

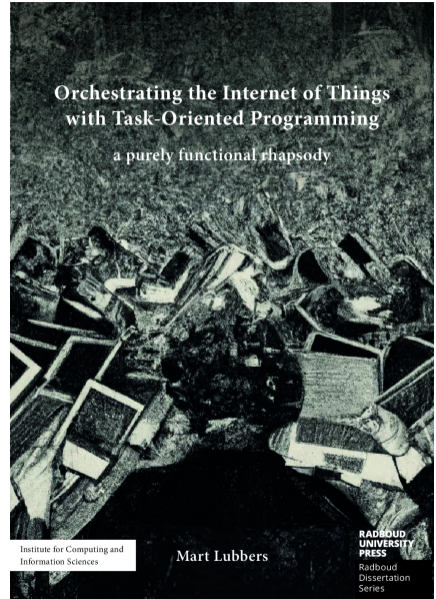
Orchestrating the Internet of Things with Task-Oriented Programming

a purely functional rhapsody

Mart Lubbers

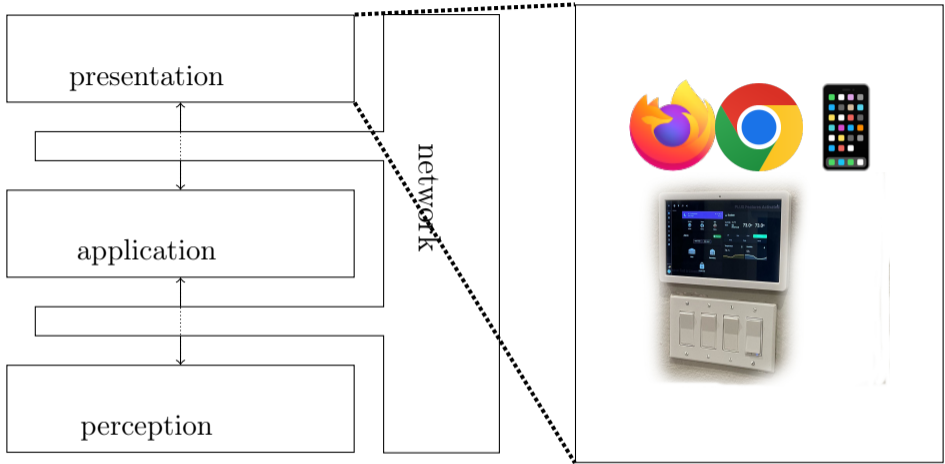
October 4th, 2023

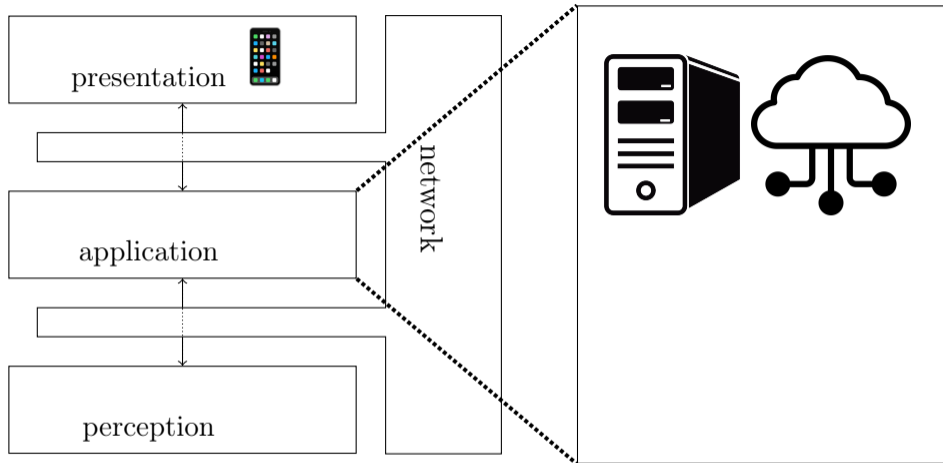
Radboud University

