Sant Cugat Smart City

Strategic Plan
Document summary

Sant Cugat, February 22, 2011
Contents

- Evolution in urban management
  - Smart City concept
  - Sant Cugat Smart City
  - Development plan
Cities translate the dynamics of a globalised world and a shifting reality into human scale actions

- Societies are connected at a global level, which enables the convergence of economic, social and environmental management models.
  - The mobility of people and goods increases as barriers and distance lessen.
  - Businesses design their strategies with a global mindset and operate at the local level.
- States lose ground to cities, which translate ongoing changes into human scale actions.
  - Local government actions have a more immediate impact on citizens and organizations
  - Within the city, interactions across society are more fluid.
- The citizen demands that the city evolve in order to adapt to new trends.
  - Increased participation
  - Better mobility and services
  - Quality and accountability in service delivery
  - Reduction of environmental impact
  - Social integration of different groups
  - Improved security, personal and public health
Additionally, the present context of economic crisis requires that city governance be focused on attaining higher levels of quality and efficiency.

**Shaping the growth of the city**
- The city's challenge was delivering necessary services and adding infrastructure to match its population growth.
- Urban planning was the backbone of all municipal actions.
- Accelerated response to citizen needs prevailed over an optimal and integrated design of solutions.

**Efficiency and quality**
- Consolidating growth.
- Innovation as the new driver of all our activity.
- Delivering higher quality services in a more efficient manner: cost reduction and sustainable management.
- Integrated vision of all city areas: development of synergies and operational cost reduction.

**Evolution of conditions exogenous to the City**

**Until now … Economic Development**

**…from now on Economic Crisis**
This efficient and quality management will help address new societal challenges in the political, social, environmental and economic arenas.

Spheres and challenges of the new City

- **Social**
  - Mobility
  - Social services
  - Health and safety
  - Education

- **Economic**
  - Baseline conditions for competitiveness
  - Administrative and regulatory
  - Accessibility of incentives

- **Environmental**
  - Environmental sustainability
  - Management of natural resources (energy and water)
  - Environmental risk prevention

- **Political**
  - Efficiency in public management
  - Accessibility of the Administration
  - Citizen participation
Some cities are developing technological projects within the domain of Smart Cities, taking on these new challenges with a vision of quality and efficiency.

- Among pioneering cities in Smart City projects are:
  - San Francisco (smart parking meters, parking space management, electronic traffic information, waste management, public transportation, etc.).
  - Amsterdam (smart buildings, energy consumption and management, open data, waste collection, etc.)
  - Stockholm (controlled access to the city), Copenhagen (collaborative parking, bicycle infrastructure, etc.), Oslo (smart lighting), London (open data and public transportation), etc.

Despite everything, these new projects are limited in scope and lack an integrated focus in the resolution of all the challenges posed by city living.

There must be an evolution from isolated technology projects towards a model that addresses new city challenges from a comprehensive perspective and with an integrated focus.
Contents

Evolution in urban management

Smart City concept

Sant Cugat Smart City

Development plan
The new challenges faced by the city spread over several domains and the relations among them, which means that solutions must provide an integrated vision.

Cross-linked impacts

Key elements in the integrated vision

- Information, responsibility and decision-making sharing among subsystems
- Managing challenges in a transversal and coordinated fashion
- Locating operational synergies among services and processes

Related actions

- Actions within the city are no always coordinated: information is not shared, all related domains are not taken into account, etc.
- Management has a vertical vision
- Multiplication of resource usage for similar purposes.
Furthermore, solutions to city challenges must strive for efficiency and quality in management, leveraging new technologies.

**Efficiency and quality in management**

Striving for efficiency and quality in management, reducing and optimising resource usage through public-private collaboration and technological deployment.

**Elements of technological deployment**

- **Collection systems**
  - Implementation of technology to measure city data in a continual manner

- **Communication networks**
  - Communication networks to efficiently transmit information between subsystems

- **Integrated management centre and systems**
  - Integrated management centre and systems used to analyze information, make decisions and implement them and analyze results
The Sant Cugat Smart City model is based on this integrated vision to address new challenges and pursue quality and efficiency through technology.

