Enterprise Architecture for Connected E–Government:

Practices and Innovations

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Chapter 15

An Architecture Driven Methodology for Transforming from Fragmented to Connected Government:
A Case of a Local Government in Italy

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ABSTRACT

Connected government implies that citizens and enterprises can interact with government as with a single entity rather than with a number of different public authorities. In countries characterized by a highly fragmented system of Local Government, connected government at the local level can be achieved only through a process of progressive integration on a wider area of systems of local government already integrated at the local level. In the chapter, the author argues that this process should be based on a maturity model and a reference model that define the technological and organizational conditions that allow the establishment of more and more integrated aggregations of municipalities. With reference to a study funded by the Region Lombardia (Italy), the chapter introduces the concept of Integrated System of Local Government (ISLG) and describes the process that leads to the establishment of ISLGs as an intermediate step toward connected government at the local level. Moreover, the chapter discusses the conditions that can induce different aggregations of municipalities to comply with a set of standard requirements in the implementation of their integration processes.

FROM E-GOVERNMENT TO CONNECTED LOCAL GOVERNMENT

During the past years, a transformation in the concept of E-Government has been observed worldwide, at the point that a discussion was started concerning whether "E-Government is dead." Be this true or not, what is certain is that the high emphasis put on online services as the fundamental goal of E-Government has been constantly lowering in the past years and a new emphasis has been put on the transformational potential of ICTs for public sector transformation.

What such transformation amounts to is:

(…) a continuous process of changing the features of the public sector towards a desired set of features typically defined politically. These features are often service delivery features (e.g. choice of and access to services, speed of service delivery, responsiveness, etc.) or organisational features (e.g. institutional boundaries and responsibilities, cross-organisational collaboration and co-operation, collaboration and co-operation across levels of government, etc.) (OECD, 2007, p. 12).

Public sector transformation concerns both service delivery and organizational transformation. However, ICT enabled service delivery transformation and organizational transformation are strictly related. On the one hand, service delivery cannot be improved without transforming the way in which Government organizations operate to produce and deliver services to citizens and enterprises. As observed in the 2008 United Nations E-Government Survey "an increase in the value of services is not possible without consolidating the way the back-end systems and processes work to bring about the front-end of service delivery" (UNDESA, 2008, p. 5). On the other hand, organizational transformation cannot be considered as a value in itself; actually, Government organizations should transform themselves only insofar this allows them to deliver greater value to citizens.

Focusing on both service delivery transformation and organizational transformation leads to the so-called "Second Generation e-Government Paradigm" that according to the 2008 UN report can be considered as "an emerging paradigm that maintains that to achieve greater value in service delivery and reduce costs, integration and redesign of government organization and processes is a necessity" (UNDESA 2008, p. 5).

This paradigm characterizes the connected/networked government that "enables governments to connect seamlessly across functions, agencies, and jurisdictions to deliver effective and efficient services to citizens and businesses" (Pallab, 2010, p. 8).

Connected government is usually considered to be a multi-dimensional construct (Kaczorowski, 2004; Pallab, 2010), including dimensions such as:

- Citizen centricity as the guiding principle for the public sector transformation processes, whose goal is to create greater value for citizens, not only for citizens as users/consumers or beneficiaries, but also for citizens as taxpayers, as participants in the democratic processes, as policy makers and employees in public administration agencies and as suppliers and entrepreneurs as well (Castelnovo & Simonetta, 2007)
- Back-office reorganisation, to force the public administration agencies to "rethink their operations to move from being system-oriented to chain-oriented with respect to their structure, functioning, skills and capabilities, and culture and management" (UNDESA, 2008, p. 5)
- Networked organisational model, to transform a fragmented system of government agencies in a networked virtual organization that operates seamlessly toward a common mission, that is to deliver more

value to citizens and enterprises (Johnston, 2006)

- Standardized infrastructures and interoperability, to allow the vertical integration among different levels of Government as well as the horizontal integration among government organizations belonging to the same institutional level (Microsoft, 2011)
- Public sector governance, to guarantee the consistency of the transformation processes implemented both at the Central and the Local Government level, and to assure that all the transformation processes preserve the public interest and increase the value for citizens
- Social inclusion, as a way to bridging the gap between government and citizens, to building trust in government and to assure that no citizen is left behind

In the whole-of-government approach typical of connected government, the public sector transformation process leading to connected government must involve all the public agencies at all the levels comprised within an institutional system. Considering, for instance, the case of Italy this means that besides the Central Government (including all the Central Government agencies and bodies), the public sector transformation process should involve all the 8094 Italian municipalities, as well as the 110 provinces and the 20 regions that make up the Italian system of Local Government.

This raises the problem of how the horizontal and vertical integration among government bodies and agencies that is instrumental for connected government can be achieved within a so highly fragmented system of Local Government.

This problem does not concern only Italy, of course; as shown in Table 1, many European countries are characterized by a highly fragmented system of Local Government.

In a highly fragmented system of Local Government the horizontal and vertical integration

Table 1. The system of local government in the countries of the Europe of 27 (CEMR, 2010)

		1st tier	2nd tier	3rd tier
Federal states	Austria	2357	9	
	Belgium	589	10	6
	Germany	12104	301	16
	Cyprus	378		
	Czech Republic	6250	14	
	Denmark	98	5	
	Estonia	226		
	Finland	342	2	
	France	36682	100	26
	Greece	325	13	
	Hungary	3177	19	
	Ireland	114		
	Italy	8094	110	20
	Latvia	119		
	Lithuania	60		
	Luxembourg	105		
	Malta	68		
	Netherlands	430	12	
	Poland	2479	379	16
	Portugal	308	2	
	Romania	3180	41	
	Slovakia	2928	8	
	Slovenia	210		
	Spain	8116	52	17
	Sweden	290	20	
	United Kingdom	406	28	3
Total EU 27 - year 2009		89699	1125	104
Total EU 27 - year 2008		90782	1171	106

among government bodies and agencies can be better achieved by integrating on a wider territorial scale systems of government organizations already integrated at the local level. Of course, to be carried out effectively, such a process of progressive interorganisational integration requires the availability of a well-defined reference model and a clear roadmap defining the stages

and the modalities for the integration, as well as a strong governance of the process. In the absence of these elements, it is not possible to guarantee the coherence of the integration processes carried out at the local level and their consistency with the public sector transformation objectives defined at the higher level.

