

XEL Network

Modular H/W ecosystem using ROS2

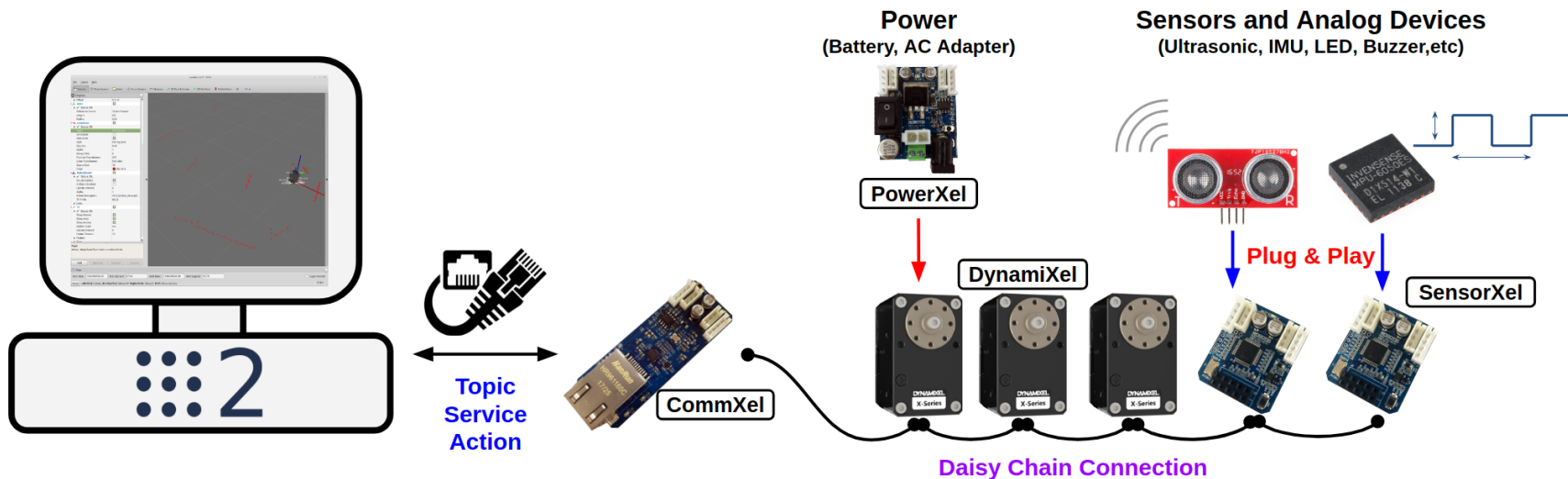
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ROBOTIS



