EULYNX Live

Student Research Project
Digital Rail Summer School 2020

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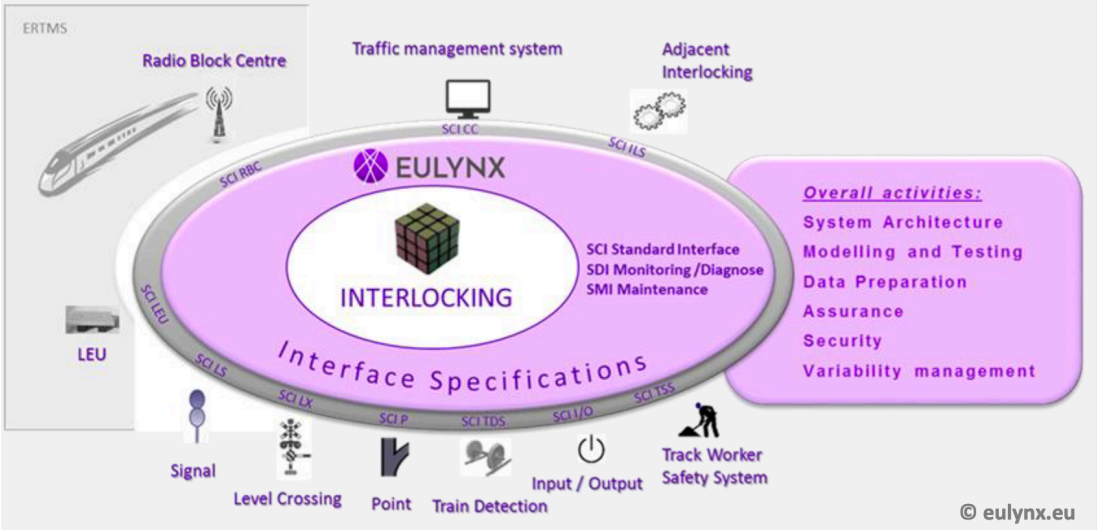
What's EULYNX?

An European Initiative to standardise interfaces and elements of the signalling system using model-based system engineering

What's EULYNX?

