COOPEUS Workpackage updates: LIFEWATCH-NEON

(2ND Annual COOPEUS Meeting 25th Sep 2013)

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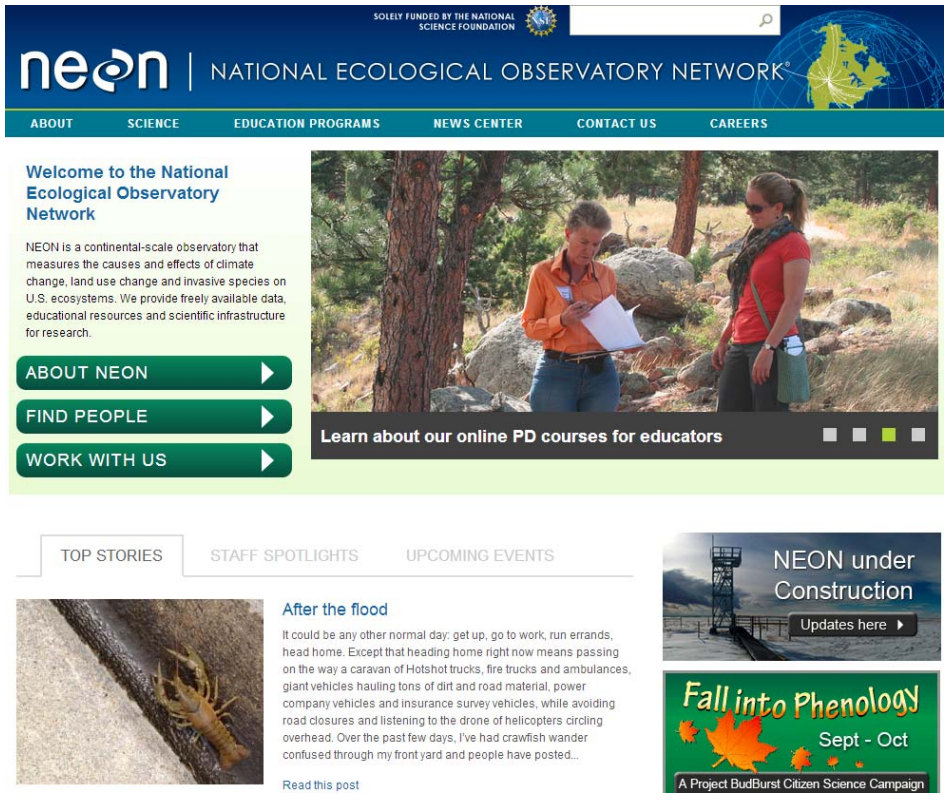
NEON & LW



http://neoninc.org/ **http://lifewatch.eu/**

International Dissemination: a key point!

Introduction to COOPEUS WP6 *Main Objectives*

(from presentation at COOPEUS kick-off meeting by Juanmi Gonzalez-Aranda)

✓**To identify how the EU and the US knowledge bases and services on biodiversity may contribute to new and efficient approaches to serve the biodiversity scientific user communities on both sides of the Atlantic Ocean and beyond. It aims to elaborate a joint scientific agenda in the field of biodiversity as driver for common research infrastructure development with common approaches for servicing users by research infrastructures and funding bodies.**

✓**It further aims to promote technical solutions for horizontal interoperability of research infrastructures in the field of biodiversity (reference model, data pre-processing and data post-processing, dataset and services catalogues, workflows).** ***Special consideration will be given to recommendations on organizational knowledge management (collaborative virtual spaces and repositories to enhance e-research collaboration between trans-Atlantic researcher communities of practice, including good practices analysis and sharing, definition of common data quality indicators and standards).***

✓**Permanent communication channels with the Global Biodiversity Information Facility (GBIF) will be established. Very large database systems, data harvesting standards and protocols and their integration within Geographical Information Systems (GIS) will be addressed in joint technical working groups with DataONE and VertNet.**

✓**NESCent and the Taxonomic Databases Working Group (TDWG) will also be involved in the COOPEUS project work, both working (together with DataONE) to develop and disseminate informatics related to biodiversity using the Darwin core as a unifying approach.**

✓**FP7-CReATIVE-B will seek to support the interaction between the LifeWatch ESFRI Research Infrastructure with Research Infrastructures (RI) on biodiversity and ecosystems research in other parts of the world.**

WP6 Tasks *(from DoW)*

Task 6.1: ***Harmonization of EU-US biodiversity information management strategies*** *(M1-M12 = September 2013)*

The task aims to use the results of **workshops** as well as **questionnaires** to document and analyze **the links between EU and US Research Infrastructure initiatives**.

A screening conference will be organized to identify the "State of the Art" through screening and monitoring of ongoing and completed projects and other initiatives regarding EU-US cooperation on Biodiversity data and knowledge.

Participants: CSIC with involvement of GBIF, NESCent, TDWG and DataONE

WP6 Tasks *(from DoW)*

Task 6.2: ***Identification of common data and knowledge services*** *(M7-M18 = March 2013 - January 2014)*

The task aims to **identify biodiversity data services that are common** on both sides of the Atlantic to contribute to new and efficient approaches covered by the EU-US agreements on Biodiversity. It focuses on identifying technological complementarities, gaps and overlaps as well as opportunities and obstacles in setting up common scientific planning resulting in (cost) efficient approaches on Biodiversity data management. The **gap and overlap analysis** will be used to provide a common definition and creation of a **Reference Model** for understanding relations among infrastructure components.

Participants: CSIC with involvement of GBIF, NESCent, TDWG and DataONE

WP6 Tasks *(from DoW)*

Task 6.3 ***Definition of potential case studies to harmonise standards and to improve interoperability***

Based on the results of tasks 6.1 and 6.2 US and EU partners will define a **common use case** for testing the achieved level of harmonization and interoperability as well as the common reference model. Potential areas of interest are species migrations and invasive species, early warning facilities, (Atlantic) wetlands ecosystems dynamics or (Atlantic) marine fish population dynamics (and fish stocks). **Identification of use cases will be done during the screening conference** as well as remotely by e-mail and with teleconferences.

Participants: CSIC with involvement of GBIF, NESCent, TDWG and DataONE

WP6 Tasks *(from DoW)*

Task 6.4 ***Design of a common EU-US Virtual Community of Practice (VCoP) Platform on Biodiversity*** *(based on the results of 6.1 and 6.2)*

This task will further outline the design plan for the components of collaborative and virtually integrated infrastructures for biodiversity and ecosystem research in the next decade and capable to address the pressing basic and societal questions.

The ultimate goal of this task is the future provision of a Collaborative Virtual Space Platform of Communication (VCoP) to facilitate the synthesis of existing data, concepts, methods, knowledge, with the aim of reuse of existing data and initiatives (projects, etc.) in new and potentially exciting ways, allowing fledgling, high-risk, science projects incubation, etc. on Biodiversity. The VCoP will follow a similar model to existing Synthesis Centers in US: E.g., NESCent , NIMBios, iPlant, SESYNC, BioSync-focused on Biodiversity, NCEAS.

