

PASODOBLE

Promote Air Quality Services integrating Observations –
Development Of Basic Localized information for Europe

The PROMOTE-legacy GMES
Downstream Service Project Proposal

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and the PASODOBLE consortium



EC Call: FP7-SPACE-2009-1

- Space-based applications at the service of European Society
- Preoperational validation of GMES services and products
- Stimulating the development of downstream services

Questions ...

- Imagine a severe smog episode building up in several European regions. Will the hospitals be prepared? Who will tell the doctors in the right region to be prepared at the right time? Will the pharmacies have relief medications in stock?
- Imagine a severe PM exceedance is detected by a regional environmental agency. How will they know and verify its source? Is it from local emissions? Advected mineral dust? Neighbouring polluted areas? How do they know the exact spatial extent? What do they report to the EC?
- Imagine families with children, a cyclist or a hiker planning a day trip. Wouldn't it be perfect to guide them to where the air is cleanest? Wouldn't it be perfect for sportsmen or people suffering from hay fever or asthma to have information that shows highly resolved and integrated information on particulate matter, pollen etc.?
- Imagine a city that wants to set up an air quality forecasting and public information system to improve quality of life for their citizens. Will they know how to proceed to get an effective and efficient solution which delivers the best objective measures and values? Wouldn't it be perfect for the organizers of the 2012 Olympic Games in London, the athletes, and the politicians to be informed about the local air quality?

PASODOBLE - Consortium

DLR - Deutsches Zentrum für Luft- und Raumfahrt e DE (coordinator)
ACRI – ST FR
AEA Technology UK
AUTH – Aristotle University of Thessaloniki EL
ARGOSS – BMT ARGOSS NL
IASB – Institut d'Aeronomie Spatiale de Belgique BE
BAS – Bulgarian Academy of Sciences, GPhI BG
CERC – Cambridge Environmental Research Consultants UK
CGS – Carlo Gavazzi Space IT
CHU – Centre Hospitalier Universitaire Nice FR
MUW/EAN – Medical Uni Vienna / European Aeroallergen Network AT/INT
EMA – European Medical Association INT
FMI – Finish Meteorological Institut FI
KNMI – Koninklijk Nederlands Meteorologisch Instituut NL
NILU – Norsk Institutt for Luftforskning NO
FRIUUK – Rheinisches Institut für Umweltforschung an der Uni zu Köln DE
TAS-F - Thales Alenia Space France FR
TNO – Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek NL
VITO – Vlaamse instelling voor technologisch onderzoek BE
Nowcasting International IE
Outdoor Concepts DE

Proposition

- Imagine PASODOBLE has been implemented and has built up number of lean and dedicated sustainable AQ Downstream Services throughout Europe.
- Then there will be an affordable solution to all these issues.
- Then local AQ services would be harmonized and would have assured quality following the EC policies CAFÉ, INSPIRE, SEIS and initiatives like FAIRMODE and HARMO.
- Wouldn't citizens benefit most from such services at the local level where population density is highest?

PASODOBLE Project Proposal - History

- Proposal for EC Call FP7-SPACE-2009-1
- Very positive Evaluation Summary Report, Mar 20
- Interfacing to Core Project MACC (ECMWF) started
- Estimated Project Start Winter 2009/2010

