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Session 4:

Digital transformation in daily life

Paper S4.2
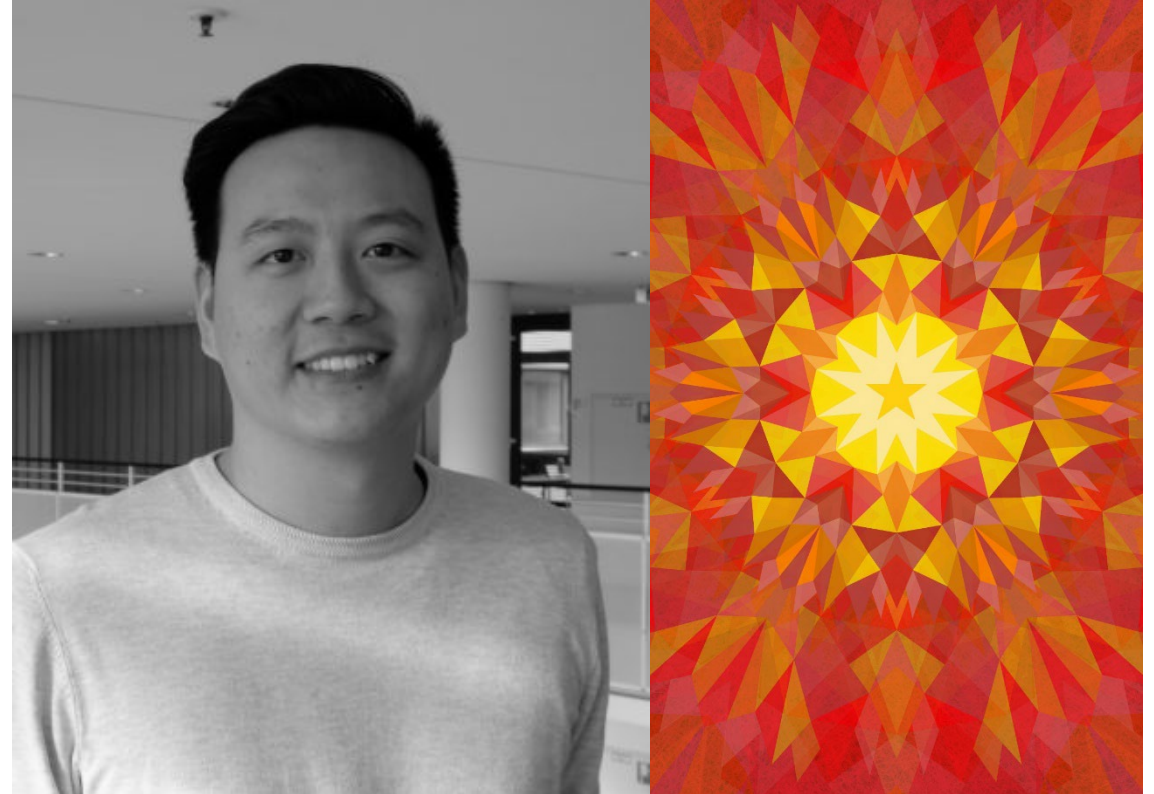
Agenda

1. Introduction

2. Digital process platform for future construction sites

3. Conclusion and Outlook

Introduction | Motivation

Construction sites are characterized by…

- Interconnected process chains (e.g., transportation; material processing, quality assurance)

- Heterogeneity of involved entities (e.g., companies, production resources)

