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DELAY IN E-GOVERNMENT AND DIGITIZATION OF PUBLIC ADMINISTRATION IN ITALY:
EU ACTION IN LAZIO

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Introduction

"There is no room for complacency in the fast-moving digital world."
Neelie Kroes, EU Commissioner for Digital Agenda 2010-2014

"The only wrong move when it comes to Digital Transformation
is not to make any move at all."
Didier Bonnet, Senior VP Capgemini

Internet and digital technology have radically and profoundly impacted every aspect of our everyday lives. Through e-Government, the digital revolution has the potential to change the way we interact with government and reshape the way the public administration functions internally and delivers services to citizens and businesses, providing unprecedented savings opportunities both in terms of direct (financial) costs and indirect costs (time, stress etc.). This revolution is taking place at different speeds across the world: some countries have been quicker than others in realizing its potential and understanding how to harness it to maximize its benefits.

The EU has played a key role in spreading this revolution to Member States. Most recently, the Digital Agenda for Europe outlined in the 2010 *Europe 2020* strategy set specific goals and deadlines to bring all Member States to a satisfactory level of digital transformation, in an effort to leverage digitization to boost the growth and employment making the EU a competitive actor in the global playing field.

EU action is fundamental in helping Member states like Italy catch-up on their digital delay, be this due to structural, political or economic reasons.

The purpose of this work is to explore Italy's progress in terms of e-Government and digitization of the public administration within the framework of the Digital Agenda for Europe, with a specific focus on EU action at a regional level through a case study on the Digital Agenda of Italy's Lazio Region.

The first chapter of this dissertation will illustrate the theoretical framework of e-government, giving a comprehensive overview of the various theoretical analysis of digitization and digital government conducted by researchers, public and private institutions, both at a national and international level. The chapter will explore the different definitions and development stages of e-Government, attempting to provide

a comparative stage model and will end with an overview of the quantitative methods and indexes used to evaluate a country's e-Government and digitization.

The second chapter will follow the evolution of E-government policies and digital strategies both at the EU level and at the national Italian level. EU policies have significantly evolved since the 1984 ESPRIT research program first investigated the field of Information and Communication Technologies and the 1993 *Growth, competitiveness and employment* White Book first interpreted the economic implications of the Information Society. The theme of digital transformation has progressively gained momentum over the past twenty years, and today the Digital Agenda for Europe is one of the seven flagship initiatives leading Member States towards the goal of smart, sustainable and inclusive growth by 2020. The chapter will retrace the different steps that brought us where we are today. Likewise, albeit with some delay, Italian policy makers followed the evolution of EU digitization policies and integrated the goals set at the Union level in a great number of national action plans and policy documents that are summarized in the second part of the second chapter. A political and legislative journey that culminated in the Strategy for Digital Growth and the Italian Strategy for Ultra-broadband presented in March of 2015.

The third and final chapter of this work will present a case study on the implementation of the EU Digital Agenda in Italy's Lazio Region. After an introduction to the principal initiatives and policy documents regarding the Regional Digital Agenda, the Lazio Region's efforts towards promoting e-Government and digitizing Public Administration are tackled as the subject of an in-depth interview with Ms. Antonella Giulia Pizzaleo, Head of Regional Digital Agenda and Internet Governance for the Lazio Region since 2014. Since radio has been part of my University life both as a hobby at RadioLUISS and as a two-yearlong professional experience at Enel.radio, I chose to conduct the study through a radio interview I recorded in the LUISS campus RadioLUISS recording studios, as I find the medium to be direct, dynamic and informal while allowing for depth in analysis.

CHAPTER ONE

Theoretical Framework of E-Government and its impact on competitiveness

This first chapter aims to provide the theoretical framework of this dissertation, giving a working definition of e-Government and outlining the main objectives and economic advantages of the digitalization of Public Administration. The first section is intended to give a synthetical definition of the process of digital government, illustrating the main characteristics of the different categories in which e-Government services are commonly subdivided. The second section will summarize the general macroeconomic benefits of a digitalized government, exploring the impact of e-Government practices on competitiveness. The third and final section will explore the existing methodology for quantitatively evaluating e-government policies and attempt at calculating the costs of delays in government digitalization.

1.1 What is e-Government?

The digital revolution, consisting in the shift from analog to digital technologies that started in the second half of the 20th century and accelerated from the 1980s onwards, has permanently and irreversibly changed every aspect of our lives and will continue to do so at a progressively higher speed. Information and communication technologies (ICTs) are revolutionary in that they are pervasive, as Castells (1996) puts it, penetrating "all domains of human activity, not as an exogenous source of impact, but as the fabric in which such activity is woven". Such a penetration of digital technology in the field of government and public administration has created the need for a new term: e-Government.

While there is no singular definition of e-Government, the term can be defined as the use of ICTs by government agencies in their functions and their relations with citizens, businesses and other arms of government. This use has deeply transformed the structures and operations of government, improving service delivery to citizens through a rationalized management of the public sector, increasing efficiency in

administrative transactions and streamlining interactions and workflows between administrations and the private sector (OECD, 2001; World Bank, 2001). More and more governments are investing in digitalization as a tool for reform, widening communication channels with the aim of transforming relations with citizens and/or the private sector through strengthened accountability and increased transparency.

A digitalized management of public administrations has been proven to "facilitate knowledge sharing, skills development, transfer of innovative e-government solutions and capacity building for sustainable development among countries". (United Nations, 2014).

At this point, a clarification should be made between the following three words: *e-government*, *e-governance* and *e-administration*. While these terms are closely related, they are not interchangeable and should not be confused. For the purpose of this dissertation, *E-government, E-governance* and *E-administration* will be regarded as specific dimensions of the broader *Framework of E-governance*, as described by the United Nations (2002) in their first benchmark of e-Government in UN Member States. In particular, the narrow definition *E-government* focuses on the dimensions of policy implementation and inter-organizational coordination with regard to the delivery of government services through online electronic means. *E-Administration*, on the other hand, consists in *intra*-organizational coordination within the public sector, mainly focusing internal management, planning, benchmarking and performance evaluation. Lastly, *E-governance* defines the political, electoral and social implications of E-Government: increased trust in institutions, facilitated interactions between citizens and elected officials, online voting processes, enhanced political participation are all elements of *E-governance*. Moreover digital divide, need for transparency, ethics, privacy and data security are issues of *E-governance*. Given this distinction, even within the same report by the United Nations (2002) cited above, *E-government* is commonly used in both its narrow meaning and in a broader sense to indicate what was above defined as the *Framework of E-governance.* This work will use the term in both its connotations.

1.1.1 *E-Government Categories*

Given the multidimensional nature of e-Government services, we can identify four categories, which represent the different types of interactions that can be improved through digitized administrative services. These categories are: government-to-citizen (G2C), government-to-business (G2B), government-to-government (G2G) and government-to-employee (G2E). Most e-Government studies tend to consider this last category a subcategory of G2G services, rather than deal with it as a separate category.

The majority of e-Government services fall in the G2C category, which focuses on digitalizing public services to individuals and improving government-to-citizen transactions. This is mainly achieved through making public information and administrative processes easily accessible through digital platforms such as websites and mobile applications. Such platforms should be designed in a user-friendly way in order to minimize stress and time necessary to complete routine transactions such as requesting authorizations, paying taxes and fines, applying for government funded programs. This automated multiple channel government service delivery allows for increased efficiency in terms of cost savings achieved by increasing speed of exchanges, reducing the number of personnel necessary to complete a task, and improving the consistency of outcomes.

Government to business (G2B) is the second most important category of e-Government services. It includes all services pertaining to transactions of both sale and procurement between government administrations and the business sector, as well as services such as the online provision of regulatory updates, application forms, license renewals, registration of new businesses etc. These services allow for a general improvement of procurement practices and increased competition within the business community. More specifically, as Fang (2002) notes, G2B can be an active driver of e-transaction initiatives such as *e-procurement* and of the development of an electronic marketplace for government purchases, carrying out government procurement tenders through digital communication systems. These mechanisms

allow government administrations to achieve benefits similar to those brought to the private sector by e-commerce applications. An example of procurement methods which rely on the use of IT are *reverse auctions*. These auctions see companies bid against each other in real time over the Internet to win a government contract. The purpose of this process is to drive B2G service prices down to market levels (Seifert, 2003).

The third category refers to the management of government-to-government (G2G) information and services through both intra- and inter-agency online communications and electronic exchanges. The premise of this kind of services is a shared super-government database of information and skills that can only be achieved through external alignment and internal integration and cooperation. Benefits achieved through G2G development include improved efficiency through time and cost savings, streamlined administrative coordination, reduction of necessary workforce, regulatory compliance and general upgrade of outcome consistency.

The fourth and final category of e-Government services, government-to-employee (G2E), refers to electronic mechanisms in the relationship between administrations and their employees. G2E services include digitized internal communication via intranet networks and online management of applications for annual leave, salary payment history, career development and human resources. Next to improved cost efficiency, the aim of G2E strategies is to facilitate the implementation of government goals and programs and promote a more fluid interaction within administrations (Seifert, 2003).

1.1.2 *Stages of e-Government Development*

The realization of e-Government can be faced with a variety of limits, both structural and circumstantial, both internal and external. The nature of these limits can be technological, economic, cultural or political. For this reason, e-Government can be divided into different progressive and sequential stages of implementation and growth. Each stage represents a specific level of the development process. Stage models are useful to evaluate the level of technological transformation of government and can be used to make predictions of future developments. Although many different models have been elaborated, most revolve around 4 or 6 stages of development.

The Gartner e-Government model (Baum and Di Maio, 2000) is perhaps the first systematic attempt to benchmark the progress of digital government initiatives. This model identifies four stages of evolution: (1) *web presence*, (2) *interaction*, (3) *transaction* and (4) *transformation*. In a 2002 report, the UN Division for Public Economics and Public Administration and the American Society for Public Administration (ASPA) reviewed Gartner's model and similar models and noted that while they were convenient tools to benchmark e-Government implementation in developed countries, they were built in such a way that efforts made by developing countries resulted invisible (United Nations, 2002). For this reason the UN DPEPA & ASPA report divided the "presence" stage of the Gartner model into two separate stages: *emerging presence* and *enhanced presence*. The *emerging presence* stage is meant to acknowledge efforts and progress of developing countries. Countries at this level of implementation have a very low number of official government websites, which tend to be static, incomplete and not updated. Moving from their experience and observations of e-Government initiatives in the United States, Layne and Lee (2001) proposed a four-stage growth model focused on technical, managerial and organizational feasibility: (1) *cataloguing*, (2) *transaction*, (3) *vertical integration*, and (4) *horizontal integration.* In 2002, Moon extended Layne and Lee's model adding a fifth stage: *Political participation.* This stage involves the use of ITs to engage direct public participation in political processes through online voting, online

public forums, and online opinion (Moon, 2002). As cited in Makoza (2013) Siau & Long's stage model analyzes e-Government implementation from a perspective of social development. More recent benchmark case studies on e-Government implementation in specific national contexts have provided an opportunity to develop new stage models: Chan, Lau and Pang (2008) for Singapore and Al-Nuaim (2011) for Saudi Arabia**.**

Model	I	II	III	IV	V
Gartner's Four Stage Model (2000)	*Web presence*	*Interaction*	*Transaction*	*Transformation*	
Layne & Lee's four-stage model (2001)	*Catalogue*	*Transaction*	*Vertical integration*	*Horizontal integration*	
UN DPEPA & ASPA (2002)	*Emerging presence*	*Enhanced presence*	*Interactive presence*	*Transactional presence*	*Seamless or fully integrated presence*
Moon's five-stage model (2002)	*Simple information dissemination*	*Two way communication*	*Service and financial transaction*	*Vertical and Horizontal integration*	*Political Participation*
Siau and Long (2005)	*Web presence*	*Interaction*	*Transaction*	*Transformation*	*E-Democracy*
Chan et al. (2005)	*Publish*	*Interact*	*Transact*	*Integrate*	*3P Integration (Public, Private, People)*
Al-Nuaim (2011)	*Web presence*	*One-way interaction*	*Two way interaction*	*Transaction*	*Service integration*

Table 1. Overview of e-Government implementation stages models adapted from

Makoza (2013)

In an attempt to synthesize the models illustrated in Table 1, this dissertation will consider the following conceptual four-stage model:

In the (1) *Presence* stage, governments simply establish their online presence through one or more static websites. These websites offer no interaction and passively list general information about administrative agencies such as opening hours, organization charts, links to other websites, mailing address and/or phone numbers. In this stage, communication is unilateral and there is no interaction between citizens and governments. In the (2) *Interaction* stage, governments provide certain automated services online to support offline activities. These services are mainly related to information provision: citizens may download forms; have access to information or instructions related to obtaining services and contact administrative agencies through email. In this stage, online interaction is relatively simple and it doesn't substitute the physical agency: while able to access certain resources electronically, citizens must visit the agency in person to receive the full service. Governments in the (3) *Transaction* stage of e-Government development enable citizens to complete entire administrative tasks and receive services online, at any time of the day or night, without having to visit government agencies in person. The fourth and final stage is the (4) *Integration* stage. This is the highest point of e-Government implementation: technology is successfully used to its full capabilities in transforming every step of government action. In this stage, administrative functions are both vertically (inter-governmental level) and horizontally (intra-governmental level) integrated, thus removing organizational boundaries and switching from an agency-centric approach to a citizen/user-centric one. *Integrated* governments offer citizens a seamless one-stop online platform providing access to all government information, services and websites through integrated application. This single-entry point relies on a shared and secure super-database of government information. In its advanced phase, the *integration* stage fosters *e-participation*: it creates an environment that encourages and enables citizens to be more involved with government activities to have a voice in decision-making.

