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HOCHSCHULE DARMSTADT
UNIVERSITY OF APPLIED SCIENCES

icm

IN-CAR MULTIMEDIA LABS

IT-SICHERHEITS EIGENSCHAFTEN FÜR ENG-GEKOPPELTE, ASYNCHRONE MULTI-BETRIEBSSYSTEME

Boppard am Rhein, 21. November 2013

Pierre Schnarz

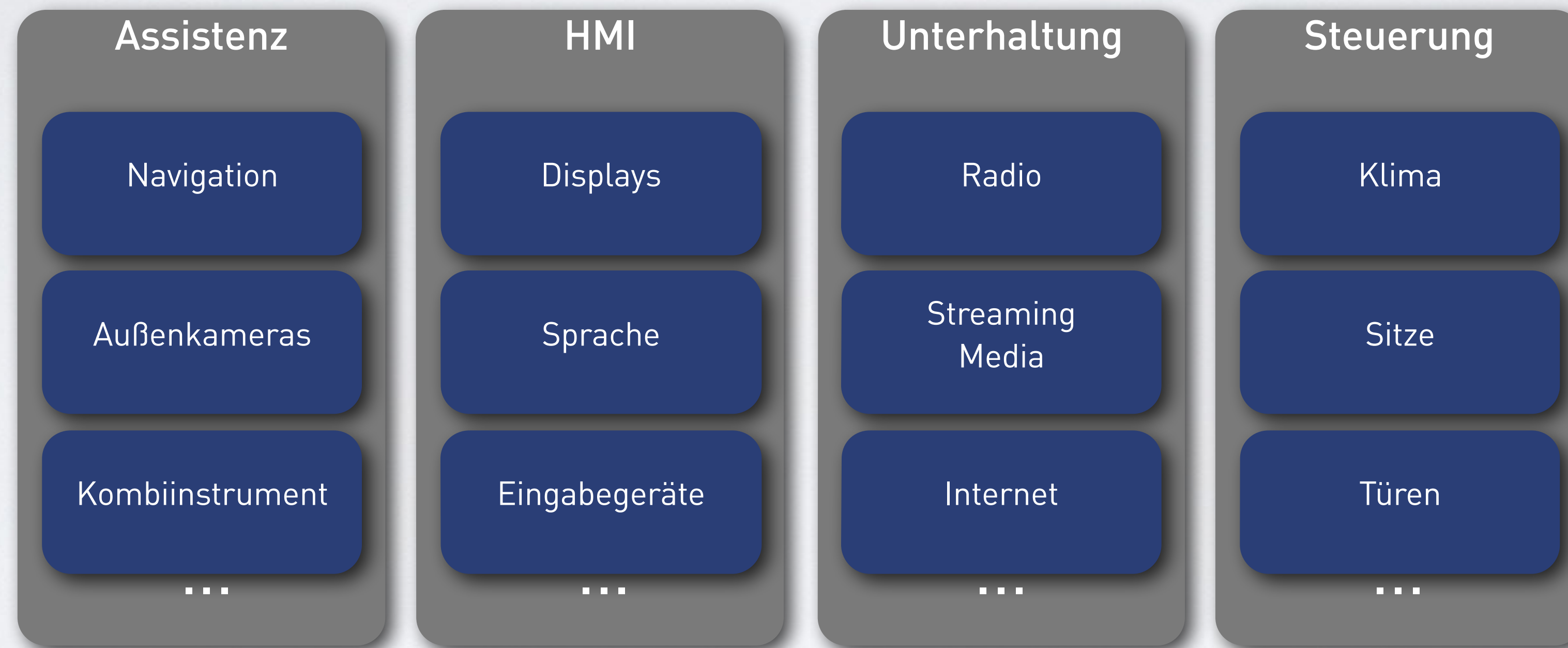
IN-CAR MULTIMEDIA



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IN-CAR MULTIMEDIA

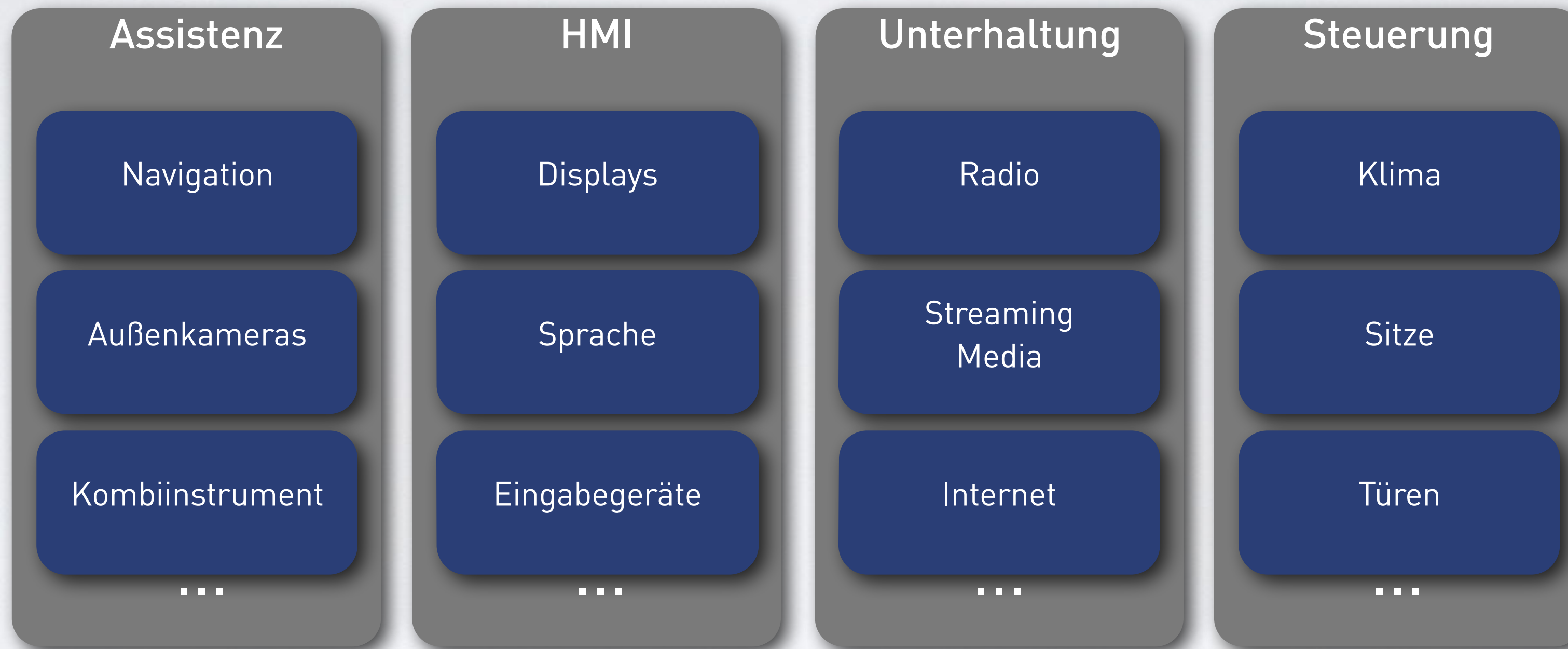


Verteilte Entwicklung

Unterschiedliche Anforderungen

Zuverlässigkeit

IN-CAR MULTIMEDIA

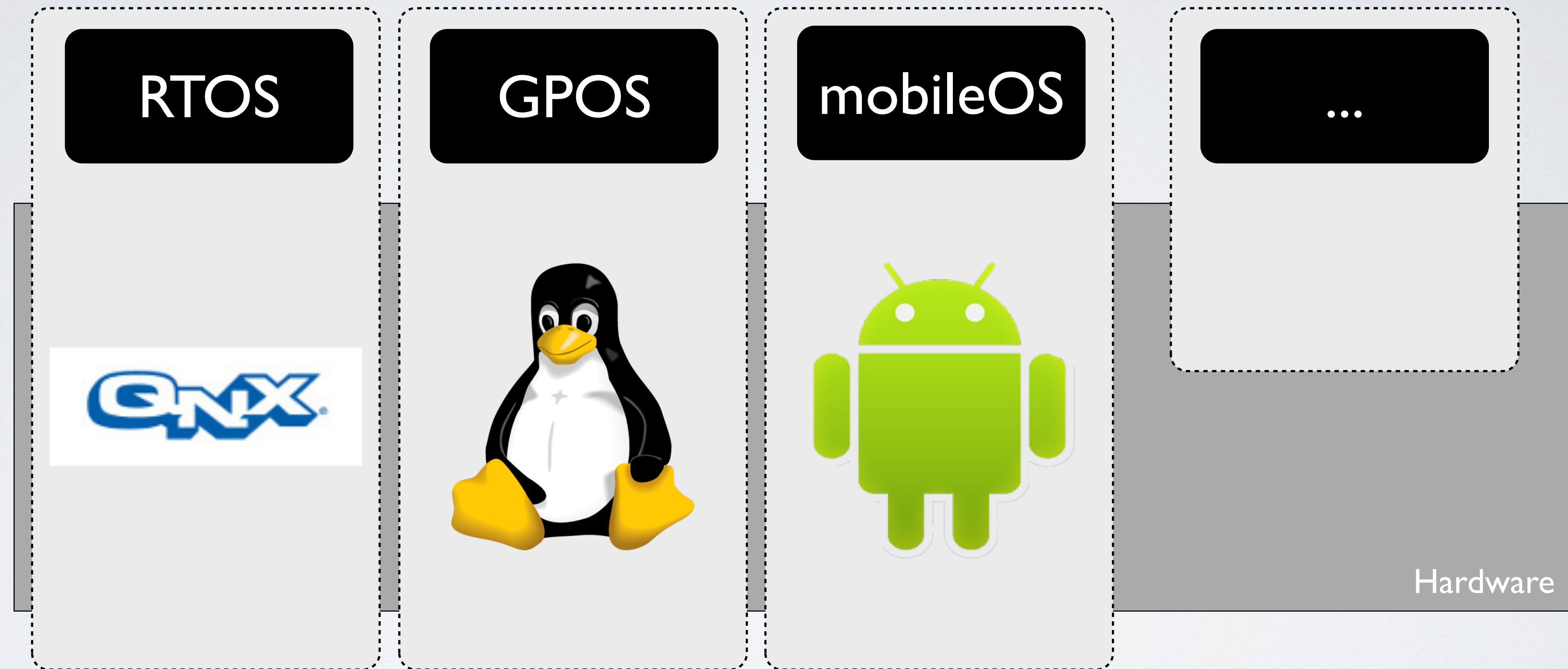


Verteilte Entwicklung

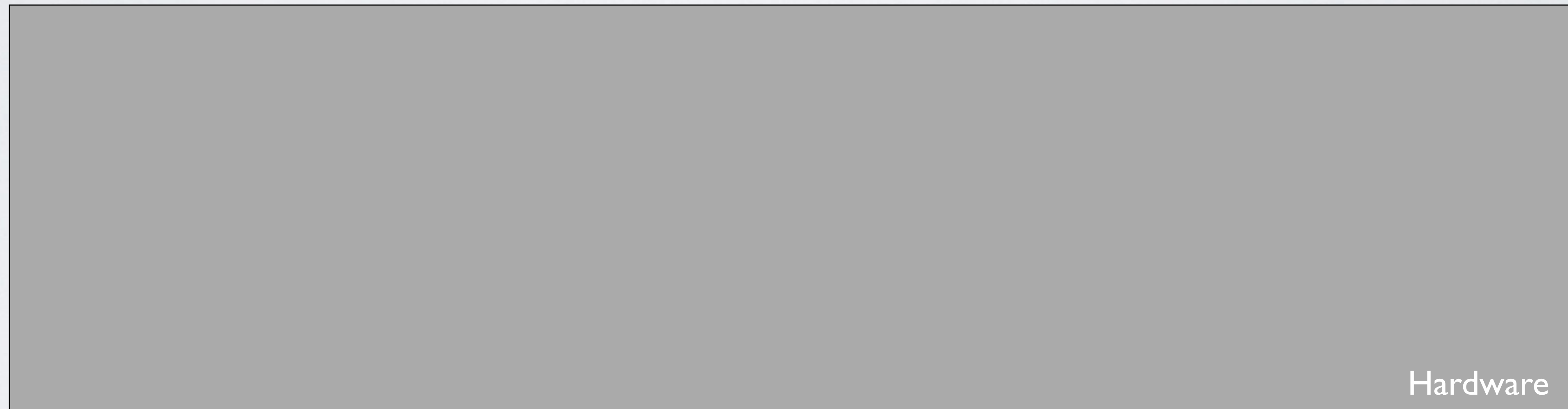
Unterschiedliche Anforderungen

