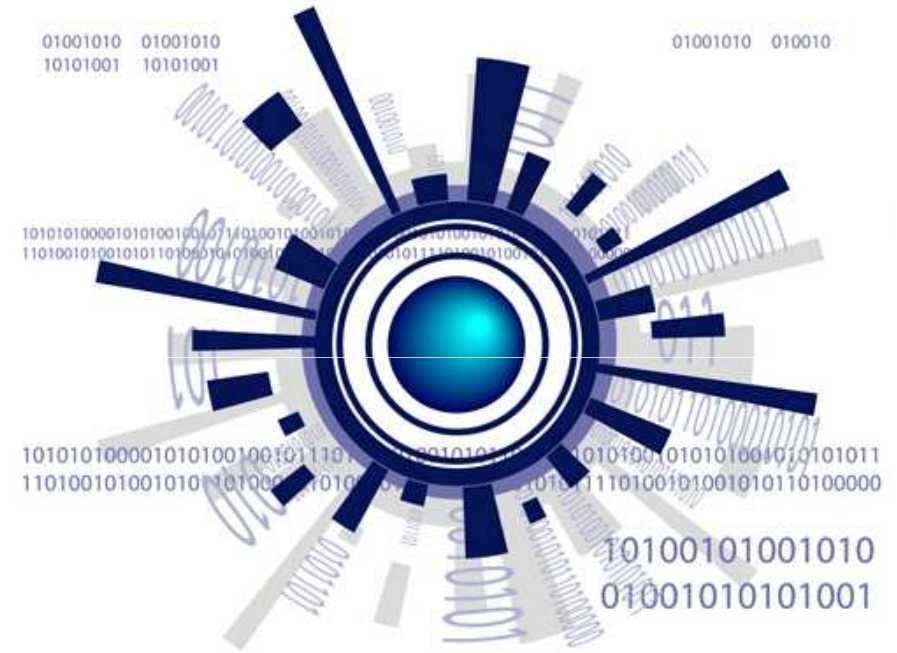




**> Innovative and collaborative platforms for  
transportation: Thales approaches  
November 2008 – THNS Shanghai**

[serge.druais@thalesgroup.com](mailto:serge.druais@thalesgroup.com)

- Research
- Technologies
- Innovation
- Collaborative platforms
- Transportation use cases






World leader for mission-critical information systems

## ■ Three core businesses

■ Aerospace & Space	25%	}	€12.3 BN annual revenues
■ Defence	50%		
■ Security	25%		

## ■ A Worldwide Group

- 68,000 employees worldwide
- Presence in 50 countries



Solutions to meet safety and security needs, an extensive services offering and cutting-edge simulation technologies.



## Capabilities

- Ground transportation solutions
- Critical infrastructure security systems
- Enterprise services; defense and aerospace
- Simulation solutions and services

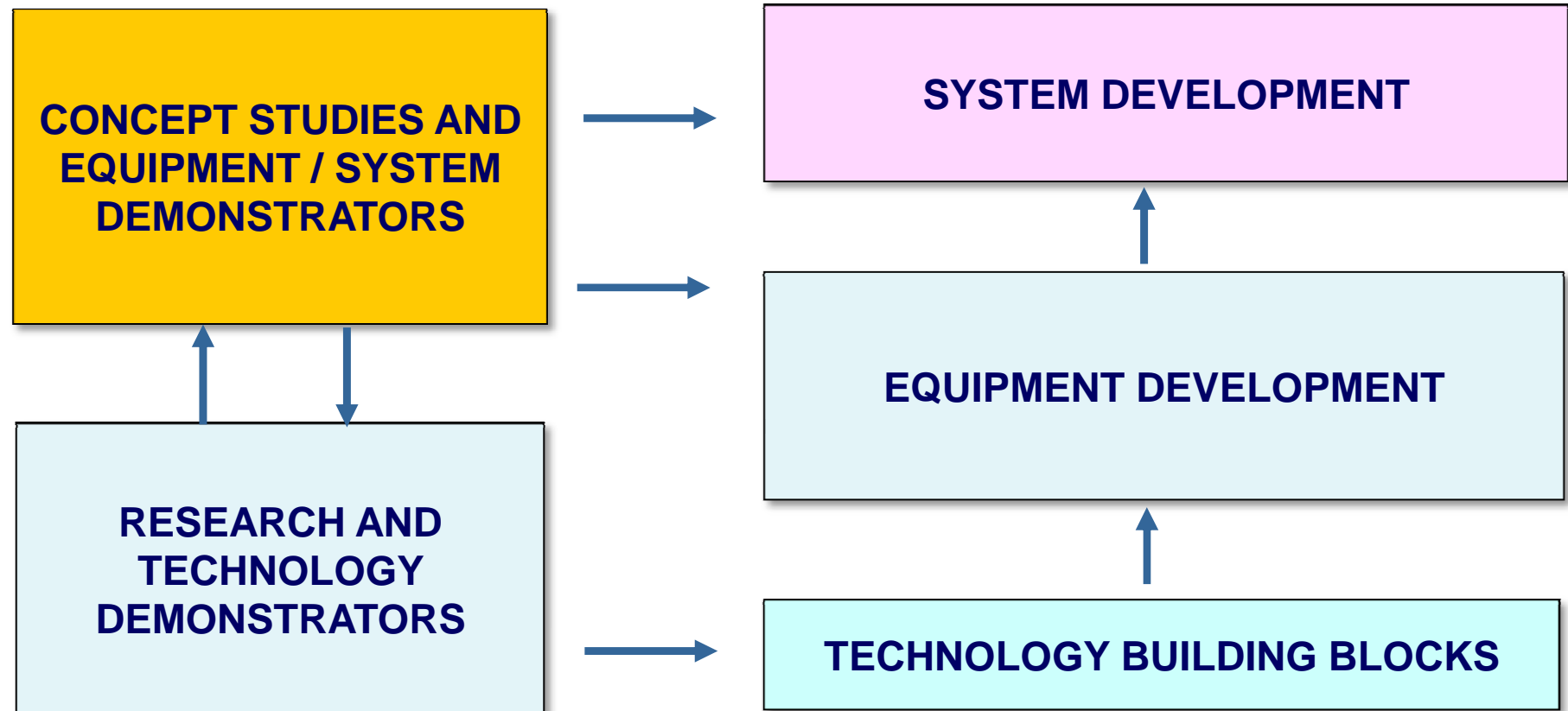
## Main customers

- Ground transportation players, government & administration, energy & utilities, banking & finance, medical, enterprises, defense and aerospace sector

