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Amperecloud

October 2024

From *development to O&M* structuring efficient PV projects

Your speakers today

Frederik Merz

CEO & Co-Founder of Amperecloud

frederik.merz@ampere.cloud

Daniel Oliveira

Technical Advisor at RatedPower

doliveira@ratedpower.com

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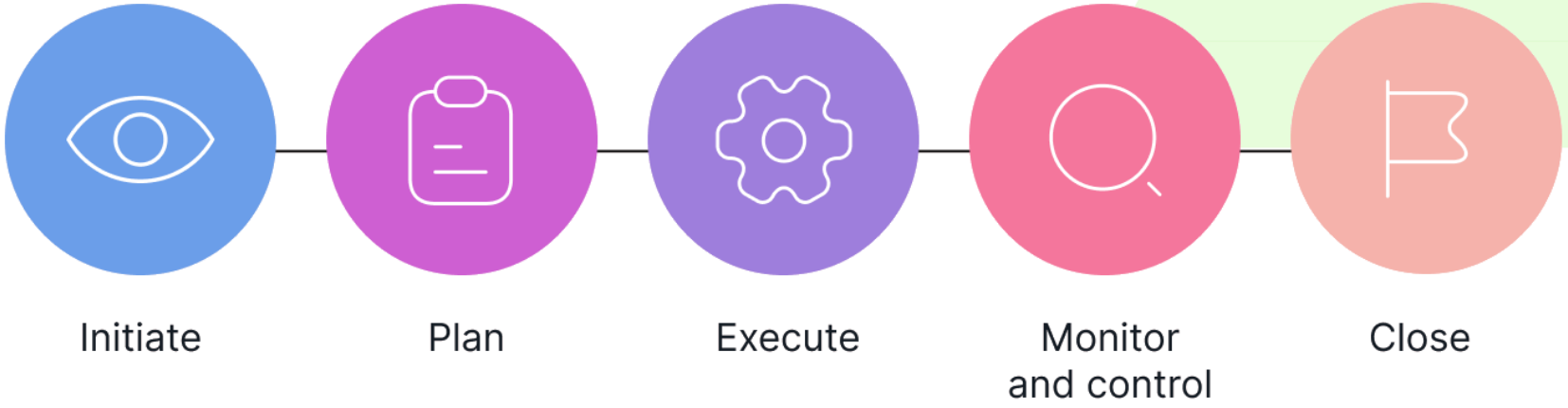
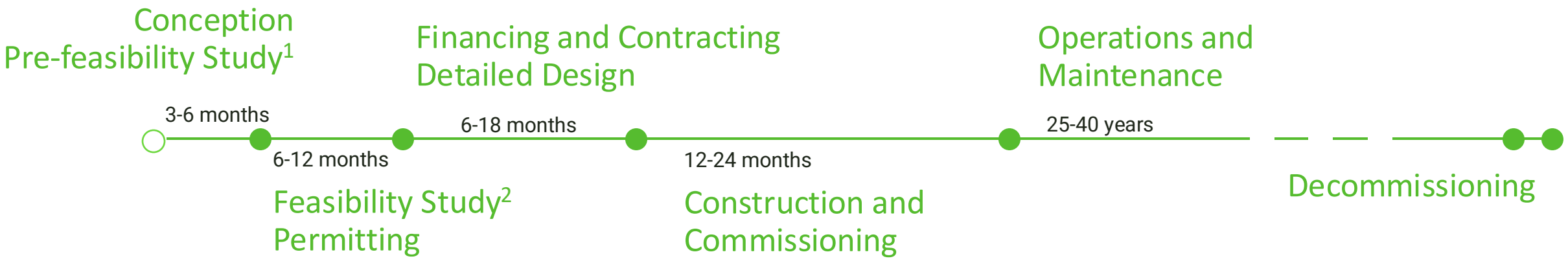
01. PV Development

Project Lifecycle – *When?*



Development Timeline of a Solar Project



[1]Power Market Analysis, Site Prospection, Financial Feasibility
[2]Financial Analysis, Engineering Feasibilty

Challenges in the Development of PV projects

Complex Regulatory Landscape

Navigating permits, grid access, and environmental assessments

- Variability in regulations across regions
- The need for extensive documentation and compliance
- Impact on project timelines and budgets

Manual Processes

Time-consuming design cycles and documentation

- Lengthy design cycles that can take weeks
- Increased likelihood of human error
- Engineering teams spending valuable time on repetitive tasks

Prospecting challenges

Difficulty in finding optimal sites for solar projects

- The importance of accurate site assessments
- Limited access to reliable data and analytics
- Identifying optimal configurations can be cumbersome

Data Management

Inefficient handling of project data, leading to errors and delays

- Lack of integrated data management systems
- Challenges in tracking project progress and KPIs
- Difficulty in making data-driven decisions

