INTERRACTION COMPONENT

STATE-OF-THE-ART

DELIVERABLE D6.1.1

By

C2TECH

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Approved by			
Authorized by			

CONTENTS

SUMMARY

Bla, bla, bla

1. SCOPE

2. ASSOCIATED DOCUMENTS

2.1 APPLICABLE DOCUMENTS

Beginning of example (style: Retrait A)

A1 Project Full Proposal. SPY

A2 Title and reference

End of example

2.2 REFERENCE DOCUMENTS

Beginning of example (style: Retrait R)

R1 : Title and reference

End of example

3. TERMINOLOGY

3.1 ABBREVIATIONS

N/A	Non Applicable
TBC	To Be Completed

3.2 DEFINITIONS

Beginning of example (style: Definition)

Aaaaaa Bbbbb Cccc	Definition 1 Definition 1 Definition 1 Definition 1 Definition 1 Definition 1 Definition 1 Definition 1 Definition 1 Definition 1 Definition 1 Definition 1 Definition 1 Definition 1 Definition 1 Definition 1
azerazerazerazer	Def 2 Def 2 Def 2 Def 2 Def 2 Def 2 Def 2 Def 2 Def 2 Def 2 Def 2 Def 2 Def 2 Def 2 Def 2 Def 2 Def 2

End of example

4. VISULIZATION COMPONENT

This chapter details the State of the Art of Visualization task and it's sub-components in SPY - Surveillance imProved System. We present a central monitoring system allow to user access SPY – surveillance cam videos, sensor data like GPS, traffic monitoring data and also plate recognition data.

Contributors on architecture: (CTECH, ?, ?)

