

**plain
concepts**

Rediscover
the meaning of technology



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Agenda

- The power of Digital Twins
- Artificial intelligence and Digital Twins
- Data Integration
- Predictions and simulations
- Model your digital twins
- Digital Twins Insights
- Digital Twin Architecture Sample
- Solar Farm Digital Twin Demo

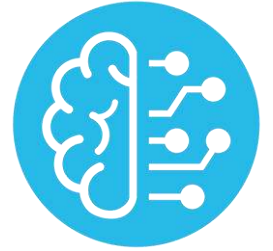
The power of **Digital Twins**



Virtual replicas of entire physical environments

- Unique representation and source of truth
- Bring down data silos and enable data-awareness
- Represent the current status and behaviour of an environment or system

The power of Artificial Intelligence

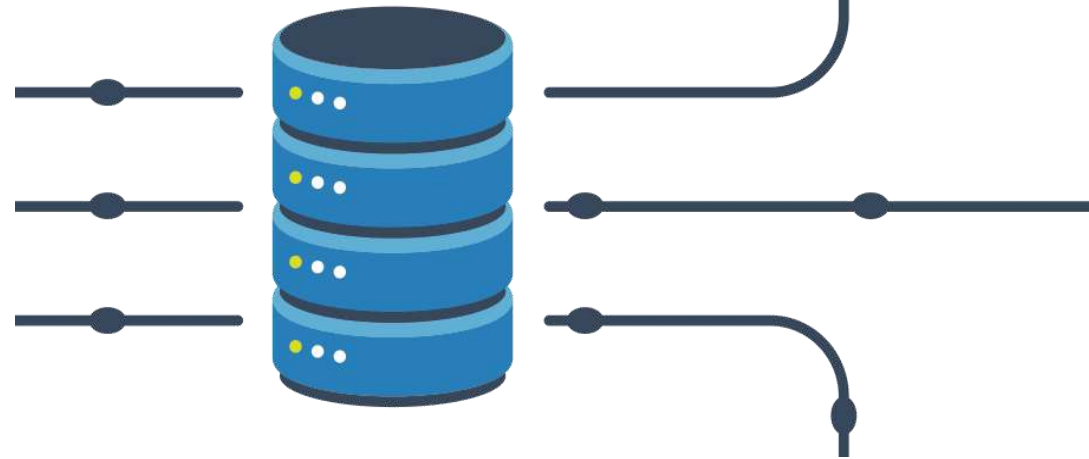


Artificial intelligence and digital twin improve one another

- Run experiments and simulations to represent potential status and behaviour under circumstances that might not be easy to reproduce.
- Predictive maintenance and anomaly detection (outliers)
- Comprehensive way of representing data.
- Improve operations and efficiency
- Minimize costs