+ Project delays and increased costs

+ Inefficient use of resources

+ Missed opportunities for optimizing project performance …

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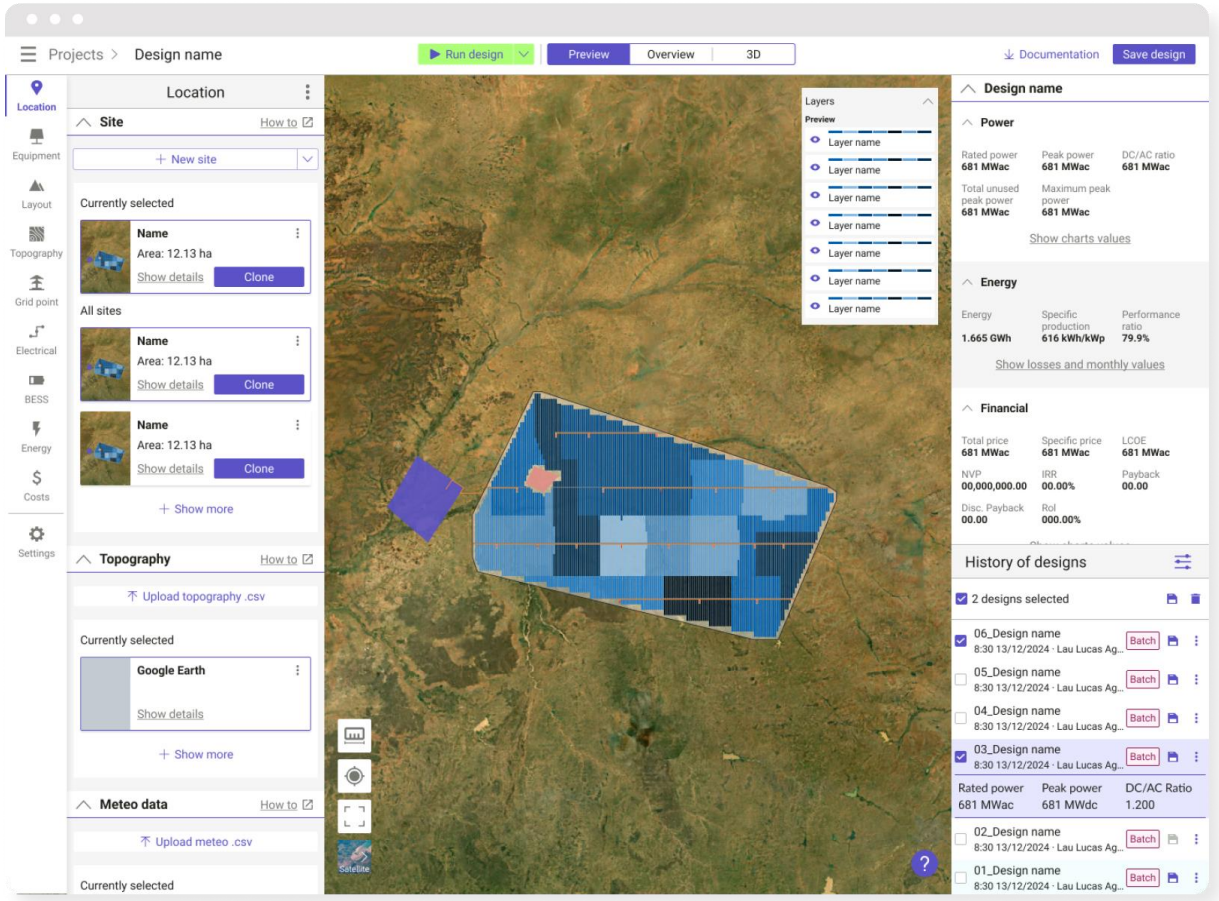
Feasibility Studies

A solar power **feasibility analysis** determines if the renewable energy project gets the green light by identifying roadblocks in the beginning of the planning phase spanning all project stages:

- Site Selection
- Solar Resource Assessment
- System Sizing
- Technology Selection
- Solar Plant Layout And Design
- Electrical Design
- Interconnection And Grid Integration
- Civil And Structural Design
- Environmental Impact Assessment
- Project Economics
- Construction And Commissioning
- Operation And Maintenance
- Monitoring And Performance Analysis



The goal is to limit project risk and address issues early on. When identified, many critical design constraints can be overcome effectively with planning, avoiding going over budget or getting stalled.

How??

