Welcome to the second issue of the EUCLID project newsletter. [Read More]

The Euclid project: what has happened during the past months?
EUCLID project team analysed the societal and industrial needs for monitoring and control systems technologies, as well as relevant research and development priorities in India and Europe… [Read More]

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Meet your future partners at the EUCLID upcoming events
Euclid panel discussion “Energy and Environmental challenges in Emerging regions – Opportunities for Control and Monitoring technologies” in Milan during the 18th World Congress of the International Federation of Automatic Control (IFAC) in August 2011… [Read More]

Euclid workshop “Foundations and future perspectives to cooperate in control and monitoring with India”: pre-conference event at the 50th IEEE Conference on Decision and Control and European Control Conference (Orlando, Florida, US) in December 2011… [Read More]

Be informed
The upcoming FP7 ICT Calls 8 and 9 offer more than one billion Euros of EU funding and cover a number of topics… [Read More]

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Focus topic: FP7 Network of Excellence HYCON2
The FP7 Network of Excellence HYCON2 “Highly complex and networked control systems” has started in September 2009, for a total duration of four years. The 4th HYCON2 PhD School on Control of Networked and Large-Scale Systems will take place on June 21-24, 2011 in Trento, Italy… [Read More]
Are you a young monitoring or control systems researcher or graduate student? Are you looking for an internship in Europe or in India, or for a thesis co-supervision? EUCLID supports win-win two-ways cooperation between Europe and India, and can help young Indian and European graduate students and researchers to find their way in Europe or in India… [Read More]

Be part of the EU-Indian monitoring and control community… Are you looking for partners for a research proposal? Do you have experience or suggestions you would like to share? Please contact us …[Read More]
It has been almost a year since we began working together, helping to bring European and Indian monitoring and control systems research communities closer to each other. We are pleased to present to you our second newsletter. The newsletter is split into three main sections: (1) What has happened during the last few months in the Euclid project? (2) What are upcoming Euclid initiatives? (3) Monitoring and control: what’s going on and how you can take part in the related activities?

What has happened during the last few months? Lots of things…We issued two brief reports, on the industrial and societal needs in India in monitoring and control, and on the European R&D priorities in networked monitoring and control systems technologies. The First EU-India collaboration meeting “Monitoring and control systems technologies: towards closer India-EU R&D cooperation” was organized in Mumbai and Bangalore, India in April 2011: 4 days, 8 European delegates, 60+ Indian specialists and more than 100+ individual discussions… we will keep you informed about the outcomes of this event of which we hope will be visible in a few months. Support has been provided to three young Indian graduate and post-graduate researchers to integrate with European organizations on a temporary basis, and also to the three Indian organizations who have joined the European research consortia for the FP7 ICT Call 7. The first ideas about the next steps to reinforce EU-Indian collaboration have already emerged and been discussed...

What will happen? Three Euclid events are currently under preparation: a discussion panel concerning “Energy and environmental challenges in emerging regions – opportunities for control and monitoring technologies” at IFAC WC Milan, Italy in August 2011, a round table on the EU-India cooperation, also at IFAC WC, and a workshop “Foundations and future perspectives to cooperate in control and monitoring with India” at CDC-ECC (European Control Conference), Orlando, US in December 2011. We are pleased to see that many outstanding specialists have been motivated to contribute to the success of these upcoming events.

What’s going on in monitoring and control in Europe and in India? Stay informed and learn more about upcoming ICT Calls 8 and 9, European Technology Platforms, HYCON2 European Network of Excellence on Highly-complex and networked control systems...

Your ideas and contributions for the next newsletter are very welcome. We also invite the interested members of the R&D monitoring and control community to take part in the project events and activities, and we look forward to meeting you soon at one of our events.
The Euclid project: what has happened during the past months?

