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Glossary

Acronym	Meaning
C2	Command Centre
CCTV	Closed Circuit Television
COP	Common Operational Picture
CP	Core Platform
EEA	European Economic Area
EEC	European Economic Community
EC	European Commission
EFTA	European Free Trade Association
ETP	European Technology Platform
EU	European Union
FI-PPP	Future Internet Public Private Partnership
GDP	Gross Domestic Product
GE	Generic Enablers
ICT	Information and Communication Technology
M2M	Machine to Machine
MRO	Main Refinancing Operations
OECD	Organization for Economic Co-operation and Development
PEST	Political, Economic, Societal and Technological analysis.
PoC	Proof of Concept
QoS	Quality of Service
R&D	Research and Development
SE	Specific Enablers
SME	Small and Medium Enterprise
SWOT	Strengths, Weaknesses, Opportunities and Threats.
VAT	Value Added Tax
Wi-Fi	Wireless Fidelity
Wi-MAX	Worldwide Interoperability for Microwave Access

References

Number	Reference
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[2]	Alvarion Breeze
[3]	CISCO
[4]	Frequentis
[5]	Position
[6]	VidSys
[7]	Swan Island Networks
[8]	Alkart Alert Alarm
[9]	Desk Alerts
[10]	SmartSantander
[11]	Mesh dynamics
[12]	Amatra
[13]	Sensen Network
[14]	Fi-ware

Document History

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1. Notes from the Author

The objective of D.8.3 Exploitation model is to lay down guidelines for bringing the SafeCity solution into the market. The document should be understood as a suggestion for a business plan, but not a set framework adopted by the consortium.

This document explains in detail the different products & services of the SafeCity solution, as well as the current situation regarding the Market (EU countries policies, competitors, etc.) affecting the SafeCity solution.

This section does not reflect any pre-agreement of the partners in order to continue with the commercialization of the SafeCity solution as a whole, or in terms of economical and/or personnel contributions, so forth and so on.

<p>CURRENT DOCUMENT IS A PRELIMINARY DRAFT VERSION OF THE FINAL DELIVERABLE AND ITS INTENTION IS TO SHOW A FIRST APPROACH AND FRAMEWORK OF THE FINAL DOCUMENT DELIVERED BY MONTH 24. TWO MORE UPDATED DRAFTS WILL BE DELIVERED IN MONTHS 12 AND 18. ALL THE SECTIONS DETAILED IN THIS DOCUMENT WILL BE UPDATED AND DEVELOPED ALONG THE PROJECT.</p>
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2. Executive Summary

By 2050, 60 per cent¹ of the population of the planet will live in cities. The increment of inhabitants in the cities implies an increasing demand in vital services as transport, health, education and personal security. For all cities and regions competing in the global market place, safety and security are crucial factors in determining overall quality of life.

SafeCity deals with smart public safety and security in cities. The main objective of this project is to enhance the role of Future Internet in ensuring that people feel safe in their surroundings at the same time that their surroundings are protected.

Accordingly, the objective of this document is to design the most appropriate Business Model for an effective future exploitation of the SafeCity solution.

SafeCity is the result of the elaboration of a vertical Use Case Scenario based on Public Safety in European cities and a part of the FI-PPP project. The current Business Model will analyse the Commercial strategy in three ways:

- **As a part of FI-PPP Smart City global solution.**

Taking in consideration that a deep commercialization approach will have to be tackling after the end of this **phase1 of the FI-PPP programme**, once the results of this document were developed, an annex document will analyse the benefits and possibilities of a Co-commercialization solution taking in consideration a common strategy, and the results of the different FI-PPP Work Groups established.

The main goal of FI-PPP programme is to advance a shared vision for harmonised European-scale technology platforms and their implementation, as well as the integration and harmonisation of the relevant policy, legal, political and regulatory frameworks.

The FI-PPP will go through three phases covering different domains, roles, challenges and involving diverse organisations and projects, as detailed in the following chart:

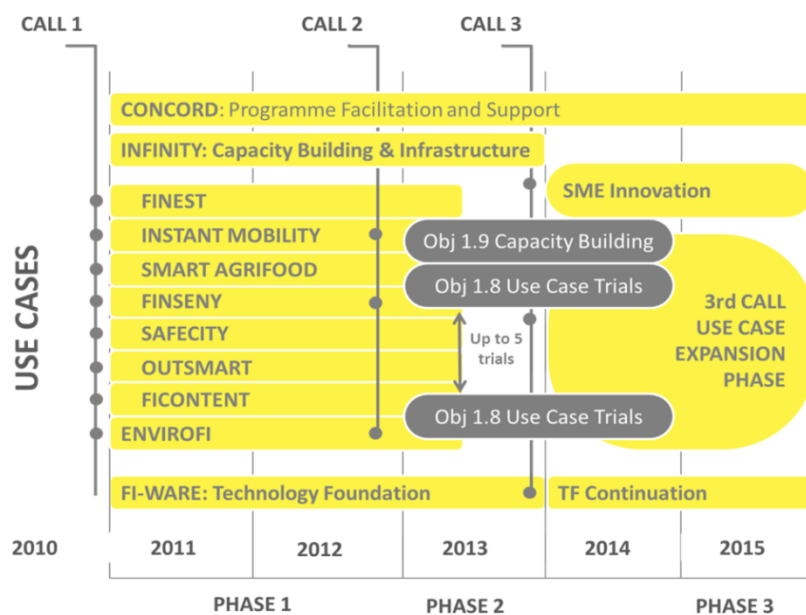


Figure 1 FI-PPP phases chart

In order to achieve a common strategy, in following phases a common business model from all projects wise must be created.

- **As a standalone and self-contained SafeCity Solution.**

This document mainly will analyse SafeCity Commercial Solution as standalone solution.

In this sense, the eight applications provided by SafeCity solution need to be integrated in a public safety system with a private network and specific enablers. Partnerships and agreements will be planned and suggested with the aim of capturing the biggest share of the potential market.

- **As a solution synchronized with FI-WARE core platform.**

One of the fundamental objectives of FI-WARE is to increase effective and interoperability between IT products and services to build a truly digital society, in this sense SafeCity milestones will be aligned and synchronised within FI-WARE milestones. Thus, SafeCity will take advantages, synergies and opportunities in terms of key market stakeholders across many sectors.

On this way, SafeCity application will depend only on FI-WARE platform and its interoperability.

As has been aforementioned, the business model can be analysed in three different approaches. Business strategies that will be developed and the level of each are detailed in the chart below:

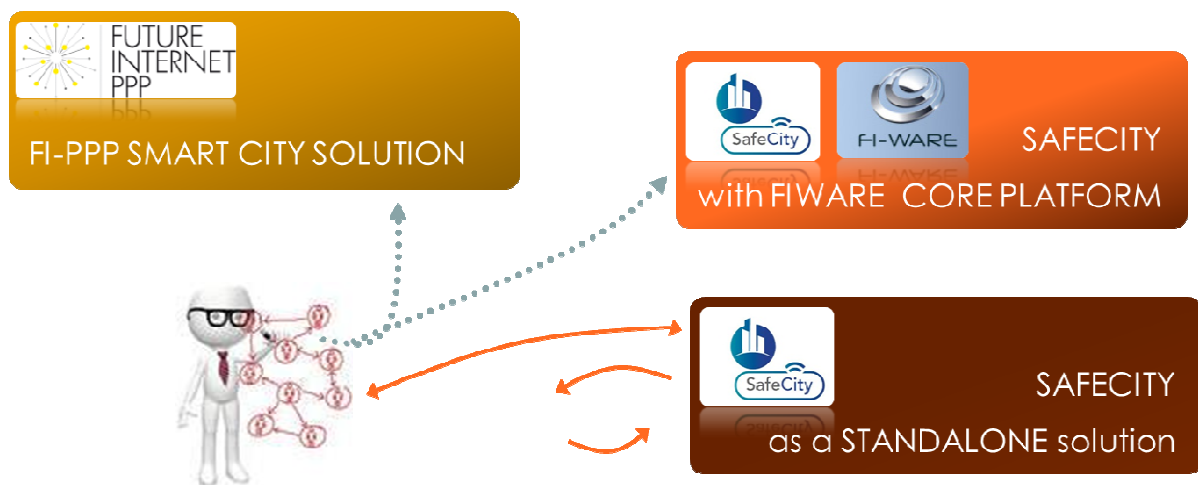


Figure 2 Business Model approaches

Objectives of the Business Model

The objective of the Exploitation and Business Model is to design the most appropriate plan for an effective commercialization of SafeCity solution.

In order to achieve the objective of designing the appropriate Business Model Strategy, several researches and analysis will be developed within this document such as the 'Exploitation Model' and excel based tool where information regarding potential Clients, Security Product Resellers or experts will be identified. This tool also will include a list of potential competitors, product providers and product resellers, etc.

The Business Model & Exploitation Plan will analyse the following aspects:



Figure 3 Business model and Exploitation Plan chart

This document has been based on Business Model Generation – “Canvas”, a management tool to simplify and design business models, mixed together with an adapted version of the Compass Model - 7C's strategy of marketing mix - by Professor Koichi Shimizu (2003). Both models have been modify and adapted to SafeCity overview, adjusting general business sections to the initiative framework. Both models working together show a most clear and detailed overview of SafeCity Business Model and exploitation strategy.

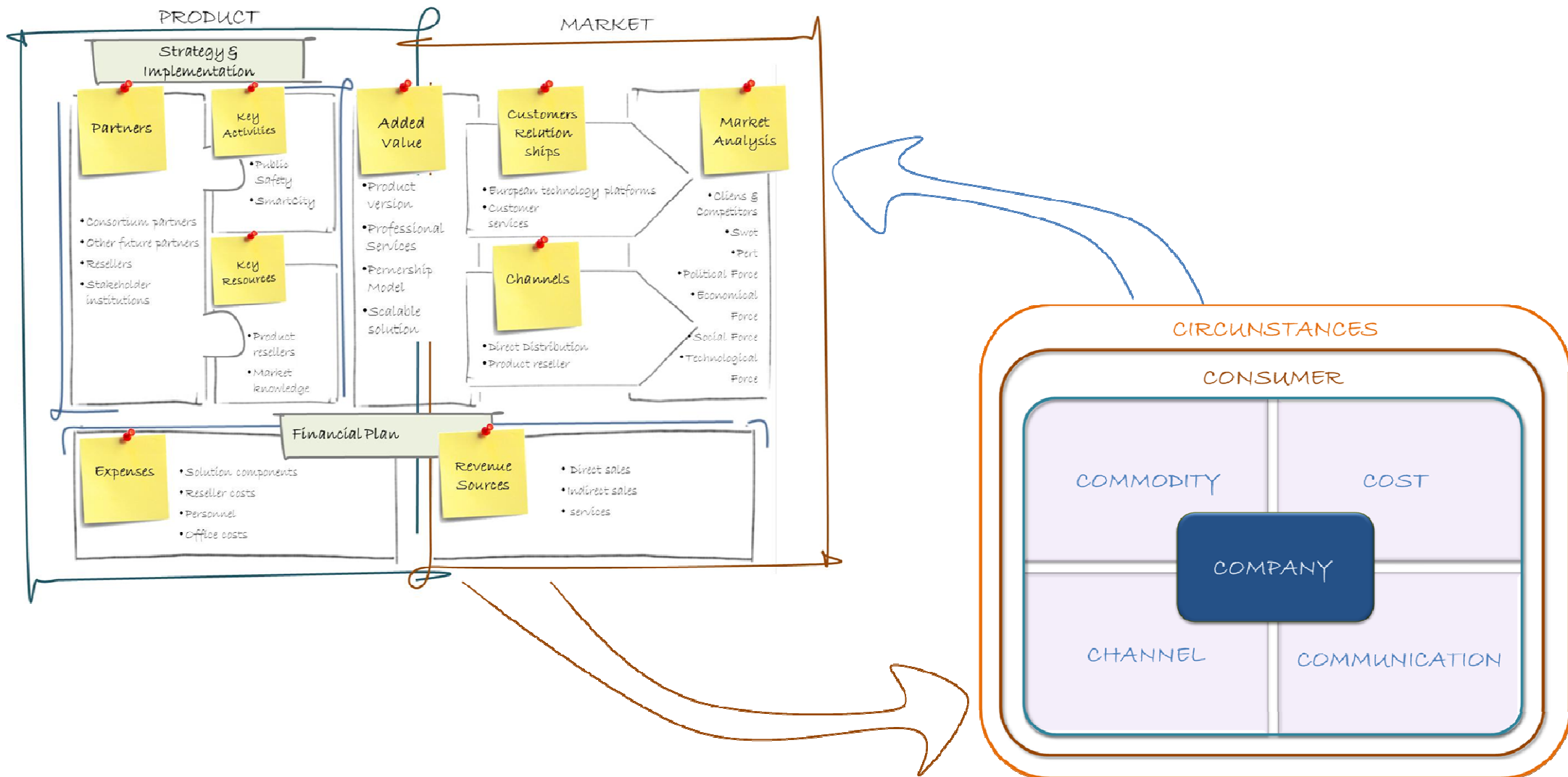


Figure 4 Canvas-7C's MIX

Thus, mixing both Business Model Generator and an adapted version of the Compass Model, it is possible to represent and sum up in just one drawing, the global vision of SafeCity Model:

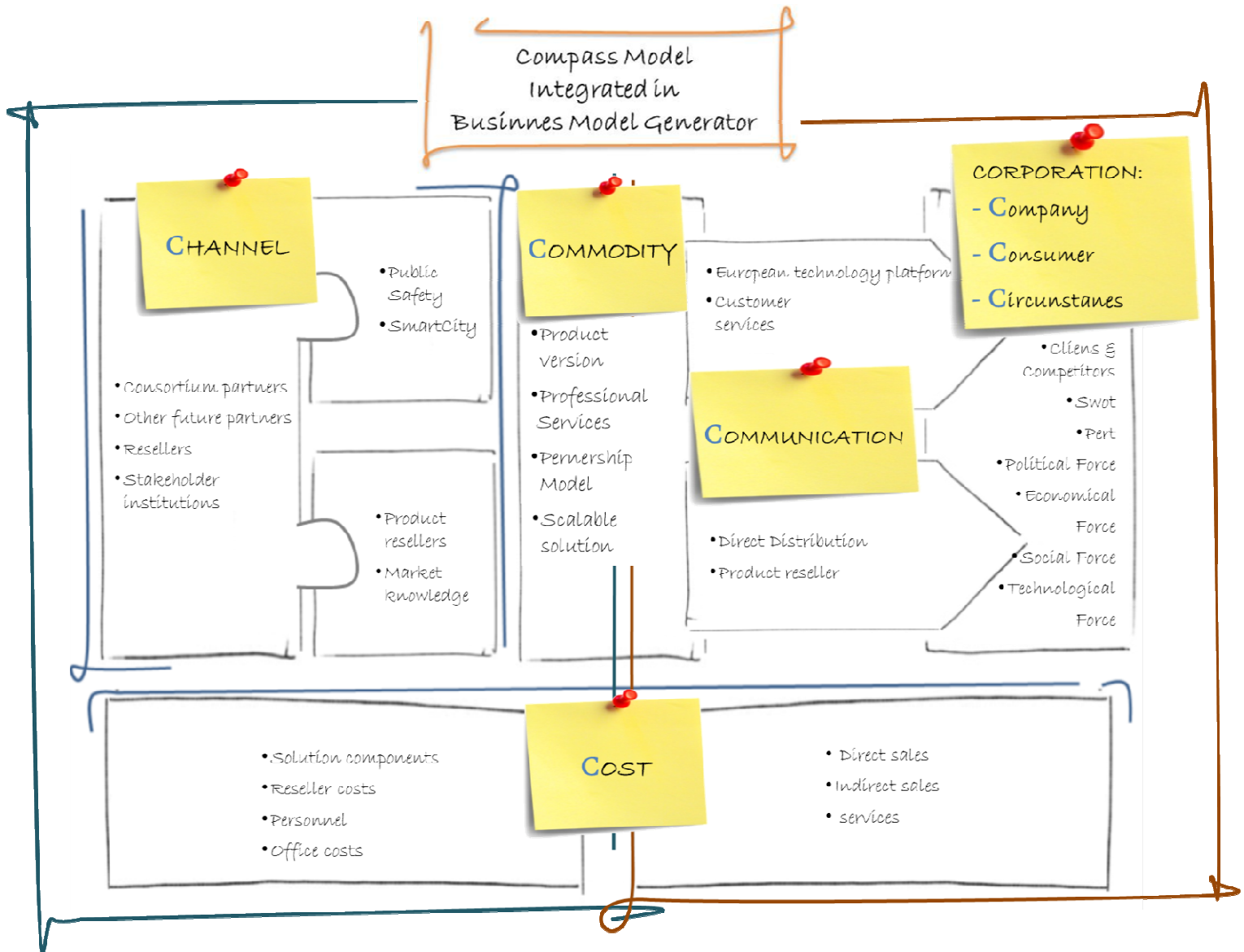
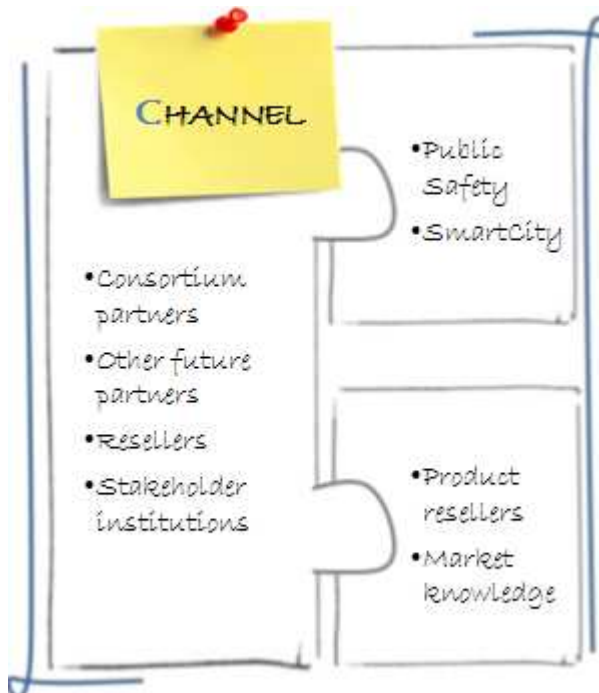


Figure 5 Canvas-7C's final Chart

According with the drawing above, SafeCity Business Model has been divided in five main areas; representing four of the 7C's which make up the Compass Model and another area which is split in 3 subareas (giving rise to the 3C's left).

Next, each area is detailed and described:

- **CHANNEL:** involve the exploitation of the resources and framework to implement the final solution into the market. Channels and approaches established to set up the go-to-market strategy of SafeCity solution.



This is development on the basis of the Implementation and strategy plan, focused in two go-to-market strategies:

- Through a spin-off coming from the current SafeCity's consortium, this involves a direct distribution to the customer. The new company can be set up and composed for current partners of the consortium, new future partners associated to the market, specific reseller within the market scope or other stakeholders keen on the project.
- Through resellers, outsourcing sales' phase to experts with a wide client list as well as a deep knowledge of the market and its niches. This option make easier and quicker reaching a wider segment in the market, but for other hand, this way has an

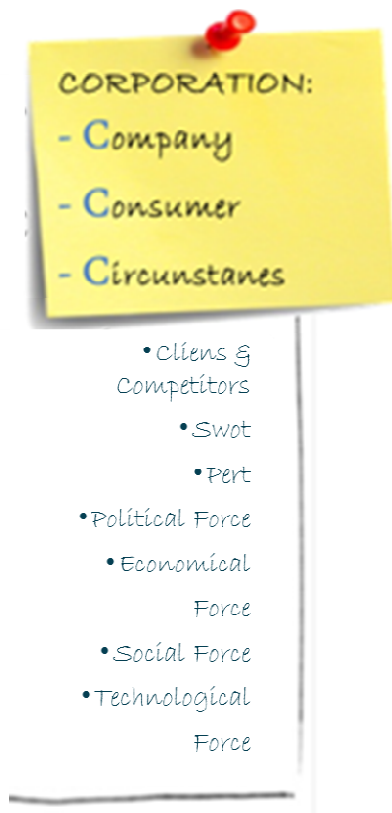
opportunity cost implied, due to the benefits' percentage addressed to resellers.

- **COMMUNICATION:** Examination of competitors and potential clients, including a general analysis of the market in order to set up a relationship rapprochement strategy. Said strategy looks for the optimum profitability taking into account the buyers and competitors power, barriers to entry and force of substitute products. For this analysis, several sub-analysis will be made, such as PEST and SWOT.



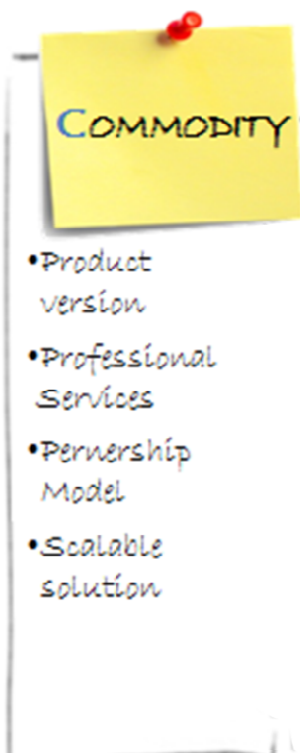
Market's knowledge will help to make some projections about SafeCity target audience, in terms of how many solutions and associated services they might buy, and how they might be affected by trends and policies.

- CORPORATION: 3C's: Consumer, company and circumstances. This is the core of the whole marketing analysis. It is necessary to place more emphases on the organization of the companies and to execute marketing plans. This section includes all issues related to the company and their environment, taking into account competitors, stakeholders, clients and the own company (employees, organisations, politics, strategies, etc.). Parallel, this section is split in three "C's":



- COMPETITORS: including organisation as a whole, competitors and their competitive edge.
- CONSUMER: referring to who is the client, their needs and behaviour. A factor that leads customers to purchase SafeCity solution.
- CIRCUMSTANCES: This section will include two analysis: PEST and DAFO. In order to know and understand all aspects which have influence in SafeCity (mentioning all factors: uncontrollable or manageable, external and internal, direct and indirect, etc.)

- COMMODITY: This section details the added value proposed by the business and the technological leap through the state of the art.



A detailed list of the final solution is described in this section, together with all its different product versions derivative of the complete SafeCity solution. Also, said product versions will come with their associated services to make easier the whole process from the need identification to the post-sale and maintenance service.

One of the main goals of this section is to demonstrate the uniqueness of the product and their associated services, the benefits to the customer (taking into account sale, purchase and post-sale period), how SafeCity solution differs from the competitors supply (showing competitive edge and key advantages towards the competitors) and the pricing policy.