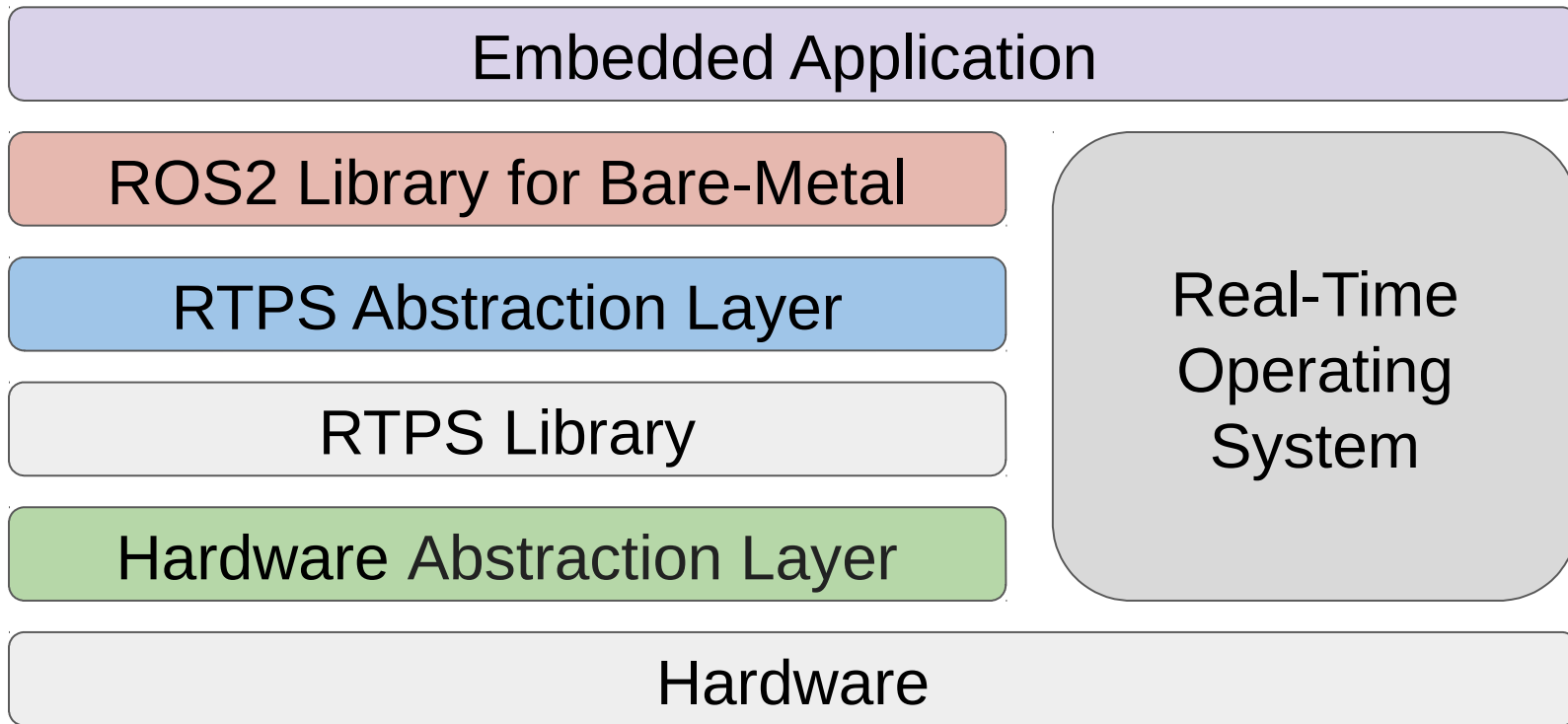
Purpose

- Practical system with MCU using ROS2



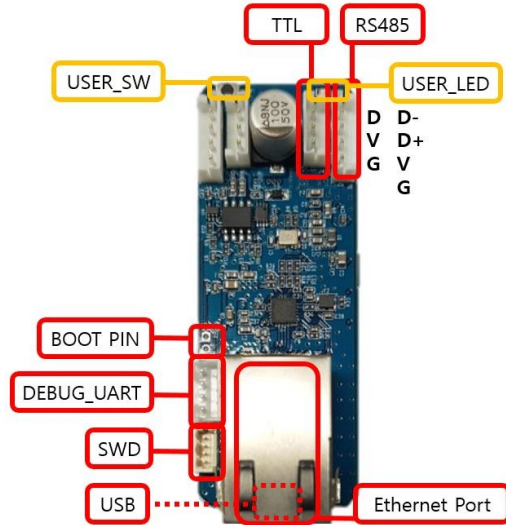


F/W Architectures



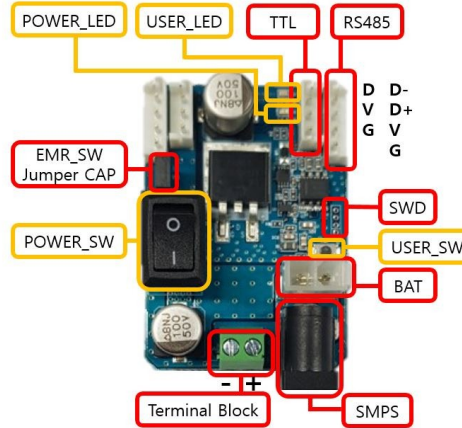


Prototype Boards



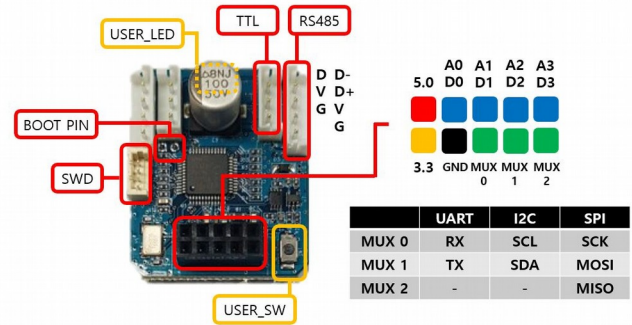
CommXEL

Collect XEL information
Communicate with ROS2



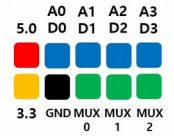
PowerXEL

Power Management
Power Distribution



SensorXEL

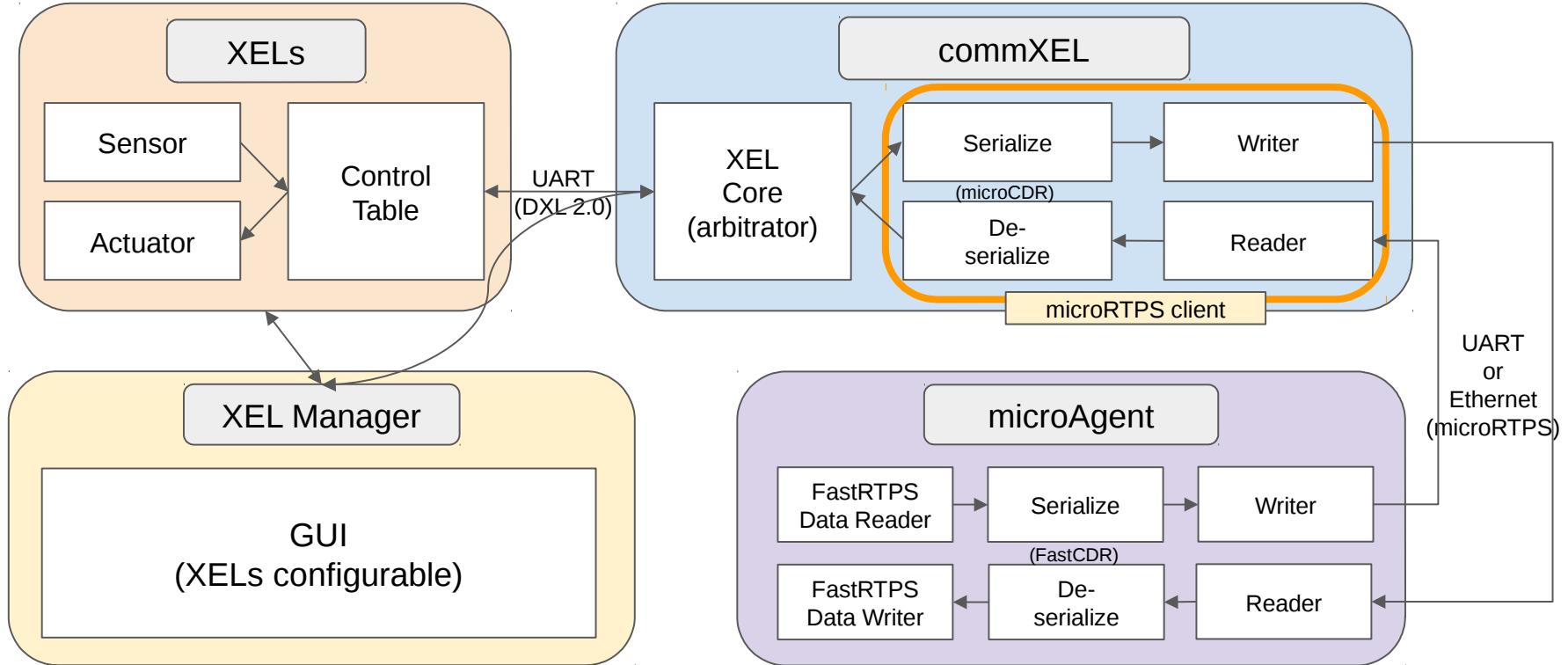
Get Sensor Data
Control GPIO



	UART	I2C	SPI
MUX 0	RX	SCL	SCK
MUX 1	TX	SDA	MOSI
MUX 2	-	-	MISO



Diagrams





Features

The screenshot shows the XEL Manager software interface. On the left is a table with columns: Area, Addr, Name, Size, Type, Acc, Data, and Debug. On the right is a configuration panel with fields for Port, ID, Baud, Model, and a Ping section.

Area	Addr	Name	Size	Type	Acc	Data	Debug
1	CON	0	Model_Number	2	uint16_t	R	<input type="checkbox"/>
2	CON	2	Model_Info	4	uint32_t	R	<input type="checkbox"/>