Analysing the societal and industrial needs for monitoring and control systems technologies in India and Europe

Two reports published on the Euclid web site highlight challenges, needs and research and development priorities for monitoring and control systems technologies, both in India and in Europe:

“Analysis of the R&D priorities in the field of Networked Monitoring and Control Systems” www.euclid-india.eu/EUp-priorities focuses on Europe and briefly address the state-of-the-art and main challenges for monitoring and control technologies in the important sectors such as transportation, energy, water, biological and medical in Europe that are essential for the sustainability, growth of economy, and to all the inhabitants of Europe. The report also provides information on European R&D funding priorities in monitoring and control.

“Societal and Industrial needs in India for monitoring and control: Focus on Transportation, Energy, Water, Industrial Automation and Health-Care” www.euclid-india.eu/India-needs focuses on societal and industrial needs in five sectors, which are relevant in modern India. These themes have been chosen for their relevance towards potential India-EU collaboration as well as being socially and economically important. Infrastructure development for India is the key factor which relates all these themes. This report highlights the current status as well as requirements for a modern infrastructure to support India’s fast growing economy as well as the requirements for an equitable society.

Meeting the European and Indian teams at the conferences

Awareness raising and dissemination of information on EU-Indian cooperation opportunities is one of the main tasks of the Euclid project. Thus, the Euclid team participated with posters, booths or presentations, in the following events:

- **Euro-India Future Internet Research and Experiments collaboration workshop**, at the ITU-T Kaleidoscope event: Beyond the Internet-Innovations for future networks and services, 16-17 december 2010, Pune, India: http://www.mosquito-fp7.eu
The first EU-India collaboration event in monitoring and control systems technologies in Mumbai (hosted by IIT-Mumbai) and Bangalore (hosted by IISC-Bangalore) brought together more than 60 participants from both industry and academia, including 8 EU monitoring and control specialists from Germany, France, Italy and Ireland.

The event included plenary sessions with presentations from the European and Indian side, parallel sessions on specific topics, discussions about cooperation challenges, barriers and the way forward, an awareness raising session about FP7 opportunities, the individual meetings between the EU and Indian participants and an FP7 training in the form of the individual consultations. All event materials, including presentations, are accessible online: www.euclid-india.eu

Although the true results will only be visible in several months, the objectives of the visit have been broadly met: both the EU and Indian participants have expressed good optimism for Indo-EU research collaboration. The satisfaction survey shows a 95% satisfaction rate from the participants with the event. Examples of follow up actions include:

- Submission of a joint collaborative research proposals
- Investigation of possibility to set up a Joint Graduate School and a joint master thesis;
- Organisation of joint PD thesis by an Indian industrial company and an EU university;
- Set up of an EU-based PhD grant funded by an Indian industrial organization
- Promotion of Indian-based internship opportunity in Europe...

A number of EU-India cooperation issues have been emerged during the meeting:

- There is a strong cooperation potential between European and Indian monitoring and control organisations in several research areas and application domains. However, the European organisations do not often understand the specific
Indian competences that bring added value to cooperation. This limits EU-Indian cooperation potential.

- Visibility of various Indian academic institutions, except for a few, is poor in the EU. A focus on only a few top academic institutions in India severely limits EU-India collaboration potential and opportunities for EU researchers.

- There is lack of awareness in Europe about existing Indian-based cooperation opportunities (e.g., Indian-based industrial companies offer internship funding for PhD interns from abroad, funding could be provided to foreign students to study in India etc). However, the win-win cooperation goes two-ways.

- There is a clear need and desire to set up joint education programmes and thesis co-supervision: this is considered as two-way win-win long lasting cooperation.

- The offices of multinational industrial companies based in India, are very motivated to pursue international R&D cooperation. The Indian industrial companies are more cautious with this regard.

- The main barriers for EU-Indian R&D cooperation (including FP7 research proposals participation) seem to be: from the Indian side, difficulties for the Indian organisations to find European partners, and little use of networking opportunities, and from the European side, lack of knowledge about Indian competences and especially lack of understanding of the added value that can be brought by the Indian teams – this is particularly relevant to the FP7 research consortia.

