

## USE CASE

# From Raw Data to Interactive Visualization for Solar Monitoring System

## CUSTOMER'S CASE

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In 2012, solar monitoring systems were primarily data-driven, offering raw data outputs with minimal visual representation or integration. Operators struggled with scattered screens and single-purpose tools, making it challenging to get a comprehensive overview of solar plant performance. Brightgrove transformed this fragmented approach into a cohesive, user-friendly system, providing operators with real-time insights and management capabilities.

## INITIAL CHALLENGE (PRE-2012)

### Solar plant operators faced significant operational inefficiencies due to:

- Unprocessed numerical data without context
- No visual representations of key metrics
- Manual data interpretation requirements
- Lack of comprehensive system overview
- Scattered single-purpose screens for different functions

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[2012-08-06 09:00:03] ALERT: Hardware offline - Fachklima IT Lanest - Sunsniffer
[2012-08-06 09:00:05] ALERT: Hardware offline - MECAM Software - webbox 1
[2012-08-06 09:00:07] ALERT: Hardware offline - TOPSUN - webbox 1
[2012-08-06 09:00:11] ALERT: Hardware offline - Open Renewables - webbox 1
[2012-08-06 09:00:15] ALERT: Hardware offline - Storm Mathenausplatz - webbox 1

[2012-08-06 09:00:20] STATUS REPORT - Plant: AAR-Montagen GmbH
Location: Ehlegrung 15, Magdeburg
Current Power: 4.67 kW
Daily Production: 808.69 kWh
Installation ID: 14956
Connected Units: 7

[2012-08-06 09:00:25] DEVICE STATUS
SN: 11000039
PW: V02-110 Rabbit 5700
IP: Unknown
Last Communication: Never
Connection: Failed