- **COSTS:** Expenses and revenues from the business. Forecasting financial issues. Basically, the financial plan section contains three financial statements: the income statement, cash flow and the balance sheet. This comes together with a brief summary analysis of these statements and the profitability of the company.

Financial plan also includes in the first stage all assumptions upon which calculations are based on, figures and amounts taken into account.

This analysis predicts the viability of the project and helps to do the correct investment (in terms of money and time) and also helps to forecast where resources must be used and when they are most needed.



The **Business Model & Exploitation Plan** definition will begin with a definition of the product & services that the SafeCity solution will offer to their potential clients.

Then a deepest examination of SafeCity's target market and competitors will be settled in order to determine following the strategies to reach the established goals. In order to define a fully market analysis several scrutiny will be developed, where environment and force's analysis in Europe and Public Safety's sphere will be the focused topic of study. Said research will help to implement the solution within the optimum place on the market. Not only direct factors may affect SafeCity implementation, thus, every single aspect concerning the business, both internal and external factors, will be explored and detailed.

Needs of the market's knowledge will provide SafeCity, key and essential information to develop the product and set a marketing plan. In this light, a strong competitors' current situation analysis need to be done, splitting the market, in two sections:

- SafeCity as a part of a Smart City solution; understanding this solution as a whole public safety system.
- SafeCity as a standalone solution composed by 8 applications which interoperate among them.

To enhance the understanding and knowledge about the market, competitor's business model and strategy must be clarified. Smart Cities solutions are currently a common trend for technology core business, therefore, competitor's objectives or interests related to Smart Cities will take up a part of the study, although, also final solution split by versions and their associated competitors will belong to the primary research.

After all those analysis are done, marketing and sale strategy will be developed in order to define the adequate approach to attract new customers and new markets. The fast growing of the population in cities brings many economic benefits to Cities and societies but at the same time this growing is resulting on growing rate of crime and vandalism, traffic, turning also those cities into new target for terrorism. It can be said that there is a latent market of Cities looking for effective global and cost-effective solutions for their '*Unsafe Cities*'. As will be described along the document SafeCity Solution will contribute to improve dramatically the safety and therefore the well-being of the people who lives in a City.

Through strategic contacts, SafeCity is aims to gain **positive Europe-wide exposure**. This exposure will come mainly from the results obtained after a successful implementation of the Dissemination strategy. Other relevant channels for this **Europe-wide exposure** will be the Partner Programme (Section 5). The success of SafeCity partner programme will be determinant important for attracting new potential clients.

Finally, the management team of SafeCity Consortium has **extensive experience in technology development, sales, marketing, finance and customer service**. The companies which make up the SafeCity Consortium have high experience on security market, and shall contribute with their expertise and contacts to the commercialization and constant evolution of the SafeCity solution.

Once the marketing and sales strategy will be defined, the next milestone will be to define the Operational Plan and Financial Plan. These plans will show how the solution is going to get out to the market, how the SafeCity will get the target audience previously embattled. As said above, partnership programme will guide one of the most important path linked to the delivery of the product, even though more operational options must be outlined in order to success in the solutions' launch, reaching the widest audience possible.

Partnership programme will provide SafeCity a wide networking audience and target market to exploit, which together with the previous experience of the consortium, will be one of the key success.

Several Key Competitive Advantages

SafeCity product & services will provide several key competitive advantages over competing solutions, including:

- Holistic approach.
- Full Europe-wide partner program which will be built along the project (installation, service operation model, support & maintenance)
- Information system integration experience + holistic approach enables turnkey offering of integrated products depending upon client needs
- Cost effective solutions
- Cost-effective delivery of services, providing QoS and security guarantees.
- Wide set of networks that can be easily deployed and programmed on demand
- Extend network of sensors deployed and programmable on demand composed of a various different sources and types to and ensuring a reliable network support.
- Solution aligned to the objectives of "Europe 2020" strategy and its "Digital Agenda for Europe"
- Reinforce industrial capability and competitiveness.

- Information Pre-processing which optimized process on command centres.

2.1 Mission

SafeCity will develop a scalable solution with the main goal of enhancing the role of Future Internet looking to improve surveillance system and public safety, making easier citizens safety. This process will allow decision makers to have a more integrated solution to public safety by matching people, processes, networks, devices and systems; in order to enable a better response and management by first responders.

One of the main priorities of SafeCity Consortium will be to profit from providing potential customers with unparalleled solution at unrivalled costs.

SafeCity Consortium mission entails the commercialisation of a solution that has to be perceived by its potential clients as:

- **A complete SafeCity system capable of providing:**
 - Awareness on the relevant problems of a City: traffic and persons
 - Advance interactive data visualization and management capabilities.
 - Manage a total and unified response in case of emergency.
 - Scalable solution, adaptable to client needs and current city situation.
- **Scalable solution:**
 - Able to be integrated to any public safety systems.
 - Possibility to be supported by FI-WARE platform.
- **A cost-effective solution in two aspects:**
 - Low cost technology.
 - High quality.
- **A highly usable system which**
 - Is user-friendly
 - Include ad-hoc communication networks easy to deploy.
 - Permanent professional support and advice.
- **A flexible system**
 - Compatible with industry standards at application integration and communication levels (including wireless encrypted communications).
 - City-wide coverage.
 - Possible integration with maps and geographic information systems to be able to show exact location and movement tracking of people by 3D position.

2.2 Keys to Success

- Offering full public safety solution scalable and applicable to current systems.
- Complete, innovative and flexible framework.
- Strong dissemination activity.
- Competitive price.
- Strong agreements with key resellers and providers.
- International consortium with wide experience and relationships (Networking).
- Deep market knowledge.
- End users support, point of view and assistances during the progression.

2.3 Objectives of the Business Model

The key objectives of this business model together with the SafeCity's consortium are:

- Analyse the current situation of Public Safety organisations in order to identify potential customers.
- Identify primary and secondary competitors.
- Create and maintain a powerful network of future partners to take advantage of synergies.
- Consolidate an image of quality and innovation associated to the potential future product, by the use of the Dissemination Plan & activities results.
- Obtain a self-contained solution which will collect, analyse data more effectively.
- Technological leap in the state of the art (according to different product versions)

Furthermore, other objectives will be fixed along the project in order to success with the implementation on the market and reach target audience.

- Consolidate SafeCity solution as a standard in Europe.
- To reach several **financial figures this will be fixed during the project**.
- To maintain an increasing **revenue growth**.
- To **expand beyond Europe** in secondary markets of interest such as the Middle East by a year fixed during the project.
- Start relationships with current and potential stakeholders.
- Others relationships: Customers, competitors, resellers, etc.
- Adapt final solution to market needs through product versions.

3. COMMODITY

The present section describes SafeCity's technology, its different product versions, and its associated service.

The "SafeCity project" can be viewed at six different layers. On the top of these layers will be the city structure compounds by citizens, roads, buildings, and other facilities. Following to this, there is a wide network of sensors and actuators distributed around the entire city. All the information coming from them will be gathered and transmitted to processing centres through the two following levels: access and core communication networks. Distributed and centralized models will be contemplated to process the information in key specific points around the city. As actuation mechanisms, the information processing units may send commands to subordinated actuators, or also may alert higher hierarchy information processing units. In case of relevant changes, first level processing centres provide C2 centres the latest news and alert them when a large emergency is detected. At the same time, C2 centres are information processing centres itself capable of collecting and process input information,

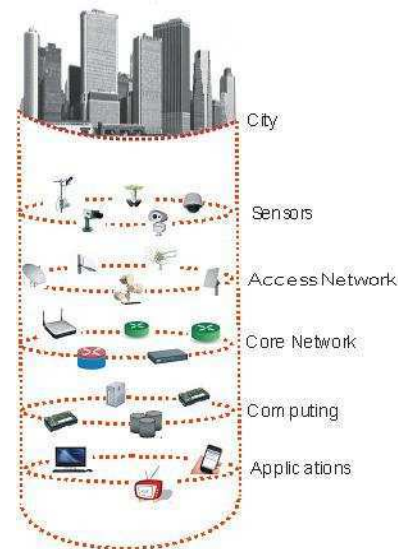


Figure 6 SafeCity Framework

generating commands to subordinate processing centres and further alerting higher-level command centres from other cities or regions.

SafeCity will offer to public safety, specific methodologies and applications with the aim of integrate them on their current safety systems with network connexions. SafeCity is formed by eight separate but inter-working applications based on specific or generic enablers.

Those applications interoperate together but at the same time they will depend of a private network or of the FI-WARE architecture, as is shown on the chart hereunder:

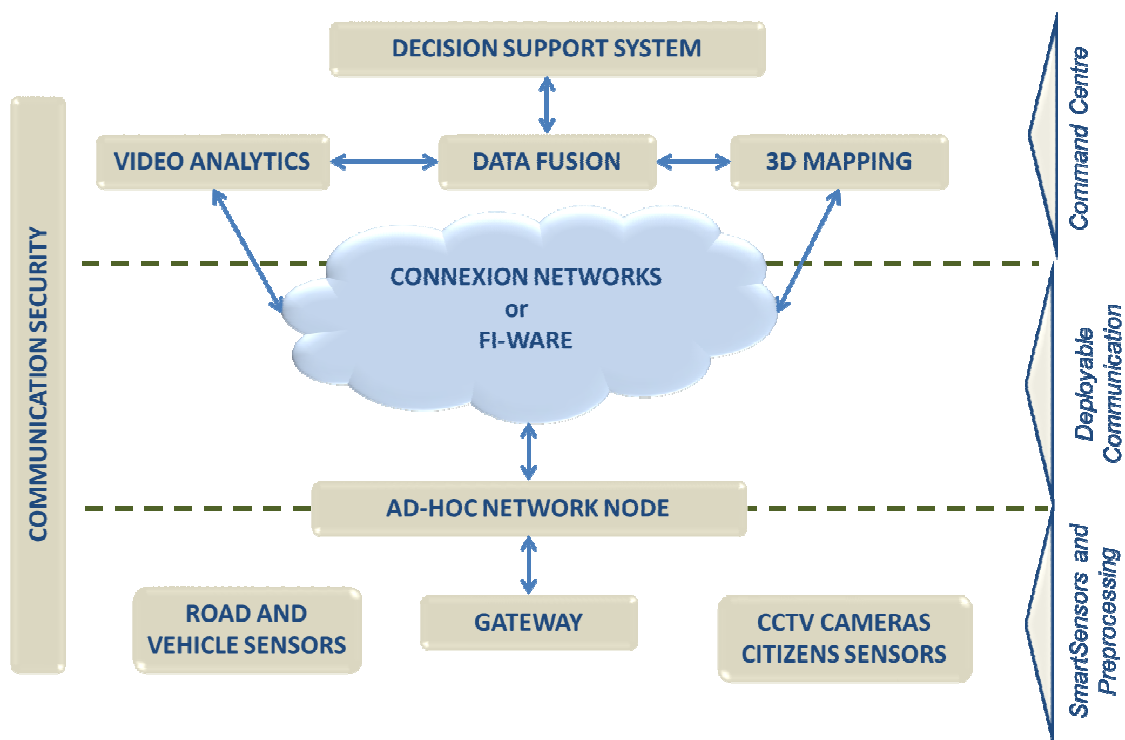


Figure 7 SafeCity applications and Interoperability

SafeCity is focused on 4 functionality areas where is developing its eight applications. Those areas are:



According with functionality areas, applications included in SafeCity solution are:

1. Video Analytics:

- a. Connect to existing CCTV Cameras from existing city-wide CCTV systems
- b. Analyse video inputs in near real time in most cases, looking for:
 - Suspicious objects and people (based on facial detection and, at times, when data permits it, face recognition against a pre-set database and orphan object detection)
 - Suspicious entries in highly secure areas (intrusion detection)
 - Suspicious behaviour pattern based on predefined profiles and historical data.
- a. Based on the Video analysis results, the system will generate alerts to users based upon:
 - Abnormal behaviour or movement (Staying too long in an unlikely place or at an unlikely hour).
 - Victim typology
 - Known patterns, or appearance
 - Web Link Analysis

2. Ad-hoc networks:

The objectives of the Ad-Hoc network components can be stated into the following:

- a. Provide physical network support to resources in the field (both during regular operations and as a fast replacement for infrastructures destroyed by natural or man-made disasters).
- b. Provide connectivity between the sensors (e.g. CCTV cameras) and the Internet through the use of Ad-Hoc nodes thus contributing to achieving the “accessible from anywhere” capability.
- c. Allowing Users to interact with CCTV and other sensors via mobile devices.
- d. Support commercial wireless standards such as GSM, WiFi or even TETRA and WiMAX as well as similar Networks.

3. Sensors Gateway:

Intelligent Sensors and Information Pre-Processing shall explore the means for allowing optimized functionality across the intermediate phase found among the deployed sensors, the operating network and the command centre.

A massive volume of information generated from a variety of different sensors is going to be forwarded to the command centres and the human operators. The current application will explore the introduction of sophisticated means in the field in order to ensure both compatibility and distribution of work; this way we expect to see the sensor network operating more efficiently and the command centre to be effectively relieved of requirements and work overloading.

4. Real-Time 3D positioning

Based on a 3D model of the town, The SafeCity project will offer a 2D/3D view of the town, representing people in the town. Two kind of information will be included:

- 3D position of people in real time extracted by video analysis.
- 3D position and behaviour of people, obtained by artificial intelligence algorithms, when real information is not available.

5. Road track and environmental sensors

The system will be able to:

1. Identify incidents and unusual behaviour in traffic patterns including:
 - abnormal or restricted vehicle (and pedestrian) behaviour
 - accidents
 - congestion situations and traffic jams
2. Sense critical environmental changes such as:
 - weather
 - road condition
 - foreign objects
3. Take certain preventive safety measures
 - alert emergency and/or maintenance units
 - warn nearby cars and citizens
 - provide real-time route optimization based on sensor information

6. Information Security

Sensor networks are based on a different set of assumptions and trade-offs, requiring new thinking about the underlying communication infrastructure. Likewise, the new architectures that come into play require new solutions for information security. In the scenario envisioned by SafeCity, the sensing devices will be either fixed or mobile, so existing security solutions that assume fixed topologies cannot be employed; may not have limited resources allowing the use of alternative cryptographic techniques, and those devices may also be carried by people as well, thus introducing privacy concerns and new adversarial threat models.

7. Data Fusion

The Data Fusion prototype will be a technology placed at the core of C2 Centres. It will allow squeezing and understanding heterogeneous information generated by any mean and any place into SafeCity in order to extract its meaning and make it easily available. Its final use will be to serve as key decision support tool.

8. Decision Support System

The Decision and Support System will be integrated with Video Analytics application, Data Fusion and 3D mapping application, creating a unified User interface for the system. This User interface will allow all the SafeCity Applications to be accessed via single terminal.

The application is not new, but will be based on existing Applications previously development by the responsible partners, dramatically reducing the required efforts.

SafeCity will develop a standalone solution with the main objective of helping Cities to achieve their goal of making the people feel safe in a protected environment. SafeCity solution is proposed to be divided on different product versions trying to give a specific response to potential necessities.

Titles of Sections

All titles of sections must be in “Title Case” form. Subsections should follow the style below:

3.1 Product Version

SafeCity has been shaped into three different ‘product versions’ trying to give response to different scenarios. Each product version includes different applications with different functionalities according with the version’s requirements.

SAFE-CITIZEN:

- SAFE-BEHAVIOUR //OBJECT
- REAL TIME POSITIONING

SAFE-AWARENESS:

- SAFE-BEHAVIOUR /OBJECT
- REAL TIME POSITIONING
- SAFE-TRAFFIC

SAFECITY PLATFORM:

- SAFE-BEHAVIOUR /OBJECT
- REAL TIME POSITIONING
- SAFE-TRAFFIC
- SAFE-ENVIRO
- SAFE BIG EVENTS

All SafeCity product versions increase the visual monitoring efficiency in Command Centres thanks to Intelligent Video Analytics from the Cloud. Thus, it contributes to the reduction of the noteworthy

information overload of C2 personnel, generates alerts for potential suspicious happening and may detect the pre-conditions of a potentially evolving unsafe situation and thus allow C2 personnel to act proactively.

Each product version counts with several functionalities and capabilities according with the needs to face up:

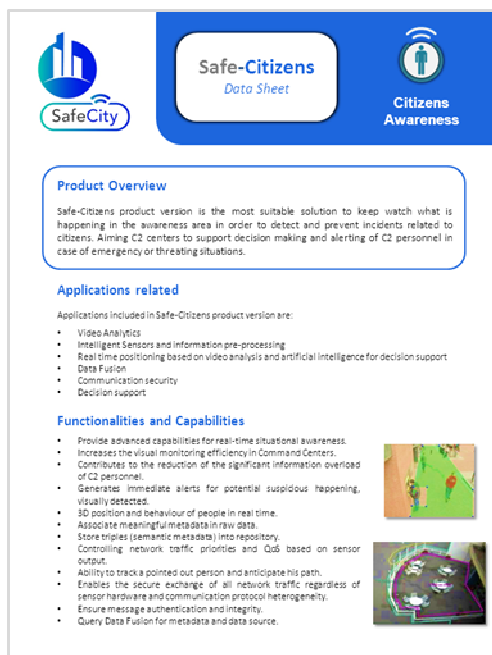
SAFE-BEHAVIOUR//OBJECT: Place special attention on public concentrations and riots, expressions of aggressive behaviour and criminal activities, serial thefts, critical places, identification of deviations in terms of time of the day. Regarding suspicious objects capabilities, this is focused on abandoned objects and recognizing human activity near the object over the past time intervals, also on movement of items and high risk areas, as well as awareness on typically expected sizes and deviations.

REAL TIME POSITIONING: This application offer several functionalities such as the ability to track a pointed out persons and their paths, 3D position of people in real time extracted by video analysis, 3D position and behaviour of people, obtained by artificial intelligence algorithms, when real information is not available.

SAFE-TRAFFIC: Main functionalities of this application are focused on stolen cars, cars features detections, irregular parking, traffic congestion and congestion loads, traffic incidents, restricted vehicle behaviour, environmental conditions disturbing traffic and road safety, road condition detection, identification of problems.

SAFE ENVIRO: functionalities related with suspicious environmental indicator's surveillance are focused on malicious air substances, malicious organic footprints and alarming environmental indicators. Specific molecular concentration detection and analysis of thermal radiation with respect to expected radiance patterns.

Note: A detailed description of SafeCity products will be developed along the project. Two types of 'Data Sheets' will give a clear vision of SafeCity Products.



Product description Data Sheet

- For each Product an associated Product Data Sheet (PDS) will be developed.
- Will give detailed information about each specific solution product.
- Will be available to any interested person/organization.
- Will be available at SafeCity website to be downloaded for free.



Safe-Citizen

This product version will be the most basic of all the versions proposed.

This product version will join **“Safe-Behaviour (S.B) + Real time positioning”**

Note: Further details about SafeCity product versions will be available in “Data Sheet” annex. Also enablers belonging to each version are detailed in figure 7: Safe-Citizen applications and enablers associated.



Safe-Awareness

This product version will be a extended version of Safe-Citizen.

Potential customers will be count with Safe-Citizen capabilities and other applications focussed on traffic and surroundings.

Note: Further details about SafeCity product versions will be available in “Data Sheet” annex. Also enablers belonging to each version are detailed in figure 8: Safe-Awareness applications and enablers associated.



SafeCity Platform

This product version is the most complete package offer by SafeCity.

This product version will join all the previous SafeCity products plus **“Safe-Big Events”**.

Note: Further details about SafeCity product versions will be available in “Data Sheet” annex. Also enablers belonging to each version are detailed in figure 9: Safe-City Platform applications and enablers associated.

		Safe – Citizen Applications // Generic and Specific Enablers associated																																
Product Name	Capabilities	Video Analytics										Ad-hoc Network										Real time positioning					Data Fusion							
		G.E.		S.E								G.E.		S.E								G.E.		S.E.			G.E.				S.E.			
		Video Analytics	Semantic Application	Video Analytics	Coarse Video Analytic	Visual Descriptors Extraction	Pattern Recognition	Detection	Model Retraining	Video Rule Engine	Critical Situation Taxonomy	Definition	Connected Device Interface	Location	Big Data Analysis	Complex Event Processing	Configuration Management	Communication Management	Resource Management	Status Monitoring	Alerting	Multimedia Analysis	Complex event processing	Tracker	3D position Extractor	3D Display	Behaviour Simulator	Semantic Application Support	Semantic Annotation	Big Data Analysis	Cloud Obj. Storage	Interface Layer	Data Manager Layer	Service Layer
Safe-Citizen	Safe-Behaviour / Object	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Real Time positioning	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Figure 8 Safe-Citizen applications and enablers associated.

