Digital Twin as a Service Software Platform 🏭 ↔️ 👥

DTaaS

Prasad Talasila

prasad.talasila@ece.au.dk

AARHUS
UNIVERSITY
DEPARTMENT OF ELECTRICAL AND COMPUTER
ENGINEERING

What is a Digital Twin?

Physical Twins — sense → control → **Digital Twins** ← build on — **Services**: visualise, monitor, predict, decide
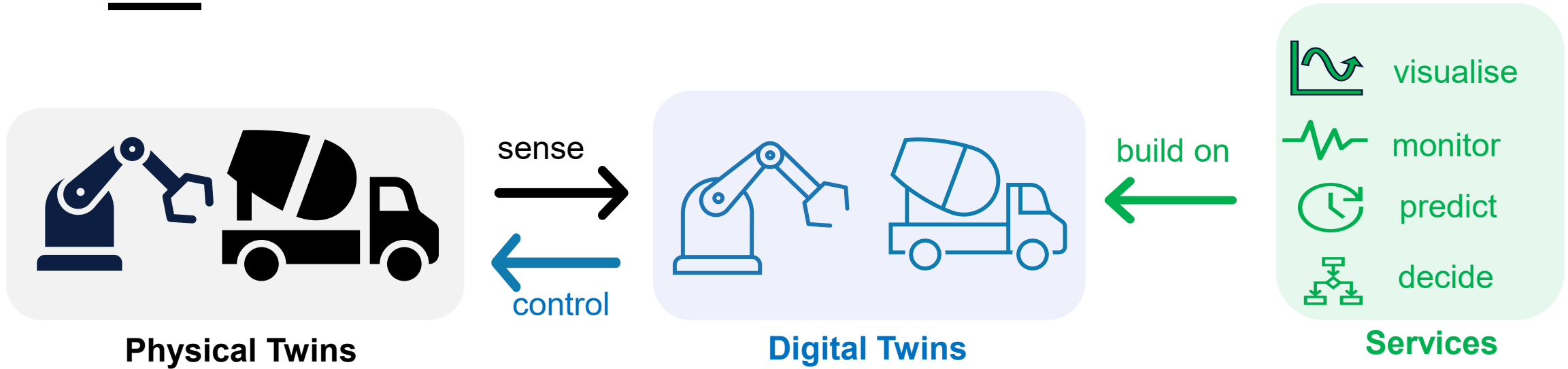
✓ Digital representation of a real-world entity which we call the physical twin.

✓ Connected in real-time with physical twin.

✓ Offers its stakeholders a range of services

What are the Application Domains?
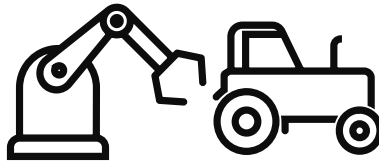
Water Systems

Air Pollution

Cities

Lifestyle Interventions

Oceans

Industry 5.0

Transportation

Personalized Medicine

AARHUS
UNIVERSITY
DEPARTMENT OF ELECTRICAL AND COMPUTER
ENGINEERING

PRASAD TALASILA
SOFTWARE ENGINEERING AND COMPUTING SYSTEMS

What is **DTaaS** ?

It is a platform to:

Create, Use, and Share Digital Twins

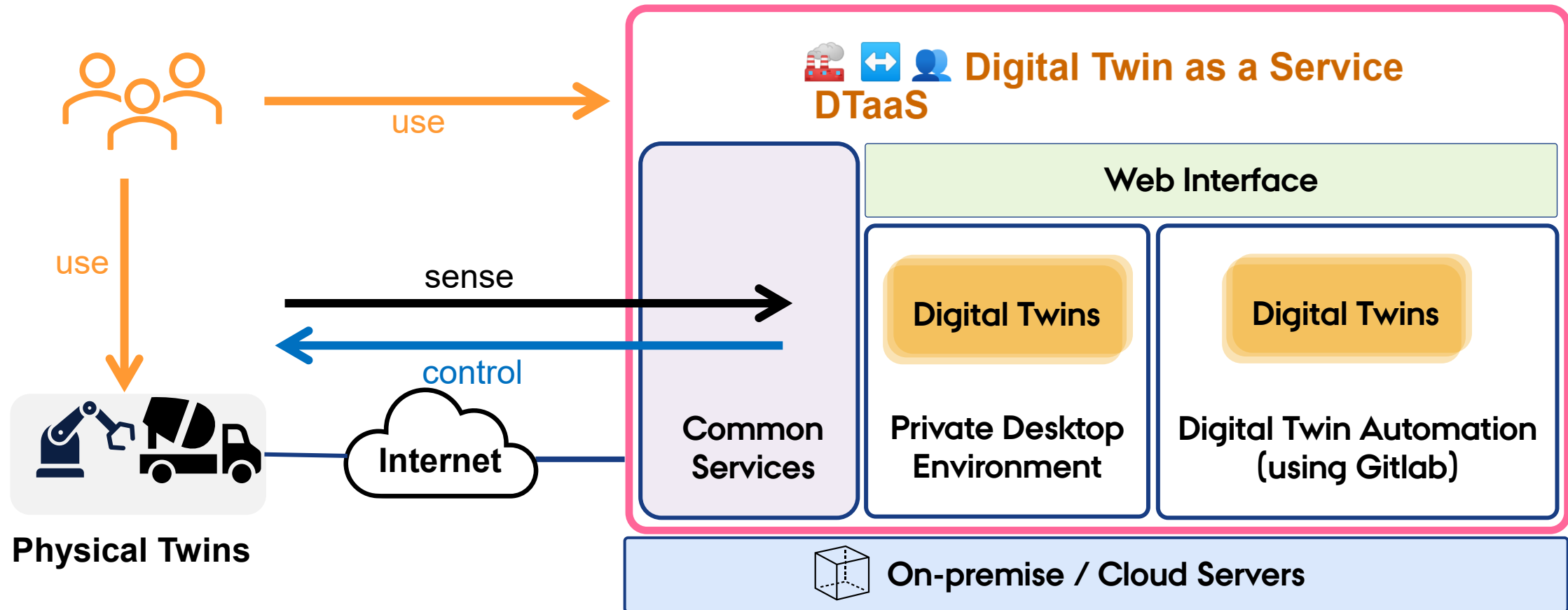Support Digital Twins from Many Engineering Domains