## ■ Thales R&D: €2.2BN (18% of revenues)

Research & Technology  
TRL\* 1 to 5  
20%

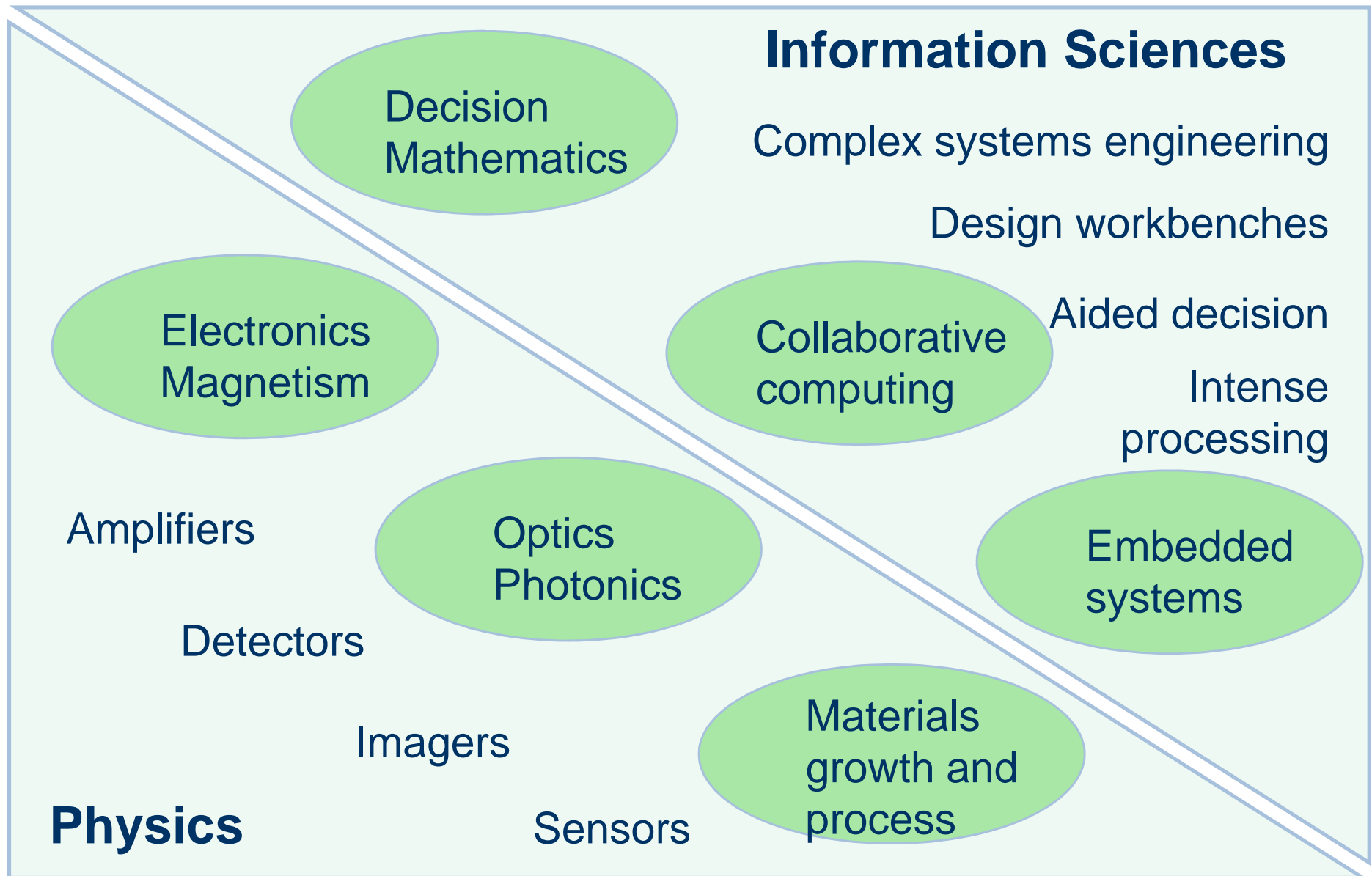
Development  
TRL\* 6 & 7  
80 %



- Thales R&D: €2.2BN (18% of revenues)
- 25,000 researchers and engineers
- 300 inventions per year
- Over 15,000 patents
- Over 30 cooperation agreements with universities and public research laboratories in France, Europe, North America and Asia-Pacific
- Among the Top 5 industrial groups in research European projects (FP6, FP7, European Technology platforms)