Participants: CSIC with involvement of GBIF, NESCent, TDWG and DataONE

WP6 Deliverables

D6.1) ***Roadmap, implementation plan:*** CSIC will compile a roadmap and implementation plan for biodiversity and ecosystem research, summarize recommendations on technical solutions for horizontal interoperability of research and on technical solutions for organizational knowledge management. **This report will summarize the findings within task 6.1 and task 6.2**. **[month 12]**

D6.2) ***Design of an action plan:*** CSIC will come up with a design of an action plan with international approaches to align infrastructure operations including recommendations for global policy bodies. This report will give a synthesis of the findings of task 6.1, 6.2 with the results of task 6.3. [month 16]

D6.3) ***Design of a grand plan:*** CSIC will compile the design of a grand plan for common global environmental infrastructure platform(-s) in the field of biodiversity. This report will summarize the findings of deliverable report D6.3 with the findings of tasks 6.3 & 6.4 [month 18]

D6.4) ***Results from case studies:*** CSIC will compile a report on the results on how to improve interoperability from case studies in the field of biodiversity. This report will summarize the findings of task 6.3 and task 6.4 [month 30]

Proposed WP6 Planning

- Identification of links USA-EU Research Infrastructures initiatives on biodiversity
  - TARGET: end of May 2013
  - Initial list: (start in the meeting)
- Preparing questionnaires and building a list of experts/stakeholders
  - TARGET: mid ~~June~~ August 2013
  - Questionnaires:
    - Other COOPEUS WP
    - Other ongoing efforts (ENVRI? Creative-B?)
- organization of the screening conference by September
  - TARGET:
    - Screening conference 18-19 September (pre-booked mid May)
    - Call, Schedule & invitations sent by mid June 2013
- reporting to COOPEUS meeting
  - TARGET: report prepared by 22-23 Sept for meeting 25-27 Sept

Proposed WP6 Organization

- Define teams/lists/stakeholders
  - CSIC-IFCA Team dedicated to push WP6 daily work (J.Marco, F.Aguilar…)
  - CORE TEAM (6-15 people) [bimonthly teleconf] including links with
    - **LIFEWATCH**
    - **NEON**
    - FP7 related EU projects
    - NESCENT, DATAONE
    - GBIF, LTER, TDWG and OTHER GLOBAL INITIATIVES
    - OTHER USA-EU INITIATIVES (RDA?)
  - GLOBAL EXPERTS/PROJECTS LIST (to be contacted, invited to workshops, etc.)
- Support to be offered / paid by the WP6:
  - Organization of workshops and Screen Conference
    - Including registration/hosting of selected participants, etc.
  - Participation/Presence in relevant meetings
    - Other COOPEUS related meetings (eg. Bremen June on PID)
    - Other related meetings, Wider audience meetings…
  - **Dissemination (material and activities)**
  - Basic Collaborative Services support (when defined)

Screening Conference

- Profit of European Grid Technical Forum in Madrid (September 2013)
  - Meeting attracting RI technical and managerial actors in Europe
  - Dates: 18-19 September (http://tf2013.egi.eu/)
  - ~ 30 people participation
  - Contributions to Technical Forum also (as VO or communities)
- Shared experiences with other RI along the week
- Promoted contacts for future wide projects
- On time to
  - Digest questionnaires
  - Report to COOPEUS meeting
- Schedule adequate for discussions + review ongoing initiatives
- Support was offered for
  - EU & USA experts
  - Dissemination activities (for COOPEUS & related projects)

Madrid meeting

- **20-30 people joined the three-days sessions**
- **K.Koop-Jakobsen (COOPEUS), W.Los, N.Fiore, A.J. Saenz & J.M. (LW)**
- **A.Hardisty (BioVel), H.Saarema (EUBON), F,Pando (GBIF), F.Bonet (LTER),Y.Legre (Creative-B), Y de Jong (PESI), R.Badia (OpenBioBrazil), D.Vicente (EUDAT), J.Gomes (EGI)**
- **B.Wee and R.Guralnick triggered many discussions, THANKS!**

https://indico.egi.eu/indico/sessionDisplay.py?sessionId=54&confId=1417#20130918
https://indico.egi.eu/indico/sessionDisplay.py?sessionId=12&confId=1417#20130919

Screening

- First part: screening
  - Info on on-going projects (profit from BIH2013 in Rome)
  - Summary of COOPEUS questionnaires
  - Further input from participants
  - What are we missing?
  - **Biodiversity data services common on both sides of Atlantic**

My naive view of the process to publish a research paper or complete a report

- Data Taking A: Biodiversity specimens observation/collection
  - Manual or Automated (Instrumentation?)
  - Professional or Amateur/Citizens for Museums/Research centers/Organizations
  - Occasional/Campaign or Systematic/Monitoring
  - Integration of annotations/previous references
- Data Taking B: Environment
  - From external remote monitoring (satellites, radar, LIDAR, etc.)
  - From in-place monitoring (basic to complex sensors and probes, cameras, spectrometers, etc.)
- Data Integration
  - Collections, Papers
  - Databases, Maps
- Data Curation: Identification/Classification, Taxonomy, Integration in GEObase
- **Model**
  - **Specimens evolution, niches, interaction, etc.**
  - **Impact of changes (eg. Environmental, human activities)**
- *Validation, Publication/Report and Design of new experiments*

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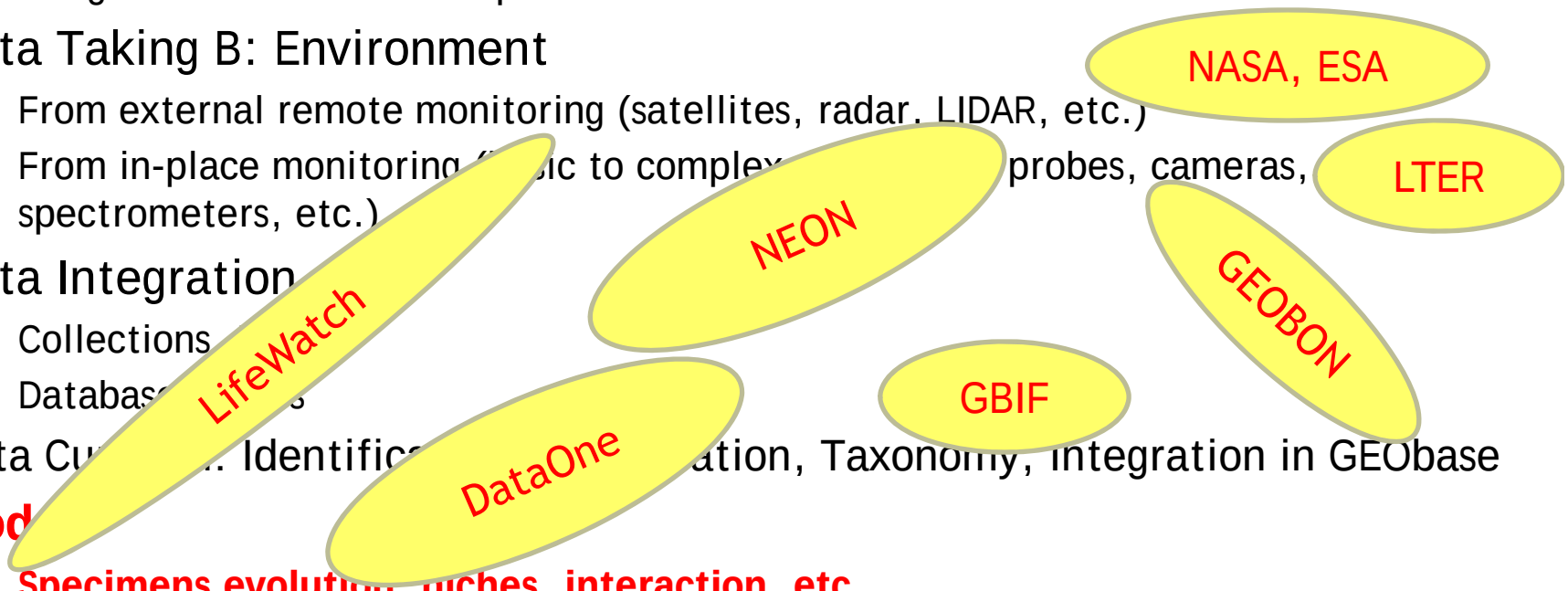


