 OPAALS	OPAALS PROJECT Contract n° IST-034824
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WP11: Socio-Economic Models for Digital Ecosystems

Del11.13 – Challenges and Results of the Trentino DCE Living Laboratory

 Information Society Technologies	Project funded by the European Community under the "Information Society Technology" Programme
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Contract Number: IST-034824

Project Acronym: OPAALS

Deliverable N°: 11.13

Due date: March 2010

Delivery Date: 5th August 2010

Short Description:

This deliverable continues and concludes the work done on the Digital Community Ecosystems (DCEs) and the Trentino case study. In Phase 1 we investigated the relationship between DEs and Community Networks producing a theoretical framework (D7.1) and a first presentation of the Trentino case study (D7.2). Starting from the early research, in Phase 2 we defined the DCEs and investigated some core issues for their sustainable local development (D12.7). Subsequently we presented the early steps of the Trentino experience as a DCE living laboratory with an alternative DE local development model (D12.8). In Phase 3 we essentially reflect in depth on the challenges and results of the Trentino DCE living laboratory. It will first included the explanation of the activities occurred during the project that is shaping the new regional innovation ecosystem for the creation and delivery of the ICT services for the public sector. Second, it will present the continuation of the others more top-down and bottom-up activities that compose the multi-layered Trentino DCE. In this last step of the regional case study research we will approach issues like: innovation facilitation strategies, regional innovation policies and formal/informal practices, local sensemaking practices of the European or "open" DE model, challenges related the approach of DE technologies.

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Partners contributed:

Made available to: Public

Versioning

Version	Date	Name, organization
1	09/07/10	Francesco Botto (CN)
2	03/08/10	Francesco Botto (CN)
3	05/08/10	Francesco Botto (CN)

Quality check

Internal Reviewers: Antonella Passani (T6 ECO), Javier Val Alonso (ITA)

Dependences:

Achievements*	In the reported period it has be developed the first operational plan for a new local innovation system for the local PA in Trentino (TasLab project) and other projects proposals and local activities to support the introduction of DEs in Trentino.
Work Packages	WP7, WP12, WP11
Partners	
Domains	Social science domain.
Targets	Future regions willing to deploy DEs.
Publications*	Actually we did not publish the reported work.
PhD Students*	
Outstanding features*	The idea to move from DEs business clusters to the ecosystemic regional innovation comes from the 2 nd project phase. Also the strategy to follow and facilitate the regional innovation by working on different bottom-up/top-down project layers is new and comes from the 2 nd phase. In this report we present the whole process of DE introduction in Trentino and we arrive to two core considerations: (1) at the state of the art it is impossible to introduce a DE through projects with already defined and hidden interests that work against the DE idea; (2) this first phase of innovation system construction could create the conditions for a future DE introduction.
Disciplinary domains of authors*	Francesco Botto: social science and information systems research domains

The information marked with an asterisk () is provided in order to address Recommendation n. 4 from the Year 2 review report*



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1. Introduction

This deliverable explains the work done by CREATE-NET in the first and second phases of the project. In the first phase of the project we reflected on the relationship between Community Networks and Digital Ecosystems, by also developing a socio-technical conceptual framework (D7.1), and we introduced the planning phase of the Trentino case (D7.2). In the second phase we started by developing the concept of Digital Community Ecosystem (DCE) for regional innovation, we suggested an alternative strategy for DE introduction and facilitation in the regions that composes a “complementary model” for DE dissemination to improve the “DBE model” (D12.7), and we exposed in detail how the DCE innovation strategy started being sustained in Trentino (D12.8).

What we called “DCE innovation strategy” for this regional case consisted in working contemporary on three levels: (1) the top-down public broadband infrastructures projects and stakeholders, (2) the middle level composed by projects that are changing the regional innovation system with new rules, institutions, relationships and technologies, and (3) the bottom-up projects that are being facilitated by CREATE-NET and should provide infrastructures and services to specific communities. Instead to identify from the beginning a specific business cluster where to develop a DBE – as suggested by the DBE project regional development model – we worked on three levels trying to enter the ongoing innovation processes differently from the previous model.

By participating the top-down regional infrastructures actions and facilitating the bottom up initiatives of specific grass-roots groups of interests and enterprises, we tried first to sustain the local *sensemaking* processes (Weick, 1995) and we tried to build a concrete and significant possibility for the regional DE innovation. Pragmatically, the idea was to work on the top-down and bottom-up initiatives to sustain a real introduction of DEs at least in the middle-level projects, focused on changing the regional innovation system and expressed in the TasLab project. It was addressed to the “creation of a living laboratory for service experimentation” and is member of the Living Labs network¹.

In this third and last phase of OPAALS we will present the challenges and results of the Trentino DCE Living Laboratory. In Chapter 2 we will recapitalise the initiation of the regional experience, the creation of the new strategy and the activities related to the different regional projects and actions we worked on. In Chapter 3 we will present in depth the activities related the TasLab project. In the Chapter 4 we will reflect on the results of the regional experimentation.

1 See: www.openlivinglabs.eu

2. The Trentino DCE activities: story and issues

2.1. PHASE 1: the setting of top-down regional infrastructures and innovation system

2.1.1. Introduction: Trentino region needs and plans

The Autonomous Province of Trento (PAT – Provincia Autonoma di Trento; also called “Trentino”) is the southern portion of the Trentino Alto-Adige Region in Italy (Figure 1), also composed by the northern Alto-Adige Province. The “autonomous” attribute is due to the special statute of the Local Government that enable the Province to manage the internal income in an independent way.

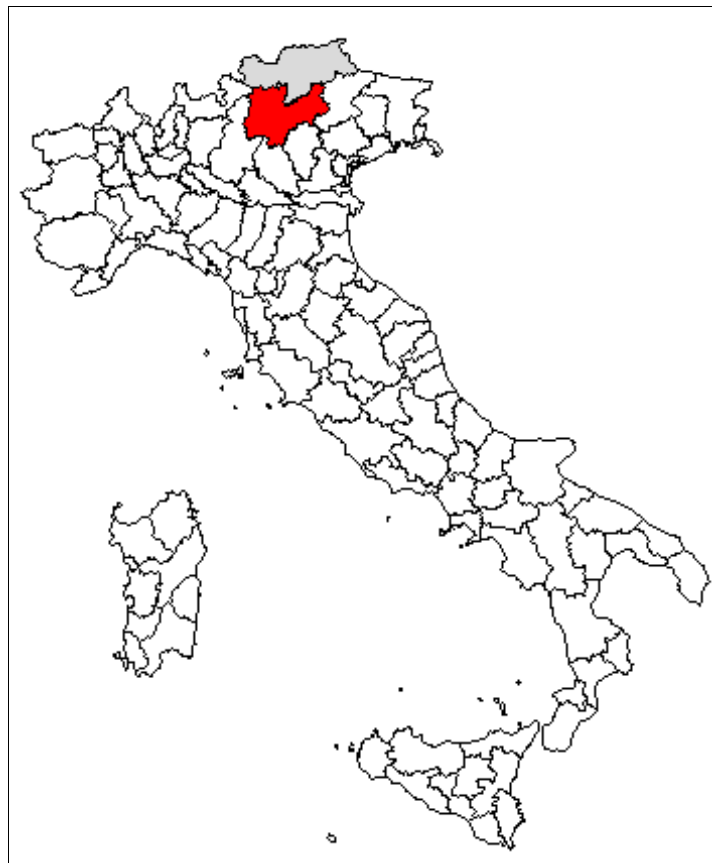


Figure 1: the PAT position in Italy (Source: Wikipedia).

The PAT is located in a mountain area (Figure 2) that is worldwide well known for the

Dolomites², with the Adige river valley in the centre from North to South. With an area of 6,212 km² (4.371 km² over the 1000 mt of altitude) and a population of around 521.779 inhabitants (end 2009) divided in 223 Municipalities, the Trentino territory results very fragmented. This population fragmentation in the high mountain area drives to the lack of the necessary broadband infrastructure, that Telecom operators used to provide only in the more dense and flat areas.

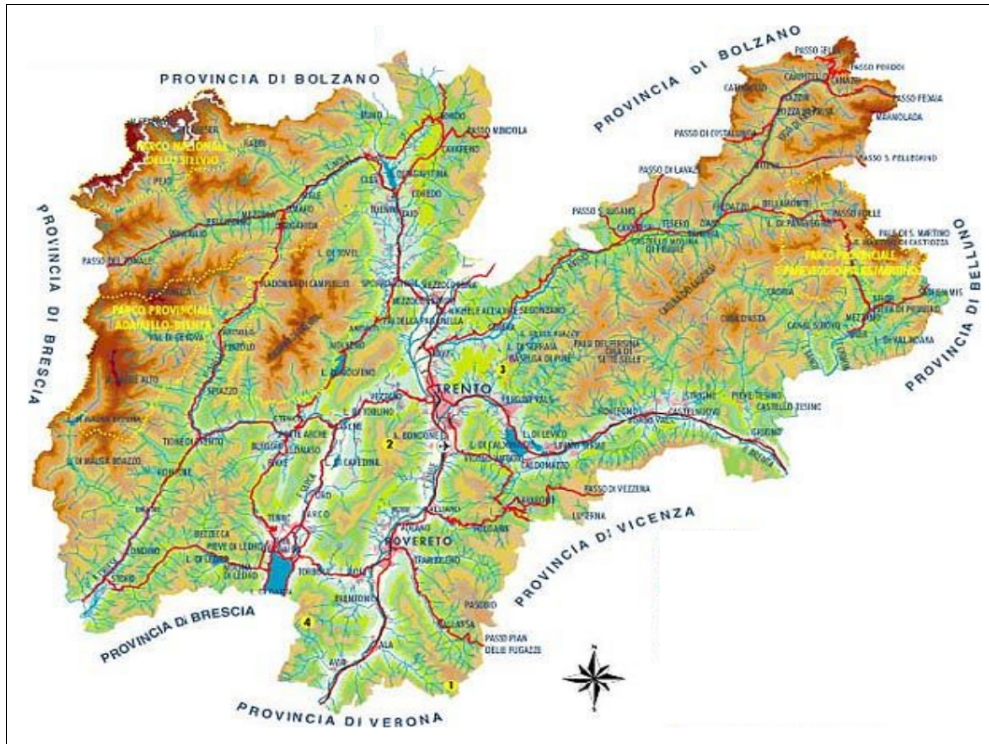


Figure 2: The morphology of PAT.

In terms of business, the Province is mainly devoted to tourism, agriculture (apple and grapes mainly), the production of wine and the extraction of porphyry. Industries are mainly SMEs and the core sectors are textiles, mechanics, wood and paper productions, and the production of hydro-electric energy. Universities and research centres are high level rated and the ICT research sector is growing very fast, with the strategic support of the Local Government.

The regional politics for the regional innovation system are composed by the following guidelines:

- creation of a regional public broadband infrastructure;
- creation of a strong ICT research system;
- creation and management of the public ICT needs through a local "facilitator" agency that should coordinate the focalised relationship between the local PA, research centres and ICT enterprises.

The current policies on the regional innovation system could be described as divided in

² <http://en.wikipedia.org/wiki/Dolomites>

two steps: “separation” and “collaboration” (Figure 3). The separation is related to the management of the network infrastructure and of the ICT services for the public administration. The creation of *Trentino Network* (TreNet - the new company in charge of the public broadband infrastructures) occurred in the 2004 when TreNet became a separate enterprise from *Informatica Trentina* (InfoTn – the company in charge of the ICT services for the local PA). Both enterprises are fully controlled by the PAT and in 2010 TreNet will become a public Joint Stock Company like InfoTn.

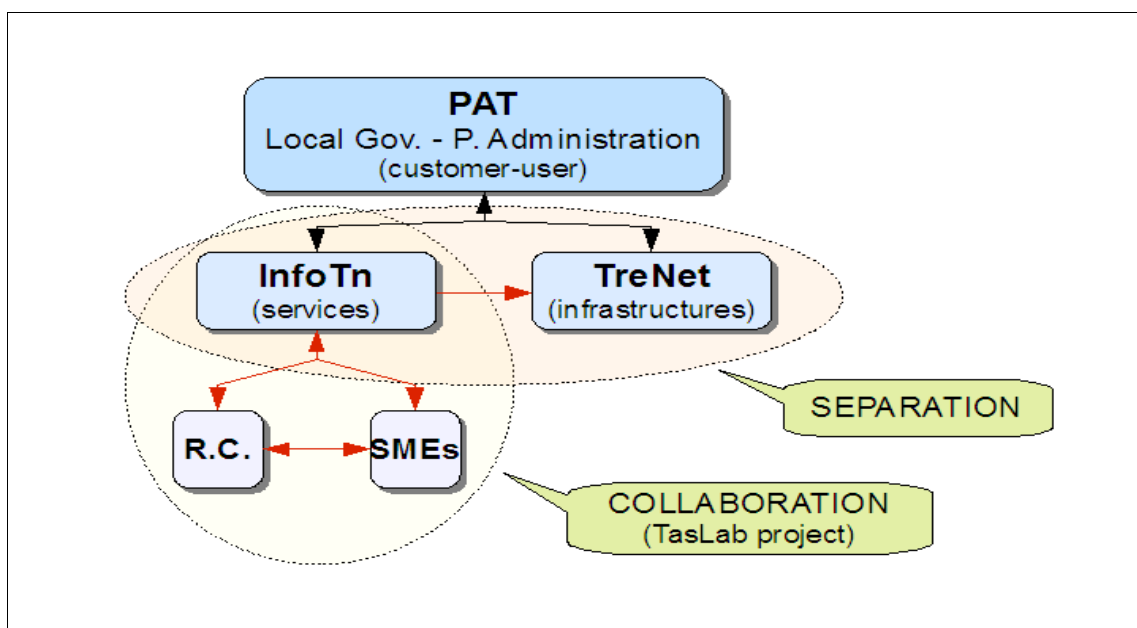


Figure 3: The two main changes in the new Trentino regional innovation system.

The collaboration policy is related to the reinforcement of the cooperation between enterprises and research centres: through the TasLab project, which will define the new “innovation ecosystem” regarding the ICT-related public sector services in Trentino. The creation and management of this ecosystem is (a) a territorial development vision called “Trentino come Laboratorio”, in English “Trentino as a Lab” (TasLab) (see the OPAALS Deliverable 7.2), and is (b) part of the InfoTn new (2009) industrial strategic plan.

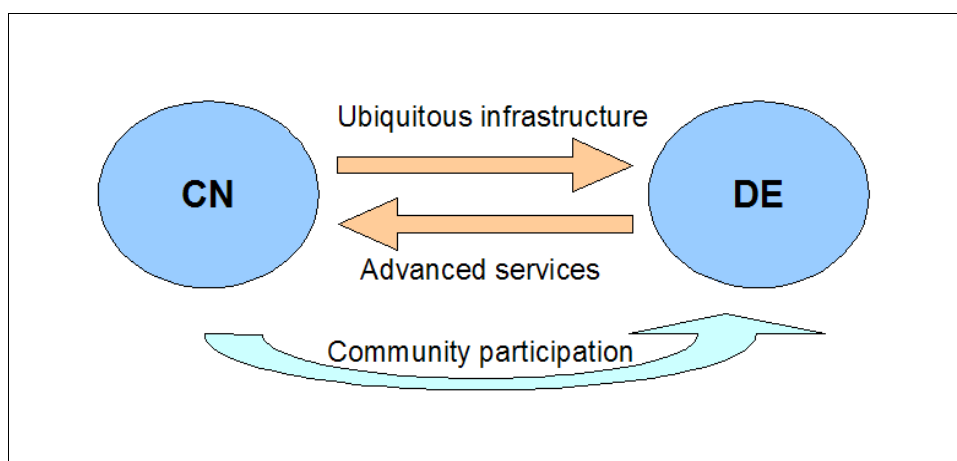


Figure 4: The Digital ecosystem and Community Network relationship.

In the following sections it will be introduced the basics of the regional broadband infrastructure (T-Net) project and regional innovation ecosystem vision (TasLab). From the beginning of OPAALS research (Botto and Passani, 2008) we underlined the need to consider:

1. the possible virtuous circle composed by the relationship of the development of both Community Networks³ and Digital Ecosystems in a region (Figure 4);
2. the multi-dimensional and relational character of a broadband-based innovation (like both Digital Ecosystems and Community Networks) seen under a socio-technical perspective (Figure 5 - the CISG framework)

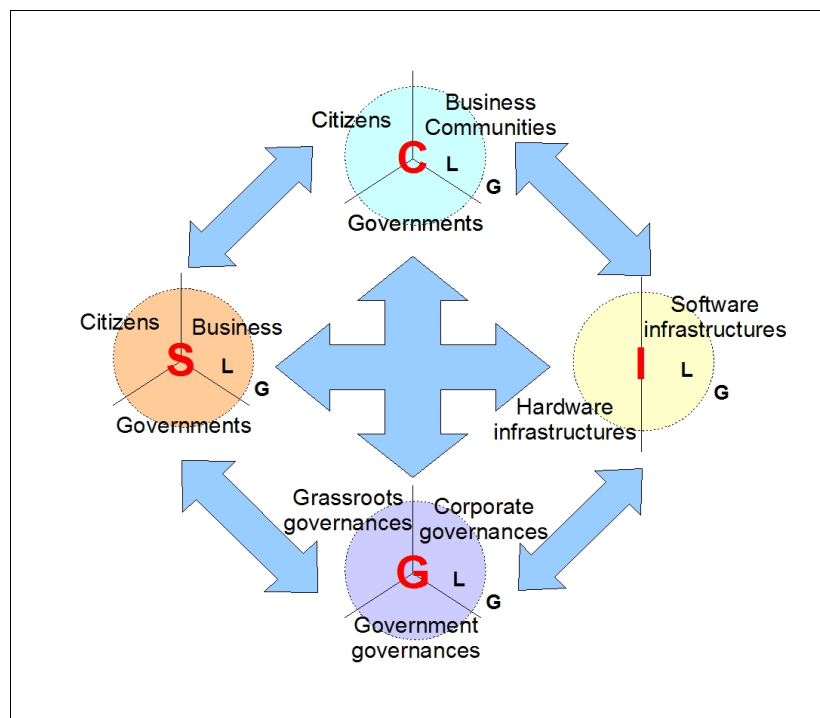


Figure 5: The multi-dimensional and relational character of a broadband-based innovation (CISG framework).

In the earlier Digital Ecosystem research (the DBE project) DEs were understood as services to be studied by considering some technical layers (applications, middleware, P2P, ...) and some general socio-economic issues (stakeholders role, trust, ...). By putting in the centre the regional experience of innovation development and by leveraging on the socio-technical theory of infrastructures (Star and Griesemer, 1989; Star and Ruhleder, 1996), we sustained that a Digital Ecosystem “in practice” should be defined and understood by analysing the relationship of at least 4 dimension – and subdimensions -: Communities, Infrastructures, Government, Services (Botto and Passani, 2008).

Under the Community Networks and Digital Ecosystems integration idea, we envisaged sustainable innovation processes as follows:

³ Community Networks have been defined as (a) public regional broadband infrastructures, or (b) local community grassroots managed online services, somehow participated by local public and/or business agencies. See OPAALS Deliverable 7.1. (Botto and Passani, 2008)

- Communities, like citizens and government agencies, at the local level are undertaking the responsibility for their own infrastructure upgrades. The grassroots community is participating in the decisions. The business community is involved through local government;
- Infrastructures are therefore created under locally sustainable business and social processes;
- Services could be developed because of the ubiquitous access and the cooperation processes enhanced by DEs and other frameworks;
- At the governance level, the creation and management of infrastructures and services could be improved by the business and grassroots participation that belong to the CNs tradition and DEs perspective.

In the following two sections we will present the two local actions that at the beginning of the regional DE adoption research in Trentino were intended to drive the virtuous circle of the local Digital Community Ecosystem. These actions are the development of a local Community Network (T-Net project) and the trial to sustain the development of Digital Ecosystems services (TasLab project).

2.1.2. T-Net project

Compared to other Italian regions, Trentino is characterized by several areas with low population density and a strong digital divide due to the fact that the incumbent operator is not willing to provide DSL connections in these areas which constitute about two-third of the province's territory. Providing a capillary network to give equal access to opportunities offered by the Information Society has been, for a long time, a priority for the Province, considering that participation by private companies in this field isn't removing the isolation of large areas of Trentino. Broadband appears to be a key issue for the development of Trentino, and so a pragmatic and operational project plan has been outlined to interconnect the entire territory with optical fibers by 2010.