<table>
<thead>
<tr>
<th>Key characteristics of a Smart City</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Foundations</strong></td>
</tr>
<tr>
<td>• Technological infrastructure and an integrated vision are its foundation</td>
</tr>
<tr>
<td>• Efficiency and quality of service is improved using new technological tools</td>
</tr>
<tr>
<td>• Bidirectional, agile and scalable (up/down) access is enabled among city actors - residents, government and businesses</td>
</tr>
<tr>
<td>• A dynamic vision is adopted: change is detected and the city adapts to it in a dynamic fashion, reinventing processes</td>
</tr>
<tr>
<td><strong>Also</strong></td>
</tr>
<tr>
<td>• Technology is at the service of the citizen, and its application is adapted to their technological know-how</td>
</tr>
<tr>
<td>• Solutions to new challenges are produced managing knowledge and supporting creative talent</td>
</tr>
<tr>
<td>• Solutions enable access to all residents and make the most of existing talent within connected organizations</td>
</tr>
</tbody>
</table>
The Smart City offers solutions based on three technological plans to cover all city domains and establish the conditions necessary for competitiveness.
The objectives for the city are the key drivers in defining and structuring new services, technology deployment and the management model of the Smart City.
Contents

Evolution in urban management

Smart City concept

Sant Cugat Smart City
- Directives and guidelines for Sant Cugat Smart City
  Structure of the Smart City model in Sant Cugat

Development plan
Sant Cugat's development within the present context requires an evolution of its management model towards economic, social and environmental sustainability.

**Present context**
- Growth model

**Expected future context**
- Sustainable management model

**Change in model**

**Present context**
- The strong demographic growth experienced in mid-sized cities in Catalonia has been particularly acute in the case of Sant Cugat.
- This has brought about a parallel growth in municipal inflows.
- Municipal efforts have focused on:
  - Structuring and supporting this growth.
  - Improving and extending the range of services offered to citizens.

**Expected future context**
- Stabilization of the population and of urban development.
- Reduction in municipal revenues.
- Increased requirements from residents:
  - Efficient resource management.
  - Maintaining the quality of services delivered by City Council.
  - Environmental awareness.
The sustainable management model will need to adapt to the institutional positioning directives of the Sant Cugat City Council, which are based on innovation:

- Efficient management and resource usage
- Quality of life improvement for young families
- Supporting entrepreneurship
- The development of a transparent and efficient governance model: e-government and participation
- Environmental awareness and commitment

Institutional positioning directives

- Service integration
- Infrastructure integration
- Promoting the usage of municipal networks
- Marshalling synergies
- Reducing expenditures
- Double usage (public-private) of the network

Technological model of reference
Additionally, all actions laid out in the Strategic Plan must be geared towards producing savings and returns on investment, as part of the directives of the new management model.

- Improvement in the quality of citizen services and offering added value
- Defining a business model for each technology investment, taking into consideration the role of the private sector
  - Engaging providers
  - Prioritization of projects with an economic and social profitability slant
- Integrating resources available to all organs and institutions in order to increase their profitability.
Contents

Evolution in urban management

Smart City concept

Sant Cugat Smart City

Directives and guidelines for Sant Cugat Smart City

Structure of the Smart City model in Sant Cugat

Development plan
In the Sant Cugat Smart City plan, the use of new technologies is supported by the organizing principles and transversal programmes

Levers for the development of a Smart City in Sant Cugat

- Organizing principles: transversality, promotion of multidirectional interactions, feed-back effects and collective growth
- Development
  - Qualified team with an integral vision
  - Technical projects (applications, DBs) and process projects (commissions, re-engineering)
- Technology
  - Technology deployment through three plans
    - Multipurpose collection systems
    - Common or single communication networks
    - Integrated Management Centre (decision making) and information systems (efficient management of services)
- Programmes
  - Objectives: Single, integrated project; the citizen as the focus of government actions; visibility and oversight
  - Structure: Level of coordination, initiatives and events
The deployment of technology of the Smart City in Sant Cugat is structured following for key elements

Key elements in the deployment of technology

- Relevant information is available to all actors and systems
- Start of the feedback effect and continual improvement
- Efficient deployment of measurement systems and of sensors
- Generating added value (multipurpose)
- Cost reduction, easy maintenance
- Relevant information is available to all actors and systems
- Start of the feedback effect and continual improvement
- Integration and interpretation of data
- Automated responses and self-teaching systems
- Supporting decision making
- Deployment of communications network
- Efficient deployment and integrated vision
- Bidirectional flows and shared information
Technology projects will cover basic activities and will be in alignment with the objectives for the city, as laid out in the reference model.
In addition to developing technology projects, Sant Cugat must have an organization charged with promoting transversality among the different functional areas of government.

**Basic principles for the Organization for Sant Cugat Smart City**

**Transversality**
- Promoting transversal and coordinated efforts in the organization's functional areas.
- Sharing information, following processes and common methodologies.
- Locating synergies in resources usage and avoiding inefficiencies and redundancies.

