

European Network on New Sensing Technologies for Air Pollution Control and Environmental Sustainability - *EuNetAir*

COST Action TD1105

THIRD SCIENTIFIC MEETING

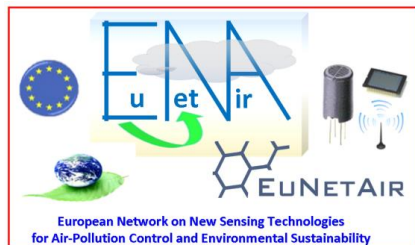
**Working Groups and Management Committee on
New Sensing Technologies for Indoor Air-Pollution Monitoring**
organized by GEBZE and Bahcesehir University

Bahcesehir University, Besiktas Campus, Istanbul, 3-5 December 2014

A New EC DG R&I Cluster Initiative: The Characterization - Sensors Cluster

Action Start date: 01/07/2012 - Action End date: 30/06/2016 Year 3: 1 July 2014 - 30 June 2015

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EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY



Michele Penza

Function in the Action: Action Chair

ENEA - Brindisi, Italy



THIRD SCIENTIFIC MEETING: WGs and MC - ISTANBUL

hosted by Bahcesehir University, Besiktas Campus



Meeting AGENDA

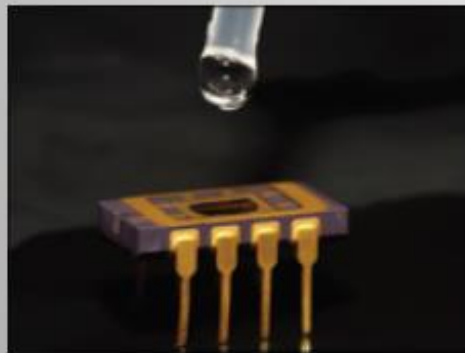
3 Dec. 2014 - Wednesday	
08:30 - 18:00	REGISTRATION
09:00 - 09:30	WELCOME SESSION
09:30 - 11:00	PLENARY SESSION 1: Indoor Environment Quality Applications
11:00 - 11:30	<i>Coffee-Break</i>
11:30 - 13:00	PLENARY SESSION 2: Indoor Environment Quality Applications
13:00 - 14:30	<i>Lunch</i>
14:30 - 16:30	WG1-WG2 Meeting WG3-WG4 Meeting
16:30 - 17:00	<i>Coffee-Break</i>
17:00 - 18:30	WG1-WG2 Meeting WG3-WG4 Meeting
18:30	<i>Gathering of Day</i>
20:30 - 23:00	<i>Social Dinner</i>
4 Dec. 2014 - Thursday	
09:00 - 18:00	REGISTRATION
09:00 - 09:30	Wrap-Up and Inputs from Action TD1105
09:30 - 10:30	KEYNOTE SESSION
11:00 - 11:30	<i>Coffee-Break</i>
10:30 - 13:00	SIG SESSIONs: SIG1-SIG4 Meeting
13:00 - 14:30	<i>Lunch</i>
14:30 - 15:30	POSTER SESSION
15:30 - 16:30	Indoor Environment Quality Cluster GENERAL ASSEMBLY
16:30 - 17:00	<i>Coffee-Break</i>
17:00 - 18:30	Action WGs/SIGs GENERAL ASSEMBLY
18:30	CONCLUSIONS
20:30	<i>Free Dinner</i>
5 Dec. 2014 - Friday	
09:30 - 13:00	6th MANAGEMENT COMMITTEE MEETING
13:00 - 14:00	<i>Lunch</i>
14:30	Meeting Closing



Brussels, Covent Garden, 27 November 2014
European Commission - DG Research & Innovation
Directorate Key Enabling Technologies
Unit Advanced Materials and Nanotechnologies

Towards to a Characterisation cluster

Sensors



November 2014

The CHARACTERIZATION Cluster: *EC Expectations*

- 1. Increase the Impact of Research funded under the NMBP Programme**
 - ✓ *Scientifically*
 - ✓ *Technically*
 - ✓ *Commercially*
- 2. Facilitate Networking and help projects to benefit from Synergies**
- 3. Obtain better Advice for future Policy and Call Preparations (Roadmaps, Inputs for Call Topics, long-term Research Goals)**
- 4. Improve Impact, Exploitation and Knowledge Management**
- 5. Raise Visibility of Public Funded Research activities and their Impact**

