



IMPLEMENTING VEHICLE-AUTOMATION SYSTEMS

the Autonet2030 Architecture and Tools

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Final Event
AstaZero, Sandhult, Sweden



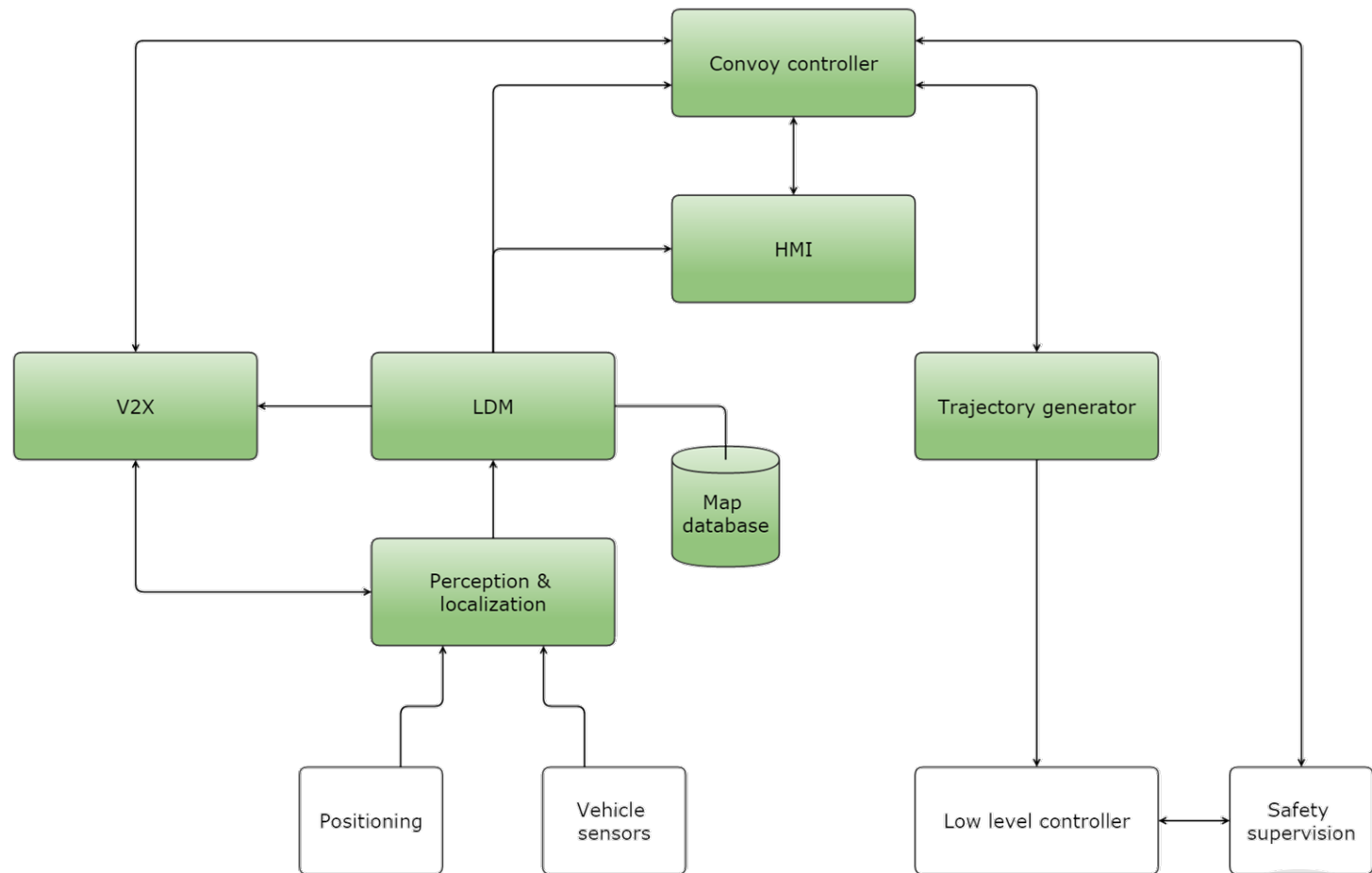
The challenge

- Highly distributed team
- High system complexity
- Four different vehicle platforms
 - Cars (SAE level 0 and SAE level 3)
 - Trucks (SAE level 3)
 - Low speed research platforms (SAE level 4)
- Diversified development environments and workflows

Solutions!

