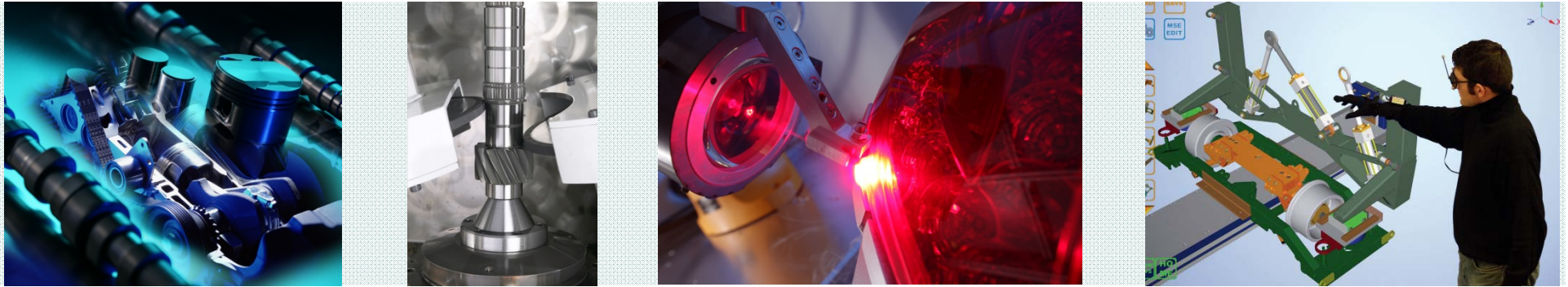


Horizont 2020 – Das neue EU-Rahmenprogramm für Forschung und Innovation

Produktionsthemen 2015



Jens Korell

Projekträger Karlsruhe, Nationale Kontaktstelle Produktion

Projekträger Karlsruhe (PTKA)

■ Nationale Aktivitäten

- Betreuung von Forschungsprogrammen auf Landes- und Bundesebene
- **BMBF Rahmenkonzepte**
 - ◆ „Innovationen für die Produktion, Dienstleistung und Arbeit von morgen“
 - ◆ „Forschung für die Nachhaltigkeit (FONA)“
- Baden-Württemberg Programme

■ Internationale Aktivitäten im Bereich Produktion

- **Nationale Kontaktstelle Produktion**
- EUREKA Umbrella PRO-FACTORY-PLUS
- ERA-NET Projekte (MANUNET, M-ERA.NET)
- ETP (MANUFUTURE, SUSCHEM)

■ Projektträger seit über 40 Jahren

- Betreuung von über 115 Mio. Euro Zuwendungen jährlich

■ 90 Beschäftigte in Karlsruhe und Dresden



Quelle: Buderus Schleiftechnik GmbH

Die wichtigsten Maßnahmentypen in Horizont 2020

Forschungs- und Innovationsmaßnahmen (RIA)

„Klassisches Forschungsprojekt“

- Grundlagen- und angewandte **Forschung**, Technologie-**entwicklung** und **-integration**,
- **Prototypen** im Labormaßstab
- Begrenzte **Demonstrations- und Pilotaktivitäten**

Innovationsmaßnahmen (IA)

