

**HAHN  
AUTOMATION  
GROUP**

**VIRTUAL  
ENGINEERING**



# VIRTUAL ENGINEERING TOOLS



Virtual Commissioning



Virtual  
Reality/Augmented  
Reality



Digital TWIN

# VIRTUAL COMMISSIONING DEFINITION



**environment for software  
development**

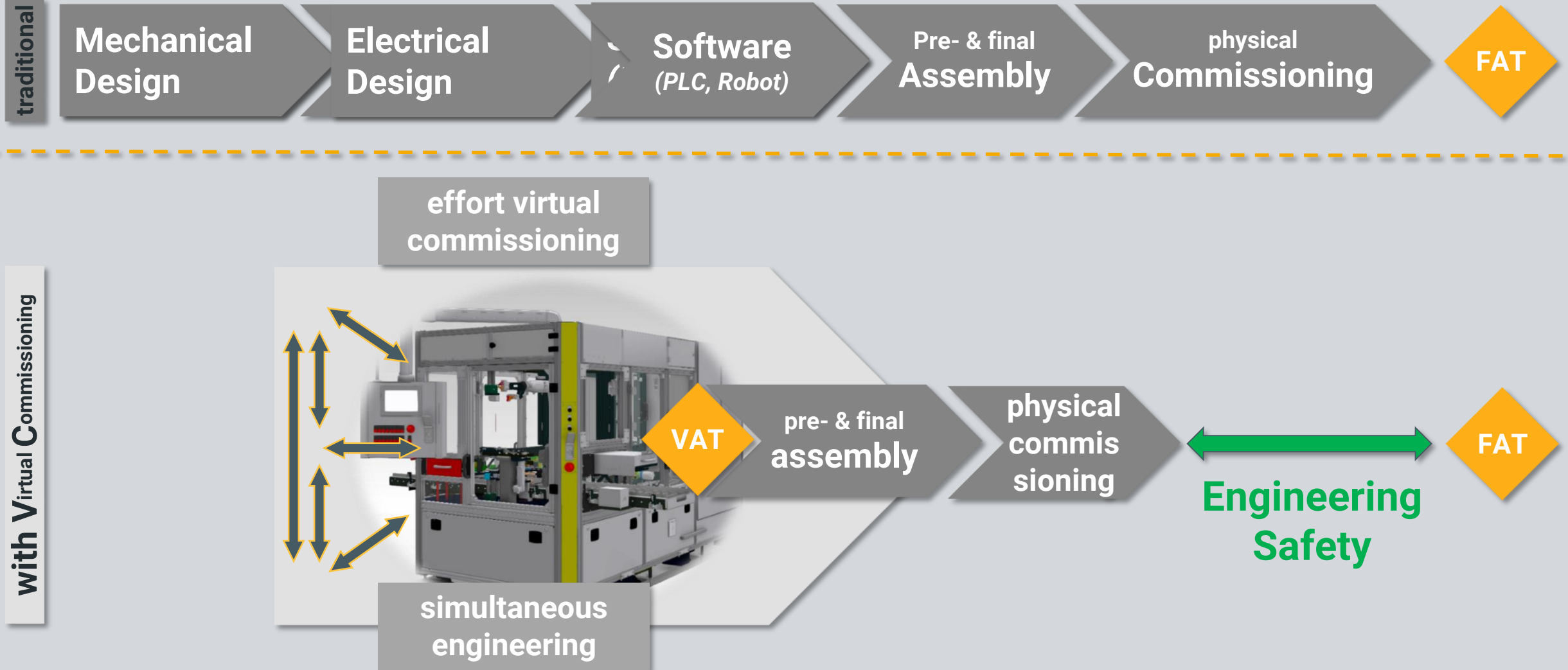
**increase software quality**

**early error analysis**

**simultaneous workflow**

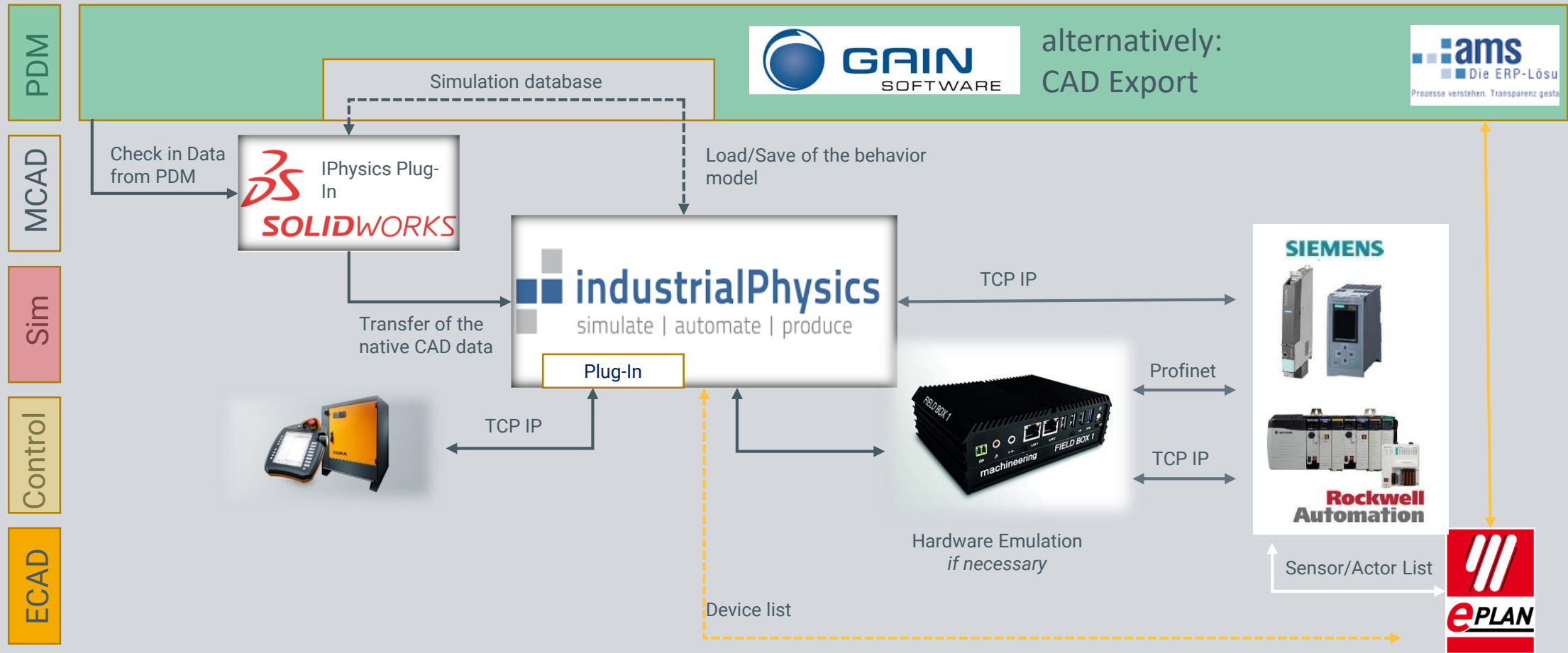
**Digital TWIN**

# WORKFLOW SIMULTANEOUS ENGINEERING





# VC SOFTWARE INTEGRATION



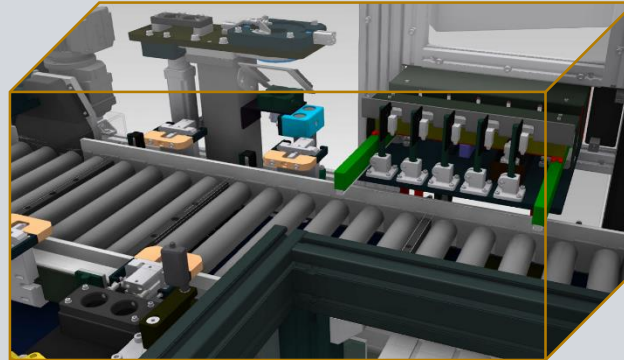
# WORKFLOW VIRTUAL COMMISSIONING

Virtual Engineer  
preperation

Native 3D data 1:1

CAD Data

Setup 3D Model



Import/Export I/O-List

Electrical Data

Exchange 3D Model

Software Engineer  
operation

Controller

PLC Controller

Robot Controller

Database Systems

Various controller



Software Code 1:1

Engineer Environments

PLC Environment

Robot Environment

Database Environment

various Environment

# METHODS OF VIRTUAL COMMISSIONING

Model in the Loop (MIL)

Software in the Loop (SIL)

Hardware in the Loop (HIL)

