CELTIC-NEXT Proposers Day

5th February 2019, London

INCYP 5G: Integrated 5G and Cloud Platforms for Industrial Cyber-physical Systems

MÄLARDALEN UNIVERSITY
SWEDEN

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Teaser

- 5G + Cloud services + Industrial Cyber-Physical System (ICPS) infrastructure will promote
  - next generation of intelligent and autonomous systems
  - real-time connected device monitoring and control
  - increased quality, efficient production and sustainable industrial systems.

- Faster time-to-market, more flexible collaboration and data sharing for European cyber-physical system industry

- Contribute to accelerating new growth opportunities to both communications service providers and ICPS providers

- Create intelligent, connected ICPS Ecosystems and 5G Services

Organisation Profile

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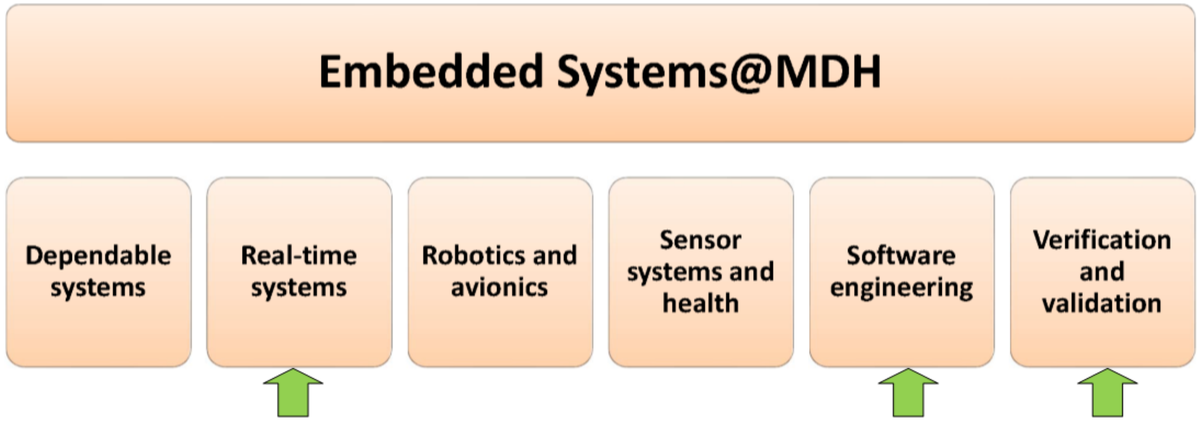
Next Generation Telecommunications

ABB VOLVO BOMBARDIER

- **Mälardalen University (MDH)**
  - One hour from Stockholm
  - **14 000 students**
  - **900** employees
  - MDH has a long tradition and history of close cooperation with industry
    - Preferred research partner of ABB and Volvo

  - Embedded Systems research direction
    - Largest, 6 prioritized areas



Proposal Introduction (1)

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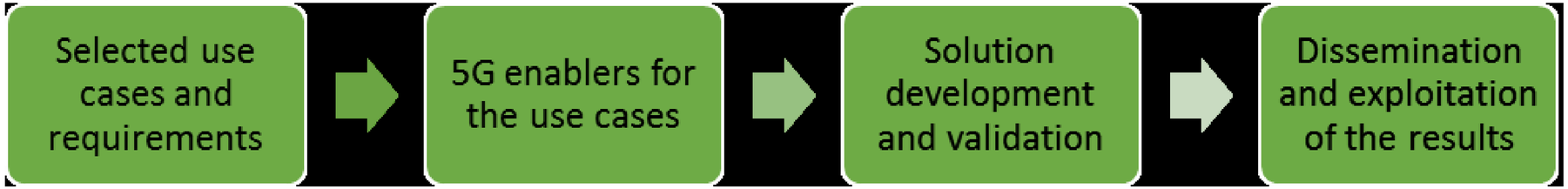
- INCYP 5G Vision
  - Provide dependable cloud-based platforms for industrial cyber-physical systems by merging 5G's service-based architecture, private and public cloud services and sensor-based devices
  - Enable complex partner ecosystems with shared cloud, network and commercial systems
- INCYP 5G Motivation
  - Need to scale, manage, secure, analyze complex data generated by digital services and content of ICPS
  - Manage large nr. of devices that are connected and communicate with each other
  - Leverage service based architectures and dynamic network slices to meet specific application requirements for reliability, timeliness, security etc.
- INCYP 5G content



  - **5 technical WPs**: Use cases (WP2), Data, QoS and hazards (WP3), 5G-based Network Architecture and Platform Virtualization (WP4), Advanced 5G-enabled services (WP5), Integration, validation, demo (WP6)
  - **2 organizational WPs**: Project management (WP1), Dissemination & exploitation (WP7)

Proposal Introduction (2)

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- Expected outcome
  - models, methods and tools that facilitate a substantial increase of dependability:
    - consistency, security and interoperability of data, operation safety, and timing predictability of using shared virtual resources
  - efficient decision-making algorithms for dynamic virtual machines placement and scheduling based on 5G network slicing
  - new 5G-enabled cloud services for ICPS
    - based on artificial intelligence/machine learning algorithms to deliver personalized services
    - create and evolve services from intelligent device data

- Impact
  - Substantial boost of dependability of cloud-based ICPS platforms based on 5G
  - Increased cross-industry collaboration and data sharing
  - Reliable, secure 5G-enabled ICPS cloud-based platforms

- Schedule
  - Start: June 2020 End: May 2013

Partners

- Sweden
  - Mälardalen University
  - ABB
  - Ericsson
  - Volvo Group Truck Operations (Volvo GTO)

- International Academic partners with expertise in
  - Real-time systems
  - Artificial intelligence/Machine learning
  - Fog/Cloud Computing, Network traffic management
  - Heterogeneous network architecture
  - Verification and Validation : Formal methods and testing

- Industrial partners – automotive, aviation, industrial automation, manufacturing etc.

Contact Info

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Presentation available via:
www.tiny.cc/proposalidea

Join the follow-up Telco

11 Feb. 16.00 CET

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Join Webex meeting
Meeting number (access code): **951 625 645**
Meeting password: **hZu5pmF8**

Join by phone
+49-6925511-4400 Germany toll
Global call-in numbers

Can't join the meeting?