- Lack of standardized interfaces for information exchange

This results in …

- Complex project environments

- Process delays and additional production costs

Therefore…

- Construction site specific digitalization solutions are necessary

- Leveraging the available data sources within construction processes

- Incorporating the needs of multiple stakeholders
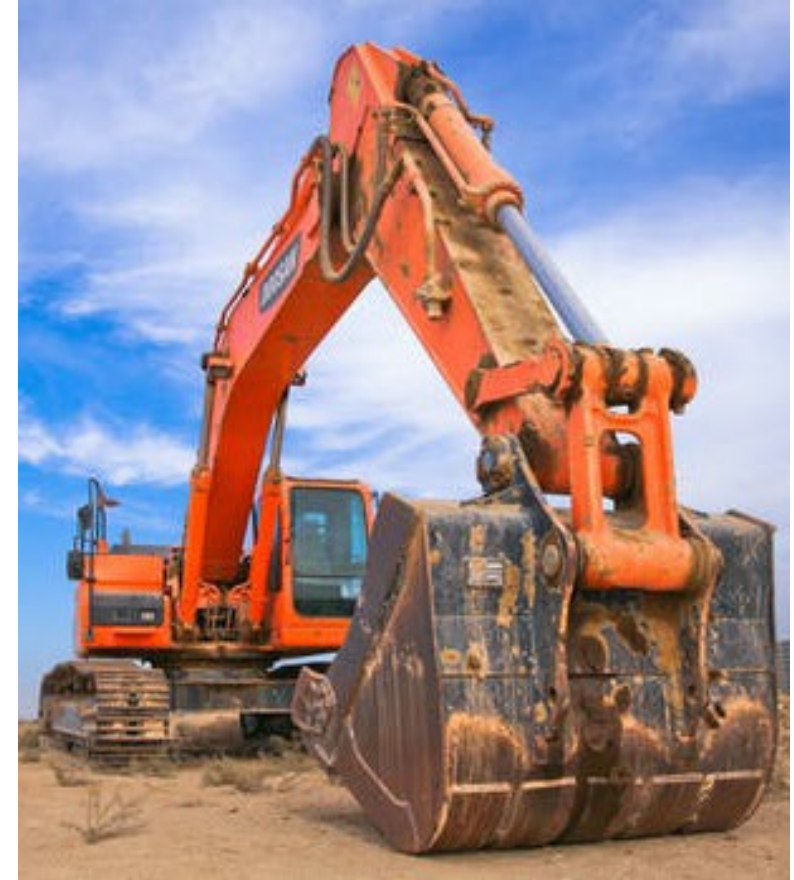
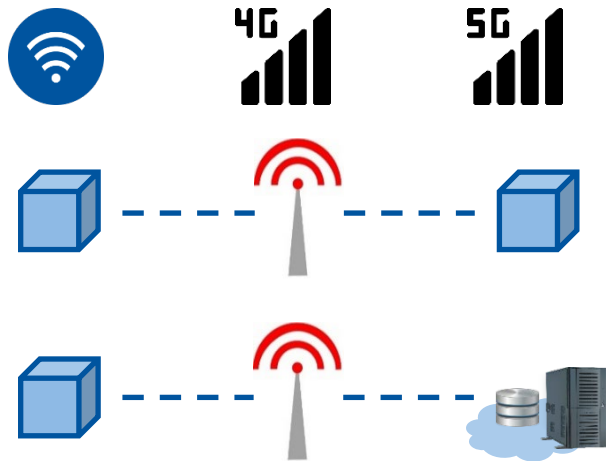# Introduction | Project FutureSite: Construction Site of the Future

Manufacturer-independent communication-infrastructure

Digitized and interconnected site infrastructure

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Digital Process Platform (data analysis, visualization)

▶ (1) Increase of construction site productivity
(2) Development and evaluation of innovative construction site technologies (e.g., autonomization)

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Towards a digital process platform for future construction sites
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Digital Process Platform | Requirements and Use Cases