Although without explicitly referring to the concept of connected government, the problem of how to define a process of progressive integration among Local Government organizations has been considered in a two years research project funded by the Regional Government of Lombardia (Italy) in 2008 and 2009, with the aim of:

- Defining a cooperation model among Local Government organizations that enables the establishment of long-term strategic public-public partnerships at the local level, with the aim of reducing the problems determined by administrative fragmentation through interorganisational cooperation
- Defining a standard process for the design and the establishment of public-public partnerships based on the cooperation model defined within the project
- Defining an interorganisational cooperation maturity model providing a framework for the progressive integration on a wider scale of systems of government organizations already integrated at the local level

This chapter will describe the results of the research project funded by the Region Lombardia, presenting them as an example of how the progressive integration among Local Government organizations could be achieved through a highly standardized transformation process based on:

- Back-office reorganisation, assuming inter-agency cooperation as the fundamental organizing principle and the networked

model as the organizational model to pursue in the public sector transformation
- The attainment of a high level of interoperability among Local Government organizations, not only at the technical level, but also at the operational, organizational and strategic level as well
- A strong governance of the integration process, in order to guarantee the consistency of the transformation processes implemented within a highly fragmented system of Local Government
- The exploitation of the results achieved through the programmes for the spreading of innovation at the local level implemented during the previous years

E-GOVERNMENT IN THE REGION LOMBARDIA (ITALY)

Starting from the year 2003, the development of E-Government in Italy has been based mostly on projects funded under the National Action Plan for E-Government, launched by the National Government with an announcement for the co-financing of ICT based projects with the aim of:

- Using ICTs to achieve a significant increase in quality and efficiency of the services delivered to citizens and enterprises;
- Promoting the creation, or the transformation, of the services delivered by Local Government into online services, or anyway services accessible through multiple channels.

The first announcement was followed by the presentation of 377 projects, whose overall value was 1200 Mln Euros. Out of these 377 projects, 134 have been co-financed with 120 Mln Euros (for an overall value of about 500 Mln Euros) (CNIPA, 2007). The funded projects involved about 3400 of the 8101 Italian municipalities (in

2003 the number of the Italian municipalities was greater than now), covering an overall population of about 38 million citizens. Out of the 134 projects which have been funded, 25 involved 628 municipalities of Lombardia (about 40% of the municipalities of Lombardia) for an overall value of 203 Mln Euros.

Besides the innovation projects funded under the National Action Plan, other specific programs for the inclusion of the municipalities of Lombardia in the spread of E-Government at the local level have been defined by the Regional Government, as shown in Table 2.

Among these programs, the most interesting one is the SISCoTEL (Interorganizational Information Systems for Local Government) program, that has been addressed exclusively to aggregations of municipalities (especially small municipalities, that is municipalities with less than 5000 inhabitants) with the aim of implementing a shared technological and organizational infrastructure allowing the members of the aggregations to share the management of services for citizens and enterprises.

Table 3 compares the National Action Plan for E-Government and the SISCoTEL program with respect to their main characteristics.

As a result of the innovation programmes implemented during the past years, the municipalities of Lombardia achieved a quite satisfactory state concerning the availability of technological infrastructures (see the indicators reported in Figure 1). The same cannot be said with respect to the level of the services delivered online, especially concerning the transactional services and the services requiring the integration among different authorities. Actually, from the 2010 Report on E-Government in Italy (DigitPA & PCM, 2010) it resulted that only 6% of the Italian municipalities allows transactional services (two ways interactive services) on their websites, as shown in Table 4.

The data reported in Table 4 clearly show that the largest Italian regions (in terms of the number of their municipalities) scores under the average national value with respect to the transactional services offered. Actually, all the regions comprising more than 500 municipalities (Lombardia is among them) belong to this class. It can thus be concluded that a high administrative fragmentation, which in a country like Italy entails a large number of small municipalities, represents a critical element for the ICT enabled public sector transformation process, mainly due to the scarcity of the resources that small municipalities can usually devote to innovation.

The sharing of resources and competences within aggregations of municipalities represents a possible solution small local government organizations can pursue to overcome the scarcity of resources affecting them. This was the inspiring principle of the SISCoTEL programme that resulted in the establishment of 74 aggregations of municipalities, involving more than 900 municipalities of Lombardia, that share the management of services delivered to citizens and enterprises. However, the adhesion of the municipalities to an aggregation established under the SISCoTEL

Table 2. Regional programmes for the spreading of e-government at the local level

Funding Programme	Total amount of the funding	Period covered
Interorganizational Information Systems for Local Government (SISCoTEL)	76 Mln	2001-2005
One stop shop for enterprises (SUAP)	10 Mln	2001-2003
Diffusion of broadband infrastructures at the local level	5,6 Mln	2005
Intermunicipal Cooperation for service delivery	9 Mln	2005-2007

Table 3. Comparison between RP_SISCoTEL and NAP_E-Government (Castelnovo & Simonetta, 2007)

	SISCoTEL	**National Action Plan**
Supporting model	Co-financing addressed exclusively to aggregations of municipalities	Co-financing addressed to single organizations of Local Government or to their aggregations
Goals of the funding program	Technological and organizational integration among the members of an aggregation of municipalities	Implementing technological solutions for the online delivery of services to citizens and enterprises
Characteristics of the beneficiaries of the program	Small to medium size aggregations of small municipalities which are geographically contiguous and share the interest in the activation of a Shared Service Center	Large aggregations of municipalities without any constraints as to the modality of adhesion of the partners. The aggregations are not required to continue their collaboration after finishing the implementation of the funded project
Time span covered by the supporting actions	Repeated funding of aggregations for which it is possible to provide a six-year span of activity	Non-recurring funding. The time span of the collaboration corresponds to that of the project (2 years)
Municipalities of Lombardy covered by the programme	63,5% out of the 1546 municipalities of Lombardy	40,9% out of the 1546 municipalities of Lombardy

programme was voluntary; this allowed a municipality to adhere to an aggregation also on a temporary basis, thus possibly pursuing an immediate opportunistic goal instead of the strategic goal related to the reduction of the administrative fragmentation. Actually, there is no guarantee that a municipality will stay within an aggregation after the conclusion of a project funded under the programme, and this sensibly limited the possibility of reducing the problems determined by administrative fragmentation through the cooperation among municipalities.

In order to overcome the problems that limited the positive effect of the SISCoTEL programme the Regional Government of Lombardia funded a study with the aim of identifying the technological and organizational conditions that would make it possible to establish stable aggregations of cooperating municipalities, based on a standard reference model.

