GLOBAL BIODIVERSITY

INFORMATION FACILITY

Making a difference with biodiversity data: impacts on conservation and development

Francisco Pando, GBIF Spain

GBIF

NATIONAL MUSEUMS OF KENYA
WHERE HERITAGE LIVES ON

KENBIF Stakeholder Consultation Workshop
Nairobi, 8th to 9th June 2011

Countries currently face critical environmental and conservation problems

- Climate change
- Ecosystem services
- Land (and sea) management
  - (use, conservation, sustainability)
- Water quality
- Fisheries
- GMOs management
- Emerging diseases
- …

Surely you are already working to solve those problems, or at least to understand them

..and chances are that your "information systems" do not talk to each other
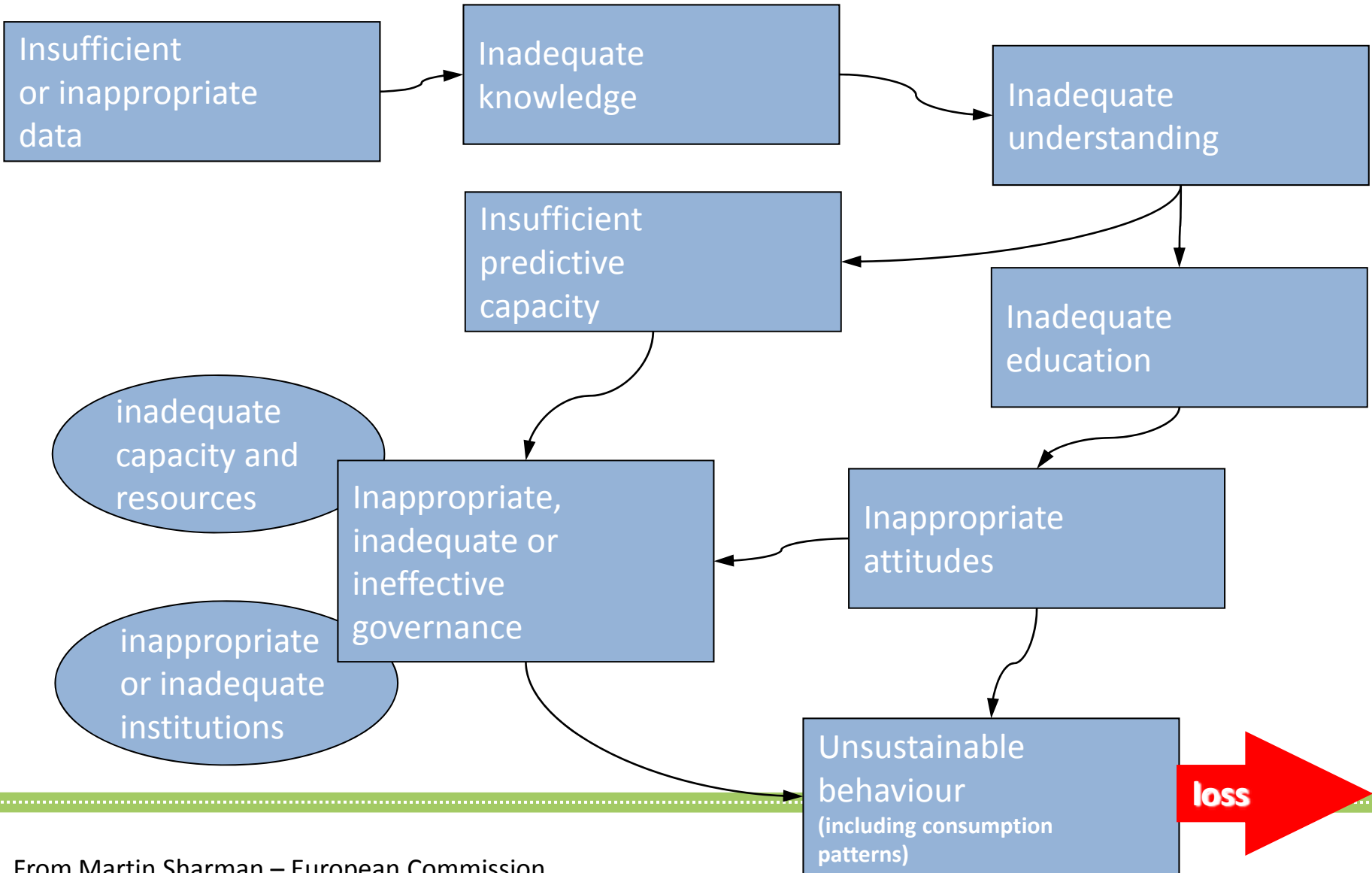
Besides