Zuverlässigkeit

MULTI-OS

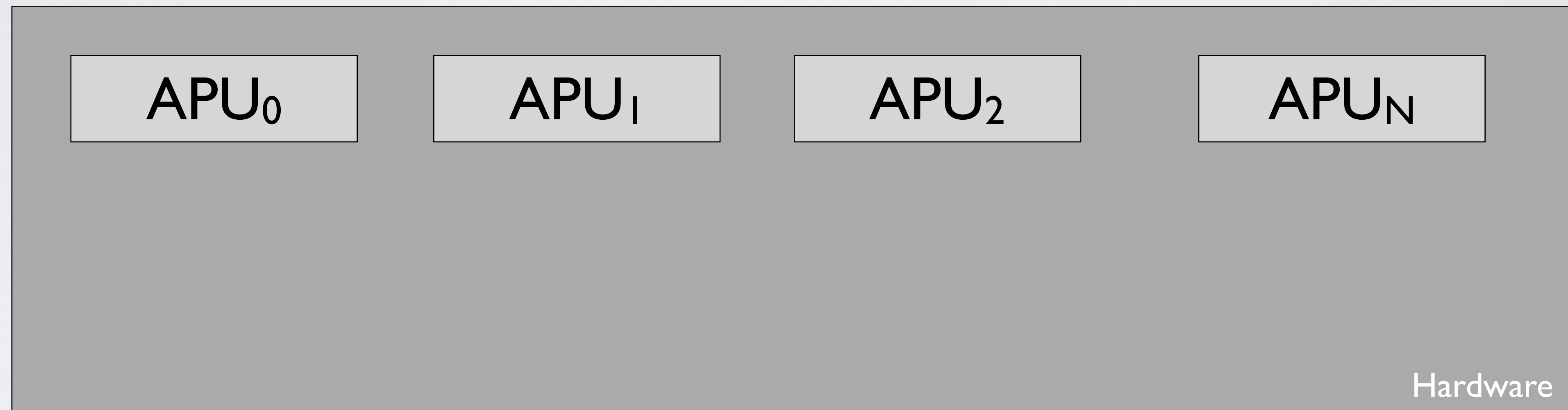


MULTI-OS - TECHNISCHE UMSETZUNG

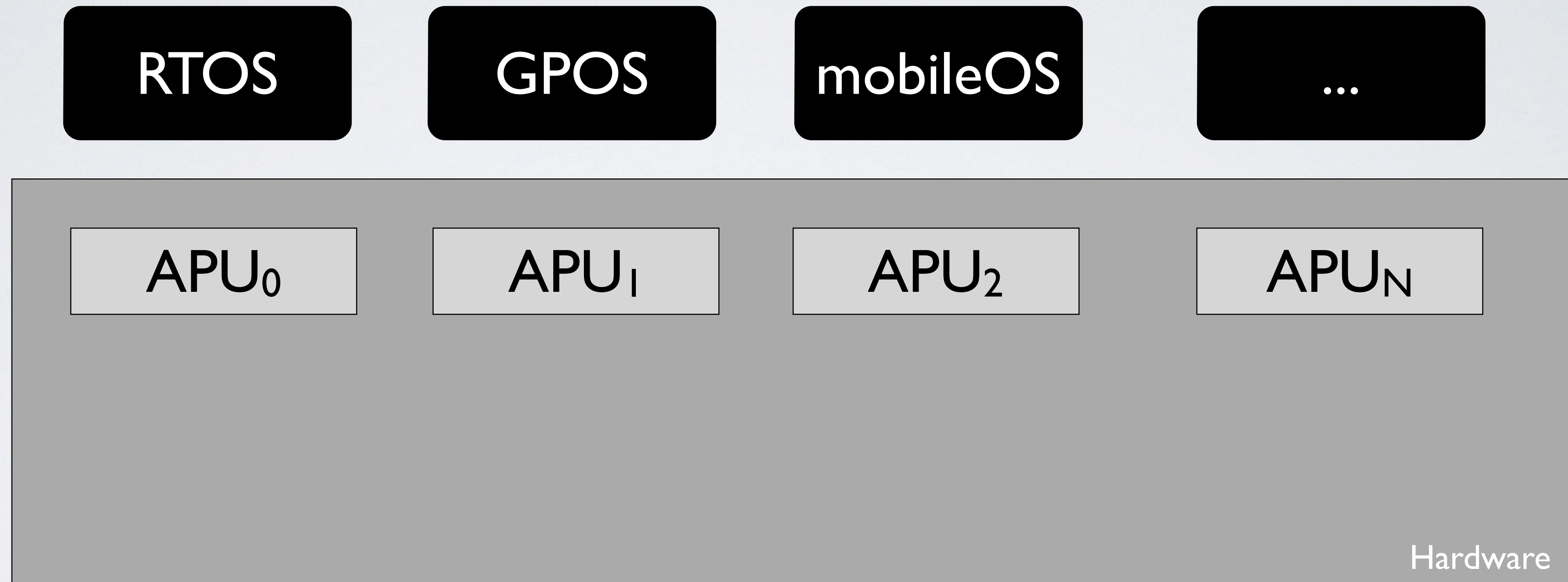


Hardware

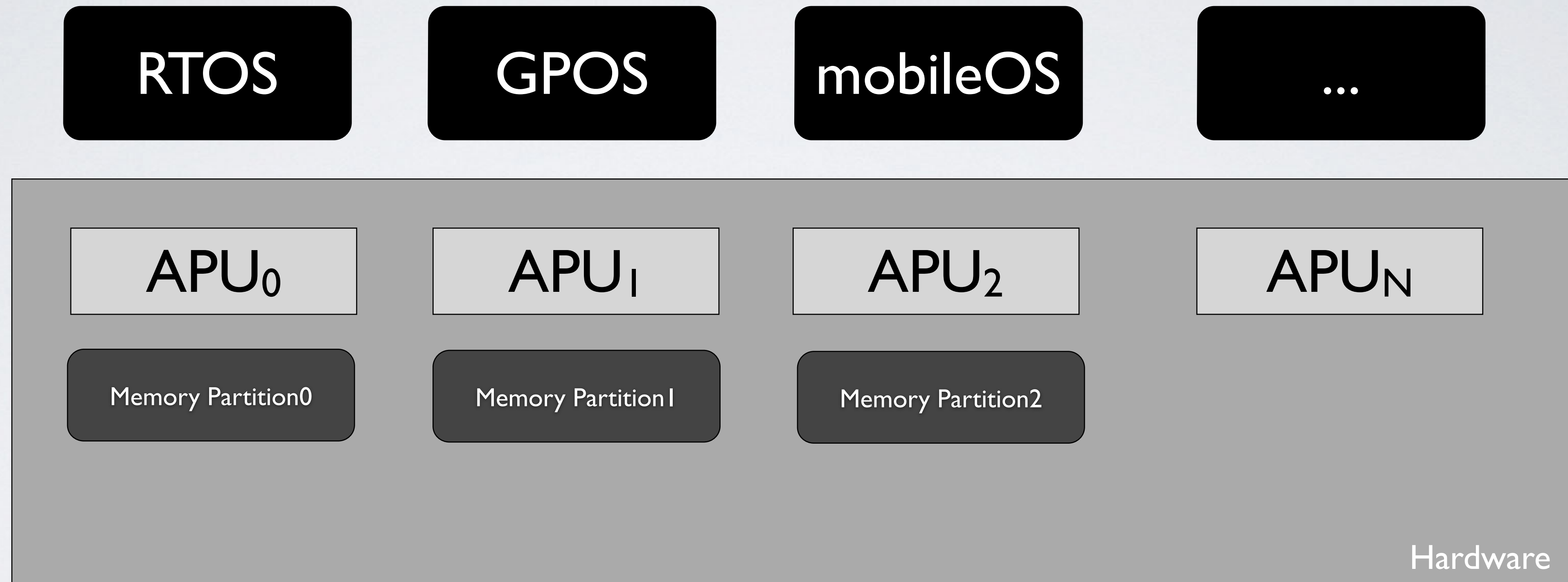
MULTI-OS - TECHNISCHE UMSETZUNG



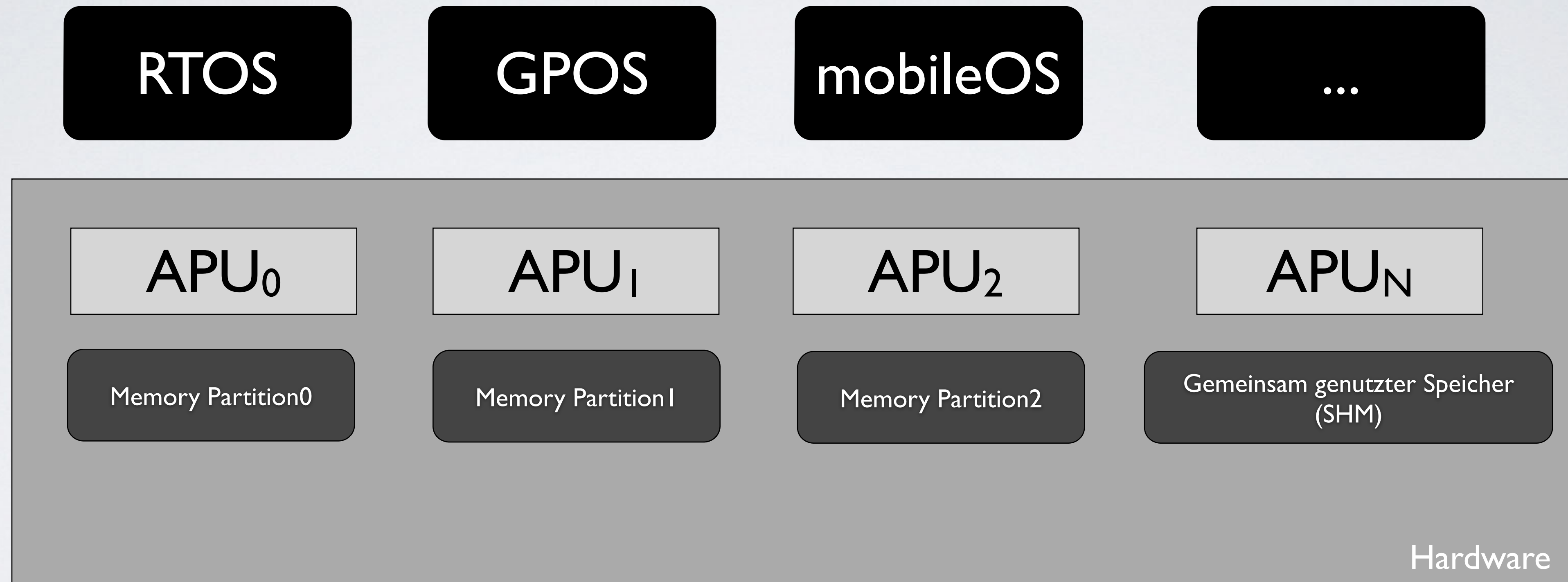
MULTI-OS - TECHNISCHE UMSETZUNG



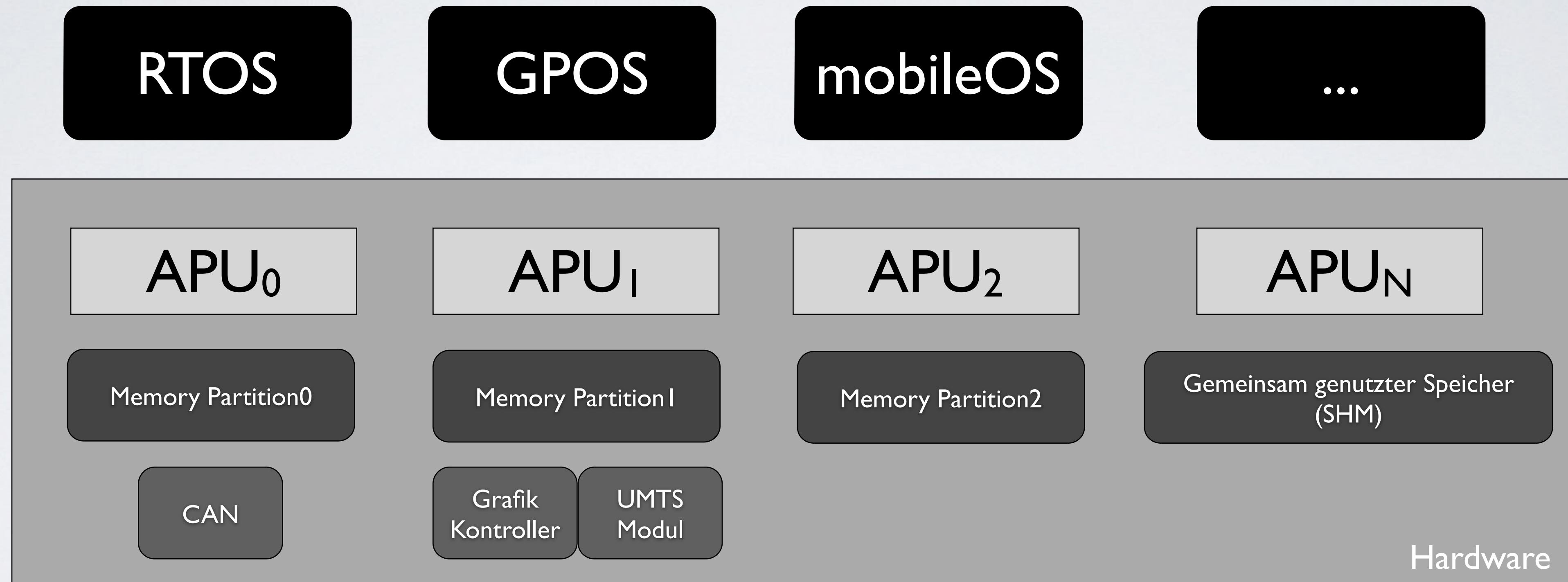
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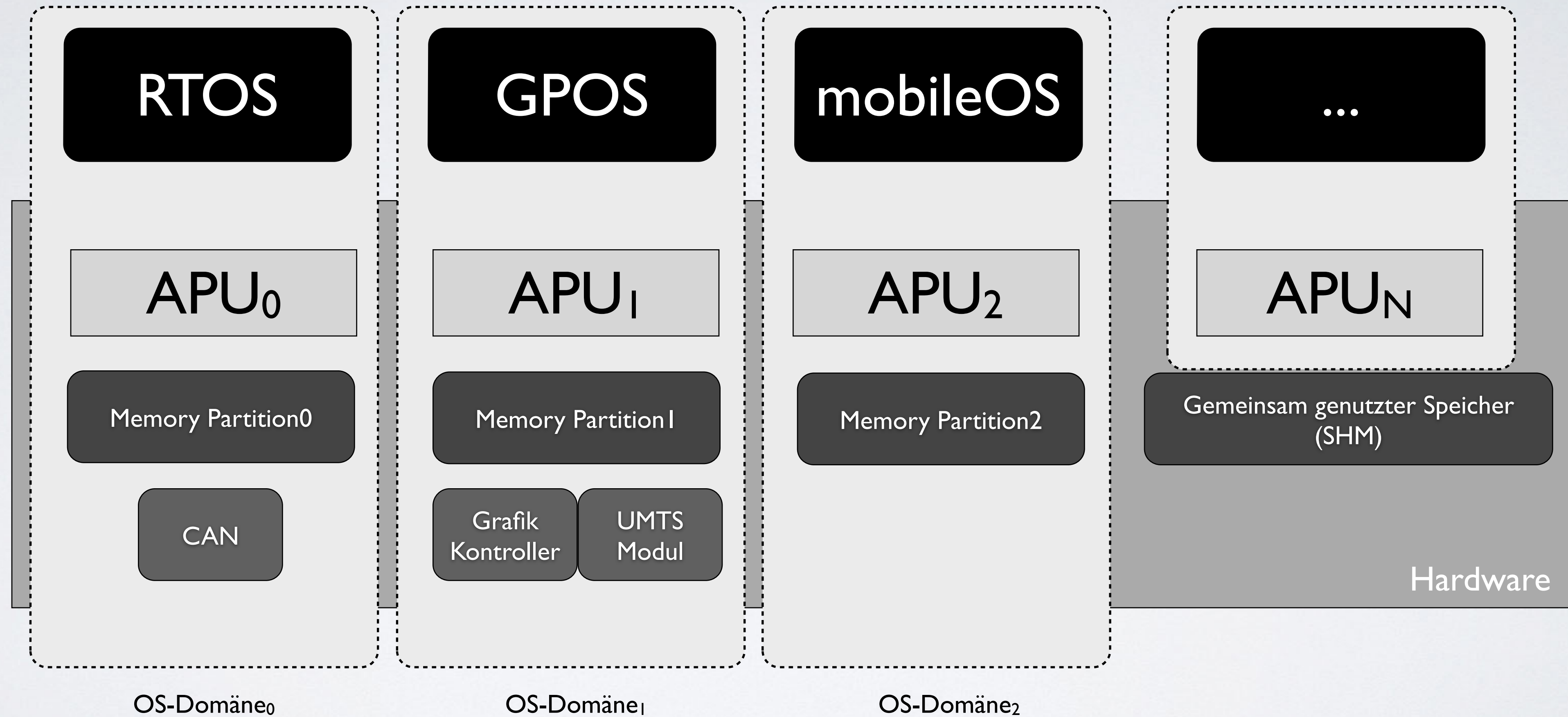
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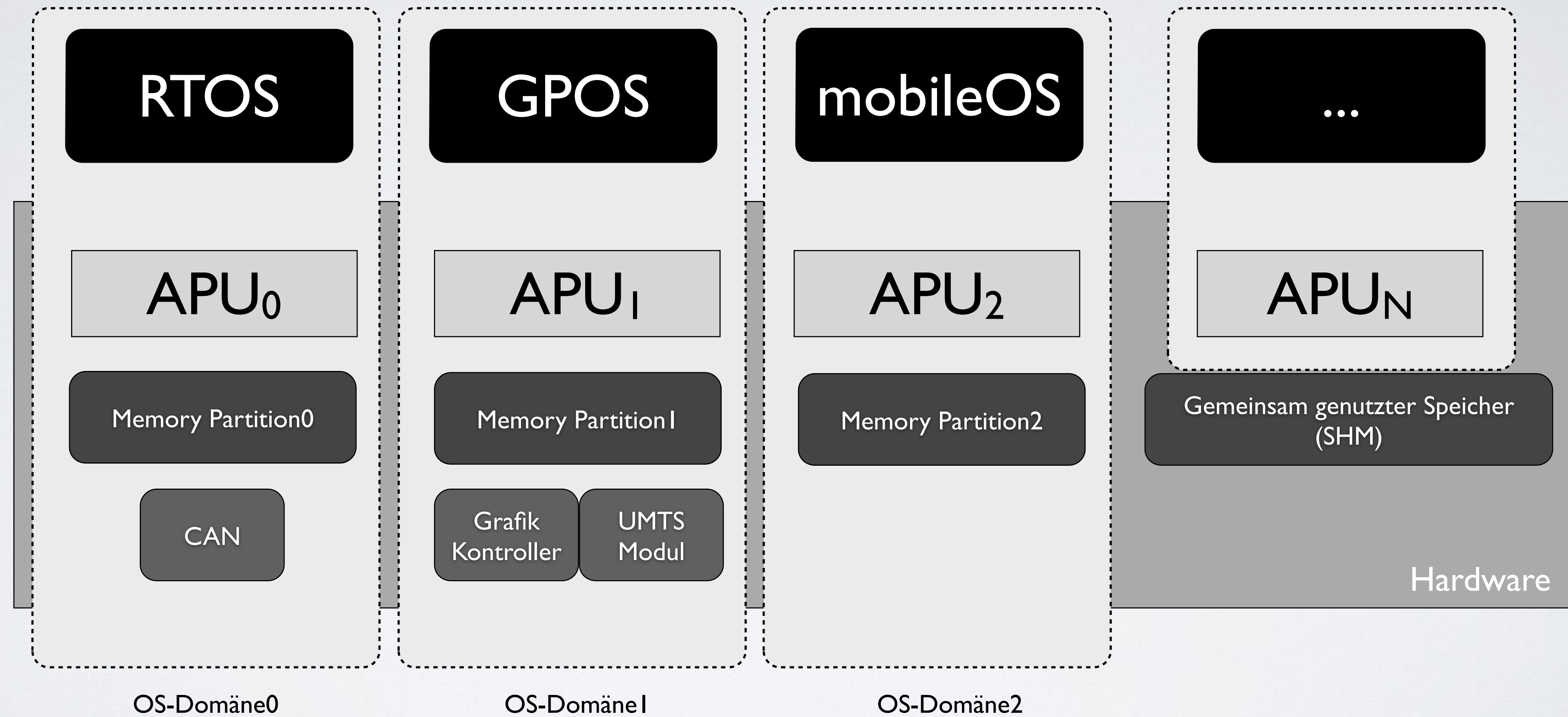
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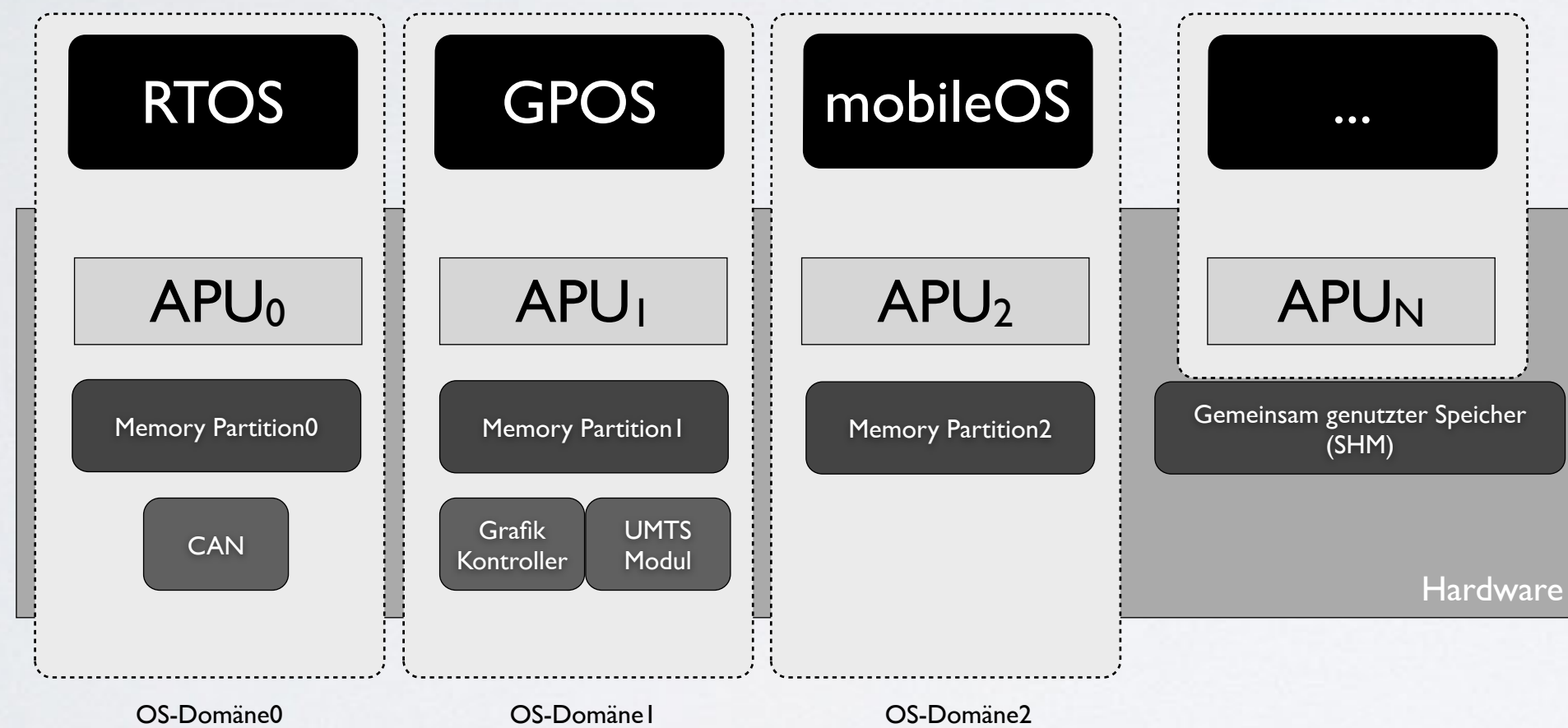
MULTI-OS - TECHNISCHE UMSETZUNG



