A Europe-wide Interoperable Virtual Research Environment
to Empower Multidisciplinary Research Communities and Accelerate Innovation and Collaboration

VRE4EIC

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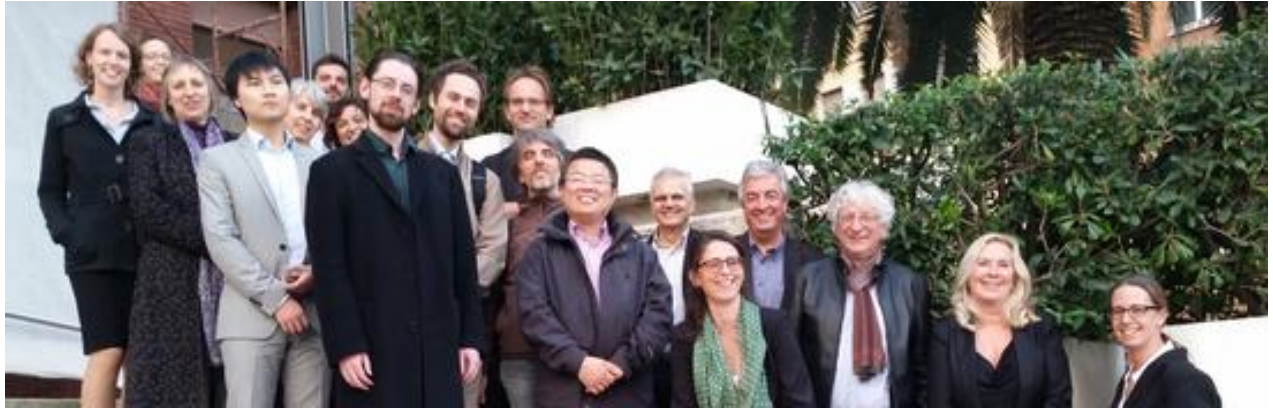
Data sheet

- Call EINFRA-9-2015:
  - e-Infrastructures for virtual research environments
- 36 months, from 01.10.2015 to 30.09.2018
- 8 partners from 4 countries
- Grant agreement N° 676247

- More at www.vre4eic.eu
- Twitter: @VRE4EIC
- Survey: http://tbm.collector-survey.tudelft.nl/nq.cfm?q=2359E7B8-5465-4154-B8BC-BD3E2C94112C

