

WONDR

UX  
DESIGN  
AWARDS  
product  
2022

WONDR

# RTV Deep Dive

UX Design Awards Interview  
April 2022

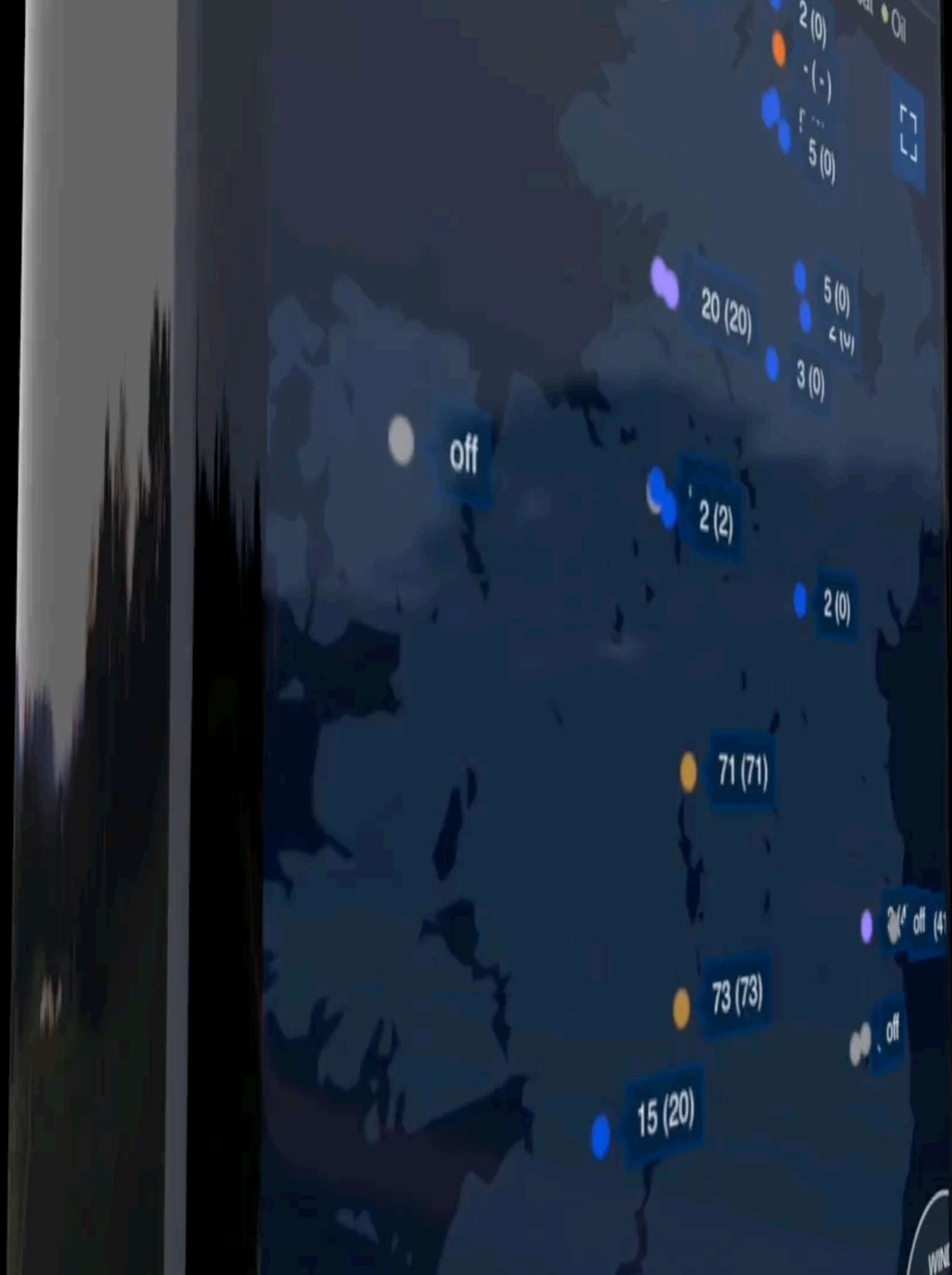
A Digital Product Practice



## AGENDA

- **Overview**
- **Discovery & Definition**
- **Design & Detail**
- **Development & Testing**
- **Deployment & Analysis**
- **Results**
- **Net Zero by 2040**









# OVERVIEW



## CONTEXT

**Everyday across Ireland and the UK, ESB (Electricity Supply Board) uses a variety of tools and interfaces to manage, monitor and trade energy.**

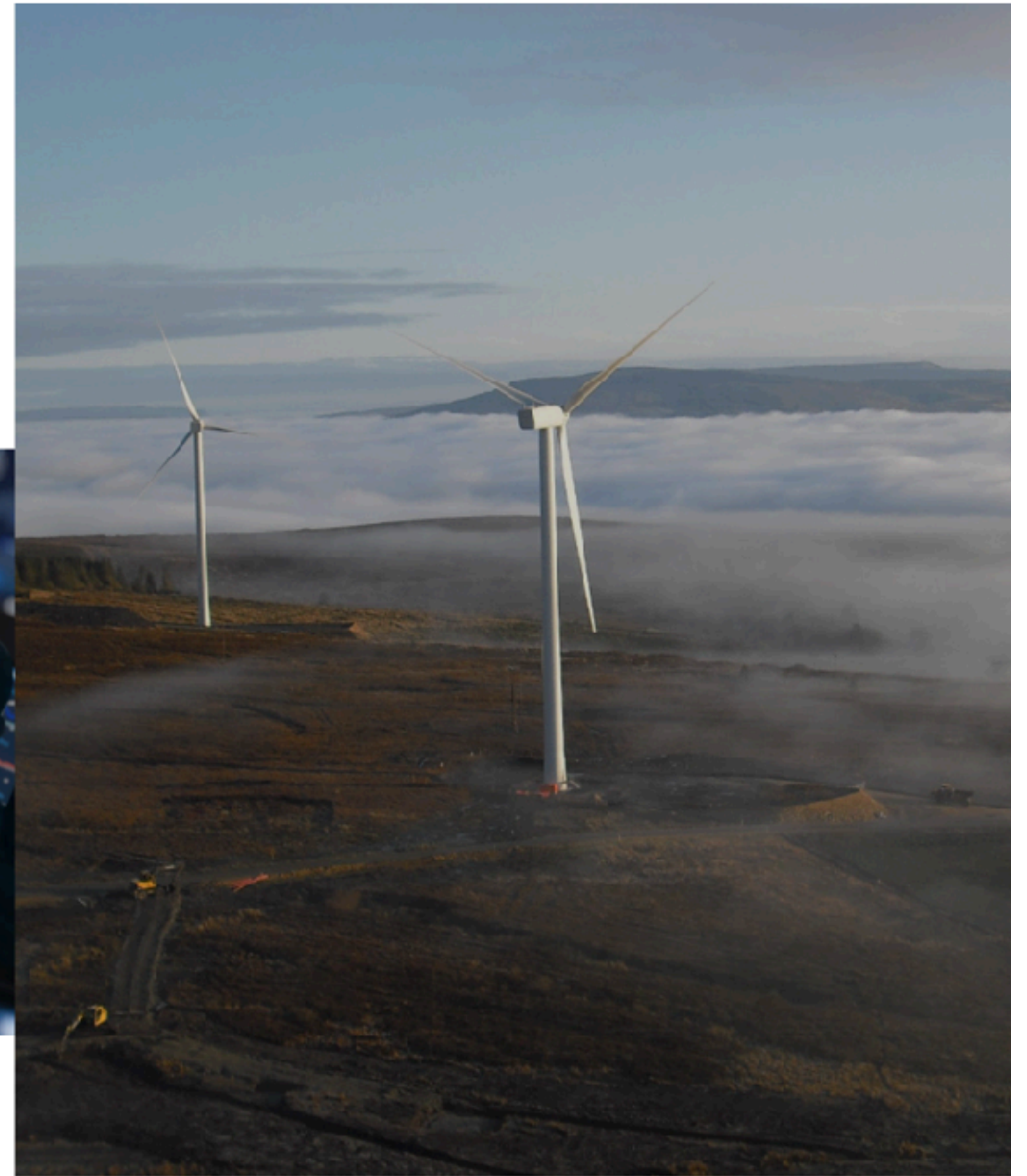




## THE PROBLEM

**The staff needed to gather data from many different sources, then aggregate the information before making decisions.**

- **Time consuming** to analyse data
- The **data** was not available in real-time
- **Multiple non verified sources of truth** creating confusion
- Generation sources such as **wind** couldn't be visualised or forecasted
- **Constraints and energy rules** were not visualised





## NET ZERO 2040

# Net Zero Strategy for 2040 is to be 100% renewable.

- **Vital tool** in the battle to reach Net Zero.
- One **source of truth** for renewable energy data.
- **Forecastable** renewable energy from RTV
- **New data** to be added in the future. Examples are battery, solar, hydrogen and new interconnectors.
- As of April 2022 **33%** of all Irelands energy is generated by **wind** a statistic **verified by RTV**





## SOLUTION

**Develop a user-friendly, centralised go-to data visualisation hub, that is one source of truth to improve operational and financial efficiencies.**





