MAXIMAL CUSTOMER VALUE THROUGH INNOVATION IN FUTURE AUTOMATION

STREAM is a VINNOVA-funded challenge-driven innovation project, aiming at creating new and competitive automation solutions. We are currently planning for phase 3, scheduled to begin early 2015 with duration of two years.

Industry is entering a new phase, driven by cost-effective means to analyze and use the massive amounts of data generated from sensors and measurements of systems and processes. STREAM will accelerate the uptake of new technology based on information analysis by focusing on industrial automation and train propulsion. Three case studies done in participation with industry are an important part of the project. The cases can all easily be generalized to other application areas.

One study, with ABB, deals with condition monitoring and maintenance of automated cranes in container terminals. To maintain high productivity, the cranes must be monitored for early detection of any problems or disturbances. Logs of performance data and error messages are used to detect faulty cranes and to predict the productivity loss associated with those cranes, as a tool to help prioritize maintenance.

Another study, with Bombardier, focuses on optimized propulsion of modern trains. For maximum effectiveness, drivers need decision support telling them which speed is the most economical, given other nearby trains, constraints on timely arrival, speed limits, and propulsion characteristics. In STREAM-3, a demonstrator for such a system will be developed, which will allow future propulsion systems to be designed optimally, and for a fleet of trains to run with minimum lifetime cycle costs.

In the third study, with Prevas, an existing furnace heating time prognosis is extended using a model for the furnace inside temperature. The energy model estimates the furnace inside temperature based on fuel composition, excess air, furnace shell properties, work piece data and time-dependent properties such as temperatures and volumes of fuel.

Methods developed in the case studies will build up the STREAM toolbox, including architecture for connecting developed modules, a methodology for solving industrial problems, and business models for resulting new services and products. Examples of potential services are process monitoring, dynamic production optimization, maintenance planning, and energy optimization.

STREAM is led by SICS Swedish ICT AB. Core partners are Mälardalen University, Blue Institute, ABB AB, Addiva, Atlas Copco, Bombardier and Prevas. Supporting partners include Mälarenergi, Trafikverket, SJ, SL, MTR, Green Cargo, Automation Region and Motion Control.

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