The conditions that have been identified by this study, that will be discussed in the next section, not only allow the establishment of stable aggregations but can also help them to activate processes of further strengthening of the interorganisational relationships, up to the establishment of systems of Local Government organizations that are strictly

integrated at the local level. The diffusion of such standardized and integrated aggregations across the whole territory of Lombardia represents an enabling condition toward the integration of the whole system of Local Government, one of the fundamental aspects of connected government. The study funded by the Regional Government described a process of progressive integration of the system of Local Government of Lombardia, represented graphically in Figure 2, that comprises the following stages:

- **Administrative fragmentation:** presence of completely independent organizations that have not defined any form of interorganisational cooperation
- **Episodic cooperation:** presence of different forms of intermunicipal cooperation, mostly established with the aim of taking advantage of favourable situations (such as funding programmes exclusively devoted to aggregations of municipalities). The cooperation is opportunistic; the same municipality can join different aggregations, even without territorial contiguity constraints

Figure 1. Some data concerning Lombardia

Nº Inhabitants (31 Dec 2009): 9.826.100 (16,28 % of the Italian population)			
The system of Local Government in Lombardy and Italy (31 Dec 2009):			
Nº inhabitants	Nº of municipalities in Lombardia	Nº of municipalities in Italy	%
0-5000	1153	5.836	19,76
5000-20000	333	1172	28,41
20000-100000	56	431	12,99
More that 100000	4	42	9,52
TOTAL	1546	8101	19,08
Nº of Provinces in Lombardia	**Nº of Provinces in Italy**		**%**
13	110		11,82

Some indicators of technological innovation in the municipalities (in Italy and in Lombardia) – 2009 - Source: Italian National Institute of Statistics)	Lombardia	Italy
Municipalities with an office devoted to the management of ICT (% of the total number of municipalities)	14,7	15,3
Employees devoted to the management of ICT (% of the total number of employees of the municipality)	1,6	1,6
Nº of PCs available for 100 employees	92,2	84,8
Municipalities using LANs (% of the total number of municipalities)	95,4	95,5
Nº of PCs connected to the LAN (% of the total number of PCs)	91,5	91,2
Municipalities with Internet access (% of the total number of municipalities)	99,8	99,9
Municipalities with a broadband Internet access (% of the total number of municipalities with Internet access)	74,9	74,7
Employees with Internet access (% of the total number of employees of the municipality)	74,6	71,3
Municipalities with a Web site (% of the total number of municipalities)	93,7	91,2
Municipalities that allow online payments (% of the total number of municipalities)	12,2	13,2

GDP per capita in Purchasing Power Standards (PPS) (EU-27 = 100) - Source: EUROSTAT												
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
European Union (27 countries)	100	100	100	100	100	100	100	100	100	100	100	100
Euro area (17 countries)	113	113	113	112	112	111	110	109	109	109	109	109
Euro area (16 countries)	113	113	113	113	112	111	111	109	110	109	109	109
Italy	119	120	117	117	118	112	110	106	105	104	104	104
Lombardia	161	162	157	155	157	149	147	140	138	135	135	134

- **Stable aggregations:** establishment of stable and multifunctional aggregations, which implement long-term sharing of different kinds of resources. The cooperation is no more opportunistic: joining an aggregation is a strategic decision

- **Local integration:** stable aggregations involved in an integration process in terms

Table 4. Levels of online services in the Italian municipalities (DigitPA & PCM, 2010)

Italian Regions	Information	One way interaction	Two ways interaction	Complete transaction
Veneto	90%	70%	9%	1%
Basilicata	66%	43%	6%	2%
Umbria	96%	73%	12%	4%
Piemonte	87%	59%	11%	5%
Province of Bolzano	88%	63%	10%	5%
Lombardia	91%	72%	14%	6%
Sardegna	86%	62%	13%	6%
Campania	92%	66%	17%	7%
Toscana	96%	83%	22%	8%
Abruzzo	78%	53%	13%	8%
Puglia	91%	69%	18%	8%
Calabria	86%	54%	13%	8%
Sicilia	85%	55%	11%	8%
Valle d'Aosta	96%	78%	17%	9%
Lazio	86%	58%	15%	9%
Friuli Venezia Giulia	95%	86%	20%	10%
Molise	93%	61%	20%	10%
Emilia-Romagna	99%	86%	20%	11%
Province of Trento	97%	82%	30%	12%
Liguria	95%	79%	18%	12%
Marche	92%	71%	22%	13%
ITALY	90%	68%	15%	7%

of cooperability conditions (US-CREST, 2000; Stewart, Clarke, Goillau, Verrall, & Widdowson, 2004) setting up an integrated system. The interorganisational cooperation turns into systematic sharing of information, as well as of technological and human resources

- **Inter-system cooperation:** the cooperation is not anymore restrained to a local area; different interoperable integrated systems of Local Government cooperate within a wider context defined by regional bounds
- **Virtualization (connected government):** networked organisation that allows a multiplicity of different municipalities to oper-
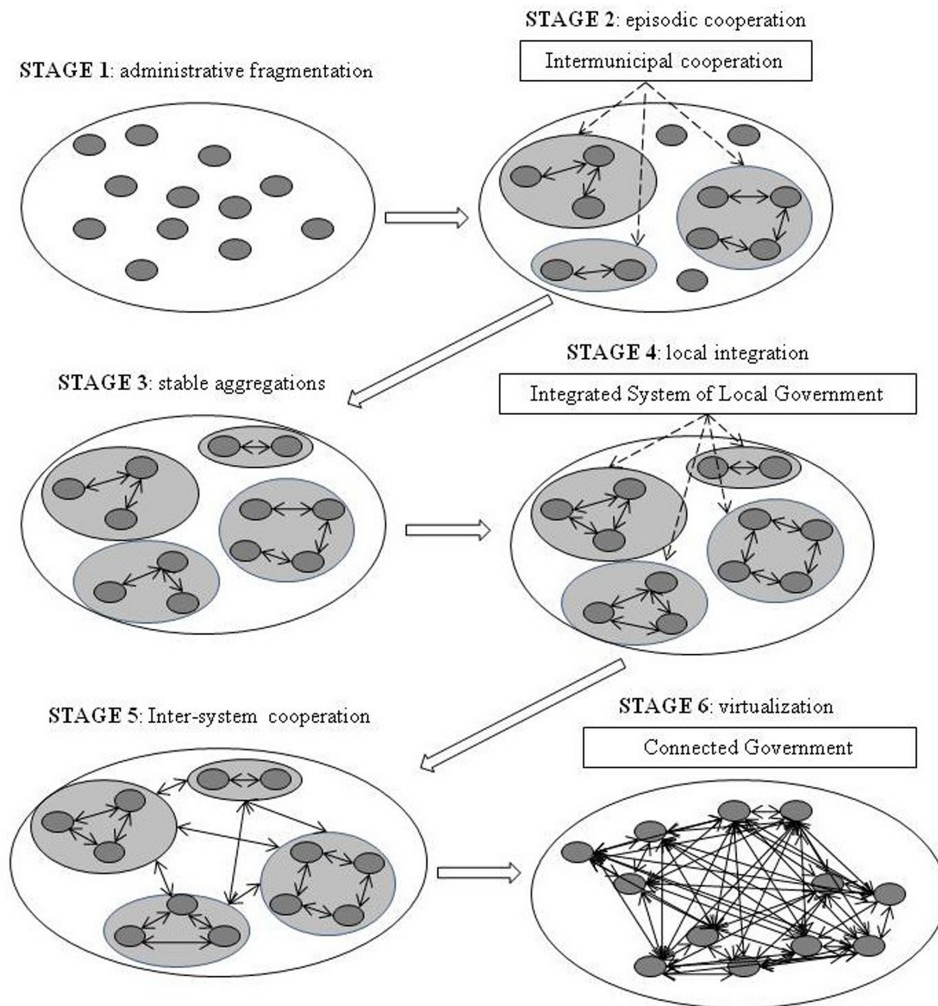
ate seamlessly to deliver greater value to citizens (and enterprises)

STANDARDIZED/INTEGRATED SYSTEMS OF LOCAL GOVERNMENT

The cooperation model to be defined by the study funded by the Regional Government of Lombardia had to satisfy three requirements:

- It should allow the establishment of strategic aggregations of municipalities that would be stable in time
- The municipalities' adhesion to an aggregation should be on a voluntary basis, due

Figure 2. Stages of the integration process leading to connected government at the local level

to the constitutionally guaranteed autonomy of the Italian municipalities

- The cooperation should not necessarily be of the institutionalized type (Council of Europe, 2007).

