
Python

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Three-Year Plan for ICT in Public Administration

1.1 Introduction

The development and revival of a smart, sustainable and supportive economy for Europe, with a view to achieving high levels of employment, productivity and social cohesion, is closely linked to its digital growth. Since 2010, the Europe 2020 Strategy has set ambitious targets for employment, innovation, education, social integration and climate / energy and identified, within a “single European digital market”, the goals for developing the digital culture and economy in Europe, leaving all Member States the task of defining their national priorities and strategies.

Innovation policies have traditionally been conceived to digitise existing processes, whereas digital represents a lever for economic and social transformation, putting citizens and businesses at the centre of action, making digital innovation a public investment for a structural reform of the Country.

On the basis of indications provided by the European Digital Agenda, Italy has defined its own national strategy drawn up together with the Ministries and in collaboration with the Conference of Regions and Autonomous Provinces. In 2015, the Council of Ministers approved two strategic programs for the country: the **National Broadband Plan** and the **Strategy for Digital Growth 2014-2020**¹.

Implementation of the Italian Digital Agenda requires the coordination of multiple actions by public administration, businesses and civil society, and requires integrated management of the various sources of national and Community funding (at central and regional level).

For this purpose, the Italian Digital Agency has the task of drafting the Three-Year Plan for IT in the Public Administration².

The Plan presented below has been constructed in accordance with what is stated in the Digital Growth Strategy, including actions, definition of financial needs and the indicators represented therein, with the aim of targeting public sector ICT investments according to government guidelines and in line with European goals and programs. The Plan proposes that the Public Administration contribute to the development and growth of the country's economy

¹ Strategy for Digital Growth 2014-2020 **www.agid.gov.it/sites/default/files/documenti_indirizzo/strategia_crescita_digitale_ver_def_21062016.pdf**

² See AgID Statute, Decree of the President of the Council of Ministers 8th January 2014 - **<http://www.agid.gov.it/notizie/2014/02/14/pubblicato-gazzetta-ufficiale-lo-statuto-dellagid>**

Law no. 208 of 28th December 2015 (2016 Stability Law) also provides for the Agency for Digital Italy (AgID) to prepare - on behalf of the Presidency of the Council of Ministers - the three-year Plan (hereinafter referred to as the Plan) guiding the digital transformation of Public Administration.

by providing them with information on some tools that will facilitate the streamlining of bureaucratic procedures, greater transparency in administrative processes, greater efficiency in the provision of public services and, not least, the rationalisation of IT spending.

These are all factors contributing to the creation of equal standards, conditions and opportunities for the first recipients of digital transformation in the country, i.e. all citizens and businesses.

1.2 Context

The three-year plan is built on the basis of a Strategic Model for the evolution of the Public Administration Information System³ (illustrated in Chapter 2 “Strategic Model for the Evolution of the Public Administration Information System”) and addresses the competition plan, funding plan and three-year plans of individual PAs.

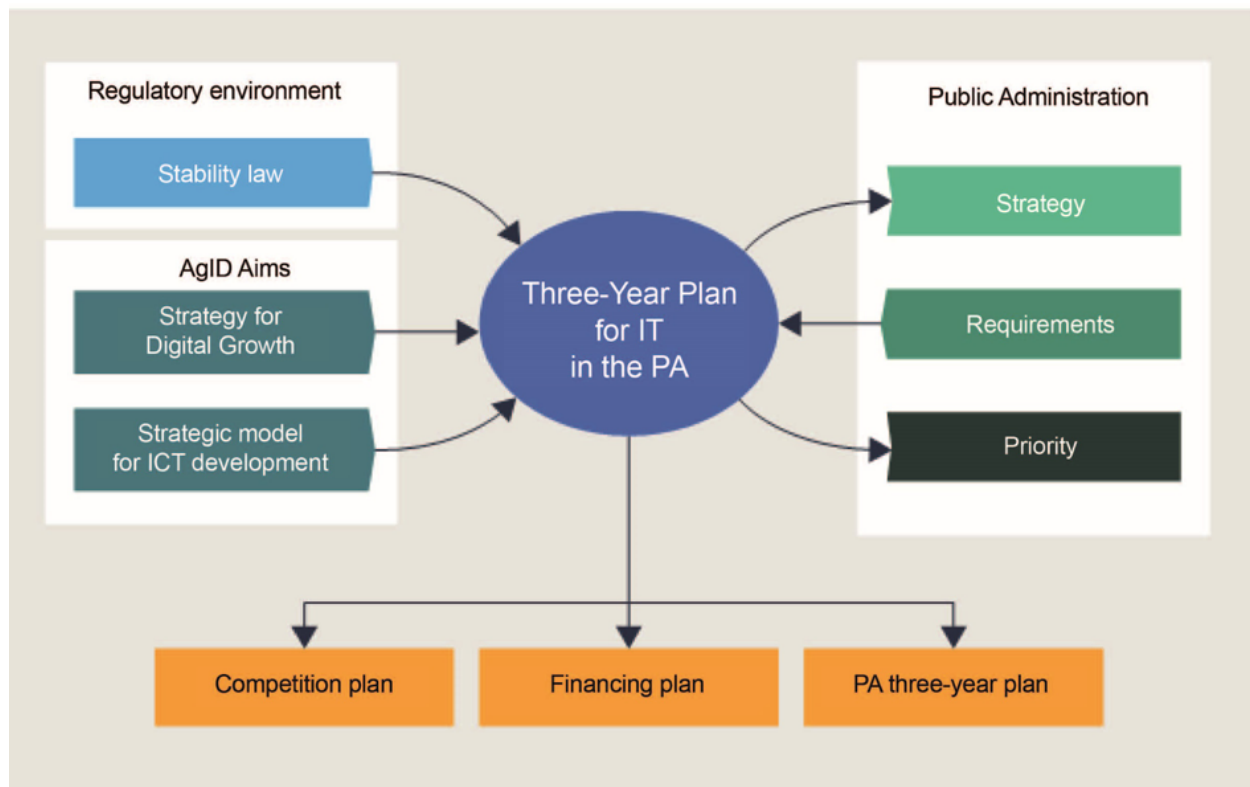


Fig. 1: Figure 1 - Input and Output of the Three-Year Plan

The Plan proposes a systematic, distributed and shared model of management and use of the most innovative digital technologies, characterised by an agile and evolutionary management style, based on clear *governance* of the various levels of public administration. The synergy and balance between the three directives (innovative technologies, agile management style and clear and effective model of *governance*) ensures the country's system more effectively uses the benefits of new technologies and provides citizens with an advantage in terms of ease of access and improvement of existing digital services.

The plan must address a complex reality with highly diversified levels of operational capacity and skill delegation, characterised by a high degree of fragmentation⁴:

³ Approved by the AgID Address Committee on 04/02/2016.

⁴ Source data from AgID, 2016.

- 32,000 public employees in ICT, of which approximately 18,000 in Central Public Administrations (CPA) and 14,000 in Local Public Administrations (LPA), plus some 6,000 local in-house company employees and more than 4,000 central in-house company employees;
- Estimates of approximately EUR 5.7 billion of external ICT spending;
- Estimates about 11,000 Public administrations data centres;
- About 160,000 databases in the AgID Public Administration database catalogue and over 200,000 applications using these data as reported by the census on 13,822 Administrations; the accuracy of these data is not as important as the dimensions that underline the complexity of the problem;
- Over 25,000 websites.

1.3 Approach to the drafting of the Three-Year Plan

The drafting of the Three-Year Plan has involved local and central public administrations, also through a process of data and information gathering both for sharing the chosen approach and the main contents of the Strategic Model and for conducting a first reconnaissance on ICT initiatives and ICT. Involving:

- The Central Public Administrations, in particular the Ministries including all supervised entities
- Tax Agencies
- Social Security Institutions
- The Regions
- Metropolitan cities of Italy
- ANCI

Other key stakeholders were also involved in the process, such as:

- The Commissioner for spending review
- Ministry of Economy and Finance
- The Department of Public Function
- Sogei
- Consip
- Agency for Territorial Cohesion
- Conferenza Unificata;
- Assinform and Confindustria

Initially, data collection and analysis also involved the central administration (CPA), especially given the significance of its ICT spending⁵.

The survey provided a clearer picture with regard to:

- The main features of ICT spending for the year 2016 and comparison with 2013-2015 average spending;
- The mapping of the main projects underway or in the start-up phase;
- Possible saving targets.

⁵ The survey results, carried out by AgID in April-October 2016, are shown in Annex 3 “Synoptic Framework of ICT Expenditure in Central Public Administrations”.

During the survey, central administrations also provided their ICT programming in order to highlight how they intend to pursue the following objectives:

- Implementation of the projects envisaged by the Digital Growth Plan;
- Implementation of the provisions of AgID Circular 24 June 2016, no. 2 which, in a transitional fashion, anticipated the provisions related to the implementation of the three-year Plan in reference to the Strategic Model for the evolution of the Public Administration Information System;
- Implementation of specific regulatory provisions for the implementation of one or more reference ecosystems. The information collected was therefore useful for:
- Highlighting the ICT needs which, although emerging from individual ecosystems (see Chapter 6 “Ecosystems”), are of general concern to the entire Public Administration;
- Identifying solutions already implemented, being implemented or planned which are to be considered strategic for the entire Public Administration;
- Verifying with the ministries that the Model is shared and consistent.

The same direction was also initiated with the regional administrations and metropolitan cities. However, at this stage, attention has been focused on key CPAs, strategic for:

- Relevance of spending;
- Implementation of synergies and centralisation measures with a view to optimising total spending;
- Ownership of the main national IT systems.

The complexity in defining and calibrating the contents of the Three-Year Plan and the continuous technological evolution lead to management that contains the forecast for the two years following the presentation, in a continuous flow logic. This Plan should therefore be seen as a dynamic tool, whose implementation depends on content update and transparent exchange of information with the public administrations already involved, as well as to the others by progressive enlargement.

The implementation of the three-year Plan provides for a gradual involvement of Public Administrations:

- 2017 is the year of construction through consolidation of the digital transformation strategy and the completion of sharing with Public Administrations;
- 2018 is the year of consolidation of the Plan, which will also be managed through online tools that will allow Public Administrations to provide their data with simplicity. They will allow the three-year plans of the administrations to be managed dynamically;
- 2019 is the year of completion of the activities of the first three-year cycle of the process, which can therefore be further refined for the next three years.

1.4 The players in the digital transformation process of the PA

The players in the digital transformation process of PA are:

- The Government, which provides the strategic directions of the digital transformation of Public Administration and, through regulatory instruments, facilitates its adoption;
- The Department of Public Function, which is the political body that supervises, including on AgID’s operations;
- The Ministry of the Economy and Finance (MEF), which is the body responsible for controlling spending and respecting savings targets;

- The Commissioner for the Implementation of the Digital Agenda that is an **extraordinary body**⁶ placed in the Presidency of the Council of Ministers with the aim of dictating the guidelines and putting in place the actions considered appropriate and priority for the implementation of the Digital Agenda. The Commissioner, in order to play his role as coordinator and supervisor of digital projects and to stimulate the development of agile procedures and technological skills within the PA, uses a contingent of staff assigned directly to him, with specific professional qualifications in the areas of activity pertaining to the functions (Team for Digital Transformation), as well as all public entities, even in corporate form, operating in the field of information technology and communication technologies. He may also exercise his power of replacement in the event of failure to implement the Digital Agenda. The Commissioner has a two-year mandate and will his term will end on 16 September 2018;
- The AgID Direction Committee, which is AgID's strategic direction body that deliberates on the Strategic Model, identifying its priorities on the basis of financial resources and monitoring its implementation;
- AgID, which transforms strategic goals into projects, coordinates programming, the implementation of national platforms and catalysts for change, manages the relationship between actors, issues technical rules and, where appropriate, manages supervision. AgID also transforms the Digital Administration Code (CAD)⁷ into implementing processes, rules and projects that are integrated into the Plan and monitors implementation of projects by administrations;
- The Regional Administrations and the Autonomous Provinces that contribute to updating the implementation and adjusting the programming of the Three-Year Plan for IT in the PA. Through the technical structures and political representation of the Conference of Regions and Autonomous Provinces and specifically with the coordination action exercised by the Special Digital Agenda Commission;
- The administrations, all those that coordinate the initiatives indicated in the plan and govern the individual projects. By identifying the Body Responsible for the transition to the digital operating mode, they ensure the harmonisation of their strategy with the principles and guidelines of the Strategic Model and the implementation of their planning and development of their initiatives;
- In-house companies, involved in the development of individual government projects and in the development and management of enabling platforms, also provide assistance and advice services;
- Instrumental organisations, which are involved in the implementation of the Italian Digital Agenda;
- **Consip** and the **commissioning centres** that run competitions and award contracts for central and local administrations. They operate on the basis of a three-year plan to aggregate needs and consequent acquisition of goods and services.

Figure 2 highlights the relationships between these players and sums up their functions with respect to the definition and implementation of the Plan:

1.5 Document structure

The document is structured as follows:

- Part One - Reference Framework:
 - Chapter 2 shows the *strategic evolution model of the public administration information system*, or the medium / long term vision to which the Public Administration must strive to make the best use of the benefits of a proper, targeted and aware use of digital technologies.
- Part Two - Components of the Strategic Evolution Model
of the PA's information system:

⁶ Prime Ministerial Decree 16th September 2016 *<http://presidenza.governo.it/AmministrazioneTrasparente/DisposizioniGenerali/AttiGenerali/DpcmOrganismiCollegati>

⁷ Legislative Decree of 7th March 2005, no. 82 et seq.

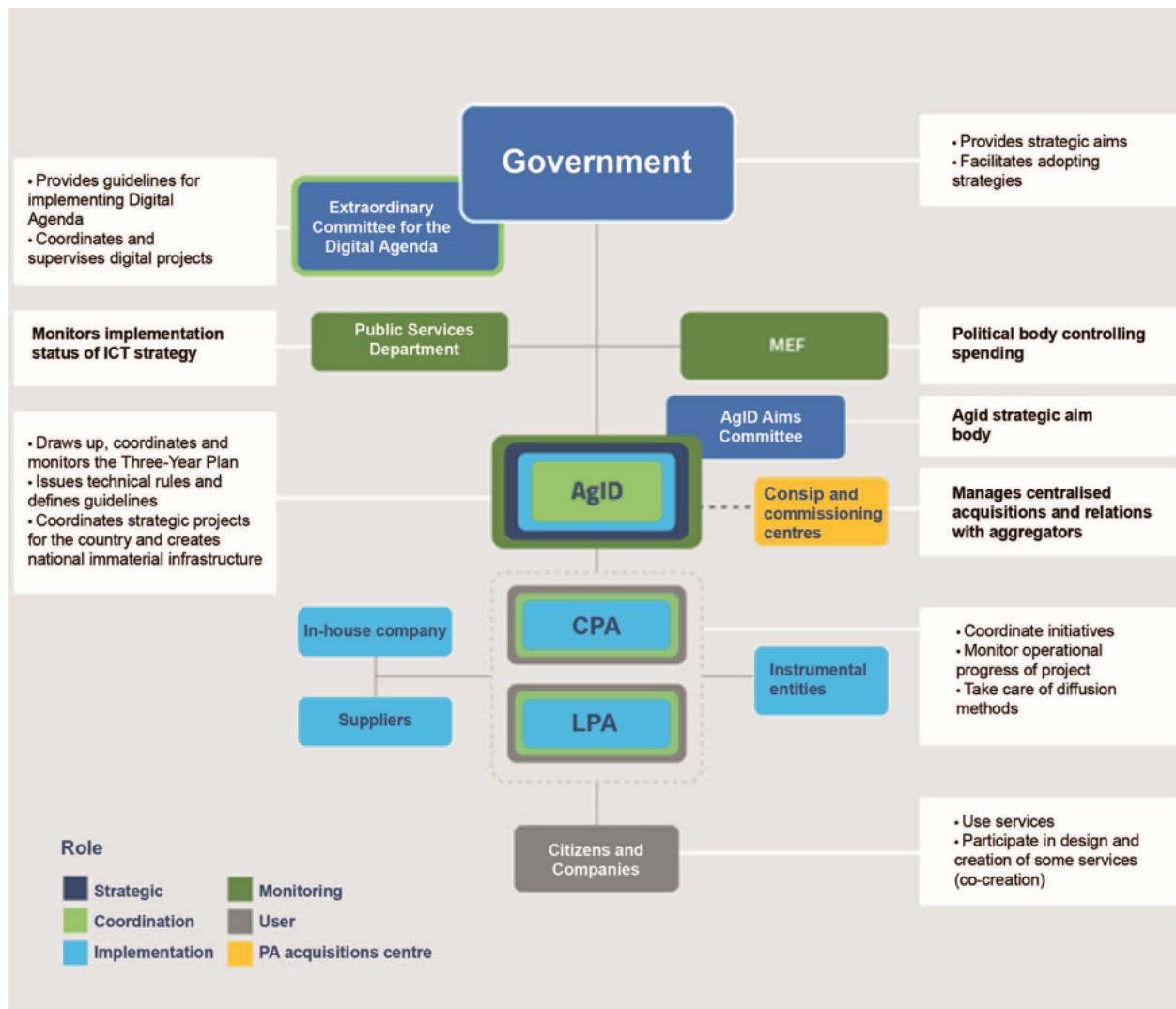


Fig. 2: Figure 2 - The players in the digital transformation process of the PA

- Chapters 3 to 10 present the components of the Strategic Model, adopting the following structure:
 - *Current scenario* - summarises some useful elements to describe the current situation with respect to the topics covered in this chapter;
 - *Strategic goals* - outlines the objectives pursued in accordance with the strategic requirements identified by the regulatory framework and the indications given in *Strategy for Digital Growth 2014-2020*;
 - *Lines of action* - presents some principles and guidelines for the implementation of the Plan and identifies the lines of action necessary to attain the goals set.
- Part Three - Direction Notes:
 - Chapter 11 contains elements related to the rationalisation goals of PA's ICT spending;
 - Chapter 12 summarises the actions that the Public Administrations will have to implement;
 - Chapter 13 sets out principles, suggestions and arrangements that all public administrations must adopt for the implementation of digital projects.

Joint reading of the *first* and *third part* will provide sufficient guidance to develop a general idea of the Strategic Model and the actions that Public Administrations must undertake.

Reading the *second part* is useful to gain a deeper understanding of the activities envisaged.

The document also contains the following annexes:

- Annex 1 extends the reference framework of the three-year Plan;
- Annex 2 summarises the Tools and Resources for the Implementation of the Plan;
- Annex 3 presents a Synoptic Framework for ICT spending in CPA;
- Annex 4 proposes a Synoptic Framework of CPA projects with respect to the Model;
- Annex 5 presents the open dataset basket.

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Strategic evolution model of the information system of the public administration

The Strategic evolution model of the public administration information system (Hereinafter referred to as “Strategic Model”)⁸ constitutes the framework for incorporating and making operational the projects, platforms and programs described in the document *Strategy for Digital Growth 2014-2020* which sets out the strategic requirements to be met, namely:

- Facilitating the coordination of all digital transformation operations and the start of a centralisation of programming and public spending on the subject;
- Considering the principle of “digital by definition” (*digital first*) as a priority, designing and implementing services for citizens, starting with the use of digital technologies;
- Facilitating the modernisation of the Public Administration starting from the processes, overcoming the logic of the technical rules and rigid guidelines issued by law. They must be dynamic and modern and point to the centrality of the experience and needs of the users;
- Adopting an architectural approach based on the separation of *back end* and *front end*, with open logic and public standards that guarantee other players, both public and private, accessibility to and maximum interoperability with data and services;
- Promoting solutions to stimulate cost reduction and improve the quality of services, including remuneration mechanisms that can also encourage vendors to pursue ever more innovative forms of composition, delivery and use of services.

The Digital Growth Strategy highlights the need for a radical redesign of the strategy for designing, managing and delivering public utilities in the network, which includes, inter alia, the adoption of multi-level architectures (*multi-layer architecture*) and the principles that have determined the affirmation of the business model of the so-called *API economy*.

The Strategic Model was therefore designed to overcome the “silos” approach historically adopted by the Public Administration and to facilitate the implementation of a true Public Administration Information System (hereinafter “PA Information System”) that:

⁸ Deliberated by the AgID Address Committee on 04/02/2016

- Considers the needs of citizens and businesses as a starting point for the identification and implementation of modern and innovative digital services (*Front office* services);
- Uniforms and rationalises the infrastructures and IT services used by the Public Administration (*Back office* services);
- Favours the creation of a new market for those private companies that will be able to operate in an agile manner in a context no longer based on large monolithic and isolated projects but on value-added services. These services will have to (i) comply with the guidelines of the Three-Year Plan, (ii) be always available on mobile devices (the first mobile approach), and (iii) be built with secure, scalable, highly reliable, application-based (API) and clearly defined architecture;
- Emphasise existing Public Administration resources in order to safeguard the investments already made, including by encouraging and creating conditions for reuse of existing software and existing interfaces;
- Not dispose of experience gained in the country's previous digitisation projects with the aim of modelling success stories (*best practice*) and not repeat mistakes made in the past;
- Improve security thanks to a multilevel architecture that ensures separation between back end and front end and allows access to back-ends only in a controlled manner and through standard APIs;
- Promote the implementation of new services according to the subsidiarity principle (e.g. through API interactions), reducing implementation times and economic commitments for administrations both in development and in the process upgrading;
- Facilitate control over expenditure on digital technology for the public administration by integrating mechanisms for measuring the progress of planned activities (e.g. through shared project management systems);
- Enable data-driven policies for planning future activities, based on optimising spending and investment.

2.1 Map of the Strategic Model

The Strategic Model can be schematically represented by the graphic map illustrated in Figure 3.

It is important to point out that Map is to be understood as the representation of macro areas that aggregate the homogeneous elements that are the subject of the Plan and not as strata of a stack architectural model ().

Referring to the Map:

- The **Tools for the generation and diffusion of digital services** (i) define common rules for the design of interfaces, services and content, improving navigation and making it consistent with the experience of citizens and businesses, (ii) facilitate the design, implementation and dissemination of digital services, (iii) define guidelines and development kits, (iv) provide for the creation of a community of developers, designers, and anyone who wants to exchange information, collaborate and participate;
- the **Ecosystems** are the policy sectors or areas where public administration takes action: from health to agriculture, from school to cultural heritage, and so on. Each ecosystem can include several domains, involving public bodies and organisations, starting from the ministries of reference, but it can also include private individuals working in the same area of interest and, for various reasons, carrying out important functions within the ecosystem itself. For example, the "Public Finance" ecosystem includes the Revenue Agency, the Regions, the Financial Police and, on the other hand, private entities, accountants, CAFs, fiscal practitioners, and so on. Ecosystems involve stakeholders interacting to achieve common goals through (i) sharing needs and operational modes, (ii) sharing different skills, (iii) planning and implementing ICT projects;
- The **Interoperability model** defines the mechanisms that facilitate and ensure correct interaction between the players in the system (citizens, businesses and public administrations), promoting transparent sharing of data, information, platforms and services. The Interoperability Model is therefore composed of elements such as guidelines, technological standards and interoperability profiles that each Public Administration will have to

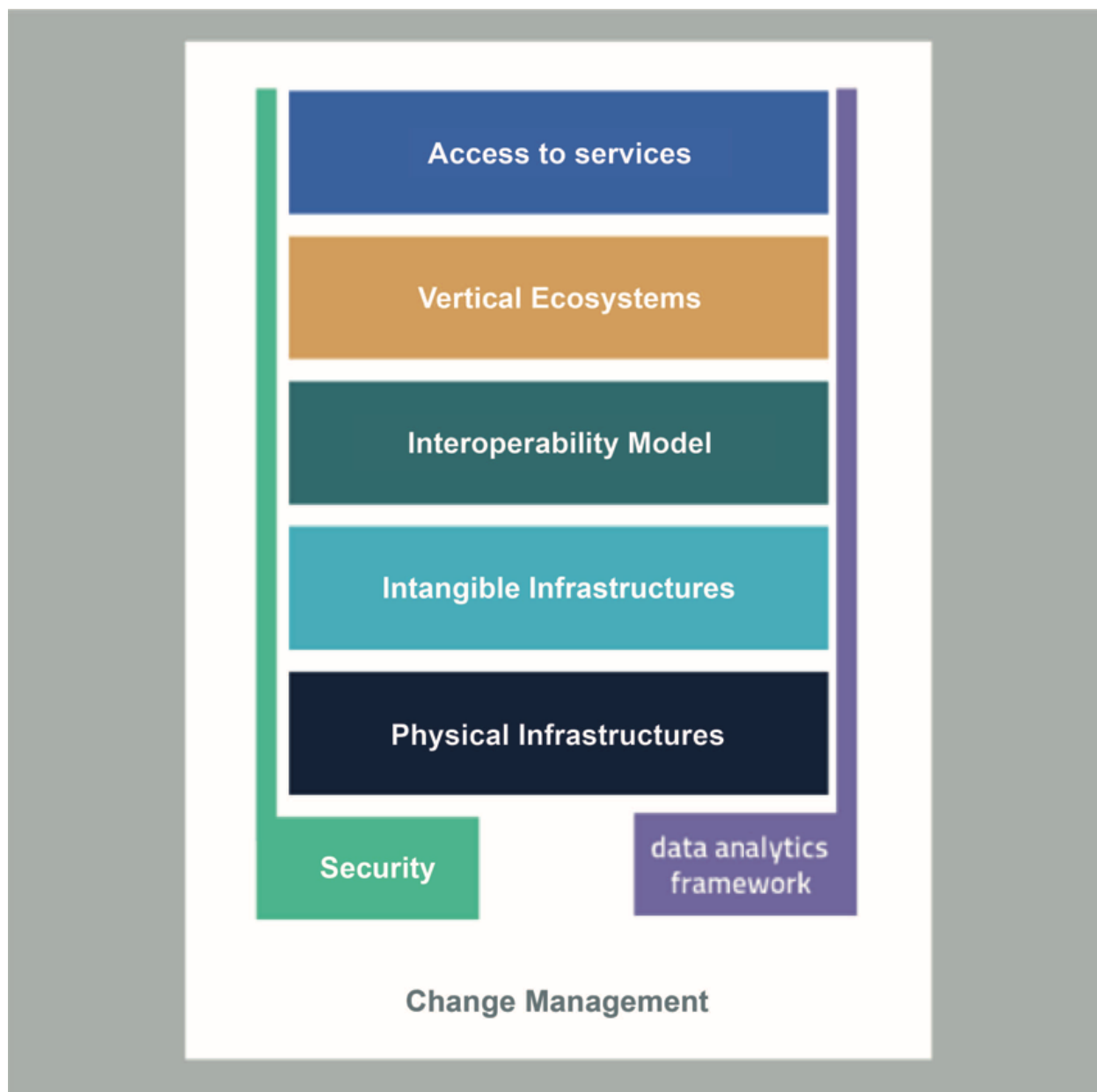


Fig. 1: Figure 3 - Map of the Strategic Evolution Model of the PA Information System

follow in order to ensure the interoperability of its systems with those of other parties for the overall implementation of the PA Information System;

- The **Intangible infrastructures** and the ***Data & Analytics Framework* (DAF)** of the PA encourage the centralisation and rationalisation of process and data management systems, reducing the fragmentation of operations.

In particular, Intangible Infrastructures facilitate, standardise and rationalise the creation of ICT services and consist of *Enabling platforms* and *PA Data*:

- **The *Enabling platforms* cover all such infrastructure services** (e.g. Identification Service, Payment Service, ANPR) that on the one hand facilitate and reduce costs for the creation of new services; on the other, standardise the tools used by end users during their interaction with the Public Administration. They also cover all those generic application solutions that can be shared by public administrations (e.g. salary management system);
- **With regard to the PA Data the following can be distinguished:** the databases of national interest, the *open data*, and controlled vocabulary. The latter is a *repository* that does not yet exist but is considered necessary to create and / or maintain all those fundamental resources for the full enhancement of the public information assets of the Public Administration.

The *Data & Analytics Framework* Is a centralised environment that acquires and make more usable public data of interest and has the objective of (i) making easier and less onerous the interoperability of public data between PAs and the distribution and standardisation of *open data* and (ii) allowing the study of the underlying phenomena of public data. In addition, the *Framework* allows the development of *data applications*, software applications that perform more or less complex operations, from simple *data retrieval* to techniques of *machine learning*, and puts the analyses generated at the disposal of an end user or another application;

- The **Physical infrastructures** aim to increase security, reduce the cost of technological infrastructure and improve the quality of public administration software services through rationalisation of *Data centers*, the systematic adoption of the *cloud* paradigm and the development of connectivity, with particular reference to the Internet network in public places and in the offices of the Public Administration;
- **Security** includes (i) activities to regulate cyber security in the PA for the Assessment *test* and (ii) CERT-PA as an operational tool to support the adoption of the correct levels of security in the Public Administration. All other aspects that help secure and make information systems reliable, such as accreditation and supervision, as well as directional activities and confidentiality-related instrumentation are also identified.
- The **Management of change** is a component designed to meet the needs of coordinating, managing and monitoring functional activities for the Plan's development. It is crosswise to other components and aggregates all lines of action, governance and support to PA involved in the implementation of the Plan.

Figure 4 detail as just explained.

The purpose of the map is to:

- Consolidate the long-term vision for the evolution of PA's information systems;
- Represent in a coherent and concise manner all ongoing initiatives on the digital innovation of the Italian PA;
- Provide a framework for identifying and steering new strategic actions;
- Enable the definition of a detailed operational plan;
- Identify the subjects involved in the implementation of the strategy and their responsibility;
- Allow multi-level continuous monitoring of the target implementation status.

The components of the map will be described in more detail in Part Two of the Plan.

