



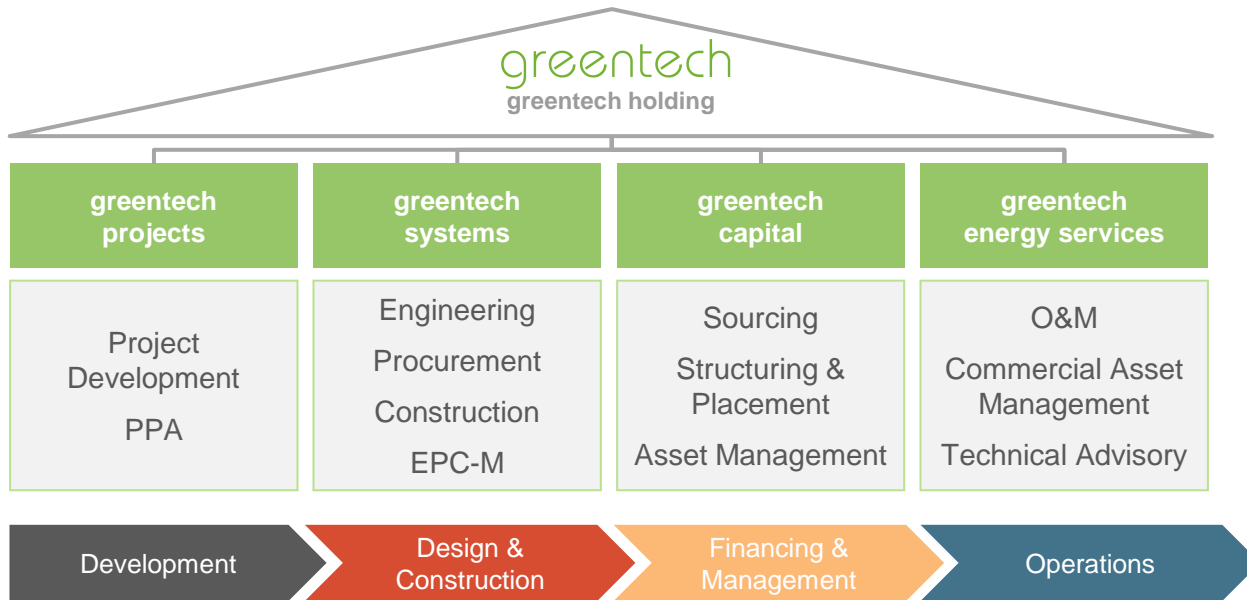
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## Project Development with O&M in Mind

**Session: Total Control - How Big Data Improves O&M and Asset Management**

Jörn Carstensen, May 10<sup>th</sup> 2022  
Intersolar Munich

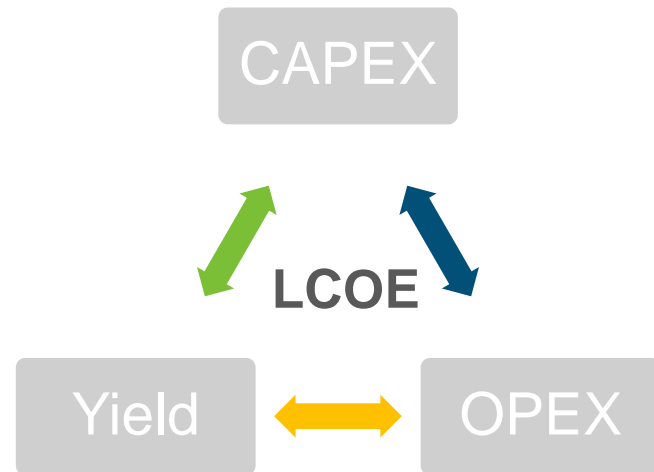
# greentech is a fully integrated player in the European PV industry