Based on these requirements, the result of the study has been the definition of the concepts of Standardized System of Local Government (SSLG) and Integrated System of Local Government (ISLG), as well as the detailed description of the steps of a standard process for the establish-

ment of aggregations of municipalities that would activate a SSLG and/or an ISLG.

Roughly speaking, a SSLG is an aggregation of municipalities whose members share a cooperation environment (Castelnovo, 2009) that makes the partners able to cooperate efficiently and effectively on a set of activities they agreed to perform jointly. The sharing of the cooperation environment makes the members of a SSLG strictly interoperable, not only at the technical level but also at the operational, organizational and strategic level as well (Tolk, 2003). This is due to the fact that the members of a SSLG could need

to share resources of many different kinds, including human resources, and, consequently, different aspects of interoperability have to be considered in the definition of the cooperation environment, besides those usually related to information and systems interoperability (Castelnovo, 2007).

Given the variety of the resources that can be shared, in the definition of a cooperation environment organizational compatibility attributes referring to different domains should be included, as shown in Table 5 (Castelnovo & Simonetta, 2007):

With each of the conditions listed in Table 5 different levels have been associated, corresponding to more or less restrictive requirements that the members of a SSLG are required to satisfy, leading to more or less strict forms of compatibility among different organizations, similar to the integration levels described in C4ISR (1998) and Clark and Jones (1999).

The set of the interoperability conditions with the specification of the levels associated with them characterize a reference model that can be used to define, and compare, different cooperation environments. Actually, by selecting for each of the conditions comprised in the reference model the level that is more appropriate for the type of cooperation the partners are interested in, it is possible to define different cooperation profiles that specify different standards for the cooperation the members of a SSLG have to comply with.

The establishment of the appropriate cooperation environment (that means the establishment of a SSLG) can thus be considered as the transformation process that lead the partners to satisfy the conditions specified by the cooperation profile they defined. From this point of view, the members of a SSLG are standardized, although only with respect to the cooperation profile they agreed on.

Due to the sharing of a cooperation environment by all its members, a SSLG can be considered as a system of pre-qualified partners that, with respect to the specific cooperation profile they defined, are characterized by a high level of readiness for the cooperation and the sharing of resources. This makes it possible, when needed, to define a sharing of resources among the partners

Table 5. Conditions defining the cooperation environment

Domain	Interoperability Conditions
Strategic The conditions pertaining to the strategic domain concern the level of the partners' strategic commitment towards the interorganisational cooperation.	sharing the mission and the objectives of the cooperation
	degree of each partner's involvement in the cooperation
	sharing of a standard organizational structure
	sharing of a common organizational ontology and terminology
Organizational The conditions pertaining to the organizational domain concern the level of homogeneity among the partners with respect to the way they manage their business processes.	level of standardization of the business processes
	common management styles
	sharing of the resources
	dissemination of information
Operational The conditions pertaining to the operational domain concern the level of homogeneity among the partners with respect to their day to day operational activities.	homogeneity of working tools used by the partners
	sharing of the training activities
	availability of tools for interorganizational communication
	availability of tools for the monitoring of the cooperation
Technological The conditions pertaining to the technological domain concern the level of homogeneity among the partners with respect to their technological infrastructures.	sharing of infrastructures for connectivity
	homogeneity of the partners' IT application portfolio
	sharing of data among the partners
	sharing of the security policies

of the SSLG (even on a temporary basis) in a plug & play modality, that is without requiring any further adjustment to the partners in order to use efficiently and effectively the shared resources. Of course, this does not mean that the members of an SSLG should necessarily be involved in actual interorganisational activities. As a matter of fact, an SSLG simply defines and implements the conditions that make the member municipalities highly compatible, thus reducing the level of heterogeneity within a system of Local Government. This is a goal an aggregation of municipalities can pursue, even without considering the possibility of implementing an actual sharing of resources.

Although the standardization of the partners enables them to (makes it possible for them to) share resources also in a "just in time" modality, the members of an SSLG (not necessarily all of them) can decide to further strengthen their relationship and to stabilize the cooperation by transforming it in a long term day to day operating modality. This leads the SSLG (or part of it) to evolve into an Integrated System of Local Government (ISLG), that is an aggregations of municipalities that, being members of an SSLG, are strictly interoperable (up to cooperability [US-CREST, 2000; Stewart, Clarke, Goillau, Verrall, & Widdowson, 2004]) and that agree to share their activities (or at least a substantial part of them) with the partners, including the delivery of services to citizens and enterprises.

ISLG's members are not, strictly speaking, integrated in the system; actually, the establishment of an ISLG simply amounts to the adoption of a particular cooperation environment and to the systematic sharing of activities that its members would find difficult to perform individually. This allows the members of an ISLG to retain local democratic accountability and local decision making on policy and priority, whilst achieving efficiencies through a more coherent and joined up approach to the design and delivery of services.

Strictly speaking, the integration among the partners within an ISLG is only virtual. This has some particularly important consequences:

- Each member of the ISLG keeps its autonomy, though it agrees to coordinate its activities with that of its partners and to systematically share resources (of various sorts) with them;
- As the integration is exclusively determined by the adoption of a shared cooperation environment, the establishment of an ISLG does not necessarily require the definition of new levels of government and/or governance (as it happens in the case of institutionalized forms of integration, such as the Unions of Communes and the Mountain Communities (Council of Europe, 2007)

An ISLG determines a weak integration among its partners when the management of the cooperation is based on the definition of some shared coordination schemes (both at the decisional and operational level) and on the implementation of a soft managerial system to which only two functions are assigned:

- The management of the cooperation environment and of all the activities necessary for its maintenance and, possibly, evolution
- The coordination of the resources shared within the ISLG and that, nevertheless, still belong to the single members of the system which manage them according to policies and management styles shared with the partners

An ISLG determines a strong integration (although it still remains a virtual integration) of the partners when it is based on an unique interorganisational management system that completely manages all the resources involved in the activities shared within the system. Such resources can be

either directly transferred to the ISLG or they can still belong to the single members of the system, with their management transferred to the ISLG.