Consortium



VRE4EIC

ERCIM

CWI

euroCRIS
Current Research Information Systems

W3C®

FORTH
Institute of Computer Science

INGV

Consiglio Nazionale delle Ricerche

TU Delft Delft University of Technology

Problem

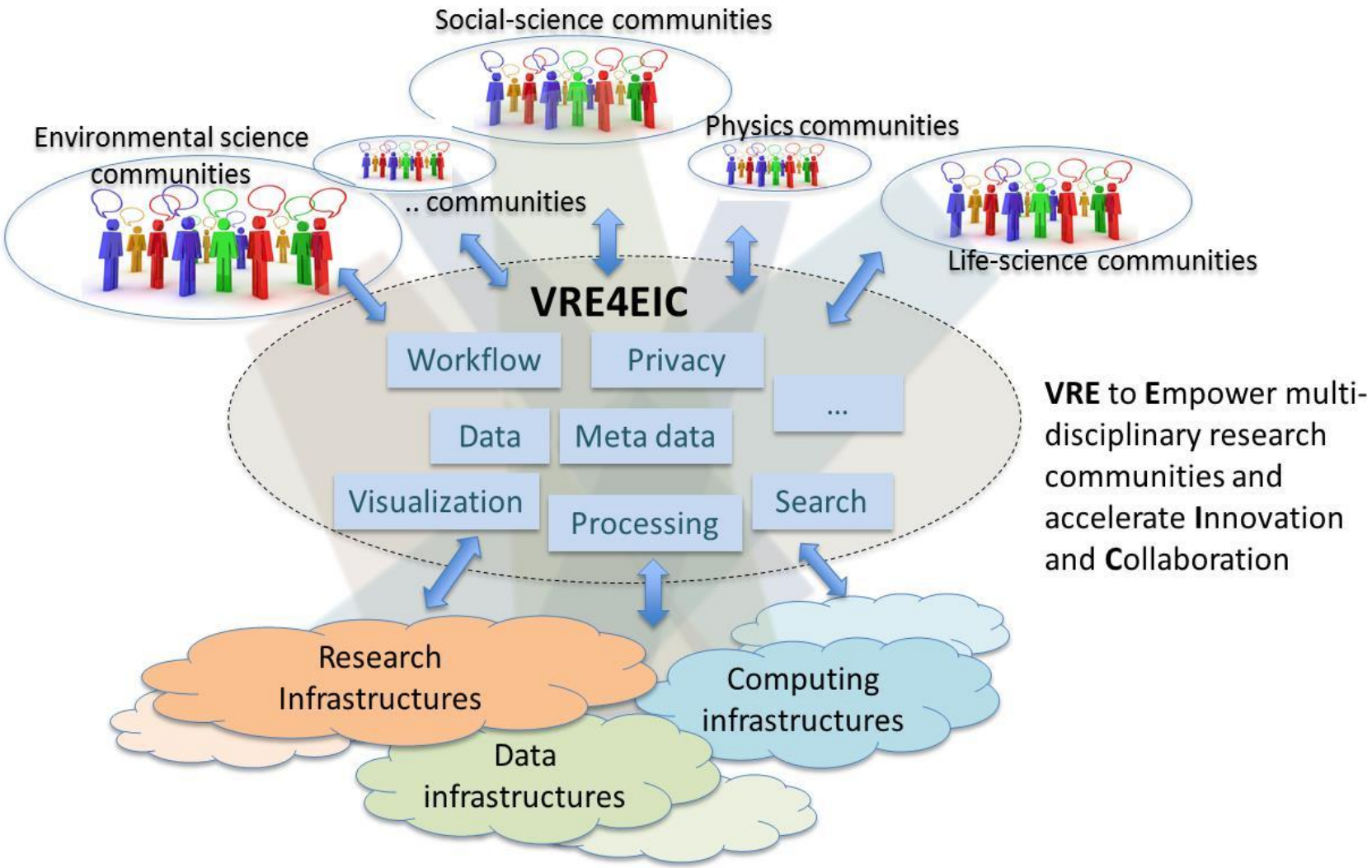
- Many scientific questions require a multi-disciplinary approach
- Data driven approaches are good at discovering knowledge in massive datasets
- Virtual Research Environments (VREs) are intending to provide tools
  - for searching, accessing, integrating data
  - for searching, accessing, utilising in composed workflows software services
  - for supporting collaboration among scientists from different domains
- Existing tools face various problems:
  - data heterogeneity, poor user experience, fast changes to datasets
  - Highly diverse software tools and interfaces
  - Security, privacy, rights management issues (data, software, resources)

- VRE4EIC will produce:
  - A VRE Reference Architecture
  - e-VRE: software components to create a new VRE and to enhance existing VREs

Objectives

1. Increase the VRE usability for multi-disciplinary research
2. Increase the quality of VRE user experiences
3. Increase the deployment of VRE on different research infrastructures by abstracting and reusing building blocks and workflows
4. Improve the contextual awareness and interoperability of metadata
5. Promote exploitation and standardisation of e-VRE

Vision



VRE to **E**mpower multi-disciplinary research communities and accelerate **I**nnovation and **C**ollaboration

Visionary use cases I

1. Prediction of transport delay
2. The researcher searches for a dataset containing the locations; dates and times; and weather data for the certain country or region;
3. Subsequently, the researcher searches for a dataset containing the transportation and traffic flow/speed/congestion data for the certain country or region
4. Based on these datasets, the researcher is able to find relations between weather and transportation data and improve existing model of correlation between weather data and transportation delay.

Visionary use cases I

1. This improved model can be used for prediction of transportation delay using weather forecast data and real-time transportation data
2. Furthermore, the prediction can be used for better organization of transportation companies including organization of connected public transports
3. Also, if transportation delays in some company or in some region are not in accordance with predicted delays, the company should analyze whether the company's vehicles should be better equipped for the certain weather conditions, or the government of the region should analyze whether the region's transportation infrastructure should be improved

