5th 4DIAC Users' Workshop

ETFA 2014, Barcelona
September 16th

www.fordiac.org

Program: Morning Session

Welcome and Recent Activities of the 4DIAC Open Source Initiative	9:00
Session: “Infrastructure Enhancements” Extending 4DIAC with a partitioning and scheduling tool Scheduling IEC 61499 Function Block based models on resource constrained platforms Dynamically loadable Function Block types to reduce application development time	9:30
Coffee break	10:30
Session “Communication Modelling” An enhanced communication scheme for 4DIAC Middleware Architecture for CPPS over IEC 61499 Automatic generation of distributed communication in 4DIAC	11:00
Open Discussion	12:00
Lunch Break	12:30

Program: Afternoon Hands on Session

Short Introduction to IEC 61499 and 4DIAC	13:30
Guided small control application example	14:30
Coffee break	15:30
Implementing a control application for a simulated press	16:00
Question and Answer session	17:30
End	18:00

Own PC required for the exercises!

Recent Activities of the 4DIAC Open Source Initiative

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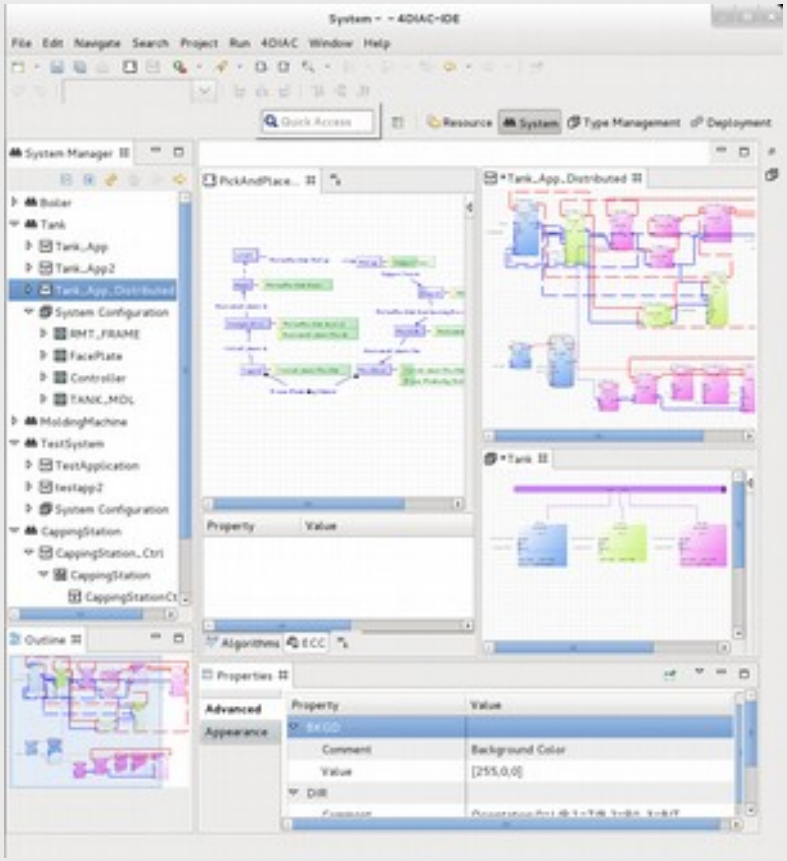
4DIAC Overview

- Goal: **open source solution** of the IEC 61499 standard for distributed industrial automation systems
  - Common framework for the further development of IEC 61499
  - Leveraging the use of IEC 61499 within industry
- Application domains:
  - Building automation, process industries, laboratory automation, smart grids, machine control, sequence coordination, ...
- Components of solution
  - Engineering tool
  - Small real-time capable runtime environment
  - Reusable component library
  - Example applications
- Open Source License
  - Eclipse Public License
  - Allows usage in products and proprietary add-ons



Release Cycle

- Two major releases per year
  - Feb. 28th
  - Sept. 30th
- Feature freeze **4 weeks** upfront
- Extended by monthly minor releases
- Bug fixes are introduced more early

Some Statistics

- Open source since **July 2007**
- 300 – 400 Page hits/ week
- >17.800 Downloads
- 384,876 lines of code
- 9 comitters from 5 companies
  - 1 new: **Matthias Plasch**

In the last year we had:

- 2 major and 5 minor releases
- 3600 downloads
- 119 closed tickets
- 723 commits from **14 contributers**
- 359 forum messages

4DIAC is getting an Eclipse Project

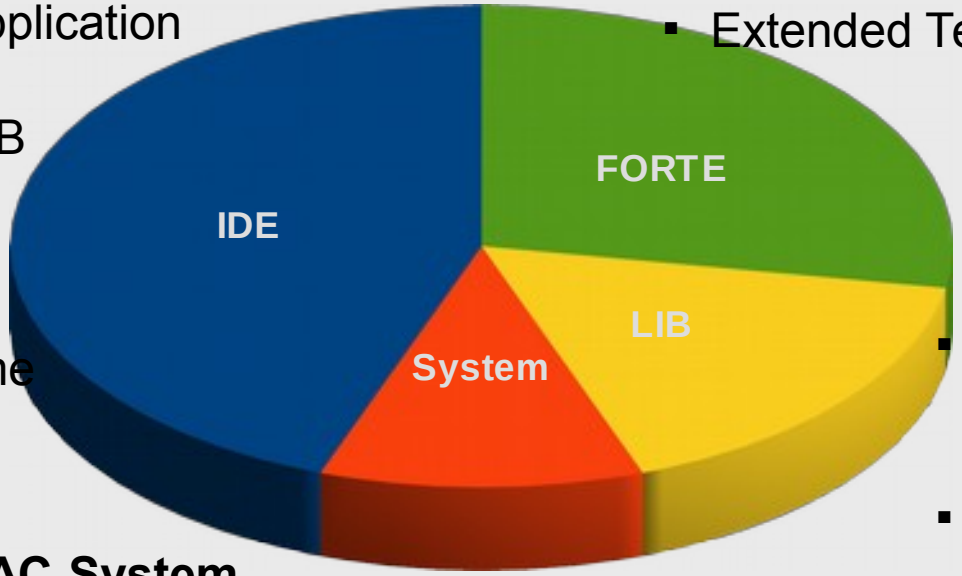
First steps taken

...

Whats New

4DIAC-IDE
- Syntax highlighting for ST Algorithms
- Extended Subapplication support
- UI cleanup for FB type editor
- Integrated 4DIAC-Help
- Updated welcome screen

FORTE
- MQTT
- New Platforms
- Extended Test infrastructure



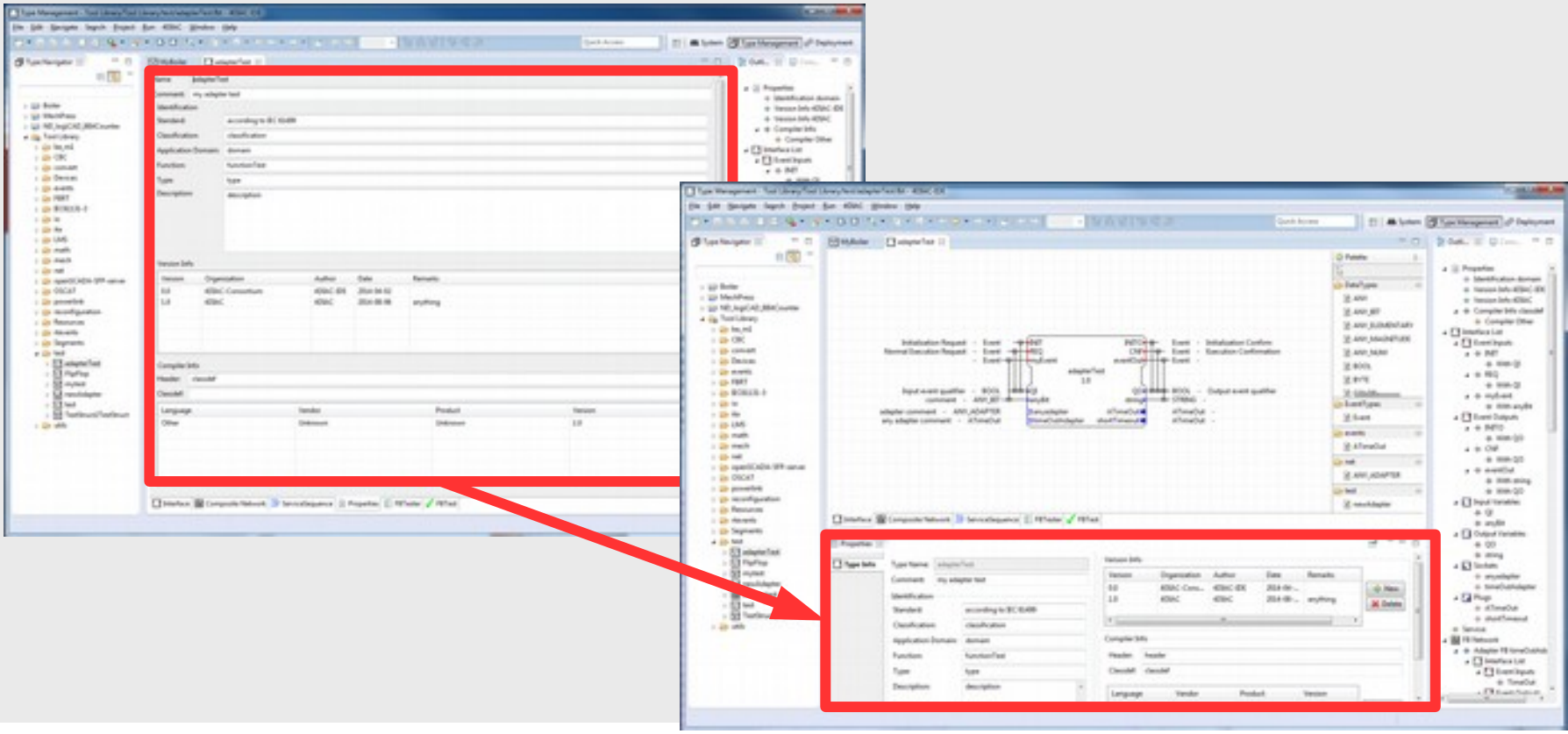
4DIAC-LIB
- Common I/O Function Blocks: IX & QX
- Array handling blocks

