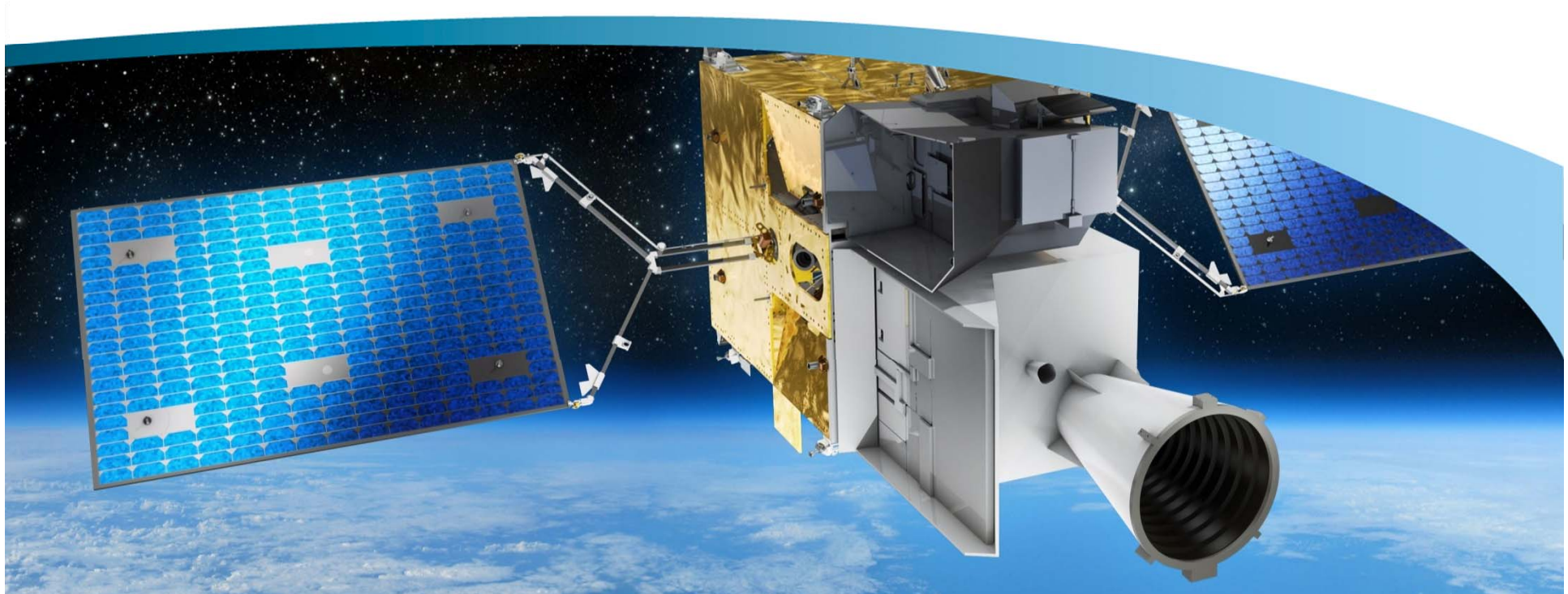


**OHB System AG**

Michael Brahm, Christian Westendorf

20/10/2015, ESA-ESTEC



SPACE SYSTEMS

## How to use SOIS in current and future flight software

We. Create. Space.