PASODOBLE - Goals

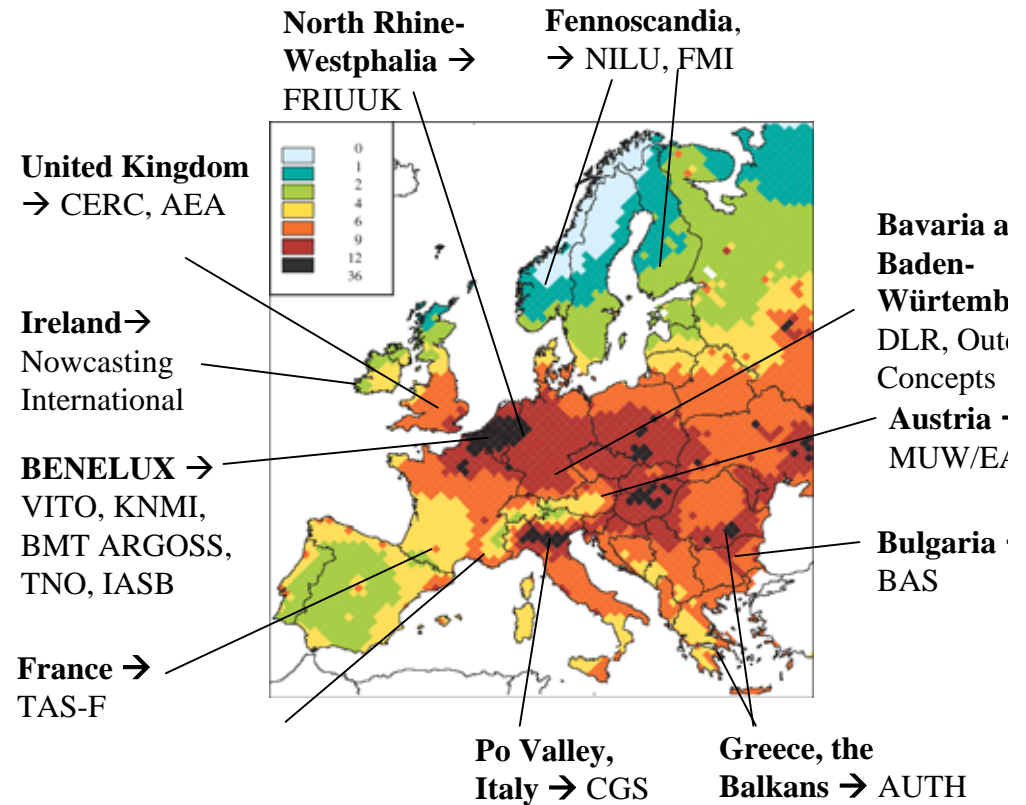
- Develop and demonstrate user-driven downstream information services for the regional and local air quality sector by combining space-based data, in-situ data and models in 4 service lines:
 - ◆ **Health community support**
for people at risk, hospitals, pharmacies and doctors
 - ◆ **Public forecasting and assessment support**
for agencies, tourist industries and sport event organizers
 - ◆ **Compliance monitoring support**
on particulate matter for regional environmental agencies
 - ◆ **Local forecast model evaluation support**
for local authorities and city bodies

PASODOBLE – Goals II

- Stimulate the development of AQ downstream services by developing a generic, harmonized, modular and technically integrated service infrastructure
 - Increase the implementation efficiency through simplification and cost reduction for implementation of the demonstrated services and new services in the future
- gaining synergy from utilisation of a common technical envelope