- Euclid is currently supported by the EU only, but to pursue sustainable two-way win-win cooperation, the “after-Euclid” support should come from India as well.

Want to share your opinion on these and other relevant issues? Contact us!
The EUCLID project team organises a panel discussion “Energy and Environmental challenges in Emerging regions – Opportunities for Control and Monitoring technologies” during the 18th World Congress of the International Federation of Automatic Control (IFAC), Milano, Italy, August 28 – September 2, 2011: http://www.euclid-india.eu/ifac

This 2 hour panel will review our current understanding of the link between energy and environment and it will discuss how monitoring and control system technologies can help. A specific focus for the session will be on emerging economies, especially India and China. It is in these regions that demand for power and energy is growing rapidly; clean energy solutions must address priorities there. Recent data on generation mix, power system infrastructure developments, and government policies and priorities will be briefly reviewed. A few imperatives bear special emphasis: reduction and redistribution of energy consumption in homes, buildings, and industries; more reliable transmission and distribution infrastructure; increased penetration of renewable generation; and adjustment of consumption demand in conditions of uncertain and intermittent supply.

The role of control in two critical technology-rich areas will be discussed: energy efficiency and smart grids. Energy efficiency is the obvious first recourse and it is applicable from the generation station to the residential, commercial, or industrial end user. Advanced control and optimization solutions have been successfully deployed, including in emerging regions, and opportunities exist for far greater impact. One challenge that needs to be addressed is that of process-model mismatch over time, resulting in decreasing performance of model-based solutions. Energy efficiency in the transmission and distribution system is a higher priority item in emerging regions than in developed countries (where T&D losses are in single-digit percentages).

The smart grid can be thought of as an overlaying of a communication and control infrastructure on the electricity grid. Control applications are ubiquitous, from generation, to transmission and distribution, to the consumer premises. Control will be crucial for integrating distributed renewable generation and storage technologies with the grid, for broad penetration of electric and plug-in hybrid vehicles, and for overall system reliability. An area of particular importance in emerging markets is microgrid optimization.

ORGANISERS: Françoise Lamnabhi-Lagarrigue, Research Director, Centre National de la Recherche Scientifique & European Embedded Control Institute, and HS Jamadagni, Professor, Indian Institute of Science, Bangalore.

PANELISTS:  
• **Moderator: Tariq Samad**, Corporate Fellow, Honeywell Automation and Control Solutions  
• **Paul van den Bosch**, Professor Control Systems in Electrical Engineering, Eindhoven University of Technology, Netherlands  
• **Jean-Luc Dormoy**, Yello Strom, Director of the EDF Group Programme on Home Technology and Smart Metering, EDF Group, France  
• **S.S. Murthy**, Professor, Electrical Engineering, IIT Delhi, India
MEET AT THE EUCLID WORKSHOP, European Control Conference and 50th IEEE Conference on Decision and Control, Orlando, US


India has a proud heritage in mathematics, leading to systems engineering and monitoring technologies. The root of contemporary linear system theory may be traced to Aryabatta, unquestionably the father of the Diophantine equation, as it is known in the west. More recent examples include a systematic approach to randomized algorithms for solving NP-hard design problems. This workshop aims to review foundations and Indian contributions to monitoring and control systems research during the past five decades, to highlight latest trends, and to inform the audience about cooperation opportunities. The realm of contributions of the invited speakers is extremely wide. It covers fundamental methodological research like input-output theory, large scale systems, $H_{\infty}$ theory, and adaptive and stochastic control. It includes also seminal contributions in classical applied fields like power systems, power electronics and robotics, as well as cutting edge areas like wireless communication system and bio-medical applications. All the speakers have kept very close contact with India and have played a major role in fostering collaborations with the EU and the USA. Their complementary expertise will help to inspire the audience on new challenges in the topic. Although the workshop has a specific focus on India, it will be relevant and useful to all those who are interested in new insights on challenges and opportunities in control systems and monitoring, including graduate students and post-doctoral researchers.