# HOW WE GOT THERE



## CORE PROCESS

**DISCOVERY  
& DEFINITION**

01

**DESIGN  
DETAIL**

02

**DEVELOP  
& TEST**

03

**DEPLOY  
& ANALYSE**

04



## DISCOVERY & DEFINITION

01

# The design team engaged users and stakeholders to gather requirements and outline the project.

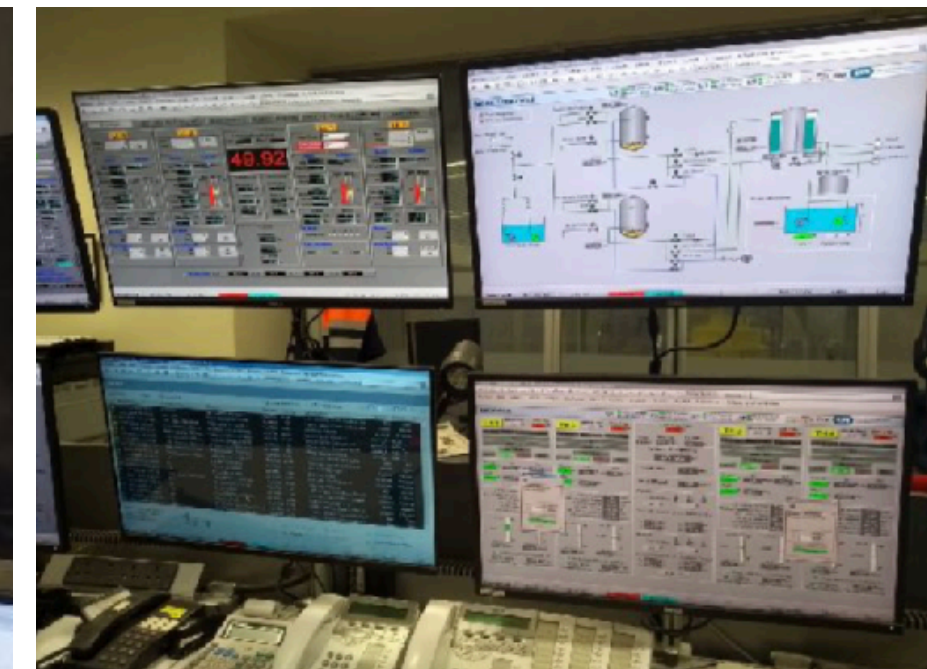
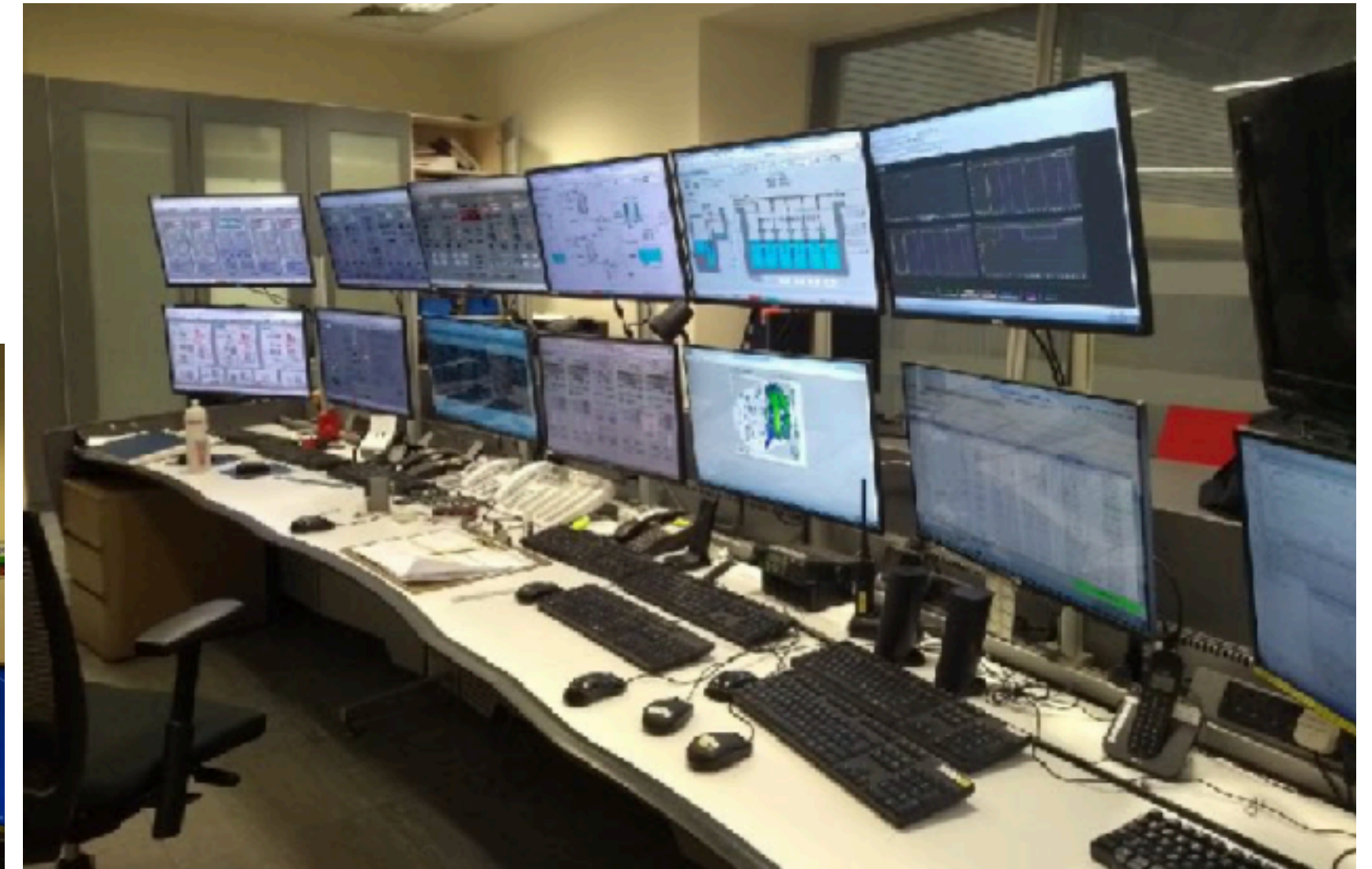
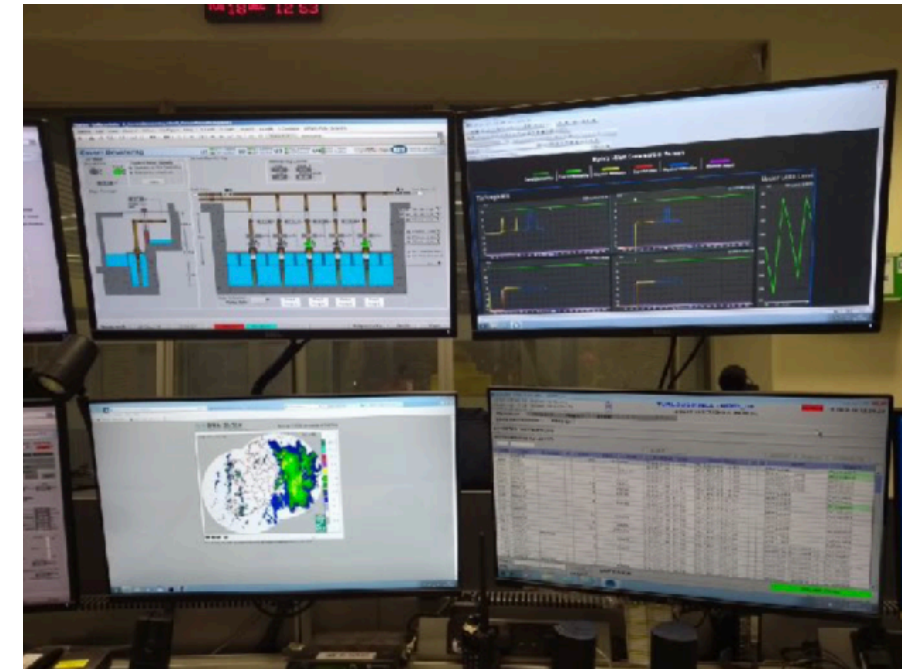
- Team **costing**
- User **interviews**, stakeholder meetings and site visits
- **MoSCoW** and Minimum Viable Product (**MVP**) definition