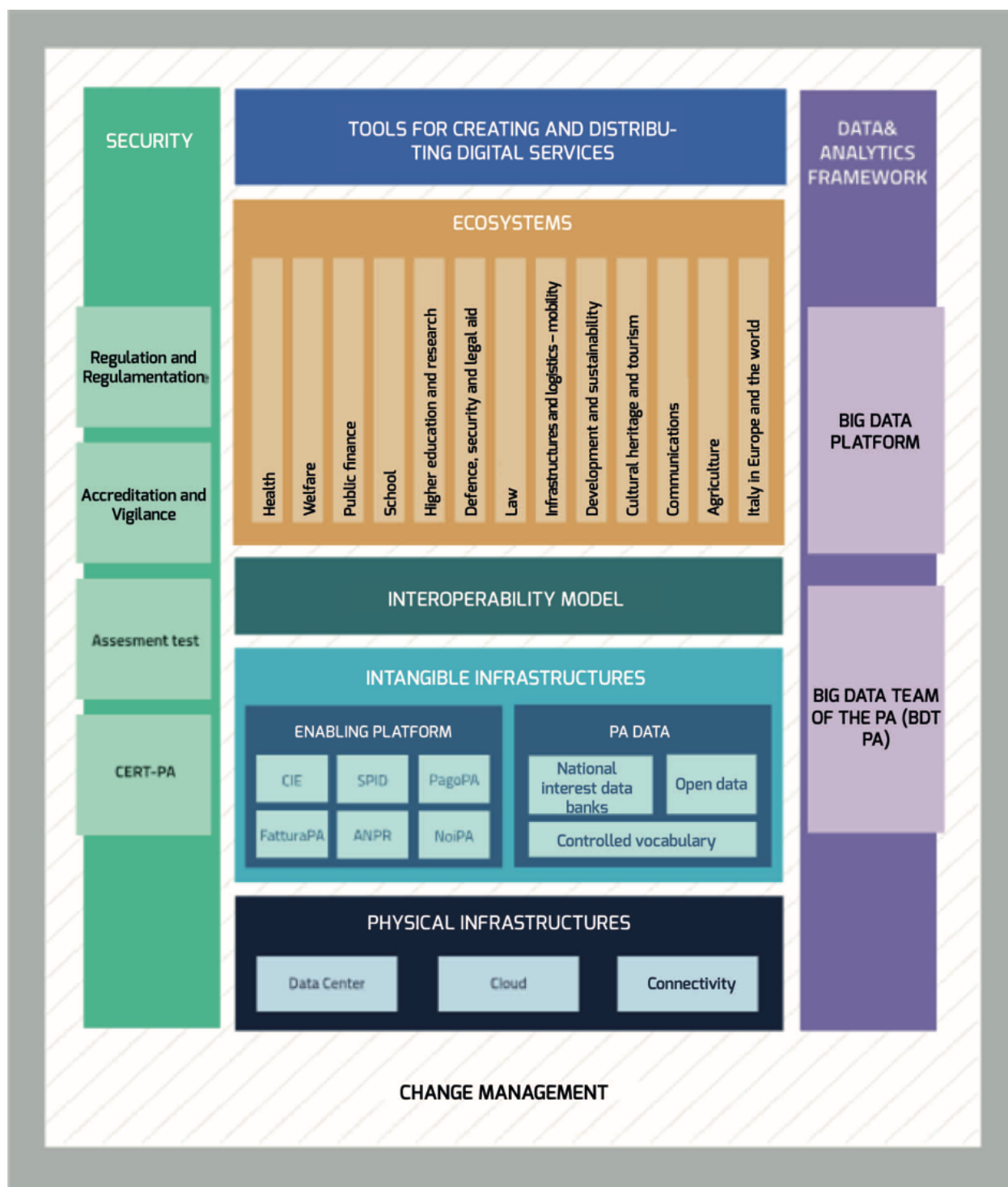


Fig. 2: Figure 4 - PA Information System's Strategic Evolution Model Detail Map

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Physical Infrastructure

National physical Infrastructures are mainly the hardware *assets* necessary for the implementation of the Plan: communication networks, *data centres*, the *PA cloud*, *disaster recovery* and *business continuity* systems and monitoring and security equipment. The Plan will develop along three main directions:

- The reorganisation of the public administration data centres through rationalisation work, both to reduce management costs and adapt and increase the quality of services offered to public administrations, including in terms of business continuity, *disaster recovery* and energy efficiency;
- The implementation of the *PA cloud*, enabling virtualisation of the fleet of all public administrations, with significant maintenance and cost management benefits. Cloud services will be offered in *IaaS (Infrastructure as a Service)* *PaaS (Platform as a Service)* and *SaaS (Software as a Service)* modes;
- The rationalisation of public administration connectivity costs and the increase in the spread of connectivity in public places for the benefit of citizens.

Physical Infrastructures are therefore divided into three macro groups, as illustrated in Figure 5 below:

- Data centre, where the activities and infrastructures identified for the rationalisation of the Public Data Processing Centres (CEDs) fall;
- *Cloud*, which contains activities and initiatives aimed at performing virtual-physical migration of public administration data centres, benefiting the services that will be offered by the *PA cloud*;
- Connectivity to the activities and infrastructures useful to (i) increase and rationalise costs for the Internet connection by the Public Administrations and (ii) its dissemination to public places and public administration offices.

Below, in paragraph 3.1 the relevant specifications to *data centres* and *clouds* will be presented and in paragraph 3.2 those relating to connectivity.

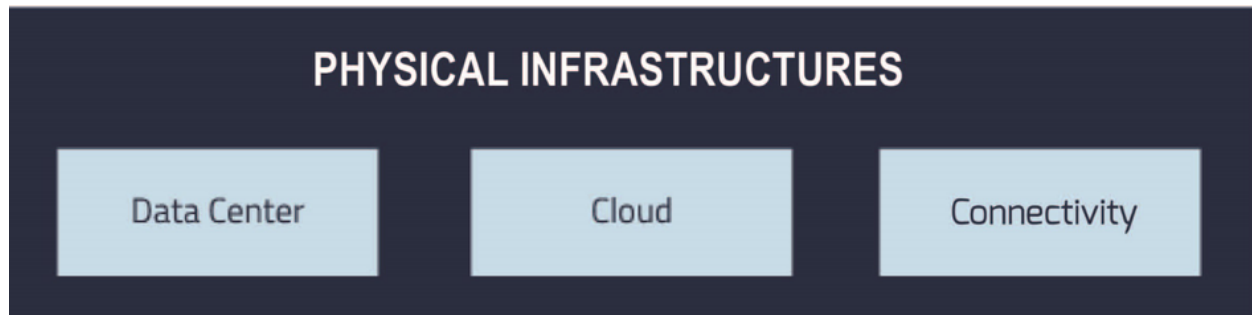


Fig. 1: Figure 5 - Components of Physical Infrastructures

3.1 Data centres and *cloud*

3.1.1 The current situation

As established by *the* law *December 17, 2012, n. 221*⁹, AgID has the task of carrying out a census of *data centres* of the PA in order to propose a rationalisation plan, i.e. rules aimed at consolidating the digital infrastructures of PAs, in order to achieve greater levels of efficiency, security and SPID in delivering services to citizens and businesses.

In the period 1 June 2013 - 31 July 2013 AgID performed *a* *first census*¹⁰ on 990 *data centres* of the PA, noting a strong fragmentation of resources and frequent situations of technological inadequacy¹¹.

The subsequent reconnaissance by AgID in 2016 indicated that, in the ICT spending of public central administration (CPA), expenditure *on data centres* was greatest, amounting to about 39% of the total¹². It highlights the importance of rationalising physical infrastructure, even from an economic point of view.

With regard to the virtualisation of the fleet, the Public Administration used the *cloud* in an extremely fragmented way, limited to the adoption of very few solutions.

Given the high fragmentation and disparity of the PA's information systems, it is necessary to define an evolutionary pathway to accompany PAs towards the efficient and flexible use of ICT technologies in order to guarantee high management economies in favour of greater reactivity in the provision of Services tailored to the needs of citizens and businesses.

This route involves two activities:

- Rationalisation of the PA *data centres* and consolidation of the less efficient *data centres* in selected centres;
- Study and definition of the evolutionary strategic model *of PA cloud* to be implemented following the rationalisation described in the previous paragraph.

3.1.2 Strategic objectives

- Increase the quality of services offered in terms of security, resiliency, energy efficiency and business continuity.

⁹ Law of 17th December 2012, no. 221 conversion, with modifications, of the Decree-Law of 18th October 2012, no. 179, contains further urgent measures for the country's growth (Official Gazette no. 294 of 18th December 2012, s.o. no. 208) **http://www.gazzettaufficiale.it/atto/serie_generale/caricaDettaglioAtto/originario?atto.dataPubblicazioneGazzetta=2012-12-18&atto.codiceRedazionale=12A13277**

¹⁰ **http://www.agid.gov.it/agenda-digitale/infrastrutture-architettute/razionalizzazione-del-patrimonio-ict-pa/censimento-data**

¹¹ 20% of the infrastructures considered had no *disaster recovery* or *business continuity* mechanisms, 12% of the infrastructures of the CPA and 50% of the LPA infrastructures considered had access controls considered insufficient, 94% of the *data centre* for CPAs and 84% for LPAs were implemented and used by a single administration, with duplication of costs and resources.

¹² For more details, see Annex 3 - Synoptic Framework for ICT Expenditure in Central Public Administrations.

- Create a PA *cloud* environment, homogeneous from the contractual and technological point of view, by retraining internal resources existing in PAs or by resorting to resources of qualified external parties.
- Cost savings resulting from consolidating data centres and migrating services to *cloud*.

3.1.3 Lines of action

The rationalisation plan for the ICT resources of the PA envisages that AgID:

- Deals with identifying a set of PA's existing physical infrastructure that will be elected as National Strategic Poles (PSN)*,*
- Define the path of PAs towards the *cloud* model, also through the resources made available by the National Strategic Poles and the resources made available through *SPC-Cloud*¹³;
- Define a qualification process for PSNs;
- Define rules and procedures for qualifying other *Cloud Service Providers (CSP)*.

The **national strategic** poles will have to meet the technical, economic, and organisational excellence requirements indicated by AgID, which will define a specific qualification procedure.

AgID will indicate CSP qualification rules and procedures and evolution of the *cloud* model dedicated to PA, starting with *cloud* architecture implemented with the Consip competition¹⁴ and the subsequent extensions defined by the *Technical Management Committee*¹⁵.

All Public administrations owners of physical infrastructure will have to participate in a census carried out by AgID (see action point **PA Cultural Heritage Census**).

Based on the responses obtained, these physical infrastructures, if not qualified as PSNs, will be divided into two categories, safeguarding past investments made by PAs:

- *Group A - Data Centres* of quality that have not been elected to the National Strategic Pole, or where structural or organisational shortcomings are considered minor. As outlined below, these facilities will continue to operate but no investment for expansion or evolution can be made. However, they will need to ensure continuity of services and disaster recovery, up to full migration, using the services available under the SPC Framework Agreement *Cloud* Lot 1 or made available by the *National strategic* poles.
- *Group B - Data centre* that *do not guarantee* minimum requirements of reliability and security from an infrastructure and / or organisational point of view, or do not guarantee the continuity of services. These infrastructures will need to be quickly consolidated into one of the national strategic poles or towards the *cloud* through the services available under the SPC Framework Agreement *Cloud* Lot 1.

For administrations that do not present a migration plan, AgID and CERT-PA, in collaboration with the Digital Transformation Team, will conduct sample safety analysis activities such as: *Penetration test* or *Vulnerability assessment*, according to the “*Continuous monitoring*” action (See paragraph 8.3).

AGID will set out an operational plan that will contain recommendations on:

- Identification of poles to be elected to national;
- Regulatory action to define the mechanisms for accession, operation, and breakdown of the costs of national strategic poles across the national territory;
- Defining a plan for migrating to PA *cloud* and the consolidation of data centres;

¹³ Cf. Annex 2 - Tools and Resources for the Implementation of the Plan.

¹⁴ SPC *CLOUD* Lot 1 - cf. Annex 2.

¹⁵ *https://www.cloud*spc.it/CDT.html*

- The insertion of national strategic poles between the “Critical infrastructures” relevant for national security.

National Strategic Poles can also carry out document retention functions in accordance with CAD, while remaining able to create additional conservation (public or private) poles.

Public Administrations, as reported in the **Circular AgID 24 June 2016, n. 2**¹⁶, cannot bear the costs associated with the constitution of new *data centres or the evolution of existing non-elected data centres to national strategic poles*.

Public Administrations will be able to proceed - with prior approval of AgID¹⁷ - to the adaptation of their data centres exclusively to:

- Avoid problems of interruption of public service;
- Anticipate decommissioning processes of their data centres to migrate to PA *cloud*;
- Consolidate their services on data centres of other PAs in order to obtain cost savings.

In addition, in order to support the objectives set out in the various phases, AgID will provide useful guidelines for system implementation, native *cloud* application development and migrating to legacy systems *cloud*.

To pursue the rationalisation of PA resources, actions have been identified to help achieve strategic goals.

On this note, please note that DL 18 October 2012, n.179 converted into Law 221/2012, and specifically **Art.33-f**¹⁸, assigns to AgID the task of consolidating and streamlining the country’s digital sites and infrastructures.

AgID will launch a strategic study to define the characteristics of the cloud environment for the PA and also with innovative tools such as pre-commercial procurement (PCP)¹⁹ it will put out to tender²⁰ the creation of a set of tools and models to optimise the transparent use of available resources, regardless of supplier (PSN or *Cloud Market Provider*).

Sub- ject	Implementation of the indications provided in <i>*the Circle AgID 2/2016*</i>
Time Frames	In progress
Play- ers	PA
De- scrip- tion	During the implementation period of the Plan, PA will not be able to make any expense or investment in the data centre, according to the indications and exceptions indicated in Circular 2 of June 24, 2016 of the AgID. PAs, who have not already done so, carry out the projects for consolidating and virtualising their data centres or migrating to SPC <i>Cloud</i> . In the event of non-use of the SPC - <i>Cloud</i> Lot 1 prepared by Consip, they will provide the reasons to AgID.
Re- sult	—

¹⁶ **http://www.agid.gov.it/notizie/2016/06/24/spesa-ict-2016-indicazioni-lacquisti-beni-servizi-pa**

¹⁷ The processes will be specified as a result of the action line, “Guidelines on the rationalisation strategy of data centres to be included in the Triennial Plans of PA 2017-2019”.

¹⁸ **http://www.gazzettaufficiale.it/atto/serie_generale/caricaArticolo?art.progressivo=0&art.idArticolo=33&art.versione=1&art.codiceRedazionale=12A13277&art.data=2016-06-24&art.idGruppo=10&art.idSottoArticolo1=10&art.idSottoArticolo=7&art.flagTipoArticolo=0#art**

¹⁹ For further information on pre-sales contracts, see Annex 2 - Tools and resources for the implementation of the Plan

²⁰ Action Line “Definition of technical specifications for the realisation of a *Cloud Brokering system* ” and “Functional Actions to Rationalise the Data Centres of the PA”.

Sub-ject	ICT Cultural Heritage Census
Time Frames	From June 2017 to December 2018
Play-ers	AgID, PA
De-scrip-tion	Census of ICT assets in operation at the Public Administration, also to identify Public Administrations that are in possession of physical infrastructures that can aspire to play the role of National Strategic Pole.
Result	Census Report (release date first release: December 2017 - further releases every 6 months).

Sub-ject	Qualifying SaaS Solutions available on SPC <i>Cloud</i> and procurement procedures
Time Frames	By March 2018
Play-ers	AgID, Consip
De-scrip-tion	<p>Finding the minimum qualification requirements for a SaaS solution for the PA deliverable on the SPC <i>Cloud</i>. Definition of an AgID Operating Circular with useful operating guidelines for suppliers and PAs to qualify as their SaaS application context.</p> <p>Definition by AgID and Consip of the procurement procedure of SaaS services usable within the framework of the SPC <i>Cloud</i>.</p> <p>AgID specifies the technical and organisational requirements of the MarketPlace platform of SaaS services of the SPC <i>Cloud</i> environment of the PA.</p> <p>In the event that it is not possible to arrange through framework Agreements or Conventions, a tender will be held in compliance with the procurement code.</p>
Re-sult	<p>Circular AgID “Criteria for qualifying SaaS services for the <i>Cloud</i> of the PA” (<i>Release date: June 2017</i>)</p> <p>Provisions for SaaS Services Procurement for <i>Cloud</i> of the PA (<i>Release date: June 2017</i>)</p> <p>Technical specification for the implementation of a MarketPlace for SaaS services for the <i>Cloud</i> of the PA (<i>Release date: September 2017</i>)</p> <p>Purchase agreement with Consip (<i>Release date: by March 2018</i>)</p>

Sub-ject	Qualifying <i>Cloud</i> Service Provider for PA
Time Frames	By December 2017
Play-ers	AgID, Consip
De-scrip-tion	AgID will define the rules and procedures for qualifying public <i>Cloud Providers</i> to enable Consip to enable new CSPs. CSPs already on MEPA or framework agreements or agreements will submit a qualification application within 3 months of the date of publication of the qualification criteria.
Re-sult	<p>Circular AgID “Criteria for qualifying for public <i>Cloud Service Provider</i> for the PA ” (<i>Release date: October 2017</i>)</p> <p>Consip provides access to electronic market instruments / conventions / framework agreements only to <i>Cloud Service Providers</i> qualified by AgID (<i>Release date: October 2017</i>)</p>

Sub-ject	Evolution of the <i>Cloud</i> of the PA
Time Frames	By June 2018
Play-ers	AgID
De-scrip-tion	AgID will launch a strategic study to define the technical and organisational requirements for the definition of a <i>cloud</i> environment devoted to the PA that will also include the definition of a platform for <i>Cloud</i> brokering of the PA, in order to simplify the acquisition and monitoring of ICT resources made available in the <i>Cloud</i> environment of the PA even with the possible implementation of prototypes through the <i>Pre-Commercial Procurement PCP</i> .
Re-sult	Strategic study for the definition of multi-supplier <i>cloud</i> environment for PA (<i>Release date: by June 2018</i>) Possible Technical Specifications for the Implementation of a <i>Cloud</i> brokering system of the PA (<i>Release date: to be defined</i>) Acquisition via Consip (release date: to be defined)

Sub-ject	Functional actions to rationalise the PA's data centres
Time Frames	From May 2017 to December 2018
Play-ers	AgID, Government.
De-scrip-tion	AgID defines the requirements necessary for the qualification of a PA to "National Strategic Pole" by issuing a special newsletter. AgID also verifies the criteria for obtaining and maintaining qualification at the National Strategic Pole. AgID identifies the first 3 Pilot National Strategic Poles (national and/or local). The government will formalise the list of national strategic poles. AgID will regulate the technical relationship and the service and economic model with the national strategic poles by defining an Accession Protocol that will also identify the possible regulatory adjustment path ²¹ , technical and organisational, which PAs will have to adhere to regulate their qualification and make available to the other PAs the ICT resources and the spaces they own.
Re-sult	AgID circular for qualifying for a PA National Strategic Pole (<i>Release date: September 2017</i>) Results AgID assessment on candidates for National Strategic Pole (<i>May 2018</i>) Official List of National Strategic Poles (<i>Release date: June 2018</i>) National strategic AgID-Pole Scheme (<i>Release date: July 2018</i>) Conventions (<i>By December 2018</i>) Guidelines for developing and maintaining applications for <i>cloud</i> of PA (<i>Release date: December 2017</i>) Guidelines for Migrating Legacy Applications to the Environment of <i>cloud</i> of PA (<i>Release date: June 2018</i>)

²¹ The regulatory diligence should include both the use of in-house companies and indications for limiting/blocking bilateral agreements between administrations for brokering services.

Sub-ject	Plans to rationalise the ICT patrimony of the PA
Time Frames	from January 2018 to April 2018
Play-ers	AgID, PA
De-scrip-tion	Following the census provided by the “PA ICT Cultural Heritage Census”, AgID defines guidelines for the rationalisation of the ICT asset of Public Administrations, in conjunction with the Three-Year Plan implementation strategies set out in the other levels of the Map. The PA executes the indications defining its own rationalisation plans that, upon request, must be provided to AgID. Rationalisation actions are checked by AgID through the annual census of PA ICT assets.
Re-sult	Guidelines for the rationalisation of the ICT assets of Public Administrations (<i>First release date: January 2018</i>) ICT assets rationalisation Plan for PA (<i>From February 2018 to April 2018</i>)

Sub-ject	Establishment of National Strategic Poles
Time Frames	From July 2018
Play-ers	PA
De-scrip-tion	The administrations identified as National Strategic Pole adapt their <i>data centre</i> within the times specified in their ICT rationalisation Plan. AgID ensures the control and monitoring of the actions carried out by the PAs.
Re-sult	—

Sub-ject	Group A: <i>Data centre</i> adaptation
Time Frames	From April 2018
Play-ers	PA
De-scrip-tion	Administrations belonging to Group A will have to consolidate existing application systems within existing <i>data centres</i> and use the <i>cloud</i> of PA through the SPC-Cloud <i>competition</i> to ensure the continuity of critical services or <i>disaster recovery</i> . AgID ensures the control and monitoring of the actions carried out by the PAs.
Re-sult	—

Subject	Group B: Migration of <i>Data centres</i>
Time Frames	From February 2018
Players	PA
Description	Administrations belonging to Group B will have to consolidate existing application systems with existing <i>data centres</i> to migrate to one of the national strategic poles or migrate to the <i>Cloud</i> of PA through the <i>SPC-Cloud</i> competition. AgID ensures the control and monitoring of the actions carried out by the PAs.
Result	—

3.2 Connectivity

In principle, public administrations must initiate processes for adapting their connectivity in order to provide all the services related to both internal administrative processes and public services addressed to citizens. They are equipped with a network connection infrastructure that can respond to at least the following general principles:

- Sufficient bandwidth to meet the requirements of internal and outsourced IT services;
- Service levels adequate to ensure the operation of the applications used;
- Bandwidth capacity scalability even for Wi-Fi bandwidth delivery for public use;
- Security levels complying with international standards;
- High reliability network configurations in case of Critical Infrastructures.

The administrations define the exact parameters and the level of network reliability according to the specific application context, the use of their applications, and the levels of service they offer. They also set up their own services to support IPv6 protocol.

The PA's Internet connectivity must be aimed at:

- Ensuring access to the Internet to **all PA employees**, irrespective of the role or assignments assigned, and without time or time limits. The Internet today must be considered to be an indispensable and effective work tool to carry out any kind of activity: from finding phone numbers, identifying people and relationships between these people, references to a competition or norms, technical documentation, productivity tool (translations, times in the world, etc.), emergency services, or news of any kind.
- Provide access not only to the tools and applications used by the PA but, after analysing the organisational needs in relation to the objectives to be achieved, **to all the content and tools that the Internet makes available**, including file and content sharing tools, social networks, as well as sites such as forums, chat, or other communication tools.

PAs that use firewalls or other types of application filters must then configure them to allow internet access to all employees, and limit filtering to directly dangerous sites and content (malware, viruses, *phishing*), or which are Illegal, or clearly unsuitable for a workplace. File sharing, social networking, chat or other sites should not be filtered in principle, for what they are but only and exclusively depending on the type of content that is normally exchanged.

If the PA has clear and documented security requirements beyond the standard (confidential material, critical services, and national security), it is recommended to use tight filters that block the use of commonly used tools **alone and exclusively** to those employees and systems that have access to this type of information, as well as strong security policies that instruct employees about how to locate and treat confidential information about the dangers of *phishing*, the use of USB keys, etc. and in the face of the configuration of logging and auditing tools to keep the network secure.

The action lines in Chapter 8, dedicated to security, will provide clear and detailed guidance.

3.2.1 The current situation

The availability of connectivity in Public Administrations is very diverse. Typically, public administrations - especially the local ones - have an under-dimensional situation that does not meet the criteria defined by the Public Connectivity System (SPC).

3.2.2 Strategic objectives

- Increase Internet connectivity by the Public Administration in conjunction with the National Broadband Plan and the rationalisation strategy of the ICT resources of the PA in the previous chapter.
- Rationalise costs for connectivity (data / voice) through the use of SPC competitions.
- Standardise and increase the diffusion of wireless connectivity in public places and Public Administration offices accessible to the public, also in order to facilitate access to services by citizens through the use of public *Wi-Fi* networks.

3.2.3 Lines of action

Depending on the PA ICT resources rationalisation plan, two distinct paths are to be mentioned, in conjunction with the National Broadband Plan:

- As far as the peripheral structures are concerned, i.e. all PAs that will not be a national strategic pole, connectivity will be guaranteed by the availability of the Consip SPC-Connectivity Contract (SPC-Conn)²²;
- For national strategic poles, in view of the potential bandwidth requirements and transmission characteristics that are not always apparent in the availability of SPC Contracts, the different levels of connectivity will be the subject of a specific competition.

By 2017, Public Administrations will adjust their connection capacity to ensure the full deployment of strategic services and platforms, by adopting alternately:

- Connectivity solutions based on the accession to the SPC Framework Agreements, except where the bandwidth requirements and the transmission characteristics required are not potentially satisfying in these contractual areas;
- The services made available, on the basis of the subsidiarity principle, in its territory of reference by the Region or by another local public entity that has already established territorial connection structures complying with the requirements of AgID and interconnected with the SPC network.

In any case, in the choice of connectivity services, PAs should prioritise supplies where the transport service is based on *dual-stack* (IPv4 and IPv6).

²² Cf. Annex 2 - Tools and Resources for the Implementation of the Plan.

Sub-ject	Publication and adaptation to the Guidelines for the Implementation of public <i>Wi-Fi</i> networks
Time Frames	From January 2018
Play-ers	AgID, all PAs that manage public <i>Wi-Fi</i> networks
De-scrip-tion	AgID will publish guidelines for the use of <i>Wi-Fi</i> that public administrations make accessible to citizens in offices and public places, drafted also on the basis of the major experiences of public <i>Wi-Fi</i> already in existence in the PA. The administrations define and implement the Adaptation Plan to the guidelines issued by AgID for the <i>Wi-Fi</i> which facilitate access to the Internet network from public offices and public places.
Re-sult	Guidelines for the implementation of public <i>Wi-Fi</i> networks (<i>Release date: December 2017</i>) Adaptation to Guidelines (<i>From January 2018</i>)

Sub-ject	Support for using the SPC Connectivity Agreement
Time Frames	Continuous support service from September 2017
Players	AgID, Consip
De-scrip-tion	AgID, with the help of Consip, will provide operational guidance to enhance the use of this supply channel, depending on the characteristics of the needs of the various administrations.
Result	—

Notes

This document was translated by a machine.

We want to make our country more efficient. We believe humans and machines should complement each other. Artificial Intelligence is the technology that will enable such symbiosis. This document has been translated using a mix of state-of-the-art machine translation and human-driven AI. The raw machine translation output has been edited by an automated system trained on millions of professionally corrected sentences. Finally, a human went through the document to make sure that no information had been lost.

This means leaving behind some stylistic improvements and potential errors. However, this AI-augmented approach to translation allowed us to prepare this English version at a fraction of the cost and time of the legacy translation process (this translation was made in a few days including the human review; we didn't publish it right away because we had to convert it to reStructuredText in order to share it on GitHub and we had a ton of things to do before that!).

If you want to contribute with feedback and changes to the Three Year Plan for ICT in the Public Administration, visit the [Github repository](#).

We remind you that only the Italian version approved every year by the Italian Government has legal value.

Intangible Infrastructure

Data from public administrations, together with the mechanisms and platforms created to provide services to citizens, are one of the major digital assets of the PA.

This chapter is devoted to these intangible infrastructures and develops along two lines:

- The rationalisation and enhancement of the information assets of the Public Administration by overcoming the “silo logic”, still too often adopted today and legacy of administrative processes and organisational choices made in the past;
- The common factor of software components that are useful to all Public Administrations and which can be considered both accelerators of the digitisation process and tools for the homogenisation of the services offered.

Intangible Infrastructures are subdivided into two macro groups, as shown in Figure 6:

- PA data, i.e. activities related to databases of national interest, open data and controlled vocabularies;
- The Enabling Platforms, that is, platforms shared at national level by PAs.

4.1 Public Administration Data

Enhancing of public information assets is a strategic goal for Public Administration. To exploit the potential of the immense wealth of data collected and managed by the PA, it is necessary to implement a paradigm shift in their management that allows to overcome “silo logic” in favour of a systemic vision. Data must be understood as a common good, shared free of charge between public administrations for institutional purposes²³ and usable by civil society, unless the reasons for not doing so are documented and properly reasoned²⁴.

To implement this paradigm, the Plan identifies three areas:

- **Databases of national interest**, or reliable databases, homogeneous by type and content, relevant to the performance of institutional functions of public administrations and for analysis purposes. They constitute the

²³ Article 50 CAD.

²⁴ Article 68 CAD.

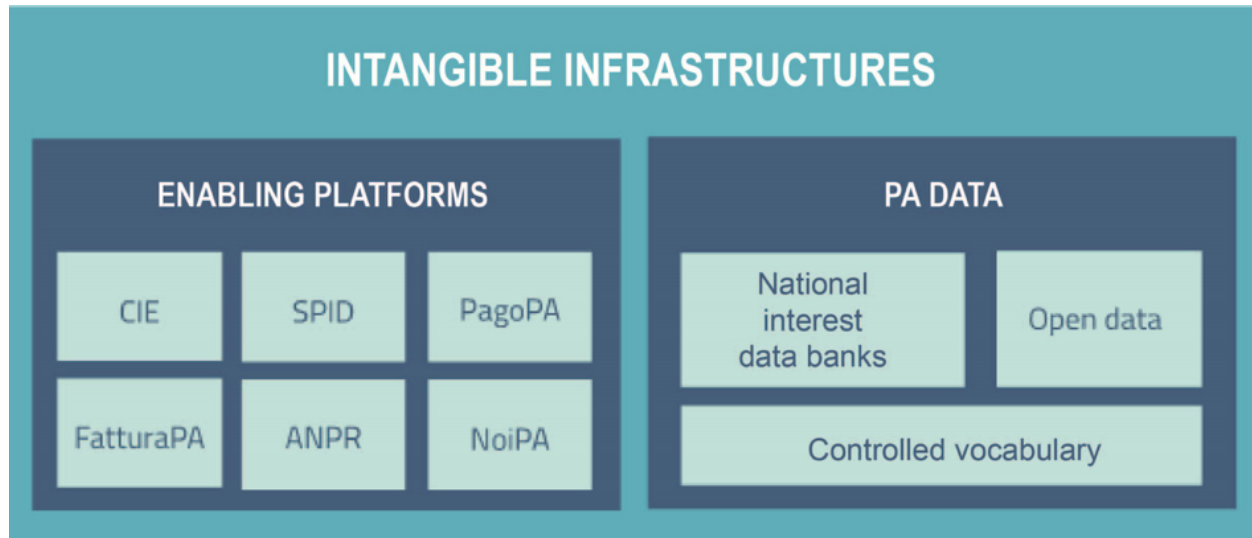


Fig. 1: Figure 6 - Components of intangible infrastructures

backbone of public information assets, to be made available to all PAs, facilitating the exchange of data and avoiding asking for the same information more often from citizens or enterprises (*once only principle*²⁵);

- ***Open data***, or “open type data”. They involve a process designed to make Public Administration data freely usable, re-usable and redistributable by anyone and for any purpose, including commercial, provided they are not subject to particular restrictions (e.g. state secret, statistical confidentiality, Privacy restrictions defined by the Privacy Policy);
- **Controlled vocabularies and data models**, which are a common and shared way of organizing recurring codes and nomenclatures in a regulated and standardized manner (controlled vocabularies) and a comprehensive and rigorous conceptualization within a given domain (ontology or shared data model).

Enhancing public assets requires careful guidance that draws on the processes of standardisation, generation, retention and reuse of data. This upgrade will bring benefits in terms of greater administrative efficiency, re-use of data for the benefit of the citizen (thus avoiding re-supplying data already held by the Public Administration) and widening the possibilities of analysis, including the understanding and prediction of social phenomena to support the process of *policy making* and the development of services to the citizen.