The CHARACTERIZATION Cluster: *3 Sub-Clusters*

SENSORS

**Characterization
for Model Validation**

**Characterization
Tools
(Materials,
Metrology)**

The CHARACTERIZATION Cluster:

Sub-Cluster Planning

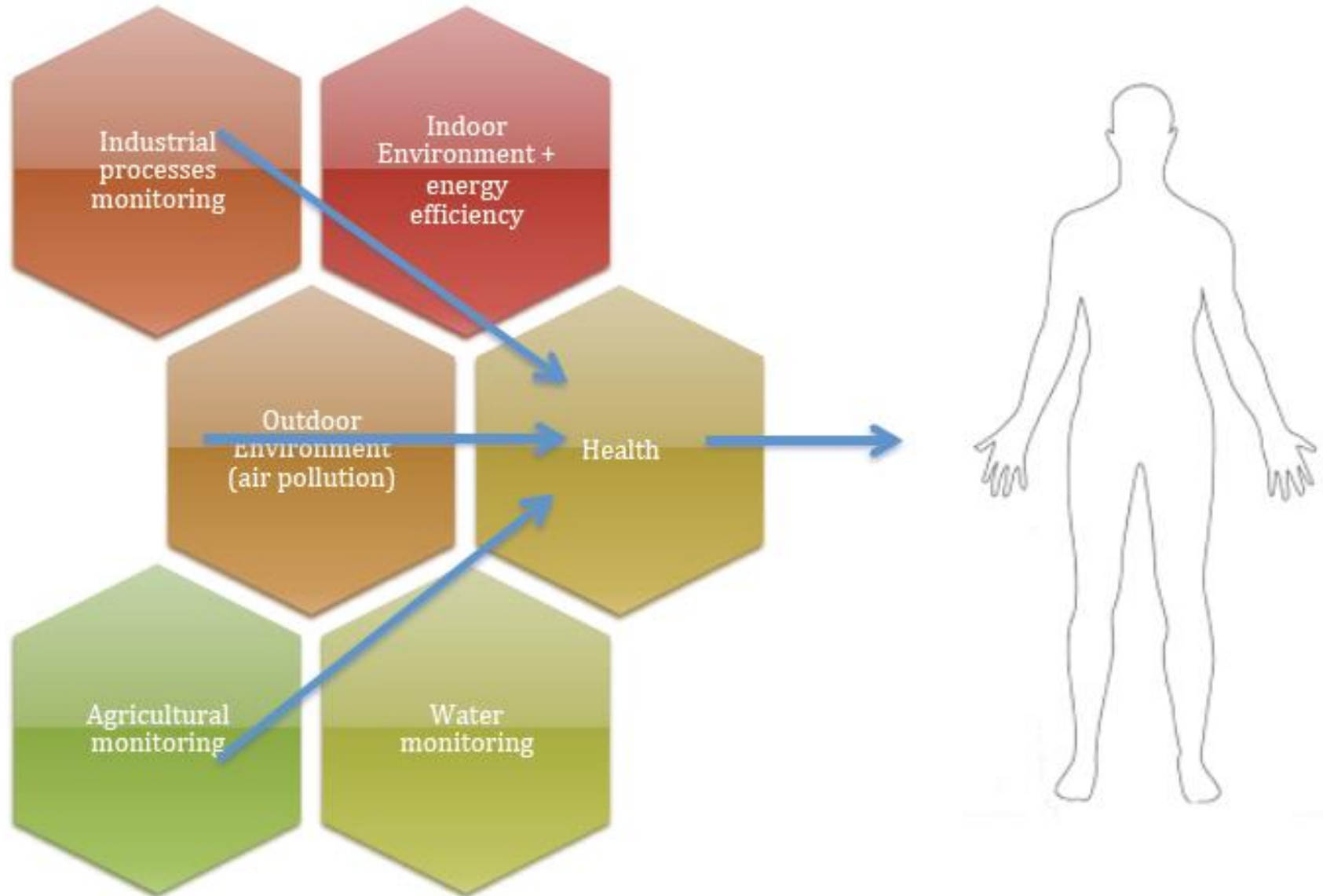
- 1. Preparation, 1° Cluster Meeting**
 - Establish interest with projects
 - Analyse results and prepare workshop
 - 1° Cluster Meeting
- 2. Define Objectives and Scope**
 - Scope, Targets and Action Plan definition
 - Organisation and Management
 - Sub-Cluster Working Groups & Your role !
- 3. Working Groups Activities - Phase 1**
 - Vision and **Scope Paper** completed
 - Targets detailed
 - Kick-off and 1° Open Cluster Meeting (ENF2015)
- 4. Working Groups Activities - Phase 2**
 - Present **ROADMAP**
 - Events & Workshops
 - Specific Networking