- UX **prototype**
- **User testing** and analysis
- UX refinement and **sign off**





# User interviews.

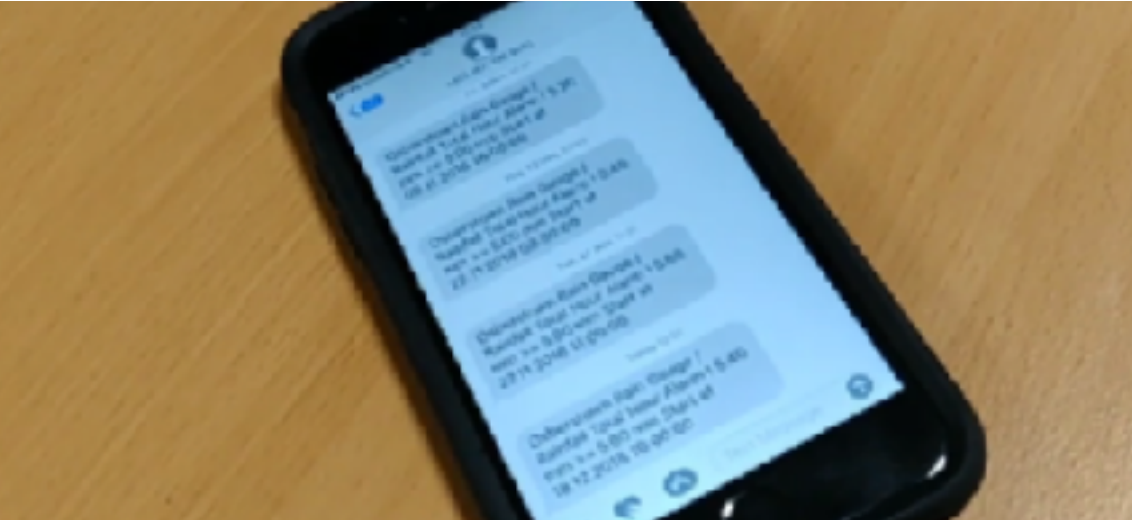
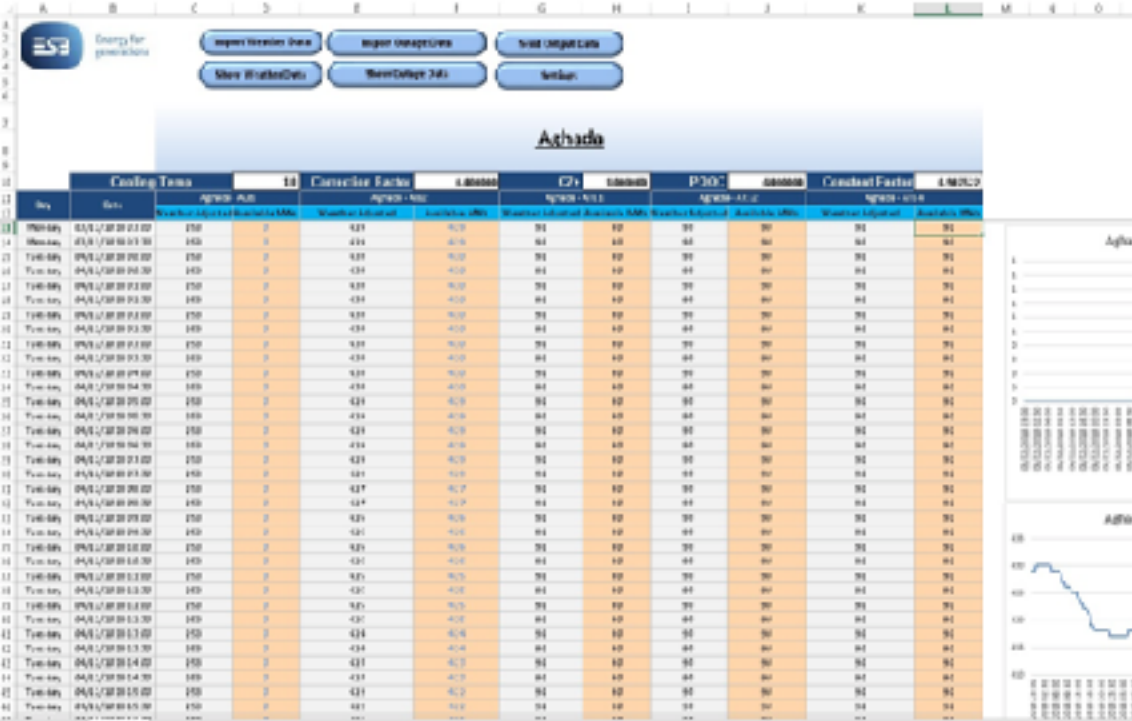
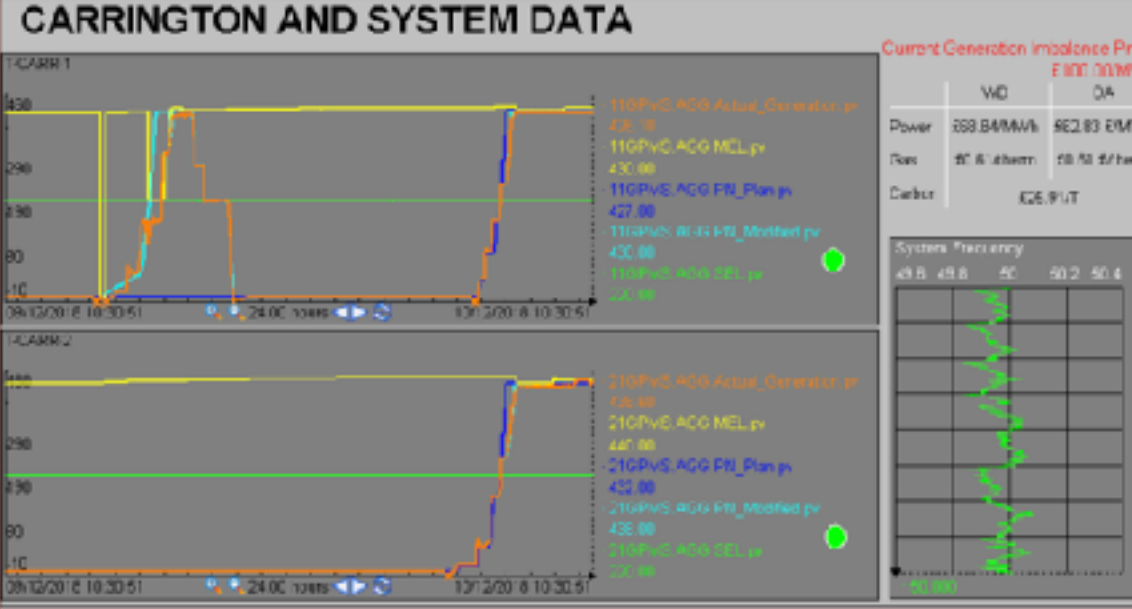
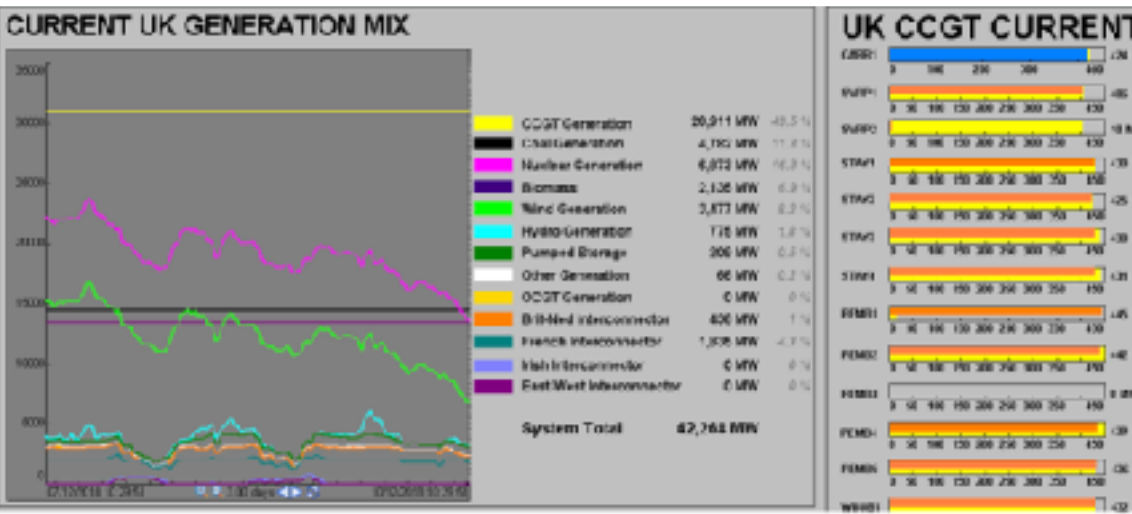
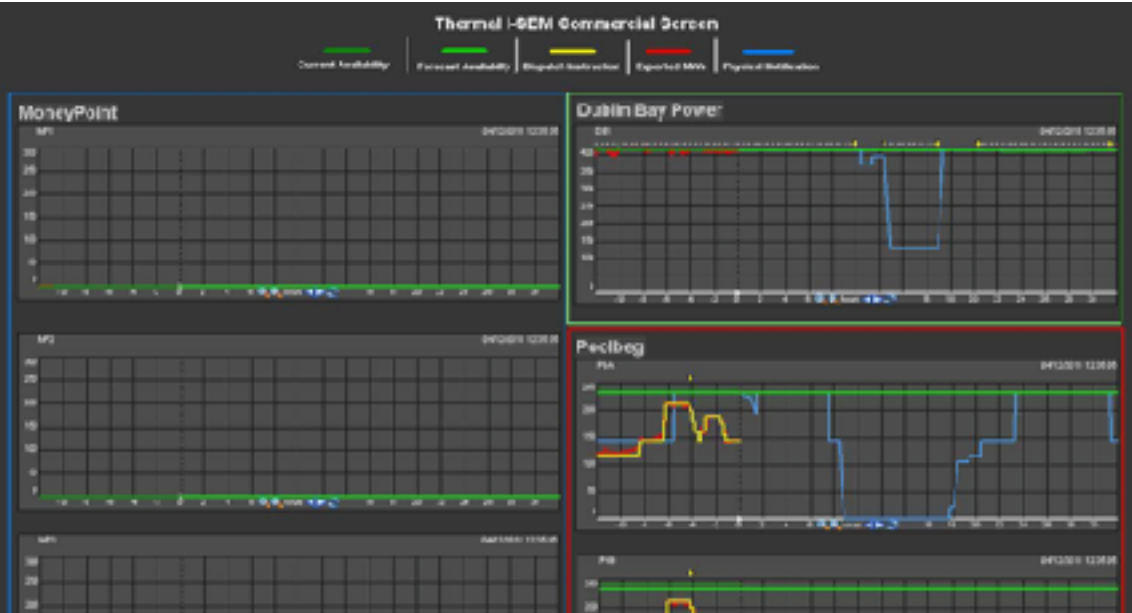
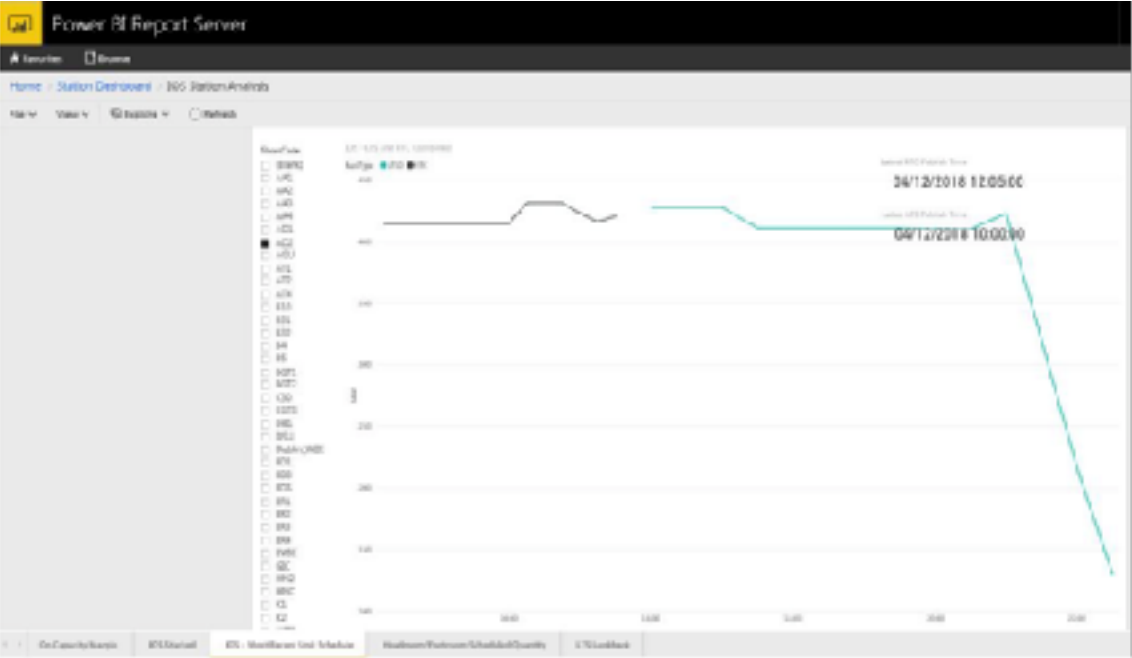
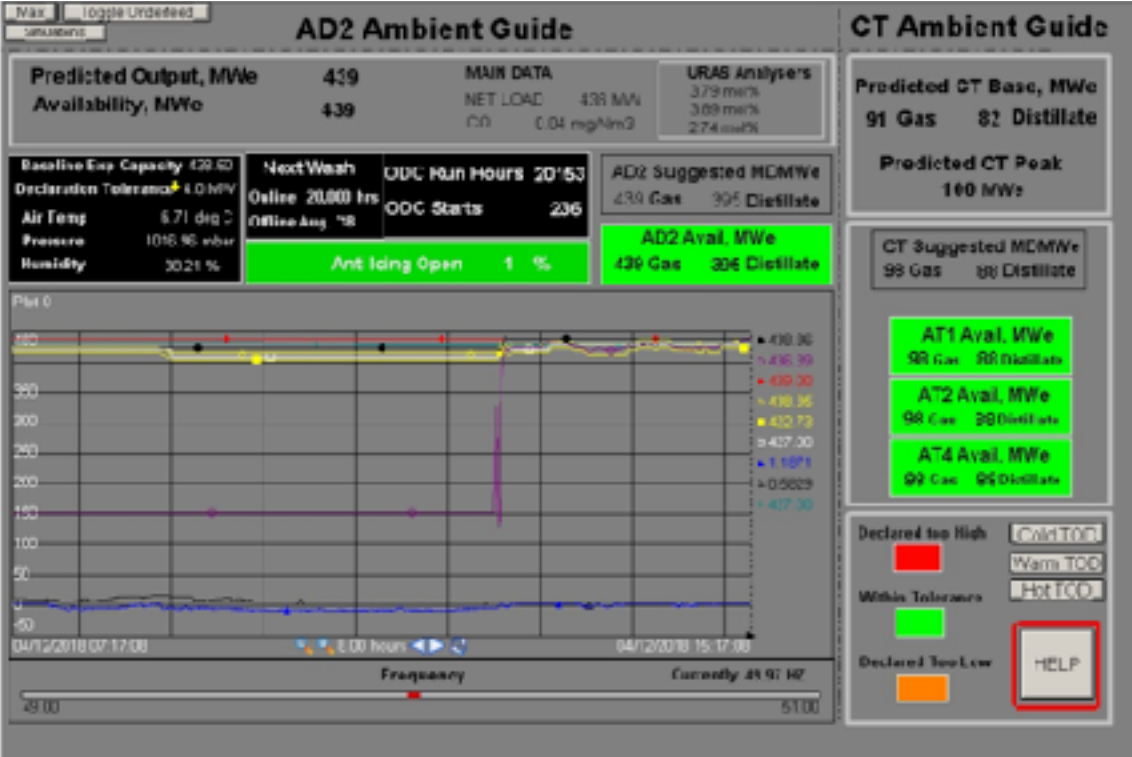
We interviewed engineers, traders, station managers, and key stakeholders to **understand how they work.**