MULTI-OS - TECHNISCHE UMSETZUNG

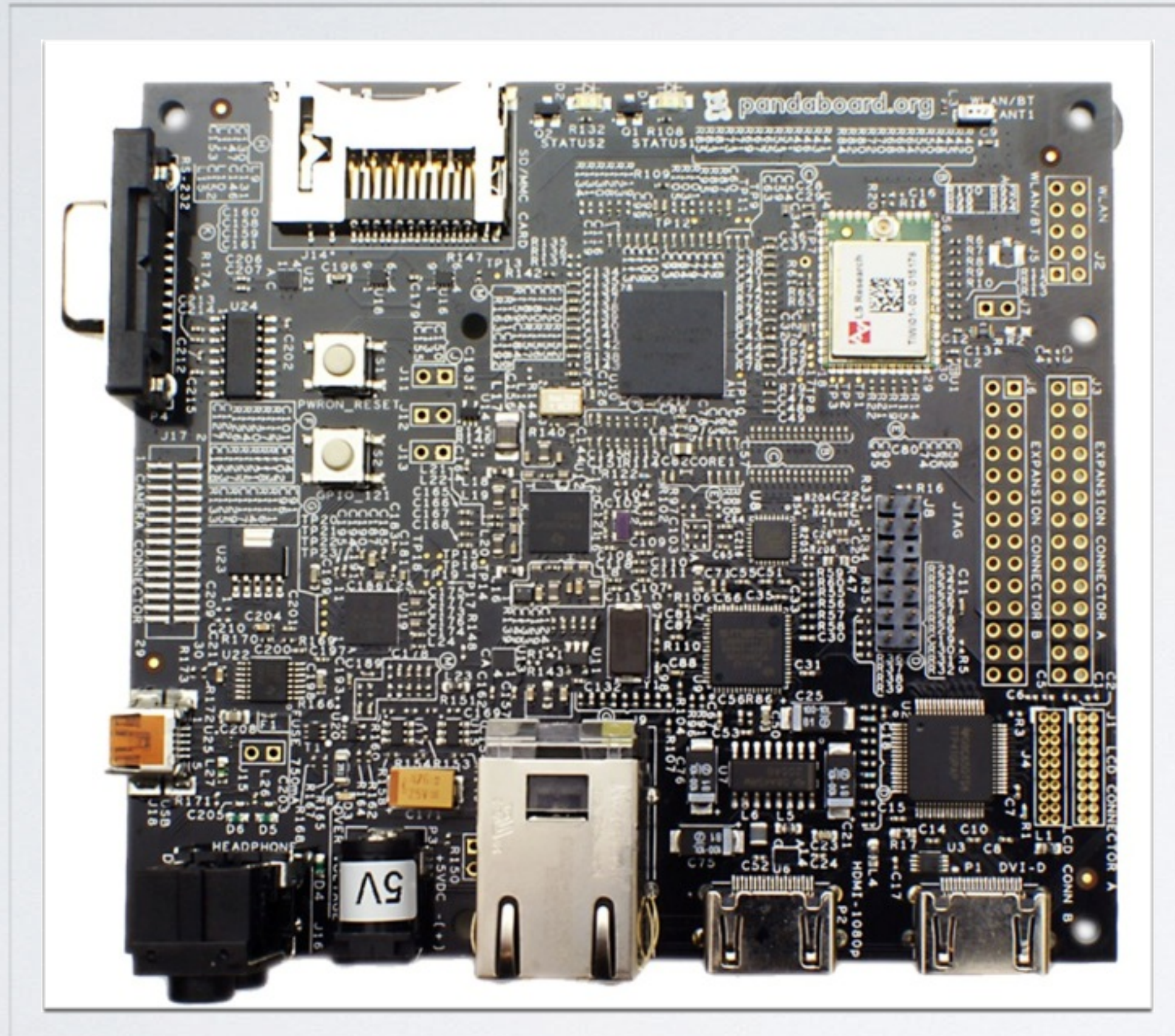


MULTI-OS - TECHNISCHE UMSETZUNG

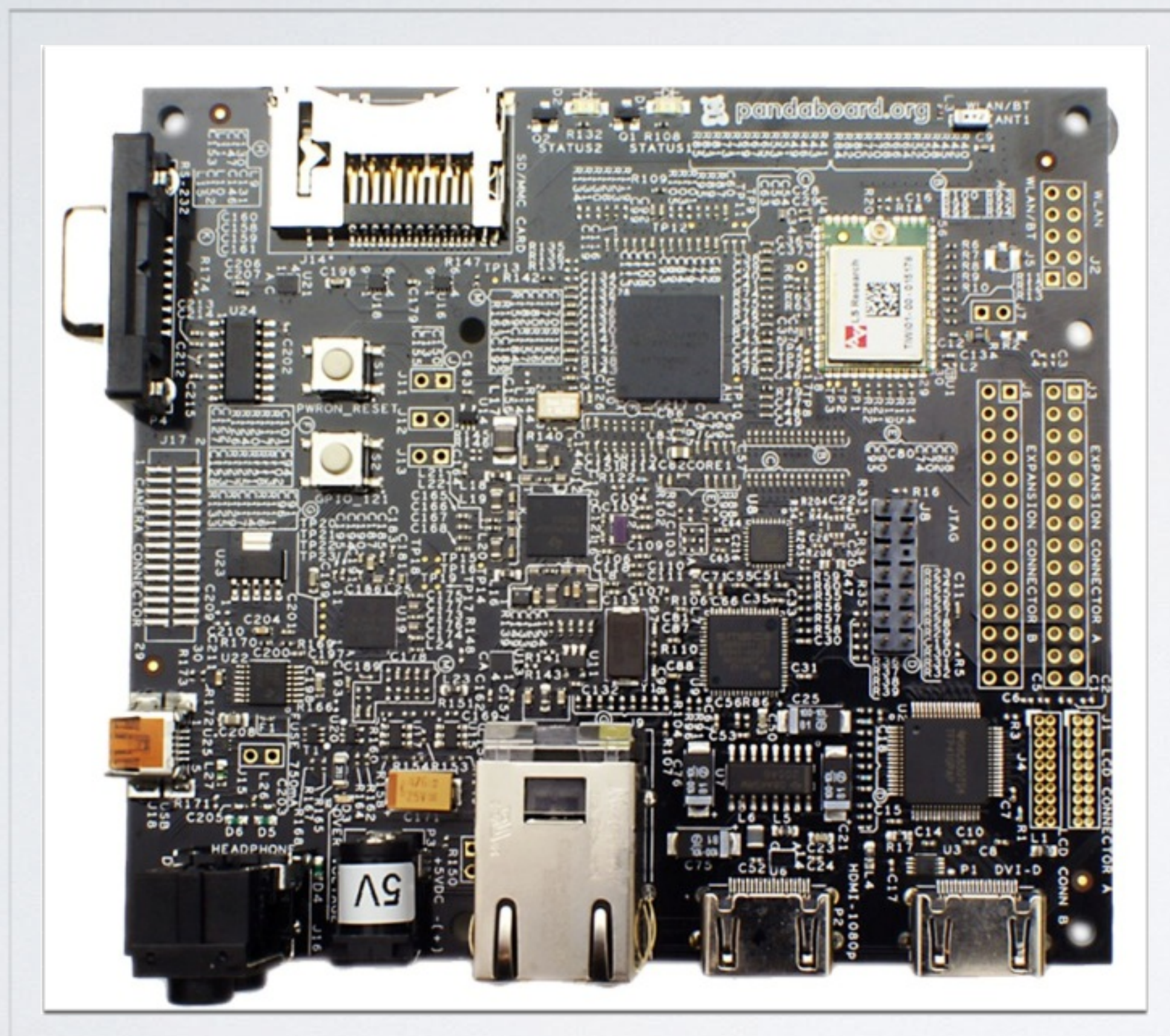


- Asynchronous Multi Processing (AMP)
- Enge Kopplung
- Vermeidung von Virtual Machine Monitor oder Hypervisor
- Statische Konfiguration

PROTOTYPISCHE UMSETZUNG



PROTOTYPISCHE UMSETZUNG



Pandaboard:

- TI OMAP5 SoC
- 2 x ARM Cortex-A15 APUs
- GPU, IPU, DSS, USB3 ...

