TECHNISCHE UNIVERSITÄT DRESDEN

ZIB

The Hebrew University of Jerusalem

FFMK – A FAST AND FAULT-TOLERANT MICROKERNEL-BASED SYSTEM FOR EXASCALE COMPUTING

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2015NOVEMBER17RUNTIME&OS BOF SC15

MOTIVATION/APPROACH

Node OS

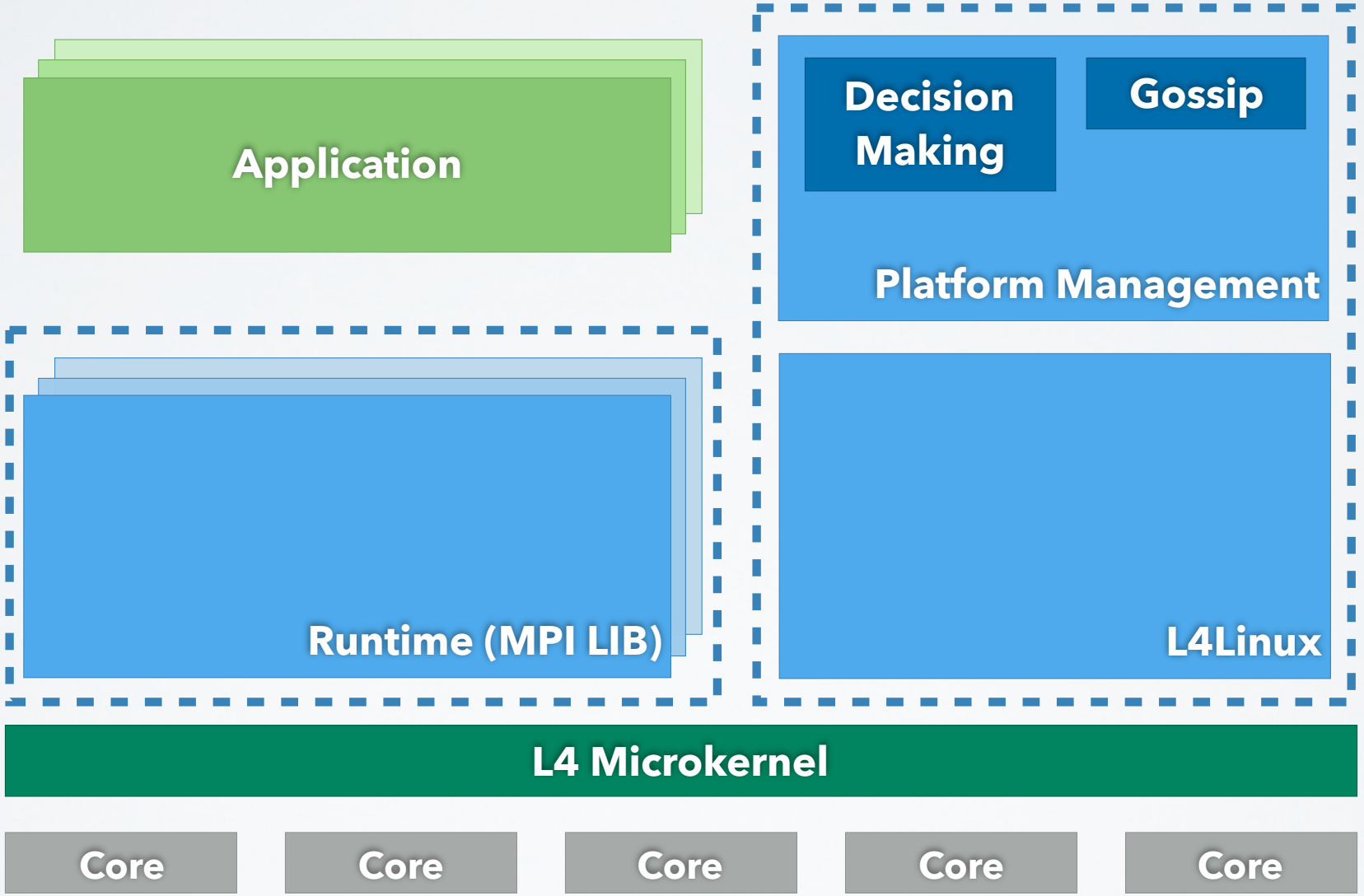
- load management thru OS mechanisms
  - full control over node platform
  - predictability (determinism)
  - OS scheduling (blocking instead of polling)
  - software partitioning (schedulers & capabilities)