[2012-08-06 09:00:30] PLANT METRICS
AAR-Montagen GmbH | 78 kWp | 4.67 kW
Solar Hafenlogistik | 200 kWp | 5.27 kW
STV | 273 kWp | 11.32 kW
Brandstatter | 30 kWp | 0.54 kW
Energium | 24 kWp | 1.74 kW
Münchke Photovoltaik | 99 kWp | 1.27 kW
Kimmerle Georebohle | 309 kWp | 6.75 kW
Kristall Palm Beach | 30 kWp | 0.40 kW
Mercedes Graf Furth | 141 kWp | 2.33 kW
```

## BRIGHTGROVE'S TRANSFORMATION (2014-2015)

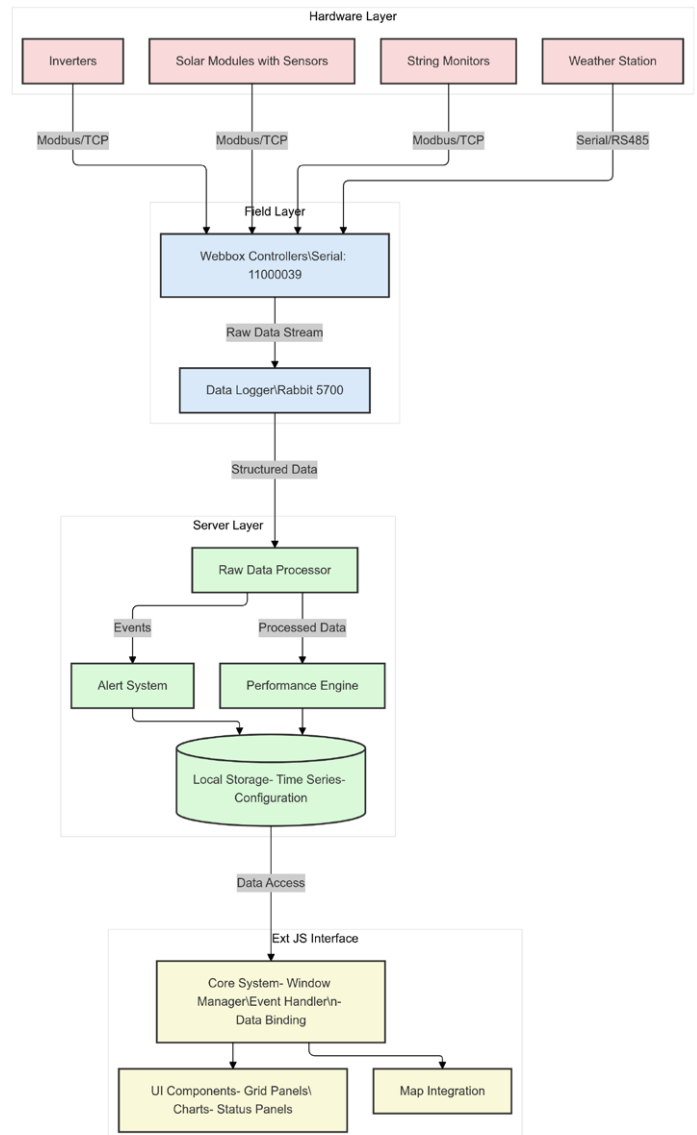
Brightgrove implemented a sophisticated multi-window interface using Ext JS framework with:

### Core Architecture Features

- Synchronized multi-view system allowing simultaneous monitoring of different data layers
- Real-time data synchronization across all interface components
- Interactive module grid for granular performance monitoring
- Integrated geolocation capabilities with map interface
- Customizable dashboard panels

### Key Technical Components

- Visual module grid displaying real-time metrics (voltage, temperature)
- Performance trend visualization with historical data integration
- Consolidated alert and notification system
- Weather data integration
- Real-time configuration management interface



## INTERFACE LAYER (EXT JS)

Implements a sophisticated multi-window interface:

### Core System

- Window Manager: Handling multiple synchronized views
- Event Handler: Managing real-time updates
- Data Binding: Connecting UI components to data sources

### UI Components

- Grid Panels: Displaying tabular data with sorting and filtering
- Charts: Visualizing performance metrics and trends
- Status Panels: Showing real-time system status
- Map Integration: Geographical representation of solar installations, visual status indicators on map

The screenshot displays the SunSniffer web interface with the following components:

- Active Alerts:** A table showing alerts for various plants.
 

| Plant                        | Item         | Error            | Time             |
|------------------------------|--------------|------------------|------------------|
| Fackelmann II Lanzet         | Sunsniffe... | Hardware offline | 06.08.2012 09:00 |
| Fackelmann II Lanzet         | Sunsniffe... | Hardware offline | 06.08.2012 09:00 |
| WICAM Technische Software... | Webbox 1     | Hardware offline | 06.08.2012 09:00 |
| TOPSUN                       | Webbox 1     | Hardware offline | 06.08.2012 09:00 |
| Open Renewables              | Webbox 1     | Hardware offline | 06.08.2012 09:00 |