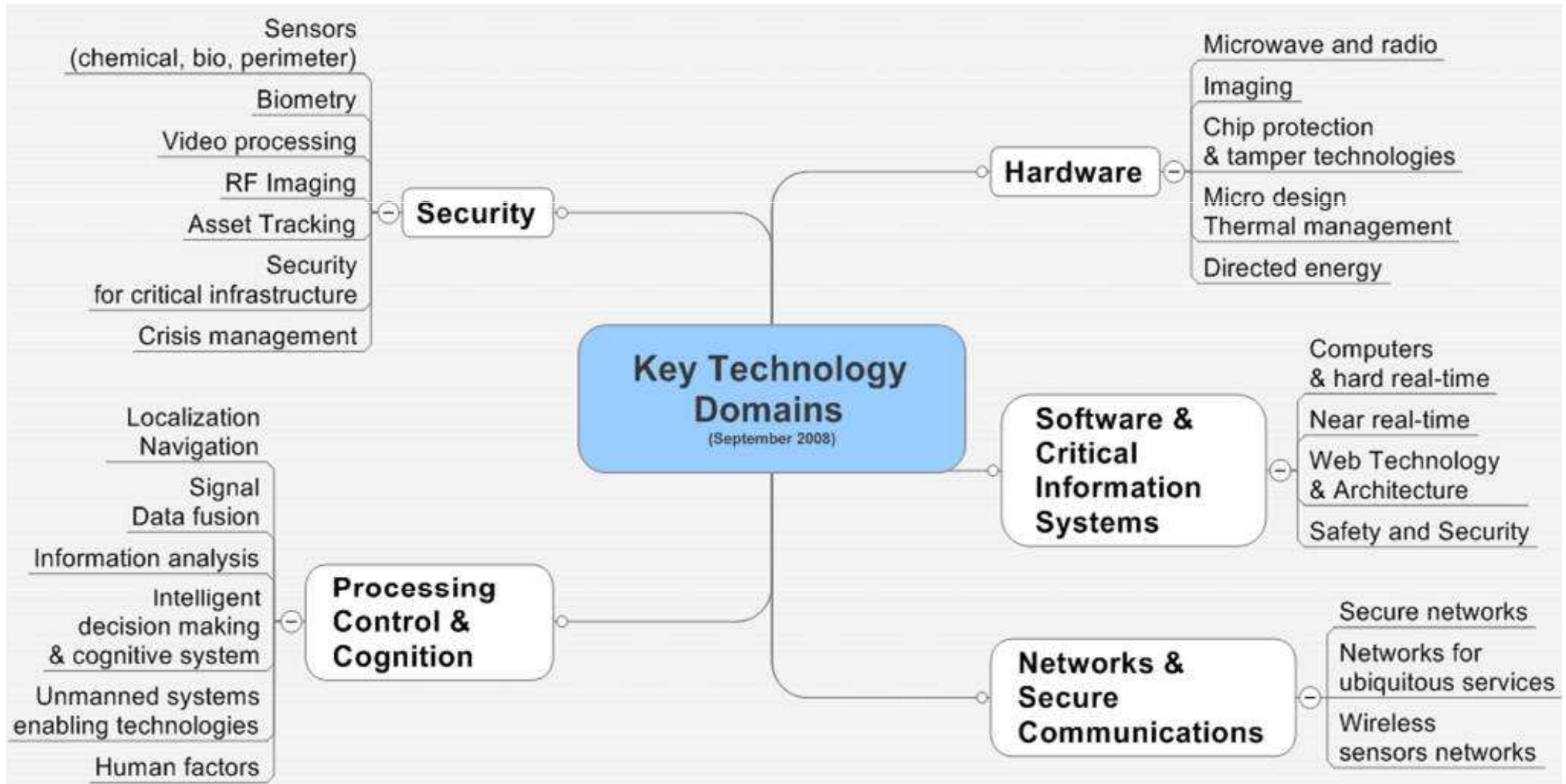


# Two complimentary families of competences



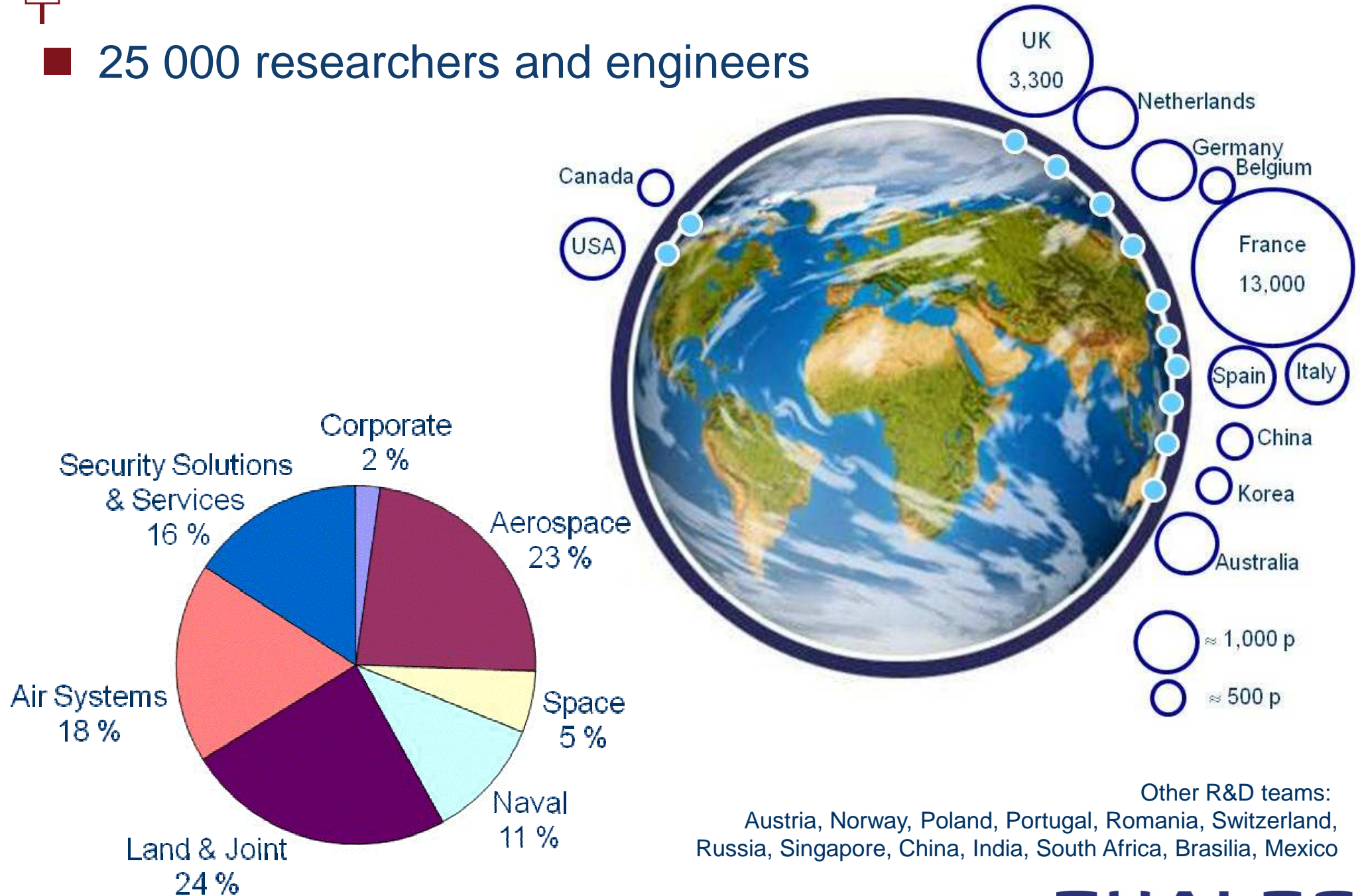


# Key Technologies domains (KTD)





■ 25 000 researchers and engineers