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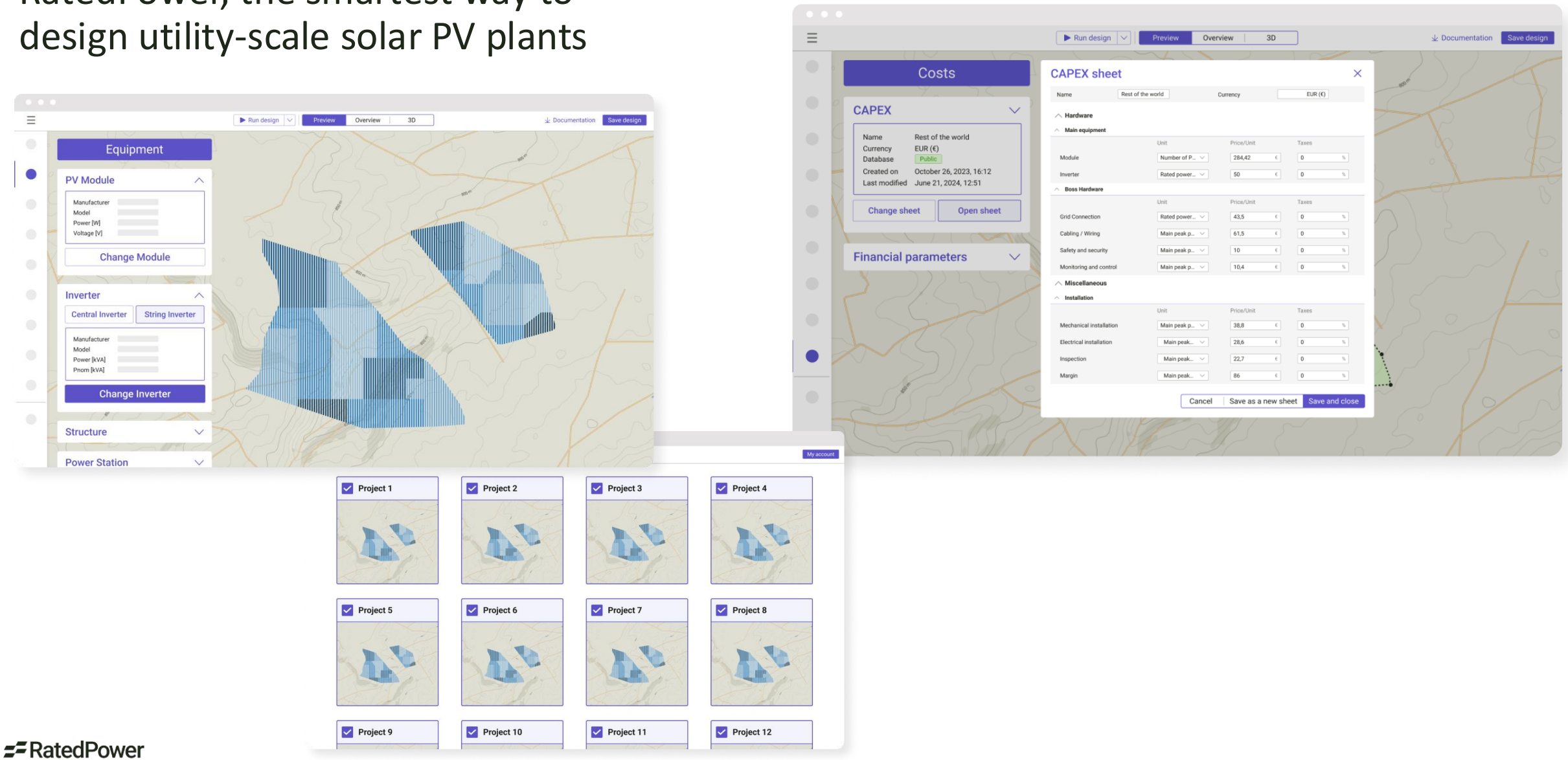
RatedPower, the smartest way to design utility-scale solar PV plants



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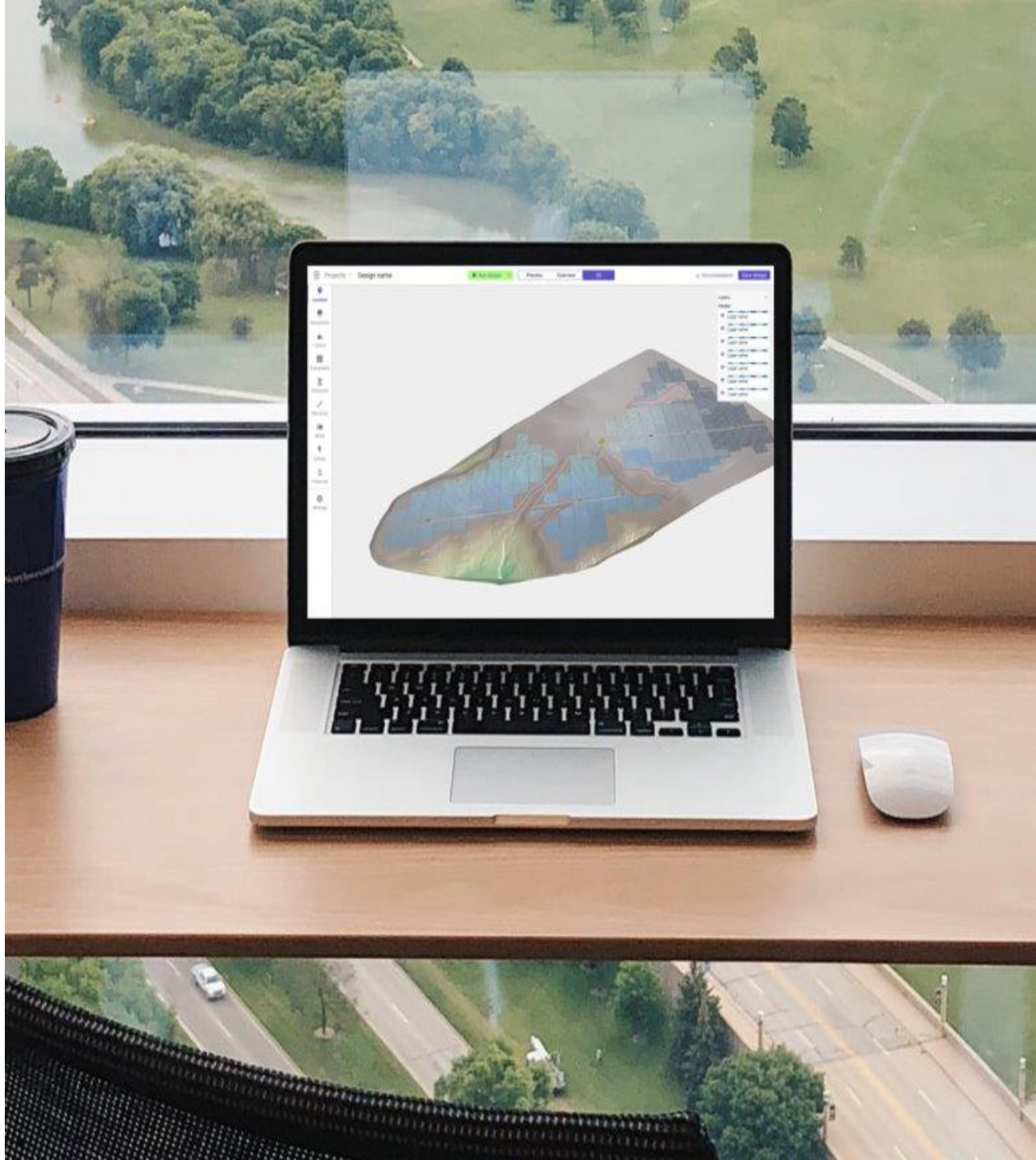
02. Software showcase