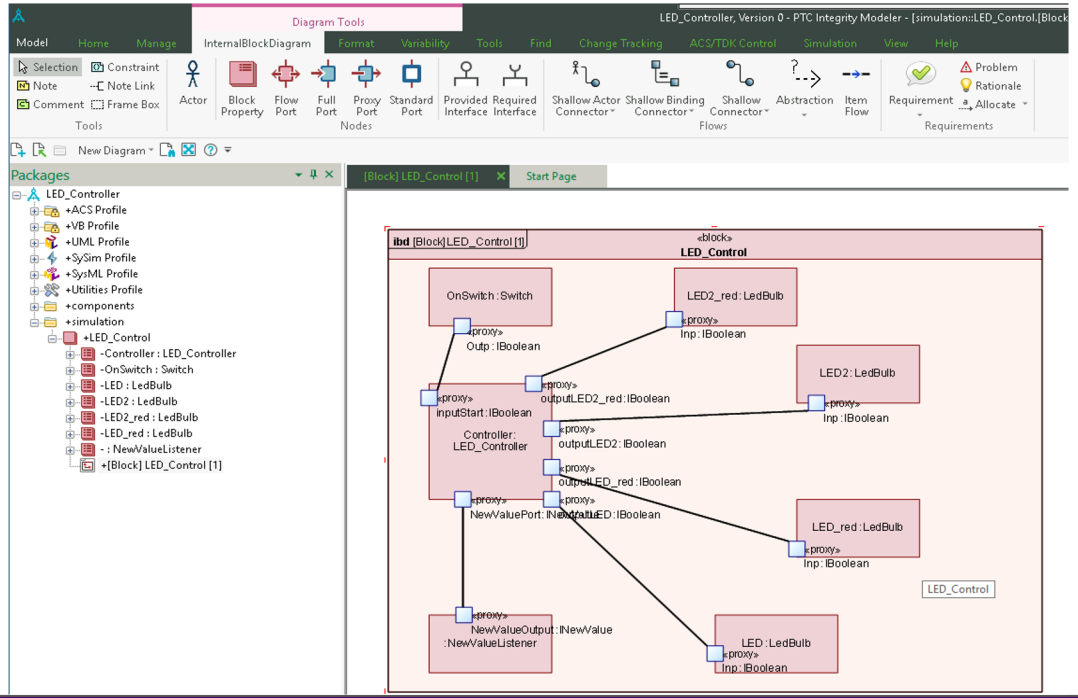


- Modular design allows easy & safe interchange between systems from different manufacturers
- Convert Use Cases into SysML model types.
- Verify models mathematically through the use of consistent *formal methods*

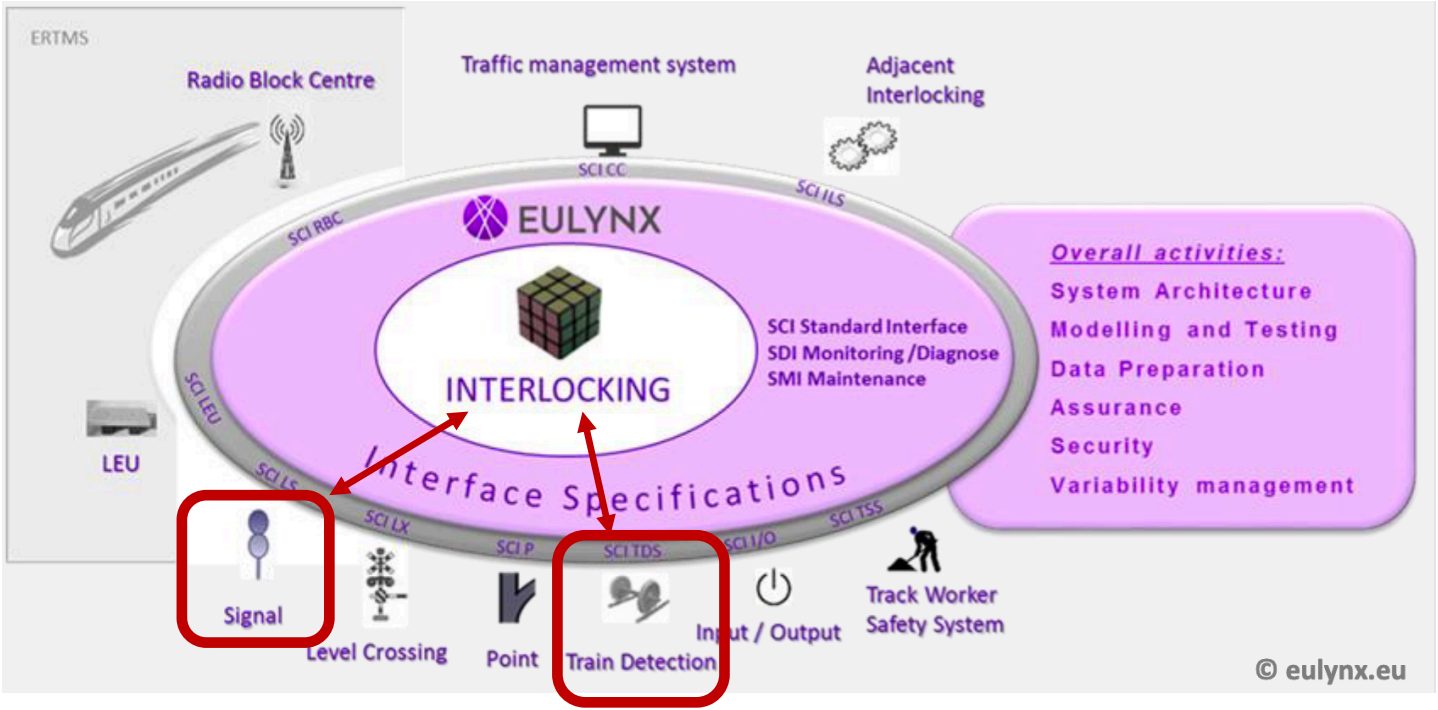
What's PTC Modeler?