4DIAC-System
- Traffic light
- Simulated mechanical press

UI Cleanup for FB Type Editor

before

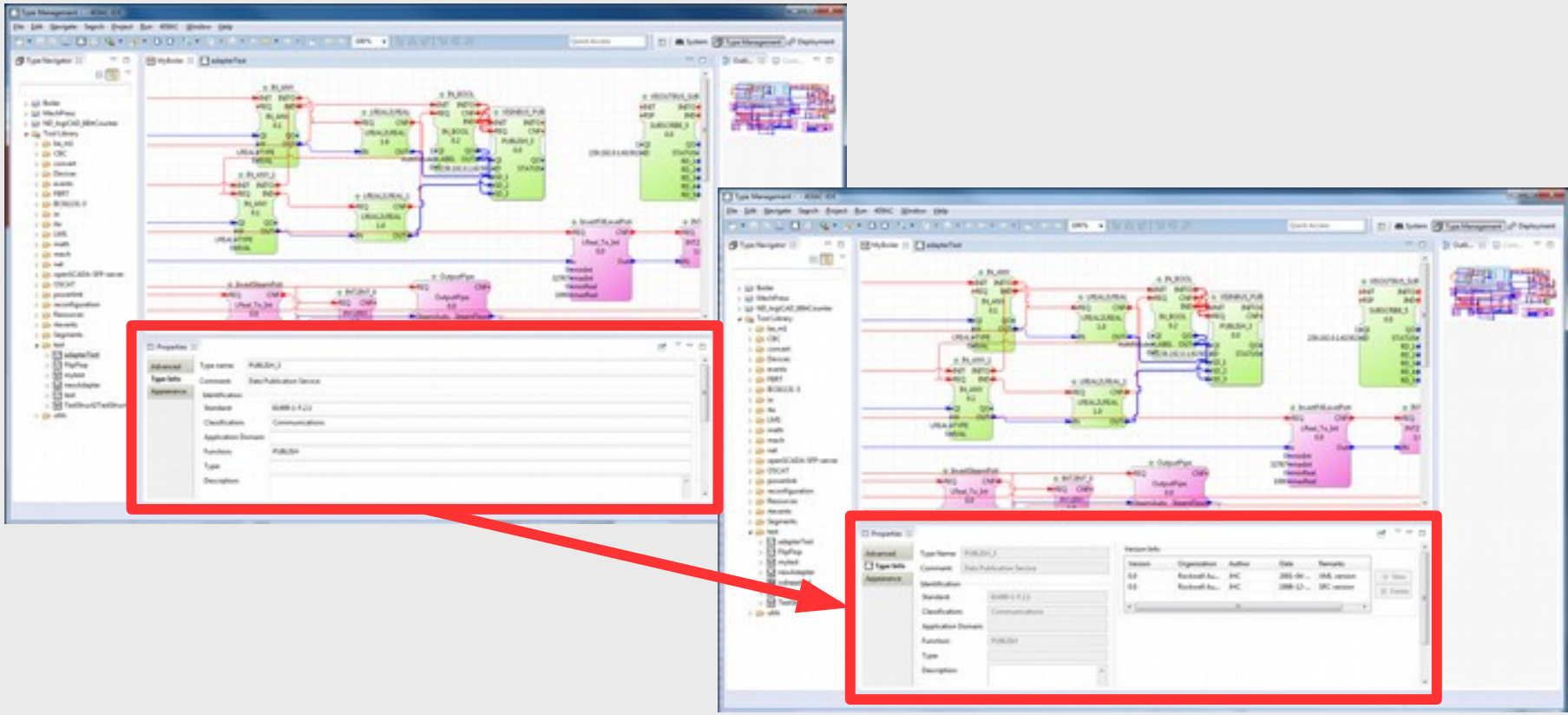