"Countries can no longer make decisions on the important environmental problems that we are now facing--such as those related to climate as well as those to natural environment and biodiversity-- without the essential basis of the best scientific information available"
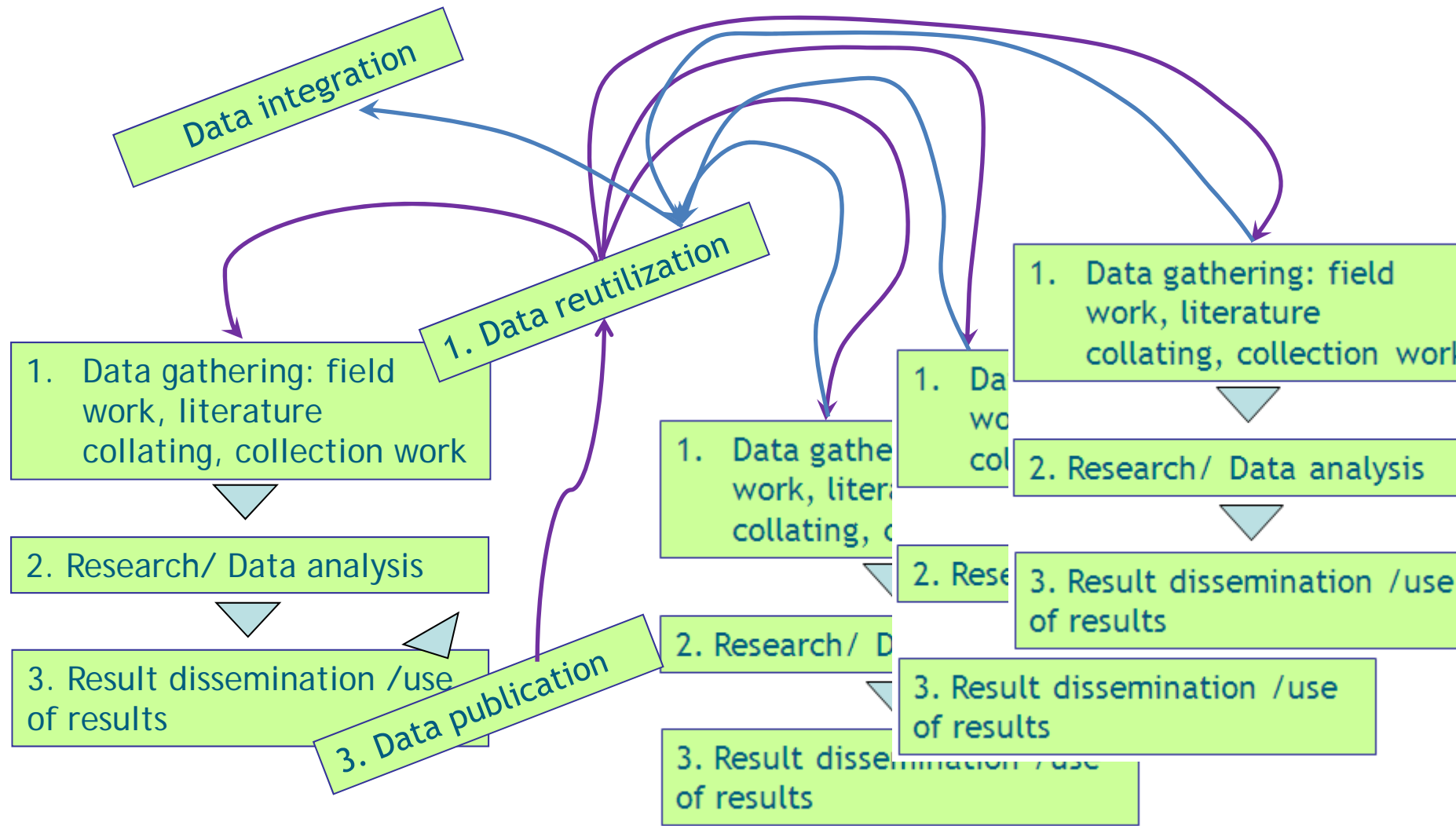
Ana Luisa Guzmán,