4.1.1 Databases of national interest

According to Article 60 of the CAD, databases of national interest are all the information collected and managed digitally by public administrations, homogeneous by type and content, and whose knowledge is relevant to the performance of the institutional functions of the other PAs, also for statistical purposes and analysis, using *big data* methodologies. In particular, databases of national interest:

- Refer to data collected and managed by or on behalf of the managing authority so that they can respond to the credibility or authenticity of the source;
- Have a high socio-economic relevance;
- Are at the service of administrative proceedings falling within the competence of other Public Administrations for the performance of their institutional duties;
- Support cross-border administrative procedures in implementation of Community standards or directives;

²⁵ <http://ec.europa.eu/transparency/regdoc/rep/1/2016/EN/1-2016-179-EN-F1-1.PDF>

- Are authoritative in the domain of reference.

In the European context, data bases of national interest correspond to the so-called **Base Register**²⁶, or basic components to support the interaction between public administrations and between them and the private bodies. The term *Base Register* is used in the **European Interoperability Framework**²⁷ to indicate reliable, authentic and official sources of particularly relevant data produced by Public Administrations. These data are the foundation for building public services and the public administrations have the task of managing them according to clear quality, security and privacy requirements.

The current situation

Most existing public data bases have been designed and implemented in a distinct way, without the support of an overview useful to address regulatory and technical actions that can enhance data quality.

Over time this feature has generated the fragmentation of the public information assets of the Public Administration into information silos: “containers” in which the data is often replicated and stored unevenly or even inconsistently and in a misaligned manner.

The CAD (Article 60, paragraph 3a) identifies a set of databases of national interest (see Glossary):

- the **National Repertoire of Territorial Data**²⁸ (RNDT) - Holder: AgID;
- The National **resident population register**²⁹ (ANPR) - Holder: Ministry of the Interior;
- The **National Public Contracts Database**³⁰ (BDNCP) - Holder: ANAC;
- the **Criminal records**³¹ - Holder: Ministry of Justice;
- the **Business Register**³² - Holder: UnionCamere;
- Automated Immigration and Asylum Archives - Owner: Ministry of the Interior;
- National Assistance Register (ANA) - Holders: Ministry of Economy and Finance and Ministry of Health;
- The Register of Farms - Holders: Regions and Ministry of Agricultural, Food and Forestry Policies.

The following data bases, governed by the regulatory context of the CAD and the Decree Law 18 October 2012, no. 179³³:

- The National Archive of Civic Numbers of Urban Roads (ANNCSU) - Owner: ISTAT and the Revenue Agency;
- The Cadastral Database - Holder: Revenue Agency;
- The **Public Administration Index**³⁴ (IPA) - Holder: AgID;
- The **certified national email address list of professionals and businesses**³⁵ (INI-PEC) - Holder: Ministry of Economic Development.

Article. 60 of the CAD assigns to the AgID the possibility of extending the previous list which should therefore be considered as non-exhaustive and expanding. In fact, in addition to the databases contained in the aforementioned regulatory references, there are others that are comparable to them:

- The Public Vehicle Register (PRA) - Owner: ACI;

²⁶ <https://ec.europa.eu/isa2/sites/isa/files/presentations/peter-burian.pdf>

²⁷ <https://joinup.ec.europa.eu/asset/eia/description>

²⁸ <http://www.rndt.gov.it/>

²⁹ <https://www.anpr.interno.it/>

³⁰ <http://portaletrasparenza.anticorruzione.it/microstrategy/html/index.htm>

³¹ <https://certificaticasellario.giustizia.it/sac/>

³² <http://www.registroimprese.it/>

³³ Converted into the law of 17th December 2012, no. 221.

³⁴ <http://www.indicepa.gov.it>

³⁵ <https://www.inipe.gov.it>

- Tax Registry - Owner: Revenue Agency;
- **catalogue of* *Public* Administration*³⁶ - Holder: AgID;
- The catalogue of Services for Citizens and Businesses - Holder: AgID;
- The National Infrastructure Information System (SINFI) - Holder: Ministry of Economic Development.

The PA also has data that, if appropriately organised and managed, can form new databases of national interest. These include, for example: crime data and statistics collected by the Ministry of the Interior; mobility data (already covered by the Third National Action Plan for “**Open Government Partnership**” (OGP))³⁷ for whose release and re-use, the Ministry of Infrastructure and Transport has identified specific actions to be undertaken; the data of the regional schools and vocational training centres on the national territory present in the project **Scuola in chiaro**³⁸, run by the Ministry of Education, University and Research; The Economic Operators Database (BDOE) and the other data bases connected with the *e-procurement*; the performance scoreboard and performance indicators³⁹, to be implemented in the **Performance Portal**⁴⁰, run by the Department of Public Service.

Strategic objectives

- Make or adapt databases of public administrations, with the aim of reducing redundancies caused by asynchronous copies and manual intervention, promoting consistency and certainty of information.
- Facilitate access to data by implementing APIs in order to exploit the potential introduced by the integration of individual databases, transforming them into enabling platforms.
- Complete the migration of data from the municipal registry to ANPR.
- Integrate ANPR with other databases of national interest, making ANPR the authoritative source of citizens’ personal data.
- Make ANPR an Enabling Platform with secure integration APIs with other Public Administrations and third-party systems and self-service interfaces for citizens.
- Proceed to populating the data on **IPA**⁴¹ and **INI-PEC**,⁴² as documented on their sites.
- Ensure compliance with the quality requirements of national data bases as defined by the data quality standard **ISO / IEC 25012 *Data quality model**⁴³, applying the technical rules defined by AgID with the **Determination no. 68/2013**⁴⁴ for critical data bases.
- Identify how to access each database or catalogue and produce technical-normative references.
- Use national data bases to feed the *Data & Analytics Framework*.

Lines of action

The strategy is based on:

- Promoting policies and actions to foster coordination in the creation of databases and ensure their quality;
- Actions for the enhancement of the PA’s information assets by updating the guidelines to ensure that PAs exhibiting public data follow a uniform catalogue population process;

³⁶ **http://www.dati.gov.it**

³⁷ **http://open.gov.it/terzo-piano-dazione-nazionale/**

³⁸ **http://cercalatuascuola.istruzione.it**

³⁹ Legislative Decree 27th October 2009 no. 150.

⁴⁰ **https://performance.gov.it/**

⁴¹ **http://www.indicepa.gov.it**

⁴² **http://www.inipece.gov.it**

⁴³ **https://www.iso.org/obp/ui/#iso:std:iso-iec:25012:ed-1:v1:en**

⁴⁴ **http://www.agid.gov.it/sites/default/files/circolari/dt_cs_n.68_-_2013dig_-regole_tecniche_basi_dati_critiche_art_2bis_dl_179-2012_sito.pdf**

- Releasing the prototype of a software platform that PAs can take for free to manage and publish their open data;
- Communication and training actions to promote the population of the national catalogue of public data.

Adoption by the PAs of national data bases of the guidelines outlined in Chapter 5 “Interoperability Model” will facilitate the dissemination of information between Public Administrations.

All PAs are therefore required to use databases and registers that are already operational and specified on the AgID site.

Sub-ject	Use of IPA and INI-PEC registers
Time Frames	By June 2018
Play-ers	PA
De-scrip-tion	Public Administrations populate and keep their data updated on IPA, as documented on the relative site. Public Administrations use IPA and INI-PEC in managing their own processes.
Result	—

Sub-ject	Publish list of databases of national interest
Time Frames	By July 2017
Play-ers	AgID, PA
De-scrip-tion	AgID will make available on its institutional site and on the dati.gov.it portal, the list of databases of national interest and the related information sheets collected. Public administrations holding databases of national interest shall describe them by means of a specific information sheet explaining how to use them and the main database technical-normative references.
Re-sult	Information sheets (release date: June 2017) Web site with list of databases of national interest (<i>Release date: July 2017</i>)

Sub-ject	Integration between the national repertoire of territorial data and the dati.gov.it catalogue.
Time Frames	By December 2017
Play-ers	AgID
De-scrip-tion	AgID will look at the alignment of the information contained in the National Directory of Territorial Data (RNDT) with respect to the dati.gov.it catalogue, providing the appropriate operational guidance for administrations and using the tools useful for exchanging descriptions of data and territorial services that were defined in the European “Geo DCAT-AP” ⁴⁵ .
Re-sult	Technical Specifications (release date: December 2017)

⁴⁵ Cf. Glossary

Sub-ject	Feeding the national repertoire of territorial data
Time Frames	In progress
Play-ers	PA
De-scrip-tion	The documentation of territorial (or geographic) data must be done only through the National Territorial Data Directory (RNDT). For the documentation of this data, PA uses the national profile of INSPIRE / RNDT metadata. ⁴⁶
Re-sult	—

Sub-ject	Creation of Services catalogue (servizi.gov.it) and its population
Time Frames	In progress
Play-ers	AgID, PA
De-scrip-tion	AgID completes the first implementation phase of the Services catalogue (servizi.gov.it) by releasing an application that allows PAs to document their services. AgID identifies so-called <i>early adopters</i> among the PAs that experiment with the use of the application. Starting from April 2017, promotional activities will also be undertaken to raise awareness and guidance on the inclusion of data in the catalogue. <i>Early adopter</i> Public Administrations, starting from April 2017, will document their services in the service catalogue in accordance with the interoperability profile specifications CPSV-AP *IT* ⁴⁷ and referring to the relative ontology. From 2018, the PA shall populate the catalogue.
Re-sult	Application for data collection (<i>Release date: June 2017</i>) Early Adopter detection (release date: June 2017)

⁴⁶ Decree 10th November 2011 Official Gazette no. 48 of 27th February 2012 s.o. no. 37

⁴⁷ *http://www.dati.gov.it/consultazione/CPSV-AP_IT*

Sub- ject	Completion of ANPR population
Time Frames	By December 2018
Play- ers	Municipalities, Ministry of the Interior, Sogei
De- scrip- tion	All municipal registry data (APRs) migrate to ANPR, with collaboration between Municipalities, the Ministry of the Interior and Sogei.
Re- sult	ANPR populated with all the master data of Italian municipalities (<i>Release date: December 2018</i>)
Sub- ject	Adaptation of national interest databases to the Interoperability Model
Time Frames	From January 2018
Play- ers	PA holders of national databases
De- scrip- tion	National database-based administrations must take all measures to fully implement the guidelines and technical rules and access them in accordance with the principles set out in the Interoperability Model. Data bases of national interest will have to ensure the flow of data towards the <i>Data & Analytics Framework</i> of the Public Administration.
Re- sult	—

Sub- ject	Integration of data bases with DAF
Time Frames	From January 2018
Play- ers	PA, DAF
De- scrip- tion	Interesting PA owners of the databases described in this chapter will implement communication channels with the <i>Data & Analytics Framework</i> , in order to ensure that data is updated in the DAF at the time of its generation. The communication modes will be defined by the <i>owner</i> of the DAF and described in appropriate guidelines.
Re- sult	Guidelines for integration with the DAF (<i>Release date: to be defined</i>) Implementation of population and production mechanisms by data holders (<i>Release date: to be defined</i>)

Subject	BDOE economic operator database
Time Frames	By July 2018
Players	MIT, AgID, and all PAs holding data bases of national interest
Description	<p>The Economic Operators Database (BDOE) acts as the sole intermediary of the contracting authority's request for documents or data to substantiate the requirements declared by the economic operator during the submission of the bid. It also allows to certify compliance by the contracting station of the obligation indicated in paragraph 1 Art.81 of D.Lgs 50/2016.</p> <p>BDOE also provides the e-Certis service to⁴⁸ verify the statements of Italian economic operators.</p> <p>The databases used by BDOE to retrieve the above information are the national registers made available by the following Administrations: MISE, Revenue Agency, Unioncamere / Infocamere, Ministry of Justice, Ministry of the Interior, ANAC, Ministry of Labour, INPS, INAIL, Casse Edili, Accredia, InarCassa and other Professionals.</p> <p>The integration plan of BDOE with the aforementioned databases also contemplates the adaptation of the latter in order to fully manage the information, providing for its history.</p>
Result	<p>Technical specifications for the integration of the economic operator database with procurement stations and databases supplying confirmation information (<i>Release date: September 2017</i>)</p> <p>Integration of the Database of Economic Operators with databases that already have digital information (<i>Release date: December 2017</i>)</p> <p>Completion of integration with databases and operations of the Database of Economic Operators (<i>Release date: April 2018</i>)</p>

4.1.2 Open data

The *open data* are defined as “open type data” in art. 68 of the CAD and are considered to be fundamental elements in the transposition of the European Public Information Directive⁴⁹.

Public data is open if:

- They are not related to individuals;
- They are made available in an open format, that is, not owned, with the related metadata;
- They are associated with a license that allows anyone the widest reuse. A maximum of two constraints are allowed: indicate the source of the data, re-use them according to the same terms for which they were originally discharged;
- They are made available free of charge or at only marginal costs for their reproduction and disclosure, except in exceptional cases that are transparent and clearly identified by the data controlling authorities together with AgID.

The current situation

Most PAs continue in activities aimed at making open and free re-use of some public data they manage. However, there are situations where no particular evolution has occurred over the years. In this context, it is noted that the quality of the data displayed is not yet of a good standard, except in a few virtuous cases. In particular, the data are not always up to date and some initiatives are apparently abandoned. Even from the point of view of documentation and metadata the situation is insufficient. The frequent lack of automation and consequent manual updating of data, the low presence

⁴⁸ Cf. Glossary

⁴⁹ Directive 2013/37/EU “PSI 2.0 (*Public Sector Information*)”, transposed in Italy with the Legislative Decree no. 102/2015.

of national and API standards, the adoption of various licences, sometimes incompatible with each other, are factors which hinder wider reuse of data.

Strategic objectives

- Identify databases that can be made available according to open datasets consistent with the areas described in chapter 6 “Ecosystems”.
- Define and apply standards for generation, update and metadata of databases and promote their adoption by central and local administrations.
- Open data bases according to a clear release plan, utilising the data automation and data management capabilities provided by the Data & Analytics Framework.
- To make available as open-source data those that can have a strong impact on civil society and businesses by ensuring compliance with quality requirements as defined by ISO / IEC 25012 *Data quality model* and encouraging the release of APIs associated with them.
- Monitor constantly (i) the adoption of [Guidelines for the enhancement of public information assets](#)⁵⁰, (ii) the achievement of the objectives of the opening process, (iii) the satisfaction of opening requests from civil society, (iv) the quality of the data released, and (v) the presence of APIs.

Lines of action

The strategy for achieving these objectives focuses on the adoption of **protocol**⁵¹ defined within the working group “*Data and Open Data Management*” of the Steering Committee set up under the Department of Public Services for the coordination of OT11 and OT2 interventions made under the Italian Partnership Agreement.

The strategy also provides:

- Ongoing monitoring of the actions envisaged in the aforementioned Protocol to prepare an annual report on the enhancement of public information assets and to respond to the requests of the European Commission in the context of the implementation of the PSI 2.0 (Public Sector Information) Directive;
- The construction of a dedicated product that allows the generation and distribution of standardised information, including through the tools of *data* visualisation and *themed dashboards*, and the availability of APIs for direct data query;
- Making it available to all PAs open tools and platforms that will encourage the reuse of already available software and the adoption of best practices.

Sub-ject	Upgrading guidelines for enhancing public information assets and setting standards for managing and using <i>open data</i> .
Time Frames	By December 2017
Play-ers	AgID, Digital Team
De-scrip-tion	Upgrading guidelines for the enhancement of public information assets for the description of the management and sharing processes of <i>datasets</i> which fall within the national data catalogue. Introduction of <i>Open Source</i> Platform Release Specifications for PA's open data lifecycle management (e.g. cataloguing, data entry and updating procedures, exposure modes).
Re-sult	Guidelines (release date: July 2017) Prototype open source platform on public repository (release date: December 2017)

⁵⁰ [*http://www.dati.gov.it/sites/default/files/LG2016_0.pdf*](http://www.dati.gov.it/sites/default/files/LG2016_0.pdf)

⁵¹ [*http://network.ot11ot2.it/sites/default/files/opendata1_elementi_tecnici_e_strategie_v4_0.pdf*](http://network.ot11ot2.it/sites/default/files/opendata1_elementi_tecnici_e_strategie_v4_0.pdf)

Sub-ject	Identifying key databases
Time Frames	By June 2017
Play-ers	AgID, Digital Team
De-scrip-tion	Identifying key databases of particular interest to the community, to be made available as <i>open data</i> at nationally level, queryable according to the principles described in Chapter 5 “Interoperability Model” and using Shared Data Models (Section 4.1.4)
Re-sult	List of key data bases (<i>Release date: June 2017</i>)

Subject	Dati.gov.it evolution
Time Frames	By December 2017
Players	AgID, Digital Team
Description	<p>AgID, in collaboration with the Digital Team, will provide the evolution of the current data.gov.it catalogue as a dedicated space to:</p> <ul style="list-style-type: none"> • Document both open data and PA data bases; • Show the PA adjustment level to the DCAT-AP_IT metadata profile⁵²; • Monitor the state of progress of the PA opening process, quality aspects and reuse of data; • View data with <i>data visualisation</i> tools; • Facilitate data query via API, in order to support the development of applications and services; • Share common data models; • Share principles and <i>best practice</i> related to the data and its management. <p>The catalogue will also represent the only national access point for interaction with similar European data initiatives.</p> <p>The data.gov.it development project will be made open, available on public <i>repository</i> in order to provide a default platform ready for reuse by PAs.</p>
Result	Data.gov.it evolution (release date: December 2017)

Sub-ject	Population of Dati.gov.it
Time Frames	In progress
Play-ers	PA
De-scrip-tion	<p>Public administrations ensure, in accordance with the guidelines for the enhancement of public information assets, the correct population of the national catalogue of data.</p> <p>PAs will have to provide infrastructure for the management and publication of data provided by the aforementioned guidelines, or if they fail to do so, they will have to adopt the default platform provided by AgID and the Digital Team as set forth in the previous action.</p>
Re-sult	—

⁵² Cf. Glossary

Subject	Provision of metadata describing open data bases and data according to the DCAT-AP_IT profile
Time Frames	By December 2017
Players	PA
Description	PAs expose the metadata, databases and open data they hold, complying with DCAT-AP_IT specifications (national metadata profile fully compliant with European DCAT-AP) and following the semantics expressed by its published ontology dati.gov.it .
Result	Metadata compliant with DCAT-AP_IT (<i>Release date: December 2017</i>)

Subject	Definition and approval of the dynamic basket of <i>datasets</i> (National Agenda for the enhancement of Public Information Assets)
Time Frames	In progress
Players	AgID and Digital Team, all PAs
Description	<p>AgID and the Digital Team collect in a single document that can be updated from year to year:</p> <ul style="list-style-type: none"> The databases identified in previous actions; The information regarding the opening requests of <i>datasets</i> by civil society; Information on opening commitments coming from institutional initiatives such as, for example, <i>Open Government Partnership</i> (OGP); The reports of key <i>datasets</i> that PA intends to make available in <i>open data</i> according to their plans of release and respecting what is generally provided in the basket itself. <p>Attachment 5 “Open data database basket” represents a first set of <i>datasets</i> and a first monitoring action. The basket was prepared considering all the <i>datasets</i> included in the agendas for the enhancement of the public information assets of the years 2013, 2014 and 2015, as well as <i>datasets</i> deriving from international initiatives (e.g. <i>Open Data Charter</i>, <i>Open Government Partnership</i>), from release plans of some Regions and central PAs and some civil society demands emerging following official public consultations. AgID publishes the Basket on its institutional site and on dati.gov.it.</p>
Result	Dynamic Dataset Basket (release date: February of each year)

Subject	Open Data Monitoring (Annual Report on the enhancement of Public Information Assets)
Time Frames	In progress
Players	AgID and Department of Public Services, all PAs
Description	<p>AgID uses the Dynamic Basket as the basis for carrying out monitoring actions envisaged in the context of the 2014-2020 Partnership Agreement⁵³ of art. 52 of the CAD and the implementation of the European Directive PSI 2.0 (<i>Public Sector Information</i>).</p> <p>In particular, AgID defines and maintains an up-to-date monitoring indicator (which also considers open data quality aspects) and prepares the Report for the Enhancement of Public Information Assets (Art. 52 of the CAD).</p> <p>By January of each year, AgID submits the report to the Department of Public Service that will approve it by February. AgID Publishes the Report in <i>open data</i> on its institutional site and on data.gov.it.</p>
Result	Monitoring Report (release date: February of each year)

4.1.3 Controlled vocabulary and data models

In order to facilitate the process of data exchange between public administrations it is necessary to:

- Harmonise and standardise recurring codes and nomenclatures in controlled vocabularies to be used in the implementation of public databases. Controlled vocabularies are therefore useful resources to initiate the standardisation process of the PA's data and to provide to businesses and private reference points for the populations of their databases;
- Identify and define data models (ontologies) that are shared in particular for cross-data across different application domains (e.g. people, organisations, services, places).

The current situation

The [*initiatives at European*](#)⁵⁴ and national level conducted in the context of the PA data base surveys highlight the need to define controlled vocabularies and shared data models (ontologies). For metadata profiles of data and services, AgID has already created and identified reference ontologies and a series of controlled vocabularies for use in the Italian context.

For some controlled vocabulary, it is necessary to keep track of the temporal evolution. Consider, for example, that there are no controlled vocabularies that allow a reconstruction of the historical evolution of the names of Italian municipalities or foreign states. While some initiatives to fill these gaps have already begun, it is necessary to define how to update and deliver vocabularies in order to make them a strategic asset.

Strategic objectives

- Identify and / or define reference data (ontologies) databases, in particular for cross-data across the different application domains and key databases identified in the actions provided in Section 4.1.3, also utilising specific competences from the research world.
- As part of the new data.gov.it, as described above, provide a publicly accessible list by API, which references the controlled vocabularies and reference ontologies.
- Provide for each controlled vocabulary and data model the identification of a responsible entity that ensures its maintenance.
- Manage the Historicisation of Vocabularies.

Lines of action

The implementation of the ontologies and the public list contained in the new data.gov.it is carried out by AgID, which identifies both controlled vocabularies (from those internationally recognised and usable in the Italian context), as well as Public Administrations that represent authoritative sources for the vocabularies and ontologies controlled by them. Along with these administrations, AgID establishes how to update and publish controlled vocabularies and ontologies.

⁵³ [*http://www.agenziacoessione.gov.it/it/AccordoPartenariato/*](http://www.agenziacoessione.gov.it/it/AccordoPartenariato/)

⁵⁴ [*http://publications.europa.eu/mdr/authority/*](http://publications.europa.eu/mdr/authority/)

Subject	Implementation of the Register of Vocabularies and Data Models
Time Frames	From May 2017
Players	AgID and other PAs
Description	<p>The following activities are carried out for the implementation of the Register of Vocabularies and data models:</p> <ul style="list-style-type: none"> • Analysis of reference ontologies and controlled vocabulary for the PA; • Definition of reference ontologies for the key data bases identified in 4.1.3 and for cross-data to different application domains (eg places and organisations); • Publishing ontologies and vocabularies controlled through the new data.gov.it; • Analysis of needs and resources already available; • Identifying a first set of controlled vocabularies and their related <i>owners</i>; • Definition of the register
Result	Release the first version of the register (<i>Release date: January 2018</i>)

Subject	Implementation of the Register of Controlled Vocabularies and Data Models
Time Frames	From January 2018
Players	PA
Description	<p>The PAs owners of national interest databases, as defined in art. 60 of CAD, are required to standardise data based on the resources contained in the Registered Vocabulary Register and Data Models.</p> <p>The other PAs initiate a process of standardising their data based on the resources contained in the controlled vocabularies and data models.</p>
Result	—

4.2 Enabling platforms

Enabling Platforms are solutions that offer key, transversal, and reusable functionality in individual projects, by standardising their delivery methods. They remove from administrations the need to purchase and / or implement common features across multiple software systems, simplifying design, reducing the time and cost of creating new services, and providing greater IT security. Some examples addressed to citizens and businesses are identification, billing and payment services. Other platforms are mainly addressed to the PA but are equally enabling, such as the National Resident Population Register (ANPR).

In this way it will be easier for administrations to offer citizens and businesses a more uniform and simpler way of interaction and collaboration.

4.2.1 The current situation

The Enabling Platforms process has already begun. Some platforms are already operational, but not yet used by all administrations, others are under construction or planning.

Enabling Platforms that accelerate and standardise the development of digital services for the citizen and the company and which operate at numerous administrations are highlighted:

- *****CIE***⁵⁵** (Electronic Identity Card): Identity document with elements for the physical identification of the holder, issued on computer support by the municipal authorities, with the prevailing purpose of showing the identity of its holder;
- *****SPID***⁵⁶** (Public Identity System): an authentication system that, through credentials classified on three levels of security, enables access to services to which it provides certified identification data;
- *****PagoPa***⁵⁷** (Electronic Payment Management to the PA): a system that interconnects all payment service providers with public administrations and allows the citizen to make the payment by choosing the preferred instrument and entity. The system also provides PAs with automatic reconciliation and reporting;
- *****Electronic invoicing***⁵⁸**: Handles PA's passive billing and allows administrations to optimize internal processes by integrating the electronic invoice into accounting processes and enabling automation of the order cycle;
- *****ANPR***⁵⁹** (National Register of resident population): the central registry of all citizens and residents in Italy. It contains the personal data, the addresses of residence and domicile (physical and digital) and represents the reference archive of natural persons for all other national systems (migration from local registry to the central registry).

Among the Enabling Platforms under design are listed:

- **ComproPA**: National system of *e-procurement* which interconnects, in interoperable mode, all players in the process of *e-procurement* by ensuring the management, digitalization and governance of the entire public procurement lifecycle in compliance with the Procurement Code and European Directives' provisions;
- **Notice system and courtesy notification**: a system, in conformity with the eIDAS provisions⁶⁰, allowing citizens to receive and send notices and courtesy notifications, also with legal validity, in digital format, to and from the entire PA, ensuring traceability, integrity, confidentiality and non-repudiation;
- **SIOPE+**: Evolution of the SIOPE system (Useful for cash flow management) aimed at ensuring the analysis and evaluation of expenditure, monitoring and control of public accounts and promoting the implementation of fiscal federalism through harmonization and standardization of schemes and data flows;
- **NoiPA**: Evolution of the current system of staff management who provides salary services to the PA, which will add functionality to the management of non-economic components of the staff, also in support of the recent PA reform (Law 124/2015 "Delegations to the Government on the Reorganisation of public Administrations");
- **National administrative procedures management system**: Guarantees digital communication between citizens and Public Administration through the digital home office. It permits the dematerialisation of administrative procedures, thus contributing to the realisation of a cooperative system between administrations that makes the document flows between them interoperable, resulting in unitary data management, events and unstructured IT documents;
- **Conservation poles**: Public Administration system for the provision of document retention services, with the involvement of the Central State Archives which permits the permanent storage of Public Administration digital archives.

⁵⁵ *<http://www.cartaidentita.interno.gov.it/>*

⁵⁶ *<https://www.spid.gov.it>*

⁵⁷ *<http://www.agid.gov.it/agenda-digitale/pubblica-amministrazione/pagamenti-elettronici>*

⁵⁸ *<http://www.fatturapa.gov.it>*

⁵⁹ *<https://www.anpr.interno.it/portale/>*

⁶⁰ Electronic Identification Authentication & Signature (Cf. Glossary)

4.2.2 Strategic objectives

- Complete the implementation of Enabling Platforms and promote their adoption.
- Enhance existing Enabling Platforms by improving or adding new features, constantly adapting the technology used and the level of security.
- Implement the Enabling Platforms already designed.
- Identify and implement any new Enabling Platforms that act as accelerators for the PA digitisation process.

4.2.3 Lines of action

AgID produces and maintains the list of Enabling Platforms. They will be candidates to become Enabling Platforms, new or existing solutions that implement basic and transversal capabilities for Public Administrations.

Planning for the implementation of individual Platforms is conditioned by aspects such as:

- Set-up costs (including platform implementation costs and migration / adaptation costs incurred by PAs accruing to the Platform) and running costs;
- The overall savings resulting from the adoption of the Platforms;
- The potentials introduced by the Platforms themselves in terms of new digital services to be delivered to citizens, businesses and PAs.

During the implementation and the operation of the Platforms, the public authorities responsible for it ensure: (i) coordination between the various initiatives, in order to promote consistency between all actions; (Ii) the monitoring of each project in order to enhance the experience gained in the previous initiatives; (Iii) technical compliance with the Interoperability Model and evolutionary adjustments resulting from the issuance of new rules; (Iv) operational continuity and adequate performance levels; (V) system security.

Public Administrations follow the instructions in Chapter 12 “Public Administration Guidelines” as far as the costs of adapting and implementing applications that require functionality from the Enabling Platforms (e.g. enhancement of digital payment or Authentication services).

In the specific systems of *e-procurement*, Administrations that are not already in possession of electronic platforms for trading will not be able to invest in the development of new platforms in contrast to the general principles and, in particular, the technical rules issued by AgID. See the cited Chapter 12 for more details.

Continuing with existing activities for the implementation of the Agenda for simplification, the overall architecture of business services will be defined by identifying components and their interfaces in accordance with the PA Interoperability Model.

Sub- ject	Integration with SPID
Time Frames	By March 2018
Play- ers	AgID, PA
De- scrip- tion	Public Administrations must implement SPID in all digital services that require existing and new authentication by March 2018, or within 24 months of activation of the first <i>Identity Provider</i> , as defined by the D.P.C.M. on 24 October 2014. The implementation is concluded with the countersignature, by AgID, of the SPID convention sent by the PA ⁶¹ .
Re- sult	Completion of SPID integration in Public Administration online services (<i>Release date: of March 2018</i>)

⁶¹ For more information *www.spid.gov.it*.