In both cases, the ISLG determines a strict integration of the partners at the operational level so that from the point of view of an external observer the result would be indistinguishable from that which would be obtained with the fusion of the member municipalities.

For this characteristic, an ISLG whose members realize a strong integration, up to the virtual fusion of its members, could represent a possible solution to the problems related to administrative fragmentation. What makes this solution particularly attractive is the fact that it allows to achieve the same results that would be achieved through the merger of municipalities, while guaranteeing the preservation of the autonomy of local communities. As observed above, this is due to the fact that the members of an ISLG are integrated at the managerial and operational level, while maintaining their autonomy at the level of the definition of the policies. From this point of view, an ISLG should not be considered simply as a cooperative system; rather it is a coopetitive system (Brandenburger & Nalebuff, 1997), since it allows the cooperation among the partners at the managerial and operative level and the competition at the level of the policies.

THE STANDARDIZATION/ INTEGRATION PROCESS

The coopetitive model the concept of ISGL in based on should help avoiding some of the problems determined by administrative fragmentation through the establishment of long-term stable local public-public partnerships among municipalities (Castelnovo, 2011). However, the properties of a cooperation model, however good it would be, do not suffice by themselves to guarantee that the partners will avoid (or at least sensibly reduce) opportunistic behaviours, that is one of the main

causes of aggregation instability. Actually, the stability in time of aggregations of municipalities implementing an intermunicipal cooperation can be achieved only by maintaining a high level of involvement and commitment of the partners towards the cooperation. One way to accomplish this result is through a careful management of the process that leads to the establishment of the cooperation, starting from an accurate selection of the potential partners.

For this reason, the project funded by Region Lombardia (henceforth indicated as SSLG/ISLG project) devoted a particular attention to the description of a standard process for the establishment of stable aggregations of municipalities and for their possible evolution into a SSLG or in an ISLG. The process comprises the following steps:

- Call for interest
- Profiling of the potential partners
- Assessment of the networkability level of the potential partners
- Definition of the strategic goals of the cooperation
- Establishment of the aggregation

The Call for Interest

The first step of the process amounts to a subject launching a call for interest concerning the establishment of a partnership among municipalities, generally within the boundaries of a given administrative territory. Such a subject, that stimulates the formation of aggregations of municipalities, plays a catalyst role, partially analogous to the role of the net broker as described in Franke (2002) with respect to the establishment of virtual organizations. The catalyst role should normally be played by a public sector subject, since this guarantees a public sector governance of the whole process.

All the municipalities interested in some form of cooperation could answer the call. Since it could be based on very smooth requirements, the number of municipalities that initially answer the call

can be quite large. The set of these municipalities represents the pool of the potential partners for the cooperation. The process leading to the setting up of a stable aggregation, one that will possibly implement a SSLG and that could evolve into an ISLG, can be considered as a refinement process that selects the appropriate partners from the set of all the potential partners that answered the call for interest.

During the refinement process some potential partners will be discarded; hence it is necessary to guarantee that the selection is fair and based exclusively on criteria related to the well functioning of the aggregation that will be set up. As in the case of the catalyst, also this guaranteeing role should be played by a public sector subject, one that has authority over the municipalities involved; in a constitutional arrangement like the Italian one, this role can be played by the Regional Government.

The guaranteeing role can be considered as an enabling role since it facilitates the establishment of an aggregation of municipalities by assuring the potential partners that in all the phases of the process the fairness and the equity requirements are satisfied. The subject that plays this role, as well as other facilitating functions such as the establishment of the appropriate legislative context and, possibly, the provision to the municipalities of infrastructures and services that can support intermunicipal cooperation, can be considered as the enabler of the standardization/integration process.

The Potential Partners' Profiling

The partners profiling amounts to a standardized description of each potential partner that is made available to all the members of the pool of the potential partners. The content of the partners profile, as well as the format of the information contained in it, can be defined in the call for interest launched by the catalyst.

The potential partners profile should include, at least, information concerning:

- Human resources
- Organizational resources
- Managerial resources
- Technological resources
- Financial resources

The profiling of the human resources, with particular concern to the kind and the level of the competencies available within each partner organization, is a critical element because, especially when the partners are small municipalities, the well-functioning of the cooperation mainly depends on the quality of the human resources involved (Koch & de Kok, 1999).

The organizational resources represent the organizational culture each partner contributes to the cooperation, both in terms of its previous experiences in interorganisational cooperation and in terms of its good internal organization and functioning. The profiling information concerning organizational resources include:

- The description and the evaluation of previous cooperation experiences the candidate municipalities have been involved in
- The description of all the contracts for service provision in force
- The description, for each service delivered to citizens and enterprises, of how it is managed and delivered
- The perceived elements of strength and weakness in the organization

The availability of adequate managerial resources within the members of the pool of the potential partners is crucial for the well functioning of the cooperation (Agranoff, 2003, 2006). However, small municipalities often lack managerial resources (as defined, for instance, in Castanias and Helfat [2001]). Actually, this is one of the reasons that forces small municipalities to enter

Table 6. Managerial roles within small municipalities

Managerial roles (based on the classification in Castanias and Helfat [2001])	Corresponding roles in small municipalities without specific managerial roles
Board of directors	Executive body
CEO	Major
Top Management team	n.a.
Upper level manager	employee that is responsible for the delivery of the services related to a given homogeneous area
Middle level manager	employee that is responsible for the delivery of single services
Lower level manager	

into an intermunicipal cooperation. From this point of view, the critical step for the profiling of the managerial resources concerns the identification of the managerial roles within a small municipality.

Given the regulation in force in Italy, in the case of small municipalities the managerial resources can be defined as in Table 6.

For each employee exerting a managerial role, the profile should describe the type of his competence, considering whether it is:

- A competence of a generic type (for instance the educational background)
- A competence acquired through previous experiences within public administration bodies
- A competence acquired through previous experiences within other Local Government bodies
- A competence acquired within the same municipality

The partners' profile should also provide a detailed description of the technological resources each partner has at his disposal. Actually, these resources represent both one of the objects of the standardization process related to the establish-

ment of a SSLG and a fundamental enabling element for intermunicipal cooperation. The profile should include information concerning:

- The number and the quality of the ICT devices/equipment in use
- A complete and detailed description of the application portfolio
- The security policies and the policies for the backup of information

The information concerning financial resources are included within the profile since they can give to the potential partners an insight concerning how well a municipality is being administered. Moreover, by considering a municipality's financial status the catalyst, as well as all the potential partners, could appreciate whether the possible inclusion of that municipality within the aggregation would constraint its functioning.

The Partners' Networkability Assessment

Once the pool of the potential partners has been established and its members have been profiled, the next step is the assessment of the networkability level of each potential partner, that is its capability to establish, maintain, and develop relationships with other organisations in order to pursue new common business opportunities or improve the results of an existing business through co-operation (Fleisch & Österle, 2000).