| Storm Rathenauplatz          | Webbox 1     | Hardware offline | 06.08.2012 09:00 |
- Sunsniffer 2 Status:** A parameter-value table.
 

| Parameter         | Value             |
|-------------------|-------------------|
| Sunsniffer        | Sunsniffer 2      |
| Plant             | Fackelmann II ... |
| Connected Strings | 7 Item(s)         |
| Plant Slot        | 2                 |
| Serial Nr.        | 46                |
| IID               | N/A               |
| Last Update       | N/A               |
| Status            | Warning           |
- WB ID 1026 on Unknown:** A detailed view of a specific installation.
 

|                        |                            |
|------------------------|----------------------------|
| Plant:                 | TOPSUN                     |
| Installation ID:       | 1026                       |
| IP Address:            | Unknown                    |
| Last Data Sent:        | Never                      |
| Data sending interval: | 0 sec                      |
| Connection status:     | No connection              |
| Firmware:              | V02.110 Rabbit 5700 Oct 06 |
| Serial Nr.:            | 11000039                   |
- Plants Overview:** A bar chart showing kWh production for various plants, with a table below.
 

| Plant                     | Address                              | kWp | Power, G |
|---------------------------|--------------------------------------|-----|----------|
| AAR-Montagen GmbH         | Ehlegrund 15, Magdeburg, Germ...     | 78  | 4.67     |
| Belor Hafenlogistik       | Mainstr. 5, Bamberg, Deutschland     | 108 | 5.27     |
| BIV                       | Bindlacher Berg, Bindlach, Germa...  | 273 | 11.32    |
| Brandstätter              | Ronhofer Weg 25, Fürth, Deutsc...    | 30  | 0.54     |
| Enerquinn                 | Grimmastraße 10, Weingarten, D...    | 24  | 1.74     |
| Hinrichs Photovoltaik GbR | Wetterkreuz 11, Erlangen/Tenne...    | 99  | 1.27     |
| Kimmerle Gewerbebau       | Industriestraße 1, Dillingen, Deu... | 309 | 8.76     |
| Kristall Palm Beach       | Albertus-Magnus-Str. 29, Stein b...  | 30  | 0.40     |
| Mercedes Graf Fürth       | Georg Brenda Str. 1, Fürth, Deu...   | 141 | 2.33     |
| Offset Druck Cadolzburg   | Gewestr. 20, Cadolzburg, De...       | 0   | 0.00     |
| Platzmann                 | Lindenstr. 30, Passau, Germany       | 0   | 1.17     |