*Used to create and communicate the design of complex projects, especially when they are **safety-critical***

- Uses industry standards such as UML, SysML and UAF
- Uses SySim to model simulations and generate executable code



EULYNX Live

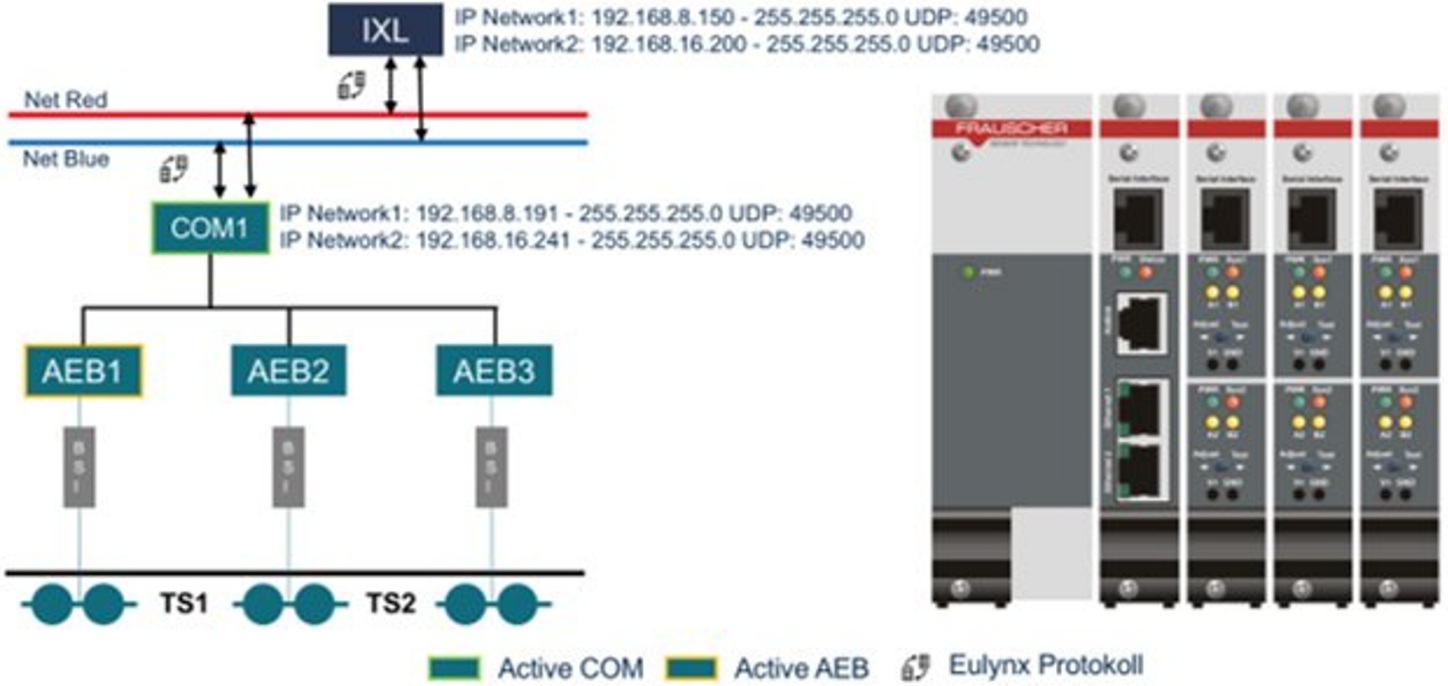


Model Generation + Validation

Hardware Integration

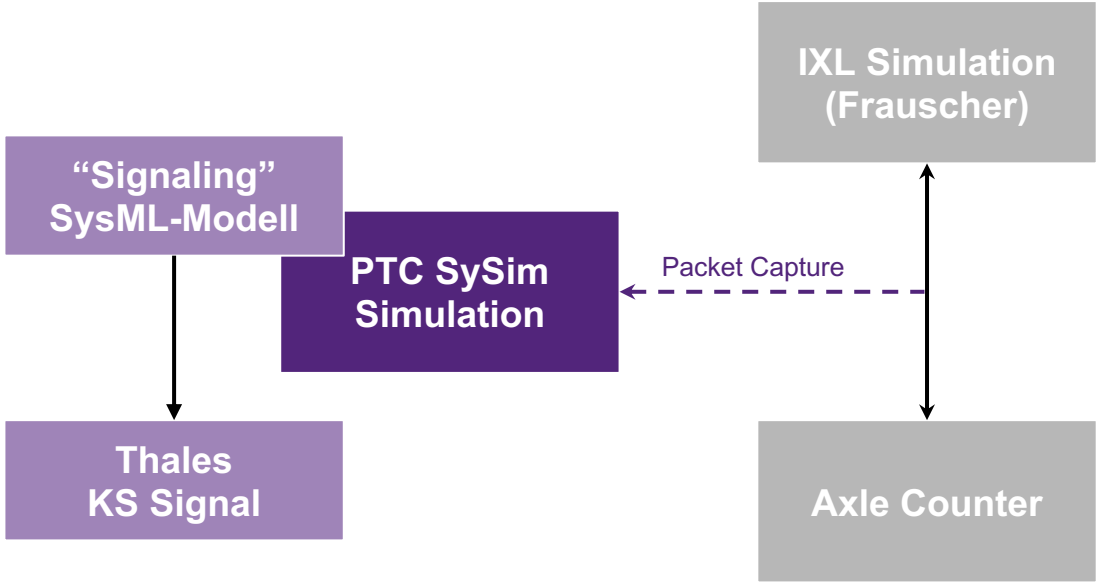
Co-Simulation

Frauscher FAdC R2 Axle Counter

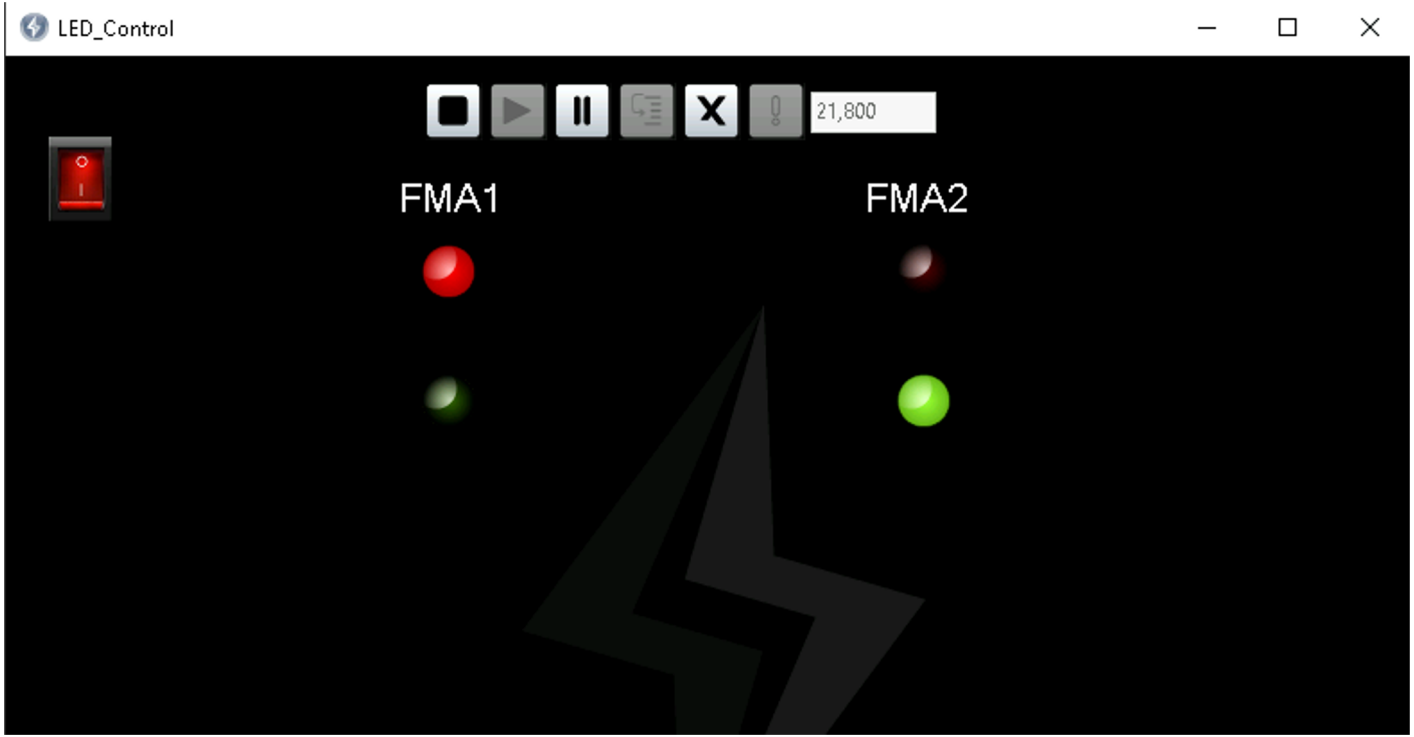


