Project Introduction / Update
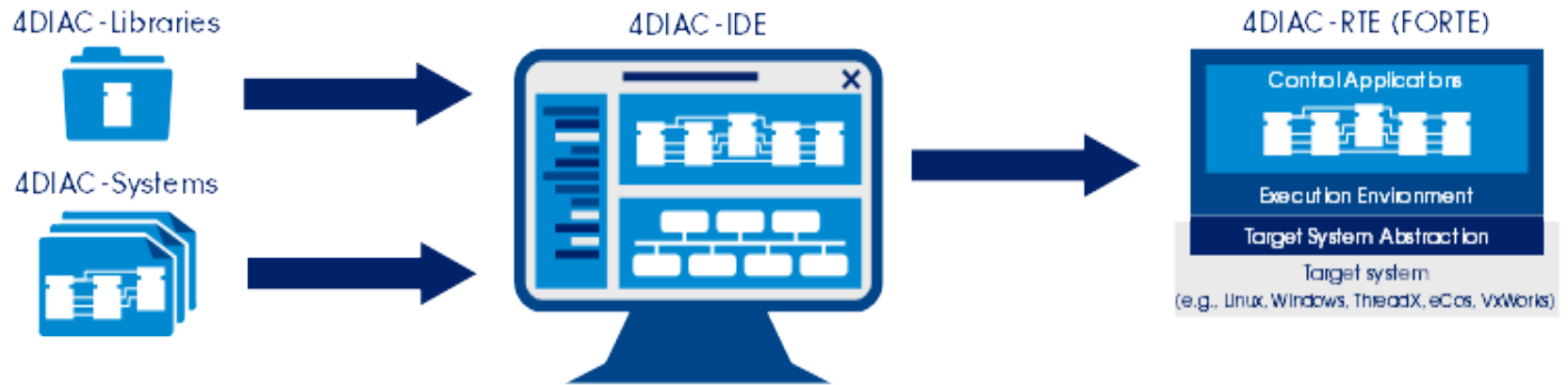
Eclipse Unconference
IoT Working Group
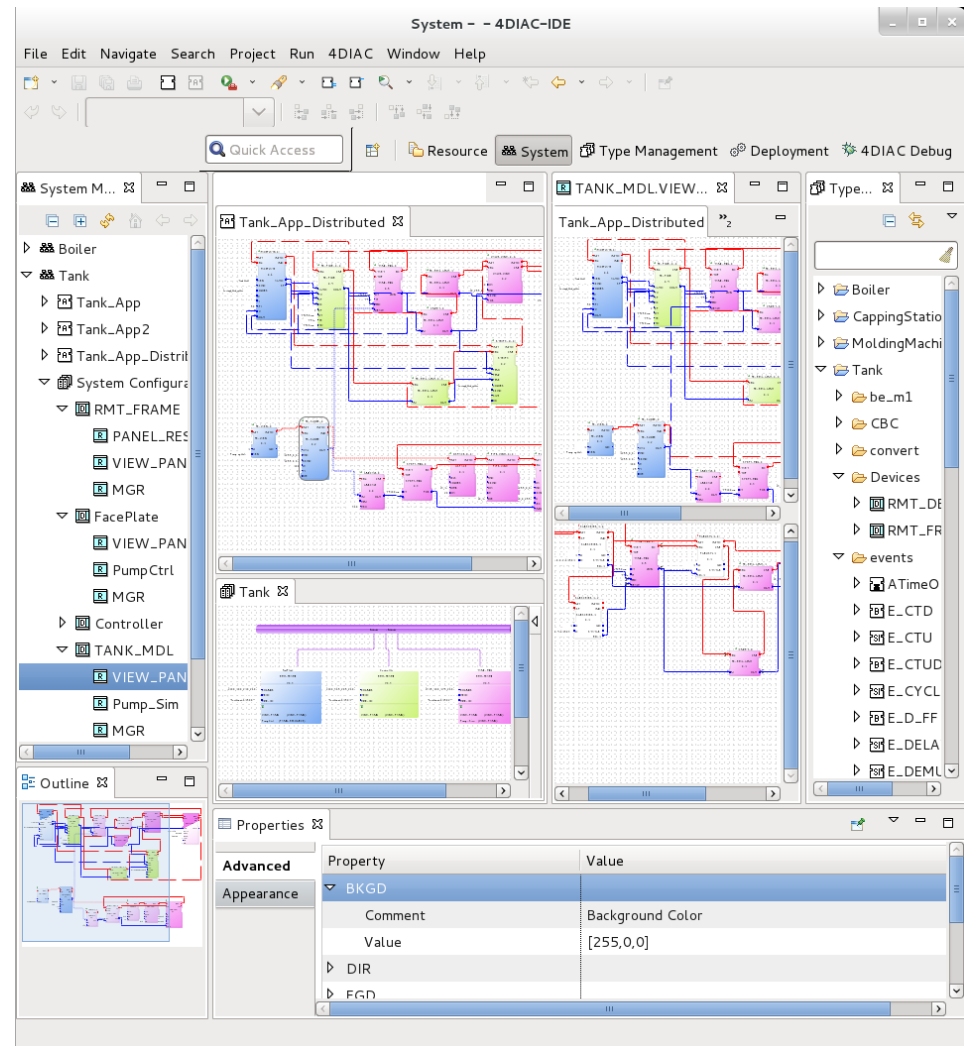*Alois Zoitl, fortiss GmbH*