# Walkthroughs.

We spoke with managers, operator and traders about their responsibilities and asked them to **show us how** they perform their daily tasks.





## Site visits.

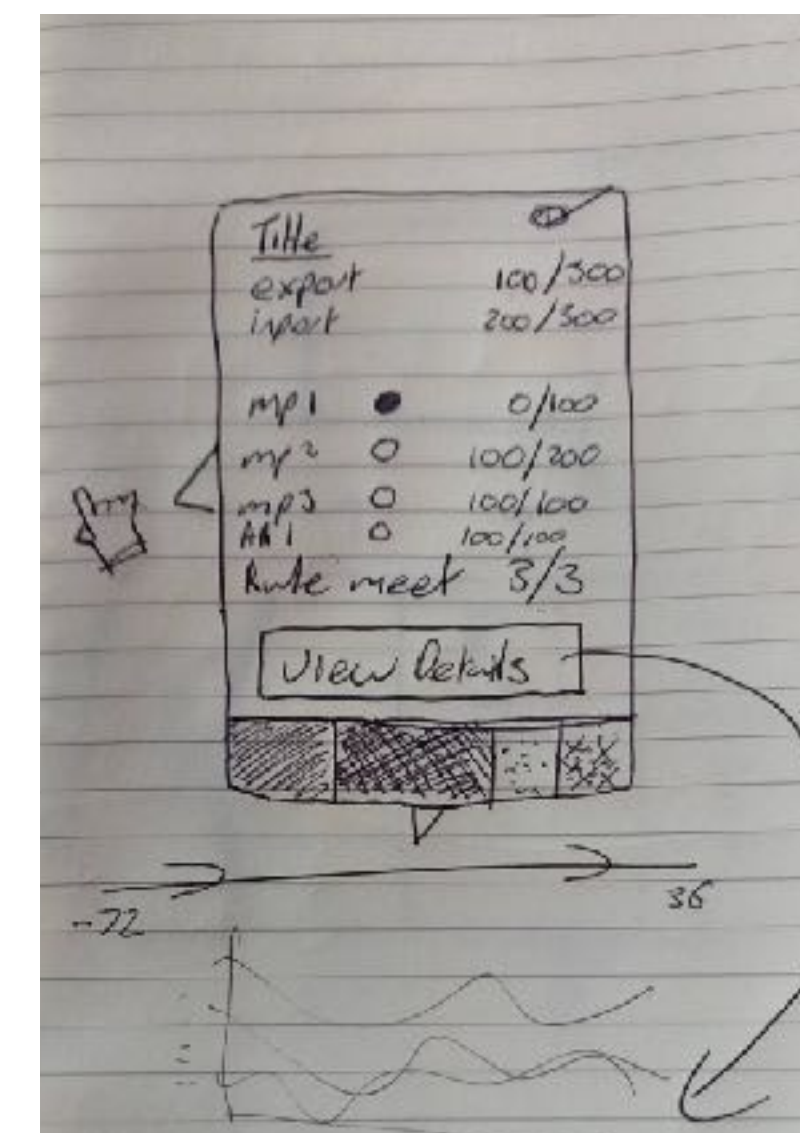
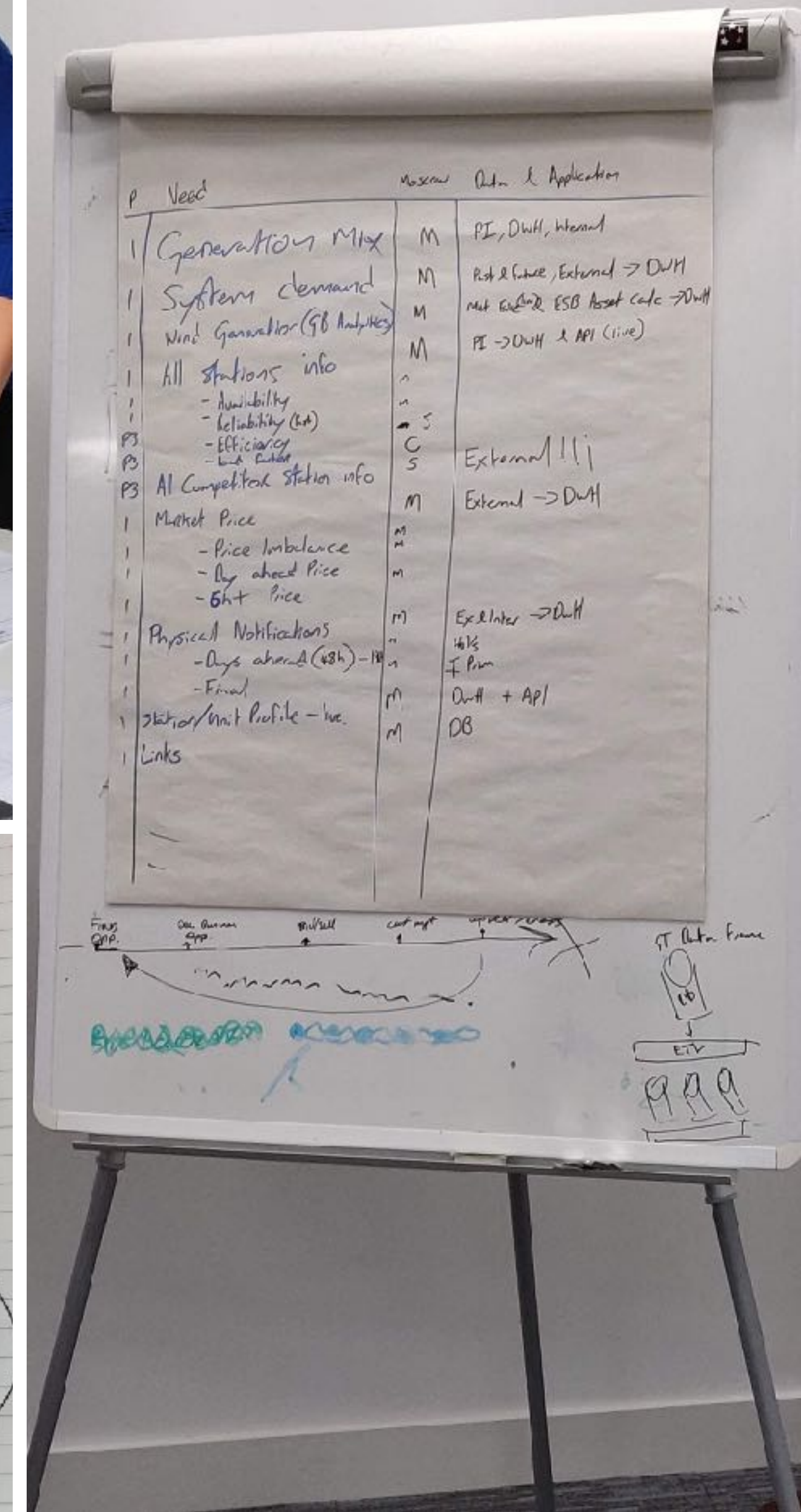
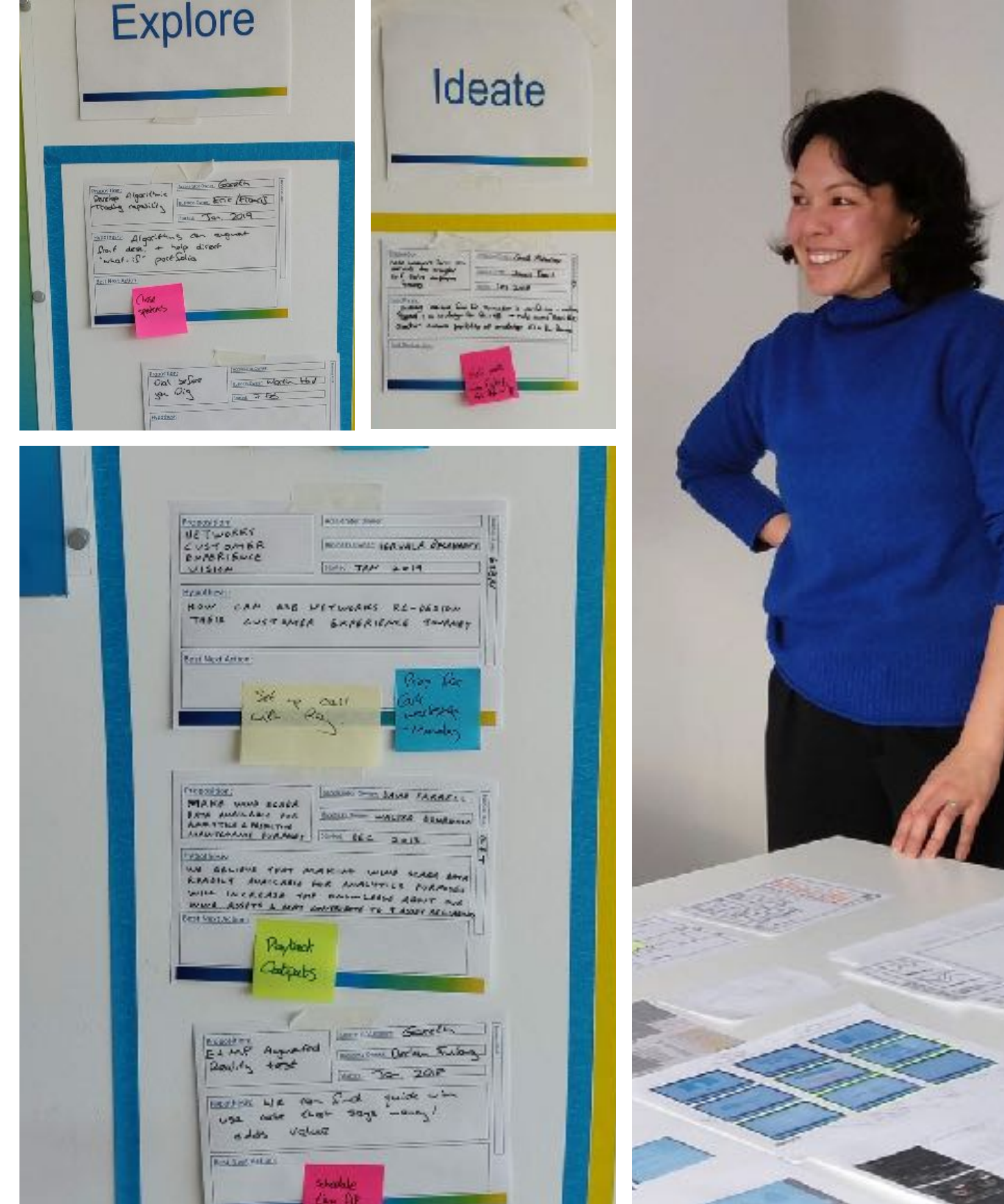
We visited power plants, dams and trading department to speak with users and **see their environment**.





# Team Workshops.

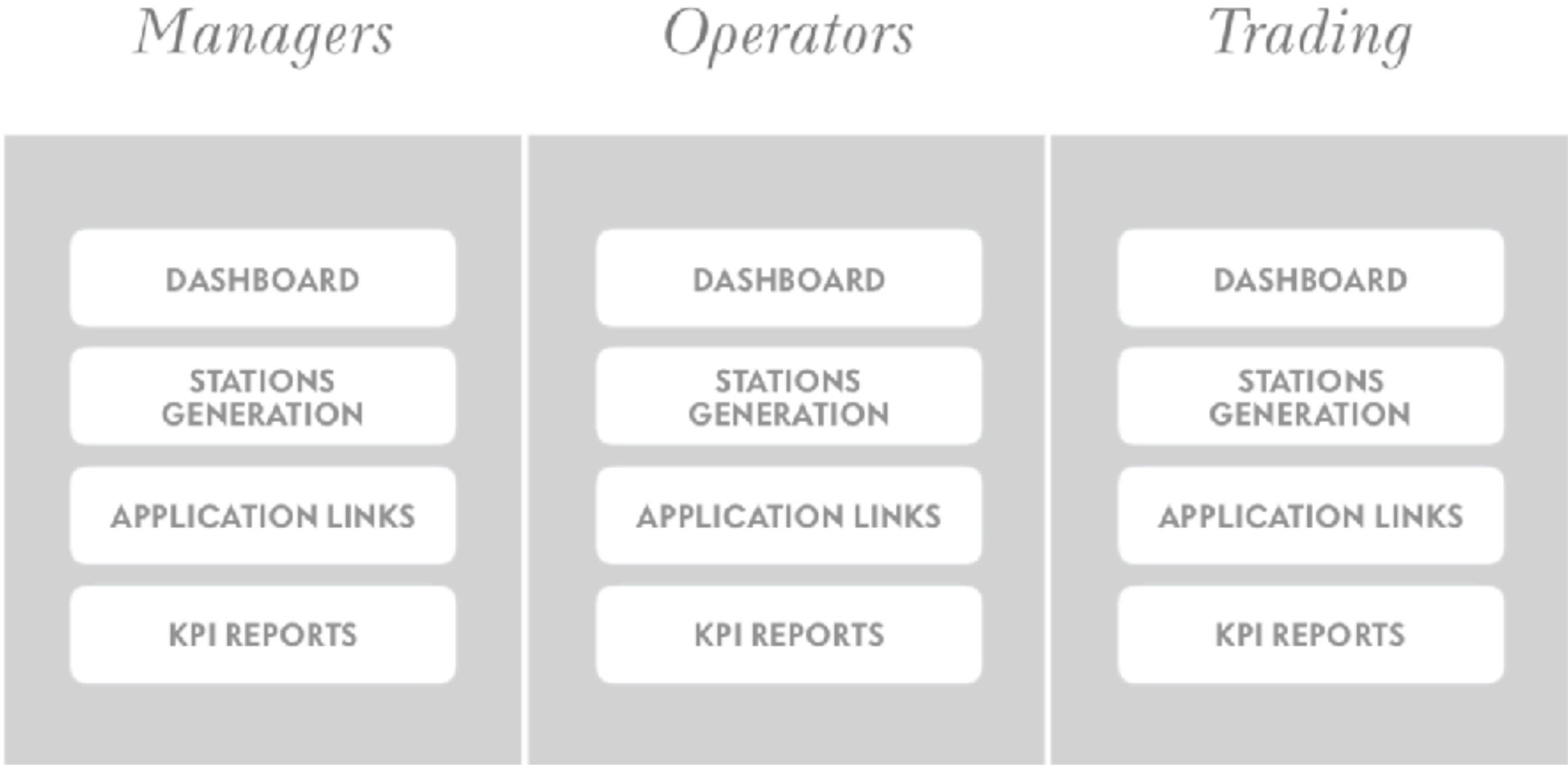
We met with key stake holders from power **generation, trading** and **data** teams to share our findings and **outline the project**.





# Personas.

We identified a number of **personas** that should be taken into consideration on a long term scenario.







**“RTV allows plant managers to update themselves on the commercial position of the plant in a clear, quick, visual & accurate way.”**

**Donal Brogan**

Generation & Trading Performance  
Application Specialist  
ESB



## We employed agile to move fast and transition smoothly through design, testing and user stories.

- **UX/UI sprints** based on MVP release stories
- **User tested** with engineers, traders and lead stakeholders
- **UI style library** to enable rapid delivery and iterations
- **Front-end sprint** to create HTML Templates and data sets for DEVELOP and TEST Integrations
- **Documentation** to help the development and test team pick up on projects





# Sprints.

From a **User Centric Design** we created and planed **epics** and user **stories** for **UX/UI** all the way through to development



ESB RTV / Project plans / Phase 1b - MVP v1.1.0

Share

Driver	Approver	Contributors	Interested Stakeholders	Status
<ul style="list-style-type: none"> <li>To create one centralized application to help drive and deliver present and future station objectives</li> <li>Responsive</li> </ul>	sharon.tobin	Donal Brogan Anna Doran @Peter.Delaney @Mariana.Spagnuolo @Dermot.O'Shea @Emily.Miller (Unlicensed)	Tom, Paul, Cathal: Turrough Hill Aodhan: Future Opportunities Robert Wallace: Carrington Station Manager Thomas Gahan: Aghada Station Engineer Paul (Turrough Hill) Rebecca Power BI	COMPLETE

Problem

Problem Statement	OT needs an application to aid the users (Manager and Engineers) on their day to day activities and be able to action their work in a centralized location for transparency
Hypothesis	<p>We believe the MVP stories and roadmap will deliver a functional application that will help the users complete their tasks in a more efficient manner resulting in a coherent and centralized process of work. This application be measurable to give a bases of activity on the following:</p> <ol style="list-style-type: none"> <li>Be presented with an aggregated, consolidated view of 'Generation Process &amp; Performance information' from key plant process and performance systems through the entire GWM Asset Portfolio (including Wind (new requirement)). Examples of these as-is systems are as follows :               <ol style="list-style-type: none"> <li>Go Portal</li> <li>Station Signals</li> <li>RTA</li> </ol> </li> <li>This consolidated view should be presented via a user friendly predefined graphical interface (i.e. a 'Generation Process &amp; Performance' dashboard) that users can easily navigate, analyse, comprehend and gain key business insights quickly. It should be built through thoughtful planning, informed design and a critical eye for what stays and goes               <ol style="list-style-type: none"> <li>*friendly predefined graphical interface</li> <li>*easily navigate</li> <li>*analyse</li> <li>*comprehend and gain key business insights quickly</li> </ol> </li> <li>'Drill down' within the 'Generation Process &amp; Performance dashboard' to view the underlying data being displayed i.e. at Portfolio, Station, Unit and KPI level.</li> <li>View the data in Real Time where required i.e. users should be have the option to view the last date / time the data presented was refreshed / updated from the system of record</li> <li>Perform Trend Analysis</li> <li>View the dashboard on a mobile device</li> </ol>

Scope Phase 1a

	Activity
Must have	<ul style="list-style-type: none"> <li>Constraints</li> <li>Hedge Prices</li> <li>System Margin Tightness</li> <li>Competitors</li> </ul>
Should/Could to have	
Not in scope	<ul style="list-style-type: none"> <li>Station</li> <li>Links</li> </ul>