On the one hand, the assessment of the potential partners' networkability level allows to identify those potential partners that are more likely to form a stable and efficient aggregation. On the other hand, by considering the results of the assessment it is possible to evaluate how much the standardization/integration process will be difficult to implement as well as the type and the amount of the resources that will be necessary to support the process.

In the SSLG/ISLG project, the networkability assessment has been based on the reference model described in Table 5. This means that a potential partner's networkability level is determined by its cooperation profile, as defined in the section above. An organization's cooperation profile can be determined by considering the value a selected group of key stakeholders within that organization associate with the interoperability conditions comprised in the reference model.

The assessment process includes the following steps:

- Ientification of the key stakeholders within the organization and selection of the people to be involved in the assessment
- Evaluation of the interoperability conditions by the selected stakeholder
- Comparison and discussion among the stakeholders of the results of the evaluation
- Convergence of the stakeholders on a shared evaluation of the interoperability conditions

During the assessment, a twofold evaluation is required to the stakeholders. On the one hand, they are asked to evaluate the interoperability conditions with respect to the level they believe characterizes the current status of the organization (the current cooperation profile). On the other hand, they are asked to indicate what level they believe would be necessary in order to adequately support a stable and efficient cooperation (the required cooperation profile).

This determines two profiles that can (and usually are) different, as exemplified in Figure 3.

The level of networkability of an organization that will be used in the partners selection process is the one corresponding to the required profile, that represents the maximum amount of organizational change that a potential partner is willing to undertake to enter in an interorganisational cooperation.

However, by comparing the current and the required profiles it is possible to evaluate how much that organization can be expected to invest in change management in order achieve the networkability level it thinks is the one required for the establishment of a stable, efficient, and effective cooperation. Moreover, for each interoperability condition, the possible discrepancy between the current and the required values gives an indication concerning the most critical elements the change process should consider.
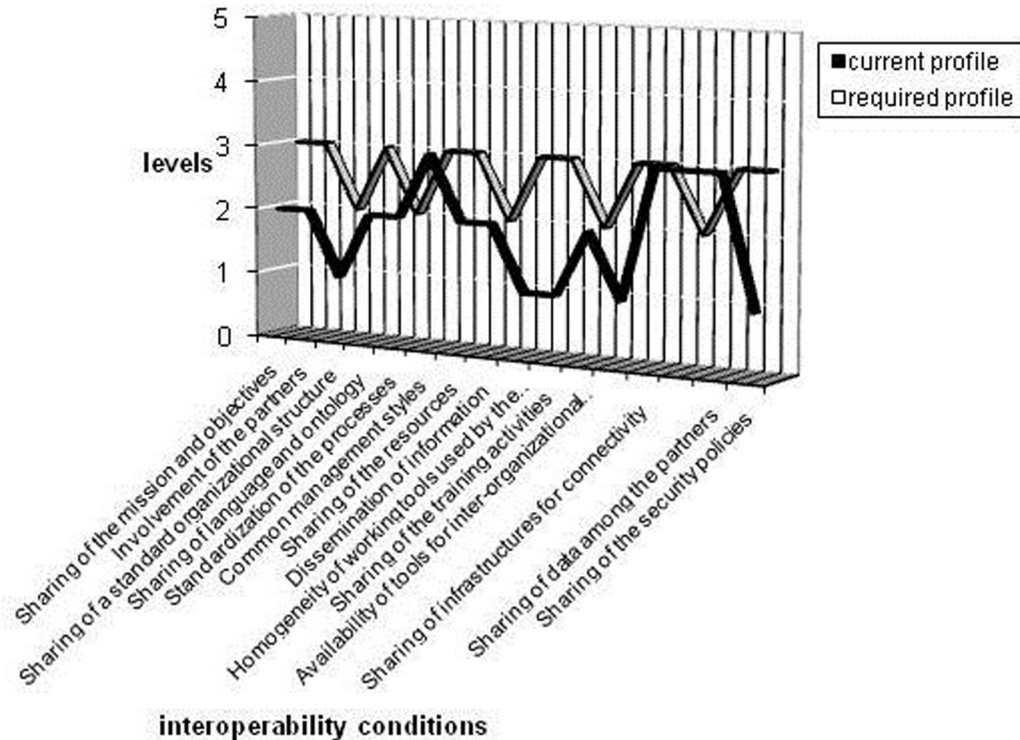
The Definition of the Strategic Goals of the Cooperation

The definition of the goals of the cooperation determines a further selection among the potential partners, since not all of them could be interested in the defined form of cooperation. The first element that can reduce the number of the potential partners concerns the decision whether to establish a stable aggregation with the aim of:

- Share a standardization process leading to a SSLG, that is a system of partners that are strictly interoperable, up to cooperability, without considering the opportunity of evolving the SSLG into an ISLG
- Implementing a SSLG as a preliminary step of a process that the partners already agree will lead at the end to an ISLG (this means that the partners agree on a two phases process: first standardization, then integration)
- Directly implement an ISLG, thus agreeing to run the standardization and integration processes in parallel.

The choice of one of these possibilities is the result of an agreement among the potential partners that, among other things, includes the specification of the interoperability level required for the planned form of cooperation. This specification can be obtained by setting the appropriate values

Figure 3. Example of an organization's current and required cooperation profiles

of the interoperability conditions defined by the reference model, thus defining a cooperation profile the partners agree to consider as the one required by the particular form of cooperation they agreed on.

By considering how much the cooperation requirements specified by the shared cooperation profile differ from those that characterize the cooperation profile it considers to be the required one, each candidate partner can evaluate the impact the planned form of cooperation would have on its own organization. Such impact evaluation could lead a potential partner to decide whether to adhere from the beginning to the standardization/integration process, to adhere to it only successively or not adhering to it at all.

The evaluation can be performed by the catalyst as well. Although some of the potential partners evaluate themselves as ready for the cooperation,

it could happen that their membership in the aggregation do not add any value to the cooperation. In this case, it could be more productive to delay the adhesion of those potential partners until the cooperation has been settled down and adequately enforced. Such an evaluation, that let alone the potential partners' desires only considers the possible advantages to the whole system, can be performed only by an external role that can guarantee the fairness of the evaluation. This is another reason why the whole process needs a public sector governance.

The Establishment of the Aggregation

The steps of the partner's selection process described so far determine a refinement of the set of the potential members of a SSLG and/or an ISLG.

However, as observed above, the aggregation of municipalities that will be established does not necessarily need to include from the beginning all the potential partners that have been qualified during the selection process. Actually, the standardization/integration process requires a high a level of commitment by the partners and the success probability of the process is higher if some further conditions are satisfied, concerning both properties of the aggregation and properties that characterize the selected partners.

Among the properties that can make an aggregation of municipalities more apt to implement a standardization/integration process the dimension, in terms of the number of the member municipalities, and the balancing of power among the partners are particularly relevant.