What is the Problem?

Engineering Tool:
Application/Distributed System Development

- System Editor:
  - Application modeling
  - Support for sub-applications
  - Device and network specification
  - Mapping
- Deployment:
  - Support for different profiles
  - Separate deployment possible
- Project Management
  - Project specific Type-Libraries

- Types
  - Basic FB's
  - Composite FB's
  - Service Interface FB's
  - Adapters
- Code generation (C++)

- Test Function Blocks
  - On target device
  - Manual
  - Automated unit tests
- Investigate Applications
  - Watch interface elements
  - Trigger events
  - Force values

Features: 4DIAC-RTE
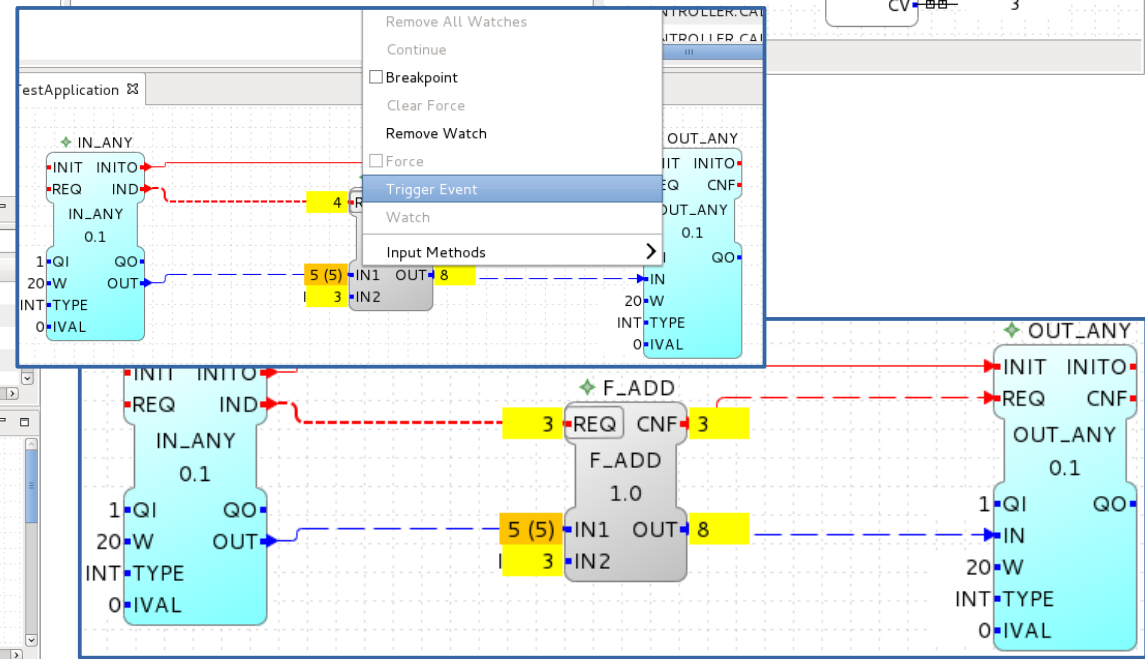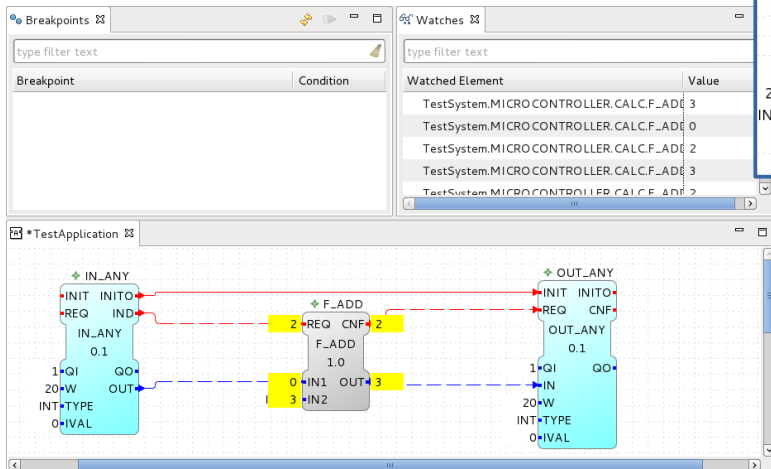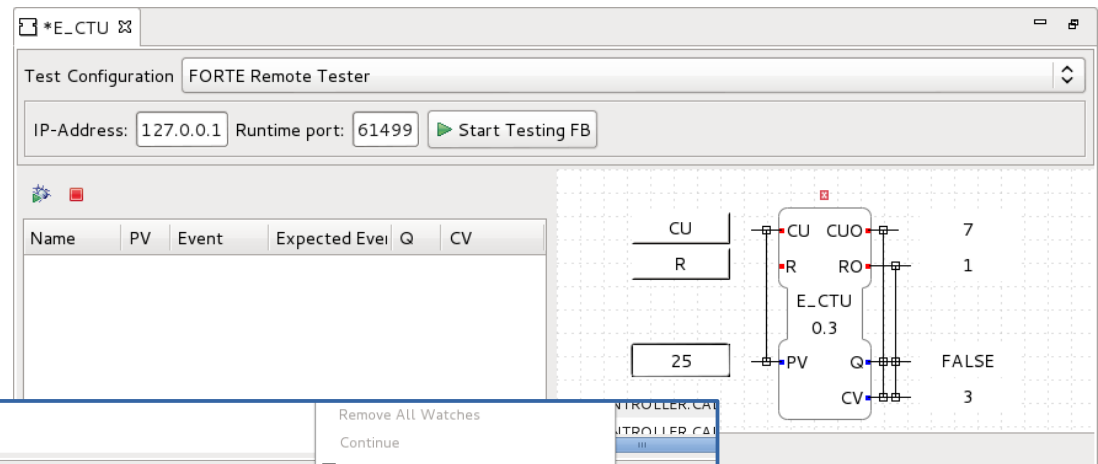
Operating Systems

- Windows
- Posix: Cygwin, Linux (i386, PPC, ARM), (VxWorks, QNX)
- NET+OS® 7
- eCos

Control Applications

Execution Environment

Target System Abstraction

Target System

Devices and Dev-Boards

- Lego Mindstorms nxt (ARM7)
- Digi Connect ME® (ARM7)
- CBC v2 robot controller
- Raspberry Pi
- BeagleBone
- Bachmann electronic M1 PLC
- Wago PFC 200