## Model in the Loop (MIL)

- Method for simulation in an embedded system

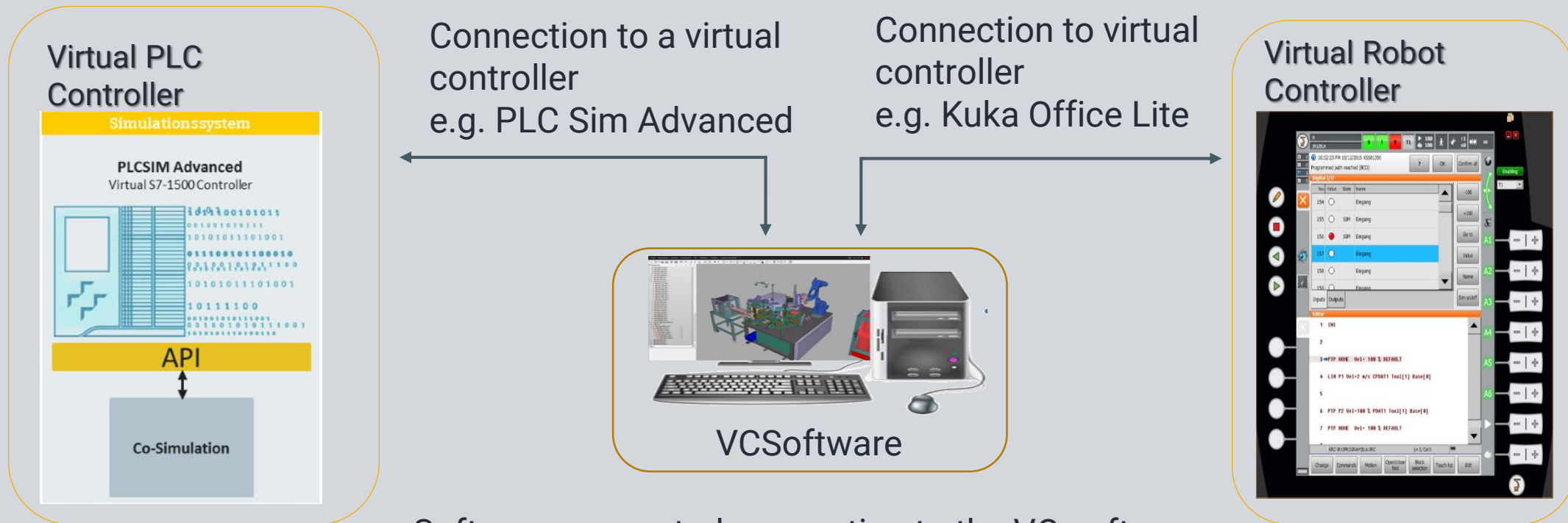
### VC Software





## METHODS OF VIRTUAL COMMISSIONING

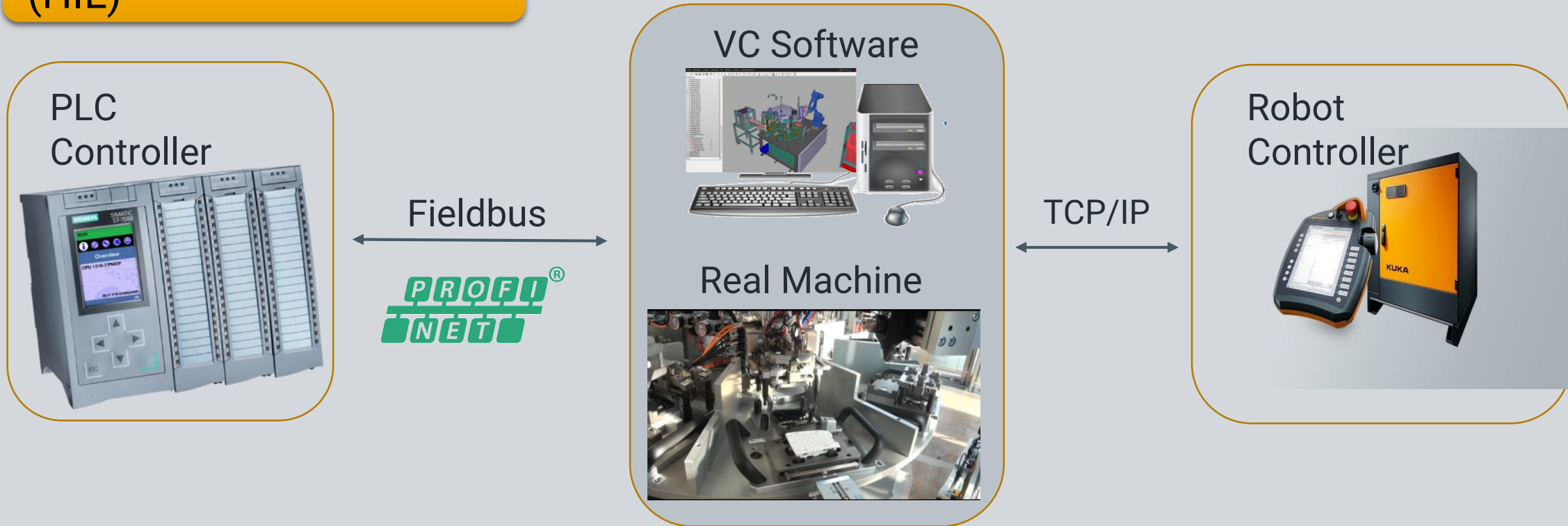
### Software in the Loop (SIL)



Software-supported connection to the VC software.

# METHODS OF VIRTUAL COMMISSIONING

## Hardware in the Loop (HIL)



Software-supported connection to the VC software

# VIRTUAL ENGINEERING PLATFORM

## VC environments

Virtual Assembly

- 32 virtual locations for 3D machines
- Software iPhysics
- 3D Hardware powered by nVidia
- VR / AR Solutions
- SMART HMI by HAHN

## PLC environments

Virtual PLC Controller & Engineering Software

- Siemens
- Rockwell
- Beckhoff
- B&R
- HMI's
- Multiuser Server
- Database systems