Executive Secretary, CONABIO, México

One of the stated priorities of the Obama Administration is to promote transparency and openness in governance, including in the dissemination and use of scientific data and information, and the use of factual scientific information in the formation of government policy and official decisions…
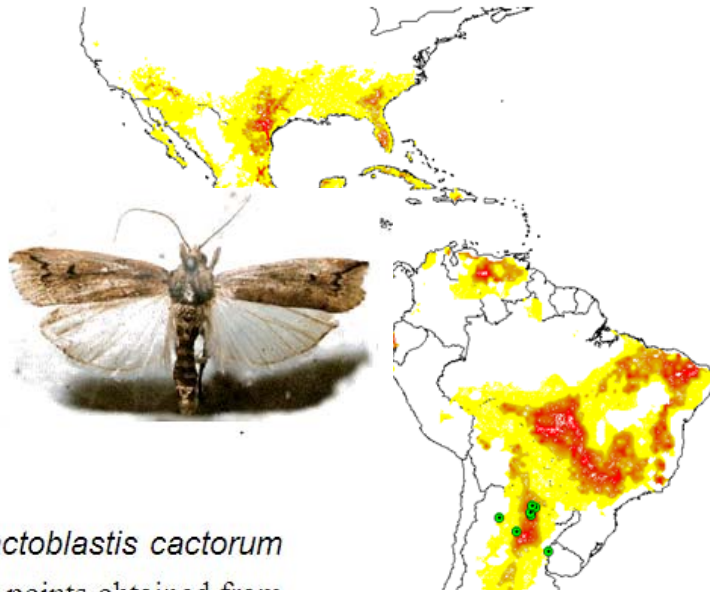
Road to disaster

GBIF

```
┌─────────────────────┐      ┌──────────────────┐           ┌──────────────────┐
│ Insufficient        │ ───▶ │ Inadequate       │ ───────▶  │ Inadequate       │
│ or inappropriate    │      │ knowledge        │           │ understanding    │
│ data                │      │                  │           │                  │
└─────────────────────┘      └──────────────────┘           └──────────────────┘
                                                                      │
               ┌──────────────────────┐                              ▼
               │ Insufficient         │ ◀────────────────   ┌──────────────────┐
               │ predictive           │                     │ Inadequate       │
               │ capacity             │                     │ education        │
               └──────────────────────┘                     └──────────────────┘
                          │                                           │
    ╭────────────────╮    │                                           ▼
   ( inadequate       )   │                              ┌──────────────────────┐
   ( capacity and     )   ▼                              │ Inappropriate        │
   ( resources        )  ┌──────────────────────┐ ◀───── │ attitudes            │
    ╰────────────────╯   │ Inappropriate,       │        │                      │
                         │ inadequate or        │        └──────────────────────┘
    ╭────────────────╮   │ ineffective          │                    │
   ( inappropriate    )  │ governance           │                    ▼
   ( or inadequate    )  └──────────────────────┘        ┌──────────────────────┐
   ( institutions     )             │                    │ Unsustainable        │
    ╰────────────────╯              └──────────────────▶ │ behaviour            │  loss ▶
                                                          │ (including consumption│
                                                          │ patterns)            │
                                                          └──────────────────────┘
```

