

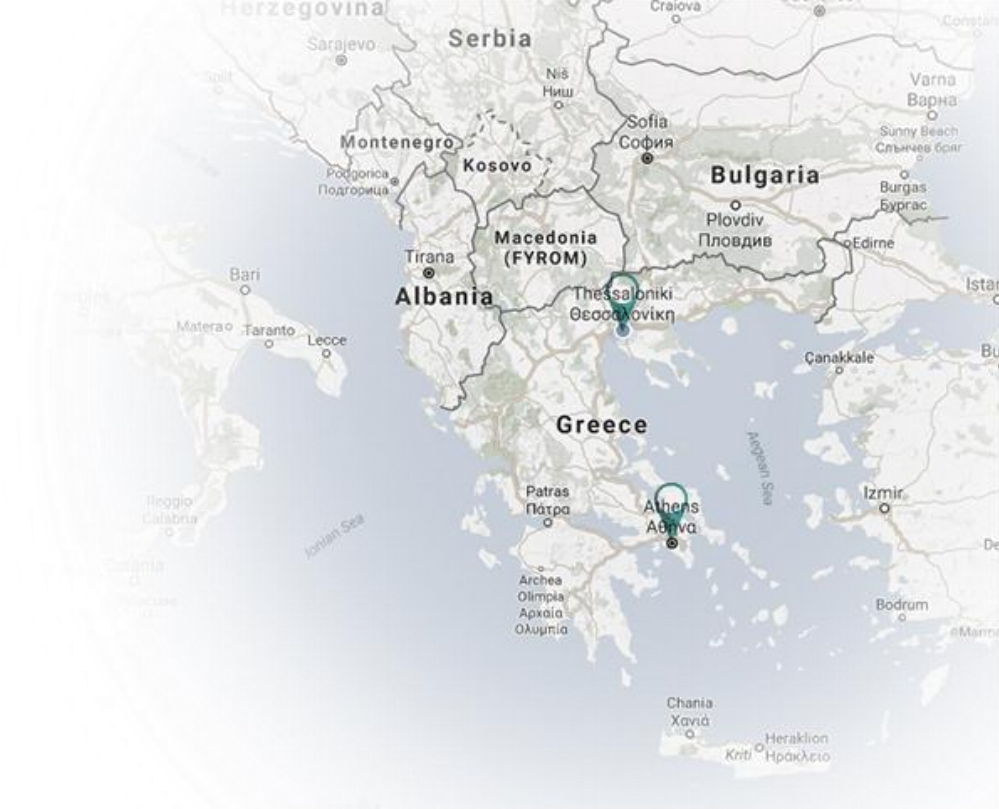


**Evangelos Kosmidis**  
**Founder, Environmental Physicist**

ICT Tools for Air Pollution Decision Support Systems  
SMURBS (ERA-PLANET), Athens, 9 October 2018

# DRAXIS – Who we are

- Type: **SME**
- Year of Establishment: **2000**
- Average Annual Turnover: **~1,5 M €**
- Location: **Thessaloniki, Athens, Brussels**
- No of Employees: **34**
- Main Areas of Expertise: **Environmental Technology & Software, ICT for Agriculture, ICT for Air Quality monitoring, Applied weather forecasting, Policy & DSS**
- Experience: **Consultation for Public & Private organizations in the last 20 years. Coordination and Partnerships in more than 20 FP7 & H2020 projects and National R&D frameworks.**





# Successful Projects

# Projects – Funding Frameworks

- National Frameworks (AP mapping, Op.Cent. of AP, Water Cost DSS)
- PPP (SEPAN, e-EPR, Cyprus)-Environmental, Workflow systems
- GSRT (More than 20, Chorus, Geoclima, AgroClima, UVNET)
- FP7 (Enorasis-agri, eEnviper, Cassandra-energy)
- FI-ware (Finodex-envi, Fractals-agro, Finish-food)
- H2020, more than 15 projects
  - (Innovation- APOLLO, BEACON, HACKAIR, IPIM)
  - (Policy-RECAP, FATIMA, STEP, HACKAIR)
- SME-Instrument (3 Seals, 1 project)

# New Projects (GSRT – H2020) for 2018

<b>EMISSION – SYMPNOIA</b> (Environmental Projects from GSRT-2018)	<b>NH3END-AGRISAFE</b> (2018-GSRT Funding for Agricultural sector)	<b>SEALOC-DRIVE-IT</b> (2018-GSRT Funding)
<b>BLUESKY-CUTLER</b> H2020 Environmental projects-2017	<b>AFRICULTURES-BEACON</b> 2017-H2020 Projects	<b>SIUGREEN-BIO4POWER</b> 2017-H2020 Projects



# **Solutions and Services**

# Services - Domains

Agricultural Services and Solutions	Environmental Solutions and Services
Irrigation Management and tracking	Air Pollution Monitoring and Forecast
Farm Management Information Systems	<b>Climate Services (Forecast)</b>
Crop enhancement Services	Low Cost Sensors
Policy making scenarios and Future Strategy (Awareness)	
AGRI and Climate Insurance Services (Real Estate).	

