Federal Department of Home Affairs FDHA
State Secretariat for Education and Research SER

„Liaison" of SER and European NMP/ICT

Martin Kern, SER

N^2 meeting Berne 14 September 2010

Contents

- Brief overview FP7, FP7-NMP and FP7-ICT

- The role of SER

- Information on the accompanying structure of FP7-NMP/ICT on the national level
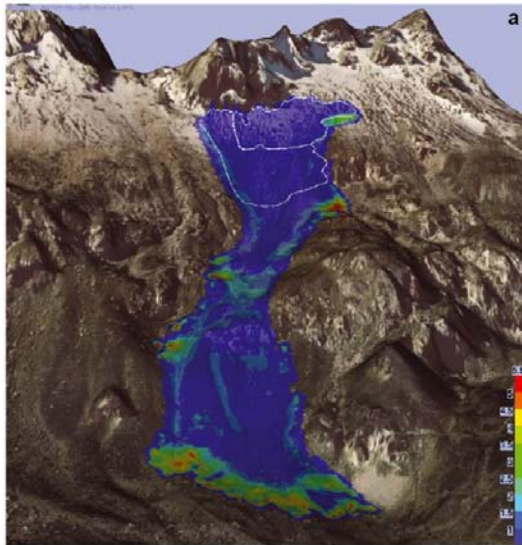
- How to place input

State Secretariat for Education and Research SER – M. Kern

Martin Kern, before SER

$$\partial_t \rho + \nabla \cdot (\rho \mathbf{v}) = 0,$$

$$\partial_t(\rho \mathbf{v}) + \nabla \cdot \mathbf{\Pi} = \rho \mathbf{k},$$
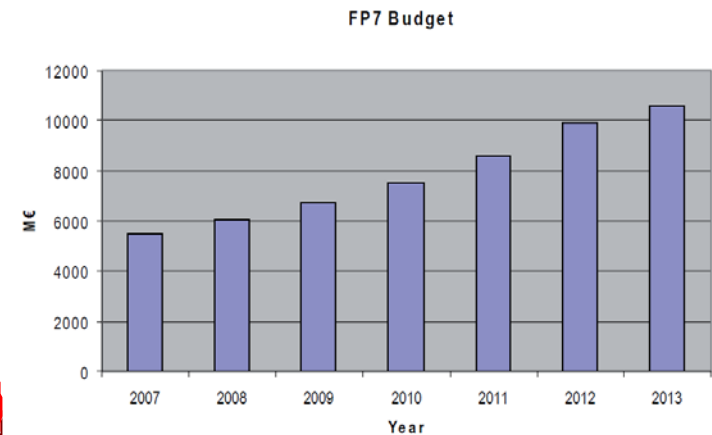
$$\mathbf{\Pi} = \rho \mathbf{v}\mathbf{v} - \mathbf{T},$$

$$\mathbf{T} = -p\mathbf{1} + \sigma,$$

State Secretariat for Education and Research SER – M. Kern

7th EU Framework Programme (FP7) Research

total research budget 2007-2013: about 53 G€

€ million

- Euratom; 4061
- JRC (EC); 1751
- Capacities; 4291
- People; 4727
- Ideas; 7460
- Cooperation; 32292

