

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
Welcome back and introduction Gunnar Andersson	2:00 PM	3-5 min	2.05
Qt Case Studies: Qt Remote Objects (Shared State) Qt WebGL (API Remoting) Qt WebAssembly (API Remoting) Timo Aarnipuro and @Kimmo Ollila (Qt Company)	2:05	23 min, combined	2.30
Case Study: Implementing Waltham in practice ADIT (Surface Sharing) @Harsha Manjula Mallikarjun (Bosch India)	2:32	15	2.47
Case Study: Harman Android/QNX system (Surface Sharing) @Sergey Klevitskiy (Harman)	2:49	15	3.04
Case Study: Reenas Canvas-demo (Display Sharing, GPU sharing, ...) Stephen Lawrence	3:05	15	3.20
Case Study: AIIGO multi-display demo (Virtual Display) Mageesh Margabandu	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
Welcome and Introduction	Gunnar	5	0	09.30
Surface Sharing in practice Harman Android/QNX system (Surface Sharing)	<ul style="list-style-type: none"> • Sergey prepare support material for discussion 	25	5	09.30
Surface Sharing in practice Waltham implementation experiences (Surface Sharing) <ul style="list-style-type: none"> • what could be used on Android • Gstreamer encoding – comparison to gst-record ("Renesas demo") 	Harsha preparing Android questions (a few, conceptual) <ul style="list-style-type: none"> ▪ As planned, gstreamer comparison will be done. ▪ Weston upstream challenges and ongoing work. 20-25 total, with discussion and Q&A. I can also prepare a bit more if needed.	25	20	10.05
Qt Technologies WebGL and WebAssembly detailed discussion	<ul style="list-style-type: none"> ▪ Timo confirmed Kimmo is prepared :) ▪ Short intro WebAssembly <ul style="list-style-type: none"> ▪ early work - distributed HMI ▪ Q&A ▪ Other discussion? ▪ Remote Objects 	~15-20?	45	10.25
★ 10.45 - 11.00 COFFEE BREAK ★	=====	15	75	★ 10.45 - 11.00 ★
Other Tools and standards (optional/backup) <i>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)</i>	<i>Gunnar lead discussion.</i> ⚠️ <i>audience poll?</i>	10 (backup)	65 (backup)	(backup)
Qt WebGL wrap up				11.10
Android Focus <ul style="list-style-type: none"> • Virtual Display and related APIs • AllGo Experiences challenges on Android "issues" (optional) Artem has GPU sharing - virtualization info about Android also.	Magesh is preparing - 10-15 minutes + 10 discussion	20-25		11.20

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