after



UI Cleanup for FB Type Editor

before

after



UI Cleanup for FB Type Editor

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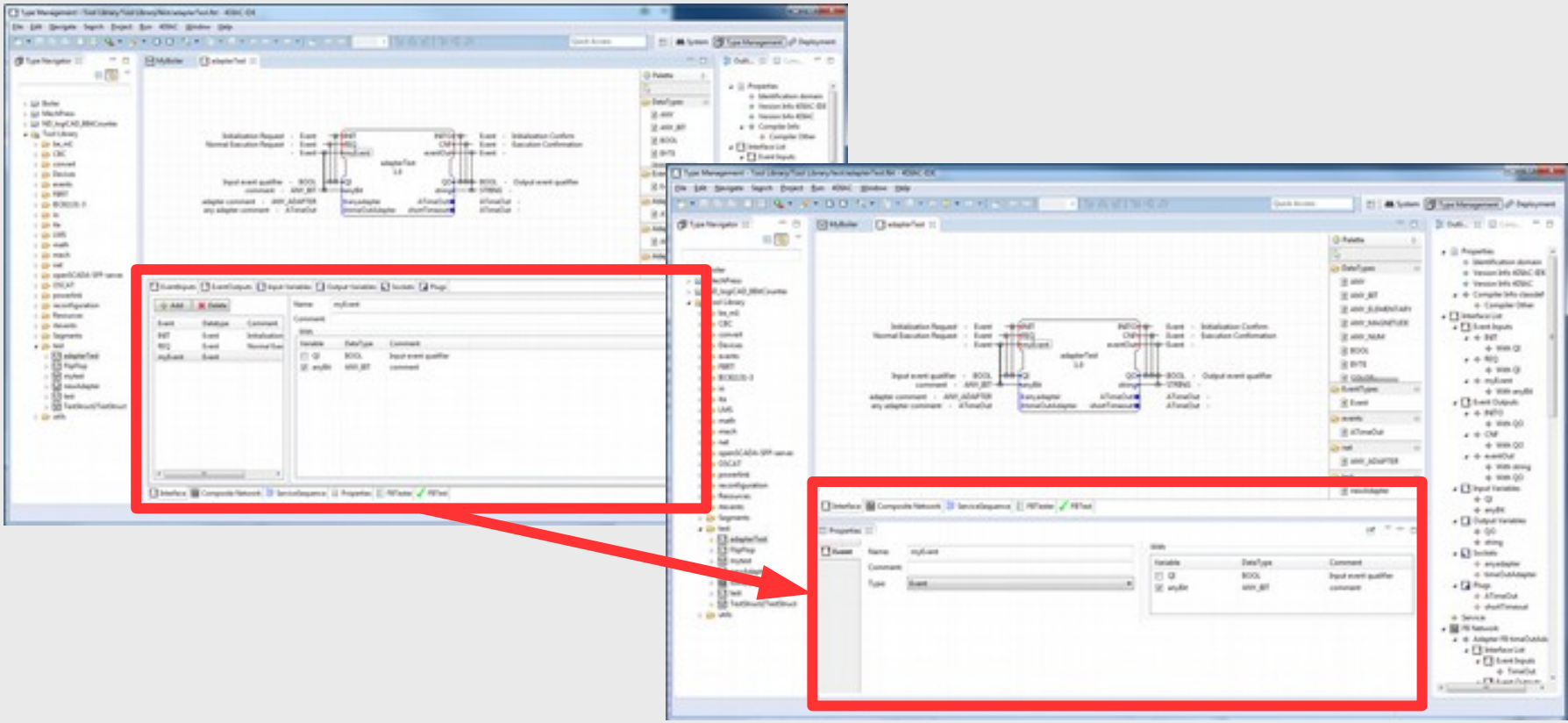
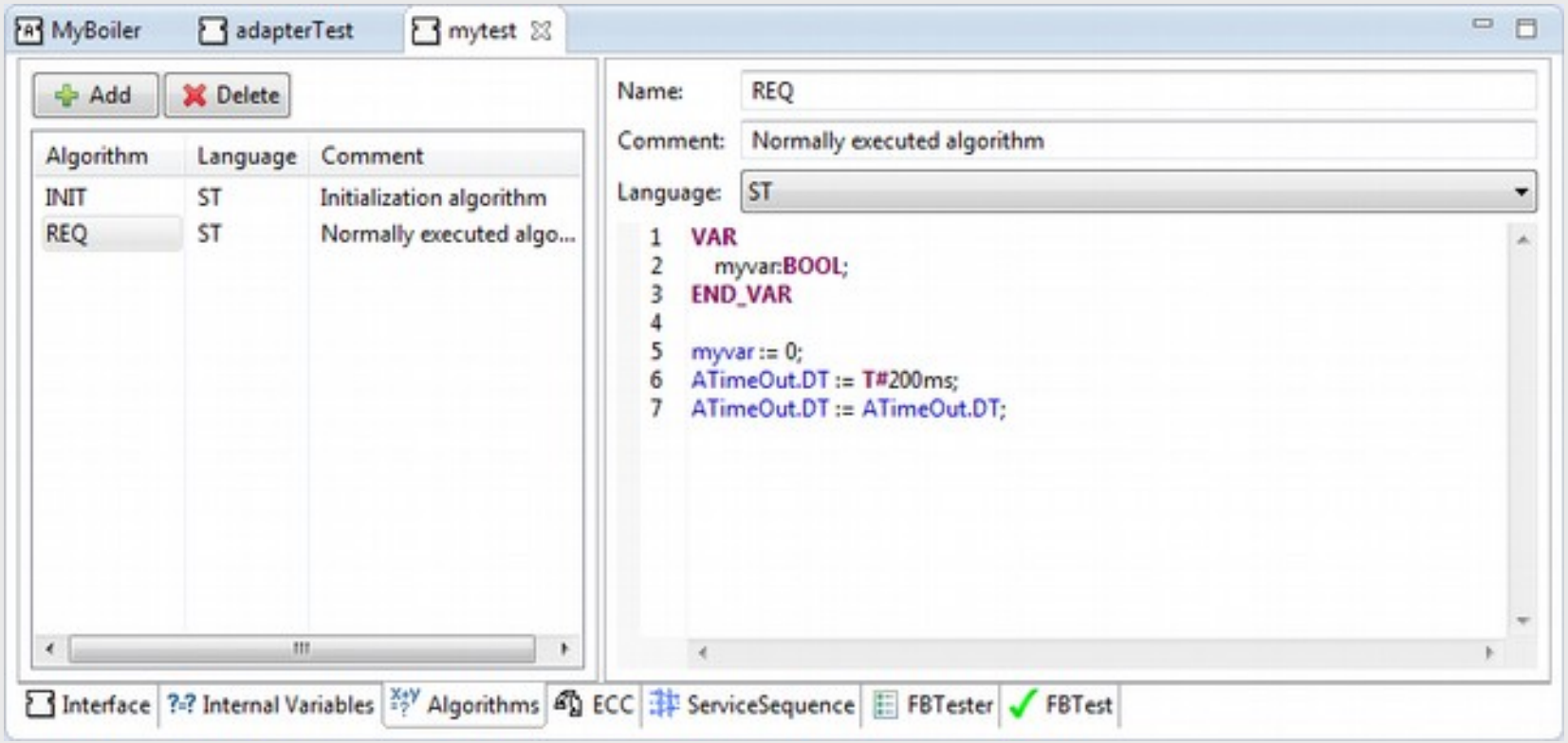