From Martin Sharman – European Commission

The fact is that we are doing mini-GBIFs

Data integration

1. Data reutilization

3. Data publication

1. Data gathering: field work, literature collating, collection work

2. Research/ Data analysis

3. Result dissemination /use of results

1. Data gathering: field work, literature collating, collection work

2. Research/ Data analysis

3. Result dissemination /use of results

1. Data gathering: field work, literature collating, collection work

2. Research/ Data analysis

3. Result dissemination /use of results

1. Data gathering: field work, literature collating, collection work

2. Research/ Data analysis

3. Result dissemination /use of results

Without GBIF

With GBIF

Cactoblastis cactorum

Data points obtained from
the NMNH,

Niche of *Tamarix* in the
Western Hemisphere with
observations in the U.S.

Presences of *Tamarix*
locations

- The *C. cactorum* analysis took more than one year. Visits were made to USA. Australia took almost four years to provide their data. San Diego, Missouri and Smithsonian queried their own databases quickly. Arizona was not computerized.
- The results were adopted by Mexico´s Minister of Agriculture. Base for colaboration with the USA

- This is a post-GBIF analysis. The data was obtained, literally, in 30 seconds.
- A map was presented to SEMARNAT, the Ministry of the Environment who started a program of eradication. The results are being refined to higher resolution

You have a choice:

- Doing everything by yourself

    And that is what pioneer countries like Australia and Mexico had to do

- Joining GBIF and taking the fast track

    "Reviewing a hundred web sites and visiting a couple of leading institutions is not substitute for being part of it. Building the foundation of a biodiversity data infrastructure is not a one-time exercise "

If you join GBIF --or you are part of it-- what you should not do is:

Not implementing a national program for having and using access to biodiversity data; or doing it as an exercise disconnected of GBIF

Culture change - Publishing data - Demanding data to be published –

Infrastructure – Servers – Connectivity – Community Support –

Education – Training – creating a new generation of scientists and professionals - …

- But GBIF it is not what is already there or done -- which is a lot.

- It is alive

- Being part of GBIF is also about what can be done, - future

Technology

- GBIF
  - Community of practitioners
    - Portals
    - Protocols
    - Building communities
    - Analyzing data
- TDWG

http://www.tdwg.org/

Welcome to TDWG

The **International Working Group on Taxonomic Databases (TDWG)** is a not-for-profit, scientific and educational association formed to establish international collaboration among the creators, managers and users of biodiversity information so as to promote the wider and more effective dissemination of information about the world's heritage of biological organisms for the benefit of the world at large.

