



Fast2Gov - Disease Reporting Platform (DRP) Architecture



#VersusVirus – Fast2Gov
Team 370

ONLINE HACKATHON
03.04. – 05.04.2020

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What and why

- As part of the Hackathon #VersusVirus Switzerland, Team 370 has worked on a solution to facilitate coronavirus reporting by centralizing the information from multiple sources.
- To achieve this a logical platform use to centralized and provide a standardized way to collect and access information, will provide a very efficient way to increase speed of data collection, accuracy, analyze and response (actions) to be provided by local and central authorities.
- The benefits are:
 - One source of truth
 - Providing one standardized data source for every partners such :
 - Authorities (BAG)
 - Healthcare professional
 - Healthcare 3rd parties)
 - Grouping multiple uncorrelated and undefined data providing from the partners
 - Providing data analysis and predictive services by pre-computing information => provide realtime asserted information for the partners
- Disease Reporting Platform technical design is:
 - highly scalable
 - data source agnostic
 - replicable : Can be used and reused for any country or can act as a centralized solution for worldwide data aggregation
 - reliable (Microservice architecture)
 - evolutive and future proof

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Disease Reporting Platform (DRP) – Architecture

Quick introduction



Disease Reporting Platform (hereafter DRP) Infrastructure is Cloud based with a Microservices Software Architecture design:

Technological choices

- Microservice architecture perfectly fit with SaaS and Web application service that aim. This allow to build quickly a very cost effective solution with a very high level of agility to develop services and aggregate third party, which are Federal Office of Public Health (FOPH, BAG in German), hospital, insurance, doctor's office. Microservice need to be seen as a piece of the core functionality of an application. Each core functionality is running as an independent web application and connect with the other services or web portal through API.
- User/Client portals are the user web interfaces dedicated for each group : Patient, Medic (Doctors, nurse, ...), BAG

Architecture is layered as follow :

- Data Bus to manage all the communication between Data bases, Web apps, Core software and third-party data providers and software solutions
- Data lake to centralize all information from every data sources (ERP, ECM, CRM, Websites, web apps, third party services/partners)
- Data Mart to provide prebuild and transformed data from the data lake to serve the Microservices (NoSQL)
 - It allows to prepare information in order to make them available and legally accessible for each targeted audience/client. IE: building an anonymized data set, ready to use for public communication
- Backend Web application as microservice with specific task & service design in order to mutualize functionalities between the Web portals (Patient, Medic, BAG, 3rd parties HealthCare).
- Web portals (Patient, Medic, BAG, 3rd parties HealthCare) designed as microservice web application with UX and web UI responsibility only

For a better understanding see slide "MVP - Disease Reporting Platform –Microservice Architecture "