IT-SICHERHEIT

RTOS



mobileOS

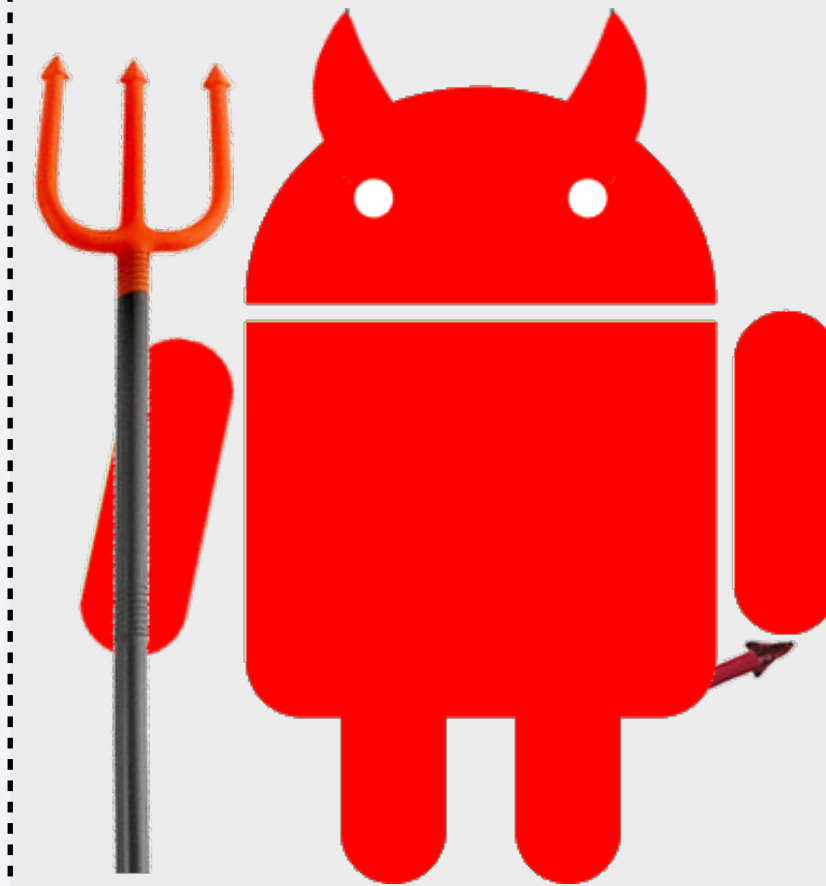


IT-SICHERHEIT

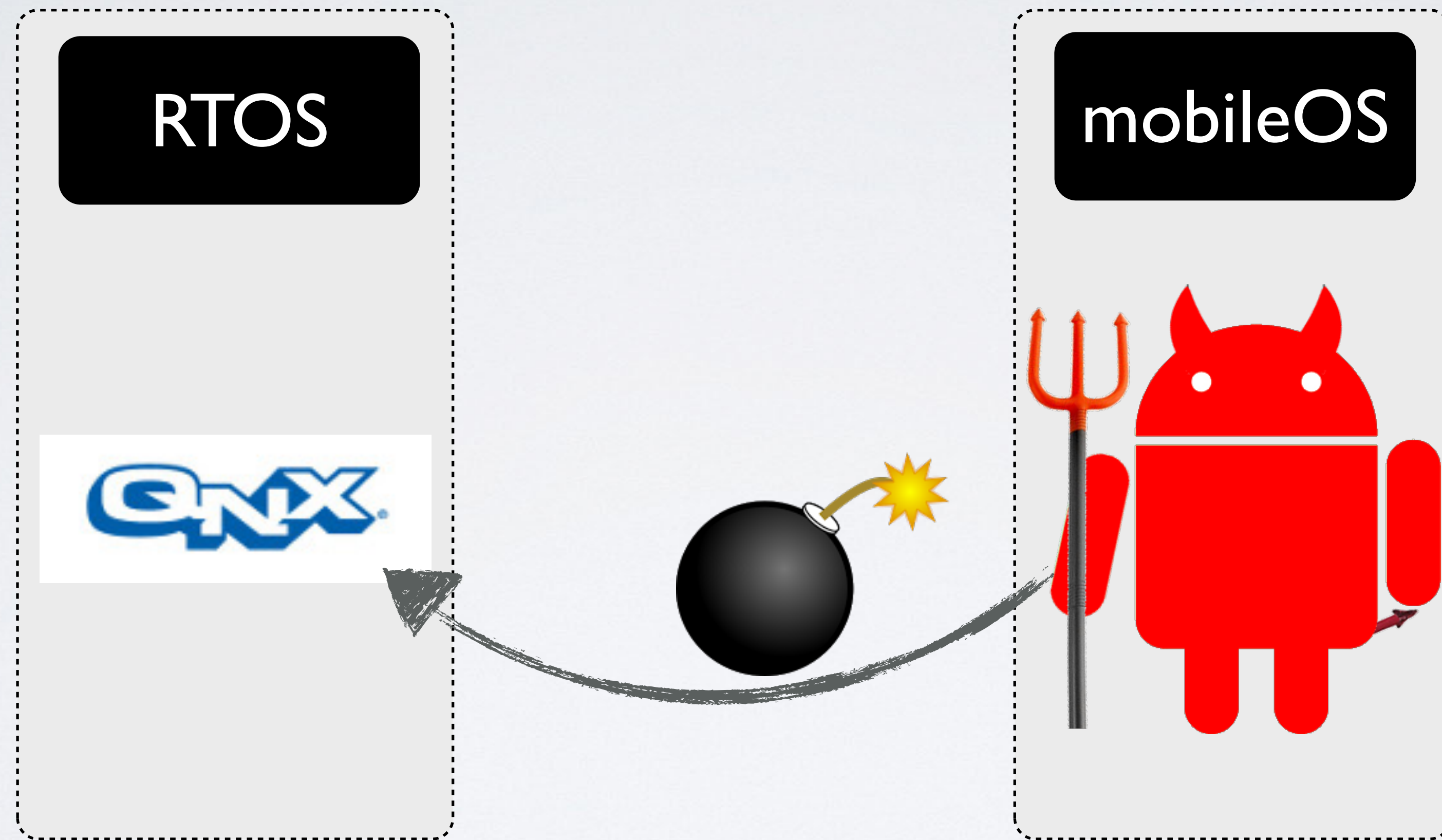
RTOS

The QNX logo is displayed in a blue, stylized font with a registered trademark symbol.