Organizers: Mathukumalli Vidyasagar (University of Texas at Dallas), Françoise Lamnabhi-Lagarrigue (CNRS/EECI), Hiri Jamadagni (IISC Bangalore), Svetlana Klessova (Inno TSD).

Speakers and moderators: Ravi Banavar (IIT Bombay, India), Hiri Jamadagni (IISC Bangalore, India), Pramod P. Khargonekar (University of Florida, US), Svetlana Klessova (Inno TSD, France), P. R. Kumar (University of Illinois, US), Francoise Lamnabhi-Lagarrigue (CNRS-EECI, France), Romeo Ortega (CNRS, France), Jorge Pereira (European Commission, DG Information Society and Media), Tariq Samad (Honeywell, US), Neeraj Suri (University of Dortmund, Germany), Mathukumalli Vidyasagar (University of Texas at Dallas, US).
The ICT Work Programme 2011-2012 of the EU’s Seventh Framework Programme (FP7) defines the priorities for ICT research funding and the related calls for proposals. The research priorities are grouped into ‘Challenges’ and ‘Objectives’ of strategic interest to Europe.

The upcoming FP7 ICT Calls 8 and 9 offer more than one billion Euros of EU funding and cover a number of topics:

**Challenge 1 – Pervasive and Trusted Network and Service Infrastructure**
- 1.1 – Future Networks
- 1.2 – Cloud Computing, Internet of Services and Advanced Software Engineering
- 1.4 – Trustworthy ICT
- 1.6 – Future Internet Research and Experimentation (FIRE)
- 1.8 + 1.9 PPP FI – Phase 2: Use Case scenarios & early trials and Capacity Building and Infrastructure Support
- PPP FI – Core Platform – Open call for new partners

**Challenge 2 – Cognitive Systems and Robotics**
- 2.1 – Cognitive Systems and Robotics

**Challenge 3 – Alternative Paths to Components and Systems**
- 3.1 – Very advanced nanoelectronic components: design, engineering, technology and manufacturability
- 3.2 – Smart components and smart systems integration
- 3.5 – Core and disruptive photonic technologies

**Challenge 4 – Technologies for Digital Content and Languages**
- 4.3 – Digital Preservation
- 4.4 – Intelligent Information Management

**Challenge 5 – ICT for Health, Ageing Well, Inclusion and Governance**
- 5.2 – Virtual Physiological Human

**Challenge 6 – ICT for a Low Carbon Economy**
- 6.1 – Smart energy grids
- 6.3 – ICT for efficient water resources management
- 6.5 – PPP EEB: ICT for energy-positive neighbourhoods
- 6.7 – Cooperative systems for energy efficient and sustainable mobility
- 6.8 – PPP GC: ICT for fully electric vehicles

**Challenge 7 – ICT for the Enterprise and Manufacturing**
- 7.1 – PPP FoF: Smart factories: energy-aware, agile manufacturing and customisation
- 7.2 – PPP FoF: Manufacturing Solutions for new ICT products

**Challenge 8 – ICT for Learning and Access to Cultural Resources**
- 8.1 – Technology-Enhanced Learning
- 8.2 – ICT for access to cultural resources

**Future and Emerging Technologies (FET)**
- 9.1 – FET Open: Challenging current Thinking
- 9.2 – FET Open: High-Tech Research Intensive SMEs in FET research
- 9.3 – FET Open: FET Young Explorers
- 9.4 – FET Open: International cooperation on FET research
- 9.6 – FET Proactive: Unconventional Computation (UCOMP)
- 9.7 – FET Proactive: Dynamics of Multi-Level Complex Systems
- 9.8 – FET Proactive: Minimising Energy Consumption of Computing to the Limit (MINECC)
- 9.9 – FET Proactive: Quantum ICT (QICT) including ERA-NET-Plus
EU-India Collaboration in ICT under the EU Framework programme – 6Choice: a success story

It would be of interest to the Indian audience aspiring to participate in FP7 to know about the success story of the project 6choice. At a time when India was very actively considering the transition from Internet Protocol Version 4 (IPv4) to IPv6 and Europe’s objective was also to promote next generation internet protocol, there was a meeting of minds resulting in project 6choice.

