

# Open Standards, the Cloud, and Grey Literature

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# Agenda

- The National Documentation Centre
- The Cloud and Grey Literature
  - The Software as a Service Cloud Model
  - Issues/Problems and Challenges
- Solution
  - Open Standards
  - Validation Tools
- Conclusions

# The National Documentation Centre (EKT)

- The national organisation in Greece:
  - for scientific documentation, online information and support services on research, science and technology
  - Objective: **making knowledge accessible to everyone**
- Incorporated in National Hellenic Research Foundation (NHRF)
- Implements the “National Information System for Research and Technology”: <http://epset.gr>
  - Digital Repositories, CRIS systems, e-Publishing, Digital Libraries, Interactive Culture, and more...
  - Open Access advocate: <http://openaccess.gr>, OPENAIRE/OPENAIRE+ member and NOAD.
  - Greek National Aggregator: <http://openarchives.gr>
  - Repository as a Service (SaaS) and validation services: [http://www.epset.gr/en/SaaS\\_Services](http://www.epset.gr/en/SaaS_Services)

# Grey: Content Delivery Systems

- A multitude of delivery systems:
  - Standards based: Repositories, ILS
  - but also: web sites, blogs, personal home pages, etc!
  - Increasingly: Science Social Networks
- Open Source has been a driving force

# Technology Trends

- Cloud technologies:
  - A variety of technology service offerings, with different definitions but with common core elements:
    - Self service
    - Networked
    - Common pool of resources
  - Service Models:
    - Infrastructure as a Service
    - Platform as a Service
    - **Software as a Service**
  - Central to EUs Digital Agenda 2020
  - Significant economies of scale

# Grey Literature and the Cloud

- IaaS and PaaS:
  - Provide new horizontal capabilities
  - However largely transparent
- Candidate systems for SaaS:
  1. Digital Repositories
  2. Social networking for scientists
  3. Current Research Information Systems
  4. Integrated Library Systems
  5. Repository interoperability
  6. Aggregation Services (as centralised services)

# Old issues revisited

- Avoid Cloud vendor lock-in?
  - Prepare migration strategy to different systems in order to avoid “cloud lock-in”
- Are our data exportable and migration capable?
  - Ensure data are “exportable” and export formats are standards-based
  - Ensure interoperability APIs

# New issues arising

- **Scientists Social Networking** increasingly used to share research
  - Person-centric and not organisation run
- **Same questions:**
  - Are our data exportable and migration capable?
  - Ensure standards and interoperability
  - Ensure portability and true Open Access
- **New questions:**
  - Potential to evolve to “**content black holes**”
  - Potential to Open Access for “members only”?
  - Difficulty to export or migrate content?
- Easier to enforce “open migration” policies as an organisation



# Open Standards

- We know the significance of open standards for interoperability/aggregation/etc
  - Flat (DublinCore) or rich (CERIF, EDM, etc)
  - Independent from Software, Implementation method and Service Model
- Standards increasingly critical for:
  - Migrating our data among SaaS providers
  - Avoid SaaS provider lock-in
    - Create a “SaaS” market
  - Avoiding closed not interworking systems

# Guidelines

- Metadata and functionality validation tools are critical for:
  - Repository as a Service development
  - Digital content interoperability
  - Aggregation mechanisms
- Ensures a minimum level of interoperability independent of
  - Software
  - Implementation method
  - Delivery method (in house, outsourced, or Cloud)

# Mandates

- Both for **content** and the **delivery** systems
  - Organisational and technological!
- Could combine guidelines, funder's mandates and funding in order to guarantee high quality projects/outcomes
  - OpenAire, H2020, various funding tools, etc

