

ASSIST Software | R&D

Reinforce your research consortium
with our technical expertise!

ASSIST has experience in creating multiple applications and digital platforms in cooperation with industry experts through Reasearch & Development partnerships. Furthermore, we have an internal R&D department which can engage in **researching solutions and testing their feasibility**.

ASSIST has established long-term partnerships with 140 European companies, universities and research centres (i.e. TWI, University of Heidelberg, REWE Group, SINTEF, etc.) and has participated as a technical partner in over **20 EU-funded projects** under various funding programs, such as Horizon 2020, FP7, Erasmus+, and Eureka-Eurostars.








Partner with us for Horizon Europe or other EU Calls where we can **foster new ideas** and **translate them into socio-economic value together!**



Solving wind power industry’s need for a monitoring
system capable of reducing risk and failures

-  **Expertise**
QA, Marketing, Integrations,
IoT
-  **Platforms**
Web, Cloud
-  **Deliverables**
Communication system,
Website, Unit testing,
Marketing materials
-  **Project Type**
European project

EU PROJECT SUMMARY

-  BladeSave
-  bladesave.eu
-  Increase wind turbine availability
-  Energy
-  Structural health monitoring, Maintenance routine, Wind Turbines
-  TWI, EWT, Smart Fibres, Renewable Advice
-  Horizon 2020

Solution
Reliable technology platform for blade monitoring

Potential uses
Manufacturers, Wind Farms, Governments

Context
Collaborative R&D project co-funded by the EU Research & Innovation Horizon 2020 Framework Programme, under the Fast Track to Innovation Pilot and implemented by a consortium of 5 international partners including leading industry experts. The challenge was to foster new ideas which can be translated into socio-economic value.

Engagement duration
23 months

ASSIST team size
up to 5

FEATURES WE DEVELOPED

- Software testing
- Marketing
- Pre-processing of data
- Communication system
- Software fine-tuning
- Project website

TECHNOLOGIES WE USED

- NDT Non-Destructive Testing
- 
- 
- Unit Testing
- Automated Testing
-  OpenStreetMap