**Reading (UK)**

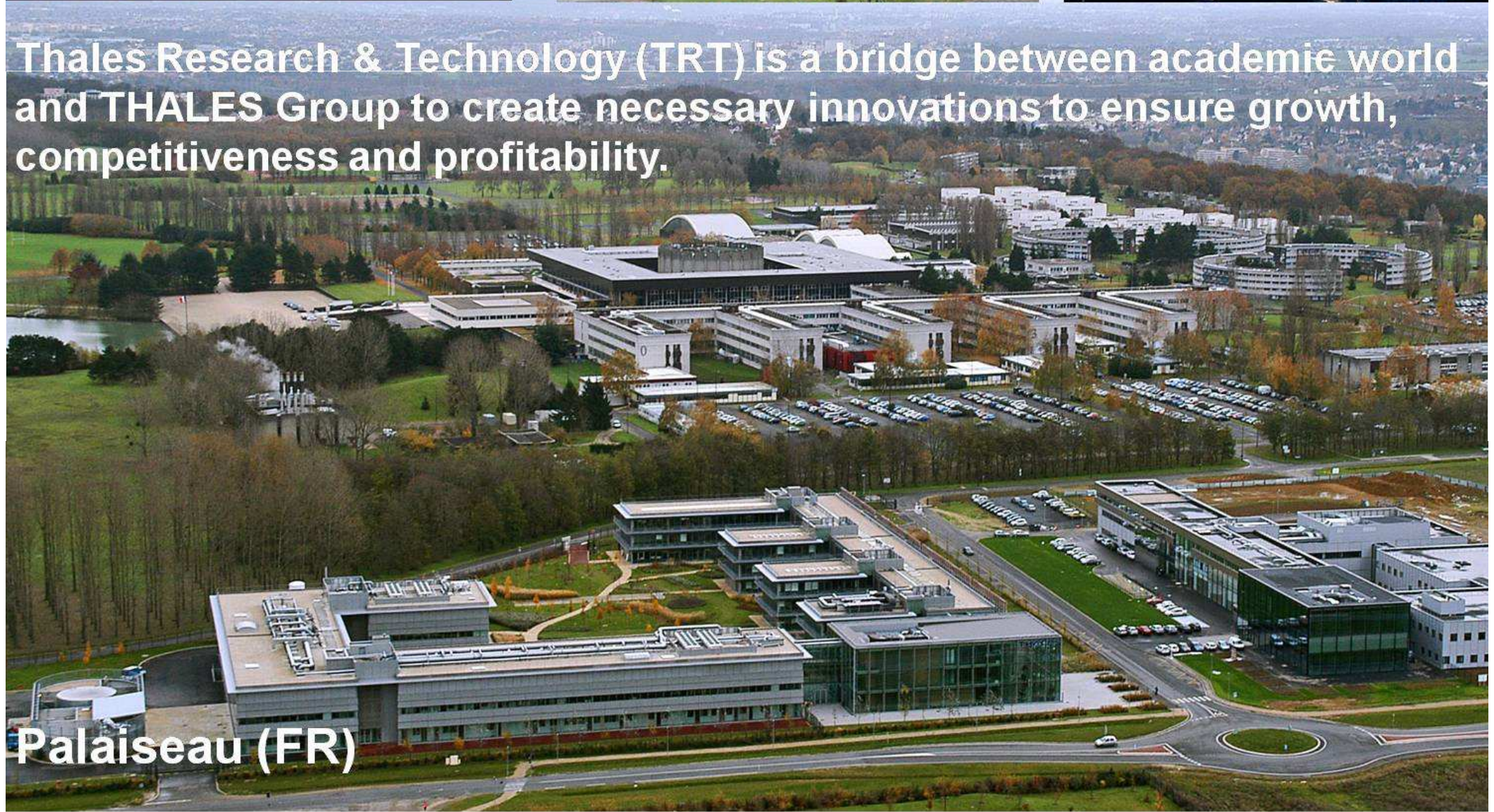


**Delft (NL)**



**Singapore (SG)**

Thales Research & Technology (TRT) is a bridge between academic world and THALES Group to create necessary innovations to ensure growth, competitiveness and profitability.