# Climate Services

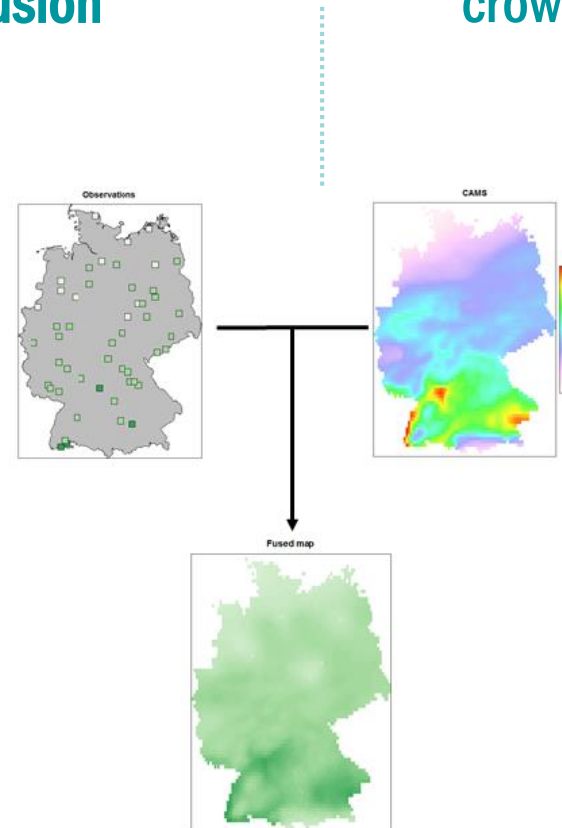
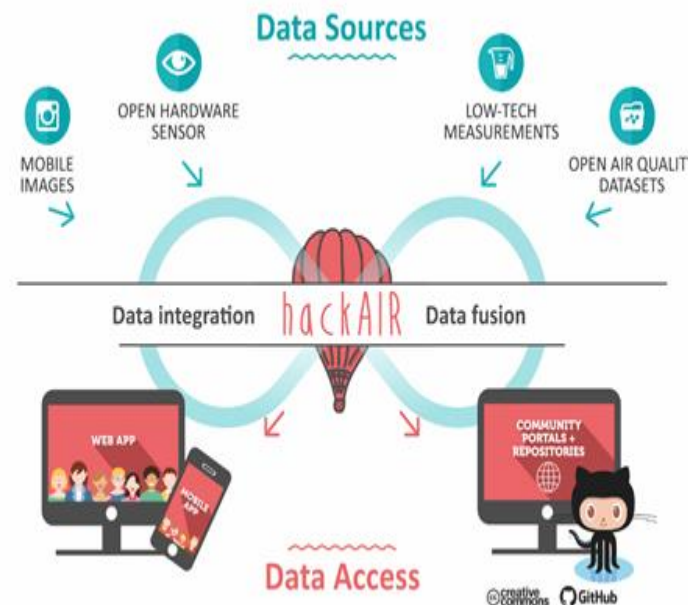
- Medium and Long Range Weather Forecasts (ECMWF, GFS, GEM)
- High Resolution Short Range Weather Forecasts (WRF, GSI)
- Custom Based Weather Forecasting Services and Weather DSS
- Historical Climatological Data (Atmospheric, Land & Ocean)
- **Applied Climate and Weather Consultation** (long term effects in various domains)



# Air quality monitoring and forecasting

Raising awareness on air pollution – IoT utilization – Low Cost Sensors – **Fusion Models**

Envi4All – AQ information based on open data & crowdsourcing – **Personalised semi-Empirical Forecast**