		Safe-Awareness Applications // Generic and Specific Enablers associated																												
Product Name	Capabilities	Video Analytics										Ad-hoc Network										Intelligent sensors and information pre-processing								
		G.E	S.E									G.E	S.E									G.E		S.E						
Safe-Awareness		Video Analytics	Semantic Application	Video Analytics	Coarse Video Analytic	Visual Descriptors Extraction	Pattern Recognition	Detection	Model Retraining	Video Rule Engine	Critical Situation Taxonomy	Definition	Connected Device Interface	Location	Big Data Analysis	Complex Event Processing	Configuration Management	Communication Management	Resource Management	Status Monitoring	Alerting	Complex Event Processing	Localization	Security Monitoring	Mediator	Data Center Resource Mgmt.	Gateway Manager	Data Integration	Data Processing	Data Management and Priorizations
	Safe-Behaviour / Object	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Real Time Positioning	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Safe-Traffic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Safe-Awareness		Real time positioning					Data Fusion					Communication Security																		
		G.E.	S.E.				G.E.	S.E.				G.E.					S.E.													
		Multimedia Analysis	Complex event processing	Tracker	3D position Extractor	3D Display	Behaviour Simulator	Semantic Application Support	Semantic Annotation	Big Data Analysis	Cloud Obj. Storage	Interface Layer	Data Manager Layer	Service Layer	Content-based Security and Compliance	Localization Platform	Security Monitoring- Intrusion Detection	IoT connectivity Management and Front End	IoT things & Resources Management	Security Manager	Setting Configuration	Data Handling	Trust Management							
	Safe-Behaviour / Object	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Real Time Positioning	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Safe-Traffic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Figure 9 Safe-Awareness applications and enablers

		Safe-City Platform Applications // Generic and Specific Enablers associated																																				
Product Name	Capabilities	Video Analytics											Ad-hoc Network										Intelligent sensors and information pre-processing								Real time positioning							
		G.E	S.E										G.E		S.E								G.E				S.E				G.E.		S.E.					
		Video Analytics	Semantic Application	Video Analytics	Coarse Video Analytic	Visual Descriptors Extraction	Pattern Recognition	Detection	Model Retraining	Video Rule Engine	Critical situation	Taxonomy	Definition	Connected Device Interface	Location	Big Data Analysis	Complex Event Processing	Configuration Management	Communication Management	Resource Management	Status Monitoring	Alerting	Complex Event Processing	Localization	Security Monitoring	Mediator	Data Center Resource Mngmt.	Gateway Manager	Data Integration	Data Processing	Data Management and Priorizations	Multimedia Analysis	Complex event processing	Tracker	3D position Extractor	3D Display	Behaviour Simulator	
SafeCity platform	Safe-Behaviour / Object	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Real Time Positioning	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Safe-Traffic	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Safe-Enviro	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Safe-Big Events	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
SafeCity platform	Safe-Behaviour / Object	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Real Time Positioning	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Safe-Traffic	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Safe-Enviro	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Safe-Big Events	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Figure 10 SafeCity Platform applications and enablers

3.2 Professional services

SafeCity is a solution comprised of a product system and its associated services. **SafeCity's professional services** are outlined on the chart below:

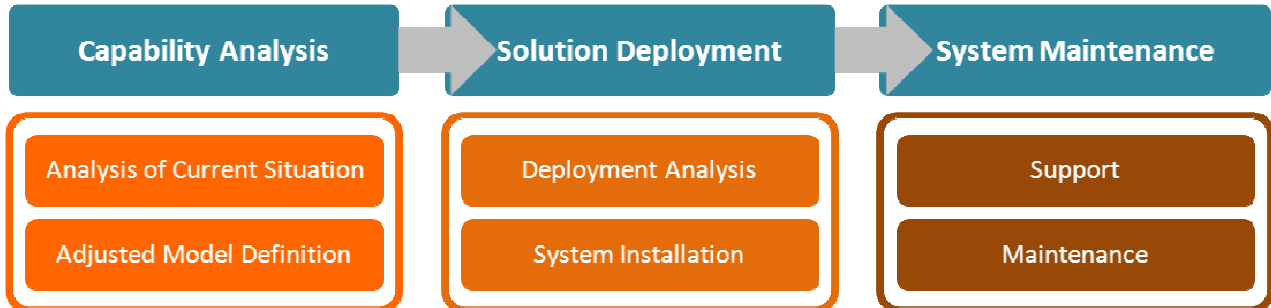


Figure 11 SafeCity services

- **Public Safety Capability Analysis.**

This service shall consist of the following activities:

- Current Situation Analysis: Includes the analysis of the cities' current technology and requirements.
- Desired Model Definition: Includes the optimization of the public safety' procedure, the technology architecture and the generation of the corresponding project plan.

- **Solution Deployment.**

This service shall consist of the following activities:

- Deployment Analysis: Includes the system integration analysis and the procedure deployment definition.
- Installation: Include the enablers & networks installation process, the system integration & testing, and the corresponding training.

- **System Maintenance.**

This service shall consist on the following activities:

- Support: Include the solution's user support.
- Maintenance: Includes the hardware and enablers maintenance & upgrade service.

3.2.1 Public Safety Capability Analysis

Current situation knowledge and an adjusted desired model are required before the purchase of the SafeCity solution. For this reason this services will be offered by the start-up, in order to have a clear overview of the existing status of their safety system and their needs.

The scope Cities Capability Analysis is scalable and shall vary depending upon the requirements and budget of the client.

The details of each of the activities which make up this service are outlined below.

Analysis of Current Situation:

- Public Safety Procedure Analysis:
 - Identification of the current procedure at the traffic, citizens' behaviour, city surveillance, of the client regarding public safety.
 - Analysis of the impact of the identified procedure within the client.
- Public Safety Technology Analysis:
 - Analysis of the enablers and surveillance system used for public safety purposes from the point of view of technical suitability and usability. In general an overall analysis of the current safety system.
 - Analysis and description of the surveillance infrastructure, networks, architecture and framework which supports the public safety systems.
 - Analysis of the capabilities of the current system.
- Public Safety Requirements Analysis:
 - Identification of the defined internal and external authorities regarding public safety management (e.g. European Union directors, national and regional authorities, local decision makers, etc.).
 - Identification of the defined internal and external authorities regarding public safety technology.
 - Verification of the alignment of the identified public safety procedure with respect to the client's strategy regarding.

Desired Model Definition

- Public Safety Procedure Optimization:
 - Definition of the adequate procedure required to optimize the client's public safety capabilities.
- Proposed Public Safety Technology System:
 - Definition of the proposed solution (enablers & networks) to optimize current public safety system. This solution shall include the following integrated elements:
 - SafeCity solution, which shall play a central role in the proposed framework, working together with client's current safety systems deemed appropriate and which fit accordingly within the proposed solution.
 - Other existing products required to complete a comprehensive public safety system.
- Project Plan:
 - Project plan of the proposed solution, including:
 - Planning of the different activities and tasks which make up the complete solution deployment project (SafeCity enablers and networks installation, integration with third party systems, testing, etc.).
 - The configuration of the team required to deploy the solution.
 - The breakdown of the professional service costs.

3.2.2 Solution Deployment

The details of each of the activities which compose this service are outlined below.

Deployment Analysis:

- System Integration Analysis:
 - Analysis of the incorporation of the proposed solution, consisting of the following elements:
 - SafeCity solution, which shall play a central role in the proposed framework, working together with client's current safety systems deemed appropriate and which fit accordingly within the proposed solution.
 - Other existing products required to complete a comprehensive public safety system.
- Public Safety Procedure Definition:
 - Definition of the deployment within area of the adequate procedure required to optimize its public safety capabilities.

System Installation:

- Enablers & Network Installation:
 - Installation of the following elements:
 - Standard SafeCity applications.
 - SafeCity partner products considered necessary.
- System Integration & Testing:
 - Integration of the following elements:
 - Standard SafeCity applications.
 - Client systems which are deemed appropriate and which fit accordingly within the proposed solution.
 - SafeCity partner products considered necessary.
 - Testing of the complete integrated system.
- System Training:
 - Complete user training of the new public safety system and procedure.

3.2.3 System Maintenance

The details of each of the activities which make up this service are outlined below.

Support:

- User Support:
 - Includes a user support contact number and exceptional service level agreements (specific to each country).

Maintenance:

- Applications Maintenance & Upgrading:
 - In case of malfunction or incorrect manipulation of system components, the user is alerted with specific information regarding the problem, enabling corrective action to be undertaken.
 - SafeCity professional services include remote upgrading of system whenever new upgrades are available.

3.3 State of the art

3.3.1 Smart Cities State of the art

Condition of nowadays State of the Art of Smart Cities shows that there is large concern over how the futures of tomorrow shall be brought into being from the today's existing ones. A proof of this is the European Smart Cities Score Chart (www.smart-cities.eu), where Smart Cities compete among themselves for evolving towards a better Smart City.

SmartCities realizations can be divided mainly into two categories:

- Those with concerns related to traffic management and others (i.e. pollution). Their ultimate objective is to smooth the traffic flow, increase the quality of citizens or improve emergency assistance in case of accidents. An excellent sample of this concept is represented by the city of Assen (www.sensorcity.nl), where the Sensor City project started in 2010. It bases on the presence of a central unit performing the fusion of the data coming from the sensors nodes floating in the cars and the other network nodes that are fixed in the road infrastructure (like cameras and Bluetooth elements) that is connected with a real time traffic managements and information systems, public transport services, and so on.
- These kinds of systems rely on a variety of sensor technologies like CCTV, traffic signals, ground loop detectors, speed radar devices and security and safety personnel on the ground.
- Those interested in increasing safety of citizens (mainly through CCTV systems). These systems have been on the market for a number of years, targeting primary deterrent and crime resolution uses. Most advanced systems integrate gunshot detectors, automatic tracking of persons (with different levels of achievement) and trainable software that can recognize violent behaviour.

SmartCity concept encompasses a large number of technologies, from CRBN and most advanced sensors to access networks and cloud computing facilities. This section will show the current SoA of a subset of the most relevant technologies where SafeCity Consortium expects to make relevant advances.

4. CHANNELS

Distribution is the activity directed to get products from manufacturer to end users. This section will analyse the distribution channels chosen to deliver the product to the final consumers.

To establish a distribution system is important to determinate two points:

- Distribution channels
- Type of distribution

The sales strategy of the SafeCity start-up considers two different channels to reach end consumers. The two options discussed are on one hand, **sales through intermediaries** and on the other hand, **direct selling** to end users.

In this sense and following SafeCity strategy, those two channels are split in different options:

- **Direct selling:** Setting up SafeCity start-up and their direct sales channel.
- **Through intermediaries:** according this option, SafeCity has considered three sub-channels as intermediaries to manage SafeCity sales. Those networks are Stakeholders, Resellers or FI-WARE platform.

An **appropriate distribution strategy would be one which uses both channels in a complementary manner**. The most appropriate type of distribution for the product is a selective distribution, since the product is addressed to a very specific set of customers.

4.1 Direct sales

A direct sales strategy is the sales technique used most of the time for most of the companies, but in SafeCity case, at the beginning, this will be just a secondary channel. It is the frontal assault on the enemy's position but also needs a high budget and market knowledge and experience. A direct sales strategy means going head to head, feature for feature against your competition.

In order to develop the most efficient direct sales strategy, SafeCity will build up "SafeCity startup" and all direct sales will be established through this new organization (Further details will be provided in following sections).

The creation of this start-up will be at the beginning of the sales operation, being the second channel in terms of sales.

This strategy offers several advantages which make it attractive to sell the products:

First of all, by using this distribution channel all the trade margin of the operation can be taken by the start-up company. The absence of intermediaries in the sale ensures that the final price paid by the end users is net income for the company, all incomes coming from sales; belong to the start-up, without any intermediary fee or cost. Thereby increasing the profitability associated.

Associated with this increase in profitability must be noted also the elimination of “transaction costs” (transaction, negotiation and monitoring costs according to economic theory).

Another advantage associated with this strategy is the protection of the technology. In the market where SafeCity is going to be focused, technology is a critical success factor. Using direct channels the company can avoid copies and imitations of the technology that reduce the profitability and damage the image of it.

The main disadvantage of this distribution system is the uncertainty involved. If SafeCity’s start-up wants to operate without intermediaries will need to be physically present in all target markets, and this involve a big investment.

4.1.1 Service Operation Plan

The operational plan is an essential component to the business plan and it shows how SafeCity would go to get the product and service out to market. That is, how the new ‘start-up’ will get the product out of the production stage to the doorstep of the target customer.

This section will outline how SafeCity start-up would carry out the delivery of products and services or how will keep track of inventory once start-up is running.

Reaching end customers is the main issue which must was answered in previous section; hence SafeCity will deal with two main options; by intermediates or by its own channels

The use of Intermediaries is a good option to help the company in the beginning of their sale process, but in the long run, SafeCity startup must be the main contact with the market, in this sense, higher incomes would be achieve and the SafeCity potential market might be able to link the solution with the society.

On the other hand, to develop SafeCity final solution, several relationships with providers must have been established. Choosing a hosting provider is never easy and it seems to be a risk in the business. SafeCity has the advantage of counting already with the main provider “FIware Platform”. Thereby SafeCity would count with other external provider, so an aggressive Service Level Agreement (SLA) will be built in order to cover the multiple components in order to that keep the SafeCity position face to its providers.

Customer service is becoming the key to developing and maintaining customer loyalty and to managing customer repurchase, recommendation and retention.

SafeCity start-up would have experience, skills and knowledge of working with people to give their potential clients the best customer service they have ever experienced.

Because SafeCity business will be young among the market, the key to success developing market share involve the ability to deliver service quickly and reliably, and to scale operations quickly without loss of quality. The best manner to improve existing service is receiving a feedback from consumers. Obtaining a feedback from customers through a customer service questionnaire can be a high quality source of helpful feedback. This questionnaire can be provided to gather information with the objective of improving existing service or products for the customers, by for instance mailing them at the end of the deal a questionnaire that can be completed online, in confidence. This questionnaire would ask about customer services provided and satisfaction with the final product.

4.2 Sales through intermediaries

Selling by intermediaries is the most popular option in the sector, and this helps to advertise the solution and reach essential costumers.

The first advantage resulting from the use of a sales strategy based on intermediaries is referred to the level of economic resources committed. Thus, it is possible to reach a wider market without being physically present at all the points of sale, so that the investment required starting to operate decreases dramatically. Intermediaries truly help to launch the solution to the market and in this sense would be priority option during first years. On the first years, these intermediate would have a deep weight in the selling strategy of SafeCity solution but eventually after no more than three years, sales from the company will start to be ahead.

On the other hand, this strategy enables entering and exiting certain markets with low entry and exit barriers. This gives high flexibility to the company to reorganize its target market at bearable costs.

Moreover, this distribution system offers clear organizational advantages. An intermediary based distribution system produces a very simple organizational structure, which means lower costs.

In short, this sales strategy is undoubtedly the most appropriate for a new company which does not have the necessary infrastructure for direct sales. In the field of intrusion detection this strategy is common for even large business that could use a direct distribution system.

4.2.1 Stakeholders Strategy

The development of and appropriate marketing strategy must include a stakeholders analysis since their involvement with the initiative is increasingly important, as well as their influence in decision making.

Analysing key stakeholders will make easier identifying their impact and involvement level in order to take decisions related to the close relationship between SafeCity and the wide group of Stakeholders.

A preliminary stakeholder's chart is deployed below, showing them into groups according with their importance, influence and power level.

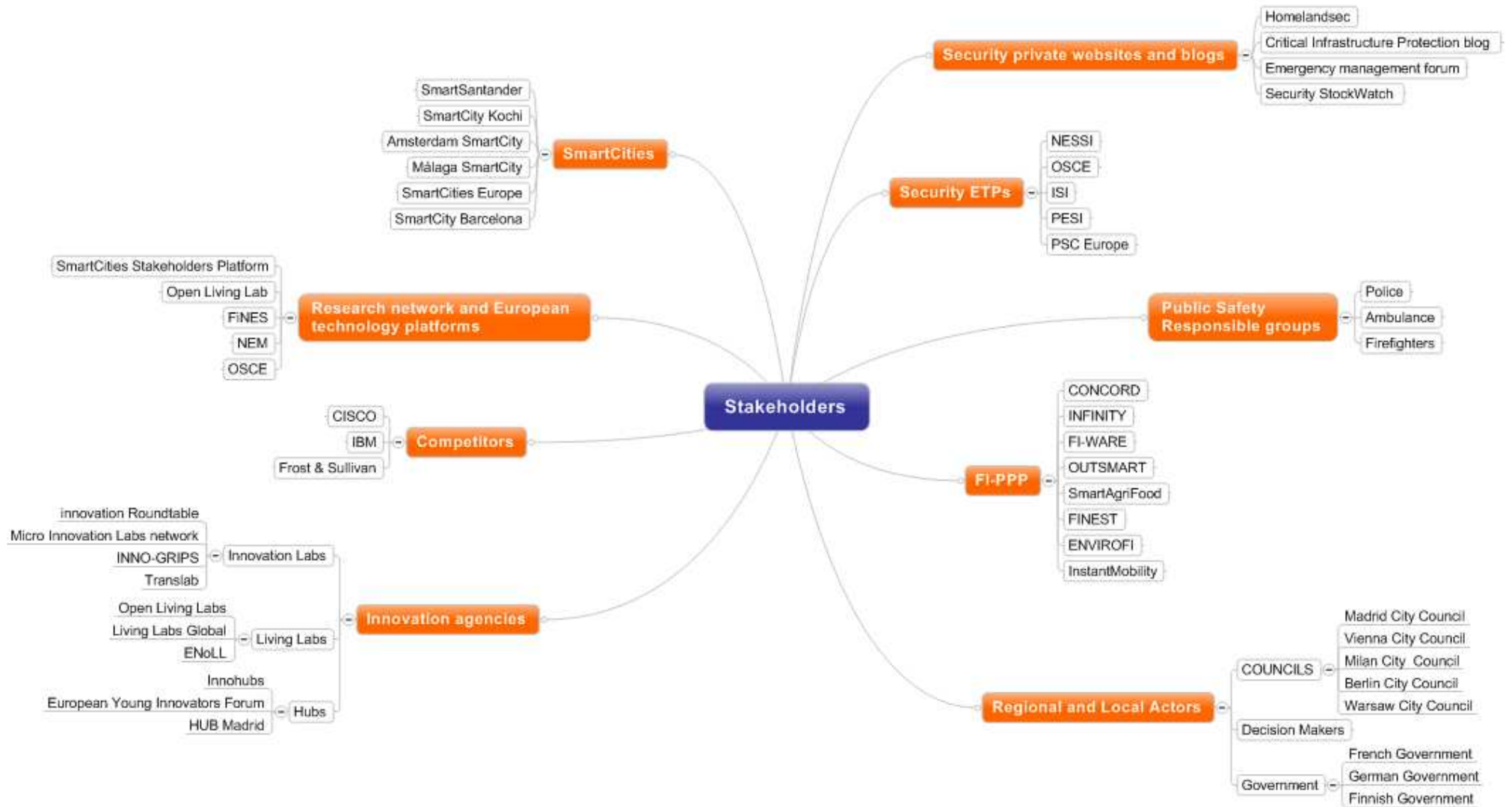


Figure 12 Stakeholders Chart

Following the stakeholders' chart, two levels of influence was created, splitting stakeholders groups in two bigger clusters.

Primary level stakeholders:

- FI-PPP
- Competitors
- SmartCities
- Public Safety responsible groups
- Security's private website and blogs

Secondary level stakeholders:

- Innovation agencies
- Regional and local actors
- Security ETP's
- Research networks and European Technology Platforms.

Primary stakeholders are those directly affected by SafeCity activity and actions, working together or closely to the initiative. In the second hand, second stakeholders are also affected by operations and goals of the initiative, but in a lesser extent, since other actors may block this direct connectivity.

It's worth it to highlight that some stakeholder are already connected to SafeCity, provoking a closer relationship and influence within the stakeholders' framework. Those connected stakeholders are the FI-PPP member and end user collaborating with the development and success of the project, such as City of Helsinki, Attunda Fire Brigade from North of Stockholm Council, Óbidos City Council, or partners, for instance Madrid City Council.

Each group of stakeholders will look for different relationships and goals, in accordance with their position or involvement level. In the same manner stakeholders shall be affected and profited from SafeCity framework and vice versa.

For instance, Local and regional actors will look for employment prospects, safeguarding citizens and their environment, quality of services, efficient use of resources and employees, contribution to society and their economy, social and ethical acceptance. The analysis will not only include the impact upon the stakeholders, but also the power and influence that stakeholders has over SafeCity.

Stakeholders Analysis

Table 1 Stakeholders Analysis

STAKEHOLDER	IMPACT ON STAKEHOLDER	POWER AND INFLUENCE
SmartCities	<i>Essential complement for a SmartCity framework.</i>	<i>Connexion and driver to the market.</i>
Security private website and blogs	<i>Innovative and complete information to the audience.</i>	<i>Direct and quick opinions from the audience.</i>
Research Networks and ETP's	<i>Synergies with related projects and innovative ideas.</i>	<i>Increase contacts and audience.</i>
Security European Technology Platforms (ETP's)	<i>Synergies with related projects and innovative ideas.</i>	<i>Increase contacts and audience.</i>
Public Safety Responsible Groups	<i>Contribution to their growth and efficiency.</i>	<i>Within main group of costumers: revenues.</i>
Innovation Agencies	<i>Take advantages of synergies and progress.</i>	<i>Direct connexion to other related stakeholders.</i>
Competitors	<i>Competence increase and market share's reduction.</i>	<i>Take up own market share</i>
Resellers	<i>Profits from sales.</i>	<i>Market knowledge and contacts.</i>
FI-PPP Participants	<i>Synergies and technology sharing.</i>	<i>Platform base.</i>
Regional and Local Actors	<i>Environment, local impact or acceptance from society.</i>	<i>Within main group of costumers: revenues.</i>

4.2.2 Partnership Programme

As has been explained before, an important part of the company's indirect sales strategy is the figure of the intermediaries, also called Product Reseller. An adequate management of these product resellers is a relevant task for the success of the project. SafeCity's 'start-up' must consider companies which might cooperate as partners, as fundamental external asset. This implies a mutual active and cooperative attitude and role to bring risk management in the public domain within Europe on a higher level.

Hence SafeCity's 'start-up' should consider working with relevant reseller partners to expand their commercial network to new end user customers. In this sense a European campaign for partnership with a partner program would be launched.

Partners would have to be seen as an extension of SafeCity's organization, playing an essential role in the go-to-market strategy and activities. SafeCity 'start-up' will have to have the goal of offer an attractive partner program which might offer the necessary resources and assistance to the potential partners and let them grow their business around SafeCity solution.

SafeCity would actively encourage the distribution of the product through the reseller channels. Product supply and sale's information to help the reseller to provide their customers with the highest quality service will have to be provided by the start-up.

SafeCity will develop a Corporate Partner Program with the aim to offer potential dealers the opportunity to enjoy interesting profits and discounts selling the SafeCity solution. This formula is presented as an advantage for SafeCity business, because relies on the sales expertise of external partners to achieve growth while satisfying a diverse range of customers.

One of the first advantages of the Partnership Program could be the marketing strategy done by these partners. This kind of partners will have to advertise SafeCity's solution product and services on different forums, for example introducing the company's logo in their website. In this sense, also a prominent place on SafeCity's programmes, conference and seminars, website and newsletters could be given it to these partners. This partnership should reflect the vision of an association in order to cooperate.

Three types of partnership levels would be offered to potential Security Products Resellers.

4.2.2.1 Gold Partners

The Gold Partner Program would be designed on a first step for those Product Resellers with more experience on the public safety and emergencies market. The main target of this kind of partners should be companies which have a high potential to attract customers both domestically and internationally.

In a medium term this Gold partnership could be extended to those partners with a lower partnership level (silver or bronze) who are prepared to take the next step in becoming fully sales accredited partner with an annual revenue target.

The Gold Partner Program would require a great commitment of potential partners in order to deploy correctly the strategy marked.

The Gold Partner Program would demand to potential partners a huge commitment to deploy correctly and to support the users of these solutions. In order to help this type of partners to achieve their goals,

an intensive training of the SafeCity final solution, installation, deployment and support would be developed.

