

ROS-INDUSTRIAL CONFERENCE 2018, STUTT GART

Ease-of-Use Packages between ROS and ABB Robots

Jon Tjerngren, ABB AB Corporate Research

2018-12-12



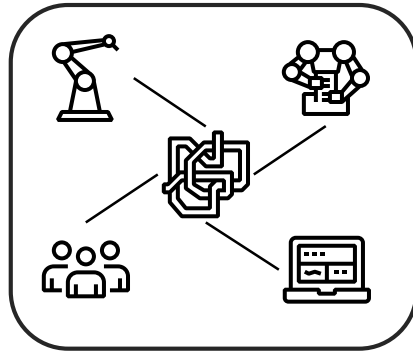
Introduction

Jon Tjerngren

ABB AB, Corporate Research Centre
Västerås, Sweden

My areas:

- ABB robots (software)
- System integration
- European projects



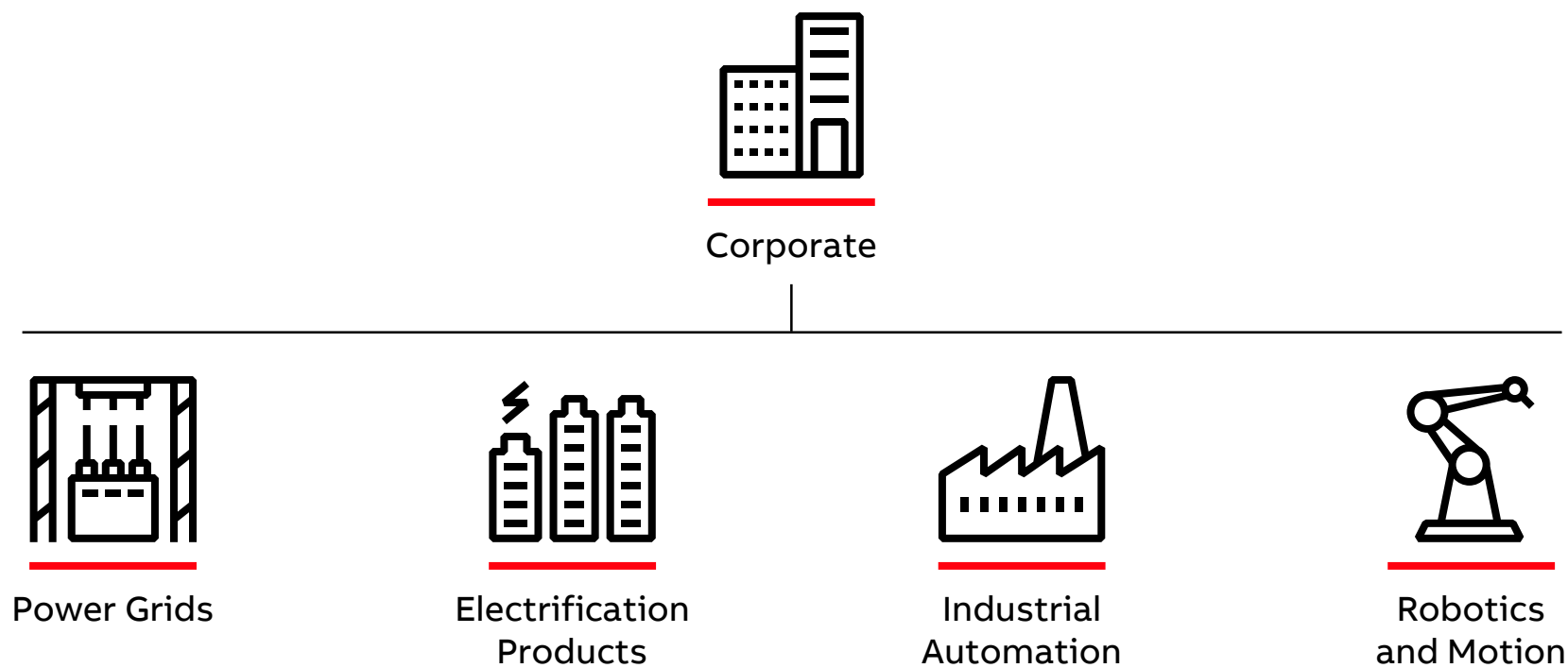
Acknowledgements

European projects



Open-source community





Power and Automation Company

ABB Robot Controllers

Brief Description

1 ABB robot setup?

