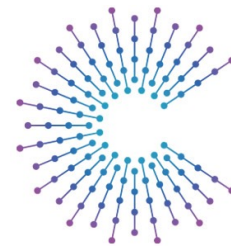




COVESA Vehicle Integration Platform (CVIP) Project Discussion

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COVESA

Accelerating the future of connected vehicles

Broadening of Hypervisor Project

- Great work on AVPS, terminology, deep-dives over the previous years
- Virtualization is one way to assemble multi-runtime systems
 - Containers, multi-processor (chip) and multiple CPU clusters (heterogeneous SoCs) are also possibilities
- Common theme is multiple runtimes being integrated
 - COVESA is broadening project mandate beyond hypervisors
 - Hence the new project name ***Vehicle Integration Platform*** project (or similar)

Software Integration vs Hyperintegration

Software Integration

“Assembling software-defined systems by combining ***multiple disparate SW elements****”

→ typically requires a lot of engineering effort including source code modifications.

→ typically involves building modified SW elements from source-code.

Hyperintegration

“Software integration by combining ***multiple compatible SW elements*****”

→ requires pre-engineering to enable low-code/no-code/automated software integration.

→ vision is to assemble systems from ready-made** SW elements.

***SW element:** runtime, module, library, service or application.

****ready-made:** SW elements that are pre-built as run-able images, VMs, containers, files and packages.

Hyperintegration Problem Statement

The *situation*:

- Vehicle SW is growing dramatically.
- Element separation is motivating SoA / loosely-coupled SW for many reasons.
- Workload consolidation onto centralized HW inevitable for much vehicle SW.

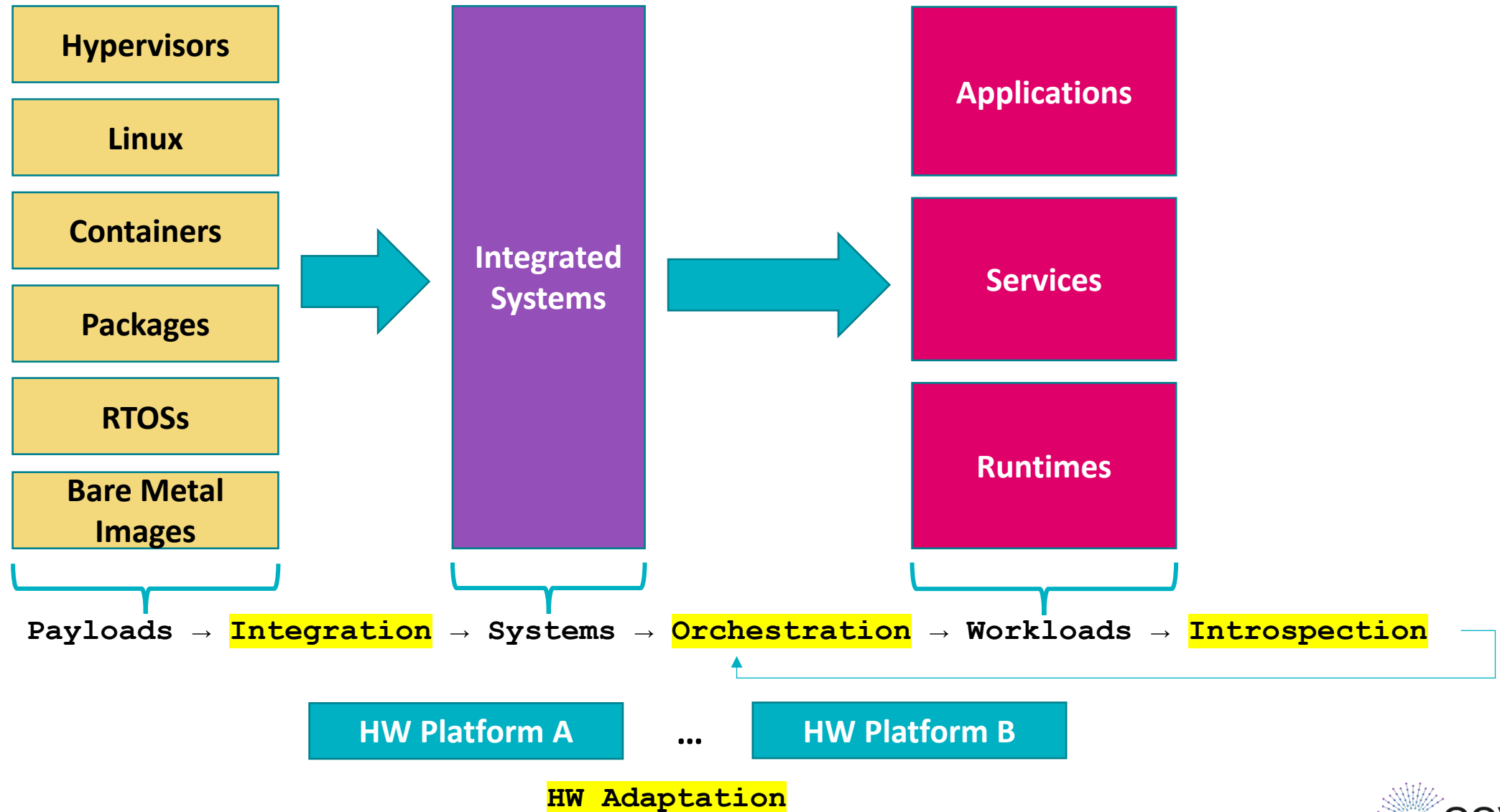
The *complications*:

- Payloads increasingly delivered with discrete OS instances (VMs, containers ...)
- SW comes from diverse sources (3rd party, SOAFEE, Eclipse, FOSS, custom ...)

The *implications*:

1. Structure is needed in order to achieve cohesive multi-element system assembly.
2. Systems assembled using hyperintegration are increasingly opaque.
→ observability is difficult also because of the many discrete OS instances.

Hyperintegration: Payloads / Systems / Workloads



Understanding Hyperintegrated Systems

We want to know things about the payloads being integrated, such as:

- **Identity and provenance** (element name, provider, version, date, signature ...)
- **Resource requirements** (memory, compute, connectivity bandwidth, devices ...)
- **Credential requirements** (actions it needs to be able to do to perform function)
- **Dependencies** (on SW and HW elements)
- **Miscellaneous attributes** (expected boot time, update/restart policy etc)

We want to trust but validate workload behavior using runtime analysis, such as:

- **telemetry aggregation** of metrics, logs, and traces gathered using instrumentation
- **telemetry processing** for edge and cloud digital feedback loops and orchestration
- **telemetry analytics** to enable continuous operations, administration and maintenance
- **telemetry-driven health monitoring/reporting** for continual system validation

How can the VIP project accelerate automotive hyperintegration?

1. Enabling classification of payloads relevant to automotive systems
 - SBOM extensions, dependencies, resource requirements, permissions
 - answer the question “Can this hyperintegrated system run on this hardware”?
2. Enabling workload telemetry aggregation, processing, reporting and analytics
 - including from auto-relevant sources e.g. DLT, AutoSAR Log&Trace, Linux perf etc
 - investigate CNCF approach e.g. OpenTelemetry project
 - answer the question “What is happening in this hyperintegrated system?”
3. Other?

CVIP General Activities: “Collaboration”

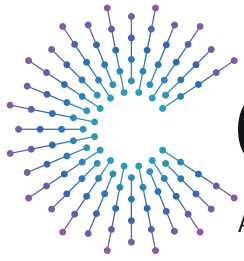
- Share knowledge
- Align on terminology
- Analyze choices
- Identify design methods and patterns
- Create recommendations
- PoCs and demos based on open source
- Standardized metadata, APIs, KPIs

(aligned with industry initiatives e.g. SOAFEE, Eclipse SDV etc)

Next Steps

1. Expressions of interest?
2. Meeting timeslot and frequency?
3. Working groups or stay as one team?
4. Presentations to the group (do you want to?)
5. PoCs? SBOM extensions? Telemetry? Orchestration?

→ Please reach out to me or [Paul Boyes](#) if you see an opportunity for COVESA member alignment and COVESA organizational value through this group that you want to provide more input on.

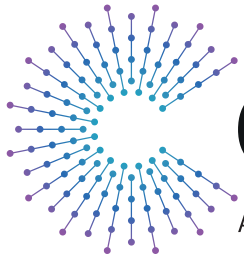


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Thank you!





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Backup Slides



CVIP Generalized Architecture

- Location Independent SW
- Hardware Independent SW
- Hardware Dependent SW

¹ bootable payload
² executable payload