My naive view of the process to publish a research paper or complete a report

- Data Taking A: Biodiversity specimens observation/collection
- **Data Taking A': Genomic information**
- Data Taking B: Environment
- Data Integration
  - Collections, Papers
  - Databases, Maps
- Data Curation: Identification/Classification, Taxonomy, Integration in GEObase
- **Model**
  - **Specimens evolution, niches, interaction, etc.**
  - **Impact of changes (eg. Environmental, human activities)**
- *Validation*
- *Publication/Report*
- *Design of new experiments*

- Interacting systems
- Stability, extreme effects
- Thresholds
- Profit-costs interactions

Biodiversity & Ecosystems

Other systems

Ecosystems

Species

Genes

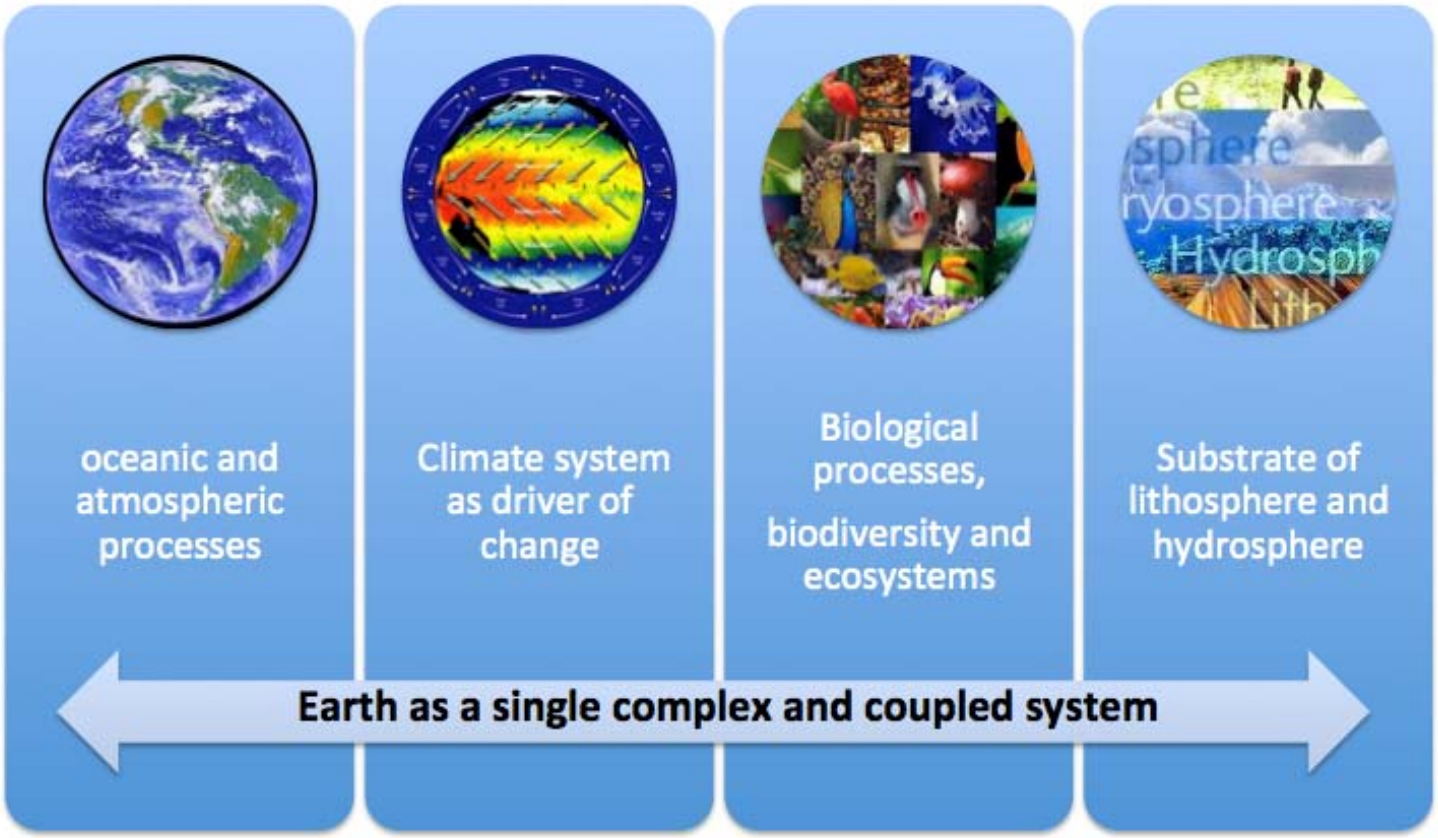
e.g. Climate System

Interactions between microscopic and macroscopic levels.