# Air Quality Modeling & Forecasting

## 1. Semi-empirical algorithms

trained with historical time series of air quality & meteorological data

**Application:** The Envi4All app (<http://envi4all.com>), API under request

**Advantages:** Light computational load & storage requirements

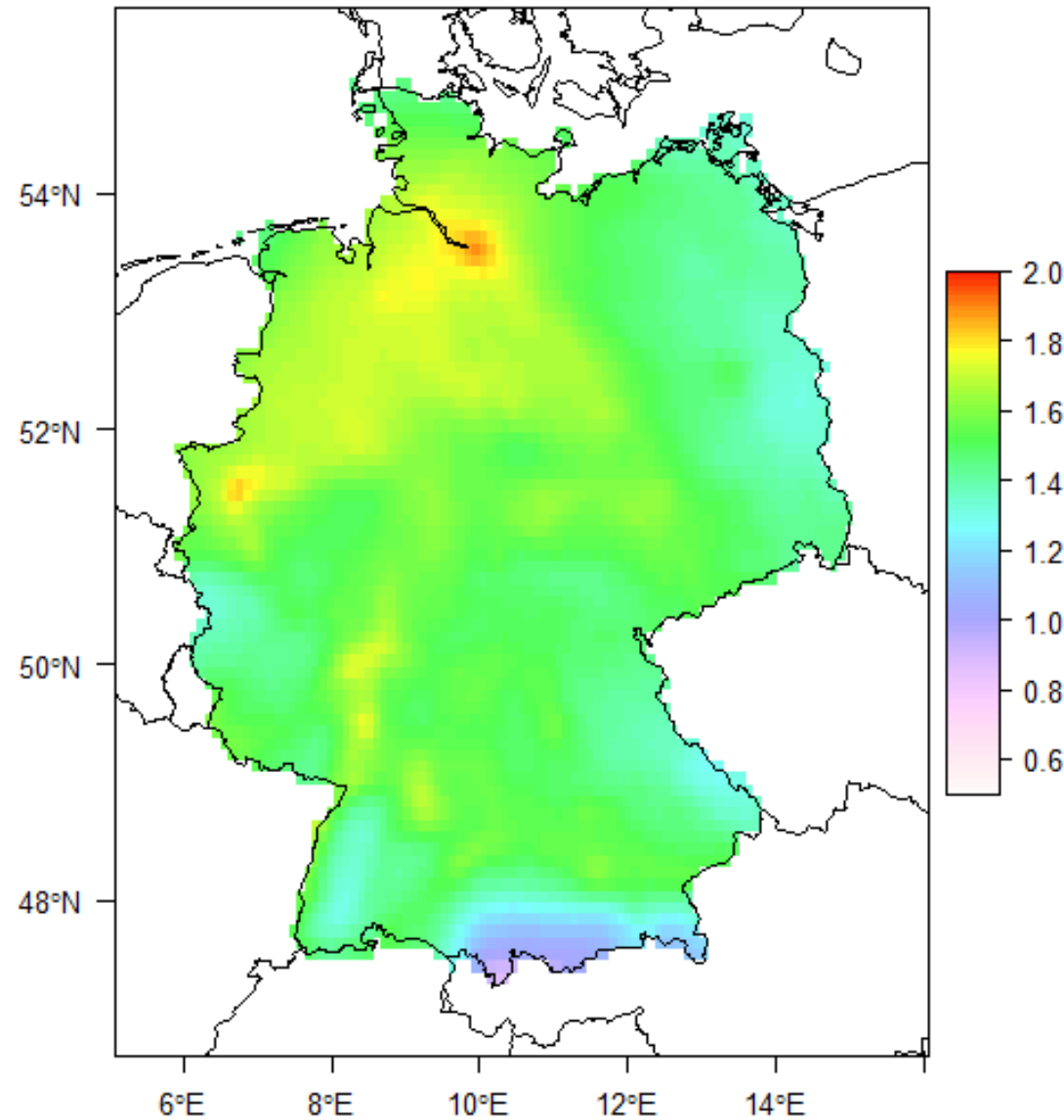


## 2. WRF-Chem utilizing CAMS forecasts (currently dust and sea, soon PM and other).

trained with localized air quality & meteorological data, aided with low cost sensor data