SafeCity start-up would give support to Gold Partners in the following ways:

- Sales programs designed to help partners in their target markets and to expand into new application areas.
- Provide all necessary sales and marketing tools to help potential partners to best promote the SafeCity solution.
- High discount rates
- Possibility to provide customized solutions, with different GE and SE, for every partner.
- Free technical training in SafeCity's facilities.
- Provide up-to-date, professional marketing collateral.
- Access to the SafeCity Partner Extranet site and advantages.
- Free partner sales folder that contains all necessary information to assist potential partners in the promotion and sales of the SafeCity solution.
- Special attention to the recommendations of potential partners in future developments of the product.
- Company brand/banner in the SafeCity website central partner page, banner on newsletter, company web page, automatic partnership for personal memberships.
- Provide partners with graphics and pictures for use in proposals, presentations and partner web site.

The Gold Partner Program would require a great commitment of potential partners in order to deploy correctly the strategy marked. In this sense, some of the responsibilities of this Gold Partners include the following characteristics:

- Provide to SafeCity start up a forecast of sales (monthly, quarterly, yearly, etc.).
- Promote SafeCity solution on their website and commercial presentations.
- Link from the partner's web site to SafeCity.
- Notify of all trade shows and other marketing events where SafeCity can participate or assist.
- Provide a company directory for sales and technical support people.
- Feedback about the comments and views of customers.
- Minimum of two target European countries for the commercialization of the solution.
SafeCity start-up will have to approve the offered countries.

4.2.2.2 *Silver Partners*

The Silver Partner Program would be designed for regional Product Resellers with experience on regional public safety and emergencies market. On a first step only resellers with a related background and experience would be accepted as Silver Partners.

The Silver Partner Program would provide to partners with all the online, tools, training, support and resources with minimal requirements to achieve success within their chosen country. The possibilities of convenience of develop a market introduction program for this kind of partners should be analysed trying to avoid this situation.

The Silver Partner Program would demand to theses partners a relevant commitment to deploy correctly and to support the users of SafeCity solution.

Also regional partners may ask to join. In this case, the program has been designed to support these partners not only at individual country, but at bigger levels as well, providing additional regional partner management support and rewards.

- Provide all necessary sales and marketing tools to help potential partners to best promote the SafeCity solution.
- Direct support on strategic opportunities.
- High discount rates.
- Free partner sales folder that contains all necessary information to assist theses partners in the promotion and sales of the SafeCity solution.
- Company brand/banner in the SafeCity website partner page, banner on newsletter, company web page, automatic partnership for personal memberships,
- Provide partners of literature and demo CDs in limited quantities.
- Free pre sales presentations for prospects.
- Sales programs designed to help partners in their target markets and to expand into new application areas.
- Provide up-to-date, professional marketing collateral.
- Free post sales customer training.
- Trade show lead referrals.
- Trade publication and visibility.

The Silver Partner Program would demand to theses partners a relevant commitment to deploy correctly and to support the users of SafeCity solution. Some of the responsibilities of the Silver Partners include the following:

- Silver Partner would let SafeCity show and referenced its label design program as first option in their web site, unless requested otherwise.

- To complete training with SafeCity.
- To be the primary contact for the end users for both sales and technical support assistance.
- To be active in marketing SafeCity and to inform SafeCity start-up of these efforts.
- To provide sales forecasts and feedback on projected SafeCity sales forecasts in the pipeline.
- Promote SafeCity on their web site and commercial presentations.
- Link from the partner's web site to the SafeCity web site.
- Notify of all trade shows and other marketing events where SafeCity can participate or assist.

4.2.2.3 Bronze Partners

The Bronze Partner Program would be designed for Local Product Resellers experience on public safety and emergencies market. On a first step only resellers with a related background and experience would be accepted.

The Bronze Partner Program would provide to the partners with all the online, tools, training, support and resources with minimal requirements to achieve success within their chosen country. The convenience of development of a market introduction program for this kind of partners would be analysed.

Bronze Partners also may ask to join as a Silver Partner. In this case, the program partner should support these partners not only at regional level, but bigger levels as well, providing additional management support and rewards.

SafeCity Program partner would give support to Silver Partners in the following ways:

- Provide all necessary sales and marketing tools to help Bronze partners to best promote the SafeCity solution.
- Direct support on strategic opportunities.
- Free post sales customer training.
- Free technical support, offered by trained technicians with years of expertise.
- Sales programs designed to help partners in their target markets and to expand into new application areas.
- Progressive discount rates.
- Company brand/banner in the SafeCity website partner page, company web page, automatic partnership for personal memberships,
- Provide partners of literature and demo CDs in limited quantities.
- Free pre sales presentations for prospects.
- Provide up-to-date, professional marketing collateral.

- Trade show lead referrals.
- Trade publication and visibility.
- Provide SafeCity graphics for use in proposals, presentations and web site.
- Have available up-to-date, professional marketing collateral.

The Bronze Partner Program also has some responsibilities for these kind partners. This time, they may help us in the following ways:

- Promote SafeCity solution on their web site and in their presentations.
- Notify all trade shows and other marketing events where SafeCity can participate or assist.
- Provide a company directory for sales and technical support people.
- Provide us with a forecast of sales for the month or quarter (as requested).
- Participate in a SafeCity overview and product positioning training session.

4.2.3 FIWARE Platform

FI-WARE is the Future Internet Core Platform which will be a **double player** in SafeCity operation strategy. On one hand, FI-WARE will be the main **provider** of Generic Enablers (GE) of SafeCity solution, and on the other hand, it also will act as **platform reseller**.

FI-WARE [15] will deliver a novel service infrastructure, building upon elements (called Generic Enablers) which offer reusable and commonly shared functions making it easier to develop Future Internet Applications in multiple sectors.



In this case, FI-WARE will provide SafeCity Generic Enablers necessities to build up final SafeCity solution and providing generic functionalities and capabilities coming from those GE.

FI-WARE will work via the OTT API directly as operator core network for different stakeholders. This platform will operate as resource reservations, charging correlation, network subscription information sharing and network level event notifications. All this facilities will help SafeCity in the go-to-market phase, and also to reach new clients.

Several stakeholders and reseller will be working together in said platform as is represented in the chart below:

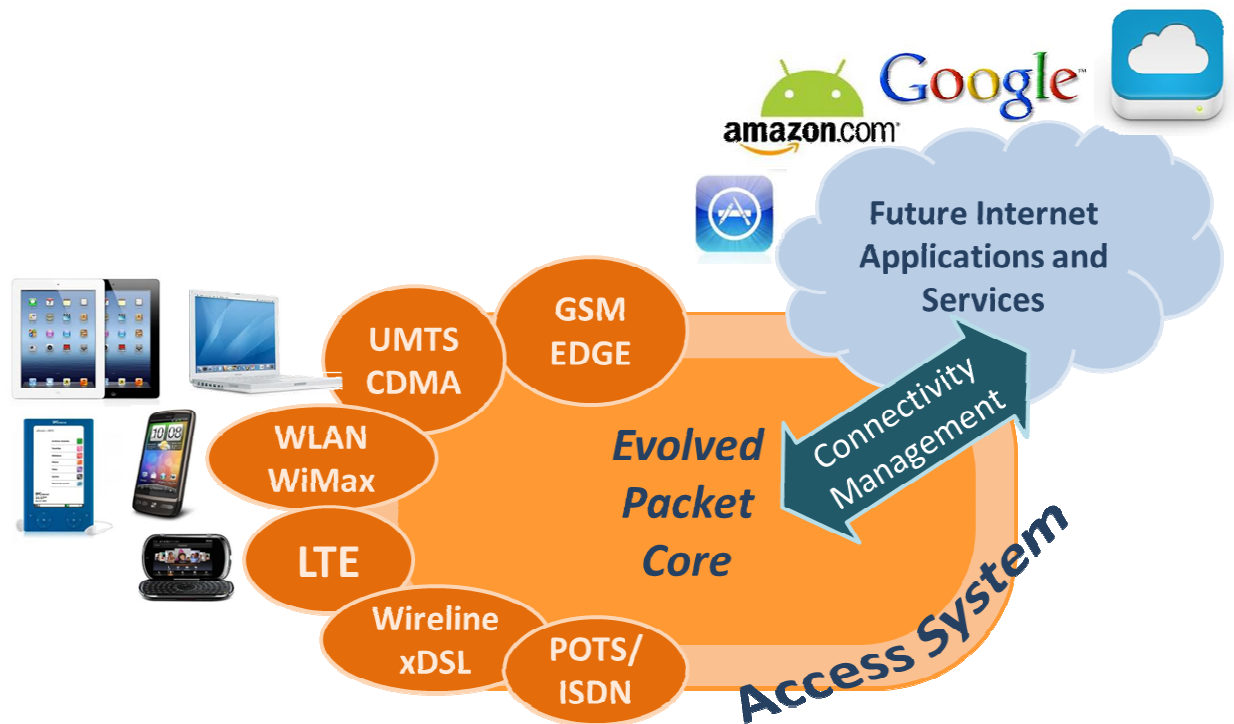


Figure 13 FIWARE platform

4.3 Sales Strategy

This section will discuss the way to approach potential clients to show them the benefits of SafeCity's product & services. In this sense, is important to make a distinction between traditional sales strategy or "pressure selling" and a new vision of the sales focused to satisfy the necessities of the customers. This change of point of view will increase the loyalty of the potential customer.

There are many companies offering various innovative technologies to defend against attacks in critical infrastructures. Taking this into account, all the decision makers responsible for this kind of infrastructures have to resolve a conflict: Ensure adequate protection at a reasonable price.

The goal of this strategy is to change the point of view of the buyers. In the security market, the critical variable decision never can be the price. It is necessary that the decision makers understand the consequences in economic terms of image, etc. Detect emergency situation or even avoid them before carrying them out, will help emergency responses to act, and will contribute to citizens safety.

The speech proposed as more appropriated to approach a potential client is to show them the comparative advantages of SafeCity solution with respect to the market in terms of two variables: **price and safety level achieved.**

In this way, customers could see that there are no other products which offer the same level of security for that price. Thus, decision-makers will realize the competitive advantage of SafeCity solution.

To achieve this goal it is imperative to have the cooperation of partners. It is therefore necessary to develop a model of cooperation between the manufacturer and the resellers as the developed in The Partner Program in which both companies have to be benefit.

It is difficult to determine a model to analyse SafeCity product's competitive advantage in terms of quality and price. This is because is not easy to measure the level of security achieved in the cities analysed.

4.3.1 Sales forecast

After finishing financial plan and forecasted figures for SafeCity solution, an interim analysis of sales will be made in order to show the progressive evolution of the business during next five years.

Taking in consideration all the previous information analysed, different scenarios of forecast sales will be prepared.

(This section will be developed in next draft version of the deliverable)

4.4 Operation Strategy

This section describes the mode of sales operations. This is the description of the condition under which sales will operate based on the processed information.

Considering a long and wide potential market and according SafeCity consortium experience, the purpose of this section is to find the right path to reach potential customers and deliver them the final solution.

According with distribution strategy developed in the section 5.2.2, sales will operate based in two channels, on one hand, sales through intermediaries and on the other hand, direct sales to end users. To centralize all operation and distributions, a first office must be set up during first year, with the intention of set up more according with the success of SafeCity start up and market needs.

In this sense and according with PEST analysis described in section 4.3, SafeCity office might be set up in specific and optimum cities in Europe. To evaluate the most effective place to establish SafeCity's office, several factors will be analysed, as aforementioned, most of them from PEST analysis. Those factors must be related to following bullets:

- Tax policy.
- Employment laws.
- Interest rate.
- Market needs.
- Competitors in the area.
- Etc.

The chart provided below describes the proposed activity to be carried out by SafeCity start up once project is ended. In summary, following illustrative graphic shows SafeCity evolution after the end of the project.

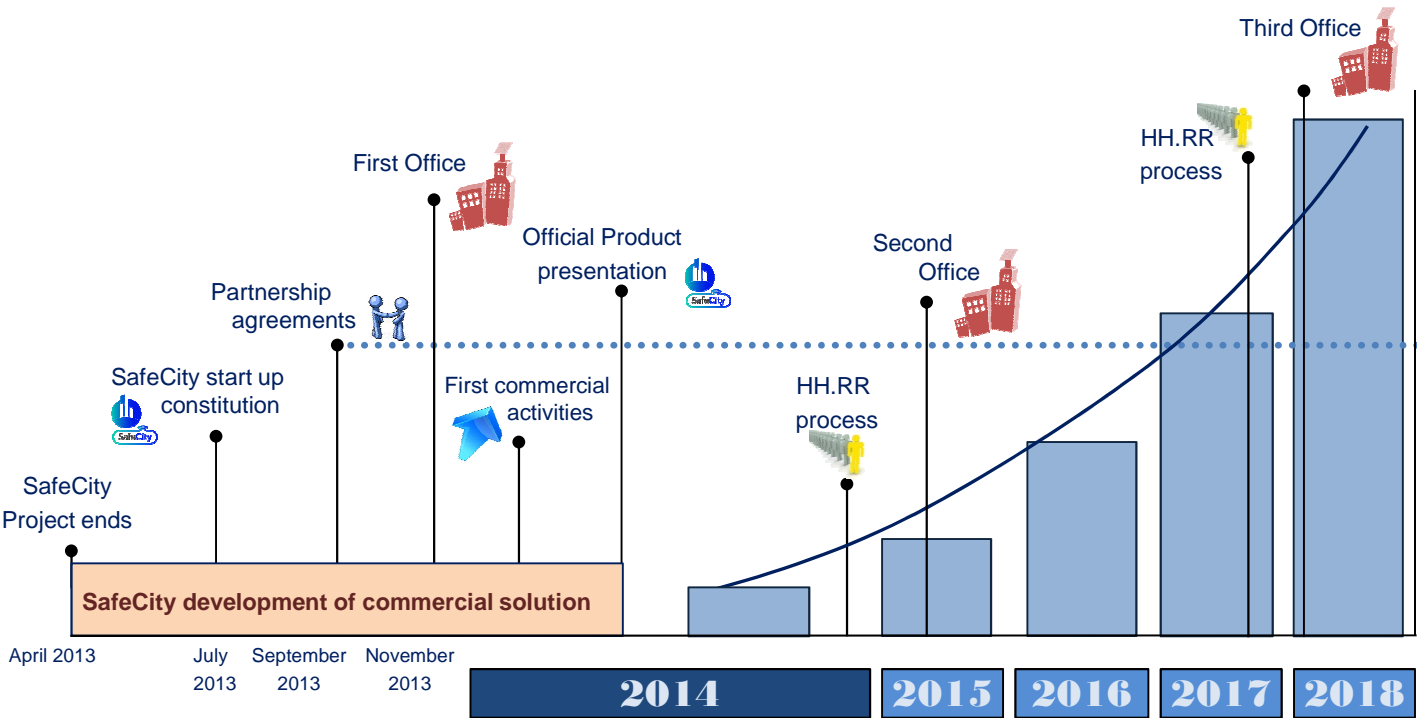


Figure 14 SafeCity Progress life cycle

4.5 Milestones

This section will describe all activities developed during next month after project. These activities will be represented in a chart similar to the one attached below:

	FY1												FY2											
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Milestones																								
Product Development																								
Meetings to build up the society																								
Set up the society																								
Build up the office																								
Commercial activity launch																								
First agreements with resellers																								
Sales launch																								

Figure 15 Illustrative milestones' table

ILLUSTRATIVE

4.6 Service Operation Plan

The operational plan is an essential component to the business plan and it shows how SafeCity would go to get the product and service out to market. That is, how the new 'start-up' will get the product out of the production stage to the doorstep of the target customer.

This section will outline how SafeCity start-up would carry out the delivery of products and services or how will keep track of inventory once start-up is running.

(This section will be developed in next draft versions of the deliverable.)

4.7 User Data Protection

SafeCity users will capture data from citizens, for this reason they will need to follow and observe European and individual (by countries) user data protection laws.

This section will analyse countries and European's laws concerning surveillance and other issues which might affect SafeCity solution.

(To be developed in next draft versions of the deliverable.)

5. CORPORATION: Company, Consumer and Circumstances

Almost in all countries the urban population has grown faster than the rural population during the second half of the twentieth century. The world population living in cities has also experienced a continuous growth since bubonic Plague, Great Famine and Hundred Years wars in 1350.

In this sense, 3% of the world's population lived in cities in 1800, and rose to 47% at the end of the twentieth century; this growth is expected to continue increasing to arise 60% of the population living in cities by 2050.

With the rapid urbanization of the world's population, human security means providing the conditions of livelihood and dignity in urban areas, living conditions are crucial for human security, since an inadequate dwelling insecurity of tenure and insufficient access to basic services all have a strong negative impact on the lives of the urban population, particularly the urban poor.

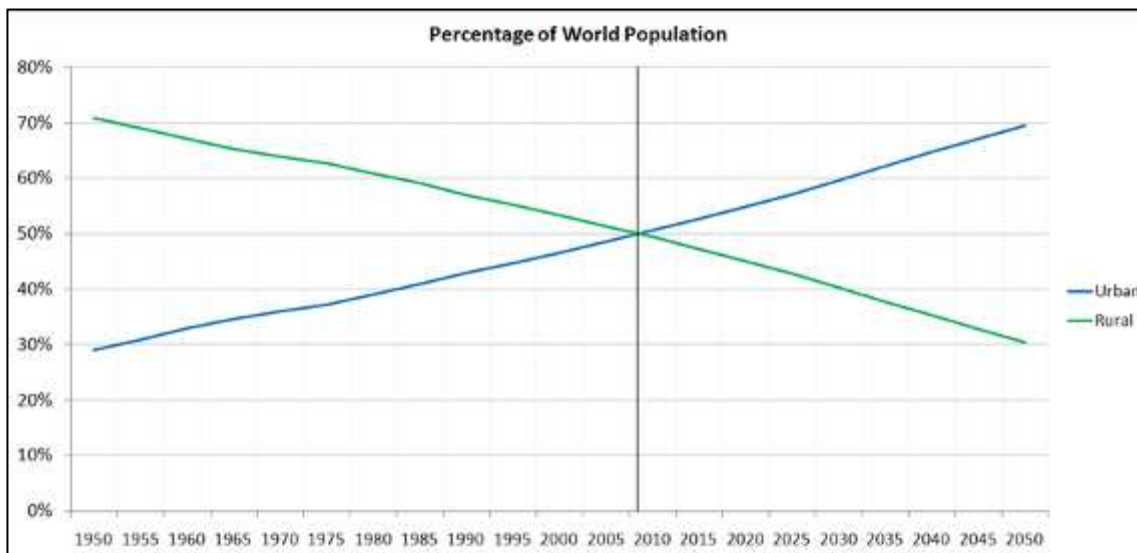


Figure 16 Chart of percentage World population living in rural or urban areas¹

The increment of inhabitants in the cities implies an increasing demand in vital services as transport, health, education or personal security. For all cities and regions competing in the global market place, safety and security are crucial factors in determining overall quality of life. Moreover, protecting citizens is the first duty of a state and also a priority for the success of businesses, communities and civil society at large. The question is how to achieve that in an urbanizing world that is becoming more interconnected, fast-paced and unpredictable every day.

Urbanization of population brings together negative aspects as social and economic exclusion leading to high rates of poverty, small labour markets and little economic growth, also, poor infrastructures with often bad and non-asphalted roads and poor public transportation systems.

In recent years, several cities, Town hall authorities, police and fire brigade managers have made a great effort in applying innovative approaches and new technologies to help reduce emergency response time and urban crime. However, there is still a need to enhance technologies already applied in the public

safety area. For example, current digital CCTV security system collect and transmit vital surveillance camera information over dedicated fibber optic lines to control rooms staffed by security professionals and equipped with digital CCTV monitors. However, visual miniaturization hour after hour yields to operators' fatigue and consequently inefficiency of these systems. In this light, only 3% of street robberies in London were solved using CCTV images, despite the fact of having 10.000 crime-fighting cameras.

New capabilities could help make urban public safety systems not just more connected and efficient, but smarter. Furthermore, instead of merely responding to crimes and emergencies after the fact, command centres should be able to analyse, anticipate and actually work to prevent them. Public safety entities should be aware of an incident even before an emergency happens, and first responders and population susceptible to get affected should be effectively alerted.

5.1 CONSUMERS

One of the most important points of this document is to define who SafeCity potential customers are and where they are. Knowing who are potential customers and their current status is necessary to effectively advertise SafeCity framework into the market.

As has been mentioned on 'product section', several SafeCity products have been identified. These product versions will be offered to specific sectors considering their needs and shortages.

SafeCity potential clients are not only reduced to City Majors or local decision makers but to specific sub-sectors.



Figure 17 Potential costumers

Following sub-sectors are listed:

Sector	Subsector	Pick of Costumers
Local and Regional Authorities	<ul style="list-style-type: none"> City Councils. Decision makers. Public Safety responsible people. 	<ul style="list-style-type: none"> Athens City Council Stockholm City Council Madrid Police Department
Transport Infrastructures	<ul style="list-style-type: none"> Airports Rail and Bus stations Metro – Undergrounds Ports 	<ul style="list-style-type: none"> Arlanda Airport EMT . Metro Madrid Charles de Gaulle airport
Educational Infrastructures	<ul style="list-style-type: none"> University campus High school campus Boarding schools 	<ul style="list-style-type: none"> University of Munich University of Tampere University Sapienza di Rome
Big events Infrastructures	<ul style="list-style-type: none"> Sport arenas Football stadiums Congress Pavilions 	<ul style="list-style-type: none"> Wembley Stadium Allianz Arena Santiago Bernabeu

Sector	Subsector	Pick of Costumers
Tourism	<ul style="list-style-type: none"> Tourist Resorts Hotels Funfair and zoos Ski stations 	<ul style="list-style-type: none"> Disneyland Paris Black Pool Pleasure Port Aventura
Heritage Buildings	<ul style="list-style-type: none"> Tourist Resorts Hotels Funfair and zoos Ski stations 	<ul style="list-style-type: none"> Westminster Abbey Notre Dame Cathedral Royal Palace of Madrid
SmartCities	<ul style="list-style-type: none"> SmartCity Projects Companies working on SmartCities 	<ul style="list-style-type: none"> SmartSantander IBM SmartCities SmartCities Europe
Others	<ul style="list-style-type: none"> Hospitals Prisons Shopping centres. Industrial areas 	<ul style="list-style-type: none"> Santander Financial City Chantilly Portes du Soleil

Figure 18 Costumers sector/subsector and example.

To enable the effective following up of European potential clients an Excel-based 'Exploitation Pipeline – Clients' tool has been created.

The following information regarding potential clients has been identified by the consortium.