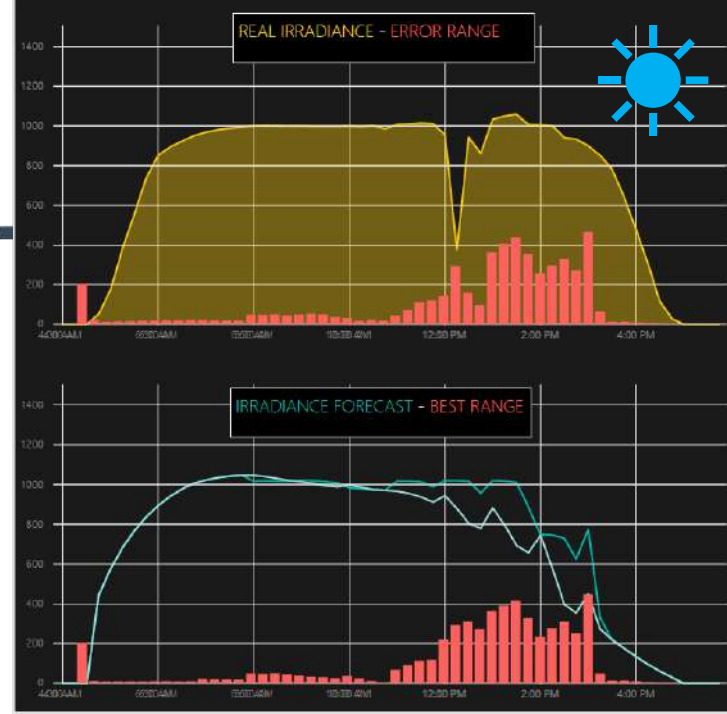
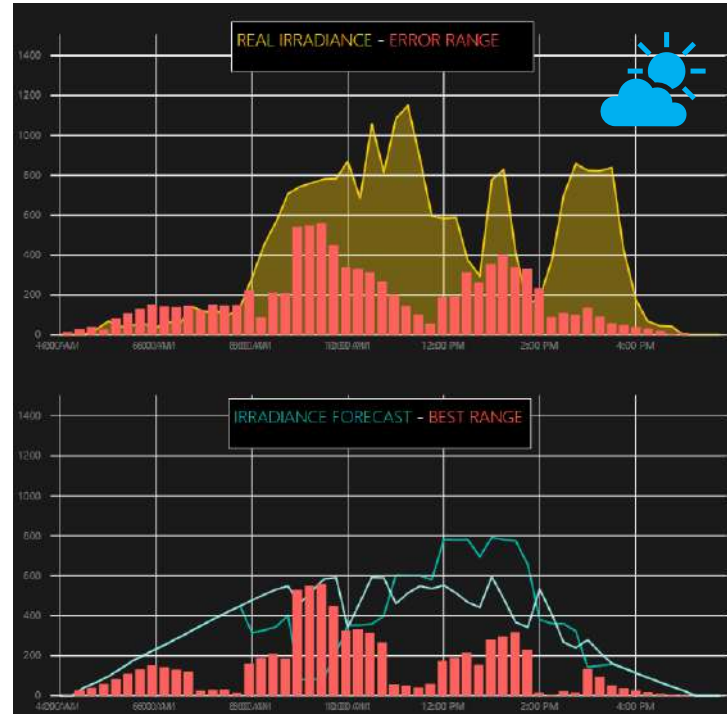
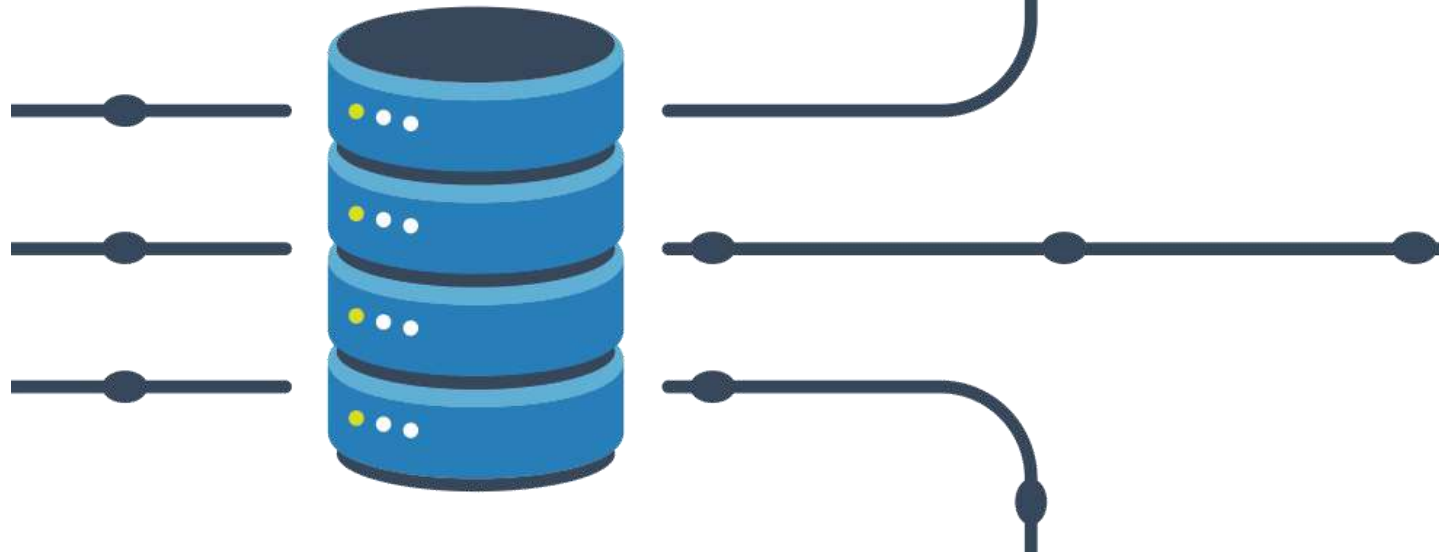
Data Integration