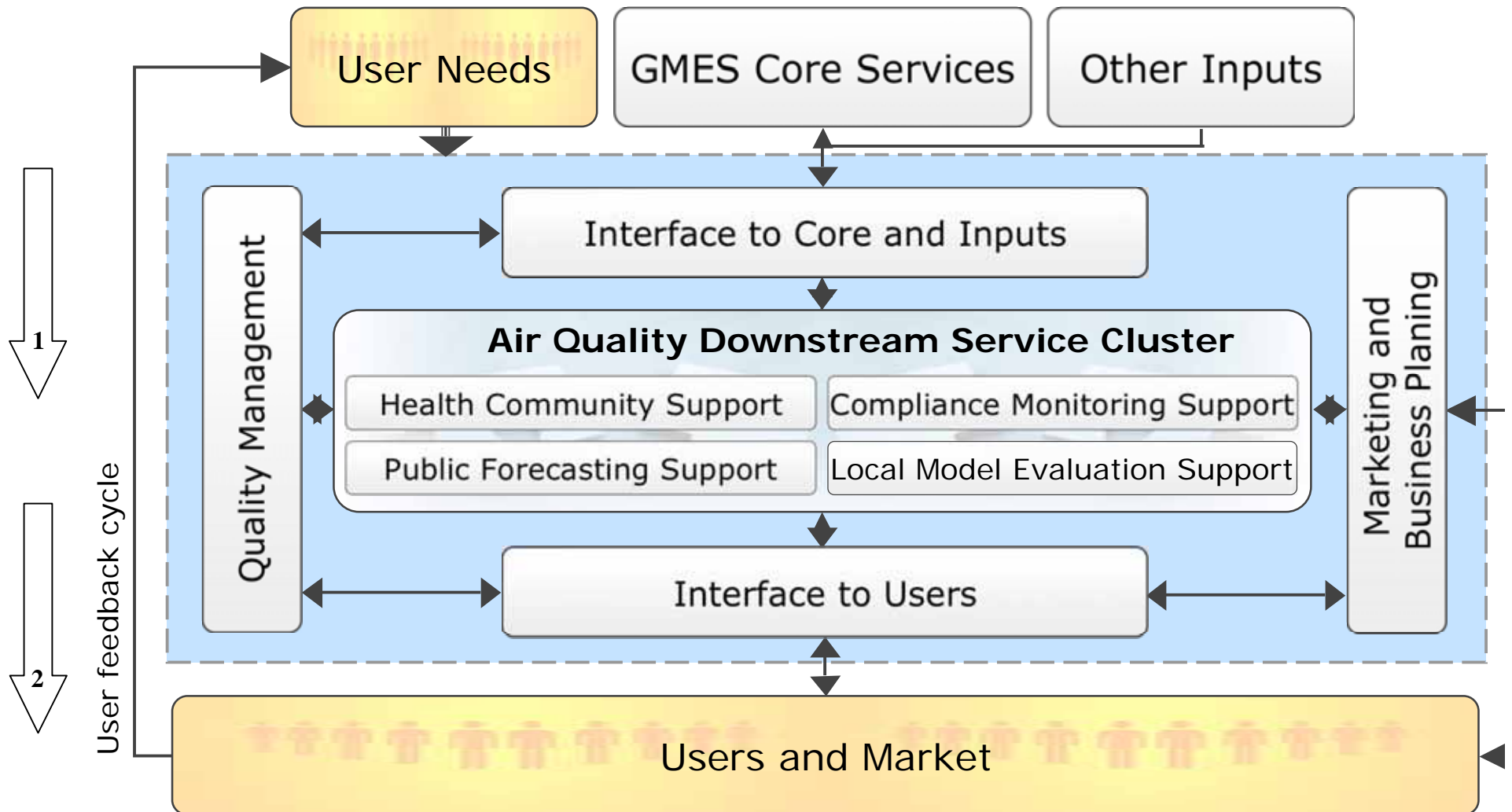
PASODOBLE - Scope

- 21 partners
- 13 countries
- Services in 17 countries
- 4 service lines in generic framework



loss in life expectancy attributable to fine particulate matter in months
(Source: M. Amann, International Institute for Applied Systems Analysis)