2 Suitable interfaces? (E.g. towards ROS)

3 How to configure?

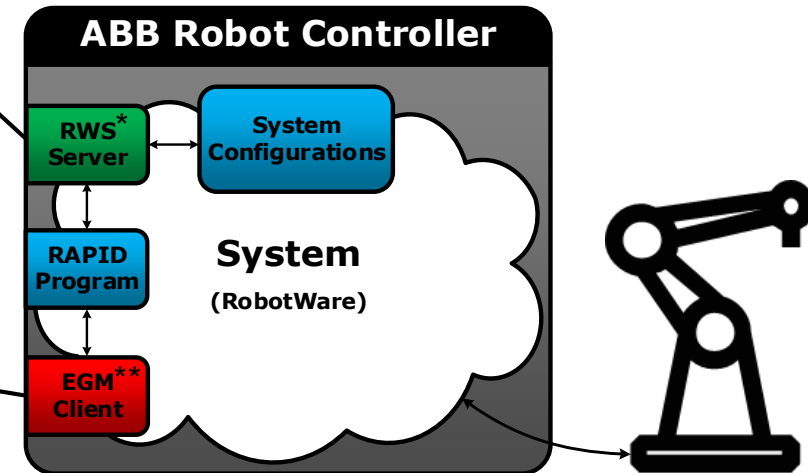
4 How to utilize?

Robot Web Services:

- Reading/writing IO-signals
- Reading/writing RAPID data
- Start/stop RAPID program
- Checking controller status
- Access file system
- Subscriptions
- And more!

Externally Guided Motion

- Responsive motion control
- Position feedback
- Position/velocity references
- Joint/Cartesian modes
- For 6-axis robots
- And more!





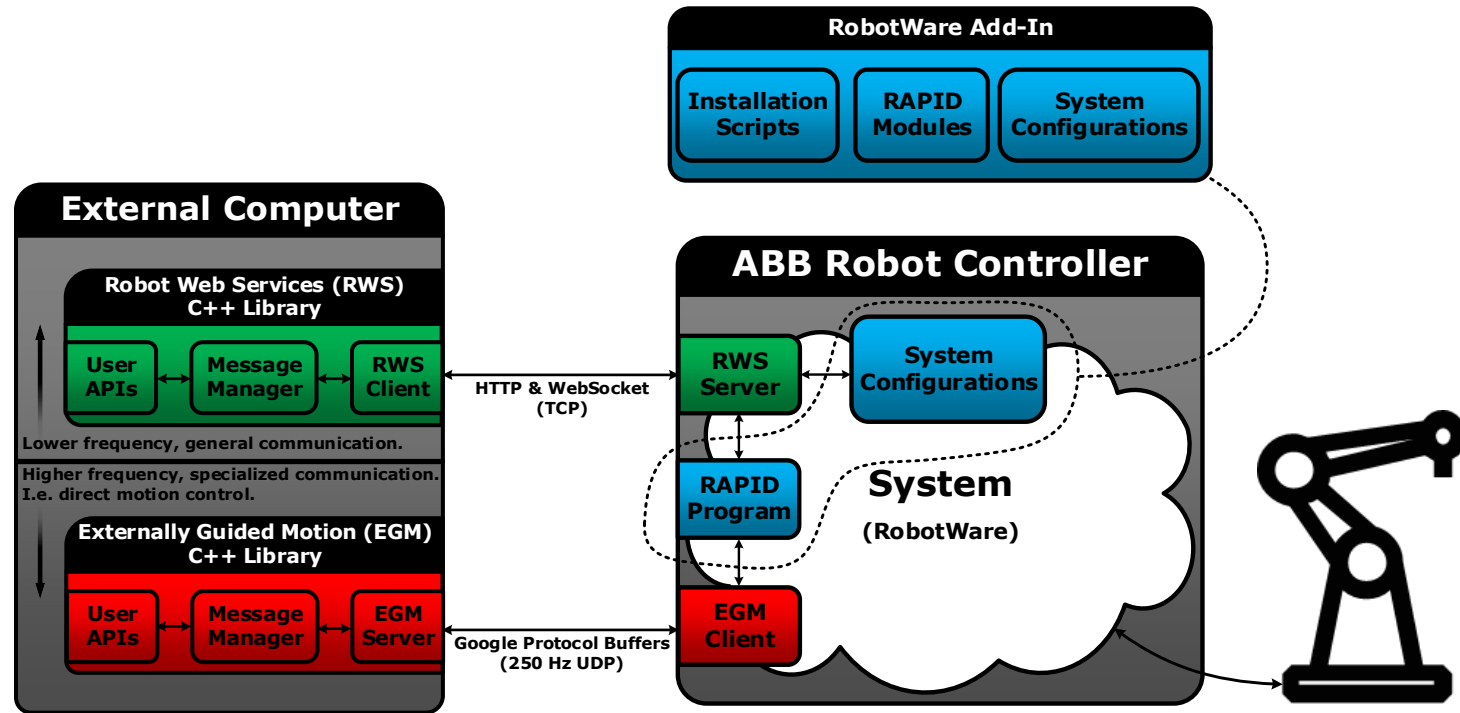
Can be challenging and time-consuming!