**Multi-directional interactions**
- Promoting bidirectional information flows: action-reaction.
- Promoting cross-linked information channels with multiple simultaneous actors.
- Creation of integrated networks of interaction among different areas.

**Feedback effect**
- Enhancing initial designs through experience: continuous learning.
- Ongoing assessment of conditions and adaptation to change.
- Extending the focus in the design of solutions: 360° vision and collective growth.
The Smart City model will be completed through specific transversal projects which seek to bring about an integrated project, placing the citizen at the centre and enabling the implementation of the goals of the Strategic Plan.

Basic principles of the transversal programmes

Integrated project

Implementation oversight and visibility

The citizen at the centre

Organization for the development of the Smart City

Programme structure and initiatives

Level of coordination

Coordination plan

Implementation oversight

Communication plan

Technological initiatives

Non-technological initiatives

Action initiatives

Events
Contents

Evolution in urban management

Smart City concept

Sant Cugat Smart City

Development plan
The roadmap for the development and implantation of the Sant Cugat Smart City model plans for the creation of integrating structures for initiatives in the technology, organization and programmes domains

<table>
<thead>
<tr>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TECHNOLOGY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT Infrastructure</td>
<td>Network design</td>
<td>Public buildings + Main streets</td>
</tr>
<tr>
<td>Services</td>
<td>IT prioritization and requirements</td>
<td>Integrated Centre</td>
</tr>
<tr>
<td>Information System</td>
<td>Re-engineering and design of IS</td>
<td>Transversal applications</td>
</tr>
</tbody>
</table>

| Organization | |
| Definition | Constituting the model |
| Development | Defining projects | Transversal commissions | Re-engineering of processes |
| Programmes | |
| Coordination level | Smart City Organization | Coordination, Oversight and Communication |
| Action plans | Defining and developing action plans: Economic promotion, training, advising, regulation, Youth and Sports |
| Events | Defining events | Fairs and congresses | Outreach week | Cultural events |

XXX: Initiatives that promote integration
The expected implantation of the Smart City in Sant Cugat stretches over a ten-year span. Results, however, will be seen throughout.

<table>
<thead>
<tr>
<th>Phase 1</th>
<th>Technology</th>
<th>Organisation</th>
<th>Programmes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Global Technical Project</td>
<td>Transversal organization model</td>
<td>Coordination/Oversight/Communication Plan, Action and Event Plans</td>
</tr>
<tr>
<td></td>
<td>Network/Public buildings design</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prioritization of services</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>First projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IS architecture design</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phase 2</th>
<th>Technology</th>
<th>Organisation</th>
<th>Programmes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Development Services + Management Centre</td>
<td>Transversal Organization projects</td>
<td>Coordination/Oversight/Communication Plan, Action plans, Events</td>
</tr>
<tr>
<td></td>
<td>Evolution IT network + Operational Centre</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Extension of pilot</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reengineering the system</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Information</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phase 3</th>
<th>Technology</th>
<th>Organisation</th>
<th>Programmes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Development Services + Management Centre</td>
<td>Transversal Organization projects</td>
<td>Coordination/Oversight/Communication Plan, Action plans, Events</td>
</tr>
<tr>
<td></td>
<td>Evolution IT network + externalization</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Externalization HW and applications</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The first step will be the launching of the technology projects and defining the make-up of the organization which will be charged with the development of the Smart City.

First steps in the development of the Strategic Plan

**Technology**
- Designing the Global Technological Project
- Design and implantation of the Integrated Management Centre
- Developing the first technological projects

**Organization**
- Defining the transversal organization model
- Defining transversal projects: Technical projects and Processes

**Programmes**
- Constituting the Organization for the development of the Smart City in Sant Cugat within a framework of public-private collaboration

3-6 months
Conclusions of Sant Cugat, Smart City

- Sant Cugat's development within the present context requires an evolution of its management model towards economic, social and environmental sustainability.

- Additionally, the new challenges faced by the city extend into several domains and interaction among them, which means that their solution requires an integrated vision.

- For this reason, the structuring directives for the model of a Smart City in Sant Cugat consist of an integrated vision in addressing new challenges and striving for efficiency and quality in solutions, marshalling new technologies.

- In order to develop a Smart City in Sant Cugat, technology projects will be supported by an organisation charged with promoting transversality, as well as by a series of programmes designed to yield an integrated project that has the citizen at its centre.

- The implementation of the Strategic Plan will be undertaken with the help of an Organization that will coordinate the Smart City initiatives and will launch the next steps within a context of public-private collaboration.