- **Client:** Name of the potential client.
- **Client type:** Normalised category of the company.
- **Client Sub-type:** Specialized category of the company.
- **Web:** Link to the website of the company.
- **Location:** Country of the company.
- **Target Audience:** Average audience in the area.
- **Current status:** Description of the current relationship with the company.
- **Current status update:** Date in which the 'Current status' field was last updated.
- **Contact details:** Contact details of the contact persons at the company.

Client	Client type	Client sub-type	web	Contact	Country	Target Audience
Madrid Council	Local/regional Authority	Council	www.madrid.es	Through Web site	Spain	3.273.006
Barcelona Council	Local/regional Authority	Council	http://www.bcn.cat	Through Web site	Spain	1.619.337
Bilbao Council	Local/regional Authority	Council	www.bilbao.net	Through Web site	Spain	355.731
Valencia Council	Local/regional Authority	Council	http://www.valencia.es/	Through Web site	Spain	815.440
Santander Council	Local/regional Authority	Council	http://www.palacioexposiciones.es	palaexpo@ayto-santander.es	Spain	182.700
Pamplona Council	Local/regional Authority	Council	http://www.pamplona.net/verPag	pamplona@pamplona.es	Spain	197.488
Sevilla Council	Local/regional Authority	Council	http://www.sevilla.org/front-page	Through Web site	Spain	704.198
Paris Council	Local/regional Authority	Council	http://www.paris.fr/english	Through Web site	France	2,193,031
Bordeaux Council	Local/regional Authority	Council	http://www.bordeaux-city.com/	No info provided	France	250.082
Lille Council	Local/regional Authority	Council	http://www.mairie-lille.fr/en	Through Web site	France	225.789
Lyon Council	Local/regional Authority	Council	http://www.lyon.fr/vdl/sections/e	Through Web site	France	1.757.180
Marseille Council	Local/regional Authority	Council	http://www.marseille.fr/sitevdm	Through Web site	France	860.363
Toulouse Council	Local/regional Authority	Council	http://www.toulouse.fr	Through Web site	France	859.543
Nantes Council	Local/regional Authority	Council	http://www.nantes.fr/	Through Web site	France	282.853
Milan Council	Local/regional Authority	Council	http://www.comune.milano.it/po	No info provided	Italy	1.307.495
Rome Council	Local/regional Authority	Council	http://www.comune.roma.it/wps	No info provided	Italy	2.761.477
Bologna Council	Local/regional Authority	Council	http://www.comune.bologna.it/e	protocollogenerale@pec.comune	Italy	377.346
Pisa Council	Local/regional Authority	Council	http://www.comune.pisa.it/engli	comune.pisa@postacert.toscana.	Italy	87.440
Padua Council	Local/regional Authority	Council	http://www.padovanet.it/index.is	retecivica@padovanet.it	Italy	212.989
Venecia Council	Local/regional Authority	Council	http://www.comune.venezia.it/fl	Through Web site	Italy	271.009
Verona Council	Local/regional Authority	Council	http://portale.comune.verona.it/	urp@comune.verona.it	Italy	265.853
Porto	Local/regional Authority	Council	http://www.cm-porto.pt/	Through Web site	Portugal	221.800
Lisbon	Local/regional Authority	Council	http://www.cm-lisboa.pt/	municipe@cm-lisboa.pt	Portugal	564.657

Figure 19 Clients pipeline

5.1.1 Clients

Following the clients pipeline, specifically “Council” subsector, a population map was created, where countries are divided according their population. Those countries were classified in 4 levels, understanding the Level 1 as these countries which have cities with more population; therefore, these city councils will form SafeCity’s target clients. This map will be taken into account for estimate potential market and areas.

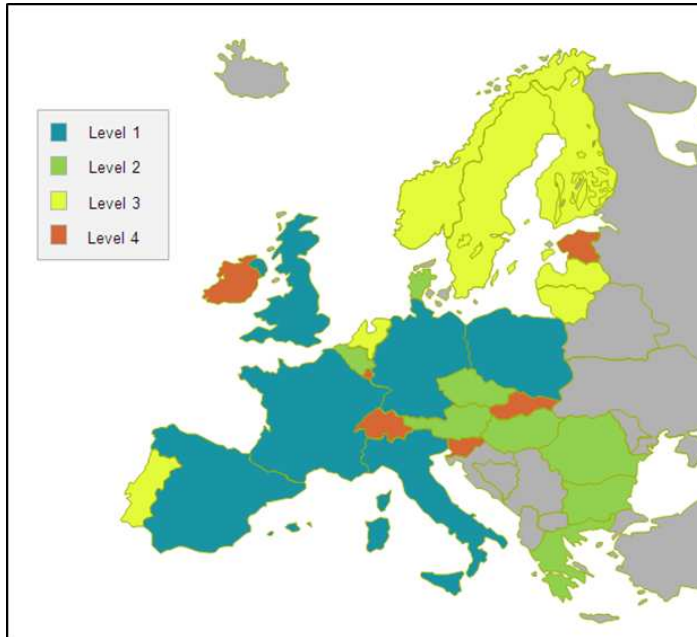


Figure 21 Population map



Figure 20 European Smart Cities Ranking Map

European Smart Cities are one of the most important subsectors within the potential market for SafeCity; those are shown in the map below and also detailed in the pipeline attached in clients’ section:

Those two sectors (Councils and SmartCities) are considered the most important market to work with, for this reason, will be analysed in deepest detail.

In order to make easier decision-making for SafeCity’s clients, suited recommendations were made. These references are related to different product versions of SafeCity solution and their adaptability to sector or subsector of SafeCity target market.

Table 2 Clients-Product versions relationship

SECTOR	SUITED PRODUCT VERSION	ARGUMENTS OF USE
Local and regional Authorities	<i>Safe-City Platform</i>	All capabilities contained in this version of the product will be needed in the context of a city.
Transport Infrastructure	<i>Safe-Awareness</i>	Airports and transport stations need to be aware not only about citizens but also about traffic and the environment.
Educational Infrastructure	<i>Safe-Awareness</i>	Due to the influx of people around this kind of infrastructures, other aspects apart from citizens and their behaviour need to be controlled.
Sport Infrastructure	<i>Safe-Citizen</i>	Citizens are the main issue to explore a track in this kind of infrastructures.
Tourism	<i>Safe-Citizen</i>	Citizens are the main issue to explore a track in this kind of infrastructures.
Heritage Buildings	<i>Safe-Citizen</i>	Citizens are the main issue to explore a track in this kind of infrastructures.
SmartCities	<i>Safe-City Platform</i>	In a SmartCity context a global and completed solution is needed.
Others	<i>Safe-Citizen or Safe-Awareness</i>	Need to be further analysed in accordance with the subsector.

5.2 COMPETITORS

Competitors are those organizations who run a business or just are starting out on your own and are key players which can affect or influence SafeCity's technological and business development. Thus, it's necessary to know which direct, indirect and complementary SafeCity's competitors are already in the market.

The present SafeCity's competitors' report is an extent document of relevant companies related to public safety operating in the worldwide, focusing the analysis in European area, both, with the whole solution and split by enabler and technologies, who might affect to SafeCity implementation.

In this sense a direct and indirect competitors will be listed and detailed, in order to find market's needs and consequently detect a successful niche on the market to set SafeCity solution:

Direct competitors are those who can be classify by:

1. Offering the same products and/or services as you are offering to clients and/or customers.

2. Having the same targeted field of clients, customers and/or demographics.
3. Using the same tactics in advertising or bringing news/information of products/services to targeted demographics.

Indirect Competitor: A product that is in a different category altogether but which is seen as an alternative purchase choice; for example, coffee and mineral water are indirect competitors. They can be classified as “wanting to have a share of the pie, but not the whole one”.

SAFECITY COMPETITORS

A preliminary identification of the primary competitors in the market has been made; products focus on alerting citizens in crisis situation linked in a command centre. This research has been mainly focused on public safety systems and its components, showing in this sense a global vision about public safety market.

For the competitors' analysis, worldwide market has been taken into account, technological companies working in the public safety sphere. Thus, the following pipeline resulted:

Competitor	Contact	Situation Insig	Ad-hoc Networ	Intelligent sens	Real-time pos	Data Fusi	Information Secur	Decision Supp	Road and enviro sens	Interest	Level
CISCO OPEN PLATFORM FOR SAFETY AND SECURE	0034 900987190									High	★★★
SENSEN - SenForce	info@senforce.com									Medium	★★★
AMATRA	info@amatra.com									Medium	★★★
Smart Multi-Grid™ Wireless Mesh Networks	SE_2@smackdown.com									Medium	★★★
Alvarion - Muni-Wireless and the Safe City	calor.ic@alvarion.com										
Video Surveillance	link to web									High	★★★
Network Management	link to web									Low	★★★
IMCL - Public Safety Networks & Emergency Services	information@imcl.net	Pending to contact									
True Sentry - TrueSistem	info@true-sentry.com									High	★★★
IBM - Smarter Planet Public Safety	link to web									High	★★★
Microsoft platform for public safety	msps@microsoft.com										
Intelligence Systems	msps@microsoft.com									High	★★★
Crisis management	msps@microsoft.com									Medium	★★★
FREQUENTIS SAFETY FRAMEWORK	link to web										
PROTECT™ CAD/IGIS	link to web									Medium	★★★
PROTECT™ RMS with AVB	link to web									Medium	★★★
PROTECT™ MDC with AVB	link to web									High	★★★
Modularis - Mobile Video Platform	calor@modularis.com									Medium	★★★
Northrop Grumman	info@northrop.com										
Command Center Integration	info@northrop.com									Low	★★★
CommandPoint™ Application Suite	info@northrop.com									High	★★★
Secure Wireless Communications	info@northrop.com									Low	★★★
Mobile vision											
HP - Public Safety Solution											
Acela Technologies											
RADWIN - Public Safety broadband app.	calor@radwin.com									High	★★★

The pipeline includes:

Competitor	Contact
CISCO OPEN PLATFORM FOR SAFETY AND SECURE	0034 900987190
SENSEN - SenForce	info@senforce.com
AMATRA	info@amatra.com
Smart Multi-Grid™ Wireless Mesh Networks	SE_2@smackdown.com
Alvarion - Muni-Wireless and the Safe City	calor.ic@alvarion.com
Video Surveillance	link to web
Network Management	link to web

Competitor name and contact (Both include hyperlink to website or e-mail)

Applications included in the competitors' solution offered. Applications included are shown with a coloured cell.

Situation Insig	Ad-hoc Networ	Intelligent sens	Real-time pos	Data Fusi

With the intention of weight the competitors' importance to SafeCity, competitors' research and analysis has been based on their application and their balanced value. In this sense, the first group: ad-hoc network, real-position, data fusion and decision support, were highly weighted. And the second group: Situation Insight, Intelligent sensors,

Interest	Level
High	★★★
Medium	★★★
Medium	★★★
Medium	★★★

Information Security and Road and environment sensors were lowly weighted. Thus, competitors were catalogued with one; two or three stars, according with the applications included, as in shown in the table.

5.2.1 Competitors as a whole

- **CISCO OPEN PLATFORM³**: architecture framework for building solutions to prevent, prepare for, respond to, and recover from incidents. The framework comprises six building blocks: Command and Control, Mission-Critical Network, Incident Collaboration, Sensing and Actuation, Mobile Force, and Citizen-Authority Interaction.

Each architecture building block contains a hierarchy of functional building blocks. But to sum it up, the focus is limited to the following three architecture building blocks of the COPSS architecture:

- Command and Control
- Sensing and Actuation
- Citizen-Authority Interaction

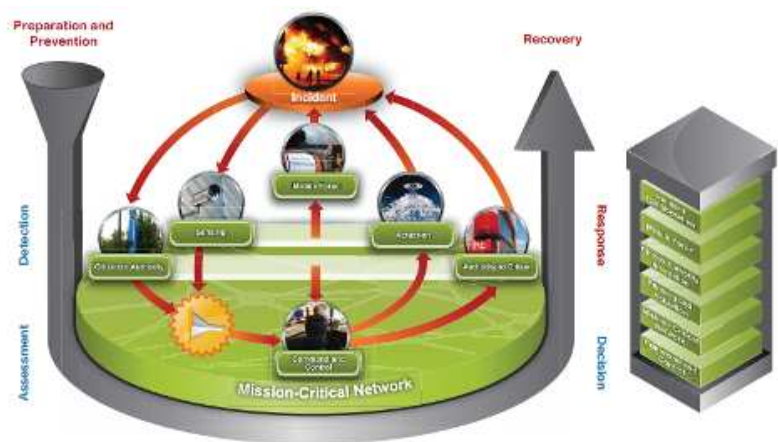


Figure 22 CISCO Open Platform Model

Command and Control: provides the emergency management team with up-to-date situational awareness, actionable intelligence, and decision support tools. Command and control contains the following functional building blocks:

- Common Operational Picture (COP)
- Unified Management
- Simulation and Investigation

Sensing and Actuation

The *Sensing and Actuation* building block streams information from the incident scene to the operations centre and provides the means for swift and automated remote action. It contains the following functional building blocks:

- Quantitative sensors
- Qualitative sensors
- Human identification based on physical characteristics that are part of a system (biometrics, as opposed to video analytics, where no specific identification is made).
- Object identification, possibly including RFID.
- Real-time video analytics.
- Sensor correlation and base lining.
- Actuators.
- Legacy integration

Citizen-Authority Interaction

The *Citizen-Authority Interaction* building block provides two-way communications capabilities. Service codes, also known as N11 codes, are used to provide three-digit dialing access to special emergency support services. Examples of these numbers include 112, 911, or 999. Conversely, authorities can alert a specific group of individuals about immediate danger, such as a fire, bomb, or biological attack. This capability is sometimes called *Reverse 911*.

The Citizen-Authority Interaction contains the following functional building blocks:

- Authority-to-Citizen - Public alert notification and information systems
- Citizen-to-Authority - Public Safety Answering Point (PSAP)

• SMART SANTANDER¹⁰

SmartSantander is a FP7 project still in course which proposes a city-scale experimental research facility in support of typical applications and services for a smart city. This experimental facility is sufficiently large, open and flexible to enable horizontal and vertical federation with other experimental facilities and stimulates development of new applications by users of various types including experimental advanced research on IoT (Internet of Things) technologies and realistic assessment of users' acceptability tests.

The facility comprises more than 20,000 sensors and will be based on a real life IoT deployment in an urban setting. The core of the facility is located in the city of Santander, the capital of the region of Cantabria situated on the north coast of Spain, and its surroundings.

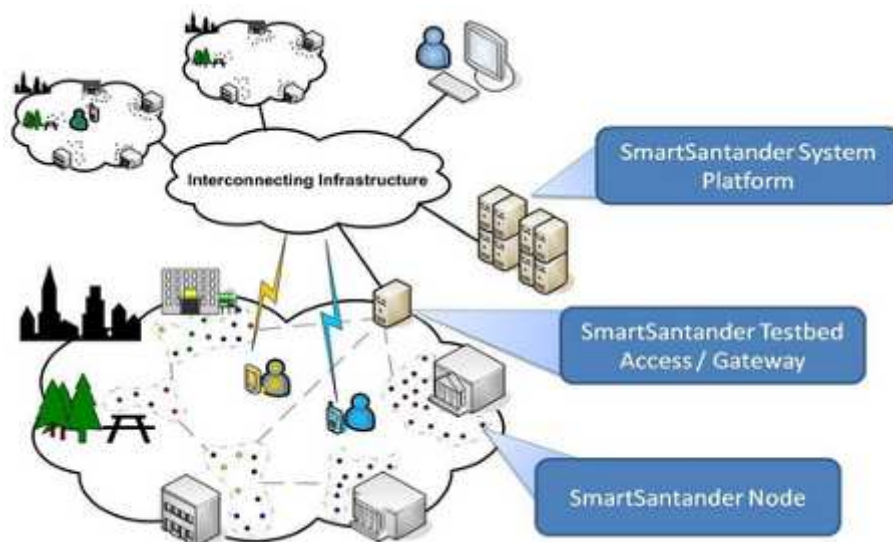


Figure 23 SmartSantander Model Centre

SmartSantander is a platform mainly focused in Smart cities experimentation, and in its sphere does not have a specific propose about safe cities, which enables SafeCity to meet all demand associated to safety and security in Smart Cities, dealing in a European field.

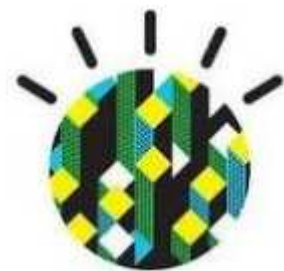
• IBM – SMARTER CITY

IBM defines a Smart City in terms of the improvements in quality of life and economic well-being that are achieved through applying Information Technologies to planning, designing, building, and operation of city infrastructure. This group will discuss Smart City technology architectures and development issues

IBM Intelligent Operations Centre for Smarter Cities provides a unified view of all city agencies so emergency bodies can predict events and quickly respond.

IBM Intelligent Operations Centre monitors and manages city services. It provides operational insight into daily city operations through centralized intelligence.

- Enable the real-time communication and collaboration needed to coordinate actions and resolve issues in an efficient manner.
- Significantly reduce the impact of crisis situations.
- Reduce the overall cost of maintenance and repairs.
- Minimize disruptions to public services and activities for citizens living and traveling in the city.
- Preserve critical services and resources and minimize life-threatening issues.



- Allow your city to recognize events as they arise. Now you can put responses in place to manage impacts back to a steady state as quickly as possible.

IBM also includes a public safety section dealing with first responders and citizens safety, prevention crisis situation and improving resources for rescue.

In this sense, IBM and the City of Madrid teamed up to create an innovative new response centre that coordinates the resources and efforts of the first responders. A 90-foot wall of screens displays traffic video from surveillance cameras, maps with GPS data, and the status and location of personnel. The Center was created in response to the aftermath of the terrorist train bombings on March 11, 2004, which triggered a swift, massive, but uncoordinated medical response. Radio communication were on incompatible frequencies and communication at the scene was limited to personal contact or telephone. Today the Centre coordinates a fast, integrated response from the right team to a wide variety of emergencies.



Likewise, IBM Intelligence Operation Centre may compete with SafeCity operating in different geographical areas. IBM even if working in City of Madrid, is mainly focused in North American Market, on the contrary, SafeCity will deal in European field.

• MESH DYNAMICS¹¹

MeshDynamics unique Smart Multi-Grid™ wireless network technology combines Smart Grid data streams with a wide variety of other applications: video surveillance, public safety communications, traffic signal controls, even public access Wi-Fi networks to bridge the "digital divide", among others.

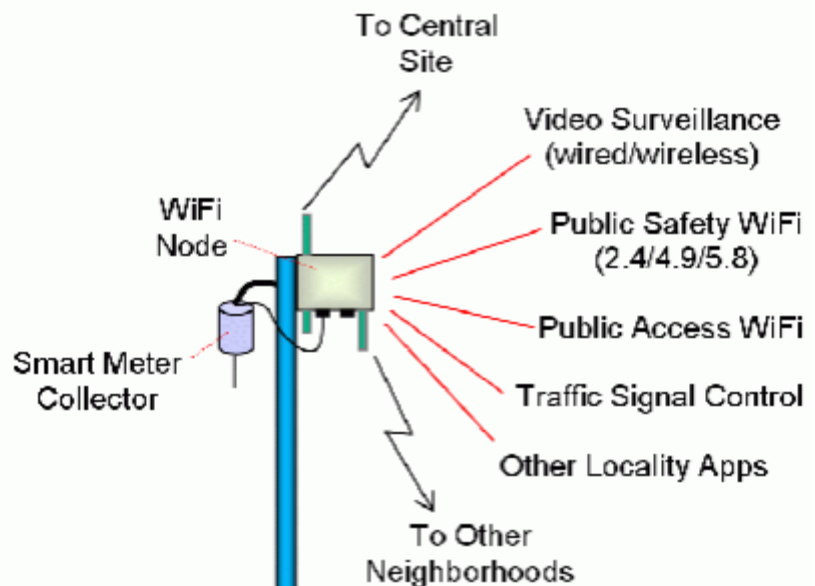


Figure 24 MeshDynamic technology

In the emerging Smart Multi-Grid wireless network model, the data stream from one or more Collectors is linked wirelessly (or via cable) to a WiFi wireless mesh node. The wireless mesh

nodes then provide the data link for the Smart Meter Controllers and provide the infrastructure for a wide variety of other applications.

- **AMATRA**¹²

Amatra SmartSource™ is a **Smart Communications Platform** built on open architecture and standards. **Amatra SmartSource™** provides an integrated environment for planning, sending, tracking and analysing communications to tens of thousands of users using multiple communication channels.

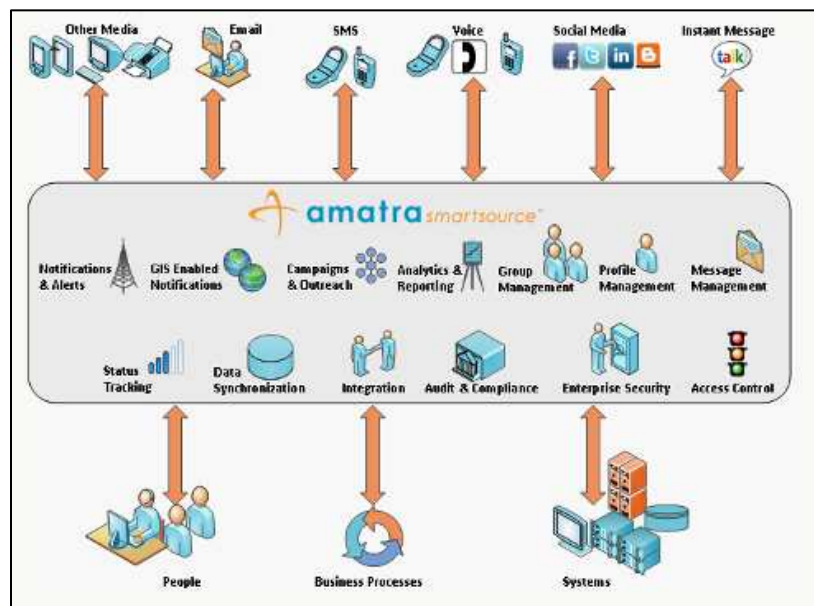


Figure 25 amatra smart source

- **SenSen Network**¹³

SenForce is a complete law enforcement solution for councils, police and local government and councils endowed with the responsibility of managing street parking spaces and making the streets safer. It is world's most advanced, autonomously driven intelligent robot that automatically invokes the location based orientation of cameras and infringement detection and enforcement schemes.

Please note that a further research and analysis of the competitor of the SafeCity applications will be provided in next draft and final version of this deliverable. Competitive edge and price comparison will be also detailed.