ABB Robot Controllers

Ease-of-use Packages

Packages

-  **abb_librws***
(C++ communication library)
-  **abb_libegm****
(C++ communication library)
-  **StateMachine Add-In*****
(RobotWare Add-In)



Saving time and easing the use of ABB robots! Packages available online for free!

Ease-of-use Packages

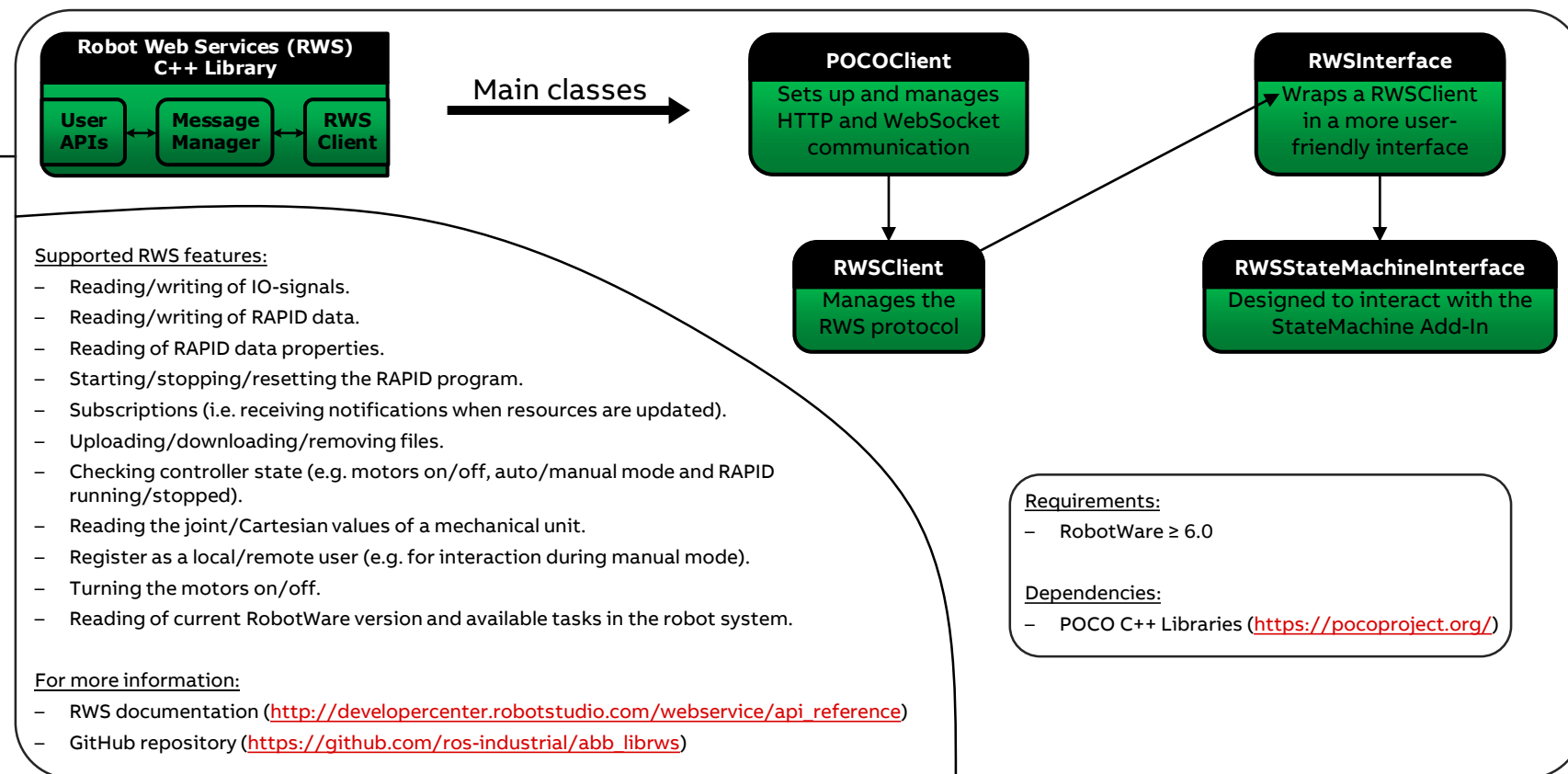
abb_librws

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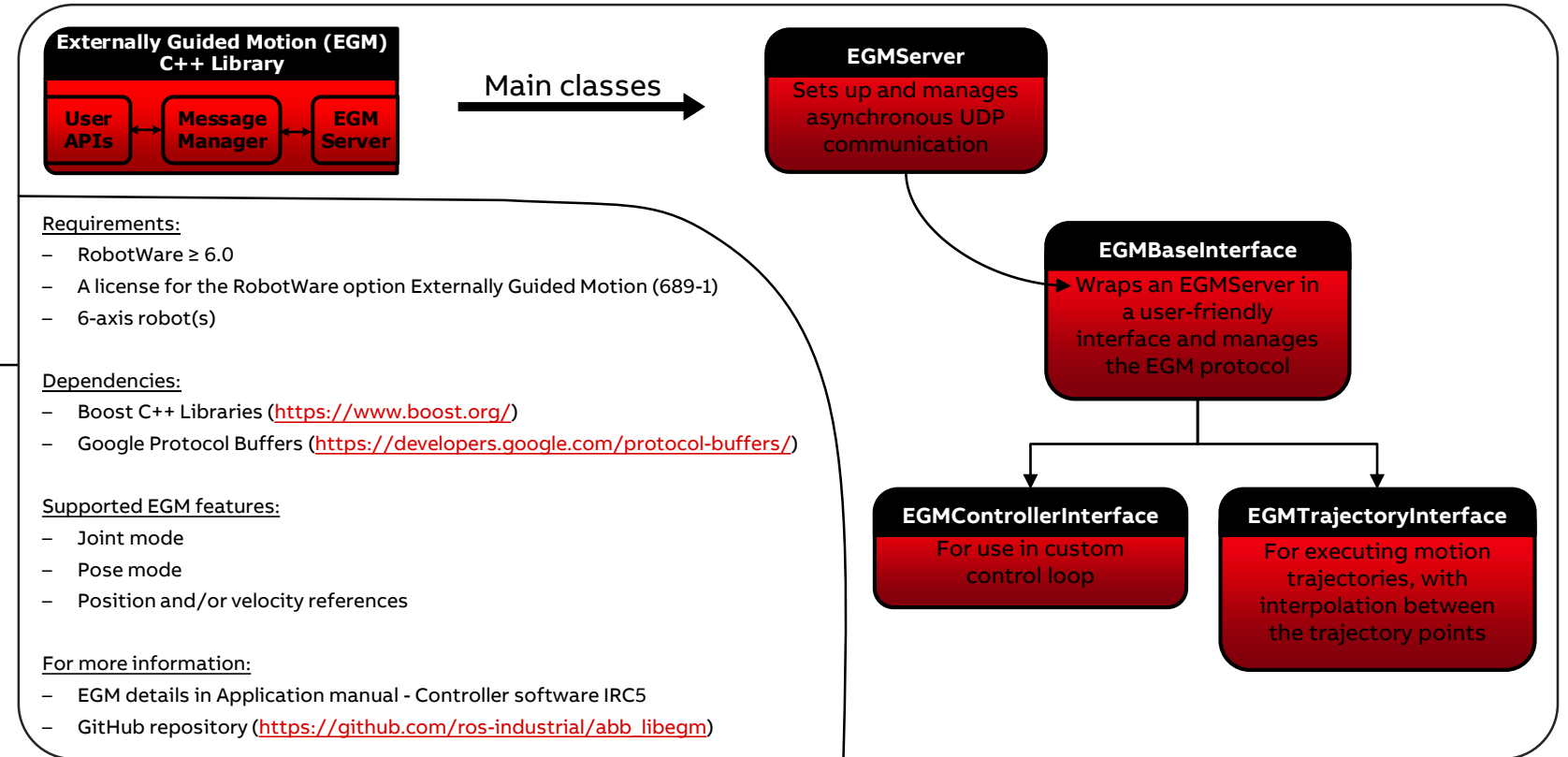
abb_libegm