T.Net project is part of a wider strategy based on ICT technology development known as the "eSociety" project, whose main objectives are the innovation of the local economy, the improvement of Public Administration efficacy and the reduction of the gap which keeps many of its citizens from participating in the Information and Knowledge Society. The development model is based on a strong collaboration between public authorities, the private sector and local university and research institutes, which lead to technological experimentations (e. g. WiMAX and fiber optics) on Testbeds integrated to the public network, and participation in European initiatives (e. g. IANIS+ and OPAALS).

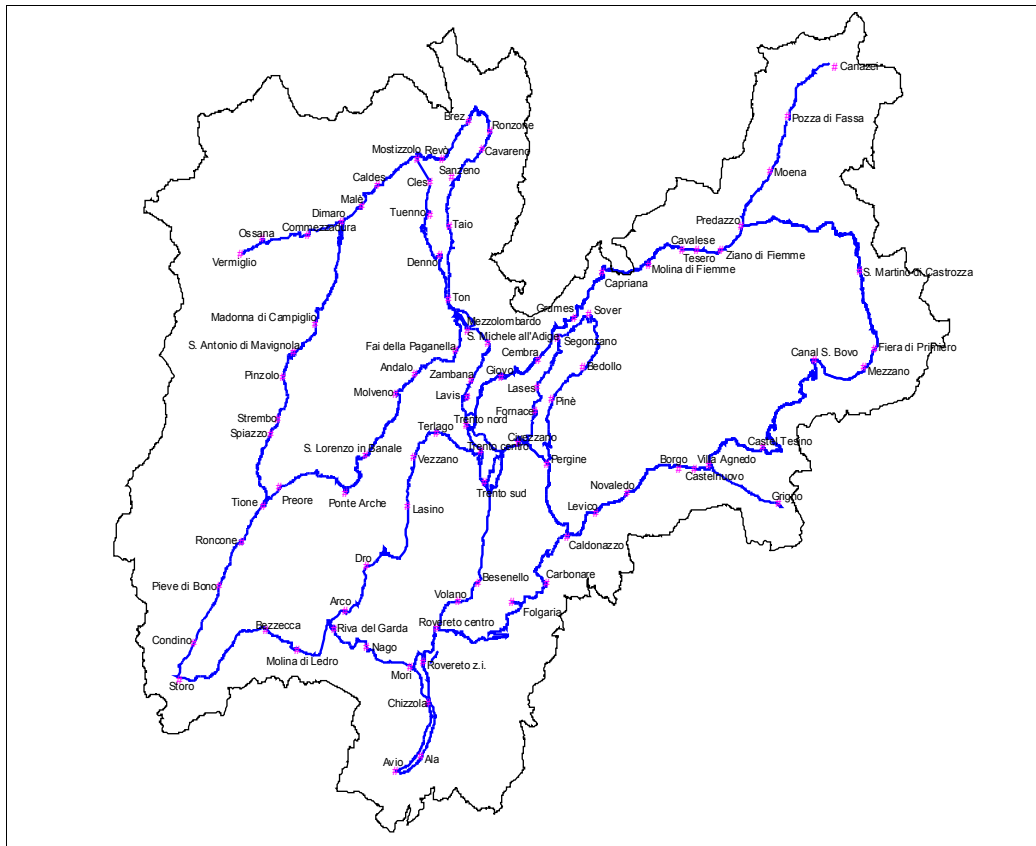


Figure 6: Deployment of the optical network infrastructure in the second phase.

The project is composed by several initiatives:

1. use of a Telecom Italia Gigabit Ethernet network (63 nodes) for a backbone network through a specific agreement (leasing), in order to start the wireless coverage – see point 3 - of municipalities currently not reached by DSL services;
2. deployment of the optical fiber backbone made of 92 nodes and more than 700 km optical fiber cabling (Figure 6);
3. deployment of a wireless network to areas where broadband connectivity is absent. 500 HiperLAN/WiFi access points planned (Figure 7). It is expected to provide broadband connectivity to 150 (out of 223) municipalities and to the large fraction (65%) of peripheral zones of cities where DSL services are not available yet;
4. deployment of a Tetra-based mobile network for civil protection.

Total investment for the completion of the network by 2010 is more than 100 millions Euros, which are being used to set up both an optical transport network infrastructure and to complete the wireless network. The incremental deployment of the infrastructure, based on the gradual introduction of fiber and wireless connections, will not only allow to supply core services in a short time frame, but will also incentivise the development of new advanced services later on. For example, telemedicine services have been deployed thanks to the migration to the Gigabit Ethernet backbone connecting hospitals, while

mobility services are becoming available in all the villages not covered by ADSL.

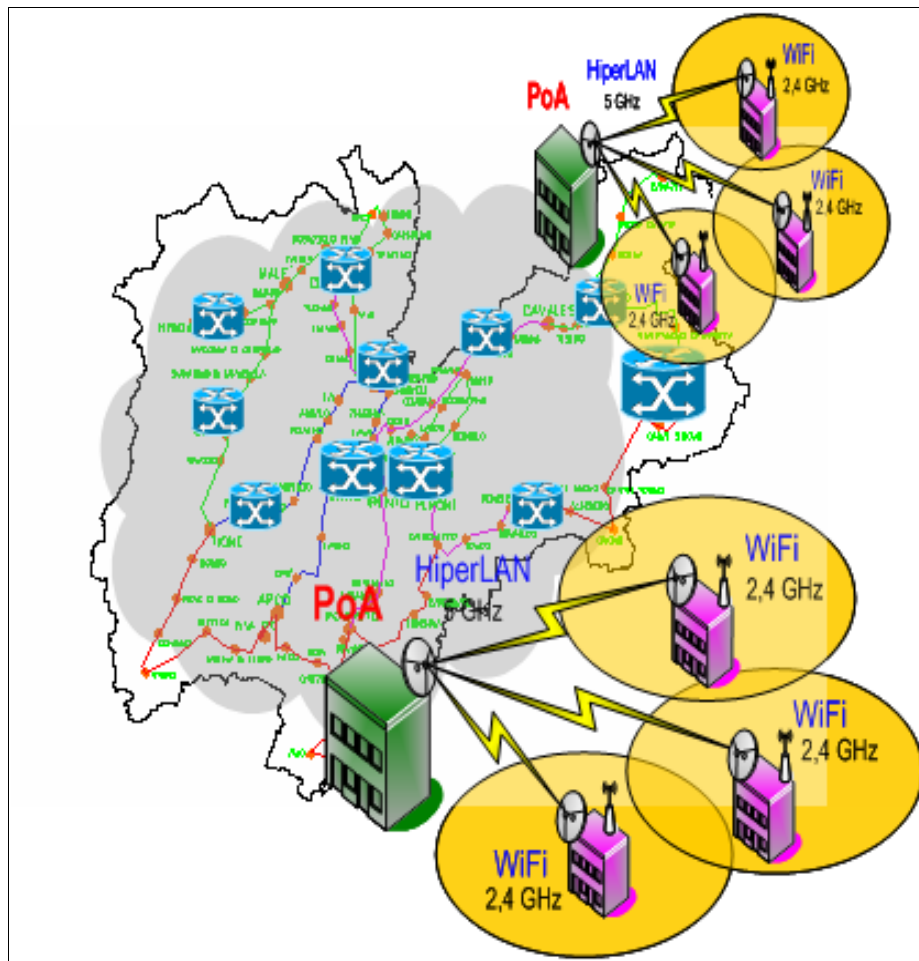


Figure 7: WINET: the wireless access infrastructure.

The deployment of T.Net is enabling a number of projects for advanced services in the following fields:

- broadband connectivity (reducing digital divide in rural areas);
- e-government;
- telemedicine;
- e-tourism;
- e-library;
- VoIP and video-conference facilities in all PA offices;
- e-inclusion;
- tele-assistance;
- e-learning.

2.1.3. TasLab project: planning and rationale

The Trentino as a Lab (TasLab) geographical Living Laboratory (LL) initiative started in 2007 in the territory of the Province of Trentino. Thanks to the “*Broadband and digital divide plan*” developed by the Autonomous Province of Trento (PAT), the “natural” evolution of what the PAT have done in the past years as part of the TasLab effort is the application to the European Network of Living Labs⁴ (ENoLL). Quoting from the ENoLL website:

“Living Lab is a new concept for R&D and innovation to boost the Lisbon strategy for jobs and growth in Europe. So what are Living Labs? The answer depends on who you ask because of the big differences between running Living Labs. But one thing is common for all of us; the human-centric involvement and its potential for development of new ICT-based services and products. It is all done by bringing different stakeholders together in a co-creative way.”

PAT have focused its application to ENoLL on the following areas:

- eMobility: Trentino has around 150 tunnels, it is very close to the planned Brennero Tunnel which will connect Austria and Italy, and has lots of roads with major mobility problems, e.g., ice during the winter.
- eInclusion: Trentino has a long history in this field; as an example, the expenditures in this area are more than double the Italian average.
- eBusiness with a focus in specific areas such as Tourism (one of the main local industries), Environment and Quality of life (among the main assets of Trentino, which are also at the basis of the tourism industry).

Notice that, in these areas, the user involvement is important at two different levels: as a key actor in the innovation process and as a user of the results of the innovation process itself. As part of the TasLab mission, innovation will become for Trentino and its citizens “*the way of being, thinking and evolving*”. To this extent, TasLab have developed new forms of partnership and Intellectual Property Rights (IPR) management which allow to exploit this double role of users.

The core reasons behind the TasLab LL were social, economic and political. The main goal was to create an advanced innovation infrastructure capable of responding to present and future user needs, not only from an ICT perspective but also from a cultural and sociological point of view. The plan was to reduce the digital divide, and at the same time to experiment with new ICT solutions, with deep user involvement, all over the Trentino mountainous territory. As a natural consequence of this long term vision, the main objective of TasLab is to support the never ending evolutionary, sometimes diverging process which local communities, users and enterprises (especially SMEs) are facing.

The target users of the TasLab are the Trentino Public Administration, all the Trentino citizens and also all the people who happen to spend some time in Trentino (e.g., tourists). Each vertical area involves different users; thus, for instance, in eInclusion an important focus is on the elderly (“ageing well” is one of the core topics in this area) while, in eMobility, the users are the car drivers but also the people in charge of the tunnel and road monitoring and maintenance.

4 <http://www.openlivinglabs.eu>

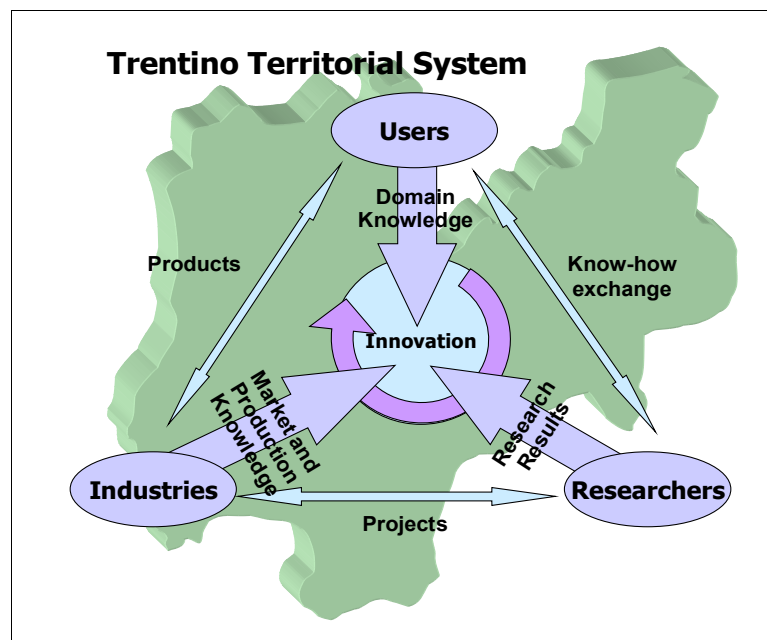


Figure 8: The "innovation tripole" model.

The co-creation approach is also empowered by a relational and conceptual model, the "Innovation Tripole" (Figure 8), that puts the users inside the innovation processes together with enterprises and research players.

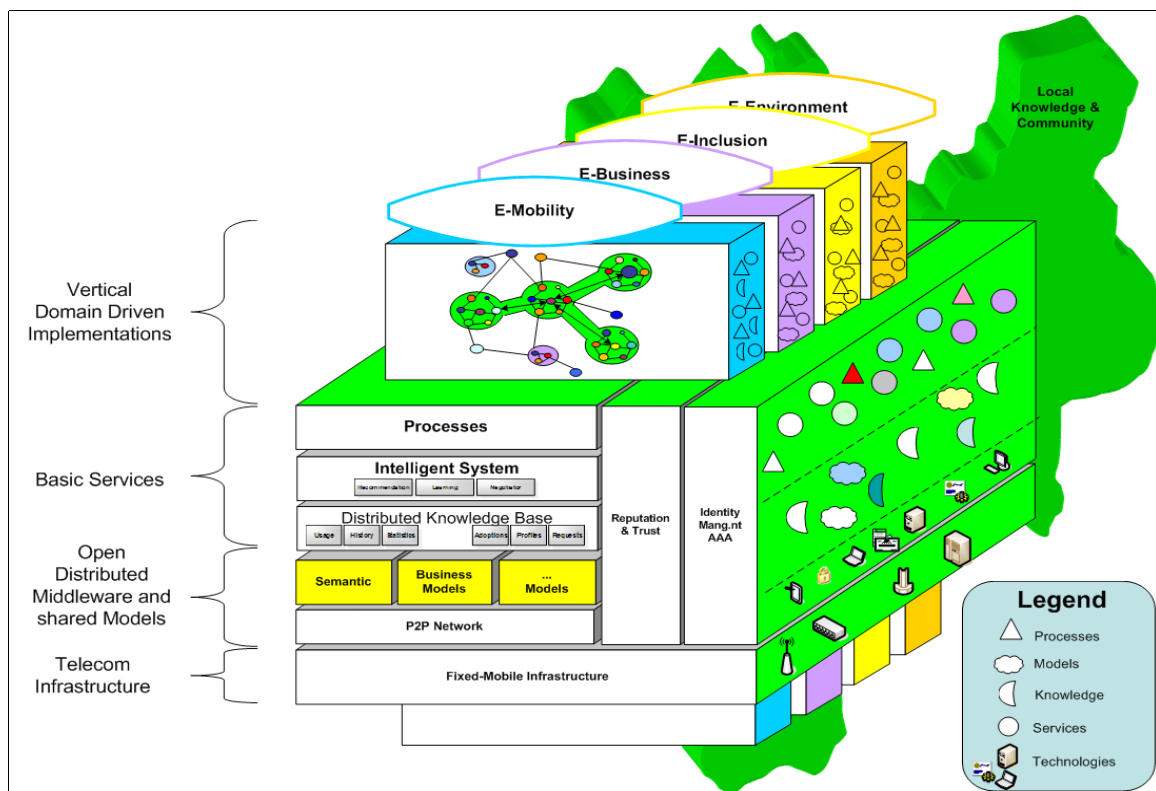


Figure 9: the early vision of TasLab as a Digital Ecosystem.

CREATE-NET participated to the creation of the early vision of the TasLab and introduced the possibility to develop the new regional innovation system by adopting the Digital Ecosystems framework. Figure 9 is an early image steaming from the first attempt to figure out the DE and TasLab relationship. It represents the possible conjunction between a DE-inspired Horizontal dimension that could work as a bus for the Vertical dimensions, with a focus on the Trentino's vocation areas, namely those areas which are core in the Trentino value system (e.g., eInclusion, eMobility, eBusiness and eTourism, and eEnvironment).

2.2. PHASE 2: the new (complementary) DCE development strategy

2.2.1. Introduction: the new DE development model and local strategy

The needs, projects and plans that have been introduced in Section 2.1 represent the first phase of the Digital Ecosystem development in Trentino. In this early phase CREATE-NET used the collaboration relationships going on with the Local Government for the development of a regional Community Network (T.Net project) in order to introduce the DEs in the main project that should design the ICT services for the regional PA (TasLab project). In the second phase it emerged the need for a new DE local dissemination model and a new local DE development strategy.

The revised DE local dissemination model

We entered the TasLab vision in spring 2007 and we rapidly understood – summer/autumn 2007 - that the DE dissemination model at regional level suggested by the DBE project (Dory, 2007) was unapplicable at the Trentino case and needed to be adjusted to the Trentino reality. What we described as the “ortodox DE dissemination model” was briefly described in the Deliverable 12.7: (a) a preliminary contact between the Regional Catalyst and the Influencers – the Policy and Economic Decision Makers -, aimed to define the political and financial resources; (b) the Regional Catalyst action of specific DE creation, aimed to develop a DE in a specific business sector. Even if this model has been described as not allowing generic “best practices”, requiring instead local practices informed by key factors and some important variables⁵ to consider (Passani, 2007).

Therefore we introduced what we initially (Csabo and Botto, 2008) called the “alternative DE development” model as inspired by the more relational and ecologic tradition in the Information Systems Research (Star and Ruhleder, 1996; Suchman, 1987) and the translation model of innovation (Callon, 1986; Law and Hassard, 1999). The relational

⁵ Pre-existing socio-economic situation; expectation/vision about DE as technological environment and as a local Innovation process; typology of selected Regional Catalyst; policy makers' level of interest; identified business domain/s; technological development of DE components.

ecologic tradition suggests to follow the local sensemaking⁶ practices instead of the formal labels and planned phases. The translation model of innovation suggests to avoid following pieces of innovations as moving as discrete and stable pieces between different contexts. This means that the DE innovation should find and follow specific local meanings and innovation trajectories, and that we should simply facilitate this local adoption as a translation process. In general we can say that the Regional Catalyst should assist this local sensemaking process.

Considering both the identified needs and the emerging issues, we considered that what counts in a regional innovation is the virtuous process composed by (a) the addressing of a concrete problem or need, and (b) the new meanings and ideas that emerge from a locally meaningful innovation trajectory. From this point of view we suggested that the early DBE dissemination model is not wrong but only partial. It addresses the demand for an institutional model and lacks in addressing to the concrete actions and strategies to perform locally.

Therefore, in order to enrich the previous model, in the Deliverable 12.7 we suggested to adopt a participated innovation methodology that should consider the following points of attention:

- *start from concrete local needs*: a DE as a pure research need will be hardly sustainable in time;
- *work with people at the many levels*: in addition to the policy makers, innovation should involve both the management and the lower levels of business organizations and communities;
- *work on what makes sense for participants, not only on the DE idea*: instead of "implementing" a DE (or DCE) as the core objective, focus on developing meaningful innovation for the community and use the DE ideas as a tool;
- *avoid using the term "DE" or "ecosystem"*: the result of this innovation should be something meaningful for local communities also in its label. It is improbable – but not impossible – that they will adopt your own vocabulary.

It should be clarified that avoiding the "DE" or "ecosystem" terms when working with local actors is different to completely delete those terms. The suggestion regards the need to avoid too specific and complex terms in the local context because: (1) they does not help the emergence of concrete needs and services, and (2) they are clearly understood as buzzwords by local actors, with a consequent decrease of the trusted relationship between researchers and local actors. It could be the case to maintain those terms when negotiating the regional innovation in the political or research domains, but operational people dislike both those terms and their users. Differently from the "practice" side, we suggested that the research domain will be probably enriched from the association of those high level concepts with specific services and tools.

6 For Dervin (1992) sensemaking is performed by individuals when attempting to make sense of observed data, while for Weick (1995) sensemaking is the practice of undertake the resolution of the ambiguous situations in organizations.

The new local DE development strategy (autumn 2007)

If the early idea for this regional case was to leverage on the close relationship with the Trentino local Government - in the development of the Community Network (T.Net project) -, in order to introduce the development of a DE through the TasLab project. With the new development model we realized a new local strategy. It consists in three layers of service-oriented projects that could be grouped as related to (Figure 10):

- A) *top-down technical and institutional conditions* at regional level (on the top),
- B) *intermediate enabling actions* at regional level (in the middle), and
- C) *bottom-up needs* at the specific community level (on the bottom).