**Application:** The NEW Envi4All mobile app (to be provided to SMURBS in the web platform)

**Advantages:** Applied Assimilations, Complimentary, Easy to display and draw conclusions.

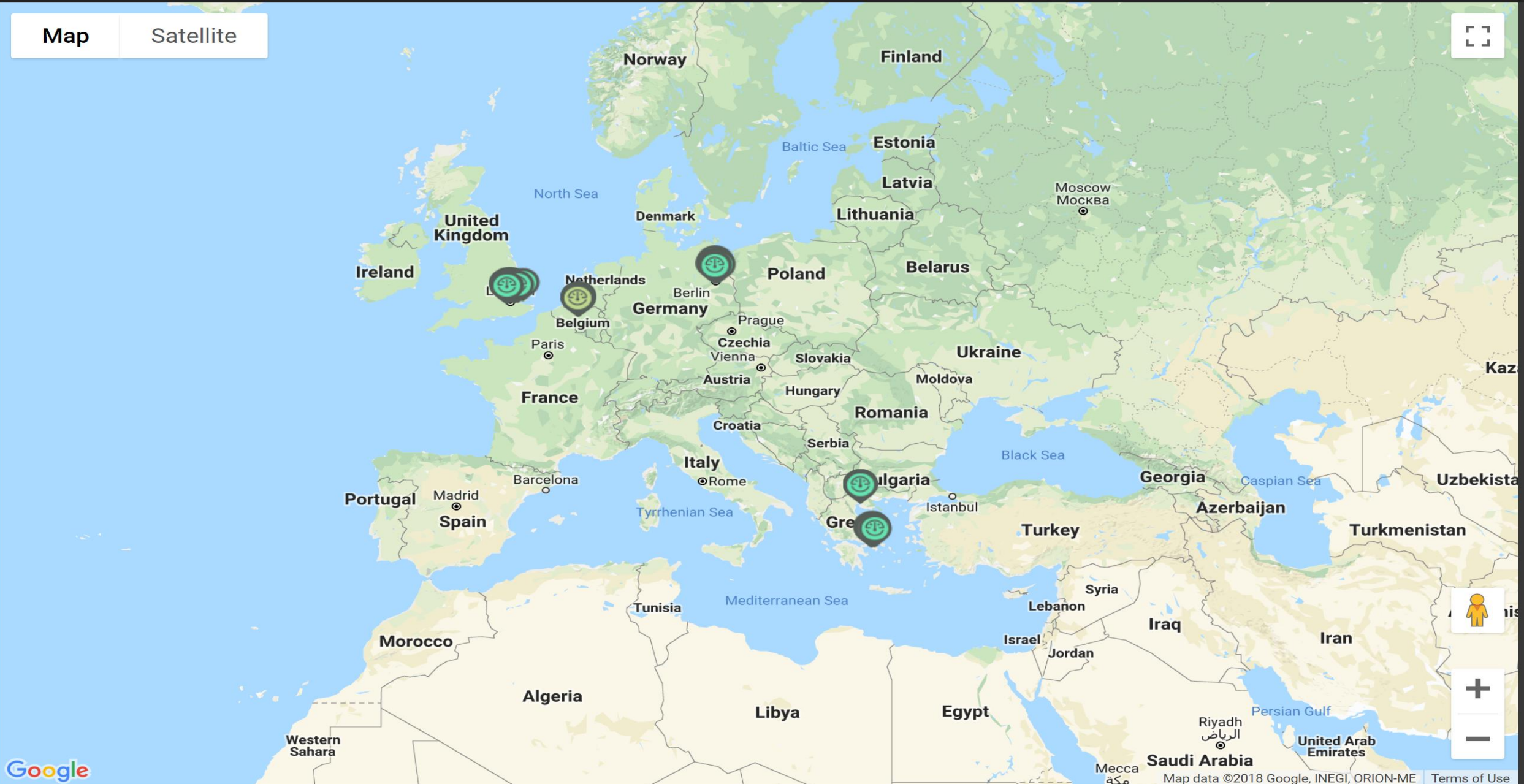


Internal representation	hAQI Label
0.5 to 1.5	Very good
1.5 to 2.5	Good
2.5 to 3.5	Neutral
3.5 to 4.5	Bad

Average spatial distribution of hAQI throughout the entire testing period for Germany

Map

Satellite





**Next Steps**



# Current Situation & Future Plans – Why SMURBS?

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## What we currently do ....

- Matching & Integrating existing technology with the requirements of each domain.
  - Collaborating with Research Centers to explore new exploitation possibilities
  - Supporting Organizations with Environmental ICT and Consulting.
  - Atmospheric Modeling & Data Acquisition planning for Policy Scenarios
- 

## What we want to do ....

- **“Internet of Things” and Big Data for Environmental Monitoring.**
- Crowdsourcing with the help of multi-modal sensors & geospatial data.
- **Social Gamification for Environmental purposes and awareness increasing.**
- High precision Air Quality Modeling & Forecasting with lower resource utilization



Thank you!

Evangelos Kosmidis

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