MOTIVATION/APPROACH

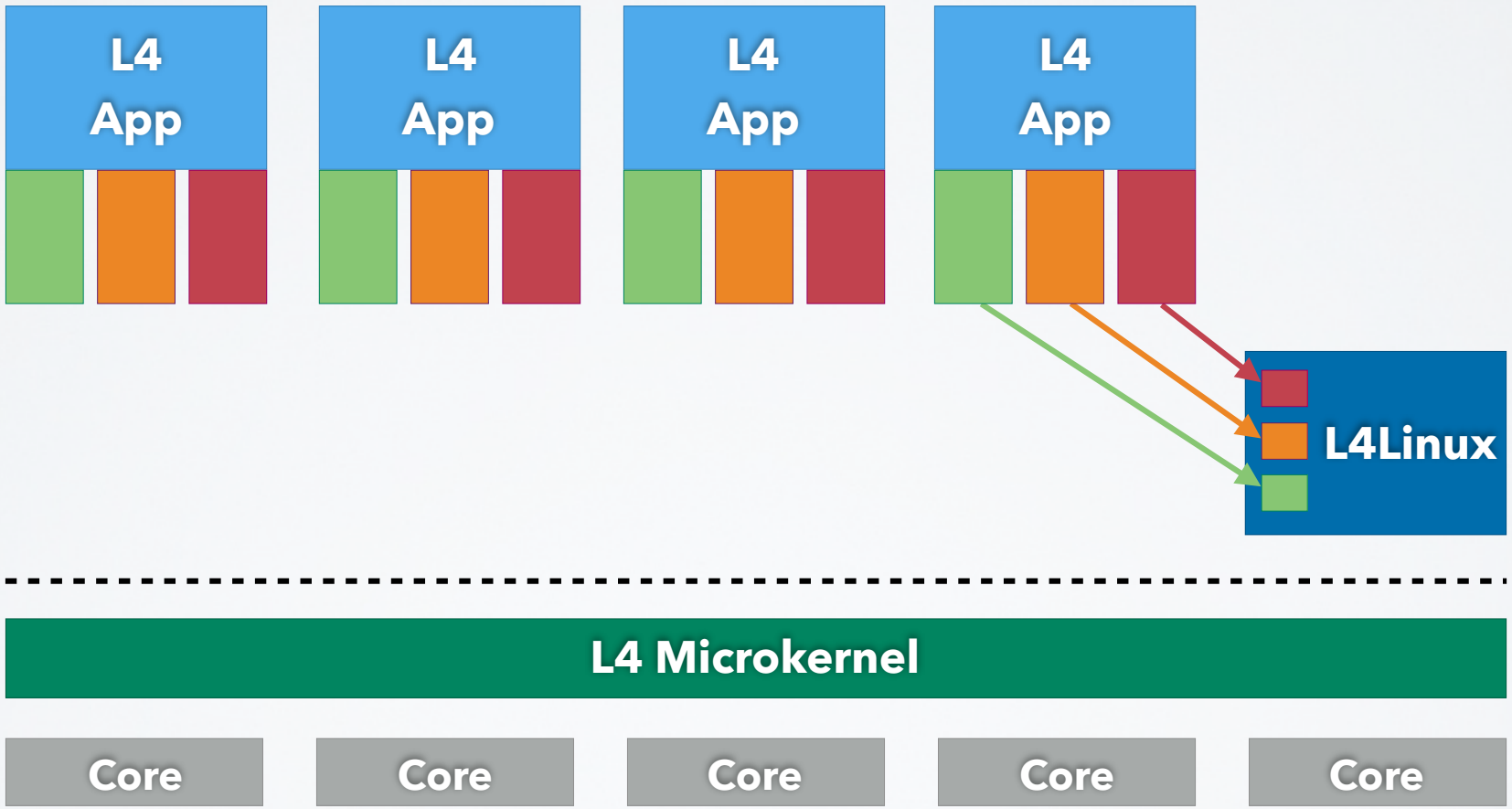
Node OS

- exploit Linux & take it out of the way
  - use microkernel & virtualization
  - specialized LibOS