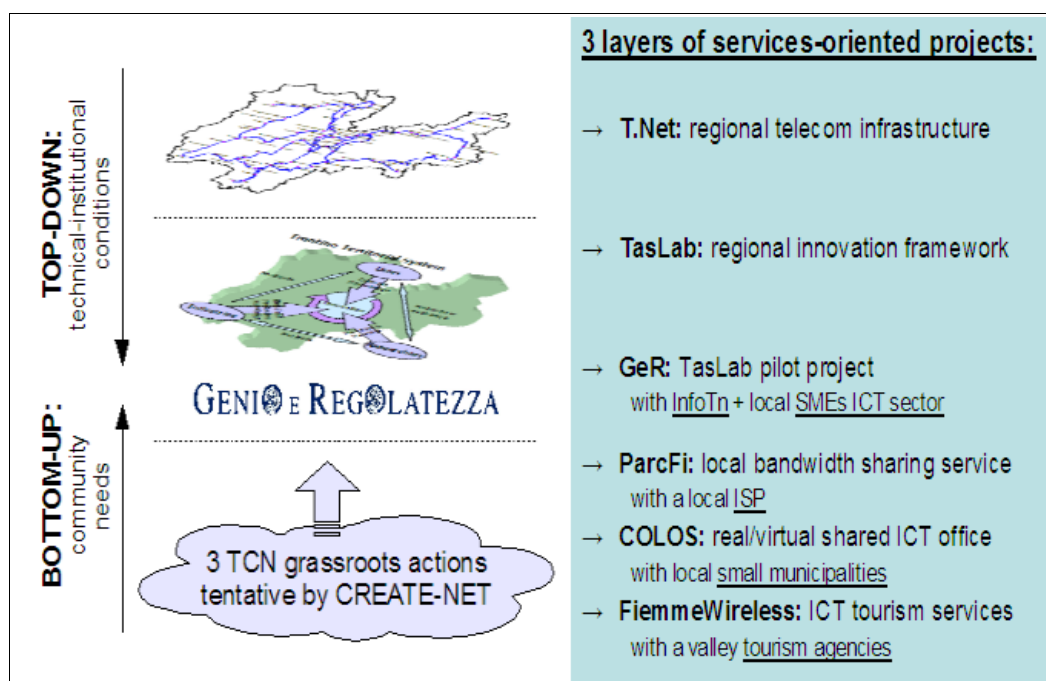


Figure 10: The multiple projects and layers strategy for the Trentino DCE.

At the level A there is the regional publicly owned/controlled telecom infrastructure project **“T.Net”**. CREATE-NET was asked by the Local Government to provide ideas and knowledge for the development of both infrastructure and services. The relevance of level A underlines the need to consider the connectivity infrastructures when doing DEs research.

At level B there are a couple of projects that should start the instantiation of DEs in the Trentino region. The **“TasLab”** project is a LivingLab action that will provide a new regional framework for eInclusion, eMobility, eBusiness / eTourism, eEnvironment and all the regional ICT innovation concerning services for the PA. The project is also part of the new operational business plan of the regional agency in charge of the ICTs services for the Public Administration (Informatica Trentina - InfoTn), which is shifting its role from the software/service direct provider to the local facilitator.

The **“Genio & Regolatezza” (G&R)** project is the first action that should instantiate concretely the DEs idea inside the TasLab framework. If the TasLab aim is to produce innovation procedures that should stay in line with the regional policies and stakeholders,

the G&R aim is to start developing a local ecosystem in the ICT SMEs sector. More precisely, it should create this ecosystem and connect it to InfoTn, the core customer.

CREATE-NET at this level is the DEs Regional Catalyst. We spent a significant amount of resources in understanding where and how to connect the DEs framework in the region. The level B underlines the fact that in order to give sense to the DEs framework at the local level, it should give sense to other projects and interests. This means that both projects are not “simply” DEs projects, but actions that connect the many stakeholders (Local Government, InfoTn, University of Trento, CREATE-NET, SMEs) visions and interests with the DEs ideas. How this idea will concretely be translated in practice will be understood after the participated process of innovation.

At the level C there are some bottom-up project plans (**ParcFi**, **COLOS**, **Fiemme Wireless**) facilitated by CREATE-NET with the aim to (i) facilitate some bottom-up concrete meanings for the local Digital Ecosystem, and (ii) create a virtuous circle of innovation with the A and B levels projects. Those actions refer to and are intended to be developed with the involvement of specific communities (local ISPs, small municipalities, tourism agencies). With this level of projects we intended: (a) to answer the specific needs with organizational change and hardware/services innovation in specific contexts, (b) to create best practices to be replicated at the regional level, and (c) to provide more situations requiring the involvement of the local ICT-SMEs Digital Ecosystem (G&R project), and the future creation of new DEs.

CREATE-NET is working at this level in order to approach grassroots users and thus complementing its efforts at the institutional level (A and B). At this level the Community Network and Digital Ecosystems issues could find a development way, but what counts is the specific community need, the availability of funds, the facilitation practice we are performing, and the effective community commitment and participation. The need of “participated actions” has been one of the outcome of the D7.1, referring to CNs and DEs innovation. After the declared interest of local communities (municipalities, ISPs and tourism agencies) we are facing difficulties in both the negotiation phase and the project proposal cooperative writing. This means that participated actions are far from being easily achievable.

In the Deliverable 12.7 we defined a Digital Community Ecosystem⁷ (DCE) as a phenomenon that stands on the line of two possible DE and CN intersections. Therefore DCEs could be considered between (a) DEs empowered by considering the most important broadband-based local phenomenon that is CNs, and (b) CNs with some kind of DE services (Szabo and Botto, 2008). This definition allows us investigating the experimentation of DE concepts, ideas and technologies in the growing context of local public broadband infrastructures and advances services in Trentino.

We organized the Trentino DCE experimentation as a strategic plan composed by few local innovation projects in which CREATE-NET is variously involved (Figure 11). The T.Net infrastructural project, in which we are only partially involved as technology consultants, is being entirely managed by the PAT (Networks and Telecommunication Service) and Trentino Network SPA. For this project we use the information we gained for

7 For a longer explanation of DCE, see the Deliverable 12.7. For a complete analysis of the relationship between DE and CN, see the Deliverable 7.1.

the Deliverable 7.2 and in addition we organized a series of interviews regarding the regulatory framework of the new public broadband network.

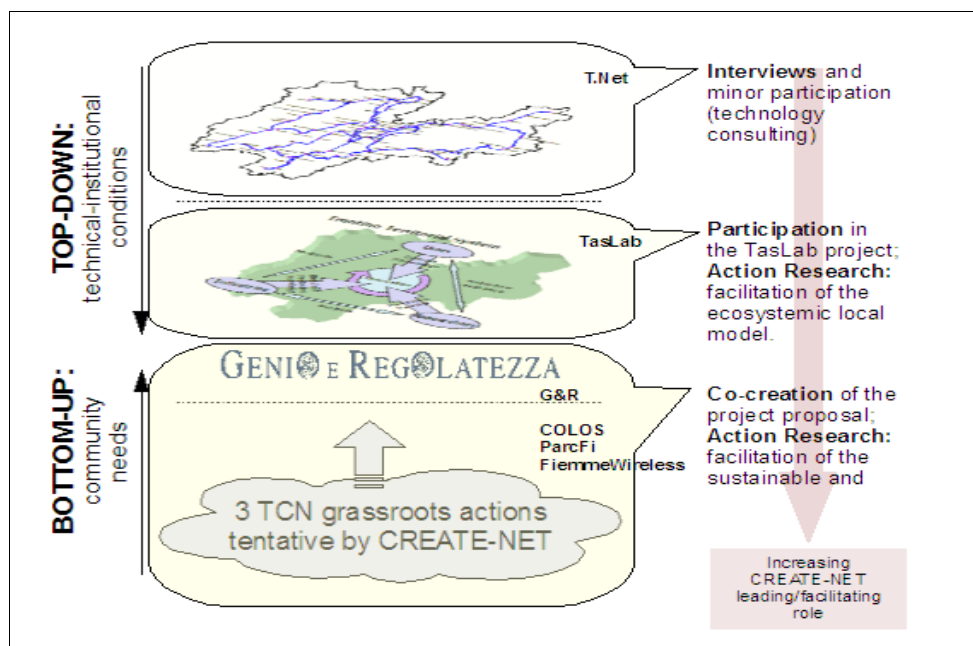


Figure 11: The multiple projects and layers strategy for the Trentino DCE.

2.2.2. Bottom-up projects

In this section will be presented the evolution of the bottom-up local projects activities: Genio & Regolatezza (G&R), COLOS, ParC-Fi and Fiemme Wireless. Those projects are – or have been - sustained by CREATE-NET in order to facilitate the DCE development in Trentino. For every activity we will consider:

- Project idea.
- Implication for the DCE.
- Initiation strategy: who, why, how.
- Activities: what happened.
- Conclusions: difficulties, lesson learned, future plans,

The Genio & Regolatezza project

Idea

As introduced before, the “Genio & Regolatezza” (G&R) project is the first action coined to instantiate concretely the DEs idea inside the TasLab framework. If the TasLab aim is to produce innovation procedures that should stay in line with the regional policies and stakeholders, the G&R aim is to: (a) implement the SEI CMMI⁸ Constellation Model for

8 <http://www.sei.cmu.edu/cmmi/>

acquisition of products, business models and services at InfoTn; (b) start developing a local ecosystem in the ICT SMEs sector. More precisely, the second one should create this ecosystem by developing the local consortium of ICT SMEs (CONIT) and connect it to InfoTn, the core customer (Figure 12).

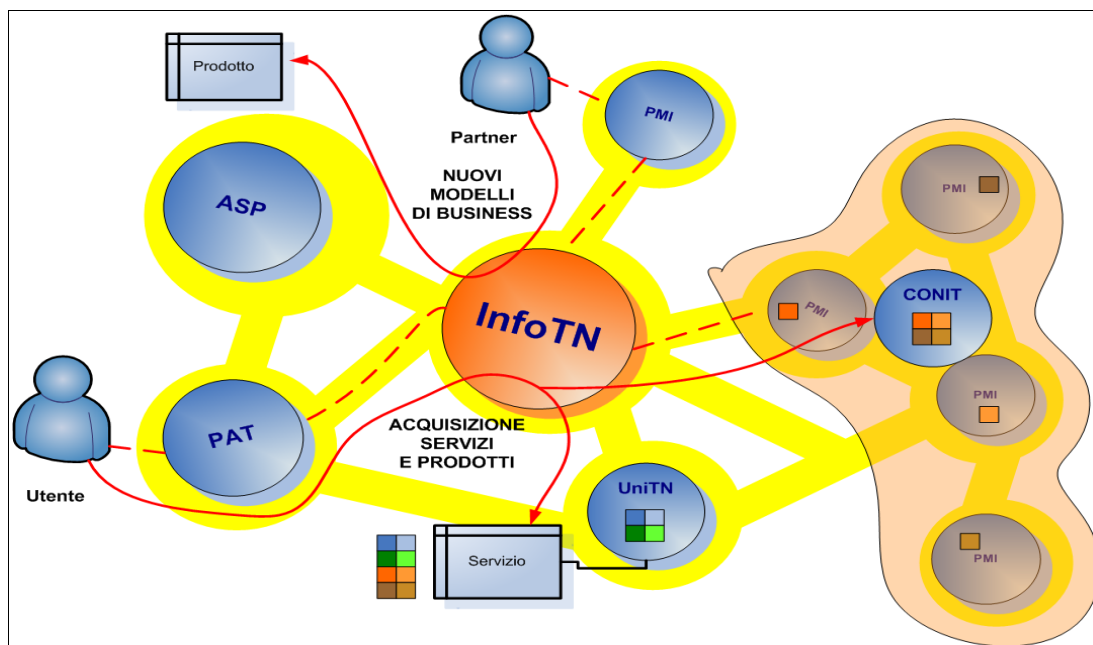


Figure 12: an early image representing the G&R project idea.

DCE implications

In terms of DE, the G&R project was created to generate a flexible and cluster specific DE with two aims: (1) sustain the public ICT services' regional innovation system with a local ICT-SMEs digital ecosystem, and (2) develop this ecosystem in order to create a virtual organization that will both answer the needs of the whole Trentino and also approach global markets. Therefore this project has been described to the Local Government as the main action to connect the regional innovation system with the T.Net public broadband infrastructure via a DE technology architecture⁹.

Initiation strategy

The project proposal started in the spring of 2007 with the idea of NOUS23, a local consulting agency, to facilitate the implementation of the SEI CMMI¹⁰ processes in InfoTn. The first negotiations started between NOUS 23 and InfoTn when CREATE-NET suggested to catch the occasion for implementing and developing an eProcurement DE. The idea was to enhance a better relationship between InfoTn – the local buyer - and the technology and services providers, the local SMEs.

Activities

⁹ At this stage of the local negotiation we avoided to deepen the discussion on the specific DE architecture and technologies.

¹⁰ www.sei.cmu.edu/cmmi

The Genio & Regolatezza project idea has been lead by NOUS 23 and CREATENET had just the chance to participate at one of the negotiation meetings with InfoTn, in order to present the DE idea. The writing of the project proposal started at the beginning of 2008 and generated the final document in June 2008. After this date it was impossible to know what happened to the proposal: NOUS 23 disappeared and we are still waiting for any news.

Conclusions

The CREATE-NET strategy has been to use the NOUS23 idea to enter InfoTn and start the local dissemination of DEs. When the first G&R idea was moving along the first steps, we also started cooperating with InfoTn in order to build the TasLab vision. Then G&R became an useful project to sustain the future regional innovation system. Therefore we can say that, even if the project disappeared, its negotiation phase has been a foundational step for introducing the DE ideas inside the local innovation discourses and projects.

The COLOS project

Idea

COLOS (*COMunità Locali Open Source* – Open Source Local COMMunities) is a project proposal that aims at developing the Open Source culture in the Trentino's small municipalities by leveraging on a needed inter-organizational and technological change (see Figure 13). The plan is to coordinate an Action Research and Participatory Design intervention in deep participation by the local partners, in order to sustain the OS culture when answering the specific needs of Municipalities and the Local Government.

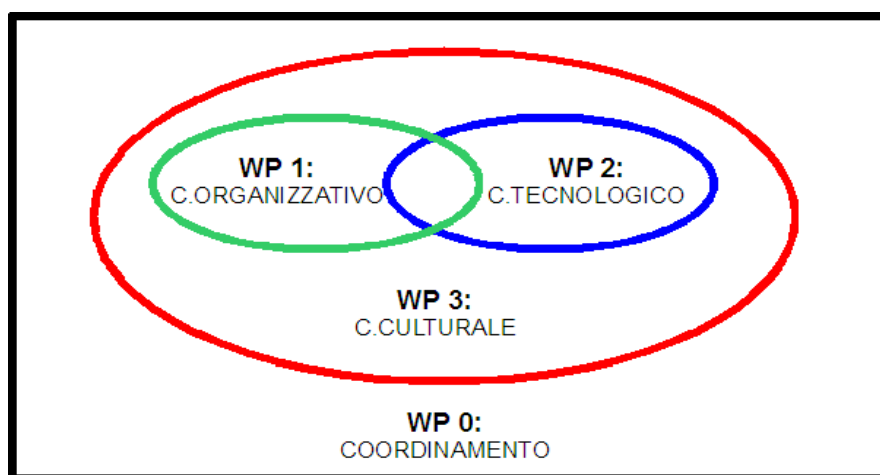


Figure 13: a simple image used to explain to the stakeholders how the three changes (organizational, technological and cultural) are related in COLOS.

The project idea comes from a similar proposal created in the 2005 by the University of

Trento. The first ICT need of Trentino's small municipalities was identified as to start managing the ICT from the inside, with the creation of inter-municipalities ICT offices. In fact, small municipalities do not have resources for establishing ICT offices, and perceive this as a big problem¹¹. The effects of this change should be reduction of ICTs costs¹², better control on consulting agencies and suppliers¹³, and the possibility to introduce Open Source software and eGovernment in the municipalities.

DCE implications

The COLOS project represents a conjunction between the PAT interests in creating innovations that highlight the role of the T.Net public broadband infrastructure, and the creation of services for the small PAs. Specific DCEs implications are:

- community: the project was planned to create innovation by managing the cooperative work between some small municipalities, research centres, and some local ICT-sector SMEs;
- DE: it was conceived to (a) help the development of the OpenSource-sector SMEs digital ecosystem, and (b) sustain the future proliferation of advanced services in the municipalities OS ecosystem;
- infrastructures: the project provided the possibility to monitor and develop the specific municipalities access points of the T.Net infrastructure;
- services: after a first step of basic services for the shared ICT office, the intention we have is to start evaluating the possibility to work on P2P DE services;
- governance: the project is intended to create sustainable innovation for small municipalities by involving them in a participated process and providing them the knowledge and tools to autonomously manage the new infrastructures and services.

Initiation strategy

The strategy to build up the COLOS proposal is connected to the involvement of the partners and the specific research call that has been used in order to shape the proposal. By re-using the ideas of the past proposal that has been exposed above, we started discussing about COLOS in the context of a research call on "Territorial networks of culture" (in Italian: Reti territoriali di cultura) financed by a local bank foundation. Since the call was centred on "culture", we focused the proposal on the Open Source culture.

CREATE-NET lead the proposal by working with other two local stakeholders: the municipality of Isera who is the leader of the Vallagarina¹⁴ area, the Competence centre on OS (CentrOS) of the FBK research centre in Trento, and CREATE-NET. The second level stakeholders, that were considered as knowledge, technology and policy providers, were: the consortium of the province municipalities, the service organization and ICT of the PAT, the local ICT SMEs focussed on Open Source, some municipalities with OS experience, and the local OS and Linux community.

11 In 2005 a municipality manager came to the University of Trento asking an help to creating an inter-municipality ICT service.

12 Small municipalities spend a lot in ICT consulting.

13 Small municipalities often do not really know what and how they need in terms of ICT, therefore consulting and supply agencies easily do their own businesses.

14 <http://it.wikipedia.org/wiki/Vallagarina>

As shown in Figure 14, the municipalities (“comuni”) are considered the centre of the project, in order to maximize their involvement and improvement. It has been decided to start with a feasibility study in order to define a better operational project. It has been agreed that the three 1st level partners will cooperate in the following Work Packages:

- o Coordination: lead by CREATE-NET through the Action Research methodology;
- 1. Organizational change: lead by the municipality leader, it will create an inter-municipality shared ICT office;
- 2. Technological change: lead by CREATE-NET, it will test the existing infrastructures and services, then it will create the ICT in support of the new shared office;
- 3. Cultural change: lead by FBK, it will (a) organize workshops and meeting on the role and use of OS software in the network of municipalities, and (b) create a network of relationships between the municipalities and the local entities in support of the OS technology and culture.

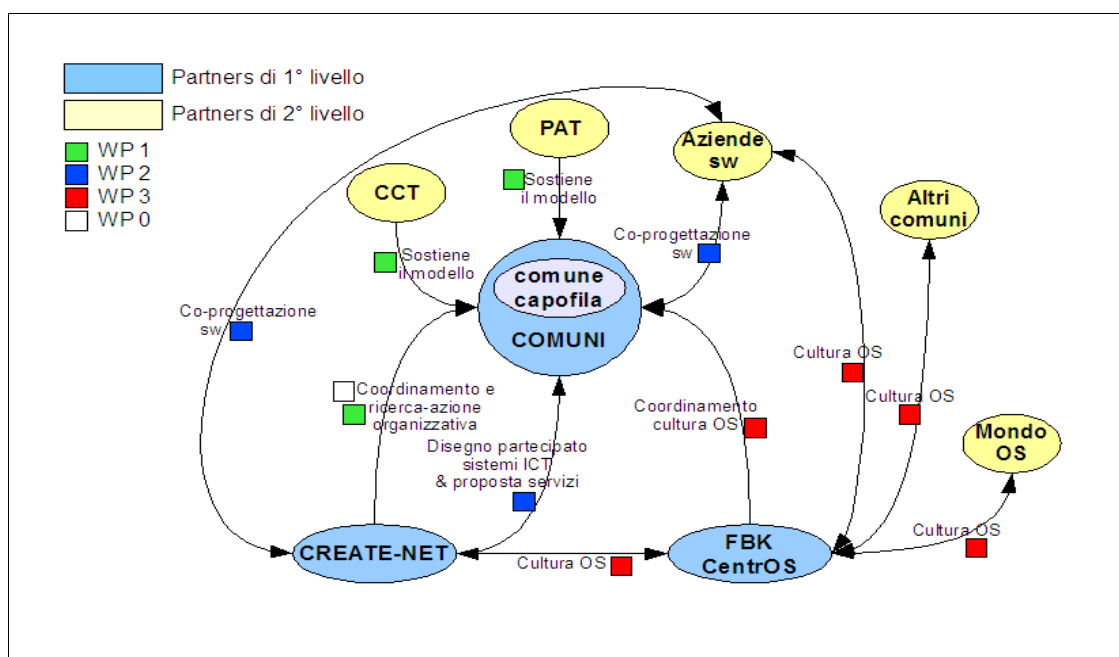


Figure 14: the planned relationships of the COLOS project as agreed from partners.