-> scaling effects

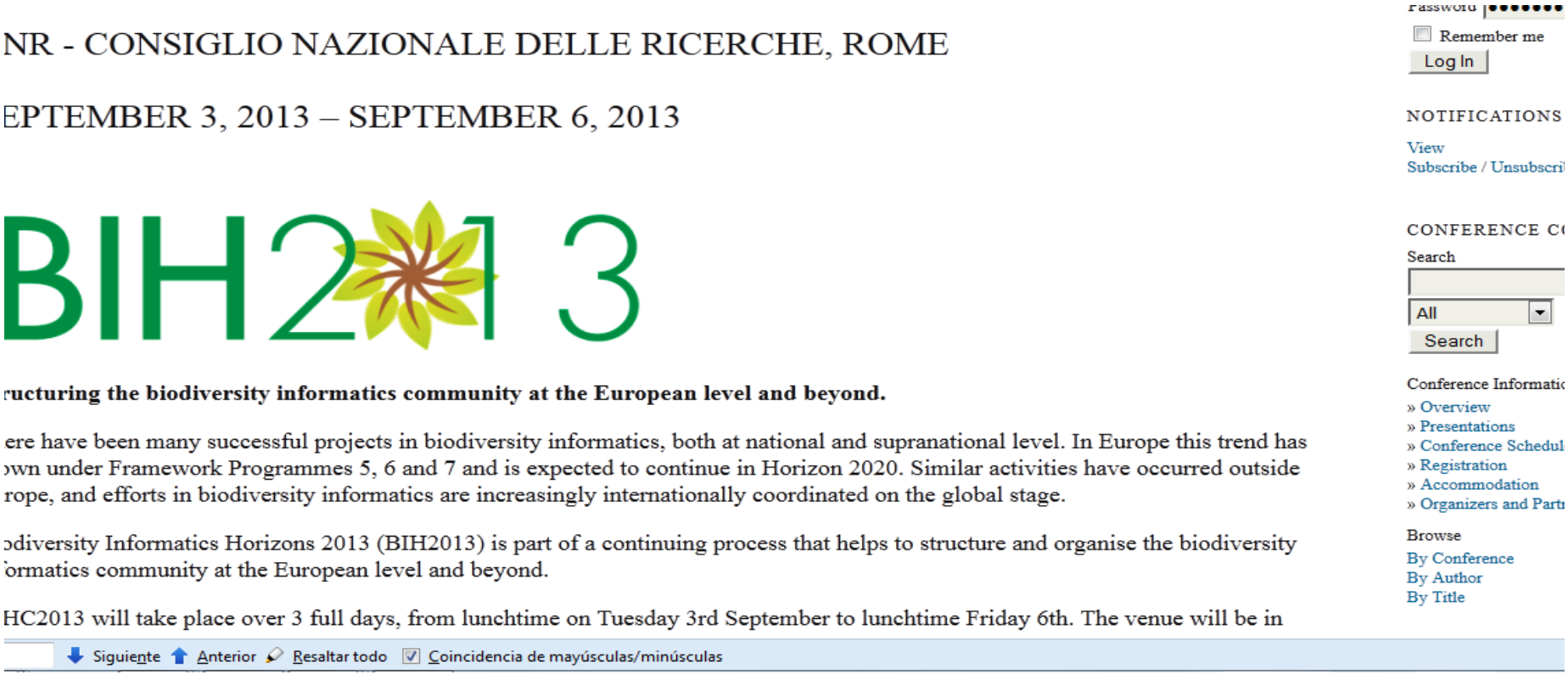
From Wouter Los presentation in Madrid

Scientific challenges



From Wouter Los presentation in Madrid

Projects and initiatives in EU



NR - CONSIGLIO NAZIONALE DELLE RICERCHE, ROME

EPTEMBER 3, 2013 – SEPTEMBER 6, 2013

BIH2013

ructuring the biodiversity informatics community at the European level and beyond.

ere have been many successful projects in biodiversity informatics, both at national and supranational level. In Europe this trend has own under Framework Programmes 5, 6 and 7 and is expected to continue in Horizon 2020. Similar activities have occurred outside rope, and efforts in biodiversity informatics are increasingly internationally coordinated on the global stage.

odiversity Informatics Horizons 2013 (BIH2013) is part of a continuing process that helps to structure and organise the biodiversity ormatics community at the European level and beyond.

HC2013 will take place over 3 full days, from lunchtime on Tuesday 3rd September to lunchtime Friday 6th. The venue will be in

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By Conference

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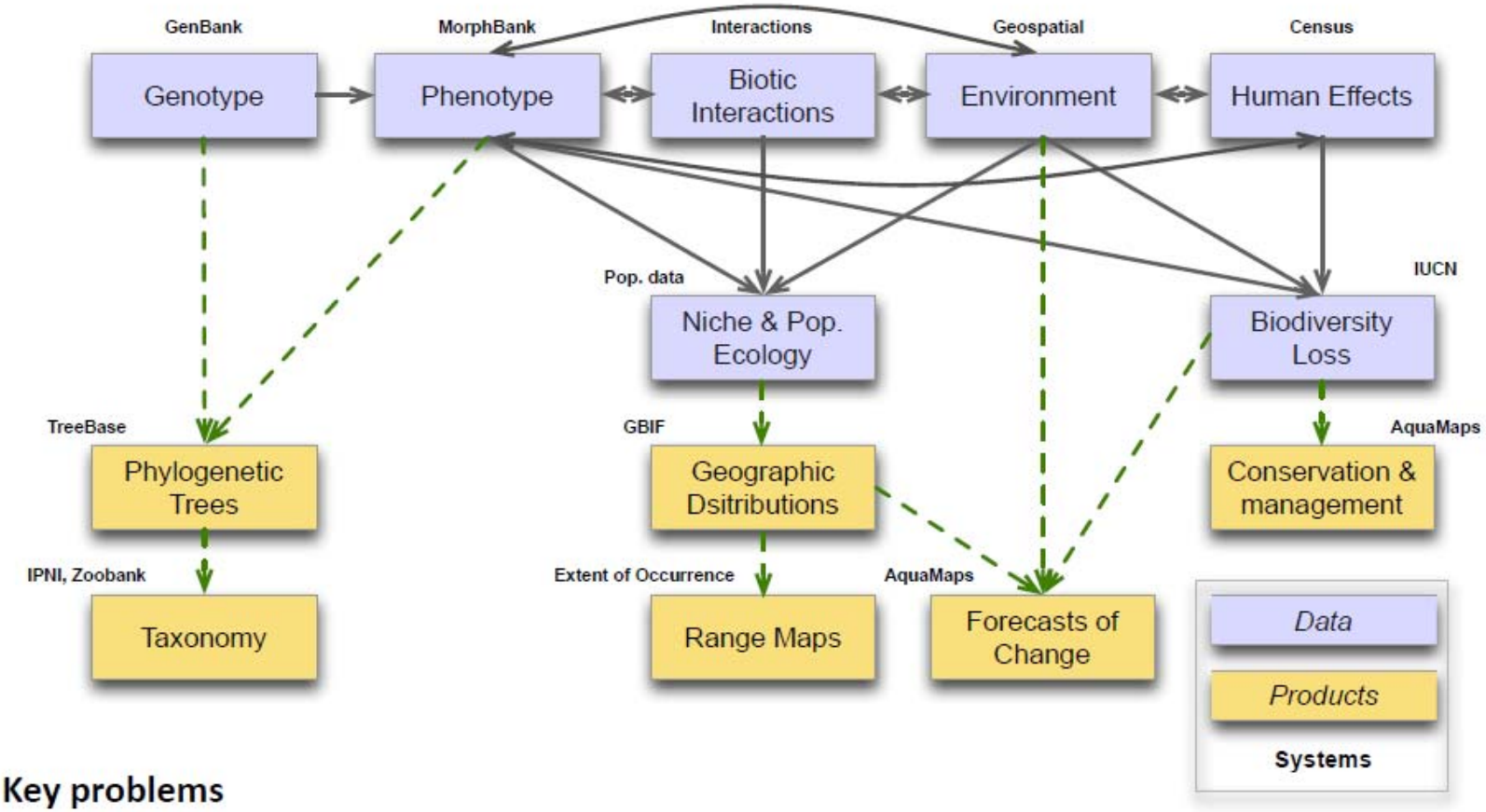
THANKS TO ALL PEOPLE INVOLVED IN THE ORGANIZATION

Better global image (Vince Smith @ BIH2013)