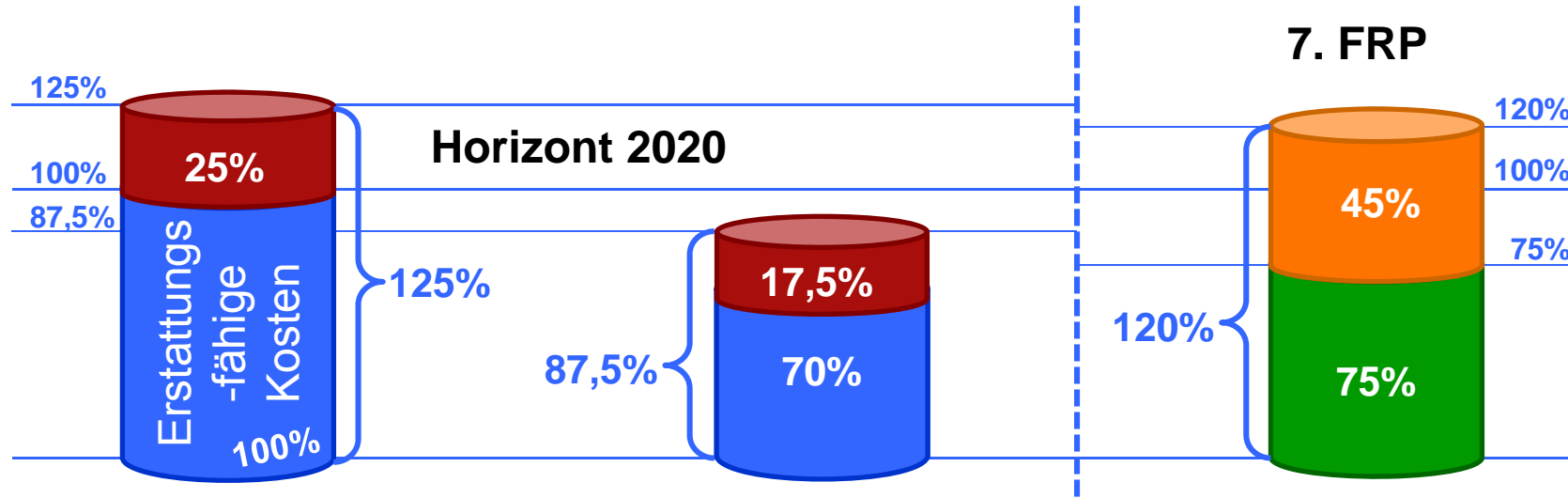
„Marktnahes (F&) E-Vorhaben“

- Prototypen, Demonstrations-, und Pilotmaßnahmen
- Marktumsetzungsprojekte
- Produktvalidierungen in operativer Umgebung

Unterstützungs- und Begleitmaßnahmen (CSA)

- Standardisierungen, Verbreitung, Vernetzung, Awareness Raising / Kommunikation
- Gegenseitiges Lernen, Policy Dialoge
- Kleinere Studien

Kostenrechnungsmodelle



Forschungs- und Innovationsmaßnahmen (RIA)

Innovationsmaßnahmen (IA)
marktnahe Aktivitäten,
Ausnahme für Einrichtungen
ohne Gewinnerzielung

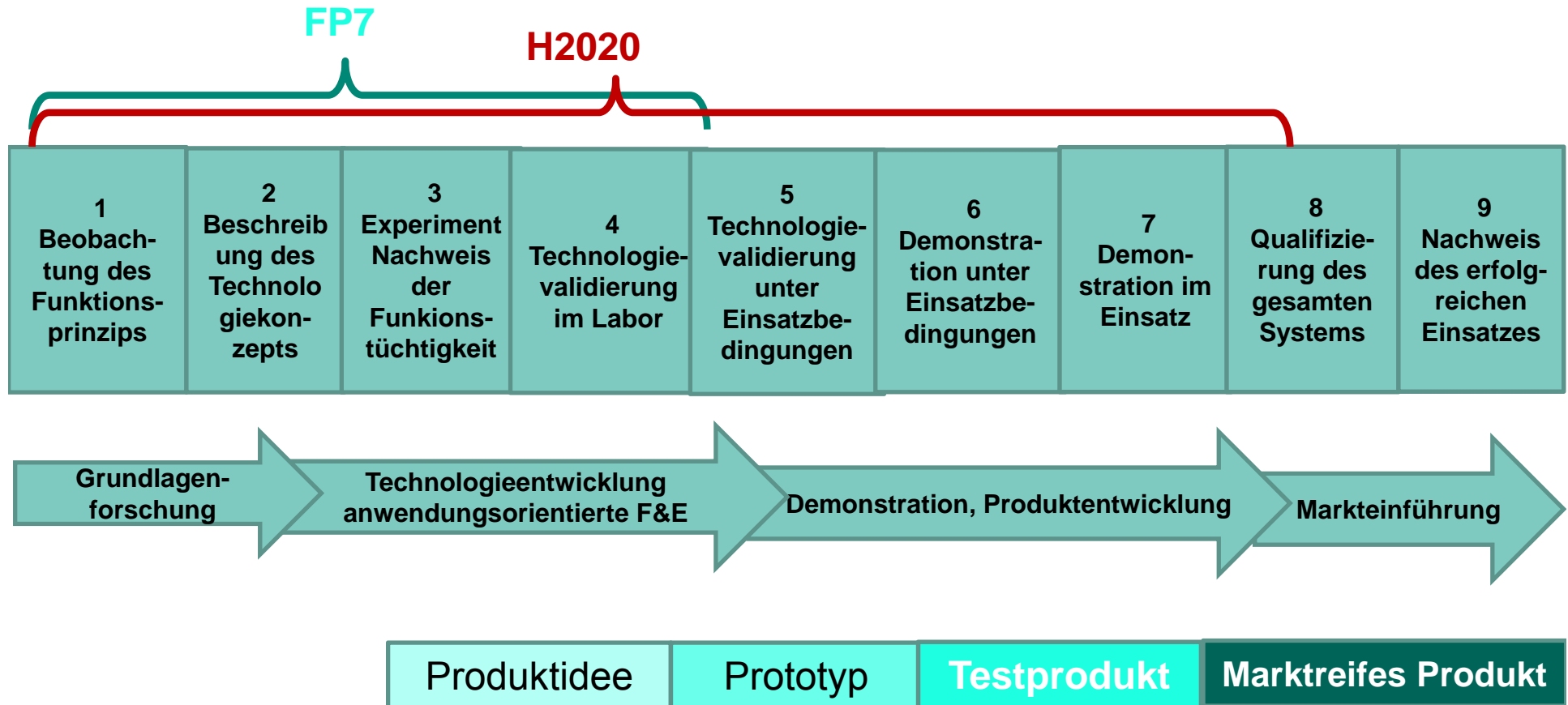
Zum Vergleich:
F&E-Tätigkeiten/KMU im
7. FRP