The number of the partners is a relevant element to consider, since it seems to be strictly related to the manageability of the aggregation; as observed in (ODPM, 2003):

It should always be borne in mind that the economic case for a partnership is strengthened when the processes are comparatively straightforward and the number of parties involved is manageable. The process costs increase significantly when the number of parties to a partnership is increased, along with the increased cost of developing and maintaining the partnership that could be disproportionate to the added value of the extra partner (ODPM, 2003, p. 47).

However, despite its seeming obviousness, the thesis according to which a small aggregation of municipalities can be managed more easily and can perform better than a bigger one is not so conclusive. On the one hand, it does not consider the intrinsic complexities of the activities in which the partners will be involved. Actually, some activities could be performed with higher efficiency and effectiveness when they are shared among a large number of partners, whereas other activities can be performed more efficiently and

effectively by a smaller aggregation. On the other hand, that thesis does not consider the properties that characterize the partners. Actually, it is quite obvious to expect that a large aggregation of partners characterized by a high organizational compatibility will be managed more easily and will perform better than a small aggregation of less compatible partners.

There are empirical data that clearly point out that the relation between the dimension of an aggregation and its manageability, efficiency and effectiveness is not so simple as it could seem. Indeed, by considering data concerning 1335 joint ventures involving Japanese firms, Beamish and Kachra (2004) show that there is an increasing in an alliance's productivity as the number of its partners grows. According to Beamish and Kachra this result depends on the fact that as the number of the partners grows, it also grows the probability that more resources, heterogeneous and complementary, become available for the alliance; this, if the alliance is correctly managed, represents a competitive advantage for the partners.

Although it is unreasonable to define an abstract criterion concerning the number of partners to be included within an aggregation, it is reasonable to assume that the number of the partners must be related to the number and nature of the functions that will be jointly managed by its members. This assumption is supported by empirical data. Actually, based on an empirical analysis of the formation of networks for social service delivery, Graddy and Chen (2006) concludes that:

The greater the number of potential partners in a service area, the greater the number of services required in a contract, and the more ethnically homogeneous the client population, the more organizations are included in the service delivery network (Graddy & Chen, 2006, p. 549).

Based on the observations above, in the establishment of an aggregation of municipalities that will implement a SSLG than can possibly

evolve into an ISLG the number of the partners to be included (from the beginning) within the aggregation can be determined by considering criteria like the following:

- The (transactional) costs for the establishment and the management of the aggregation, that grow as the number of the partners grows
- The benefits that could derive from an increased availability of heterogeneous and complementary resources related to the rising of the number of the partners
- The number and type of the functions that will be jointly managed by the members municipalities, considering that the more these functions are, the more are the heterogeneous and complementary resources that will be needed to manage them

Besides the number of the partners, in the establishment of an aggregation also the relative dimension of the partners should be carefully considered, in order to avoid the establishment of aggregations that include partners that differ too much in dimension from one another. Actually, the inclusion within an aggregation of municipalities whose dimensions are sensibly different is very likely to determine the establishment of unbalanced power relationships among the partners that can ultimately undermine the same stability of the aggregation. This could happen because:

- The larger municipalities in the aggregation are those that are more likely to hold the resources, the skills and the competences needed for its well functioning. This can determine an asymmetry within the aggregation and thus the establishment of unbalanced power relationships among the partners that could lead the smaller municipalities to weaken their commitment
- If, as it often happens, the governance mechanisms of the aggregation are deter-

mined also considering the dimension of the partners involved, the inclusion within the aggregation of partners that differ too much in dimension from one another determines the establishment of uneven powers of control among the partners. This could lead the smaller municipalities to fear of loosing their autonomy and, consequently, to re-consider their membership
- If, as it often happens, the distribution of the costs for the functioning of the aggregation among the partners also considers their dimension, the inclusion within the aggregation of partners that differ too much in dimension from one another determines an uneven distribution of the costs. This could lead the larger municipalities to consider too expensive their membership

THE PATH TO CONNECTED GOVERNMENT THROUGH THE SSLG/ISLG MODEL

The fundamental thesis of this chapter has been the claim according to which the establishment of SSLGs and ISLGs at the local level can be considered as an intermediate step toward connected government in a highly fragmented system of Local Government. However, besides what argued in the preceding sections, two further problems must be considered to support this claim:

- Connected government implies that government agencies operate in a so seamlessly integrated way to be perceived as a single virtual and networked enterprise; if the goal is the complete virtualization of the whole system of Local Government, why should it be necessary to pass though the establishment of standardized/integrated systems of Local Government?
- Due to the constitutionally granted autonomy of the Italian municipality, the SSLG/ISLG model allows aggregation of munici-

palities to define and establish cooperation systems based on requirements defined locally; how could it be avoided the establishment of local systems whose properties would make it difficult to integrate them on a wider area?

The answer to the first question has already been anticipated and it is related to the inherent complexities of connected government. Connected government is the most sophisticated level of e-government initiatives and, as pointed out in UNDESA (2008):

As countries move upwards towards the stage of connected government, they pass through many thresholds in terms of infrastructure development, content delivery, business re-engineering, data management, security, and customer management (UNDESA, 2008, p. 15).

To achieve these intermediate goals at the local level, local government organizations are required to implement transformational processes, both at the technological and the organizational level, that necessitate those resources, skills and competences that small local government organizations are more likely to lack. From this point of view, the systematic sharing of resources among the members of an ISLG can be considered as one of the conditions that allow them to take part in the transformational process leading to connected government.

Moreover, as observed at the beginning of this chapter, given the high number of local government bodies that should be involved in it, the process toward connected government can be sensibly simplified if all the connections it requires (horizontal and vertical connections among government bodies, infrastructure connections, connections between governments and citizens, and connections among stakeholders) are firstly established on restricted local areas.

This is exactly what the SSLG/ISLG model is intended to achieve.

The second question above concerns the conditions that would make it possible to connect different SSLGs/ISLGs established locally through a system of systems integration. Such an integration would be easier if all the local systems have been based on the same principles and the same reference model. However, due to the legislation in force, the Italian municipalities cannot be forced by authority to adhere to a particular organizational model. For this reason, the SSLG/ISLG project also considered how an authority of a higher institutional level (the Regional Government in the case of Lombardia) could induce the municipalities to comply with the SSLG/ISLG model by offering them some incentives, advantages, and facilities. This can be done through the implementation of a system of supporting actions that besides through financial incentives also support aggregations of municipalities that agree to establish a SSLG and/or an ISLG through information, training, assistance as well as control and regulation actions.

Information actions are intended primarily for the dissemination of information concerning the SSLG/ISLG model at all the levels within the organizations that will be involved in the standardization/integration process. These actions aim to create within the organizations a shared knowledge concerning the standardization/integration process. This help reducing the risk of the rising of conflicts among people involved in the process, due to the presence of subcultures within the organization that can affect the success probability of the standardization/integration process (Schein, 1996).