The strategy was to provide two methodological circles (feasibility study and operational project) in a first concrete setting (the Vallagarina Municipalities in Trentino) in order to create a model that would be replicated in the whole Provence.

Activities

At the beginning of 2008 CREATE-NET started reflecting about the project idea with FBK. The idea was to catch the occasion of a local bank foundation call for projects in order to investigate the idea in depth, start the negotiation with a local municipality community, and submit a proposal for the feasibility study.

Then around ten Vallagarina municipalities have been contacted by CREATE-NET and a discussion started on their needs and perspectives in terms of ICT management and

eGovernment innovation. They agreed on the need to work for a organizational and technological participatory experience, with the support of workshops and events relating the Open Source culture. They also identified the Isera municipality as their leader because it is the most skilled and capable to perform and follow innovation projects. They did not, however, participate in the writing of the project proposal that CREATE-NET submitted at the end of March 2008.

In June 2008 we understood that the proposal was evaluated very well by the reviewers, but they decided not to accept it because of the visible lack of concrete participation of the municipalities.

Conclusions

Actually the project proposal is frozen and CREATE-NET is waiting for: (a) some concrete PAT policies about the Open Source in the local PA, and (b) to hear from the Open Source local community (associations, SMEs, competence centres, opinion leaders, ...) a good strategy of action. The main lesson learned from the COLOS experience is that the participation of municipalities should be higher from the beginning, especially in the pilot project. Therefore in the future attempts we will try to involve a municipalities community where the leader municipality could be less able to manage innovation projects, but more willing to be involved in real cooperative work from the beginning.

The ParcFi project

Idea

The ParC-Fi (Parental Control wi-Fi) project aims to create an advanced service for the entire Trentino Province territory based on:

1. the sharing of internet connectivity coming from the wireless public access network called WiNet;
2. the service providing a secure fruition of web contents, because of a new “parental control” system.

Inspired to the FON and Spark-Net services¹⁵, the project moves through the proliferation of wireless access points available on the territory without increase the number of physical access points. The objective of ParC-Fi is to expand the possibility to get an internet connection through the bandwidth disposed by the same users, because of a specific Hardware and Software device that will allow the sharing and a regulation of identities and accesses to the service. This has been considered will have positive effects both on citizens and to the tourism sector.

The parental control system on web contents is a service that many ISPs clients actually request. The idea in ParC-Fi is to develop a centralized service managed directly by the ISP in collaboration with the parents suggestions through a simple web 2.0 service. The study of parental control systems installed on the clients shows in fact the ability of the young generation, usually more skilled than the parents, to skip the control. The service will be optional and configurable by the client.

¹⁵ www.fon.com; www.sparknet.fi

DCE implications

The ParC-Fi project represents an advanced service that, if created with the support of the Local Government, can be identified as a “New Government 2” type, or type 4, of Community Network (see: Botto and Passani, 2007). Type 4 CNs are public broadband infrastructures that also provide public advanced services. It emerges from the interaction between CREATE-NET and a local ISP, a business actor interested in providing new and useful services for the territory.

Initiation strategy

The project idea started to be developed when WinNet, a local ISP, asked CREATE-NET to be helped in the creation of a proposal for the “Trentino legge 6”. It is a local call for industrial projects managed by the Local Government with the aim to co-fund innovation initiatives that will also help local enterprises in acquiring skills and relationships. WinNet asked to CREATE-NET to evaluate the parental control system idea, and CREATE-NET suggested to introduce it inside a more value added innovation, that is the sharing connectivity service. We started creating the project proposal with the idea to work for a three steps long innovation:

1. a feasibility study, where to collect the information and write a better operational project;
2. a pilot project, where to create the service on a specific area composed by many municipalities;
3. the extension of the service on the entire Provence territory.

Activities

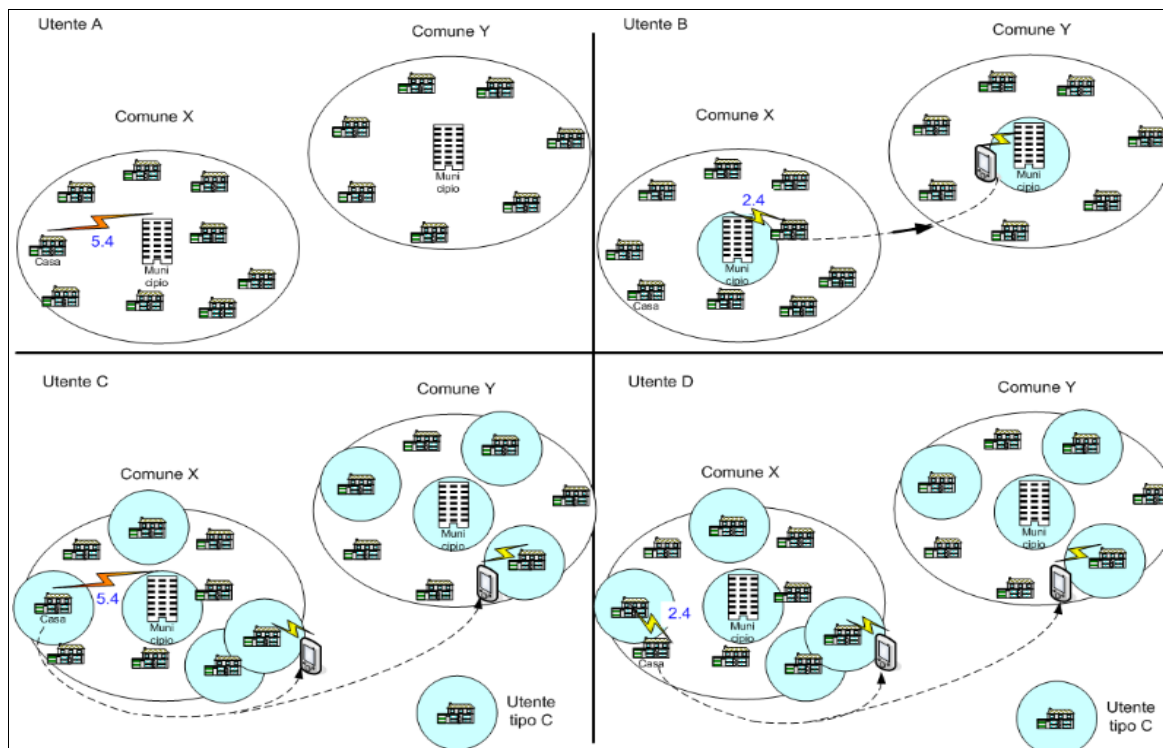


Figure 15: the four typologies of users/services considered in Parc-Fi.

There are two kinds of activities we performed for the ParC-Fi project: the creation of a proposal for the call with a deadline in June 2008, and the negotiation with the PAT in order to check and sustain the relevance of this service for the Province. The cooperative work between CREATE-NET and Win-Net created the project strategy described above and five specific services/users. Services C and D improve standard services A and B with the sharing of connectivity, while E is a specific and temporary service for tourists (see: Figure 15):

- A) The service for the “standard” user is internet ADSL-like connectivity at home provided by a 5.4 GHz wireless coming from the municipality unique access point (AP).
- B) The service called “fixed and nomadic restricted” is a 2.7 GHz wireless signal to the home plus the nomadic service on every municipality wireless AP.
- C) The service called “re-distributor user” is a 5.4 GHz wireless internet to the home, plus the nomadic connectivity to all the municipalities APs and the others re-distributors users APs. This user shares the 30% of his/her home connectivity.
- D) The service called “fixed and nomadic extended” is a 2.7 GHz wireless connection to all the municipalities and the homes hotspots.
- E) The service called “only nomadic extended” is the temporary service D, available via online registration, that has been shaped for tourists in Trentino.

On the side of the negotiation of the project with the PAT, in June 2008 CREATE-NET had the answer that the project is very interesting, but it would be more appropriate to submit it as part of the FESR 2007-2011 European program for the Province of Trento.

Conclusions

The shift of ParC-Fi into a FESR proposal means that in the future the PAT will manage the helm, with good political opportunities for the project in terms of and regional system of innovation. On the other hand, starting from November 2008 the project has been frozen due to the Province political elections. The project is therefore actually in standby, waiting for the creation of the Province FESR proposal.

The Fiemme Wireless project

Idea

The project aims to improve the tourism sector in a famous winter sports valley (Fiemme Valley¹⁶) by creating high level internet services. It has been considered to answer to the request of the future tourists, that will ask for services through the smartphone. Therefore considering the CISG framework we presented in Deliverable 7.1 (Botto and Passani, 2008) the project considers:

- *communities*: local stakeholders, facilitators and research centres, and tourists;
- *infrastructures*: a wireless Mesh extension of the WiNet Public broadband infrastructure;
- *services*: addressed to both specific events and more continuous interests;

¹⁶ http://en.wikipedia.org/wiki/Val_di_Fiemme

- **governance:** CREATE-NET will facilitate the innovation process with a participated Action Research methodology (see Figure 16 as a draft for negotiating the project phases locally: the first circle is the feasibility study, the second one implements the first actions and re-defines the future ones), while the local actors will entirely manage the future infrastructures and services.

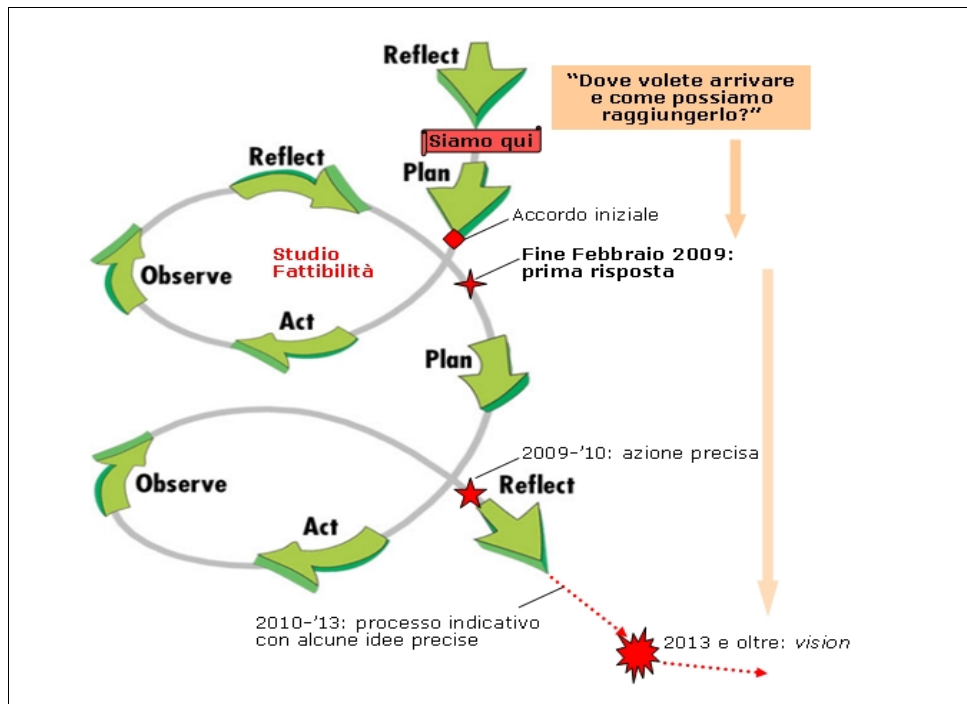


Figure 16: a first draft of the participated trajectory of Fiemme Wireless.

DCE implications

In terms of Community Networks, Fiemme Wireless is about the creation of a Wi-Fi Mesh community Network as an extension of the PAT public CN. This action has been planned by deeply involving local partners in cooperating in an Action Research project. In terms of Digital Ecosystems, as the participatory project will highlight, on this local CN will run more simple and advanced services, and it will be an opportunity to work on future DE services. It will be also an opportunity to connect to this market a future possible DBE or cluster of local ICT sector SMEs.

Initiation strategy

The project idea faced a first tentative starting from December 2007, by trying to work with the Polsa Valley¹⁷ in Trentino, a mountain area that need for innovation in order to overcome the tourism sector crisis. After 4 months of negotiation with the valley consortium that coordinates the tourism sector CREATE-NET understood that the local stakeholders, even if interested in the project, were not able to take any decision because of the political problems of the consortium.

17 <http://www.tr3ntino.it/en/winter-sports/skiing-areas-in-trentino/-vallagarina/polsa-san-valentino.html>

We therefore decided¹⁸ to suggest a similar project to Fiemme Valley, that is the most experienced valley in terms of innovations in Trentino. We therefore started negotiating with the local agency for the tourism (APT Fiemme¹⁹) and the agency in charge of the 2013 Nordic Ski World Cup²⁰ (Nordic Ski). The 2013 event became the punning element for the project, that became a possibility to ensure continuous infrastructures and services for the valley through technologies and funds addressed to the ski world cup.

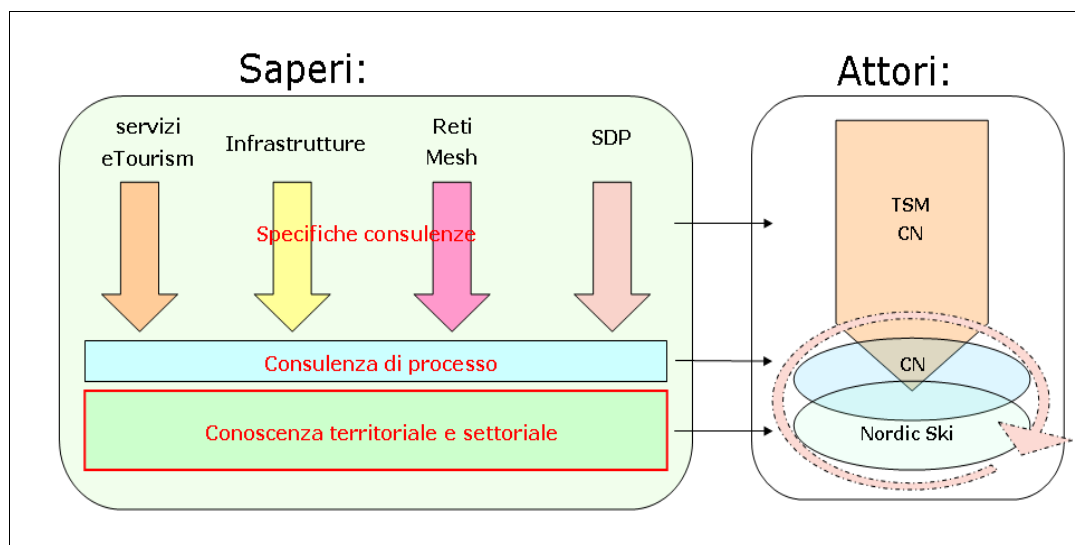


Figure 17: Knowledge ("saperi") and actors ("attori") involved in Fiemme Wireless.

The plan of the actors and knowledges involved in the project is reported in Figure 17. With the facilitation of CREATE-NET, Nordic Ski will participate in every step of the intervention. The innovation will be created by working on the intersection of the specific competences, provided by the different partners:

- Local competences: Nordic Ski;
- Process consultancy: CREATE-NET, OSCO area;
- eTourism services: Trentino School of Management;
- Infrastructures: CREATE-NET, ECC area;
- Mesh networks: CREATE-NET, Pervasive area;
- Service Delivery Platform: CREATE-NET, OSCO area.

Activities

CREATE-NET spent some months to agree on a shared preliminary plan with the local stakeholders. We started by meeting the APT Fiemme director in August 2008, in order to identify the key actors possibly interested. Between September and October 2008 we organized a couple of other meetings with Nordic Ski (NS), in order to present and start discussing the early proposal. Since the Director of NS needed a more detailed plan – activities and costs – to introduce it to the Board of Directors.

In November CREATE-NET started an early survey to anticipate part of the feasibility

¹⁸ CREATE-NET decided under suggestion of a Trentino School of Management (a local institution expert in tourism) consultant.

¹⁹ www.visitfiemme.it

²⁰ www.fiemme2013.com

study and identify specific technology in use, people do be involved, needs, actions to perform. On this data we identified the project as divided in three phases (Figure 18):

1. [Deadline January 2010] empowerment of the broadband infrastructure, creation of the Wireless Mesh networks, creation of some core and simple services in a Web Portal;
2. [Deadline 2013] creation of the Service Delivery Platform (SDP) – that will be locally managed - and of the first advanced services (as VoIP, location based services, videostreaminig, ...) that will run on it and will be provided by specific providers;
3. [Continous] improvement of the whole system.

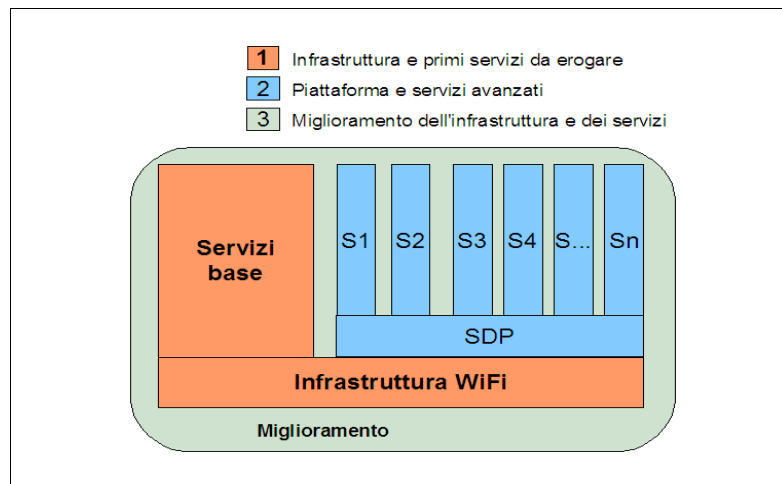


Figure 18: the three steps and kind of costs succeeded by CREATE-NET in Fiemme Wireless.

In Novmeber 2008 the answer from the Nordic Ski Board of Directors was that even if the project is a good opportunity for the valley, it will need some time for start it. The budget for the World Cup 2013 is not enough to cover all the planned innovations and they are waiting for a financial agreement with the PAT in order to cover part of them. Therefore the project is actually frozen in order to define the funding trajectory.

Conclusions

Fiemme Wireless is an interesting project for CREATE-NET since it involves many internal experiences and looks for the creation of a sustainable set of advanced services. Those services will be enabled only in concordance to the rules of the SDP that will be managed locally, giving the governance of the services to the local stakeholders. This will enable an ecosystem of services that will autonomously evolve or die, in relation to their consumption and management. The technological infrastructure simply enables the consumption of those services in an ubiquitous way in some areas of the valley. We are therefore waiting for the PAT decision on the budget to be spent.

Actual situation of the bottom-up projects

Actually, the four bottom-up projects we discussed are variously in a limbo between the

general disinterest of the key stakeholders, the research of funding, and the possible re-composition in new specific projects or clusters of projects. In every project we started from an expressed local need, but the negotiation and sense-making phases (both with the interested managers and politicians) affected (positively or negatively) the linear passage to concrete development activities.