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Ease-of-use Packages

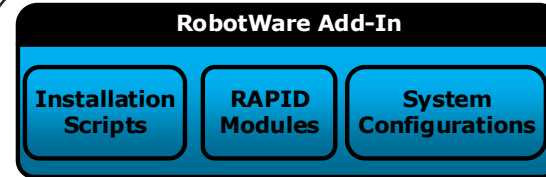
StateMachine Add-In

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 **StateMachine Add-In**
(RobotWare Add-In)



Requirements:

- RobotWare ≥ 6.06

Installation scripts:

- Inspects the system specifications. E.g.:
Number of robots, an if the EGM option is present
- Loads system configurations . E.g.:
IO-signals and EGM configurations (optionally)
- Loads each motion task with RAPID modules for its own state machine.

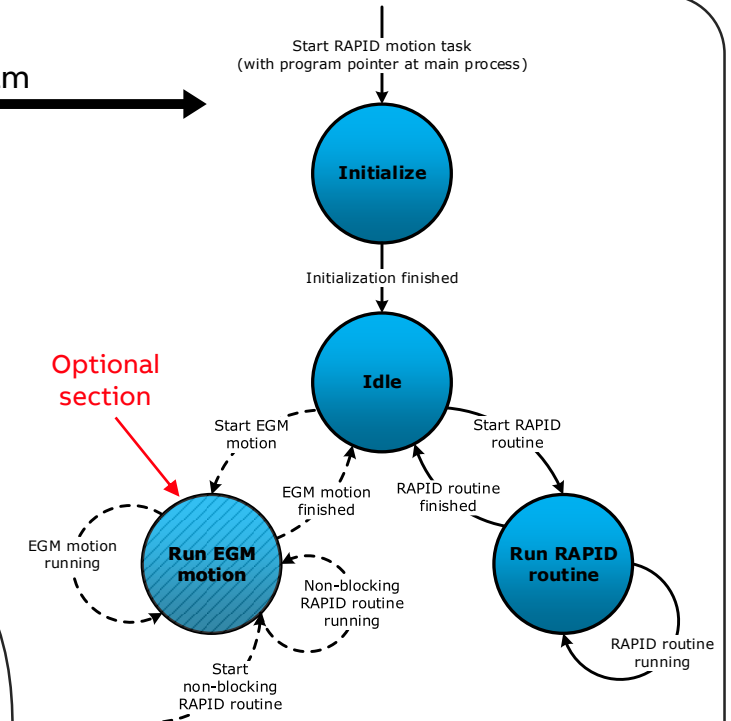
Purpose:

- Constitutes a customizable, ready to run, RAPID program.
- Intended to be used in combination with external systems that want to interact with the robot.

For more information:

- RobotApps website
(<https://robotapps.robotstudio.com/#/viewApp/7fa7065f-457f-47ce-98d7-c04882e703ee>)

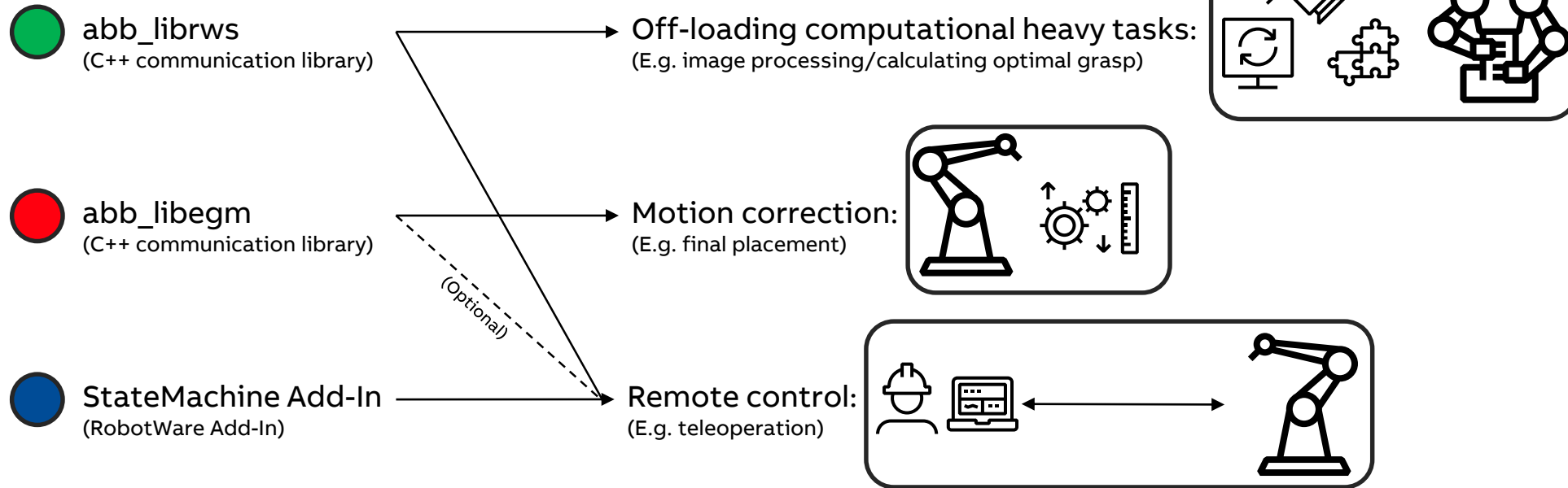
RAPID program



Ease-of-use Packages

General Examples

Packages



Independent packages, use in any combination, depending on the application!