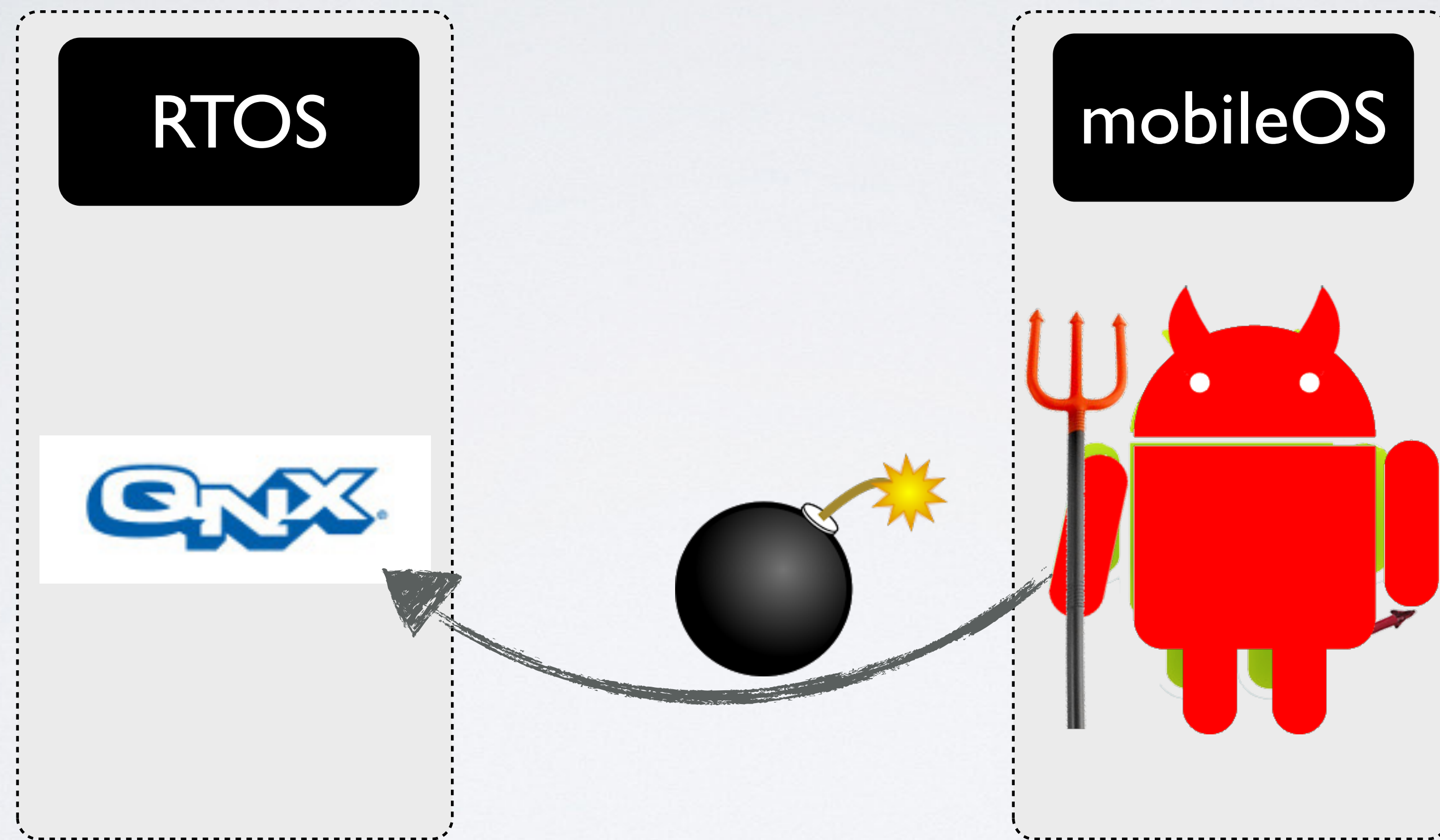
mobileOS



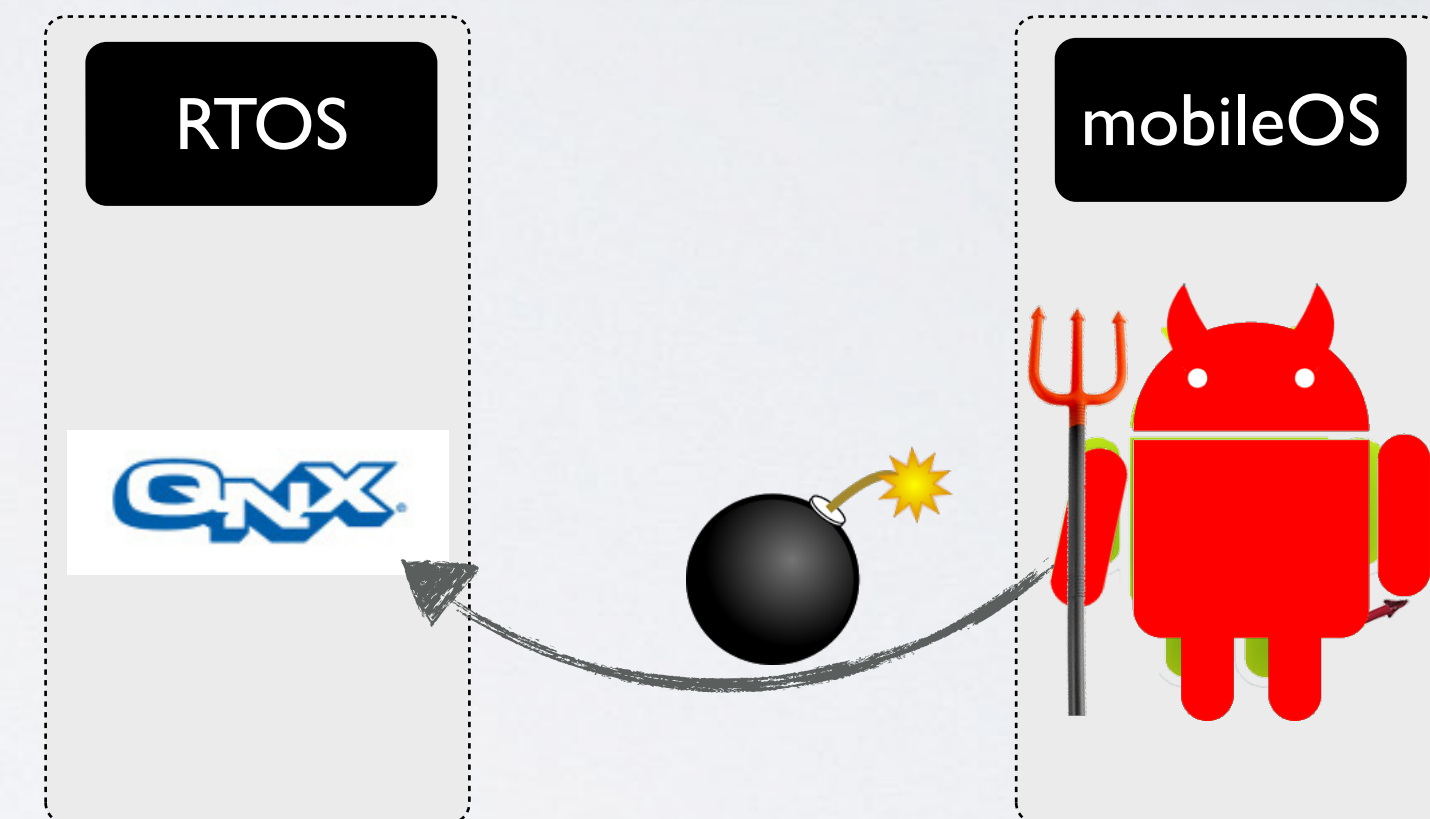
IT-SICHERHEIT



ANGRIFFS VEKTOREN



ANGRIFFS VEKTOREN



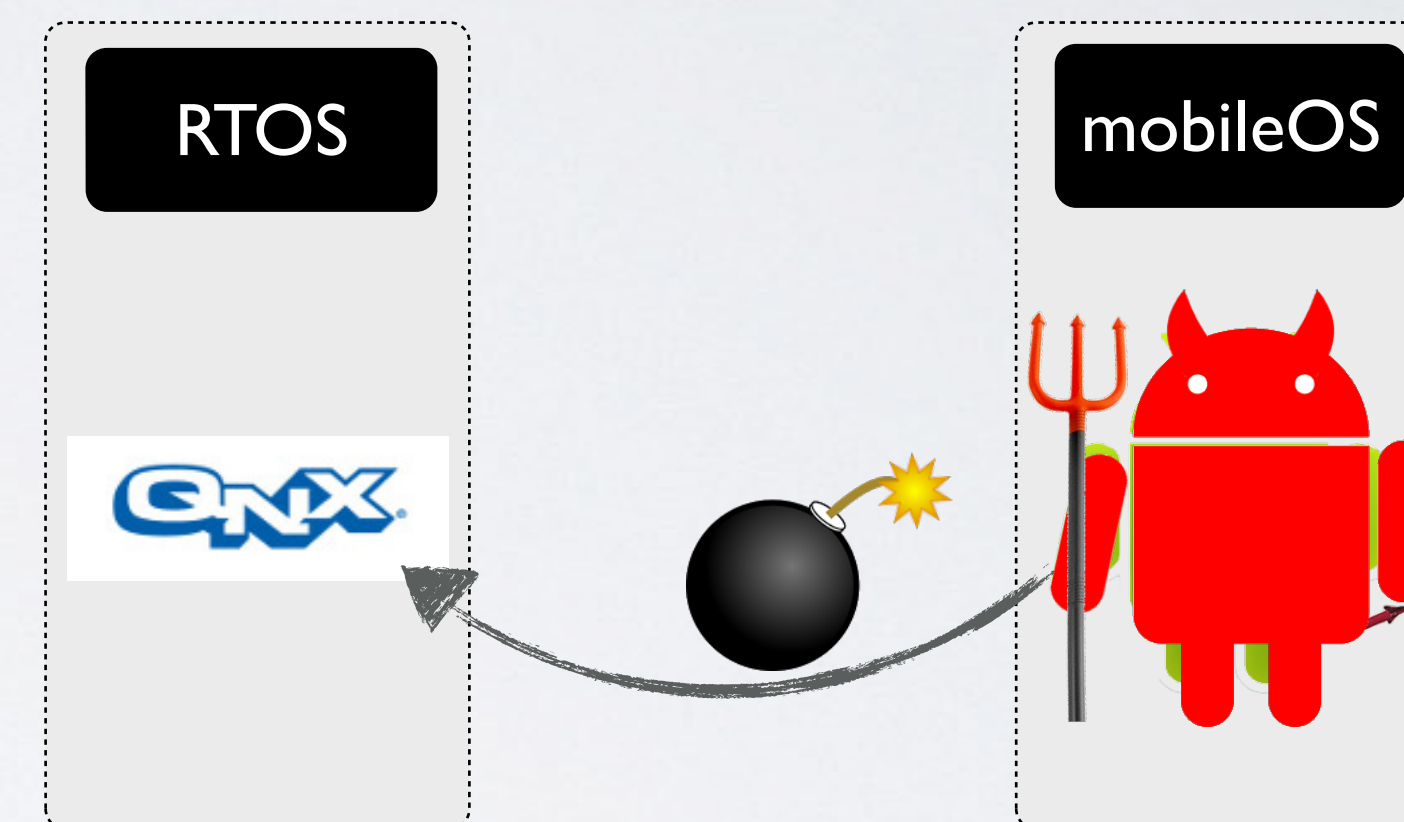
ANGRIFFS VEKTOREN

Denial of Service

Manipulation

Ausspähen von Daten

Unerlaubte Zugriffe



SCHUTZZIELE

Denial of Service

Manipulation

Ausspähen von Daten

Unerlaubte Zugriffe

SCHUTZZIELE

Denial of Service

Manipulation

Isolation

Vertrauen

Ausspähen von Daten

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SCHUTZZIELE

Denial of Service

Manipulation

Isolation

Vertrauen

Ausspähen von Daten

Unerlaubte Zugriffe



KOPPLUNG



Gemeinsames UI



Kombiinstrument



Unterhaltung



Navigation

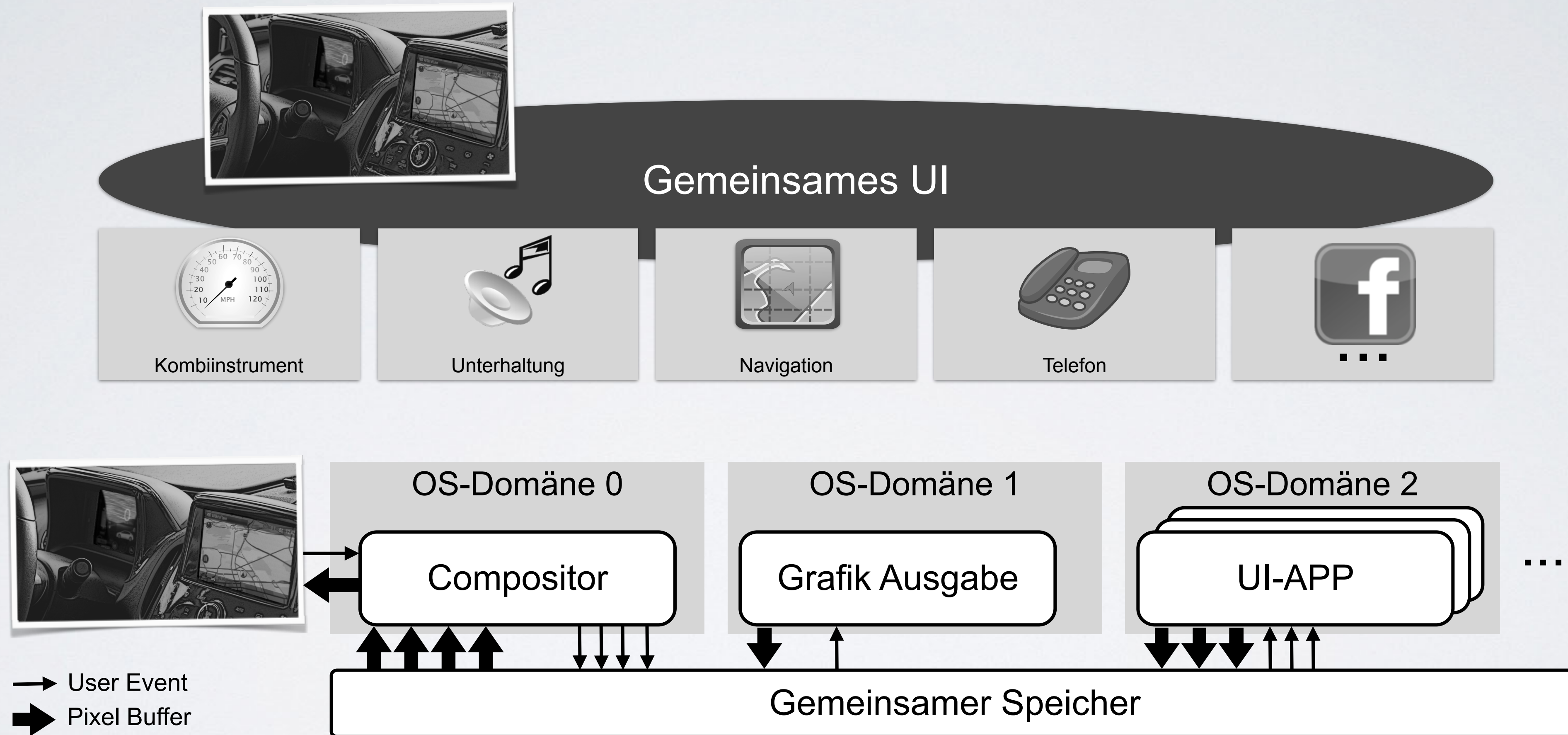


Telefon

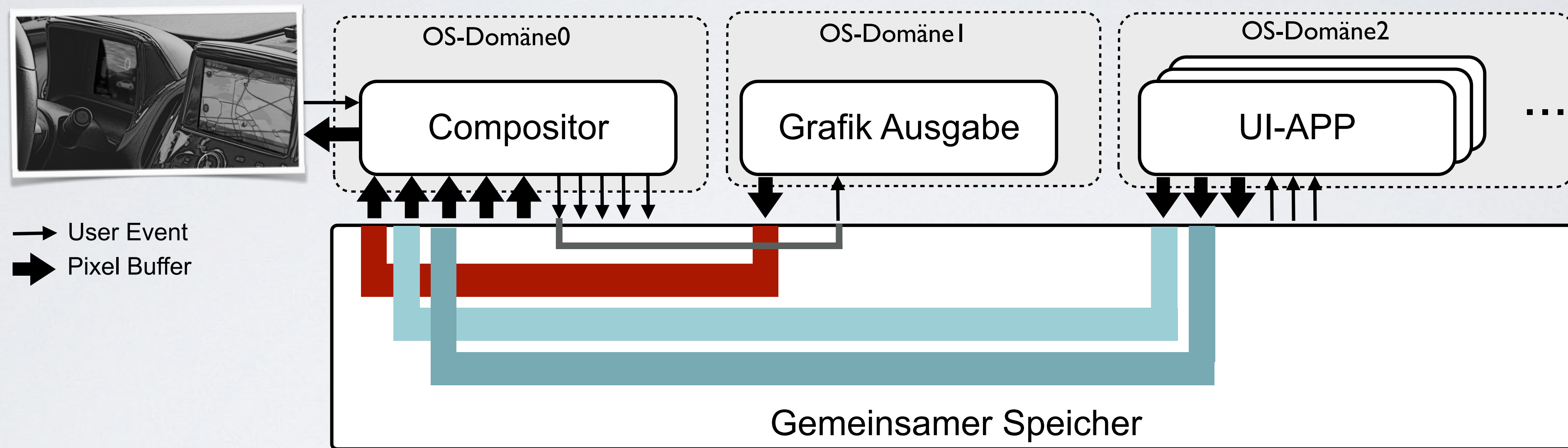


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KOPPLUNG

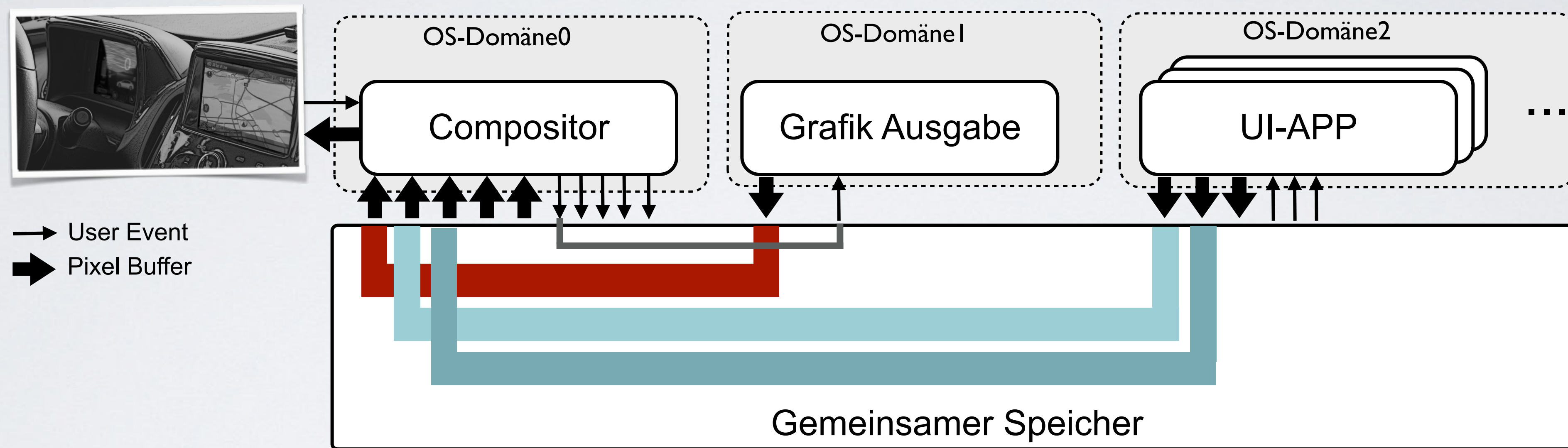


KOMMUNIKATIONSKANÄLE



TPM = Trusted Platform Module

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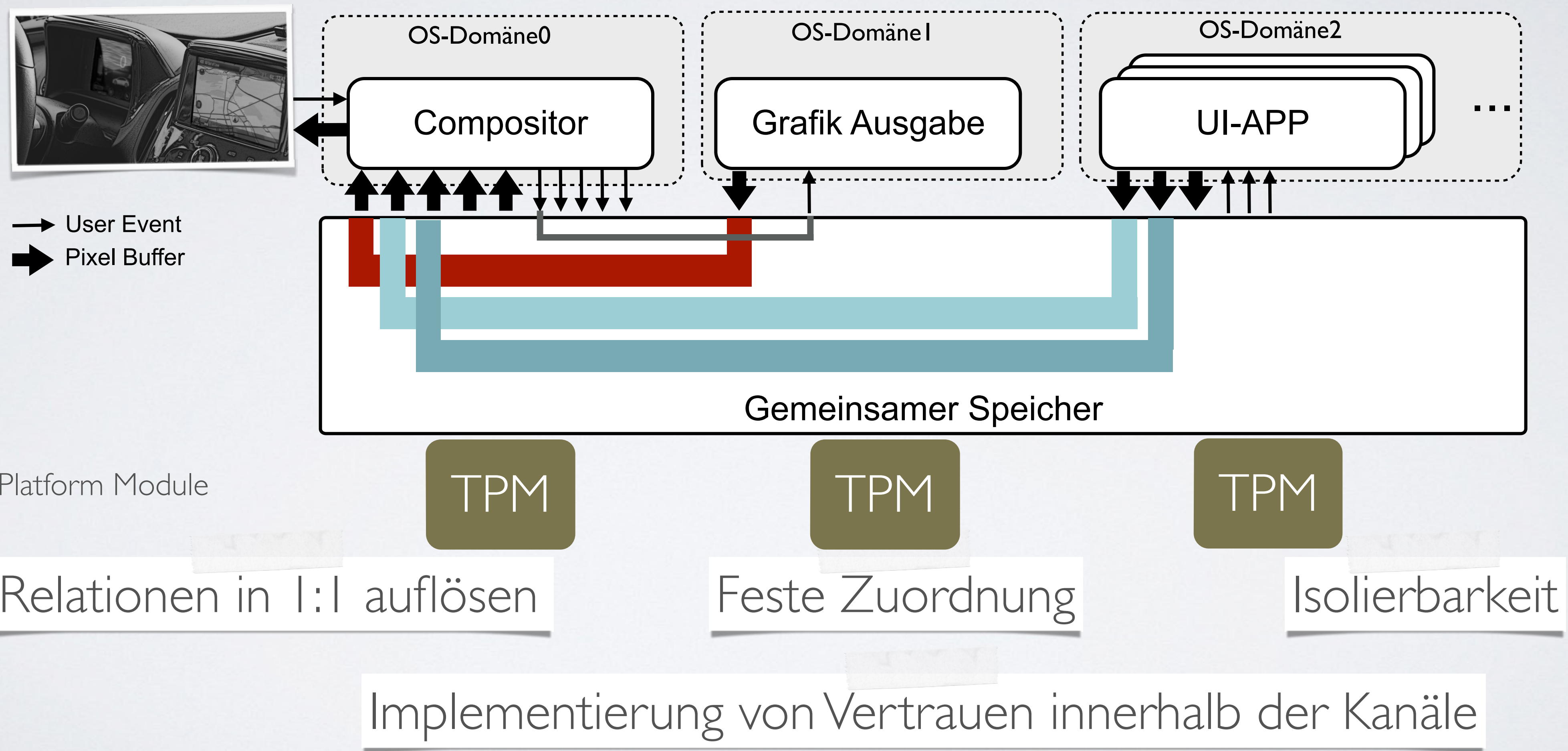
Relationen in 1:1 auflösen

Feste Zuordnung

Isolierbarkeit

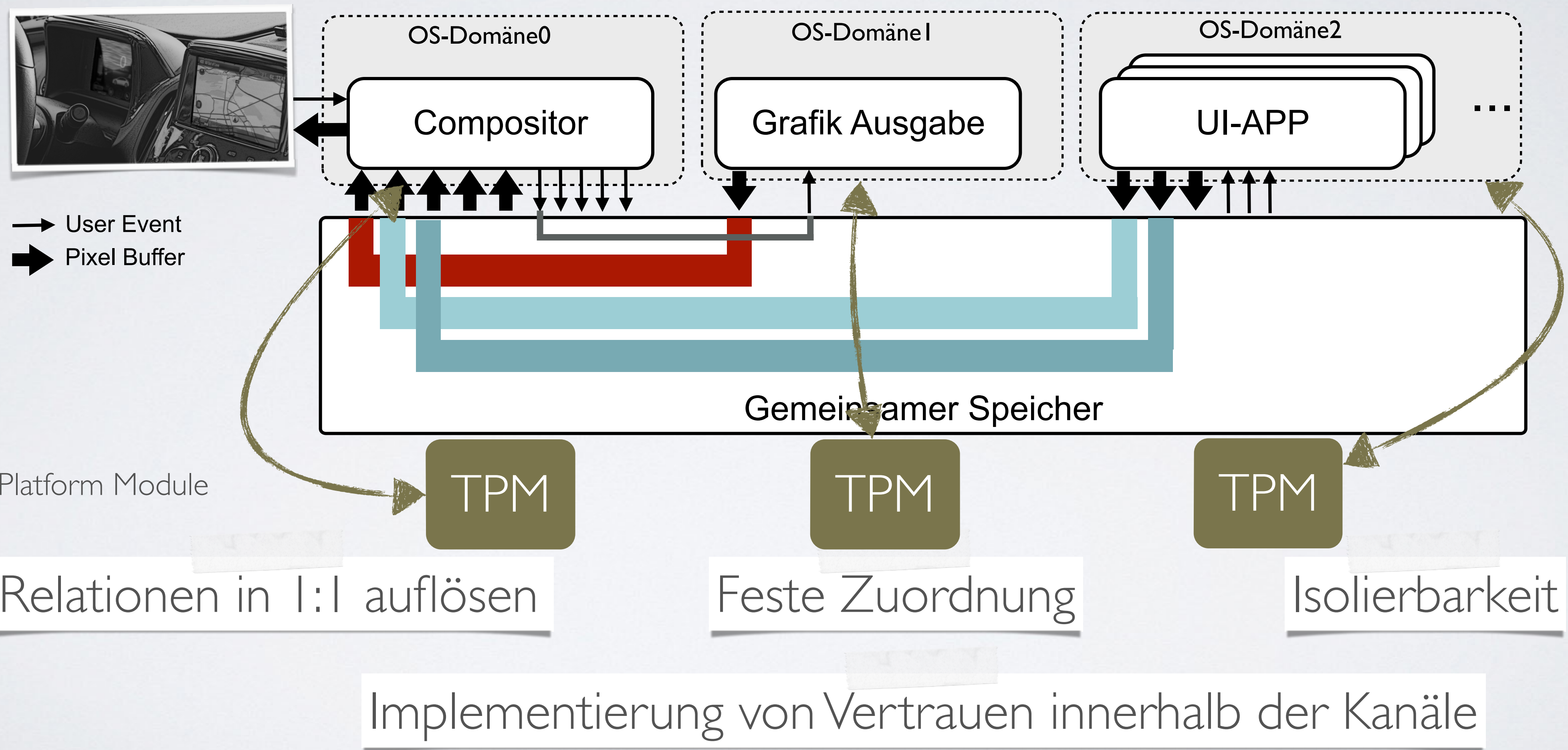
Implementierung von Vertrauen innerhalb der Kanäle