FP7 Budget
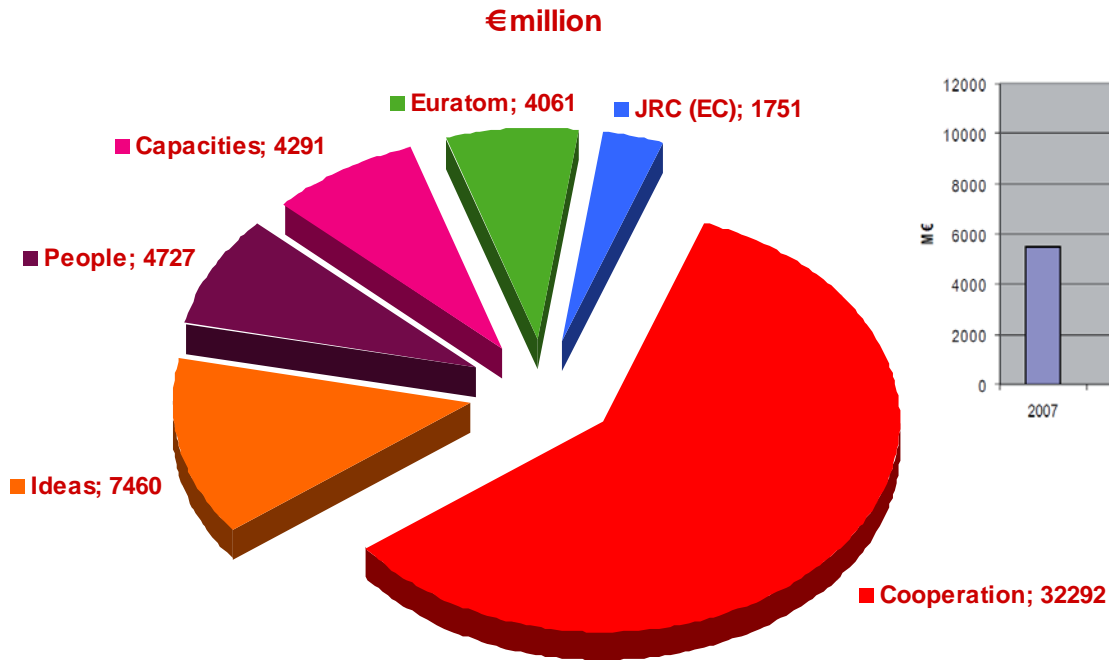
FP7-Cooperation

- Health
- Food, Agriculture and Fisheries, and Biotechnology
- **Information and Communication Technologies**
- **Nanosciences, Nanotechnologies, Materials and new Production Technologies (NMP)**
- Energy
- Environment (including Climate Change)
- Transport (including Aeronautics)
- Socioeconomic Sciences and the Humanities
- Space
- Security

State Secretariat for Education and Research SER – M. Kern

Swiss participation in FP7-NMP

(up to Oct 2009)

- Total funding of FP7-NMP: 1'153 M€

- Funding for Swiss project partners: 60 M€ (5.2%)

- In CH, the funding goes to:

  ETH domain   : 48%

  SME   : 23%

  Industry   : 12%

  Universities, FHs

- Total number of projects: 191

- 7 projects with Swiss lead, 73 with Swiss Participation

Swiss participation in FP7-ICT

(up to Oct 2009)

- Total funding of FP7-ICT: 3'226.5 M€

- Funding for Swiss project partners: 135.5 M€ (4.2%)

- In CH, the funding goes to:
ETH domain	: 41.2%
SME	: 12.5%
Industry	: 14.7%
Universities, FHs	: 19.9%

- Total number of projects: 590

- 18 projects with Swiss lead, 162 with Swiss Participation

State Secretariat for Education and Research SER – M. Kern

FP7-Cooperation

- Specific Programme: Cooperation

- Themes: NMP, ICT

- Work programme: 2007, 2008,…, 2010, **2011, 2012**

- Call: e.g. "FP7-NMP-2007-LARGE-1"

- Topics: e.g. "self assembly"

- **Strategic objectives of FP7**: to strengthen the scientific and technological base of European industry, to encourage its international competitiveness, while promoting research that supports EU policies.

=> Funding only for projects in line. Topics need to match the strategy.

Work Programme (WP) Evolution

SER EURESEARCH SER
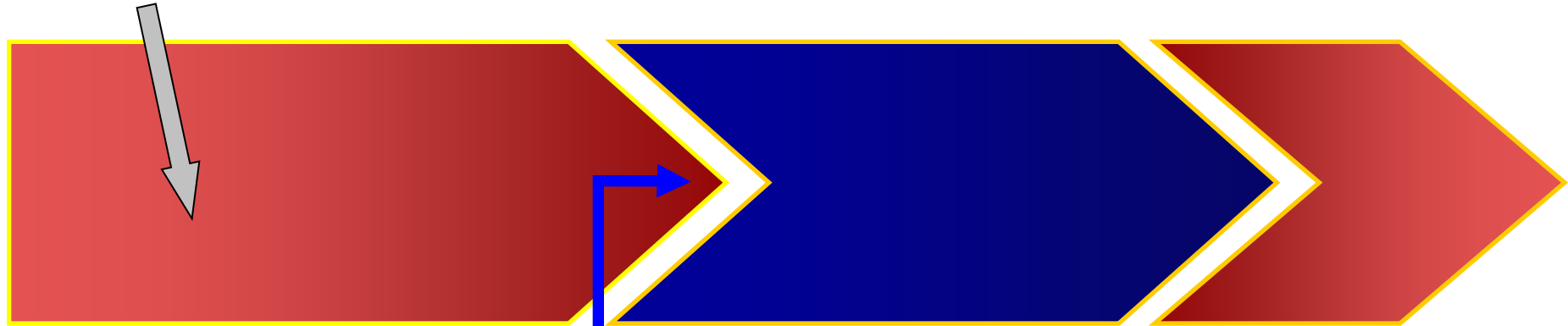
- Int. Consultation
- Ext. Consultation
- WP Draft Elabor.
- PC Constulation
- Commission Adoption
- Call Publication
- 1st Encounter
- Idea Check
- Submission
- Contract
- Project Mangt.
- Dissemination
- Data Collection
- Evalutation, Statistics