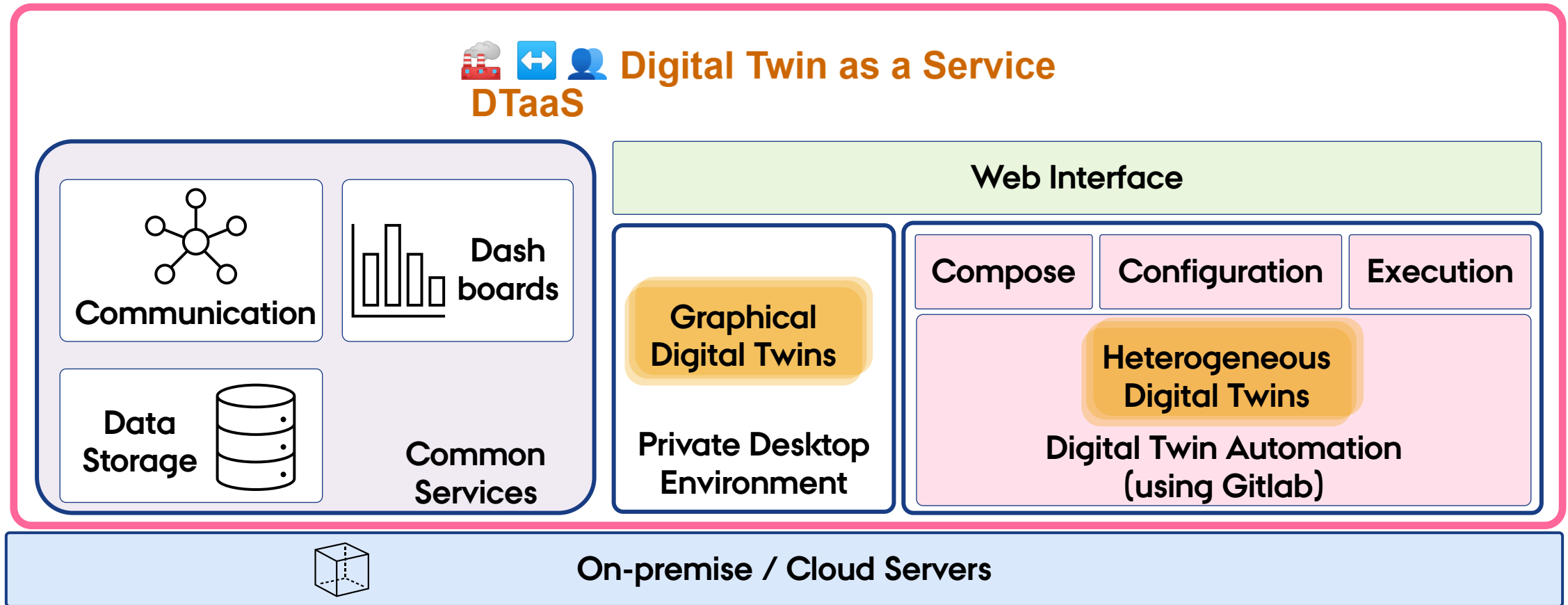Provides private workspaces

Run Digital Twins as Services

Scalable execution of Digital Twins

<u>Easy to use</u>: familiar desktop environment

AARHUS
UNIVERSITY
DEPARTMENT OF ELECTRICAL AND COMPUTER
ENGINEERING

PRASAD TALASILA
SOFTWARE ENGINEERING AND COMPUTING SYSTEMS

A User Centric View of DTaaS

Physical Twins

🏭 ↔️ 👥 **Digital Twin as a Service DTaaS**

Web Interface

Common Services

Digital Twins

Private Desktop Environment

Digital Twins

Digital Twin Automation (using Gitlab)