Subject	Design of the ComproPA system architecture
Time Frames	By September 2017
Players	MEF, MIT, ANAC, AgID, Consip, Regions and ANCI
Description	MEF, MIT, ANAC, AgID, Consip, Regions and ANCI, each according to the tasks and competences set out in the Procurement Code, define: The technical rules of the electronic platforms for the purchase and negotiation of contracting stations, in accordance with standards and European <i>best practice</i> reference and technical rules for interviews and interoperability of data between systems of <i>e-procurement</i> issued by AgID; The infrastructures necessary to the operation of the ComproPA system through the interconnection of <i>e-procurement</i> with the databases and national systems involved in the <i>public procurement</i> process.
Result	Definition of Infrastructure rules and design (<i>First version release date: September 2017</i>)

Subject	Commissioning of the ComproPA system
Time Frames	By October 2018
Players	PA (<i>proprietor</i>), MEF, MIT, ANAC, AgID, Consip, Regions and ANCI
Description	<p>The administrations adhere to the ComproPA system gradually, in compliance with the deadlines laid down in the European Public Contracts Directives.</p> <p>The administrations exercise their functions as a procurement station through the use of electronic purchase and trading platforms conforming to the design of the architecture of the ComproPA system, in the following terms:</p> <ul style="list-style-type: none"> • Use of a platform already owned by the administration; • Use of the platform made available by one of the aggregators identified by ANAC; • Reuse of the software of platforms already in use with other public administrations; • Use of e-procurement platform services offered in SAAS by market operators according to the acquisition arrangements referred to in paragraph 512 of Law no. 208/2015. <p>AgID, in agreement with MEF, MIT, ANAC, Consip, Regions and ANCI:</p> <ul style="list-style-type: none"> • Coordinates the infrastructure implementation activities required to operate the ComproPA system; • Plans the necessary actions for subsidiary and change management to facilitate the adaptation of public administrations to regulations in the established times.
Result	ComproPA system in operation (<i>Release date: October 2018</i>)

Subject	Electronic billing
Time Frames	By November 2018
Players	MEF and the Revenue Agency, AgID, Regions and ANCI
Description	<p>Administrations and, in general, all VAT entities adopt electronic invoicing by integrating with the Interchange System (SOI)⁶³ in accordance with current regulations.</p> <p>The MEF, in agreement with the Revenue Agency, the AgID, the Regions and the ANCI, issues the transposition measures of the 2014/55 / EU European Electronic Billing Directive, which will result in adapting the systems to allow the issuance and receipt of electronic invoices in European format.</p> <p>The administrations evolve their systems to allow the electronic invoice to integrate with accounting processes and order cycle automation in accordance with the technical rules for data sessions and interoperability between systems of e-procurement <i>issued</i> by AgID.</p>
Result	<p>Transposition Directive 2014/55 / EU</p> <p>SDI Adaptation</p> <p>Adapting PA electronic billing systems</p> <p>(Release date: November 2018)</p>

Subject	CIE service completion
Time Frames	By December 2018
Players	Ministry of the Interior, Municipalities
Description	<p>Within the framework of the CIE project, implemented by the Ministry of the Interior, the municipalities are responsible for activating the electronic identity card distribution services.</p> <p>According to the planning approved by the Ministry of the Interior, by October 2017 about 450 Municipalities will activate the system and distribution of CIE to its citizens, achieving a total of 50% of the population. From October 2017, the distribution of the CIE system is expected in the remaining Municipalities⁶⁴.</p>
Result	CIE Services activated in all municipalities (<i>Release date: December 2018</i>)

Subject	SPID project
Time Frames	By December 2017
Players	AgID
Description	Evolution of the SPID system, also in conjunction with the CIE project, through the necessary maintenance, rationalisation and simplification of authentication tools. Integration with the Public Prevention of Credit Fraud in Consumer Credit - Identity Theft (SCIPAFI).
Result	Advanced SPID system (release date: December 2017)

⁶³ *<http://www.fatturapa.gov.it/export/fatturazione/it/sdi.htm>*

⁶⁴ For more information, visit *www.cartaidentita.interno.gov.it*

Subject	Monitoring SPID Implementation by PAs
Time Frames	By March 2018
Players	AgID, PA
Description	AgID will design a SPID implementation plan with PAs that have not yet done so and will monitor its execution.
Result	Effective SPID adhesion by PA (<i>Release date: by March 2018</i>)

Sub-ject	PagoPA project
Time Frames	In progress
Play-ers	AgID
De-scrip-tion	PagoPA system evolution, also in conjunction with the SPID project, through the necessary maintenance, rationalisation, and simplification to improve <i>user experience</i> , add a mobile user interface and open to new forms of payment.
Re-sult	Evolved PagoPA system (release date: December 2017)

Sub-ject	Notice and courtesy notification system
Time Frames	From April 2017
Play-ers	AgID and PA
De-scrip-tion	Creating a system that allows the citizen to receive notices and courtesy notifications in digital format, with legal value, from the whole PA. Administrations launch and distribute the use of the national infrastructure for issuing alerts and courtesy messages to be sent to citizens on various digital channels for full use of the digital home.
Re-sult	First release of the project (release date: December 2017) Starting use by the PA (<i>Date of release: January 2018</i>)

Sub-ject	National standardisation of business services
Time Frames	By December 2017
Play-ers	AgID, Public Services, MISE, Regions, Unioncamere
De-scrip-tion	In the continuation of the activities for the implementation of the Agenda for simplification, regarding the interoperability of the systems of the involved parties, the overall architecture of business services will be defined by identifying the components and their interfaces in compliance with the PA Interoperability Model. This line of action launches the Ecosystem Development and sustainability ⁶⁵ , as far as the Competitiveness and Business Development mission is concerned.
Re-sult	Definition of architecture, components, and application interfaces (<i>Release date: December 2017</i>)

⁶⁵ Cf. chapter 6 “Ecosystems”

Subject	Evolution of the SIOPE system (SIOPE+)
Time Frames	In progress
Players	General State Accounting, Bank of Italy, AgID and PA
Description	<p>The definition phase of the details of all the organisational, architectural and functional aspects of the new system is completed and the implementation phase is underway, which will be completed by June 2017.</p> <p>When finished:</p> <ul style="list-style-type: none"> • All the infrastructural and application components of SIOPE+ will be made available on the Bank of Italy and MEF platforms; • It will involve a pilot group of banks and entities, identified in concert with the associations of <i>stakeholders</i>, which will have to make the procedural changes needed to start the pilot phase. <p>In July 2017 the pilot phase will start.</p> <p>From January 2018, the scope of the new project will be expanded, reinforcing, if necessary, the infrastructure components in order to properly manage the new volumes. In particular, the IT components required for the extension of revenue recognition and central PA operations will be finalized.</p> <p>The administrations are responsible for adopting systems to join the SIOPE+ in accordance with the plan defined by the General State Accounting, in agreement with the Bank of Italy and AgID and the local PA representatives.</p> <p>Administrations can participate by adopting their own systems or those offered by the General State Accounting in a subsidiary logic or alternatively using services provided by other intermediaries.</p>
Result	<p>Completion of SIOPE+ (<i>Release date: June 2017</i>)</p> <p>Pilot phase implementation (release date: December 2017)</p> <p>Launch of SIOPE+ (release date: January 2018)</p>

Subject	Evolution of the NoiPA system
Time Frames	In progress
Players	MEF, AgID and PA
Description	<p>The intervention strategy provides for (i) the new public management system to cover all administrative personnel management processes and (ii) the PA staff data base.</p> <p>The MEF will implement the new NoiPA system within 2018.</p> <p>Administrations not yet members of the system will be able to communicate their membership to plan migration in 2018, subsequently adopting the NoiPA system with the programming agreed with the MEF.</p>
Result	<p>Conclusion of the new NoiPA system (<i>Release date: December 2018</i>)</p> <p>PA adhesion (release date: starting from 2018)</p>

Sub- ject	Implementation of national administrative procedures management system
Time Frames	From May 2017
Play- ers	AgID and PA
De- scrip- tion	The National Administrative Procedures Management System is implemented through AgID's definition of the rules for interoperability of document flows (document, file, protocol) implemented by Public Administrations to join the system. Among the implementation rules will be defined how to implement a system of verification by the citizen of document authenticity. Following the issuance of the Interoperability Guidelines and Rules, the implementation phase of APIs will start.
Re- sult	Interoperability guidelines and rules (<i>Release date: June 2018</i>)

Sub- ject	Conservation Pole Implementation
Time Frames	From May 2017
Play- ers	PA and Central State Archive
De- scrip- tion	The administrations participate with the Central State Archive to develop the Conservation Poles of Digital Archives and to define interchange rules for interoperability of conservation systems. A regulatory adjustment path will be initiated to ensure that conservation services ensure that at least one operational copy of each stored computer document is present on the national territory.
Re- sult	Conservation Poli Constitution (<i>Release date: by December 2018</i>)

Sub- ject	ANPR
Time Frames	By December 2018
Play- ers	Ministry of the Interior, Municipalities
De- scrip- tion	The Ministry of the Interior integrates into the ANPR system the capabilities required to manage civil status services and leverage lists. Municipalities adopt extended ANPR functionality through application integration with their systems or through the use of web <i>applications</i> .
Re- sult	Use of ANPR by municipalities (<i>Release date: by 2018</i>)

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Interoperability Model

The Interoperability Model is a supporting axis necessary for the functioning of the entire Public Information System. This Model makes it possible to collaborate between Public Administrations and between these and third parties through technological solutions that ensure interaction and exchange of information without constraints on implementations, avoiding ad hoc integrations.

The Interoperability Model:

- Enables the development of new applications for PA users consistent with the activities described in Chapter 7 “Tools for Generating and Delivering Digital Services” and with the objectives of the Plan;
- Ensures dialogue within individual ecosystems and between ecosystems;
- Regulates the use of Intangible Infrastructure components by regulating their sharing and publication;
- Regulates the ways in which data streams are sent to the Data & Analytics Framework;
- Ensures, in the respect of the right to privacy, access to public administration data also by third parties;
- Is designed in accordance with the principles still valid in the [European Interoperability Framework \(EIF\)](#) version 2.0⁶⁶, published in 2010 under the program [Interoperability Solutions for Public Administration, Businesses and⁶⁷ Citizens \(ISA, 2016 ISA²\)](#).

5.1 Current scenario

In October 2005, CNIPA (today AgID) published a set of documents that constitute the technical reference for interoperability between public administrations. These documents outline the technical and implementing framework of the Public Co-operation System (SPC Coop). AgID is in the process of consolidating the definition of the new Interoperability Model which goes beyond the previous model and will be defined with appropriate guidelines.

The new Model, as anticipated by the recent changes to the CAD with the repeal of Article 58, allows to overcome the need for agreements for the exchange of point-to-point information.

⁶⁶ [*https://joinup.ec.europa.eu/sites/default/files/5e/db/a3/isa_annex_ii_eif_en.pdf*](https://joinup.ec.europa.eu/sites/default/files/5e/db/a3/isa_annex_ii_eif_en.pdf)

⁶⁷ [*https://ec.europa.eu/isa2/isa2_en*](https://ec.europa.eu/isa2/isa2_en)

5.2 Strategic objectives

- Harmonise the architectural choices of the Public Administration, specifying the conditions required for joining the PA Information System.
- Create the technological conditions that encourage the development of innovative, citizen-oriented, business and government-based application solutions by administrations and businesses and enabling the use of the services described in Chapter 4 “Intangible Infrastructures”.
- Promote the adoption of the API first approach to foster the separation of back end and front-end levels with open logic and public standards that guarantee other players, public and private, accessibility and maximum interoperability of data and services.
- Prioritise technology standards that meet the need to ensure interaction between public administrations and those with citizens and businesses.
- Enable data flow useful to the population of the Data & Analytics Framework.
- Simplify the procedures for the exchange of services between Public Administrations and, where possible, between Public Administration and private individuals, through publication of participation rules in the guidelines.
- Ensure compliance with the guidelines and promote the quality of the PA’s services.

5.3 Lines of action

The Interoperability Model defines the guidelines that all Public Administrations will have to take to ensure interoperability of their systems with those of other subjects and the overall implementation of the PA Information System.

Technological standards will reflect the *best practice* in the interoperability of information systems and / or will adhere to established standards, including within the EU.

All administrations must adhere to the new interoperability model’s technological standards and interoperability profiles to define and present compliant *Application Programming Interface* (API).

APIs will have to resort to best management practices (API management), including in particular:

- Traceability of different versions of APIs in order to allow non-destructive evolution (*versioning*);
- Coordinated documentation with the API version (*documentation*);
- User management, in particular authentication and authorisation;
- Usage restrictions related to the characteristics of the API itself and the user class (*throttling*);
- Traceability of requests received and their outcome (logging *and accounting*), also for the purpose of non-repudiation of communication;
- Testing environment
- Software interfaces for third-party strategic services (SDKs);
- An adequate level of service according to the type of service provided (SLA);
- Scalable resource configuration;
- Publishing usage metrics (*analytics*).

In this perspective, there is no single centralised element (middleware) which mediates access to PA services and instead it is expected that AgID, directly or indirectly:

- Furnishes a distributed catalogue of APIs and services available with a unique access interface;
- Verifies compliance with the rules of the Interoperability Model as a condition of access to the catalogue;

- Continuously checks compliance with the requirements for registration to the catalogue;
- Assists in resolving issues with appropriate cooperation tools (e.g. Help desk, forums, mailing lists and newsletters);
- Establishes, publishes, and monitors usage metrics;
- Provides libraries and SDKs to provide many of the features defined in the guidelines.

Consistent with the repeal of Article 58 of the CAD, there will no longer be agreements between administrations; AgID will establish API membership guidelines.

Public Administrations will be responsible for defining the terms of use of the APIs they are exposed to.

The rules for the adherence of private individuals will then be defined.

In order to promote and coordinate all activities, AgID:

- Will support the activities described in Chapter 6 “Ecosystems” and, more generally, the administrations involved in adapting their systems to the new interoperability Model;
- Will ensure that the Interoperability Model is constantly updated from a technological point of view.

Subject	New Interoperability Model Guidelines
Time Frames	By December 2017
Players	AgID
Description	<p>Issue of useful guidelines for Public Administrations and other players in the PA’s Information System to adhere to the Interoperability Model. More precisely, the indications that will need to be adopted (in terms of technology standards, interoperability profiles and communication protocols) will be provided for the implementation of the APIs needed to adapt the components described in Chapter 4 “Intangible Infrastructure” and in Chapter 6 “Ecosystems”. Indications will also be provided for the implementation of new end-user applications, described in Chapter 7 “Tools for Generating and Delivering Digital Services” and for populating the <i>Data & Analytics Framework</i>.</p> <p>The publication of the guidelines will be preceded by the issuance of a document showing the evolutionary roadmap from the old to the new model and a phase-out plan for the old-model infrastructural elements that are being decommissioned.</p>
Result	<p>Guidelines for Transit to the New Interoperability Model (Release date: May 2017)</p> <p>New Interoperability Model Guidelines (Release date version 1.0: December 2017)</p>

Sub- ject	Adoption of the Model by PAs
Time Frames	From May 2017
Play- ers	AgID, PA
De- scrip- tion	For existing platforms and ongoing design activities, PAs adopt transition guidelines, while new designs are adapted to the new Model.
Re- sult	—
Sub- ject	API catalogue
Time Frames	From June 2017
Play- ers	AgID
De- scrip- tion	AgID will create a special API catalogue, which will allow the PA to share APIs. Through the information recorded in the catalogue, a display point is created in which user-shared APIs will be censored and documented, and useful to developers and other stakeholders involved in ecosystems. However, in respect of the privacy rights regarding the data processed, APIs may also be used by parties outside the PA. AgID will define a set of usage rules and a governance model for management.
Re- sult	First release of the catalogue (release date: December 2017)

Sub- ject	API population catalogue
Time Frames	From January 2018
Play- ers	PA
De- scrip- tion	PAs, in implementing the rules of the Interoperability Model, will follow the implementation of APIs and the subsequent population of the catalogue in order to facilitate their use by developers.
Result	—

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Ecosystems are the sectors or areas where action is taken by public administrations, from health to agriculture, from school to cultural heritage. The Plan identifies thirteen of them, which are listed in Figure 7 and described Table 1 in the next page.

Each ecosystem identifies a thematic sector with characteristics of homogeneity. It includes public bodies and bodies and may also include private individuals, such as associations that, for various reasons, carry out important functions within the ecosystem. For example, the public finance ecosystem includes public entities such as the Ministry of the Economy and Finance, the Ministry of the Interior, the Revenue Agency, the Regions, the Guardia di Finanza, as well as private entities as accountant, CAF, fiscal practitioners.

In order to facilitate co-ordination between the actors involved, each ecosystem:

- Defines the reference databases, their power rules, and implements the communication mechanisms with the *Data & Analytics Framework*;
- Contributes to the definition of the specific ecosystem guidelines;
- Defines shared and transparent rules for its operation;
- Uses the enabling platforms;
- Presents its services through APIs.

The application of the rules defined in the Interoperability Model within each ecosystem represents the common language that enables communication between ecosystems.

6.1 The current situation

In order to ensure the implementation of the 2014-2020 Digital Growth Strategy, AgID has provided a first definition of ecosystems based on the classification **Missions and Programs**⁶⁸ as indicated in the Law of 28 December 2015, n. 209 (Budget Law 2016).

⁶⁸ **http://www.rgs.mef.gov.it/_Documenti/VERSIONE-I/e-GOVERNME1/Contabilit/Pubblicazioni/MissionieProgrammi/MissioniProgrammi-2015_10.pdf**

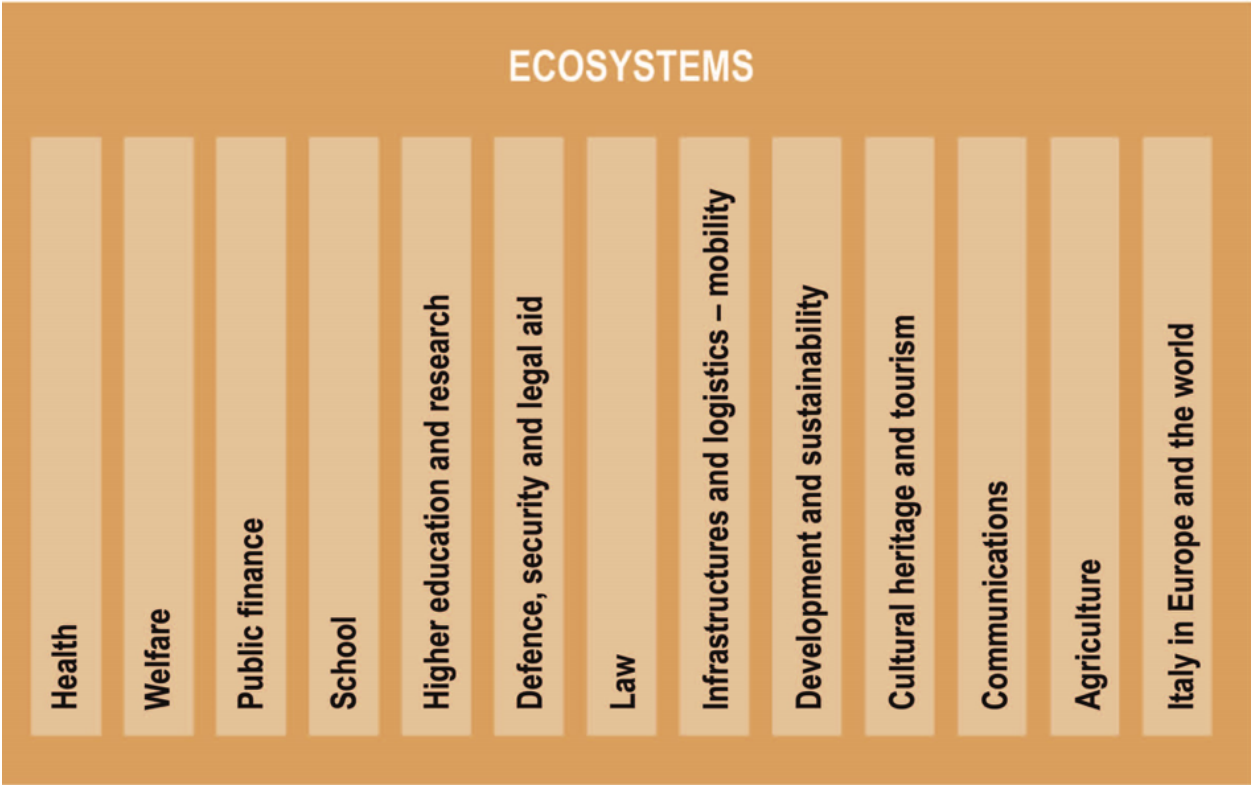


Fig. 1: Figure 7 - Ecosystems

Based on the above criteria, the ecosystems listed in the following table have been identified, indicating the main administrations involved:

Ecosystem	Ecosystem Description	Main administrations involved
Health-care	The Healthcare ecosystem has been defined in accordance with the “Health Protection Mission” and the Strategy Paper for Digital Growth 2014-2020, which identifies the “Digital Healthcare” action.	Ministry of Health, MEF, ISS, Regions, Health Care Companies, AgID, Zooprophyllactic Institutes, AGENAS, AIFA.
Welfare	The Welfare ecosystem includes Missions related to “Social Rights, Social Policies and Family,” Social Security Policies and Labour Policies.”	Ministry of Labour and Social Policies, MEF, MIUR, INPS, INAIL, Regions, Provinces and other territorial entities, ANCI, Municipalities, COVIP.
Public finance	The Public Finance ecosystem includes the “Economic and Financial Policies and Budget Policies”, “Financial Relationships with Territorial Autonomy” and “Public Debt” missions and the “Electronic Billing PA” action in the document “Strategy for Digital Growth 2014- 2020.	MEF, Ministry of the Interior, Revenue Agency, Customs Agency and Monopoly Agenzia del Demanio, Equitalia.
School	The School ecosystem has been defined in accordance with the “School Education” Mission, the Strategy Paper for Digital Growth 2014-2020 and the MIUR DM in 2015, which initiates the <i>*National Digital School Plan</i> ^{*69} .	MIUR and Public Schools (Public and Equivalent), Provinces and Other Aggregates of Local Authorities, Municipalities, ANCI.
Higher education and research	The Higher Education and Research ecosystem mainly comprises the “University Education and Post-graduate Education” Mission.	MIUR, University System and Higher Institute of Research.
Defence, Security and Rescue - Legality	The Defence, Security and Rescue Ecosystem consists mainly of the “Defence and Security of the Territory”, “Public Order and Security”, “Civil Emergency” and “Immigration, Reception and Guarantee of Rights” missions.	Ministry of Defence, Ministry of the Interior, MEF, MIT, MIPAAF
Justice	The Justice Ecosystem has been defined in accordance with the Justice Mission and the Strategy Paper for Digital Growth 2014-2020 in which the “Digital Justice” action is identified.	Ministry of Justice, MEF, INAIL State Attorney, TAR, Tribunals, Court of Auditors, State Council, Court of Cassation, CSM.
Infras-structure and Logistics - Mobility	The Infrastructure and Logistics ecosystem mainly comprises the missions “Right to Mobility and Transport System Development”, “Public and Logistics Infrastructures” and “Home and Urban Planning” missions.	MIT, MEF, Regions, Provinces and other Aggregations of Local Authorities, Municipalities, ANCI, ACI, ANSF.
Development and sustainability	The Ecosystem Development and Sustainability includes primarily the Missions “Energy and Energy diversification,” “Competitiveness and Business Development”, “Market Regulation”, “Sustainable Development and Conservation of the Territory and the Environment”, “Territorial Development and Rebalance”.	MISE, MEF, Ministry of the Environment, MIUR, ENEA, ANPA, ARPA, UnionCamere, Regions, LPA.
Cultural heritage and tourism	The Cultural Heritage and Tourism ecosystem has been defined in accordance with the Missions “Protection and Enhancement of Cultural Heritage, Activities and Landscapes” and “Youth and Sports”, as well as the Document for Digital Growth 2014-2020, which identifies the “Digital Tourism” action.	MIBACT, MEF, Regions, Provinces and other Aggregations of Local Authorities, Municipalities, ANCI, ENIT, EPT.
Communications	The Communications Ecosystem includes the “Communications” Mission.	MISE, AGCOM, IPZS, MIT, MEF.
Agriculture	The Agriculture ecosystem has been defined in accordance with the “Agriculture, agri-food and fisheries policies” mission and the document “Digital Growth Strategy 2014-2020”, which identifies the “Digital Agriculture” action.	MIPAAF, MEF, Regions.

Table 1 - List of ecosystems

AgID made a first mapping of the major ecosystem projects currently underway or being launched at the Central Public Administrations. This mapping, as detailed in Annex 4, “Synoptic Framework of Central Public Administration Projects”, should be considered as a preliminary analysis in view of the new developments linked to the very definition of the ecosystem proposed by the Strategic Model for the Evolution of the PA Information System.

The results,⁷⁰ for exemplification, observed during the mapping of the CPA projects are given below with respect to the following four ecosystems:

- **Ecosystem Health:** In this ecosystem, a central role is covered by **Electronic Health Booklet (FSE)** which is the tool through which the citizen can trace, consult and share their health history. The standard stipulates that the FSE infrastructure manages the set of health and socio-medical digital data and documents generated by clinical events present and past regarding the patient. Other solutions, which are currently being launched, which will make computerized health services available are: **Unique Reservation Centre (CUP)**, the centralized computerized system for unified reservation of services, to facilitate accessibility of assistance and reduction of waiting times; the Telemedicine project to provide services that improve the usability of care, distance diagnosis and medical consultation as well as constant monitoring of vital parameters.
- **Ecosystem Public Finance:** The main structure of this ecosystem is **the BDAP**, The Database of Accounting Transactions of Public Administrations, and systems supporting administrative accounting processes such as **SICOG** (Integrated Management System for Economic and Financial Accounting) **IGRUE** (Control and monitoring system) and the **SIOPE** (Cash flow management).
- **Ecosystem Development and Sustainability:** In this ecosystem, among other things, actions are being implemented for the implementation of the Agenda for Simplification 2015-2017 and, specifically, the consolidation at national level of the **Business services** (SUAP, SUE, ...), through the implementation of the ways in which entrepreneurs interact with the PA on administrative procedures affecting the economic and production activities and / or the activities of the plants. AgID, thanks to the involvement of stakeholders (Department for Public Services, Regions, LPA, Unioncamere, ...), will support the establishment and implementation of the ecosystem.
- **Justice Ecosystem:** Such ecosystem rotates around (i) the **electronic civil process** and (ii) the **electronic taxation process**, being deployed and consolidated, (iii) the **electronic Criminal Procedure**, evolving also for the components involved in the execution of the sentence, (iv) the **electronic administrative process**, being activated with the related support systems (such as **Multivideoconference**) and (v) the constitution, considering the breadth and heterogeneity of the users, of the **Access Points**, that is, of the technological-organisational structures that provide the authorised entities outside the Justice System the services of connection to the portal of the electronic services.
- **Ecosystem Development and Sustainability:** A collaboration agreement between the Agency and the Ministry of the Environment and the Protection of the Territory and the Sea (MATTM) is underway for the development of the Environment system with interventions aimed at rationalizing the infrastructures present on the territory and supporting the Strategic projects of the Ministry. Another area of collaboration will be to support the definition of the new system **SISTRI** “Waste Tracking Control System”, which aims to computerize the entire national waste and urban waste chain for the Campania Region.
- **Ecosystem Cultural Heritage and Tourism:** A collaboration agreement between the Agency and MiBACT is underway for the implementation of “Interventions for the enhancement and promotion of the tourism sector through the definition of digital strategies”. In particular, specific projects aimed at the free distribution of a single access system to a Wi-Fi network federation will be elaborated made available to citizens and tourists, especially in the major tourist and cultural sites, accessible via SPID.

While confirming that the foregoing example does not provide an exhaustive overview of the evidence emerging from AgID’s reconnaissance (see paragraph 1.3), reference should be made to Annex 4 for the exhaustive list of enumerated initiatives, which as a whole will form the first nucleus of projects to start the ecosystems.

⁶⁹ *http://www.istruzione.it/scuola_digitale*

⁷⁰ For details on the individual projects mentioned here, please refer to Annex 4 “Synoptic Framework of Central Public Administration Projects”

6.2 Strategic objectives

- Support a citizen and business oriented vision for each ecosystem, leading to the creation of services that simplify interaction with public administrations, offering individual access points for the user.
- Standardise the approach to the development of public administration services between different ecosystems to promote the uniformity of services offered to the citizen. Such services must be simple to use, based on security and based on data and application interoperability (see chap.2).
- Stimulate interoperability - with an API-based model (see chap. 5) - between public administration systems as a necessary condition to increase the efficiency and effectiveness of public services and administrative procedures involving more administrations (e.g. the electronics Services Conference).
- Capitalize on the experiences gained by individual Public administrations through the enhancement of *best practice*.

6.3 Lines of action

For each ecosystem AgID, in accordance with the priorities set out in the 2014-2020 Digital Growth Strategy, recommends the establishment of an *Ecosystem Working Group* (hereinafter referred to as GdL), which deals with the management and technological development of the ecosystem itself, defining the operational processes to be digitized and the technological requirements that characterize the ecosystem itself. The GdL will be responsible for:

- Defining the actions to be implemented for the implementation of the ecosystem and their priorities (roadmap), also in compliance with regulatory constraints;
- Identifying and interacting with, where necessary, administrations that may vary and influence the regulatory framework for the ecosystem;
- Defining the Business Plan by identifying projects that are beneficial to the development of the ecosystem;
- Ensuring the dissemination of technological issues related to the ecosystem through the involvement of all stakeholders;
- Verifying the overall consistency with the three-year Plan and in particular the principles of interoperability, APIs, security, use of licensing platforms, design lines and software development as outlined in Chapter 2 “Strategic Model for the Evolution of the Public Administration Information System”;
- Involving civil society and stakeholders in defining the development of the ecosystem.

From a more technical point of view, the GdL will ensure the implementation of the necessary actions to:

- Identify, draft, and publish, as defined in the Interoperability Model, technical standards and technical specifications for applications such as standard interfaces for specific industry APIs, specific glossaries, interoperability profiles and *best practice*;
- Identify or define the data model in accordance with what is already in section 4.1 “Public Administration Data”;
- Stimulate and monitor the use of Enabling Platforms.

Subject	Ecosystem Working Groups
Time Frames	From May 2017
Players	PA, AgID
Description	For each ecosystem, the GdL follows the operational activities by identifying the specific objectives of the ecosystem itself, project planning and the establishment of technical discussion sites. AgID can, upon request, support the activities of the ecosystem, particularly with regard to the finalization of GdL activities.
Result	—

The model for management and technological development for the above-mentioned ecosystems has found a first application in the Health Ecosystem. In particular, the implementation, still ongoing, of the Electronic Sanitary Paper is summarized in the following line of action.

Subject	Evolution of the Electronic Healthcare Scheme (FSE)
Time Frames	In progress
Players	Ministry of Health, MEF, AgID, Regions and Asl
Description	<p>The Ministry of Health, in agreement with the MEF and AgID, has developed the infrastructure adaptation project to the provisions of DPCM 178/2015.</p> <p>The ministerial decree and interoperability rules governing the operation of the system are published by June 2017.</p> <p>Regional administrations will have to implement their regional electronic healthcare systems, interoperable with the national infrastructure, according to the plans presented and in any case by 2018.</p> <p>Administrations that by June 2017 will not complete the adoption of autonomous systems will have to adopt, according to the subsidiarity principle, the solutions made available by the MEF.</p> <p>The Regions are responsible for completing the dissemination of the electronic health record on their territory to all their patients.</p>
Result	<p>Ministerial Decree defining the rules of interoperability * (Release date: June 2017)*</p> <p>Implementation of Regional FSE Systems (Release date: by December 2018)</p>

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Instruments for the generation and the spread of digital services

The Plan aims to support the development of public digital services through various strategies, in particular through the dissemination of Enabling Platforms (see paragraph 4.2), the production of guidelines and development kits that will help anyone who wants to develop services and, finally, through the creation of a community of developers, designers and digital service providers who can exchange information, collaborate and participate in the development of Public Administration.