The consortium was formed by partners with the right balance of Industry, Internet Service Providers and Academia from both Europe and India who came together in this project with an aim to strengthen cooperation between the research communities in India and Europe dealing with research networks (ERNET/GÉANT), Grid connectivity and services. (RENATER – Europe and ERNET- India), academia (Indian Institute of Science- Bangalore and University college of London – UK, internet Service providers (Sify – India + Telefonica – Spain), industry (HP – India and Telscom – Switzerland) were the partners who were the driving force of the project.

6CHOICE promoted the use of IPv6 technology across Europe and India as a fundamental part of creating futuristic research infrastructures. The objective of the project was to create Network planning, IPv6 Networks and Services, deployment, applications and experiments, coaching the trainers and operational staff, creating awareness across stakeholders through workshops, seminars and conferences. With these objectives to achieve, the project executed a well defined action plan resulting in several positive outcomes.

The project was successful in establishing connectivity across the European GÉANT and ERNET to a considerable extent, one of the partners, Telscom, set up an EU-India test server to measure the basic QoS parameters and this was then followed by other partners. SIFY another partner from India pioneered the IPv6 commercial services and has become India’s first IPv6 enabled portal during the project duration. This created news within India as SIFY was one of the major ISP and this move was seen
The FP7 Network of Excellence (NoE) HYCON2 “Highly-complex and networked control systems” has started in September 2009, for a total duration of four years. It is led by F. Lamnabhi-Lagarrigue (CNRS) and regroups 23 European academic institutions as Level 1 partners, as well as several industrial partners working in the field of complex networked control systems: http://www.hycon2.eu/

The HYCON2 NoE was born after the obvious observation that ICT developments both enable and enforce large-scale, highly-connected systems in society and industry. Knowledge to cope with these emerging systems is lacking. HYCON2 will stimulate and establish the long-term integration of the European research community, leading institutions and industry in the strategic field of control of complex, large-scale, and networked dynamic systems. It will interconnect scattered groups to create critical mass and complementarity, and will provide the necessary visibility and communication with the European industries.

HYCON2 will assess and coordinate basic and applied research, from fundamental analytical properties of complex systems to control design methodologies with networking, self-organizing and system-wide coordination. HYCON2 has identified several applications domains to motivate, integrate, and evaluate research in networked control. These domains are ground and aerospace transportation, electrical power networks, process industries, and biological and medical systems. Benchmarking will serve as a tool for testing and evaluating the technologies developed in HYCON2 and for stimulating and enforcing excellence by the identification and adoption of best practices. In particular, two show-case applications corresponding to real-world problems have been selected in order to demonstrate the applicability of networked control and the need for research in control. As no substantial technological breakthrough can be achieved without preparing the proper cultural background, a further important objective of HYCON2 is to spread and disseminate excellence through multi-disciplinary education at the graduate and undergraduate level. The proposed research, integration and dissemination program will make Europe both the prominent scientific and industrial leader in the area of highly complex and networked control systems, therefore putting Europe in an extraordinary position to exploit their impact in economy and society.

If you want to take part to this initiative, please consult the HYCON2 website, on which you can apply to the mailing list on the domains you are interested in. Do not hesitate to contact the HYCON2 management to get specific information on this NoE.
4th HYCON2 PhD School on Control of Networked and Large-Scale Systems

The 4th HYCON2 PhD School on Control of Networked and Large-Scale Systems will take place on June 21-24, 2011 in Trento, Italy. The school is targeted at graduate students and researchers who want to learn the main concepts of the appealing field of networked control systems, as well as at graduate students and postgraduate researchers already working in the area.