Reaching a fully integrated level of e-Government services requires a significant amount of political, administrative and managerial cooperation. As noted by the United Nations (2002), certain conditions must be met: a realistic political vision and plan, conscious of the public sector's existing strengths and weaknesses, a "fully committed national leadership secure enough to sustain the political opposition to such a reform program" and a "confident and professional administrative culture willing to relinquish some degree of organizational and administrative territory".

1.2 *Which are the economic benefits of e-Government?*

The impact of digitization, and in particular the digitization of public administrations, on competitiveness can be studied on multiple levels. First, it is important to define what a country's competitiveness is. There is no single and precise definition of this term and it develops through three different dimensions: a macro-economic or national level, an intermediate or industry level and the micro-economic or enterprise level. For the purpose of this dissertation, competitiveness will be defined as the "ability of companies, industries, regions to generate, while being and remaining exposed to international competition, relatively high factor income and factor employment levels on a sustainable basis" (Hatzichronoglou, 1996). Competitiveness is a multi-leveled element that can be incentivized by different factors, depending on the context. In the context of the European economy, the primary trigger of competitiveness has been proven to be productivity growth, which makes it possible to simultaneously reduce costs and raise returns and wages, driving real income, inflation, share prices and interest rates. (EU Commission, 2002). Having identified productivity growth as the key driver of competitiveness of EU economies and enterprises, we can move on to identify digitization as the main driver for productivity growth. According to the OECD, the use of Information and Communication Technology (ICT) has three main impacts on competitiveness: ICT investments contribute to an overall increase in capital density, therefore raising labor productivity; rapid technological innovation in the production of ICTs generates a higher growth of multi-factor productivity (MFP) in the ICT production sector; sustained use of ICT in all sectors allows for a transversal raise in efficiency

and MFP of the whole economy (OECD, 2004). Booz & Company's econometric analysis gives us a quantitative measure of how digitization accelerates productivity growth and facilitates job creation: in 2011, despite the negative trend in the global economy, investment in ICTs generated an overall US$193 billion increase in global output and created 6 million new jobs worldwide (Strategy&, 2013). By analyzing these numbers on a country and sector level, it is evident that the impact ICT digitization is uneven between developed and emerging economies: North America and Western Europe accounted for 29% of the output gain, but only 6% of the growth in jobs. On the other hand emerging economies accounted for a 71% gain in GDP and 94% of the global employment boost. The positive impact on economic growth is stronger in developed economies while the drive for job creation is more effective in emerging economies. These differences are connected to the difference in economic structures: the effect on employment is comprehensibly stronger in those economies that are driven by tradable sectors and export oriented (emerging economies). By contrast, developed economies, which are oriented towards domestic consumption and non-tradable sectors, tend to delocalize lower-skill and lower value-added work to emerging markets, thus cutting jobs domestically. Data from 2011 showing a 4 million job increase generated by digitization investments in East Asia, South Asia and Latin America (emerging markets) and little or no growth in North America and Western Europe seem to confirm this scheme (Strategy&, 2013). A Microsoft-sponsored 2004 report by the Economist Intelligence Unit (EIU, 2004) evaluating the link between ICT and productivity growth in 14 European countries and the US between 1995 and 2002, shows that technology is a stronger driver of GDP per capita growth in those developed economies that have reached a certain level of ICT development. In other words, investments in ICTs become profitable in terms of GDP per capita only once the penetration of technology reaches and surpasses a specific threshold, which the report indicates as level 5 of the EIU ICT development index (indicated by the dotted line in the Graph on the following page).

ICT development and GDP per head growth residuals, Europe and the US, 1996-2002
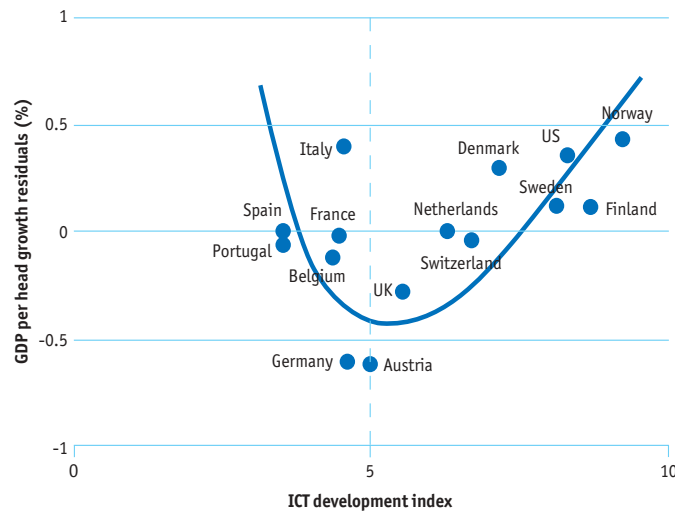
Source: Economist Intelligence Unit (2004)

The relationship implied in the graph between ICT and productivity growth is non-linear, thus resulting in a U-shaped slope. In economies with low levels of ICT development (the downward sloping part of the curve), the costs of introduction of ICT outweigh the benefits; in fact increases in ICT are actually associated with a decline in the rate of growth. Conversely, countries that have surpassed level 5 of ICT development (the upward-sloping part of the curve), benefit from increased growth associated to higher ICT development. In these economies, the benefits of investments in digitization outweigh the costs (EIU, 2004). The study also notes how there is a significant time lag between ICT investments and returns, even in countries that have reached the development threshold. This can generate inefficiencies especially at a firm level, where a lack of market strategy can lead to an over-investment in the short period. Economies in the transitional stage of digitization (ICT Development Index from < 5 to >5) benefit from higher impacts on GDP per capita because the digitization leap is substantial. This explains why in 2011 East Asia, Western Europe and Latin America surpassed North America in terms GDP per capita boost, even though these regions have lower GDP impact coefficients. As countries move to more advanced stages of digitization, the acceleration of GDP per capita growth increases thanks to the gradual establishment of an ICT-enabling ecosystem both in the private and public sector.

Given this framework on the general impact of digitization on competitiveness, we can explore the specific effects of E-Government implementation on economic growth. One of the most relevant studies attempting to assess the economic impact of e-Government is a study commissioned by the Dutch Presidency of the European Public Administration Network (EPAN, 2004) titled "*Does E-Government pay off?",* aimed at understanding if, how and why investing in e-Government initiatives could be economically beneficial for EU Member states. The study gathered data from eight selected cases of successful E-Government practices: Denmark, Estonia, Finland, France, Germany, The Netherlands, Slovenia and Spain. EPAN found that the use of ICTs in the public sector can indeed be rewarding and made a distinction between seven types of interconnected e-government investment returns: (1) improved quality of information and information supply, (2) reduction of process time, (3) reduction of administrative burdens, (4) cost reduction, (5) improved service level, (6) increased efficiency, (7) increased customer satisfaction. Investing in digitization of public services (1) improves the quality of information, by eliminating errors in data input and storage, while a use of shared databases and common networks can improve the quality of information supply. The most appealing and most tangible return of ICT investments is perhaps the (2) reduction of the *process time* of public services (i.e. the time necessary for service planning, delivery and reception) and the (3) reduction of the *process burden on users*, which includes bureaucratic stress for customers and administrative burdens for businesses. The e-enablement of certain key processes, the rationalization of common steps combined with a streamlining of the organizational process can significantly help reduce the "red tape" weighing on those who use public service. This is particularly relevant for businesses because it helps reduce the *time to market* (TTM), i.e. the time it takes a firm to enter the market, by reducing the time lag between permit and license request and reception (Deloitte, 2004).

The higher service delivery capability made possible by e-Government initiatives can directly (4) cut personnel and transaction costs by automating and e-enabling certain procedures or parts of them. These kinds of cost reductions are proportional to

transaction frequency: reduction of process time and administrative burden will be most advantageous to those categories of citizens who interact with the public administration on a regular basis (i.e. pension holders, students relying on government-funded financial aid). In the medium term, these savings translate into reduced stress on taxpayers. Another return that is highly appealing to users is the (5) improvement of the level of service quality, mainly achieved through greater flexibility (24/7 service availability, multi-channel service delivery etc.), customization and transparency. All these benefits, combined with a distribution of tasks between different sectors and increased capability of input conversion (6) boost efficiency levels. Finally, the optimization made possible by E-Government initiatives (i.e. citizen-centric service delivery, customization) raises customer satisfaction, which can be measured through an increase of e-service users. The EPAN study also underlines the interrelated nature of these returns, which tend to reinforce one another when investments in different areas are made simultaneously: customer satisfaction is a direct consequence of improved efficiency, which comprises of a combination of the other types of returns. For this reason, a comprehensive knowledge of possible benefits is key to maximize investment returns. A further distinction can be made between what the ENPA report calls "*quick wins*" and long term so-called "*back office*" organizational changes. The first kind of returns may be more appealing to policymakers but they are only possible in certain sectors, mainly cost reduction. Because of the previously mentioned interrelated nature of these returns, a complete e-Government strategy must direct investments to a deep re-organization of the *back office* in order to maximize long term ROI (return on investment) and spur a lasting cultural shift in the public sector (EPAN, 2004).

On the matter of the reduction of compliance costs, Deloitte (2004) notes that regulatory compliance has a cost ranging between 2-4% of the average firm's expenses and estimates that the annual cost of complying to federal regulations in the United States amounted to US$ 843 billion in 1996. Moreover, in its "*Citizen Advantage"* study, Deloitte explores the composition of these compliance costs by

dividing the governmental burden on businesses and citizens in three stages: find, understand and comply. Phase-specific transaction costs are connected to each stage. The costs of the first stage are the costs of discovering which regulations are to be complied with: i.e. the cost of either placing internal resources on this task or outsourcing the task to legal or accounting professionals. This second option can particularly drive up costs and is often necessary for more complex transactions like G2B and B2G transactions. The second stage concerns understanding the content of the rules and regulations found in stage one and understanding how to comply with them. Due to the specificity of regulations, this task almost always requires deployment of resources towards a legal consultancy (professional cost) and, depending on the complexity of the regulation, can be time consuming (time cost). The third stage is the actual compliance to the rules found and understood in the finding and understanding stages. The costs of this stage are varied and range from postage to equipment modification and installation, making it the most expensive of the three stages. A January 14th 2014 article published on the Wall Street Journal website's business section, reported that certain regulatory environments, like the US one, are driving the demand for professional figures skilled in the field of legal compliance. According to the US Bureau of Labor Statistics, the unemployment rate in the field of compliance in the third quarter of 2013 in the US was 1.5% lower than the general unemployment rate in the same period. HR monitoring also recorded an annual 3,5% increase of entrance salaries in the compliance consultancy sector between 2011 and 2014 (Millman & Rubenfeld, 2014). It should be noted that outsourcing compliance consultancy is a greater cost for small firms and single citizens than it is for large corporate firms. Nonetheless, the fact that compliance constitutes the highest governmental burden makes it the process in which potential savings from e-Government initiatives are the highest, both for businesses and citizens. The next and final section of this chapter will explore the different approaches to quantitatively measuring these savings.

1.3 Quantitative methods of e-Government evaluation: a few examples

The quantitative evaluation of e-Government investment returns is structurally prone to multiple approaches. Public sector investments are generally evaluated through a simple cost-benefit analysis. Such an approach poses difficulties when applied to e-Government investments, which are transversal by nature. As described in the previous sections of this chapter, digitization interests the public sector in its horizontal and vertical entirety and returns are highly interrelated. In measuring the benefits connected to the integration of the Information Society in the public sector, a problem is posed by the difficulty to define the intervening variables. For instance, unlike with other services, with ICTs it is often difficult to distinguish between the infrastructure and the service delivered through it. To explain this difficulty, Picci (2006) uses the example of broadband cable capacity: over the course of 15 years, technological process has made it possible to double and in some cases triple the data transmission capacity of regular copper wire broadband infrastructures. In this case, while the physical infrastructure remained the same, a combination of hardware (DSL) and software improvements changed the quality of the service delivered through that infrastructure. The current switch to fiber cables is a change in infrastructure that provides even more service improvement potential. Moreover, it is hard to standardize certain concepts for evaluation and the relatively recent nature of digitization makes for a quantity of data insufficient for statistical inference. In spite of these difficulties, significant efforts have been made in the recent years to harmonize definitions and develop e-Government benchmarking strategies, both at an international and a national level.

