

# SEMPEROS: A Distributed Capability System

Matthias Hille<sup>†</sup>

Nils Asmussen<sup>†</sup> \*

Pramod Bhatotia<sup>‡</sup>

Hermann Härtig<sup>†</sup> \*

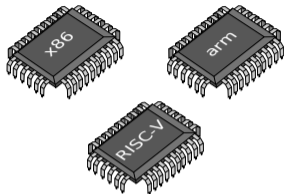
<sup>†</sup>Technische Universität Dresden

<sup>‡</sup>The University of Edinburgh

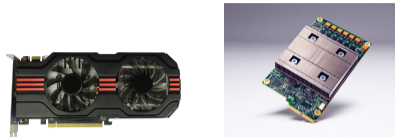
\* Barkhausen Institut

Dresden, 2019/06/21

# Hardware Environment



General-purpose cores



Accelerators



Memory

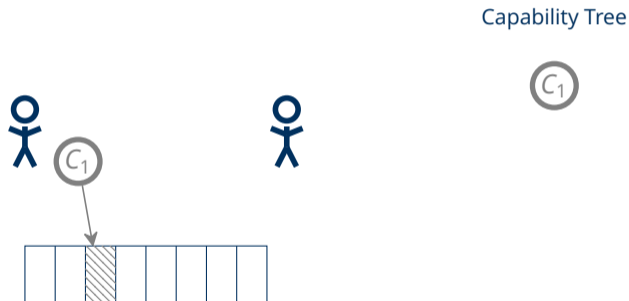
# Rights Management – Capability Systems



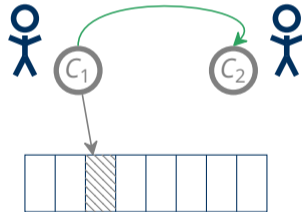
# Rights Management – Capability Systems



# Rights Management – Capability Systems



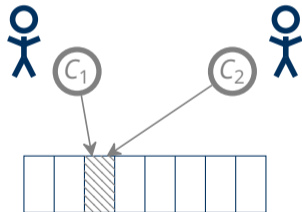
# Rights Management – Capability Systems



Capability Tree



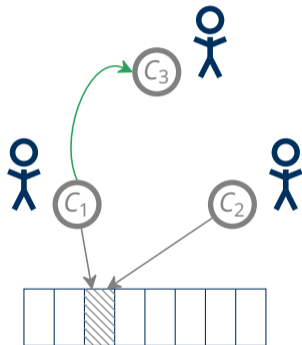
# Rights Management – Capability Systems



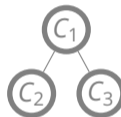
Capability Tree



# Rights Management – Capability Systems

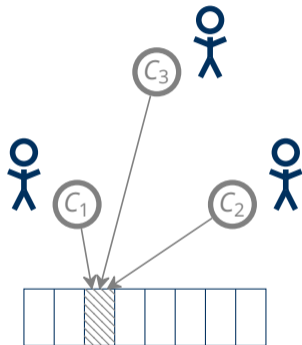


Capability Tree

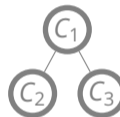




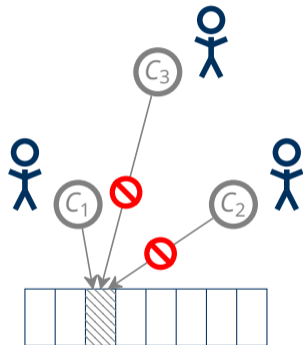
# Rights Management – Capability Systems



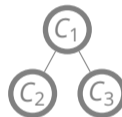
Capability Tree



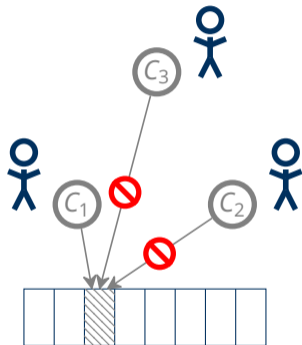
# Rights Management – Capability Systems



Capability Tree



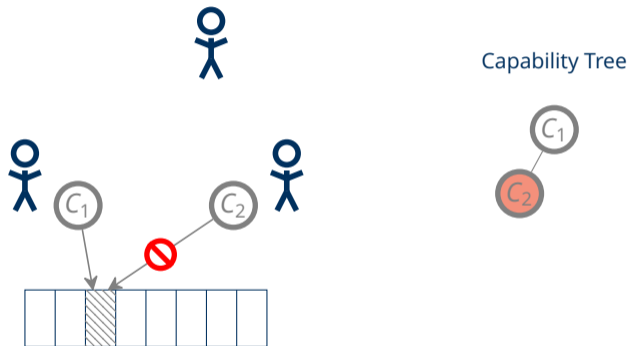
# Rights Management – Capability Systems



