



Generic Protocols Evaluation Project

2017-11-23 Project Kick Off Meeting

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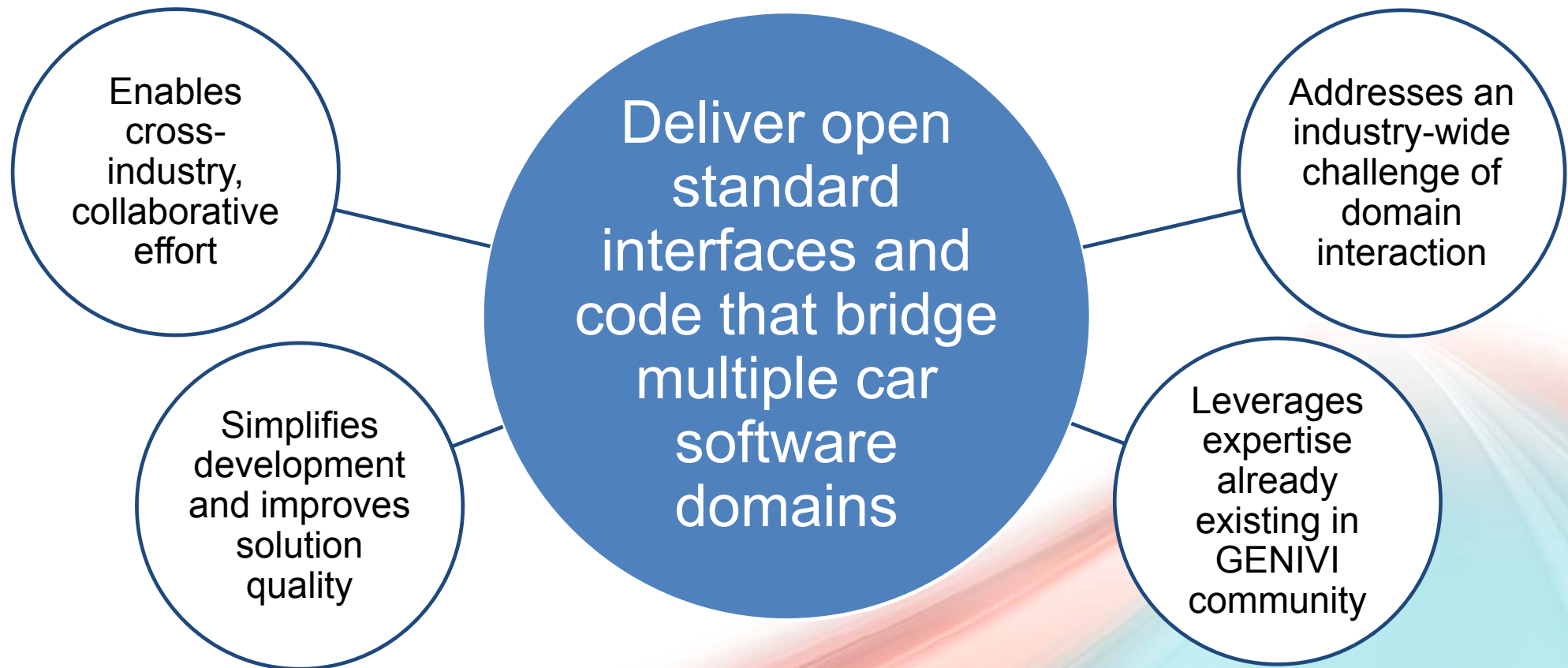


AGENDA



1. Context – Vehicle Domain Interaction Strategy
2. First definition of Generic Protocols Evaluation project
3. Review and refine initial goals of the project
4. Review Scope & first list of “existing technologies”
5. Practicalities - issue tracker, mailing list, meeting setup
6. Presentation of project participants, background, interest and planned participation
7. Participant feedback on goals – prioritization
8. Free form discussion - immediate thoughts? other technologies to be aware of?
Partitioning the work into different areas of investigation
9. Review actions, next steps.

