POSEIDON, INSPIRE updated citizen science project
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Research and Technology to enhance excellence in Aquaculture development under an Ecosystem approach
Citizen Science project that deals with **marine biodiversity**;

Project financed by *Fundacion Biodiversidad, 2014-2015*;

Marine **species are reported** (photo, local name & location) by citizens and **validated by experts** (marine biologists - experts in sharks, invertebrates, fish....)

Goal **obtain marine biodiversity data** within the citizen collaboration, increasing awareness on biodiversity issues
User interface
Current results

• Project finalized but **still running** (2014-2015), still we are obtaining new records, but intensity is decreasing (**need new push**)  
• **Campaigns** to get to the **target citizens groups** (scuba divers, whale watchers...)  
• Number of “**samples**” > **7000**, **6942 validated** (3119 photos)  
• Number of **registered users** > **400**  
• We believe that use of Programa Poseidon can go much further
• Why include **INSPIRE data management** into Programa Poseidon?
• **NOT LEGAL/PROJECT REQUIREMENT**
• EcoAqua Institute of ULPGC - important **producer of the scientific marine/maritime data in the Macaronesia region.**
• The institute applies sharing data policy and in 2016 the goal is to apply **INSPIRE data management.**
• Motivation to be a **part of distributed Spanish SDI & European SDI** is **to increase visibility** of EcoAqua work and shared information
• **SDI/INSPIRE data management** we see primly as **a tool**
• **NOT RESEARCH**
• To properly understand **INSPIRE data management** methods,

To apply in our future international developments - searching for efficiency in development
Open source/free of charge software
– no budget for tools

• Using **exclusively open source/free** of charge software
• Data management that can be applied **without elevated additional costs**
• to **understand and adopt** process:
  – metadata development & management
  – data harmonization
  – Development of the internet services - discovery, view and download

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GeoNetwork

GeoServer

PostGIS

hale

spatial data harmonisation
Data harmonization

- Original data base in MySQL, managed and shared also as .shp files
- Transformation done with Humboldt Alignment Editor (HALE)
- We used web tools offered through the INSPIRE web site/data specification corner
  - Technical guidelines DS documents /Interactive Data Specification
  - Mapping tables, HTML view of the UML models, application schemas (XSD) ...
INSPIRE data model
- Species distribution -

- SD data set/SD units
- SpeciesNameType
- Classification schemas allowed: EuNomen, Eunis, Nature Directives codes
- Model supports local species name and classification schema
Transformation

- Simple transformation - renaming, assign new properties, without geometry calculation (geometry point or square)
- Posedion (source) INSPIRE conformant transformation
- Simple relationship from source data set to INSPIRE confirmant – "one to one"
Mapping to EU-Nomen code list

- Specie names mapped into EU-Nomen code list - Pan European Species Directories Infrastructure (PESI)
- PESI provides on-line mapping tool, that decrease manual work of mapping (around 80%)
- Mapped 414 species – 389 included in EuNomen
Architecture applied

- What architecture to apply: **One-off** or transformation **On fly**
- **One-off** transformation + external web based services WMS/WFS
- Even POSEIDON is not static data set (as bathymetry or geology data, weekly or even daily update) no need for **One-the-fly** transformation
- **Monthly update** of INSPIRE data set – HALE provides support for One-off
- One –off **better performance** than On fly, **wider choice of software** components
- Duplicate, triplicate (our use case) copies of data base – **storage and management**

*Image by Chris Schubert*
Developing view/download network services

• We use GeoServer with INSPIRE extension that provide support for extended capabilities WMS & WFS (WCS)

• First idea to serve plane INSPIRE compliant data model as a *.shp (WFS) – Following conceptual data model - quite simple solution – HALE is providing flat data model

• Not possible as *.shp, (*.dbf) not support more than 10 characters attribute name

• We needed to include the PostGIS data base as a conversion data base
  – Possible to serve plane gml file with all required attributes
  – Possible to serve complex structure gml file
Developing discovery services

• Development of the metadata – with metadata editor – in xml need to embed manually reference system code, using the INSPIRE metadata editor
  – European Open Source Metadata Editor (EUOSME)
• Development of the catalogue CSW with GeoNetwork
• DISCOVERY – **on going/in progress** – problem to share/connect our catalogue to Spanish SDI (harvest) managed by Instituto Geográfico Nacional (INSPIRE contact point)
Conclusions Data Harmonization

**INSPIRE interoperability - Data Harmonization**

- **Available tools** (no cost) and support more than satisfying, HALE, Data specification (corner) on INSPIRE web, Interactive data specs, INSPIRE cluster, Technical Guidelines
- Understanding **what need to be done and how is time consuming**
- **Expert knowledge needed** (+awareness what is actually available)
- **Planning INSPIRE data models** is a good solution for developing data flows within international project
- We can not expect from our partners to provide INSPIRE compliant data set without providing our **extensive support (providing courses and training)**
Conclusions **Network services**

- **Available number of tools** (no cost)
- **Easy to serve WMS, view network services**
- Complicate to serve **INSPIRE compliant WFS - include PostGIS data base** (use it only for the bridge to serve INSPIRE gml) – decrease robustness of the system
- Easy to serve **WFS for INSPIRE liked data – Flat data models** (without complex features)
- Easy to **transform into INSPIRE compliant file**
- **Download services – provide efficient data flows** – updated data – must - extremely useful in the projects
- Discovery services – metadata management
  – should be part of the project dissemination process
Thank you for your attention

....and patience

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