The training actions aim at reducing the lack of skills and specialized competencies within Local Government organizations, especially in the case of small municipalities. As part of the supporting system the training activities are intended to achieve two goals. On the one hand, they contribute to spread a culture of innovation

within small municipalities, thus improving their human capital. On the other hand, they give the people involved in the standardization/integration process the specific competencies required for carrying it out. Training actions thus differ from information actions because they aim at creating competencies within small municipalities, whereas information actions simply aim at the dissemination of information and knowledge, not necessarily of the operative kind.

The assistance actions amount to the delivering to small municipalities of professional and consulting services that can help them to manage all the activities related to the establishment of a SSLG and/or an ISLG.

Assistance services should be centralized; this not only guarantees the achievement of economies of scale but, more importantly, also helps guaranteeing that the standardization/integration processes implemented at the local level comply with the requirements defined by the SSLG/ISLG model.
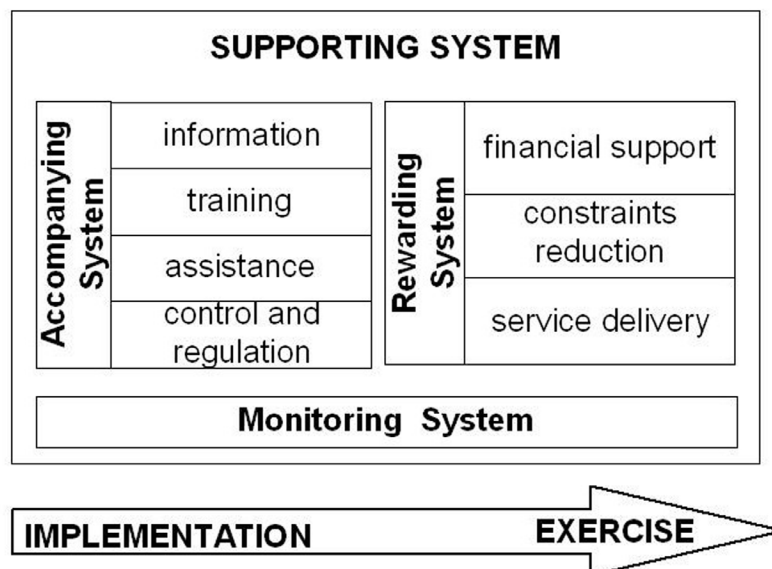
The primary objective of the control and regulation actions is to determine the appropriate legal framework for the standardization/integration processes, concerning the matters on which the higher-level authority that implements the supporting system has power. However, the control and regulation actions can also help avoiding the rising of potential conflicts between different innovation projects involving small municipalities at the local level.

Financial support concerns the transfer of financial resources to the municipalities involved in the standardization/integration processes by funding all those activities small municipalities most often are not able to fund by themselves, due to the scarce resources at their disposal. Well-known examples of such activities include, for instance, the reengineering of the processes, the re-organization of the back-office and the training of the personnel.

The higher-level authority can support small municipalities also through constraints reduction (for instance by reducing some of the controls that it should perform on the activities of the municipalities) or the devolution of power to the local level (for instance the transfer to the municipali-

Figure 4. The supporting system

ties of the competence concerning some activities normally performed by the higher-level authority). These can be considered as supporting actions since they can help reducing the bureaucratic burden on small municipalities, thus allowing them to release resources that could be devoted to the standardization/integration process.

The same result can be achieved by means of service delivery actions. As a component of the rewarding system, service delivery amounts to the higher-level authority delivering services to the municipalities involved in the standardization/integration processes. Service delivery can be conceived as an element of the supporting system because it allows small municipalities to avoid managing on their own particularly complex activities or activities that might require resources that they could instead devote elsewhere.

Finally, the inclusion of rewarding actions within the supporting system allows the higher level authority to force the members of an SSLGs and/or an ISLGs to satisfy some quality requirements in order to access the benefits; this is why the supporting system includes a monitoring subsystem too, with the aim of allowing the continuous assessment of the SSLGs and the ISLGs that have been established.

Figure 4 summarizes the components of the supporting system defined within the SSLG/ISLG project.

The supporting system completes the SSLG/ISLG approach to connected government at the local level. The approach considers all the six pillars connected government is based on. Citizen centricity has been accounted for by defining the conditions that would allow small municipalities to deliver high quality services to citizens and enterprises through intermunicipal cooperation and the systematic sharing of resources among the partners of an integrated system. Indeed, a more efficient use of the scarce resources available not only entails the delivery of more "value for money," but also helps avoiding that citizens (and

enterprises) could experience differences in the quality of the services delivered by Local Government depending on whether they live and operate in a small municipality or in a larger one. This not only represents an aspect of citizen centricity but also accounts for one important aspect of social inclusion.

Back-office reorganisation and the assumption of a networked organisational model are at the core of the SSLG/ISLG model, as are standardization and interoperability, defined not only at the technological and infrastructural level, but at the organizational and strategic level as well. Thus, also these pillars of connected government have been taken into account by the SSLG/ISLG approach.

Finally, also the pillar of governance has been considered in the SSLG/ISLG approach. On the one hand, the coopetitive model the concept of ISLG has been based on allows to retain local democratic accountability and local decision making on policy and priority, that represent fundamental aspects of good governance. On the other hand, the SSLG/ISLG approach defines some roles that can facilitate the standardization/integration process, namely the role of the catalyst, that initiate the standardization/integration process, and the role of the enabler, that implements the supporting actions addressed to the municipalities involved in the process. Played by a higher-level authority, these roles allow a coordinated governance of the standardization/integration processes defined locally, thus avoiding the lack of coordination and consistency and the implementation of not interoperable solutions that would destroy the efforts toward connected government.

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KEY TERMS AND DEFINITIONS

Architecture Driven Transformation: A transformational process based on a reference model that provides a comprehensive approach to the design, planning, implementation, and governance of an organizational system.

Administrative Fragmentation: Situation in which the system of Local Government is characterized by a high number of municipalities, most of which are small municipalities; administrative fragmentation can affect the efficiency and effectiveness of Local Government.

Cooperability: A form of non-technical interoperability that allows the successful bridging between partners of differences in vision, organization, operational processes, and culture.

Connected Local Government: The result of a transformational process that leads Local Government organizations to achieve a level of integration such that citizens and enterprises can interact with government as with a single entity rather than with a number of different public authorities.

Integrated System of Local Government: An aggregation of (Small) Local Government Organizations that on the basis of a preliminary sharing of interests jointly define systematic forms of cooperation based on a strict form of interoperability, up to cooperability.

Intermunicipal Cooperation: Cooperative or contractual arrangement between two or more municipalities for the sharing of resources and/or the delivery of services.

Small Local Government Organizations: Municipalities with less than 5000 inhabitants; Small Local Government Organizations often lack the resources and the specialized competencies required to manage innovation.