Interaction NMP/ICT community - SER

- Swiss NMP/ICT community **provides input** on topics of interest, research needs and ongoing research.

- SER **represents** Switzerland at the Programme Comitee (PC) meetings of FP7-NMP and FP7-ICT

- That is, **interests and needs** of the Swiss NMP/ICT community can be **placed** in the course of the development of work programmes.

- Most (and likely the only) effective way of influencing the EU: Swiss NMP/ICT community is speaking with **one voice** through NMP and ICT-PC delegations

Representation of NMP/ICT at the EU: how is this done?

Accompanying structure on the national level

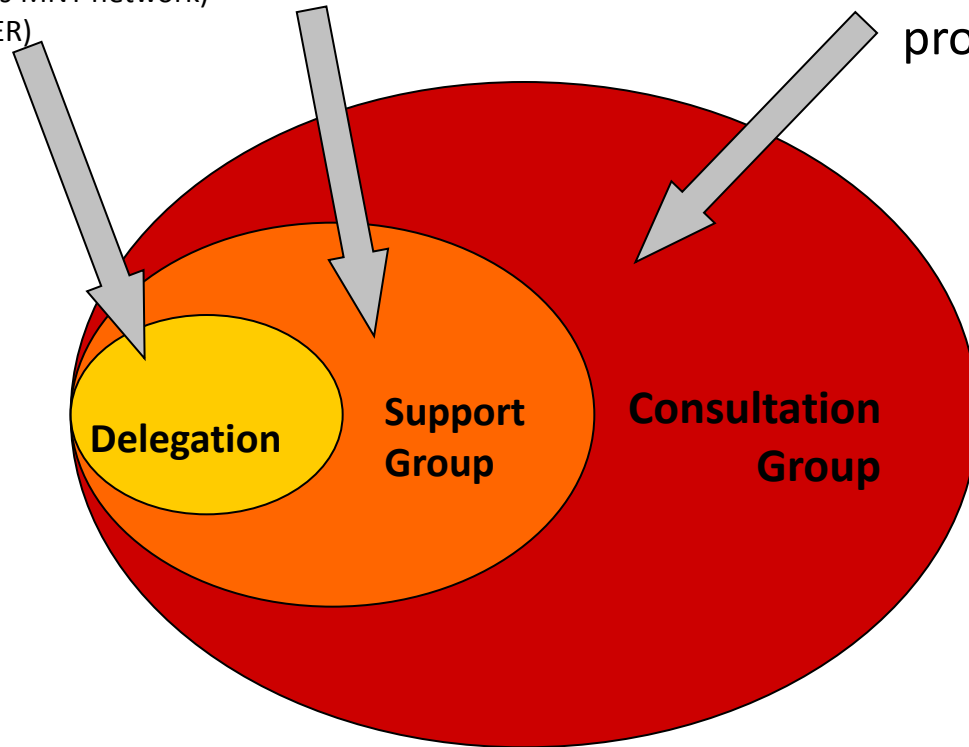State Secretariat for Education and Research SER – M. Kern
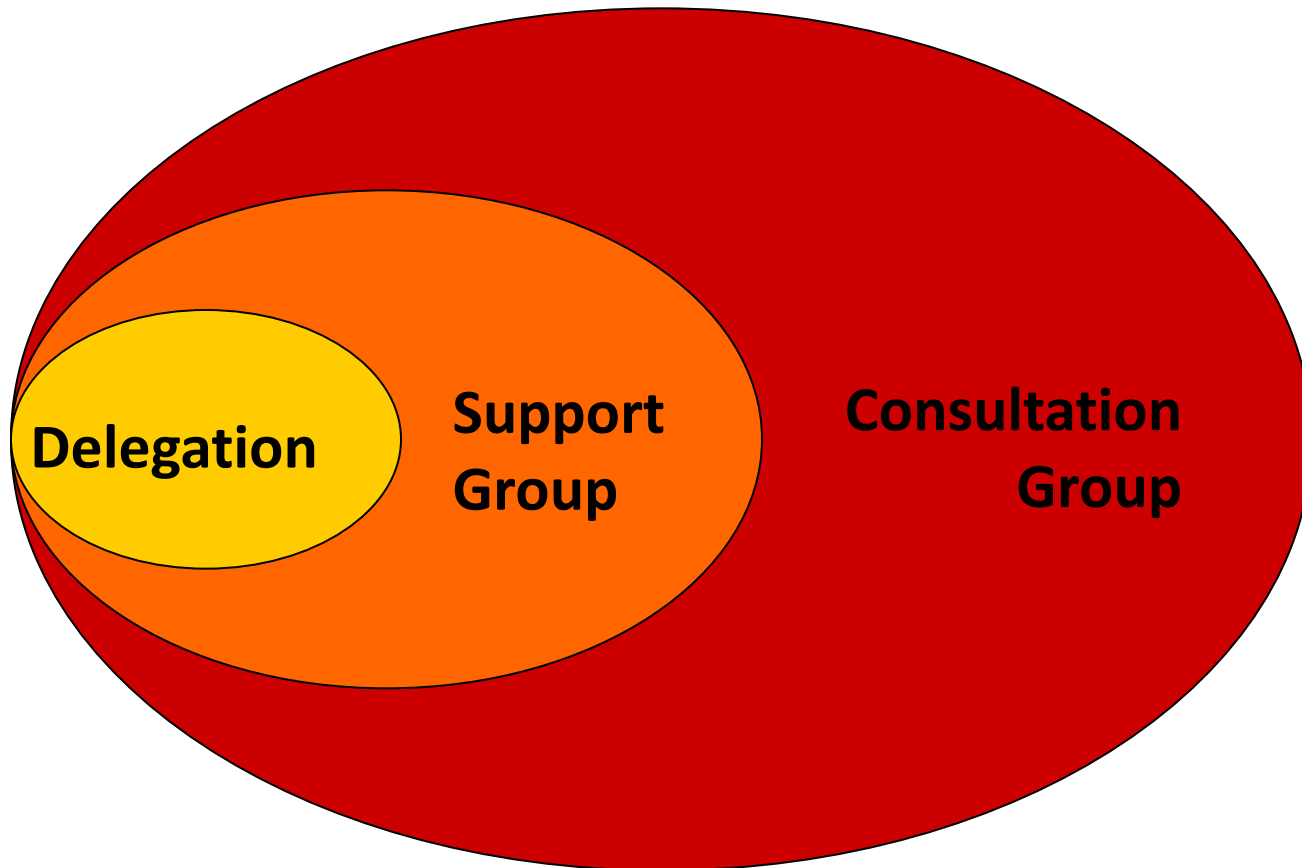
Representation of Swiss NMP at the EU