KOMMUNIKATIONSKANÄLE



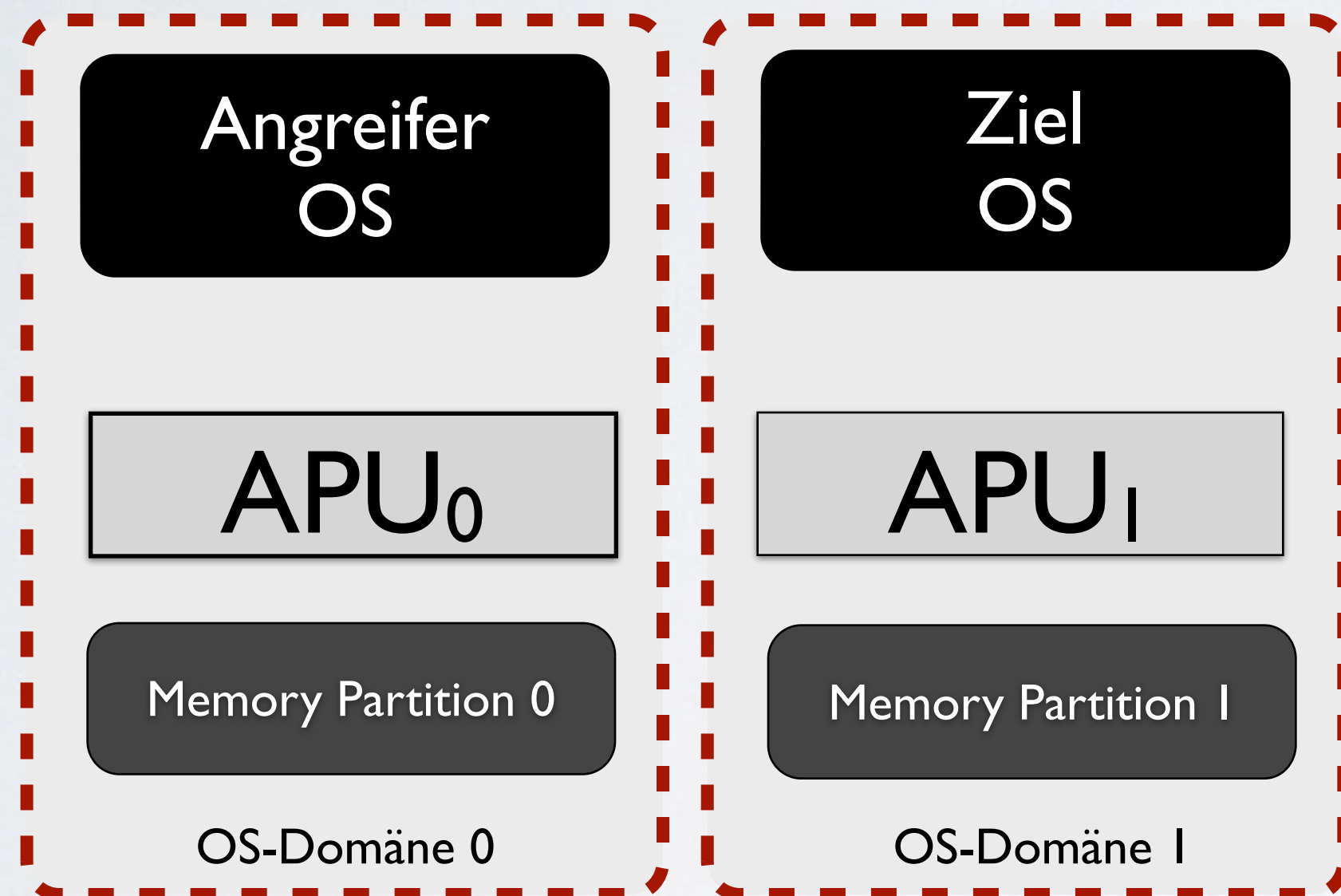
TPM = Trusted Platform Module

KOMMUNIKATIONSKANÄLE

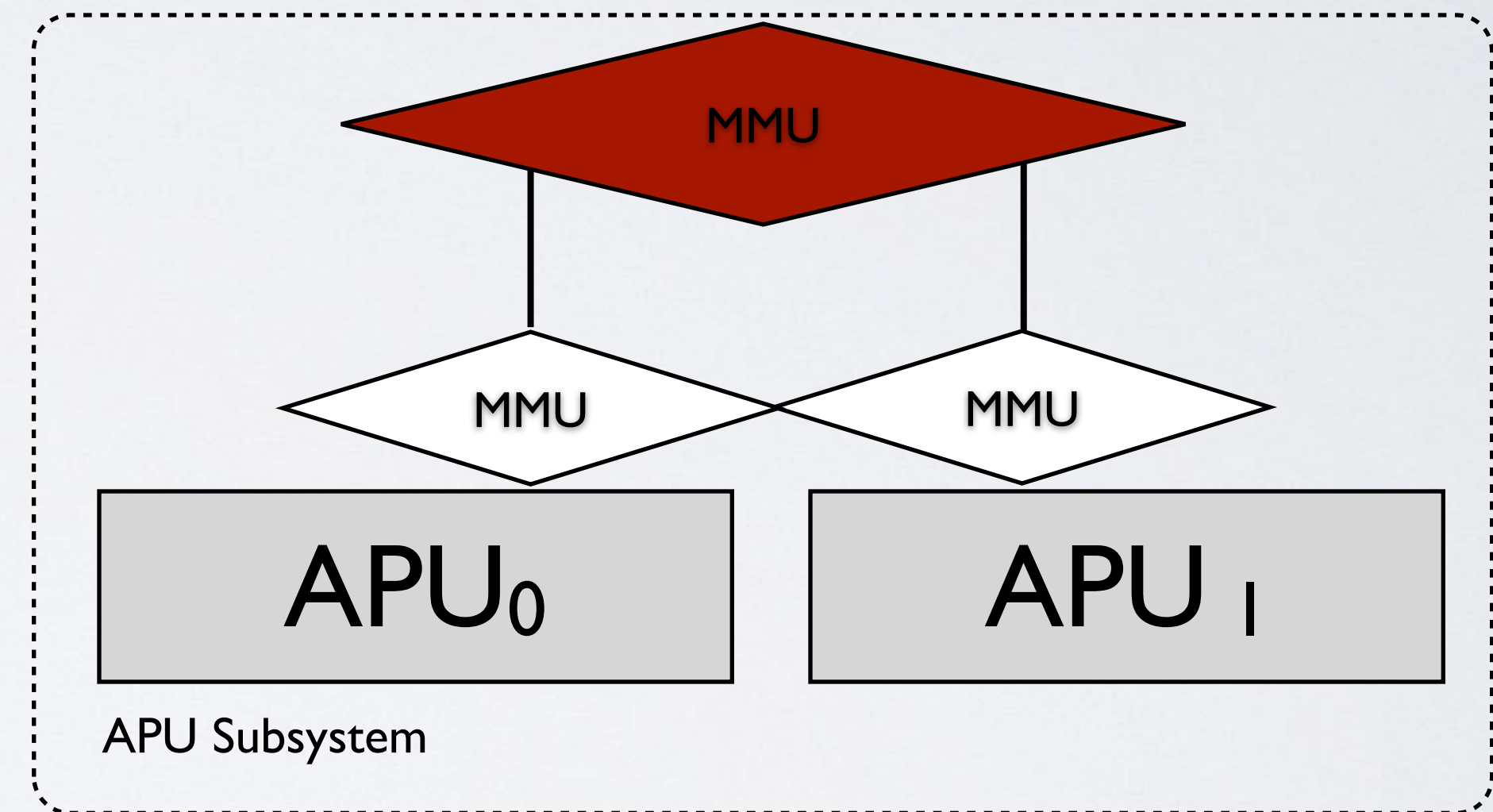
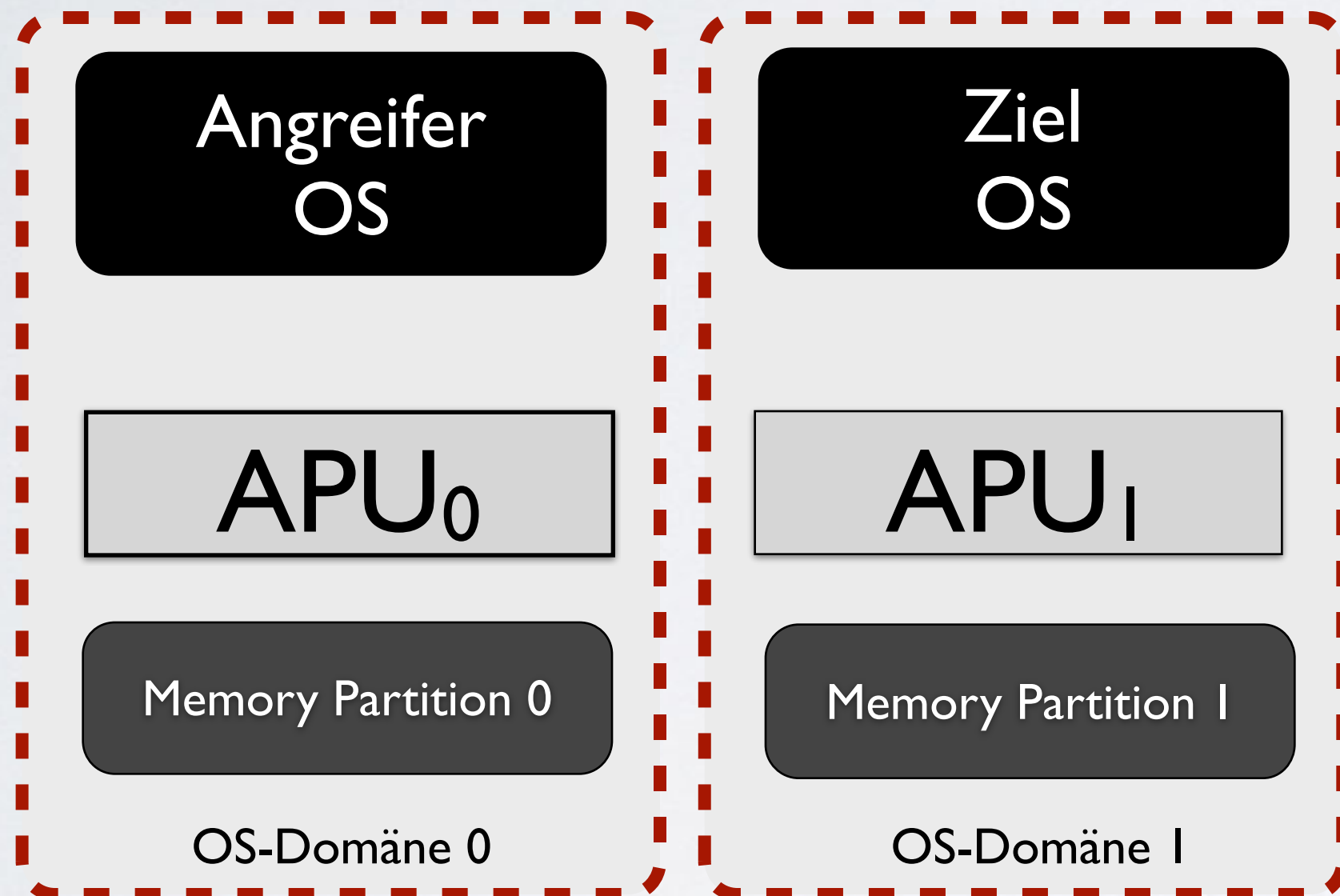


TPM = Trusted Platform Module

ISOLATION

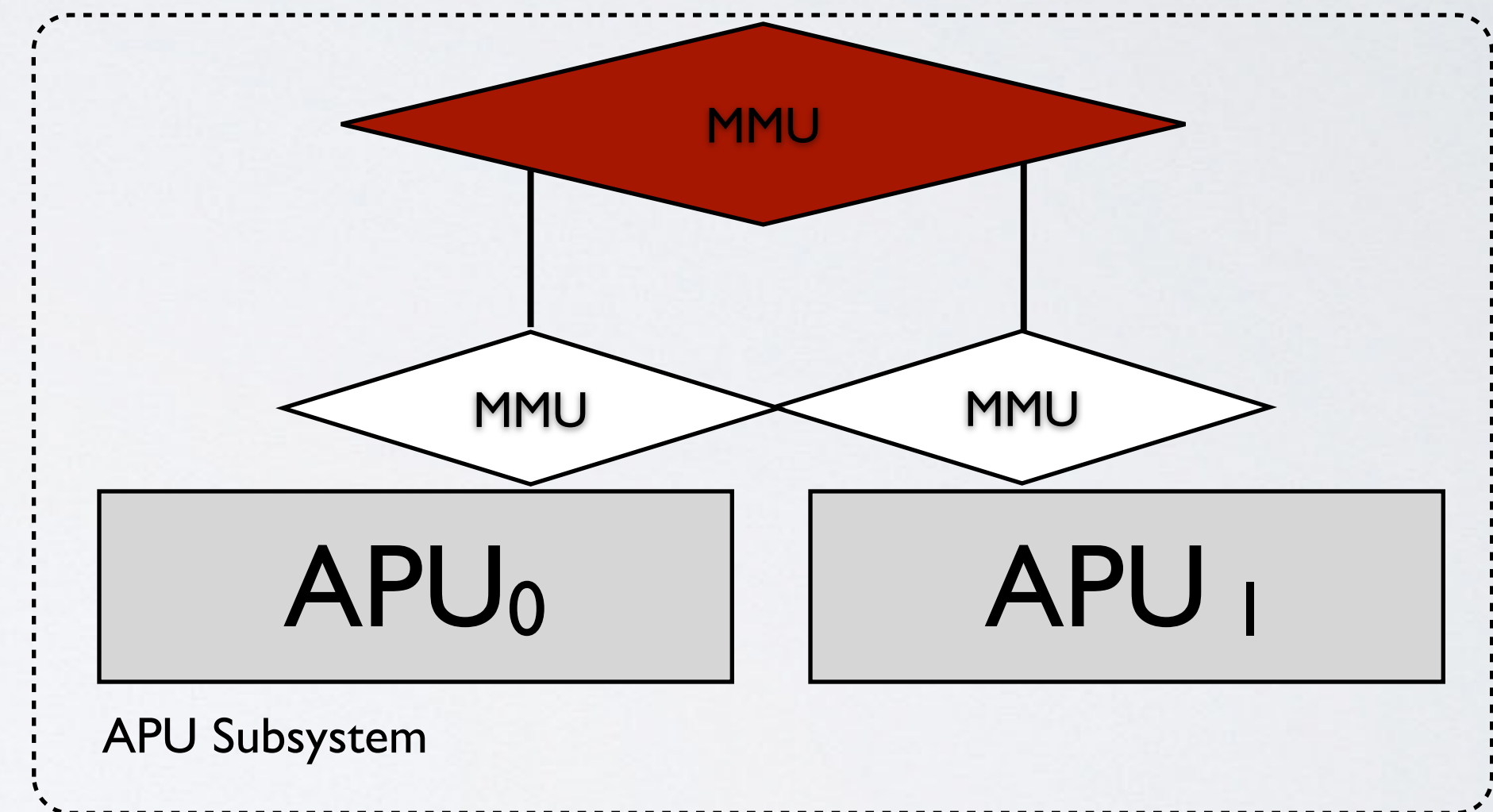
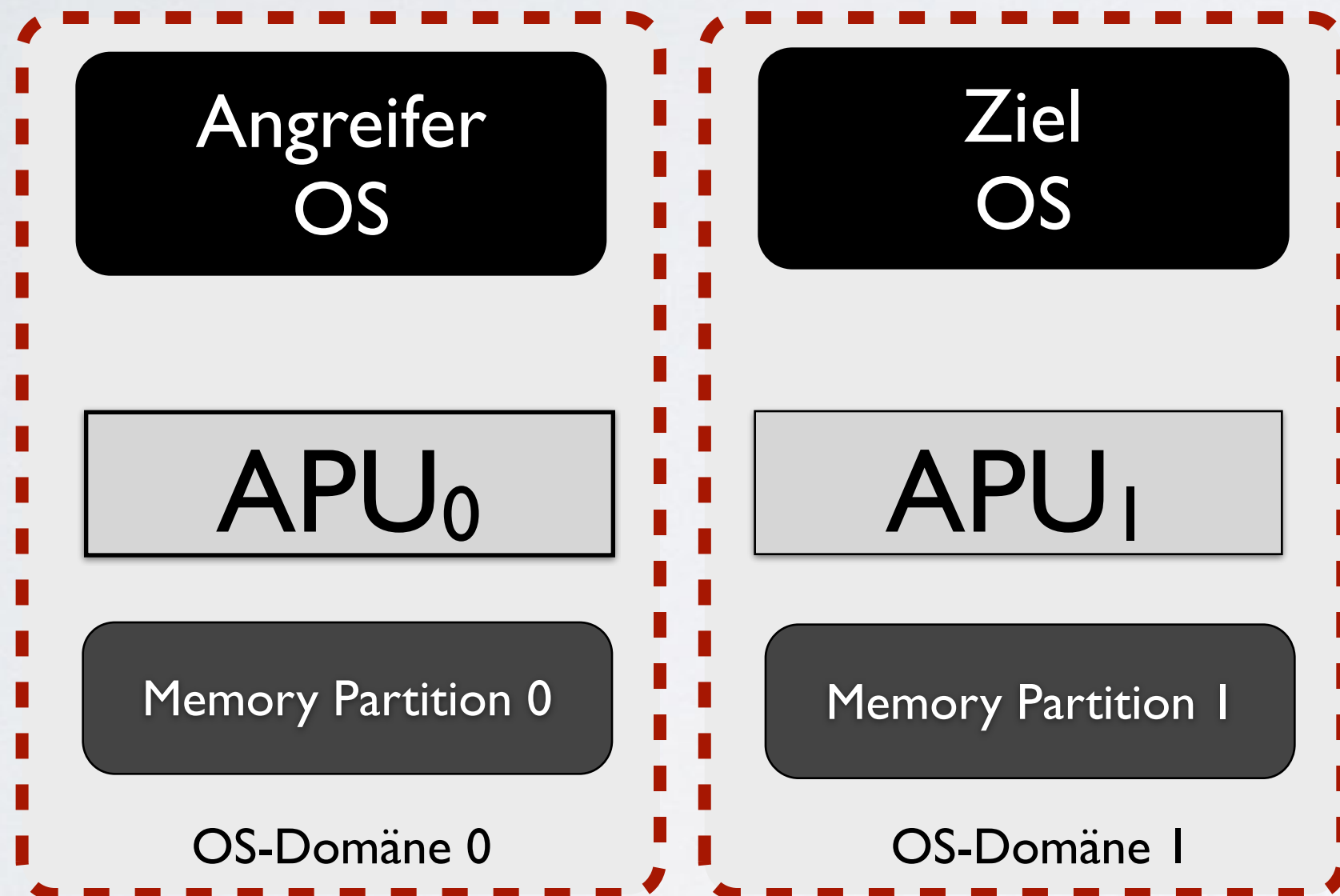