Source: LEGO

Source: digi

Source: KIPR CBC
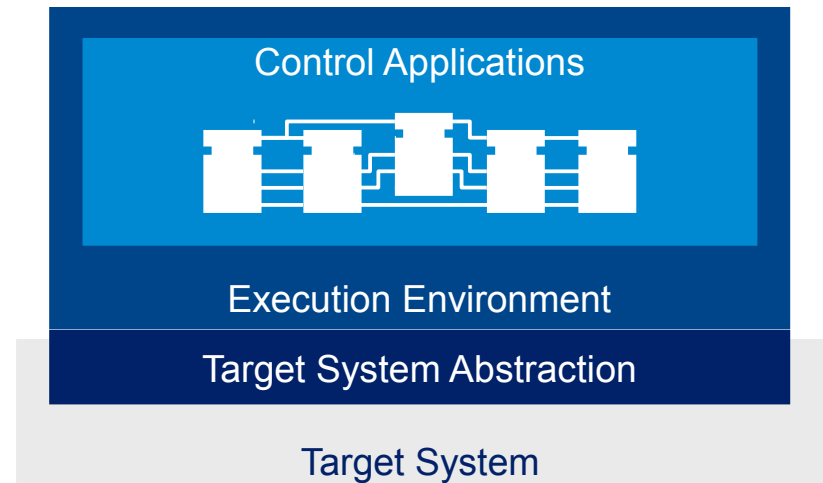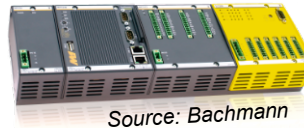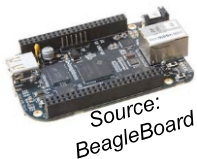
Communication Support

- EclipseSCADA SFP
- Ethernet (TCP/UDP)
- Ethernet PowerLink
- Modbus TCP Client
- MQTT (Eclipse Paho)
- OPC DA Client
- RS232

Source: RaspberryPi

Source: BeagleBoard

Source: Wago

Source: Bachmann

Some Statistics

- *Open source since **July 2007***

  - *Development started 2005*

- *> 22.600 Downloads*

- *~400k lines of code*

- *9 comitters from 5 companies*

  - *3734 commits since 2010*

In the last year we had:

- *2 major and 5 minor releases*

- *4900 downloads*

- *101 closed tickets*

- *650 commits from **12 contributers***

- *445 forum messages*

Project plan

- *Migration to Eclipse*
  - *Identify contributors and dependencies*
  - *FORTE 95% complete*
- *Next release: 1.8*
  - *4DIAC-IDE*
    - *Usability improvements in IDE*
    - *New icon set*
    - *Monitoring of adapters*
  - *FORTE*
    - *Integration of LUA engine for dynamic type loading*
    - *Performance improvements*
    - *New Hardware:*
      - *RaspberrySPS*
      - *Lego Mindstorms EV3*

Key Challenges

- *Work through 10 years of development history (cvs, svn, hg)*

- *Dependencies*

  - *OSes*

    - *Linux*

    - *Windows*

    - *ThreadX*

    - *Ecos*

    - *Upcoming*

      - *FreeRTOS*

  - *Vendor Specific*

    - *Wago PFC200 KBus library*

    - *Bachmann electronic M1 libraries*

  - *Libraries*

    - *Libmodbus (http://libmodbus.org/)*

    - *Eclipse Paho*

    - *EclipseSCADA SFP*

    - *OPC Client library release 0.4 (http://sourceforge.net/projects/opcclient/)*

    - *Boost (http://www.boost.org)*

      - *Boost Test*

      - *Lexical Cast*

    - *openPOWERLINK V1.8.0 (http://sourceforge.net/projects/openpowerlink/)*

Dependency wrapping key USP of 4DIAC!

Collaboration Opportunities

- *EclipseSCADA*

- *MQTT payload specs*

- *IP handling*

- *Communication protocols in general*

  - *Horizontal*

  - *Vertical*

- *...*