RatedPower case study: Spain

Site location: Almería, Spain
PV module: Bifacial 610 W
Central inverter: 2310 kVA
Structure: SAT

Objective:
- Find the best DC/AC ratio to minimize LCOE
- Compare the results and decide on final design

Tools:
- Batch design
- Comparison tool



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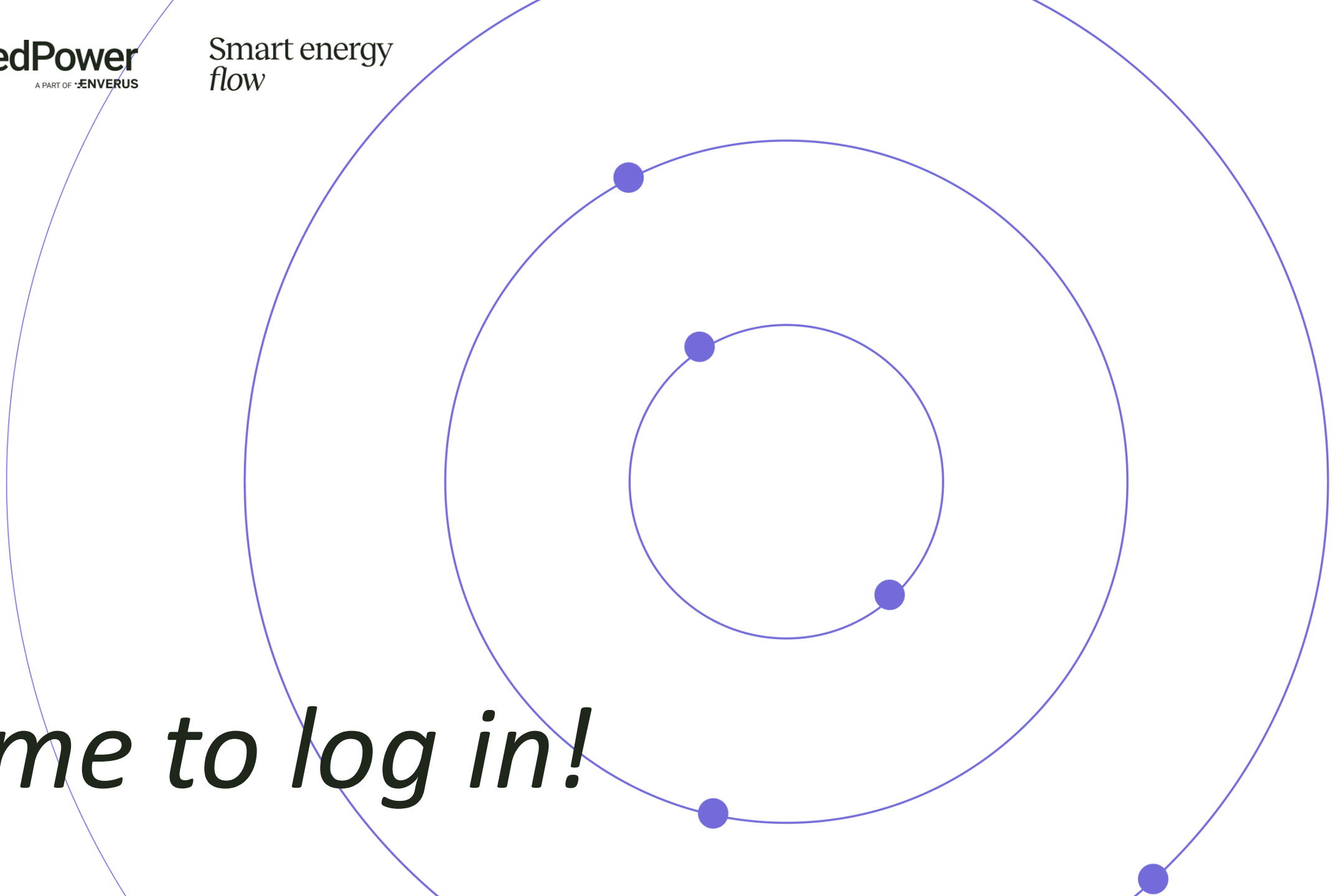

Time to log in!