$$\begin{aligned}
 & (100\% \text{ erstattungsf. Kosten} \\
 & + 25\% \text{ Pauschale}) \\
 & \times 100\% \text{ Erstattungsquote} \\
 \hline
 & = \underline{125\%} \text{ Erstattung}
 \end{aligned}$$

$$\begin{aligned}
 & (100\% \text{ erstattungsf. Kosten} \\
 & + 25\% \text{ Pauschale}) \\
 & \times 70\% \text{ Erstattungsquote} \\
 \hline
 & = \underline{87,5\%} \text{ Erstattung}
 \end{aligned}$$

$$\begin{aligned}
 & (100\% \text{ erstattungsf. Kosten} \\
 & + 60\% \text{ Pauschale}) \\
 & \times 75\% \text{ Erstattungsquote} \\
 \hline
 & = \underline{120\%} \text{ Erstattung}
 \end{aligned}$$

Technology Readiness Levels (TRL)



Produktion in Horizont 2020

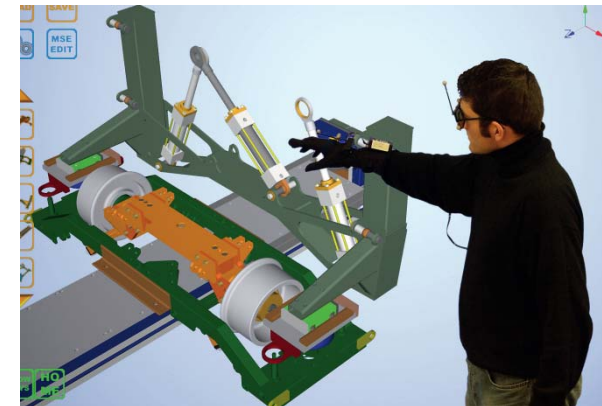


Enthält den Bereich
„Fortschrittliche Produktions-
und Verfahrenstechniken“

Produktion in Horizont 2020

Der Bereich „Fortschrittliche Produktions- und Verfahrenstechniken“ enthält die Public Private Partnership (PPP) Initiativen

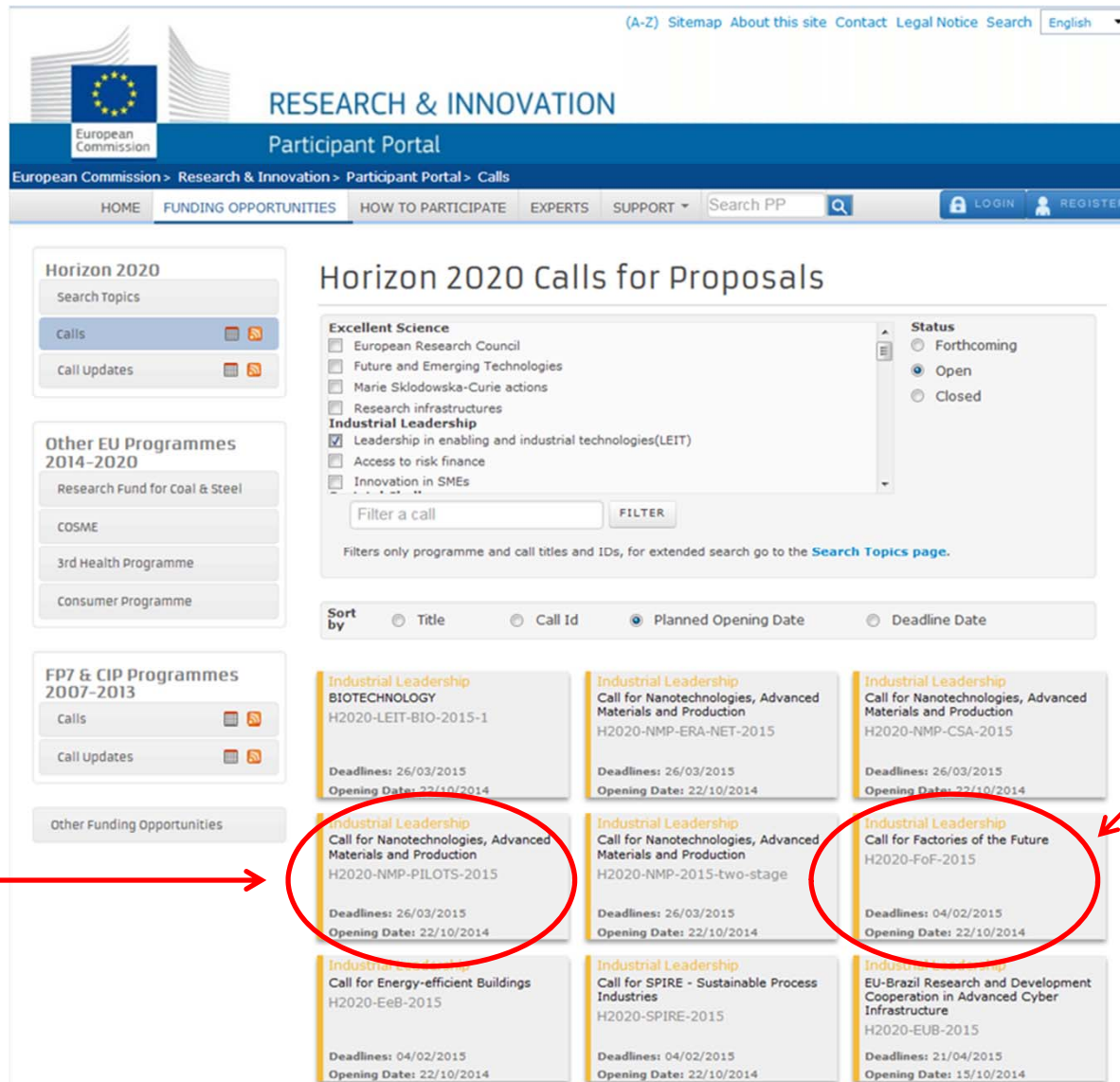
- Factories of the Future (FoF)
- Energy efficient Buildings (EeB)
- Sustainable Process Industries (SPIRE)