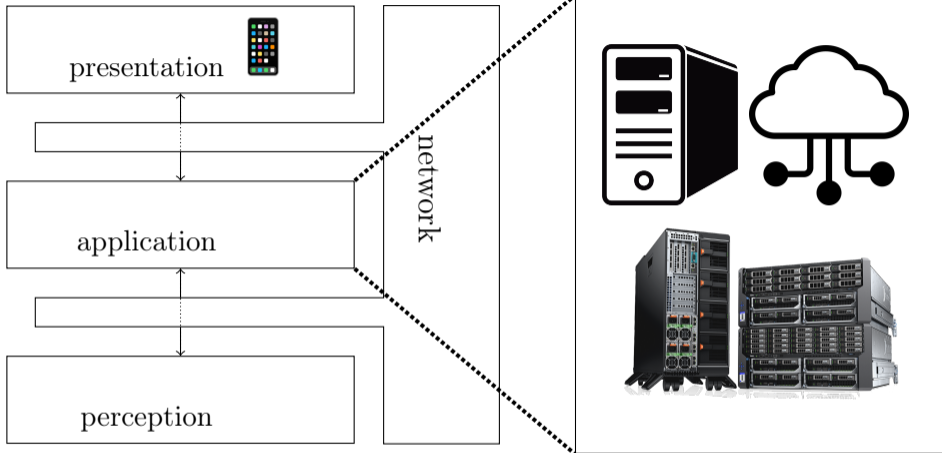


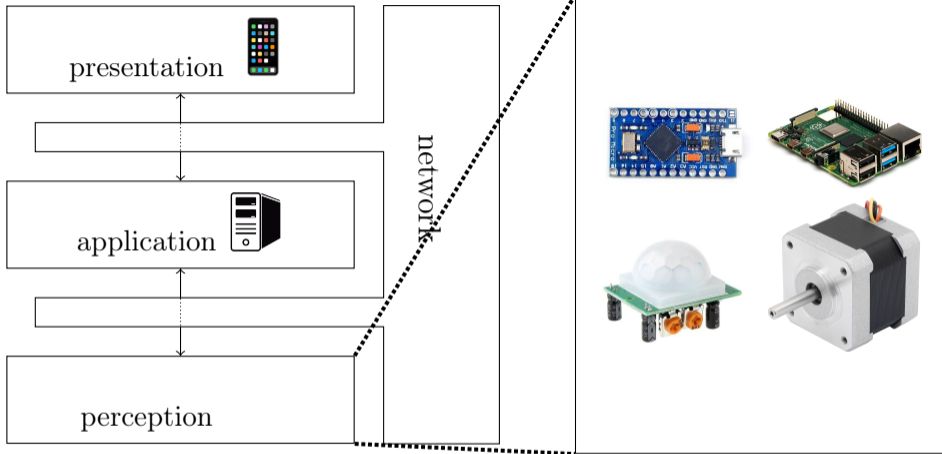


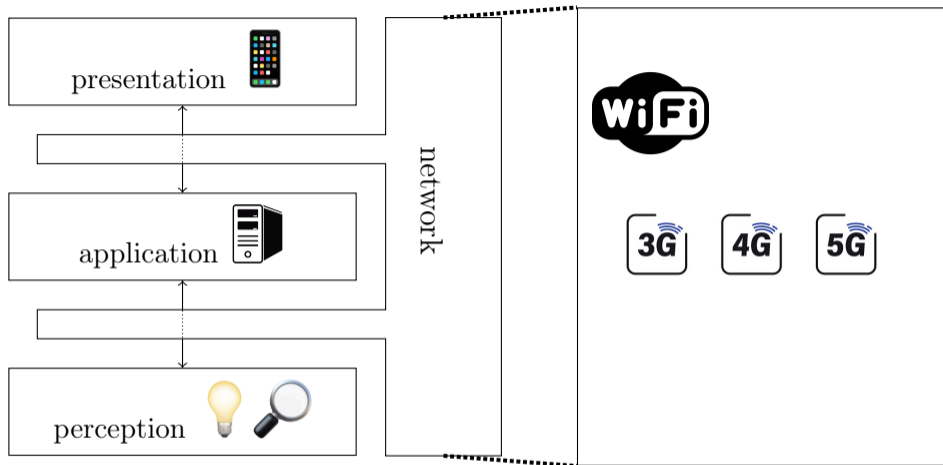
WHAT THE WORLD IS MADE OF
#IoT

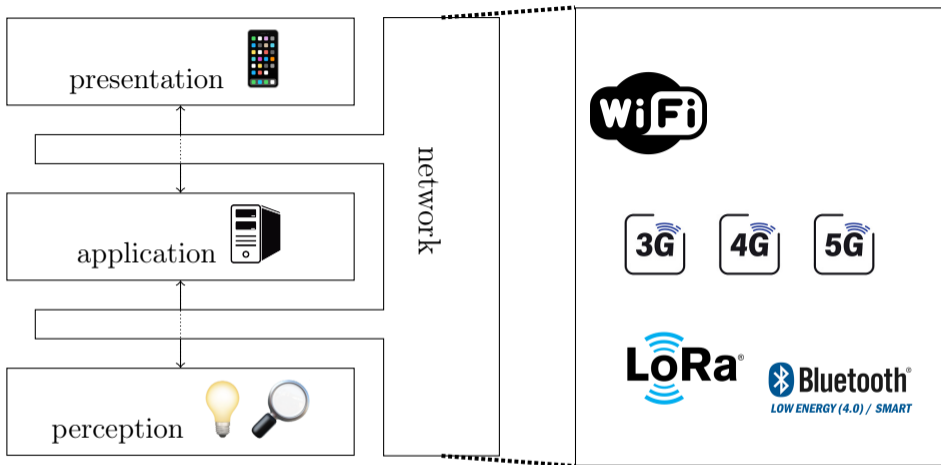


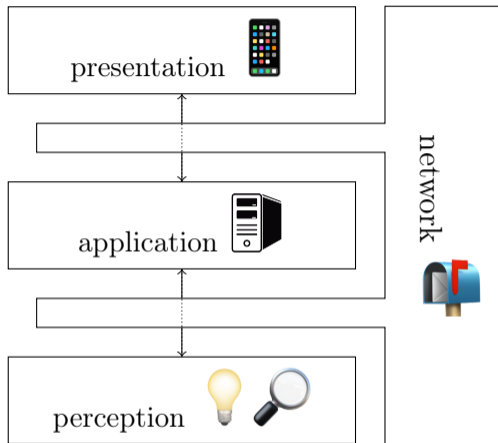




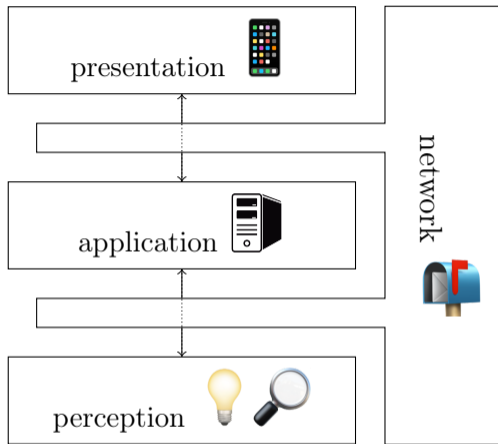