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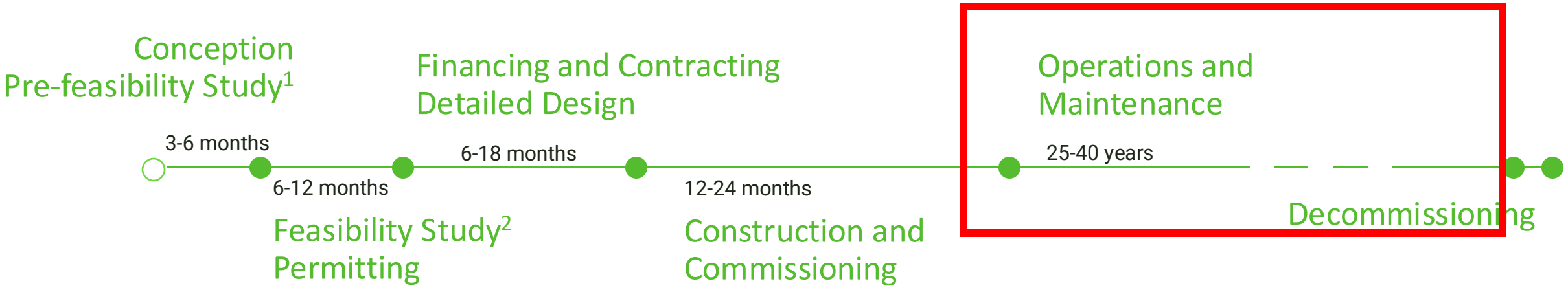
03. O&M

Development Timeline of a Solar Project



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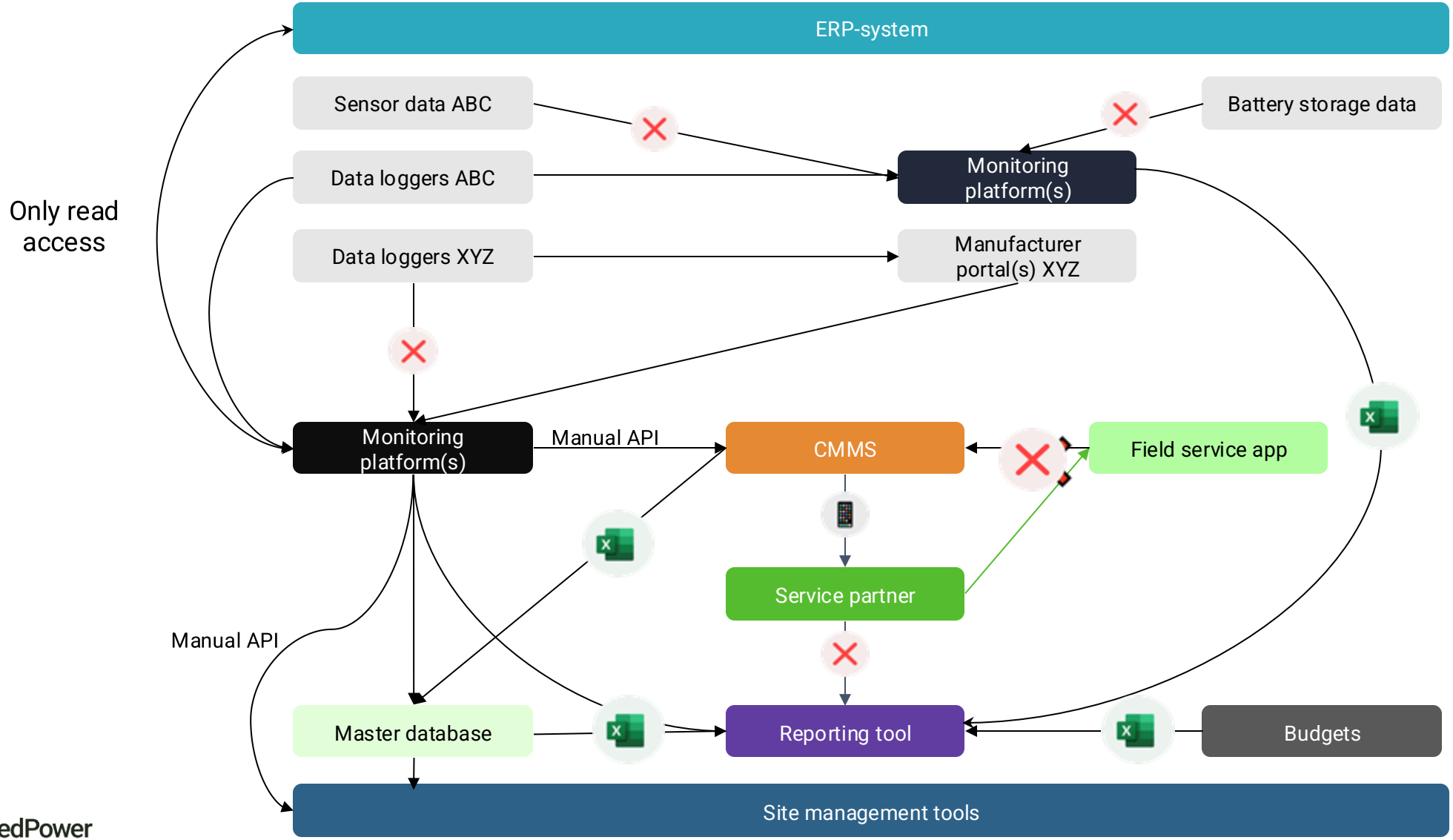
Map your data flows