Selected speakers will lecture during the school covering the basic concepts and results on stability and control of networked control systems, wireless communication, event-triggered control, consensus algorithms, decentralized control, distributed optimization, model predictive control, real-time control, and large-scale applications such as power and traffic networks. The program of the school includes four full days of lectures, split up by enough time slots to allow scientific discussions among the participants and with the speakers.

The lectures will be given by Alberto Bemporad (Italy), Stephen Boyd (USA), Carlos Canudas-de Wit (France), Christos Cassandras (USA), Maurice Heemels (Netherlands), Hideaki Ishii (Japan), Kalle Johansson (Sweden), Jan Lunze (Germany), Luigi Palopoli (Italy), Dragoslav Siljak (USA), Sandro Zampieri (Italy), Kameshwar Poolla (USA).

The school follows an established successful tradition of organizing biannual international PhD schools. The 1st HYCON PhD School on Hybrid Systems, the 2nd HYCON PhD School on Hybrid Systems, and the 3rd WIDE PhD School on Networked Control Systems took place in 2005, 2007, and 2009, respectively, in Siena, Italy. On these schools top researchers in the field educated over 300 PhD students from all over the world on a broad range of topics.

The full program of the school, other information and the registration procedure can be found at http://control.ing.unitn.it/4hycon2/

We welcome you, your students and colleagues to this interesting and inspiring event!

Are you a young monitoring or control systems researcher or graduate student? Are you looking for an internship in Europe or in India, or for a thesis co-supervision?

EUCLID cares about win-win two-ways cooperation between Europe and India, and offers a unique opportunity to young Indian researchers, looking for internships or training, to find their way in Europe, and also to the young European researchers to find their way in India. The services offered by EUCLID project are totally free of charge.

If you are one of those young and motivated Indian or European researchers, willing to prepare your thesis or to do your long term internship with European or Indian organisations, do not hesitate to contact us – we will do our best to help you to find good opportunities, both in India and in Europe. And take a look on the short guide about funding opportunities in Europe, produced by the Euclid team: www.euclid-india.eu/EUfunding
Possibilities of Research & Innovation Cooperation with Europe
Awareness Raising and Information Campaign in India, 13-24 June 2011

Over a two-week period, 13–24 June 2011, the European Union and its Member States are organising together 27 information seminars throughout India to raise awareness among Indian research stakeholders – including SMEs – about the opportunities that they can offer for research and innovation cooperation with India, including mobility schemes for Indian students and researchers.

23 European S&T Counsellors and representatives of research organisations from Belgium, Finland, France, Germany, Italy, Netherlands, Poland, Spain, the United Kingdom, as well as from the Delegation of the European Union, will make 100 presentations in 27 key research and innovation hot spots in India.

Participation is free but requires a registration. To check the seminars’ schedule and to register: http://eeas.europa.eu/delegations/india/st_awareness_campaign/index_en.htm

Be part of the EU-Indian monitoring and control community…

Are you looking for partners for a research proposal? Do you have experience you would like to share? Do you have a NMCS related seminar, conference or publication you would like to promote? If so, please send information to any of the following contacts:

Europe:
• Françoise Lamnabhi-Lagarrigue
  Francoise.Lamnabhi-Lagarrigue@lss.supelec.fr
• Gergana Hristozova (inno TSD)
  g.hristozova@inno-group.com
• Svetlana Klessova (inno-TSD):
  project coordinator s.klessova@inno-group.com

India:
• Dr. Hiri Jamadagni
  hsjam@cedt.iisc.ernet.in
• Dr. Viswanath Talasila
  Viswanath.Talasila@Honeywell.com

We need your feedback! Are you:
• an Indian graduate student or researcher in monitoring and control working in Europe?
• A European specialist supervising Indian young researchers / graduate students?
• A European specialist working in India or with India?

Please contact the project coordinator Svetlana Klessova s.klessova@inno-group.com to answer a few questions that will help us to advance win-win EU-Indian cooperation in monitoring and control systems technologies. Thank you.

For further, up-to-date information concerning Euclid news, activities and events in monitoring and control, we encourage you to regularly visit our project web site www.euclid-india.eu