NODE ARCHITECTURE



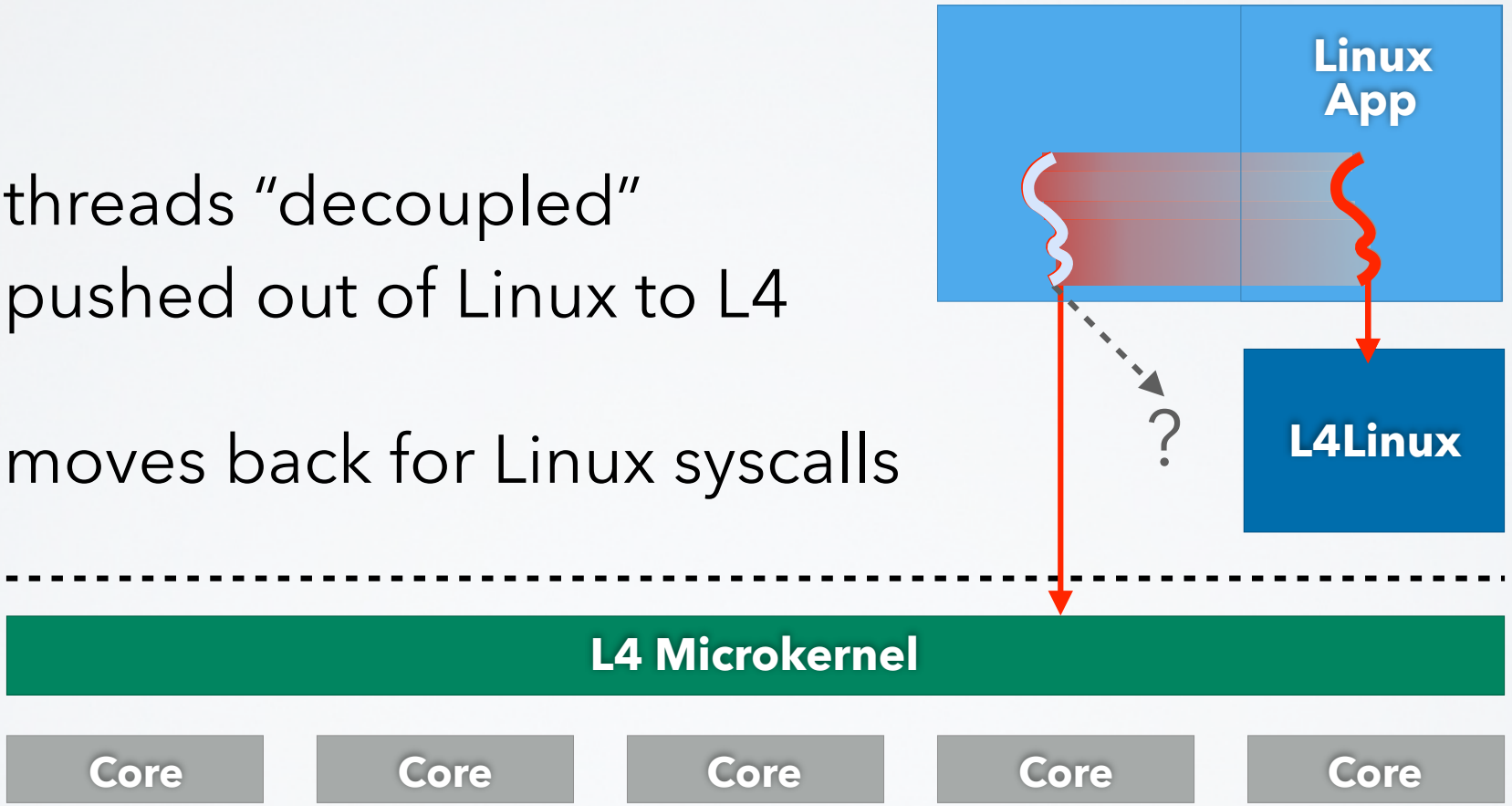
EXECUTION MODEL (1)



EXECUTION MODEL(2)

threads “decoupled”
pushed out of Linux to L4

moves back for Linux syscalls



MORE

global platform control:

- elastic partitions
- Amnon Barak & team:
  gossip and hints
- Alexander Reinefeld:
  checkpointing into on-node storage

LICENSE

- GPL v2:
  L4/Fiasco & L4Linux & L4Re
  caveat: HPC implementation not yet available (immature)
- visit: l4re.org

ACKNOWLEDGMENT

Funded by DFG
Priority Program “Software for Exa-Scale”