7.1 The current situation

In recent years, AgID has taken various actions to simplify the development and use of digital services produced by PAs and has **designed guidelines for Public Administration services and sites**⁷¹, with the aim of defining common rules for designing interfaces, services and content, to improve and make consistent navigation and citizen experience and to help reduce PA spending in designing and implementing new products (applications, Sites, digital services).

7.2 Strategic objectives

- To foster the diffusion of the *open source* paradigm, facilitating the establishment of a community of application developers and utility software components for the PA.
- Encourage the adoption of Enabling Platforms (e.g. SPID, PagoPA, ANPR) by developing and disseminating development kits, validation and verification environments, transparent communication on the progress of each project and signalling and discussing anomalies.
- Provide guidelines to follow and *toolkit* useful for the development of applications and services with suitable design levels, *user experience*, security and usability.
- Encourage the development of digital products and services based on the use of databases, APIs, and information made available by Public Administrations (eg public database query applications).

⁷¹ <http://design.italia.it>

- Share information and software components that reduce the cost of implementing new digital products, favouring reuse and interoperability.
- Supporting the administrations in distributing and disseminating the services and tools needed to communicate the path of implementation of the three-year Plan.

7.3 Lines of action

The API-oriented approach proposed in the Interoperability Model, coupled with the diffusion of Enabling Platforms and Design Guidelines, makes it possible to develop easy-to-use digital consumer services that can deliver consistent experience.

This strategy will favour the implementation of:

- A state-of-the-art user experience from design and accessibility perspective, with *mobile first* approach;
- A personalized experience through the use of Enabling Platforms.

It will also encourage the creation of a community supported by an infrastructure that can accommodate technical documentation and development tools. The goal is to provide resources that facilitate integration with Enabling Platforms, to make projects of common interest available and to promote initiatives created by the community itself.

The design.italia.it site, active since November 2015, collects directions for design and implementation of PA services. In addition to extending the path already outlined, especially through a more effective involvement of the community of designers, developers and, in the broader sense, of digital public service providers, one of the goals is to integrate the guidelines with SDK operational support, easy to implement by all PAs, to speed up adoption and reduce costs.

The drawing up of the guidelines is based on the active collaboration of all the participants. This is a dynamic construction of content in continuous updating, with periodic releases, thanks to the shared contributions of all those who want to participate in the project.

Public Administrations will be able to use the following development tools made available by AgID:

- A *repository* of the source code, in which the open source components that are useful to the PA and the community will converge;
- The API catalogue, provided in Chapter 2 “Intangible Infrastructure”, with relevant documentation, test environments and *sandbox*;
- Technical documentation
- Project management tools;
- Service design tools.

This strategy will favour the implementation of:

- Value-added applications that use existing API aggregation and data sources;
- Libraries to facilitate access to APIs;
- Reusable software components for the implementation of digital services.

Sub-ject	Community
Time Frames	In progress
Play-ers	AgID, Digital Team
De-scrip-tion	The activities envisaged in this action aim at following up the <i>designer community</i> and <i>developer community</i> through the implementation and continuous development of the necessary digital tools to be made available to the same communities, such as, for example, Internet sites, test environments, forums, <i>repository</i> for software, content management and documentation systems. Inside the developer <i>community</i> there will also be documentation and technology support for the use of API resources in reference to the catalogue provided in Chapter 2 “Intangible Infrastructures”. The ongoing updating of the Digital Public Services Design Guidelines, made with the contribution of the <i>community</i> , represents another activity carried out by this action.
Re-sult	First tools for communities (<i>Release date: March 2017</i>)

Sub-ject	Shared tools and templates for designing and delivering services
Time Frames	In progress
Play-ers	AgID, Digital Team
De-scrip-tion	Guidelines will be made, maintained and made available, <i>toolkits</i> and useful tools for the entire prototyping, development and diffusion of applications and services. It will also be suggested and, where possible, made available tools for analysing the behaviour of users, such as, for example, <i>web analytics</i> , usability analysis tools, tools for performing surveys of satisfaction. To this end, pilot projects will be launched in collaboration with the administrations, for the definition and field testing of the proposed solutions.
Re-sult	Pilot projects start (release date: June 2017) Modelling of the main services and content to be delivered (<i>Release date: July 2017</i>) Template alpha versions (release date: September 2017)

Notes

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Security is of fundamental importance as it is necessary to ensure the availability, integrity and confidentiality of the information provided by the Public Administration Information System. It is also directly related to the privacy principles provided for by legal order.

To this end, the role of CERT-PA will be strengthened in order to structure public security plans, supervise with monitoring actions and periodically check the implementation of the plans. This is an ever-changing technology area, almost daily, in which investments need to be steadily strengthened.

The Plan, taking into account *the National Strategic Framework for Cyber Space Security*⁷² (*QNS*), emphasizes the rationalisation of ICT resources described in Chapter 3 “Physical Infrastructures” as a priority method to increase the security level by reducing the “surface” exposed to computer attacks. This is, in fact, the most critical aspect of those identified in the “*Italian Cyber Security Report 2014*”.

AgID managed activities are grouped into the following areas:

- *CERT-PA*, in which the activities carried out by CERT-PA (*Computer Emergency Readiness / Response Team*, or “Computer Emergency Response Team” in support of public administration IT systems) that operates within the AgID and which supports Public Administrations in the Prevention and Response to Computer Security Incidents by Public Administrations;
- Rules and regulation, which embraces the activities of issuing regulations, technical rules, guidelines and reference documents on the aspects of security (e.g. *Minimum ICT Security Measures for Public Administrations*⁷³), also based on the contextualisation of the *National Cyber Security Framework (FNCS)*⁷⁴;
- Accreditation and supervision, under the CAD, of subjects providing qualified trustee services or other regulated activities, such as the retention of IT documents, for which security aspects are relevant;
- *Assessment* and testing, which includes the activities to verify the correct implementation and compliance with the security features of the system components or service of the Public Administrations. This activity is currently being redefined and strengthened.

⁷² <https://www.sicurezzanazionale.gov.it/sisr.nsf/wp-content/uploads/2014/02/quadro-strategico-nazionale-cyber.pdf>

⁷³ http://www.agid.gov.it/sites/default/files/documentazione/misure_minime_di_sicurezza_v.1.0.pdf

⁷⁴ “National Framework for Cyber Security” is the content of the “Italian Cyber Security Report 2015” of the CIS Sapienza, published in February 2016 and implemented with the contribution of AgID.

8.1 The current situation

AgID is already operating CERT-PA, which offers Public Administrations:

- Analysis and addressing services, aimed at supporting the definition of security management processes, developing methodologies, designing processes and measuring metrics for cyber security governance;
- Proactive services, with the purpose of collecting and compiling meaningful data for cyber security, issuing bulletins and security messages, implementing and managing information databases;
- Reactive Services, with the purpose of managing security alerts, supporting process management and resolution of security incidents within the PA domain;
- Training and communication services to promote the cybernetic security culture by fostering awareness and competence within public administrations by sharing information on specific ongoing events, new risk scenarios or specific security themes information.

AgID defines the security profiles for the elements of the Map of the Strategic Model, referring to the National Cyber Security Framework and international standards such as ISO / IEC 27000 and COBIT, and assumes that all administrations follow the same standards.

Pending the issuance by the Department of Public Services of the Technical Rules for ICT Security of Public Administrations proposed by AgID, taking into account the urgency arising from the evolution of cyber threats on the international scene, and in particular with regard to the Public Administration, in September 2016 AgID published *the document Minimum ICT Security Measures of Public Administrations** which provides timely indications on how to reach pre-established safety levels from the minimum, compulsory for everyone.

Regarding the activities related to Accreditation and Supervision, AgID is responsible for the qualification of those who intend to start providing *qualified trustee services*⁷⁵ and accreditation of *certified email managers*⁷⁶, *computer document storage*⁷⁷, *accredited digital signature*⁷⁸ certificates and the *SPID Identity Provider of SPID*⁷⁹, for which it takes care of the publication of trusted lists. AgID also carries out supervisory functions on such entities and, for trustee services, is the body designated in Italy under EU Regulation 910/2014 (eIDAS Regulation⁸⁰). For this purpose, actions are being taken to adapt the qualification, accreditation and supervisory processes to the new provisions.

8.2 Strategic objectives

- Define the security profiles of Public Administration ICT components, including instantiating the *National Cyber Security Framework (FNCS)* in all the components of the Strategic Model and, following a specific risk analysis, provide the technical and regulatory references that the Public Administrations will have to adopt. Failure to implement safety profiles could, in proportion to the type of failure, also result in the need to stop the provision of related services.
- Offer to Public Administrations support for the prevention and treatment of IT security incidents.
- Provide and implement security *assessments* and checks to ensure the application of the security rules identified by the Public Administrations.
- Follow up on the activities of accreditation and verification by providing, in the first place, full implementation of the eIDAS Regulation.

⁷⁵ [*http://www.agid.gov.it/agenda-digitale/infrastrutture-architetture/il-regolamento-ue-ndeg-9102014-eidas/servizi-fiduciari*](http://www.agid.gov.it/agenda-digitale/infrastrutture-architetture/il-regolamento-ue-ndeg-9102014-eidas/servizi-fiduciari)

⁷⁶ [*http://www.agid.gov.it/infrastrutture-sicurezza/pec-elenco-gestori*](http://www.agid.gov.it/infrastrutture-sicurezza/pec-elenco-gestori)

⁷⁷ [*http://www.agid.gov.it/agenda-digitale/pubblica-amministrazione/conservazione/elenco-conservatori-attivi*](http://www.agid.gov.it/agenda-digitale/pubblica-amministrazione/conservazione/elenco-conservatori-attivi)

⁷⁸ [*http://www.agid.gov.it/certificatori-firma-digitale-accreditati-italia*](http://www.agid.gov.it/certificatori-firma-digitale-accreditati-italia)

⁷⁹ [*http://www.agid.gov.it/infrastrutture-architetture/spid/identity-provider-accreditati*](http://www.agid.gov.it/infrastrutture-architetture/spid/identity-provider-accreditati)

⁸⁰ The eIDAS Regulations (Electronic Identification Authentication and Signature) aims to provide a Community-level regulatory basis for fiduciary services and electronic means of identification in member States.

8.3 Lines of action

In order to reach the objectives of the Plan, CERT-PA will, by the end of 2017:

- Implement the *Cyber Security Knowledge Base* in which information on infrastructures made in the public administration domain and on security events occurring within them are collected;
- Implement and manage the *National Vulnerability Database* (NVD), a catalogue of vulnerabilities that integrates internationally available catalogues (e.g. MITRE) with the vulnerabilities found on systems developed nationwide;
- Make tools and information readily available to prevent and respond to computer attacks;
- Provide support to administrations in preparing response to incidents;
- Provide support to administrations and deepen the cyber space monitoring function of Public Administrations, also by activating specific collaborations with national and international reference communities;
- Provide support for incident management and subsequent restoration.

To this end, a progressive increase in CERT-PA's operational capability is being completed by completing the ICT infrastructure for providing basic services and implementing the first cyber menace information system on the US MITRE⁸¹ model.

Another important step will be the issuance of the Technical Rules for ICT Security of Public Administrations that will provide guidance on the measures to be taken in each component of the Strategic Model Map.

Some of these are anticipated by some indications of physical infrastructures:

- Each Public Administration shall have an Information Security Management System (SGSI) and its organisational structure;
- Each Public Administration shall, on the basis of a specific risk analysis, identify the appropriate security profile for its infrastructure and, taking into account the threat updates from CERT-PA, take the appropriate measures.

To follow the activities of the area *Assessment and testing*, will identify the actions described below, the implementation of which is relevant to individual administrations.

Under the hypotheses indicated, *the assessment* and the execution of assessments is to be understood as:

- Periodic testing of operational configuration and vulnerability in ICT products and systems and related procedures: periodic audits of the integrity of the software used in the administrations at least twice a year, scans of the state of updating of such software and the existence of exploitable vulnerabilities. This verification includes, in addition to verifying the integrity of the running source code, the configuration of the software under review;
- Assessment of the correct implementation and related configuration of the security features adopted on ICT systems and products used by each administration: specific security tests should be foreseen to authorize the use of products (and their systems integrating those products) which perform critical security features for the operation of the public administration under review. To this end, it may be useful to adopt the approach already described in standards or methodologies for the development and evaluation and certification of ICT security such as the ISO / IEC 15408 family. The adoption of ISO / IEC 15408 certified products provides security guarantees both because it involves well-proven staff (safety assessment laboratories) and because it provides in-depth safety analysis (through analysis of reference documentation and implementation Of documented and repeatable intrusion testing) or because it assigns to the European and international technical communities the task of monitoring possible vulnerabilities of certified products. According to art. 68 of the CAD, the adoption of *open source* software and applications is to be considered as a priority, within the framework of an overall risk assessment, of total *cost of ownership* and use capacity.

⁸¹ [*https://www.mitre.org/](https://www.mitre.org/)

Sub-ject	CERT-PA
Time Frames	In progress
Play-ers	AgID
De-scrip-tion	CERT-PA, which is already operational since 2013, will gradually increase its operational capability by completing the ICT infrastructure for providing basic services and delivering the first embryo cybernetic information system including through the implementation of solutions: ‘Infosharing <https://portal.cert-pa.it/web/guest/login>’ __ ‘CERT PA <https://portal.cert-pa.it/web/guest/login>’ ⁸² is <i>National Vulnerability Database</i> .
Re-sult	—

Sub-ject	Publication and adaptation to the Technical Rules for ICT Security of Public Administrations
Time Frames	By September 2017
Play-ers	AgID, Department of Public Services, PA
De-scrip-tion	AgID compiles the Technical Rules for ICT Security of Public Administrations that will provide PA with guidance on the measures to be taken. The Department of Public Function issues the Technical Rules prepared by AgID. Public Administrations comply with the Technical Rules for ICT Security of Public Administrations, through the preparation and execution of Adaptation Plans for Technical Rules issued by AgID. Pending the issuance of these Technical Rules, all public administrations are able to adapt to the “ <i>ICT Minimum Security Measures for Public Administrations*</i> ” already published by AgID ⁸³ .
Re-sult	Technical Rules for ICT Security of Public Administrations (<i>Release date: June 2017</i>) PA Adjustment Plans (Release Date: In accordance with the constraints normally determined by the issuance of the Technical Rules)

Sub-ject	Security architecture for critical services
Time Frames	By September 2017
Play-ers	AgID, PA
De-scrip-tion	Define the principles and guidelines of the architectural model of critical service management and contextualisation with respect to the managed data cluster. The PA <i>owners</i> of critical services prepare an Adaptation Plan and adapt or implement critical services in accordance with the guidelines.
Re-sult	Critical Service Management of Architecture Guidelines (<i>Release date: June 2017</i>) Adaptation plan for administrations <i>owners</i> of critical services (<i>To be launched by September 2017</i>)

⁸² [*https://portal.cert-pa.it/web/guest/login*](https://portal.cert-pa.it/web/guest/login)

⁸³ [*http://www.agid.gov.it/notizie/2017/04/07/pubblicare-gazzetta-ufficiale-misure-minime-sicurezza-informatica-pa*](http://www.agid.gov.it/notizie/2017/04/07/pubblicare-gazzetta-ufficiale-misure-minime-sicurezza-informatica-pa)

Subject	Continuous monitoring
Time Frames	In progress
Players	PA
Description	To secure the <i>continuous monitoring</i> , recommended by best security practices (e.g. ISO 27001, NIST documentation), Public Administrations will be responsible for verifying the status of software updates used in each administration in relation to known vulnerabilities published by one or more reference subjects (e.g. National CERTs or vulnerable databases). In order to follow this action, software will be scanned using automatic tools and the next analysis of the results (and the possible impact of an incorrectly noted vulnerability) to a competent subject. AgID reserves the possibility of performing <i>penetration tests</i> randomly.
Result	Periodic publication of results.

Subject	Indicating IT incidents to CERT-PA
Time Frames	In progress
Players	PA
Description	All public administrations are required to monitor and report promptly to CERT-PA IT incidents and any potential risk situations using the communication channels reported in <i>*the dedicated section of the AgID site*</i> ⁸⁴ . For all accredited subjects on <i>Infosharing</i> CERT PA has a special signalling feature.
Result	—

Subject	Reorganisation of the “gov.it” domain
Time Frames	By June 2018
Players	AgID, PA
Description	AgID issues rules for the reorganisation of the “gov.it” domain, in order to reorganize it with a segmentation that meets international criteria and allows grouping of central administration sites. Symmetrically within 12 months PA completes activities.
Result	Rules for reordering the domain “gov.it” (<i>Release date: June 2017</i>). Adaptation to those provisions by the PA (<i>By June 2018</i>).

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⁸⁴ [*http://www.agid.gov.it/agenda-digitale/infrastrutture-architettura/cert-pa*](http://www.agid.gov.it/agenda-digitale/infrastrutture-architettura/cert-pa)

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Data & Analytics Framework

The *Data & Analytics Framework* (DAF) is part of the activities aimed at enhancing the national public information heritage. DAF aims to develop and simplify the interoperability of public data between PAs, standardize and promote the dissemination of *open data*, optimize data analysis processes and generate knowledge. The idea is to open the world of public administration to the benefits offered by modern platforms for managing and analysing *big data*, acting in four main directions:

- To significantly amplify the value of the information assets of the PA through the use of the big data technologies that help to create knowledge about the *decision makers* and drastically reduce the time of analysis. Horizontal scalability of these technologies can, in fact, extract information from the intersection of multiple data bases and process data in *real-time* allowing you to have more prospects of analysis on a given phenomenon, in a timely fashion;
- Foster and optimize data exchange between PAs, minimizing transactional costs for access and use. It will be possible to overcome the one-to-one conventions scheme, which lead to multiple copies of the same data and allow standardized access to an ever-updated data;
- To encourage the diffusion of *open data* and make it more effective. DAF, in fact, allows centralized and redistributed public data through APIs, ensuring standardization of formats and ways of reusing them on up-to-date data;
- Foster explorational data analysis by teams of *data scientists*, both within the PA and at the central level, in order to improve knowledge of social phenomena. The analysis techniques used will also allow the development of “intelligent” applications that take advantage of regularity in data to provide services to citizens, businesses and public administrations;
- Finally, the *framework* will allow the promotion of scientific research initiatives on issues of particular interest to the PA, encouraging collaboration with universities and research bodies.

The DAF will be structured in accordance with what is defined in the CAD and Interoperability Model, in Intangible Infrastructures and consistency with the requirements related to the Monitoring Functions of the Plan.

The DAF is based on a **big data platform**, composed of: a *data lake*, a set of *data engines* and tools for data communication.

In the *data lake* personal data such as: (i) data bases that PA generates in order to carry out its institutional mandate, in compliance with personal data protection regulations; (ii) data generated by Public Administration’s IT systems

such as logs and usage data that do not fall under the previous definition; (iii) authorized data from the web and social networks of potential public interest, are stored.

The *Big Data Engines* are useful for harmonizing and processing, both in *batch* mode and *real-time*, the raw data stored in the *Data lake*, and implementing models of *machine learning*.

Lastly, data communication tools are useful in favouring the use of data processed by stakeholders, including through APIs that display data and functionality to third-party applications.

The implementation and subsequent management of the DAF is entrusted to **the BDT-PA**, or *PA's Big Data Team*, a team consisting of *Data scientists*, *Big data architects* and domain experts who provide the conceptual design and evolution of the *Big data* platform, the construction of interconnection models of different data sources, data analysis, and development of *machine learning*, the coordination of the development of *Data applications* and the organisation of scientific “competitions” on issues of interest to the PA.

9.1 The current situation

To date there is no public administration *framework* of analysis, standardization and interchange of public data, which favours the definition and monitoring of *data-driven* policies at the same time. Already from 2013, AgID has verified the possibility of using this type of tools in the specific domain of Public Administration through numerous experimental initiatives conducted in collaboration with national research institutes and various Italian universities within the project *Italia.gov.it*, the digital administration engine.

In recent years, big data technologies have matured to such an extent that they are used not only in the production environments of major IT companies (e.g. Google, Facebook, Twitter, Linked-In), but also those of banks, insurance companies, lotteries and betting operators, trading companies. Consequently, new professional profiles have emerged, such as *Data scientists* and the *Big data architects*, whose skills are considered to be necessary for the governance and the use of *Big data*.

As regards the exchange of data between PAs, the present scenario still sees the widespread practice of direct accords and agreements between PAs to regulate the exchange of data necessary for the conduct of institutional activities. This practice is not scalable and limits the sharing of public sector information.

9.2 Strategic objectives

- Enhance the wealth of public administration information by facilitating access to data by PAs and encouraging the creation of both central and federated analysis teams.
- Focus on quality and standardization of data. DAF, in fact, is the operational tool that allows to coordinate the efforts described in paragraph 4.1 “PA Data”, focusing on the processes of generation, management, updating and dissemination of data.
- Facilitate the development and diffusion of open data and *API economy*, through which civil society can reuse, in compliance with the law, the wealth of public information and create new business opportunities. To this end, DAF will develop standardized APIs on up-to-date databases to help build applications and services to the citizen.
- Encourage collaborations with universities and research bodies. They will be given access to a *sandbox* containing meaningful samples of appropriately anonymized data, to stimulate research and create useful knowledge for the community.
- Encourage data exchange between Public Administrations, overcoming the limitations of the current practice of access to data based on conventions between individual administrations.

- Rationalize the resources involved in data exchange and in *analytics*, including *Data warehouse* and *Business intelligence*. These initiatives, often uncoordinated, are often characterized by high licensing costs and hardware and they have a high tendency to respond many times to the same need.
- Provide tools that measure in a timely manner the progress of the implementation of the Plan and allow integrative or corrective actions based on *data-driven* logic to be identified.

9.3 Lines of action

The *DAF*, as said, is based on the development of a *Big data* platform and on the establishment of a team of *Data scientists*, *big data architects* and *Data engineers*. The *Big Data Team of* the PA, set up within the Digital Team, has the task of actively managing the phase of conceptual and implementation development of the infrastructure, along with all phases of the life cycle of the data, from ingestion to analysis and application development. In addition, BDT-PA will develop technology and project partnerships between the PAs involved.

The BDT-PA designs and defines the implementation and use of the PA big data platform by:

- Identifying the governance model that provides a leadership and control role by the Digital Team, in collaboration with AgID and paying attention to Privacy;
- Planning any regulatory adjustments that would facilitate the implementation of the project;
- The definition of the data sources of the *Data lake* and their modalities of population. These will be included in the guidelines produced under the Interoperability Model;
- The definition of the logical architecture of the platform and the identification of implementing technologies;
- The identification of information needs useful to the definition of *Data driven policy* and the realization of related analytical tools;
- The use of public and private *cloud* for *storage* and computing;
- The involvement of the scientific community for the promotion of initiatives aimed at conducting research activities on issues of interest to the PA;
- The usage and consultation directives.

Over the next few months, BDT-PA will release the DAF Development Plan. It will provide an *incremental roll-out* based on the agreements with the PA that the Digital Team is implementing. In particular, a phase of experimentation will be planned which will involve a group of selected central and local PAs and will have the objective to develop data exchange models and use cases with services for PAs, citizens and businesses.

The data in the DAF will also be used to synthesise useful knowledge of the monitoring activities described in Chapter 10 “Management of Change”: in this regard, AgID and the Digital Team will provide tools that will complement the tool kit described in the action line “Tools for Monitoring the Implementation of the Plan” of Chapter 10.

Sub-ject	Definition and implementation of the development plan of the experimental phase of the <i>Data & Analytics Framework</i>
Time Frames	By December 2017
Play-ers	AgID, Digital Team
De-scrip-tion	Identify the governance model of the DAF and the PAs that will be part of the testing phase. Defining the platform architecture and its evolutionary roadmap. Definition of use cases for the development of services for Public Administrations, Citizens and Businesses. This activity is coordinated with the Guarantee of Privacy. Implementation of the technological infrastructure, consistent with the development plan of the DAF pilot phase, which implements all the components necessary for the operation of the Platform.
Re-sult	DAF Development Plan (<i>Release date: June 2017</i>). Big Data Cluster and Component Testing and Use Cases (<i>Release date: December 2017</i>).

Sub-ject	Data Ingestion in the DAF - Experimental Phase
Time Frames	From June 2017 to December 2017
Play-ers	AgID, Digital Team
De-scrip-tion	Definition of the data to be included in the project during the experimental phase and putting into operation the extraction and ingestion procedures. Defining the relations between the DAF manager and the PAs involved in the initiative.
Re-sult	Regulating relationships with PAs. Standard operational definition in compliance with privacy standards. Definition of data ingestion procedures in the platform. Supply of DAF (release date: December 2017).

Sub-ject	Putting DAF into Production
Time Frames	From January 2018
Play-ers	Digital Team, AgID, PA
De-scrip-tion	The Digital Team and AgID will set up procedures for the future <i>owner</i> of the DAF that will manage the operation and evolution of the project. The <i>owner</i> of DAF will take care of interactions with PAs to define plans for incorporating their databases and usage cases. PAs from time to time will define how to ingest data and how DAF uses its activities.
Re-sult	Substitute plan. Current operation (release date: to be defined).

Sub- ject	Implementation of support tools for monitoring the Plan
Time Frames	From April 2017
Play- ers	AgID, Digital Team
De- scrip- tion	The Digital Team and AgID provide tools that, based on the information contained in the DAF, provide useful information for the Plan monitoring activities described in Chapter 10 “Managing Change”.
Result	Plan Monitoring Support Tools (<i>Since January 2018</i>)

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Management of the change

The *Management of change* defines a governance model for the implementation of the Plan and for achieving the objectives. More specifically, activities will be carried out to ensure:

- The *Management of the Plan*, through planning, monitoring and coordination activities;
- The *Support for the implementation of the Plan*, with initiatives aimed at answering questions on the Plan itself, to facilitate, raise awareness and train public administrations involved in the digital transformation process.

The need for a governance model arises from the need to coordinate a plurality of actors who, albeit different in role, function and organisation, are called upon to participate in the implementation of national projects that require consistency of solutions to be adopted in Respecting the times and rules laid down.

10.1 The current situation

The rule attributes to AgID the role of coordinator of the planning and monitoring activities of the strategic development of the Public Administration Information System. This role has been reinforced by Art. 14 of the CAD, which regulates relations between the state, regions and autonomies⁸⁵.

In the same context, the prediction provided for in Article 17 of the same CAD also plays a central role, according to which each administration, in order to ensure the implementation of the strategic guidelines for the reorganisation and the digitization of the administration defined by the Government, “entrusts To a single general management office, without prejudice to the total number of such offices, the transition to digital operating mode and the consequent reorganisation processes aimed at the creation of a digital and open administration, of easily usable and quality services, through greater efficiency And economics.”

⁸⁵ Article 14 of the CAD establishes relationships between the state, regions and autonomies in the implementation of the provisions of the Constitution and assigns to the AgID “IT coordination of state, regional and local administration, with the purpose of designing and monitoring the strategic evolution of the information system of the Public Administration, encouraging the adoption of infrastructures and standards that reduce the costs incurred by administrations and improve the services provided.” This role is reinforced in the following Article 14-bis. Alongside the function of planning and coordinating the activities of the administrations through the drafting and subsequent verification of the implementation of the three-year Plan, AgID performs the role of “monitoring the activities carried out by the administrations in relation to their consistency with the three-year Plan (...) and verifies the results achieved by the individual administrations, with particular reference to the costs and benefits of the IT systems in the manner set by the Agency itself”.

In the correctional decree of the Code of the Digital Administration, it is stated, inter alia, that where the size of the individual administrations does not permit the identification of an office within them, it may be possible to fulfil that obligation in a consortium.

10.2 Strategic objectives

- Define and implement a structured process of governance of the actions required to carry out the PA's digital transformation process, including the planning of *switch-off* logic.
- Accompany selected PAs to play the role of aggregator - as better described below - in the implementation of organisational and instrumental activities.
- Promote the fulfilment by the administrations of the identification obligation of the office responsible for the transition to digital as referred to in Article 17 of the CAD.
- Monitor the transformation process for the purpose of coordinating the Plan and eventual European reporting through measuring the state of progress of the activities, including using the indicators set out in the "Digital Growth Strategy".

10.3 Lines of action

To achieve the objectives of the Plan, it is necessary to define a model that, on the one hand, allows governance in compliance with the requirements of administrations and on the other hand is sufficiently agile to facilitate the conduct of digital transformation activities in the times defined in the Strategy for Digital Growth.

This model must also take into account the organisational complexity of the PA where an administrative procedure and / or a service can be provided to the citizen through the interaction of several subjects:

- National level administrations, such as Ministries, Agencies and Authorities, who set rules or manage national databases;
- Middle-level administrations and / or bodies and instrumental organisations such as the Regions, Companies in House and other aggregators;
- Administrations of *Front office*, i.e. PAs providing services to citizens and businesses such as, for example, provinces, municipalities, courts and ASLs.

The national strategy - elaborated in collaboration with the Conference of Regions and Autonomous Provinces - identifies priorities, intervention arrangements and actions to be undertaken and emphasizes complementarity between the national and regional levels and the integration of the same regional initiatives.

Figure 8 graphically illustrates how solutions made by individual administrations can contribute to the realization of digital services through collaborative logic that amplifies their value. For example, databases of national interest, generally in charge of central level administrations, can contribute to the provision of services provided by other administrations, including through the involvement of intermediate and instrumental organisations (e.g. ANPR). By the same token, even databases made by intermediate level bodies, although not necessarily involving national level bodies, can contribute, in a cooperative logic, to the provision of services to citizens by other administrations (e.g. The Electronic Health Record).

