We-Share

Challenge: Weather Forecasting
Proposed by: Enel

TEAM MEMBERS

Alessandro Fusaro	*MBA Fellow and MSc Media and Communication Engineering*
Arslan Arif	*PhD candidate and MSc Engineering Management*
Domenico Lopriore	*MBA Fellow and MSc Management Engineering*
Gianluca Montanari	*MBA Fellow and MSc Mechanical Engineering*
Maite Labairu-Trenchs	*MBA Fellow and MSc Aeronautical and Space Systems Engineering*
Maria Luce Lupetti	*PhD candidate and MSc Design Research for Service Robotics*
Michela Tonda	*MBA Fellow and MSc Industrial Engineering*

AN OVERVIEW

We-Share is a team born from an identified global challenge affecting the energy industry.

Wind power is gaining more and more importance in the global supply of energy (approximately 3% in 2016 and 18% expected in 2050). However, the lack of accuracy in predicting wind 48-72 hours ahead (about 5% average error and 20% error at peaks) causes big inefficiencies in energy supply management, which translates into additional costs. That means a global need of improving the quality of weather forecasts.

A solution to this problem indeed would save huge amounts of production costs to the energy business, contributing in making a more efficient use of green energy, and savings in several businesses.

> *"The Weather Company estimates that weather is perhaps the single external factor affecting business performance, to the tune of nearly $1 trillion lost annually in the U.S. alone. Combining weather data with business data can improve decision making for a wide range of companies"*
>
> *Jessica Davis – Information Week*

PROBLEM STATEMENT

After speaking to a number of experienced professionals from the sector, we found out that the main sources of inaccuracy in wind predictions are both the lack of weather data points and the lack of integration of data.

Weather forecasting companies rely on data coming from national and European agencies. Data is obtained from weather measurement stations, distributed among the territory and with an average distance of about 30 km between stations. An insufficient number of measurement points in between leads to inaccuracies in the initialization of weather forecasting models, causing prediction errors.

In addition, many pieces of data generated every day are not properly exploited because of the difference in formats and the lack of reference platforms where to upload the collected data sets.

OUR SOLUTION

We start from the assumption that an increase in weather prediction accuracy is related to an increase of data points collecting weather parameters.

On that, we want to take advantage of the global sharing movement that we are experiencing today to encourage citizens to contribute in increasing the amount of weather data collection points, exploiting the existing network of public and private entities operating on the national territory.

At first, we want to create a social impact in strengthening awareness on weather-related issues, green energy and sustainability and strengthen the scientific background among the generations that were born in the data-sharing era: this will consist in the first phase of our project, *Meteoro-making*.

Meteoro-making requires the introduction and installation of a weather station collecting six basic parameters: humidity, temperature, wind, rain, light, pressure, plus the GPS location and a Wi-Fi antenna to share data. The weather station comes with an educational model that includes notions in support to curricular subjects such as robotics, mathematics, science, geography and the students will be engaged in a number of workshops, students will learn more about energy business and big data and the need to collaborate in the collection of data in order to solve global challenges.

Thus, this will correspond to an increased amount of data points from and consist in a test-phase of the web-based platform showing the location of the weather stations and historical and real time data sets. We believe that schools are a good starting point that will follow with a scaling-up to all citizens of the access to this platform.

In a second phase, our aim is to introduce a new concept of data collection and sharing which consists creating partnership with strategically located entities (corresponding to missing data points or with a spread out localization). The partner entity will join the *We-Share* community and be supported in the cost-free installation of a weather station and, subsequently, start collecting data. For each set of data uploaded into the *We-Share* platform, the partner entity receives an economic compensation. In this way, strategic localization and reliability in the collected data will be guaranteed.

At the same time, the access to the platform full of new sets of data with an extended geographical distribution will be provided to forecasting service companies and other interested customer profiles under an annual subscription fee.

OUR PLAN

Before 20th of June	Feedback from schools on the *Metereo-making* program, Weather sensor/station prototype, Business definition of the *We-share* platform
Next 20 months	Implementation of the school program, Development of the *We-Share* platform, Data contribution testing, Final weather sensor/station prototype
20 years ahead	Full deployment of our platform at a global scale