At the international level, several indexes have been developed: the EIU ICT development index cited in section 1.2 of this chapter, the European Commission's newly developed Digital Economy and Society Index (DESI), the World Economic Forum's Network Readiness Index (NRI), Strategy& (formerly Booz&Company's) Digitization Score and the UN E-Government Development Index (EGDI) are just a few examples. These are composite indicators that summarize different relevant indicators and are built in different ways. The methodology of some of these indexes

will be illustrated in detail in the following chapter, where they will be used to assess the level of digitization in Italy. Within this section, we will analyze Strategy&'s Digitization Score to exemplify the use of indexes to assess the *economic* impact of digitization. This index, first presented in the 2012 Global Technology Report, assesses digitization by combining six key attributes measured through 23 different indicators. The six key attributes are: *Ubiquity, Affordability, Reliability, Speed, Usability* and *Skill. Ubiquity* indicates the availability of "universal access to digital services and applications"; *Affordability* measures the accessibility of the price of digital services; *Reliability* measures the "quality of available digital services"; *Speed* measures the time necessary to access digital services (i.e. bandwidth speed); *Usability* measures the "ease of use for digital services and the ability of local ecosystems to boost adoption of these services" and *Skill* measures the incorporation of digital services by users in their lives and businesses (Sabbagh et al., 2012).
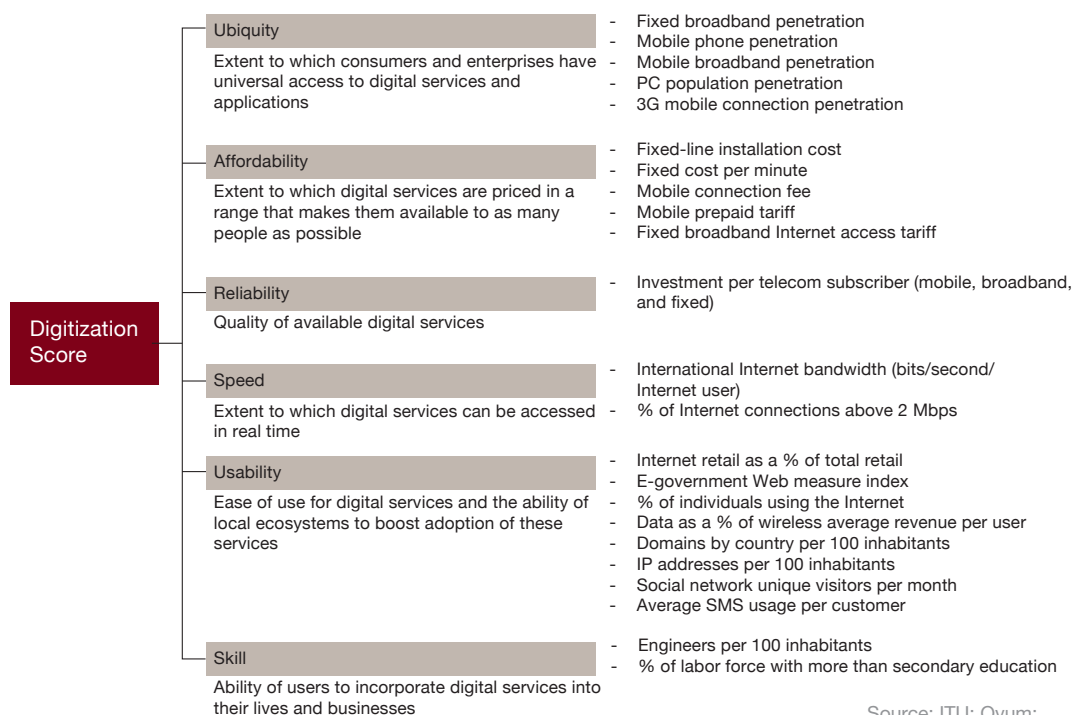
Sabbagh, K., Friedrich, R., El-Darwiche, B. and Singh, M. (2012)

The level of each of these attributes helps determine which stage of digitization each country is in. Each index generates its own stage model. Strategy&'s analysis measured the economic impact of digitization on three variables: growth in GDP per capita, effect on employment and innovation. The model used to study 150 countries is a classical growth model controlling the variables of human capital and capital formation for growth of GDP per capita and the variables of foreign direct investment (FDI), other financial investments and secondary school enrollment for the impact on employment. The results show that a 10% increase in the digitization score generates a 0.50-0.62% rise in GDP per capita, twice as high as the impact of broadband penetration (0.16-0.25%). Such an increase is able to reduce a country's unemployment rate by 0.84%: adding an estimated 19 million jobs in the global economy between 2009 and 2010. A positive correlation between the increase of the digitalization score and the Global Innovation Index Score (10% and 6 GII points) is evidence to suggest that a more digitized country is also a more innovative one. As anticipated in section 1.1.2 of this chapter, the positive effects of digitization tend to be maximized as countries advance in their development stage.

Contribution to GDP per Capita Growth of a 10 Percent Increase in Digitization (percent per Stage)

Average of broadband studies[1]	Constrained	Emerging	Transitional	Advanced
0.16	0.50	0.51	0.59	0.62

Impact of Digitization on GDP (Constant 2005 US$ billion)

| 2007–08	2008–09	2009–10
272	108	395

+45%
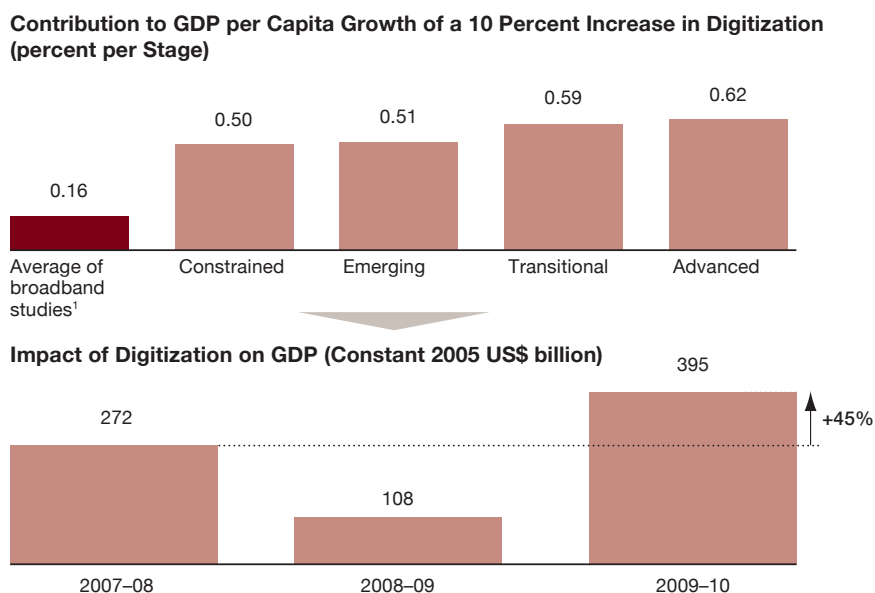
Sabbagh, K., Friedrich, R., El-Darwiche, B. and Singh, M. (2012)

At the national level, indexes and models to assess the economic impact of digitization have been designed to fit specific local realities. The city of Tampa (FL) in the United States, provides citizens with a model that estimates the direct and indirect cost savings made possible by the e-enablement of certain procedures. This calculator estimated that by paying parking tickets online instead of paying them in person a citizen can save $807,664 in indirect costs (multiplying time saved by the average cost per hour of Tampa residents) and $143,000 in direct costs (gasoline and parking), for a total saving of $950,664. A similar calculation can be made for businesses estimating the opportunity cost savings per year made possible by a one-stop-shop website providing all the information needed to register and enter the market (Deloitte, 2004). In Italy, Picci (2005) proposed a structural modeling strategy, based on a system of equations, each quantifying a specific interaction between the e-government policy, the public administration and the surrounding environment. This kind of modeling intends to depart from the typical composite approach commonly used in e-government indexes, moving towards a mainly mathematical and computational approach. Picci's model takes into account the concomitant nature of policy implementation by different administrative levels and intends to measure the extent to which these policies are substitutable. The model also incorporates as a variable the realistic time lag between a policy's enactment and its effects. The proposed function measures the economic impact of e-government policies in terms of regional private output, regional private employment and cost savings. Simulations based on data from the Tuscany region in Italy, show that the positive impact on the above mentioned elements increases as central and regional policies become more substitutable (Picci, 2005).

Another recently developed index is the *Digital Private-Public Relations* (@PPR) index (Monti et al. 2014b), which focuses on the public relations dimension of G2C and G2B interactions. This index considers three variables: (A) e-government use (evaluated as A1 satisfying or A2 problematic); (B) G2C interaction; (C) digital infrastructure presence (divided in C1 high-speed Internet connection, C2 LTE data communication and C3 Internet access). By assigning a score of e-government use

based on these indicators and comparing data relative to variables B and C from 6 EU countries (Italy, Portugal, Spain, UK, Germany, Sweden), a noticeable direct proportionality is evident between economic growth and a rise in the @PPR score in 2013. Countries with a higher @PPR score (UK, Germany and Sweden) have positive GDP levels in the analyzed year, while the countries with a lower @PPR score (Italy, Portugal, Spain) have a relatively negative GDP trend.
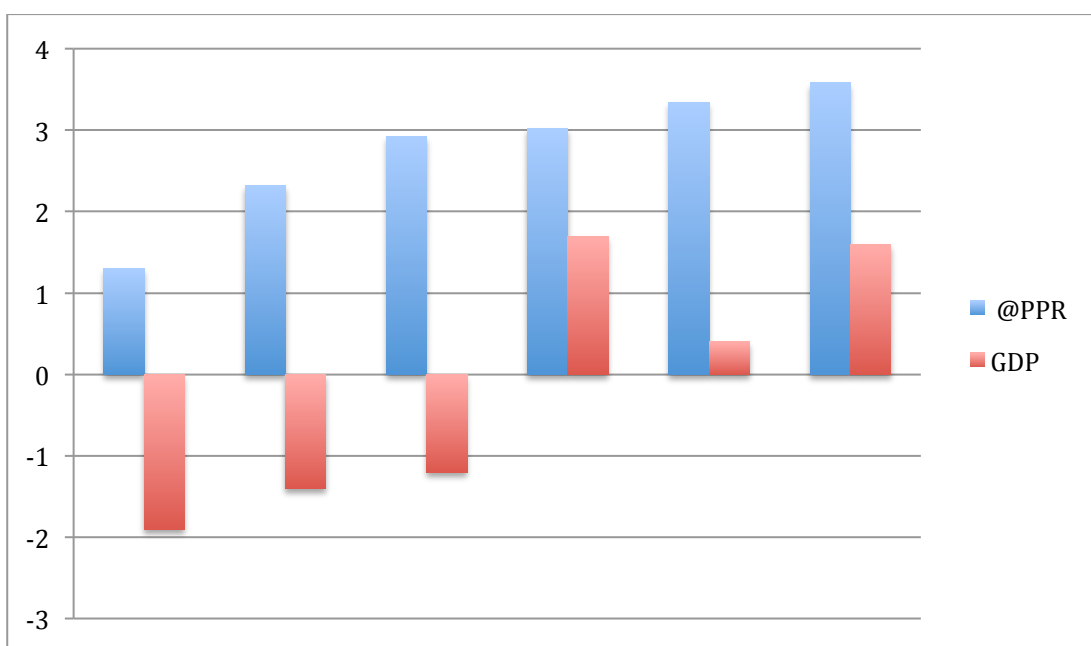
	Italy	Portugal	Spain	UK	Germany	Sweden
@PPR	1.3	2.32	2.92	3.02	3.34	3.58
GDP	-1.9	-1.4	-1.2	1.7	0.4	1.6

Adapted from Monti, L., Pepe. F., Rizzuti, G. (2014a)

This light but direct correlation between @PPR score and GDP performance is sufficient evidence to consider a satisfactory interaction between citizens and the public sector through digital technologies one of the various factors determining economic growth. This correlation may contribute to turning citizens, from "*influencers* (simply because they pay taxes), into stakeholders (they get involved, at last, in a win-win relationship with the Government)" (Monti, Pepe and Rizzuti, 2014a).

CHAPTER TWO

Digitization Policy and Regulations in the EU and in Italy

In this second chapter, the main stages of evolution of E-Government policies and digital strategies in the EU and Italy will be illustrated.

2.1 EU policies

The first steps in the EU strategy in terms of the information society date back to the mid 1980s. The 1984 ESPRIT program was the first research effort by the EU in the field of Information and Communication Technologies, later followed by programs regarding the ITC applications (transportation, healthcare and online learning) and the RACE program on advanced telecommunication technologies, inserted in the first Framework Program (1984-1987) (EU Commission, 1985). The 1987 Green book on the liberalization of the telecommunications market inaugurated EU telecommunications policy, but it wasn't until the 1993 White Book by the EU Commission entitled *Growth, competitiveness and employment* (EU Commission, 1993) that a comprehensive policy strategy on the Information Society was launched.

2.1.1 eEurope 2002

In the early 2000s, the positive economic outlook for EU member states provided the fertile ground for a new global action plan focused on making Europe the most competitive and dynamic economy in the world seizing the opportunities offered by the new economy and in particular Internet. This action plan was presented at the European Council in Feira (Portugal) in June of 2000 with the title *eEurope 2002: an Information Society for all*. The three main objectives of this initiative were: to promote a more economic, rapid and secure access to Internet, bringing citizens, homes, schools, businesses and administrations into the digital age; "to create a digitally literate Europe, supported by an entrepreneurial culture ready to finance and develop new ideas; to ensure that the whole process is socially inclusive, builds

consumer trust and strengthens social cohesion" (EU Commission, 1999). In particular, the use of Internet is to be promoted through an acceleration of e-commerce, electronic access to public services (e-Government and digital Public Administrations), online healthcare assistance, digital European contents for global networks and intelligent transportation. The development of online public services focuses on the use of new technologies both for the internal organization of Public Administrations and for the access to services by citizens and businesses. The goal set in the action plan was that Member states were to ensure "generalized electronic access to main basic public services by 2003". Moreover, to allow for a monitoring of the state of advancement of the action plan in the different national contexts, a European system of result and progress indicators was established and is still used today by Eurostat for national benchmarking. Out of these 23 indicators laid out by eEurope, two are specifically related to e-government issues: the percentage of public services available online and the use of public services by citizens.

2.1.2 eEurope 2005

In June of 2002 the European Council of Seville (Spain) approved the new *eEurope 2005* action plan, as a continuation of the previous *eEurope* (Horizon 2003-2005), with the aim of providing a favorable environment for private investments and job creation, increasing productivity, modernizing public services and guaranteeing every citizen the opportunity to take part in the global Information society (EU Commission, 2002). The *eEurope 2005* action plan developed in two main interdependent course actions. On one hand, it intended to stimulate services, applications and content both for online public services and e-business; on the other hand its aimed at developing the basic broadband infrastructure and aspects pertaining to security. An aspect that is transversal to these two macro-themes is e-inclusion, the principle which aimed at creating a "digital society" that provides opportunities for everyone. Particular attention is given to e-Government, e-health and e-learning practices. The action plan underlined that the goals outlined in the previous European programming document had not been achieved completely: "much has been achieved in this area but many services still have limited

interactivity" (EU Commission, 2002). Exchange of best practices, consolidation of electronic authentication practices, improvement in participation, diffusion of interoperability practices between different administrative back-offices of administrations and the betterment of accessibility for disabled users are the key areas in which Member States should invest for the development of online public administration services.