- IoT Devices and Sensors Telemetry
- Configuration Management database (CMDB)
- Device Logs
- Time Series Databases
- External Systems and Datasources
- Machine learning algorithm outputs
- Historic Data
- Simulated Data



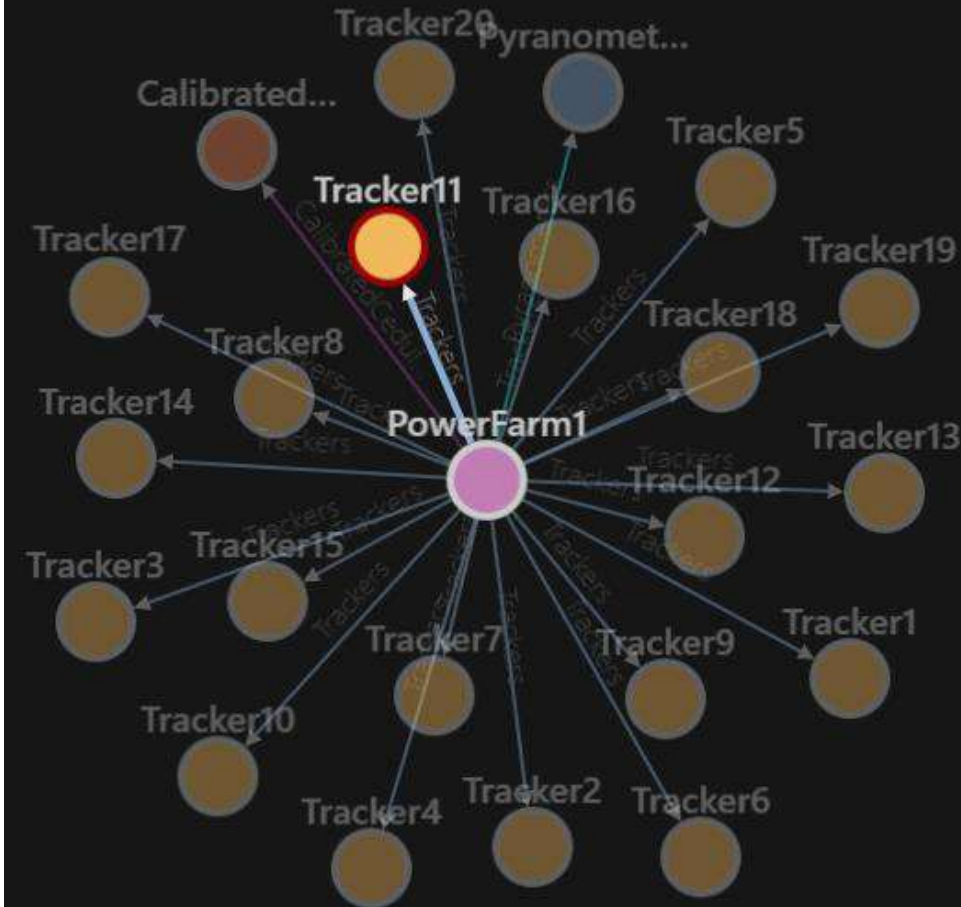
Insights → Predictions

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Model your Digital Twins

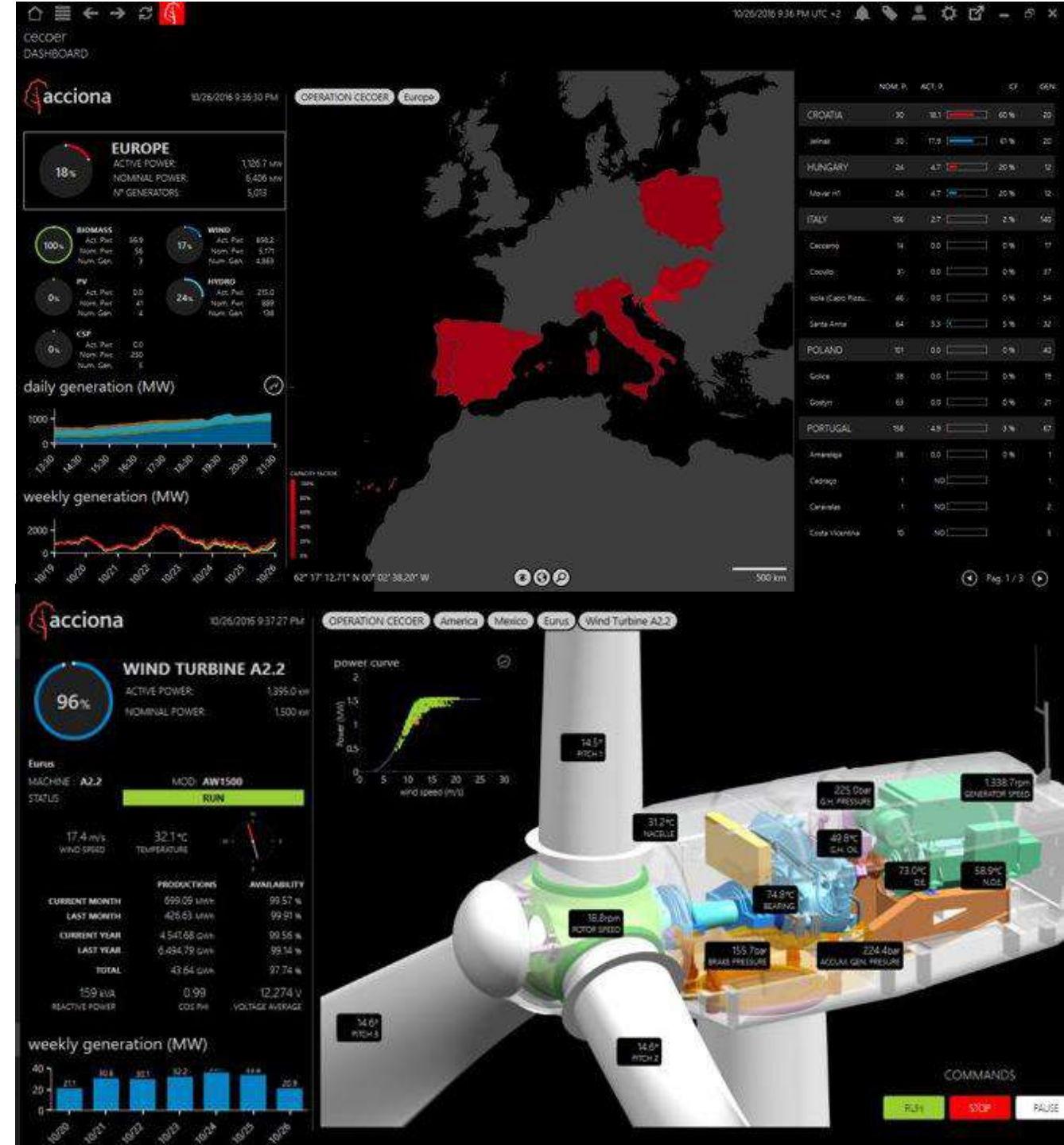
- Open modeling language to create custom Business models using Digital Twins Definition Language (DTDLE)
- Represent your Business with Digital Twins instances, relationships, properties and telemetry.
- Powerful query mechanisms to obtain desired information from the graph
- Seamlessly integrate Digital Twin in your systems
- Highly scalable live execution environment to bring digital twins to life in a live graph representation