5.3 CIRCUMSTANCES

The following analysis represents a strategic starting point for the SafeCity solution commercialization. The information emerged from these incoming sections will affect significantly on subsequent sections of such as the Marketing & Sales strategy or Operation Strategy.

5.3.1 European Security Framework

In February 2010 the EU Internal Security Strategy: "Towards a European Security Model" set out the challenges, principles and guidelines for dealing with security issues within the EU. On this document were identified main-related risks and threats, such as: terrorism, serious and organised crime, drug trafficking, cyber-crime, trafficking in human beings, sexual exploitation of minors and child pornography, economic crime and corruption, trafficking in arms and cross-border crime. These Threats identified, update their strategies, resources and methodologies, extremely quickly to changes in science and technology, in their attempt to exploit illegally and undermine the values and prosperity of our open societies.

In May 2010 was published the Stockholm Programme that provides a roadmap for European Union work in the area of justice, freedom and security for the period 2010-14. This Programme sets out the European Union's (EU) priorities for the area of justice, freedom and security for the period 2010-14. Building on the achievements of its predecessors the Tampere and Hague programmes, it aims to meet future challenges and further strengthen the area of justice, freedom and security with actions focusing on the interests and needs of citizens.

In the security area, the Stockholm Programme recommends the development of an internal security strategy for the EU, in order to improve the protection of citizens and the fight against organised crime and terrorism. Within the spirit of solidarity, the strategy will aim to enhance police and judicial cooperation in criminal matters, as well as cooperation in border management, civil protection and disaster management. The internal security strategy will consist of a pro-active, horizontal and cross-cutting approach with clearly divided tasks for the EU and its countries. It will focus on the fight against the risks and threats identified by the EU Internal Security Strategy: "Towards a European Security Model" mentioned above.

To implement this Strategy, the Commission adopted the Communication "EU Internal Security Strategy in Action" in November 2010, where proposes 41 actions targeting the most urgent security challenges that Europe is facing.

The EU Internal Security Strategy in Action identifies five strategic objectives and outlines a series of actions for each objective, such as:

1. Disrupt international criminal networks threatening our societies

Action 1: Identify and dismantle criminal networks

- Proposal on the use of EU Passenger Name Records (PNR) (2011)
- Revision of the EU Anti-Money Laundering Legislation (2013)

Action 2: Protect the economy against criminal infiltration

- Proposal on monitoring and assisting EU States in the fight against corruption (2011).

Action 3: Confiscate criminal assets

- Proposals for the efficient seizure and confiscation of criminal profits and assets (2011).
- Establishment of Asset Recovery Offices (2014)

2. Prevent terrorism and address radicalisation and recruitment

Action 1: Empower communities to prevent radicalisation and recruitment

- Establishment of an EU radicalisation-awareness network and measures to support civil society in exposing, translating and challenging violent extremist propaganda (2011).
- Handbook of actions and experience to support Member States' efforts (2013)

Action 2: Cut off terrorists' access to funding and materials and follow their transactions

- Policy for EU extraction and analysis of financial messaging data - EU TFS (2011).

Action 3: Protect transport

- Strengthening of EU transport security policy (2011).

3. Raise levels of security for citizens and businesses in cyberspace

Action 1: Build capacity in law enforcement and the judiciary

- Establishment of an EU cybercrime centre (2013).

Action 2: Work with industry to empower and protect citizens

- Real-time pool of shared resources and best practices among Member States and industry (2013)

Action 3: Improve capability for dealing with cyber-attacks

- Establishment of a network of Computer Emergency Response Teams (2012).
- Establishment of a European information sharing and alert system - EISAS (2013).

4. Strengthen security through border management

Action 1: Exploit the full potential of EUROSUR

- Establishment of a European external border surveillance system - EUROSUR (2011).

Action 2: Enhancing the contribution of *Frontex* at the external borders

- Joint reports on human trafficking, human smuggling and smuggling of illicit goods to form the basis of joint operations (2011).

Action 3: Common risk management for movement of goods across external borders

- Development of risk analyses to identify 'hot spots' at the external borders (2011).

Action 4: Improve interagency cooperation at national level

- The development of minimum standards and best practices for interagency cooperation (2014).

5. Increase Europe's resilience towards crises and disasters

Action 1: Make full use of solidarity clause

- Proposal on the implementation of the solidarity clause (2011).

Action 2: An all-hazards approach to threat and risk assessment

- Establishment of a risk management policy that links threat and risk assessments to decision making (2014).

Action 4: Develop a European Emergency Response Capacity for tackling disasters

- Proposal for a European Emergency Response Capacity (2011).

The implementation of the EU Internal Security Strategy counts with funds that will be made available within the current ceilings of the multiannual financial framework. For the period post-2013, internal security funding will be examined in the context of a Commission-wide debate on all proposals to be made for the period. As part of that debate, the Commission will consider the feasibility of setting up an Internal Security Fund.

5.3.2 PEST analysis

A scan of the external environment in which SafeCity will operate can be expressed in terms of the following factors:

- Political
- Economical
- Social
- Technological

PEST analysis assesses a market, from the standpoint of a particular proposition or a business. It is very important that SafeCity considers its environment before beginning a business strategy development and before any assessment or decision-making. In fact, environmental analysis should be continuous and feed all aspects of planning.

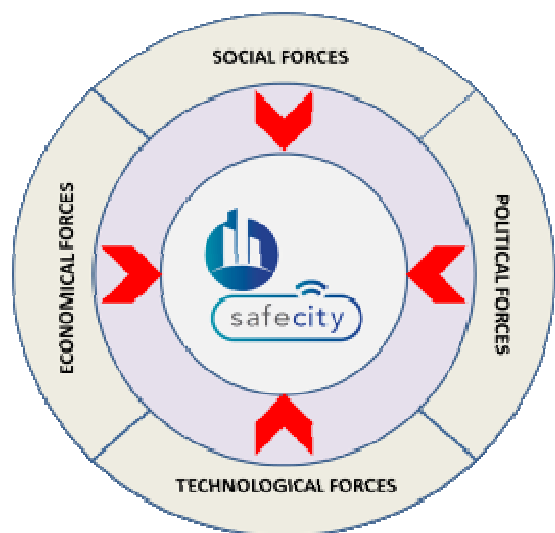


Figure 26 SafeCity PEST's Chart

SafeCity environment has been analysed taking into consideration the four aforementioned factors. To analysis SafeCity' factors, European environment has been considered.

5.3.2.1 Political Force

Political factor includes government regulations and legal issues and define both formal and informal rules under which SafeCity start-up must operate.

Political force section describes how stable is the political environment in Europe, in terms of regulation, tax variations, aspects as trade barriers or agreements with foreign countries.

- **Tax policy.**

The economic and financial crisis that started in 2008 has affected all EU. In 2009, the peak year of the crisis, all Member States saw their GDP shrink; EU-27 GDP was contracted by 4.2 % during crisis period. However, the depth of the slump differed considerably among Member States.

GDP has a strong relationship with taxation, thus, VAT was also affected in crisis times. VAT is an important source of revenues, thus, due to the GDP shrink, VAT system was needy of reform and European Union was the first region to introduce said restructuring.

The average standard rate of VAT rose in Europe from a little over 19% in 2002 to more than 20% in 2011. This means that VAT is on the up as a percentage of total taxation. For the European countries within the OECD, VAT formed something over 17% of total tax income in 1985. In 2006, that had already gone up to 20.1%. Furthermore in the Europe of 27 Member States, VAT represents an average of 7% of GDP.

Stagnant since 2002, VAT standard rates have often changed from 2008 onwards, in the vast majority of cases upwards, although most of them did not move, nor up neither down. The average has strongly risen as is represented on the map below:

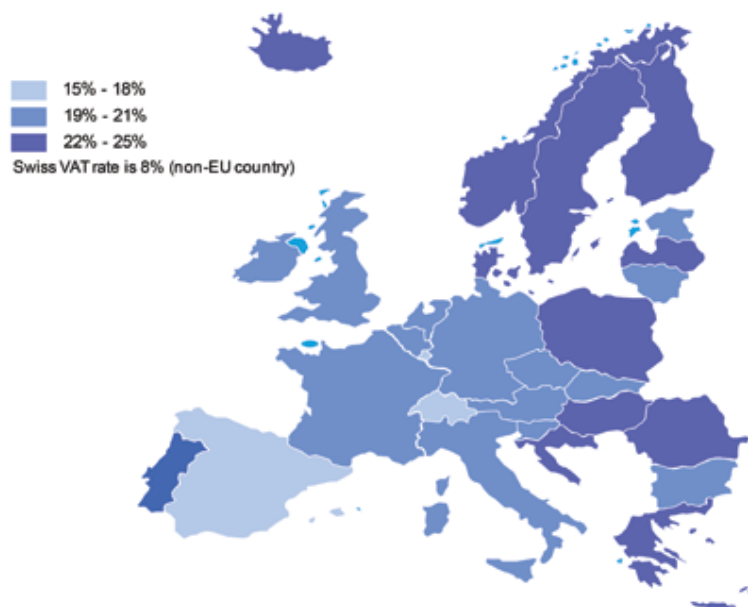


Figure 27 Europe map VAT

VAT increase will affect decision making before starting any SafeCity product commercial activity or setting up further strategies. A country with a strong taxation system might damage inputs coming from core business. For this reason, this section will be powerfully analysed and considered in future decisions.

- **Employment laws.**

European Union employment's law protects the rights of workers across the EU.

It covers areas such as:

- Conditions of employment - e.g. working time, part-time and fixed-term work, posting of workers, discrimination, equal pay and the protection of pregnant workers.
- Informing and consulting workers, in collective redundancy and business transfer situations.
- Protection of personal data.

It is important to note that, although the laws apply to the whole of the EU, they often operate differently between member states owing to differences in the way the laws were implemented at the national level. This means that when SafeCity is conformed as a business and need to employ someone in the EU, must:

- Provide equal access to employment.
- Treat workers fairly and equally, e.g. when offering training opportunities or access to benefits
- Make sure that disabled people can work comfortably.

- **Environmental regulations.**

In the past 30 years the EU has adopted a substantial and diverse range of environmental measures aimed at improving the quality of the environment for European citizens and providing them with a high quality of life. European environment can only be well protected if Member States properly implement the legislation they have signed up to.

Water, food, oxygen, energy and much more, the environment meets so many of our vital needs. Since the early 1970s Europe has been firmly committed to the environment: protection of air and water quality, conservation of resources and protection of biodiversity, waste management and control of activities which have an adverse environmental impact are just some of the areas in which the EU is active, at both Member State level and internationally. Whether through corrective measures relating to specific environmental problems or cross-cutting measures integrated within other policy areas, European environment policy, based on Article 174 of the Treaty establishing the European Community, aims to ensure the sustainable development of the European model of society.

Whatever the means used, the overall objective of the Commission is to ensure that EU environmental legislation is implemented in full, correctly and on time. This is important because legislation which is not or incorrectly implemented will not achieve the desired effect on the environment.

- **Trade restrictions and tariffs.**

In European context, market barriers do not exist for communitarian countries. The European Union has always operated as more than a free trade area with its predecessor, the European Economic Community (EEC) being founded as a customs union. The EU shares its single market with three EFTA members via the European Economic Area and has a free trade agreement of some level with most other European countries.

CEFTA has expanded into southern Europe with members from the Western Balkans and Moldova. All

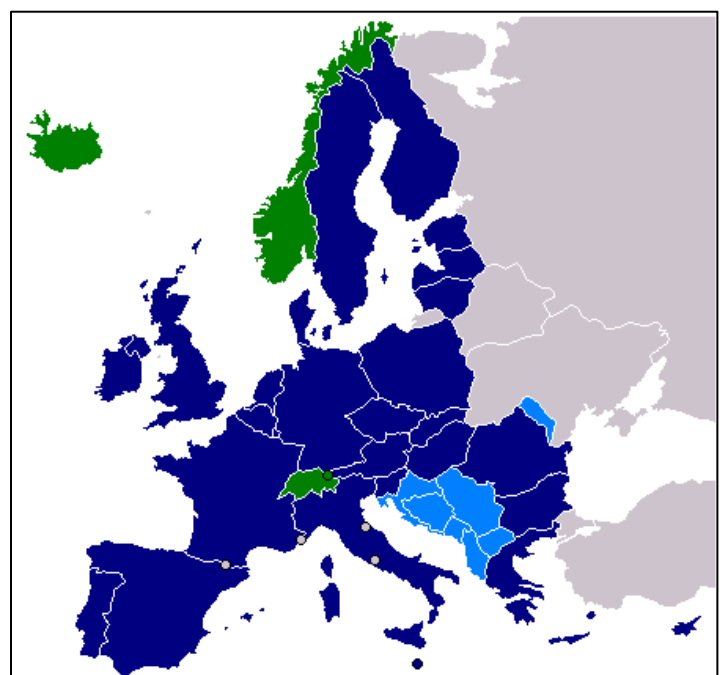


Figure 28 Free Trade Areas in Europe

of the new CEFTA countries, except for Moldova, are prospective members of the EU and hence EFTA is the only FTA with a long term future, as there are no immediate plans for these countries to change their present status. However, CEFTA may gain new members in the form of countries to the east of the present EU.

Since 1995 the Trade Barriers Regulation (TBR) has also given European businesses a tool for tackling trade barriers in export markets. Businesses can use the TBR to ask the European Commission to investigate restrictions on their sales abroad, discriminatory treatment in foreign markets, difficulty obtaining patents or licenses or any other form of unfair barrier to their export of goods or services.

Free trade areas in Europe facilitate the expansion of SafeCity among European countries as well as the success of the business in a wide market without almost any barrier.

5.3.2.2 Economical Force

Economic factors affect the purchasing power of potential customers and the SafeCity Company's cost of capital.

- **Economic growth.**

The European Commission raised its economic growth forecast slightly for the Eurozone and the EU in 2011, but warned inflation would also exceed the previous forecast.

According to the European Commission forecast released on 11 May 2012, real GDP is projected to stagnate this year in the EU and to contract slightly in the euro area. However, strong policy actions and major advancements in the EU institutional framework have brought about an easing of financial market tensions in the beginning of 2012. Together with an expected acceleration in global growth, a gradual recovery is forecast to start for this year and gather speed in 2013.

All in all, GDP is projected to stagnate in the EU and contract by 0.3% in the euro area this year, and to grow by 1.3% in the EU and by 1.0% in the euro area in 2013.

- **Interest rates.**

The three key interest rates for the euro area are:

- The interest rate on the main refinancing operations (MRO), which provide the bulk of liquidity to the banking system.
- The rate on the deposit facility, which banks may use to make overnight deposits with the Eurosystem.
- The rate on the marginal lending facility, which offers overnight credit to banks from the Eurosystem.

The interest rates do provide the basis for the price and interest rates of all kinds of financial products like interest rate swaps, interest rate futures, saving accounts and mortgages. The most important reference rates in the European money market are the Euribor rates.

The Euro Interbank Offered Rate (**Euribor**) is an interest rate based on the average interest rates at which panels of 57 European banks lend money to one another.

From 2009 to nowadays Euribor rates has dropped substantially, standing around 5 points in 2008, dropping to nearly zero during 2009 due to crisis period. Though Euribor rate seems to be rising since middle of 2010, reaching being close to 1.5 during 2011 but start falling down again reaching values around 0.7 in 2012.

Euribor evolution needs to be continuously rechecked in order to make decisions about market, operation strategy and financial actions for SafeCity.

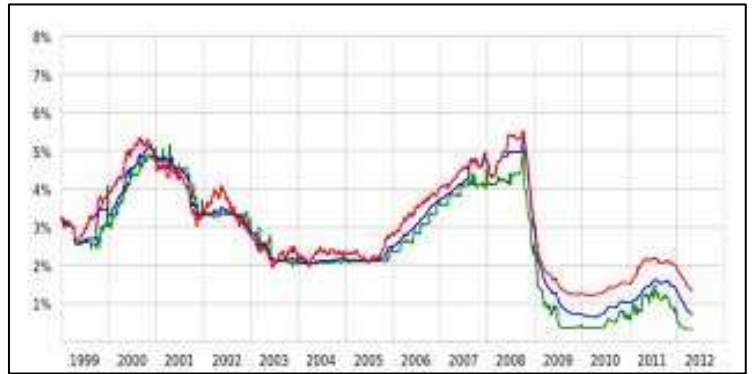


Figure 29 Euribor progress from 1999 to 2011

- **Exchanges rates.**

One of the positive factors of the European Union related to exchanges rate is it the European Economic Area (EEA) which was founded with an agreement between the member states of the European Free Trade Association (EFTA) and the European Community, later the European Union (EU). Specifically, it allows EEA countries to participate in the EU's Internal Market.

In exchange, they are obliged to adopt all EU legislation related to the single market, except laws on agriculture and fisheries.

Due to this agreement, most of the EEA countries adopt to use a European common currency, EURO, used by the countries belonging to Eurozone (conformed by 17 of the 27 members of the EU).

On the map provided, Europe situation about currency is represented.

The fact that most of the European countries deal with the same currency simplifies the exchange rate factor which could have been a barrier to set up SafeCity business.

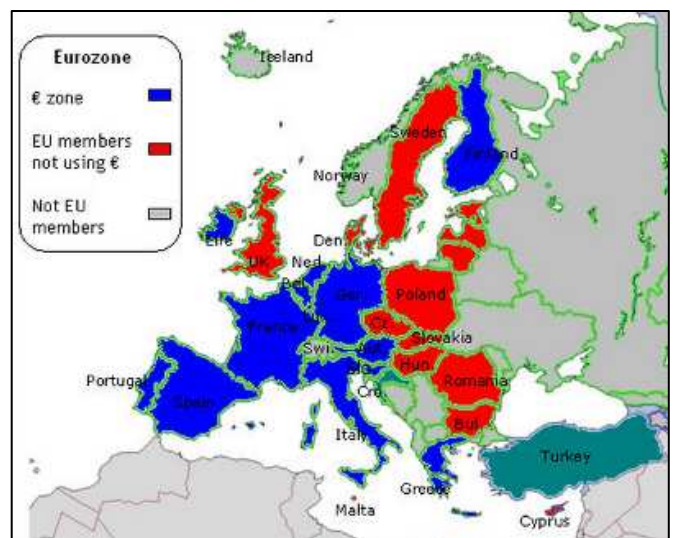


Figure 30 Eurozone and € users

- **Inflation rate.**

Due to the surge in energy and commodity prices, inflation was revised up to 2.2 per cent in the Eurozone, from the previous 1.8 per cent. Inflation is estimated to slow gradually and to fall below 2% in 2013. Energy prices and indirect taxes have been the main drivers of consumer price inflation in recent quarters.

Nevertheless inflation rate differs between

European countries from -1.6 to 8.6 according with the following map.

	-1.6 - 1.1	6
	1.1 - 1.7	8
	1.7 - 2.1	4
	2.1 - 2.7	6
	2.7 - 8.6	8
	Data not available	2

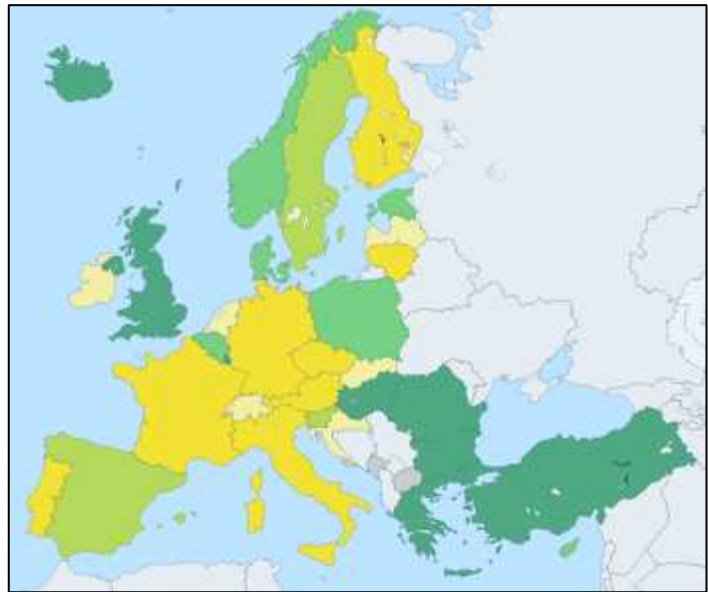


Figure 31 Annual average inflation rate

5.3.2.3 Social Force

Social factor include the demographic and cultural aspects of the external environment. These factors affect customer needs and the size of potential markets.

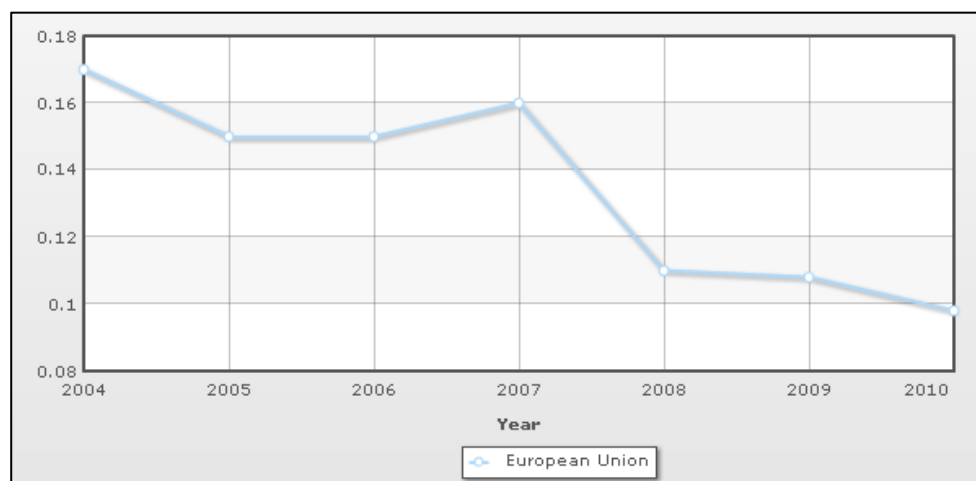
- **Population growth rate.**

One of the main problems within the public safety sphere is the population growth in urban areas, thus, this section will clarify the core deal of SafeCity in Europe.

The average annual per cent change in the population, resulting from a surplus (or deficit) of births over deaths and the balance of migrants entering and leaving a country.

The growth rate is a factor in determining how great a burden would be imposed on a country by the changing needs of its people for infrastructure (e.g., schools, hospitals, housing, roads), resources (e.g., food, water, electricity), and jobs. Rapid population growth can be seen as threatening by neighbouring countries. From SafeCity, most important factor of growth rate is in the area of urban population growth.