virtual engineering server by HAHN



## R&V environments

Virtual Robot Controller & Engineering Software

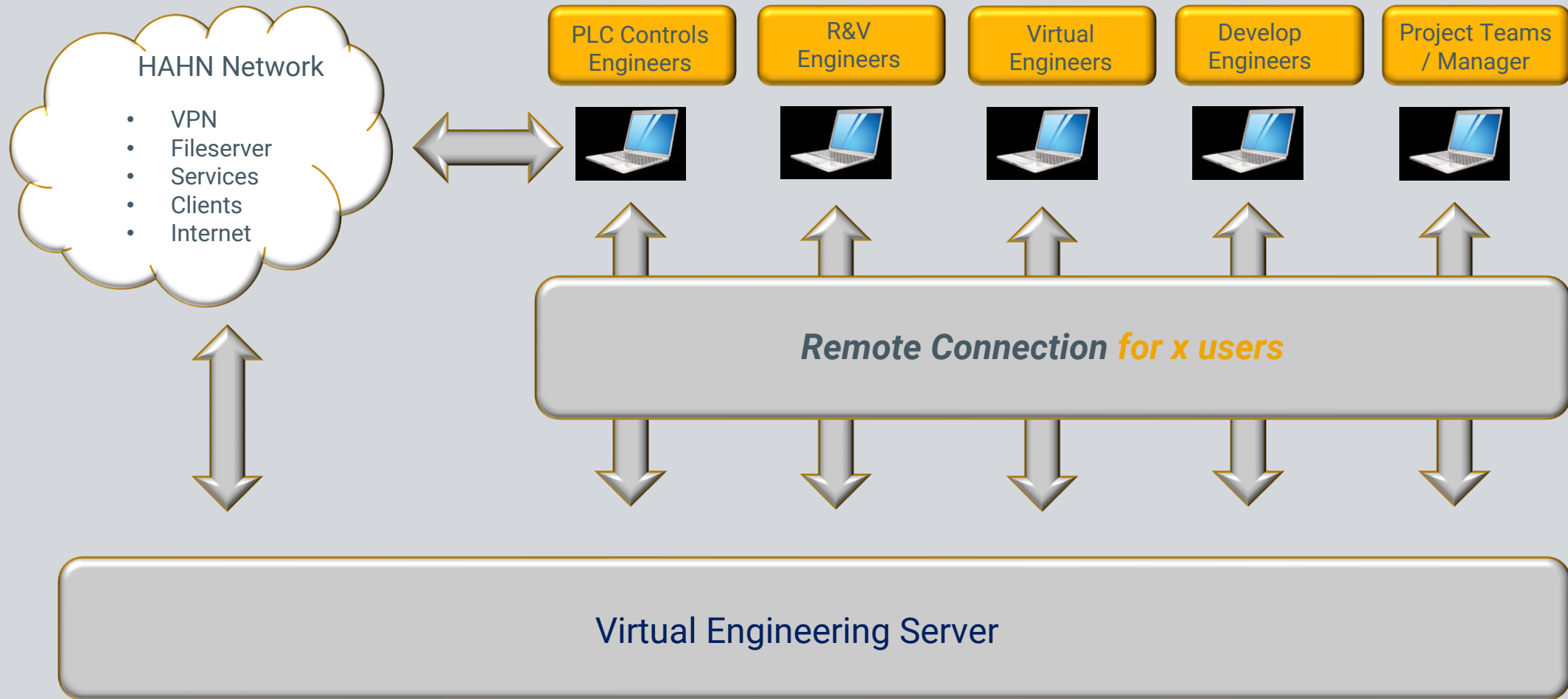
- KUKA
- ABB
- Fanuc
- Stäubli
- Denso
- Mitsubishi
- Kawasaki