Visionary use cases II

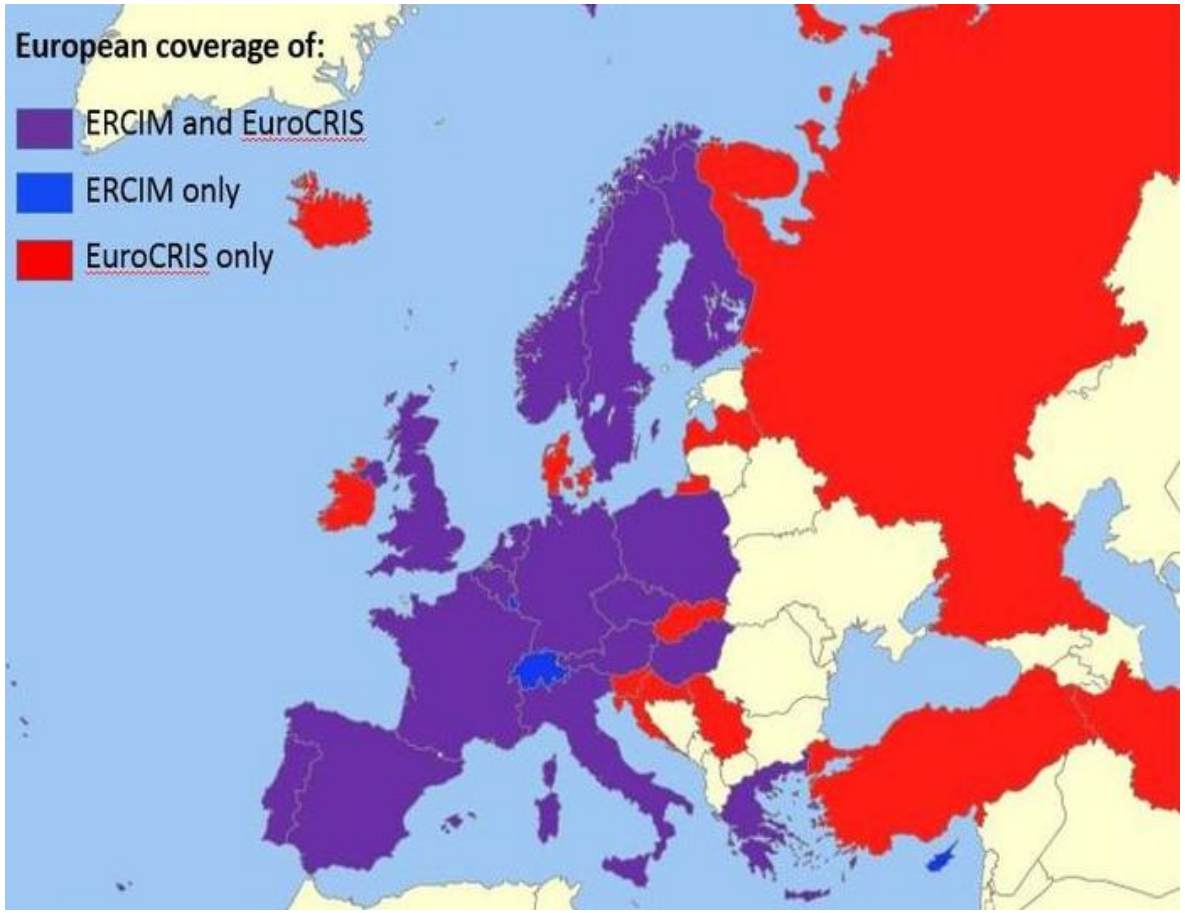
1. Choosing travel destination for tourists with allergic diseases
2. The researcher searches for a dataset containing the locations; dates and times; and environmental data for the certain country (or region)
3. Subsequently, the researcher searches for a dataset containing the time-tagged healthcare data (allergic data) georeferenced using medical institution address for the certain country (or region)
4. Based on these datasets, the researcher is able to find relations between the environmental and allergic data, and improve existing model of correlation between environment and allergic diseases