1. Q3-4, 2014 - **2. Q1, 2015** - **3. Q2-3, 2015** - **4. Q3-4, 2015**

AGENDA (EXPERTS PRESENTATIONS)

- ◎ **Prof. Andreas Schütze (University of Saarland)** – Sensor systems for environment and health: challenges and opportunities
- ◎ **Prof. Dermot Diamond (Dublin City University)** - Challenges in autonomous environmental sensing
- ◎ **Prof. Vladimir M. Mirsky (Brandenburg University of Technology Cottbus)** – Change of the paradigm: smart chemical sensors with additional integrated functions
- ◎ **Dr. Adriele Prina Mello (IMM/AMBER/CRANN-TCD)** - Challenges in sensors for health applications: the future of cancer diagnostics.
- ◎ **Dr. Michele Penza (ENEA)** – New Sensing Technologies for Environmental Sustainability in Smart Cities (COST EuNetAir)
- ◎ **Olivier Martimort (NanoSense)** - Challenges for IAQ sensor industrialisation

Field of application of sensors





Sensor sub-cluster: Objectives

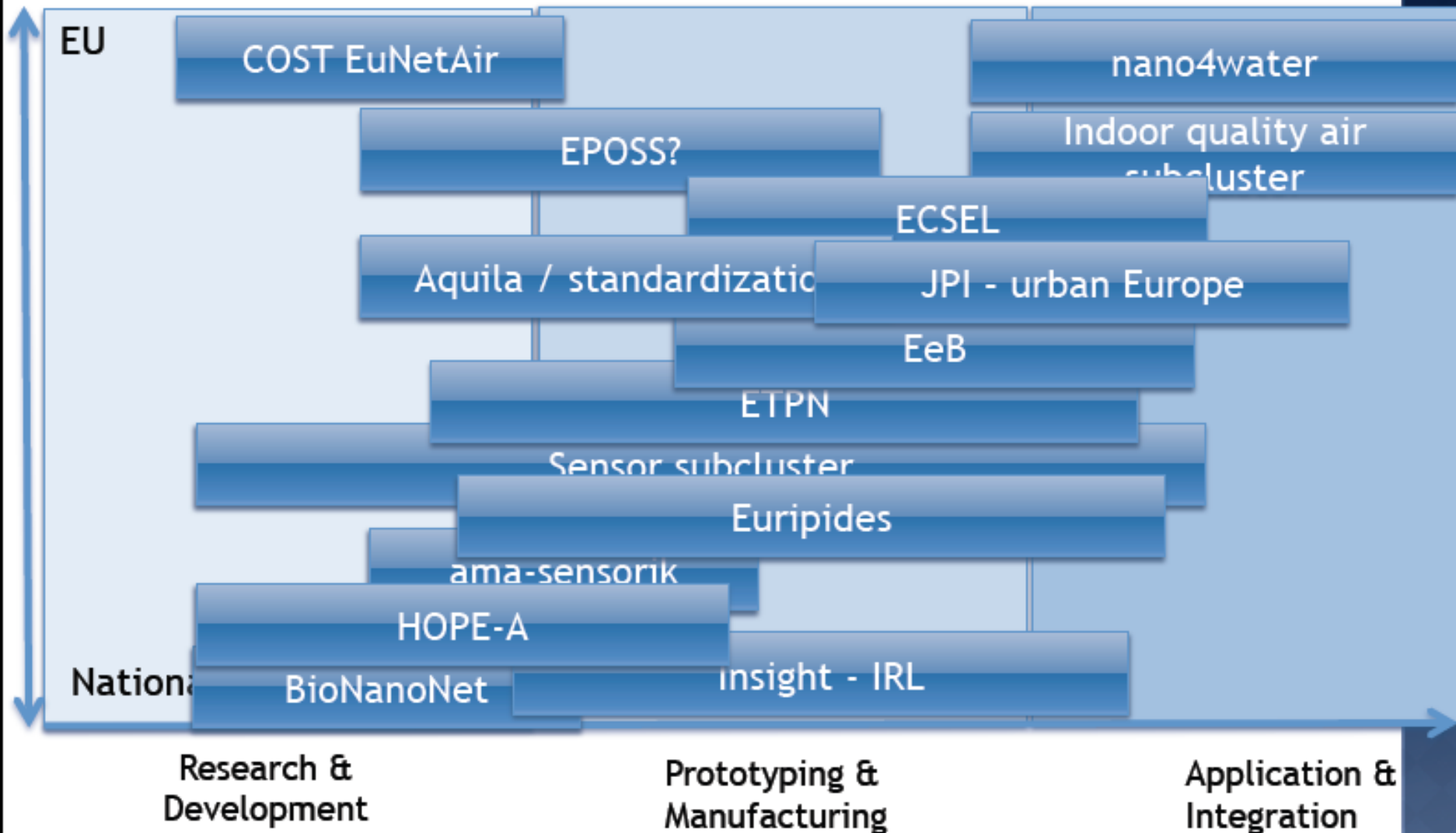
- **maximize** the cooperation between projects (avoid duplicating work and improve efficiency)
- identify common interests **in on-going research and development (e.g. open calls, training)**
- provide a forum for discussion, problem solving and **analytical planning R&D activities in Europe**
- establish the EU-wide meeting platform for researchers and mainly for **involved industries and end-users**
- **remove commercialization** barriers to ensure the **EU leadership in Sensor technologies**
- **Integrate inputs and recommendations from existing clusters**
- promote the connection **with external bodies (EC – RTD, Connect, standardization and regulatory bodies, journals and scientific boards) – advisory board**
- disseminate the sensor-related issues/findings to informed public (e.g. on the invisible environmental problems)