Quelle: HNI Universität Paderborn

Themen mit Produktionsaspekten finden sich auch in den Schwerpunkten „Wissenschaftsexzellenz“ und „Gesellschaftliche Herausforderungen“

Teilnahme: Aufrufe (Calls)



Horizon 2020 Calls for Proposals

Excellent Science

- European Research Council
- Future and Emerging Technologies
- Marie Skłodowska-Curie actions
- Research infrastructures

Industrial Leadership

- Leadership in enabling and industrial technologies (LEIT)
- Access to risk finance
- Innovation in SMEs

Status

- Forthcoming
- Open
- Closed

Sort by: Title Call Id Planned Opening Date Deadline Date

Call Title	Call ID	Deadlines	Opening Date
Industrial Leadership BIOTECHNOLOGY	H2020-LEIT-BIO-2015-1	26/03/2015	22/10/2014
Industrial Leadership Call for Nanotechnologies, Advanced Materials and Production	H2020-NMP-ERA-NET-2015	26/03/2015	22/10/2014
Industrial Leadership Call for Nanotechnologies, Advanced Materials and Production	H2020-NMP-CSA-2015	26/03/2015	22/10/2014
Industrial Leadership Call for Nanotechnologies, Advanced Materials and Production	H2020-NMP-PILOTS-2015	26/03/2015	22/10/2014
Industrial Leadership Call for Nanotechnologies, Advanced Materials and Production	H2020-NMP-2015-two-stage	26/03/2015	22/10/2014
Industrial Leadership Call for Factories of the Future	H2020-FoF-2015	04/02/2015	22/10/2014
Industrial Leadership Call for Energy-efficient Buildings	H2020-EeB-2015	04/02/2015	22/10/2014
Industrial Leadership Call for SPIRE - Sustainable Process Industries	H2020-SPIRE-2015	04/02/2015	22/10/2014
Industrial Leadership EU-Brazil Research and Development Cooperation in Advanced Cyber Infrastructure	H2020-EUB-2015	21/04/2015	15/10/2014

NMP



Factories of the Future (1-stufig)



Teilnahme: Arbeitsprogramm

EN

HORIZON 2020
WORK PROGRAMME 2014 – 2015

*5. Leadership in enabling and industrial technologies
ii. Nanotechnologies, Advanced Materials, Biotechnology
and Advanced Manufacturing and Processing
Revised*

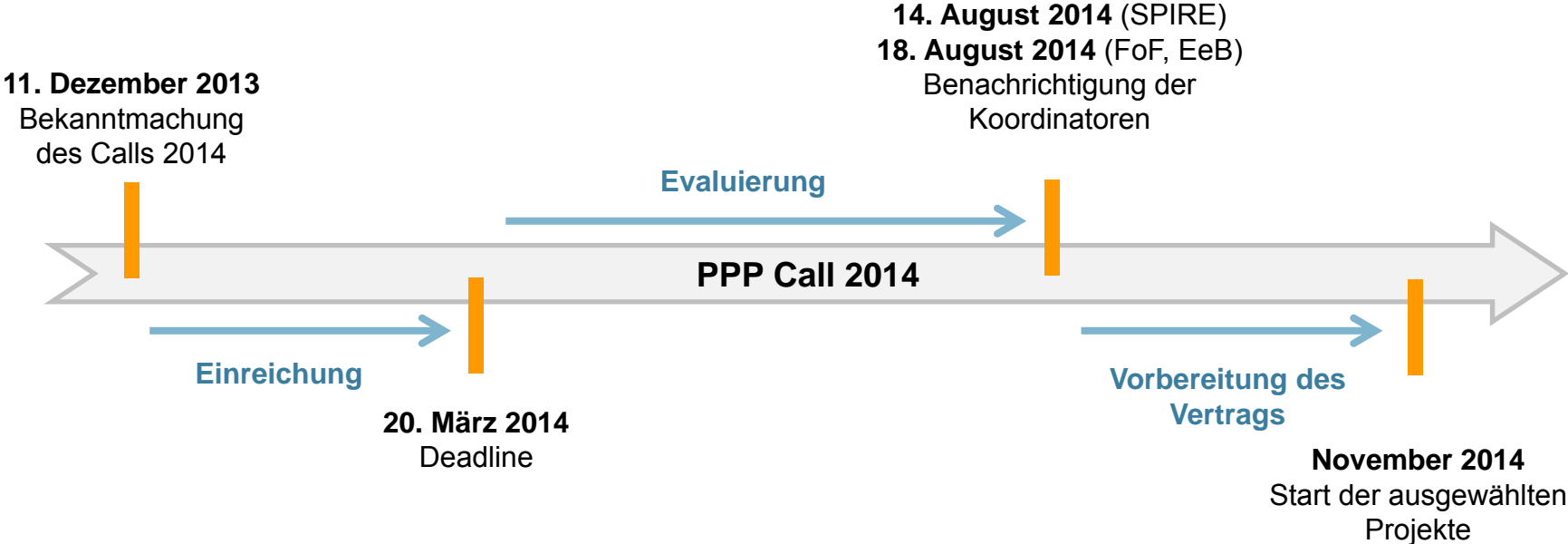
This Work Programme was adopted on 10 December 2013. The parts that relate to 2015 (topics, dates, budget) have, with this revised version, been updated. The changes relating to this revised part are explained on the Participant Portal.