## O&M knowledge has a major impact on LCOE

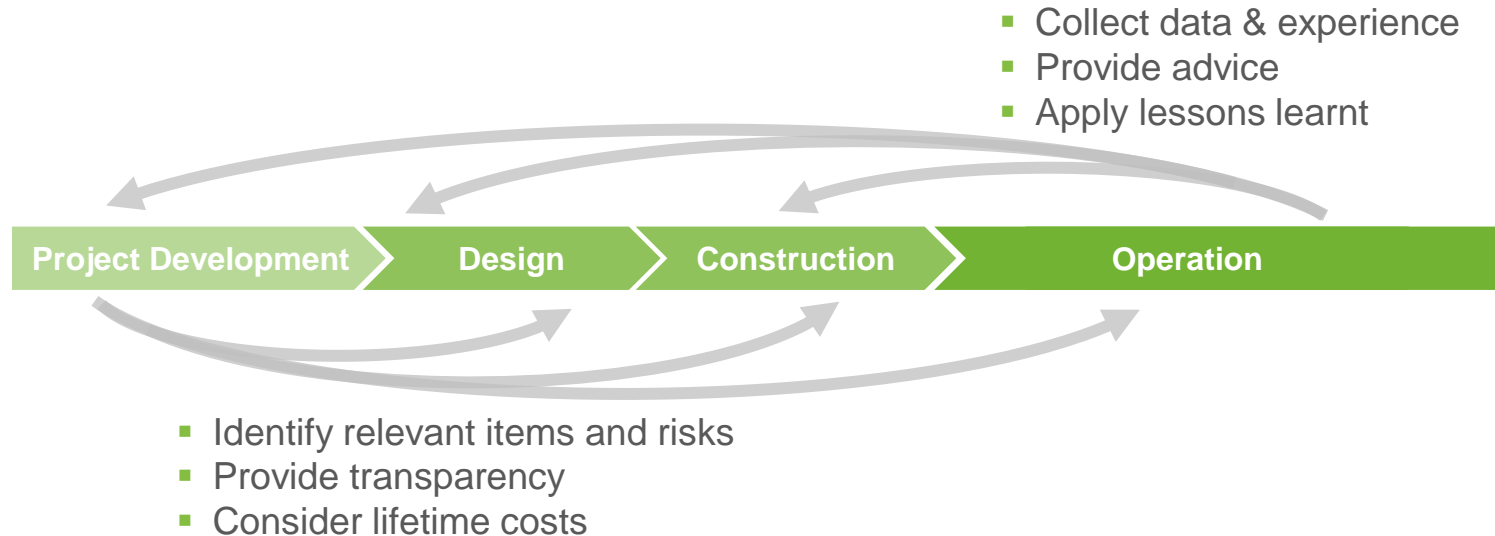
Considerations and relevance for PV and O&M

- 3 variable elements to LCOE with high interdependencies
- **PV** has, out of all renewable energy sources <sup>1</sup>
  - by far **lowest OPEX** overall and
  - **highest LCOE sensitivity** regarding variation in OPEX
- Optimising **LCOE as a whole, instead of individual elements**
- Utilizing O&M experience across the value chain