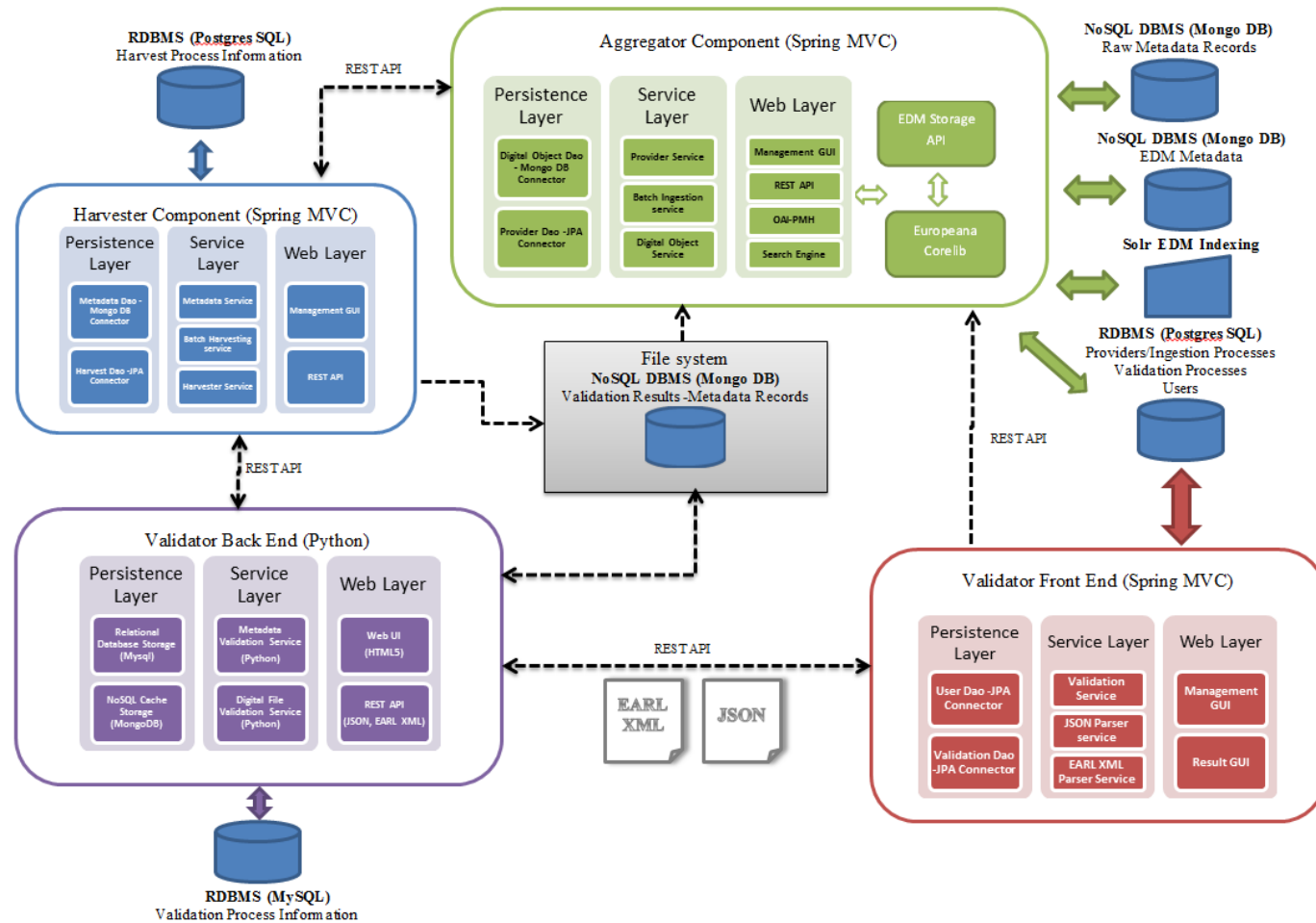
# Validation tools

- Automatic validation of guidelines critical
  - Link automatic validation to value added services
  - E.g.: aggregator harvesting (OpenAIRE+, EUROPEANA) to funder mandate (Digital Convergence/EKT)
- Various validation tools for various standards:
  - Free, open, or project specific
  - E.g. <http://oaipmh.ekt.gr> ,  
<http://www.openaire.eu:8380/dnet-validator-openaire/>, Europeana Content Checker, etc.
    - *(also CERIF validation tool under development)*

# EKT case study

- The Greek Digital Convergence Funding authority mandated that **digital repositories must implement Digital Content Interoperability guidelines**
  - Call mandated:  
<http://www.digitalplan.gov.gr/portal/resource/Prosklhsh-31-Politismos>
  - >75 funded organisations, 65M€ of funding.
  - Focused on digital culture but includes Grey Literature related content
- EKT has specified basic interoperability guidelines for digital repositories:
  - <http://hdl.handle.net/10442/8887>
  - Applicable both if development by EKT, provided as SaaS or developed externally

# Interoperability validator



# Mandate's validator

- Harvester/Aggregator/Validator Front-end and backeng
- EARL reporting
  - Will be used for guarantying basic implementation quality
- Support :
  - Dublin Core Metadata [6], Europeana Semantic Elements (ESE) [7] and Europeana Data Model (EDM) [8].

# Validation Benefits

- Ensure wide interoperability and aggregation
- Avoid “data” lock-in, ensure capability to transfer content and service among:
  - Different Digital Library/Repository software
  - Different SaaS cloud providers
    - Exploit advantages of Cloud without “lock-in” dangers
- Ensure high quality of funded Digital Repositories and Libraries
- Continuous implementation of the chosen guidelines



# Conclusions

- New grey literature delivery models and systems: open source, cloud, SaaS, Scientists Social Networking
- We must expand the interoperability and flexibility capabilities
  - While exploiting the new delivery systems
- How?
  - Open Standards for content
  - Interoperability specifications and guidelines
  - Automatic validations tools
  - Aggregation Services

# Thank you for your attention!

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