4.1 GENERAL ARCHITECTURE OF COMPONENT

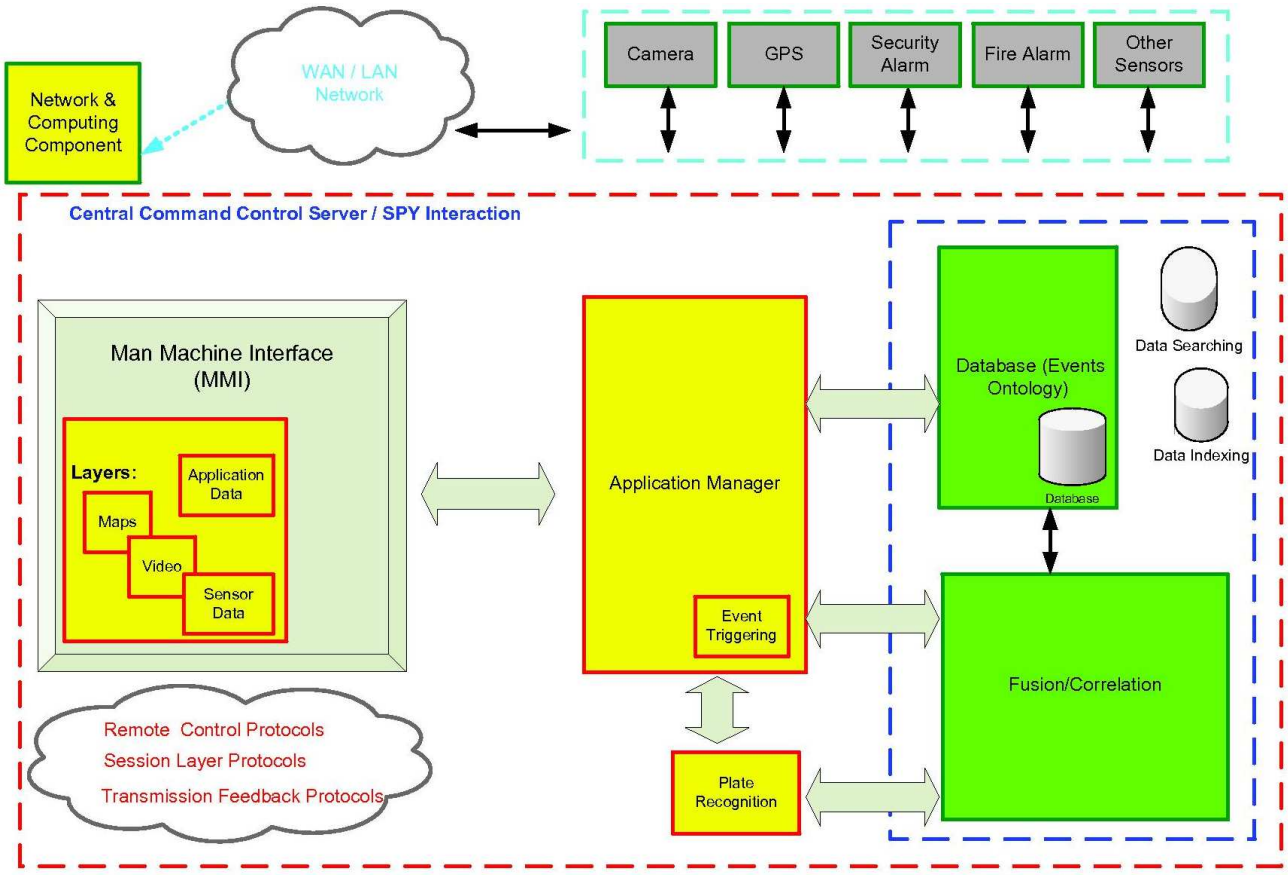

Figure 1: Conceptual Design of Visulization Component

4.2 VISUALIZATION TOOL

Visualization tool provides an interface to track the events on a digital map and to get necessary information to interfere them by using the resulting data set of the central fusion tool.
Fusion tool creates a data set in which a row indicates an event and relevant information coming from multiple sources. Each event has a unique ID number to make tracking easier. Visualization tool make little queries to fusion DB and classifies the events.

Visualization tool could have three layers:

1. The digital map
2. Event indicator
3. Event details

Digital map is a vectorized image file which includes coordinates and street address data. It is the main background of the visualization tool and as default it is focused on the city where the command and control center is situated. Its default location might be changed manually.

As soon as a new event data is created in the fusion DB, an event indicator appears on the map over the location of the event. According to the priority of the event this indicator might have different colors and shapes.

This indicator is clickable and clicking on it triggers the event details window. Event details window shows the data like location, event type, nearest police station and mobile teams, a brief video of the event , physical attributes of the objects involved in the event like color, shape, number of people, direction and speed. User can select the police teams to be alerted and a little package is sent to the mobile equipments of the teams. This little package includes the same information in a packed format not to overload the bandwidth.

4.2.1 Central Monitoring - Man Machine Interface

Display options based on show gathered data from context to user instantly with geographical data.
This Central Monitoring System allow to user access surveillance cam videos, sensor data like GPS, traffic monitoring data and plate recognition data. This data created object recognition techniques in sensor and fusion center analysis.

4.2.1.1 Input Data

Central monitoring system needs input data above;

- Data from cameras
  - Surveillance, tracking and traffic camera data
  - Cam position for display icon on map
  - Captured data includes object info, plate or motion video.
  - Cam status like look angle and zoom level
- Data from microphones
  - Audio data
- Data from sensors
  - GPS data
  - Fire alarm sensor data
  - Unauthorized access alarm sensor data
- GIS data (Provided by used map API)
  - Geographical coordinate and altitudes
  - Layered satellite images
  - Road maps

- State, city, place tags
- Alarm data
  - Alarm level, alarm type and alarm info data

4.2.1.2 Display Functions and Visual Outputs

Monitoring technology serves these actions

- GIS map with slide, zoom and layer abilities
- Cam icons on real geographical position at the map
- Sensor icons on map
- Alarm window
- Car pass, plate query tools
- Object tracking data

4.2.1.3 Central Monitoring Technology

Video data life cycle to show in user interface is above;

Monitoring service is designed like show input results on Geographical Map. Base on this design we have 4 powerful option of map API. These map API information and comparison table is above;

Map API	Description	Technology	Development Language	Advantages	Disadvantages
Google Earth	Most popular GIS service provided by Google	API gives KML to developers Java Script based web platform and others.	KML is a file format used to display geographic data in an Earth browser, such as Google Earth, Google Maps, and Google Maps for mobile. Create KML files to pinpoint locations, add image overlays, and expose rich data in new ways. Google Earth doesn't support stream video play on map but have abilities like view	Fast for image view in 3D user interface. Google has satellites for update images frequently uses simple developing KML file. Easy to find examples.	Earth 3D visual world slower then Bing maps. Visual effects are simple then others.