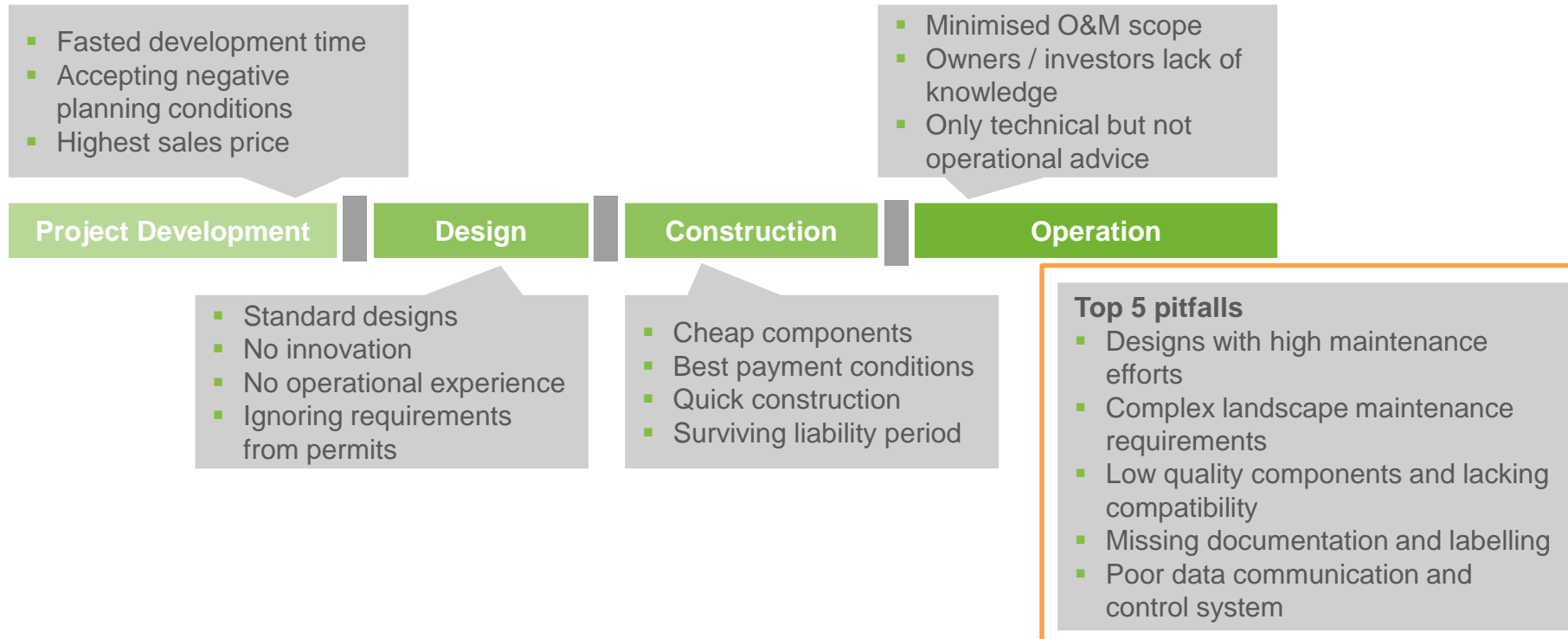
## Ideally, the stages of the PV value chain are integrated

Utilize learnings and share the full picture



## But often every stage of the value chain is optimised individually

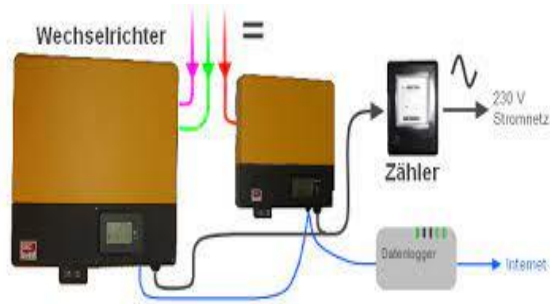
Challenges and risks from project development to operations