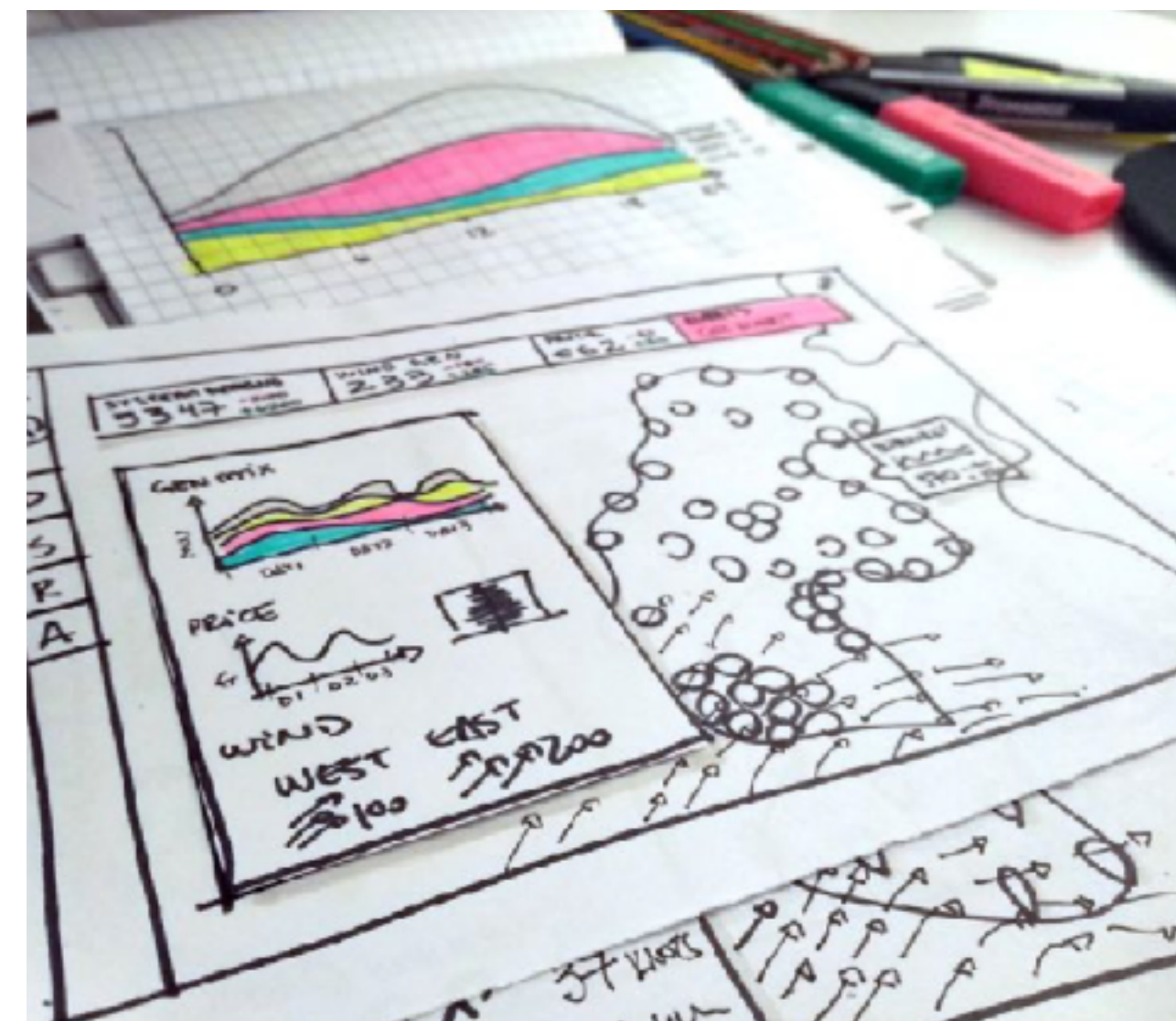
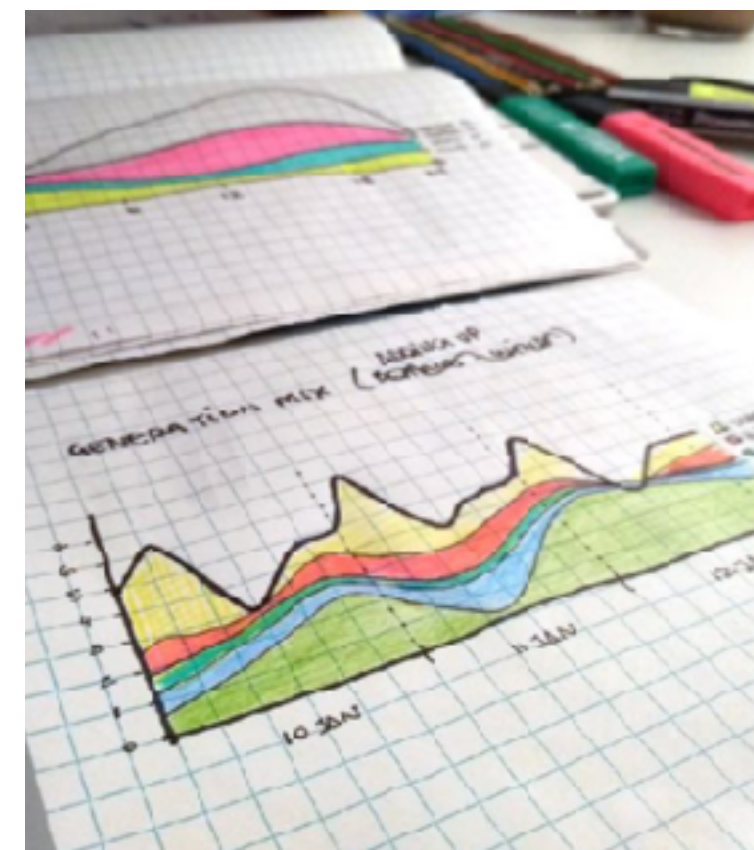
ESTIMATIONS

WONDR MVP Release 2: Epics = Hedge Price, Constraints, Competitors (54.75 days WONDR Effort)



# Sketching & Collaboration.

We had collaborative **workshops** where engineers, traders, developers and designers were sketching together. That helped us to move fast and get the design right design.