- BIV check:** A status dashboard showing green checkmarks for Sunsniffer Webbox, Sunsniffer Server, Strings, Sunsniffer Sensors, Modules, and Overall Status.
- Alerts:** A table for active alerts (currently empty).
- Summary:** A table showing key performance indicators for the BIV plant.
 

|                  |               |
|------------------|---------------|
| Plant name       | BIV           |
| kWh today        | 108.09 kWh    |
| Gain today       | 30.27 €       |
| kWh since start  | 307485.19 kWh |
| Gain since start | 85619.12 €    |
- Weather:** A table showing current and forecast weather for the BIV plant.
 

|         |                                    |
|---------|------------------------------------|
| Address | Bindlacher Berg, Bindlach, Germany |
| Today   | Showers, 12° – 20° C               |
| Tue     | Mostly cloudy (day), 10° – 20° C   |
| Wed     | Chance of Rain, 12° – 22° C        |
| Thu     | Partly Sunny, 13° – 25° C          |

## INTERFACE LAYER (EXT JS)

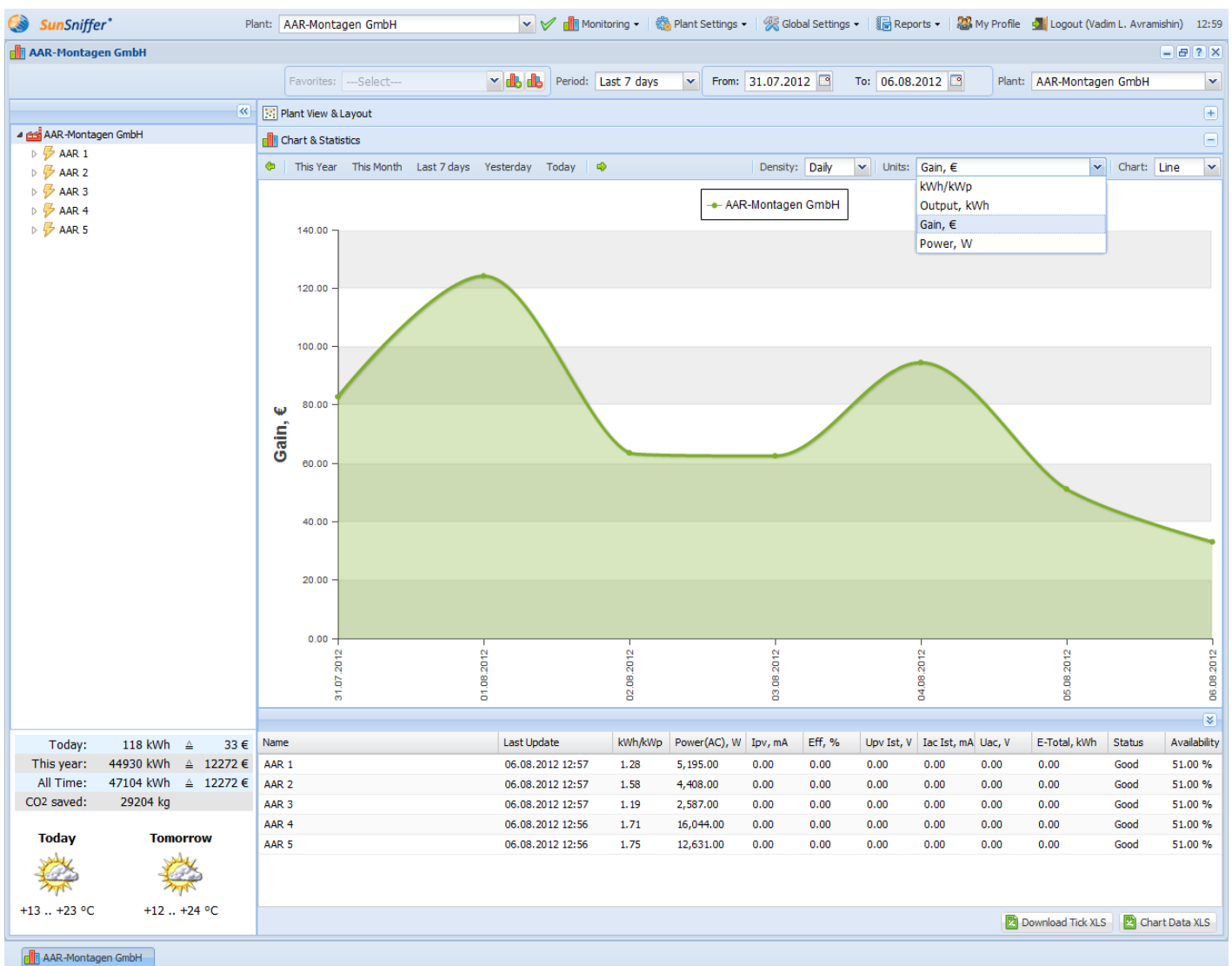
**Simultaneous Views:** Operators could monitor live data, review performance charts, inspect module status, and manage configurations—all at once. Key features like alerts, notifications, and weather data were displayed prominently.

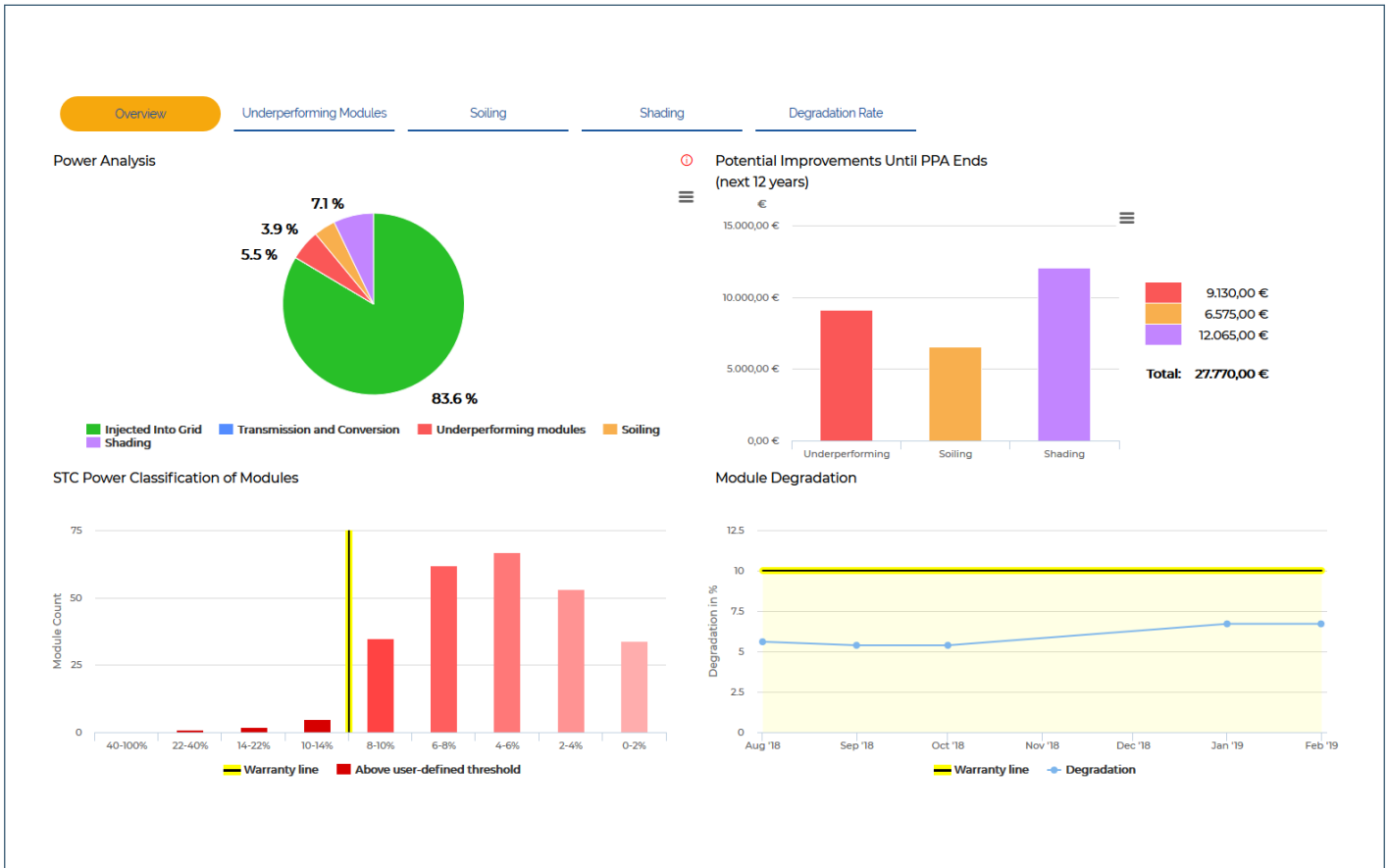
**Real-Time Synchronization:** Windows updated in real-time, ensuring that all components reflected the current status of the system.

**Visual Module Grid:** Real-time module-level data (e.g., voltage, temperature) was displayed in an interactive grid.

**Performance Charts:** Historical and live data trends were visually represented for quick insights into plant performance.

**Map Integration:** Operators could geolocate and monitor plants using an integrated map interface.





## CUSTOMER EVOLUTION (2018–2020)

Building on Brightgrove's foundation, SunSniffer's in-house team implemented modern UI/UX patterns:

- Flat design principles
- Spacious layouts with optimized white space
- Card-based interface organization
- Streamlined navigation
- Enhanced typography hierarchy

## BUSINESS IMPACT

The transformation enabled:

- Shift from reactive to proactive plant management
- Reduced system downtime through real-time monitoring
- Improved operator efficiency with centralized control
- Enhanced decision-making through visual data representation

Ready to take the next step?

Reach us today at [info@brightgrove.com](mailto:info@brightgrove.com)