Swiss PC delegation:
Marion Tobler (Euresearch),
Karl Knop (Swiss MNT network)
Martin Kern (SER)

Participation: meetings
Bilateral discussion

Meetings
provide input

Delegation

Support
Group

Consultation
Group

Representation of Swiss ICT at the EU

Swiss PC delegation:
Patrick Furrer (Euresearch),
Daniel Egloff (BBT, INT)
Martin Kern (SER, MFZ)

Participation: meetings
Bilateral discussion

Meetings
provide input

Delegation

**Support
Group**

**Consultation
Group**
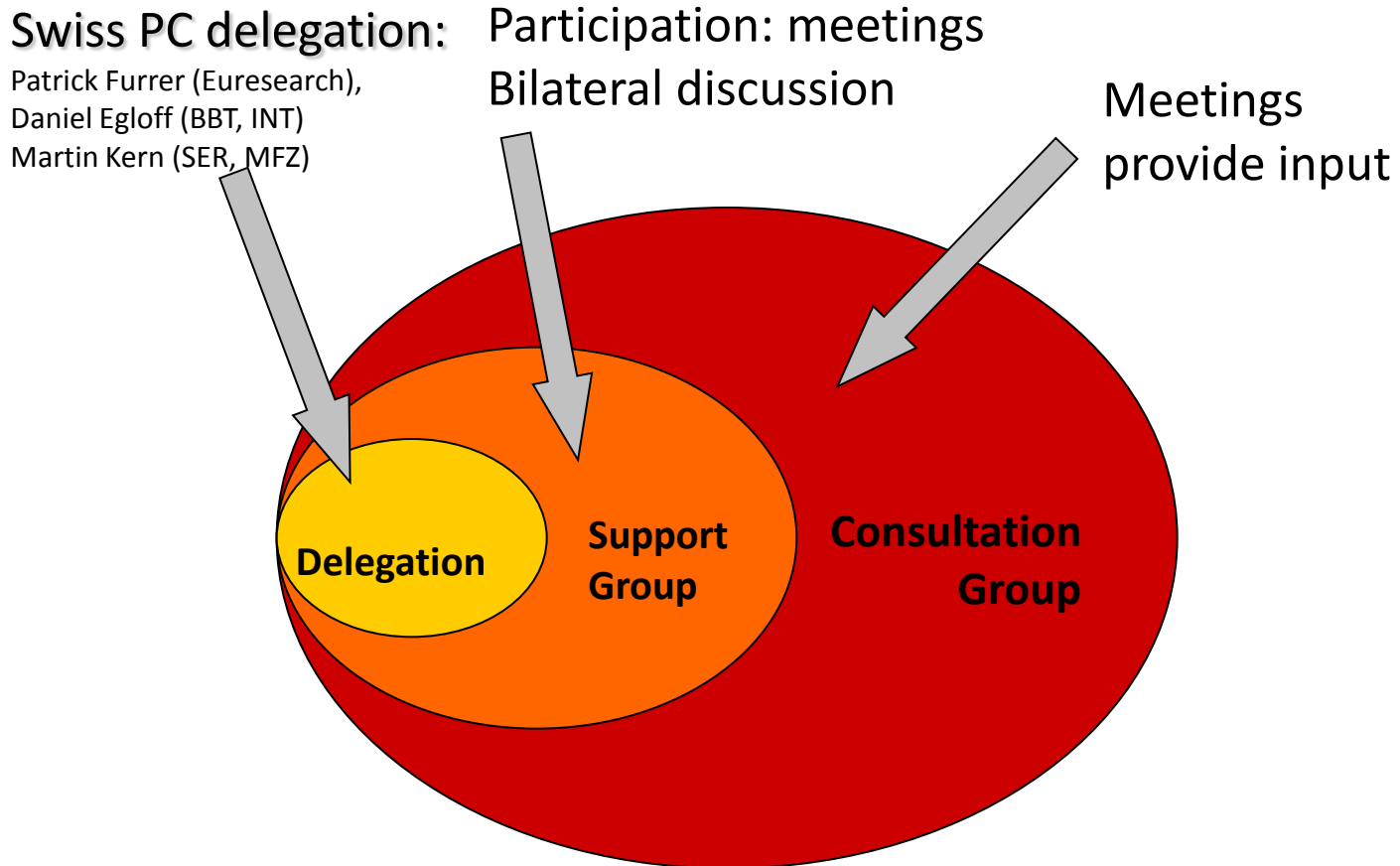
Providing input to FP7- NMP WP 2012

When? **NOW !**

Probability of having an impact on the WP

ICT has another (bi-annual) pace
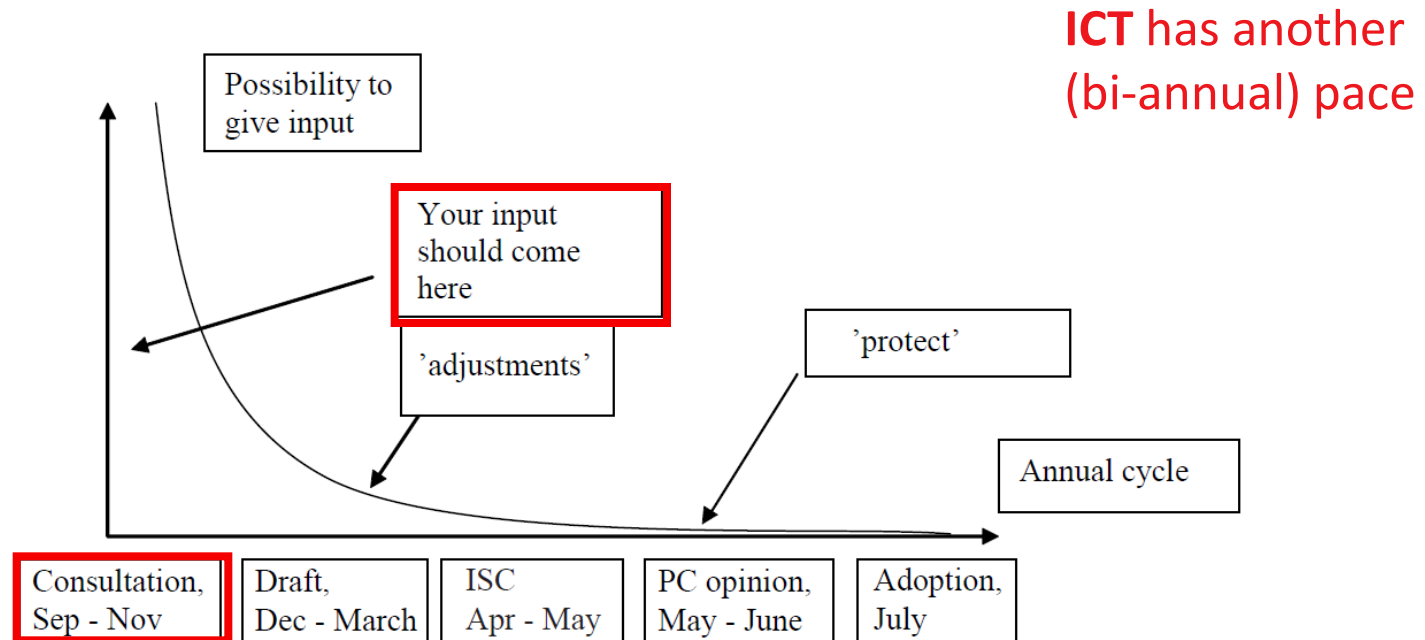
Providing input to FP7- NMP WP 2012

How?　　**Maybe like this….**

SEVENTH EUROPEAN FRAMEWORK PROGRAMME, THEME NMP
NANOSCIENCES, NANOTECHNOLOGIES, MATERIALS AND NEW PRODUCTION TECHNOLOGIES

Suggestions for New Topics in the 2012 Call

Descriptive Title	
Short Summary	
Industrial Relevance/Potential	
Potential European Partners (Research and/or Industry)	
Potential Swiss Partners (Research and/or Industry)	
Any remarks	
Contact (Name, Organisation, e-mail, phone)	

Please forward this form to karl.knop@bluewin.ch no later than August 15, 2010.
For questions you may also contact me under 044 371 5883 or 079 606 5220. For information on current NMP Calls see

- http://www.euresearch.ch/index.php?id=777
- http://cordis.europa.eu/fp7/dc/index.cfm?fuseaction=UserSite.FP7ActivityCallsPage&id_activity=4

Karl Knop, Swiss Expert to the FP7-NMP Programme Committee.

Providing input to FP7- NMP WP 2012

How will it (finally) look like?

LIKE THIS !

Topic
Technical content/scope
Funding Scheme
Expected impact

Be useful: Try to create text that the EC actually can use (like current WPs).

Think European: European added value, No specific wish lists.

Be focused: not too many topics.