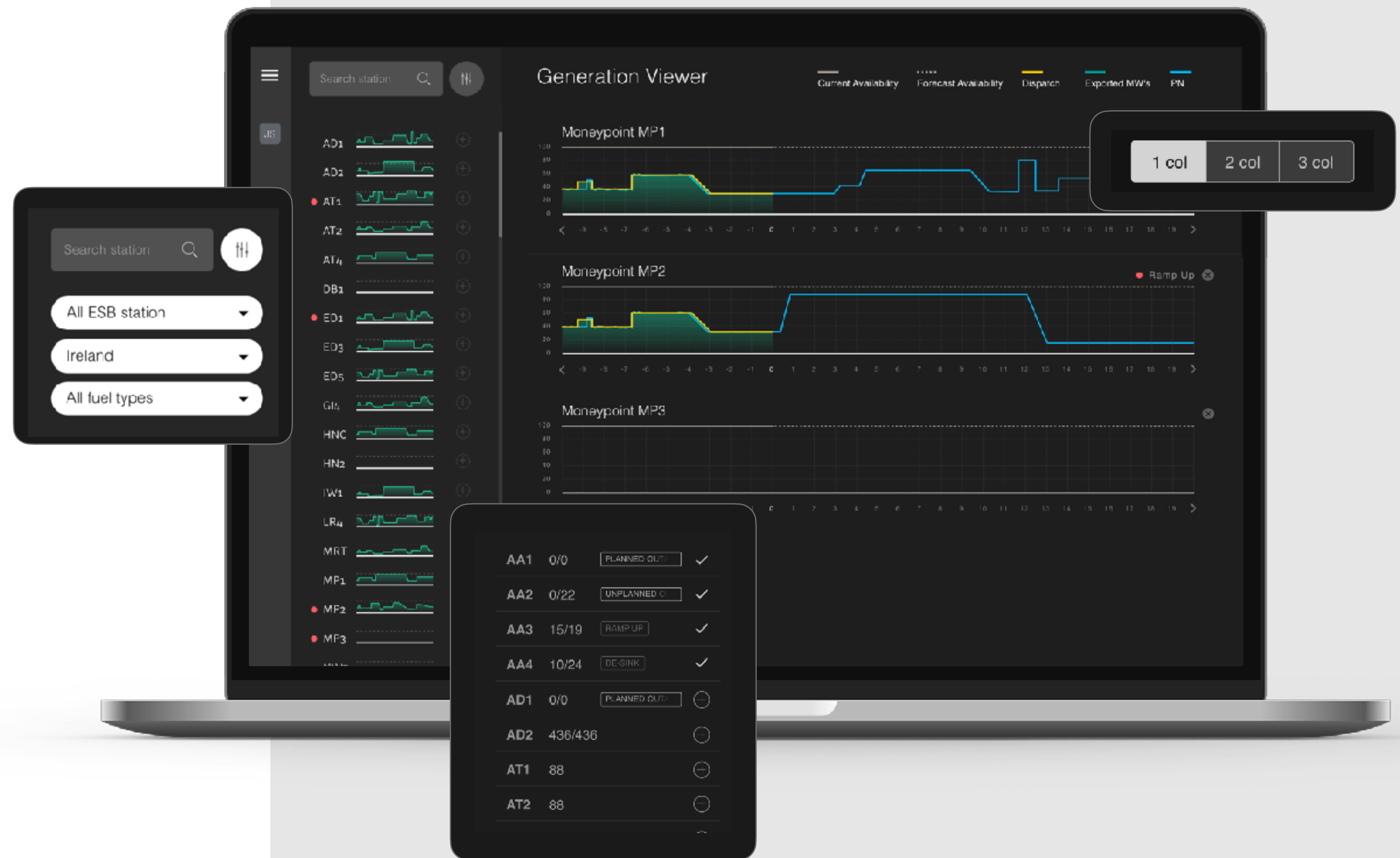


# UX Concept Dashboard.





# UX Concept Stations Page.



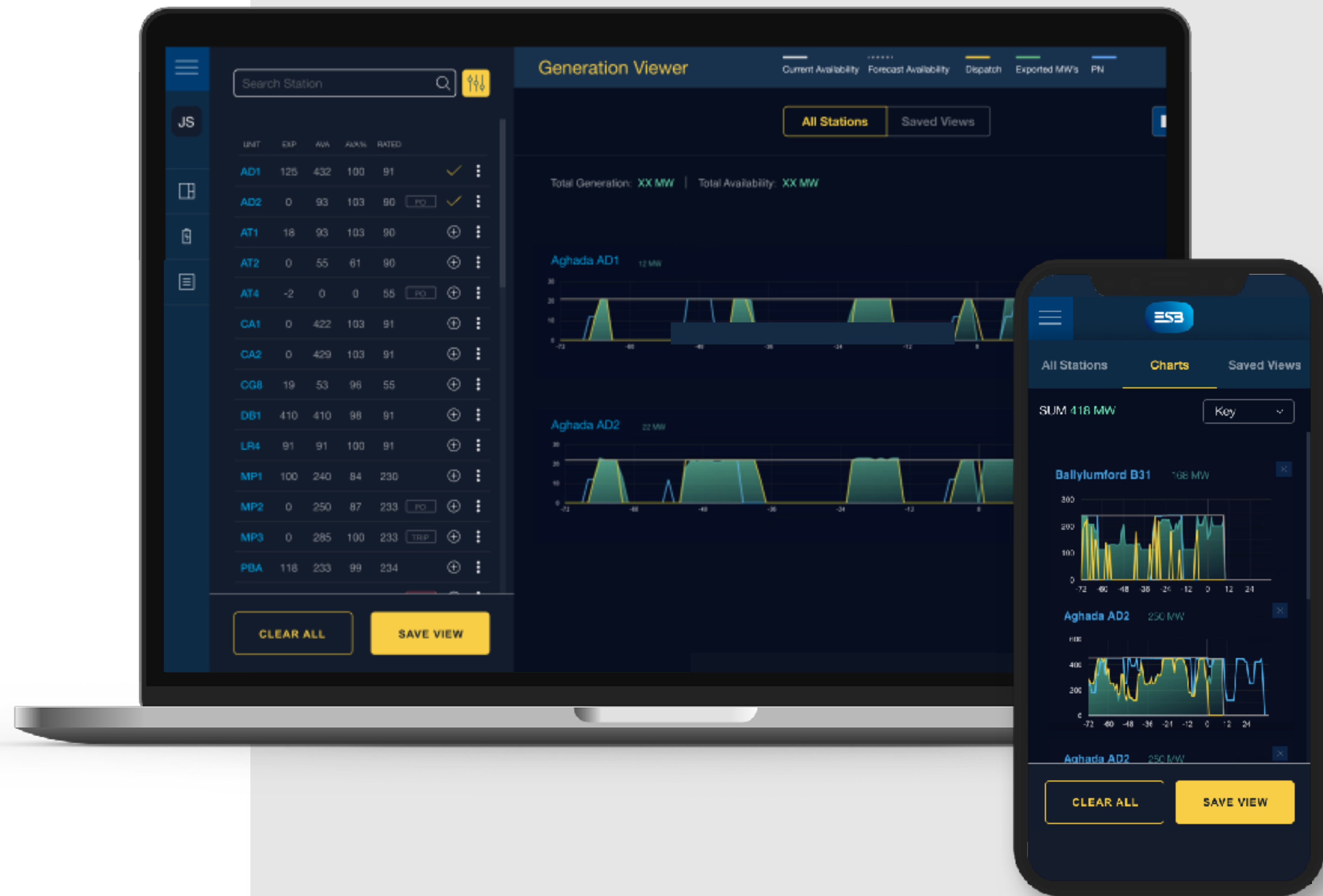


# UI Prototype Dashboard.





# UI Prototype Generation Viewer.





# UI Prototype Reporting.

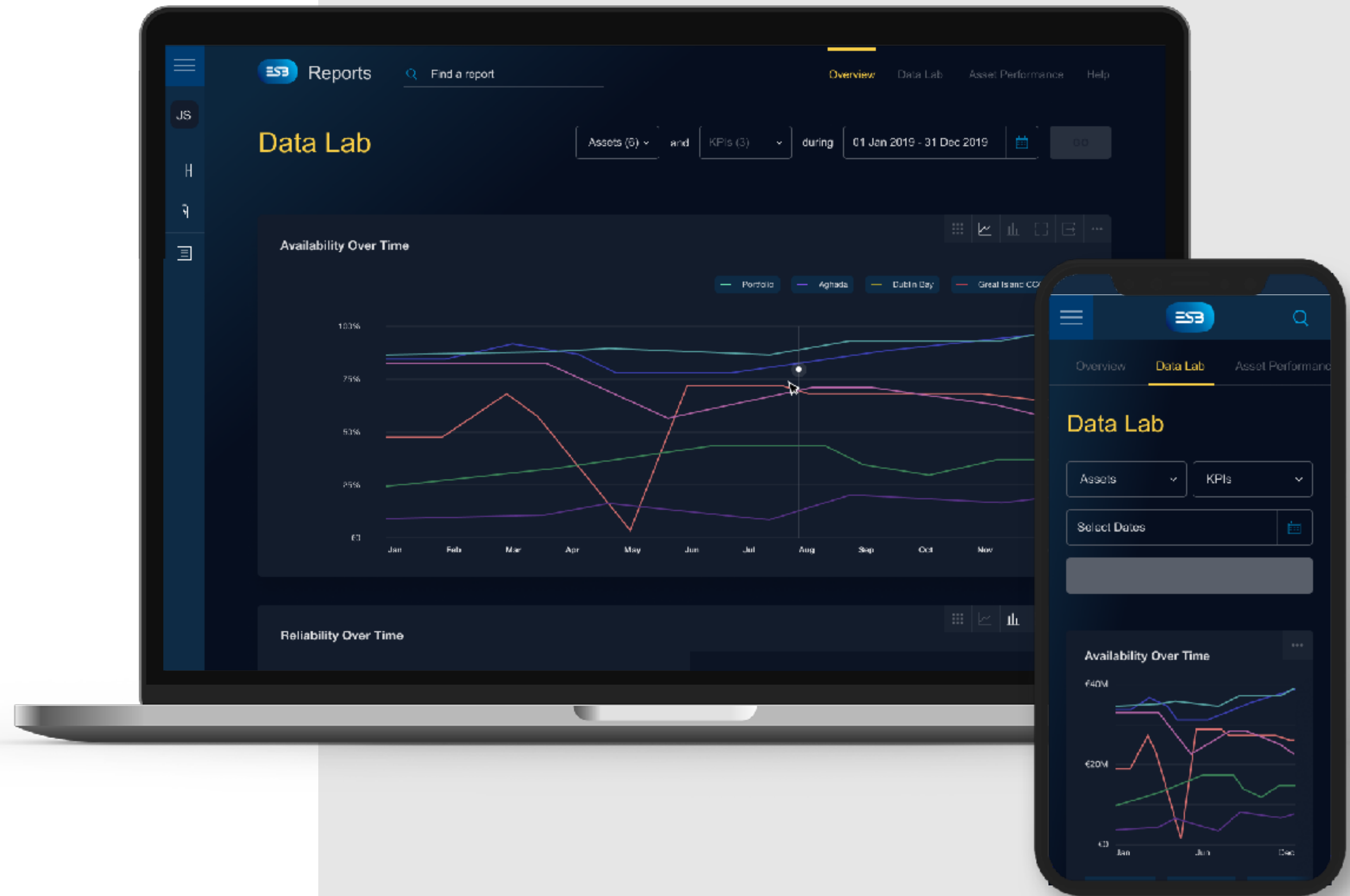
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# UI Prototype Data Lab.



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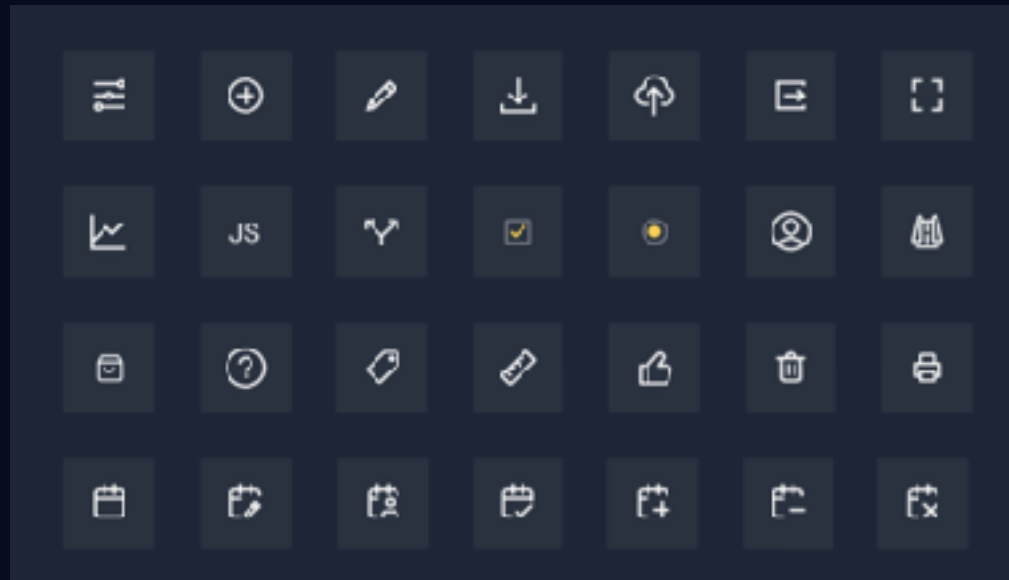


# Design System.

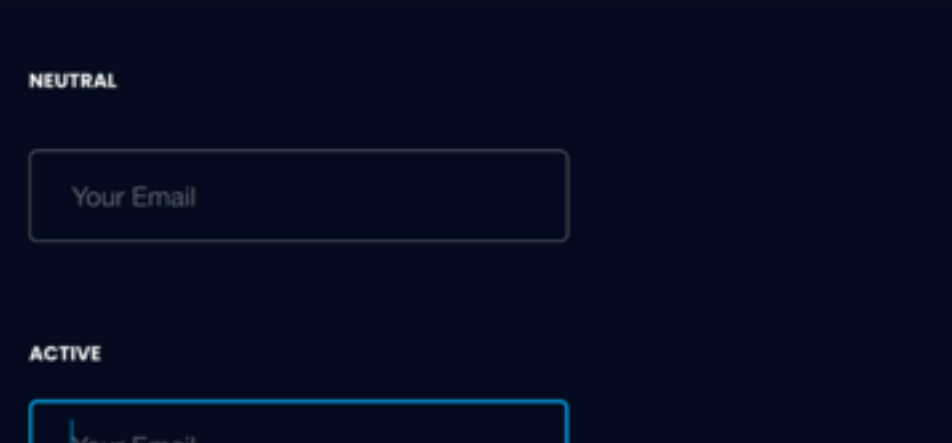
## Color Palette



## Icons



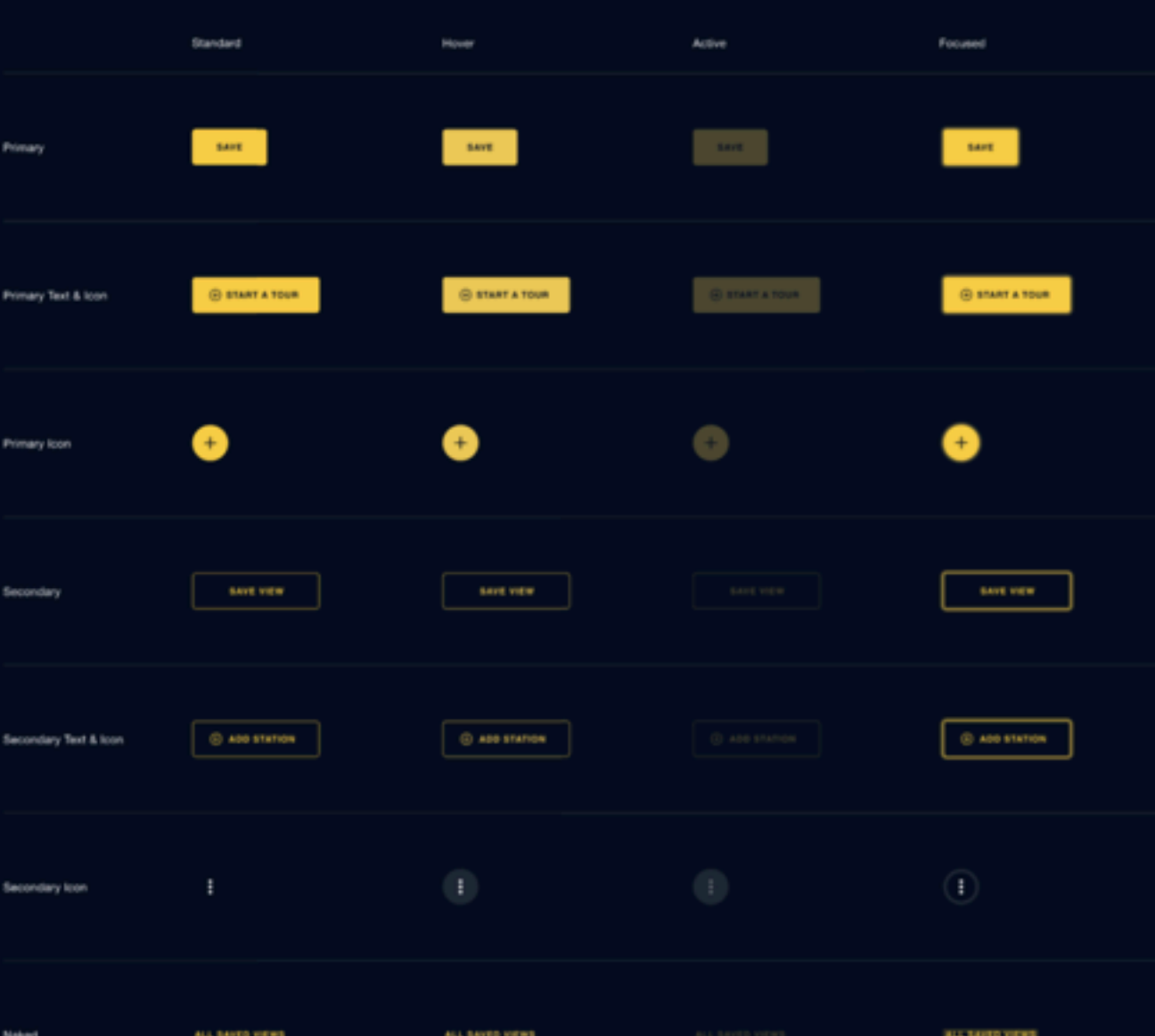
## Forms



## Typography

H1	H1 St Ryde Regular 32-36
H2	H2 St Ryde Regular 24-30
H3	H3 St Ryde Regular 20-24
H4	H4 Helvetica Regular 16-20
H5	H5 Helvetica Regular 14-18
H6	H6 Helvetica Regular 12-16
Body 1	Body 1 Helvetica Regular 16-28
Body 2	Body 2 Helvetica Regular 14-26
BUTTON	BUTTON HELVETICA BOLD 14-26 ALL CAPS 7%
OVERLINE	OVERLINE HELVETICA MEDIUM 12-26 ALL CAPS

## Buttons



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**“RTV is now considered an essential product by all our stakeholders and is embedded in our daily operations. Therefore helping us to achieve our Net Zero Strategy 2040”**