The projects timelines are summarized in Figure 19. Summarising the problems we faced, we can say that:

1. ENTER ALREADY-BAD PROCESSES: when using the strategy to enter a local project under negotiation phase in order to inflate DE ideas and services, the first risk is to be involved in a low quality and unsuccessful local relationship and innovation (see the G&R project);
2. LOCAL PARTNERS PARTICIPATION: it takes time to concretely involve and test the real interest and motivation of the local partners. Usually there is a gap between the political/managerial statements of managers and the real interest that influences the partners participation;
3. LACK OF POLICIES: also the absence of a concrete settlement of policies by the Local Government, that could happen for several reasons (see next Chapter), negatively influences the development of bottom-up projects.

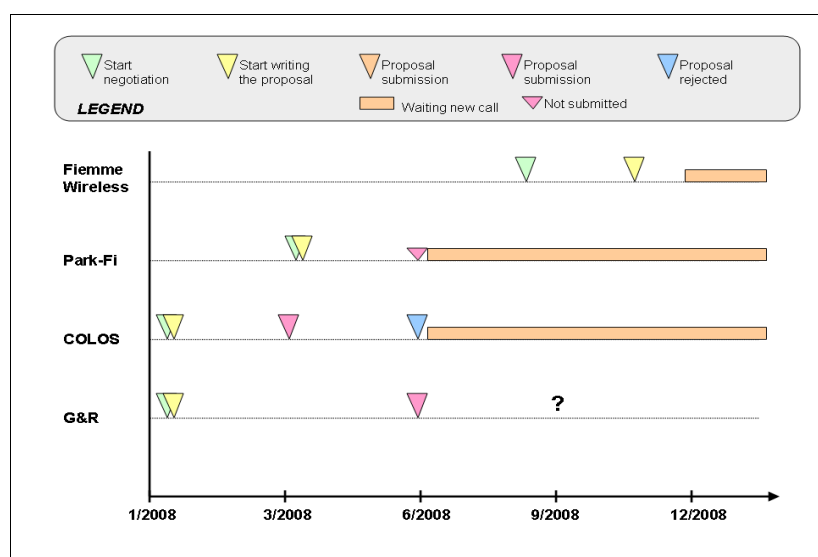


Figure 19: The Trentino DCE bottom-up projects timelines.

2.2.3. TasLab project: the early activities

In this section we will deepen the description of the TasLab by moving from the “vision and rationale” (Section 2.1.3) to the “early activities”. We will therefore present the first project that is trying project that aims to develop the early vision. At the end of 2008 the TasLab vision generated an FSE project (FP 2007-13, Axes IV “Human Capital”) called “Trasferimento di conoscenze e know-how tra centri di ricerca e imprese anche attraverso la mobilità di ricercatori e tecnici” (Knowledge and know-how transfer between research centres and enterprises also through researchers' and technicians' mobility”). The objective of the project is to develop a collaboration network between the ICT-related research centres and enterprises, the University, and local public administrations in order to facilitate the local research and innovation in the public sector. The project end is June 2010.

This project involves Informatica Trentina²¹ (InfoTn) as coordinator, CREATE-NET in charge of the ecosystemic model, the Computer and Management Sciences Department (DISA) of the University in charge of the networked organization model, and the Information Engineering and Computer Science department (DISI) of the University for the technology. In this report we will continue by calling this project “TasLab” because it aims to design the organizational shape of the regional innovation ecosystem that is the core of the TasLab vision.

Objectives, stakeholders and roles

Through the cooperation between the local PA, ICT enterprises and ICT research centres/University, the TasLab project objective is to develop a positive regional environment in terms of innovation for the PAs' ICT services. This specific project aims at defining both the organizational (human resources, processes, patterns, ...) and the ICT infrastructure to support the cooperation and knowledge movement. Therefore, specific objectives of the project are the definition of the networked organizational model, the enabling processes, the related tools and methods, the cooperative core scenarios, and the ICT infrastructure.

The project stakeholders are:

- *InfoTn* (Informatica Trentina SPA – agency in charge of the ICT for the local public sector): project coordinator and leader regarding the micro-processes planning (WP3), the prototype development of the network (WP5), and dissemination (WP6);
- *PAT* (Provincia Autonoma di Trento – the Local Government): as customer and user of every innovation service, the PAT is variously involved in all the project activities;
- *CREATE-NET*: WP1 leader for the definition of the requirements of the TasLab early model based on the local, the ecosystemic and the networked organizational

21 Informatica Trentina is a public Joint Stock Company since 1985 that manages the ICT for the local public sector. InfoTn operated and managed the TELPAT, the first broadband network of the Province for providing services to public administrations.

model requirements. CREATE-NET participates in the ICT infrastructure plan (WP4) and monitors the entire project in terms of organizational model implementation;

- *DISA* (Dipartimento di Informatica e Studi Aziendali, Università di Trento - Computer and Management Sciences Department): WP2 leader on the organizational model inspired by the networked organization;
- *DISI* (Dipartimento di Ingegneria e Scienza dell'Informazione, Università di Trento - Information Engineering and Computer Science department): WP4 leader on the ICT architecture of the TasLab.

Activity plan and DEs

The TasLab project plan (see Figure 20) starts with a WP1 that should identify the main organizational requirements. This requirements will influence the organizational model (WP2) by considering the local requirements and constraints, the ecosystemic model and the networked organization model. CREATE-NET is therefore leading the WP1 in order to introduce and evaluate the interest for the Digital Ecosystems while facilitating the emergence of needs, interests and power relationships in the discourse about the new regional innovation system.

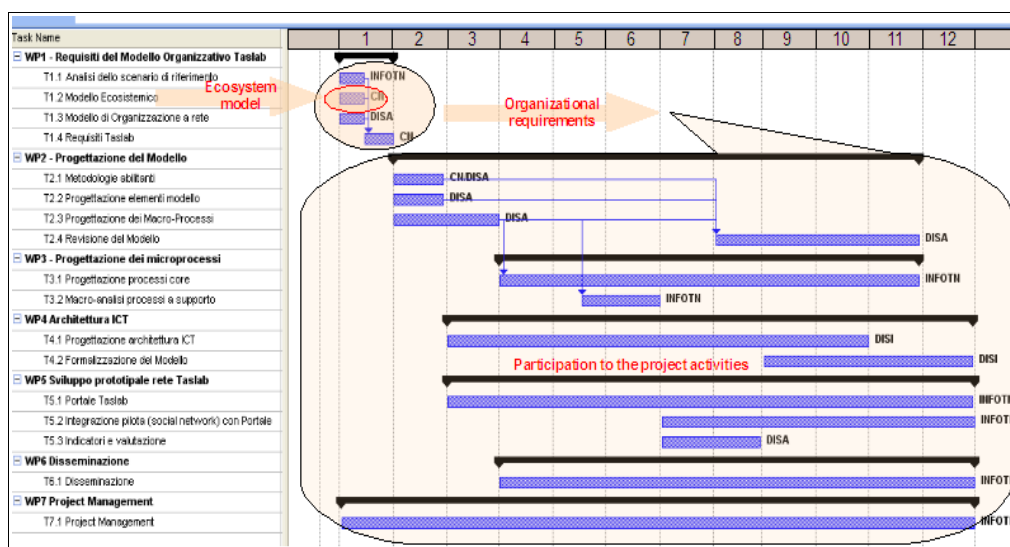


Figure 20: CREATE-NET involvement plan in the TasLab project

The WP1 will influence not only the organizational model (WP2) but also the design of micro-processes, the ICT architecture, and the specific IT devices like the web portal and the Social Network tool. CREATE-NET is involved in all those activities in order to sustain the organizational requirements.

On the 10th of September 2008 the project partners met at the kick-off meeting and the starting point of the project should have been September. During the meeting the coordinator communicated that the formal start of the project would be postponed because of bureaucratic problems. It has been said that the project would probably start in December, then the partners decided to start working informally in order to perform a

better organizational requirements activity. The project formally started in April 2009, with a delay of seven months, then it will finish at June 2010.

The research strategy

The dual role of InfoTn – also the project coordinator - as an enterprise and a regional entity for public ICT services affected the whole project. Since it involved the internal structure and business, InfoTn was directly interested in some particular shapes of TasLab, while there was no agreement between the other regional stakeholders. Furthermore, the attempt to emerge a series of core data (like effective stakeholders' roles and participation rules) for the project has been very difficult. CREATE-NET spent most of the time - between October 2008 and April 2009 – by (a) facilitating the emergence of some issues that the FSE formal project hides, and (b) sustaining the DE principles when defining the organizational model and the technology in support of TasLab.

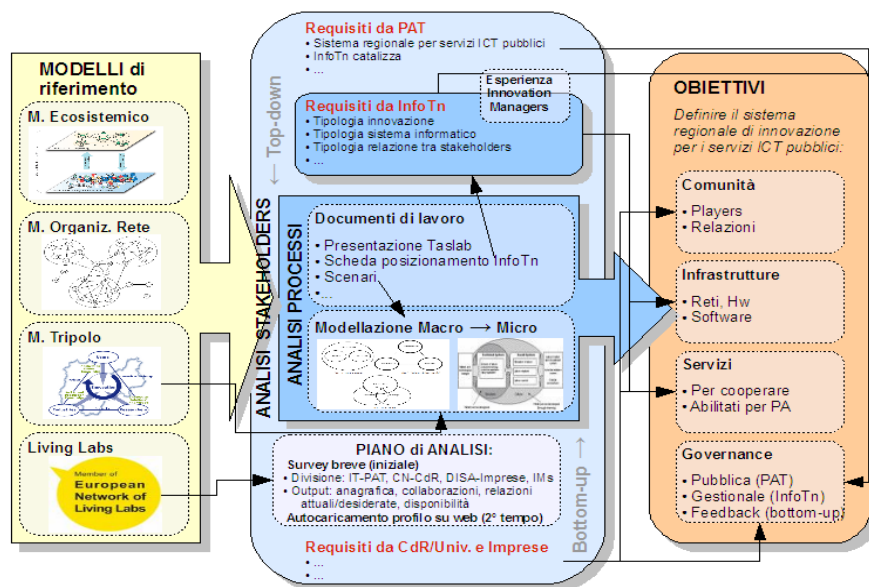


Figure 21: a CREATE-NET attempt to order the research strategy in TasLab.

Figure 21 represents one of the attempts by CREATE-NET in order to identify and share a research strategy that contains all the needed elements²²:

- *Reference models*: ecosystems, networked organization, tripole, Living Labs;
- *Stakeholders analysis*: PAT, InfoTn, Innovation Managers, ICT Research centres and University departments, ICT enterprises
- *Processes analysis*: macro and micro organizational model;
- *Objective*: define the regional innovation system by identifying Communities, Infrastructures, Services and Governances²³

In the following sections we will briefly explain the early definition of the regional innovation system, the emergence of InfoTn role and interests, the core stakeholders survey plan,

²² Not only the elements of interest for InfoTn.

²³ InfoTn appreciated the CISG model that has been developed in the OPAALS D7.1 (Botto and Passani, 2008)

and the early organizational model draft.

The early definition of the regional innovation system

The first issue we suggested to clarify is the composition and relationships of the regional innovation system as actually is (“as-is analysis”). Figure 22 constitutes one of the outcomes of a project meeting and refers to a situation where InfoTn is directly in charge of all the ICT services and products for the local PA. It represents the stakeholders of the innovation system divided in three circles:

- PA: local PA, European Commission, partially the controlled agencies InfoTn and Trentino Sviluppo (in charge of the business development), and the European centre for Innovation in Trentino (CEII);
- Enterprises: local ICT enterprises, the enterprises association, and partially CEII, Trentino Sviluppo and InfoTn;
- Research centres and University

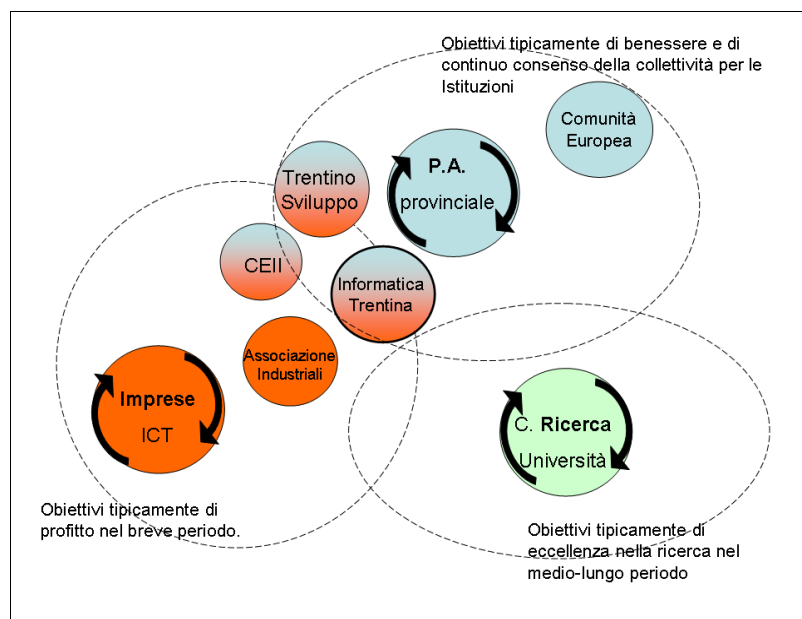


Figure 22: the stakeholders of the Trentino innovation system.

One of the models for shaping the innovation system is the “Tripole” or “Triple Helix model” (see Figure 8; Etkowitz and Leydesdorff, 2000). This very abstract and macro model suggest that Local Government and regional development officials can push technology development by engineering the process that will take technology to commercialization in a top-down fashion. The model is very common in the Scandinavian countries. Recently the model has been criticised in favour of a “Double Helix” model that underlines the roles of the innovators – that disappears in the previous one – and the enterprises (Brännback et. al., 2008).

We suggested to start considering the future innovation system by introducing the

innovators and stop hiding the role of InfoTn, since in the “Trentino-tripole” (Figure 8) images InfoTn did not appear. A very early Trentino tripole emerged when the InfoTn colleagues started drawing their institution in a schema (Figure 23).

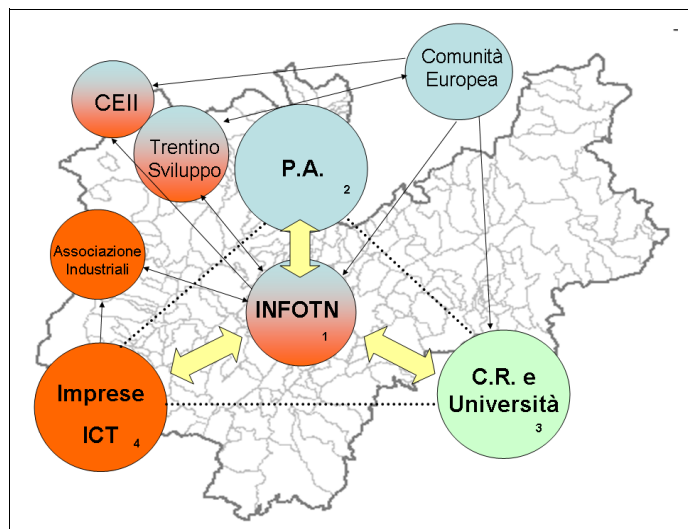


Figure 23: The early Trentino Tripole of innovation

Facilitating the emergence of InfoTn role and interests

We were aware of the relevance of the project for InfoTn: as explained in Chapter 2.1.2, the FSE project innovates its business plan. Formally TasLab is a joint initiative of the PAT, InfoTn and many research centres and enterprises. In the previous section we discussed the need to emerge the role of InfoTn in the project: the coordinator of the FSE project and the future facilitator of the innovation system. We continued doubting on the declarations of InfoTn about: their willingness to be a neutral intermediary, their openness to any organizational form and technological tool for TasLab. InfoTn is a business organization, therefore it is focused on its own business. The difficulties we found in meetings with the PA key person – remember that InfoTn is an agency publicly controlled –, and the fact that InfoTn is hardly criticized by every local PA in Trentino, reinforced the doubts.

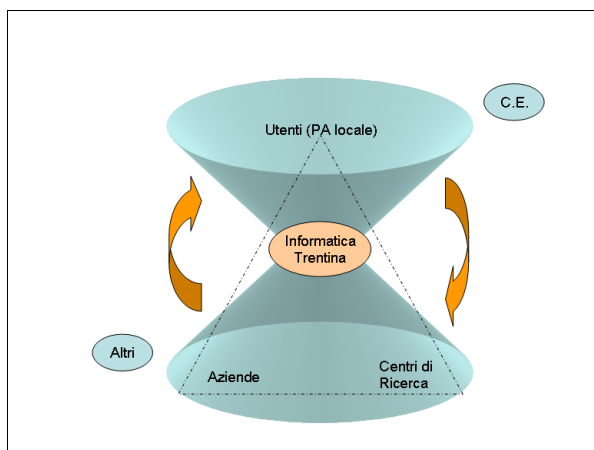


Figure 24: The strategic position of InfoTn in the tripole of innovation.

InfoTn continued being vague about their interests and strategy. For the DISA colleagues and us it was hard to work on a future innovation system with such a lack of trust on who is the project coordinator and the agency that will facilitate the future innovations. We realized that this situation will create tensions during the interviews with the local stakeholders. Therefore CREATE-NET decided to facilitate the emergence of the role of InfoTn in the innovation system by forcing the discussion on their strategic interest.

Therefore we produced an image of the future innovation system (Figure 24). It is alternative to the tripole of innovation image (Figure 8), where InfoTn is simply hidden, that they tried to use in a presentation to explain the future regional system. It is also alternative to the Trentino tripole of innovation (Figure 23), where they described their role as the “facilitator”, that we pushed to draw in order to include them in the tripole. This image describes InfoTn in the strategic role of the “obligatory passage point”.

From a sociological point of view, this position is considered to be powerful (Callon, 1986), because of the possibility to manage the exchanges between agencies and influence the system by forcing ideas, standards, micro-decisions, and so on. We simply generated this image to clarify that this is what actually we and everyone knows about InfoTn and TasLab. We therefore suggested them to start working for more trusted relationships with us and with the local stakeholders. Then we all – InfoTn, DISA and CREATE-NET – generated a draft view of the processes of innovation in TasLab where InfoTn highlights as the central agency (Figure 25):

1. *Initiation*: the first idea can steam from any stakeholder;
2. *Involvement of InfoTn*: an Innovation Manager will evaluate and start facilitate;
3. *Circulation*: the cooperative work will generate the services and/or products;
4. *Return to the user*: the IM moves the innovation to the PA;
5. *Continuation*: the innovation will be monitored and improved.

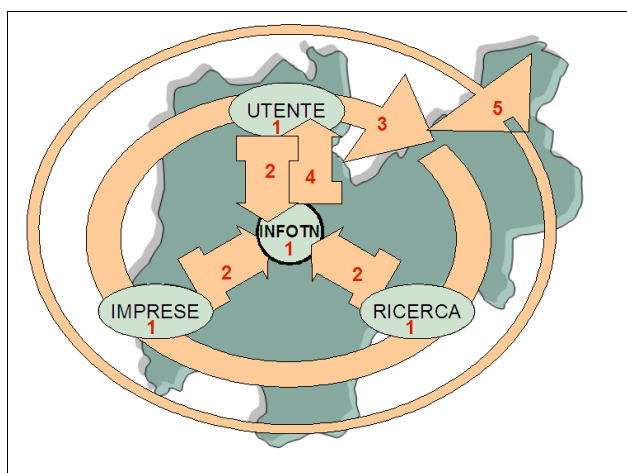


Figure 25: The strategic role of InfoTn in the processes of innovations.

The survey plan and practice

In January 2009 CREATE-NET started organizing the survey of the relevant stakeholders. Originally, in order to validate the core ideas and governance framework with the local decision makers, we planned to meet the decision makers first:

1. *PAT*: the responsible of the Organization and Informatics Services, who is the one that should address InfoTn to the right direction;
2. *InfoTn*: about ten Innovation Managers are actually working in InfoTn waiting to enter the TasLab;
3. *Research centres and enterprises*: about ten research centres and twenty enterprises.