For the management of the Plan, AgID has established:

- A program management group that assists the management of the Plan and coordinates data collection and information activities by the PA;
- Technical structures that oversee the development and management of the individual components described in the Strategic Model;

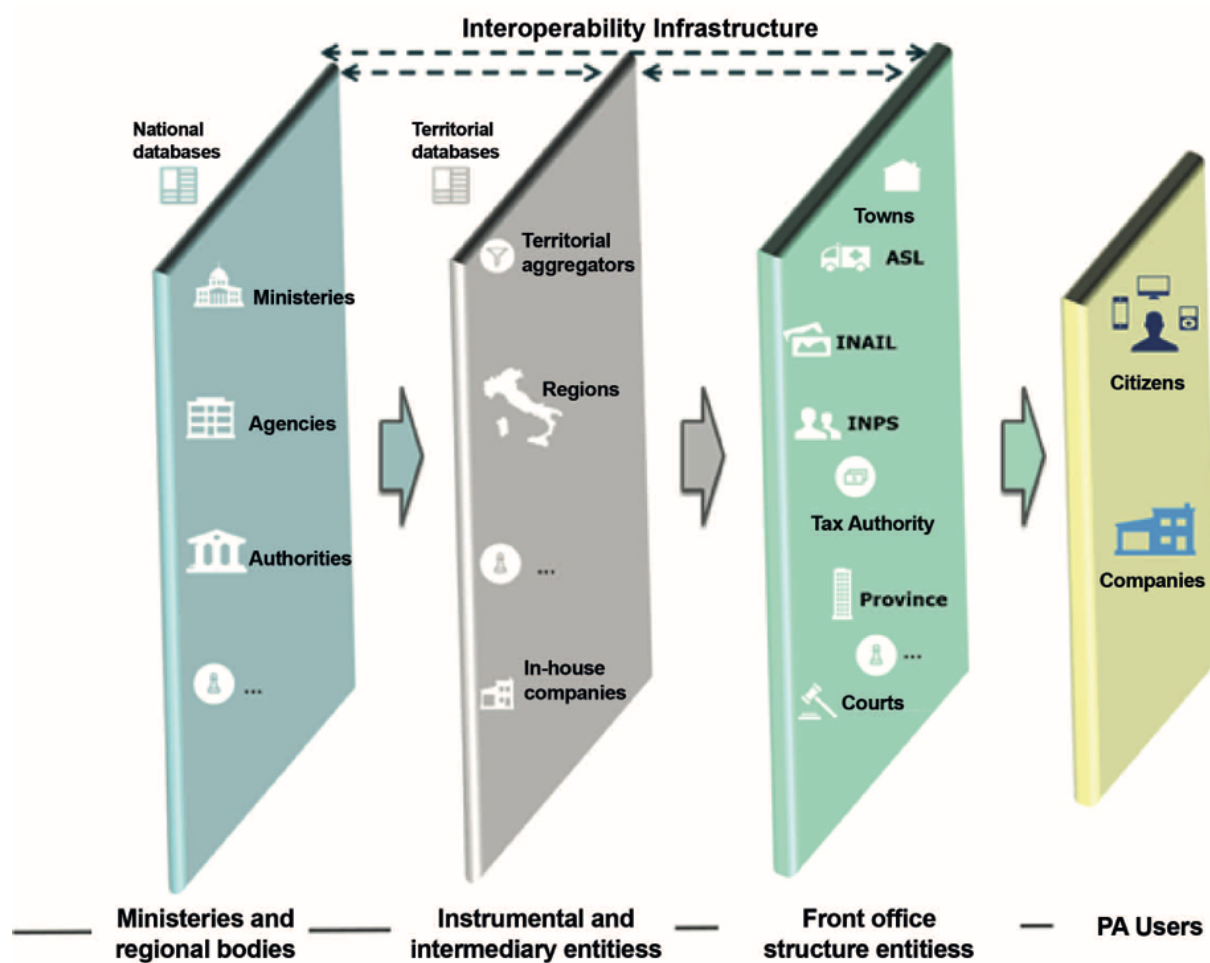


Fig. 1: Figure 8 - Exemplifying dependencies between the different levels to provide services to citizens and businesses

- A technical team for the implementation of PA actions (see Annex 2).

AgID, in its role as coordinator, will involve in these groups, all representations of different types of public institutions or other stakeholders in the specific lines of action.

For each digital transformation project implemented in the implementation of the action lines, it will also be located at the administration *owner* of the project, a **referent** with the task of managing the phases of carrying out activities in concert with the stakeholders involved. The referent can take advantage of AgID support for aspects of a technological nature and reports to ***Manager for transition to digital operating mode*** established by the CAD⁸⁶. The latter is the main interlocutor of AgID for the monitoring and coordination of digital transformation activities.

The identification and appointment of the Head of Unit for the transition to the digital operating mode is a necessary and urgent duty, brought to the attention of all PAs by the Parliamentary Commission of Inquiry into the level of digitization and innovation of public administrations, which too few administrations have so far even partially implemented.

The governance model described above monitors the activities related to the implementation of the three-year Public Administration Plans on two macro-domains:

- **Monitoring the technical aspects**, aimed at verifying the implementation of the planned actions through set of indicators of achievement and results, which should be linked wherever possible to the DESI indicators;
- **Monitoring economic aspects**, linked to the systematic collection of government ICT spending data for the purpose of streamlining and re-addressing the investment part.

It should also be noted that the Plan's actions have been constructed by referring to the monitoring indicators as set out in the Digital Growth Strategy, in particular: i) Implementation KPIs used to monitor the state of progress of the actions in a determined time span; (ii) Results of the KPI defined in the 2014-2020 Partnership Agreement

⁸⁶ Article 17 of the CAD - Structures for organisation, innovation and technologies

((1. The Public Administrations shall ensure the implementation of strategic guidelines for the reorganisation and digitisation of government-defined management in accordance with the technical rules referred to in Article 71. For this purpose, each of the above subjects entrusts to a **single general management office**, without prejudice to the total number of such offices, **the transition to a digital operating mode** and the consequent reorganisation processes aimed at the creation of a digital and open administration, of easily usable and quality services, through greater efficiency and cost-effectiveness. To the aforementioned office are also assigned tasks related to:)) a) strategic coordination of the development of IT, telecommunications and telephonic systems, so as to ensure consistency with common technical and organisational standards; b) addressing and coordinating the development of services, both internal and external, provided by the telecommunication and telephony systems of the administration; c) address, plan, coordinate and monitor IT security related to data, systems and infrastructures, also in relation to the public connectivity system, in compliance with the technical rules referred to in Article 51, paragraph 1; d) access of disabled persons to computer tools and the promotion of accessibility also in the implementation of the provisions of Law no. 4 of 9th January 2004; e) the (periodic) analysis of the consistency between the organisation of the administration and the use of information and communication technologies in order to improve user satisfaction and service quality and to reduce the time and cost of administrative action; f) cooperation to review the reorganisation of the administration for the purposes of point e); g) addressing, coordinating and monitoring the planning envisaged for the development and management of telecommunication and telephony information systems; h) design and coordination of relevant initiatives for the purpose of a more effective provision of network services to citizens and companies using instruments of applied communication between the Public Administrations, including the preparation and enactment of service agreements between administrations to implement and share the cooperative information systems; ((28)) i) promotion of the initiatives relating to the enactment of the directives imparted by the President of the Council of Ministers or the Minister in charge of innovation and technology; j) planning and coordination of the diffusion process, within the administration, of e-mail, IT protocol, digital signature ((or qualified electronic signature)) and IT mandate services, and the rules in terms of accessibility and usability.

((1-bis. For carrying out the tasks referred to in paragraph 1, the Agencies, the Armed Forces, including the Carabinieri Police and the Port Authorities, as well as the Police Force have the facility to identify their offices without increasing the total number of those already provided for in their respective organisational arrangements.

((1-ter. The head of the office referred to in paragraph 1 is endowed with appropriate technological, legal and managerial information and answers, with reference to the transition tasks, in the digital mode directly to the highest political body.))

((1-quater. The Public Administrations, without prejudice to the total number of offices, shall identify, usually from amongst the executives in service, **an ombudsman for digital matters**, having appropriate third-party, autonomy and impartiality requirements. Anyone may submit reports and complaints about any of the alleged infringements of this Code and of any other norms regarding the digitisation and innovation of the Public Administration to the Digital Ombudsman. If such allegations are grounded, the Digital Ombudsman invites the office responsible for the alleged violation to remedy it promptly and in any case within thirty days. The Ombudsman reports failure to the competent office for disciplinary proceedings.

((1-quinquies. AgID publishes on its website a summary guide to digital rights of the citizen under this Code.

((1-sexies. In compliance with their organisational autonomy, the Public Administrations other than State Administrations will identify the digital office referred to in sub-paragraphs 1 and 1-quater among those of a managerial level or, if not available, identify a digital administrator from among their senior management. In the absence of the senior political body, the head of the digital office referred to in paragraph 1 shall be directly answerable to the administrative body of the entity.))

UPDATE (28) The Legislative Decree of 26th August 2016, no. 179 (Article 61, paragraph 2, letter d)) states that the term "citizens and companies", wherever it occurs, means "legal entities".

initialled by Italy with the European Commission; iii) Impact KPIs, able to measure the potential economic and social effects of individual actions and the Digital Growth Strategy as a whole, these indicators derive directly from DESI. Consequently, verification of achieving its “target values” will be an integral part of the monitoring activity described in this paragraph.

AgID will provide a monitoring system that, through automated data collection for individual projects, will support the activities of the Plan and will provide evidence of its progress.

The effectiveness of the Plan is also ensured by the ability to share its goals and implementation methods and the presence of professionalism and skills at all levels.

Activities carried out within the framework of the governance model are complemented by the activities described below, which carry out, at national and European level, the most important crosswise support actions for the implementation of the Plan such as:

- **Communication / awareness** on the objectives of the Plan with regard to Public Administrations and Citizens and Businesses. All public awareness actions are included, including the definition of national communication plans on individual strategic initiatives, which can be complemented by local initiatives;
- Coordination, at least limited to the activities related to the implementation of the Plan, of the offices referred to in Article 17 of the CAD;
- Collaboration with the Department of Public Services - for the identification of the **digital skills** required by the Public Administration to support the processes of change and rationalisation induced by the Plan. In this way, administrations will be able to implement training initiatives for their staff with the support of universities, public and private subjects of professional training systems and administration schools.

In 2017:

- All administrations are responsible, within their responsibilities, to adapt the programming to carry out the actions described in this Plan and to appoint the person in charge of the transition to the digital operating mode;
- AgID will indicate the administrations that will have to write their Plan individually and those that will instead have a role in the aggregation of administrations⁸⁷, in the first instance Regions and Metropolitan Cities

From 2018, in compliance with Art.14a of CAD⁸⁸, the AgID provides for periodic elaboration of the Plan with the following timelines:

- By April, AgID collects from the administrations (by category or in single form as defined above) the data relating to the consolidated expenditure of the previous year and the expenditure forecasts for the current three-year period (for example, for the year 2018 the administrations Provide the consolidated expenditure for 2017 and the expenditure forecast for the three-year period 2018-2020)
- By September, AgID will draw up a Plan for the next three years (for example, for the year 2018, the three-year Plan 2019-2021 will be prepared);
- By December, administrations draw up their own plans, either by category or in a single form as defined above, for the next three years (for example, in 2018, administrations draw up their three-year plan 2019-2021).

⁸⁷ as described in paragraph 513 Article 1 of the 2016 Stability Law

⁸⁸ [...] The aforementioned Plan, developed by the AgID, also based on the data and information acquired by the Public Administrations referred to in Article 1, paragraph 2, of Legislative Decree no. 165 of 2001, is approved by the President of the Council of Ministers or the Delegated Minister by 30th September of each year.

Subject	Monitoring system
Time Frames	In progress
Players	AgID, Digital Team
Description	<p>AgID provides the PA with the minimum set of indicators to be valued for measuring the progress of the Plan.</p> <p>The PAs, according to their organisational articulations and including any Instrumental Bodies, collect data for the enhancement of the above indicators and communicates them to AgID in the manner that will be indicated by AgID.</p> <p>AgID and Digital Team design and implement a tool that, also utilizing the experience of existing PA monitoring systems, assures:</p> <p>Automated data collection for individual projects (descriptive, economic, SAL data, etc.);</p> <p>Analysis in aggregate and timely form on a territorial and national scale, and to share progress on the implementation of the digital strategy.</p> <p>The implementation of the monitoring system will also make use of the tools made available by DAF.</p> <p>The tool will be made available to aggregators.</p>
Result	<p>Minimum set of indicators for measuring the progress of the Plan (release date: July 2017).</p> <p>First release of the monitoring system (release date: March 2018).</p>

Subject	Communication of the Three-Year Plan
Time Frames	In progress
Players	AgID, Digital Team
Description	Idea of communication initiatives for the dissemination and implementation of the three-year Plan.
Result	Communication materials (release date: June 2017).

Subject	Identification of the main profiles and promotional actions for the creating digital skills in the PA
Time Frames	From September 2017
Players	Funzione Pubblica (Civil Service), ISTAT, MIUR, AGID and other technical bodies
Description	The link between the players in the definition of the professional figures identified by the Plan with the development of specific training paths.
Result	<p>Revision of UNINFO and ISTAT profiles for new professional figures with digital skills.</p> <p>Formation of course, workshop and specialisation training formats.</p>

Notes

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Rationalisation of costs

As anticipated in Chapter 1 “Triennial Plan for IT in Public Administration”, one of the objectives of the three-year Plan is to guide the rationalisation of Public Administration ICT spending and its reorientation at national level as defined, in the first instance, by the Stability Law of 2016.

In fact, the law establishes certain principles for the containment of expenditure, where there is no conflict with the strategic objectives of the digital Agenda and in particular:

- a savings target for the three-year period 2016-2018, set at 50% of the average annual expenditure for 2013-2015 for the current management of the entire IT sector, net of charges for connectivity services;
- the principle that the savings generated will be used primarily by administrations for investment in technological innovation;
- the principle that the savings target is made exclusive of spending effectuated through Consip and other commissions;
- the principle that the costs of some entities are excluded: INPS, INAIL, Sogei and Consip (relative to the services and services provided to their contracting authorities); the Department of Administration of Justice (in relation to the investment costs necessary to complete the computerisation process of civil and criminal prosecution in the judicial offices).

In general terms, the savings target is here referred to as a steady reduction in spending over the three-year period. This means that at the end of the three-year period, the annual national expenditure (“exit rate”) will be 50% lower than the average annual expenditure of the previous three years.

However, the goal to be reached depends to a large extent on the degree of use of the commissioning centres. In fact, in theory and for the sole purpose of further expediting the mechanism put in place with the Stability Law, if during the three-year period 2013-2015 all expenditure was to be passed through the central commissioning centres, the savings target requested for the national system would have been zero.

The law therefore is intended to encourage:

- a path of requalification of spending by encouraging connectivity where there it is still lacking and in investments in innovation, releasing resources today devoted to financing current spending;
- a path of optimisation and control of spending by having all the possible needs pass through the commissioning centres.

11.1 PA and ICT spending

Starting from the most recent analyses (cf. Annex 3, “Synoptic Framework of ICT Expenditure in the CPA”), including that carried out by AgID on the data provided by the Central Public Administrations, the following situation was summarised.

The average ICT spending of the PA in the three-year period 2013-2015 was equal to approximately € 5.6 billion. The expenses exclude from the savings targets, as indicated in the Stability Law of 2016, are quantifiable as:

- ICT spending carried out by Sogei, INAIL and INPS, amounting to approximately € 1.1 billion;
- investment expenditure of public administrations, amounting to approximately € 1.2 billion;
- current spending through Consip and other aggregating entities, amounting to approximately € 1.4 billion;
- connectivity costs, equal to about € 0.15 billion.

As a result, the current “aggravating” expenditure for spending review purposes amounts to approximately € 1.7 billion.

Based on these elements, the starting point for defining the savings target to be achieved at the end of the three-year period 2016-2018 is therefore as represented in Figure 9, and is quantifiable at about € 0.8 billion, corresponding to 50% of current spending. This objective is to be understood as an overall objective and does not refer to each administration (or its relative in-house instrumental company). The identified savings will be achieved mainly through the reclassification of spending as a result of the set of actions provided by law.

11.2 The savings goals deriving from the implementation of the Triennial Plan

Already in 2016, the administrations received indications coherent with the provisions of the new focalisation on expenditure under the law. In particular, the actions launched following the publication of the 2016 Stability Law concern:

- the involvement of the PAs in sharing the approach and the main contents of the Strategic Model for an initial recognition on mappable activities, particularly as regards national platform adhesion plans, an important source of savings because they standardise solutions and technologies and prevent each administration from developing its own solutions;
- the issuance of Circular AgID 2/2016 which has temporarily anticipated the provisions related to the implementation of the three-year Plan, especially as regards the costs for setting up new *Data centres* and for the adaptation of applications relating to intangible infrastructures;
- initiation of the processing and publishing of the technical rules as foreseen in the CAD.

From an analysis of ICT spending trends for 2016 over the three-year period 2013-2015, conducted by AgID on 21 central administrations, some elements emerge which show the process of focusing of spending on the objectives of the 2016 Stability Law is starting, and in particular:

- compared with a 7% increase in overall spending, a 2% reduction in the current spending share and a 16% increase in investment spending are recorded;
- there was an increase in the use of Consip’s purchasing instruments, whose percentage contribution in 2016 ranges from 54% to 65% of the total (230 million).

In this context, it is now necessary to strengthen the process in the direction indicated by the principles outlined above, focusing the action on the following guidelines:

1. with regard to current expenditure:

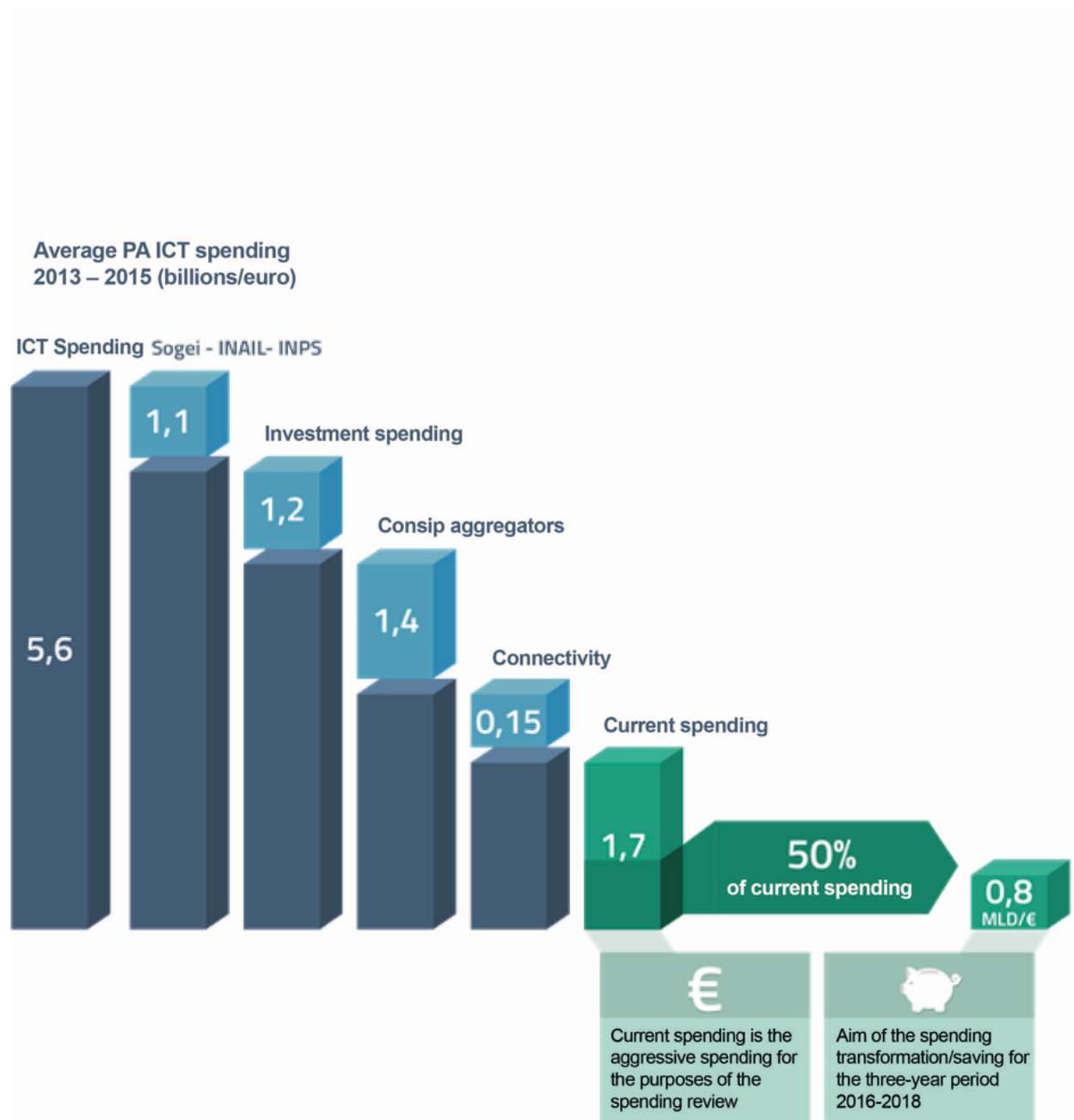


Fig. 1: Figure 9 - AgID Processing based on internal surveys and 3rd Assinform Observatory data on ICT in Public Administration

- blocking **new spending on data centres**, unless properly justified in terms of the *cloud* and/or the construction of national Hubs, as described in paragraph 3.1;
- full **adhesion to the enabling Platforms** described in section 4.2 and *Switch Off* of local solutions;
- ANPR: progressive deployment of the national solution as described in section 4.2;
- SPID: Disclosure of Local Authentication Systems and use of SPID according to the plan presented by individual administrations, which requires the adherence of all administrations within the times indicated in section 4.2;
- PagoPA: adhesion and full use of PagoPA, with the abandonment of local solutions, within the times indicated in section 4.2;
- NoiPA: decommissioning of personnel management systems and adherence to NoiPA services, without charges for state administrations and unit cost maintenance for the others.

B. with regard to the means of purchasing through Consip and other aggregators:

- **software licenses**, based on the data collected by AgID so far, evidence emerges of possible savings in this area, firstly through IT *asset management* interventions⁸⁹ for the optimisation of purchasing and management processes such as:
- software purchasing in Software as a Service mode;
- rationalisation and standardisation of applications;
- use of open source software;
- extensive use of existing Consip tools and of other aggregators, as set out in Annex 2 “Tools and Resources for the Implementation of the Plan”.

In confirming and verifying this approach, it was possible to estimate, on a precautionary basis, savings at the end of 2018 generated by the adherence to the licensing platforms described in paragraph 4.2, and licensing optimisation, amounting to approximately 480 million as evidenced in Table 2 - Saving goals deliverable at the end of 2018.

Lines of action	Cost base ⁹⁰ 2016 (Values in €/Mln)	Savings (Values in €/Mln)
National platforms	600	400
Licences	380	80
TOTAL	980	480

Table 2 - Saving goals deliverable at the end of 2018

It is therefore possible to assume that the combined effect of containment and transformation of current spending on ICT can generate the following situation by the end of 2018 (with the same scope of intervention considered for the initial definition of the savings target):

- a total spending contraction of around 480 million;
- an increase in the share of investment spending in line with the trend recorded in 2016 for approximately 200 mln (+15%);
- an increase in spending through Consip and other aggregators of approximately 1,000 mln, assuming that the conventions and contracts recently stipulated by Consip for the next five years provide spending limits of over 6,000 mln.

⁸⁹ Source Gartner *http://www.gartner.com/binaries/content/assets/events/keywords/symposium/esc28/esc28_costoptimization.pdf*

This document highlights 10 considerations/suggestions to use in order to optimise costs. In particular, the points represent rationalisation of purchasing operations to potentially achieve savings.

⁹⁰ It is noted that for the purpose of identifying the cost base on which the savings were calculated, a projection of the CPA sample data involved in the total amount of public administration expenditure compiled by the Assinform Observatory was performed.

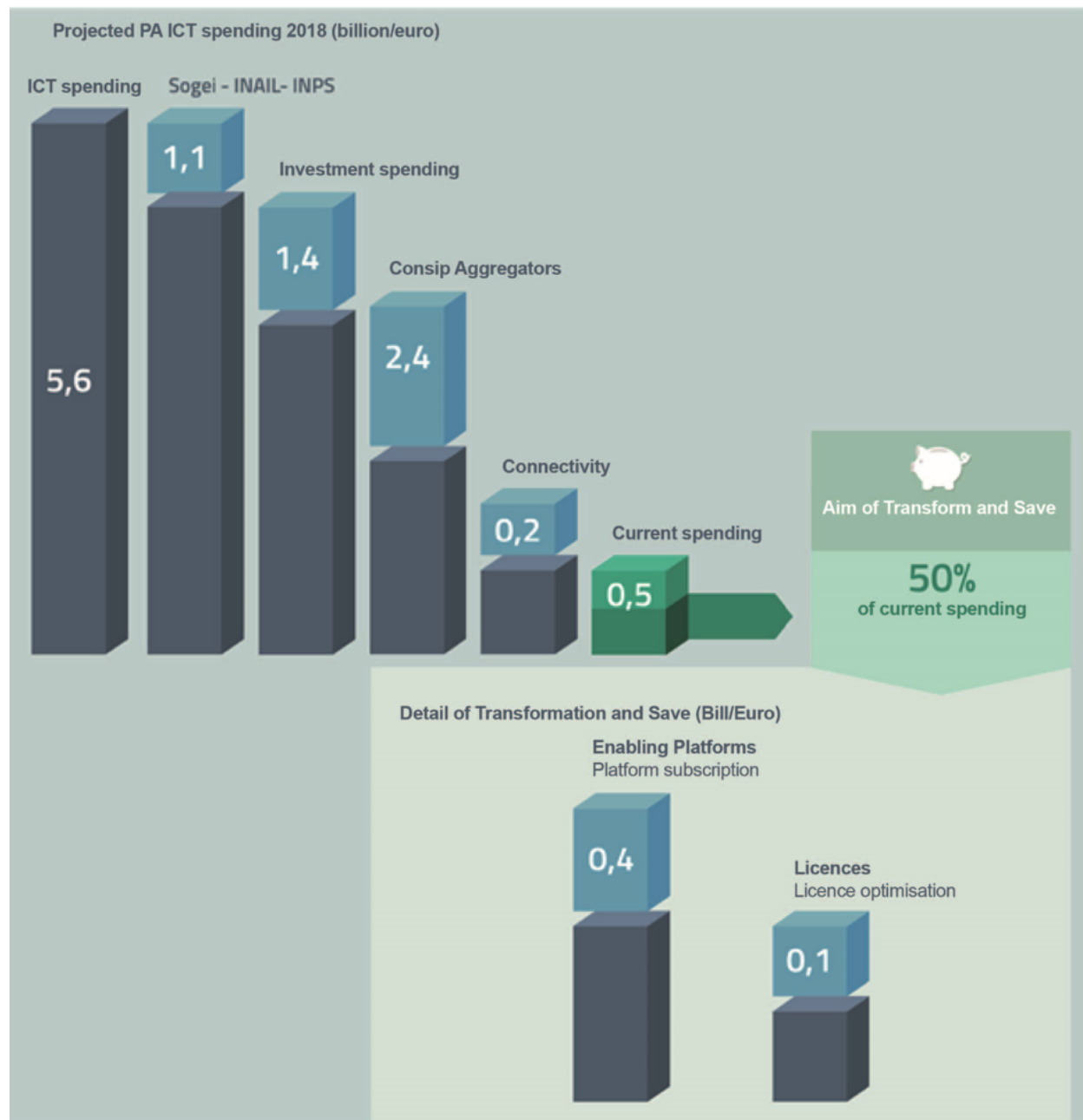


Fig. 2: Figure 10 - AgID projection on internal data and 3rd Assinform Observatory data on ICT in Public Administration

The above set of assumptions and findings will be verified in the next Recognition of Expenditure Data, which will track the progress of the Plan (cf. Chapter 10, “Managing Change”). In this way, in the event that non-converging trends are highlighted, any corrective measures can be identified to safeguard the transformation/savings objective planned.

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Indications for the Public administrations

The Plan provides for a number of PA actions, some of which have already been initiated. To speed up the implementation path of each administration, refer to Annex 2 for an overview of conventions and other active procurement tools. It is underlined that in addition to the traditional *procurement* tools, the PAs can use forms of collaboration to accelerate implementation times and reduce costs and risks of failure. Amongst the forms currently in use and which will have to be adopted by the administrations, which are not capable of achieving the objectives by themselves within the times provided, are:

- **collaboration agreements for the management of application services:** participation in collaboration agreements between administrations that have decided to share in the implementation of common platforms; in this case the already existing cooperation agreements between some regions reoccur;
- **“ancillary” solutions:** use of “ancillary” applicative solutions through agreements between the PAs that have already developed strategic and non-operational initiatives; such agreements, which may be different, depending on the project, must have characteristics such as to guarantee their sustainability;
- use of **“in reuse” solutions**, as an alternative to “ancillary” ones, in cases where the suitability has been evaluated;
- use of infrastructure services made available by other administrations.

Below is a summary of all actions that involve the Public Administrations described in detail in the previous chapters.

12.1 Indications related to *Data Centres* and to the *cloud*

Public Administrations cannot create new *Data Centres*⁹¹*,* and can only adapt the existing data centres exclusively to:

- avoid problems of interruption of public service;

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See Circular AgID 2/2016

http://www.agid.gov.it/sites/default/files/documentazione/circolare_piano_triennale_24.6.2016_def.pdf

- anticipate discharging processes for the acquisition of SPC-Cloud tender competition *services*;
- consolidate their services on *data centres* of other PAs in order to obtain cost savings.

Below are the actions planned for the three-year period 2017-2019:

2017	Public Administrations identified by AgID contribute to the creation of the census of ICT patrimony in operation. PAs with the right infrastructure can apply to cover the role of the National Strategic Hub. PAs, who have not already done so, carry out the projects for consolidating and virtualising their data centres or migrating to SPC <i>Cloud</i> . In the event of non-use of the SPC - <i>Cloud</i> Lot 1 tender prepared by Consip, they shall provide the reasons for AgID and ANAC.
2018	The administrations that did not provide the data for the census on ICT patrimony in operation in 2017 will have to do so. From February, PAs selected as National Pilot Strategic Hubs initiate adaptation of their data centres in the times specified in their ICT resource rationalisation Plan From February, the administrations belonging to Group B will have to consolidate existing application systems with existing Data Centres to migrate to one of the national strategic hubs or migrate to the <i>Cloud</i> of the PA through the SPC- <i>Cloud</i> tender. From April, the PA shall execute the indications defining its own rationalisation plans that, upon request, must be provided to AgID. Rationalisation actions are checked by AgID through the annual census of PA ICT assets. From April, administrations belonging to Group A will have to consolidate existing application systems with existing Data Centres and use the <i>Cloud</i> of the PA through the SPC- <i>Cloud</i> tender to ensure the continuity of critical services or <i>disaster recovery</i> . From July, the other PAs selected as National Strategic Hubs shall initiate adaptation of their data centres in the timeframes specified in their ICT resource rationalisation Plan.
From 2019	Public administrations will continue to migrate to the National Hubs or to the <i>Cloud</i> of the PA within the times specified in its ICT resource rationalisation Plan.

12.2 Connectivity Tips

Expenditure sustained by administrations for the charges for connectivity services does not fall within the objective of containing expenditure for the three-year period 2016-2018, pursuant to Article 1 paragraph 515 of the 2016 Stability Law.