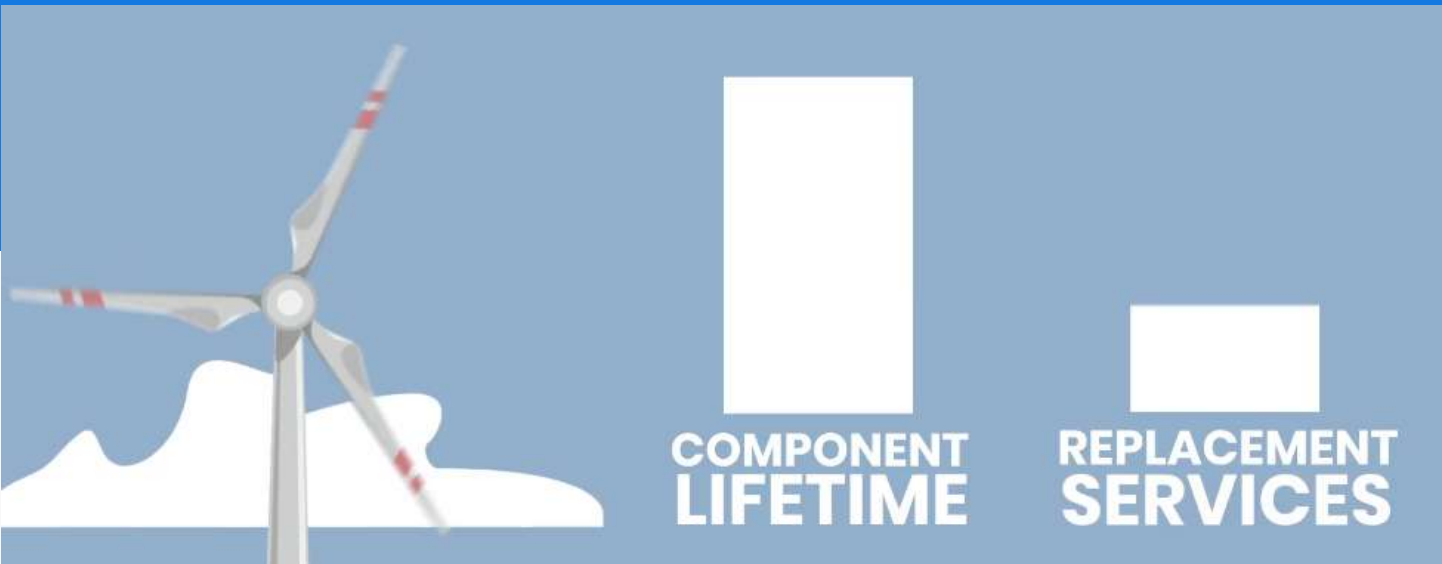
PROJECT SCOPE

BladeSave System aims to **increase** the average annual **availability** per wind turbine from 95% to 98-99% through the **optimization** of maintenance routines and the safe maximization of component lifetime versus unscheduled repair/replacement and breakdown.

ASSIST was involved in developing the **communication system** and the pre-processing of data to perform **system trials**, the software fine-tuning and demos while also creating the dissemination, project website, promotional materials and **support** for market uptake.



HIGHLIGHT FEATURES



BladeSave is a fusion between a **Fibre Optic Structural Health Monitoring System** (Smartscan) providing multi-sensing capability (strains, vibrations, and acoustic emission), and a **blade management software** (WindManager) linking the data from inspection and maintenance to the SHM data for a complete solution for wind turbine blades monitoring, repair, and management.

- Effortless** – simple actions for the end user
- Rugged** – unaffected by lightning or static electricity
- Flexible** – compatible with any wind turbine

TECHNICAL DETAILS

The BladeSave system consists of both hardware and software components, ranging from optical sensors, interrogators, optical switches, and processing units to **data processing software**, **cloud communication**, cloud storage and **management** dashboards.

The data from monitoring, inspections and repairs forms a **risk matrix** evaluating the blade health on a 5-grade scale. **Smartscan data** is pre-processed on-site, transferred to a cloud server for second stage processing where the damages identified feed the risk matrix **dashboards**.



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VALUMICS

Food Systems Dynamics

Enabling food value chains and network dynamics integrity through agent-based modeling



Expertise

Custom Software development, Design, Agent-based modelling



Platforms

Web, Cloud



Deliverables

Dynamic simulation model, Cloud integration, Quantitative tests

EU PROJECT SUMMARY

Product name	Valumics
Website	valumics.eu
Challenge	Raising awareness about food systems network dynamics
Industry	Food
Areas of interest	Economic, environmental, and social dimensions of food chains
Funding Framework	Horizon 2020
Solution	Implement system framework analysis supported by modelling and data-gathering
Potential uses	Farmers, producers, retailers, consumers, waste managers, and policymakers
Context	Collaborative R&D project co-funded by the EU Research & Innovation Horizon 2020 Framework Programme, under the call: Sustainable Food Security, with a core of 19 European partners, including leading industry experts. The specific challenge was to foster new ideas which can be easily translated into the sustainability and resilience of food systems and value chains.
Engagement duration	24 months
ASSIST team size	up to 5

PARTNERS

University of Iceland, SINTEF, Luke Finland, University of Hertfordshire, cscp, University of Bologna, UCDublin, IDDRi, Newcastle University, EAS, MarkMar, Chalmers, FIAB, REWE Group, IAMO, ART-ER, China Agricultural University, University of Life Sciences Prague, UEH, LUT University