An informaticians view of biodiversity



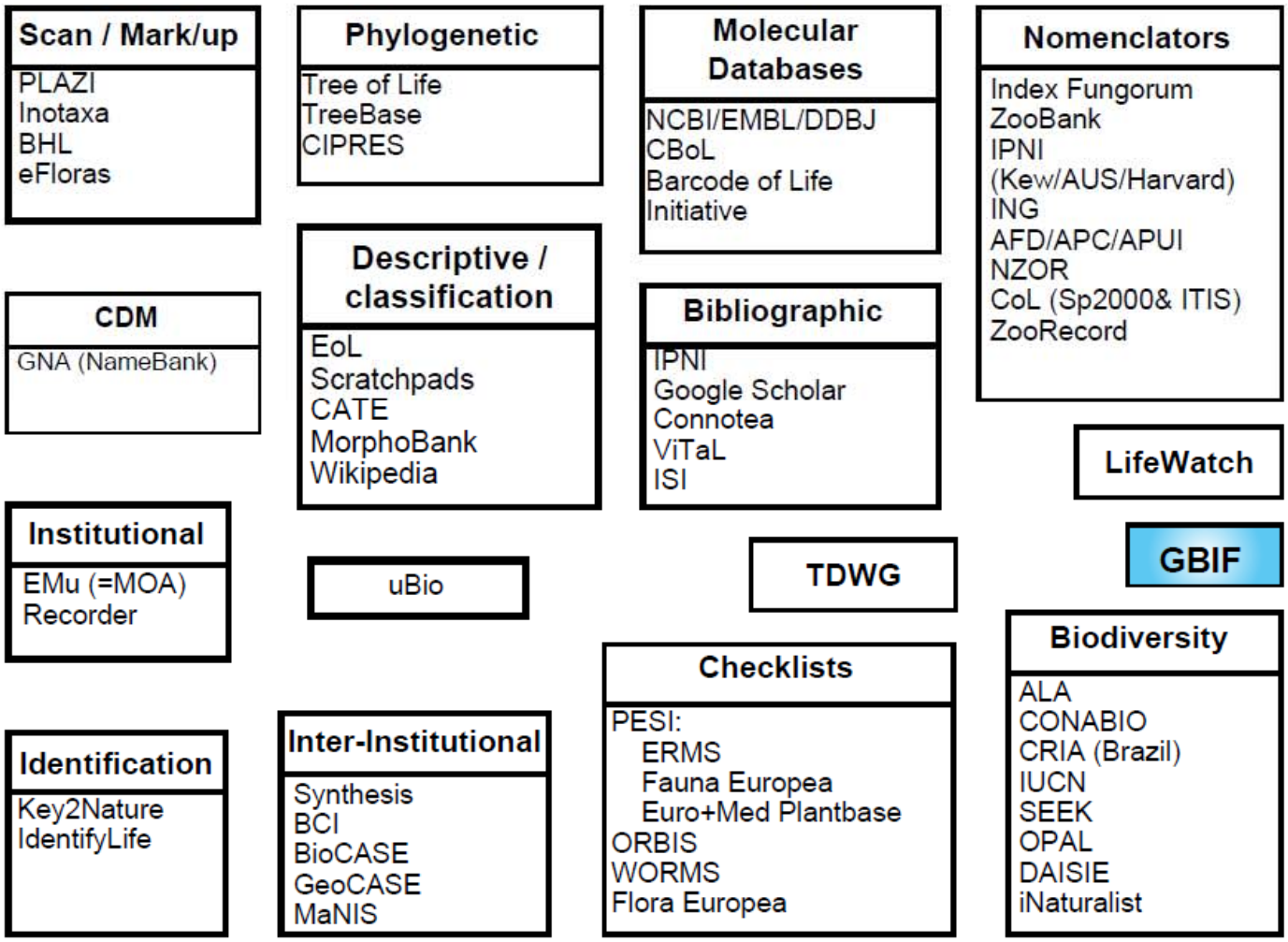
Key problems

- Landscape is complex, fragmented & hard to navigate
- Many audiences (policy makers, scientists, amateurs, citizen scientists)
- Many scales (global solutions to local problems)

Figure adapted from Peterson et al 2010

Better organization (Vince Smith @ BIH2013)

A project centric view of biodiversity



A snapshot from 2009. *"the dance of the initiatives"*

Indeed, a long list of initiatives

- LIfeWatch & National LW Initiatives
- LTER-Europe, LTSER (supported by ALTER-Net)
- GBIF, TDWG
- RDA
- IPBES (Intergovernmental Platform on Biodiversity & Ecosystem Services)
- FAO interest for fisheries and agriculture, AG-Infra, i-Marine, FLOD,
- GEO Ecosystems
- GEOBON genomic layer
- Biosos Earth Observation / EBONE; NATURA2000 sites
- General Ecosystem Models (Predicts, BioVel)
- Ecological Observatories & Genomic Observatories
- Biocode / BiSciCol: VertNet/Genbank
- Microbiome project
- Local Ecological Footprint Tool, Connectivity:www.groms.de
- Ecological Index, BICT, Vibrant
- Catalogue of Life
- Traits: integration of pheno and genotypic data; Phenotype Ontology Research Coordination Network
- BiodiversityDataJournal
- Integrating information using OCR / Vibrant

Really long list…non exhaustive!!!

- Service Networks, Service Sets (deployed on e-Infra) and Biodiversity Catalogue: Integrated Virtual Environment (IVE) for Biodiversity Science (Creative-B)
- Workflows and provenance (Wf4ever, SCAPE)
- Virtual Research Environments (i-Marine, D4Science, gCube)
- Scratchpads (websites for taxonomists)
- OpenAgrid / Agrovoc; data.fao.org
- EnvEurope (semantics and data)
- COMPSs: programming framework for distributed infrastructure
- EUBrazilOpenBio Ecological Niche Modeling Service
- EUBrazilCloudConnect
- New tools for environmental monitoring (Acoustic, Trackers…)
- AAA solutions
- Long Term Preservation (Rebind)
- Ocean Sampling Day
- GeoBroker & A Broker Framework for Next Generation Geoscience (BCube)
- FreshWaterBiodiversity (Mobilizing data and constructing data networks)
- pro-iBiosphere
- PESI
- EUBON
- GN (Global Names)

Consider priorities as RI

LifeWatch priorities for Horizon 2020 according to ALTER-Net

- ***Construction of workflows*** for ecosystem service and biodiversity change indicators (support national and international activities like IPBES).
- ***Connection to remote sensing activities***, also to allow for extrapolation of field data (e.g. from LTER-Europe).
- ***Development of links to other international infrastructures in this field***.
- ***Development of virtual distributed laboratories*** by integrating already existing data and knowledge (analysis tools) at European level to provide services and support frontier research.
- ***Enhance LTER and LTSER facilities with "biodiversity sensors" as proxies for biodiversity.*** E.g. leaf area index, photosynthetic active radiation, phenology, acoustic sensors.