			picture or videos in web page in composed browser.		
Bing Maps	Developed by Microsoft to compete Google Maps	Bing released web based Silverlight component version	Silverlight is based on XAML file for development. With XAML file can create object with vector points. This gave us to deploy very flexible interface. XAML supports animations and video playing on current Bing Maps Silverlight application. Also Bing in web page can support Java Script based web page application abilities too.	New Silverlight version of Bing Maps fast as Google Maps. Has Birds Eye version for good 3D view. Added visual object at Silverlight has more functionality. Quite fast video streaming and playing abilities.	Newly released technology. Hard to find developer documentation.
OVI Maps	Developed by popular cell phone GIS version of OVI Maps provider	Uses Java Script based image locating system	Development in Java Script maps on web page based on your choice. Because of web page binding Java Script maps application can use Flash for video streaming or other picture, object visualize.	Java Script based applications can uses more flexible with any platforms. Mobile and Central versions can make quickly.	Has not a good visualization. Slow from Google Maps and Bing Maps.
Yahoo! Maps	Provided by Yahoo!	Uses Java Script based image locating system	Development in Java Script maps on web page based on your choice. Because of web page binding Java Script maps application can use Flash for video streaming or other picture, object visualize.	Java Script based applications can uses more flexible with any platforms. Mobile and Central versions can make quickly.	Very slow image show speed from the others.

Table 1 Center Visulization Map API comparison table.

4.2.1.4 Central Monitoring Commands

Command and Control Center Command Definitions

4.2.2 Mobile Monitoring - Man Machine Interface

Mobile monitoring system has same data like central monitoring system but quality or resolution of data will be reduced for fast mobile data transfer. Mobile monitoring system has limited functions because of low bandwidth, weak processing units and small screen to show results. Mobile teams have a lighter version of the visualization database. It has the map data in its local database so that it doesn't need to get map data from the main server unless a map update is available. The received package contains the location data so that mobile teams visualize the event in the same way the main server does. It has a little map instead of the alerting part.

4.2.2.1 Input Data for Mobile

Central monitoring system needs reduced to light version of input data above;

- Data from cameras
  - Surveillance, tracking and traffic camera data
  - Cam position for display icon on map
  - Captured data includes object info, plate or motion video.
  - Cam status like look angle and zoom level
- Data from microphones
  - Audio data
- Data from sensors
  - GPS data
  - Fire alarm sensor data
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4.2.2.2 Mobile Display Functions and Visual Outputs

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Bing	Developed	Bing	Bing has Ajax V7	New Silverlight	Newly

Maps for Mobile	by Microsoft to compete Google Maps	released web based Silverlight component version	for Android platform, Objective C for Apple iOS platform and Silverlight Control for Windows Phone 7 platform. Silverlight is based on XAML file for development. With XAML file can create object with vector points. This gave us to deploy very flexible interface. XAML supports animations and video playing on current Bing Maps Silverlight application. Also Bing in web page can support Java Script based web page application abilities too.	version of Bing Maps fast as Google Maps. Has Birds Eye version for good 3D view. Added visual object at Silverlight has more functionality. Quite fast video streaming and playing abilities.	released technology. Hard to find developer documentation.
OVI Maps	Developed by popular cell phone GIS version of OVI Maps with NOKIA provider	Uses Java Script based image locating system and JavaME, JavaScript and QT available in mobile	Development in Java Script maps on web page based on your choice. Because of web page binding Java Script maps application can use Flash for video streaming or other picture, object visualize.	Java Script based applications can uses more flexible with any platforms. Mobile and Central versions can make quickly.	Has not a good visualization. Slow from Google Maps and Bing Maps.
Yahoo! Maps	Provided by Yahoo!	Uses Java Script based image locating system and Action Script 3.0 Adobe Flash API and Flex API	Development in Java Script maps on web page based on your choice. Because of web page binding Java Script maps application can use Flash for video streaming or other picture,	Java Script based applications can uses more flexible with any platforms. Mobile and Central versions can make quickly. Developing in Adobe Flash is	Very slow image show speed from the others.

			object visualize.	easy to make visual components this very popular application references	

Table 2 - Visualization Map API comparison table.

4.2.2.4 Mobile Monitoring Commands

Mobile Terminal Commands Definitions

5. INFRASTRUCTURE RELATED COMPONENTS:

5.1 NETWORK RELATED INFRASTRUCTURE

TBD

5.2 DATABASE & COMPUTING INFRASTRUCTURE

TBD

5.3 MEDIA PROCESSING& ENCODING

TBD

5.4 SESSION & TRANSPORT PROTOCOLS

TBD

6. INTERRACTION COMPONENT FEASIBILTY ANALYSIS

6.1 FIGURES

6.2 TABLES

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			Bing in web page can support Java Script based web page application abilities too.	abilities.	
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Yahoo! Maps	Provided by Yahoo!	Uses Java Script based image locating sysem	Development in Java Script maps on web page based on your choice. Because of web page binding Java Script maps application can use Flash for video streaming or other picture, object visualize.	Java Script based applications can uses more flexible with any platforms. Mobile and Central versions can make quickly.	Very slow image show speed from the others.

Table 3 : Center Visulization Map API comparison table.