2.1.3 i2010

The European Council held in spring of 2005, moving from the results achieved within the *eEurope 2005* action plan, found knowledge and innovation to be the real drivers of sustainable growth, underlining the fundamental importance of developing an Information Society based on inclusion and general use of ICTs in public services, in enterprises and in families. In June of 2005, the Commission proposed the new policy document *i2020 - An information society for growth and occupation* that defines general strategic guidelines, promotes an open and competitive digital economy and attributes ICTs a prime role in the promotion of inclusion and quality of life. The commission identified three priorities for European policies on the Information and media society: (1) creating a single European information area able to foster an open and competitive internal market for the Information and media society; (2) enhancing innovation and investments in ICT research to promote growth and to improve the quality and quantity of employment opportunities; (3) build a European Information Society based on inclusion, able to stimulate growth and employment in coherence with sustainable development and focused on bettering public services and quality of life. E-Government is of key importance within this third priority, seeing as the program intends to make public services better, more cost-effective and more accessible. In particular the Commission wanted to promote online public services to solve two important aspects: from a technical standpoint, common interfaces, authentication systems and transferability of identities among different systems were declared necessary; from an organizational standpoint public administrations were to adopt new practices, new work processes, new skills and new rules. The Commission also

underlined the need for a specific action plan for e-Government with clear and targeted strategic directions on ICT-based public services.

In April 2006, the EU Commission approved the *2010 e-Government Action plan* as part of *i2010* in order to bring an important contribution to the realization of the Lisbon agenda and other Community policies. The action plan aimed at: (1) providing that all citizens and businesses could have concrete advantages as soon as possible; (2) guaranteeing that e-Government practices at a national level didn't create obstacles for the single market through fragmentation and absence of interoperability; (3) extending the advantages of e-Government to the Community level, allowing for economies of scale within Member States' initiatives and through cooperation on common European challenges; (4) and guaranteeing that all the implicated subjects of the EU cooperated in the definition and implementation of online administrations. The action plan pursued five main objectives for e-Government with specific results to be reached by 2010: (1) "no citizen left behind": promoting inclusion through e-Government so that, by 2010, all citizens may easily access secure and innovative services; (2) "making efficiency and effectiveness a reality", contributing in a significant way to raise user satisfaction, transparency and responsibility, reducing administrative burdens and obtaining advantages in terms of effectiveness by 2010; (3) implementing "high-impact key services for citizens and businesses" with the aim of having 100% of procurement occur electronically by 2010, with al least 50% of public procurement happening electronically by that time, in a cooperative effort on other high-impact online public services for citizens; (4) "putting key enablers in place" to allow citizens and businesses to benefit, by 2010, from a "convenient, secure and interoperable access" to public services from all over Europe; (5) strengthening participation and the democratic decision-making process by providing, by 2010, the tools necessary for "effective public debate and participation in democratic decision-making", otherwise known as *e-democracy* tools (EU Commission, 2006).

2.1.4 2009 Malmö Ministerial Declaration on e-Government

On November 18th 2009, 34 European e-Government officials reunited in Malmö, Sweden unanimously approved a *Ministerial Declaration on e-Government* as a supporting document to the Commission's *European e-Government 2011-2015 Action Plan.* This document, which partly integrated recommendations coming from an "Open Declaration" promoted and signed online by over 2000 EU citizens , outlined the priorities for the future e-Government in four areas of interest pertaining to *open government*: (1) inviting third parties to collaborate on the development of e-government services; (2) increasing the availability of information from the public sector (*open data*); (3) increasing transparency of administrative processes; (4) involving stakeholders in policy-making processes (*e-democracy*) (EU Ministerial e-Government Conference, 2009).

2.1.5 Beyond i2010

In 2009, moving from the evaluation of the results achieved with the *i2010* Action Plan, the EU Commission undertook a series of participatory initiatives aimed at defining the next framework through meetings, public hearings, seminars with both public (Member states, regions etc.) and private (companies, associations etc.) stakeholders. In this evaluation process, the Commission stated that "the pro-competition and pro-consumer policy drive led by i2010 has produced many tangible results". To name a few: an increasingly higher number of EU citizens online (from 43% in 2005 to 56% in 2008) with the majority of them using high broadband connections; a more inclusive Internet use with a rise in use by people in disadvantaged groups (those who are inactive, have a low level of education and people aged 55-64); 114 million high broadband Internet subscribers making Europe the world's largest broadband market, with high speed Internet connection available to 93% of the EU25 population; online public services (e-Government) supply reaching 50% for citizens (up 23% from 2004) and 70% for businesses (up 12% from 2004), with almost one third of EU citizens and 70% of EU businesses using online administrative services; ICT potential for growth and productivity being recognized

by policy makers in general (EU Commission, 2009). Among the initiatives of the EU Commission to define the priorities of the European Information Society, one is particularly interesting: the public online consultation entitled "Transforming the digital dividend opportunity into social benefits and economic growth in Europe" launched in July of 2009 and focused on nine key sectors of the European Information Society post-*i2010*: (1) exploiting the potential of ITCs to relaunch economic growth and give a significant contribution to the Lisbon strategy for growth and the creation of occupation; (2) strengthening the role of ICTs in the shift towards a more sustainable economy with fewer carbon emissions; (3) enhancing performance in research and development in the field of ICTs; (4) creating a 100% connected economy thanks to a high-speed, open and accessible network; (5) consolidating the EU single market online; (6) promoting "2.0" creativity among users; (7) strengthening the EU's leading role in the global ICT market; (8) providing everyone with modern and efficient services, with online administrations becoming a reality in all member states but still struggling with interoperability between different public administrations; (9) using ICTs to improve the quality of life of EU citizens by offering them free access to the European cultural capital and putting it online. The online consultation received only about a thousand responses, of which 2/3 coming from single individuals and 1/3 from organizations, both public (public administrations) and private (businesses, associations) (EU DG Connect, 2010). The states that contributed mostly were Germany (with 180 responses), Belgium (115) and France (95), with Italy sending only about 50 responses. Out of the nine priorities outlined, the ones that were mostly successful in the consultation were: high speed and open Internet for everyone (51%), Innovation and Research in the ICT sector (47%) and ICT for growth and jobs (37%). The summary by the Directorate General for Communication, Networks, Content and Technology highlighted a clear distinction between responses by citizens and by businesses and organizations: predictably for citizens, the most important indications were those regarding superfast internet for everyone, creativity of users and quality of life; for businesses and organizations the priority is instead a strategy for economic development, for productivity, for innovation and a more sustainable economy.

2.1.6 Digital Agenda for Europe 2020

In March 2010 the EU Commission presented "*Europe 2020 - A European strategy for smart, sustainable and inclusive growth*" (EU Commission, 2010) with the aim of exiting the crisis and preparing the EU economy for the challenges of the following decade. One of the seven flagship initiatives of the *Europe 2020* strategy is the Digital Agenda for Europe, which aims at establishing the key role of ICTs in reaching the goals, set by Europe for 2020. First of all - according to the new European policy document - relevant content and services must be offered in an interoperable and boundless Internet environment. This way, the demand for higher connection speed and capacity will be incentivized, thus creating opportunities for development in faster networks. The creation and adoption of faster broadband networks will in turn make way for innovation services. According to the EU Commission, this cycle of activities could potentially be virtuous for the economy as a whole, but it needs a commercial environment favorable to investments and entrepreneurship. The Commission doesn't fail to acknowledge seven existing factors that can become obstacles for this type of process: the fragmentation of digital markets, lack of interoperability, rise in cybercrime and risk of a decrease in trust of networks, lack of investments in new generation networks, insufficient effort in research and innovation, lack of digital literacy and lost opportunities in terms of response to society's problems (De Pietro, 2011).

The Digital Agenda outlines the fundamental actions (grouped in eight areas of actions) to be undertaken to effectively tackle these seven problematic areas while fulfilling the three dimensions of growth envisioned by the *Europe 2020* strategy: smart, sustainable and inclusive. The eight areas of action envisioned by the Digital Agenda are: (1) a single and dynamic digital market; (2) interoperability and standards; (3) security and trust; (4) access to fast and ultra-fast Internet; (5) research and innovation; (6) improvement in digital literacy, skills and inclusion in the digital world; (7) advantages for the EU society offered by ICTs and (8) international aspects of the Digital Agenda.

The Digital Agenda set very specific and - in some cases - ambitious goals. Regarding high speed Internet access, for example, the set goal was to bring basic broadband to *all* citizens by 2013 and providing everyone with access to faster (30Mbps or above) connections by 2020, with "50% or more of European households subscribing to internet connections above 100 Mbps" (EU Commission, 2010). Concerning digital inclusion, raise regular Internet users to 75% of the population, working for the inclusion of those categories of citizens who are now partially excluded (elderly, women who are not part of the workforce, immigrants etc.) bringing their Internet use to 60% and reducing the percentage of citizens who don't use Internet at all to 15%. Lastly, and particularly relevant for the purpose of this dissertation, in terms of online government the EU Digital Agenda sets the goal of guaranteeing wide distribution of user-focused, personalized and multiplatform e-Government services by 2015. For this purpose, Europe needs a more efficient administrative cooperation to develop and implement trans border online public services. In underlining the importance of a shared effort by single Member States towards reaching the goals set, the Digital Agenda explicitly mentions the contribution of European youth to guarantee a complete implementation of the Agenda.

Looking at data from 2014 (EU Commission DG for Communication, 2014), one can see that significant progress has been made towards reaching the ambitious goals of the Digital Agenda for Europe, although there is still room for improvement, as shown by the table below.

	EU average	
Broadband	**2014**	**Target**
Basic broadband coverage for all	100 %	100 % (2013)
Digital single market		
Population buying online	47 %	50 % (2015)
Cross-border e-commerce	12 %	20 % (2015)
Small to medium-sized enterprises (SMEs) selling online	14 %	33 % (2015)
Digital inclusion		
Regular Internet use	72 %	75 % (2015)
Regular Internet use by disadvantaged people	57 %	60 % (2015)
Population never having used the Internet	20 %	15 % (2015)
Public services		
Citizens interacting online with public authorities	42 %	50 % (2015)
Citizens returning filled-in forms to public authorities electronically by 2015	21 %	25 % (2015)

2.1.7 European e-Government Action Plan 2011-2015

In December of 2010 the EU Commission approved the *European e-Government Action Plan 2011-2015* which aims to promote the transition towards a new generation of e-Government services: open, flexible, seamlessly connected between the regional, national and European level. In particular, the plan is aimed at extending e-Government services in a cross-border logic and to give a central role to users (citizens and businesses) in actively designing and personalizing online public services that respond to their needs. National public administrations will play a key role in implementing the action plan, while the main responsibility of the EU Commission will be that of bettering the conditions for the development of cross-border e-Government services moving from the necessary preconditions on interoperability, e-Signatures and e-Identification.

The action plan is built around four macro-themes explicitly based on the Malmö Declaration: empowering users, reinforcing mobility in the Single Market, enabling efficiency and effectiveness of administration and providing the necessary key enablers and pre-conditions for e-Government (EU Commission, 2010b). Empowering users means allowing citizens, businesses and other organizations to be pro-active in society through the use of the tools provided by new technologies. Public services can become more efficient and users may be more satisfied if services are designed and/or produced in collaboration with those users who will benefit from them. The primary courses of action to this regard are: services designed to respond to users' needs; collaborative production of services, for example through 2.0 web technologies; re-use of public sector information (including a revision of the directive on public service information or *open data*); a more transparent Public administration; involvement of citizens and businesses in the policy-making process (*e-democracy*). The second theme - Single Market - includes all actions aimed at allowing e-government services to overcome national barriers: "borderless services" for businesses; services for personal mobility; implementation of cross-border services in the whole EU. The third theme - efficiency and effectiveness of PA - gathers a series of actions pertaining to the use of technologies

as an enabling factor to obtain important organizational changes in the Public Administration: betterment of organizational processes (for example through electronic procurement and a faster sorting of applications); reduction of administrative burdens; more "ecological" public administrations (for example through electronic archiving and use of videoconference systems as an alternative to travel for meetings). The fourth and last theme is dedicated to the full provision of the pre-requisites for the development of e-Government: open standards and interoperability (for example enabling a common European framework of interoperability); provision of basic tools (for example through a revision of the directive on e-Signatures and a proposal for a reciprocal pan-European acknowledgement of e-Identification and e-Authentication). Within the actions cited by the *European e-Government Action Plan 2011-2015* some are particularly relevant for the purpose of this dissertation: a boost towards the spread of national electronic ID cards to facilitate cross-border procedures; the availability of data to be reused by third parties for the development of new public services and applications, of which Lazio's "Open Data Lazio" portal is a perfect example; real-time monitoring of the progress of citizen- and business- procedures with the Public administration through more transparency and openness.

2.2 Italian policies

2.2.1 *2000 Action Plan for the Information Society*

In keeping with the *eEurope 2002* initiative and after several years of sporadic and non-continuous initiatives, on June 16th 2000 the Italian government adopted an organic plan on the theme of the Information Society - *Piano d'azione per la Società dell'Informazione (Action Plan for the Information Society)* - built around four main areas of intervention: human capital (formation, education, research, development); e-government (Public Administration services); e-commerce (coordination, rules and procedures) and infrastructures, competition and access to market. The plan considered the transition towards the Information Society a strategic priority for Italy and moved from the assumption that the development and adoption of ICTs happen

in a largely spontaneous and decentralized process. Aim of the plan was to facilitate and accelerate this process through: cooperation and integration between all the interest subjects (businesses, financial markets, universities, non-profit institutions, workers, citizens, public administrations); support to research, education and promotion through light and existing tools; promotion of a competitive environment in the ICT sector and training and inclusion policies in Italy's underdeveloped South. The logic behind intervention is the coordination, the promotion and the spread of best practices at the local level, activating private sector resources where possible. Regarding funding, the burden on the public budget was limited and largely covered by existing laws pertaining mainly to schools and universities. New and additional resources were predicted to come from the revenue of the tender for UMTS licenses. Like many similar European documents, this action plan was rich of quantitative goals and deadlines (De Pietro, 2011).