- **Indoor sensing**
 - ✓ Cross-sensitivity with specific gases (fatty acids)
 - ✓ Accurate VOC quantification
 - ✓ Long term exposure quantification
 - ✓ Stability and life expectancy
 - ✓ Miniaturization, low consumption, controlling and data processing
 - ✓ Integration to air treatment systems and HVAC (incl. occupancy)
 - ✓ Human machine interface for comfort
- **Standardization and regulation**
 - ✓ Standards and data protocols for Data Benchmarking (open access)
 - ✓ validation and standardization of measurement procedures
 - ✓ Advanced study of VOC impact on health/productivity
 - ✓ Harmonization/Regulation/Public information of measured sites/households
 - ✓ Regulation/Public info on industrial products – e.g. real time styrene monitoring
- **Modeling and Simulation**
 - ✓ Multi-physics model : analyte flow, material layer, transduction, data processing, integration

- **Environmental sensing**
 - ✓ Sensors complementary to existing tools (larger devices)
 - ✓ Integration to *mobile devices*
 - ✓ Low cost, wireless sensors to form *networks (e.g. sensing cities)*
 - ✓ Targeted *information to habitants* and mitigation
 - ✓ *Nanoparticle detection* for dust and aerosols
- **Biosensors**
 - ✓ Disposables vs. *continuous/automatic* monitoring
 - ✓ High throughput
 - ✓ *Regulatory framework* not fully adapted to personalization
 - ✓ Towards *point of care* diagnostics, incl. telemonitoring
 - ✓ Data integratability in *health system*
- **Chemo/bio sensors for liquids**
 - ✓ High potential, *but low progress*
- **Business model**
 - ✓ Total cost of ownership vs. savings in comfort environment
 - ✓ Food quality monitoring and price adaptation (realtime S/D)
 - ✓ Health system rewarding for early testing and monitoring
- **Analytical tools/metrology**
 - ✓ Validation