W.Los @ BIH2013

Screening

- Questionnaires
  - > 30 answers
  - Mainly EU
  - Conclusions?
    - Strong collaboration on few topics (i.e Global Names)
    - Standards + Open Data perceived as key
    - Not many “hard” complaints on data access US-EU, rather in general (Open Data policy again!)
    - (Substantial) Funding is required for collaboration
    - New techniques related to sensors & genomics could make an impact

Screening

- Further input from participants
  - Challenge: **Predictive Modelling of Biosphere**
    - Essential Biodiversity variables (IPBES) to be established to assess models (like in Atmospheric/Weather models are T, Rainfall…)
  - Example: Alien Species
    - Collected 11000 species (some defined as alien) from 300 sites
  - Preliminary list of IPBES variables: alien species distribution
    - Controversy: what is an alien species?
      - What is the impact of the alien species (i.e. economical,policy)
      - Do we have common EU-US? Tiger mosquito, Ballast water
  - Design of databases
    - Common "templates" or better Brokering approach
    - Classical (SQL) , "emerging" noSQL…
    - "Triple Store" (not scaling?)
      - multiple matching mechanisms (related **to Ontologies**)
    - Towards the Semantic Web or…
    - Exchange format / how it is published as a service
    - Impact of BigData techniques

DISCUSS HARMONIZATION OF ECOLOGICAL INPUT (see EUBON vs US/Au…) next week

BIG GAP

Screening

- Further input from participants
  - Smart sensor networks NEED ontologies
  - CAN WE MAKE A COMMON (SWEET) ONTOLOGY (USA-EU) OR AT LEAST A TRANSLATOR? (plus Opencyc) Is it possible? (standard or broker?)
  - Ontologies "branches" and *reconnection*?
  - *Best practices on platforms on the exchange platforms US-EU.*
  - Sensor use cases, technology, contact with companies?
  - New uses/functions in sensor networks
  - Sensor Observation Service OGC
    - Further work/input/specification is needed?
    - Analyze within global COOPEUS
  - New sensors? US National Labs , Argonne, DoE (in contact with NEON)
    - Will try to give answers to NEON request, who does this in EU?
  - Opportunities:
    - Biodiversity observation (like camera traps)
    - Genomic-related

Screening

- Further input from participants:
  - Collaboration on Global Names EU-US
    - Right now mapping names
    - Need to build the “index black-box”, to eliminate all intermediate steps now required
    - Improve the process for new species
  - Impact on Data Mining?
  - PID role?
  - “evolution” in some areas (phytoplankton)
  - Role of catalogues
  - Implication of GBIF (distributed queries?)
  - What about genes and functions? And in general sequences? Metagenomics
  - Genomic tools needs and connections?
  - Also Modeling over..
  - E-INFRASTRUCTURE
    - Grid, Cloud, Large Data Repositories, Supercomputers
    - Commercial resources (in the Cloud)
    - Interface to very large databases (Clima, Satellites,)
    - NSF: Environmental Information (check with DataOne, U.California SantaBarbara)
    - Tools using R and OpenScience (good way to disseminate, open repositories)
    - IDEA AT NSF? : Core team to produce “industrial” level software, or create Workflow Framework supporting R (kind of Software Institute), link also to other communities
    - Programming Models

Screening

- Further input from participants:
  - Models
    - Interoperability
    - Reuse
    - Scalability
    - ABM models
      - For ecosystems you need programming and resources
      - Simulating to entity level?
        - MULTISCALE?
    - Ecosystem services simulation work?
      - What is the approach in EU? Check INVEST in Stanford
    - Decision support tools
  - Consider Stakeholders:
    - Managers
  - Spatial scale approach
    - Have in mind local initiatives with clear targets, and take into account their data
  - Document the analytical processes behind data
    - And the corresponding code

Screening

- Further input from participants:
  - New ideas on publication process
    - Access to data from publication (figures even!)
    - How to get feedback? (social network feedback-like?) Make the article "alive"
  - Check runmycode.org
  - Alive funding programmes ! And IPR issues
  - Portals?
    - EUBON in EU, what is equivalent in US?
  - LTER: US, and eu-LTER
    - US: pasta software for quality check of data…check with DataOne
    - Data One will offer those "federated" resources
    - Similar scheme in EU, Australia, SouthAfrica, Taiwan…
  - What about citizen science tools?
    - And validation?
    - "Gaming" approaches (identification of images)
  - The Open Source community ideas rediscovered!
    - Best practices: Projects managed as long-term "projects" (cf. NEON)
      - Change integration (ITIL ideas)
      - Use cases needed to get "feedback" (USERS MEETINGS)

From Madrid workshop

- Second part: potential use cases
  - Carbon cycling
    - Interesting for NEON
    - Net primary productivity (IBB variable)
    - Integrate field, remote, airborne and the phenology
    - LTER Europe
    - Marine estimations (large incognita?)
    - IBB variables depending on time series (80's…) IMM? require large resources for computing: net primary production, phenology, photosintetic…
    - Changes induced on functional genes (ELIXIR?)
    - Also BioVel addresses the topic
    - ICOS view
  - Global Water cycling
    - FreshWater and Human health impact
    - Global sources imapcting fresh water quality
    - Understand Rivers,Lakes,water reservoirs, ground water

From Madrid workshop

- Second part: potential use cases (continued)
  - Carbon cycling and Global Water cycling
  - Global Names
  - Involving additional Stakeholders
    - UNDERSTAND THEIR ROLES, TIMING, INTERESTS… MAKE AN INTERACTION SCHEME?
    - Cf. NEON Stakeholders meeting in Florida
    - Promote your “market”
    - Administration/Authorities
    - Citizens
    - Industry: SMEs and also large companies
      - Industry on cloud/e-infrastructure
      - Markets/appstores/PIDs and IPR and tracebility
      - Look to D3.1 Creative_B on interoperability
      - Contribute to Biosphere model and IPBS indicators
        - Develop a Use Case scenario with contribution from different projects

Examples of candidate Essential Biodiversity Variables

EBV class	EBV examples	Measurement and scalability	Temporal sensitivity	Feasibility	Relevance for CBD targets and indicators (*1,9*)
Genetic composition	Allelic diversity	Genotypes of selected species (e.g., endangered, domesticated) at representative locations.	Generation time	Data available for many species and for several locations, but little global systematic sampling.	Targets: 12, 13. Indicators: Trends in genetic diversity of selected species and of domesticated animals and cultivated plants; RLI.
Species populations	Abundances and distributions	Counts or presence surveys for groups of species easy to monitor or important for ES, over an extensive network of sites, complemented with incidental data.	1 to >10 years	Standardized counts under way for some taxa but geographically restricted. Presence data collected for more taxa. Ongoing data integration efforts (Global Biodiversity Information Facility, Map of Life).	Targets: 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15. Indicators: LPI; WBI; RLI; population and extinction risk trends of target species, forest specialists in forests under restoration, and species that provide ES; trends in invasive alien species; trends in climatic impacts on populations.
Species traits	Phenology	Timing of leaf coloration by RS, with in situ validation.	1 year	Several ongoing initiatives (Phenological Eyes Network, PhenoCam, etc.)	Targets: 10, 15. Indicators: Trends in extent and rate of shifts of boundaries of vulnerable ecosystems.
Community composition	Taxonomic diversity	Consistent multitaxa surveys and metagenomics at select locations.	5 to >10 years	Ongoing at intensive monitoring sites (opportunities for expansion). Metagenomics and hyperspectral RS emerging.	Targets: 8, 10, 14. Indicators: Trends in condition and vulnerability of ecosystems; trends in climatic impacts on community composition.
Ecosystem structure	Habitat structure	RS of cover (or biomass) by height (or depth) globally or regionally.	1 to 5 years	Global terrestrial maps available with RS (e.g., Light Detection and Ranging). Marine and freshwater habitats mapped by combining RS and in situ data.	Targets: 5, 11, 14, 15. Indicators: Extent of forest and forest types; mangrove extent; seagrass extent; extent of habitats that provide carbon storage.
Ecosystem function	Nutrient retention	Nutrient output/input ratios measured at select locations. Combine with RS to model regionally.	1 year	Intensive monitoring sites exist for N saturation in acid-deposition areas and P retention in affected rivers.	Targets: 5, 8, 14. Indicators: Trends in delivery of multiple ES; trends in condition and vulnerability of ecosystems.