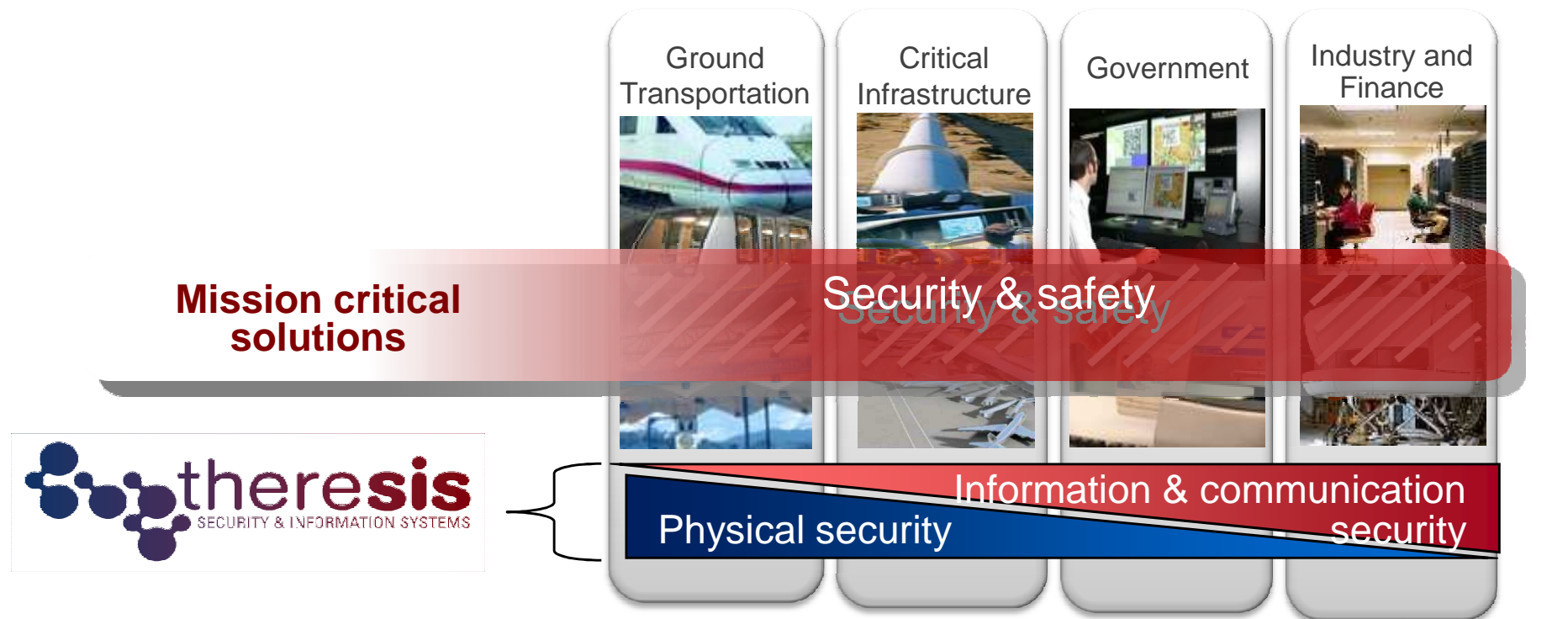
**Palaiseau (FR)**

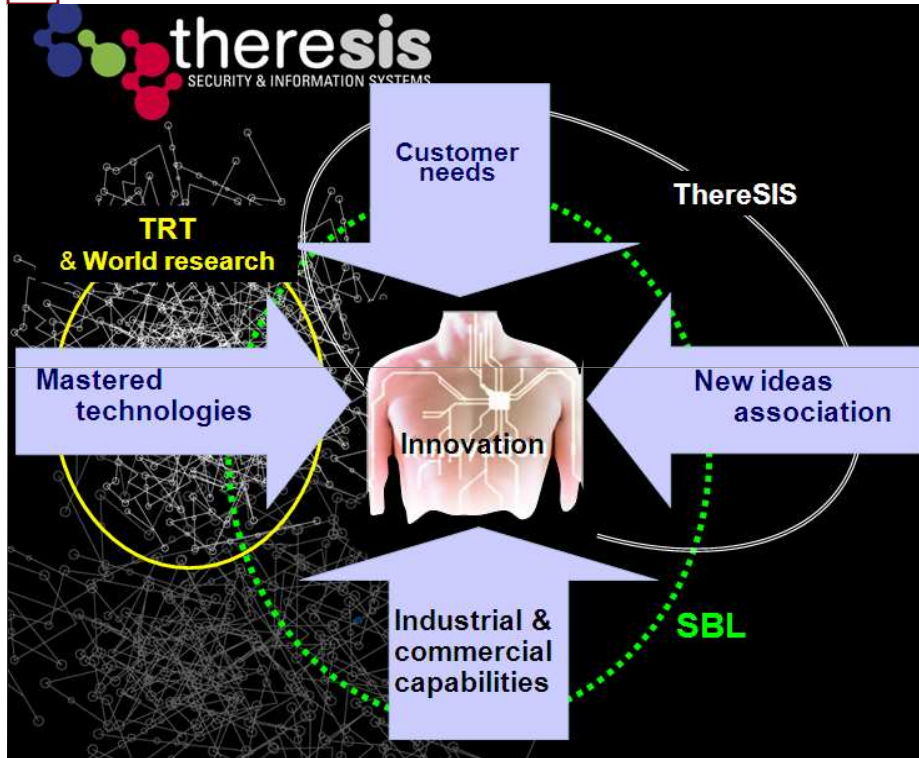


- R&T in Asia (China) for all Thales group (All KTD)
  - Develop R&T activities for the benefit of Thales business segments in China and worldwide
  - Establish adequate agreements between major Chinese research organizations and Thales group teams
  - Manage the R&T activities and cooperation
- R&I in Asia (China) for D3S division
  - Develop R&I activities in China
  - Facilitates the relationships between Asian R&I players and D3S R&I Organisation
  - Technical support to D3S business development

- Detect concepts before competitions
- Detect R&T / R&I players and new technology breakthroughs
  - Since 2006, the year China became the second largest investor in research and development worldwide just behind the US
  - In some domains China is moving from followers to Innovation leaders
- China has the ability and knows how to launch huge regional or “country” projects (Beijing Olympics, Shanghai 2010, mass transportation, security, airports...)
- Access to High skills manpower
  - Thales Academia <http://www.thalesgroup.com/academia>

- Build up differentiators
- Improve the competitiveness
- Support business in the technical domain
- Organize and optimize the external funding
- Develop technical synergies





## ■ Innovation by :

- Collaboration with customers
- Rapid prototyping (Speed)
- Partners networking (Technology & Access)

## ■ Empowered by ThereSIS

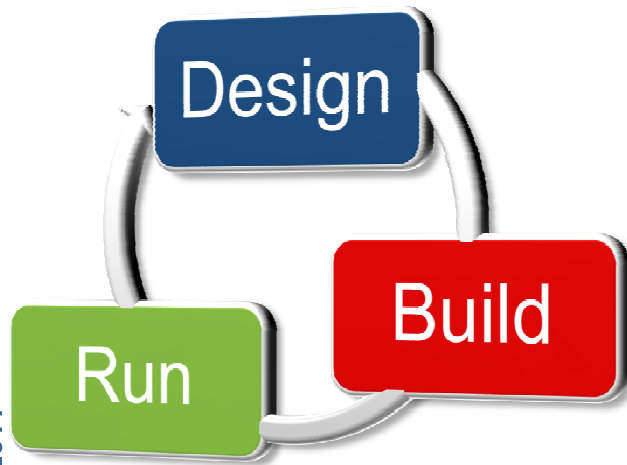
- Defining new concepts with customers
- Designing new technologies for mission critical systems
- Realizing system demonstrators
- Showing differentiators to the customer

## ■ Enabling solutions in :

- ICT security and privacy
- Digital Identity
- Critical infrastructure security
- Supervision
- Synthetic environment
- Intelligent Transportation







- Fast prototyping iterations for specification & design
- Visualization, modelization, simulation



