

# Technology Briefs and Whitepapers

In addition to [published specifications and code](#), and [reference architecture information](#), GENIVI presents a family of technology and security-related tech-briefs and whitepapers.

These documents have also been published on the [GENIVI home page](#).

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## Common Vehicle Interface Initiative and Cloud and Connected Services Category

### Technology Briefs

#### ★ Curve Logging algorithm

- This document describes Geotab's Curve Logging algorithm, which can combine high accuracy with large reduction in the amount of transferred data between vehicle and cloud.
- [Curve Logging Tech Brief](#)

#### ★ Vehicle Data Models - Overview and Gap Analysis

- This document reviews five existing vehicle data models and proposes alignment around the Vehicle Service Specification (VSS).
- [Vehicle Data Models - Overview and Gap Analysis](#)

## Vehicle Domain Interaction Category

### Graphic Sharing & Distributed HMI

#### White papers

#### ★ Graphics Sharing Whitepaper

- This comprehensive document summarizes and compares all the studied approaches in one document. (The tech briefs below focus on one specific topic at a time)
- [WhitePaper - Graphics Sharing and Distributed HMI v3](#)

### Technology Briefs

#### ★ Sharing a physical display across multiple operating systems

- This brief describes the **Display Sharing** category which provides support in hardware for compositing the display output from multiple operating systems into a single final display buffer. Using this, a combined HMI can be created from independently operating systems without any additional interaction
- [GENIVI\\_Renesas\\_DisplaySharing\\_TechBrief\\_1Mar2019.pdf](#)

Published with support from **Renesas**

#### ★ Digital Cockpit HMI Distribution Using Shared State, Independent Rendering

- This brief introduction introduces the 5 identified [categories](#) of Graphics Sharing and describes a concrete application of the **Shared State / Independent Rendering** approach for Navigation map interaction between an IVI unit display and an instrument cluster display.
- [GENIVI\\_HARMAN Shared State Rendering\\_TechBrief\\_20180414.pdf](#)

Published with support from **Harman**

#### ★ Interactive Cockpit HMI using Surface Sharing

- This brief describes the **Surface Sharing** category of graphics exchange, exemplified by the Wayland+Waltham projects.

- [GENIVI\\_ADIT\\_SurfaceSharing\\_TechBrief\\_20180711.pdf](#)

Published with support from **ADIT**

## ★ Distributed Graphics Control Through API Remoting

- This brief describes the **API Remoting** category of graphics exchange, exemplified by the **RAMSES project**.
- [GENIVI Distributed HMI through API Remoting 20181128.pdf](#)

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## Generic Communication Protocols Evaluation

### ★ Whitepaper and Project report: Generic Protocols

- This white paper reports the outcome of the GPRO work on surveying protocol usage in the automotive industry and a whitepaper-style introduction of key technologies such as **Franca IDL**, **Franca Plus**, **CommonAPI**, **MQTT**, **CoAP**, **WAMP**, **D-Bus** and **HTTP/RESTful** services, and the **Franca to AUTOSAR ARA::COM** investigation, among other things.
- [GENIVI\\_Generic\\_Protocols\\_Evaluation\\_Results\\_Whitepaper\\_20190612.pdf](#)

### ★ Tech Brief: Franca / ARA::COM Interoperability

- This brief describes an approach and technologies essential to building a demonstrator for the interoperability of GENIVI IVI (and Linux) based IVI systems and Adaptive AUTOSAR systems.
- [GENIVI Franca-ARA-COM-tech-brief-20181219.pdf](#)

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## Security Category

### ★ Certificate Pinning Technology Brief

- This one-pager gives an advanced reader an immediate understanding of the basics of Certificate Pinning, for avoidance of Man-in-the-middle attacks against SSL/TLS secured communications.
- [GENIVI Certificate Pinning Tech Brief 20180216.pdf](#)

**Audience:** Busy professionals, software engineers, as well as managers that need a quick awareness boost about risks and mitigations around encrypted communication channels.

Published with support from **Irdeto**.

### ★ Man-in-the-middle Whitepaper

- This detailed document provides an in-depth analysis of Man-in-the-middle attacks against secured communications, and mitigations, including the concepts mentioned in the Certificate Pinning Technology Brief.
- [GENIVI Man in The Middle Attacks whitepaper Feb 20 Final.pdf](#)

**Audience:** Security professionals, system architects and implementers that need a deeper understanding of pitfalls and risks in implementing SSL/TLS, categories of attacks, and the type of mitigation that is effective against each.

Published with support from **Irdeto**.