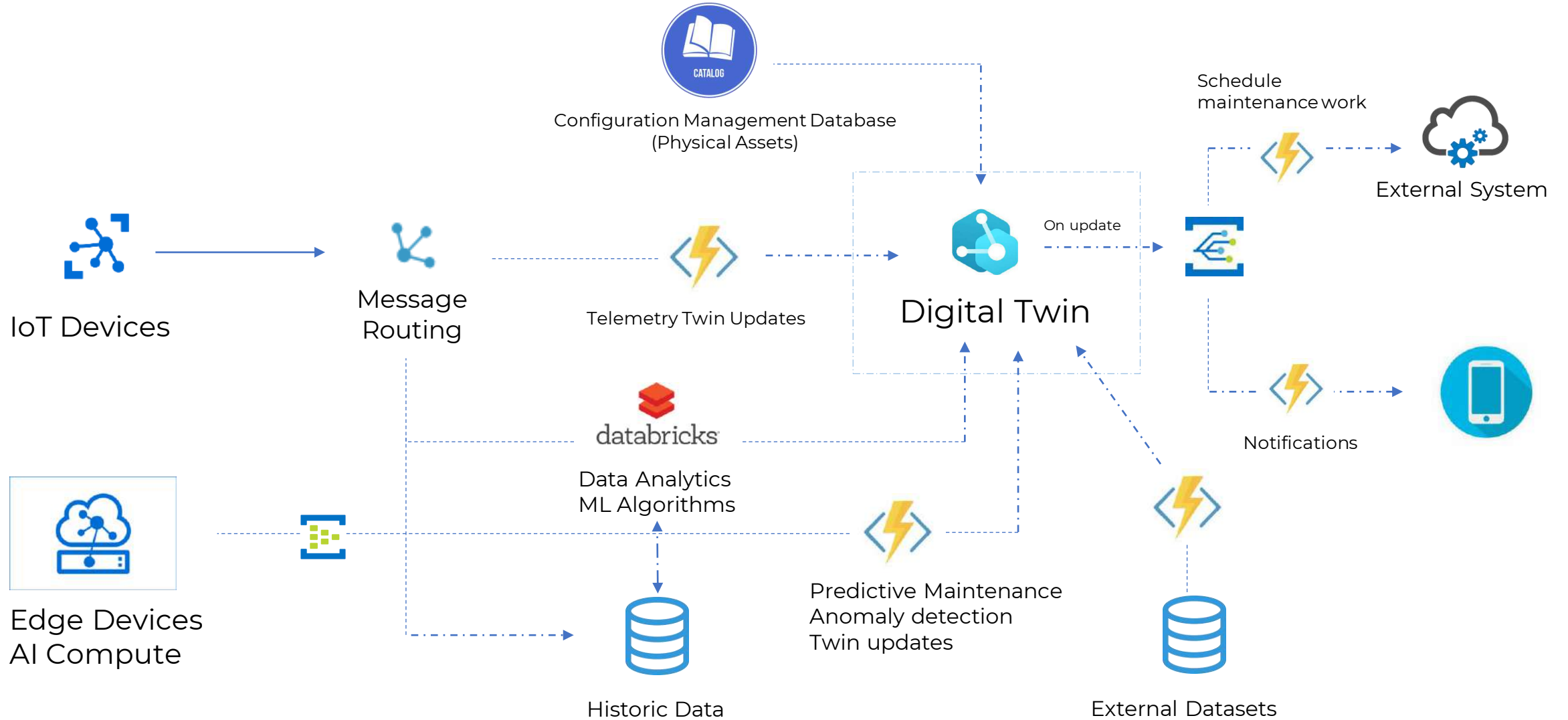
Insights Digital Twins

Use the representation that best suits your Business and get immediate insights

- SCADA
- Maps
- Hierarchy Graphs
- 3D Model representations
- BIM, Autocad
- Augmented Reality
- All of them!