InfoTn was in charge for contacting the PAT key person, the meeting was delayed for a certain number of times, then they communicated us that it will be very difficult to organize this meeting. This news sounded us like the customer is not aware or dislikes the project, therefore we asked InfoTn to be very clear with us about the concrete relationships with the PAT. The answer was:

“... actually the 'constraints' between InfoTn and PAT are not clear. There is a business plan that has been approved in the 2008 from the past Regional Government, then we faced the elections and the government is changed. The PAT President at the moment is maintaining the Innovation Aldermanship in his hands and the decisions are not taken.” (The InfoTn TasLab Project Manager, 3 March 2009)

This means that we started negotiating for a meeting with the customer of the future innovation - who should want TasLab and controls InfoTn – at the beginning of January, and that at the beginning of March we have been informed that “the decisions are not taken” on the project. In the middle of May 2009 we have been informed that:

“It is a new and confidential information that the PAT President decided to create a Board (CDI – Comitato di Indirizzo) for the research and innovation in ICT. It will be composed by some key persons of PAT and the presidents/directors of the main research centres in the Provence. Its role will be to address the ICT innovations, therefore it will finally validate the ideas and the work done.” (The InfoTn TasLab PM's area head, 14 May 2009)

We understood that:

1. the PAT President started considering the TasLab only after a workshop organized the 14th of April by an agency of the National Research Council (CNR), asking to work on a better local innovation system in order to increase the local agencies possibilities;
2. the PAT key-person for the TasLab will be part of this board and, for some reasons, he can not force his own direction on TasLab;
3. the research centres that are partners of TasLab found a way to enter the discourse before we started interviewing them.

When waiting for a meeting with PAT we started organizing and meeting the TasLab Innovation Managers²⁴ and we will meet the research centres and enterprises later. A set of new pieces of information emerged at this point:

- a) ten IMs have been selected by the PAT key-person and the DISI director in the last

24 The IMs are the persons in charge of specific innovation threads (eMobility, eRescue, ...) inside the TasLab.

3 years,

- b) then they have been employed by InfoTn with funds coming from the PAT,
- c) they focus on specific issues like eGovernment or eMobility and maintain the relationship with specific PAT officers, and
- d) five of them actually work as PMs in InfoTn, four in the PAT key person's office, and one is the director of the local Laboratory on Interoperability and eGovernment (LEGO - Laboratorio di Interoperabilità ed E-GOvernment).

The division of the IMs between the PAT key person and InfoTn reinforced our understanding that the relationships between the two institutions are not clear. The early interviews to four IMs (side InfoTn) strengthened the impression that InfoTn is not the place where the TasLab could be organized. In general the IMs are suffering for the bureaucracy and the slowness of the organizational procedures in InfoTn. It results that they can not perform the flexible and fast activity of territorial facilitation and project management activity that was required them during the selection.

3. TasLab as the core of the DCE: challenges and results

The FSE project (FP 2007-13, Axes IV "Human Capital") formally called "Trasferimento di conoscenze e know-how tra centri di ricerca e imprese anche attraverso la mobilità di ricercatori e tecnici" (Knowledge and know-how transfer between research centres and enterprises also through researchers' and technicians' mobility"), here "TasLab", has been conducted how represented in Figure 26. CREATE-NET analysed the local stakeholders interests and suggestions coming from different innovation approaches and best practices. DISI modelled the organizational requirements and goal-models. DISA designed services and processes. DISI identified technology requirements. Finally InfoTn and two SW enterprises (WEBBS and OMNYS) designed the technology infrastructure.

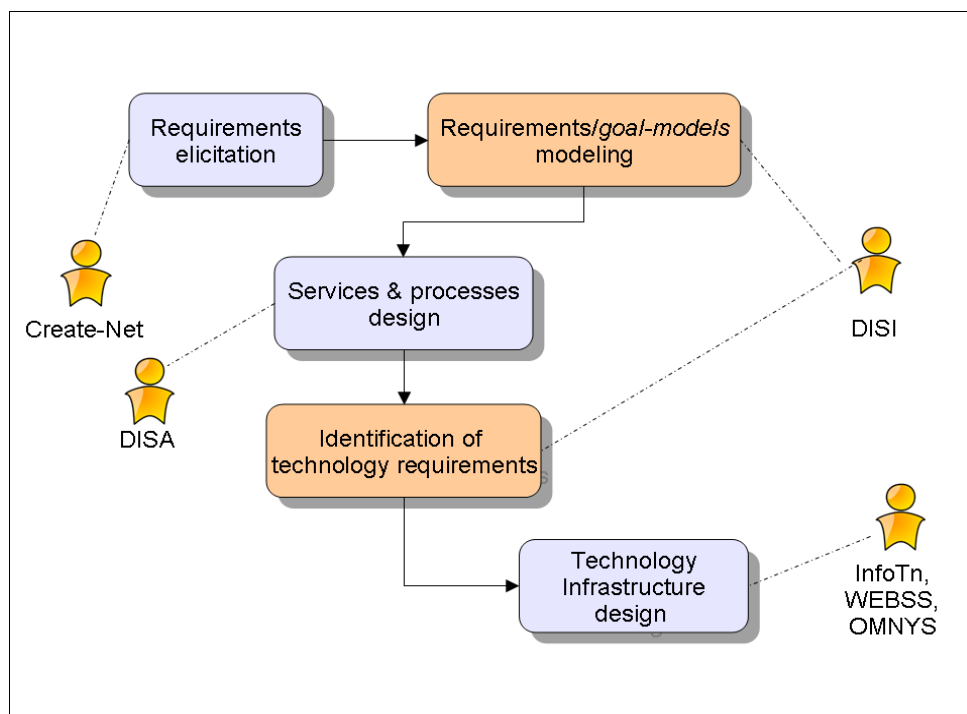


Figure 26: Main actors and roles of the TasLab project (Source: Fabiano Dalpiaz, DISI, UniTn).

In this section we will deepen the knowledge of the TasLab project by presenting the stakeholders and their requirements,

3.1 Stakeholders analysis and requirements

The stakeholders of TasLab constitutes the ICT innovation for the PA ecosystem in the Trentino region. In this section we will summarise the outcomes of the stakeholders

analysis - with the aim to identify the visions and interests on the TasLab of the interested agencies/persons – and the related requirements for TasLab. We will therefore consider:

1. PAT (the Organization and Informatics Services - Innovation Department);
2. Informatica Trentina;
3. Innovation Managers;
4. Research centres and University departments, ICT sector (see Appendix A);
5. Enterprises, ICT sector (see Appendix C).

3.1.1 PAT

In the 2006 the Italian act “Legge Bersani”²⁵ defined the new rules of the game for the services enterprises controlled or owned by public entities. Now those enterprises are not allowed to compete with the other enterprises in the PA services market: PA owned/controlled organizations can not provide services to the PA others than the ones that constitute them. This lead the Trentino Local Government (PAT) to reconsider the position of InfoTn inside a new local system of ICT-based innovation for the PA.

The PAT therefore defined in the 2007 a new role for InfoTn (Dalmonego, 2008; Giunta Provinciale, 2007): to stop providing direct ICT services and to become what has been called a “strumento di innovazione” (tool for innovation) inside a more coordinated local innovation system. Regarding the actual analysis, the two core suggestions coming from the meeting with the head of the of the Organization and Informatics Services (SOI) are:

1. the SOI will start a collaborating with the TasLab project team in the definition of the best organizational model for Taslab, in order to ensure real cooperation between partners and transparency;
2. some work is needed to ensure the coherence of TasLab with the regional laws and rules regarding the eGovernment plan.

The final list of TasLab requirements for PAT is:

General requirements:

- Centralization of the ICT purchases through an e-procurement platform.
- Develop the actions for the internet-based relationship through PA, enterprises and citizens.
- Development of Internet in the PAT most strategic activities.
- Development of broadband infrastructures.
- Extention of the service offer through Internet.

Specific requirements:

1. Develop innovative products/services through the collaboration between local enterprises and research centres.
2. TasLab as part of an administrative macro-service that will support enterprises'

²⁵ Decreto-legge 4 luglio 2006, n. 223, articolo 13, comma 1.

- innovation also with fast financing.
3. Enable the local PA to express the ICT needs with a rapid satisfaction.
 4. Operational definition of Informatica Trentina as "strumento di sistema" (system tool) for the Trentino system for the public ICT innovation.
 5. It should be coordinated through a "Tavolo di indirizzo" (board) heterogeneous.
 6. Coherence with the regional laws on eGovernment and innovation.
 7. Support the PAT Innovation Department in the project selection and in their evaluation.

Basic Services:

1. Cost reduction and measurement of the advantages produced by the European projects.
2. Support the PAT in the process of project selection.
3. Support the cooperation between different institutions and actors and the governance of interregional projects.
4. Create e support new partnerships between enterprises, research centres and PAT.
5. Find actors interested in the "onlookers" involvement.

3.1.2 Informatica Trentina

During the 2008 InfoTn developed a vision called "Trentino come Laboratorio". This vision is in line with the new role that PAT gave to InfoTn (see previous chapter) and is also the core part of the InfoTn 2009 strategic plan. To be the "catalyst" or "innovation tool" of the regional ICT innovation system for the PA InfoTn will need to facilitate the cooperation between the local innovation stakeholders. Therefore InfoTn defined the following objectives in the 2009 business plan:

- create a monitoring team for ICT trends and funding programs;
- support enterprises for the development of ICT services and partnership creation;
- support the local PA in the creation of the strategic plan for innovation in ICT services (by integrating the actual PAT procedure with 4-5 years anticipation plans);
- support the internationalization of the local ICT system;
- develop a user-centric approach in the services design.

The final list of TasLab requirements for InfoTn is:

1. Cover the role of the local innovation ICT catalyst (strumento d sistema).
2. Be the observatory of the ICT trends and financing programs for the ecosystem.
3. Support new partnerships for enterprises in the development of ICT services.
4. Support the local PA in the development of the strategic plans for innovation in the ICT services.
5. Develop the internationalization of the local ICT system.
6. Pursue a user-centric approach of the service design.

7. Innovation Managers belonging to InfoTn will manage specific innovation fields or "tripoli" (eRescue, eMobility, ...) with the following operational objectives:
 - 7.1. follow and influence the european research lines (i.e.: eGovernment, eHealth);
 - 7.2. support PAT in the creation of the field-specific strategic plan;
 - 7.3. take the relationships with PAT, research centres and enterprises managers;
 - 7.4. create and follow projects through specific project managers;
 - 7.5. develop the specific "tripole".

3.1.3 Innovation Managers

In the TasLab early vision the innovation managers (IMs) are professionals in charge of specific innovation areas. Ten IMs have been selected starting from the 2006 and are actually in charge of InfoTn (five) and of the PAT Department of Innovation (five). Since the TasLab system is not a reality, the IMs are at the moment project managers that try to do their best in the organization where they work. The ten IMs actually are in charge of the following issues:

1. eTourism and
2. eInclusion
3. eRisk and energy
4. eProcurement and eParticipation
5. Territory and geo-referencing
6. eLearning
7. eLearning (additional person)
8. communication and innovation web-portal
9. eGovernment
10. innovation methodologies (transversal person)

They should act as intermediaries in order to facilitate innovation in specific areas with the following operational objectives:

- I. manage locally the European research lines;
- II. help the PAT in generating the area specific strategic plan;
- III. take relationships with PAT, research centres and enterprises managers;
- IV. create and follow projects through specific project managers;
- V. increase the specific tripole capabilities.

The InfoTn plans are to concentrate the IMs inside the InfoTn structure. Nevertheless the IMs that already work in InfoTn are the most critical with the management. They describe InfoTn as it is well known from every customer (i.e.: every local PA worker): it is a slow and heavy organization not well controlled by the Local Government, and it is very hard to successfully manage innovation processes if working inside such organization²⁶.

²⁶ This information has been deleted by InfoTn (the project coordinator) from the FSE project deliverable (responsibility of CREATE-NET) concerning the stakeholders analysis and organizational requirements for TasLab.

The final list of TasLab requirements the Innovation Managers is:

- 1 Organizational model clear and identified with partners.
- 2 Nimble and flexible organizational processes should support the innovation complexity in the context relationships:
 - 2.1 for the creation of project proposals;
 - 2.2 for fast answers to funding opportunities;
 - 2.3 for linking the PAT funding processes.
- 3 Personal delegation and independence of the innovation management.
- 4 High level of personal responsibility.
- 5 System for the evaluation of activities.
- 6 Precise and shared governance rules of the system, based on a methodology and the evaluation of the activities.
- 7 Specific work methodology linked to the common interest of the system.
- 8 Synergy with innovation structures others than the "tripole" ones.

3.1.4 Research centres and University departments

In Trentino actually work nine research centres and university departments ICT (RC):

1. Fondazione Bruno Kessler (FBK);
2. Dipartimento di Informatica e Scienze dell'Informazione (DISI, University);
3. CREATE-NET (CN);
4. Laboratorio di Ontologia Applicata (LOA-CNR);
5. Centro Ricerche Microsoft (COSBI);
6. Laboratorio per l'Interoperabilità e l'e-Government (LEGO);
7. Centro Ricerche FIAT (CRF);
8. centre for the Evaluation of Language & Communication Technologies (CELCT)
9. centre for Advanced Computer Graphics Technologies (GraphiTech)

Almost all RCs are very well linked in the network composed by the local innovation players (Figure 27). Some of them (FBK, DISI, CN, COSBI and GraphiTech) receive a partial economic contribution from PAT. The founding partners of TasLab are CN, FBK, GraphiTech, LOA-CNR, LEGO and DISI. They ask to be informed and asked about every present and future item regarding TasLab.

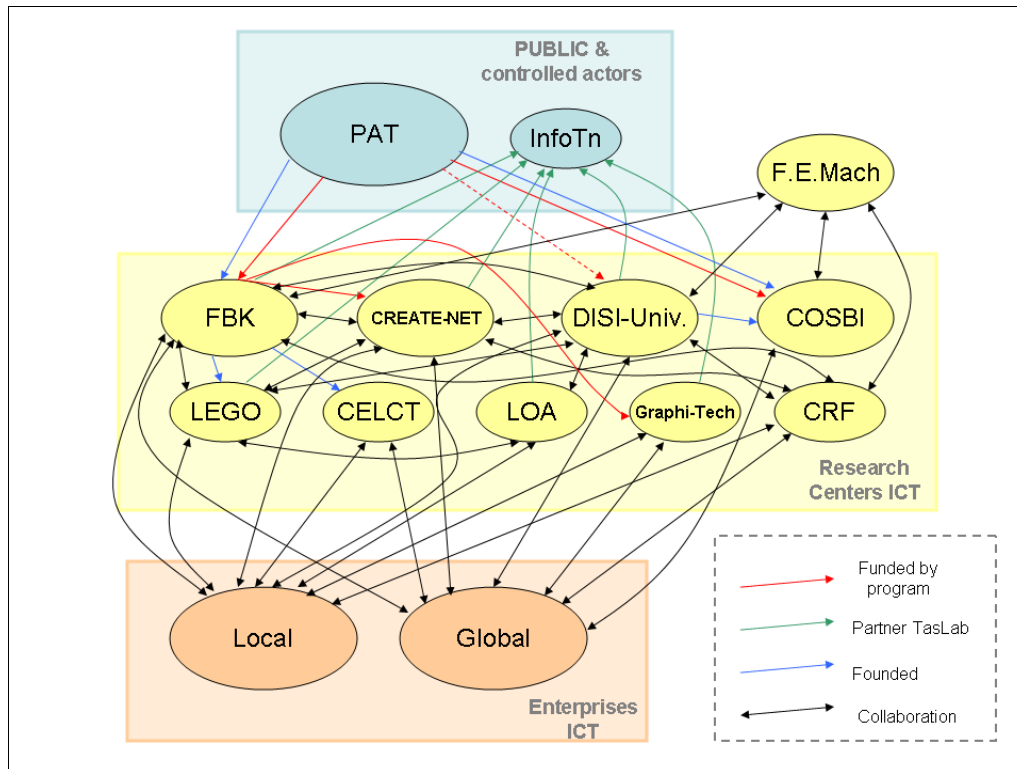


Figure 27: The centrality of the local ICT research centres in the tripole network before TasLab.

Being asked about the present regional ICT innovation system for the PA, their heads describe it “without any specific public regulation” (7 answers on 9). Two thirds of them (6/9) would prefer a system “with specific rules to equilibrate the power between actors”. The majority of them (5/9) is sceptical about the agility of the new system if it will be managed by InfoTn. Four of them ask for TasLab organized as a legal entity, therefore the new structure should drive a well coordinated system to catch new and relevant European funds.

The final list of TasLab requirements for the RCs is:

1. Precise public governance and agreed interaction rules for stakeholders.
2. TasLab should be a legal entity capable to open new financing opportunities for the system in a coordinated manner.
3. Involve the research centres partners of TasLab in every decision on its the organizational shape.
4. Organizational structure possibly external to InfoTn.
 1. (5 answers on 9) Virtual organization with Innovation Managers belonging to the research centres and a board able to coordinate them.
5. Participants should autonomously take care of their profile on the web platform.

3.1.5 Enterprises

In 2006 there were 1103 enterprises concerning the ICT sector in Trentino divided in: 19 Hardware, 811 Software, 194 direct channel, 18 services, 33 technical assistance, 28 telecommunications (Source: ASIA Istat). Most of them are small or micro-dimensioned and two of them are pretty big and controlled by PAT: Informatica Trentina (services) and Trentino Network (telecommunications). During the project we composed a representative group of enterprises and associations of enterprises. It has been decided to exclude the micro-enterprises at this stage of the TasLab creations, since they are unable to stay connected to a regional ICT innovation system, due to the lack of human resources.

In general the enterprises expressed the willingness that TasLab have precise and explicit roles, responsibilities and rules of the game, with adequate instruments for the reduction of conflicts. They ask that the facilitator (InfoTn) should perform its role without overlaps on the other stakeholders of the tripole. If the public founding channel will remain the same²⁷, the enterprises ask: effective communication channels, standard processes of financial reporting, services supporting the reporting, fast processes of evaluation, and a support on the collaboration for the entire financing period. Very important is that the tripole components should have the possibility to develop both contents and methods in a responsible and independent manner. The intellectual propriety (IPR) problems should be adequately solved by TasLab.

The final list of TasLab requirements for the enterprises is:

1. Identify a trusted referee for the management of conflicts between stakeholders.
2. Define the sphere and processes of participation and the cooperation rules.
3. Create the possibility for every stakeholder to identify and evaluate the financing opportunities.
4. Enable the participation of enterprises to the public local ICT market.
5. Offer to enterprises an help to manage innovation processes.
6. Offer management help to enterprises in relation to their typology and size.
7. Enable the dissemination of results.
8. Support the exchange of innovation in business values for enterprises.
9. Send feedbacks (positive or negative) on project proposals to enterprises.

²⁷ Local enterprises receive from the PAT funds fostering their innovation attitude, whose channel name is “Legge 6”.

3.2. The TasLab structuration

3.2.1 Organizational shape

Following the stakeholders requirements, the project team started reconsidering the must to create TasLab as a service inside InfoTn. On the 17th of April 2009 CREATE-NET and DISA draw the first early macro organizational model for TasLab (see Figure 28).



Figure 28: A first draft of the early TasLab organizational model.

We suggested that the TasLab should not depend directly from InfoTn because this institution does not allow three core issues for the broker of the future regional innovation system:

- *independence*: TasLab should not depend directly on any local stakeholder, in order to ensure his neutrality;
- *flexibility*: TasLab needs to be organized on a fast decision making and working procedures, in order to catch in time the innovation possibilities and concretely catalyse the processes;
- *evaluability*: the work done by TasLab should be evaluated by the local stakeholders in order to improve its service.

The TasLab should be organizationally divided in two parts: the Innovation Managers (IMs) and the Innovation Manager Service (IMS). The IMs will work as the business mediator of the local innovation. They should know the territory and maintain the

relationships with the decision makers, the researchers and the enterprises on their specific subjects. They will maintain also national and international relationships and maintain the contact with the Venture Capitalists and other funding institutions. The IMS will support the bureaucratic and administrative procedures of the TasLab. It is the executive component for the strategic part of the network.

Then the TasLab should be well connected with the local stakeholders. The IMs maintain the individual relationships with members of PAT, InfoTn, research centres, enterprises, venture capitalists, and everyone who is relevant for their subject locally and globally. The IMS will maintain the institutional relationships with PAT, research centres and enterprises. For this extent a Task Force composed by PAT and research centres representatives will work as decision maker on issues like organizational asset of TasLab, definition of the evaluation system, definition of the incentives system.