2.2.2 *2000 Action Plan for e-Government*

A week after the approval of the *Action Plan for the Information Society,* the Italian Council of Ministers approved the first ever *Action plan for e-Government (Piano d'Azione dell'e-Government)* with an initial envisioned value of 1.335 lira (690 million euros) for actions promoting the digitization of the public sector, thanks to funds coming from the public auction for the assignment of UMTS licenses. The plan focuses on actions aimed at digitizing the delivery of public services to citizens and businesses and on actions aimed at allowing computerized access by end users to Public administration services and information, leaving aside other digitization processes aimed at improving internal operative efficiency of single administrations. To implement the integrated Public administration digitization program the Plan envisioned a rapid switch to a new phase in which all central and local administrations were enabled for an equal digital cooperation. This new phase saw local administrations playing a key role, becoming more and more public service *front-offices* in the decentralized and federal State system, with central administrations serving as *back-offices.*

The Action Plan intended to enable citizens to receive every type of public service they are entitled to by simply interacting with any front-office administration, without any territorial or residential limits; in interacting with the Administration, other than personal ID documents citizens shouldn't have to provide any documentation if such documentation is already held by al least one branch of the public administration. Once the citizen is identified, the *front-office* information system must be able to obtain all the information necessary for service delivery by directly reaching the public administration in possession of such information. In this vision, citizens aren't required to have any knowledge of the way the State is organized and may request services according to their needs, without needing to know which administration does what. The plan also envisioned for the Public administration to store all service delivery information in a single profile for each citizen. A single communication of eventual changes in the citizen's information would be sufficient for the new information to be registered at all levels of administration.

Among the preconditions indicated as necessary for of the Plan itself were: that all administrations be equipped with an information system designed to digitize not only internal administrative procedures and service delivery to users, but also for the delivery of services directly to the information systems of other administrations; that all the information systems of all administrations be connected through an equal network, without hierarchies reflecting institutional or organizational structures; that all administrations playing the role of *back-offices*, i.e. keeping records of the information necessary for service delivery, provide that information to all administrations playing the role of *front-offices*, free of charge, making service delivery possible without requesting information to citizens when this information has already been inserted in the system; that authentication, identification and authorization verification follow a procedure that is uniformed at the national level, using a single document (i.e. digital ID card) to access all services.

This first action plan awards the majority of funding (240 million euros) to local administrations, asked to realize the infrastructures and services necessary for the creation of a national integrated information system. In addition to these funds, about 160 million euros were allocated for actions of general interest: electronic ID card, e-Signature, and integrated civil registry. The rest of the funding was divided between digital training of public servants (142 million euros) and the realization of broadband infrastructure (84 million euros).

2.2.3 *2002 Guidelines for the Information Society*

In 2002, following a change in government and a new impulse to the theme of innovating the Public administration - mainly symbolized by the fact that a new Ministry of Innovation and Technology was created, thus separating the subject from the Ministry of Public Function - the competent authority at the time, Minister Lucio Stanca, presented the *Government guidelines for the development of the Information society in the 2002-2006 legislature* (CdM, 2002). The three main courses of action envisioned in the national programming document were: bettering efficiency and effectiveness of Public administration leveraging technological innovation (e-Government); stimulating the development of Italy's economy spreading new technologies and making Italy a key player in European policy-making and in the promotion of international cooperation on technological innovation. In particular, in regard to e-Government, the document contained a series of quantitative objectives on which to measure and evaluate government action, regarding services to citizens and businesses, internal efficiency of the Public administration, development of human resources, transparency of parliamentary activity and quality of service (see table in the next page).

Online services for citizens and businesses
1. All "priority" services available online
2. Distribution of 30 million electronic ID cards and National service cards
3. 1 million e-Signatures enabled by 2003
Internal efficiency of the Public Administration
4. 50% of goods and services expenditure through e-Procurement
5. All internal Public Administration mail through e-mail
6. All payment obligations and orders to be carried out online
Development of human resources
7. Certified digital literacy of all public servants eligible
8. 1/3 of training carried out through *e-Learning*
Transparency
9. 2/3 of Public Administration offices offering citizens online access to the monitoring of procedures.
Quality
10. Adoption of user satisfaction monitoring systems by all service-delivering offices

Legislature goals, adapted from *Government guidelines for the development of the Information society in the 2002-2006 legislature* (CdM, 2002)

In the following years, the normative developments in relation to the use of ICTs in public administrations were passed: Directive on open source in PA in October of 2003, "Stanca Law" on accessibility (Law n° 4 of January 9th 2009) and in particular the 2005 Digital Administration Code (*Codice dell'Amministrazione Digitale).*

2.2.4 *2005 Digital Administration Code*

In March of 2005, the various regulations on the subject of digital activity of public administrations where gathered and reorganized in a single normative act, the Digital Administration Code, with the aim of providing an adequate normative framework for the promotion and regulation of the use of ICTs not only for the public administration's internal activities, but also in its relationships with citizens and businesses, achieving a progressive reduction of costs and, simultaneously, an

increase in efficiency and transparency. The Code establishes the principle according to which central and local public administrations are to organize themselves, re-determining their own structures and procedures for the new communication technologies, to ensure "the availability, management, access, transmission, conservation and usability of information through digital means".

The Code also gives citizens and businesses the right to request and obtain the use of ICTs in their relationships with public administrations and public service managers, within the limits stated by the Code, for the dispatch of acts and documents and for the completion of payments. This right is reiterated in particular reference to participation in the administrative procedure (in reference to the communications relative to the start of a procedure and its different phases) and to the right to access administrative documents, within the observance of the rights established in Law 241 of August 7th 1990. However, these "new right" haven't always been rendered effective by the procedures and behavior of the Public Administration.

Particular attention is accorded to the need for uniformed user-service interaction modalities, interoperability between systems, security in data management and digital training for public servants. Lastly, the Digital Administration Code regulates the communication and interaction systems between the Public Administration and citizens and businesses: i.e. certified electronic mail (PEC) and the Public connectivity System, which serves as a sort of intranet for the Public Administration.

After ten years from the approval of the Code, the envisioned administrative reorganization hasn't been carried out or hasn't delivered the results hoped, causing for the majority of the principles listed above not be enacted (EY & Glocus, 2015).

2.2.5 Phase 2: e-Government for an efficient federalism

In spring of 2003 the Technical Committee of the Permanent Commission for Innovation and Technologies, composed by regional governors and the Minister for Innovation and Technologies Lucio Stanca, drafted a programming document entitled "*E-government for an efficient federalism: a common vision, a cooperative implementation*". The document defined the future collaboration between Municipalities, Provinces, Regions and central Administrations for the development of e-Government in Italy, stating that the federal transformation of the country was an extraordinary opportunity for reorganizing the major part of Italian Public Administration. The reorganization of the central and local public sector is presented as the way to guarantee not only the economic sustainability of the enactment of federalism, but also to improve the efficiency and quality of the Public administration. In order for this to happen, a common view of innovation in the federal State between the central level and the system of local and regional authorities is fundamental.

In November of 2003 the Italian Unified State, Regions and Local Autonomies Conference approved the *E-government in Regions and local authorities: second phase of implementation* document. The second phase of implementation of e-government mainly focused on the extension of existing innovation processes to the vast majority of local public administration, in relation to both citizen- and business-service delivery through interoperability and the realization of infrastructural services in all regional territories. This phase also includes promoting digital citizenship through online services and specific measures for the inclusion of small municipalities, for the promotion of the use of online public services and for the training and assistance to local authorities. The actions envisioned in the second phase of e-government implementation amounted to a budget value of 185 million euro, with the majority of resources (114 million euros) coming from the UMTS funds inserted in the 2000 Action Plan and the primary cost driver being the spread of services through interoperability (about 85 million euro). In 2004 another line of action was added: using the emerging digital cable TV technologies as a channel for

local public administration service delivery ("T-government") with a 7 million euro budget coming from the UMTS funds.

It should be noted that due to a series of political and administrative vicissitudes, mainly connected to the spread of citizen- and business-services and CSTs (territorial services centers) for small municipalities, operational projects for local authorities didn't start until 2009 (De Pietro, 2011).

2.2.6 *Towards a national e-Government system*

In January 2007, following a change in government, Italian Minister fro Reforms and Innovation in Public Administration Luigi Nicolais presented the new policy document titled "*Towards a national system of e-Government"*. The document opens presenting a critical assessment of the state of the art of the innovation of Italy: the central Public administration is technologically equipped but not efficient; there is no homogenous and minimum level of innovation at the local level; services are underused; digitization hasn't always implied a simplification and reorganization of processes; little or no attention has been paid in previous years to innovation of Public administration *back-offices* or to the sustainability of administrative projects. The document proposes to overcome the experimental phase to move on to an actual implementation phase reaching seven strategic objectives: (1) improving Public Administration efficiency, obtaining a strong change in organization and management thanks to the potential of technological innovation; (2) realizing interoperability and full cooperation between administrations through shared databases and information, in order to reduce processing time and simplify procedures; (3) improving public expenditure transparency and efficiency through tools functional to higher control over management and public finance; (4) building a digital citizenship, promoting *e-Democracy* and overcoming the digital divide, through broadband development, removal of barriers to access and higher quality supply of online public services; (5) adopting a systematic approach for PA service quality and efficiency measurement, using technologies for evaluation of customer satisfaction both within and outside administration; (6) creating a favorable

environment for business competitiveness and to boost growth in the ICT sector, promoting innovation of public administration services and supporting *open source* initiatives; (7) making Italy a key player in the administrative innovation process in Europe through a stronger presence of the country in the EU and international scene, in order to facilitate sharing of knowledge and good practices.

Despite the positive intentions, this policy document wasn't implemented due to the early and abrupt interruption of the legislature in 2008.

2.2.7 *2012 e-Government plan*

In December of 2008 Minister of Public Administration and Innovation Renato Brunetta presented the *2012 e-Government Plan* as a new policy document on innovation in Italian Public Administration. In particular, the document moves from the previous programming document by the same Minister *Industrial plan for the Public Administration* and from the latest EU program documents (mainly the *2010 e-Government Action Plan).* This previous document outlined Minister Brunetta's strategic guidelines, underlining the crucial role of the digitization of Public Administration and the need to rationalize the numerous digital initiatives that have affected multiple administrations, both central and peripheral. This intense activity - said the document - has implied important costs and has generally been uncoordinated and disorderly, with waste and duplications, due to the absence of a "control room" which should be created by the central Government through a rethinking of its own technical structures (Innovation and Technology Department, CNIPA and Formez).

The *2012 Italian e-Government Plan* has the explicit aim of overcoming the gap between Italy and other developed countries in terms of online services and Public Administration innovation, through the definition of precise operational goals to reach, enhancing existing experiences also in collaboration with the private sector. 27 transverse and multidimensional project objectives for the local and central Public

Administration are connected to 4 macro-level goals: sectorial, territorial, system and international. In addition to these, the "Special projects" included the Innovator's initiative at the 2010 Shanghai World EXPO.

From a content point of view, the *2012 Italian e-Government Plan* collected and enhanced what had previously been done at a normative level (above all the CAD - Digital Administration Code and the law on e-invoicing and VoIP) and tried to give a single national standard on other issues (such as health, civil registries and land registries) overcoming opposition by local administrators. The dimension of sectorial innovation (from Justice, to Education, to Healthcare etc.) prevails, at least in terms of visibility, on the innovation of the local autonomies system. It should also be noted that the themes of e-democracy, of organizational changes (redefinition of procedures and processes) and of the communication of existing services to businesses and citizens are completely absent.

In an effort for efficient control, each objective was qualified with a standard format in terms of predicted outcomes, costs, gantt, partners, etc. and a web page for constant implementation monitoring was created (it is currently inactive). It might also be noted that the *e-Government plan* was presented in an atypical format: a PowerPoint presentation, in clear discontinuity with the previous policy documents (presented in Word document format) and probably in an effort to facilitate communication and disclosure.

The funding requirements for the plan are estimated in 1380 million euros, but only 248 million euros are effectively available (mainly gathered from programming of previous governments), while 1133 million euros were to be taken from specific funds as indicated at page 4 of the Plan (FAS - Fund for Underdeveloped Areas, POR - Regional Operative Plan, PON - National Operative Plan). The funding situation is not a marginal element: it forced the Government to downsize part of its ambitious goals also due to the fragile situation of Italian public finances in general at the time.

2.2.8 The 2012 "Transform Italy" Decree and other main policy and legal documents concerning the Digital Agenda implementation in Italy between 2012 and 2014

A legislative decree titled *"Further urgent measures for the Country's growth"* (also known as *"Crescita 2.0"* or *"Trasforma Italia"*) containing measures for the development of the Digital Agenda and start ups, was amended by Senate and approved in October of 2012. In particular, the decree received the principles of the European Digital Agenda in the Italian legal system, providing a strong leverage point for social cohesion, structural effort for innovation strategy implementation, job growth, higher productivity and competitiveness. On the basis of this decree, the Italian government is held to present an annual updated report on the implementation of the Italian Digital Agenda.

