Mälardalen University (MDH)
Sweden

Safety assurance of Fog-based industrial systems

- **Deadline**: March 31, 2018
- **Career levels**: PhD student
- **Keywords**: Embedded / Cyber-Physical Systems, Safety and Security, Networking / Distributed computing

**PhD Project 13 (MDH)**

**Objectives:**

- Enable efficient safety certification of Fog-based industrial automation systems by extending the state-of-the-art safety case approaches.
- Develop a safety assurance framework for Fog-based industrial systems that reduces costs and takes into account security.

**Expected Results:**

- Evaluate the current certification practice and relevant functional safety standards in the area, such as IEC 61511, for the suitability to assure the safety of Fog-based infrastructures
- Analyze the Fog Computing Platform for new types of hazards and associated risks.
- Propose new fault models, dependability attributes and mitigation methods for Fog Computing.
- Extend the current safety assurance methods with an "evolving" safety case model, which collects operational data via monitoring, leading to periodic validation of the safety argument and evidences.

**Planned visits and collaboration:**

- **TTT**: Develop a proof-of-concept safety assurance of a Fog Infrastructure use case.
- **ABB**: Learn about certification standards in industrial automation and safety assurance practice.

**FORA**—Fog Computing for Robotics and Industrial Automation is a European Training Network (ETN), which will fund and train 15 PhD candidates in the area of Fog Computing, during the period 2017-2021. Fog Computing, also sometimes called Edge Computing, brings the Cloud "closer to the ground", to the edge of the network. FORA is an interdisciplinary, international, intersectoral network that will train the next generation of researchers in Fog Computing with applicability to industrial automation and manufacturing.

Please visit the FORA website [http://www.fora-etn.eu](http://www.fora-etn.eu) to learn more about these positions and to apply. Application deadline: Dec. 31st, 2017 Earliest start date: Oct. 1st, 2017 Latest start date: April 1st, 2018