2010 population growth in European Union was 0.098 %, following a slow-moving but continuous trend. During last year, this growth has been reduced due to crisis effects, but still has a positive trend along



years, as is shown can see in the chart below.

- **Age distribution.**

Eurostat's 2008 based national population projections (EUROPOP2008) show that population ageing is likely to affect all EU Member States. The convergence scenario of these population projections is one of several possible population change scenarios that aim to provide information about the likely future size and structure of the population.

According to this scenario, the EU's population will be slightly higher in 2060, while the age structure of the population will be much older than it is now; population is projected to increase by almost 5 % up to 2035, and thereafter to gradually decline by nearly 3 % through to 2060. During the same period (2008 to 2060), the median age of the EU-27 (excluding French overseas departments) population is projected to rise to 47.9 years. The population of working age is expected to decline steadily, while elderly people will likely account for an increasing share of the population, those aged 65 years or over will account for more than 30.0 % of the EU's population by 2060 (17.2 % in 2009).

Another aspect of population ageing is the progressive ageing of the older population itself, as the relative importance of the oldest people is growing at a faster pace than any other age segment of the EU's population. The share of those aged 80 years or above in the EU-27's (excluding French overseas departments) population is projected to almost triple by 2060.

As a result of the population movement between age groups, the EU's old age dependency ratio is projected to more than double from 25.6 % in 2009 to 53.5 % by 2060. The total age dependency ratio (calculated as the ratio of dependent people, young and old, over the population aged 15 to 64 years old) is projected to rise from 48.9 % in 2009 to 78.5 % by 2060.

Current European age structure:

- **0-14 years:** 15.44% (male 38,992,677/female 36,940,450)
- **15-64 years:** 67.23% (male 166,412,403/female 164,295,636)
- **65 years and over:** 17.33% (male 35,376,333/female 49,853,361)

The age pyramids for 2009 and 2060 show that the EU's population is projected to continue to age. In the coming decades, the high number of baby-boomers will swell the number of elderly people. The population pyramid shows how the baby boomer bulge is moving up while the middle and the base of the pyramid (those of working age and children) are projected to narrow considerably by 2060.

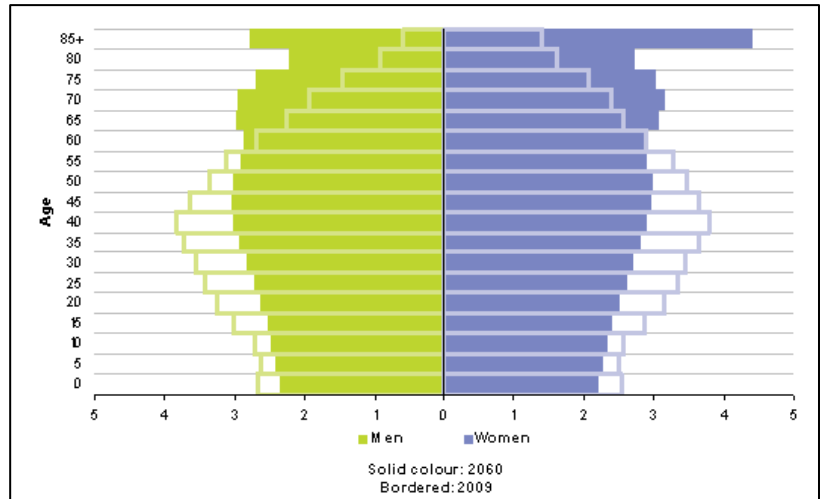


Figure 32 Age Structure chart. SOURCE: EUROSTAT

5.3.2.4 Technological Force

Technological factor can lower barriers to entry, reduce minimum efficient production levels, and influence outsourcing decisions.

- **R&D activity.**

The number of science and technology researchers in Europe is increasing, but the European Union is still far from reaching its research and development investment targets, the European Commission has warned.

The European Commission develops three levels of indicators to support research and innovation policymaking. These indicators are generally grouped together as: headline indicators; core indicators; and comprehensive indicators. Within the headline indicators – also referred to as Europe 2020 strategy indicators – is the measure of research intensity (with a 3 % target for investment in research across the EU). The core indicators are designed to monitor research and innovation for the Competitiveness Council, while the comprehensive indicators are for analytical purposes and Commission services to produce a science, technology and competitiveness report.

The *Science, Technology and Competitiveness key figures report 2008/2009*, shows how just 1.84 per cent of European gross domestic product (GDP) was being spent on R&D in 2006--as the proportion is almost identical to that being spent in 2000, the Commission described the situation in a statement as "stagnation".

At an EU summit in Lisbon in 2000, a goal was set for three per cent of GDP to be spent on R&D to make Europe "the most dynamic and competitive knowledge-based economy in the world".

Since 2000, all European countries have increased their R&D investment, but overall no faster than their growth in GDP.

A major reason for the stagnation in R&D investment proportionate to GDP, according to the Commission, is a decreasing level of business R&D investment, mainly because Europe has a much smaller tech sector than the United States. Therefore, the Commission recommended policies that "favor the development of fast-growing high-tech SMEs, the development of innovation-friendly markets in Europe and cheaper access to Europe-wide patenting".

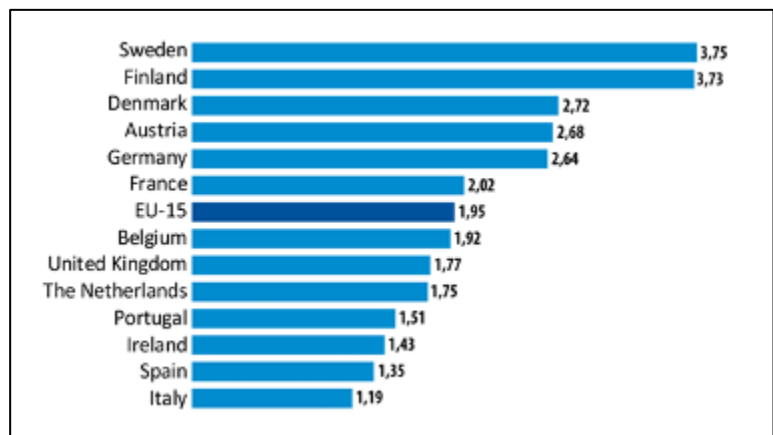


Figure 33 R&D spending in % of the GDP (2008)

"The EU does have many assets, notably an increasingly attractive European research area and a continuously improving innovation performance, but there is still work to be done, especially on the relative underinvestment by business." (By Potočník and Verheugen).

- **Tax incentives for research.**

Since 2004, a number of Member States have introduced new tax incentives or substantially improved existing ones to stimulate investment in research. They now constitute a substantial part of the total public effort to support business R&D in several Member States.

However, the design and implementation of tax incentives, which falls under the responsibility of Member States, reflects national preoccupations. As a consequence, the European fiscal landscape is fragmented, excessively complex and sometimes discriminatory against foreign organizations and multinational R&D partnerships.

Identifying and disseminating good practices could improve the effectiveness of tax incentives in Europe and ensure their compliance with Community law. Consistent approaches should be promoted across the EU for **common issues** such as:

- Cross-border outsourcing of research
- Expansion of young research-intensive firms, which most often involves transnational expansion
- Synchronisation of national support to large European research projects

Tax incentives for R&D will involve taking decision in the sphere of operational strategies and actuation areas before setting up SafeCity business. An additional research about R&D incentives per countries needs to be developed in future versions of this document.

- **Rate of technological changes**

Over the last 50 years the pace of innovation and technological change has accelerated consistently. The time needed for basic inventions to enter mass use has steadily decreased. Cycles of technology-induced societal and economic change are becoming faster. And cycles of innovation and technology change are very likely to accelerate further.

The processes of creating, owning and sharing knowledge are changing in a highly interlinked world; any outlook is fraught with considerable uncertainties.

The 2010 State of the Future Report from the Millennium Project observes that while humankind is devising ever more sophisticated ways to improve the human condition, global problems seem to be increasing in complexity and scale. Innovation is a key driver of economic growth and increasing welfare, and can contribute directly and indirectly to damaging or improving the environment. Many promising technological solutions are already available or could be available in a short time but are being poorly implemented.

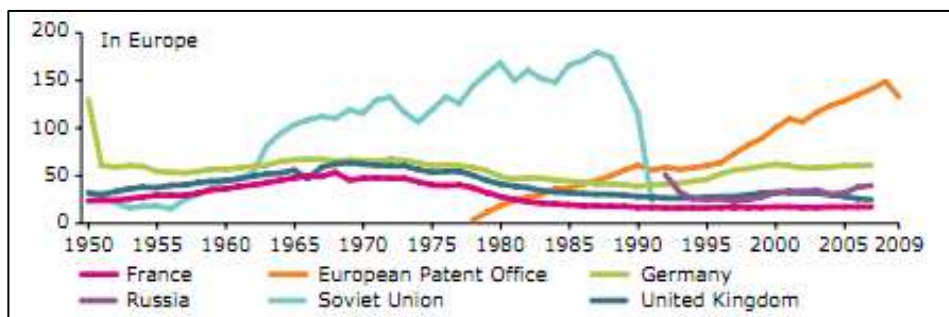


Figure 34 Patent registration trend in Europe

While new technologies are an indispensable part of any strategy to address problems, previous experiences with technological fixes show the possibility of simply shifting the source of the problem and creating new problems along the way. However, the legal requirement to apply the precautionary principle in the EU helps manage potentially harmful technologies and stimulate smarter, less threatening innovations.

The accelerated path of the technology research in Europe might affect to SafeCity and its competitors. For this motive technology changes will be updated and tracked during the whole project and completely considered for decision making.

5.3.2.5 PEST Conclusions

PEST analysis is a strategic starting point. Although has its own limitations, also provide an essential point of reference for the SWOT analysis and Operation Strategy. For this reason PEST analysis will effect on future decision making significantly.

Taxation rates by country, employment laws, and tax incentives for research, inflation rate and population within a determinate area are crucial factors to be considered in order to choose the proper operational plan as well as the correct city to set up the business and begin the commercial activity.

Economic and technological factors will fully determinate decision making; thus, most of the decisions taken before and during the setup of the business will run around above factors.

5.3.3 SWOT analysis

Generally speaking, a SWOT analysis measures a business unit or proposition, whereas a PEST analysis measures the market potential and situation, particularly indicating growth or decline, and thereby market attractiveness, business potential, and suitability of access - market potential and 'fit' in other words.

In this light, SWOT and PEST analysis must be studied together to achieve a clear conclusion and evaluation of the SafeCity solution commercialization strategy.

SWOT analysis is a strategic planning method used to evaluate the Strengths, Weakness, Opportunities and Threats involved in a project. It involves specifying the objective of the project and identifying the internal and external factors that are favourable and unfavourable to achieve that objective.

SWOT analysis must include:

- **Strengths:** characteristics SafeCity initiative that give an advantage over others in the current market. (*Internal factors*)
- **Weaknesses:** are characteristics that place the SafeCity at a disadvantage relative to others companies. (*Internal factors*)
- **Opportunities:** are chances to make greater sales or profits in the environment. (*External factors*)
- **Threats:** are elements in the environment that could cause trouble for SafeCity business. (*External factors*)

The following chart shows and simplifies SafeCity's strengths, weakness, opportunities and threats possible to face:

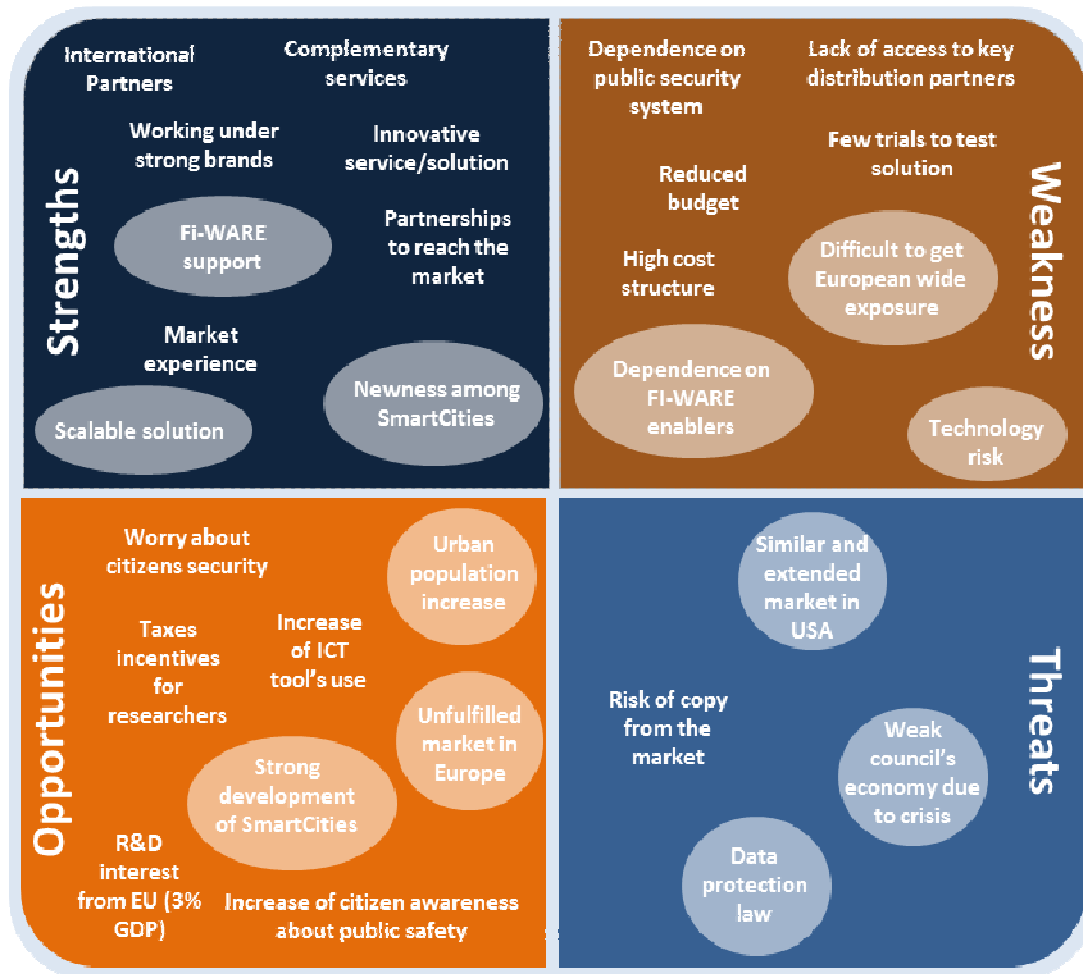


Figure 34 SafeCity's SWOT chart

Weakness:

Firstly and adhered to SafeCity project which is managing to a new market, it exists an important technology risk related to the primary state of the market. This project requires the use of privacy or FI-WARE security system as a high cost structure due to the adaptation to the security system connected the installation of the system created in SafeCity. In this sense, SafeCity project may depend on FIWARE generic enablers.

On the other hand, the commercialization of SafeCity in an international level will need the use of the key distribution partners which will allow a greater introduction into the market; the problem is that this key distribution partner is not easily accessible.

One internal weakness which the consortium should have into account is the probable need of investment for all the partners in order to achieve the constitution of a company which commercialize the product. Having into account that it is important to point out the existence of a huge crisis situation

throughout Europe, this unstable situation involves that some partner might not enjoy of the financial resources to face the sale, this may cause an important budget constriction.

Strength:

The biggest strength of this Project is the high innovative component service. Besides the low competitiveness that we can find in the market OWING TO the ability of adaptability of the product at all of its versions.

Another strength that should be considered is the composition of the Consortium, given that the partners have a wide experience in the sector, which is proved in the historical trajectory of each one, all this joined to an international recognition of each brand. The consortium has a high level as a knowledge terms need to the development of the project and generate a feasible product, as a proved experience in the commercialization of product and services.

This consortium has had the capacity to see a market niche in one of the latest sectors, the SmartCities. As well as providing to the market with different solutions adaptable to the conditions and needs of the costumer.

In other hand, the final solution counts with the support and background and support of FIWARE platform which will provide those Generic enablers necessities to provide a full service.

Threats:

Although the SmartCities sector will be a latest market, this market has shown a high development level due to the market which IS framing in the developing of new technologies following an industrial development faster than the traditional markets. On the other hand, there is a similar market in U.S.A, which is able to generate synergies with another actor than in the European market. This might cause the increase of the potential competitors in the area of SmartCities which might prefer to incorporate to this niche.

Furthermore, there is a great capacity to imitate the products framing in the security and ICT markets, becoming an important risk that the consortium will have into account at the moment OF defining the strategy of sales. This strategy will have into account that the economic public institutions are situated in a crisis period, and therefore its budget is being drastically reduced.

One factor that has to be taken into account is the increase of legislation about data protection and privacy. In addition, we will have to check the law of each Member State as the legislation is not aligned.

Opportunities:

Nowadays we are living a population increase worldwide, which is having the trend to focus on the cities. A population that is increasingly concerned about the safety, because the world has suffered big attacks from 2001 and we still suffer from a feeling of more insecurity.

On the other hand, the ICT market is in continuous growing. Each day the ICT tools are more common in our day to day life due to the accessibility and operational.

From the UE there is a big compromise with the development of the ICT tools in the frame of the citizens' security, establishing recommendation about spending 3% of GDP in the development.

Although there are competitors, the market is covering if we break the concept down, but in this moment it does not exist a great number of companies which provide an integrated solution. This supposes to the consortium that we will have to take into account this fact in order to define the strategy position. "

By analysing the external environment and SafeCity internet environment, it is possible to think about future strategies in a short term. The SWOT analysis results in performing the SWOT/TOWS alternative Matrix as shown below, combining internal, external, positive and negative factors to develop most suitable strategies possible. Several strategies and guidelines might be draw from each quadrant.



Figure 35 SWOT/TOWS matrix

- SO- "Maxi-Maxi" Strategy

SO - "Maxi-Maxi" Strategy

This situation is the best option ever, in here, SafeCity need to take advantage of it and develop growth strategies.

- Considering an unfulfilled market in Europe, SafeCity will cover that gap with an innovative solution and their complementary services with the support of FI-WARE platform
- Urban population is growing in an quick and unregularly path, where the scalable solution of SafeCity will become although more necessary.
- SmartCity concept and interest is continually growing, and the concept of "safety" is not always included, SafeCity must go through.

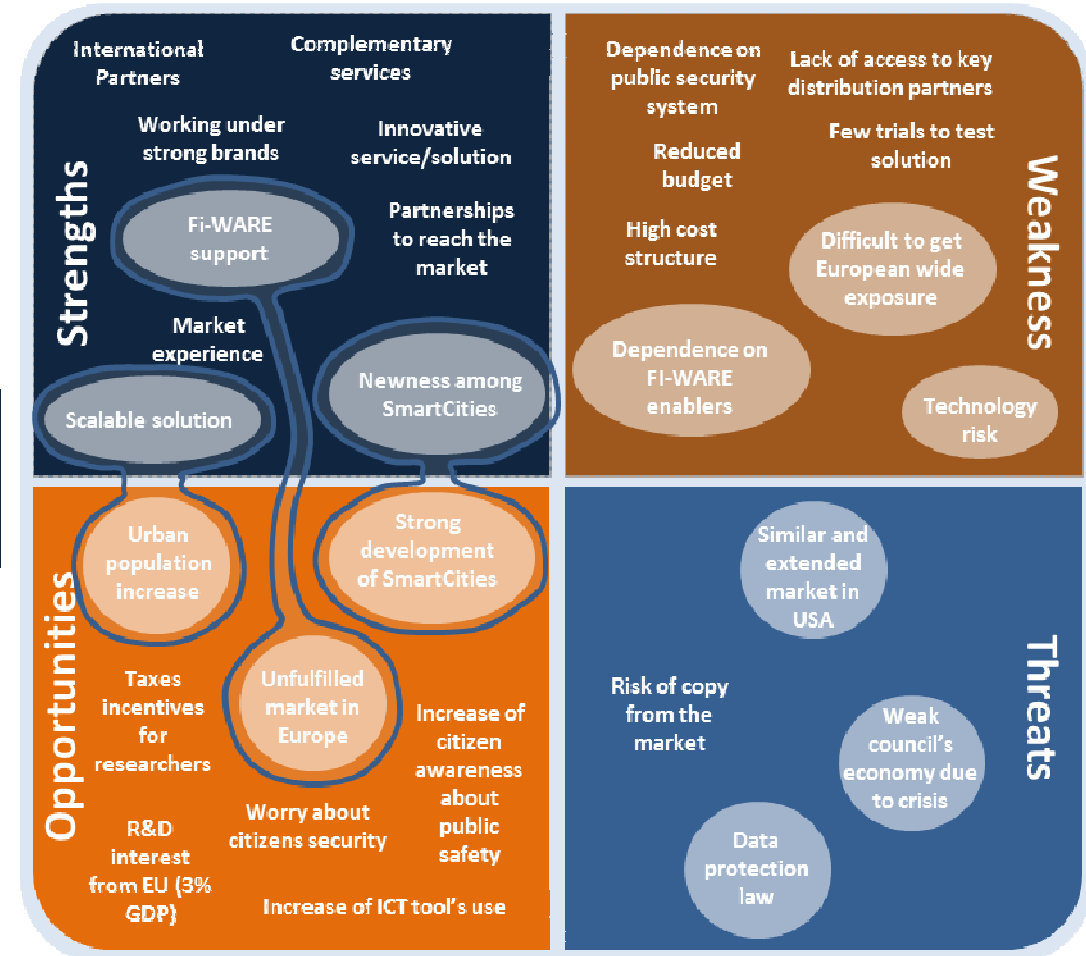
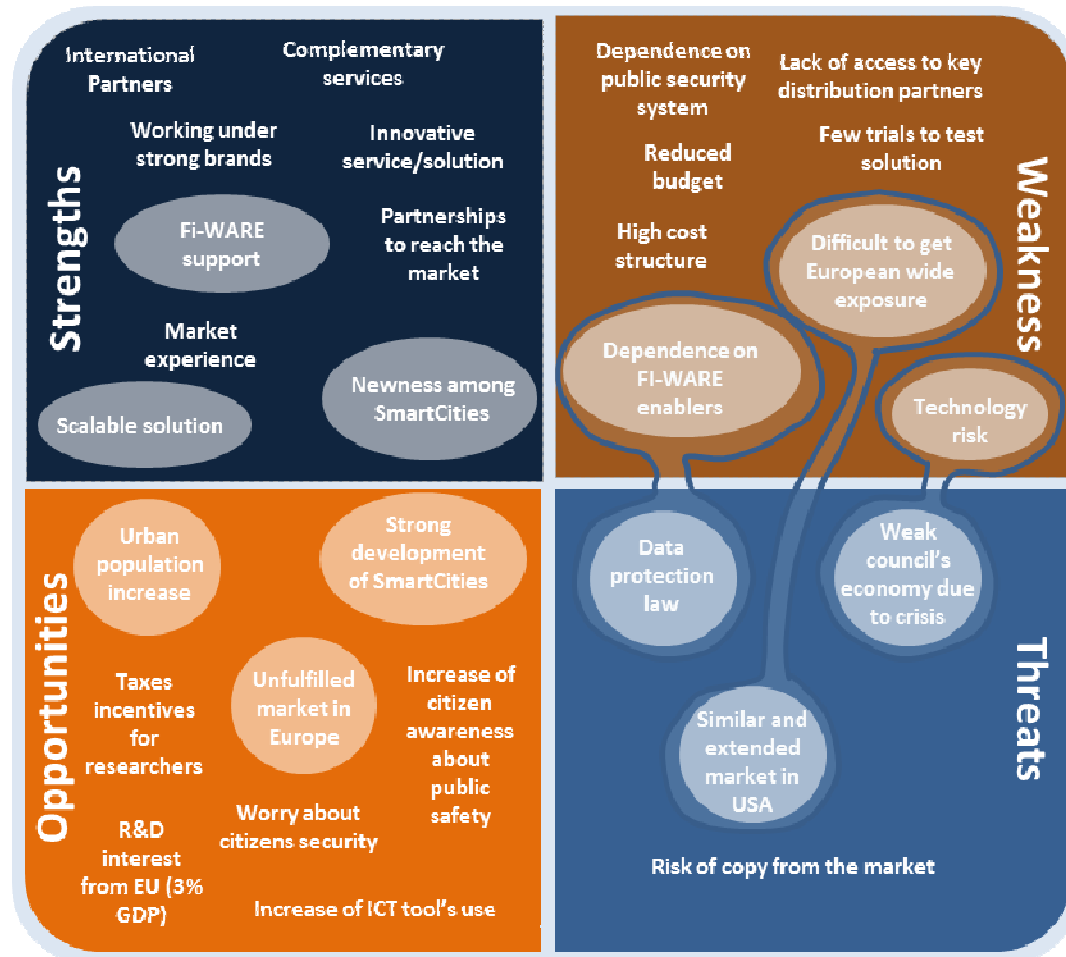


Figure 36 SO- "Maxi-Maxi" Strategy

- WT- "Mini-Mini" Strat



WT - "Mini-Mini" Strategy

In this case, SafeCity has external threats which cannot confront in the short dated.