SUB-CLUSTER POSITIONING



PRIORITY SCOPE

- ⦿ Position paper on sensors - roadmap
- ⦿ Definition of chemical sensor
- ⦿ Meeting with investors - public funding managers - exhibition - narrow gap to meet between investors and sensors experts
- ⦿ Competitions for technology solutions
- ⦿ Selection of projects based on prototypes working
- ⦿ Selection for funding on sensors - advisory role
- ⦿ Shorter evaluations
- ⦿ Drive strategic value chain
- ⦿ High value initiatives
- ⦿ Translation hub - nanomedicine - clearance house
- ⦿ Link to ERDF regional findings - act regionally
- ⦿ Start with CSA as ETP nanomed
- ⦿ Common protocols on multiple sensor measurements -European standardized deployment
- ⦿ Network of start-ups
- ⦿ Bring expertise to selection and evaluations
- ⦿ Regulation of short /long term exposure health / productivity
- ⦿ Felt temperature is not standardized
- ⦿ Fabless chip production opportunities - for small scale - network with producers - emerging fabrication

SUB-CLUSTER GOVERNANCE

DG R&I Officers: Hans-Hartmann Pedersen,
Rene Martins, Christos Tokamanis

Chair of Cluster SENSORS: Michele Penza
Coach of Cluster SENSORS: Rudolf Frycek

Working Group 1:
Environmental Sensor Technologies

Working Group 2:
Sensor Technologies for Energy Efficiency

Working Group 3:
Sensor Technologies for Health Monitoring

Working Group 4:
Industrial Applications & Commercialization

Working Group 5: Dissemination & Outreach
Webpages; Joint-Workshops; Open Advisory Board

Process monitoring

leaders

Michele Penza

Dermot
Diamond

A. Schuetze, O.
Martimort

A. Prina Mello,
P. Galvin

O. Martimort,
R. Frycek

T. Simmons -
ama + eurice

Torsten Mayr

The CHARACTERIZATION Cluster: *Sub-Cluster SENSORS*

Brussels, EC DG R&I, 27 November 2014



- **Interlink with Other 2 Sub-Clusters:**
 - ✓ *Characterization of Sensor Materials & Nanomaterials*
 - ✓ *Modelling of Sensor Materials*
 - ✓ *Metrology and Validation*
 - ✓ *Harmonisation of Environmental Measurements*
 - ✓ *Standards and Protocols for Data Benchmarking*
 - ✓ *Other*

Sensors Sub-Cluster Governance: *Objectives* (3/4)

• **Interlink with Other National/International Initiatives**

- ✓ *COST Action TD1105 EuNetAir*
- ✓ *European Energy Research Alliance (EERA)*
- ✓ *AQUILA Network - Air Quality Reference National Laboratories (EU Directive Ambient Air EC/2008/50)*
- ✓ *Joint Programming Initiative (JPI): Urban Europe*
- ✓ *Renaturing Cities Initiative: Indoor Environment Cluster*
- ✓ *NanoMATCH Cluster: Nanosystems for Conservation of Cultural Heritage*
- ✓ *European Technology Platform on Smart Systems Integration (EPoSS)*

Contact Details

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EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY



CSO Approval: 01 Dec. 2011

Kick-off Meeting: 16 May 2012

Start of Grant: 01 July 2012

End of Grant: 30 June 2016

www.cost.eunetair.it

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http://www.cost.eu/domains_actions/essem/Actions/TD1105

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Istanbul, Turkey, 3 - 5 December 2014



THANK YOU VERY MUCH FOR YOUR KIND ATTENTION !