**Anna Doran**  
Product Owner  
ESB



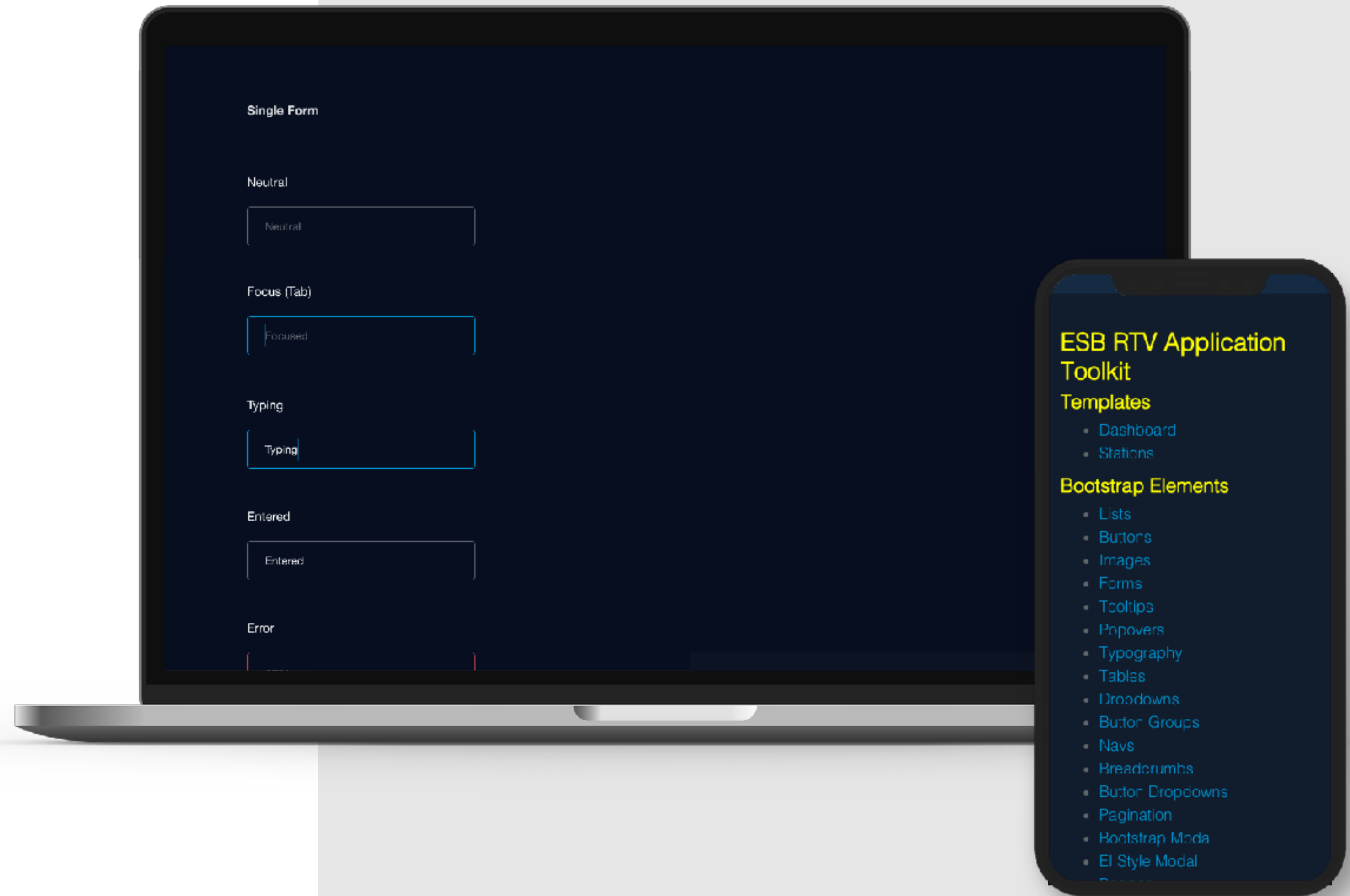
## We created HTML templates, a components library and data structures to facilitate backend development handover and integration.

- **Dark themed toolkit** for rapid development of future pages and functionalities for many applications
- **HTML template** with Ajax interactions
- **API endpoint** using JSON data structure examples for easy integration and future proofing
- **Documentation** to guide the Development teams for both toolkits and data





# Toolkit.





HTML templates.

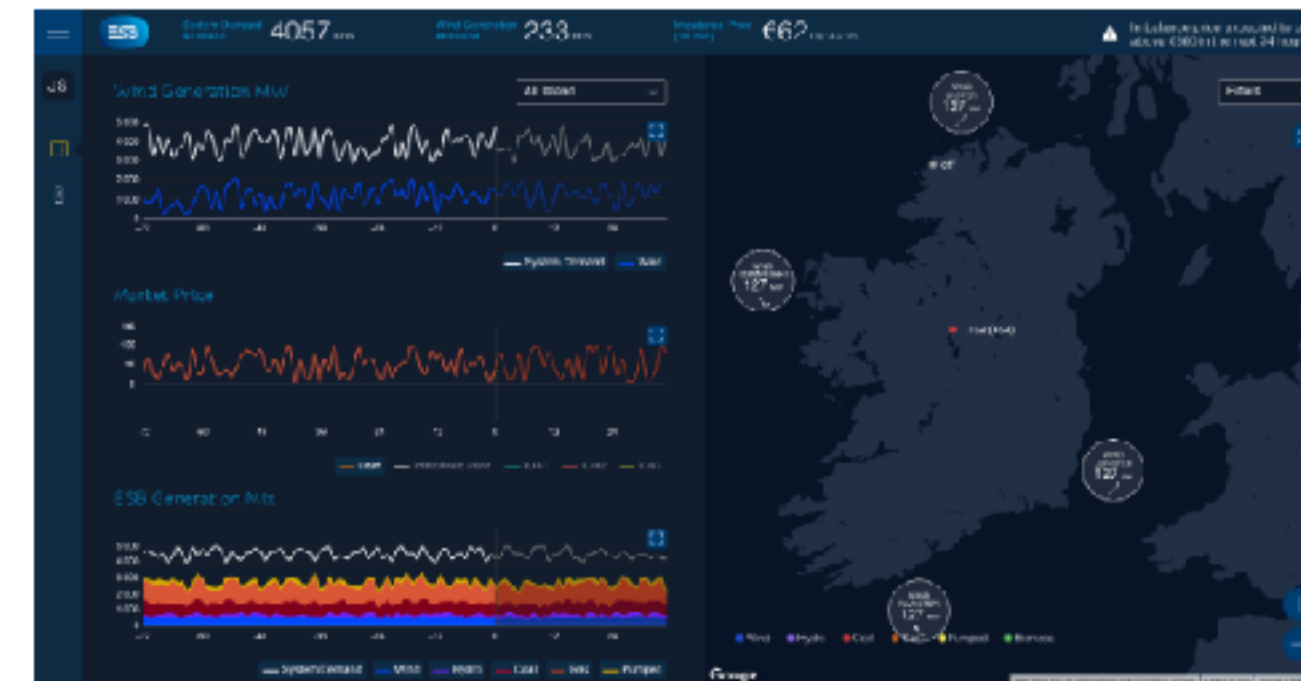




# API Endpoints.

ESB RTV / ... / Dashboard Template - Release 1a

Share ...

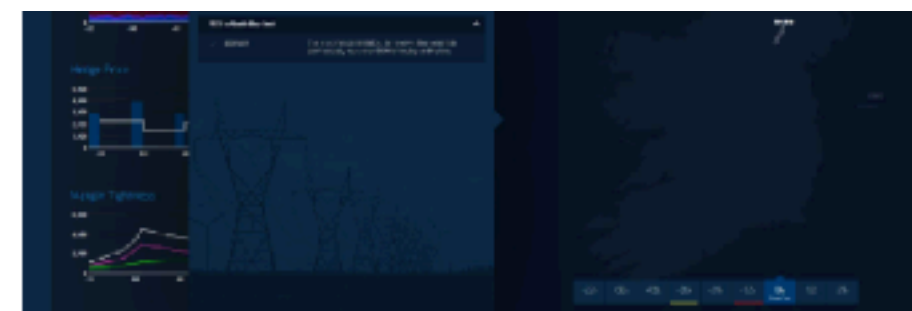


## Timeline Data

The points in time are configured via the General API call, currently mapped to

`"/js/data/dashboard/general.json"`

```
"timePoints": [
  { "value": -72, "status": "neutral" },
  { "value": -60, "status": "neutral" },
  { "value": -48, "status": "neutral" },
  { "value": -36, "status": "caution" },
  { "value": -24, "status": "neutral" }
```



- title** - displayed in the map and in the modal dialogue
- coordinates** - position of the connector on the map in percentages (relative to the map container width and height). E.g. x: 60 is middle of the map, width: 33 is 1/3 of the map width.
- style** - style of the connector lines (solid, dashed, dotted)
- angle** - connector rotation in degrees
- titlePosition** - relative position of the title to the connector (in percentages)
- main** - includes main information displayed in the modal dialogue. The information is structured into three attributes: label, value and unit
- rules** - an array of rules which apply to the connector. Each rule is displayed in the modal dialogue and includes the following attributes:

- title** - title of the rule
- ruleStatus** - possible values:
  - success** - ruleText to be displayed in green text with green check mark
  - status-alert** - ruleText to be displayed in red text with red triangle icon
  - neutral** - ruleText to be displayed in grey text and grey check mark
  - ruleText** - text to display
  - unitsHTMLText** - Text to display further rule details.

JSON File example:

```
"connectors": [
  {
    "title": "Tie Line",
    "titlePosition": {
      "x": 8,
      "y": -33
    },
    "style": "solid",
    "angle": -60,
    "main": {
      "label": "North to ROI flow",
      "value": 425,
      "unit": "MW"
    },
    "rules": [
      {
        "title": "North to ROI flow limit",
        "ruleStatus": "success",
        "ruleText": "440 MW",
        "unitsHTMLText": "This is a physical limitation, for reserve, they generally won't actually have over 300MW flowing on this line."
      }
    ]
  }
]
```



# Documentation.

## Dashboard Template - Release 1b

Created by Pete  
Last updated: Oct 09, 2019 • 7 min read • 12 people viewed



### Timeline Data

The points in time are configured via the General API call, currently mapped to

`"/s/data/dashboard/general.json"`

```
"timePoints": [
  { "value": -72, "status": "neutral" },
  { "value": -60, "status": "neutral" },
  { "value": -48, "status": "neutral" },
  { "value": -36, "status": "caution" },
  { "value": -24, "status": "neutral" },
  { "value": -12, "status": "alert" },
  { "value": 0, "status": "neutral" },
  { "value": 12, "status": "neutral" },
  { "value": 24, "status": "neutral" }
]
```

In the returned JSON object, the 'timePoints' attribute is an array of objects. Each object represents point in time.

For each point in time there is the value attribute which represent time offset (e.g. -72 hours) and status.

Status could be either:

- *neutral* - nothing is highlighted for that point in time
- *caution* - the time-line point is highlighted in amber color on the Constraints map
- *alert* - the time line point is highlighted in red color on the Constraints map

The 'value' attribute is strictly numeric and 'h' unit is added once loaded.

If any point in time is selected from the time line then the 'value' attribute of the point in time is passed as the 'offset' query parameter in the following two AJAX calls:

- Stations Map JSON request
- Constraints Map JSON request

E.g. `"/s/data/dashboard/map.json?offset=-12"`

The reloading of the time sensitive data sets is performed by `loadTimeSensitiveData(selectedTimeOffset)` function.

### Constraints Map

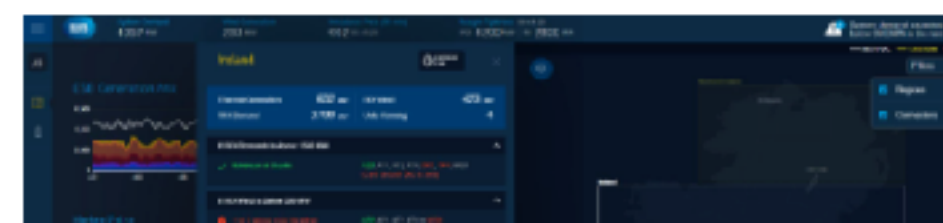
#### 1. Regions

Each region includes the following attributes:

- *title* - displayed in the map and in the modal dialogue status - color of the region on the map. Possible values are neutral, caution and alert.
- *coordinates* - position of the region on the map in percentages (relative to the map container width and height). E.g. x: 50 is middle of the map, width: 33 is 1/3 of the map width.
- *main* - includes main information displayed in the modal dialogue. The information is structured into three attributes: label, value and unit.
- *rules* - an array of rules which apply to the region.