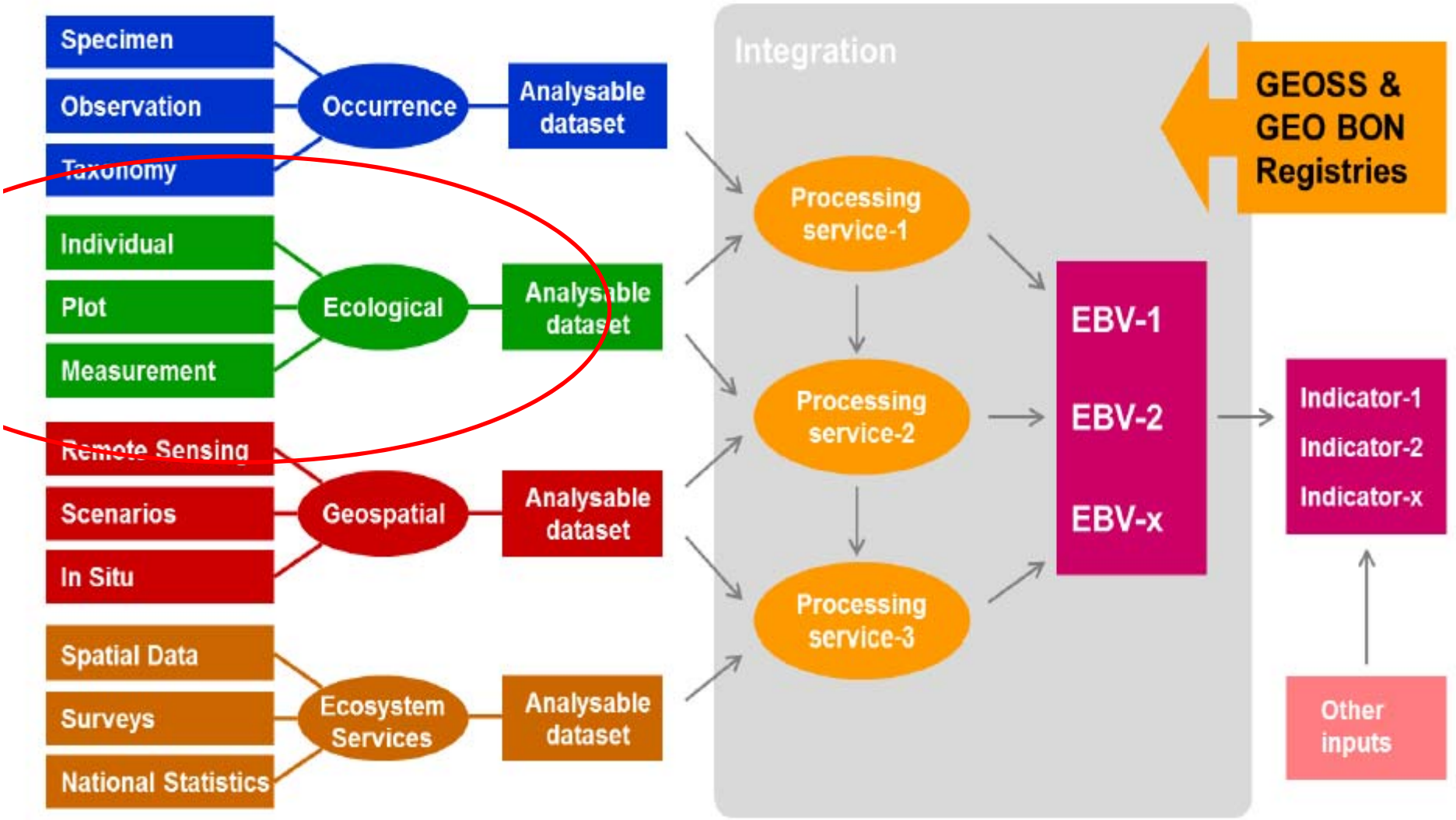


Figure 3: EU BON will be implementing the GEO BON vision of automated, streamlined data flow, end-t end, from observations to Essential Biodiversity Variables (EBV), using a plug-and-play service-oriented approach, coordinated through the GEO BON registry system and linked to the GEOSS Common Infrastructure, and transparent to users through portals.

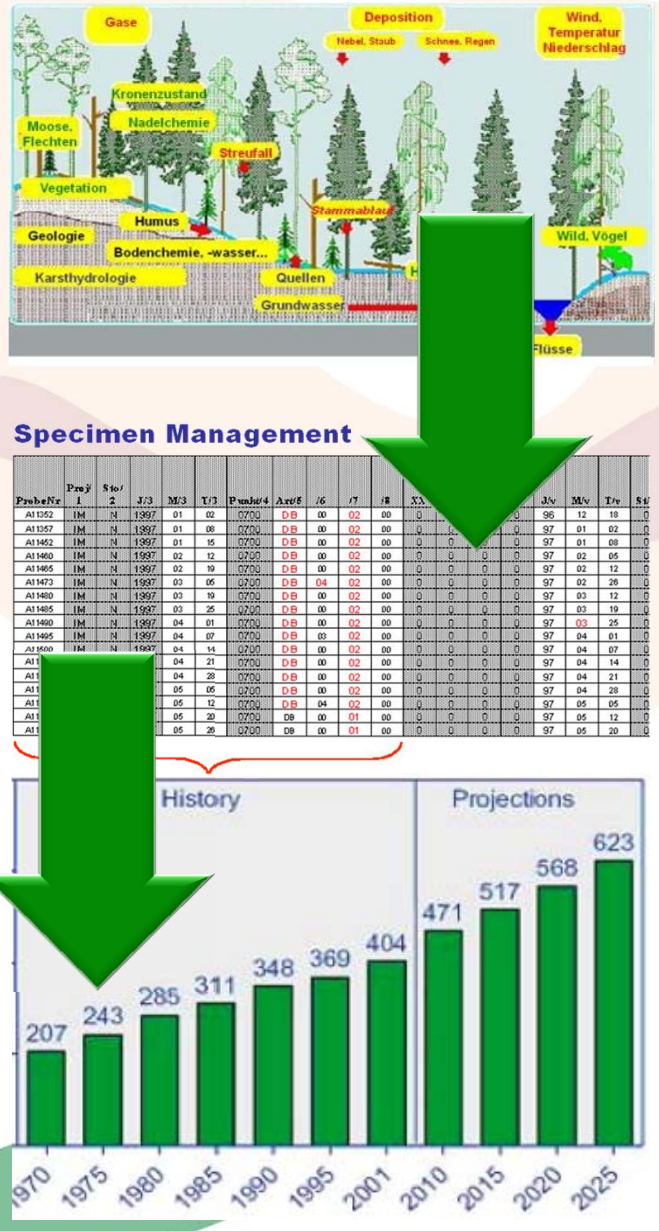
From Hannu Saaren presentation in Mac

Timeline

- The EBV automation use scenario was coined in the GEO BON meeting December 2012
- EU BON has adopted it in March 2013
- Pilot project will target trends in species populations
- Processing services from GBIF and BioVeL will be used
- Work to commence in 2013-2014