Digital Twin Architecture Sample

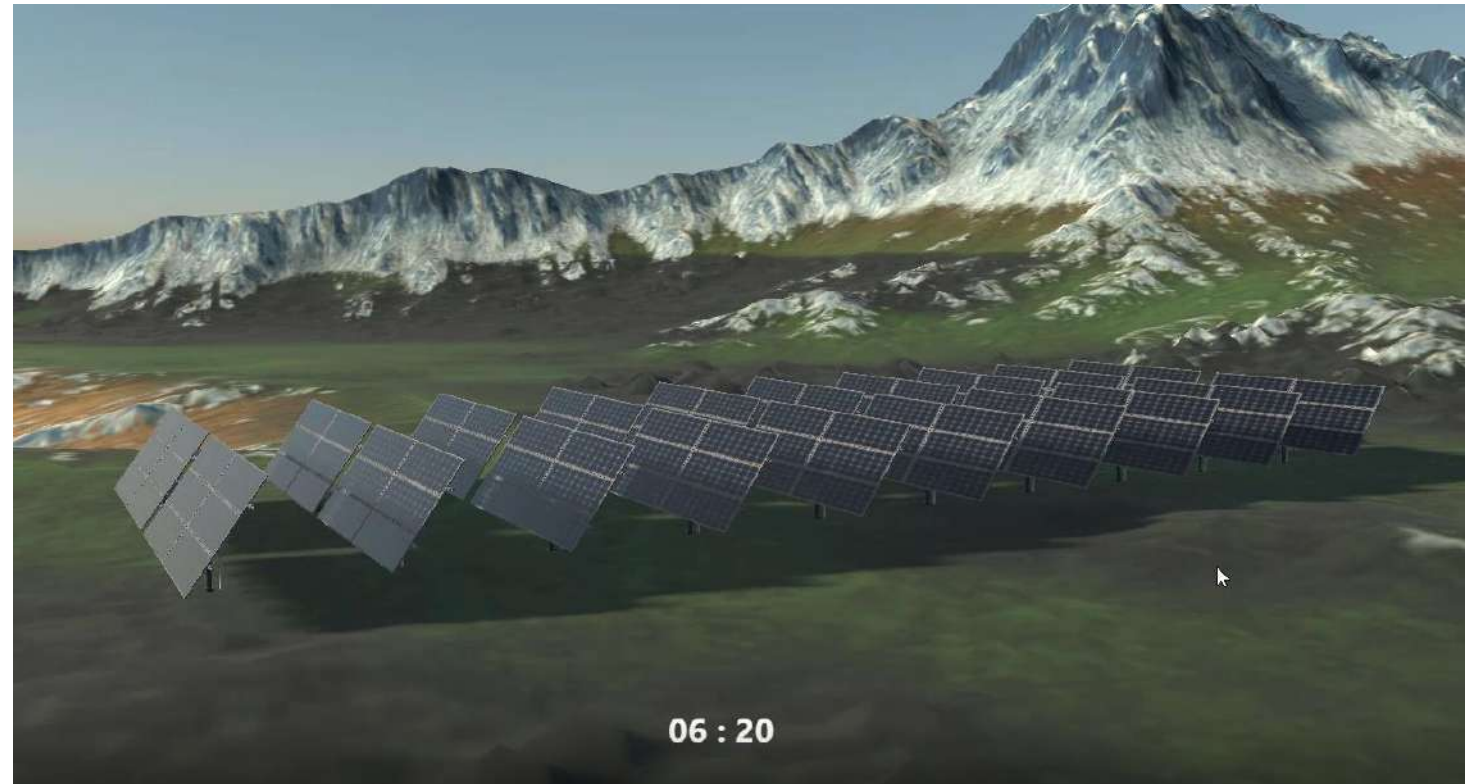


Digital Twin Demo

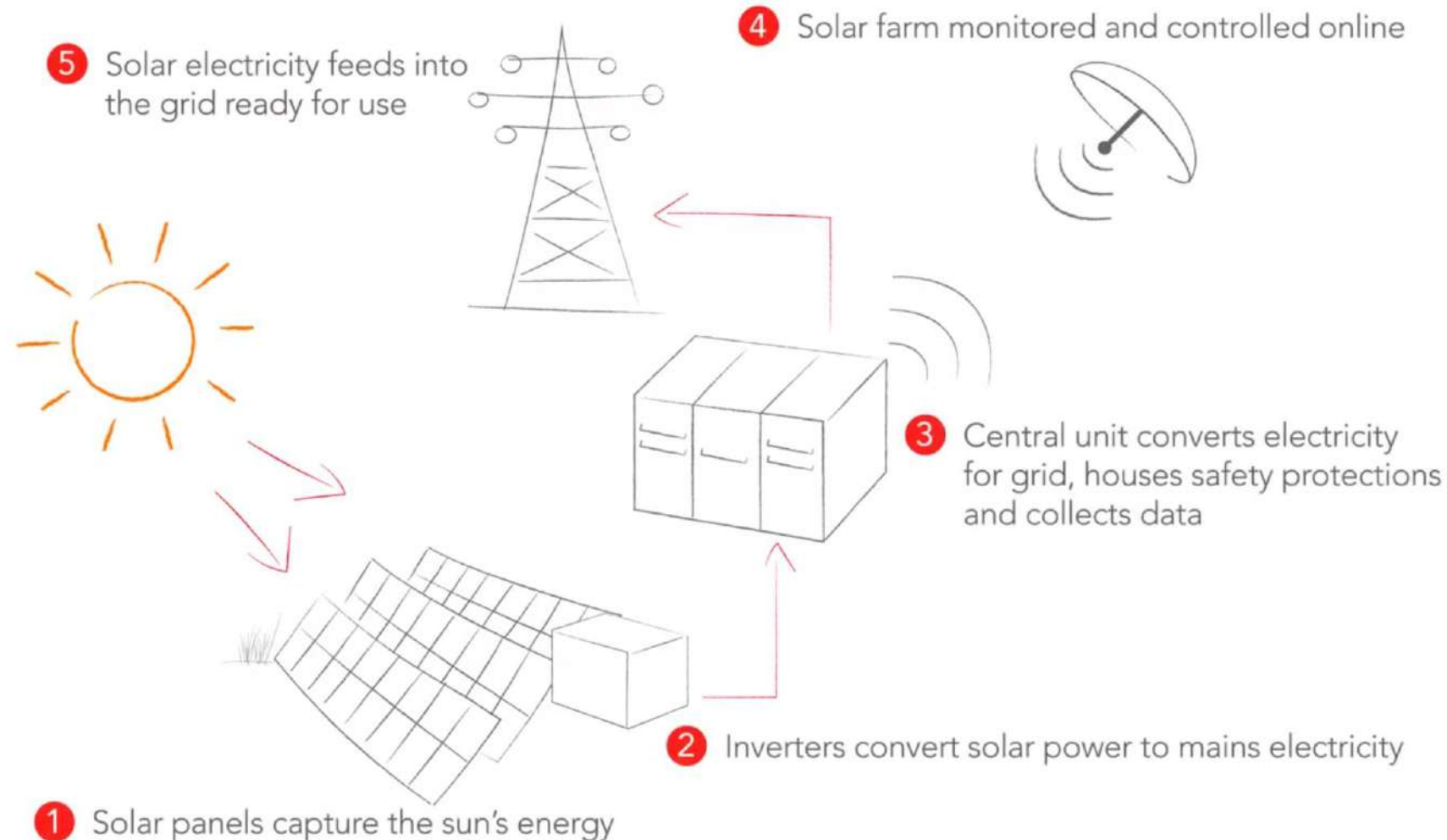
Solar Power Farm

Facts:

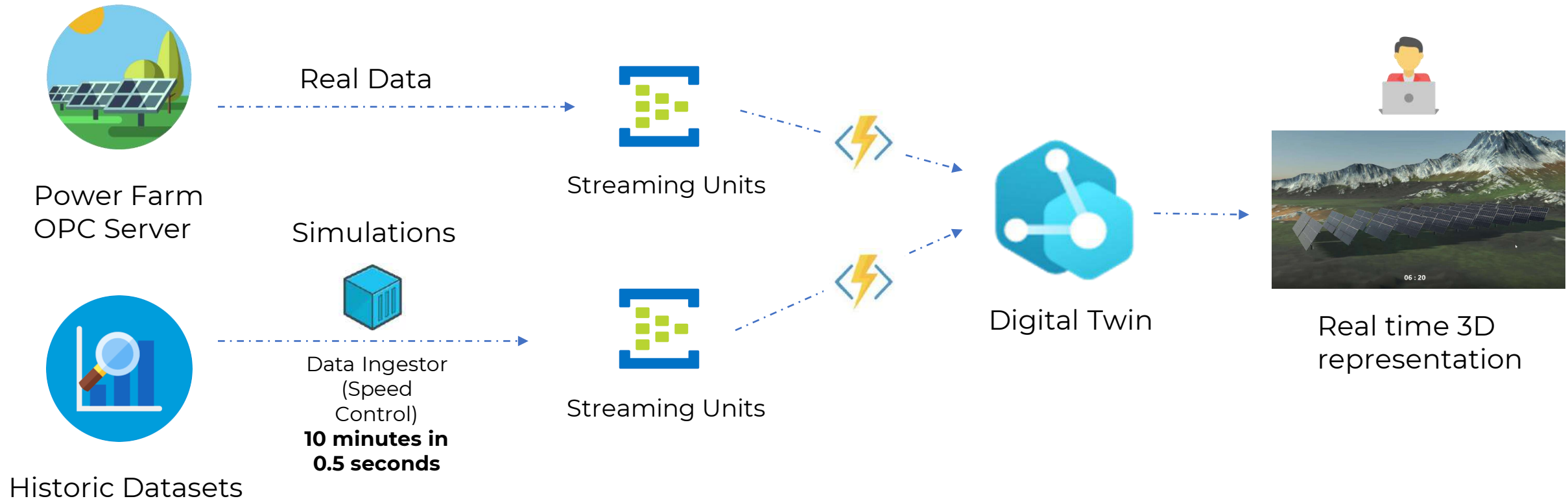
- Lack of monitoring often leads to wastage of solar energy
- Lack of information on energy generation and forecast depending on the plant, weather conditions, solar panels, etc.
- Energy prediction can help better plan the energy consumption (more efficient operations)
- Detecting outliers help operators to perform predictive maintenances anticipating to absolute failure