On-premise / Cloud Servers

use

use

sense

control

Internet

A User Centric View of DTaaS

USE OF DTAAS FOR FEDERATED DIGITAL SHADOWS

DTaaS on User Laptop

DTaaS at Aarhus University

MQTT Broker

mosquitto

Data Stream

Data Stream
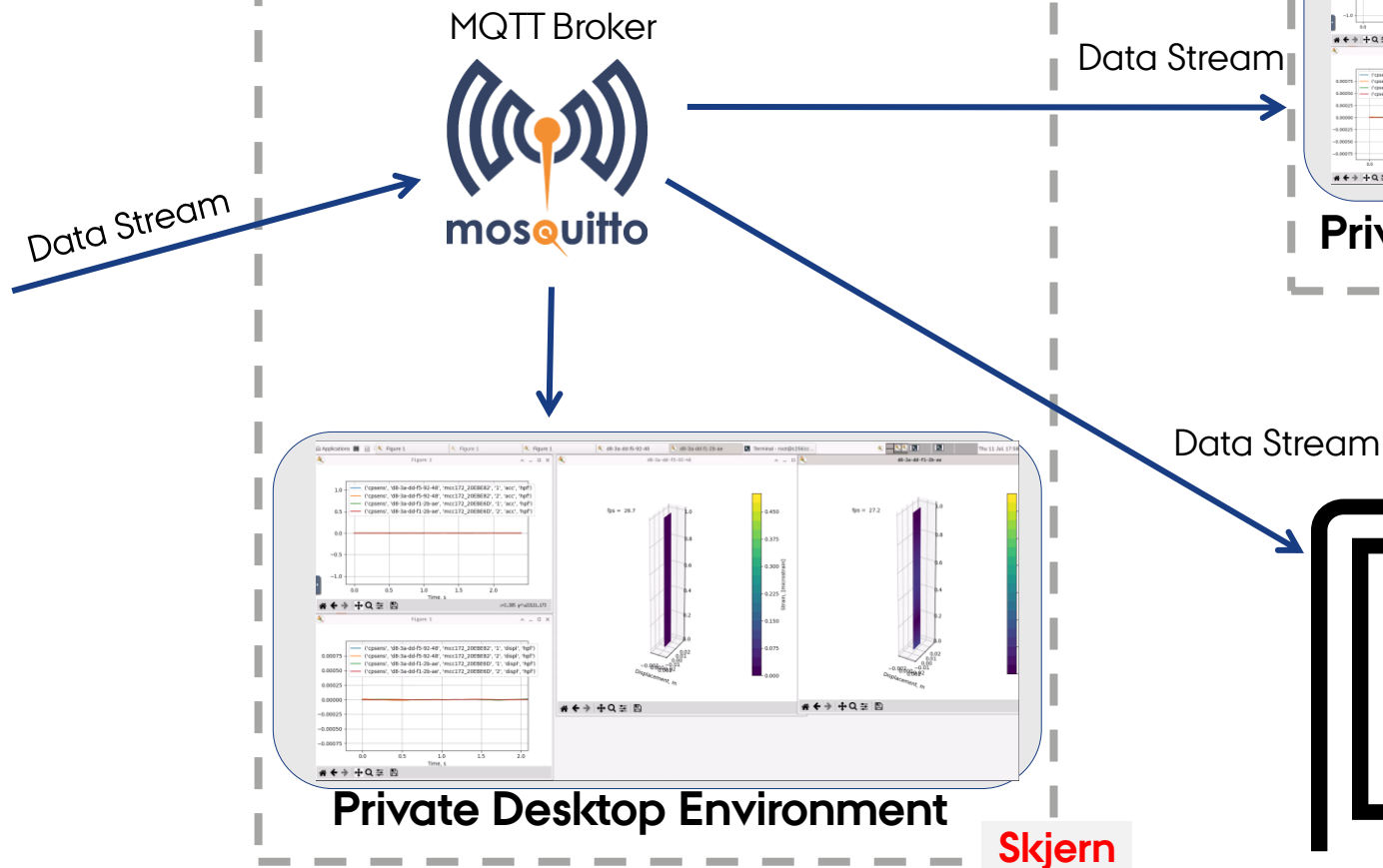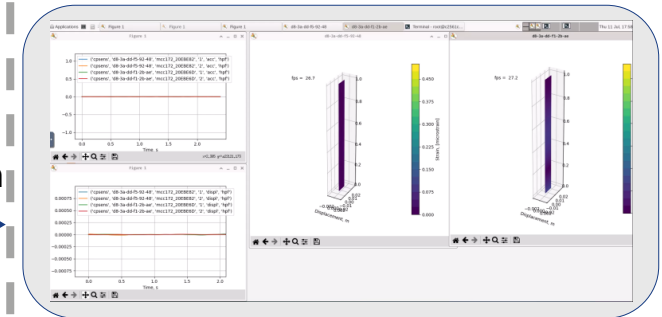
Private Desktop Environment

Copenhagen

Data Stream

Physical Twin

Copenhagen

Private Desktop Environment

Skjern

Data Stream

**Collaborator
(not a user of DTaaS)**

Aarhus

Ref: Adopted from technical demo done in collaboration with Dmitri Tcherniak and Giuseppe Abbiati, 12-July-2024.

PRASAD TALASILA
SOFTWARE ENGINEERING AND COMPUTING SYSTEMS

AARHUS
UNIVERSITY
DEPARTMENT OF ELECTRICAL AND COMPUTER
ENGINEERING

CP·SENS
CREATING DIGITAL TWINS