The suggestion to take the TasLab as an independent entity to InfoTn failed. Since the leading role of InfoTn is part of the strategic plan and the Local Government did not spend an opinion on this point, TasLab is being configured as a InfoTn service. Nevertheless, in autumn 2009 a Coordination Table for ICT policies has been created from the PAT by involving the representatives of the main research centres on ICT and InfoTn. This group will also work as a Task Force in order to monitor and regulate the TasLab activity.

3.2.2 TasLab services and processes

The project team focused therefore the last months of the project in identifying the TasLab services out of the requirements and local decision-makers constrains (see Figure 29 for a general overview of the services identification process).

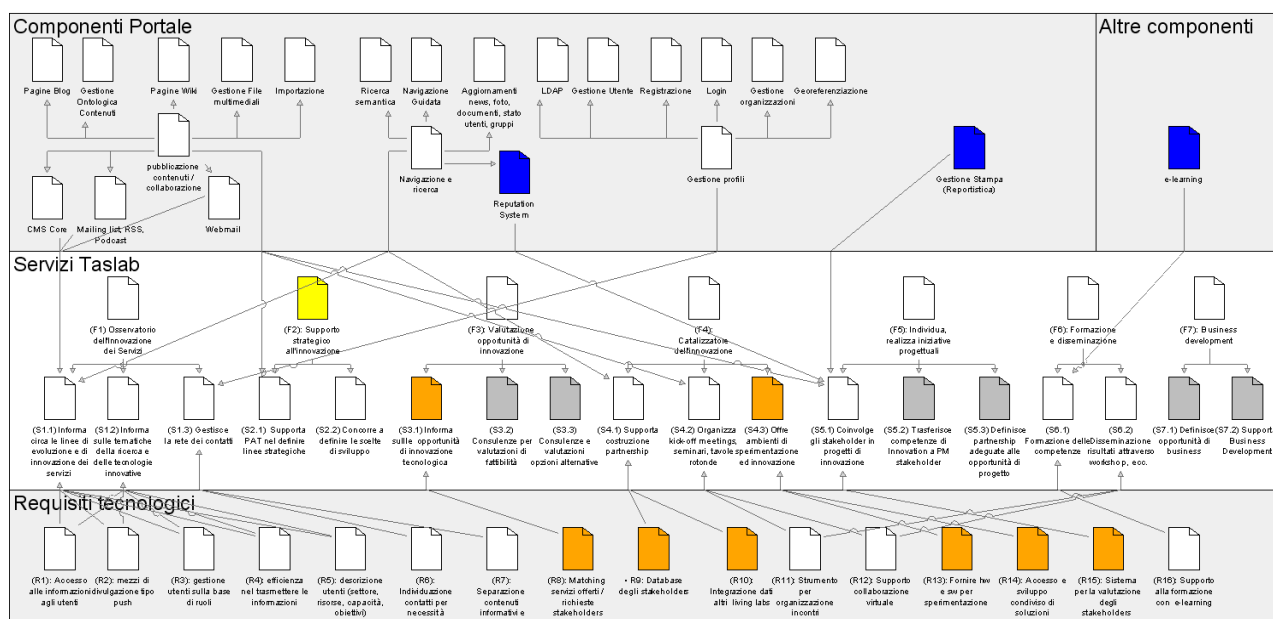


Figure 29: The relationship between technology requirements, services and web/portal components in TasLab (InfoTn, 2010)

TasLab will offer the following services:

- **KNOWLEDGE SERVICES** -

1. **Monitoring of demand/offer:** TasLab will constantly analyse the need and the offer of innovation services products in Trentino;
2. **Networking:** TasLab will facilitate the creation and development of relationships between the local stakeholders in the different domains (research, enterprise, PA, policy makers) and will also develop international relationships;
3. **Technology scouting:** TasLab will constantly analyse the work of the research centres in order to evaluate the potential of future technologies. It will allow the fast creation of alliances and possibility to eventually acquire the rights of business production;

- **MANAGEMENT SERVICES** -

4. **Training:** TasLab will support training initiatives in order to acknowledge the stakeholders on the state of the art of technology research, markets, and the functioning of the network;
5. **Funding:** through the constant relationships with funding institutions, TasLab will inform the stakeholders on funding opportunities at local, national and European level. The service will be articulated through two levels:
 1. general presentation of existing opportunities;
 2. first evaluation on the eligibility of projects and, if potentially promising, the procedures for the funding request will be presented;
6. **Project management:** TasLab will support the stakeholders in the everyday management of funded projects;
7. **Testing:** TasLab will facilitate the testing of innovative solutions through testbeds in real-life-like situations.

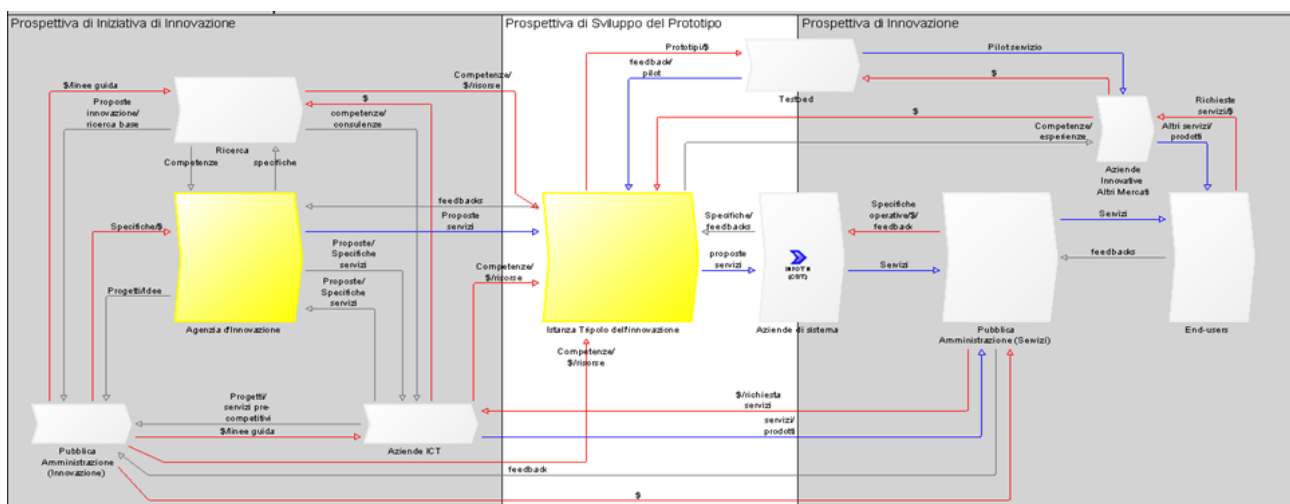


Figure 30: The Taslab value chain (InfoTn, 2010)

The TasLab value chain (see Figure 30) has been therefore elaborated by considering the

stakeholders and the formal processes in three subsequent phases – or “perspectives” (“prospettiva” in Italian) -:

- I. **Innovation initiative.** In the first phase the actors coming from the “tripole” (PA, research, ICT enterprises) started being coordinated by the local Innovation Agency (or broker). This agency is partially a product of the collaboration between the stakeholders and partially a service provided by InfoTn. Through the creation of a strategic plan, this agency coordinated and manages the local innovation network. The Innovation Agency is composed by two elements: (a) a *board* composed by representatives the core stakeholders of the innovation network, with the role of defining the innovation strategies and monitor the local actions; (b) a *service team* composed by the Innovation Managers and the organizational staff to support the everyday innovation activities of the network.
- II. **Development of prototype.** In the second phase the local stakeholders interested on a specific innovation process and the Innovation Agency create an hybrid agency, that is the instantiation of the innovation tripole on a specific interest through the formalization of a project agreement. In this phase the Innovation Managers support and start managing the innovation project, and InfoTn work as a facilitator of the relationship between the Innovation Agency and the local PA. Finally, the Testbed is a mixture of local competences, services and environments – a diffused resource from the local players - that will be used to execute testing and evaluate/improve the quality of the pre-competitive products.
- III. **Innovation.** In the last phase the enterprises that will move the services and products from the pre-competitive status to the market will be identified. Also the departments of the local PA that will acquire the new services and solutions participate this phase with the “final users” like citizens that directly or indirectly use the products through the PA.

Finally the project team defined three innovation scenarios and identified for each one the specific stakeholders roles and processes (see Figure 31). In this report we will not enter in the specific description of processes, nevertheless a brief description of the scenarios is provided:

- Scenario 1: the initiator of the innovation process is an enterprise or a group of enterprises, that will start searching for partnerships and will create a first “tripole” proposal.
- Scenario 2: the innovation idea comes from the research domain. The research centre will therefore propose the first partnership proposal with PAs, the enterprises domain and other research centres.
- Scenario 3: an agency belonging to the local public sector has the first idea and creates the first partnership proposal between the interested “tripole” stakeholders

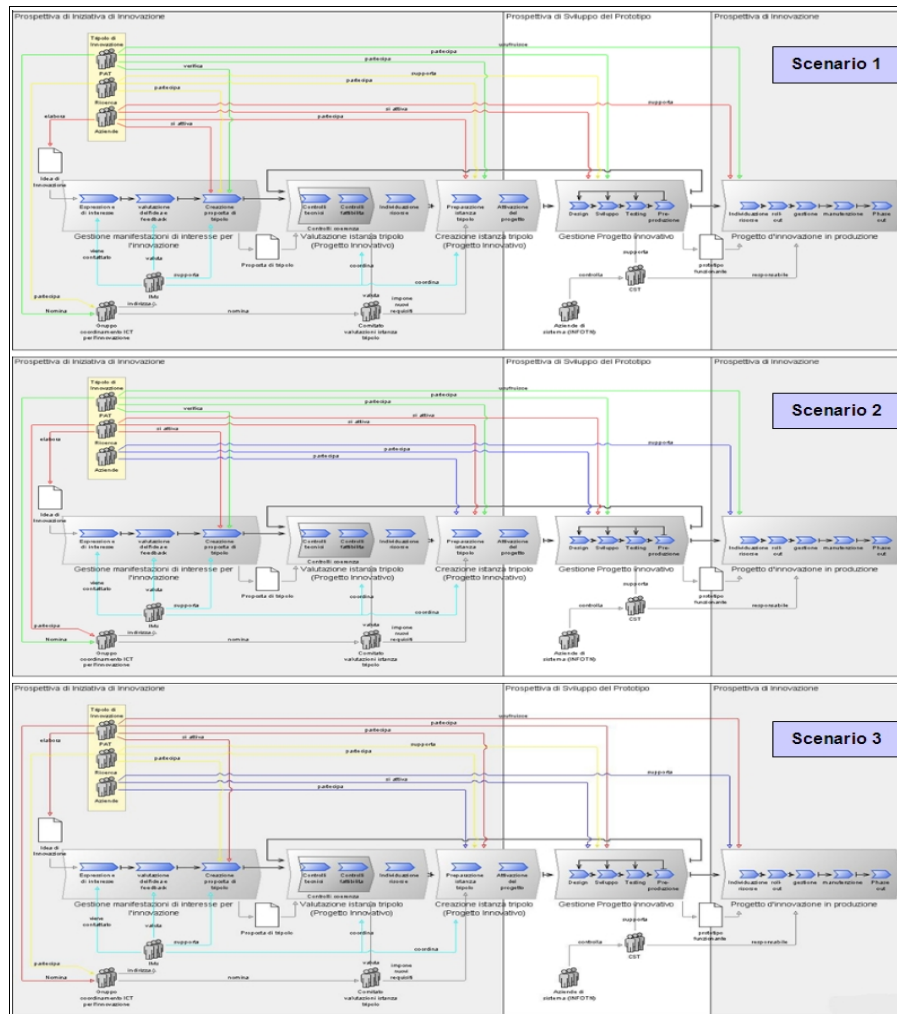


Figure 31: The three TasLab innovation scenarios (InfoTn, 2010)

3.3. About Digital Ecosystems

The work done on the ecosystem metaphor and the DE model in TasLab – at the beginning of June 2009 – is divided in three phases, that will form the following chapters:

1. the early DE model proposal and discussions;
2. the plausible approaches for the DE model in TasLab;
3. the starting discussions on specific DE services in TasLab.

3.3.1 The early DE model proposal and discussions

As WP1 leader, CREATE-NET asked for the circulation of a first documentation regarding the local level institutional and political requirements/constraints influencing TasLab (from InfoTn) and the definition of the networked organization (from DISA). We asked for a clear explanation of the issues, plus a starting reflection on how the models could be connected to the TasLab. In October 2008 CREATE-NET started the circulation by delivering an explanation of the European DE model as it comes from the DBE project, with some corrections addressing the latest understandings of the OPAALS project.

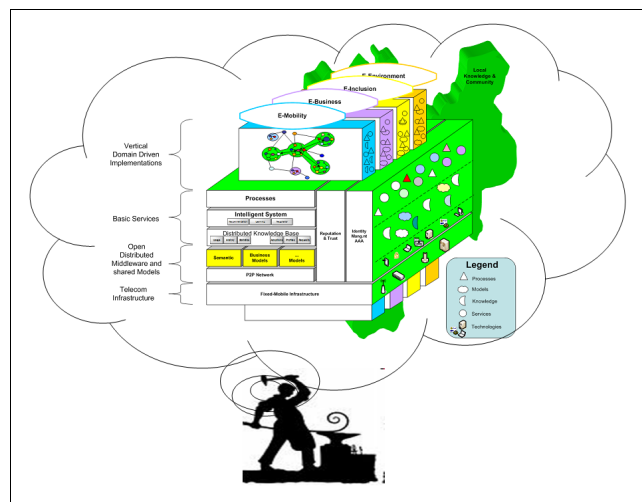


Figure 32: The image used to push the project partners through a pragmatic approach to DEs.

Considering the fact that the DE model is usually seen as too abstract and complex when discussing about concrete needs, when presenting this document we suggested to adopt a pragmatic approach (Figure 32). With this approach it is possible to move from a vision to the reality by:

1. a cooperative effort that starts considering the contextual and motivational variables where to possibly implement DE services;
2. understanding and evaluating the technological and organizational requirements of

- the DE model by clearly identifying what is needed and possible and what is not²⁸;
3. considering the fact that the European DE/DBE model were – at the time in which activities took place - based on already not working technology solutions, therefore with no fully functional services on top of the P2P infrastructure.

As anticipated in the previous point 2, at the end of a capillary explanation of the DE idea and model we generated a list of organizational and technological requirements (Figure 33):

- CORE REQUIREMENTS:
 - Distribution:
 - Org.: distributed competences and skills
 - Tech.: enabling P2P architecture
 - Flexible leadership:
 - Org.: self and distributed power between participants
 - Tech.: Virtual Super Peers architecture
 - Openness:
 - Org.: open participation
 - Tech.: Open Source Software and possible DEs network
 - Autonomous evolution:
 - Org.: auto-regulation of clusters (policies defined before)
 - Tech.: auto-composition of services
- SUGGESTED ADDITIONAL REQUIREMENTS:
 - Participated development
 - Synergy between local innovations

28 CREATE-NET stated that the DE model should be useful for the local interests, therefore the our pragmatic mission is not to apply the model but to facilitate the local development trajectories.

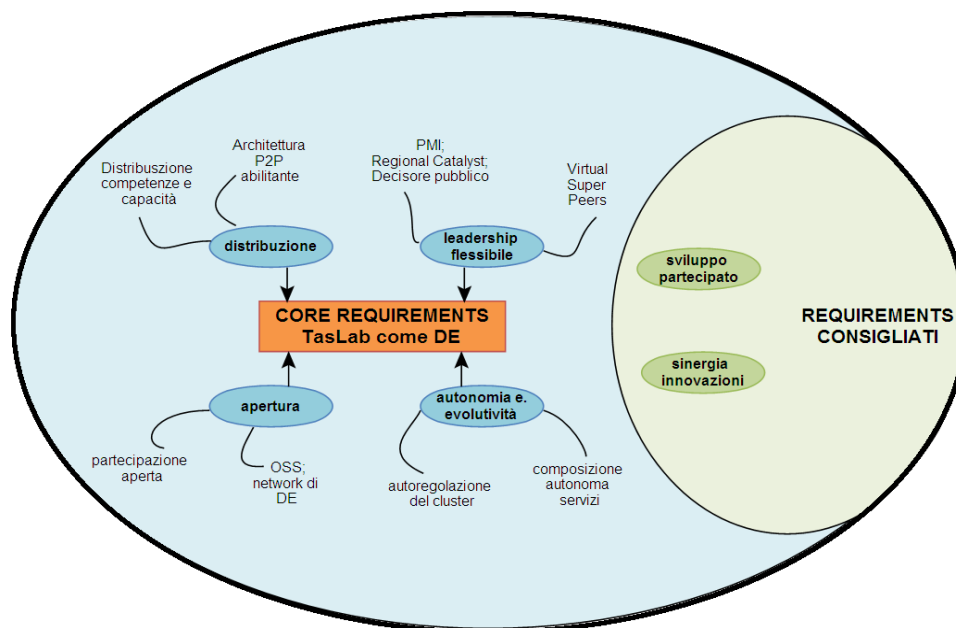


Figure 33: The high level requirements suggested to follow the DE model in TasLab.

3.3.2 The plausible approaches for the DE model in TasLab

In January 2009 we re-opened the discussion about the role and the strategy for introducing the DE model in TasLab. In October the partners read and discussed the document we presented, and CREATE-NET opened a discussion about what is plausible and what is not. Therefore we collected from project coordinator (InfoTn) three ideas:

1. *Ecosystemic metaphor*: the regional innovation system could be understood as an ecosystem.
2. *Regional innovation system and DE*: we will evaluate if and how to introduce the DE model in two separate time periods:
 - considering the organizational processes: from the beginning of the research;
 - introducing DE technologies: later.
3. *The local ICT SME cluster*: it is possible to develop the cluster with some DE services or building a DBE, but in this case it will be another project.

We slowly understood that the ICTs we can work on are already understood. This means that the expected technologies for TasLab will be a web portal with the same standards of the whole InfoTn information systems. Therefore, the approach of the system will be centralized and the new ICTs will first of all reinforce the centralized control. The social network system will enable the relationships between stakeholders, but decisions will be possible only in a centralised environment. In general this means that it will be difficult to introduce DE technologies in TasLab, and that we will follow the strategy to work on specific DE services.

3.3.3 The discussions on specific DE services in TasLab

In May 2009 we started interacting with some Innovation Managers (IMs) of InfoTn, that will be the future facilitators of innovation in TasLab, in order to work on the future DE services. With TasLab InfoTn is trying to position its IMs between the demand, provided from the local PA, and the offer of ICT services and technologies. If actually it is difficult to imagine a proper ICT-SMEs digital ecosystem, the idea is to work on a service that is in line with the IMs needs to work comfortably with an SMEs cluster.

On the 21th of May 2009 CREATE-NET organized a meeting with two IMs in order to start discussing about the new DE service created through the EC 6FP "ONE" project²⁹. The Open Negotiation Environment project allows organizations to create contract agreements in order to supply complex, integrated services as a virtual organization. The ONE software is Open Source and available on SourceForge³⁰.

During the meeting a CREATE-NET expert³¹ presented the main points of the service. ONE is a P2P-based web service that facilitates the negotiations between two entities: the owner and the participant. Through the service it is possible to model two elements: the objects of the negotiations and the processes. The exchange of complex information is then organized in a simplified way and through a prized³² identity and trust model. There is a distributed engine for the negotiation and both the owner and the participants may use their own machines. The main outcome of the meeting is that the IMs appreciated the idea and understood the ONE platform "as a way to generate the tripole in a semi-autonomous way". This expression responds to a functional requirement that InfoTn introduced in the call for project of the TasLab portal.

29 <http://one-project.eu/site/modules/content/?id=1>

30 <http://sourceforge.net/projects/one-project/>

31 CREATE-NET is the ONE project coordinator.

32 <http://www.iaria.org/conferences2007/AwardsSECURWARE07.html>

4. Conclusions: the idea of introducing Digital Ecosystems in Trentino at the end of the TasLab project

The TasLab project ended at the end of March 2010 and a local public conference has been organized by InfoTn the 24rd of June in order to start introducing the new system for the ICT innovation for the PA sector³³. During this meeting also the web technologies in support of TasLab have been briefly presented to an audience (150 circa) composed by entrepreneurs, researchers and public workers. The two technologies are a social network and a web portal.