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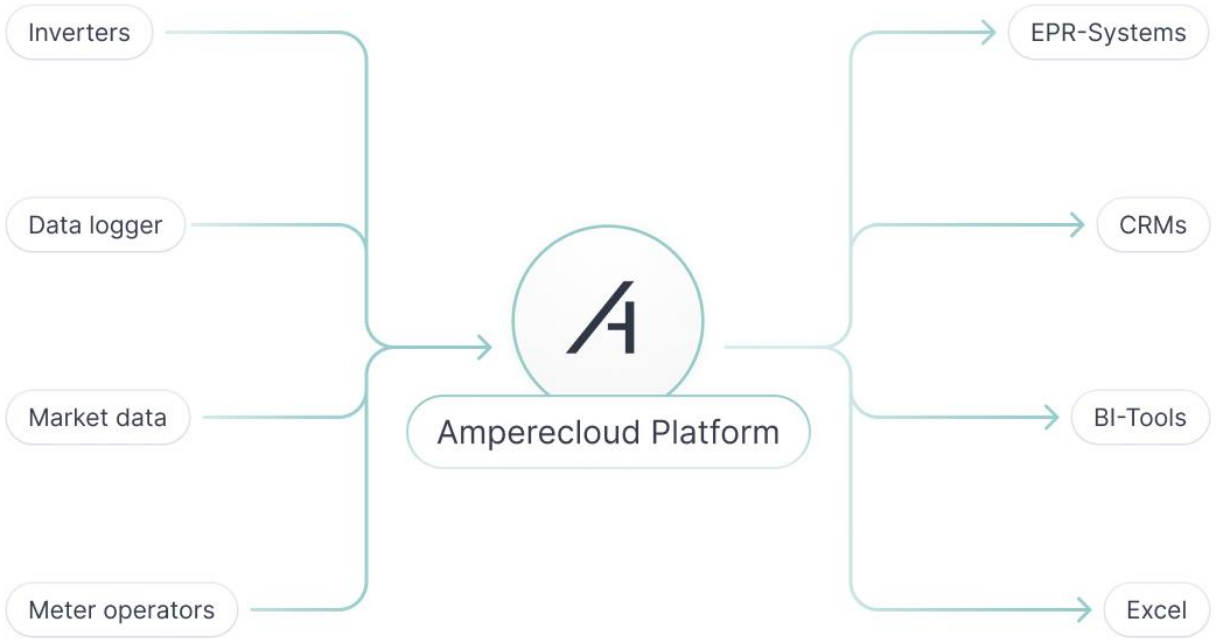
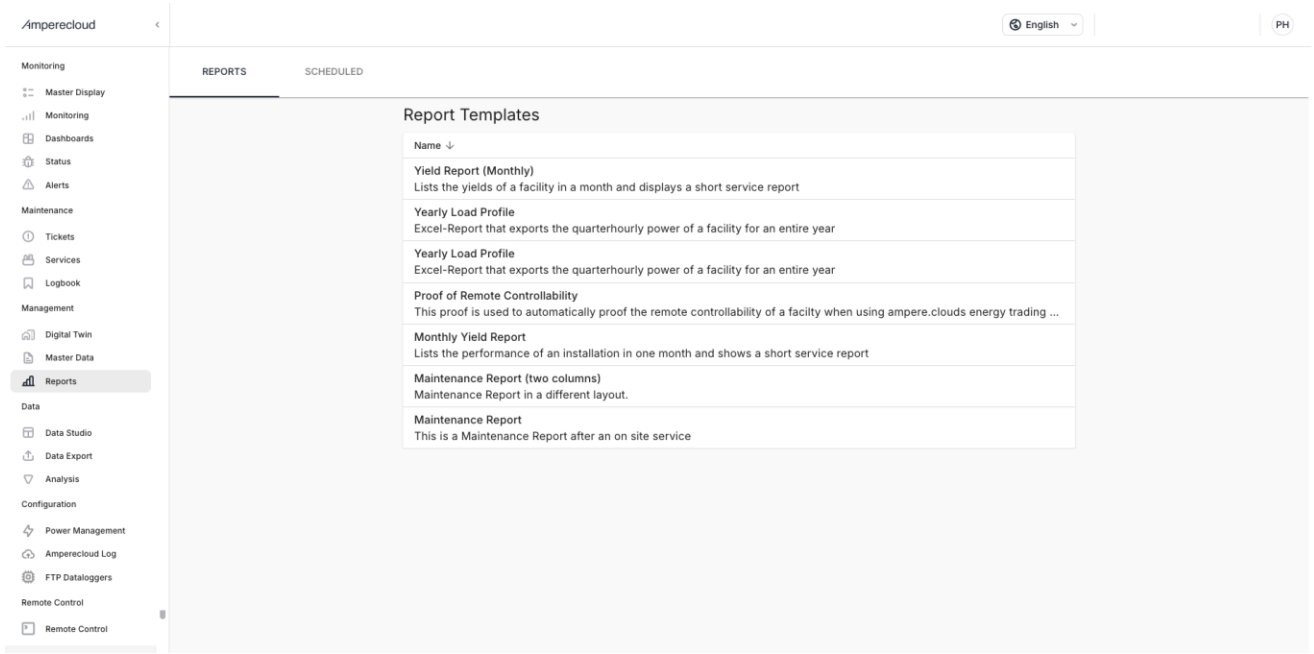
Map your data flows **and streamline it with a central data warehouse**