GENIVI Vehicle Domain Interaction Strategy



Vehicle Domain Interaction Strategy - Resources



- Large interest since GENIVI first announced the Vehicle Domain Interaction Strategy – leading to many questions
- To meet the demand we have created a Frequently Asked Questions document for the most common questions: <http://tinyurl.com/DIROFAQ>
- Please refer to the FAQ for general questions about Vehicle Domain Interaction Strategy.
- Also:
 - **Strategy Home Page** (Wiki): <http://tinyurl.com/DIROHOME>
 - - Strategy **KickOff Slides** and **Recorded Webinar** ^ links on Home page
 - - [Project registration/survey](#) (fill in, to be kept informed)

(Reminder)

Project Candidates Identified During AMM Workshops in Seoul



1. Graphics sharing & Distributed HMI Compositing
2. Developing or Extending Hypervisor APIs
3. **Determining Preferred Generic Communication Protocols**
4. User Input Distribution and Coordination
5. System Health/Debugging/Analysis (incl. Log & Trace)
6. Distributed System Lifecycle / Node State
7. Network Traffic routing & accounting (priority/bandwidth/payment...)
8. (Distributed) Audio management
9. Distributed User / Login / Profile management

Why is this project needed?

“Too many choices, too much diversity, too much boiler-plate code, adaption layers, and incompatibility”

Why is this project needed?

*As automotive software engineers we have (at least)
“5 dimensions of incompatibility...”*

- Network protocol standards
- Data encoding
- Programming languages
- Programming APIs (bindings,...)
- Hardware / CPU architecture specifics (byte order,...)

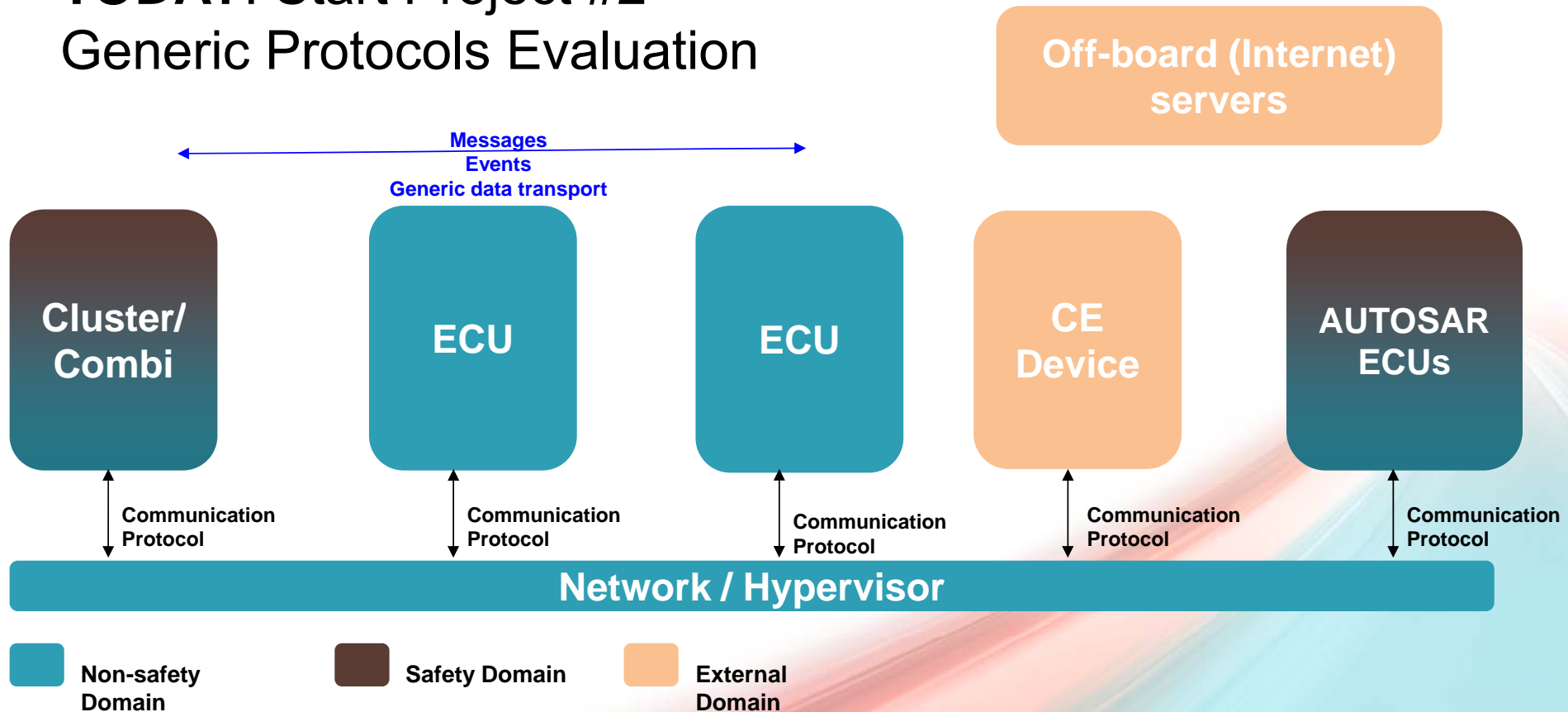
but wait! there's more!