3	CON	6	Firmware_Version	1	uint8_t	R	<input type="checkbox"/>
4	EEP	7	ID	1	uint8_t	...	<input type="checkbox"/>
5	EEP	8	Baud	1	uint8_t	...	9600 <input type="checkbox"/>
6	EEP	32	XEL_DATA_TYPE	1	uint8_t	R	BOOLEAN <input type="checkbox"/>
7	EEP	33	XEL_DATA_HZ	4	uint32_t	R	<input type="checkbox"/>
8	EEP	37	XEL_DATA_NAME	32	str_t	R	<input type="checkbox"/>
9	EEP	69	XEL_DATA_DIRECT...	1	uint8_t	R	SEND <input type="checkbox"/>
10	RAM	70	XEL_DATA_ADDR	2	uint16_t	R	<input type="checkbox"/>
11	RAM	72	XEL_DATA_LENGTH	1	uint8_t	R	<input type="checkbox"/>
12	RAM	128	XEL_DATA	4	uint32_t	R	<input type="checkbox"/>

Port: /dev/ttyACM0 Model:
ID: 4 LoadModel
Baud: 1000000

Common
Ping
ID: Model:

Command

- Set topic name and type using XEL Manager
- Plug-And-Play
- Daisy-chain





Thanks & Plan

- Arduino library (project name: **ros2arduino**)
- Enhance abstraction layer
- Add **Modbus** for PnP
- Add **WiFi** hardware

- XEL Network wiki : <http://xelnetwork.robotis.com>
- OpenSource (H/W, F/W, S/W) / Apache2.0
- Welcome contributors