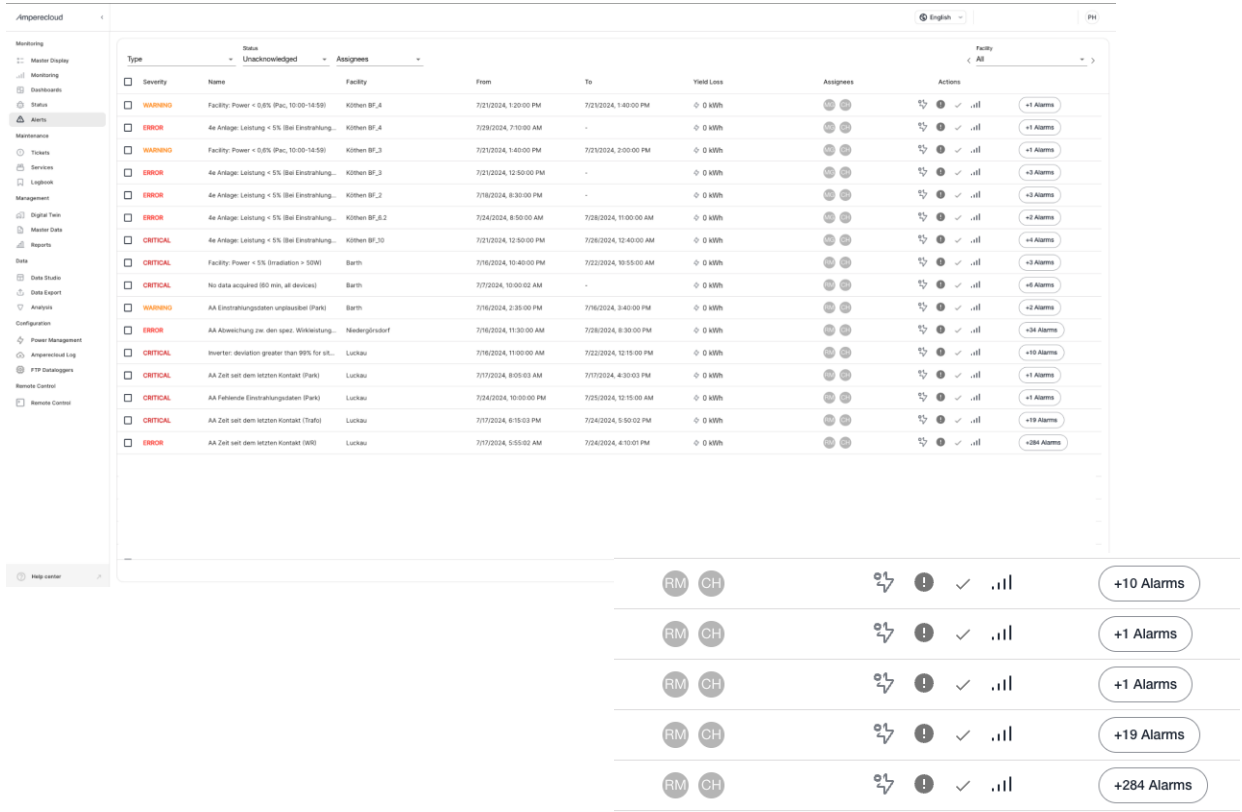
Map & automate your reporting structure

- Create a list of stakeholders (e.g. investors, grid operators, clients) and their needs
- Setup KPIs and events you want to report about in your monitoring system
- Best case: Build real-time dashboards for stakeholders they can view themselves
- Big plants = many stakeholders + lot of data → Automate your reporting