TECHNOLOGIES WE USED

- > .NET Core
- > Microsoft Azure
- > Java/Repat
- > xUnit
- > Dynamic Systems

FEATURES WE DEVELOPED

- > Simulation model
- > Cloud integration
- > Quantitative tests



PROJECT SCOPE

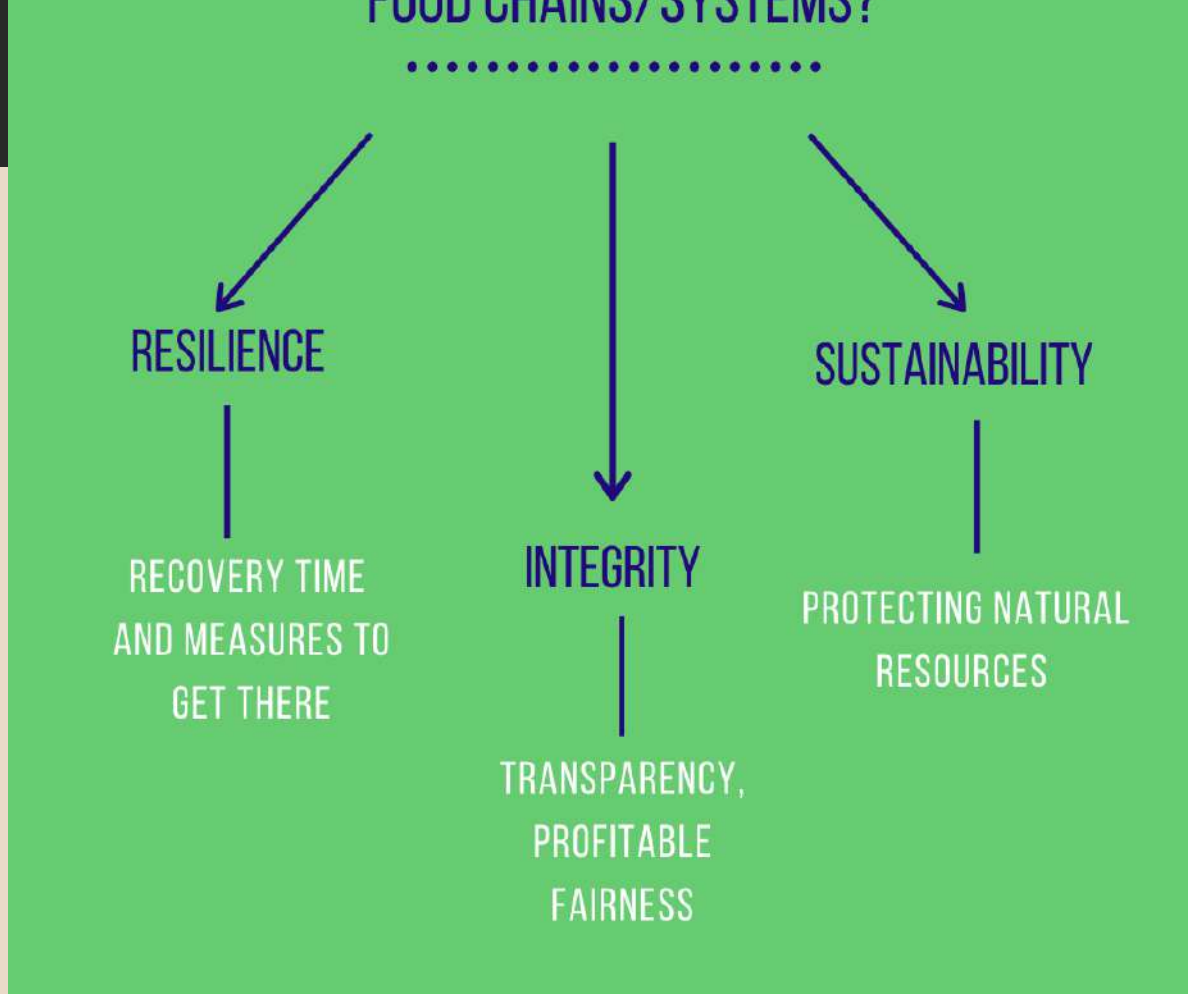
The objective of VALUMICS is to provide decision-makers with a suite of tools to evaluate the impact of strategic and operational policies and **enhance the resilience, integrity, and sustainability** of European food value chains.