(European Commission Decision C (2014)4995 of 22 July 2014)

Enthält die Themen für

- FoF
- EeB
- SPIRE
- NMP

Rückblick: Zeitlicher Ablauf PPP Call 2014



Call H2020-FoF-2015

FoF 8 - 2015	ICT-enabled modelling, simulation, analytics and forecasting technologies
FoF 9 - 2015	ICT Innovation for Manufacturing SMEs (I4MS)
FoF 10 - 2015	Manufacturing of custom made parts for personalised products
FoF 11 - 2015	Flexible production systems based on integrated tools for rapid reconfiguration of machinery and robots
FoF 12 - 2015	Industrial technologies for advanced joining and assembly processes of multi-materials
FoF 13 - 2015	Re-use and re-manufacturing technologies and equipment for sustainable product life cycle management
FoF 14 - 2015	Integrated design and management of production machinery and processes

ICT-enabled modelling, simulation, analytics and forecasting technologies (FoF 8 – 2015)



Specific challenge:

- Simulation of manufacturing processes
- Forecasting the behaviour of manufacturing systems
- Decision support methods and tools

Scope:

- Innovative modelling, simulation, analytics and forecasting tools for manufacturing at large
- Integrated modelling, simulation and information management systems

Expected impact:

- Increased productivity, higher mass customisation capacity
- Reduced time to production, optimised supply chains
- Enhanced interoperability of integrated product and factory design systems

Type of action:

Research & Innovation Actions (100% funding)
+ Support Action on Road mapping and constituency building

ICT Innovation for Manufacturing SMEs (I4MS)

(FoF 9 – 2015)



-
- Specific challenge:**
- Advances in ICT taken up in engineering and manufacturing
- Scope:**
- Adoption of ICT advances in the manufacturing domain
 - Application experiments, equipment assessment experiments
 - Highly flexible and near-autonomous robotic systems
- Expected impact:**
- New users of advanced ICT in the manufacturing sector
 - More innovative and competitive technology suppliers
 - More competitive European service providers
- Type of action:**
- Innovation Actions (70% funding)
Expected contribution: 5 – 8 Mio. EUR
+ Support Action on a network of innovation multipliers

Manufacturing of custom made parts for personalised products (FoF 10 – 2015)

Specific challenge:

- New strategies integrating design with manufacturing
- Quick realisation from design to production
- Economic production systems down to single lot sizes

Scope:

- Advanced design and manufacturing technologies
- New machines and processes integrating advanced materials
- Seamless data integration across process and supply chains
- TRL 4-6

Expected impact:

- Rapidly follow the market dynamics
- Reduction by 50% in the lead-time for manufacturing one part
- Cost reduction of customised parts manufacturing by 20%
- Reduction of time to market of customised parts by 30%

Type of action:

Research & Innovation Actions (100% funding)

Expected contribution: 3 – 6 Mio. EUR

Flexible production systems based on integrated tools for rapid reconfiguration of machinery and robots (FoF 11 – 2015)



Specific challenge:

- Fast reconfigurable machinery and robots
- React to rapid changes in market demands

Scope:

- Demonstration activities
- Integrated tools for management of agile production systems
- Standardisation of communication protocols (plug & produce)
- TRL 5-7

Expected impact:

- Ability to produce at least 50% smaller lot sizes and 50% more product variations
- Reduction of at least 30% of setup and changeover time / cost
- Reduction of energy consumption by 5%

Type of action:

Innovation Actions (70% funding)
Expected contribution: 4 – 7 Mio. EUR

Industrial technologies for advanced joining and assembly processes of multi-materials

(FoF 12 – 2015)



Specific challenge:

- Increased strength-to-weight ratio
- Multi functionality
- Low carbon footprint

Scope:

- Improved, new or hybrid joining and assembly processes
- Maximise performance of the joints
- Implementation of numerical simulation techniques
- TRL 5-7

Expected impact:

- 20% decrease in the consumption of high cost materials
- 30% improvement of the product performance
- Higher level of automation and lower production times

Type of action:

Innovation Actions (70% funding)
Expected contribution: 4 – 7 Mio. EUR

Re-use and re-manufacturing technologies and equipment for sustainable product lifecycle management (FoF 13 – 2015)



- Specific challenge:
- Manufacture added-value products with fewer resources
 - Innovative product recovery approaches
 - Recovery of advanced materials in high-tech products

- Scope:
- Eco-innovative approaches for product design
 - Effective disassembly/separation of advanced materials
 - Suitable for IMS, TRL 4-6

- Expected impact:
- Reduction of energy consumption
 - Reduction in non-renewable materials
 - Reduction of 20% in greenhouse gases emission
 - Reduction of waste generation by 10%
 - Enabling the manufacturing of eco-products
 - Increase of above 20% in productivity rates

Type of action: Research & Innovation Actions (100% funding)
Expected contribution: 3 – 6 Mio. EUR

Integrated design and management of production machinery and processes (FoF 14 – 2015)



Specific challenge:

- Computational models simulating machine-to-part process
- New integrated approaches in simulation methods

Scope:

- Simulation models and algorithms for model based control
- Tool programming strategies that can be rapidly modified
- Demonstration of the reliability of model-based machines
- TRL 4-6

Expected impact:

- Improved system adaptability
- Reduction of lifecycle costs by 30%
- Machine reliability improved by 10%
- Reduction of maintenance costs by 20%
- Increase of 30% in energy efficiency, reduced waste

Type of action: Research & Innovation Actions (100% funding)
Expected contribution: 3 – 6 Mio. EUR

Call H2020-EeB-2015

-
- | | |
|--------------|--|
| EeB 5 - 2015 | Innovative design tools for refurbishment at building and district level |
| EeB 6 - 2015 | Integrated solutions of thermal energy storage for building applications |
| EeB 7 - 2015 | New tools and methodologies to reduce the gap between predicted and actual energy performances at the level of buildings and blocks of buildings |
| EeB 8 - 2015 | Integrated approach to retrofitting of residential buildings |

Innovative design tools for refurbishment at building and district level (EeB 5 – 2015)

Specific challenge:

- Predict and simulate interactions of buildings with environment
- Knowledge collection and management

Scope:

- Taking into account district heating/cooling systems
- Energy efficiency technologies
- Taking into account subsequent operation and maintenance
- TRL 5-7

Expected impact:

- More effective refurbishment
- Optimised design of integrated energy-efficient buildings

Type of action: Innovation Actions (70% funding)
Expected contribution: 4 – 7 Mio. EUR

Integrated solutions of thermal energy storage for building applications (EeB 6 – 2015)

Specific challenge:

- Towards nearly zero energy and Plus-energy buildings
- Full use of the potential yield of renewable energy

Scope:

- Reduce thermal losses and pressure drops
- Improve heat exchange
- High energy density storage materials
- TRL 4-6

Expected impact:

- Advanced thermal energy storage solutions
- Stable long term performance of at least 20 years
- Storage material volume per dwelling below 2.5 m³
- Reduction of net energy consumption by at least 15%
- Return-on-investment period below 10 years

Type of action: Research & Innovation Actions (100% funding)
Expected contribution: 3 – 6 Mio. EUR

New tools and methodologies to reduce the gap between predicted and actual energy performances at the level of buildings and blocks of buildings (EeB 7 – 2015)

- Specific challenge:**
- Monitoring of real energy use
 - Capture the real complexities of the energy performance
- Scope:**
- Consider user behaviour, energy systems performance
 - Predict building energy loads and consumption
 - Energy performance diagnostics for predictive maintenance
 - Demonstration for a block of buildings (at least 3)
 - TRL 5-7
- Expected impact:**
- Significant reduction in the difference between real and predicted energy behaviour
 - Solutions with a high replication potential
- Type of action:** Innovation Actions (70% funding)
Expected contribution: 4 – 7 Mio. EUR

Integrated approach to retrofitting of residential buildings (EeB 8 – 2015)

Specific challenge:

- Deep rehabilitation of residential buildings
- Lowering the costs of refurbishment

Scope:

- Integrate most promising cost-effective technologies/materials
- Reduce drastically the buildings heat needs
- Interactions between buildings and energy networks
- Two demonstration sites in two different climatic conditions
- TRL 5-7

Expected impact:

- Innovative retrofitting solutions as real cases
- Reduction of at least 60% in energy consumption
- High replicability potential
- Return on investment below 7 years

Type of action:

