Fifteen years of collaboration on domain-specific languages
Products
800xA Control IT

Plant Network / Intranet

Workplaces
Enterprise Optimization Suite

Client/server Network

Connectivity Server
Aspect Server
Application Server

Third party application server

Third party controllers, servers etc

Control Network

AC 800M
Redundant
AC 800M HI

Field Bus

Serial, OPC or fieldbus

Engineering Work place

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Products derived from LTH

- **PID Autotuner** (Tore Hägglund, Karl Johan Åström)
  - Algorithm still used as the main autotuner.
- **Sattline** (Hilding Elmqvist)
  - 1989 market introduction
  - Reason for ABB to buy the automation part
  - 800xA – AC800M (derived from SattLine 1999)
    ABB main DCS and still continuously developed.
Distributed Control System – Language

- SattLine – graphical representation, automatic execution order sorting (1989)
- AC 800M + IEC 61131-3 : IL, ST, FBD, SFC (1999)
- AC 800M + Diagrams, graphical language with visible data flow (2012)

Hierarchical type instance based – but still is inheritance missing!
Language Cooperation ABB – LTH

- Vinnova / Lucas (2000-2009)
  - Design and implementation of object-oriented extensions to the Control Module Language, Torbjörn Ekman

- Vinnova / EASE 2010
  - ABB failed to sign the agreement – focus on mobile industry

- PhD 2010 - 2014
  - A Sequential Control Language for Industrial Automation, Alfred Theorin

- ABB – CT / LTH 2013 - 2016
  - The Design and Implementation of Bloqqi – A Feature-Based Diagram Programming Language, Niklas Fors
Language cooperation ABB – LTH, next step

- Vinnova / LTH / ABB, 2016 - 2017
  Feasibility study: Feature-oriented automation programming

- Sequence Programming / JGrafchart
- FMI / Modelica
- Unit tests
- Provide examples