VALUMICS goes beyond previous research limitations through a **highly cross-functional design** that bridges analysis across the economic, environmental, and social dimensions. This includes new modeling tools, consumer research, foresight analysis, and policy options synthesis.

Specific aims are defined by **four operational phases** and their activities: Development (groundwork), Integration (case studies, data gathering, analysis), Exploration (quantitative models), Policy and use (tests and scenarios).

ASSIST AS A TECHNICAL PARTNER

THE CHANGES REQUIRED TO TACKLE CHALLENGES OF FOOD CHAINS/SYSTEMS?



VALUMICS aims to implement system framework analysis supported by **modelling and data gathering**. Drivers that influence sustainability performance are analysed and mapping performed.

ASSIST Software's role was to build an **integrated dynamic simulation** model, quantitatively test the model, and provide understanding of the drivers and outcomes of behaviours within food value networks.

We built the **technical platform** which enables stakeholders to explore the contractual and regulatory implications using modelling-based foresight scenarios for improved value chains.

TECHNICAL DETAILS

The backend is developed using a **.NET Core Web API app** that ensures the management of the simulation process. It provides multiple endpoints for interacting with all entities – case studies, scenarios, agent classes, parameters, runs, accounts, and template-based classes. The API solution consists of three projects:



For source control we used **Azure DevOps Repos** and there is one repository for all three applications (Frontend app, .NET API, and Java/Repat application). The **CI/CD** is handled using Azure DevOps Pipelines – there are three build pipelines, three release pipelines, and one deployment target. Advanced **workflows** enabled integration of different data sources.



Valumics.API contains all the controllers for the required endpoints. The project is developed using Microsoft Visual Studio 2019 IDE and is based on .NET Core 3.1.0 Framework.



Valumics.Core contains the entire business logic—entity models, services, mappings, database configuration, and migrations. Database access and operations are performed using the Entity Framework Core as the ORM.



Valumics.Tests contains unit tests for the controller endpoints using the industry-standard xUnit framework. The goal is to test individual methods from each controller to ensure correct functionality and error-handling.

RESULTS

Through various **case studies** applied in real-world scenarios with relevant participants, VALUMICS is **breaking the silos** and bringing all stakeholders together—including farmers, producers, retailers, consumers, waste managers, and policymakers—increasing the **transparency and fairness** of European food systems.



TESTIMONIAL

Adrian Onu
Valumics Tech Lead

“ASSIST has proven skills and abilities to find technical solutions that are in line with the requirements of the system, creating a reliable platform using flexible solutions that enable the creation of the complex VALUMICS ecosystem with all its components and integrations.”

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SMART EVC™

BLOCKCHAIN PLATFORM

Leveraging Blockchain & Machine learning to create a Smart Management Platform for Electric Vehicles Charging Stations

- Expertise**
 Blockchain development,
 Mobile App development,
 Backend, Frontend, Design
- Platforms**
 Web, Mobile, Cloud
- Deliverables**
 Mobile App, Cloud platform, Design
- Project Type**
 European Project

EU PROJECT SUMMARY

- Smart EVC
 Increase competitiveness
- Automotive, Energy
 Disruptive technologies, Peer-to-peer charging
- Stefan cel Mare University
 UEFISCDI

Solution

Smart Management Platform

Potential uses

Local councils, Manufacturers

Context

Nationally co-funded project to research and develop an innovative platform using emerging and disruptive technologies, with applicability in the electric vehicles field and the management of charging stations.

