

Technology Briefs and Whitepapers

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

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

Cloud and Connected Services Category

Technology Briefs

★ 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](#)

Published with support from **BMW**

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](#)

Published with support from **itemis** and **itk**

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**.