ISOLATION



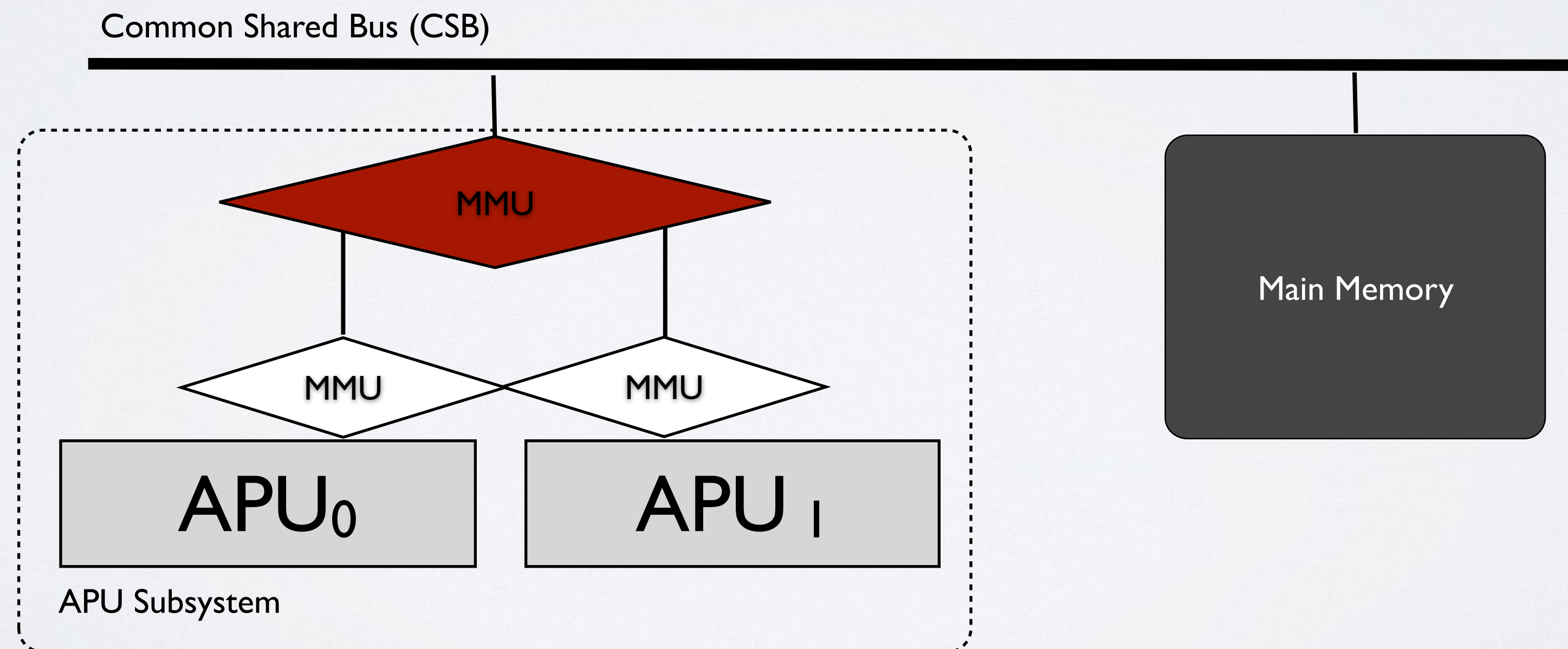
MMU = Memory Management Unit

ISOLATION

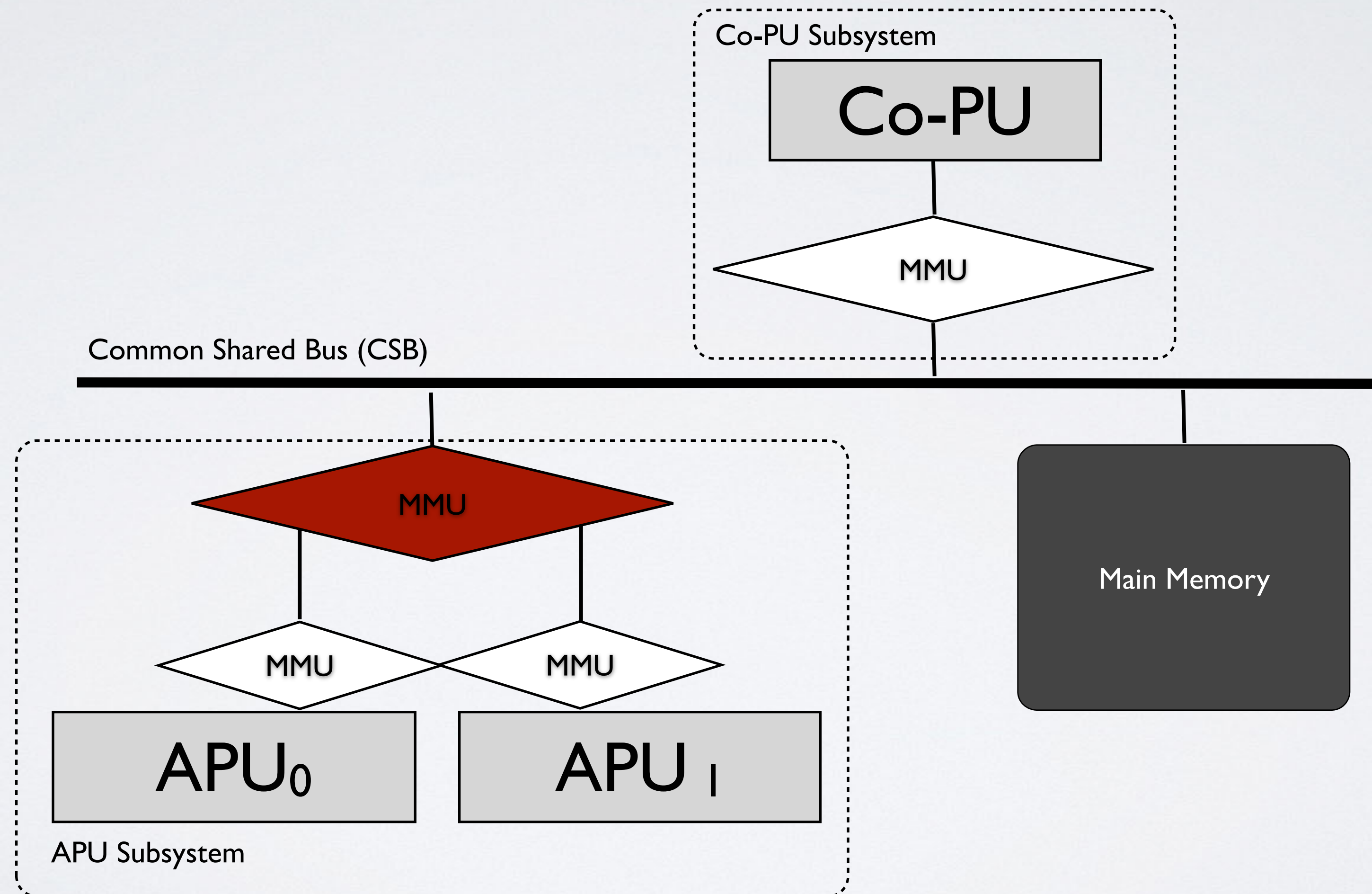


MMU = Memory Management Unit

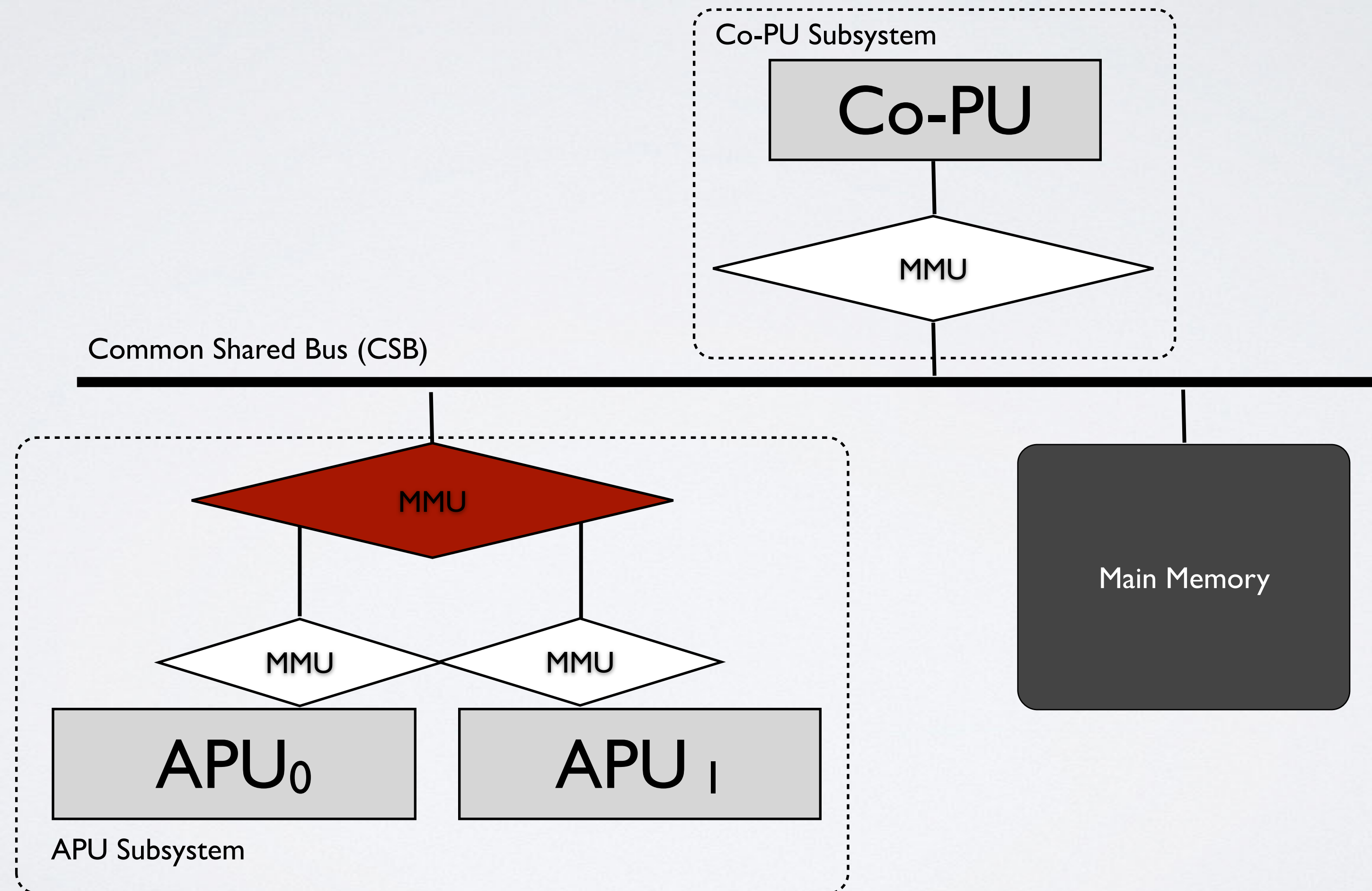
ISOLATION



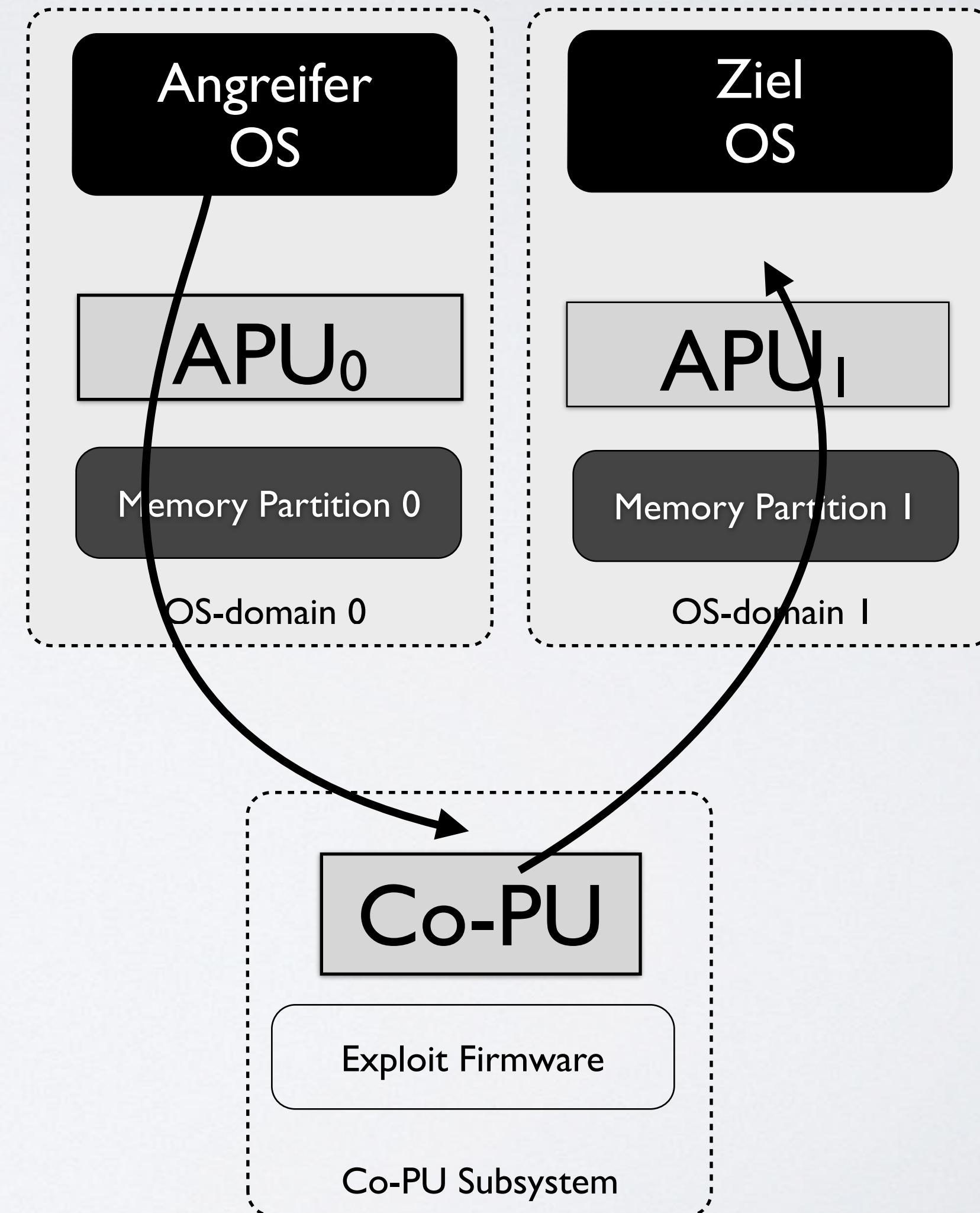
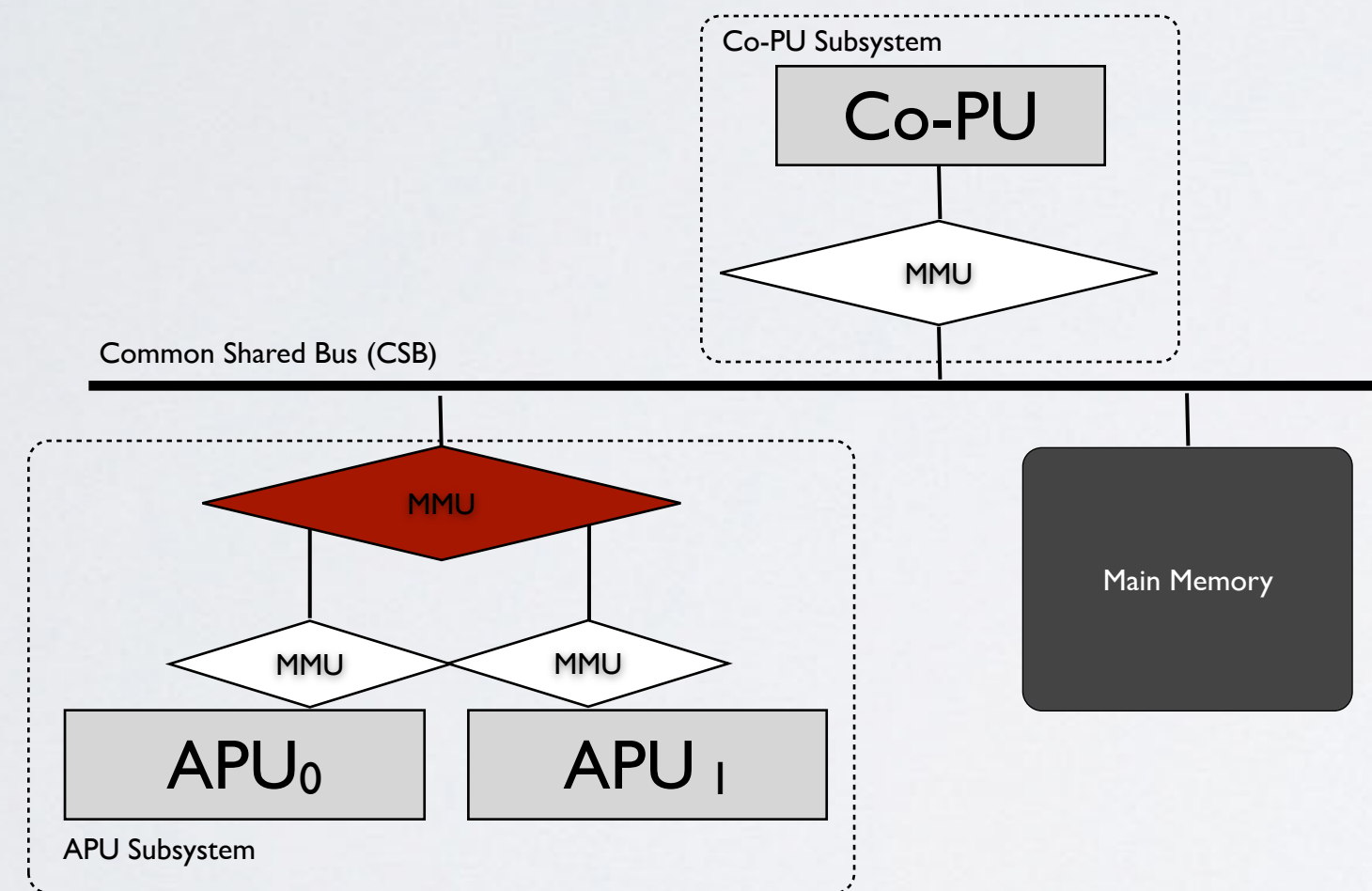
ISOLATION



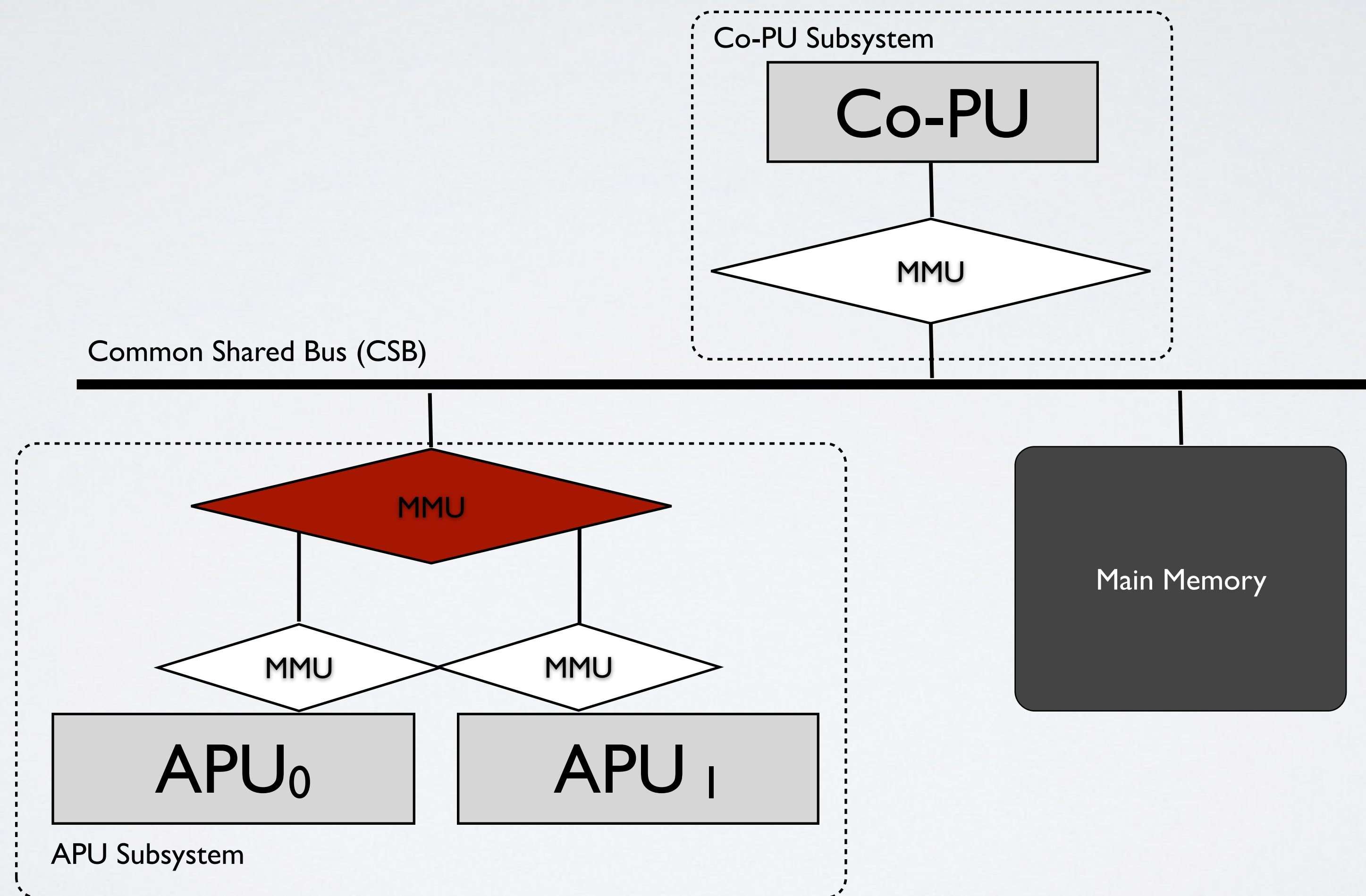
DURCHBRECHEN DER ISOLATION