Each rule is displayed in the modal dialogue and includes the following attributes:

- *title* - title of the rule
- *ruleStatus* - possible values:
  - *success* - ruleText to be displayed in green text with green check mark, the rule block to be expanded

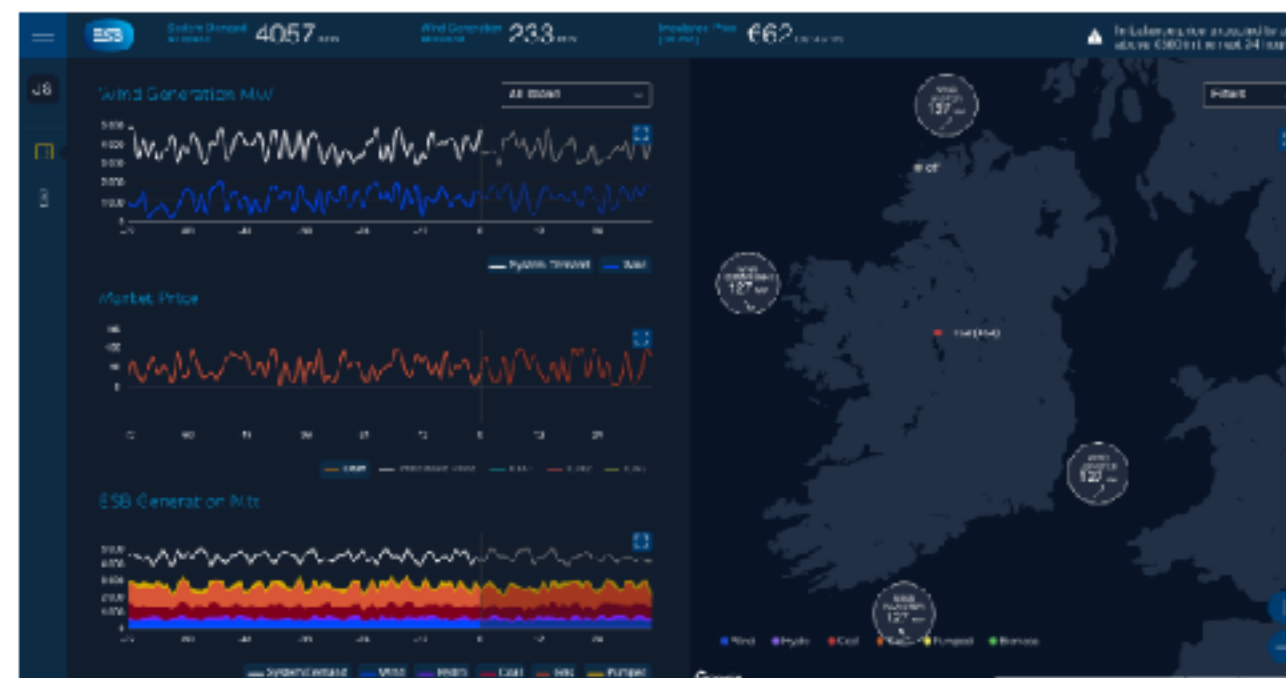




ESB RTV / ... / Dashboard Template - Release 1a






 Share ...


1 <!--[[if lt IE 7]]> <html class="no-js oldie lt-ie9 lt-ie8 lt-ie7"> <!--[[endif]]>

2 <!--[[if TE 7]]> <html class="no-js oldie lt-ie9 lt-ie8"> <!--[[endif]]>

3 <!--[[if IE 8]]> <html class="no-js oldie lt-ie9"> <!--[[endif]]>

4 <!--[[if IE 9]]> <html class="no-js oldie ie9"> <!--[[endif]]>

5 <!--[[if gt lt 9]]><!--> <html class="no-js loading"> <!--[[endif]]>

6 <!--[[if gt lt 9]]><!--> <html class="no-js loading"> <!--[[endif]]>

7 <head>

8 <meta charset="utf-8">

9 <title>ESB RTV Application Tool</title>

10

11 <!-- [[[[ META ]]] -->

12 <meta name="title" content="">

13 <meta name="description" content="">

14 <meta name="viewport" content="width=device-width, initial-scale=1">

15 <meta http-equiv="X-UA-Compatible" content="IE=edge" />

16

17 <!-- [[[[ FAVICON ]]] -->

18 <!--[[if lt IE 9]]><script>var html5Element=document.createElement("script");html5Element.setAttribute("src","/assets/js/html5shiv.js");document.getElementsByTagName("head")[0].appendChild(html5Element);</script><!--[[endif]]>

# Documentation.

## Requirements

#	Title	User Story	Importance	Status	Notes
1	Dashboard - Menu Item	As a User I want to dashboard to be the homepage of the application so when i click on the header logo or the dashboard menu icon I'm directed to here	M	COMPLETE	
2	Dashboard - Overview Stats	As a User I want to see some simple overview stats for like Price Now, Wind Now (MW/h), System Demand Now so I have a quick reference to get an overall feel for the present	M	COMPLETE	<ul style="list-style-type: none"> <li>Assuming ESB have a valid Data Feed</li> </ul>
3	Dashboard - Whether Map (Wind, Rain & Temp)	As a User I want to be able to see a Map with the Wind (MW/h - Degrees"), Rain (mm) and Temp (°C) over the following periods Now, 3h, 6h, 12hr, 24hr so i can click on the map and see the exact whether information for that location	C	Phase 2+	<ul style="list-style-type: none"> <li>Assuming ESB have a valid trusted weather API provider</li> <li>example of data <a href="https://earth.nullschool.net/">https://earth.nullschool.net/</a></li> <li>This is beneficial to all station types</li> </ul>
4	Dashboard - All Stations Summary - Map	As a User I want to see all Assets/Units Stations in a map and be able to tap on each to go to a more detailed page of that Asset/Unit Profile	M	COMPLETE	<ul style="list-style-type: none"> <li>Assuming ESB have a valid Data Feed</li> </ul>
5	Dashboard - All Stations Summary - List/Chart (Assets/Units)	As a User I want to see all Assets/Units Stations Information like GO Portal with Asset Unit Name, Generation, Availability, Status (On, Maintenance, Must Run) and be able to tap on each to go to a more detailed page of that Assets/Unit Stations Profile	M	COMPLETE	<ul style="list-style-type: none"> <li>Assuming ESB have a valid Data Feed</li> </ul>
6	Dashboard - All Competitor Stations Summary - List/Chart (Assets/Units)	As a User I want to see all Assets/Units Stations information like GO Portal with Asset Unit Name, Generation, Availability	W	Phase 1b	<ul style="list-style-type: none"> <li>Assuming ESB have a valid Data Feed</li> </ul>
7	Dashboard - Market Prices - Overview	As a User I want to see the Market Price for Now, 6h (Mean, Min & Max), 24h (Mean, Min & Max) so I have a general idea of how the market is reacting to demand vs actual	M	COMPLETE	<ul style="list-style-type: none"> <li>Assuming ESB have a valid Data Feed</li> </ul>



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## Problem

<b>Problem Statement</b>	OT needs an application to aid the users (Manager and Engineers) on their day to day activities and be able to action their work in a centralized location for transparency
<b>Hypothesis</b>	<p>We believe the MVP stories and roadmap will deliver a functional application that will help the users complete their tasks in a more efficient manner resulting in a coherent and centralized process of work. This application be measurable to give a bases of activity on the following:</p> <ol style="list-style-type: none"> <li>Be presented with an aggregated, consolidated view of 'Generation Process &amp; Performance information' from key plant process and performance systems through the entire GWM Asset Portfolio (including Wind (new requirement)). Examples of these as-is systems are as follows :               <ol style="list-style-type: none"> <li>Go Portal</li> <li>Station Signals</li> <li>RTA</li> </ol> </li> <li>This consolidated view should be presented via a user friendly predefined graphical interface (i.e. a 'Generation Process &amp; Performance' dashboard) that users can easily navigate, analyse, comprehend and gain key business insights quickly. It should be built through thoughtful planning, informed design and a critical eye for what stays and goes.               <ol style="list-style-type: none"> <li>*friendly predefined graphical interface</li> <li>*easily navigate</li> <li>*analyse</li> <li>*comprehend and gain key business insights quickly</li> </ol> </li> <li>'Drill down' within the 'Generation Process &amp; Performance dashboard' to view the underlying data being displayed i.e. at Portfolio, Station, Unit and KPI level.</li> <li>View the data in Real Time where required i.e. users should be have the option to view the last date / time the data presented was refreshed / updated from the system of record</li> <li>Perform Trend Analysis</li> <li>View the dashboard on a mobile device</li> </ol>

## Scope Phase 1a

	Activity
<b>Must have</b>	<ul style="list-style-type: none"> <li>Constraints</li> <li>Hedge Prices</li> <li>System Margin Tightness</li> <li>Competitors</li> </ul>
<b>Should/Could to have</b>	
<b>Not in scope</b>	<ul style="list-style-type: none"> <li>Station</li> <li>Links</li> </ul>

## ESTIMATIONS

WONDR MVP Release 2: Epics = Hedge Price, Constraints, Competitors (54.75 days WONDR Effort)





**“RTV blends market, business, asset and station information to create a business narrative in a clear, compelling and engaging way that helps inform its audience on decision making. It’s success is evidenced in its daily use by Station management, Engineering, Trading and right up to the Executive level.”**

**Daragh Noctor**

CIO Analytics | Generation & Trading  
Analytics Manager  
ESB



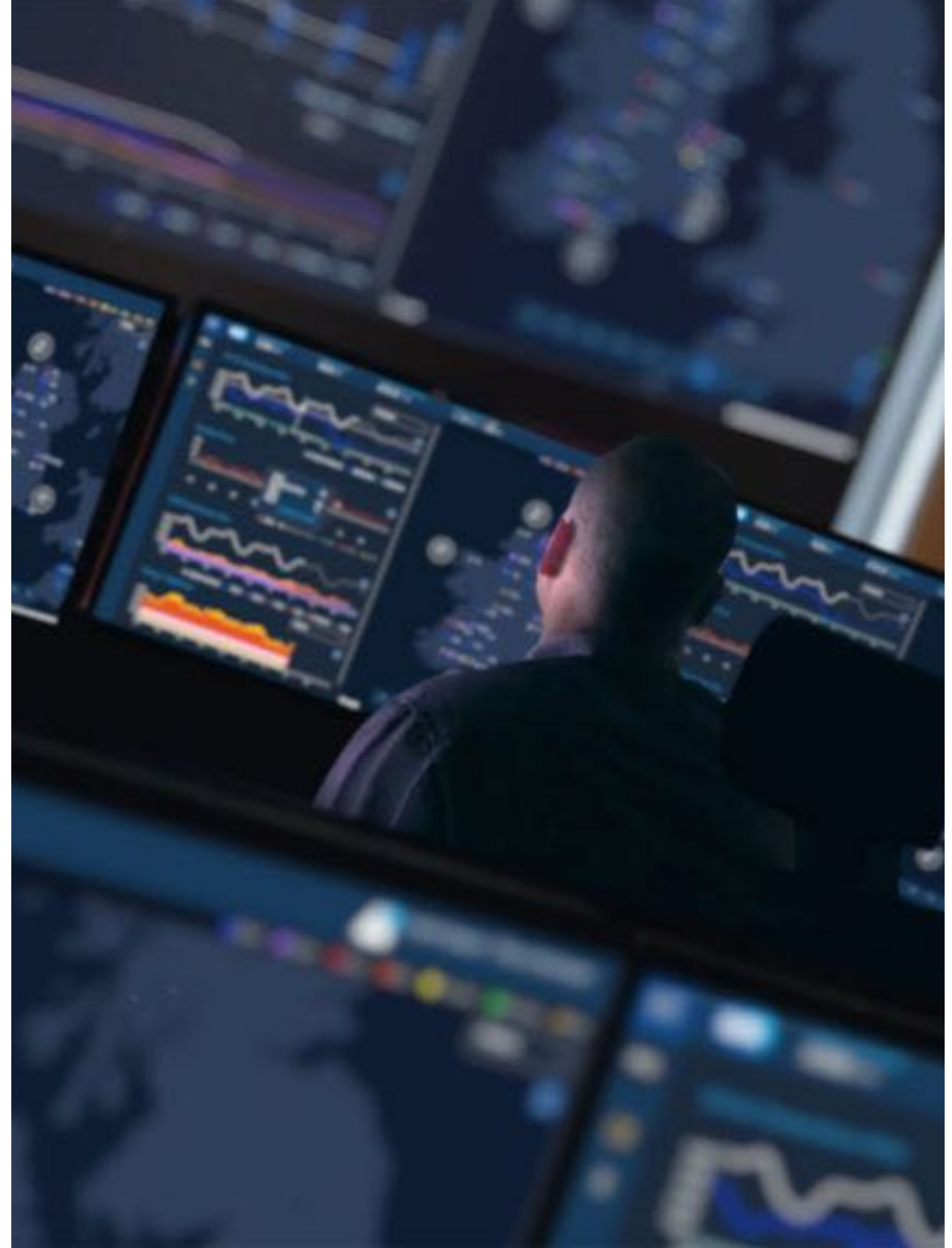


# RESULTS



# Results

- **Single Source of Truth** within ESB
- Greater **collaboration** within the business and 3rd parties
- Substantial **savings** based around decision making in the prevention of fines
- RTV Forecasting and innovating to meet **Net Zero 2040**
- A Benchmarked **product process** for design and deployment
- Delivered **on-time** and **on-budget** in an agile methodology





# The Future

- Further **expansion** on data to incorporate **renewables assets** like **batteries, hydrogen** and **solar**
- **Increased investment** for new functionality like station details, **renewables** value breakdowns
- Release roadmap planned for **self service reporting** and **Maintenance forecasting**
- Creation of many products using the outline process including the **Design System** like Dam monitoring and other Power BI Applications





# Go raibh maith agat

If you'd like to speak further about this  
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