Visionary use cases II

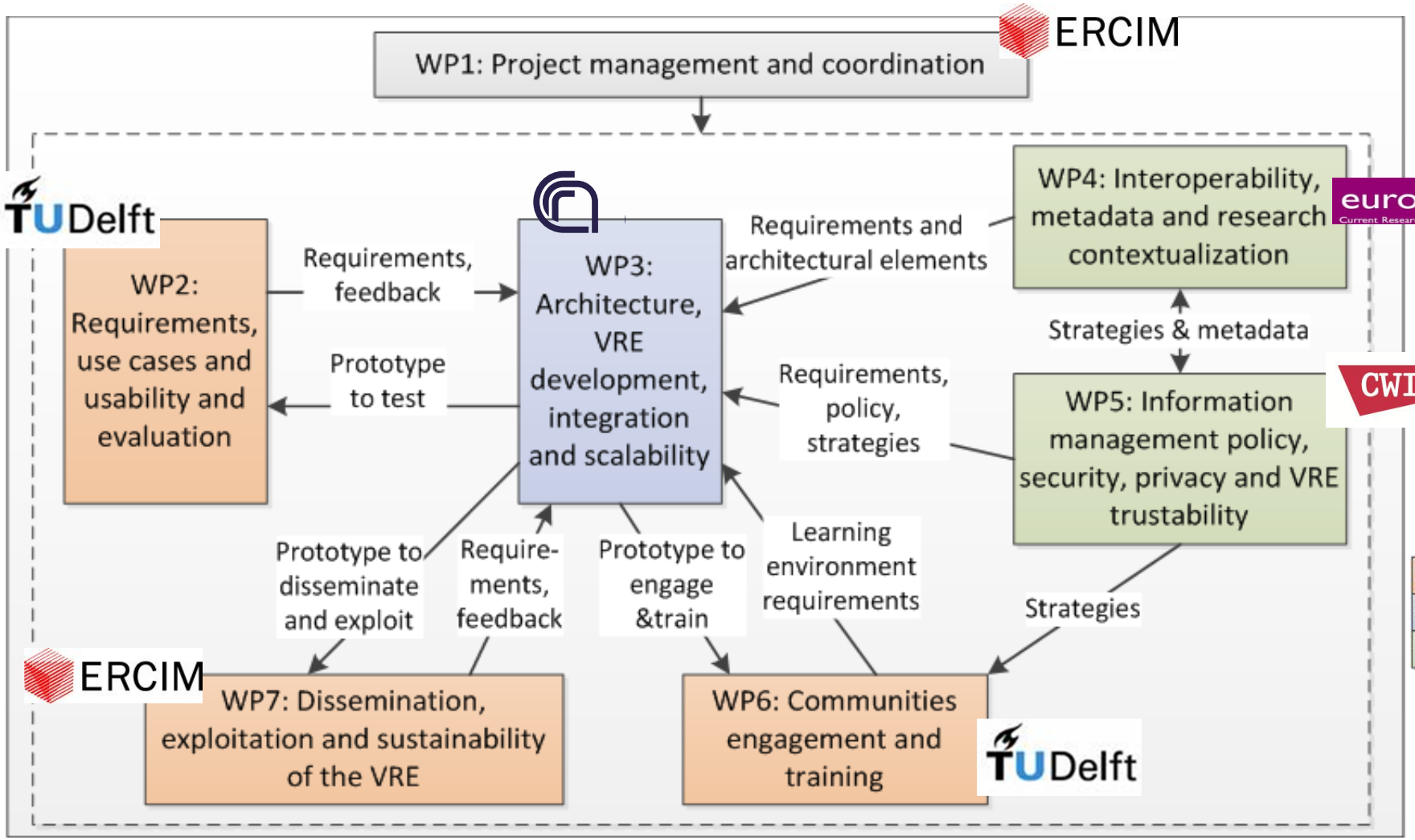
1. This improved model can be used for prediction of allergic problems for regions where we have only environmental data for certain period of year (not healthcare – allergic data)
2. That prediction can be visualized using OpenStreetMaps API, predicted allergic diseases can be plotted on a map using different colors for different allergic diseases and months of year, and size of circle can represent probability of allergic reaction.
3. That map can be used by tourist with allergic diseases for choosing travel destination.

Impact

- Large European coverage supported by ERCIM and EuroCRIS
- Reach of 70.000+ researchers



Work plan



Networking Activities : WP2, WP6, WP7
Service Activities: WP3
Joint Research Activities: WP4, WP5

KEYSTONE and VRE4EIC

- VRE4EIC stores research datasets
- VRE4EIC enables creation of structured query for searching datasets by metadata
- Datasets can have structured textual content
- VRE4EIC enables keyword search of datasets by its textual content (data)
- Can datasets represent structured data sources?
- Keyword based search over datasets => structured data sources?

KEYSTONE and VRE4EIC

- Data could be structured in many ways and keyword searching of those structured data improves discoverability of those data
- A VRE4EIC user needs weather forecast data for Novi Sad, but that is located in a datasets containing weather forecast data for Serbia
- A VRE4EIC user needs Cluj Napoca population stored in a datasets containing populations for Romanian cities

Acknowledgment

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