- Well defined modules
- Standardized, loosely coupled, interfaces
- Strict versioning of binary components
- Collaboration platform

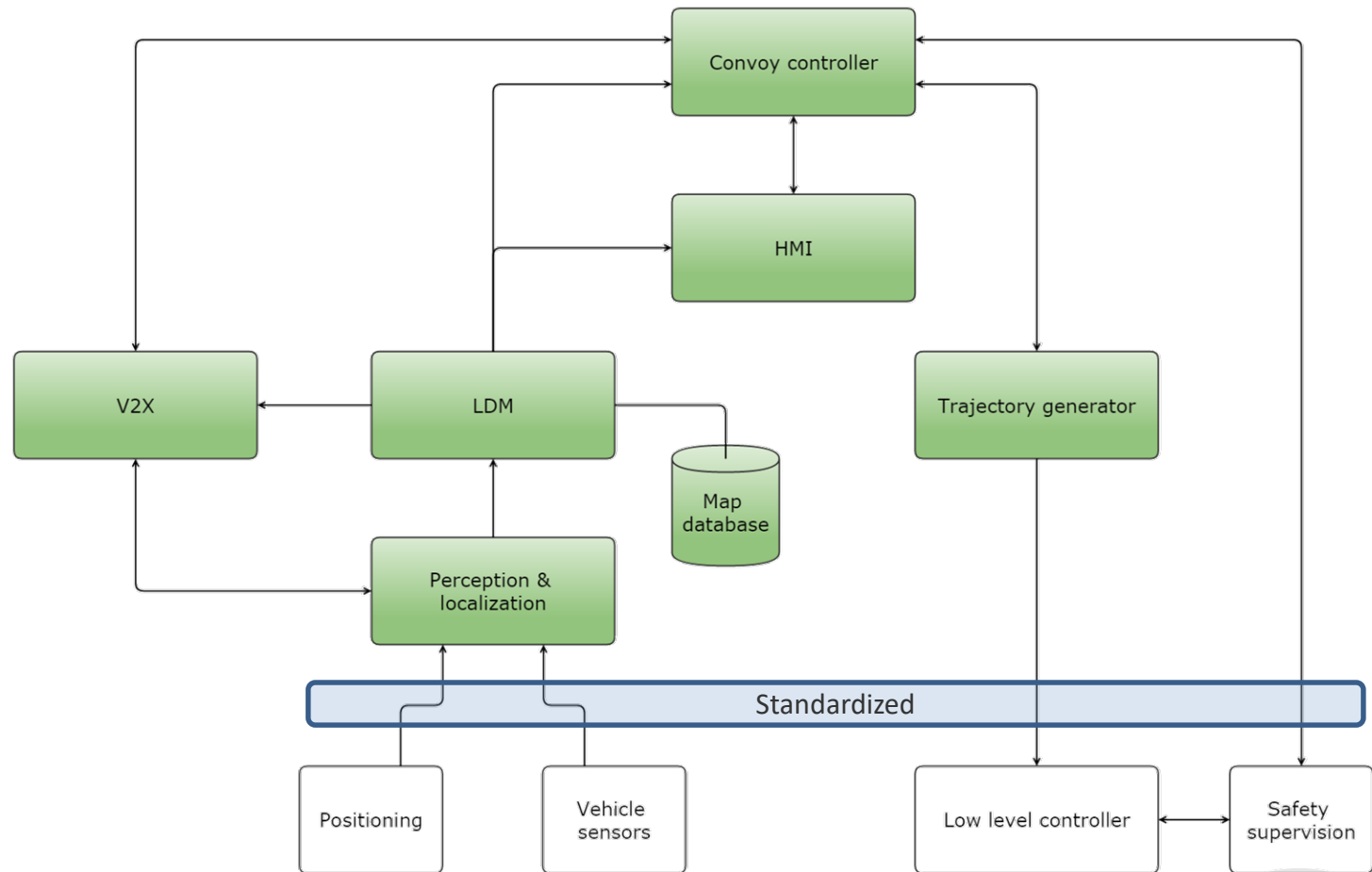
Software modules



Solutions!

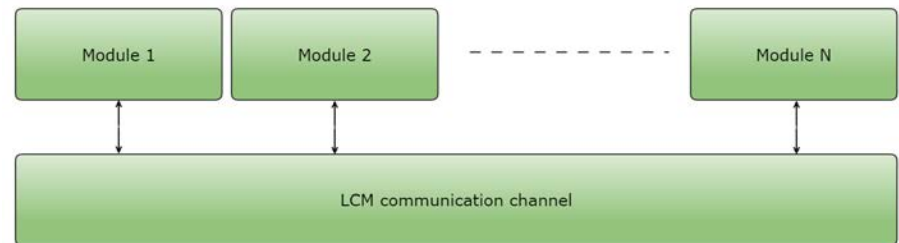
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Standardized interfaces



Inter module communication

- Multicast UDP
 - Hot plugging
 - Platform agnostic
 - Simulation / Vehicle testing
- Efficient serialization
 - High performance
 - Low overhead
- Logging
 - Able to replay logs as they were recorded in the vehicle
- Lightweight Communications and Marshalling (LCM);
<http://lcm-proj.github.com>



