



## Consortium

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### Partners

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Fondazione Bruno Kessler (IT)

Rainbow Photonics (CH)

ETH Zürich (CH)

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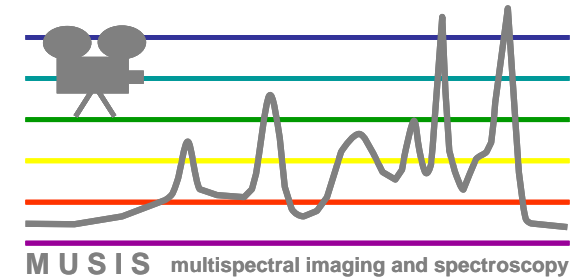
European Commission

Information Society and Media DG

ICT Programme

Unit G5 - "Photonics"

[http://cordis.europa.eu/fp7/ict/photonics/home\\_en.html](http://cordis.europa.eu/fp7/ict/photonics/home_en.html)



# MUSIS

**M**ulti**S**pectral terahertz, infrared, visible  
Imaging and **S**pectroscopy

Specific targeted Research Project  
co-funded by the European Commission



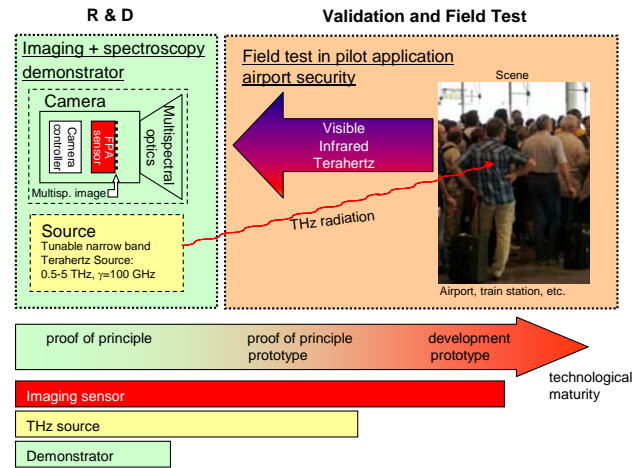
# Overview

MUSIS is a Specific Targeted Research Project (STReP), which started in May 2008, co-funded by the European Commission under the strategic objective “Photonic Components and Subsystems” of the framework 7 ICT program.

MUSIS will develop photonic components in security, safety, medical, and production technology. Multispectral imaging can be a beneficial tool since it can combine the advantages of different spectral detection bands in a unique system. In an airport security environment for example, classical CCTV detection can be combined with scanning persons for hidden objects (weapons, explosives, etc.) using terahertz sensing and monitoring body temperature for detecting infectious diseases or excitement.

The pilot application of the MUSIS components will be in the field of airport security. A demonstrator to test the performance of the components will be built up and tested at Zurich airport. Results of the field test will be discussed with experts from airport security but also from other application fields in order to define the future strategy for the MUSIS technology.

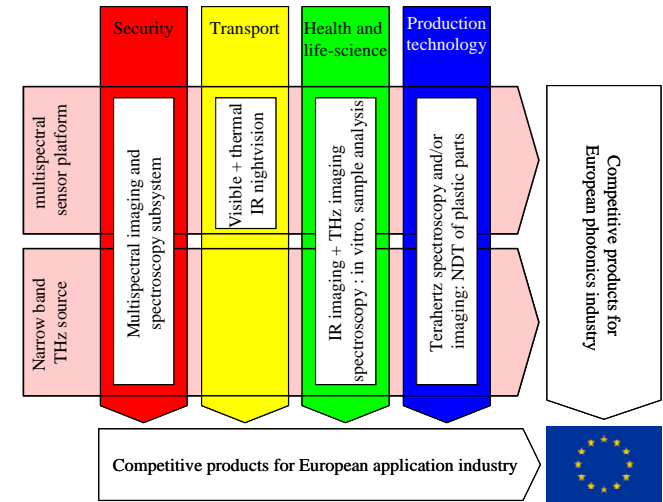
# Challenges



MUSIS will address the following challenges:

- Development of a monolithic multispectral terahertz, infrared, and visible focal plane array detector based on a CMOS substrate working at room-temperature
- Development of a high power, small band tunable terahertz source using components with the potential of getting a low cost technology in future
- Design of a subsystem capable of doing passive visible, infrared, and terahertz imaging as well as active stand off terahertz spectroscopy
- Validation of multispectral imaging and spectroscopy system for use in an airport security environment

# Applications



MUSIS will develop photonic components which will bring innovative products to European Photonics industry as well as to European application industry. In addition to the application in security technology the following applications are conceivable:

*Transport safety:* combination of near infrared and thermal infrared vision for advanced nightvision systems.

*Health and life-science:* Use of multispectral imaging for detection of skin cancer or dermatologic dysfunctions.

*Production technology:* Use of terahertz imaging and infrared imaging for non destructive testing of combined metal – plastic parts.