Below are the actions planned for the three-year period 2017-2019.

From 2017	<p>The Public Administrations will adjust their connection capacity to ensure the full deployment of strategic services and platforms, by adopting alternately:</p> <ul style="list-style-type: none"> • connectivity solutions based on the accession to the SPC Framework Agreements, except where the bandwidth requirements and the transmission characteristics necessary are not potentially satisfying in these contractual areas; • the services made available in the territory of reference by the Region or other local public entity which has already established territorial connection structures in compliance with the requirements of AgID and interconnected with the SPC network (principle of subsidiarity)*.* <p>In any case, in the choice of connectivity services, PAs should prioritise supplies where the transport service is based on <i>dual-stack</i> (IPv4 and IPv6).</p>
From 2018	<p>The administrations define and implement the Adaptation Plan to the guidelines issued by AgID for the <i>Wi-Fi</i> systems that facilitate access to the Internet network from public offices and public places.</p>

12.3 Information on Public Administration Data and DAF

The PAs are required to adapt databases and registers that already operate according to the rules set out in section 4.1.

The PAs will need to use databases of national interest in conjunction with AgID in accordance with the programming set out in the specific implementation plans by the PA holding the individual national database. Failure to comply with these plans must be notified to AgID as it differs from the provisions of this Plan and represents an expenditure inconsistent with the principles of saving set out in Article 1 paragraph 515 of the 2016 Stability Law.

Below are the actions planned for the three-year period 2017-2019.

2017	<p>The public administrations shall commence populating and keep their data updated on IPA as documented on the site www.indicepa.gov.it.</p> <p>The public administrations will use IPA and INI-PEC⁹² in managing their own processes.</p> <p>From April, the administrations must feed the National Territorial Data Directory (RNDDT) according to the rules defined by AgID.</p> <p>A first set of administrations, identified by AgID from administrations already using PagoPA, SPID and SIOPE systems, commences the activity of documenting its services in the <i>**Services Catalogue**</i>⁹³.</p> <p>The public administrations will ensure, in accordance with the guidelines for the enhancement of public information assets, the correct population of the <i>*National Data Catalogue*</i>. The PAs will have to provide infrastructures for the management and publication of data provided by the aforementioned guidelines or, failing this, adopt the default platform provided by AgID and the Digital Team.</p> <p>From July, PAs holding national databases will update the AgID data sheet on the National Data Catalogue, which explains how to access and the main technical-regulatory references of the specific database.</p> <p>Public administrations are to participate in the survey on the spread of open data. Administrations that have not yet adopted the <i>*adherence*</i> protocol⁹⁴ will need to collaborate with AgID to develop an adherence plan.</p> <p>By December, administrations will display the metadata for the databases and open data they hold, complying with DCAT-AP_IT specifications⁹⁵ and following the semantics expressed in the relative ontology⁹⁶.</p>
2018	<p>From June, Public Administrations are to complete the population and keep their data updated on <i>*IPA*</i>⁹⁷, as documented on the relative site.</p> <p>The public administrations will use IPA and INI-PEC⁹⁸ in managing their own processes.</p> <p>From January, PAs holding national databases are to adhere with the Inter-operability Model, assuring data flow to DAF and standardising their data based on the resources contained in the controlled vocabulary.</p> <p>As of January, all Administrations shall be responsible for uploading information about their services in the <i>*service catalogue*</i>⁹⁹.</p> <p>From December, all municipal registry data (APRs) will migrate to ANPR, in collaboration between Municipalities, the Ministry of the Interior and SOGEI.</p> <p>From January, following the release of the first version of the register of controlled vocabularies, public administrations are to initiate a process of normalisation of their data based on the resources contained therein</p>

12.4 Indications on enabling Platforms and on strategic projects

Public Administrations are to draft and transmit to AgID the integration plans with intangible infrastructures according to the times and procedures established in the programmes of the individual platforms and strategic projects: SPID, PagoPA, ANPR, electronic invoicing, ComproPA, SIOPE+, NoiPA, etc.

Administrations cannot support costs for the acquisition of autonomous solutions, nor for evolutionary application adjustments, which provide a functionality similar to those offered by enabling platforms and the strategic projects referred to in paragraph 4.2.

It is understood that the costs of integration of their information systems with enabling platforms and strategic projects are eligible, and that these costs are included in the costs for innovation, and are therefore excluded from the savings targets provided for in Article 1 paragraph 515 of the 2016 Stability Law. Public administrations that, on dates set out by the single platform or strategic project, have failed to provide a firm plan for integration, will have to adopt

⁹² [*www.inipepec.gov.it*](http://www.inipepec.gov.it)

⁹³ [*https://servizi.gov.it*](https://servizi.gov.it)

⁹⁴ [*http://network.ot11ot2.it/sites/default/files/opendata1_elementi_tecnici_e_strategie_v4_0.pdf*](http://network.ot11ot2.it/sites/default/files/opendata1_elementi_tecnici_e_strategie_v4_0.pdf)

⁹⁵ national metadata profile fully compliant with the European DCAT-AP

⁹⁶ please refer to the ontologies published on [*https://dati.gov.it*](https://dati.gov.it)

⁹⁷ [*www.indicepa.gov.it*](http://www.indicepa.gov.it)

⁹⁸ [*www.inipepec.gov.it*](http://www.inipepec.gov.it)

⁹⁹ [*https://servizi.gov.it*](https://servizi.gov.it)

solutions made available by AgID or other administrations (such as platforms implemented by regions) according to subsidiarity logic.

Below are the actions planned for the three-year period 2017-2019.

2017	<p>SPID: The administrations will continue the process of migrating to the Public System of Digital Identity (SPID) by ensuring coverage of all existing digital services, in accordance with AgID's rules. The administrations will only use the SPID system for newly-activated services.</p> <p>PagoPA: by December, administrations will need to complete their membership of the PagoPA system for all services that arrange for the payments due by citizens and businesses, according to AgID's rules. Administrations that have not yet completed their membership to the PagoPA system by June will have to adopt, according to a logic of subsidiarity, already available solutions implemented by other administrations (e.g., regional or other administration platforms), which offer the role of intermediary as provided by the PagoPA system.</p> <p>ComproPA: by September, MEF, MIT, ANAC, AgID, Consip, the regions and ANCI will complete the rules and start implementing the infrastructures necessary for the operation of the ComproPA system. The administrations involved, being holders of databases of a national interest (such as INPS, INAIL, the Ministry of Justice), will embark on the integration of their systems with the BDOE Economic Operator database feed-in procedures as defined by the decree currently being issued by the MIT.</p> <p>Electronic invoicing: the Administrations that have not yet completed the integration of Electronic Invoicing with the accounting processes are to carry out the above-mentioned operations and at the same time complete the integration with the accounting systems.</p> <p>Electronic Identity Card (CIE): from April to October 2017, according to planning approved by the Ministry of the Interior, about 450 Municipalities (that, together with the 199 municipalities already in possession of the CIE distribution service, cover 50% of the population) will activate the system and the distribution of CIEs to its citizens with the support of the IPZS system manager. From October 2017, the distribution of the CIE distribution system is planned for the remaining Municipalities.</p> <p>Alert and Notification System: the administrations are to initiate experimental use of the national infrastructure for issuing alerts and courtesy notifications to be sent to citizens on the various digital channels.</p> <p>SIOPE+: from June, the administrations will be able to participate with their treasury banks in the experimentation phase for the SIOPE+ system, which will enable the system to be set up, scheduled for January 2018 for all PAs.</p> <p>NoiPA: the administrations can join the salary services provided by the NoiPA system through the stipulation of special agreements with the MEF.</p> <p>Conservation hubs: the administrations will participate in the implementation of the National Administrative Procedures Management System, which establishes the rules for inter-operability of document flows (document, file, protocol) between public administrations. The administrations will participate with the Central State Archives to set up the system for storing personnel</p>
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12.5 Guidelines on the Inter-operability Model

The administrations must move to the new *Inter-operability model* according to the indications that AgID will provide on managing the transition from current to future applicative cooperation that includes an API-based approach.

Below are the actions planned for the three-year period 2017-2019.

2017	From May, the Public Administrations shall adopt the <i>Guidelines for transition to the new Inter-operability Model</i> for the existing platforms.
2018	From January, for all new applications, the Public Administrations shall adopt the new Inter-operability Model and arrange for the population of the API Catalogue provided by AgID.

12.6 Instructions on Ecosystems

For each ecosystem, the AgID recommends, in line with the priorities set out in the “2014-2020 Digital Growth Strategy”, the establishment of an *Ecosystem Working Group* (hereinafter GdL).

2017	From May, the GdLs, for the individual ecosystems, will follow the operational activities for the realisation of Ecosystems through the identification of specific ecosystem objectives, project planning and the establishment of technical discussion sites.
2018	By December, the regional administrations will have to implement their own regional electronic healthcare filing systems, inter-operable with the national infrastructure.

12.7 Instructions on Security

Below are the actions planned for the three-year period 2017-2019.

From 2017	<p>The PAs will comply with the Technical Rules for ICT Security of Public Administrations prepared by AgID and issued by the Public Departments. While awaiting issuance, public administrations will adapt to “Minimum ICT Security Measures for Public Administrations”¹⁰⁰ already published by AgID.</p> <p>From September, the public administrations providing critical services will adapt or implement them in accordance with the Critical Service Architectural Management Guidelines published by AgID.</p> <p>The Public Administrations are responsible for verifying the updating of the state of their software against known vulnerabilities, according to the principles of <i>continuous monitoring</i> recommended by <i>best security practices</i>, and handle the emerging vulnerabilities.</p> <p>The Public Administrations will report cyber incidents and potential risk situations to the CERT-PA and handle security incidents by activating updating procedures in the prescribed ways.</p> <p>From June, the Public Administrations will begin the process of adapting to the provisions issued by AgID regarding the reorganisation of the “gov.it” domain.</p>
2018	By June, the public administrations are to conclude the process of adapting to AgID’s provisions regarding the reorganisation of the “gov.it” domain.

¹⁰⁰ *<http://www.fatturapa.gov.it/export/fatturazione/it/sdi.htm>*

¹⁰¹ *http://www.agid.gov.it/sites/default/files/documentazione/misure_minime_di_sicurezza_v.1.0.pdf*

12.8 Instructions for Change Management activities

from 2017	<p>The administrations are responsible for appointing the Manager for the transition to the digital operating mode and recording the data on the PA Index in the manner indicated by AgID.</p> <p>The administrations will participate and promote awareness, communication, training and assistance initiatives on the services provided with the enabling platforms and strategic projects.</p> <p>The administrations are required to train their own staff in the optimal use of the services and to identify specialist pathways to strengthen internal digital skills.</p> <p>The institutional training players shall start designing initiatives to create digital skills.</p> <p>The administrations will plan, with the support of AgID, information points on the services implemented within the strategic initiatives and ecosystems on which they are involved.</p>
From 2018	<p>The administrations identified by AgID must draw up their own Plan; the regions and the metropolitan cities will have to act as aggregators for the other administrations in their territory according to the methods indicated by AgID and with the following timelines:</p> <ul style="list-style-type: none"> • by April, the administrations (by category or in single form as defined above) will provide AgID with data on the consolidated expense of the previous year (for example, in 2018, administrations shall provide consolidated expenditure for 2017) and the expenditure forecast for the current three-year period (for example, in 2018, the expenditure forecast for the three-year period 2018-2020); • by December, the administrations are to draw up their own plans, either by category or in a single form as defined above, for the next three years (for example, in 2018, administrations shall draw up their three-year plan 2019-2021).

12.9 Instructions on the retention of IT documents

The administrations maintain their own computerised documents (digital natives or digitised analogue documents) and computer files, by:

- purchasing services using Consip tenders;
- cooperation agreements between administrations for the sharing of common infrastructures dedicated to conservation;
- adhering to the services offered by conservation hubs.

Notes

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Principles for the development of digital projects

This chapter contains the principles that are mentioned here and recommended because due to being considered fundamental to the implementation of the projects contained in the Plan. The arrangements are both of a practical nature - for management of the project - and of a contractual and administrative nature for the drafting of the contract, the definition of the objectives and the procurement of resources.

Finally, the preparation of a digital project for the creation of a new system or the evolution of an existing system requires:

- a clear outline of that desired (design);
- a plan of how to build it (implementation);
- a strategy to lead it to being adopted by the end-user (launch);
- **a plan to keep the system up-to-date**, secure and effective over time, as well as to ensure its continued operation even in the event of malfunctions or disasters (**evolution and maintenance**).

The following paragraphs describe these points in greater detail.

13.1 Design of the project

The design phase is essential for the successful outcome of the project. In this regard, please refer to the chapter *Service Design* of the Design Guidelines for the web services of the PA¹⁰². In particular, during the design of the services it is recommended to:

1. **Always involve the citizens, starting from understanding their needs (Strategy no. 1 in the Guidelines).** This means imagining how the citizen (or the end user) will use the system and ensure that all features are designed around his/her needs, enabling him/her to easily and quickly obtain what is needed - without unnecessary steps and with instructions that can be understood by anyone.
2. **Studying to understand, documenting so as not to repeat (Strategy no. 3 in the Guidelines).** It is necessary to know the context in which a project will work, define its objectives, comply with standards, and research on possible alternatives at national and international level, as well as on the availability of successful tools and

¹⁰² <http://design.italia.it/linee-guida/service-design/>

processes that can be reused. Each phase of project development must be documented and made available openly, on the one hand to ensure its future integrity and sustainability, and on the other to allow possible collaborations that could add value to it.

3. **Apply the *Only Once* principle (Strategy No. 6 of the Guidelines).** Avoid citizens having to provide the same information more than once. Each process must be designed to be as simple and user-friendly as possible, replacing old procedures when needed.
4. **Outline the objectives and metrics.** It is therefore necessary to identify the objectives to be achieved in terms of functionality and processes, along with the metrics that can evaluate the success and appreciation of the project. For example, in an electronic billing system, a goal might be to “have a process that never requires printing invoices”. Whenever possible, it is recommended that objective metrics are used rather than data obtained from questionnaires or surveys. For example, considering the “number of invoices printed traditionally” as an indicator of the inadequacy of the system or the “number of invoices sent electronically” as a success factor.
5. **Start from the data (Strategy no. 4 of the Guidelines).** To make decisions based on real behaviours and data, it is necessary to implement services and processes that are entirely digital, not merely the simple transposition on-line of a process traditionally delivered.
6. **Nominate a *Product Owner*,** *being* a person who - preferably within the PA and in any case not linked to the company that will produce the product - knows the expectations and needs of end-users of the planned service plus has a clear competence on the processes that are to be digitised and the desired result. For example, in an electronic billing project, the *Product Owner* will be a person who understands billing processes well and will be able to guide project executives by providing advice and guidance on how to send and process such invoices, the data they contain, and so on.

13.2 Implementation of the project

In addition to following the Design Guidelines for PA web services, in producing a plan on how to implement the project, it is recommended that the PA:

1. **Nominates a *Technical Project Manager*,** **or* a person who, within the body or in any case not linked to the company that will produce the product, has strong expertise in the technologies that will be used and is able to verify the quality of the work, helping to coordinate the activities. This individual can be identified as the director of the execution of the work stipulated in the Procurement Code¹⁰³ or one of his or her delegates.
2. **Define a minimum viable product (MVP) and subsequent incremental steps** that will deliver the required features one by one up to the completion of the work, possibly using agile methodologies such as Figure 11 fees due to suppliers that will only be paid out on the completion and verification of each of these steps. It is also recommended that the product be made available to experimental users without waiting for all steps to be completed in order to identify any problems, critical factors or risks as soon as possible.

Finally, it is suggested that, at a contractual level, to achieve the completion of the product, these steps may be subject to changes throughout the course of the work, based on the results obtained and the measures of success identified.

From a technical point of view, it is also necessary:

1. **To make the data open, share processes and tools (Strategy no. 8 of the Guidelines).** To share all the data, every process, every code, every idea, every failure and all the information, it is necessary and vital for all the services to promote transparency and quality in development. The code and documentation of each service provided by the Public Administration should be issued in open format with an appropriate licence to save time and costs; where this is not possible, the impediment should be adequately justified.
2. **Favour free or *Open source*** components, namely software components whose source codes are available and, if possible, freely editable and adaptable to PA requirements, as specified in Article 68 of the CAD. The

¹⁰³ Cf. Article 101 of the Code of Contracts Legislative Decree no. 50 of 18th April 2016.

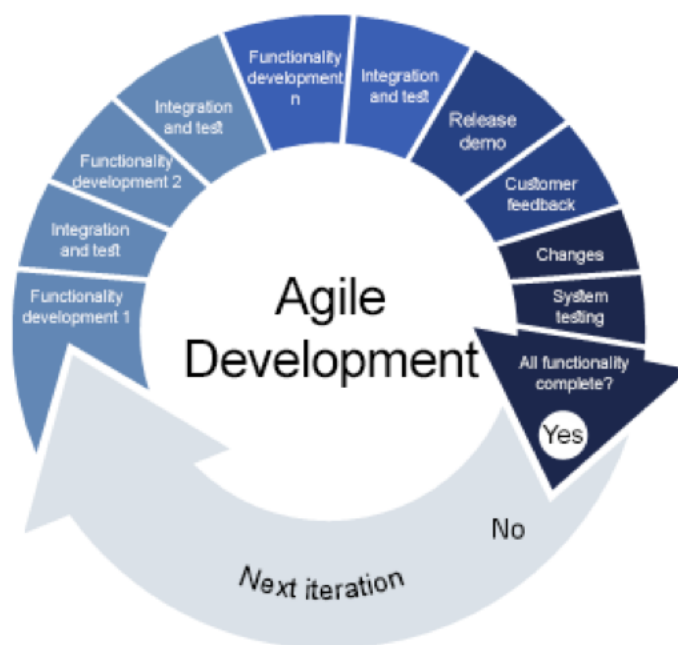


Figure 1 - Agile Development Methodology

Fig. 1: Figure 11 - Agile Development Methodology

use of commercial products or sources whose sources are closed must be carefully justified and only allowed if the cost and functionality needed for the project make them more appropriate than the *Open Source* alternatives.

3. **Choose hardware solutions based on cost-effectiveness and efficiency estimates**, in particular by assessing the cost of migration to alternative solutions (exit from a *lock-in*) and ensuring technological neutrality.
4. **Make use of the *Cloud* of the PA**. Except for demonstrated technical reasons, the software and the project must be designed for use on the *Cloud* of the PA as defined in paragraph 3.1 “Data Centre and *Cloud*”.

Finally, the software that is being developed must:

1. **Be structured in micro-services**, or components that perform a few well-defined features (e.g., tax code verification, user existence in the database), controlled through APIs and easily reusable, so that they can be made available to other PAs via the *Developer Community* (cf. Chapter 7 “Tools for Generating and Delivering Digital Services”).
2. **Expose the APIs**, namely create interfaces that allow systems to communicate and interact with each other easily and automatically. The interface exposed to the user and all the features of the product must be constructed using these APIs (cf. Chapter 5 “Inter-operability Model”).
3. **Use databases** designed according to the rules outlined in section 4.1 “PA Data” and, in particular, insert into the *Data & Analytics Framework* (DAF)¹⁰⁴ the information on the nature of the transactions and their mutations over time.
4. **Maintain the inter-operability** of data, services, and processes according to AgID’s inter-operability and co-operation rules, subject to the criteria required to ensure the privacy of users. The data must be made available as *Open Data* and is to be accompanied by an exhaustive description of the fields and their meaning (metadata).
5. **Utilise solid testing and qualification strategies**, being with the use of unit tests, functional tests, and *fuzz tests* to verify the code and conduct *stress tests* to check the load that the product will be able to support. It is also

¹⁰⁴ Cf. Chapter 9 “Data & Analytics Framework”.

advisable to use static code analysis strategies, and to audit results to address security issues.

6. **Use *Best* Safety Practices** such as encrypting passwords and networking.
7. **Include all necessary documentation**, meaning the inclusion of documentation on the structure of the data used (fields, tables, etc.), how the software works and is used, as well as documentation about how the product works, how to maintain it, update it and monitor it.
8. **Be part of the PA**, that is the contract must specify that all product rights, from code to documentation, domain names to licences, third-party libraries or patents registered on the product belong to the PA. In this way, the PA can continue the evolution of the product, even by using suppliers other than those who originally developed it.
9. **Be made available to other PAs** that are registered in the *Market Place* of Consip and, whenever possible, be freely available with sources and documentation, with open licences that allow the use, modification or evolution by third parties.

When it is important to integrate the project with third-party software or pre-existing systems, it is advisable to:

1. **Provide testing tools and infrastructures**, requiring the provision of facilities where own software, test accounts, or simulators can be tried that can be freely used by third parties to test component integration.
2. **Use and document processes** to coordinate software updates that include mechanisms to announce the upcoming release of new versions (newsletters, forums...), release in testing environments and release into production only after functional verification with system users and third-party software in testing environments.
1. **Make libraries and development kits available**, being code samples and software components ready for use by third parties in their products to integrate with your systems. This facilitates reuse, improves code quality, decreases maintenance and upgrading costs, significantly reduces the risk of incompatibility and implementation that does not meet specifications, and decreases development costs for each third party.

13.3 Launch of the project

In establishing a route for the adoption of the project, the PA must:

1. **Identify the adoption strategy of least resistance**, namely determining the way that is easiest, fastest, and has minimum impact in starting to have the product be adopted, even in limited or incomplete form. Rather than introducing great changes in one step, it is preferable to take small incremental steps - individually simpler and less risky - towards achieving the ultimate goal.
2. **Identify an incremental use strategy**, namely being to find the mechanisms that enable the adoption of the product, first by a small number of users, then by a wider number and ultimately by all users. It is important to highlight how launching a service for the totality of users does not stop the development activities or the completion of the product. Conversely, when possible, it is advisable to identify strategies that will allow you to use the product even before it is completed in order to identify problems, rearrange priorities and begin to provide the benefits of innovation, even with a partial product.
3. **Outline a plan to launch the product completely**, or to disable the previous product. For large-scale projects, it is important to point out that a launch strategy may require not only product realisation, but promotion campaigns with users, mailing mechanisms (mailing lists, Twitter, showcase websites) and everything that is considered important to lead to the adoption of the product itself.
4. **Communicate effectively, often, anywhere (Strategy no. 5 of the Guidelines)**. The Public Administrations must clearly communicate the usefulness and prerequisites of the service, as well as all the information regarding personal data protection, privacy protection and computer security, reaching citizens through the most used and widespread communication channels, giving them access to their data plus the possibility to check and correct it, maintaining a continuous dialogue, even beyond and after launching the service.

13.4 Evolution and maintenance of the project

When defining the strategies for evolution and maintenance of the project, the PA is advised to:

1. **Ensure regular maintenance and upgrading** of all software and systems in order to prevent security issues, and ensure software compatibility with new technologies and compliance with regulatory evolution.
2. **Ensure a plan for the continuous evolution of the product**, being to establish or have a strategy to improve the product after launch, add functionality, correct issues and, more generally, allow it to be upgraded.
3. **Ensure a *Disaster Recovery* and *Business Continuity* strategy**, that is, ensure that in the case of malfunction or disaster, critical data is not lost and it is possible to continue to deliver services even if in reduced mode.
4. **Ensure continuous verification of operating parameters**, such as software monitoring (errors, requests, latency), periodic audits to ensure its security, and so on.
5. **Prepare all the necessary procedures to avoid *lock-in***, while keeping open the possibility of switching from one supplier to another. The use of several suppliers for the creation, maintenance and launch of the product generally guarantees a better migration capacity to another supplier.

13.5 Existing projects

For pre-existing projects, or for digital solutions that are being implemented or already in operation, it will be necessary to migrate gradually to an approach that complies with the guidelines set out in the Plan, within the limits imposed by the adjustment costs and the reduction in operating costs.

Notes

CHAPTER 14

PART ONE - FRAMEWORK OF REFERENCE

CHAPTER 15

PART TWO - COMPONENTS OF THE MODEL ICT EVOLUTION STRATEGY

CHAPTER 16

PART THREE - FINAL CONSIDERATIONS AND GUIDANCE NOTES

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17.1 Appendix A - Acronyms

ABR	Administrative Burden Reduction
ACI	Automobile Club of Italy
AGCOM	Authority for Communications Guarantees
AGEA	Agricultural Payments Agency
AGENAS	National Agency for Regional Health Services
AgID	The Agency for Digital Italy
AIFA	Italian Medicines Agency
AIG	General inter-operability architecture
ANA	National Assistance Register
ANCI	National Association of Italian Municipalities

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Table 1 – continued from previous page

ANNCSU	National Archive of Street Numbers of Urban Roads
ANPA	National Environmental Protection Agency
ANPR	National Resident Population Register
ANSF	National Railway Safety Agency
API	Application Programming Interface
APP	Application Abbreviation, both mobile and otherwise
BDT-PA	Big Data Team of the PA
BUL	Ultra-wideband
C-API	APIs approved by Italia Login
C2G/G2C	Citizen-to-Government/Government-to-Citizen
CAD	Digital Administration Code
CAF	Taxation help centre
EC	European Commission
CED	Data processing center
CEF	Connecting Europe Facility
CERT	Computer Emergency Response Team
CIE	Electronic identity card
CIP	Competitiveness and Innovation Framework Programme
CNIPA	National Centre for IT in Public Administration
COBIT	Control Objectives for Information and Related Technology
Consip	Public Information Services Concessionaire
COVIP	Pension Fund Supervisory Board
CSKB	Cyber Security Knowledge Base
CSM	Superior Council of the Judiciary
CSP	<i>Cloud</i> Service Provider
DAE	Digital Agenda Europe, European Digital Agenda
DAF	Data & Analytics Framework
DESI	Digital Economy and Society Index
EGDI	E-Government Development Index
eIDAS	Electronic Identification Authentication & Signature
EIF	European Interoperability Framework
EIN	National Hybrid Meta-Ecosystem
ENIT	Italian National Tourism Agency
ETP	Tourism Promotion Bodies
EU	European Union
FESR	European Regional Development Fund
FNCS	National Cyber Security Framework
FSE	The Electronic Health Record
G2G	Government-to-Government
ICT	Information and Communications Technology
INAIL	Italian National Workplace Safety Body
INI-PEC	Certified national e-mail address list of professionals and businesses
INPS	National Social Welfare Institution
IoT	Internet of Things
IPA	Public Administration Index
IPZS	Polygraphic institute and state mint
ISEE	Equivalent economic situation indicator
ISS	National Institute of Health
ISTAT	National Statistics Institute
IT	Information Technology

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Table 1 – continued from previous page

JSON	JavaScript Object Notation
KPI	Key Performance Indicator
LOD	Linked Open Data
M2M	Machine-to-Machine
MAE	Minister for External Affairs and International Cooperation
MEF	Ministry of Economy and Finance
MEPA	PA Electronics Market
MEV	Software evolutionary maintenance
MiPAAF	Agriculture, food and forests ministry
MISE	Ministry of Economic Development
MIT	Ministry of Infrastructure and Transport
MIUR	Ministry of Education, University and Research
MMS	Minimum Security Measures
MSE	Strategic evolutionary model
MVP	Minimum Viable Product
NVD	National Vulnerability Database
OD	Open data
OT	Thematic objective
PA	Public administration
PaaS	Platform-as-a-Service
CPA	Central Public Administration
LPA	Local Public Administration
PCP	Pre-Commercial Procurement
PEC	Certified e-mail
PEPPOL	Pan-European Public Procurement OnLine
PM	Project management
PON	National Operational Programme
POR	Regional Operational Programme
PPI	Public Procurement of Innovative Solution
RDF	Resource Description Framework
RDO	Quote request
REST	Representational State Transfer
RNDT	National Repertoire of Territorial Data
RTT	Round Trip Time
SCIPAFI	Public fraud prevention system in the consumer credit sector - Identity Theft
SDI	Interchange system
SDK	Software Development Kit
SGSI	Information Security Management System
SICOGE	System for integrated management of economic and financial accounting
SIOPE	Information system on the operations of public bodies
SLA	Service Level Agreement
SOA	Service-Oriented Architecture
SOGEI	General IT Company
SPC	Public connectivity system
SPID	Public System for Digital Identity
TAR	Regional Administrative Courts
TLC	Telecommunications
UI	User Interface
UX	User Experience
VoIP	Voice Over Internet Protocol

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WISP	Wireless Internet Service Provider
XML	eXtensible Markup Language

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17.2 Appendix B - Glossary

EXPRESSION	DESCRIPTION
Administration or Public Administration	Entity referred to in Article 2, paragraph 2 of the CAD.
Administration owner	Administration owner of a project or activity.
Register of agricultural companies	A database of national interest composed of all public and private entities, identified by the Tax Code (CUAA, Unique Farm Code), engaged in agricultural, agri-food, forestry and fishing activities, which have any administrative and/or financial relationships with the central or regional public administration.
National Assistance Register (ANA)	A database of national interest implemented by the Ministry of the Economy and Finance, in agreement with the Ministry of Health in relation to the specific needs of monitoring the essential levels of assistance, dependent on the records and the lists of beneficiaries held by individual local health units. The electronic health checklist will ensure the alignment of the identification data of the patients with the data contained in the National Registry of the patients.
National Resident Population Register (ANPR)	A database of national interest and enabling platform of the Ministry of the Interior. The ANPR will take over the registers of the Italian Municipalities, forming a unique reference for Public Administration, Associated Societies and Public Service Managers. It includes all the personal data of the resident population.

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Table 2 – continued from previous page

App	A software application dedicated to mobile devices, such as smartphones or tablets. It differs from traditional applications, both in terms of its support and its conception, characterised by simplification and elimination of excess, in order to achieve lightness, essence and speed, in line with limited hardware resources and with the different usability of mobile devices compared to <i>desktop</i> computers.
Application Programming Interface (API)	An interface for application programming, being a series of conventions adopted by software developers to define how a specific function of an application should be referenced. Compared with what is stated in this Plan, the new Interoperability Model (see chap. 5) will define the rules and conventions that public administrations, and other parties that adhere to the PA's IT System, must adopt to develop services that are enabled for application integration.
API economy	An emerging economic outsourcing originated by organisations and individuals providing useful APIs for direct access to their systems and/or processes. Opening APIs allows for quicker innovations and delivers homogeneous data and interoperable interfaces to both internal and external developers, vendors and customers, to improve data access and information exchange. Such organisations can also develop apps to access the API themselves, to create new features, adding value to both themselves and the outside environment. This results in an economy capable of enabling new types of applications with the potential to transform administrative and commercial processes. Specifically for the PA, the opening of information systems to the APIs profoundly changes the way the different administrations interface and cooperate with each other and with third parties.
API first	A development and implementation strategy for services and applications that requires the development of an API before implementing an application or web page or application for mobile. In other words, the definition of service delivery channels follows the development of the API logically and chronologically.
Automated files for immigration and asylum	Established with Presidential Decree no. 242 of 27-07-2004 of the Ministry of the Interior, automated immigration and asylum archives are also interconnected with the information systems of regions, autonomous provinces and local authorities and connect in the remote network various archives of interest to different CPAs, for example: the computerised archive of the world-wide visa network (Ministry of Foreign Affairs); the Tax Registry (Ministry of Economy and Finance and Tax Agencies); the register of non-EU workers (INPS); the computerised archive of residence permits (Ministry of the Interior - Department of Public Security).