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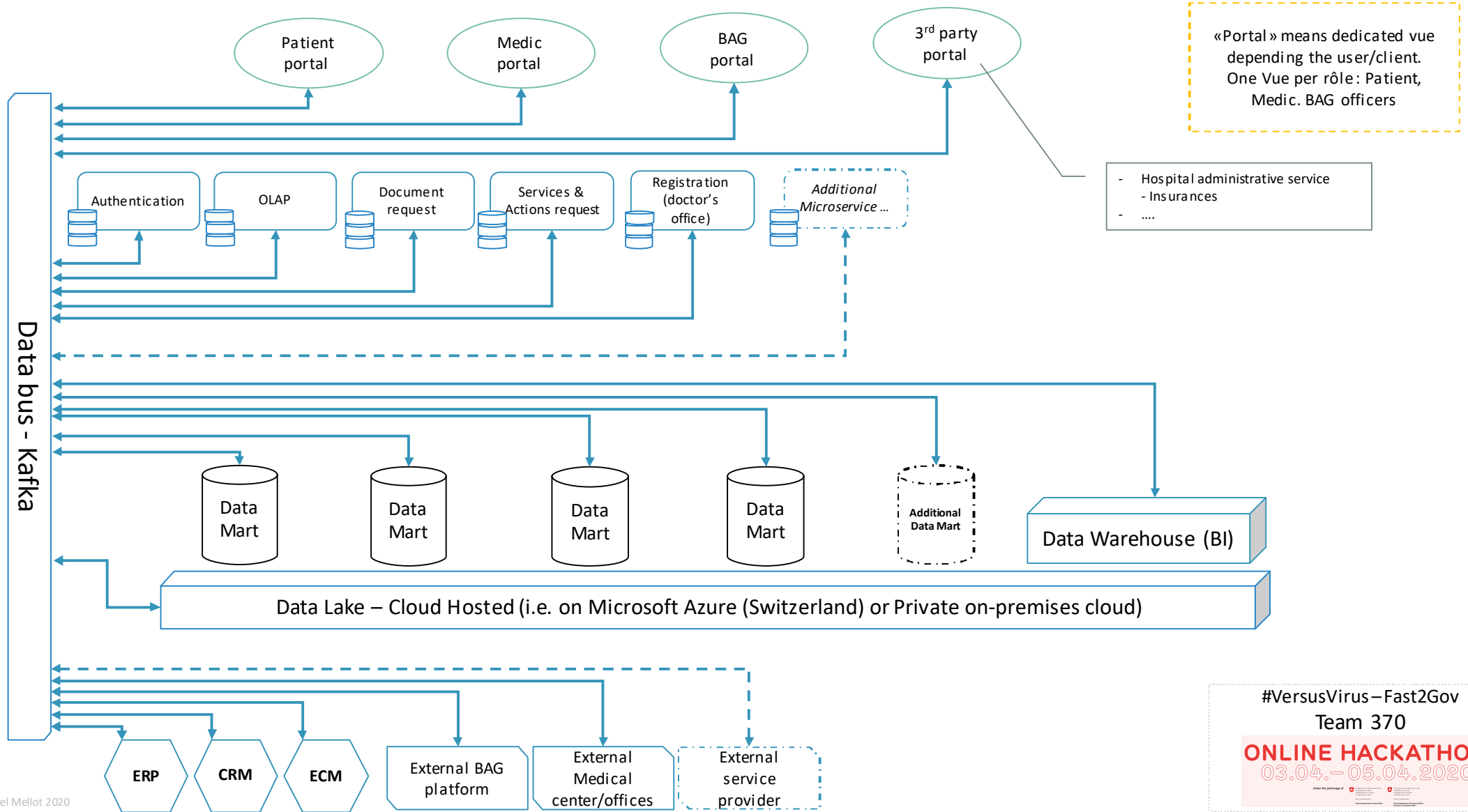
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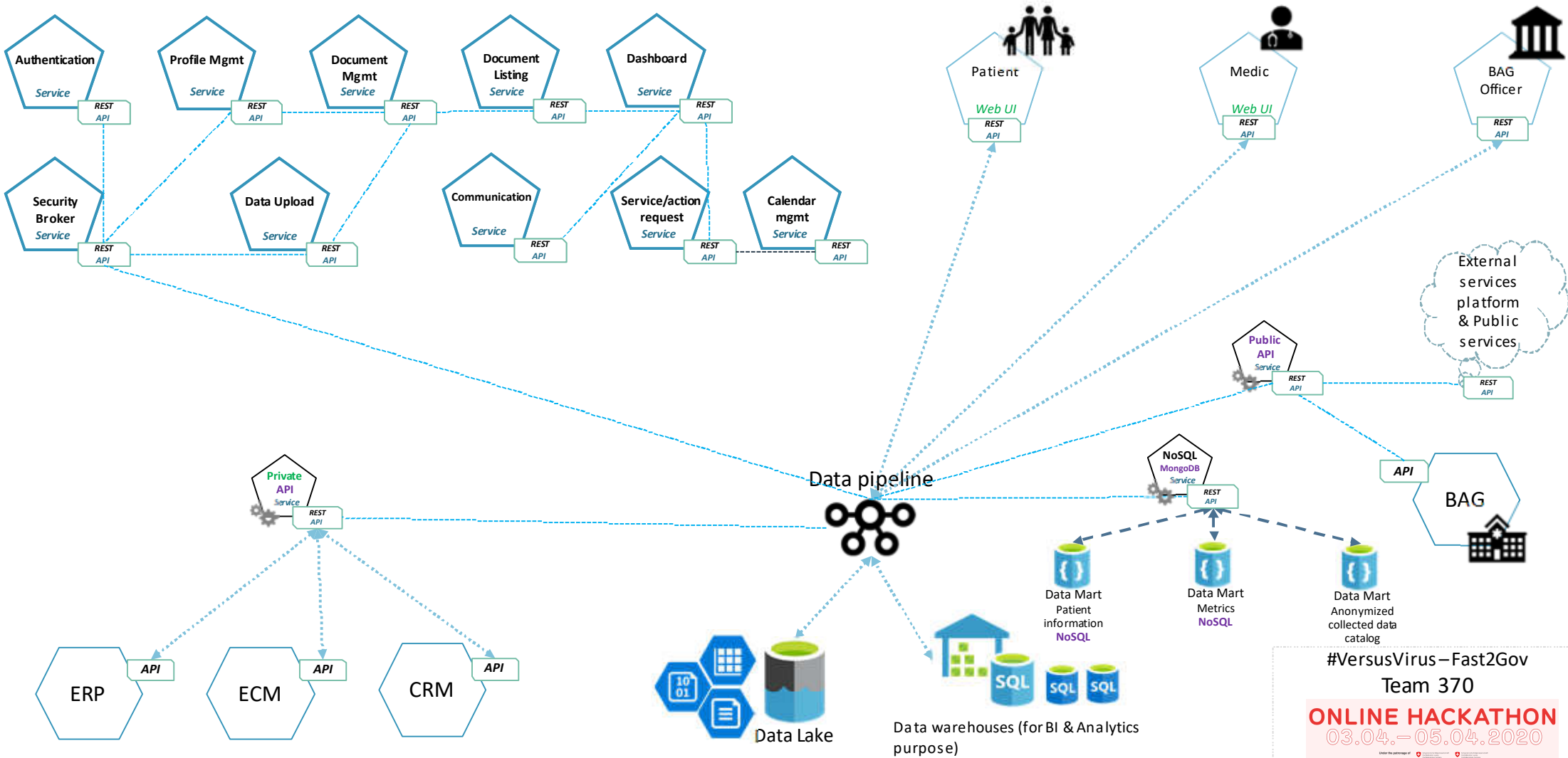
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Disease Reporting Platform - Architecture – Logical SOA Data Bus & Microservice



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MVP - Disease Reporting Platform –Microservice Architecture



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Technical resources



Core system & hosting :

- Microsoft Azure Switzerland or Private on-premises Cloud
- Availability : Services Data redundancy Local (LRS) Switzerland if Azure or Multi site Geneva & Zurich Geographical Zone



SaaS Services/Software solution (all inclusive):

- Azure HDInsight : Hadoop for Data Lake + Kafka for the Data Bus & Data Lake Storage
- Azure CosmosDB : Decentralized Database for NoSQL (Data Mart)
- Azure Service Fabric : Microservice container hosting, execution and management
- Azure App Service : Web Apps execution with public access (web portals)
- Azure Application Gateway : Application & service Firewall for security management
- Azure API Management : Centralized API management

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