... IDLs, Tools, Modeling tools? UML?, ...

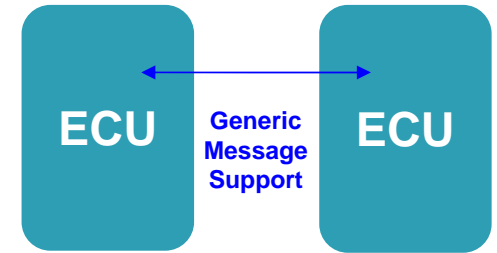
Vehicle Domain Interaction Strategy = multiple projects



- **TODAY:** Start Project #2
Generic Protocols Evaluation



Scope and definitions (first proposal)



- **Generic Protocol (*in this context*)**

*“Network (*and IPC) protocols acting primarily as a transparent data carrier, applicable to many different application domains, but including convenience features above that of a plain data stream (socket). For example: data encoding, segmenting, opaque target addressing, routing, peer authentication, delivery guarantee, data integrity and service-discovery.”*

- In other words, we are concerned with OSI model levels 5-6 (approx.)
- To reduce scope – focused on segmented, atomic, event/message-based semantics more than “streaming data”
- *IPC needs to be in scope, because of shared parts (data encoding), similarity, and that network-transparency is often a design goal.

Project Goals proposal (high level)

- Analyze choices among a vast number of messaging protocols & encodings
- Reach consensus on preferred options: Among 10-15 choices, find 3-5 recommended (and for which scenarios they are recommended)

Project Goals proposal (detailed)

- Project participants gain thorough understanding of available choices
- Deep dive: SOME/IP - where is it applicable, and where is it not?
Similarly for RESTful web interfaces and a few others.
- Produce or identify technology demonstrators newly created or (if exists already) found and highlighted.
- Publish hard data on learning: Performance, resource needs.
- Evaluate popularity / probability to encounter
- **Reduce scope of “preferred” choices in industry**
- Document applicability and recommendations
- Promote *open* standards and implementations across industry
- Summarize and create (implementation) documentation for recommended choices

Areas to explore

- Flexibility & network transparency, etc.
- Interface Description Languages: Franca IDL ↔ others
- Tooling:
 - Code generation & bindings
 - Documentation
 - Runtime evaluation / debugging
- Concrete programming APIs, e.g.: Common API C++
- System modeling: **Franca +**

Existing technologies to explore

- MQTT, WAMP, AMQP, XMPP, SOME/IP, CoAP, REST-ful HTTP, D-Bus, gRPC,... Protobufs, MsgPack, JSON, Thrift, Avro
- Franca IDL – current state, and future needs

Practicalities

- Need clear commitments from project participants
- A project to achieve results! Those willing to actually work will organize (or self-organize) around a functioning meeting schedule.
- Volunteers for project leader?
- Time poll, or just set a time?
- Mailing list: [genivi-projects @lists.genivi.org](mailto:genivi-projects@lists.genivi.org)

JIRA tracker

(<https://at.projects.genivi.org/jira/projects/GPRO>)

- Keep in touch: <https://www.surveymonkey.com/r/JZJV5KP>

Remaining Agenda

- Presentation of project participants, background, interest and planned participation
- Optional / time permitting
 - Time for first evaluation of candidates, comments
 - Free form discussion
 - - immediate thoughts?
 - - other technologies to be aware of?
 - - Partitioning the work into different areas of investigation
 - Participant feedback on goals – prioritization
- Review actions, next steps.