Innovation Actions (70% funding)
Expected contribution: 4 – 7 Mio. EUR

Call H2020-SPIRE-2015

-
- SPIRE 5 - 2015 New adaptable catalytic reactor methodologies for Process Intensification
 - SPIRE 6 - 2015 Energy and resource management systems for improved efficiency in the process industries
 - SPIRE 7 - 2015 Recovery technologies for metals and other minerals
 - SPIRE 8 - 2015 Solids handling for intensified process technology

New adaptable catalytic reactor methodologies for Process Intensification (SPIRE 5 – 2015)



Specific challenge:

- Reduction of the number of steps and unit operations
- Improving the efficiency in the use of resources

Scope:

- Redesign and merging of critical reaction steps
- Allowing new operating windows
- Design of corresponding reactor equipment
- Process modelling and assessment
- TRL 3-5

Expected impact:

- Reduction of at least 15% in process energy intensity
- Reduction of at least 15% in emissions

Type of action: Research & Innovation Actions (100% funding)
Expected contribution: 3 – 6 Mio. EUR

Energy and resource management systems for improved efficiency in the process industries (SPIRE 6 – 2015)



Specific challenge:

- Cross-sectorial interaction of production units
- Sharing of resources (plants, energy, water, residues)
- Understanding of each other's processes

Scope:

- Enable the implementation of a broad variety of technologies
- Integration into a single management system
- Flexible energy use and material flow integration
- TRL 4-6

Expected impact:

- Significant gains in sustainable processing (resource and energy efficiency, emission performance)
- Cost effective reduction in the use of resources
- Reduction of overall costs by at least 15%

Type of action:

Research & Innovation Actions (100% funding)
Expected contribution: 3 – 6 Mio. EUR

Recovery technologies for metals and other minerals (SPIRE 7 – 2015)

-
- Specific challenge:**
- Recovery from primary sources and waste streams
 - Recovery from low concentration streams
 - Major improvements in separation processes
- Scope:**
- New approaches combining several existing techniques
 - New alternative solutions
 - Integration in the current industrial scenario
 - TRL 5-7
- Expected impact:**
- Proof of economic and industrial feasibility
 - Life Cycle and Cost Assessments
 - 40% increase in recovery of materials suitable for reprocessing
- Type of action:** Innovation Actions (70% funding)
Expected contribution: 6 – 10 Mio. EUR

Solids handling for intensified process technology (SPIRE 8 – 2015)

Specific challenge:

- Decentralised on-site plants and modular approaches
- Fast and flexible processes

Scope:

- Handling of solids in continuous production units
- Consider downstream processing operations
- Case studies should be included
- Metering and transport of solids
- TRL 5-7

Expected impact:

- Novel, efficient and cost effective production concepts
- Innovative modules allowing to process solids
- Higher production capacity

Type of action: Innovation Actions (70% funding)
Expected contribution: 6 – 10 Mio. EUR

Evaluierungskriterien bei PPP

Kriterium	Minimum Schwellenwert
1 - Wissenschaftlich- Technische Exzellenz	4/5
2 - Impact	4/5
3 - Qualität und Effektivität	3/5
Geforderter Schwellenwert	12/15

Bedeutung des Impact in H2020 noch gewachsen – bei Anträgen wird dem Kriterium entsprechend größere Bedeutung beigemessen

- Schwellenwert bei der Evaluierung: 4 von max. 5 Punkten
- Ranking der Proposals:
Für Innovation Actions wird das **Kriterium “Impact”** bzgl. Ranking mit dem Faktor 1,5 gewichtet (Bei FoF und SPIRE)

Antrag: Expected Impacts

- Berücksichtigung des im Arbeitsprogramm / Aufruf / Topic genannten „Impacts“
- Wer sind die potentiellen Nutzer?
- Inwiefern stärkt das Projekt die Wettbewerbsfähigkeit (Produkte, Technologien)?
- Sozialer / gesellschaftlicher Nutzen
- In welchem Maße unterstützt das Projekt die EU-Politiken?