## **Innovation**

Strong  
Dissemination

## **Industrialization**

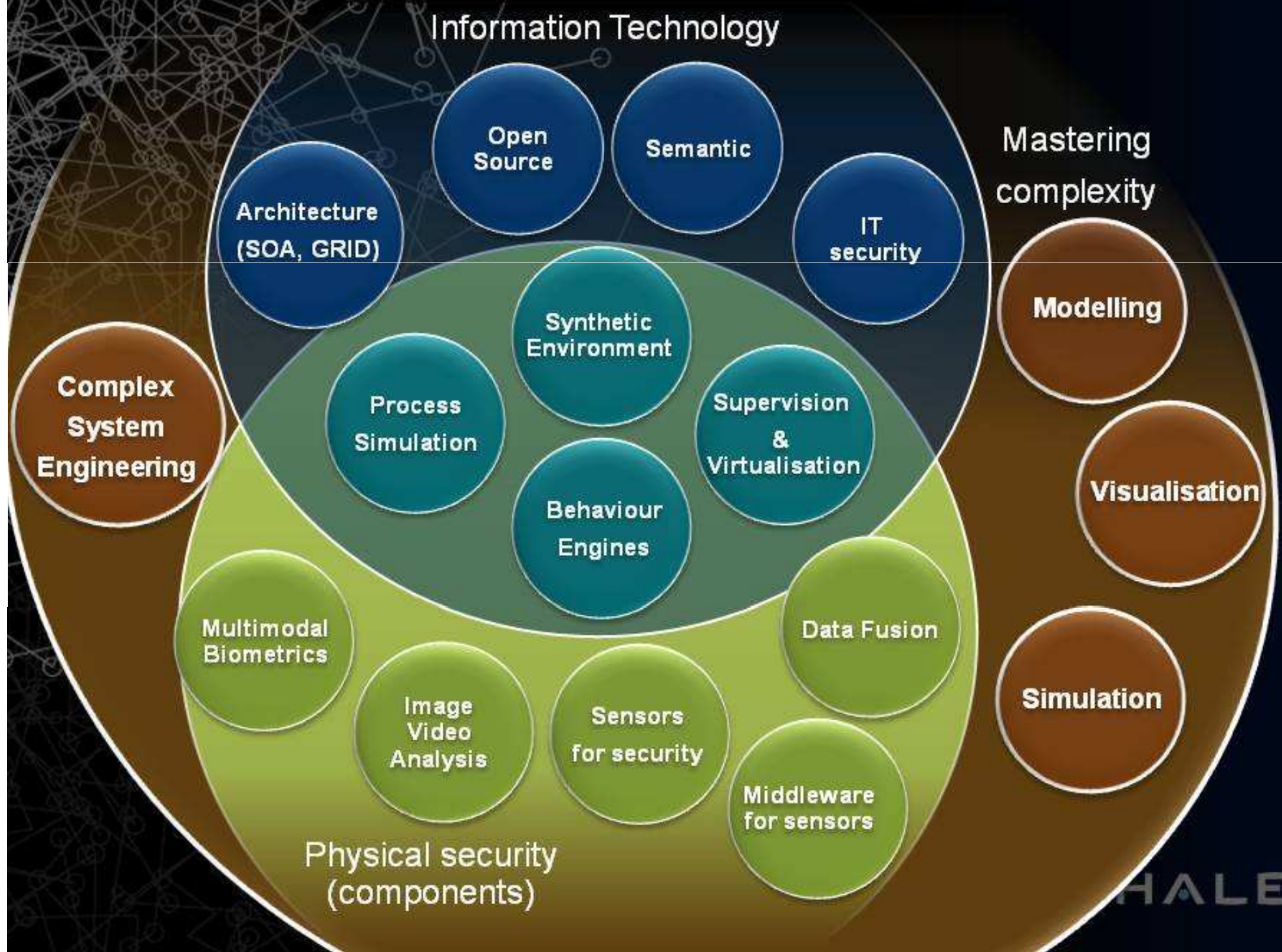
Rapid Prototyping  
Test Bed

## **Community**

Fast  
Dissemination

**Iterations are in days  
and no longer in weeks or months**

# ThereSIS: Research areas







## ■ Collaboration with Geneva Airport (Virtual airport)

- Flux & passengers behaviors
- Airport processes & ecosystem (trains, taxis...)
- Security & sensors

**System Dynamics**

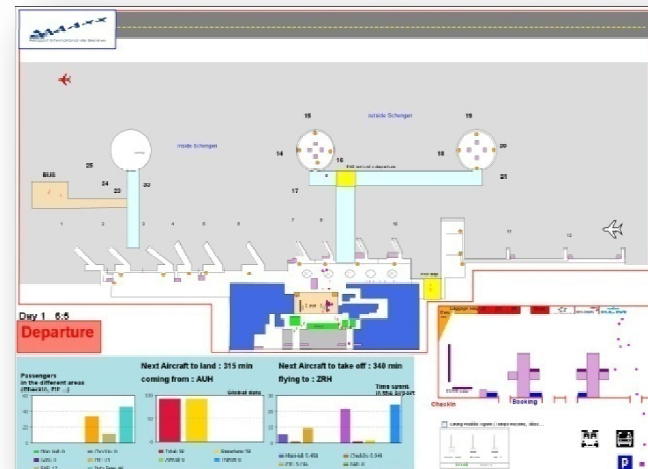
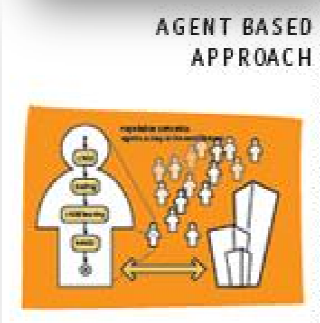
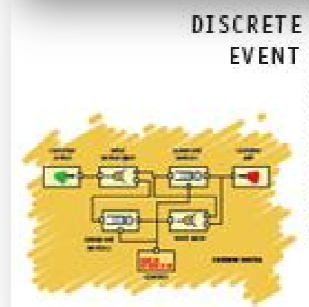
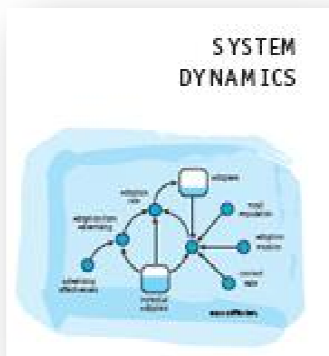
**Process-centric and  
Discrete Event approach**