Article 1 of the decree focuses on the creation of a "unified digital document", a free single document to facilitate citizen access to online public services. This document would cost 62 million euros a year. Furthermore, the decree established the National Registry of Resident Population, a single data management center, which would merge the existing INA (National Index of Registries) and AIRE (Registry of Italian citizens residing abroad). Another element of the first section is the concept of "Digital domicile of the citizen" - the possibility for each citizen to communicate with the public administration through a certified email address - and the mandatory use of certified email (PEC) by single businesses registering in the Business Registry or the Register of craft trade enterprises, so to significantly reduce processing time and burdens for bureaucratic compliance. Article 6 imposes that all purchases of goods and services by the Public Administration be carried out exclusively online, so to increase transparency and time-efficiency, and that all communication between the different branches of the Public Administration or between the PA and businesses occur exclusively through digital means. Civil servants of incompliance would face legal and disciplinary responsibility. Art. 9 makes it mandatory for the PA to publish data and information in open format, in an effort to reach EU goals in terms of *open data.*

There are a few other important elements of the "*Transform Italy*" decree that are relevant to the purpose of this work. First of all, the confirmation of the goal of completely eliminating digital divide, providing all "white areas" with a minimum 2Mbps connection, with 600 million euros directed at Italy's underdeveloped South and an additional 159 million euros for interventions in the county's center-north. Secondly, art. 15 envisions mandatory electronic invoicing for all companies supplying the public sector in Italy and mandatory acceptation of electronic payments, regardless of the transaction value. Thirdly, art. 29 focuses on investments in innovative startups as a prime driver for growth and investment attractiveness, enabling tax deductions for investments in innovative startups in 2013, 2014 and 2015. Lastly, art. 29 of the decree introduces a 50% tax credit for investments in the realization of strategic infrastructures exceeding 500 million euros by December 31st 2015.

Other measures adopted in 2012 include regulations by the Ministry of Education, University and Research (MIUR) and the Ministry of Economic Development: chiefly the *National broadband plan* and the *National ultra broadband plan*.

In 2013 measures in terms of Digital Agenda are tackled in the so-called "*Action decree*" (*"Decreto del fare"*) - mainly for what concerns government incentives to SMEs investing in ICT - and in the 2014 Italian Financial Stability Act. This last document allocated and confirmed 20,74 million euros for the completion of the *National Broadband Plan.* On the issue of Digital Agenda governance, article 13 of the *Action decree* approved in June of 2013 envisioned, in addition to the existing AgID (Agency for a Digital Italy), the establishment of a "control room for the implementation of the Italian Digital Agenda", chaired the President of the Council of Ministers or one of his delegates and composed of seven ministers, one regional governor and one mayor designated by the Unified Conference". Within the scope of this control room, a "Permanent table for innovation and the Italian Digital Agency" was also envisioned. This advisory organ is in turn "chaired by a Government Commissioner for the implementation of the digital agenda who is in charge of a mission structure in the Presidency of the Council of Ministers". By September 2014,

this control room was supposed to present a "comprehensive overview of the rules in force, of the started programs and of the available resources that all together constitute the digital agenda". This document was not presented in time and its content later included in different documents pertaining to AgID (Fotina, 2014).

In 2014, the Italian government includes Digital Agenda goals in various parts of the 2015 Financial Stability Act. Due its specific budgetary normative nature, this last act could not include organizing or regulatory interventions and its content is therefore limited to identifying priorities and funding interventions already contemplated in previous laws or plans. Funding is mainly directed to the sectors of Justice (digital trail), Healthcare (Digital Healthcare Pact and New Health Information System) and Internal Revenue (fighting tax evasion by promoting e-payments). Funds are also allocated for the digitization of documentary heritage (Culture sector), information system for social services (27 million euro/year) and labour policies (11 million euros/year). The Agency for a Digital Italy (AgID) is awarded an annual working budget of a little less than 3 million euros per year (Iacono, 2014).

2.2.9 *2015 Italian Strategy for Digital Growth and Italian Strategy for Ultra-broadband*

In 2015, after parliamentary consultation, the Italian Government approved the *Italian Strategy for Digital Growth* and the *Italian Strategy for Ultra-broadband,* two policy documents that will address the initiatives of the Partnership Agreement for the 2014-2020 funding program.

The *Strategy for Digital Growth* divides its interventions in 3 groups: (1) "Transversal Infrastructural Actions", which include Public Connectivity System and Wi-Fi availability in all public buildings, Digital Security for the Public Administration, Rationalization of ICT assets, consolidation of data centers and cloud computing, Public Digital Identity Service (SPID); (2) Enabling platforms:

Resident Population Registry, Electronic Payments, Electronic Invoicing to and by the Public Administration, Open Data, Digital Healthcare, Digital Education, Digital Justice, Digital Tourism, Digital Agriculture; (3) Acceleration programs: "*Italy Login - the citizen's home"*, Digital skills, Smart Cities and communities (Presidenza del Consiglio dei Ministri, 2015a).

The *Italian Strategy for Ultra-broadband (2014-2020)* plans the interventions necessary to reach the EU 2020 targets (100% 30Mbps broadband coverage and 50% of subscriptions to 100Mbps broadband with an 85% coverage). Aside from residual funds from the 2007-2013 programming, the Strategy allocates 12 billion euros for the actions necessary to reach the 2020 targets, with 6 billion euros coming from providers and 6 billion euros coming from the State. The planned interventions are divided on the basis of the four clusters that subdivide the Italian territory, with the individuation of 94 thousand homogeneous areas (Longo & Iacono, 2015).

Keeping in mind this detailed overview of the evolution of policies and regulations relative to digitization both at the EU and at the national Italian level, we can now move on to assessing the state of the art of policy implementation in Italy and in particular in the Lazio region. After a brief history and description of the governance of the *Agency for Digital Italy* (AgID) the following chapter will focus on the implementation of EU and Italian policies in the Lazio region.

CHAPTER THREE

Case study:

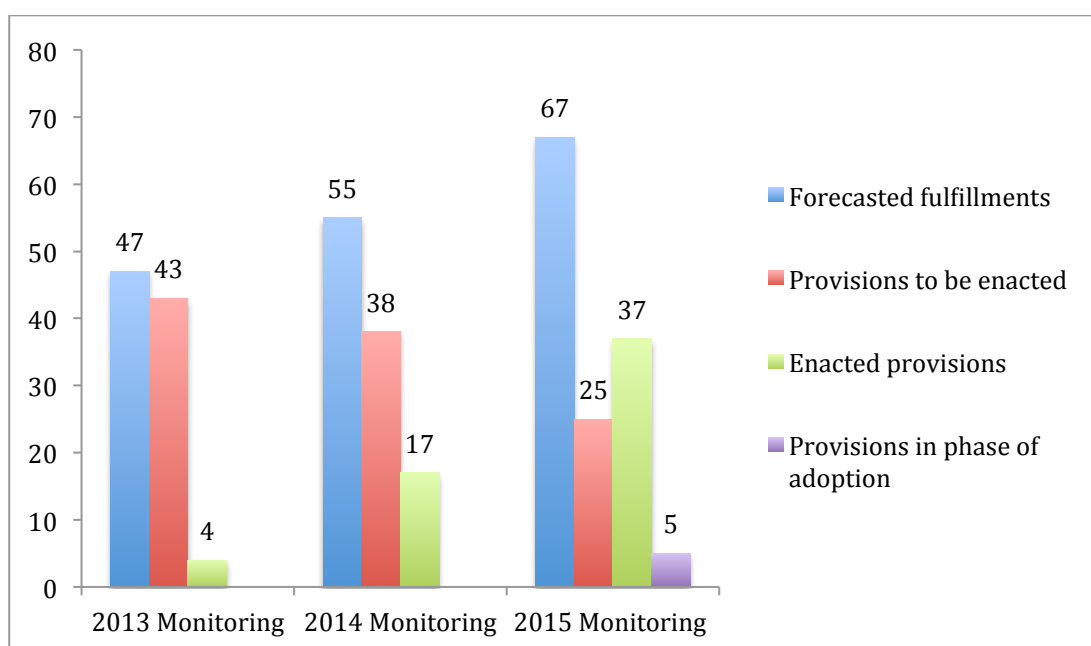# Implementation of the Digital Agenda for Europe in Lazio

This third and final chapter will focus on the implementation of the European Digital Agenda in Italy's Lazio Region. After an introduction on the state of the art of digital policy implementation in Italy and the relationship between the national and regional levels of digitization governance in Italy, this chapter will present the main initiatives the Lazio Region has completed and planned to contribute to reaching the goals set by the EU Commission for 2020 with the *Digital Agenda for Europe.* These initiatives will be presented through an in-depth interview conducted specifically for this work with Ms. Antonella Giulia Pizzaleo, Head of Regional Digital Agenda and Internet Governance for the Lazio Region.

3.1 *Implementation of the Italian Digital Agenda: where are we now?*

As documented in the previous chapter, the implementation of the EU Digital Agenda in Italy has mainly consisted in a long series of normative and policy documents that transposed the Europe 2020 digital objectives to the national level. Despite the significant number of action plans and laws adopted, Italy presents a significant delay in its progress towards the 2020 goals. This delay has Italy ranking 25th out of 28 EU Member States according to the 2015 Digital Economy and Society Index, with an overall DESI score of 0.36 [out of a (0,1) interval], whereas the European Union as a whole scores 0.44, with the worst performing country (Bulgaria) scoring 0.31 and the best performing country (Denmark) scoring 0.68 (EU Commission, 2015).

DESI	Italy		Cluster	EU
	rank	score	score	score
DESI 2015	25	0.36	0.38	0.47
DESI 2014	25	0.33	0.34	0.44

According to the latest Monitoring of the implementation of the Italian Digital Agenda by the Servizio Studi of Chamber of Deputies, out of the 67 fulfillments forecasted on March 15 2015, only 37 provisions have been enacted and 5 provisions are in the advanced phase of enactment; 10 acts don't have an enactment date set or the set enactment date hasn't expired yet. The measures not yet adopted and of which the adoption date has already expired are 15 out of the 67 envisioned (Servizio Studi Camera dei Deputati, 2015).

Implementation of the Italian Digital Agenda

Adapted from elaborations by the Servizio Studi of the Chamber of Deputies on enacting provisions adopted between June 2012 and March 15 2015 (Servizio Studi Camera dei Deputati, 2015)

However, as shown by the chart above, there has been a rise in the adoption of enacting provisions of the Digital Agenda compared to the past year (20 new enacted provisons and 5 in phase of adoption).

3.2 Towards the Digital Agenda for the Lazio Region

The Digital Agenda for the Lazio Region was officially presented on June 18th 2015, as this work was already completed. The Agenda is an integrated program of innovative and high-technology interventions aimed at a sustainable, inclusive and intelligent social and economic development of the Region. It is a policy and directive tool for the planning, realization and implementation of the Administration's digital projects, which are common to all sectors. The document represents an opportunity to value the work of all regional structures. The Agenda is articulated in five areas of intervention: (1) digital and network infrastructures; (2) open and intelligent digital public administration; (3) digital Healthcare; (4) Smart Communities; (5) Citizens and digital skills. In addition to these objectives, there is also a transversal objective in terms of Regional Internet Governance: the definition of policies, in accordance with national and international directions and actors, of an overall management of the Internet network, for the part for which the Regional Administration is competent (Pizzaleo, 2015).

However, the document presented is the result of different initiatives, many of which have already begun, like the Open Data Lazio project. Prior to the Lazio Digital Agenda, the Region worked to meet the goals set in the Italian Digital Agenda through operative strategies defined by an annual Action plan approved by the Regional Council. The goals approved by the Regional Council in April 2014 were inserted in a publication on the joint framework for regional resource programming for the 2014-2020 cycle, entitled *"With Europe, Lazio restarts"*. This publication summarized the joint programming framework and described in detail how 90% of over 4.1 billion euro would be concentrated in just 45 macro-interventions (Regione Lazio, 2014). Among these, particularly relevant for the Digital Agenda were the interventions within *"A great European Region of Innovation"* and *"Investments for a competitive territory"* like the *"Lazio 30 Mega program. Interventions for disseminating ultra-fast broadband Internet in the Lazio Region"*.

3.3 Antonella Giulia Pizzaleo, Head of Regional Digital Agenda and Internet Governance for the Lazio Region.

Before reaching her current position as Head of Regional Digital Agenda and Internet Governance for the Lazio Region, Ms. Pizzaleo has worked on the themes of e-government and innovation for public administrations both at a central level (Presidency of the Council of Ministries and Ministry for Public Administration) and at a local level (Province of Rome and various municipalities). From 2006 to 2008 she was scientific councilor for the Ministry of Public Administration and Innovation. She has worked extensively in the field of Internet Governance for the Institute of Informatics and Telematics of the National Research Council (CNR) in Pisa, taking part in numerous international meetings on this theme and she actively organized the Italian Internet Governance Forum. She was also post-doctoral Research Fellow at the Nexa Center for Internet & Society of the Polytechnic University of Turin. She has collaborated in various articles and publications and has been an adjunct lecturer at universities and research centers.

3.4 *Interview*

The following interview was conducted in Italian, by phone, on Monday June 8th 2015. It was recorded in the RadioLUISS recording studios.

Fosco: How long have you been Head of the Digital Agenda and Internet Governance for the Lazio Region?

Ms. Antonella Giulia Pizzaleo: A little over one year. Since receiving this assignment a year ago, I gathered all that had already been done in the Lazio Region: in terms of e-gov and digitization of the region's administration and in terms of projects that had already begun (in the field of digital healthcare for example) or were about to begin like the Open Data Lazio project. What we did was try to group all these projects in a coherent frame that we would then integrate with all current and future projects of the Digital Agenda. In addition to this, we made a consistent effort to collaborate with other levels of administration in order to make the Lazio

Region a steady presence in the national, European and inter-regional conferences and working groups that focus on the digital agenda. This was done to insert the region in a wider conversation on digitization.

Fosco: How is the digital governance split between AgID (Agency for Digital Italy), regions, the State-Regions conference etc.? Are Regions independent from AgID in terms of the implementation of the Italian digital agenda? What are the relationships between the different levels of governance?