- Turn to resellers and strategic partners to gain access in the European Market and make disappear American competence in European sphere.
- Crisis has made council reduce their budget for public safety, this, together with the associated technology risk might affect to SafeCity sales. A strong marketing campaign need to be done.
- The strong dependence on FI-WARE enablers might get worse due to the data protection law. For these reason, currents situation and FI-WARE availability need to be analysed.

Figure 37 WT- "Mini-Mini" Strategy

- WO – “Mini-Maxi” Strategy

WO - "Mini-Maxi" Strategy

Take advantage of the market opportunities to overcome the SafeCity weakness.

- Although the access to European market and target customers is high, the unfulfilled gap in the market might help.
- Also the importance of the urban population increase together with the strong development of SmartCities may give incentives to the market, reducing the affect of the technology risk and dependence on public safety systems or FIWARE enablers.

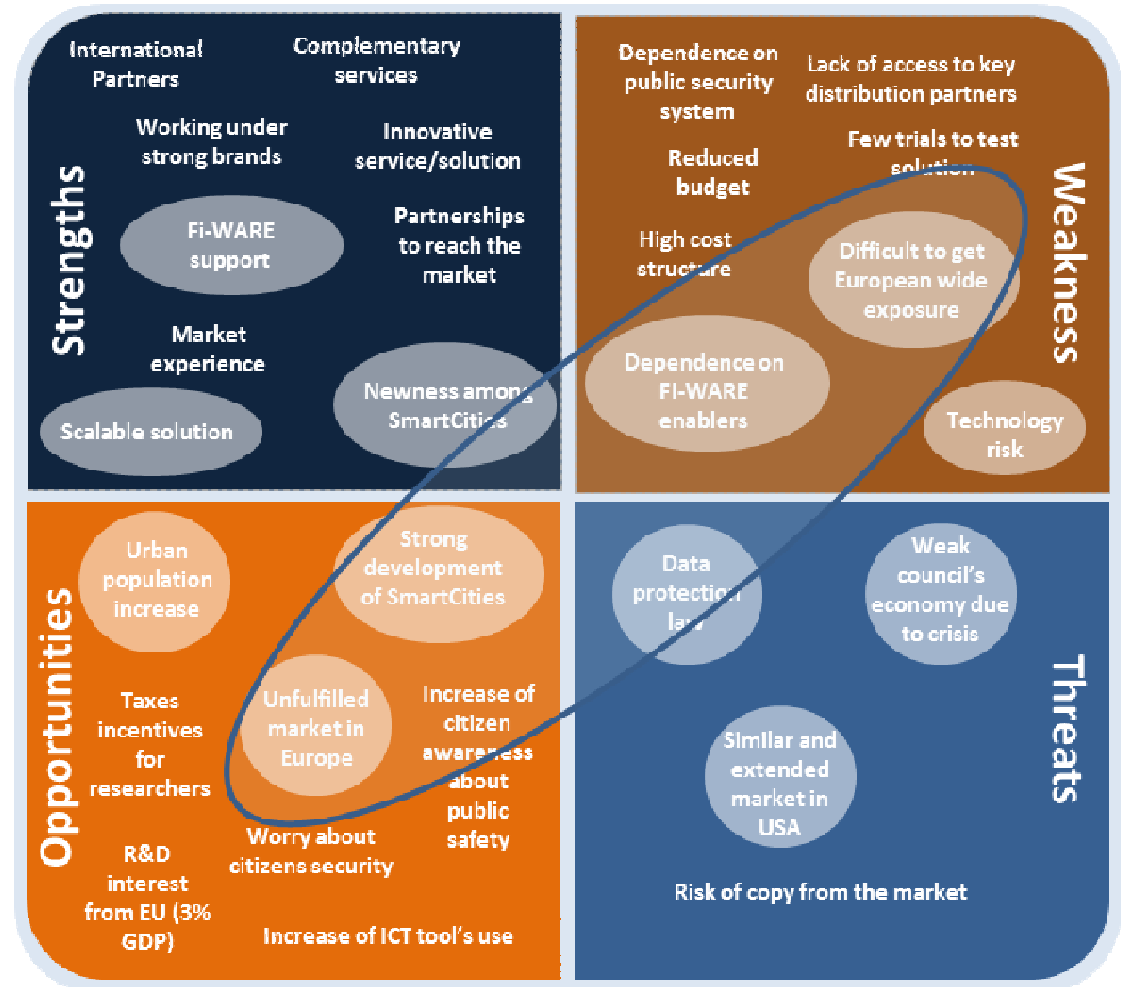
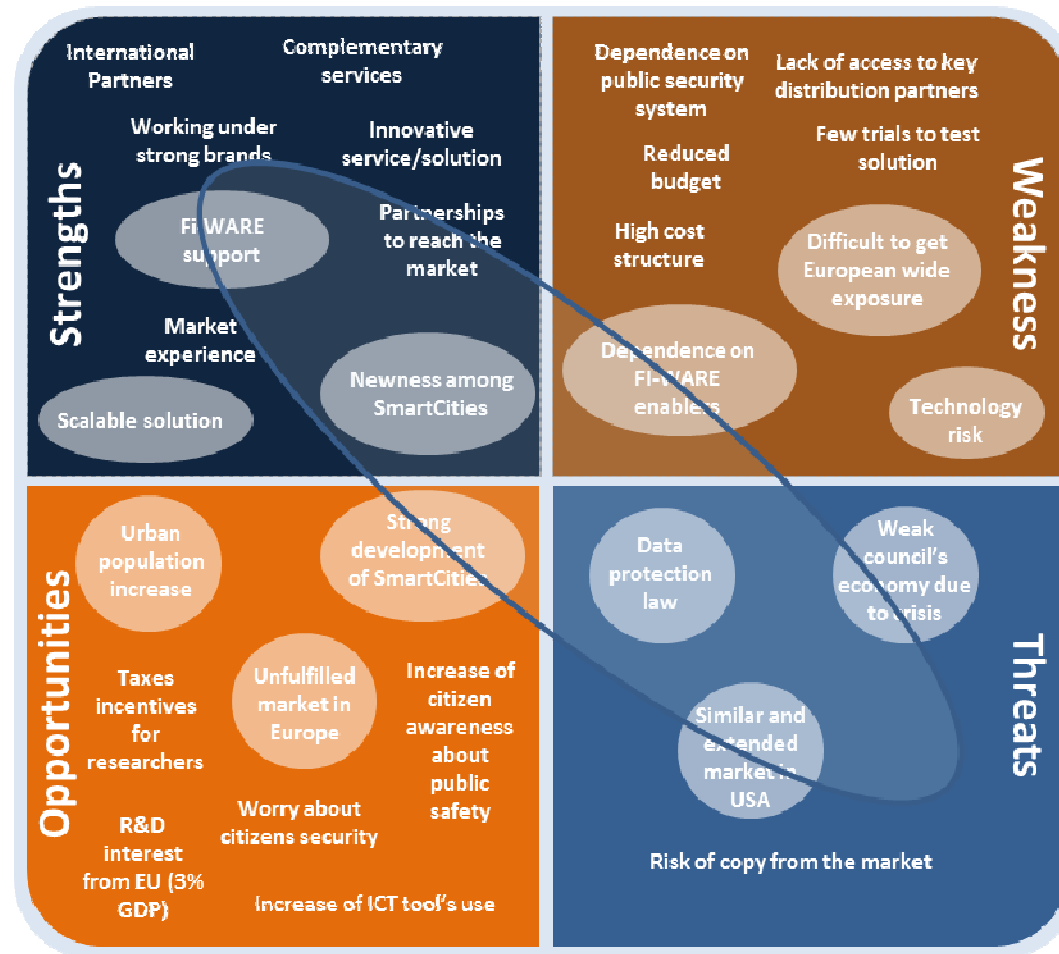


Figure 38 WO- "Mini-Maxi" Strategy

- ST – “Maxi-Mini” Strategy



ST - "Maxi-Mini" Strategy

Take advantages of SafeCity strengths to avoid real and potential threats present in the market.

- The fact that SafeCity is an scalable and innovative solution helps to confront the problems of data protection and their restricted laws associated.
- An strong branding, FIWARE support and international partnership along Europe reduce the impact of USA's competitors.
- The whole strengths of SafeCity shall avoid the importance of crisis impact into the economy, becoming SafeCity a essential and necessary solution for costumers.

Figure 39 ST- "Maxi-Mini" Strategy

6. COST

6.1 Financial Plan

This financial plan is a self-supporting document intended to support and direct the actions of the business. It should explain what SafeCity start-up could afford, how it could afford to do it and what the expected profits would be. But in this case, due to the uncertainty related to some associates expenses, the financial plan will be a working tool which will help to allocate SafeCity solution into the market, within the correct price and quality range.

In this sense, a supporting document is included (in excel format), where several hypothesis have been set up. Those hypothesis together with a further analysis of the market, should detect the correct niche into the market where SafeCity solution must be placed (in terms of price and quality). This excel document includes several sheets detailing market and SafeCity figures. Those sheets are following:

6.1.1 Potential Market

This first sheet, include those potential customer detected and purchase associated to each potential costumer.

POTENTIAL MARKET SCENARIOS				ILLUSTRATIVE			
Potential Market				Potential Market by product versions			
	Europe	Other Countries	TOTAL	Safe-Citizen	Safe-Awareness	Safe-City Platform	TOTAL
City councils	83	0	83	0	0	83	83
SmartCities	5	0	5	0	0	5	5
Universities	26	0	26	6	20	0	26
Hotel Resorts	13	0	13	11	2	0	13
Stadiums	20	0	20	20	0	0	20
Airports	17	0	17	0	17	0	17
Funfairs	20	0	20	10	10	0	20
Others	35	0	35	15	12	8	35
	219	0	219	62	61	96	219

Figure 40 Potential Market

6.1.2 Product and associated costs

Product and associated costs include all those expenses (fixed and variable) associated to the elaboration of the solution and the go-to-market process. This means, all costs associated to SafeCity sales, costs which will be directly contained within the final SafeCity price.

Due to the dependence on FIWARE platform, all those costs will not be able to be provided in this version of the document.

PRODUCT AND ASSOCIATED COSTS		ILLUSTRATIVE	
Product Costs			
Specific Enabler	Total costs		
Video Analytics SE			
Coarse Video Analytics SE			
Visual Descriptors Extraction SE			
Pattern Recognition SE			
Detection SE			
Model Retraining SE			
Video Rule Engine SE			
Critical Situation Taxonomy			
Definition SE			
Configuration Management			
Communication Management			
Resource Management			
Status Monitoring			
Alerting			

Figure 41 Product and Associated Costs

6.1.3 Annual Sales Forecast- Market share

According to the first sheet “Potential Market”, a preliminary sales’ forecast need to be done. In this sense, sales have been split by product versions and sales per year, as is shown in the table below.

On the other hand, this sales need also to be split by seller, this means, in direct or indirect sales. In order to reach the widest room in the market, at the beginning, indirect sales (especially through the partnership programme) would dominate the sales’ strategy. And direct sales would take stronger position as time goes by, sharing portfolio and market shares.

SafeCity ANNUAL SALES FORECAST						ILLUSTRATIVE					
<u>Sales in units</u>						<u>Sales distribution (%)</u>					
	Year 1	Year 2	Year 3	Year 4	Year 5		Year 1	Year 2	Year 3	Year 4	Year 5
	Units	Units	Units	Units	Units		%	%	%	%	%
Safe-Citizen	3	10	20	20	25	Direct Sales	25%	25%	50%	75%	75%
Safe-Awareness	5	15	25	25	30	SafeCity consortium	25%	25%	50%	75%	75%
Safe-City Platform	10	20	30	35	40	Indirect Sales	75%	75%	50%	25%	25%
Total Sales	18	45	75	80	95	Partnership programme	50%	50%	25%	15%	15%
						Stakeholders	15%	15%	15%	5%	5%
						FI-Ware	10%	10%	10%	5%	5%
						Total	100%	100%	100%	100%	100%

Figure 42 Annual Sales forecast

6.1.4 Annual Sales Forecast - Detailed

With the purpose of evaluate the correct viability in the market of SafeCity solution; further details would be required in terms of sales forecast. A preliminary SafeCity solution price will be necessary to fulfil this scenario, for this reason, at the time being this section is also temporary.

ILLUSTRATIVE

SafeCity ANNUAL SALES FORECAST												
<u>Direct Sales</u>												
	Year 1			Year 2			Year 3			Year 4		
	Units	Amount		Units	Amount		Units	Amount		Units	Amount	
Safe-Citizen	1	0,00 l	✓	3	0,00 l	✓	10	0,00 l	✓	15	0,00 l	✓
Safe-Awareness	1	0,00 l	✓	4	0,00 l	✓	13	0,00 l	✓	19	0,00 l	✓
Safe-City Platform	3	0,00 l	✓	5	0,00 l	✓	15	0,00 l	✓	26	0,00 l	✓
Consortium	5	0	✓	11	0	✓	38	0	✓	60	0	✓
<u>Total Indirect Sales</u>												
	Year 1			Year 2			Year 3			Year 4		
	Units	Amount		Units	Amount		Units	Amount		Units	Amount	
Safe-Citizen	2	0,00 l	✓	8	0,00 l	✓	10	0,00 l	✓	5	0,00 l	✓
Safe-Awareness	4	0,00 l	✓	11	0,00 l	✓	13	0,00 l	✓	6	0,00 l	✓
Safe-City Platform	8	0,00 l	✓	15	0,00 l	✓	15	0,00 l	✓	9	0,00 l	✓
Consortium	14	0	✓	34	0	✓	38	0	✓	20	0	✓
TOTAL SALES	18	0		45	0		75	0		80	0	

Figure 43 Detailed Sales Forecast

6.1.5 Market's Prices

In order to have the most appropriate pricing strategy, a deep market analysis is required. For this reason, an exhaustive analysis of competitors including quality and price is prerequisite. Focusing the analysis in this data, finding the most appropriate room in the market for SafeCity solution would be easy. SafeCity pricing strategy (more information in section 6.2) will detail how SafeCity would penetrate into the market and which would be the most suitable final price, according with competitors'

SafeCity's Market Price		ILLUSTRATIVE	
<i>Competitors</i>	Product version	Price	Quality
CISCO Open Platform for Safety and Security	Safe-City Platform	TBD	High
SENSEN - SenForce	Safe-Awareness	TBD	High
Amatra	Safe-City Platform	TBD	High
Smart Multi-Grid™ Wireless Mesh Networks	Safe-Awareness	TBD	High
Alvarion - Muni-Wireless and the Safe City	Safe-City Platform	TBD	High
Video Surveillance	Safe-Awareness	TBD	Medium
Network Management	Safe-Awareness	TBD	Medium
IMCI - Public Safety Networks & Emergency Services	Safe-Awareness	TBD	Medium
True Sentry - TrueSistem	Safe-Awareness	TBD	Medium
IBM - Smarter Planet, Public Safety	Safe-City Platform	TBD	High
Microsoft platform for public safety	Safe-City Platform	TBD	High
Intelligence Systems	Safe-Awareness	TBD	Medium
Crisis management	Safe-Awareness	TBD	Medium
FREQUENTIS SAFETY FRAMEWORK	Safe-City Platform	TBD	High
PROTECT™ CAD/GIS	Safe-Awareness	TBD	Low
PROTECT™ RMS with AFR	Safe-Awareness	TBD	Low
PROTECT™ MDC with AVR	Safe-Awareness	TBD	Medium

Figure 44 Market Prices

information.

6.2 Competitive price

Competitor's price will be analysed along the project. All this input will be continuously compared with estimated price for SafeCity solution, after financial plan is developed.

The pricing strategy used to sell SafeCity would be "leadership in the price". In this sense, is important to say that the objective of the strategy is to avoid potential customer finding another Public Safety Solution with similar features or enablers than the SafeCity's one at a lower price

Due to the complexity and the status of the project, establish a realistic price is quite complex. For this reason a representative and preliminary matrix is being developed, showing the SafeCity Market Penetration strategy and next steps.

This matrix shows all different possibilities for SafeCity to penetrate into the Public Safety Market. At the moment, several competitors are already in the some niche, with different quality versions of their product, different prices and also different relations between price and quality. The most suitable strategy for SafeCity in the first stage will be placed with a mixed strategy between "Economy" and "Penetration", always taking care of the quality and services.

SafeCity solution must go-to-market in a competitive manner, offering same quality and services than competitor but with a lower price. Mainly, “leadership in the price” need to be taken into account, as well as competitor position in the market, and strategies taken.

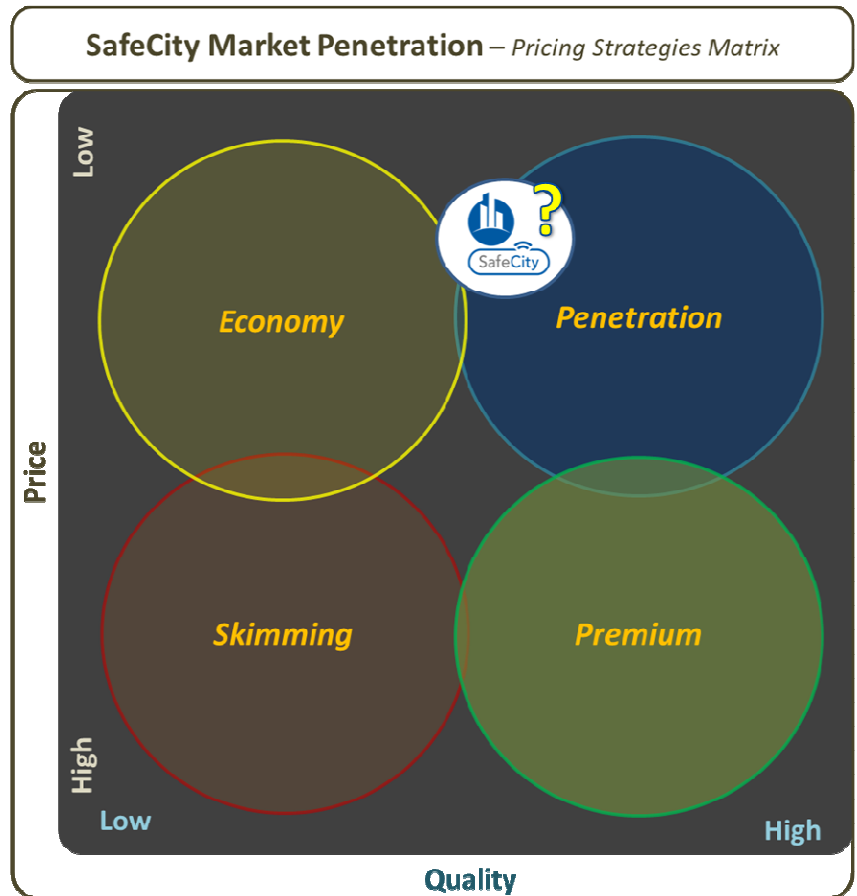


Figure 45 Pricing Strategy Matrix

7. ANEXS

Product Description Data Sheet

**Citizens Awareness**

Product Overview

Safe-Citizens product version is the most suitable solution to keep watch what is happening in the awareness area in order to detect and prevent incidents related to citizens. Aiming C2 centers to support decision making and alerting of C2 personnel in case of emergency or threatening situations.

Applications related

Applications included in Safe-Citizens product version are:

- Video Analytics
- Intelligent Sensors and information pre-processing
- Real time positioning based on video analysis and artificial intelligence for decision support
- Data Fusion
- Communication security
- Decision support

Functionalities and Capabilities

- Provide advanced capabilities for real-time situational awareness.
- Increases the visual monitoring efficiency in Command Centers.
- Contributes to the reduction of the significant information overload of C2 personnel.
- Generates immediate alerts for potential suspicious happening, visually detected.
- 3D position and behaviour of people in real time.
- Associate meaningful metadata in raw data.
- Store triples (semantic metadata) into repository.
- Controlling network traffic priorities and QoS based on sensor output.
- Ability to track a pointed out person and anticipate his path.
- Enables the secure exchange of all network traffic regardless of sensor hardware and communication protocol heterogeneity.
- Ensure message authentication and integrity.
- Query Data Fusion for metadata and data source.



Figure 46 SafeCity Data-sheet