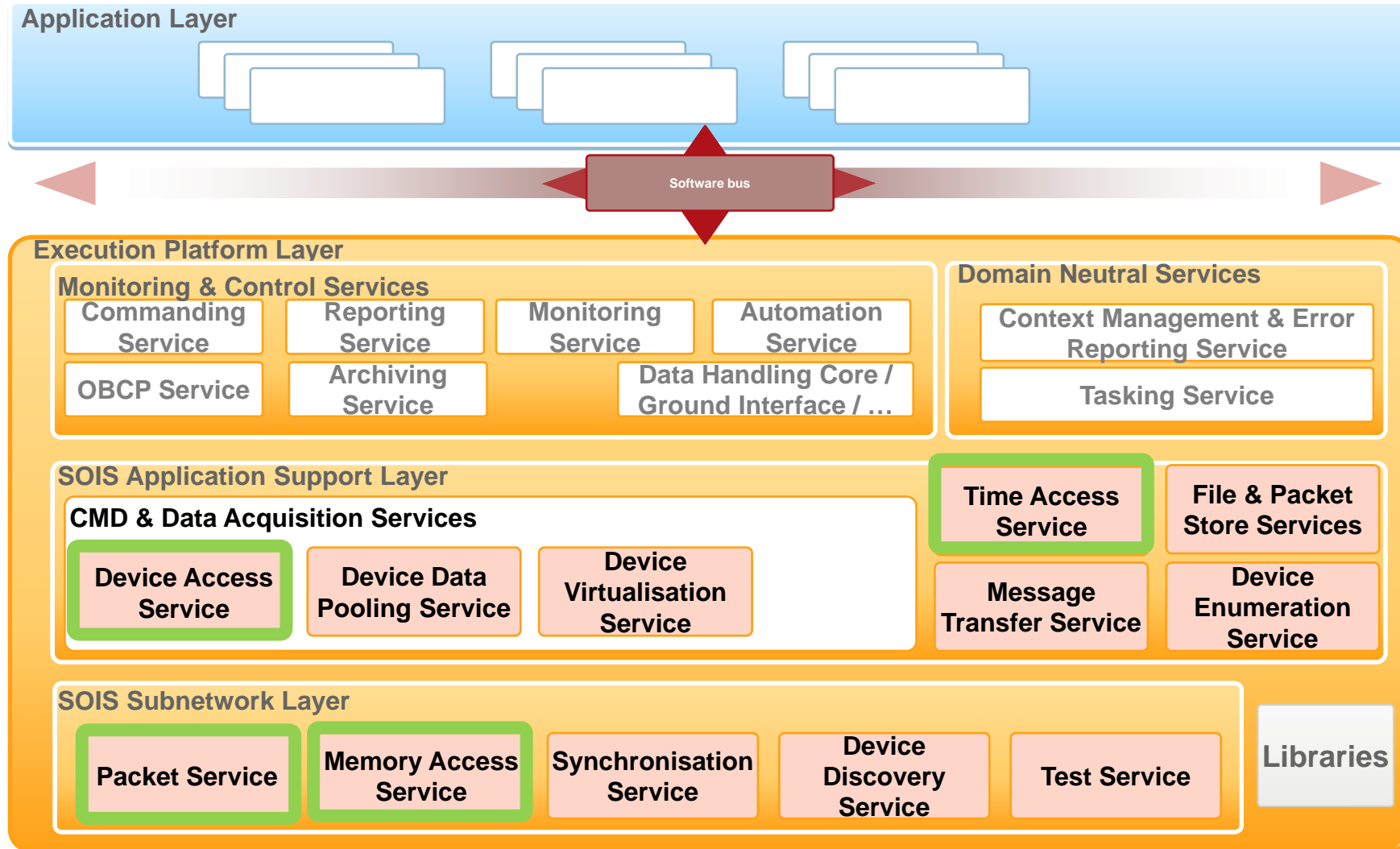
- **Part 1:**
  - **Selected SOIS Services**
  - **Results of the Study**
  - **Merging into OH B SW Architecture**
- **Part 2**
  - **Recommendations, Roadmap & General Feedback**



SPACE SYSTEMS

## Selected SOIS Services

We. Create. Space.



SOIS Services   
  Selected SOIS Services   
  Other building blocks identified by SAVOIR