Ms. Pizzaleo: By statute, regions have a certain level of financial and legal independence, for example in regard to the way they allocate regional funds and funds coming from EU programming. This independence is nonetheless coherent with national and EU frameworks. The relationships between the different levels of governance present certain degrees of criticalities that have brought regions to put pressure at a national level for these problems to be solved: the recent change at the top of AgID [*referring to the sudden resignation by AgID Director General Alessandra Poggiani in March of 2014, less than a year after taking office*] has inevitably slowed down what had been started, even though the new director general [*Antonio Samaritani, former CIO of the Lombardy Region*] is very committed to getting the agency back to its 100% activity. On one hand we have AgID [*Agency for Digital Italy*] which is responsible for and focuses on the "*Strategy for digital growth*" [*Strategia per la Crescita digitale*]*,* which is one of the three strategic documents pertaining to the Digital Agenda. The other two are: the *"National plan for Ultra-wide Broadband"* [*Piano nazionale per la banda ultralarga*]*,* which in turn is direct competence of the Presidency of the Council of Ministers (in coordination with AgID), and the *"Agenda for simplification"* [*Agenda per la semplificazione*] which is competence of the Department of Public Service [a part of the Presidency of the Council of Ministers]. Regions, including the Lazio Region, are pushing for a link between the different national levels in order maximize efficiency by integrating the different initiatives and avoiding overlapping efforts in the implementation of these three strategic documents.

The Lazio Digital Agenda is a regional document, with the specific strategic objectives being defined on the basis of Governor Zingaretti's political program while execution is handled in coordination with the Italian Digital Agenda and the EU Digital Agenda. This coordination is mandatory in relation to certain binding objectives defined at the EU level, for example the goal set for Ultra-wide broadband coverage of the regional territory at 30Mbps and 100Mbps by 2020. We are dependent in terms of goals to be reached and deadlines to be met, but not on the way they are to be reached and met. For example, Lazio is the region that has invested the highest overall amount of resources out of all the Central and Northern regions of Italy (the most developed regions), both in terms of regional resources and of European funds through the European Agricultural Fund for Rural Development (EAFRD). The choices behind this investment are made at the regional level: Gov. Zingaretti has decided that Ultra-wide Broadband is strategic. In addition to AgID, the Presidency of the Council of Ministers and the Ministries, there is also an inter-regional level at which we are coming together to structure working groups in order to overcome certain factors of confusion in terms of national governance of the Digital Agenda. For example we recently signed a Protocol for Central Italy, in which Lazio, Tuscany, Umbria, Marche and Emilia Romagna come together to find innovative and shared solutions. Working together allows us to move faster, not replicating the same initiatives in all regions but rather understanding where to exchange solutions, services and best administrative practices. Another important step at the inter-regional level has been the recent [*May 2015*] creation, within the State-Regions Conference, of a Commission on the Digital Agenda that will become the single political aggregation point in terms of the regional level execution of the Digital Agenda. This will unify the governance, which was previously fragmented among the different commissions of the Conference in order to reunite and strengthen the political mandate through a single Commission.

Fosco: Would the Italian Digital Agenda implementation benefit from a single, strong governance concentrated in AgID?

Ms. Pizzaleo: I think this situation is very complex. We're not starting from scratch, so we can try to find solutions for the problems we have in terms of governance [*of the Digital Agenda*] moving from a conscious analysis of the current situation. If we don't want to go as far as to centralize all functions - both in terms programming and in terms of control - in one administrative body, what certainly needs to be done is to create a much stronger coordinating body. If centralizing completely would probably be problematic as well as inappropriate - because in certain cases it is logical for certain tasks to be carried out by different administrative bodies - strengthening the coordination function and authority is fundamental, whether it be assigned to AdID or the Presidency of the Council of Ministers.

Fosco: How important is the role of European Structural Funding in the implementation of the Digital Agenda at a regional level? Which are the funds used?

Ms. Pizzaleo: Essential! European funds are of vital importance for the implementation of the Digital Agenda, particularly in the Lazio Region, where the available regional resources are absolutely insufficient. The Lazio region was one of the most virtuous regions in terms of European fund management not only because it was able to reinvest unused funds from previous programming but also because it was included in the first round of funded regions in the awarding of the European Fund for Regional Development (ERDF). Funds for the Ultra-wide broadband project come from both the EAFRD and European Regional Development Fund (ERDF). The European Social Fund (ESF) and the ERDF contribute to the financing of other activities of the Digital Agenda, with the ESF focusing on training and skill-building activities.

Fosco: Where does the Lazio Region stand in terms of progress towards reaching the 2020 goals for Wide and Ultra-wide Broadband (30Mbps download rates for all citizens and at least 50% of households with 100Mbps broadband subscriptions)?

Ms. Pizzaleo: We have already started the first three interventions for 23 municipalities of the Lazio Region, which are all "*white areas*" [the EU defines "white areas" those areas at market failure, where public intervention is necessary to guarantee ultra-wide broadband coverage because there isn't enough potential profit for market operators to invest] and will be covered at 30 Mbps. These interventions were funded with residual resources from the previous EU funding programming. We are working on the next intervention in collaboration with Infratel, the joint-stock company created by the Italian Ministry for Economic Development and the Invitalia [*the National Agency for the attraction of investments and the development of enterprises*] in charge of classifying Italian municipalities in *white, grey or black areas* [*black areas* are areas that do not require public intervention to reach the 2020 goals in terms of Ultra-wide broadband and *grey areas* are areas where only one broadband operator is present and it is improbable that another network be installed in the near future]. I would say we are making decisive and rapid steps forward in reaching the goals set for 2020.

Fosco: The Lazio Region has recently launched the Open Data Lazio project and is currently touring the region to present the initiatives to citizens. What feedback are you getting?

Ms. Pizzaleo: This presentation tour is the result of an effort of the Region to share our Open Data experience with citizens, in order to understand the situation in the different areas and to push for adhesion. So far we have visited the municipalities of Albano Laziale and Formia, which represent excellencies in terms of Open Data, as they have already been working for some time on these kinds of initiatives. In these municipalities not only did we have great feedback on Open Data Lazio but we also saw a coherent effort that has already been brought forward by the municipal

administration. The awareness of citizens on this subject is certainly growing. In particular there is a strong request for these kinds of initiatives in terms of transparent administrative spending, partly due to the Region's track record [*probably referring to the scandal of embezzlement of electoral funds by Regional councillor Francesco Fiorito, which brought then-governor Renata Polverini to resign from presidency of the Region in September 2012* (O'Leary, 2012)]. Guaranteeing a strong transparency of the different administrative authorities is certainly one of the functions of the Open Data Lazio initiative, but there are many others.

The public meetings of the Open Data Lazio tour are not the only tools we have. We call Open Data Lazio a "*project*" rather than a "*portal*" because in addition to the portal, it comprises of a series of measures aimed at informing citizens, at spreading an open data culture among the local administrations and also at providing the skills necessary to support the project. The Open Data Lazio tour is the first of these tools, the second being the creation of a "practice community on the Digital Agenda" ("comunità di pratica sull'Agenda Digitale") part of the Lazio Region and open to all members of local administrations who wish to contribute to the implementation of the Agenda. This practice community is a group that we started in the Region to provide open-data skills and that so far has 500 members among regional officials and local administrators.

Fosco: Speaking of digital skills, according to the DESI (Digital Economy and Society Index), Italy ranks 9th out of all Member States in terms of Open Data, but 25th out of 28 EU states in terms of overall digital performance and competitiveness. The DESI report stresses the fact that while many problems are on the supply side, there are evident issues on the demand side, in terms of digital skills of users. What is the Lazio Digital Agenda doing in terms of training public servants on one hand and improving the digital literacy of citizens in general on the other?

Ms. Pizzaleo: There are two distinct issues here. The first is qualified demand, which is an issue of skills within the administration but also at a local level because

businesses, start-ups, research centers and all those who actually use open data should be the ones urging public administration to keep liberating data and requesting high quality data. One problem we face as a country in terms of open data is that we have liberated an amount of data adequate to EU standards - and that explains why we rank higher in Open Data Score than in the overall DESI ranking - but this data is often not high in quality, causing the demand to be downscaled by the low quality of supply.

The second issue is on the supply side, in terms of internal skills necessary not only to produce open data but in general to implement the Digital Agenda. Realizing the goals set in the Agenda is unthinkable without a structural and radical change within the administration, as it implies changing internal managerial and organizational flows and thinking differently - and cultural changes are the most difficult to bring forward. What the Lazio Region is doing in this direction is the "practice community" I spoke about earlier: we grouped all the administrative regional bodies, explained our project and asked them to nominate a representative for the Digital Agenda to be part of the community. This community offers opportunities to share experiences and compare problems, with an online platform though which to exchange questions, doubts, solutions and tips. In particular we are using platforms like Moodle to carry out online training.

Fosco: What are the next steps in the Lazio Digital Agenda?

Ms. Pizzaleo: The guidelines of the Lazio Digital Agenda will be presented on June 18th. The Agenda is built around five areas of intervention, which are (1) digital and network infrastructures, (2) open and intelligent digital public administration, (3) digital Healthcare, (4) Smart Communities, (5) Citizens and digital skills. Each one of these areas of intervention will have specific strategic goals, a vision of a digital Lazio and tangible projects. These projects have different statuses of implementation. Some of them have already begun, like the Ultra-wide broadband project within the digital and network infrastructures area and Open Data Lazio and a project of internal digitization of the administration within the open and intelligent digital

public administration area. "Open" refers to open data, "digital" refers to the e-gov dimension and "intelligent" refers to digitization of information and databases.

Digital healthcare refers to all projects related to ePrescriptions, database sharing and telemedicine for citizens and for health workers. The Smart Communities area includes services for local actors, specifically businesses, and measures that are meant to be a regional version of smart cities, for example the energy requalification of public administrative buildings or the single portal for productive activities directed at SMEs. The last area aims not only to give digital skills, through activities like the "practice community" and other activities aimed at citizens, but also to focus on the new rights of digital citizens, a theme that we are very close to. The transposition of "old" rights into the digital realm and the digital society is within this area.

In addition to these five areas, the Lazio Region is the first region to set a cross-objective on Internet governance. This subject is partly transversal to certain themes and objectives of the Digital Agenda and partly has its own peculiarities. In general, international bodies like ICANN are urging all levels of government to intervene on the theme of policies governing Internet. Since regions have a strong decision independence on how to intervene in the management of networks, we as a Region want to measure ourselves on the issue of Internet Governance.

Fosco: According to the DESI 2015 report, Italy has one of the lowest percentages of regular Internet users on the total population, with only 59% of Italians using Internet on a regular basis. This seems to be one of the key factors in the country's digital delay. Having worked in this sector for several years, do you think that the low levels of digital literacy are a *generational factor* or do you think that if more is done in terms of training and skill building, that percentage could be reduced in the near future, thus improving our digital performance and competitiveness ranking?

Ms. Pizzaleo: Unfortunately we can't tackle a single dimension that will solve this multidimensional issue. At a national level, Italy has a significant availability of e-gov services but very few users taking advantage of those services. We have high

levels of internet use for communication and social networks, but low levels of use for e-commerce. We don't use Internet for services but we have very high mobile penetration [Italy had a 158% mobile penetration, with over 97 million mobile subscriptions in 2014, and a 41% smartphone penetration as a percentage of the total population (Osservatorio Mobile and App Economy, 2014)] so it may be useful to focus on how to bring online services to mobile. The issue of digital literacy is influenced by different factors. Digital natives undoubtedly have a more specific attention towards these issues, even though digital skills don't always imply a consciousness of the broader implications of technology use. We obviously need to act on different levels: all these considerations can't be made if we don't provide the basic infrastructures. Nonetheless, providing the infrastructure is a necessary but not sufficient condition. We need to tackle the issue on a cultural level, taking consciousness of our shortcomings and putting a lot of effort in informing and raising awareness.

Fosco: Last question: are you optimistic about the digital future of Italy?

Ms. Pizzaleo: I can't afford not to be. We have a lot of work to do and it won't be easy. I am personally very passionate about what I do and have been doing for all my life. I am optimistic: we need to work really hard because we are faced with a lot of problems, but I think we are going in the right direction.

Conclusion

The main objective of the Digital Agenda for Europe is to foster economic growth and employment in Europe through a review of the digital priorities, investing on the spread of broadband, on the creation of new infrastructures for digital public services, on the development of digital skills, on Cloud Computing and on the realization of a new industrial strategy for electronics. According to EU estimates, reaching the goals of the Digital Agenda would increase EU GDP by 5% in the next 8 years, generating a 3,8 million job increase. These numbers should be a sufficient reason to convince Member States' policymakers that investments in digitization are an absolute priority in a time when the EU is still struggling to get back on its feet after the European debt crisis started in 2009.

The Italian context is somewhat misaligned with the average trends of EU Member States, in particular in regard to the goals and the digitization performances of the Public Administration. Moreover, the existence of various normative restrictions, as well as organizational, technological, cultural and financial restrictions leaves a series of criticalities due to the absence of a centralized coordination of the initiatives that are launched. This isn't to say that progress isn't being made, rather that it is not equally distributed within the country, resulting in a low average despite some excellencies at the local and regional level. The Lazio Region, chosen as the subject of the case study of this dissertation, could represent a parable of what the country is going through now in relation to the EU Digital Agenda: after years of digitization policies aimed at formally implementing actions set at the national level, the Region seems to have found its strategic focus in digital transformation as an opportunity for growth. Best practices like the "practice community on the Digital Agenda" and the Open Data Lazio project discussed in the interview with Ms. Antonella Giulia Pizzaleo in the third chapter of this work are proof of this focus and - thanks to vitally important EU structural funds - create the conditions for a digital leap of the Region. It might be desirable for Italy to take a similar path towards reaching EU digitalization standards and leveraging the economic and social opportunities offered by the digital transformation.