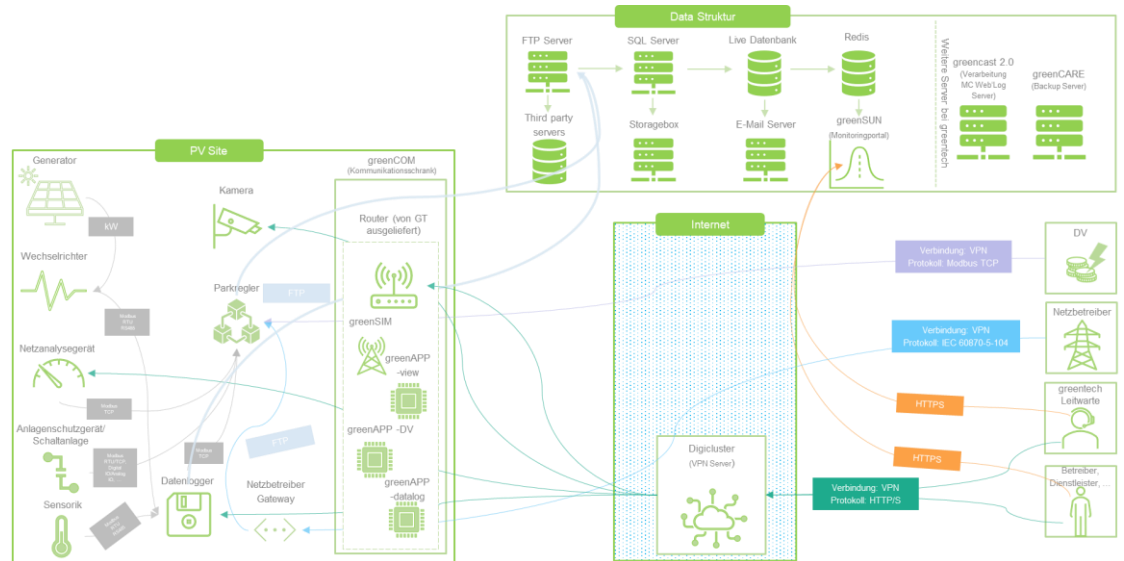
## Data communication is an often underestimated part of a PV plant

Use case: data communication and control system

What some people still think

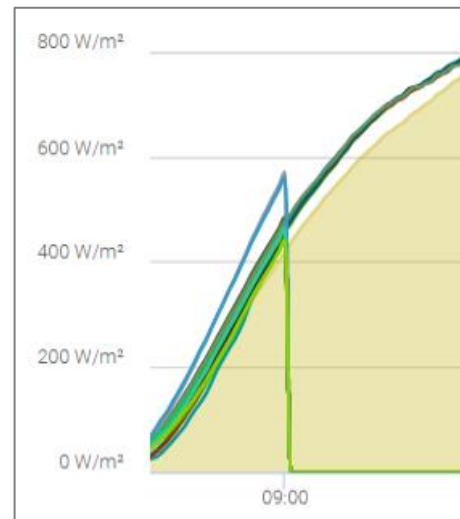
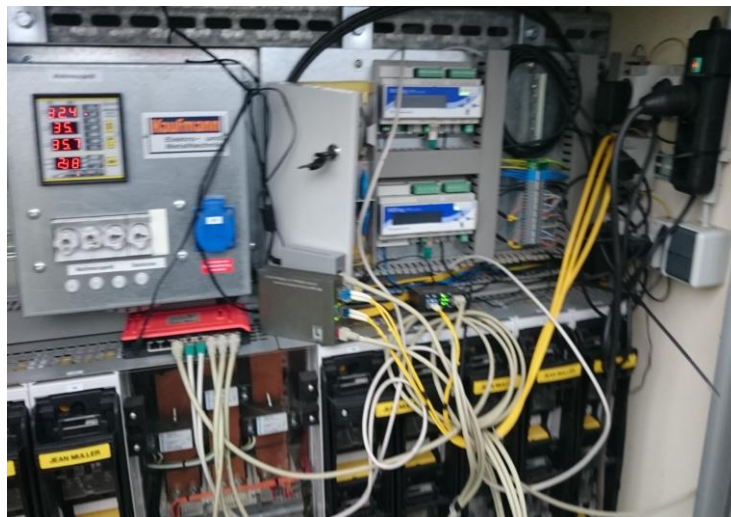
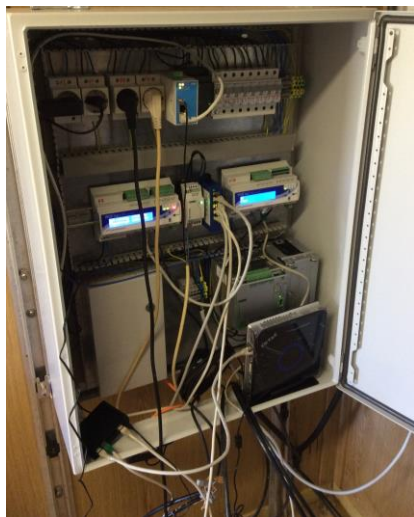