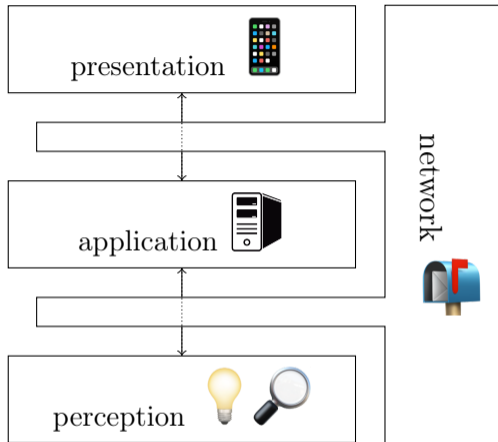


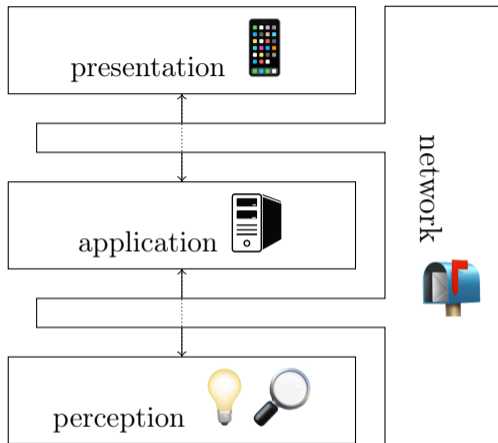


Driven by software



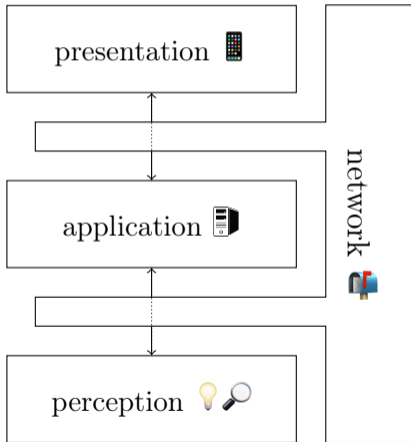
Driven by software





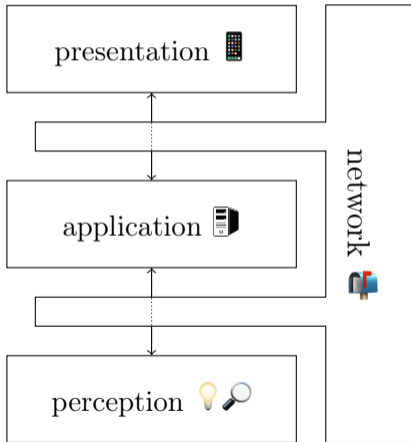
Task-Oriented Programming

Task-oriented programming