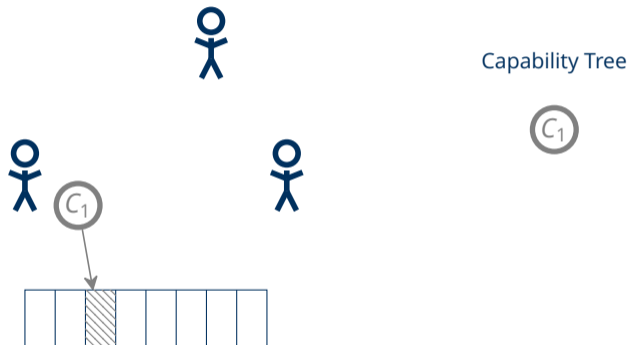
Capability Tree



# Rights Management – Capability Systems

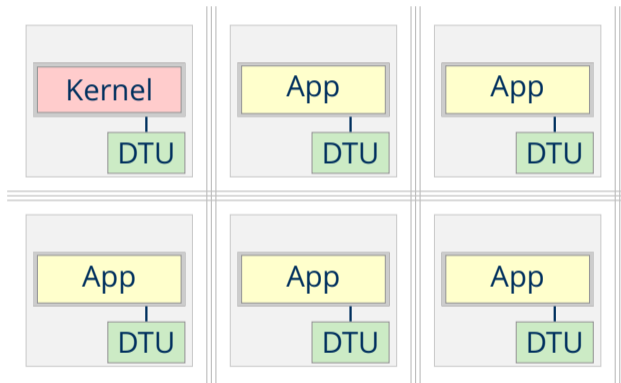


# Rights Management – Capability Systems

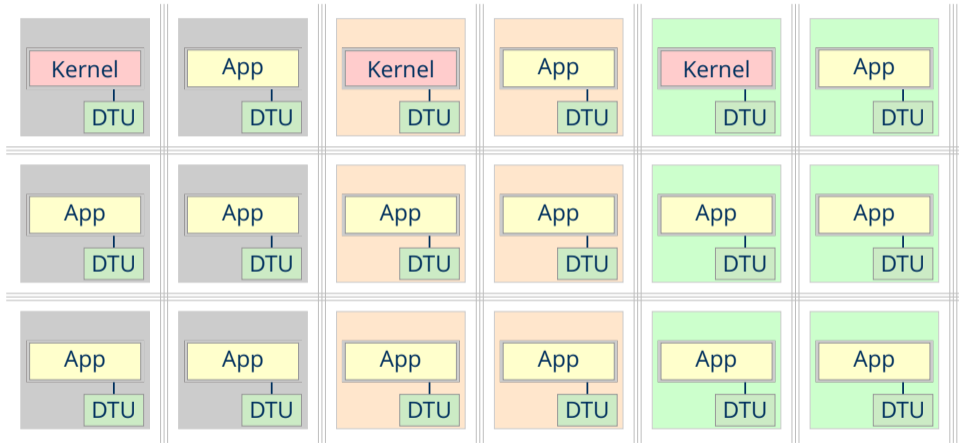


# Do Capability Systems Scale?

# Base Capability System - M<sup>3</sup>

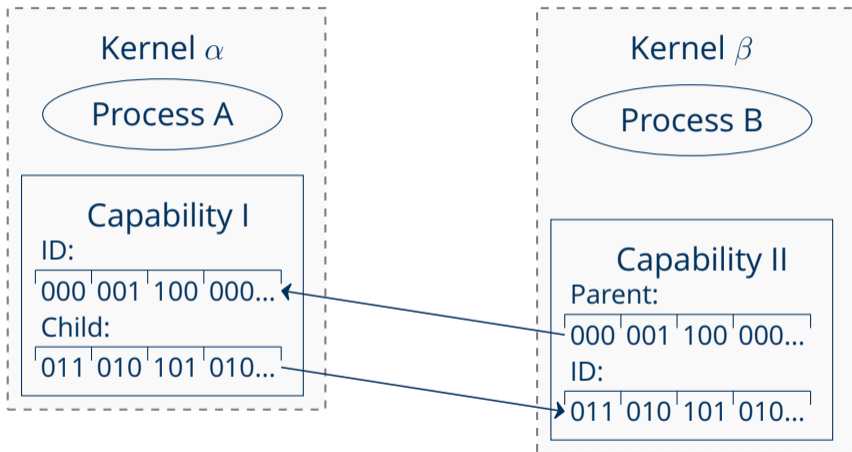


# SEMPEROS

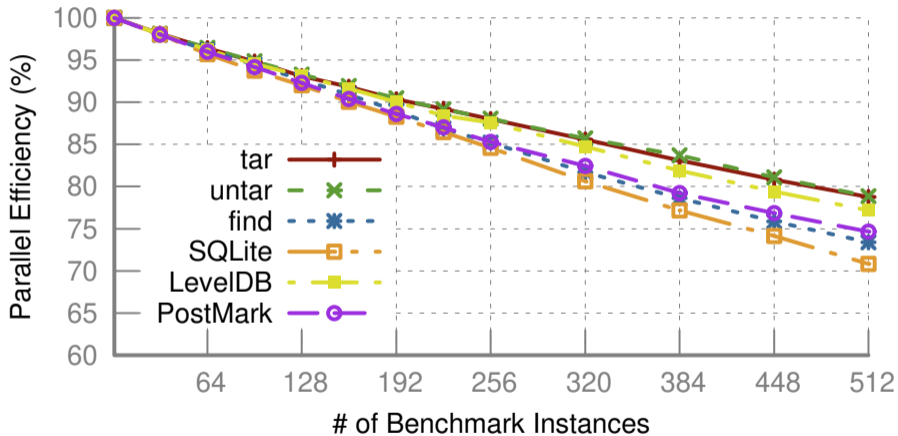




# The Distributed Capability System



# Scalability



# SEMPEROS: A Distributed Capability System

Come and visit our talk!

**Thursday, July 11, 2019 at 5:35 pm**

Track 1: Exotic Kernel Features #2