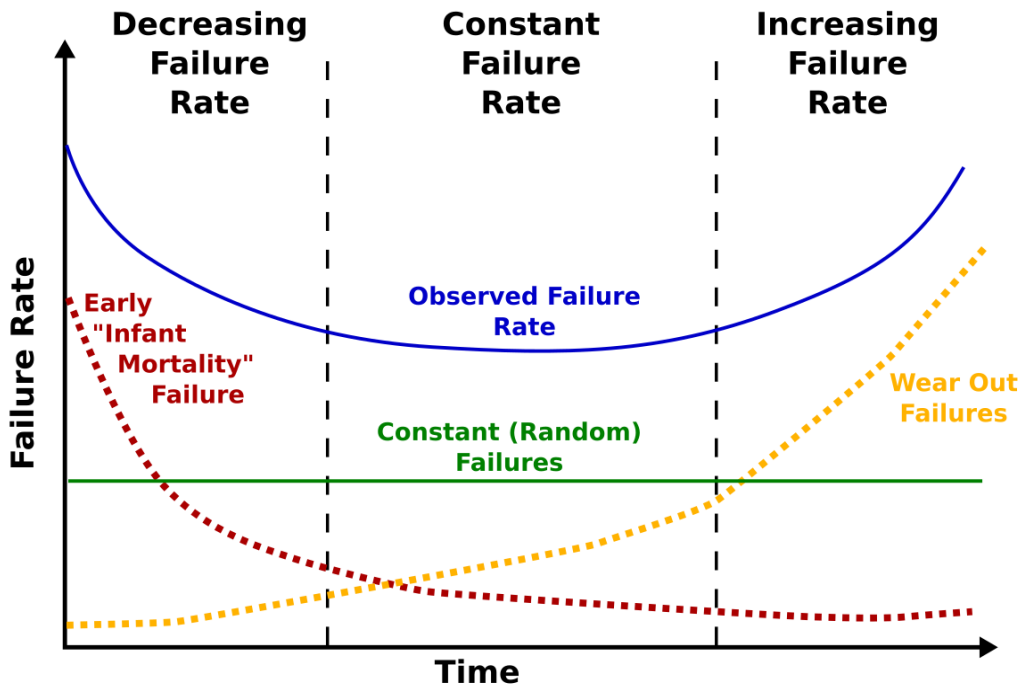
Implement an intelligent alarm structure

- Bigger plants = more components = exponentially more alarms
- Setup hierarchies in your alarm system to prevent alarm fatigue
- Challenge your alarm structure in the first 12 months on a constant basis



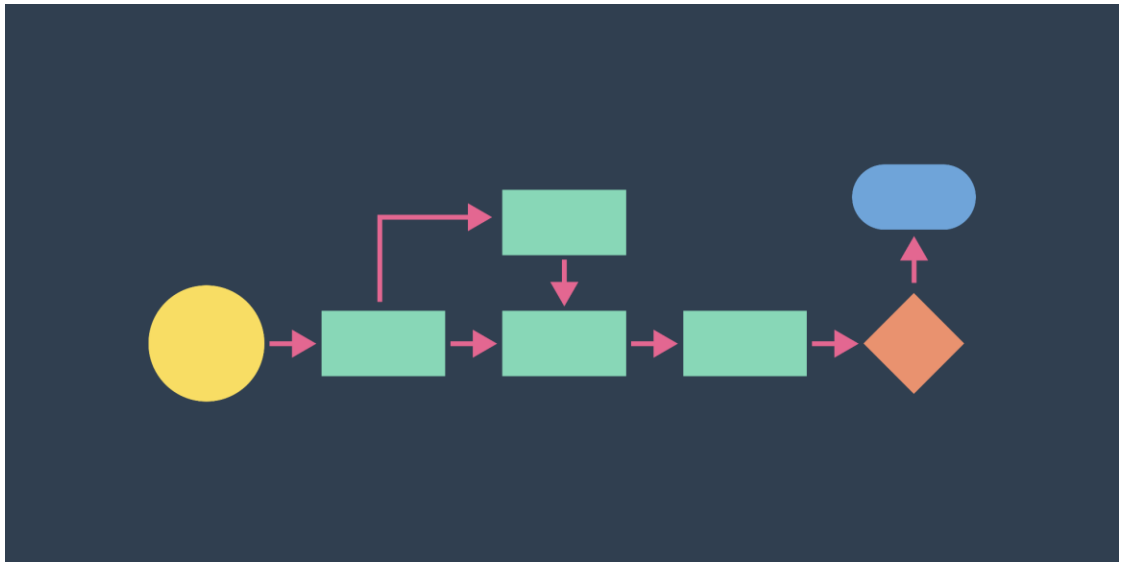
Anticipate initial failures

- Most hardware failures happen in the first months of operation
- Brief your control rooms about it
- Setup more sensitive alarms
- Plan regular maintenance at smaller intervals
- Best case: Have a stock of hardware components right next to your plant



Constantly challenge your (monitoring) workflows

- You can already automate > 90 % of monitoring processes
- Our best practice: review processes once a quarter
- Implement new, automated workflows for most time consuming tasks in the next quarter
- “We are doing this in excel” is the best hint that you need to automate a process :)



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04. Q&A session

Questions?

We're all ears!
Drop yours in the question box!

Frederik Merz
frederik.merz@ampere.cloud

amperecloud.com
Linkedin: /amperecloud

Daniel Oliveira
doliveira@ratedpower.com

ratedpower.com
Instagram: @rated_power
Linkedin: /ratedpower

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