PASODOBLE - Concept



PASODOBLE: Evolution of the PROMOTE legacy

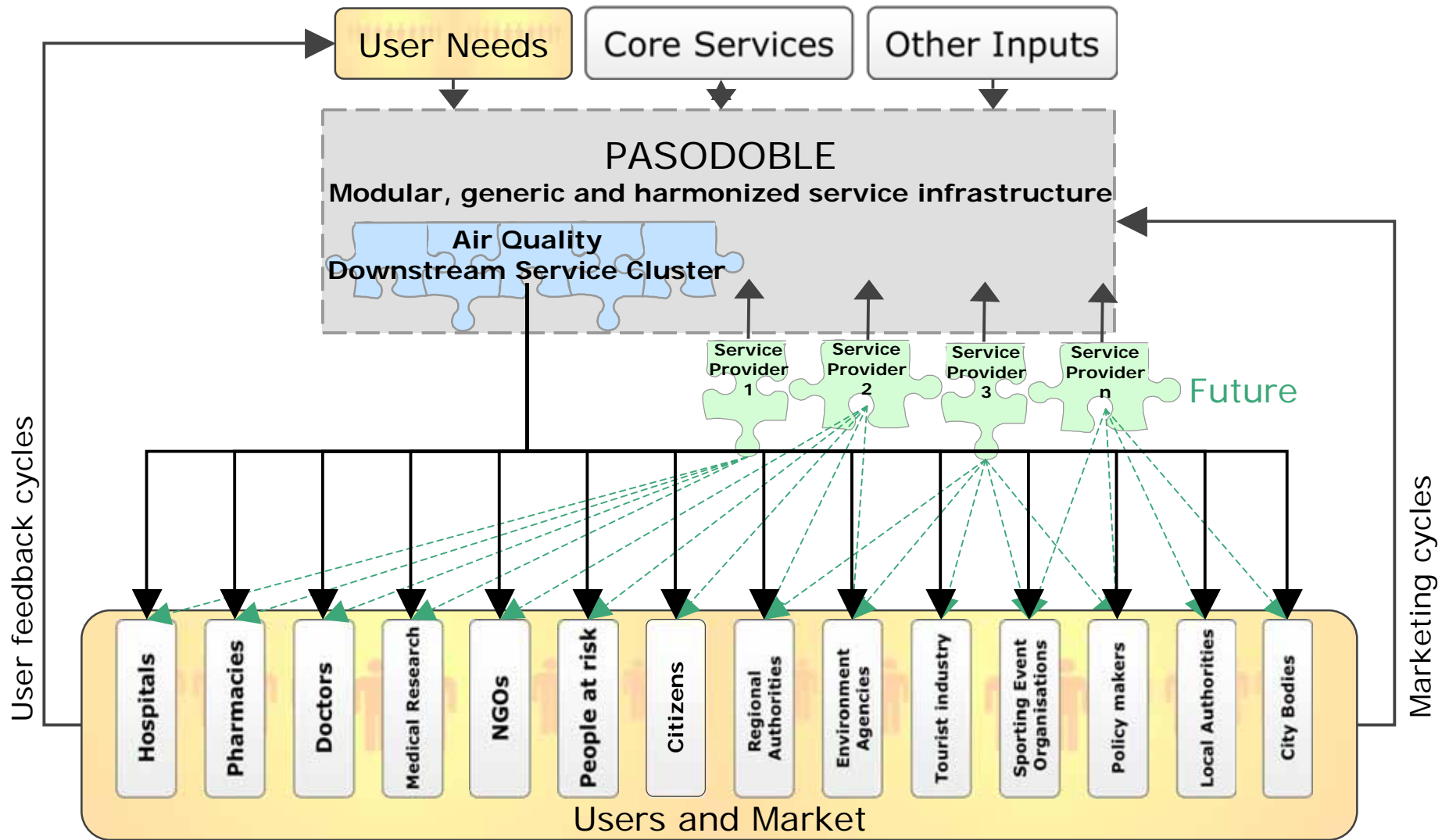
- Downstream Services on AQ will be further developed and strengthened to meet documented user needs
- Users will be involved to further shape and specify their requirements and evolve the proposed services building on their commitment and active role within the PROMOTE User Federation
- Service Level Agreements will be evolved towards a detailed commitment from the service providers on products to be delivered sustainably
- Annual evaluation cycles will be continued and strengthened
- Validation efforts will be extended towards harmonised and automatic quality assessment in order to assure documented “fitness for purpose” throughout the services’ lifetime
- Promotion and training efforts will be significantly improved to further expand the user base and uptake of services

Mission



- PASODOBLE will develop and evolve
 - a variety of specific user-driven services in 4 thematic lines
 - a generic, modular and harmonised service infrastructure.
 - a well-balanced approach will be the prerequisite for sustainable and self-supportive Downstream Services for the AQ sector in future.
- gaining synergy from utilisation of a common technical envelope