Engagement duration **23 months** ASSIST team size **up to 6**

FEATURES WE DEVELOPED

Charging online management platform

Mobile Applications

Intelligent reservation module

Machine learning algorithms

Cloud integration

Offline module

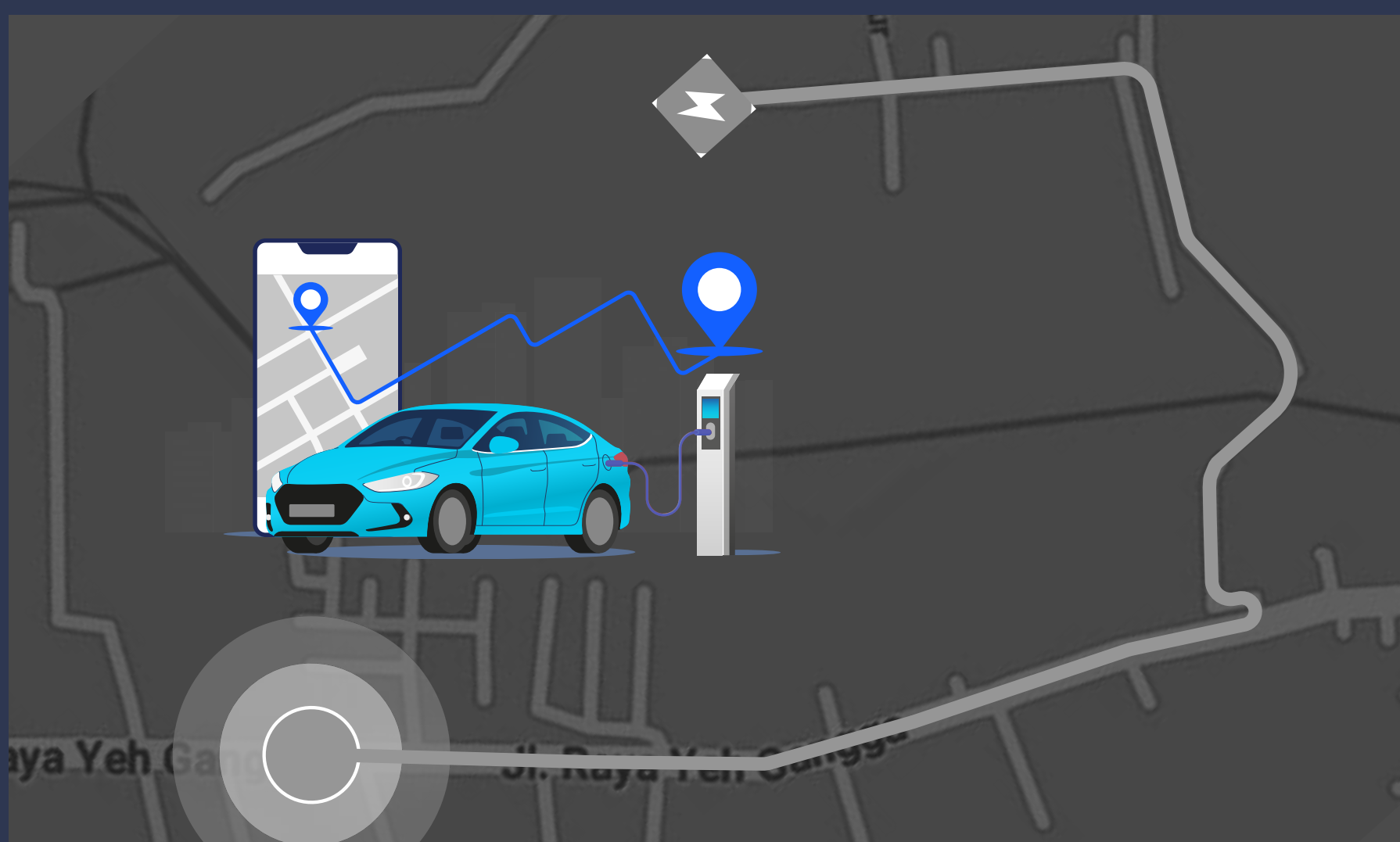
TECHNOLOGIES WE USED

- .NET Core
- Machine Learning
- OCPP 1.6
- React
- TypeScript
- SOLIDITY
- MySQL
- Microsoft Azure
- python™