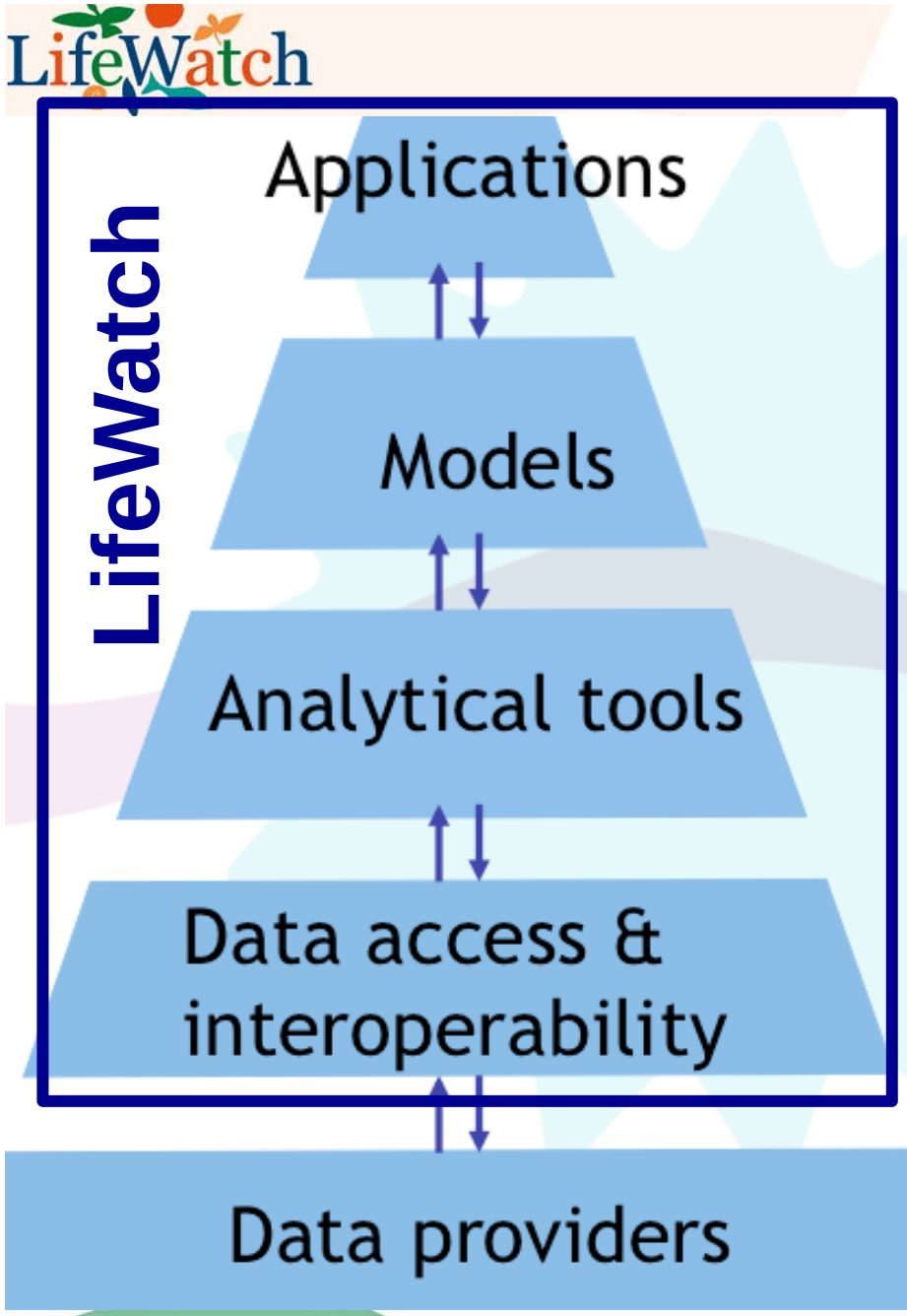
From Hannu Saarenma
presentation in Madrid

e-Infrastructure challenges



- Complex data sets with different spatial, temporal and thematic resolutions
- Data discovery and data filtering: fitness for use
- Data integration with data and meta data from different application domains
- Workflow development for analysis and modelling
- Re-applicability and provenance control
- Visualization of results

From Wouter Los presentation in Madrid



EU Knowledge Network (contributes to IPBES)
EU BON (Support to GEO BON)
ViBRANT (virtual environment for taxonomy)

BioVEL- Biodiversity Virtual Laboratories
OpenBio (EU-Brazil cooperation)
CloudConnect (EU-Brazil cooperation)

ENVRI (Cooperating environmental research infrastructures - data discovery & data processing)
Pro-iBiosphere (standards & interoperabilty)

EBI genomic data; PESI; BioCASE; GBIF; LTER-Europe; MARS; PANGEA
EUDAT

From Wouter Los presentation in Madrid

Interoperability opportunities: the "Low hanging fruits" (1/2)

ALA: interaction with data providers; Data quality rules (50-60 rules); Criteria for including analytical techniques for inclusion in Ris; Document with motivation on data sharing

Data One: world-wide indexing of metadata; User Forums.

GBIF: Provision of software components for data integration. Data interpretation services

LifeWatch: Data discovery, processing, testing models, semantic annotation and training.

Sanbi: Experience with linking the data with policy related issues (strategy plans, yearly plans, biodiversity serving other policies). Show evidence that data on biodiversity are relevant for policy on climate change and job creation.

From Yannick Legre presentation in Madrid

Interoperability opportunities: the "Low hanging fruits“ (2/2)

GEOBON: Collection of templates, observation guidelines, software etc. to get regional BONs started. It would be interesting to develop an "RI in a box" (on the basis of the example of "BON in a Box").

CRIA: Open Modeler Platform by a Cloud Implementation in OpenBio.

CAS: Species distribution models. IT platform managing data entries (for instance colour photos). A ready to use package. Reference system for data providers to see data usage and publications connected to it.

From Yannick Legre
presentation in Madrid

Next Workshop

- Santa Fe, NM (USA)
- October 28th – 30th
- Focusing mainly on:
  - Legal
  - Policy
  - Governance
- Participation of US COOPEUS member is being checked with the host

What next from LW

- **LEARN from NEON**
  - **Infrastructure**
  - **Data Model, Access to users, Data Published in Portal**
  - **Stakeholders "market", etc.**
- **INTERACT WITH DATA ONE**
  - **Reference Model**
  - **Discussion in SantaFe (ENVRI, Y.Legre)**
  - **GBIF access integration, LTER sites in coordination with EUBON**
- *Biodiversity data services common on both sides of Atlantic ?*
- **We aim to setup a LW-related test site in EU and check inter-"*whatever" using common services* along next 6 months**
- **Global Use Case?**

get involved and apply all above, if possible in relation to IPBES

Progress Statement

- **Milestones:**
  - MS1 Working groups on interoperability established
  - MS2 Status quo assessment questionnaires
  - MS3 Fact finding and analysis phase finished
  - MS5 First draft of core data policy **(Connected with D 7.2)**
  - MS7 Report on potential case studies for future collaborations
- **Conducted & planned Workshops**
- **Exchange of personnel**
- **Participation in User Scenario**
- **Expected time line, some highlights:**
  - Oct-Dec: consolidate info & collaboration relationships, prepare D6.2
  - Nov-Jan: new proposals (EU side: H2020)
  - Jan-Sep: User scenario development
  - Apr-May: workshops (EGU + aim to have a hands-on meeting in Spain)
- **Concept development for a data sharing framework**