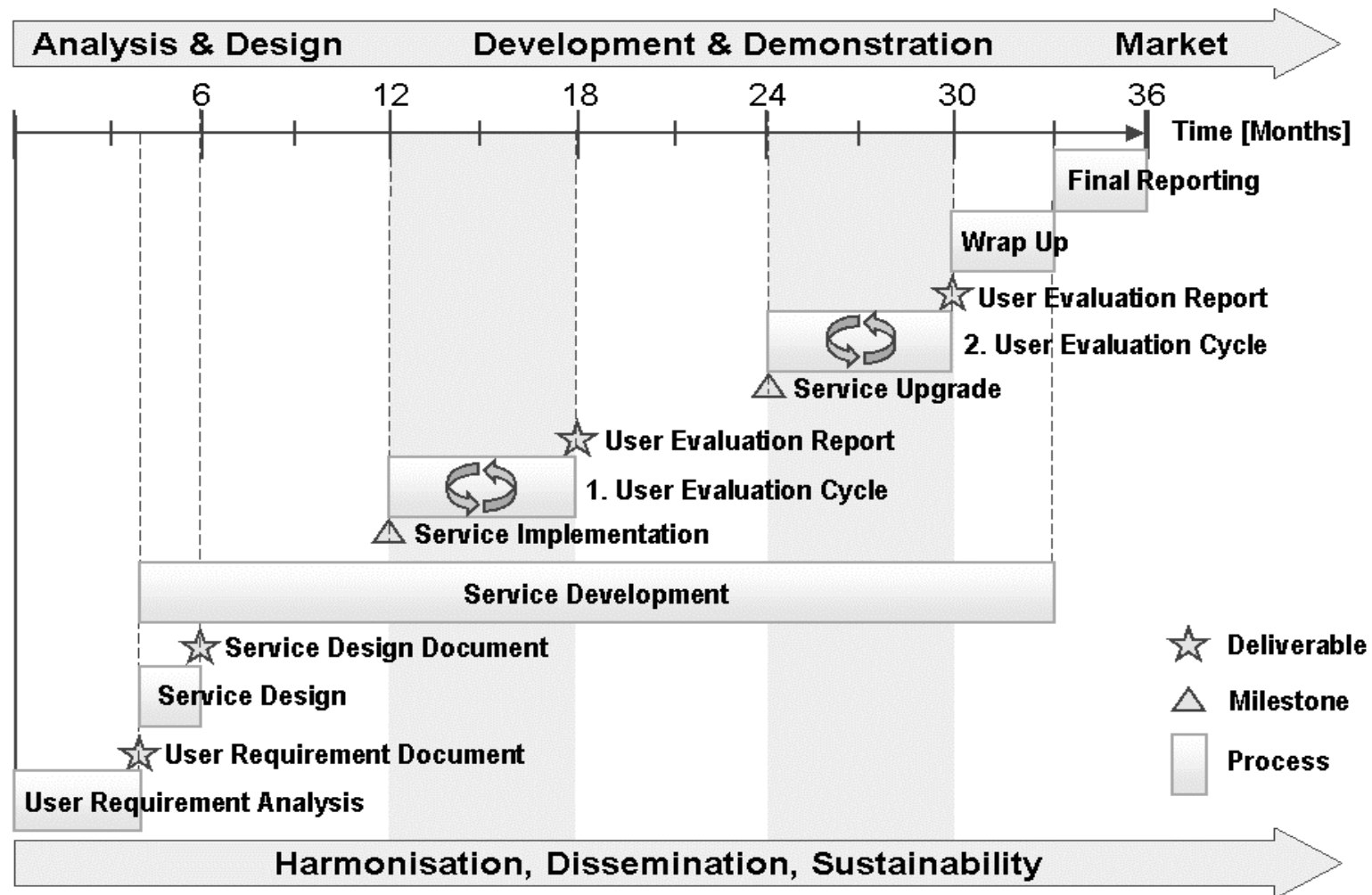
PASODOBLE – Services and Users



PASODOBLE - Objectives

- Development and demonstration of AQ services for European regions, based on documented needs and demonstrated capabilities of the ESA G3 PROMOTE user federation and service providers
- Development and testing of a sustainable generic service infrastructure in which modular AQ services can be easily added and through which a user friendly and customized access to end products is assured.
- Utilization of multiple cycles of delivery, use, and assessment vs. requirements and market planning, based on SLAs to facilitate evaluations of the value of the services thus assuring a leading role for the end users
- Promotion of use of best practise and harmonization

Phasing Strategy



PASODOBLE users*

- Environmental agencies, ministries
(national, regional and local) and NGOs
- City bodies, local authorities, municipalities
- Health actors
(hospitals, pharmacy networks, medical researchers, networks)
- SMEs
- Tourism industry
- Sporting event organizers

*at time of proposal preparation

Committed Users*

Black Sea Commission INT

European Environment Agency (EEA)INT

Joint Research Centre (JRC) INT

airTEXT Consortium UK

Belgian Interregional Environment Agency (IRCEL-CELINE) BE

Ben-Gurion University / National Water Company (Mekorot) IL

Central Institute for Meteorology and Geodynamics (ZAMG) AT

City Development Authority (URM Prague) CZ

Conseil Général des Alpes-Maritimes FR

Eidgenössische Materialprüfungsanstalt (EMPA) CH

Environmental Protection Agency Rijnmond (DCMR) NL

European Pollen Information (epi) EU

Austrian Pollen Information AT

Executive Environmental Agency Bulgaria (EEA - BG) BG

Geriatric Cluster of CHU de Nicelsabel Bereder FR

Health Protection Agency (HPA) UK

Hellenic Ministry of Environment,

Physical Planning and Public Works EL

Helsinki City Council FI

Landesamt für Natur, Umwelt und

Verbraucherschutz NRW (LANUV) DE

Medical University of Vienna (MUW) AT

National Environmental Research Institute (NERI-ATM)