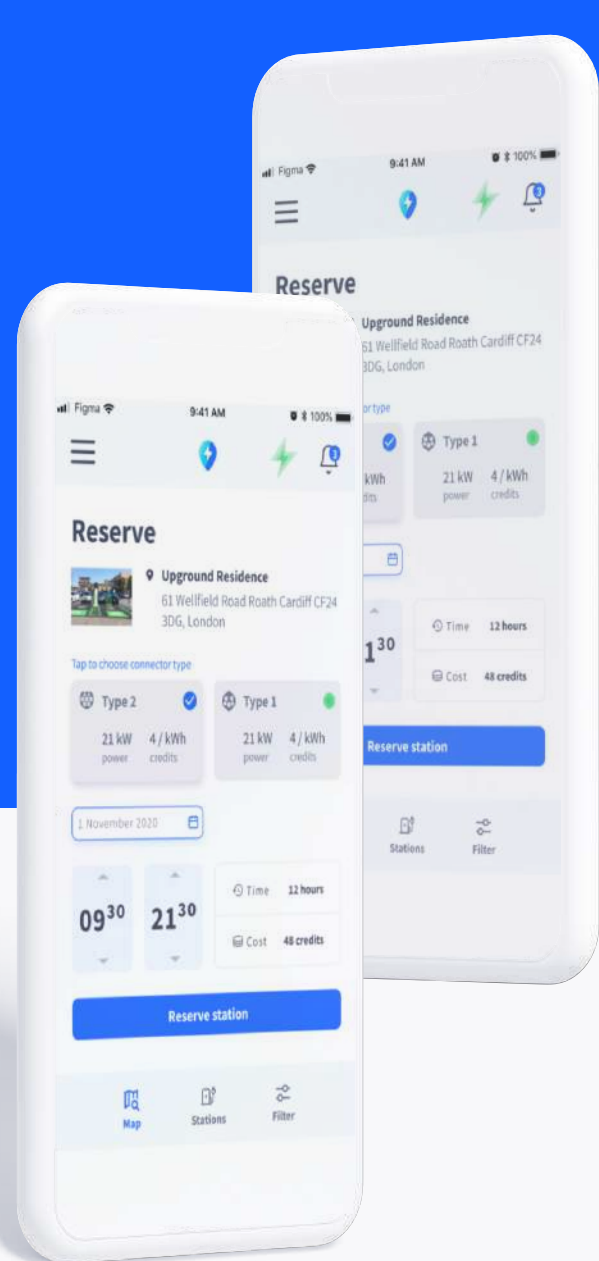
PROJECT OVERVIEW

The Smart Management Platform for Electric Vehicles Charging Stations is a cloud-hosted software platform for the management of EV charging stations on top of the latest OCPP version. Smart EVC aims to **strengthen charging station networks** by supporting and encouraging private station owners to allow reservations and recharging for a small fee.

The project also hopes to **increase the competitiveness of the economic environment** by **assimilating RDI results** in conceiving, designing, implementing, testing and demonstrating an intelligent charging station management platform based on Blockchain and artificial intelligence, along with the transfer of this software to the market.



HIGHLIGHT FEATURES



Simplified charging – the platform unifies the various connection methods of electric vehicles to charging stations.

Smart alerts – The mobile app facilitates interaction with charging stations, generating smart alerts for future charges based on established parameters, technical specs and driving styles.

Blockchain based – Merging of payment methods for charging electric vehicles by using Blockchain technology.