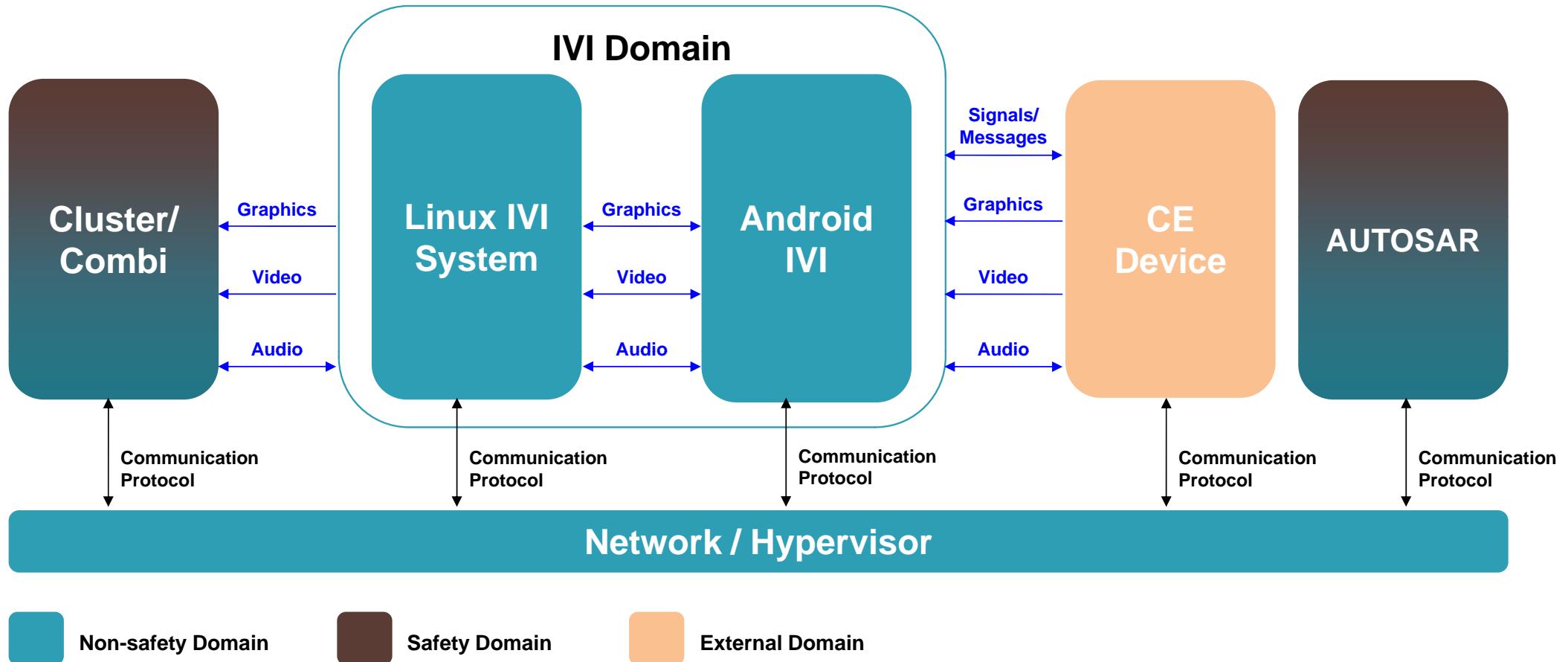
END

BACKUP SLIDES



1. (if needed to support conversation)

Supporting ECU architecture picture (example)



1. Register yourself to projects on the on-line GENIVI Domain Interaction form & survey (<https://www.surveymonkey.com/r/JZJV5KP>)
2. Projects #2, and #4 – meeting times to be announced
– register your interest on the on-line form (<https://www.surveymonkey.com/r/JZJV5KP>)
3. Questions? Philippe Robin philippe.robin@technoveo.com
Gunnar Andersson gandersson@genivi.org
Use the community mailing list ! genivi-projects@lists.genivi.org