

# Graphics Sharing topics at Tech Summit Bangalore 2018

Planning for [GENIVI Tech Summit in Bangalore](#), October 2018

October 10

Domain Interaction Projects introduction

✔ **TIMESLOT: 10:00-10:45 "GENIVI Vehicle Domain Interaction Strategy: Overview and Status" (45 minutes)** [Philippe Robin Gunnar Andersson](#)

Last 15 min will be used for the first GSHA intro

- (15 min) GSHA - Graphics Project & Distributed HMI "Readout" Gunnar Andersson
  - (5 min) Graphics Project Intro/Purpose
  - (10 min) The 5 Graphics Sharing categories – intro
    - 1. - Surface Sharing
      - - Wayland project (basic knowledge needed for Waltham discussion).
      - - Waltham project (very basic)
      - - Subcategory: Virtual Display - 5m

- *GSHA readout continues after the break*

**TIMESLOT: 11:00 - 11:45 "Graphics Project & Distributed HMI Readout" (45 minutes)**

- **(20 min) Graphics Project & Distributed HMI "Readout"** [Gunnar Andersson](#)
  - (20 min) The 5 Graphics Sharing categories (continued)
  - 2. (5 min) Display Sharing
  - 3. (5 min) API Remoting
  - 4. (5 min) Shared State, Independent rendering
  - 5. (5 min) GPU Sharing
- Ending 11:20
- **Starting ~11:20 (25mn) Graphics Sharing Case Studies** case study presenters
  - (15 min) Case Study: *RAMSES (API Remoting)* [@Violin Yanev and Vaclav Kyba \(BMW\)](#)
  - (10 min) Case Study: *Harman Linux+Android system repeated from April AMM (Shared State)* [@Sergey Klevitskiy \(Harman\)](#)

**TIMESLOT: 2:00-3:30 PM, Graphics Sharing & Distributed HMI – Case Studies (90 minutes)**

Topic	Start time (max 2 minutes for switching speakers!)	Duration	End time
<b>Welcome back and introduction</b> <a href="#">Gunnar Andersson</a>	2:00 PM	3-5 min	2.05
Qt Case Studies: <b>Qt Remote Objects</b> (Shared State) <b>Qt WebGL</b> (API Remoting) <b>Qt WebAssembly</b> (API Remoting)  <a href="#">Timo Aarnipuro</a> and <a href="#">@Kimmo Ollila (Qt Company)</a>	2:05	23 min, combined	2.30
Case Study: <b>Implementing Waltham in practice</b> ADIT (Surface Sharing)  <a href="#">@Harsha Manjula Mallikarjun (Bosch India)</a>	2:32	15	2.47
Case Study: <b>Harman Android/QNX system</b> (Surface Sharing)  <a href="#">@Sergey Klevitskiy (Harman)</a>	2:49	15	3.04
Case Study: <b>Reenas Canvas-demo</b> (Display Sharing, GPU sharing, ...)  <a href="#">Stephen Lawrence</a>	3:05	15	3.20
Case Study: <b>AIIGO multi-display demo</b> (Virtual Display) <a href="#">Mageesh Margabandu</a>	3:21	8	3.30
End of session	3.30		

October 11

**⚠️ TIMESLOT: 9:30 PM - 12:30 PM Graphics Sharing & Distributed HMI Working Session (3 hours, incl. breaks)**

Possible remote-web-conferencing via [Zoom](#), if anyone will present remotely. The conference details will be posted here in that case.

Topic	Preparation comments	Topic time (minutes) including Q&A or discussion	Accumulated time (minutes)	Start of topic
<b>Welcome and Introduction</b>	Gunnar	5	0	09.30
<b>Surface Sharing in practice</b> Harman Android/QNX system (Surface Sharing)	<ul style="list-style-type: none"> <li>• <b>Sergey</b> prepare support material for discussion</li> </ul>	25	5	09.30
<b>Surface Sharing in practice</b> Waltham implementation experiences (Surface Sharing) <ul style="list-style-type: none"> <li>• what could be used on Android</li> <li>• Gstreamer encoding – comparison to gst-record ("Renesas demo")</li> </ul>	<b>Harsha</b> preparing Android questions (a few, conceptual) <ul style="list-style-type: none"> <li>▪ As planned, gstreamer comparison will be done.</li> <li>▪ Weston upstream challenges and ongoing work.</li> </ul> 20-25 total, with discussion and Q&A. I can also prepare a bit more if needed.	25	20	10.05
<b>Qt Technologies</b> WebGL and WebAssembly detailed discussion	<ul style="list-style-type: none"> <li>▪ Timo confirmed Kimmo is prepared :)</li> <li>▪ <b>Short intro WebAssembly</b> <ul style="list-style-type: none"> <li>▪ early work - distributed HMI</li> </ul> </li> <li>▪ Q&amp;A</li> <li>▪ Other discussion?</li> <li>▪ <del>Remote Objects</del></li> </ul>	~15-20?	45	10.25
★ 10.45 - 11.00 COFFEE BREAK ★	=====	15	75	★ 10.45 - 11.00 ★
<b>Other Tools and standards (optional/backup)</b> <i>Discuss other graphics tools &amp; standards (experiences from participants). (I'm looking for experience with the commercial HMI tools that have not yet engaged in our projects)</i>	<i>Gunnar lead discussion.</i> ⚠️ audience poll?	10 (backup)	65 (backup)	(backup)
<b>Qt WebGL wrap up</b>				11.10
<b>Android Focus</b> <ul style="list-style-type: none"> <li>• Virtual Display and related APIs</li> <li>• <b>AllGo</b> Experiences</li> </ul> challenges on Android "issues" <b>(optional)</b> Artem has GPU sharing - virtualization info about Android also.	<b>Magesh</b> is preparing - 10-15 minutes + 10 discussion	20-25		11.20