To achieve its goals, TDWG: a) develops, adopts and promotes standards and guidelines for the recording and exchange of data about organisms; b) promotes their use through the most appropriate and effective means; c) acts as a forum for discussion through meetings and publication. → More
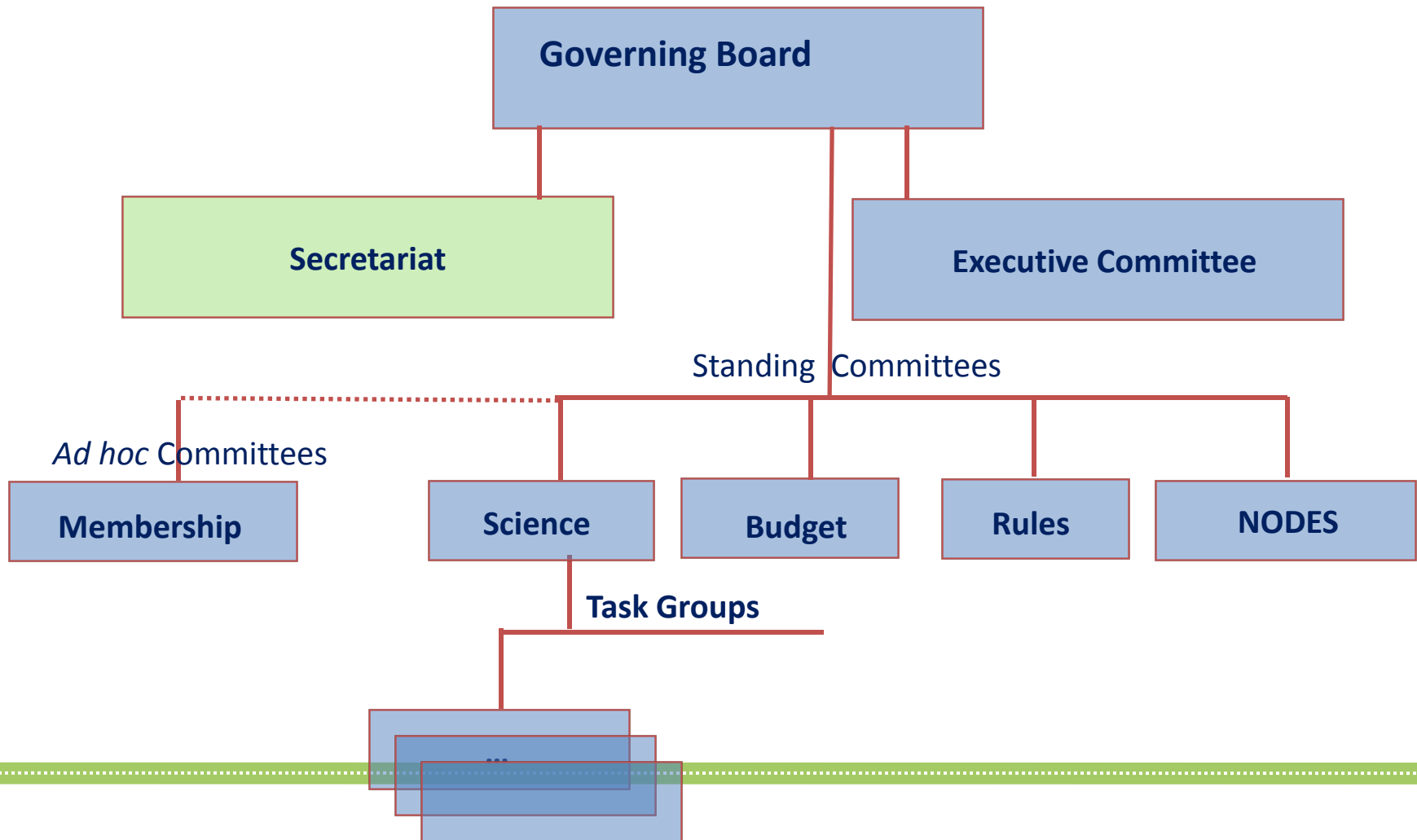
WG Prior Standards

llowing standards have been ratified by TDWG prior to the

TDWG Standards

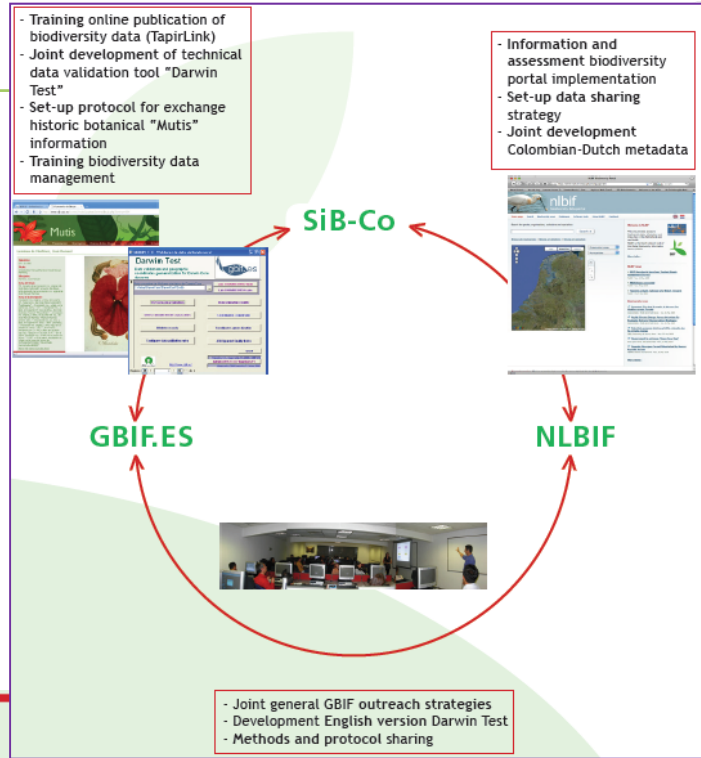| ID	Title	Stat
85	TDWG Standards Documentation Specification	Draft
87	TDWG Life Sciences Identifiers Applicability Statement	Draft