As Ms. Pizzaleo said in our interview, Lazio's [and Italy's] digital delay is a multilevel problem that can't be tackled acting on one single factor. The effort must be strong, wide and - most of all - coordinated. The necessary political will and vision seems to be adequate, as witnessed by the fact that the Renzi Government defined Digital Growth and Ultra-broadband as strategic priorities. Nonetheless, there is an evident criticality in the enactment phase, mainly due to the fragmented nature of the implementation and the absence of a strong authoritative body to coordinate this implementation. It seems natural that this role should be played by AgID (the Agency for Digital Italy), a body created with the specific task of "guaranteeing the realization of the objectives set in the Italian Digital Agenda within the framework of the Digital Agenda for Europe". However, this body seems to lack the tools or legitimation to fulfill its task.

In preparing this work, I have had the extraordinary opportunity to discuss the issue of the Digital Agenda governance with Ms. Marianna Madia, Minister of Public Administration and Simplification of the Renzi cabinet, Ms. Antonella Giulia Pizzaleo, Head of the Digital Agenda and Internet Governance for the Lazio Region and Ms. Maria Pia Giovannini, Director of the Public Administration Area for AgID. On three separate occasions[1], they all acknowledged that AgID doesn't currently have the authority and resources it needs to fully function as a "control room" for the Digital Agenda and successfully convey all local, regional and national efforts towards reaching the goals set by *Europe 2020*. As discussed with Ms. Pizzaleo, Regions are trying to find a solution at an inter-regional level with the Commission on the Digital Agenda established within the State-regions conference. It is now up to the Italian Government and policy makers to effectively accord AgID the authority it needs to lead Italy towards its digital future, which should already be a reality.

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[1] I spoke with Minister Madia during a Seminar on the Public Administration reform organized by the LUISS University Department of Political Science on April 15th 2015 in the Viale Romania campus in Rome. I spoke with Ms. Pizzaleo during our phone interview on June 8th, 2015 and I spoke with Ms. Giovannini during the "Competenze digitali e mercato del lavoro - Digital Management: transforming business and public administration" conference organized by the LUISS Business School and Ernst&Young on June 11th, 2015 in the viale Pola campus in Rome.

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DELAY IN E-GOVERNMENT AND DIGITIZATION OF PUBLIC ADMINISTRATION IN ITALY:
EU ACTION IN LAZIO
Abstract

Internet e la tecnologia digitale permeano la nostra vita di cittadini, cambiando radicalmente molti aspetti della nostra quotidianità. Attraverso l'e-Government, la rivoluzione digitale cambia il modo in cui interagiamo con le istituzioni, ripensa e riorganizza la pubblica amministrazione sia nel suo funzionamento interno che nel modo in cui fornisce servizi a cittadini e imprese, fornendo nuove opportunità di sostanziale risparmio sia sui costi diretti che su quelli indiretti. Gli effetti di questa rivoluzione si stanno manifestando con tempi e ritmi diversi nelle varie part del mondo: alcuni paesi sono stati più rapidi di altri nel comprenderne il potenziale e sfruttarlo per trarne i massimi benefici. L'Unione Europea si è posta come obiettivo quello di rendere gli Stati Membri partecipi dei vantaggi di questa rivoluzione. Nello specifico, con l'Agenda Digitale Europea inserita nella Strategia Europa 2020, l'UE ha fissato traguardi precisi e scadenze specifiche per portare tutti gli Stati Membri ad un livello soddisfacente di trasformazione digitale. Questo nel tentativo di sfruttare i vantaggi della digitalizzazione per realizzare una "crescita intelligente, sostenibile e inclusiva" e garantire all'UE un ruolo competitivo nello scacchiere economico globale.

L'Agenda Digitale Europea è una delle sette "iniziative faro" della Strategia Europa 2020 e, in quanto "faro", definisce il traguardo da raggiungere ma lascia agli Stati Membri indipendenza sulla rotta da seguire per raggiungerlo. L'Unione mette a disposizione degli Stati membri i fondi di programmazione, che costituiscono la "benzina" o il "vento" necessari per portare la barca in porto e raggiungere gli obbiettivi fissati per il 2020. Questi fondi e l'azione comunitaria sono essenziali per permettere agli Stati Membri come l'Italia di recuperare il proprio "ritardo digitale", che può essere dovuto a fattori strutturali, politici o economici.

Lo scopo di questo lavoro è analizzare il progresso dell'Italia in termini di e-Government e digitalizzazione della Pubblica Amministrazione nel quadro dell'Agenda Digitale Europea, con un focus specifico sull'azione comunitaria a livello regionale attraverso uno studio di caso sull'Agenda Digitale della Regione Lazio.

Il primo capitolo di questo lavoro mira a fornire un quadro teorico dell'e-Government, termine ampio e soggetto a interpretazioni più o meno estensive il cui significato è riassumibile nell'uso delle tecnologie dell'informazione e della comunicazione (TIC) da parte delle agenzie di governo nelle loro funzioni e nei loro rapporti con i cittadini, le imprese e gli altri rami del governo. Attraverso un'analisi comparata dei vari studi sulla digitalizzazione compiuti da ricercatori, imprese, istituzioni sia pubbliche che private, al livello nazionale e internazionale, il capitolo esplorerà le varie definizioni e fasi dell'e-Government, con lo scopo di elaborare un modello sintetico comparativo. Il primo capitolo si chiude con una panoramica sui metodi quantitativi e sui vari indici elaborati per valutare i livelli di digitalizzazione e e-Government di un paese.

Il secondo capitolo ripercorre le tappe principali dell'evoluzione delle politiche di e-Government e delle strategie digitali sia al livello comunitario che al livello nazionale italiano. Le politiche dell'Unione Europea in tema di digitalizzazione sono cambiate molto da quando nel 1984 il programma di ricerca ESPRIT investigò per la prima volta il ruolo delle TIC e nel 1993 il Libro Bianco intitolato *Crescita, competitività e occupazione* interpretò le implicazioni economiche della Società dell'Informazione. Il capitolo descrive come l'Unione ha interpretato il crescente interesse politico e di opinione pubblica al tema della trasformazione digitale sul piano normativo e di policy, fino ad arrivare alla sopracitata Agenda Digitale Europea nella Strategia Europa 2020. Analogamente, si riassumono i vari passaggi normativi con i quali l'Italia ha seguito e interpretato l'evoluzione delle politiche comunitarie attraverso una serie consistente di leggi, piani d'azione e documenti di policy. Un percorso politico e legislativo culminato nella Strategia per la Crescita Digitale e nella Strategia Italiana per la Banda Ultralarga presentate nel Marzo 2015.

Il terzo e ultimo capitolo di questo lavoro presenta uno studio di caso sull'attuazione dell'Agenda Digitale Europea nella Regione Lazio. Dopo una panoramica degli aspetti principali del'Agenda Digitale Regionale, le iniziative della Regione Lazio in termini di e-Government e digitalizzazione della Pubblica Amministrazione diventano l'oggetto di una intervista approfondita con la Dott.ssa Antonella Giulia Pizzaleo, Responsabile Agenda Digitale e Internet Governance per la Regione Lazio dal 2014.

Secondo stime UE, il raggiungimento degli obiettivi fissati dall'Agenda Digitale si tradurrebbe in un aumento del 5% del PIL europeo nei prossimi otto anni, contribuendo a creare 3,8 milioni di nuovi posti di lavoro. Queste cifre dovrebbero costituire una motivazione sufficiente a convincere i politici e i legislatori nazionali dell'urgenza degli investimenti nella digitalizzazione, in particolare in un contesto in cui la ripresa dell'UE dalla crisi dei debiti sovrani è tutt'altro che rapida.

Il contesto italiano è in ritardo rispetto ai trend medi dei Paesi Membri, con particolare riferimento agli obiettivi in termini di digitalizzazione della Pubblica Amministrazione. Inoltre, l'esistenza di limiti non solo di natura normativa ma anche organizzativa, tecnologica, culturale e finanziaria genera una serie di criticità aggravate dall'assenza di un efficace coordinamento centrale delle iniziative digitali. Come illustrato nel terzo capitolo, il ritardo italiano vede il paese classificarsi 25esimo su 28 Stati Membri sulla base dell'Indice dell'Economia e della Società Digitale, con un punteggio DESI complessivo di 0.36 in un intervallo che va da 0 a 1. Nel suo insieme l'UE si aggiudica un punteggio dello 0.44, con il paese più in ritardo (Bulgaria) allo 0.31 e il paese più digitalizzato (Danimarca) allo 0.68 (Commissione UE, 2015).

Secondo il più recente Monitoraggio dell'attuazione dell'Agenda Digitale Italiana, condotto dal Servizio Studi della Camera dei Deputati, rispetto ai 67 adempimenti previsti al 15 Marzo 2015, solo 42 risultano adottati (37) o in fase di adozione avanzata (5); mentre non risultano ancora adottati 25 atti, di cui 15 non adottati entro il loro termine di adozione. Per un'analisi più approfondita di questi dati, si rimanda

alla sezione 3.1 del lavoro. Il basso punteggio italiano nell'indice DESI e il ritardo nell'attuazione dei provvedimenti non devono essere interpretati come indici di un assente progresso nel paese, ma come indici di un progresso disomogeneo e non coordinato che fa sì che le eccellenze regionali e locali siano oscurate dai dati medi.

L'impresa digitale della Regione Lazio, scelta come oggetto dello studio di caso del terzo capitolo di questo lavoro, potrebbe rappresentare la parabola di ciò che il Paese sta tentando di fare in relazione all'Agenda Digitale Europea: dopo anni di politiche di digitalizzazione esauritesi in una semplice applicazione formale delle azioni dettate al livello nazionale, la Regione ha trovato il suo focus strategico nella trasformazione digitale come opportunità di crescita. Eccellenze come la "comunità di pratica sull'Agenda Digitale" e più in generale il progetto Open Data Lazio, descritti nell'intervista con la Dott.ssa Pizzaleo nella sezione 3.4 del lavoro, sono prova di questo focus e - grazie al fondamentale contributo dei fondi della programmazione Europea - creano le condizioni giuste per il "salto digitale" della Regione. L'auspicio di questo lavoro è che l'Italia segua un percorso analogo nell'adempimento degli standard digitali europei, massimizzando le opportunità economiche e sociali offerte dalla Trasformazione Digitale.

Come affermato dalla Dott.ssa Pizzaleo nell'intervista condotta per questo lavoro, il ritardo digitale del Lazio [e dell'Italia] è un problema multidimensionale che non può essere risolto intervenendo su un'unica variabile . L'impegno deve essere forte, su larga scala e - soprattutto - coordinato. Raggiungere un livello integrato di servizi di e-Government richiede una significativa cooperazione politica, amministrativa e manageriale. Come sottolineato nel primo capitolo citando le Nazioni Unite, sono necessarie: una visione e un piano politico realistico, consapevole dei punti di forza e di debolezza del settore pubblico; una leadership nazionale impegnata e capace di sostenere l'eventuale opposizione politica al proprio programma di riforma; e infine una cultura amministrativa disposta a cedere un certo grado di autorità organizzativa e gestionale.

E' possibile rintracciare la "necessaria volontà politica" nella definizione - da parte del Governo Renzi - della Crescita Digitale e della Banda Ultralarga come priorità strategiche per il Paese. Ciononostante, questa volontà si scontra con criticità nella fase di attuazione, principalmente dovute alla natura frammentata dell'implementazione e all'assenza di un'ente dotato di forte autorità che coordini tale implementazione. Sembrerebbe naturale attribuire questo ruolo all'AgID (Agenzia per l'Italia Digitale), un ente creato con lo specifico compito di garantire la realizzazione degli obiettivi dell'Agenda digitale italiana in coerenza con l'Agenda digitale europea". Tuttavia, l'Agenzia appare priva degli strumenti o della legittimazione necessari per svolgere il proprio ruolo.

Nel preparare questo lavoro, ho avuto la fortuna di porre alcune domande sulla governance dell'Agenda Digitale non solo alla Dott.ssa Pizzaleo, Dirigente Responsabile Agenda Digitale e Internet Governance per la Regione Lazio, ma anche al Ministro Marianna Madia (Ministro per la Publica Amministrazione e la Semplificazione del Governo Renzi) e alla Dott.ssa Maria Pia Giovannini, Dirigente Responsabile Area Pubblica Amministrazione per AgID. In tre diverse occasioni[2], hanno tutte e tre riconosciuto che l'AgID non ha l'autorità né le risorse di cui ha bisogno per funzionare a pieno regime come "cabina di regia" per l'Agenda Digitale e per valorizzare al meglio tutti gli sforzi locali, regionali e nazionali verso il raggiungimento degli obiettivi fissati da *Europa 2020*. Come dichiarato dalla Dott.ssa Pizzaleo, le Regioni stanno cercando una soluzione al livello inter-regionale con attraverso la Commissione per l'Agenda Digitale istituita all'interno della Conferenza Stato-Regioni. Spetta adesso al Governo Italiano attribuire effettivamente ad AgID l'autorità necessaria per condurre l'Italia verso il suo futuro digitale. Un futuro, che per molti versi, dovrebbe già essere il suo presente.

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[2] Ho parlato con il Ministro Madia durante il Seminario sulla Riforma della Pubblica Amministrazione organizzato dal Dipartimento di Scienze Politiche della LUISS Guido Carli il 15 Aprile del 2015 nel Campus di Viale Romania. Ho intervistato telefonicamente la Dott.ssa Pizzaleo l'8 Giugno 2015 e ho parlato con la Dott.ssa Giovannini a margine dell'incontro "Competenze digitali e mercato del lavoro - Digital Management: transforming business and public administration" organizzato da LUISS Business School ed Ernst&Young l'11 Giugno 2015 nella Sala delle Colonne del campus LUISS di Viale Pola a Roma.