**Agent-based approach**

**Usages**

- New designs & calibration
- Operations
- Crisis

**THALES**



### Geneva Airport - Thales Collaboration



Run Airport Model

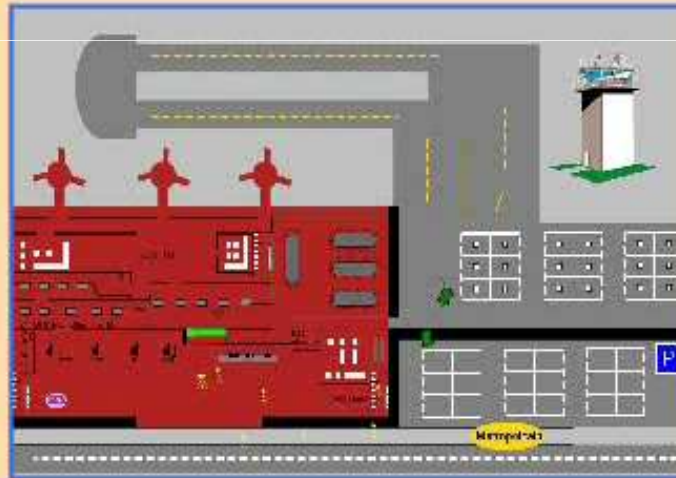


The purpose of this simulation model is to optimize passenger and aircraft flows in an airport. A virtual airport has been modelled, considering all the possible bottlenecks among the processes involving passengers, aircrafts and luggage. The main processes that have been modelled are a booking system (allocating flights to passengers), different possibilities for checking in, Security checking and passport control. The processes were defined and provided to us by Eurocontrol. The data (flights frequency, number of passengers, performance of the different processes...) is realistic and was provided by IATA. The first experiment is focused on flow segregation and trying to split the passenger flow into several smaller flows depending on passenger profiles such as age, number of people traveling together, type of passport...

# i-Airport

## Simulation du flux des passagers

Run Airport No...



The purpose of this simulation model is to optimize passenger and aircraft flows in an airport. A virtual airport has been modelled, considering all the possible bottlenecks among the processes involving passengers, aircrafts and luggage. The main processes that have been modelled are a booking system (allocating flights to passengers), different possibilities for checking in, Security checking and passport control. The processes were defined and provided to us by Eurocontrol. The data (flights frequency, number of passengers, performance of the different processes...) is realistic and was provided by IATA. The first experiment is focused on flow segregation and trying to split the passenger flow into several smaller flows depending on passenger profiles such as age, number of people travelling together, type of passport...



Virtual Airport



Virtual Station



Virtual Harbor



Virtual...

