

# Domain Integration Projects

## Top-priority projects

### Cloud & Connected Services Project (active)

Challenge: Enable the full data-oriented connected vehicle architecture

- Enabling easy interoperability of parts, flexibility and choice
- Developing common solutions and software
- Enabling access to all data we want to exchange
- Controlling access to data
- Enabling user privacy and data security
- Clarifying responsibilities
- Facilitating business opportunities and contractual agreements
- Agreeing on names, roles, responsibilities

### Hypervisor Project (active)

Challenge: Efficient realization of the move from networked system to consolidated systems

- Extending / developing **HV APIs** e.g. starting from **virtio**. Potentials for cross-industry consolidation?
- Understanding where Common Interfaces are feasible and realistic
- For implementors who are interested: Surveying and analyzing available HV choices.
- Building the system stack with hypervisors and networked operating system instances

### Generic Communication Protocols Evaluation (active)

Challenge: Too many choices, too much diversity, too much boiler-plate code, adaption layers, and incompatibility.

- Survey and compare choices MQTT-style, WAMP, RESTful/Web technology and other messaging level protocols
- Deep dive: SOME/IP - where is it applicable, and where is it not?
- Discuss and reach consensus.
- Industry preferred options: Say, among 10-15 choices now, find 3-5 recommended (and for which scenarios they are recommended)

### Graphics Sharing & Distributed HMI Compositing (active)

Challenge: Consistent distributed HMI experience across distributed and diverse multi-ECU systems.

- Top-level compositing across domains for the same physical display, with or without mixed safety levels
- Diverse operating systems and HMI technologies
- Distributed HMIs - Wayland/Waltham... other
- + Graphics transfer encoding/technology

### System Health, Debugging and Analysis in Distributed Systems (restarting)

Challenge: The complexity of debugging and running robustly automotive computing systems with today's constant connectivity, data distribution, consolidation/virtualization and cross-domain interactions.

Seeking out, evaluating, consolidating and recommending **Tools** and **Standards** that support *development* of virtualized or connected, ***distributed systems*** with ***cross-domain interactions***.

### User Input Distribution and Coordination (likely a sub-project of Graphics Sharing & Distributed HMI Compositing)

Challenge: Multiple inputs, varying by car model, technology, etc. bound to very complex multi-modal user interactions.

- Complexity in encoding rules from input to effect
- Bounded latency guarantees, time identification
- Modes / modality and dynamic rules

## Comprehensive list of identified projects

- Hypervisor solutions & low-level API standardization (virtio etc.)
- Generic Communication Protocol – for cross domain GNU-Linux / AUTOSAR / Android / other
- Including Safe network protocol (End-2-end, etc.)
- Graphics Transfer/Sharing
- Including Distributed HMI Compositing
- Input Handling Coordination
- System Health/Debugging/Analysis (incl. Log & Trace)
- Distributed System Lifecycle / Node State

- Network Traffic routing & accounting (priority/bandwidth/payment...)
- (Distributed) Audio management
- Distributed User / Login / Profile management

## **Domain Interaction Strategy Kick-Off - Materials**

2 November, 2017.

- [Kick-off slide deck](#)
- [Webex recording of kick-off meeting \(43 mins\)](#)

## **Frequently Asked Questions**

- [FAQ \(PDF\)](#)