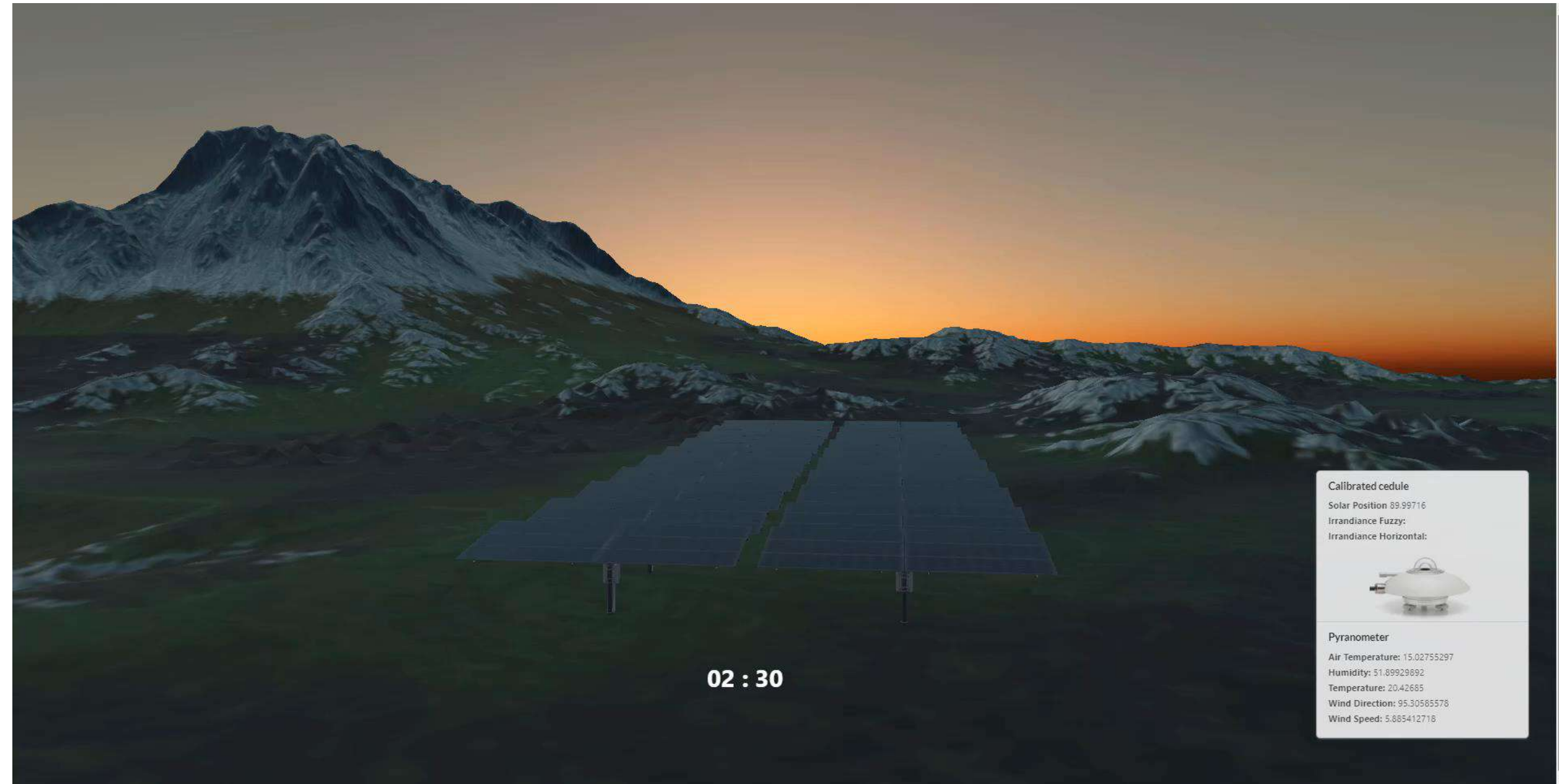


How does a Solar farm work?



Digital Twin Demo Architecture





02 : 30

Calibrated cedula

Solar Position 89.99716
Irradiance Fuzzy:
Irradiance Horizontal:



Pyranometer

Air Temperature: 15.02755297
Humidity: 51.89929692
Temperature: 20.42685
Wind Direction: 95.30585578
Wind Speed: 5.885412718