Thales KS Signal

Project Structure



Occupancy Status Signaling System



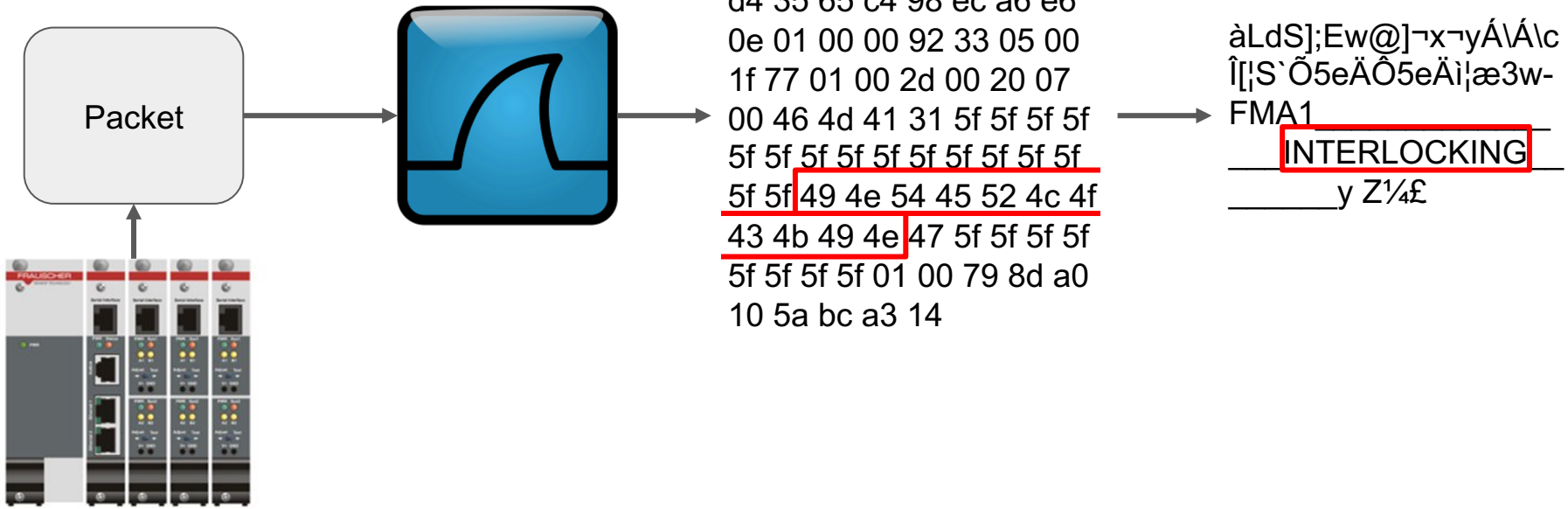
Communication - RaSTA Packet

Packet

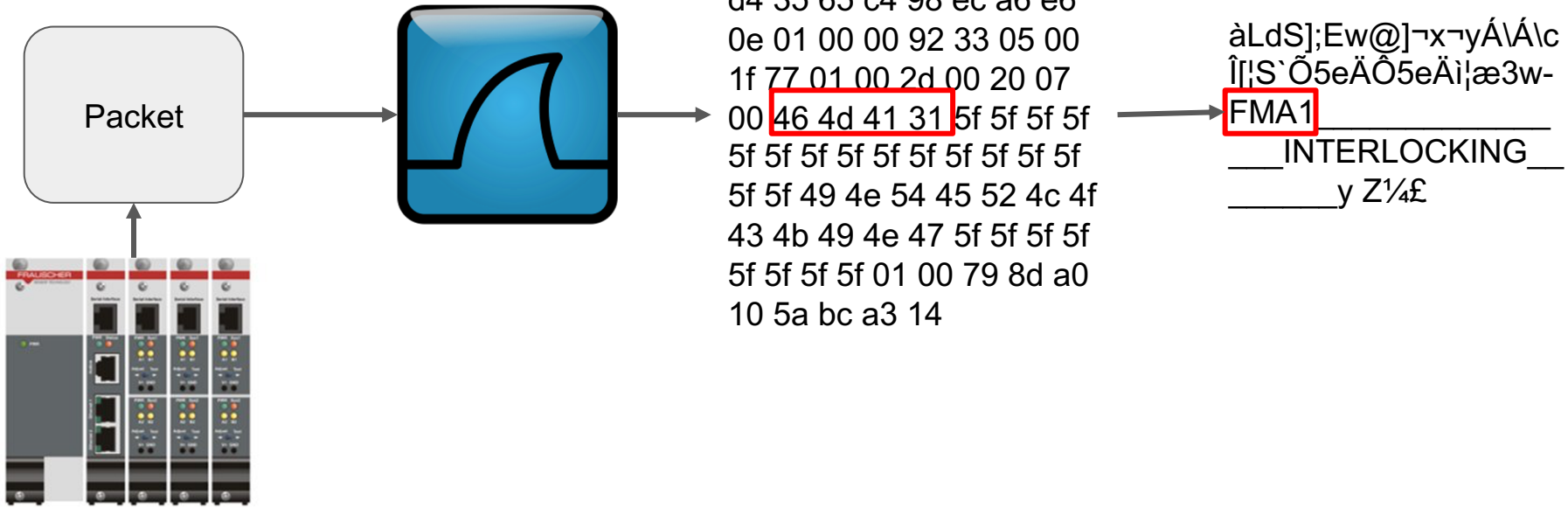
5b 00 00 00 a6 01 00 00
53 00 60 18 d5 35 65 c4
d4 35 65 c4 98 ec a6 e6
0e 01 00 00 92 33 05 00
1f 77 01 00 2d 00 20 07
00 46 4d 41 31 5f 5f 5f 5f
5f 5f 5f 5f 5f 5f 5f 5f 5f
5f 5f 49 4e 54 45 52 4c 4f
43 4b 49 4e 47 5f 5f 5f 5f
5f 5f 5f 5f 01 00 79 8d a0
10 5a bc a3 14