National Institute for Public Health and the Env (RIVM)

Naturpark Scout GbR DE

Naturschutzzentrum Ruhestein DE

Paediatric Cluster of CHU de NiceFR

Ph@re NetworkFR

Province of Zeeland NL

Regional Agency for Env Prevention (ARPA) Emilia Ro

Regional Agency for Env Prevention (ARPA) Lombardia

Regional Agency for Env Prevention (ARPA) Piemonte

Region of Central Macedonia (RCM) EL

Slovak Hydrometeorological Institute (SHMU) SK

State Meteorological Agency of Spain (AEmet) ES

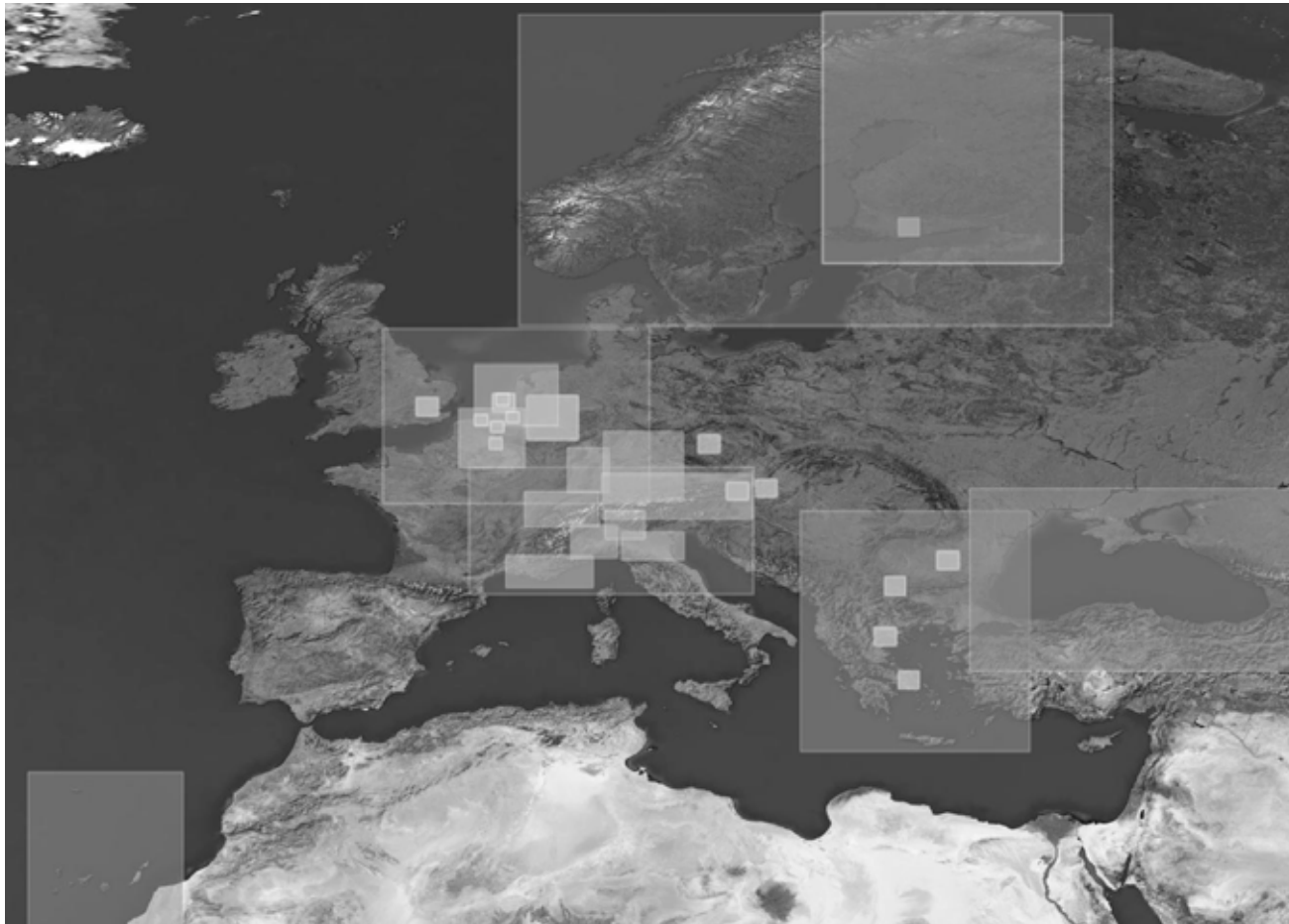
System of Emergency Medical Assistance in F(SAMU)