The social network will maintain updated stakeholders' infos (identity, skills...) and will provide the networking that will generate the first "tripole" proposal for a specific idea. The web portal (Shvaiko et al, 2010) is the place where continue the work of every specific "tripole" generated through the social network. The portal is divided in public and private areas.

The public is organized as follows:

- *Initiative*: general description of Taslab with vision, mission, framework, infrastructures, partnership.
- *Services*: brief description of the services offered through the web portal.
- *"GCSICT"*: the objectives and the organization of the heterogeneous board that is supporting the PAT in defining and evaluating the local ICT strategies.
- *Documents*: public documentation divides in local, national, international.
- *Activities*: public web-pages of ongoing and old projects.
- *News*.
- *Opportunities*: calls that can be published by the organizations that are logged to the portal.
- *Contacts*.
- *Login*.
- *SocialNet*: link to the Social network.

The private part of the portal is organized as follows:

- *My Page*: the personal homepage of the private area.
- *Organizations description*: through a semantic search or a list of organizations.
- *Projects description*: through semantic search or a list of projects.
- *Project management area*: with detailed infos and management/coordination tools.

As anticipated in Chapter 3.3.2, the portal and the social network tool correspond to the wills of InfoTn before the start of the TasLab project. Two different calls have been published at the beginning of the project, therefore the TasLab project team did not have the possibility to suggest different technologies and architectures. This means that in the design phase of TasLab the project team had the possibility to work on the understanding and shape of the local innovation ecosystem, however we had no possibilities to concretely start working on technologies for Digital Ecosystems.

³³ www.infotn.it/cms-01.00/articolo.asp?IDcms=7353&s=

Referring to the three possible ways to introduce DEs in Trentino through the TasLab project and vision, in June 2010 we can say that:

Ecosystem as a metaphor: through the TasLab project we mainly studied (1) the local system of innovation “as-is” and local constraints, (2) the local stakeholders’ wills for the new system, (3) the suggestions coming from different approaches and models, (4) the organizational and technical requirements, and (5) the suggested organizational shape, services and processes. Within the project we did not use the “ecosystem” term, but it is clear that we worked on the understanding of the past and future local innovation ecosystems.

Regional innovation system and DE: at the beginning of the project CREATE-NET started introducing the DE model (see Chapter 3.3.1) and checking if the DE requirements could be adopted in order to create a regional DE of innovation. Two core and hidden interests of the project leader (InfoTn) vanished the possibility to start immediately working for a DE. (1) The TasLab technologies were already decided at the beginning of the project. (2) The project leader prefers a centralized management of data in a controlled server. The last agreement with InfoTn is that the bootstrapping of TasLab will be done with centralized architectures and classic web technologies, and in the future we can work for more open and DE-like models.

The local ICT SME cluster as a DE: the first TasLab project focused on the heterogeneous (public, research, enterprise) regional innovation ecosystem and, given the centralized character of the action, it was strategic for InfoTn to directly manage the relationships with the local enterprises. CREATE-NET tried to work in parallel on a DE composed by the local ICT SMEs, but the project proposal (“Genio & Regolatezza”, see Chapter 2.2.2) failed. We are convinced that TasLab is preparing the SMEs cluster for a more coordinated and autonomous phase. Therefore, if in the future we will be able to propose concrete and affordable DEs technologies and use cases, we will have the opportunity to work with the ICT SMEs cluster.

As the ending point, it is important to underline the work done on the organizational structure of TasLab (Chapter 3.2.). CREATE-NET led the stakeholders analysis and underlined the need for an independent, flexible and easy-to-evaluate agency at the centre of the system. The project leader (InfoTn) refused this suggestion and the Local Government did not force them to do so. The research continued therefore in two parallel lines: (a) the formal claim for open innovation systems and DE frameworks, and (b) the concrete structuration of TasLab as a (directly and indirectly) fully controlled entity by InfoTn. The new organization will therefore hardly implement democratic and open standards, procedures and technologies, as suggested by the DBE and OPAALS projects. Nevertheless, the relevance of this experience for OPAALS project and for the DE deployment process is in terms of methodology and of governance of the processes: we tried to introduce the DE idea by starting from local ongoing activities, studying the stakeholders’ interests and the stronger ones’ strategies to control them, and maintaining a realistic and pragmatic approach in face of the projects’ rhetorics.

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APPENDIX A: the interview questionnaire for research centres

Progetto TasLab, CREATE-NET, aprile-maggio 2009, francesco.botto@create-net.org

INTERVISTE AI CENTRI DI RICERCA

ANAGRAFICA

- 1 Nome del CdR:
- 2 Nome del referente:
- 3 Numero dipendenti:
- 4 Può spiegare in brevemente (2-3 frasi, un abstract) di cosa si occupa?
.....
.....
.....

COLLABORAZIONI E PROGETTI LOCALI

- 5 Può spiegarci i tipi di collaborazione e progetti che vi relazionano ai seguenti attori:
 - a PAT,
 - i) Numero bandi di ricerca della provincia (ultimi 5 anni): ...
 - (1) Progetto 1:
 - (a) Nome:
 - (b) Tipo di progetto:
 - (c) Competenze coinvolte:
 - (d) Uffici coinvolti:
 - (e) Eventuali commenti:
 - (2) Progetto 2:
 - (a) Nome:
 - (b) Tipo di progetto:
 - (c) Competenze coinvolte:
 - (d) Uffici coinvolti:
 - (e) Eventuali commenti:
 - (3) Progetto 3:
 - (a) Nome:
 - (b) Tipo di progetto:
 - (c) Competenze coinvolte:
 - (d) Uffici coinvolti:
 - (e) Eventuali commenti:
 - (4) Progetto 4:
 - (a) Nome:
 - (b) Tipo di progetto:
 - (c) Competenze coinvolte:
 - (d) Uffici coinvolti:
 - (e) Eventuali commenti:

- (5) Progetto 5:
- (a) Nome:
 - (b) Tipo di progetto:
 - (c) Competenze coinvolte:
 - (d) Uffici coinvolti:
 - (e) Eventuali commenti:

ii) Numero **commesse conto terzi** (ultimi 5 anni): ...

- (1) Commessa 1:
 - (a) Quantità monetaria:
 - (b) Servizio erogato:
 - (c) Eventuali commenti:
- (2) Commessa 2:
 - (a) Quantità monetaria:
 - (b) Servizio erogato:
 - (c) Eventuali commenti:
- (3) Commessa 3:
 - (a) Quantità monetaria:
 - (b) Servizio erogato:
 - (c) Eventuali commenti:
- (4) Commessa 4:
 - (a) Quantità monetaria:
 - (b) Servizio erogato:
 - (c) Eventuali commenti:
- (5) Commessa 5:
 - (a) Quantità monetaria:
 - (b) Servizio erogato:
 - (c) Eventuali commenti:

b Informatica Trentina,

i) **Subfornitura** di prodotti e servizi:

- (1) Subfornitura 1:
 - (a) Quantità monetaria:
 - (b) Prodotto/servizio erogato:
 - (c) Eventuali commenti:
- (2) Subfornitura 2:
 - (a) Quantità monetaria:
 - (b) Prodotto/servizio erogato:
 - (c) Eventuali commenti:
- (3) Subfornitura 3:
 - (a) Quantità monetaria:
 - (b) Prodotto/servizio erogato:
 - (c) Eventuali commenti:

ii) **Ricerca e sviluppo** (partecipazione a progetti di ricerca):

- (1) Progetto 1:
 - (a) Nome:

- (b) Tipo di progetto:
- (c) Competenze coinvolte:
- (d) Eventuali commenti:
- (2) Progetto 2:
 - (a) Nome:
 - (b) Tipo di progetto:
 - (c) Competenze coinvolte:
 - (d) Eventuali commenti:
- (3) Progetto 3:
 - (a) Nome:
 - (b) Tipo di progetto:
 - (c) Competenze coinvolte:
 - (d) Eventuali commenti:

c Aziende locali:

- (1) Collaborazione 1:
 - (a) Azienda:
 - (b) Tipo di collaborazione:
 - (c) Competenze coinvolte:
 - (d) Eventuali commenti:
- (2) Collaborazione 2:
 - (a) Azienda:
 - (b) Tipo di collaborazione:
 - (c) Competenze coinvolte:
 - (d) Eventuali commenti:
- (3) Collaborazione 3:
 - (a) Azienda:
 - (b) Tipo di collaborazione:
 - (c) Competenze coinvolte:
 - (d) Eventuali commenti:
- (4) Collaborazione 4:
 - (a) Azienda:
 - (b) Tipo di collaborazione:
 - (c) Competenze coinvolte:
 - (d) Eventuali commenti:
- (5) Collaborazione 5:
 - (a) Azienda:
 - (b) Tipo di collaborazione:
 - (c) Competenze coinvolte:
 - (d) Eventuali commenti:

d Altri players locali (CEII, Trentino Sviluppo, Ass. Industriali, ...):

.....
.....
.....
.....

RELAZIONI A LIVELLO LOCALE

- 6** Può disegnare uno schema delle relazioni a livello locale tra il vostro CdR/Dipartimento e gli altri attori dell'innovazione a livello locale (PAT, InfoTn, altri CdR, imprese, altri Player...)?

- 7** Quale è l'attuale **modello di innovazione regionale per l'ICT**?
- a** Regolato dal pubblico ☐
 - b** Senza specifica regolazione ☐
 - c** Con specifici ruoli e regole ☐

Commenti:

.....

.....

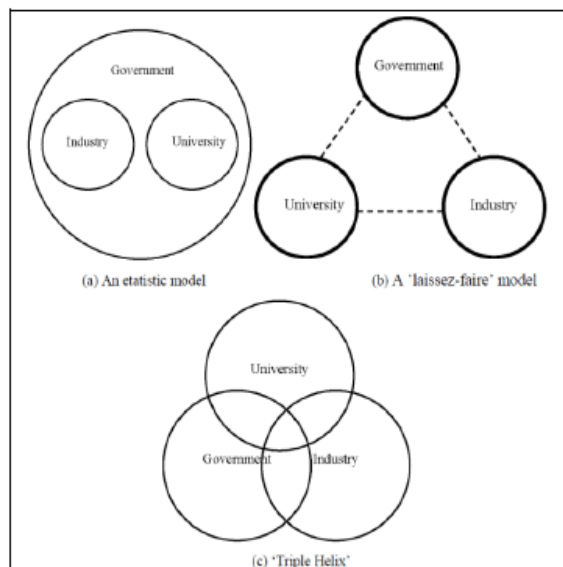
- 8** Quale **modello di innovazione regionale per l'ICT** desidererebbe?
- a** Regolato dal pubblico ☐
 - b** Senza specifica regolazione ☐
 - c** Con specifici ruoli e regole ☐

Commenti:

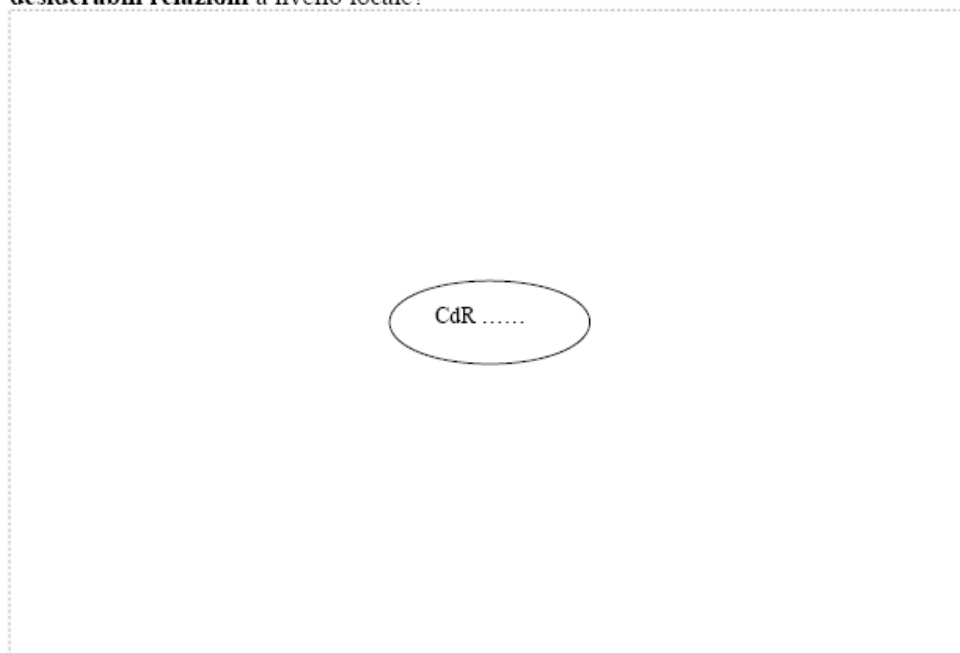
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.....

.....



- 9 Tenendo conto dell'ultima risposta, può disegnare uno **schema delle vostre future e desiderabili relazioni** a livello locale?



DISPONIBILITA'

10 Disponibilità a:

- a **partecipare alla creazione del nuovo sistema** di innovazione per i servizi ICT pubblici: ☐
 - i) come:
 -
 -
- b **partecipare al nuovo mercato** per i servizi ICT pubblici: ☐
 - i) come:
 -
 -
- c **partecipare al network** aggiornando il profilo su un portale web: ☐
- d **utilizzare software specifici** per il coordinamento: ☐

CHIUSURA



11 Dubbi e proposte

.....

.....

.....

APPENDIX B: the questionnaire for the enterprises

 <p>Innovation as the way of being, thinking and evolving</p>	<p>Trentino as a Lab "Taslab"</p> <p>Progetto finanziato dal Fondo Sociale Europeo, Programma Operativo 2007-2013, Asse IV Capitale Umano</p>	 <p>Unione europea Fondo sociale europeo</p>
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Il presente progetto si colloca nell'ambito delle iniziative di sviluppo dell'innovazione ICT nel territorio che coinvolgono imprese, mondo della ricerca e delle istituzioni.

L'obiettivo del questionario è quello di acquisire un primo livello di informazioni per comprendere alcune dimensioni dei soggetti operanti nel settore ICT e della loro propensione ad attività di innovazione, ricerca e sviluppo.

I dati acquisiti attraverso il seguente modulo verranno trattati nel rispetto del D. Lgs. 196/2003 e dei consueti obblighi di riservatezza. Le informazioni raccolte verranno utilizzate unicamente per lo scopo di indagine suddetto e non verranno cedute a terze parti.

Grazie per la collaborazione.

A - Denominazione impresa, oggetto sociale e riferimenti e settore

Ragione sociale:

A1) Forma giuridica
impresa:

- | | |
|---|---|
| a. <input type="checkbox"/> Impresa individuale | e. <input type="checkbox"/> Cooperativa |
| b. <input type="checkbox"/> Società di persone | f. <input type="checkbox"/> Consorzio pubblico/privato |
| c. <input type="checkbox"/> SpA | g. <input type="checkbox"/> Associazione/istituzione
sociale privata |
| d. <input type="checkbox"/> Srl/Altro | |

Cognome e nome
del referente
aziendale:

Funzione aziendale:

Telefono:

cell.:

E-mail:

A2) Classe addetti
(dipendenti e collaboratori)

- | | |
|---|---|
| 1. <input type="checkbox"/> 1 – 5 addetti | 4. <input type="checkbox"/> 51-100 addetti |
| 2. <input type="checkbox"/> 6 – 10 addetti | 5. <input type="checkbox"/> 101-250 addetti |
| 3. <input type="checkbox"/> 11 – 50 addetti | 6. <input type="checkbox"/> oltre 250 addetti |

A3) Classe fatturato dati
Euro/1000 (si faccia riferimento
all'ultimo bilancio)

- | | |
|---|---|
| 1. <input type="checkbox"/> 1- 300 | 5. <input type="checkbox"/> 2501-5000 |
| 2. <input type="checkbox"/> 301 – 500 | 6. <input type="checkbox"/> 5001-10.000 |
| 3. <input type="checkbox"/> 501 – 1.000 | 7. <input type="checkbox"/> 10.001-25.000 |
| 4. <input type="checkbox"/> 1001-2500 | 8. <input type="checkbox"/> oltre 25.000 |

Si prega di indicare le attività svolte dalla vostra azienda in riferimento ai codici ATECO 2007 (si veda tabella in allegato):

inserire i codici

B - Ricerca e Sviluppo (R&D) di nuovi prodotti e servizi

B1) La vostra azienda svolge attività di Ricerca e Sviluppo?

a) ☐ No, non è interessata

b) ☐ No, ma sarebbe interessata a farlo in collaborazione con :

1. ☐ altre aziende del Trentino
2. ☐ aziende al di fuori del Trentino
3. ☐ l'università di Trento
4. ☐ altre università
5. ☐ altri centri di ricerca in Trentino
6. ☐ altri centri di ricerca fuori dal Trentino
7. ☐ altro _____

c) ☐ Si

1) Se sì, presso la vostra impresa esiste una struttura dedicata a progetti di R&D ? ☐ No ☐ Si

2) Se sì, quanto investe in un anno?

- | | |
|---|---|
| Classe di investimento in
R&D ¹
(Euro) | 1. <input type="checkbox"/> meno di 50.000 |
| | 2. <input type="checkbox"/> 51.000– 100.000 |
| | 3. <input type="checkbox"/> 101.000– 200.000 |
| | 4. <input type="checkbox"/> 201.000 – 500.000 |
| | 5. <input type="checkbox"/> oltre i 501.000 |

4) Indicare il numero di addetti² che vengono impiegati in questa attività ?

(_____)

5) Indicare il numero di progetti di R&D che sono stati sviluppati negli ultimi 3 anni?

(_____)

6) Quali sono i soggetti con i quali svolgete attività di ricerca?

Nome soggetto	% fatturato sul totale

C - Fornitura di beni e servizi ICT

¹ In riferimento all'ultimo bilancio

² Si intende sia dipendenti che collaboratori

C1) La vostra impresa fornisce beni e servizi alla Provincia Autonoma di Trento? ☐ No ☐ Si

C2) In quale percentuale le forniture di beni e servizi alla Provincia Autonoma di Trento partecipano al fatturato della vostra impresa?

- Classe percentuale
1. ☐ meno del 25%
 2. ☐ dal 26% al 50%
 3. ☐ dal 51% al 75%
 4. ☐ dal 76% al 100%

C3) Quali sono le imprese **sub contractor** più importanti per la vostra impresa?

Nome soggetto	% fatturato sul totale

C4) Quali sono le **imprese fornitrici** più importanti per la vostra impresa?

Nome soggetto	% fatturato sul totale

C5) Quali sono le **imprese clienti** più importanti per la vostra impresa?

Nome soggetto	% fatturato sul totale

D - Valutazione progetto "Trentino as a Lab" (Taslab)

D1) Quanto secondo voi la vostra azienda è interessata a partecipare alla rete TASLAB?

0 ☐ Per nulla, 1 ☐ Poco, 2 ☐ Abbastanza, 3 ☐ Molto, 4 ☐ Moltissimo, 5 ☐ Non so

1) Se sì, a cosa sareste interessati?

	Per nulla	Poco	Abbastanza	Molto	Moltissimo	Non so
partecipare a progetti di ricerca con l'università	0	1	2	3	4	5
trasferimento tecnologico da università a imprese	0	1	2	3	4	5
ideazione di nuovi prodotti e servizi	0	1	2	3	4	5
progettazione (creazione di prototipi) di soluzioni/prodotti innovativi	0	1	2	3	4	5
testing dei prototipi	0	1	2	3	4	5
marketing e comunicazione	0	1	2	3	4	5
conoscere le richieste e i bisogni delle istituzioni	0	1	2	3	4	5

2) Se sì, come partecipereste alla rete Taslab?

- a. ☐ Coinvolgeremo l'intera unità di ricerca dell'azienda
- b. ☐ Dedicheremo una persona a tempo pieno
- c. ☐ Dedicheremo una persona a tempo parziale (indicare i mesi/uomo _____)
- d. ☐ Delegheremo una persona a tenere i contatti con la rete (pochi giorni all'anno)

D2) Quali difficoltà Lei nota nella costituzione della rete TASLAB?

D3) Quali difficoltà Lei nota nell'eventuale coinvolgimento della sua azienda nella rete TASLAB?