Be realistic: confined influence…

FoF.NMP.2011-5   Towards zero-defect manufacturing

Technical content/scope: Nowadays, manufacturing industries very frequently operate in data-rich environments. On the one hand, product quality is increasingly characterised by multiple geometric specifications of complex product's shape (e.g. in automotive, white-goods and aerospace industries). On the other hand, the quality process is to a greater extent associated with process data gathering. In fact, moving the attention from product data to process data allows to extend quality monitoring and optimisation strategies even to short-run production (e.g. small-lots, customised manufacturing).

From the system viewpoint, data collection, data presentation and root cause reasoning needs to be developed to allow continuous monitoring of the performance of the different process stages to master propagation of defects within or between processes and increase the robustness of processes.

In these scenarios, traditional "Six-Sigma" approaches can no longer help to achieve zero-defect manufacturing, given their limitation to simple data sets (invariant and independent data over time). Those methodologies have to be improved by controlling the process parameters in real time (in the relevant parameters field) and by the use of pre-processing prognosis and proactive controls on processes, production systems and sub-systems integrated in the production lines/cells. This includes the application of sensors for process diagnostics, monitoring and visualisation. The integration of cognitive systems will enable the development of intelligent and self-optimising machines for "zero-defect" manufacturing, with increased process capability (of Cpk=2.0 or higher) thanks to new strategies for data-rich quality monitoring, control and optimisation.