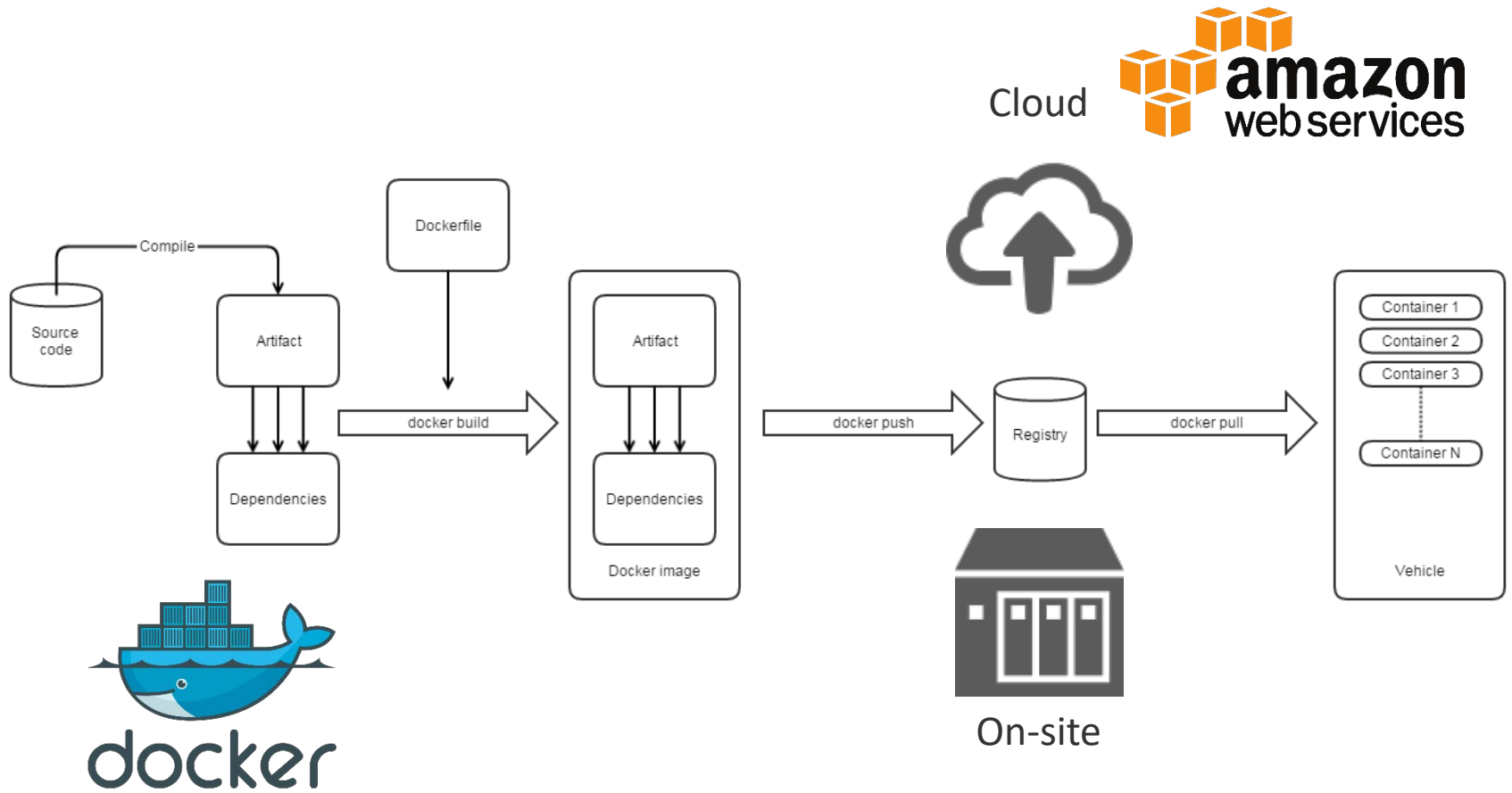
Solutions!

- ✓ Well defined modules
- ✓ Standardized, loosely coupled, interfaces
- Strict versioning of binary components
- Collaboration platform

Collaboration & versioning

- Docker
 - Isolation between modules (resources and stability)
 - Restart policies
 - Dependencies
 - Update modules independently of each other
- Collaboration platform
 - Registry
 - Cloud / On-site

Distributed workflow



Solutions!

- ✓ Well defined modules
- ✓ Standardized, loosely coupled, interfaces
- ✓ Strict versioning of binary components
- ✓ Collaboration platform

Architecture

LCM

Docker

Registry





THANK YOU!
ANY QUESTIONS?

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