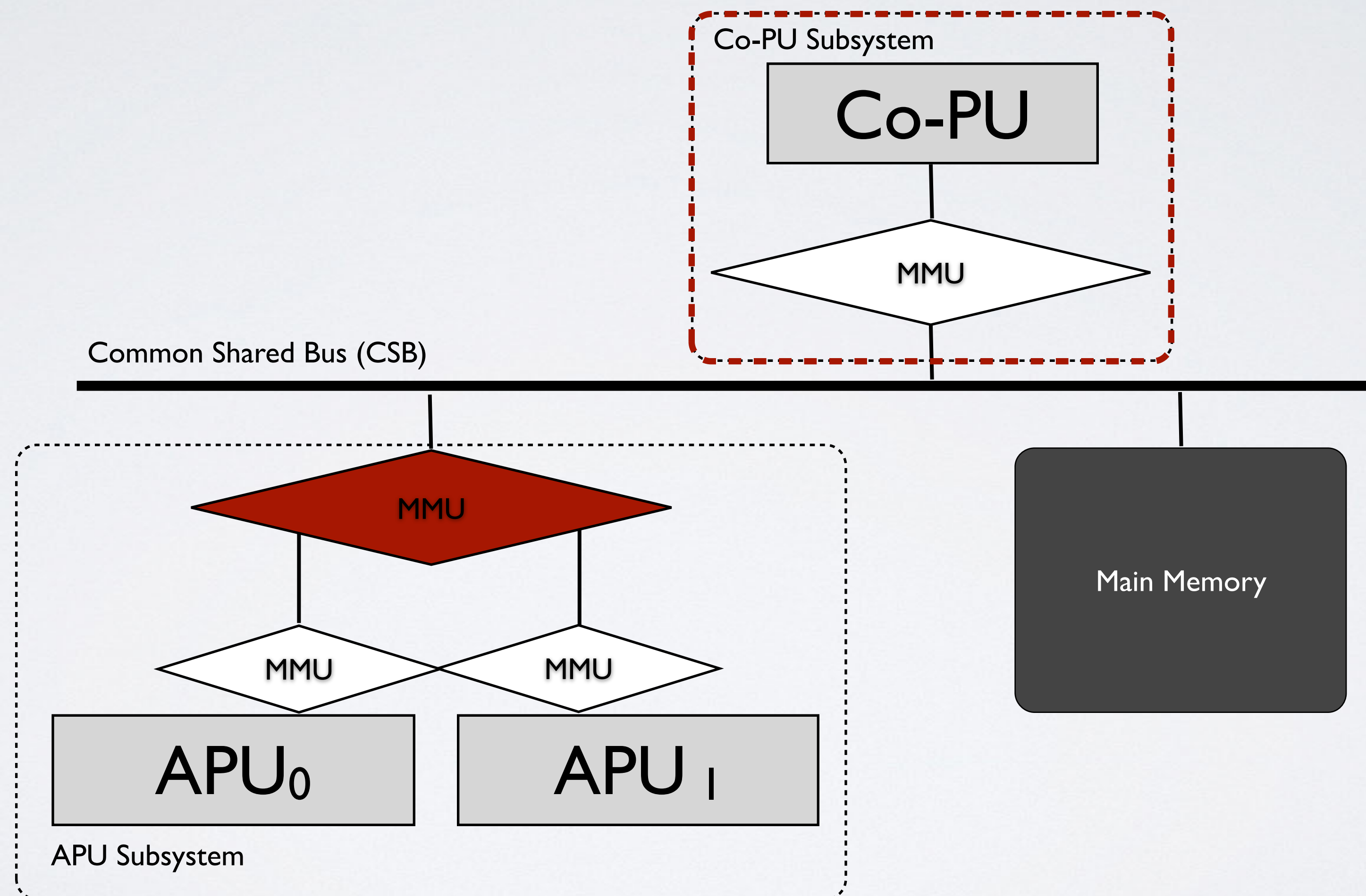
DURCHBRECHEN DER ISOLATION



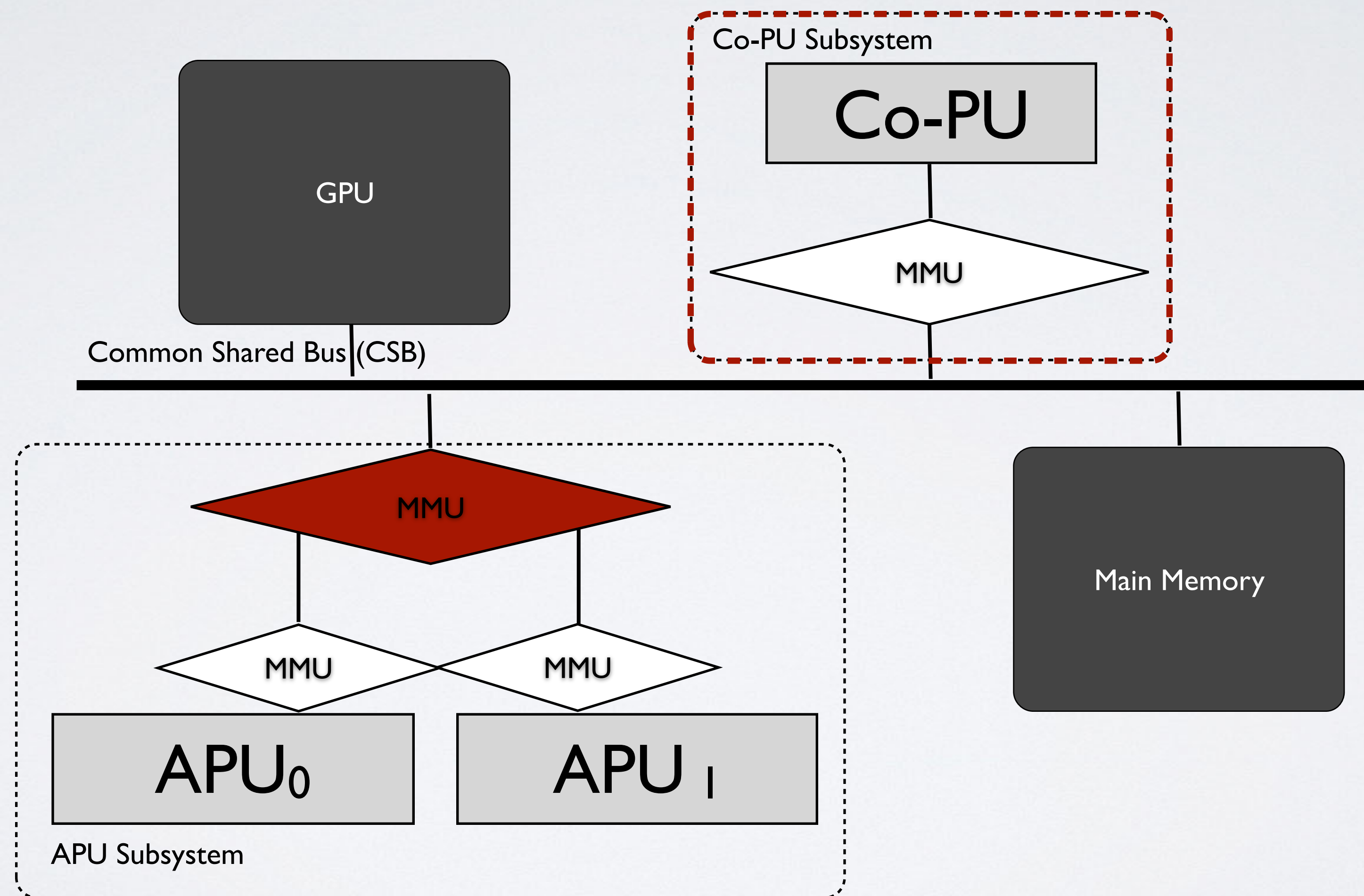
ERWEITERN DER ISOLATION



ERWEITERN DER ISOLATION



ERWEITERN DER ISOLATION



ZUSAMMENFASSUNG

- Spezielles Einsatzgebiet
- Identifikation der Berührungspunkte
- Gerätelogikanpassung -> Isolation
- Anforderungen für Kommunikationsszenario
- Konzept für TPM



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