Be at the driver's wheel

- Priorities, focus, flavour


```
                    Governing Board

    Secretariat                        Executive Committee

                    Standing  Committees

  Ad hoc Committees

  Membership    Science    Budget    Rules    NODES

                Task Groups
```

Example 1

- Mentoring 2008
  - Colombia
  - Netherlands
  - Spain

- Training online publication of biodiversity data (TapirLink)
- Joint development of technical data validation tool "Darwin Test"
- Set-up protocol for exchange historic botanical "Mutis" information
- Training biodiversity data management

- Information and assessment biodiversity portal implementation
- Set-up data sharing strategy
- Joint development Colombian-Dutch metadata

SiB-Co

GBIF.ES

NLBIF

- Joint general GBIF outreach strategies
- Development English version Darwin Test
- Methods and protocol sharing

Key results:

- **Data mobilisation:** Hundreds of thousands of Colombian records published by participants of the technical GBIF.ES training
- **Capacity Building:** Over 40 Colombian researches trained in GBIF related skills
- **Implementation:** Taxonomic authority files for data exchange Spain - Colombia
- **Technological transfer:**
  - Translation of Colombian metadata software (Cassia) into English
  - Trial with Colombian metadata Nodes "abroad"
  - Implementation of Colombian metadata Node in the Netherlands
  - Joint further development of validation tools (Darwin Test)
- **Fundraising:** Set-up of research proposal for the digitization of Colombian biodiversity research data from Dutch research groups
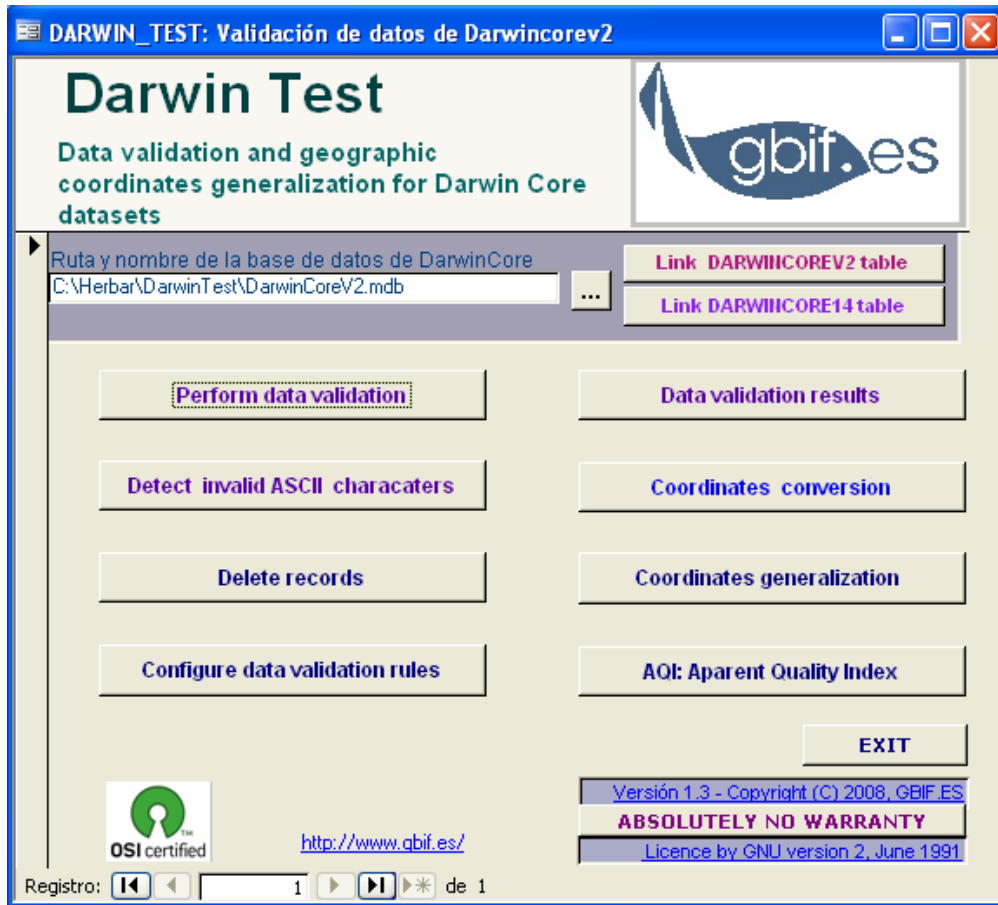- **Spin-off:** 4 major spin-off projects under way