Ease-of-use Packages

Concrete Example

Packages

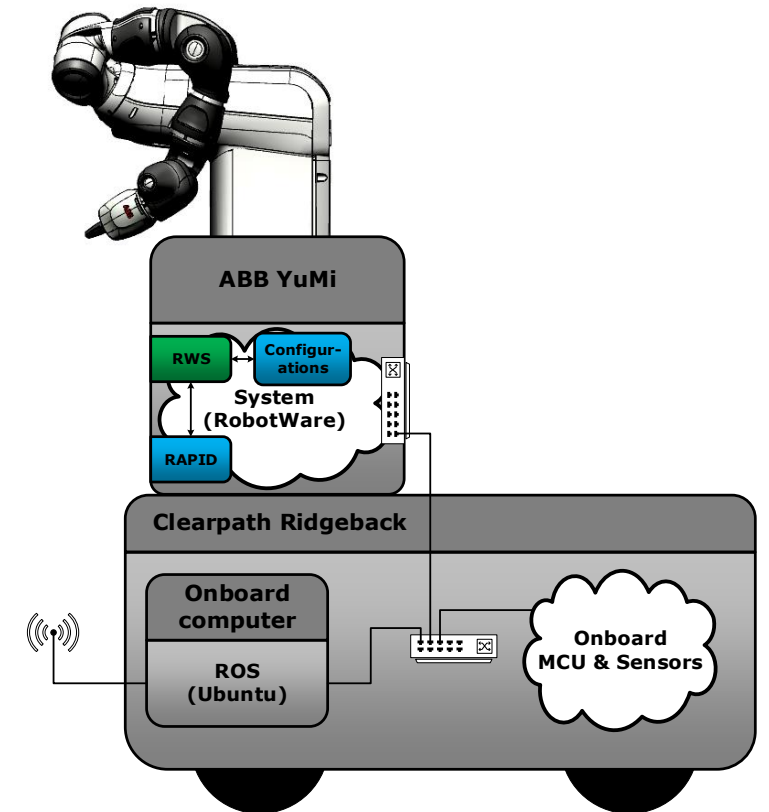
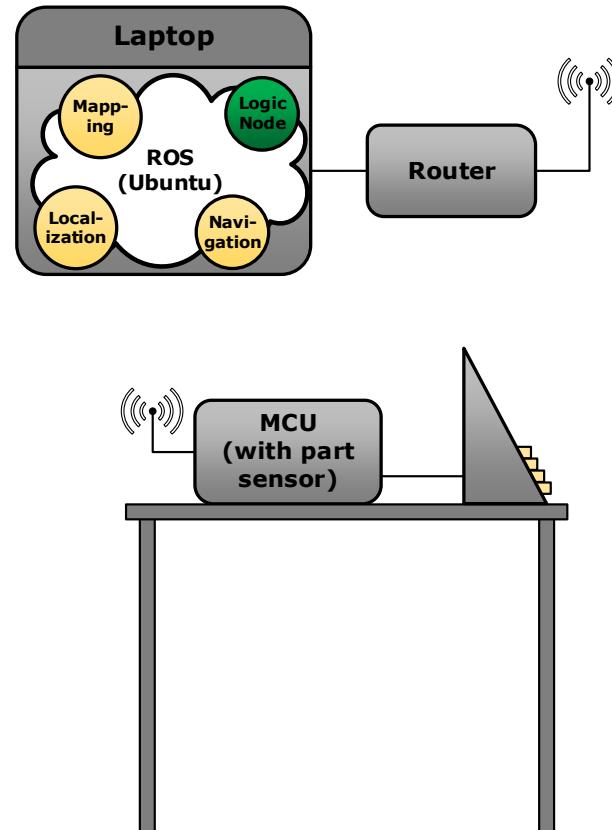
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Components

- ABB YuMi
- Clearpath Ridgeback
- Workstation
- Laptop
(ROS for navigation and logic)

Internships

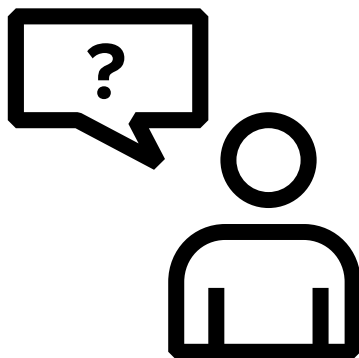
Majority of ROS integration done by
2 interns (via ROSIN project) → ~2 weeks



Ease-of-use Packages

Video

Questions



ABB