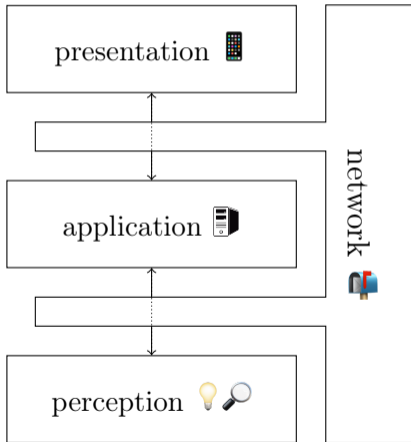
Task-oriented programming

- ▶ Task
 - ▶ Abstraction over work
 - ▶ Combinators



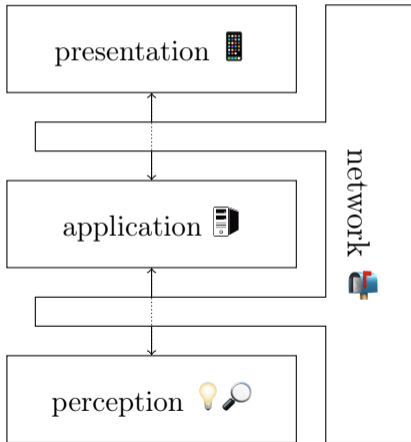
Task-oriented programming

- ▶ Task
 - ▶ Abstraction over work
 - ▶ Combinators
- ▶ Declarative programming
 - ▶ *What* and not *How*