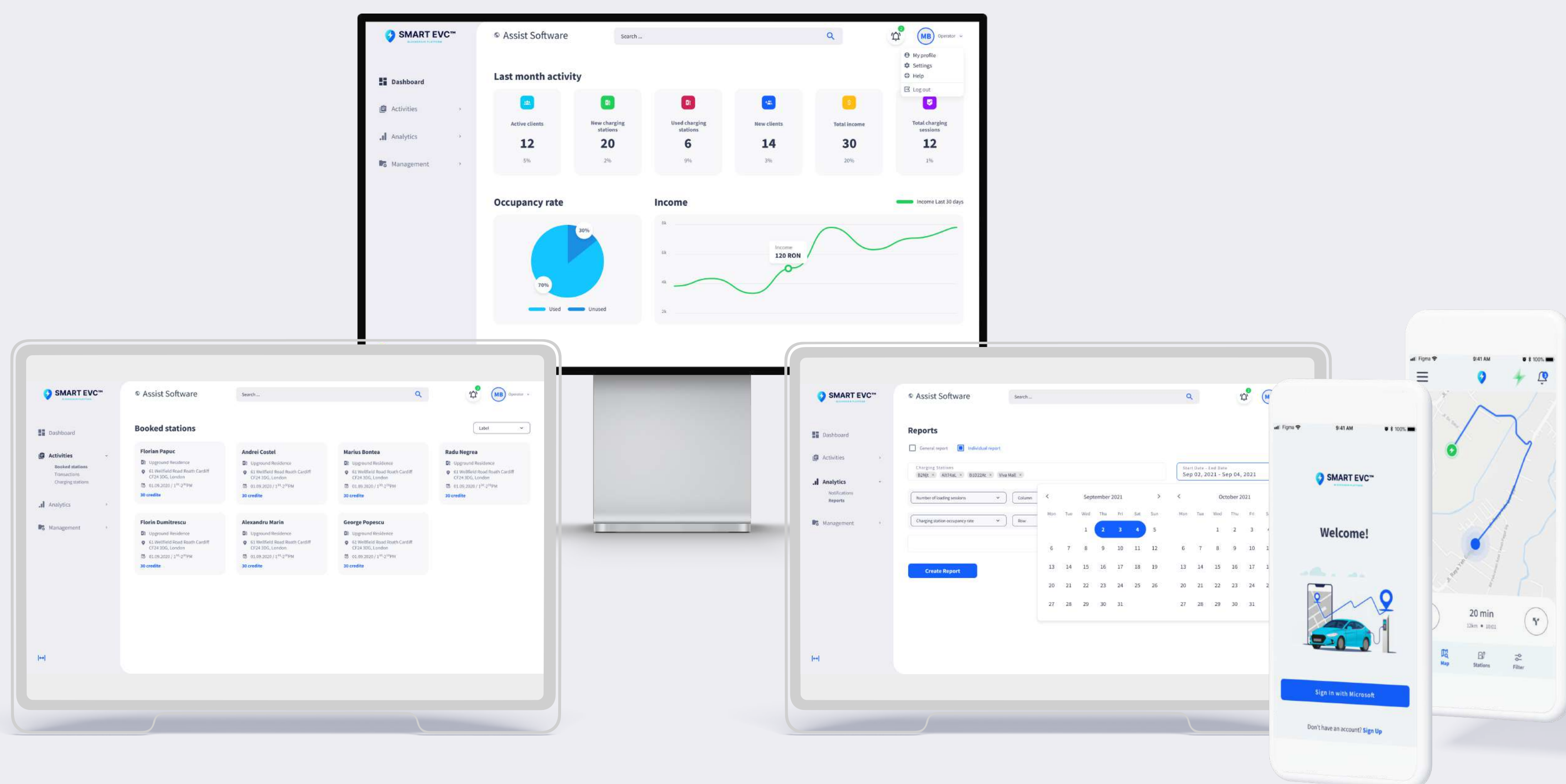
Intelligent scheduling – AI-based module, using algorithms to establish patterns and suggestions.

TECHNICAL DETAILS

ASSIST Software is responsible for the development of the online charging platform, mobile applications, intelligent reservation module for charging stations, using reinforcement **machine learning algorithms** and a wrapper over the **Open Charge Point Protocol**.

The backend of the SmartEVC Platform is being developed using .NET Core technology using **microservices** and the front-end uses **React**. The microservices are used by the two front-end apps – EVC Mobile App and EVC Web App through **request APIs**.

A **peer-to-peer charging and transacting** component are enabled using a blockchain microservice, Ruby and Ethereum.rb for **Solidity**-based smart contracts. Using REST endpoints, the backend microservice can interface with **BigchainDB** for **transparency** and **decentralization**.



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