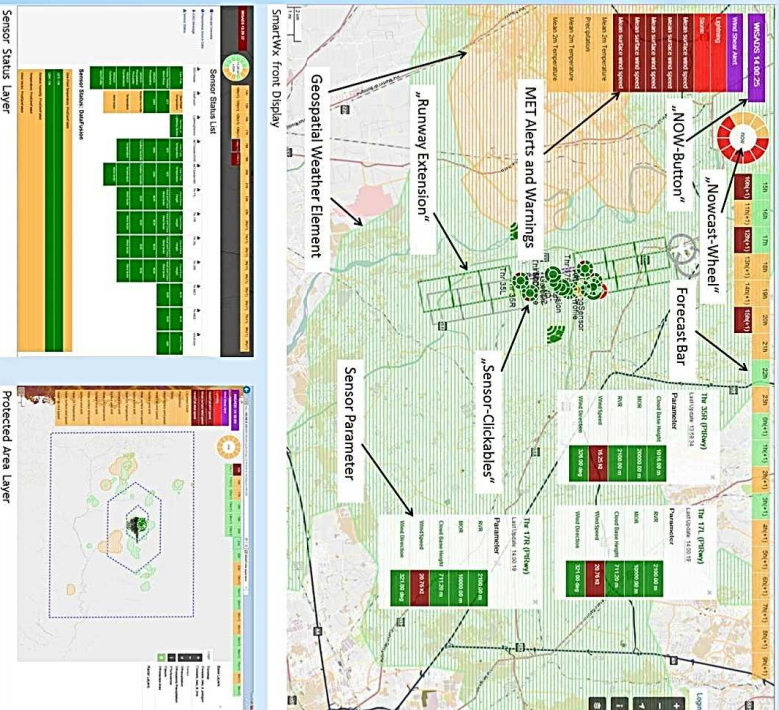


## SmartWx

SmartWx is a web-enabled multi-layer solution made for airport stakeholders. MET products are visualized based on generic MET sources like sensors (ground/aircraft based), NWP-Model or satellite data in order to fulfil the user requirements. The modular architecture and platform independent technology use ensures a high degree on flexibility. System features are:

- ❑ OpenStreetmap based browser display
- ❑ Complete MET picture or pure MET Alerts and Warnings
- ❑ Observations, Nowcast and Forecasts
- ❑ Reliable improved MET products based on Sensor Fusion
- ❑ Publish subscribe middleware providing SWIM based ATM tailor-made services



## Aeronautical MET Service Process Flow

MET requirements from different airport stakeholder were used to develop and implement a multi-tier software framework which connects, processes and visualizes all available sources of meteorological information relevant to the airport and aerodrome. In this process, it makes use of the synergies between the different sources by means of data fusion and translates the outcome to specific operational needs. The software is based on a flexible architecture in terms of MET input, business logic and presentation. Tailoring of specialized services for particular groups of stakeholders according to their requirements is performed at the end.



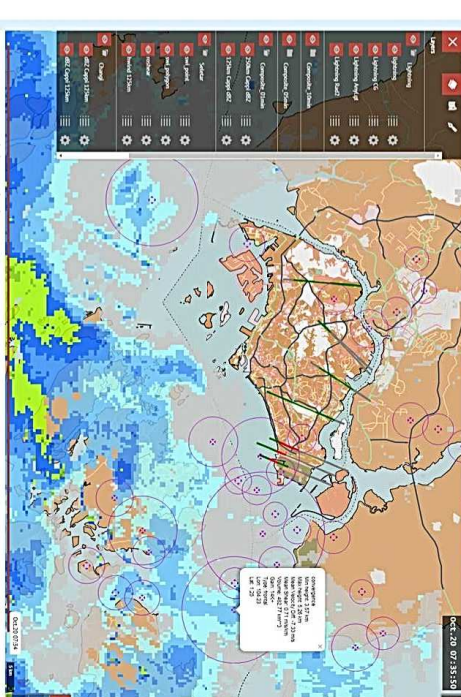
## Developed, verified & validated by SESAR

The system was developed inside the SESAR 1 program. A measurement campaign took place at Braunschweig airport in 2015 to demonstrate the multi-source integration and fusion capability. A comprehensive set of MET input sources were processed partly fused and finally reliable and improved products derived. The complete system was successfully validated by different stakeholders at Milan Malpensa in 2016.

Category	Parameters
WIND	Low level wind shear, Directional precipitation, Surface wind speed & direction observation, Observation last, Directional precipitation, Low level wind shear
Connection	Directional precipitation, Directional precipitation, Directional precipitation, Directional precipitation, Directional precipitation, Directional precipitation
Visibility	Low level visibility, Cloud amount, Cloud base, Cloud amount, Cloud base, Cloud amount, Cloud base
Weather	Thunderstorm, Precipitation type, Radar & Lidar
StandardMET	Thunderstorm, Precipitation type, Radar & Lidar

## Up-to-date Customized Enhancements

Thanks to the flexible architecture of SmartWx, a new design has been developed due to new customer request of multi-runway monitoring of near-by located airports. The MET products are also customized based on available input sources. In this application, one Weather Radar delivers products for 2 airports and therefore sensitive to different protected areas. New symbol and parameter settings were incorporated according to customer wishes.



## Outlook

SmartWx will be currently improved by several customized services and further research program SESAR 2020. New MET products based on small scale CFD Model like Glideslope-Wind Forecast and 3D Convection areas will be integrated after successful validation which is currently ongoing and will be integrated into the new designed front Display. The specialized design shows the capability to easily adopt to new applications like flood warning system, Hydrology, or where tactical weather is needed like special events.