## develop environments

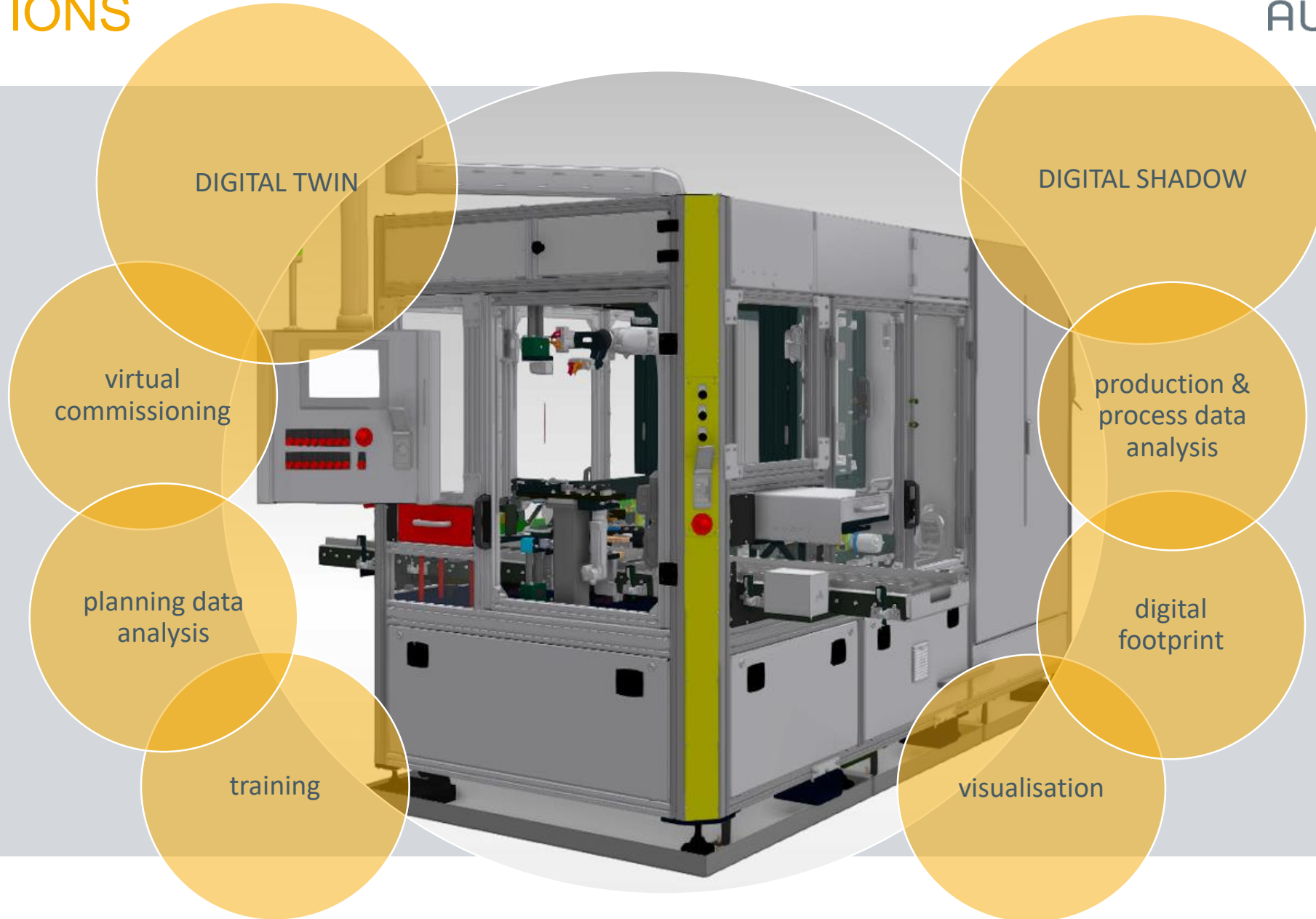
Diverse Machines

- Advanced developments
- Training modules
- Data analysis
- Code generator
- Digital customer support

# VIRTUAL ENGINEERING CONNECTIVITY



# SOLUTIONS





# VIRTUAL COMMISSIONING BENEFIT / OPPORTUNITIES

global collaboration

virtual customer training

retrofit simulation

virtual software training





EVE SUPPORT



## Augmented-Reality- Powered Communication

**EVE Support** is an interactive augmented reality-powered visual **remote assistance** solution enabling experts to guide on-site technicians through **repair, maintenance, or inspection** steps **remotely**.

Using smart glasses, on-site technicians can show remote experts exactly what they see in a secure connection, allowing the experts to provide real-time assistance from their workplace by adding annotations, drawings, texts and pictures.

# EVE SUPPORT – SHARED VIEW FOR SUPPORT