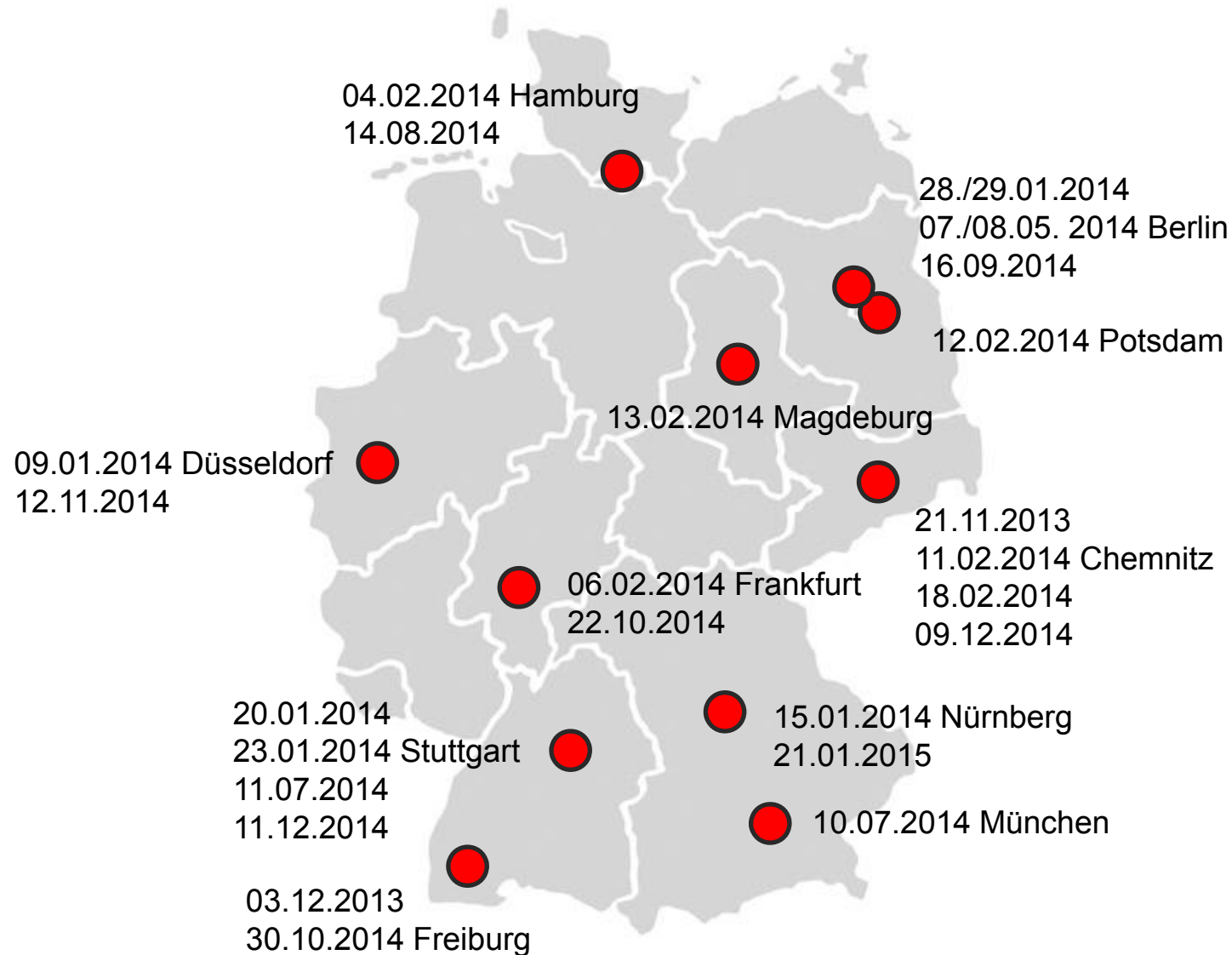
Antrag: Measures to maximise Impact

- Verbreitungspläne – Dissemination angepasst an Zielgruppen (Paper, Webpage, Konferenzen, Workshops, Filme, Blogs, Pressemitteilungen, Roadshows, Messen...)
- Verwertungspläne - Einbeziehung von Industriepartnern, Verwertungsagenturen
- Schutz von geistigem Eigentum und Datenmanagement
- Kommunikationskonzept

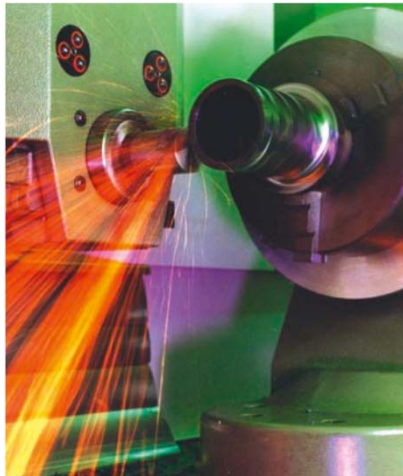
Time to Grant

-
- Ziel des Projektstarts nach 8 Monaten hat KOM fest im Blick
 - Start der Vertragsvorbereitung 5 Monate nach Deadline wird strikt eingehalten
 - Verkürzung der Fristen geht häufig zu Lasten des Consensus Meetings der Gutachter
 - Keine Verhandlung der Projektinhalte mehr möglich

Veranstaltungen zu HORIZON 2020 unter Mitwirkung der NKS Produktion



Informations- und Beratungsdienst Produktion



**Ihr freundliches NKS-Team
von PTKA @ KIT**

NKS

Jens Korell

Erik Mertens

Dorothee Weisser

Daniel Eimer

e-Mail: eu.production@ptka.kit.edu

Internet: <http://www.produktionsforschung.de/international>

Hotline: 0 7 2 1 / 6 0 8 - 2 4 5 7 5

Bei Interesse melden Sie sich bitte für unseren Infobrief an!

Nationale Kontakt- stelle Informations- und Kommunikations- Technologien

Team

Dr. Friedhelm Gillessen

Stefan Hillesheim

Andrea Köndgen

Dr. Uwe-Michael Schmidt

Dr. Manuel Spaeth

e-Mail: eu-ncp@dlr.de

Internet: <http://www.ncp-ict.de>

Hotline: 0 2 2 0 3 / 6 0 1 - 3 4 0 0