Syntax Highlighting for ST Algorithms



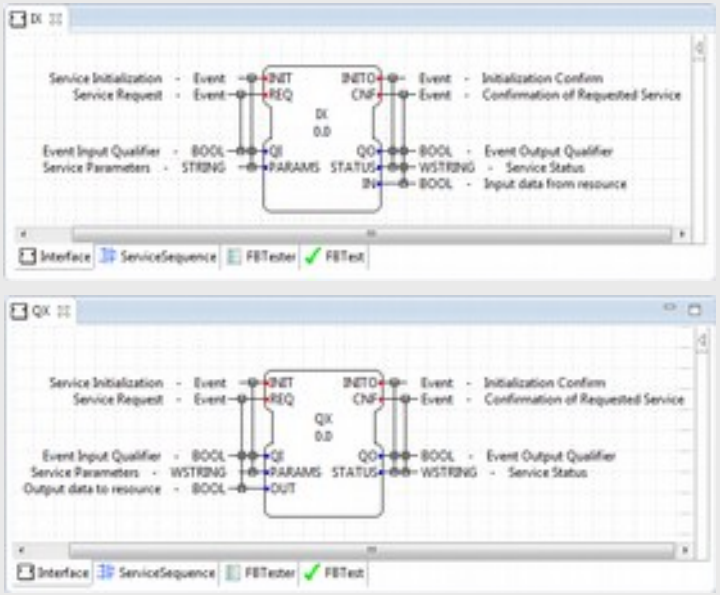
Whats New: FORTE

- New Platforms
  - Raspberry PI
  - Beagle Bone Black

- MQTT
  - IoT connectivity
  - Using Eclipse Paho

Whats New: 4DIAC-LIB

- Common I/O Function Blocks: IX & QX



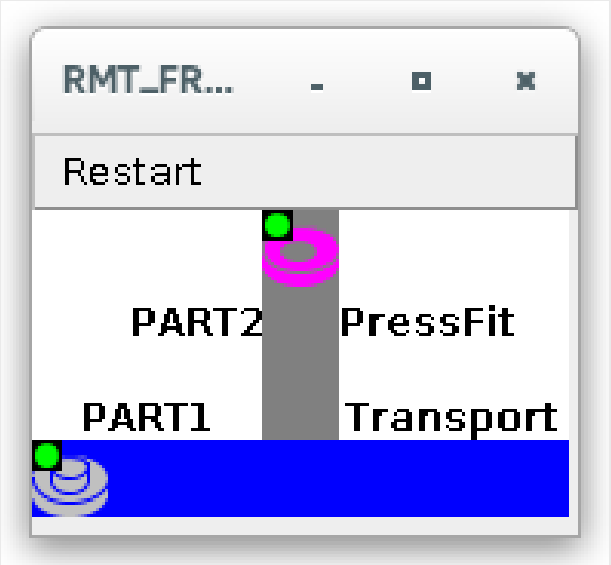
Sample implementation for RaspberryPI and BeagleBone Black

- Array handling blocks
  - GET_AT_INDEX
  - SET_AT_INDEX
  - ARRAY2ARRAY_2
  - ARRAY2VALUES_2
  - VALUES2ARRAY_2

Whats New: Systems

- Traffic light

- Simulated mechanical press



The 4DIAC Team likes to say thank you!

Many thanks to all

bug reporters,
feature requesters,
patch submitters,
and discussions in the forum

Getting Involved

- Bug-list / feature-requests as starting point for involvement
- Source code provided in distributed version control system “Mercurial”
  - 4DIAC-IDE: http://sourceforge.net/p/fordiac/fordiac-ide/
  - FORTE: http://sourceforge.net/p/fordiac/forte/
  - 4DIAC-LIB: http://sourceforge.net/p/fordiac/fordiac-lib/
  - 4DIAC-Systems: http://sourceforge.net/p/fordiac/fordiac-systems/
- Patches of collaborators will be reviewed and applied

Recent Activities of the 4DIAC Open Source Initiative

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