Infrastructure Requirements

Independence and Scalability

Heterogeneity

Security and Robustness

Platform Use Cases

Static geofencing
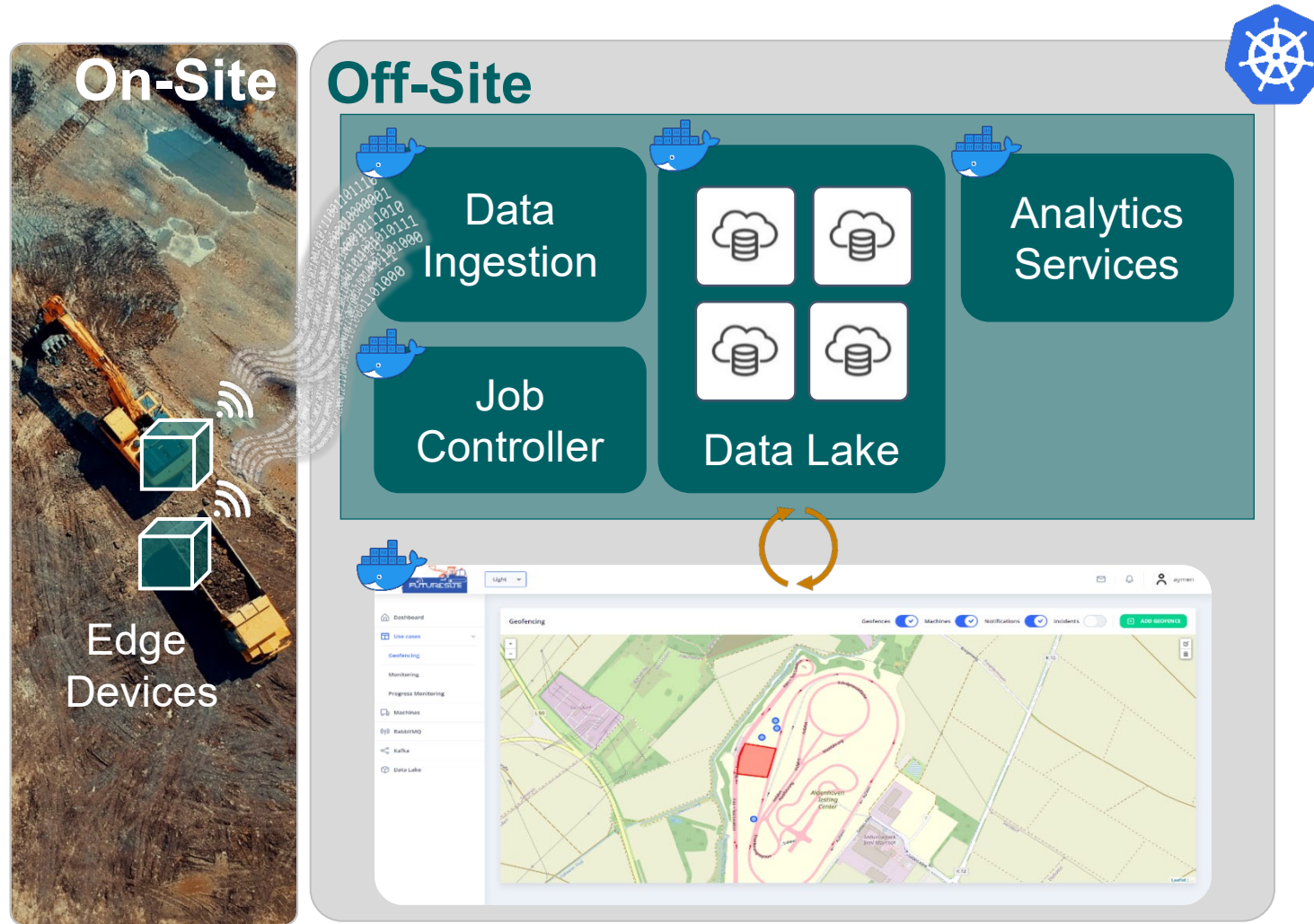
Machine monitoring

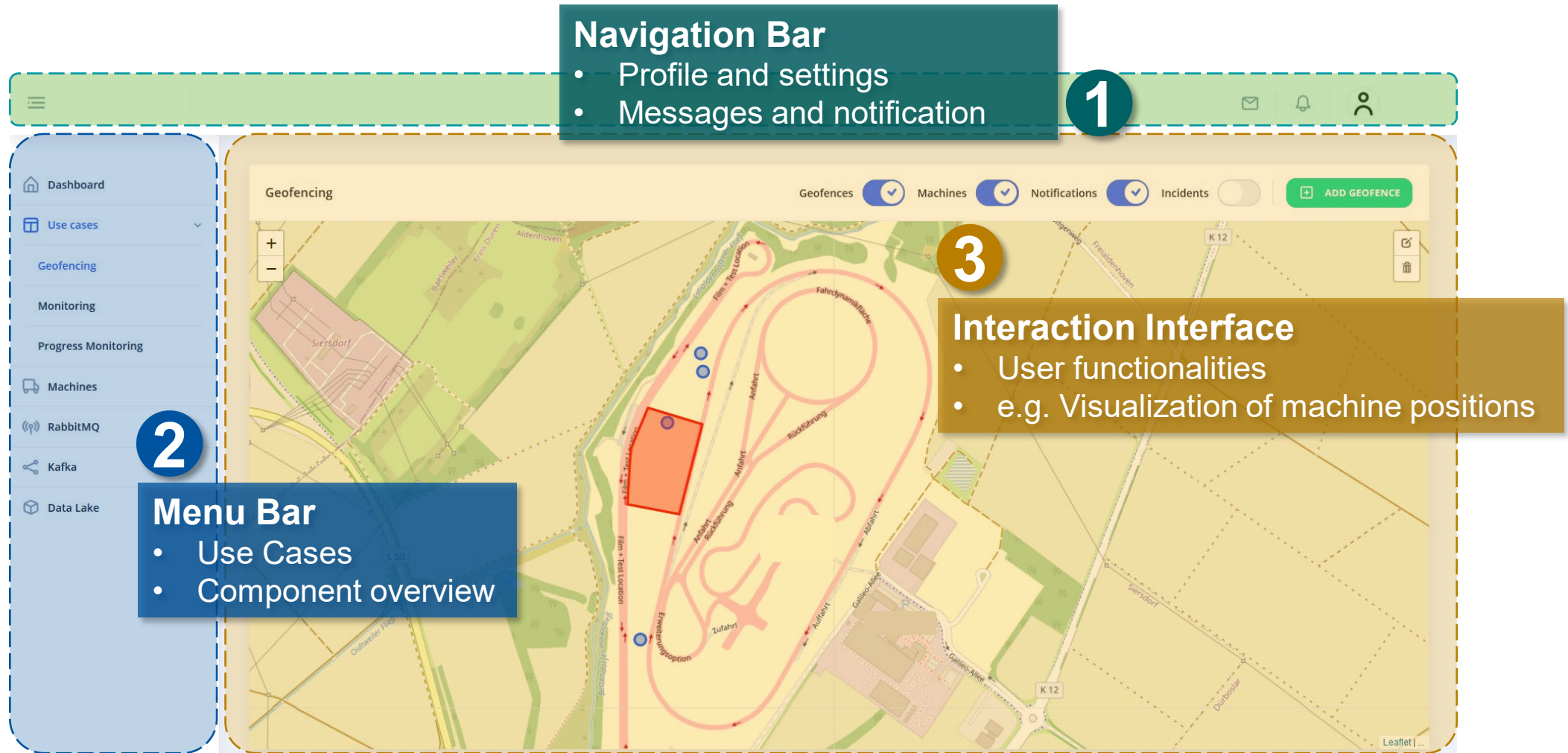Process planning

Digital Process Platform | Communication Infrastructure Modules

Digital Process Platform | User Interface Mockup

Navigation Bar
- Profile and settings
- Messages and notification

1

3

Interaction Interface
- User functionalities
- e.g. Visualization of machine positions

2

Menu Bar
- Use Cases
- Component overview

Conclusion and Outlook

- Design of a **platform concept** for tackling current and future challenges of construction sites
  - Analysis of construction site requirements
  - Development of Use Cases
  - Presentation of a User Interface Mockup

- Development of a machine independent and modular **communication infrastructure** as an initial approach for a data processing pipeline

- Software and hardware implementation
- Testing and evaluation under laboratory and field conditions

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Thank you!
Questions?

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Further Reading | State of the Art

1. Digitalization of construction sites [4] – [8]

2. Digital platforms for construction sites [9] – [16]

3. Hardware and Communication Infrastructure components [17] – [31]

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