# Boosting Efficiency of Serverless Computing Platforms

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# Efficiency of serverless platforms

Current serverless platforms are often very inefficient:

- Inter-function dependencies are not considered in deployment and scheduling
- Fine-grained functions result in repeated deployment of the same runtimes + libraries
- Platforms do not differentiate between time-critical and latency-insensitive functions
- Most platforms run containers inside VMs instead of more efficient isolation mechanisms (e.g., unikernels)

Research goal:

=> Develop methods for automatically deploying FaaS functions in the most efficient way possible, considering inter-function dependencies, time-criticality, and various runtime options.

# Research questions

RQ1: How can we consider function interdependencies and their time-criticality in function scheduling?

RQ2: How can we facilitate information exchange between FaaS schedulers and lower layers?

RQ3: How can we assert platform longevity by considering future developments such as disaggregated hardware?

Mid-term vision:
A flexible and adaptive FaaS platform with intelligent application-aware scheduling and inter-function communication.

# Planned subgoals

- Runtime support for microVMs, containers, and unikernels
- Native provider-side support for intelligent function fusion and call rescheduling
- Application-independent information exchange between hypervisor/OS and FaaS scheduler level
- In-depth study studying effects and interplay of the various mechanisms
- Adapting to emerging technology as it becomes available


Thank you.