àLdS];Ew@]¬x¬yÁ\Á\c
Î[¦S`Õ5eÄÕ5eÄì¦æ3w-
FMA1_____
___INTERLOCKING__
_____y Z¼£

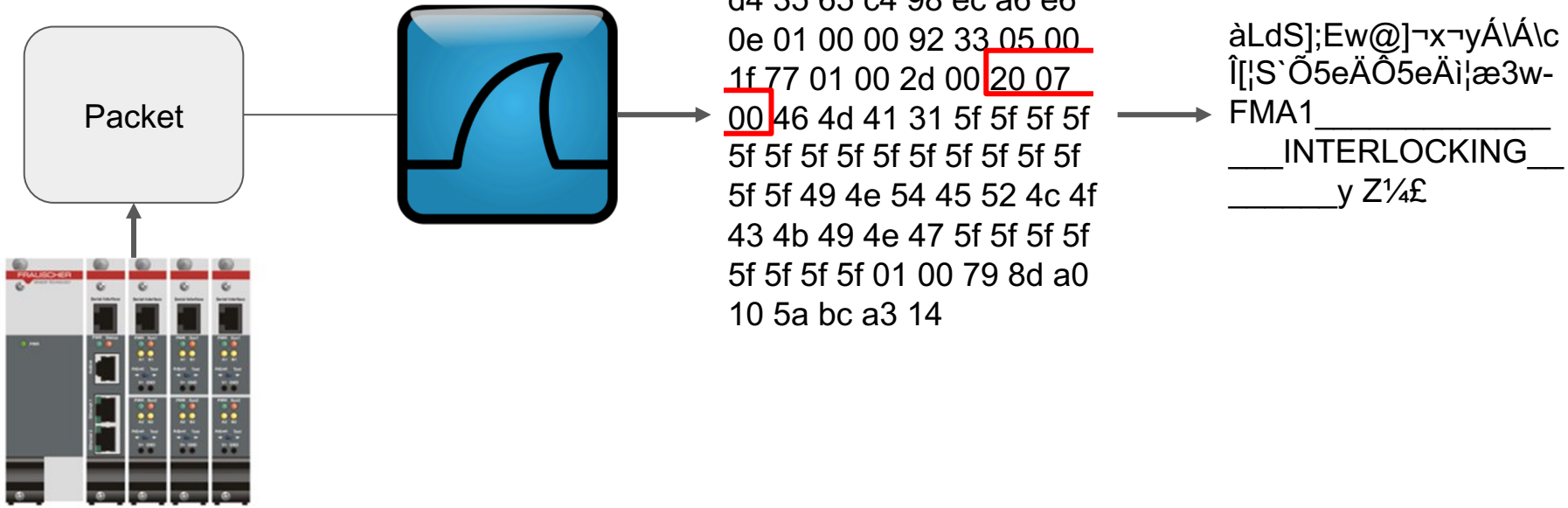
Communication - Interlocking



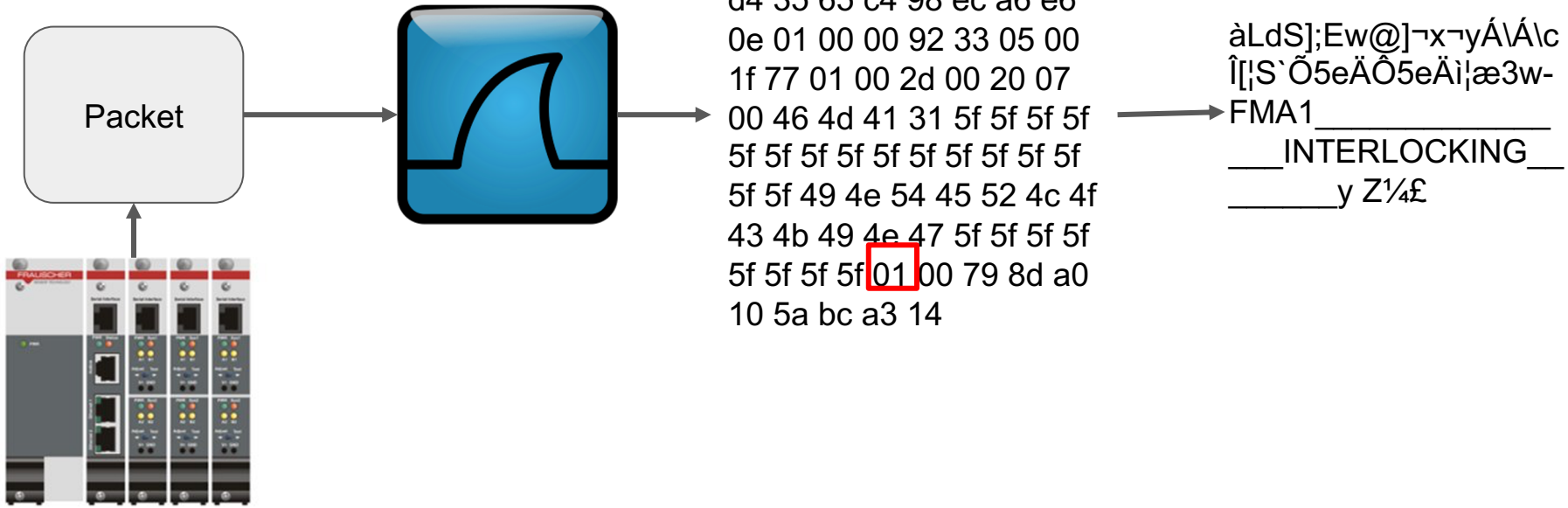
Communication - Track Section



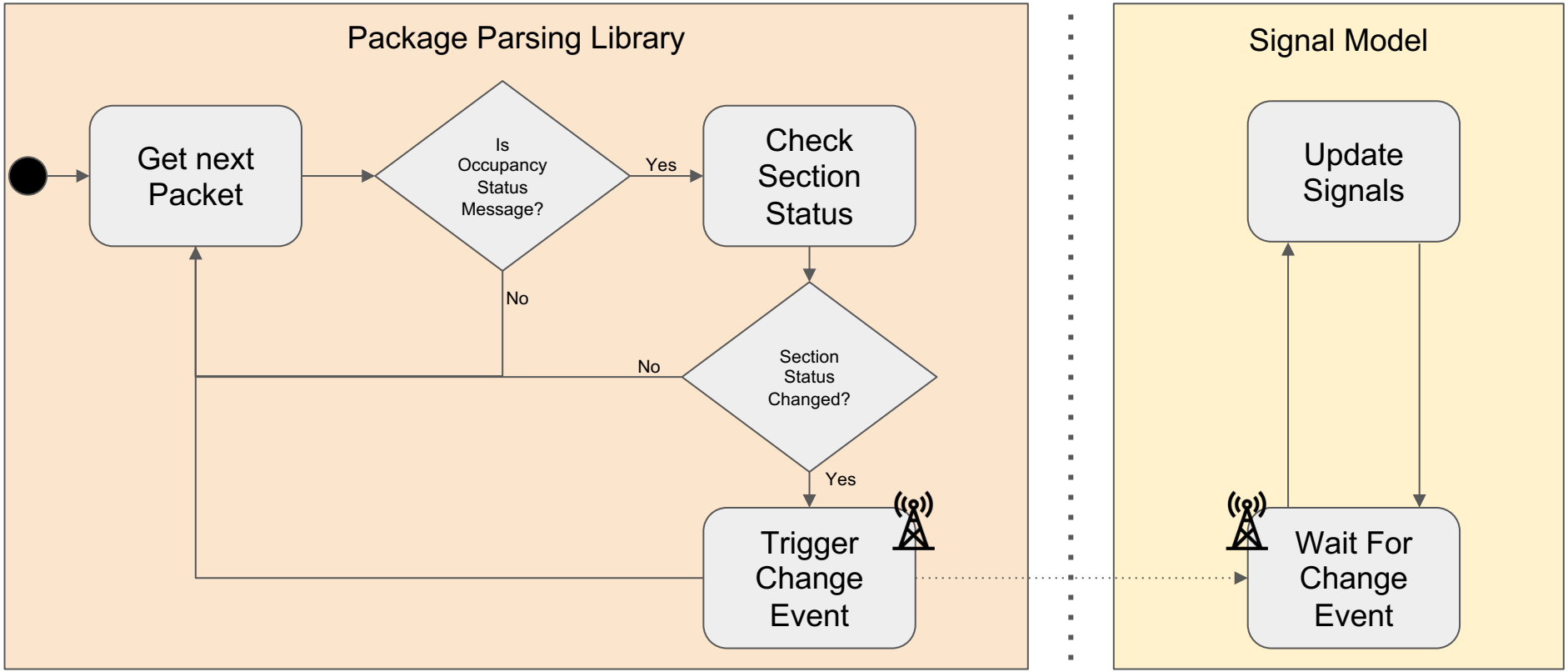
Communication - Packet Start



Communication - Occupancy Status



Workflow



Icons made by Freepik from www.flaticon.com

Demo

Future Work

- Embed into the SCI-TDS SysML-Models of DB Netz

- Integration of further Hardware → Thales Weichenantrieb

- Bidirectional communication → requires use of „OpenRaSTA“

Thank you!

Questions?