Example 2

Georeferencing training

- "Joint venture" Secretariat – Node
  - Maximizing resources, initiative, impact
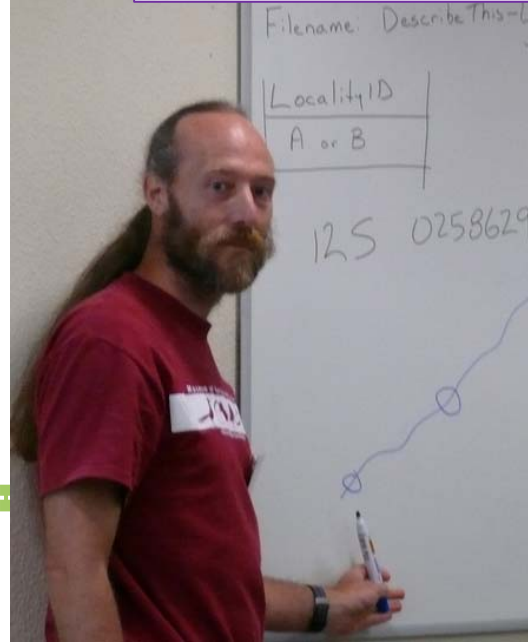
Example 3

Data cleaning and validation tool

http://www.sp2000.org/

http://www.siac.net.co/sib/aat

http://www.gbif.es/darwin_test/Darwin_Test_in.php

Example 4

- Biodiversity Monitoring Network
  - Setting a network of observatories all over Spain to track changes in plant communities in connection with climate change, invasive species and land use changes.
  - It is planning that the network will use GBIF technology and concepts…

  …. It is not the data, it is the methods, IT architecture, and the know-how of GBIF that matter here

As a way of conclusion

- GBIF is much more than just data:
  - Advanced technology, proven methods, expertise, coordination
  - Data to be reused and integrated
  - Closing the gap between Science and Management
- For you to get the most of GBIF, you have to participate in it, and to link that participation to your national initiatives on biodiversity information

  … or use it to build a national biodiversity data infrastructure

- Data handling; tools for:
  - Data capturing
  - Data management
  - Data visualization
  - Data cleaning & validation
  - Discovery
  - Integration
- Knowledge
  - Training
  - Best practices
  - Experts
  - digitalization
  - Tools

- Coordination
  - Communication
  - Collaboration framework
- Resources
- Publishing
  - Standards
  - Servers
  - Connectivity
  - Portals
  - Storage
  - Agreements /credit framework

At your command

Francisco [Paco] Pando
GBIF Spain Node Manager
GBIF NODES Commitee Chair

GBIF Spain
Real Jardín Botánico - CSIC
Claudio Moyano 1
28014 Madrid, Spain

pando@gbif.es
www.gbif.es
Phone: + 34 91 420 3017
Fax: + 34 91 420 0157