Umweltbundesamt (UBA-Austria) AT

University of Turku, Aerobiological group FI

***at time of proposal preperation**

PASODOBLE users*



Map of Europe showing the regions and cities covered by PASODOBLE Downstream Services for Committed Users.

*at time of proposal preparation

Health community support services

- **Target:** people at risk, hospitals, pharmacies and doctors
- **Motivation:** Increases in mortality and morbidity associated with air pollution and its uptake as a critical component in policy discussions.
- **Aim:** generate and analyse environmental health information to support relevant policies in Europe and the health care community
- **Objective:**
 - ◆ packaging existing AQ data to increase its uptake in health care community
 - ◆ developing information products in conjunction with the health community
 - ◆ developing and establishing information-dissemination mechanisms to increase support among physicians/specialists
 - ◆ cooperating with local, regional pan-European and international users

Public forecasting and assessment support services

- **Target:** regions, cities, the tourist industry and sporting event organizers, the public
- **Motivation:** Region-wise harmonisation of individual services and topic-wise development and implementation of integrated assessments of meteorological and chemical characteristics combining parameters from different thematic areas, such as pollutants, airborne allergens, UV.
- **Aim:** develop and integrate dedicated air quality services which are of high value for protecting human well-being and have direct implications for outdoor activities, mobility, recreation and sports.
- **Objectives:**
 - ◆ Air quality forecasts for regions and cities evolving from PROMOTE-II services
 - ◆ Tailored regional and local air quality products for sports, tourism, traffic management, regional fire monitoring, and aeroallergen information

Compliance monitoring support service for PM

- **Target:** regional environment agencies
- **Motivation:** member states are obliged to monitor ambient PM (10 and 2.5) concentrations and to report them to the EC on annual basis.
- **Aim:** Set up of a satellite-based “one-stop-shop” for exceedance/PM compliance monitoring for EC directive
- **Objectives:**
 - ◆ Collaboration with agencies with AQ Directive compliance duties
 - ◆ Develop a satellite-based mapping tool for geo-spatial distributions of annual PM threshold exceedances
 - ◆ Improve upon existing desert dust services to provide daily quantitative analysis of dust leading to potential threshold exceedances
 - ◆ Develop standard techniques to assess likelihood in the next few days exceedances being caused by a natural phenomenon

Local AQ Model Evaluation Support

- **Target:** local authorities, municipal governments, city bodies
- **Motivation:** Regional and municipal governments are increasingly interested in providing services to assess and forecast local- & city-level air quality
- **Aim:** develop, demonstrate and evaluate a methodology/toolbox for evaluation of local air quality forecasting models / setting European standards
- **Objectives:**
 - ◆ Standardization of interfaces for local input datasets based on common practices
 - ◆ Setting standard criteria and protocols for performance evaluation
 - ◆ Supporting apportionment studies to evaluate mitigation measures
 - ◆ Collaboration with / test bed for FAIRMODE initiative (JRC, EEA)

Summary

PASODOBLE =

Four user-driven thematic Downstream Service lines embedded in a modular and generic infrastructure that will be the prerequisite for sustainable services and will be open to new services and service providers in the future

Wishlist for ACC workshop discussion

- Drivers of GMES Downstream
 - ◆ Users
 - ◆ Sustainable services

- Requirements for satellite-based data
 - ◆ Sustainability (perspective for users)
 - ◆ Near-real time access (temporal constraints)
 - ◆ Improved characterisation (errors, averaging kernels, etc.)
 - ◆ harmonisation (better comparison of available data, best practise)

- Dedicated AQ mission/instrumentation for regulatory pollutants