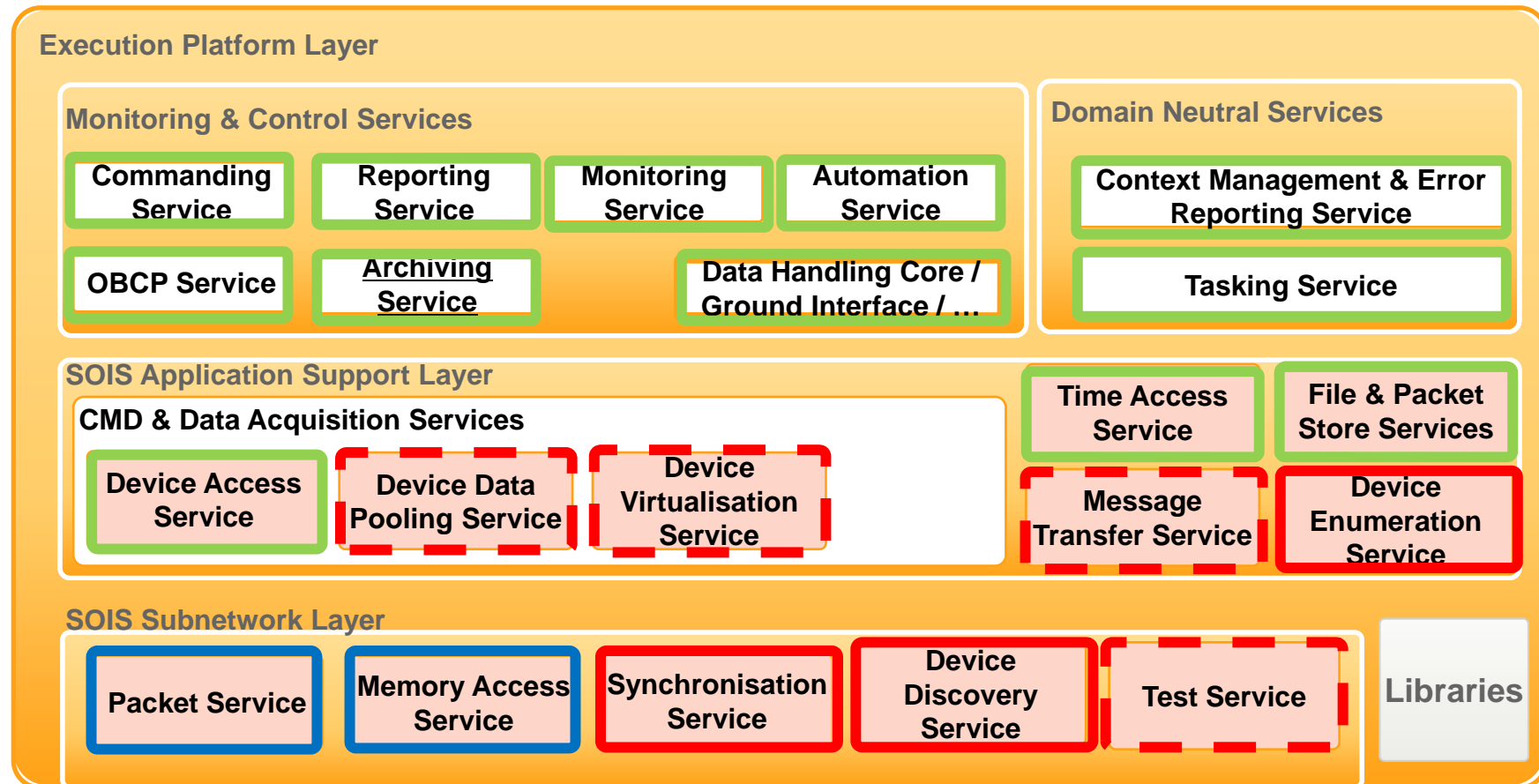


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## Results of the Study

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