<b>The Functional Safety Challenge</b>  <b>Safe Renderers:</b> <ul style="list-style-type: none"> <li>Qt Safe renderer presentation</li> </ul> <b>Hardware support for safety</b> <ul style="list-style-type: none"> <li>comparator (was it rendered?) DISCOM?</li> <li>Hardware alpha, separate domains.</li> <li>⚠️ Note that HV Working session also has a dedicated time block for GPU Sharing! If short on time – continue hardware discussion there</li> </ul>	<b>Kimmo</b> presents Qt Safe Renderer. architecture <b>10-15 minutes</b> Q&A 5 minutes Q&A  <i>20 minutes total?</i>	20-25		~11.45
	Stephen leading hardware support topic with support material.  10 minutes presentation. + 5 min	15		~12.10
<b>General questions / return to previous topics</b>				The rest of the time
<b>Safe&amp;Secure for Network Graphics protocols (optional)</b> <ul style="list-style-type: none"> <li>Data integrity for network transfers</li> </ul>	Data integrity? Gunnar leading discussion. (optional)  <i>5 minutes</i>	5	175-180	if time permits
<b>Session total time</b>			180	12.30
cancelled:  <ul style="list-style-type: none"> <li>Luxoft Safe Renderer - <a href="#">Arwed_Richert</a> (on-site, not remote as I first said – to be confirmed)  ❌ Not possible?</li> </ul>	<b>Luxoft</b>  <i>20 minutes presenting + 5</i>			

**Back-up:**

Harman Shared-State, technical detail  
E.g. Message sequence charts / protocol discussion?

Graphics topic on HV project:

***TIMESLOT: 2:00 PM - 4:30 PM Hypervisor Project Working Session (2.5 hours, incl. breaks)***

***GPU Sharing*** topic is discussed here.

+ *GPU preemption, intro and discussion. (This is not only applicable in a virtualized setting, but an important feature also virtualized settings.)*

Details: [HVWS Workshop Schedule at Bangalore Tech Summit](#)

**Original preparation information, brainstorming, etc. See above for results.**

Gauging interest among "core group" (for group discussion). We will also take into consideration the participation and interest of new participants (audience).

★ High interest

★ Medium interest

★ Lower interest (Could be a topic well understood already)

No star – might keep as a backup topic.

✘ GPU sharing and Memory Buffer sharing/handling discussions Moved to Hypervisor Working Session!

★ **Harman demo from AMM (Shared State, repeated)**

Technical details (shorter!). Interesting for new participants but less for "core group"

Just like all other topics will have a short time slot during case-study session.

★ **Harman Android/QNX system (Surface Sharing)**

Share experience: - Android+Qt on QNX

Proprietary protocol - worth discussing the aspect what was needed to add (to existing "open" protocols)

★ **Qt Remote Objects (Shared State)**

Explain implementation of remote objects, and usage for graphics sharing

Such as QImage containing image data.  
Presentation & Q&A.

**Waltham implementation experiences (Surface Sharing)**

10-15min ... challenges, future outlook, working with weston upstream, ...?

★ Specific solutions that could be used also on Android

How to abstract storage of buffer – negotiation of buffer formats? ⚠ is this part of GPU-sharing/Memory handling discussion instead?

★ Gstreamer encoding – comparison to gst-record ("Renesas demo")

🔍 **Renesas Canvas-demo (Display Sharing, GPU sharing, ... Linux+Integrity)**

Technical details...

Like... Processing Flow diagram, hardware & software blocks. Specific hardware support

**AllGo demo system – (Virtual Display)**

★ **Focusing on experiences and remaining Android "issues"**

Technical challenges - from Android point of view. Android support for Multiple displays. Challenges of focus, audio routing. Some use cases still have limitations.

★ **Qt WebGL (API Remoting)**

★ **Qt WebAssembly (API Remoting)**

**Maybe combined the two**

(research idea, discussion topic)

Like an additional backend for Qt

A little bit RAMSES. Compare pros/cons

"Interested in understanding the abstraction level"...

★ **Functional safety** – Discussion topic generally

Make Introduction to Functional Safety in graphics – TBD responsible for slides

- Qt Safe Renderer?
- Luxoft Safe Renderer?

**- Breaks**

~ 2 x 15 min? Is there a scheduled break (coffee?)

**Other topics (brainstorm)**

- Discuss other graphics tools & standards (experiences from participants).

(I'm looking for experience with the commercial HMI tools that have not yet engaged in our projects)

Time

Topic

T+50

T+60

T+70

BREAK

T+80

T+90

T+100

T+110

T+120

T+130

T+140

T+150

T+160

T+170

T+180

#### Considerations

We might also have to adapt a bit to the people who are attending. If most of the summit "audience" is doing RAMSES tutorial then we will have a smaller core group in the working session and can focus on deeper work, but if we have many new people in the room then I imagine it might have to shift over a bit more to a structured show-and-tell and Q&A. We have a responsibility to all that attend the summit, to have them engaged in the activity (if possible, it can be challenging).

---

Older info

Topic List

Each item should be (an idea for) a full speaking slot. Think of it as the title of the presentation. Then, below it, add smaller details.

RAMSES & API Remoting

Surface Sharing / Waltham

Graphics Sharing & Distributed HMI

General presentation

Whole project, goals, the defined categories and results

TBD GPU sharing (Renesas?)

Needed HV and hardware support, how it works ...

Virtual Display / GST recording, etc.

TBD Android