How SCADA is like today



## Apparently small items can lead to substantially higher LCOE

Use case: data communication and control system



Costs for re-engineering

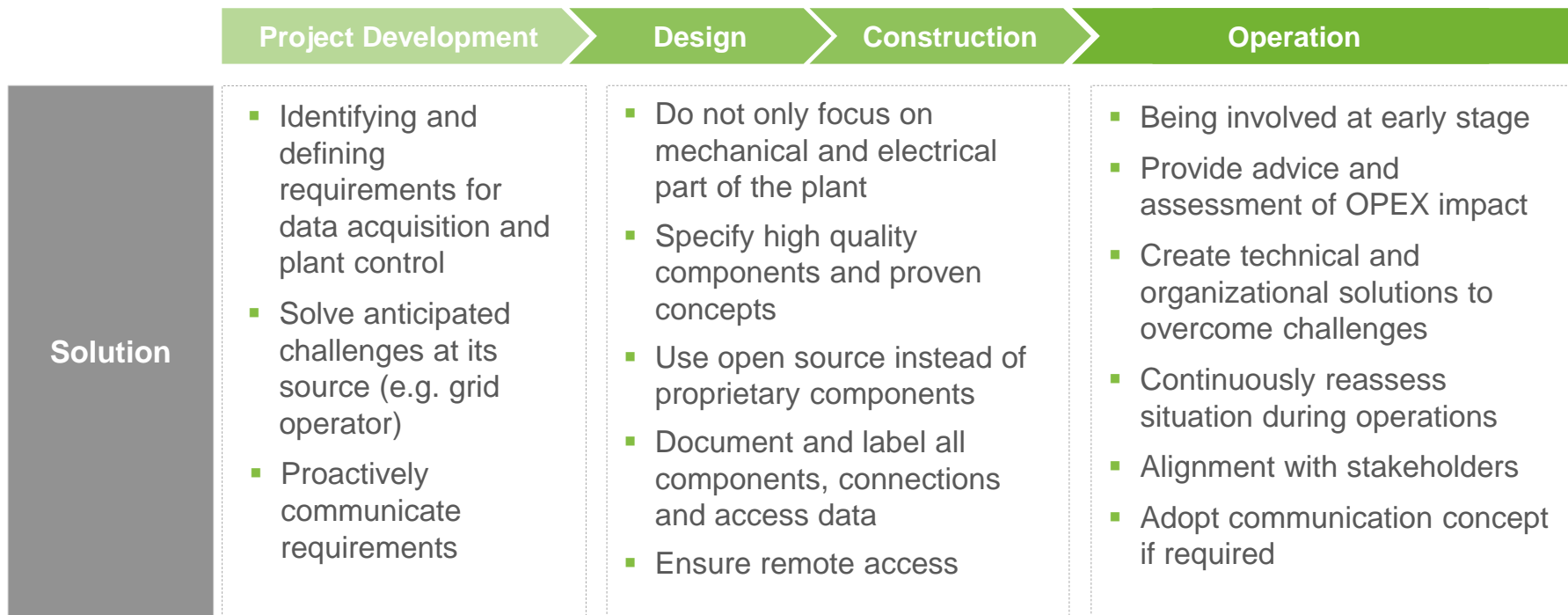
Health & Safety risks

Regulatory issues

No consistent data base for further analysis and operational excellence

## An integrated approach saves costs and effort

Impact of O&M knowledge on each part of the value chain





## Life could be so easy

Ideal data communication and control solution



+

- High focus on data communication and plant control
- Utilisation of high quality components and proven concepts
- Open source and compatible components
- High quality installation and labelling
- Secure safe remote access
- Powerful data connection
- Detailed documentation of all components, connections and access data

# The integrated approach is already important and will be even more

Prepare yourself for new challenges...



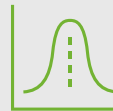
**New PPA &  
PV concepts**



**Digitalisation &  
IT Security**



**Grid-supporting  
operation**



**Global Supply  
Chains**



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