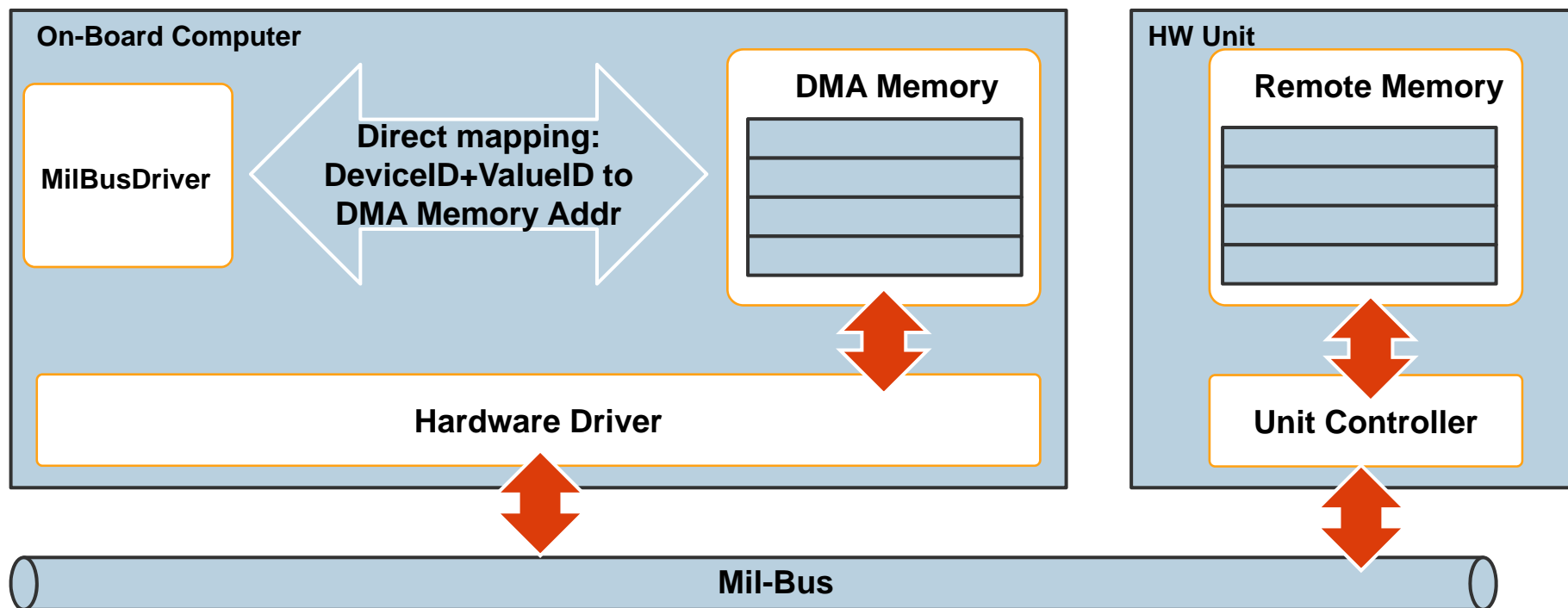
# Summary on Execution Platform Services



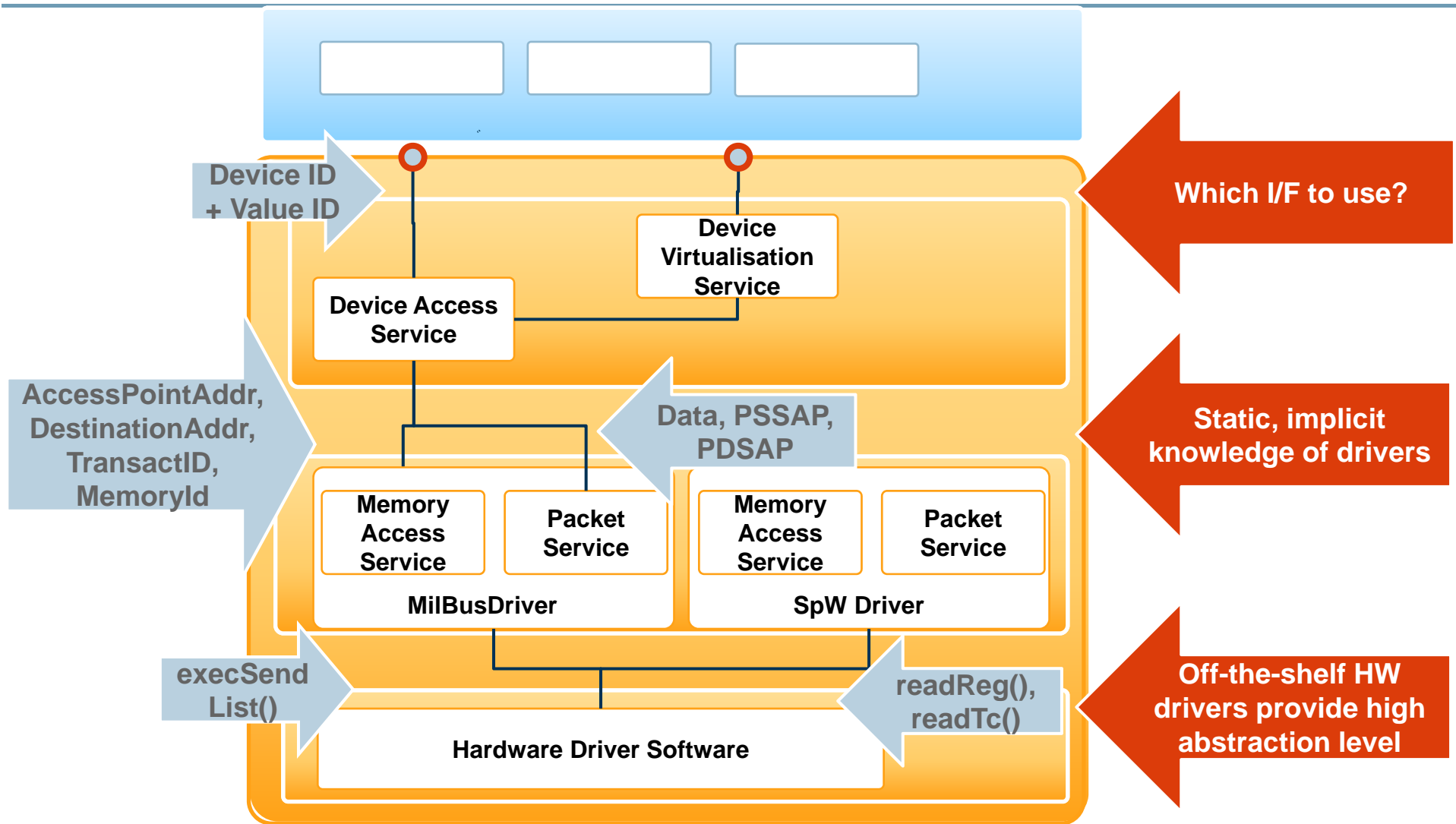
  Expected in most on-board Software architectures  
   Scope and I/F to be discussed  
   Probably not useful  
   Under discussion/ Purpose not clear