From the hardware viewpoint, multi-resolution data-gathering devices are foreseen to integrate intelligence into the machining process after appropriate integration. Thus, new cost-efficient tools for quality monitoring and optimisation with multi-resolution, multivariate and auto-correlated data have to be developed. The research in this area will focus on:

system approaches for monitoring and data processing of dimensional fluctuations;
efficient simulation tools and methods to predict the machining system behaviour which can be utilised for efficient operation planning to be combined with in-process monitoring;
innovative solutions for intelligent manufacturing systems, in support of customising and build-to-order strategies; and
extensive integration capabilities in production equipment of intelligent, autonomous, and self–adaptive devices (integrated, self-powered sensors and actuators) at low cost for process monitoring, control and quality management.

The projects are expected to cover demonstration activities, including pilot implementations in industrial settings. In order to ensure industrial relevance and impact of the research efforts, active participation of industrial partners represents an added value to the activities and this will be reflected in the evaluation.

Funding Scheme: Large-scale integrating collaborative projects.

Expected Impact: The development of innovative solutions for zero-defect conventional manufacturing is of strategic relevance for Europe, especially in the domains of parts manufacturing with conventional technologies such as machining, cutting, forming, coating and others. The reduction of losses by extensive quality control and the increase of efficiency in manufacturing are expected in many industries, in particular in the traditional sectors.

State Secretariat for Education and Research SER – M. Kern

Providing input to FP7- NMP WP 2012

Where should it go to?
European Commission (EC)
(Research Directorate General)

Director (more or less) decides what gets in,
Heads of units „own" their sub-areas,
Policy officers actually write down WPs.

They are human beings one can talk to!

Herbert v. Bose

© CORDIS News
Renzo Tomellini

Directorate G - Industrial technologies
Director: *Herbert von Bose*

G.1: Horizontal aspects and coordination
Head of Unit: *Michel Poireau*
G.2: New generation products
Head of Unit: *José-Lorenzo Vallés Brau*
G.3: Value-added materials
Head of Unit: *Renzo Tomellini*
G.4: Nano- and converging Sciences and Technologies
Head of Unit: *Christos Tokamanis*
G.5: Administration and finance
Head of Unit: *Hélène Chraye*

State Secretariat for Education and Research SER – M. Kern

Providing input to FP7- WPs

How should it be conveyed to the EC?

- **Directly** to Head of Units, Director or Policy Officer
  (please avoid being an „unguided missile")

- By the Swiss **Delegation** in the NMP Programme Committee:
  - **coordinates input**, works out Swiss position": more chances of success.
  - **conveys** text samples to the Head of Units, Director or Policy Officer
  - can **discuss/adapt** the draft WP in the Programme Committee
  - can „**defend**" topic in draft WPs
  - („political" work: alliancing with PC delegations of other countries)

- Through **ETPs** (European Technology Platforms): refer to Swiss members
  - ARTEMIS
  - AENEAS (CSEM)
  - MANUFUTURE-EU (ManuFuture-CH)
  - EPoSS (CSEM)
  - …..

State Secretariat for Education and Research SER – M. Kern

Providing input to FP7- NMP WP 2012

Is there a guideline or something like this?
YES!

A rough guide to the FP7 Work Programmes
(EU's seventh Framework Programme for Research).
Who can be involved in the preparation?
What to do, when and how?

Dan Andrée
Special Advisor
Ministry of Education and Research1
Stockholm - Brussels
March 2008

http://www.regeringen.se/sb/d/108/a/104454

Providing input to FP7- WPs

What do I get from participating?

- being involved in attempt to generate calls that fit to the Swiss research landscape,

- access to up-to-date information on future NMP/ICT calls of the EU, project evaluations,..

- access to EC Commission via NCP, PC delegates.

- Link up with academic/industrial Swiss NMP/ICT networking,

- Euresearch provides extensive service and coaching in
  - preparing EU-proposals,
  - research/industrial partner search and
  - governance of EU-FP7 projects.

Coordinates

Martin Kern

Federal Department of Home Affairs FDHA
State Secretariat for Education and Research SER
Multilateral Research Cooperation

Hallwylstrasse 4, CH-3003 Berne, Switzerland

Phone   +41 31 325 14 19
Fax   +41 31 322 78 54
martin.kern@sbf.admin.ch
www.sbf.admin.ch

Thank you !