## Applications

Security

Flow  
Analysis  
Optimization

Decision  
support  
Training

Hypervision

## Technology

Real & virtual worlds  
symbiosis

Simulation of Adaptive  
Behaviors

(3D) Environment modeling

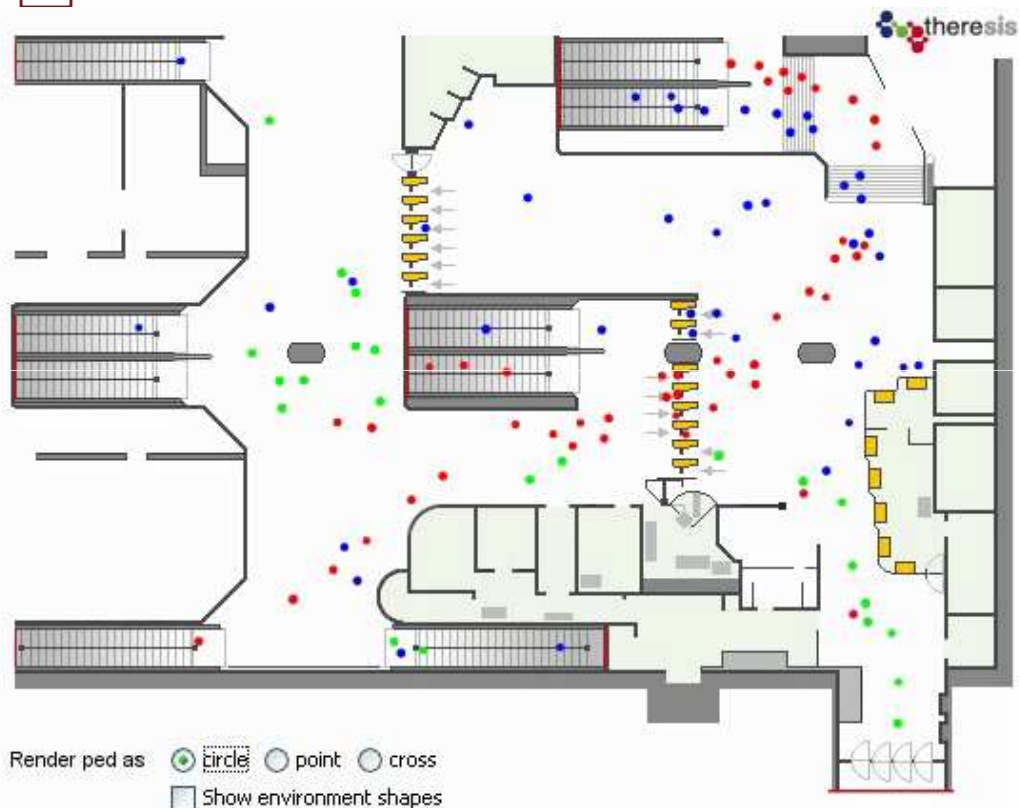
Optimization

Process capture and  
modeling



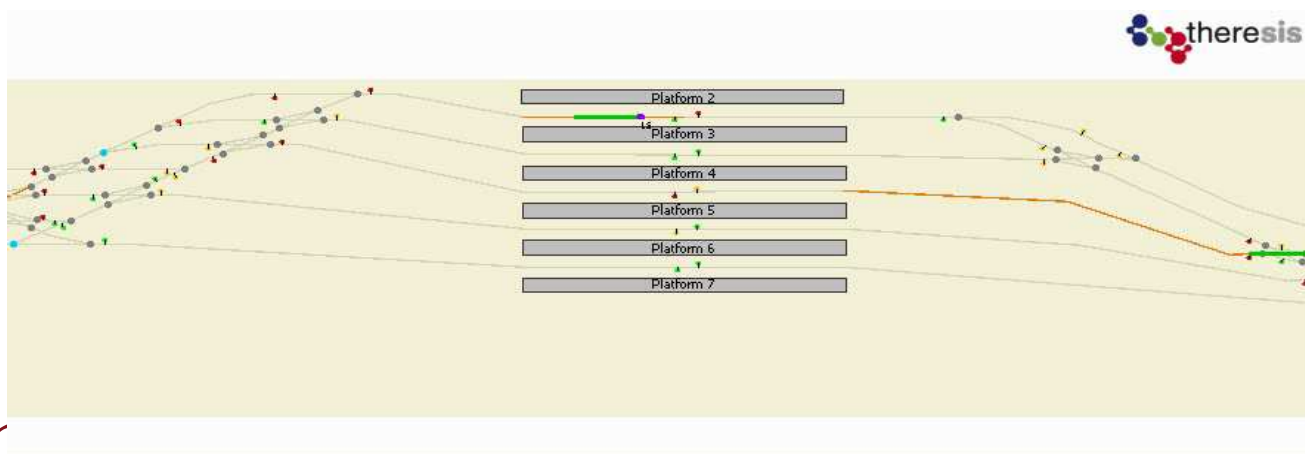
## Use Case

# Virtual Critical Infrastructures



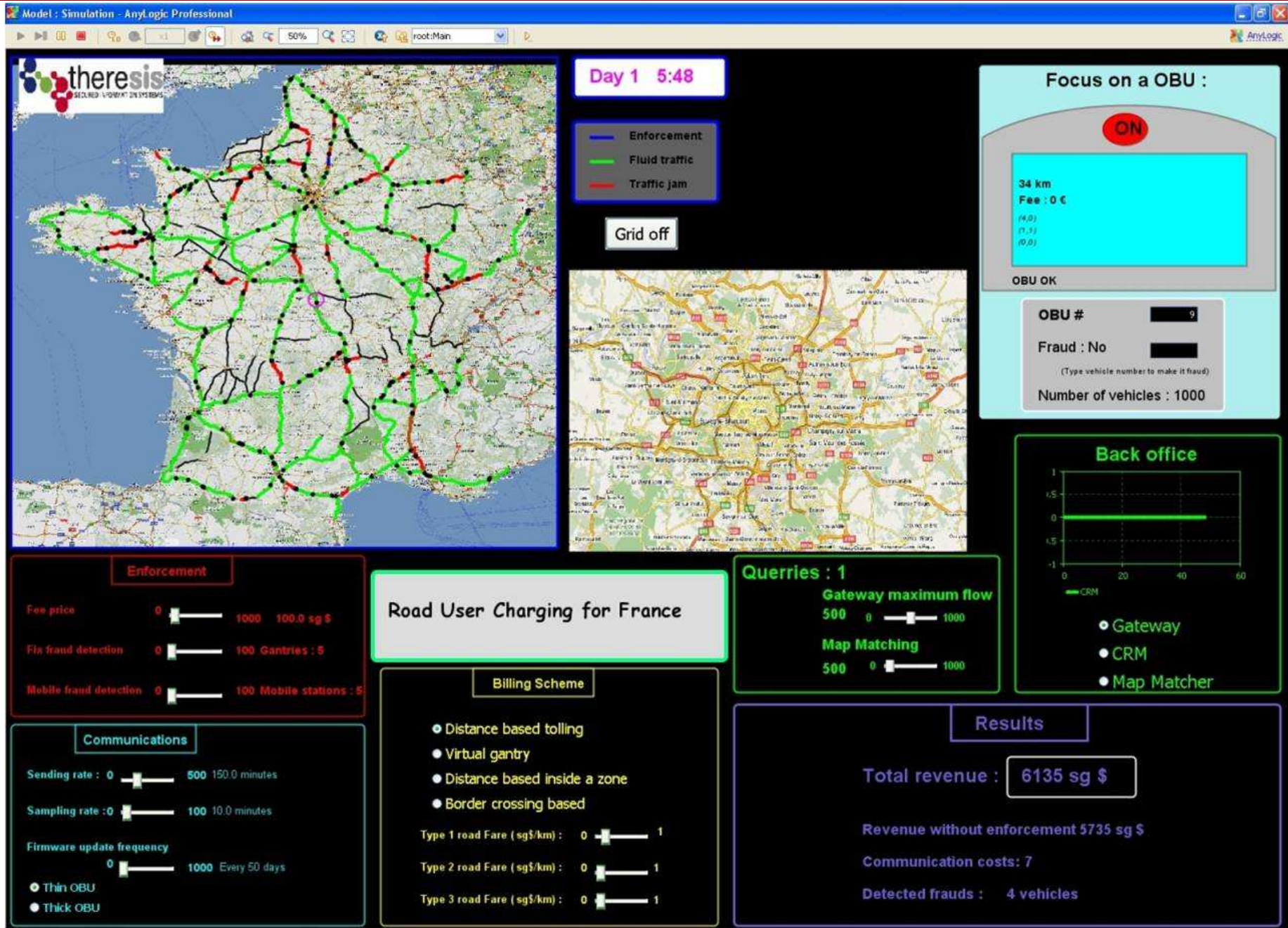
## Station

## Platforms



## Network







THALES

Search OK

## About us

### Roles



As part of Thales's new research facility at the École Polytechnique campus in Palaiseau, near Paris, the Security Solutions and

Services division has created ThereSIS, a research laboratory dedicated to developing security technologies to protect people, property and critical information systems.

### Research



We are channelling our efforts into a number of key areas: architectures for Web-based services, information system security

and resilience, open-source software and open standards, modelling and simulation technologies, supervision and administration for extensive, distributed architectures, semantic enhancement of web services and new internet usages.

### Structure and leadership



ThereSIS operates under the direction of Serge Druais, R&I programme director.

## Focus ON

### » NESSI, a major European project

NESSI (Networked European Software & Services Initiative) is a European technology platform which brings together 22 industrial companies, SMEs and university institutes operating in the software, telecommunications and IT services sector who have chosen to pool their research efforts on a range of specific topics including service-oriented architectures, Web semantics, grid computing software and infrastructure, and security.

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## European research programmes

In March 2000, the Lisbon Summit fixed as objective that Europe should become the most competitive and dynamic knowledge-based economy, characterised by sustainable growth, more and better jobs and greater social cohesion, by 2010's.

As a very significant European market and a strategic capability to achieve the Lisbon objective, the development and use of ICT is supported by the EC.

**ThereSIS is part of this dynamics through:** the Networked European Software and Services Initiative (NESSI) and FP6 European projects.

[READ MORE >>](#)

## Virtual visit



[visit the demo center](#)



[visit our offices](#)

**ThereSIS collaboration platform**  
[www.theresis.org](http://www.theresis.org)

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