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National Archive of Street Numbers of Urban Roads (ANNCSU)	A database that meets the need to provide information on streets and street numbers, computerised and encoded, updated and certified by municipalities, throughout the national territory, in order to provide all Public Administration Bodies with a database of reference data. The archive will also be used by Istat as the only toponymic archive of reference for permanent census and the production of territorial statistics.
Backend	In IT, this indicates interfaces that have a programme as recipient. A Backend application is a programme with which the user interacts indirectly, usually through a front-end application.
Back office	This is the opposite to <i>Front Office</i> and is that part of an organisation that includes all of its own activities that contribute to its operational management: from technical aspects related to production and the exercise of typical functions, to organisation management activities and administrative procedures. In practice, the <i>Back Office</i> is everything the user does not see but which allows the realisation of the services destined for them.
Backlog	In IT, a series of operations waiting to be carried out by a computer.
National Database of Public Contracts	Established by the CAD (Article 62-bis) by the Authority for the Supervision of Public Contracts for Works, Services and Supplies to reduce the administrative burden from IT obligations and to ensure effectiveness, transparency and control of administrative actions in real time for the allocation of public expenditure on works, services and supplies, also in order in respect of the legality and correctness of the PA and to prevent corruption.
Database of cadastral data	Owned by the Inland Revenue Agency, it includes data for certain identification on the territory of the property asset in the context of the transfer of rights and the allocation of the revenue ordinarily obtainable from the property.
Base registry	Term used within the <i>European Interoperability Framework</i> to indicate reliable, authentic and official sources of particularly relevant data produced by Public Administrations (e.g., people, roads, buildings, organisations, etc.). This data is the foundation for the construction of public services and the public administrations appointed that have the task of managing it according to clear quality, safety and privacy requirements. Within the <i>Base register</i> there are different National databases, transverse databases and resources (dictionaries, glossaries, ontologies, etc.).

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Databases of national interest	Article 60 of the CAD defines this as unified information collected and managed digitally by public administrations, homogeneous by type and content and the knowledge which is relevant to the performance of the institutional functions of other public administrations. By way of example, the databases identified are: the National Directory of Territorial Data, the National Register of Resident Population, the National Public Contracts Database, the Criminal Records and the Registry of Companies.
Best practice	A set of activities (procedures, behaviours, habits, etc.) that, based on experiences that have proven to be better over time, both for their efficiency (requiring less effort) and for their effectiveness (providing better results) can be taken as a reference and formalised in rules or plans to be systematically reproduced to help achieve the best results in a particular field.
Big data	Big data is referred to in the case of a set of data to be stored and/or processed that is so large, and/or with such a wide variety of formats, and/or with such high growth rates that it requires the use of unconventional software (big data technologies) to extrapolate, manage and process information within a reasonable time. Big data technologies are highly scalable: their processing/storage capacity grows in line with the amount of dedicated resources (typically expressed as number of hosts).
Big spenders	Considered to be big spenders are those administrations that have a high spend on the total of detected CPAs as well as a high percentage of the Opex component out of the total Capex/Opex and the IT component out of total ICT.
Business continuity	This is the set of activities aimed at minimising destructive or otherwise damaging effects as a result of an event that has struck an organisation or part thereof.
Digital Administration Code (CAD)	Established with Legislative Decree of 7th March 2005, no. 82 and amended by Legislative Decree 179 of 2016, this is an organic body of provisions governing the use of information technology by the public administration.
Capex	<i>Capital Expenditures</i> (expenses for investment).

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Criminal records registry	Database of national interest, containing the list of civil and criminal records of each citizen. All Italian judicial offices are connected to the Criminal Records Information System (SIC), which is the property of the Ministry of Justice, a centralised database containing all the data of the criminal records and the records of cases pending and the data that refers to the register of administrative penalties for offences and the register of cases pending for administrative offences resulting from crime. It is supplied directly from the inscription and local offices and through interconnection with the so-called source systems of the criminal system (SICP, SIES, SIPPI). It is also interconnected with the databases of other European Criminal Records.
Reuse Catalogue	For the re-use of computer programmes, it is possible for a Public Administration to reuse free programmes or parts thereof developed on behalf and at the expense of another administration, adapting them to its needs. The Reuse Catalogue is instituted by AgID, with the aim of fostering cooperation between administrations, saving on costs of software purchasing, and interoperability between PA information systems.
Computer Emergency Response Team (Cert)	This is an organisation charged with preventing and coordinating the response to cybernetic events. Several CERTs also provide training and information to users.
The Unified Conference	Joint sitting of the State-Regions Conference and the State-City Conference and Local Autonomies established by the Legislative Decree of 28th August 1997, no. 281.
Cloud or cloud computing	A model to enable, through the network, the widespread, easy, and assisted access to a shared and configurable set of processing resources (such as networks, servers, memory, applications and services) that can be acquired and released quickly and with minimal management effort or interaction with the service provider.
Private Cloud	Typology of <i>cloud</i> installed by the user in its data centre for its exclusive use. The main advantage of a private <i>cloud</i> is that the services are provided by computers located in the user's domain and, therefore, it has full control over the machines on which the data is stored and the processes performed.
Public <i>cloud</i>	Public <i>cloud</i> services are offered by suppliers who make available to their users/customers the calculation and/or storage potential of their <i>data centres</i> .
Hybrid cloud	The hybrid <i>cloud</i> is a combination of the public and private model, being a model in which the user has both the resources of its own private <i>cloud</i> and a public <i>cloud</i> .

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Steering Committee	The Steering Committee for coordinating OT11 operations (strengthening institutional and administrative capacity) and OT2 (Digital Agenda Implementation) has been established at the Department of Public Function to ensure the protection of the strategy and coherence with the processes of reform of the Public Administration.
Connecting Europe Facility (CEF)	Plan proposed by the EU in October 2011 (COM (2011) 665) in support of transport, energy and digital infrastructures, within the framework of the 2014-2020 Multi-annual Financial Framework. The objective of the <i>Connecting Europe Facility</i> is to speed up public and private investment in the trans-European transport, telecommunications and energy networks. In particular, the CEF supports projects of common interest aimed at the development and construction of new services and infrastructures, or the modernisation of existing ones, with priority for missing connections in the transport sector. The tool also supports projects with added value at European level and significant benefits to the company that does not receive adequate funding from the market.
Document preservation	The retention of documents and computer files, governed by the Prime Ministerial Decree of 3rd December 2013, is the activity of protecting and maintaining archives of documents and data files over time. The storage time, as recalled by Article 43 of the CAD can be “permanent”, being indefinite in the future or, as is often referred, “long-term”, being a sufficiently wide timespan to be affected by technological changes. Its primary goal is to prevent unauthorised loss or destruction of documents and to maintain their features of authenticity, integrity, reliability, readability and availability over time.
Perennial conservation	Perennial preservation is a long-term document retention process that involves the renewal of time-based trade-marks (<i>timestamp</i>) every ten years. This process is subject to acts of historical and cultural relevance relating to administrative proceedings concluded more than 40 years ago. The permanent storage of PA’s digital archives is activated at the Central State Archive.
Digital growth	The 2014-2020 Digital Growth Strategy is a national strategic plan that tracks the path to pursuing the goals of the Digital Agenda, within the framework of the 2014-2020 Partnership Agreement. Digital Growth has been prepared by the Presidency of the Council, together with the Ministry of Economic Development, the Agency for Digital Italy and the Cohesion Agency and approved by the European Commission.

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Data-driven policy	Policies driven by data. The opportunities offered by the technologies for Big Data and the diffusion of the <i>IoT</i> make data analysis a useful tool for building increasingly accurate models of reality, with which to set effective policy strategies.
Data application	Applications that allow you to effectively view and manipulate a data set.
Data lake	Architectural component to save input data for a Big Data system. In a <i>data lake</i> , data is generally stored in its natural format (<i>raw data</i>) coming from different sources of information: consequently, in a <i>data lake</i> there coexists structured data (e.g., XML, JSON), semi-structured data (e.g., CSV, logs), unstructured data (e.g., emails, documents, PDF files) and binary data (e.g., images, audio, video).
Data Retrieval	The process of search and retrieve of data from a database through a query. It allows data extrapolation in order to view it and/or use it within an application.
Data warehouse	Computer archive containing the data of an organisation, designed to allow easy analysis and useful reports to be made for decision making purposes.
Data set	A collection of data, generally relating to the same organisation, which is delivered and managed jointly.
Dati.gov.it	Managed by AgID, this represents the national catalogue of public administration data. In relation to the provisions of Article 9 of Legislative Decree no. 36/2006, as amended by Legislative Decree 102/2015, on “Re-use of Public Sector Information”, data.gov.it is also the open source data search tool released by the Public Administrations. The catalogue is powered by two modes: the insertion of descriptive metadata of the data through a web application, the automatic <i>harvesting</i> from data portals of the Public Administrations.
Data Catalogue Vocabulary (DCAT)	The RDF Vocabulary that facilitates inter-operability between catalogues of data published on the Web.
DCAT Application profile (DCAT-AP)	European specification for description of <i>datasets</i> of the public sector based on the <i>Data Catalogue Dictionary</i> (DCAT), to allow better cross-border and public-sector data research.
Demand pull	Also known as <i>market pull</i> , it focuses on the concept that demand determines the direction and size of innovative activity. This approach arises in antithesis with the <i>Technology Push</i> model, based on the idea that research and development functions guide innovations to be subsequently introduced the market.
Digital Economy and Society Index (DESI)	Composite index drawn up by the European Commission to assess the state of progress of the EU Member States towards a digital economy and society. It aggregates a set of structured indicators around five dimensions: connectivity; human capital; use of the Internet; integration of digital technology; digital public services.

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Digital by default	PA services are produced directly in digital mode. This follows the need for organisational change of administration through the digitisation of back office processes as well.
Digital Divide	This indicates the gap between people with tools of communication, information, digital processing in step with the times, and those that are devoid of it for various reasons. The Digital Divide can be of an infrastructure, economic or cultural type.
Digital First	A strategy through which an organisation distributes a service or product directly in digital and online mode, rather than in traditional mode. In a PA context, it implies that services are mainly delivered via digital means. This approach allows two results to be achieved: to promote the dissemination of computer skills to the population; to give impetus to the modernisation of the Public Administration through the re-engineering of its internal processes.
Disaster Recovery	The set of technical and organisational measures taken to ensure the organisation's operation of the data processing centre, the procedures and IT applications of the organisation itself, in alternative sites to the primary/production ones, in the face of events that cause or may cause prolonged unavailability.
Applicative domain	The context in which a software application operates, especially with reference to the nature and meaning of the information to be manipulated.
Dual-stack	A solution used to handle the transition from IPv4 to IPv6. The <i>dual-stack</i> technique provides for the use of double <i>stack</i> IP, in the stack to be filed. This double <i>stack</i> allows one to interpret both versions of the protocol and, therefore, to deploy the contents of the packet to higher levels without them knowing which IP protocol is used.
IT Duplicate	The IT document obtained through the storing, on the same device or on different devices, of the same sequence of binary values of the original document.
e-Certis	The IT System of the European Commission that allows for contracting stations to verify documents and certificates submitted by foreign operators and companies to know the documents and certificates required for the submission of applications for public procurement in any country of the Union, in accordance with procurement directives.
E-Government	Digitised Public Administration Management System, with the aim of optimising and improving the internal processes of agencies, and offering faster and more innovative services to users.
Early adopter	Under this Plan, administrations that experiment with the use of the Services Catalogue (servizi.gov.it) from April 2017, before the opening of the application to all PAs in 2018.

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EGDI (E-Government Development Index)	An index that measures the effectiveness of E-Government in providing basic economic and social services to people in five sectors: education, health, work and employment, finance and social welfare. The assessment evaluates the performance of an E-Government of a nation in relation to others and not to an absolute degree. The <i>framework</i> methodology used for collecting and evaluating the analysis data is based on three dimensions: the adequacy of Telecommunication infrastructures, the human capacity to promote ICT, the availability of services and content on-line.
Electronic Identification Authentication & Signature (eIDAS)	The regulation of the eIDAS is the EU 910/2014 Digital Identity Regulation, which aims to provide a EU-wide regulatory basis for trustee services and electronic means of identification for member states.
European Interoperability Framework (EIF)	A framework defined by the European Commission to promote the provision of public services within the Union. It contains a set of recommendations and definitions for: (i) promoting and supporting the delivery of public services by promoting cross-border and trans-sector inter-operability; (ii) guiding public administrations in providing services to businesses and citizens; (iii) complementing and linking the various national inter-operability frameworks (<i>National Interoperability Frameworks, NIFs</i>) at a European level. It describes how organisations have agreed or should agree to interact with each other, and how standards should be used. It therefore provides the policies and recommendations that form the basis for the selection of standards to be adopted in interaction between organisations.
National Cyber Security Framework (FNCS)	This is the content of the <i>Italian Cyber Security Report 2015</i> of the “CIS Sapienza”, published in February 2016 and implemented with the help of AgID. The purpose of the document is to offer organisations a homogeneous approach to addressing cyber security in order to reduce the risk of cyber threats. The approach of the <i>framework</i> is intimately linked to a risk analysis and not to technological standards.
Front end	In IT, this indicates the interfaces that have a user as recipient. A front application is a programme with which the user has direct interaction.
Front office	This is the opposite of <i>Back office</i> and represents the set of structures in an organisation that manage end-user interaction. In the case of the PA, the front office is represented by the various channels of service provision (from traditional counters to digital services), by the Information <i>Desk</i> and by the offices that deal with the public.
Fuzz test	Automated testing by software that involves inadmissible, unexpected, and random data in a computer programme. The programme is monitored to check that there are no anomalies.

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Geo DCAT-AP	An extension of the European DCAT-AP profile for the description of geo-spatial data sets and relative services. This provides a RDF syntax of metadata included in the core set of the ISO 19115:2003 standard and that defined by European Regulation 1285/2008 under the INSPIRE Directive. The profile is intended to provide useful tools for exchanging descriptions of territorial data and services between data portals that are not strictly geographic using a common exchange format.
Public service managers	Companies and bodies organised in a corporate form that manage public services.
Grand Coalition for Digital Jobs	An initiative intended to grow exponentially the Information and Communications Technologies (ICT) sector, a sector that plays a fundamental role in the growth of productivity and living standards but is still experiencing difficulties in development also due to the lack of digital skills.
Hash one way	The <i>hash</i> is a cryptographic function, an algorithm that transforms data of an arbitrary length into a fixed-size binary string. The algorithms used in this regard are unidirectional (<i>one-way</i>) and therefore difficult to invert, so that this string cannot be traced back to the message from which it was generated. The cryptographic functions of <i>hash</i> are widely used in IT security environments where sensitive data such as digital signatures, message authentication, and personal user credentials are encrypted in web applications.
Identity Provider	Managers of digital identity accredited pursuant to Article 4 of the Prime Ministerial Decree of 24th October 2014. Legal persons accredited to the SPID who, as public service providers, upon sure identification of the user, assigns, makes available and manages the attributes used by the same user in order to identify himself/herself. They also provide the services needed to manage the attribution of the digital identity of users, the distribution and inter-operability of access credentials, the confidentiality of managed information, and the computer authentication of users.
Infrastructure as a Service (IaaS)	<i>Cloud</i> service model. The faculty provided to the consumer is in order to acquire processing, memory, network and other key computing resources, including operating systems and applications. The consumer does not manage or control the underlying <i>cloud</i> infrastructure, but controls the operating systems, memory, applications and possibly - to a limited extent - some network components (e.g., firewalls).
Information and Communication Technology (ICT)	A set of methods and technologies related to the transmission, reception and processing of information. In general, it is also used to describe the area of technological and industrial activity related to information communication and processing.

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Index of Public Administration (IPA)	The database managed by AgID represents the master data catalogue of the Public Administrations. It includes all data on the articulation of the offices, the email and certified e-mail addresses of each office together with other data such as the managers, office location addresses, and so on. The databases also include the office code of the recipient PA of an electronic invoice by which to enable functionality offered by the national platform for electronic invoicing.
National index of certified e-mail address of professionals and businesses (INI-PEC)	Managed by the Ministry of Economic Development, the catalogue contains all the certified e-mail addresses of professionals and companies present on Italian territory.
Critical infrastructures	A set of infrastructures on the continuous and coordinated operation on which depends on the development, safety and quality of life in industrialised countries. The destruction, interruption or even partial or momentary unavailability of the ICs has the effect of significantly weakening the efficiency and normal functioning of a country, but also the security and the economic, financial and social system, including the equipment of the central and local public administration. By way of example, there are physical infrastructures for the electrical and energy system, the various communication networks, the networks and infrastructure for transporting people and goods (air, sea, rail and road), the health system, economic-financial circuits, the networks supporting the Government, local and regional authorities and emergency management.
Inter-operability	In the IT field, the ability of different and autonomous systems to cooperate and exchange information automatically, based on commonly shared rules.
Italian Core Vocabularies	Databases containing vocabularies and recurring data templates in the Public Administration. The realisation of the <i>Italian Core Vocabularies</i> will enable the harmonisation and standardisation of codes and nomenclatures in the PA data bases.
Lock-in	This occurs when an agent or set of agents is trapped within a choice or economic balance from which it is difficult to get out, even if potentially more efficient alternatives are available. For businesses and organisations, one talks about technological <i>lock-in</i> in the presence of an investment in a technology that is inferior to others that are available, but proves expensive to get out of the investment. The cause of the difficulty may lie in the presence of fixed investment costs that would be lost, or of network outsourcing that is created between a group of companies or organisations using the same technology, making the switch to another standard very complex.

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Silo logic	In IT, the term ‘silo’ means an isolated component of an IT system that does not share data, information, and/or processes with other components of the system.
Machine Learning	In Italian: apprendimento automatico (automatic learning). Scientific discipline related to the Artificial Intelligence area, with algorithms and methodologies useful for training programmes capable of automatically responding to specific problems.
Evolutionary Maintenance (MEV)	Evolutionary Maintenance (of a website, an app or software) includes operations aimed at improving the product through architectural evolution, the introduction of new features, modification of existing ones, integration with other features/services also in relation to non-functional aspects such as usability, performance, accessibility, and even in application cooperation with third party systems.
Time stamp	A <i>timestamp</i> is a sequence of characters that represent a date and/or time to ascertain the actual occurrence of a certain event.
PA Electronics Market (MePA)	A digital market in which authorised administrations can purchase goods and services offered by suppliers authorised to submit their catalogues to the system for values below the Community threshold. Consip defines the types of goods and services and the general terms and conditions of supply, specifies the licensing of suppliers and publishes and updates the catalogues.
Metadata compilation	Assigning descriptive data to information through standard language that is non-proprietary, intelligible to all computer systems.
Metadata	This is information describing a set of data. In ICT, metadata describes the data properties in a structural manner. Metadata can also be used to allow functional use of documents within a given IT system. Indexing with a homogeneous metadata schema allows interoperability between different types of resources.
Agile methodology	A set of software development methods that are based on a less structured approach to traditional means, with the aim of developing functional software in a short time. Features are added through subsequent cycles (iterations), passing through demo releases and undergoing interaction with the client. At the end of each iteration, the software is in operation and has new features compared to the previous iteration. The iterations are followed through to the final completion of the product.
Micro-services	Architectural model for the realisation of software applications in which application logic is implemented, mainly through the aggregation of functionality exposed by blandly coupled services.
Minimum Viable Product (MVP)	In the development of a product or service, this indicates the minimum stage of development for which the product can be tested or introduced on the market.

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Mobile First	An approach that determines the delivery of a digital service from the mobile channel (app and/or website), then extends the product via a website suitable for <i>desktop</i> navigation.
Multi-layer architecture	Software architecture typically adopted in the implementation of client-server applications, where presentation, application processing, and data management logics are decoupled to render the solution more flexible and increase the reusability of the software developed.
Technological neutrality	The principle introduced into European legislation by the 2002 telecommunications package (2002/21/EC, 2002/20/EC, 2002/19/EC, 2002/22/EC, 2002/58/EC). This principle provides for: (i) non-discrimination between particular technologies, (ii) non-imposition of the use of a particular technology compared to others, and (iii) the possibility of taking reasonable measures to promote certain services regardless of the technology used.
Once only principle	A principle under which public administrations should avoid asking citizens and businesses information already provided. Public administrations then share such data between their offices, so they do not impose additional burdens on citizens and companies. At a European level, the <i>once only principle</i> is the key element of the <i>Administrative Burden Reduction (ABR)</i> priority, crucial in achieving the goal of an efficient and effective government, set as a priority in the EU <i>E-Government Action Plan 2016 - 2020</i> (COM (2016) 179).
Ontology	This is a model of formal representation of reality and knowledge. In IT, this is the explicit formal description of the concepts of a domain in the form of a set of objects and relationships, a data structure that allows the entities and their relationships in a certain domain of knowledge to be described.
OpenPEPPOL	Non-profit Association founded on 1st September 2012 after the completion of the <i>Pan-European Public Procurement Online (PEPPOL)</i> project which has seen the implementation of <i>the PEPPOL</i> in several European countries, to solve interoperability problems for electronic contracts.
Open Government Partnership	An international initiative aimed at achieving concrete commitments from Governments in terms of promoting transparency, supporting civic participation, combating corruption and the diffusion - both inside and outside public administrations - of new technologies in support of innovation.
Opex	Operating Expenditures (Current Expenditure).
Thematic objective	The Thematic Objectives (OTs) are the common European Union-wide ambitions that the Cohesion Policy has established to sustain growth for the 2014-2020 period.

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Thematic Objective 11 (OT11)	A thematic objective aimed at strengthening institutional capacity and promoting efficient public administration.
Thematic Objective 2 (OT2)	A thematic objective aimed at improving access to information and communication technologies, as well as the employment and quality of the information.
Paas - Platform as a Service	<i>Cloud</i> service model. The faculty provided to the consumer is to be distributed on the <i>cloud</i> infrastructure applications created by itself or acquired from third parties, using programming languages, libraries, services, and tools supported by the vendor. The consumer does not manage or control the underlying <i>cloud</i> infrastructure, including the network, server, operating systems and memory, but has control over applications and possibly over the configurations of the environment that hosts them.
Pan-European Public Procurement On-Line	An initiative developed from 2008 through to August 2012 under the European Innovation and Competitiveness Programme (CIP) with the aim of defining solutions that allow long-term EU economic operators to participate without encountering technological barriers to the electronic tendering procedure of a PA in another Member State, by submitting attestations for participation and tenders in catalogue form, receiving orders and issuing invoices, all in electronic format and with the possibility of signing documents electronically.
Penetration Test	In <i>IT</i> , the <i>Penetration Test</i> is the operational evaluation process of the <i>security</i> of a system or network that simulates an attack by a malicious user.
National strategic hub	A set of physical infrastructures (Data Centres, Connectivity) - both owned by Public Administrations, and managed but not owned by Public Administrations (vendors acquired from the market), made available by the administrations, without any constraints in terms of location in the national territory - capable of providing: optimised infrastructure services (e.g., <i>Cloud</i> , hosting, support, maintenance, processing capacity, supercomputing); connectivity services; disaster recovery and business continuity services; IT security management services.
Conservation Hub	A data centre specialising in the preservation of digital PA documents by means of an electronic storage system that guarantees authenticity, integrity, reliability, readability and availability of computer documents, as foreseen by the CAD (Article 44).

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Pre-Commercial Procurement (PCP)	Pre-commercial contracts aimed at promoting innovation to ensure sustainable and high-quality public services in Europe. The COM (2007) 799 of the CE defines the characteristics in these terms: the field of application is limited to R&D services; the sharing of risks and benefits applies (the public purchaser does not reserve for its exclusive use the results of R&D activities); they are competitive tenders aimed at avoiding state aid. Article 19 of Legislative Decree 179/2012, identifies the AgID as a pre-commercial procurement bureau for the regions and other relevant administrations.
Business Registry	A database of national interest owned by the Chambers of Commerce with which all entrepreneurs must enrol. It contains information on the constitution, financial transactions and other acts of companies operating in the national territory.
National Repertoire of Territorial Data	A database managed by AgID, which represents the national catalogue of reference for geo-spatial data of public administrations. The catalogue should be used to document the geographical or territorial data that the administrations hold, using as the common standard the national profile of INSPIRE/RNDT metadata, interoperable with the profile defined in the context of the implementation of the INSPIRE Directive, following the rules defined at the time (decree of 10 November 2011 Official Gazette No. 48 of 27/02/2012 Ordinary Supplement no. 37). In 2016, AgID will undertake to align the information of the repertoire with the national data catalogue data.gov.it (see below), using the <i>GeoDCAT-AP</i> profile defined at a European level and providing the appropriate technical guidance.
Re-hosting	The means to migrate the applicative field. Technically, it is the <i>porting</i> of one or more legacy applications, up to the entire system, towards open and standard environments (Microsoft, Unix, Linux) without any source code conversions or rewrites and, above all, without any <i>mission critical</i> applications undergoing functional changes.
Resource Description Framework (RDF)	A language that allows data and metadata to be represented through the definition of assertions, called triplets, according to the “subject”, “property” and “object” schemes. It is the markup language on which the <i>Semantic web</i> is based.
Representational State Transfer (REST)	A type of software architecture for distributed hypertext systems such as the World Wide Web. Instead of using the typical mechanisms of <i>web services</i> (e.g., <i>SOAP</i>) for the connection between <i>hosts</i> , the HTTP protocol is used to handle requests and make calls between two points.

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RESTful (applications)	Applications based on <i>REST</i> , that use HTTP requests to send data (create and/or update), query, modify and delete data. In other words, <i>RESTful</i> applications use HTTP for all four <i>CRUD</i> operations (<i>Create/Read/Update/Delete</i>).
Sandbox	In the IT field, this identifies an environment in which testing and experimentation can be performed on applicative solutions.
Statistical confidentiality	Regulated by Article 9 of Legislative Decree no. 322 of 6th September 1989, statistical confidentiality is part of the broader protection of personal data provided by the Code on the Protection of Personal Data (Legislative Decree 196/03) and, in particular, by Annex A3, entitled “Code of ethics for the processing of personal data for statistical purposes in the Sistan domain”. It is the instrument through which the right to privacy is strictly protected for the citizens about whom the data is collected. Such data is therefore used solely for statistical purposes and may only be disclosed in aggregate form and in such a way that it is not possible to identify the person to whom the information relates.
Service Oriented Architecture (SOA)	An architectural model for the design of distributed software based on the concept of service, where service is defined as a software module that exposes an interface (or contract) used to describe the features offered.
Back office services	Concerning the Plan, the digital services used by the Public Administration in order to carry out its institutional tasks and which do not provide for contact with the end user (citizens and businesses).
System Management Services	Management, maintenance and specialist support services for HW and SW infrastructures, being the complex of services and activities intended to ensure the full operation of technological infrastructures, the availability and the performance of the applications installed on them and the integrity of the related data.
Qualified trustee services	The term ‘trustee service’ indicates a set of electronic services, generally provided against payment. In the <i>eIDAS</i> , regulation trustee services are defined as follows: services for the creation, verification and validation of electronic signatures, electronic seals, electronic time-frame validations, certified electronic delivery services; certificates relating to such services; creation, verification and validation of website authentication certificates; signature keeping services; seals or electronic certificates relating to such services. Qualified trustee services are subject to the supervision of specific national government bodies, in Italy being the AgID.
Front office services	In terms of the Plan, they are the digital services that the Public Administration delivers to its users.

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Public services	Any activity that is carried out in the production of goods or services that meet the needs of general utility, not only in economic terms but also in terms of social promotion, provided that it meets the needs of general utility or is intended for it being provided to meet collective interests.
Servizi.gov.it	The database overseen by AgID currently being implemented contains the main metadata that documents the public services offered to citizens, professionals and businesses by public administrations.
Information Security Management System (SGSI)	A tool that allows for the continuous and systematic control of the processes that concern the security of the entire corporate information patrimony, not just from an IT point of view (electronic or paper media used to store documents and data) but above all from a management and organisational point of view by defining roles, responsibilities and formal procedures for the operation of the company itself.
In-house companies	Public companies constituted in a corporate form, typically joint stock companies, whose capital is held wholly or in part, directly or indirectly, by a public body entrusting them with instrumental or production activities.
Subsidiaries	Companies that have one or more Public Administration among their shareholders.
Software as a Service (SaaS)	<i>Cloud</i> service model. The facility provided to the consumer is that of using the supplier's applications running on a <i>cloud</i> infrastructure. The applications are accessible from different devices through a lightweight interface (<i>thin client</i>), such as an email application on a browser, or programmes with a dedicated interface. The consumer does not manage or control the underlying <i>cloud</i> infrastructure including the network, server, operating systems, memory, or even the capabilities of individual applications, with the possible exception of limited configurations thereto assigned (parameter assignment).
Public Connectivity System (SPC)	A set of technological infrastructures and technical rules that aim to “federate” ICT infrastructures of Public Administrations in order to implement integrated services through shared rules and services. This integration saves costs and time, and provides end-user-centred services, avoiding continuous requests from administrations, as well as duplication of information and controls.
Stress testing	In computing, and in reference to client-server architectures, a test type that involves an incremental increase in the number and/or frequency of service requests sent to the server in order to reach the breaking point. Using stress testing, one determines the maximum “capacity” of the server and can check the effects of an overload.

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Switch off	The abolition, in the relationship between PA and citizen, of every physical and paper interaction. The dematerialisation of the relationships with the PA is the main tool for simplifying administrative acts, reducing costs, efficiency and administrative effectiveness, and improving the quality of services delivered.
Troubleshooting	A logical and systematic search process for the causes of a problem on a product or process.
Virtualisation	The execution method of applications where they are installed on a representation (hence the term virtual) of a real computer, obtained via software and known as a “virtual machine”. The “virtual machines” in turn, run (are executed) above a level of software (usually called “ <i>hypervisor</i> ”) that simulates the availability of hardware infrastructure for all virtual machines.
Web Oriented Architecture	A service-oriented architecture that uses protocols and typical web mechanisms. It can be briefly described by the formula: WOA = SOA + WWW + REST

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If you want to contribute with feedback and changes to the Three Year Plan for ICT in the Public Administration, visit the [Github repository](#).

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18.1 Annex 1 - Reference framework of the three-year plan

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18.2 Annex 2 - Tools and resources for the implementation of the Plan

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18.3 Annex 3 - Synoptic framework of CPA ICT spending

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18.4 Annex 4 - Synoptic framework of CPA projects with respect to the Model

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18.5 Annex 5 - Open data dataset basket

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