# Conclusion on the Memory Access Service

- Memory Access is performed in existing architectures, BUT
- SOIS primitives and parameters not adequate
  - Existing HW drivers provide higher level of abstraction, e.g. “sendHlc”
  - Periodic send-list concepts do not require passing these parameters
  - Static mapping between DeviceID/ValueID and DMA memory addresses



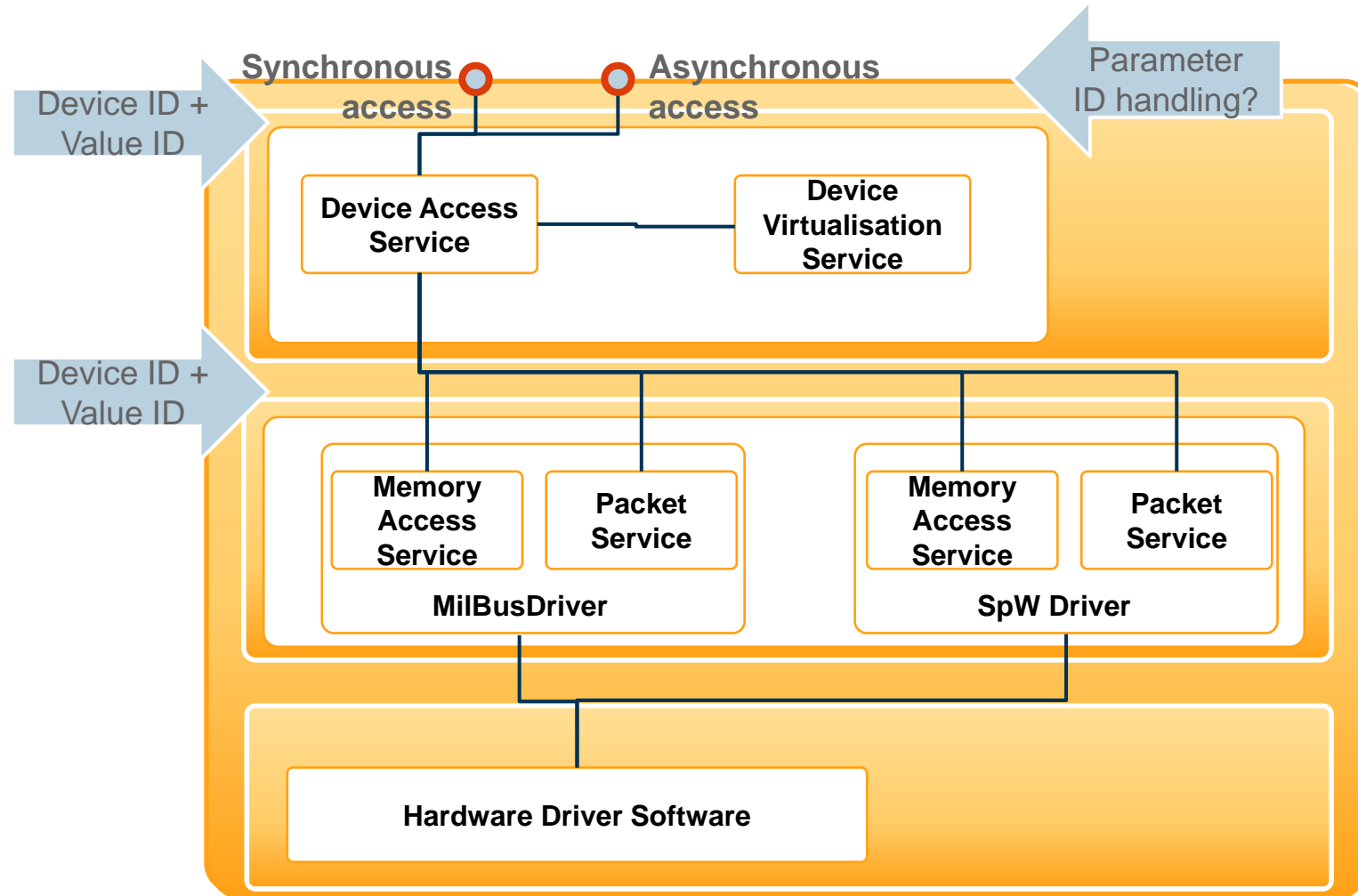
# SOIS Cmd & Data Acquisition Problems



➔ Interface level      ← Problem



# Recommendation: Re-structuring



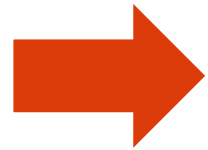
➔ Interface level



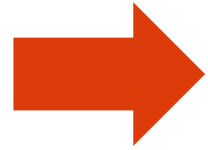
SPACE SYSTEMS

## PART 2: Recommendations, Roadmap & General Feedback

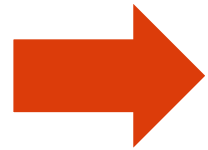
We. Create. Space.



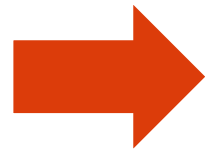
**Subnetwork Layer Blocks & Interfaces should not be standardized**



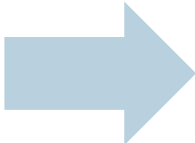

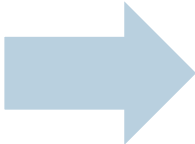
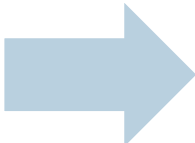

**Mapping of PUS Parameter ID to DeviceID + ValueID to be addressed**







**Message Transfer Service purpose to be clarified**



**Defining services & primitives will hardly allow to exchange building blocks among suppliers**

-  **Rename of existing building blocks according to SAVOIR/SOIS**
  -  **Ease understanding across projects with stakeholders**
-  **Apply concept of DeviceID & ValueID**
-  **Building blocks without equivalent in existing architectures not considered**
-  **No adaption to subnetwork layer primitives**

- ?** Make building single blocks exchangeable among suppliers?  
 Difficult. Programming language, basic infrastructure & tooling would have to be standardized
- ?** Unify language and wording to enhance the understanding among stakeholders?  
 Yes. Worth the effort?
- ?** Make the Execution Platform exchangeable to reduce development costs?  
 Possibly. Still, the programming language and tooling has to be addressed.
- ?** Learn from the SOIS concepts  
 Yes. Even if not standardized, current SOIS concepts will be considered.

*Tooling: includes case tools, test tools, req. engineering tools, WCET analysis tools, SRDB interfaces and configuration tools*

**Thank you for your kind attention!**

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- [christian.westendorf@ohb.de](mailto:christian.westendorf@ohb.de)