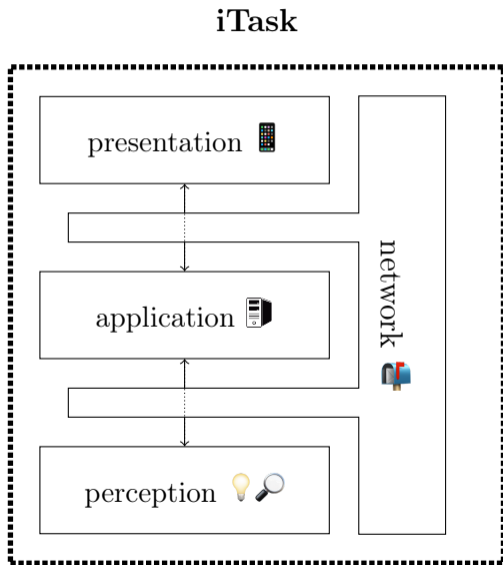
Task-oriented programming

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- ▶ iTask: TOP for the web



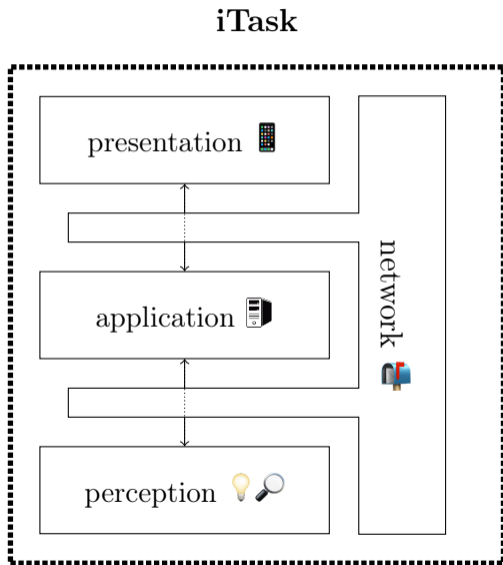
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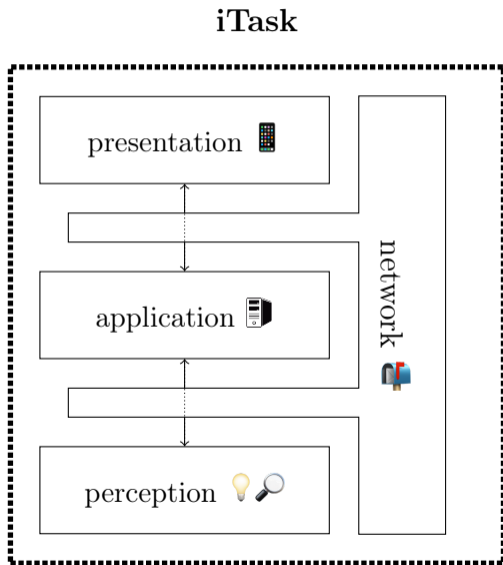
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- ▶ Domain-specific languages



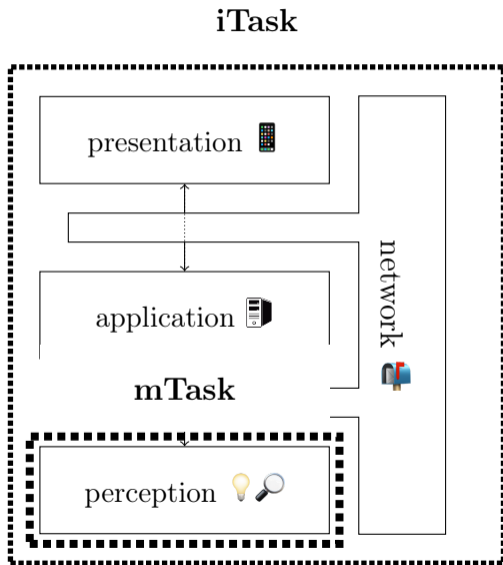
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- ▶ Domain-specific languages
- ▶ mTask: TOP for tiny computers



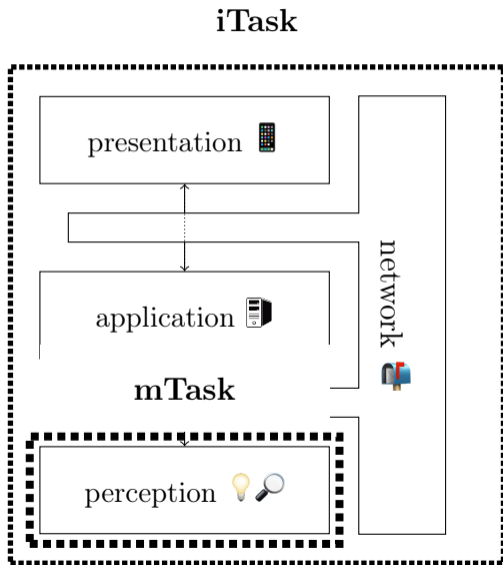
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Task-oriented programming

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 - ▶ Combinators
- ▶ Declarative programming
 - ▶ *What* and not *How*
- ▶ iTask: TOP for the web
- ▶ Domain-specific languages
- ▶ mTask: TOP for tiny computers
- ▶ Tierless programming
 - ▶ Single source
 - ▶ Single type system
 - ▶ Single compiler
 - ▶ Generated interoperation



Task-oriented programming

- ▶ Task

iTask



- ▶ Single compiler
- ▶ Generated interoperation

