The European *ex situ* PGR Information Landscape

Theo van Hintum, Frank Begemann, Lorenzo Maggioni

ECPGR Documentation and Information Network Coordinating Group

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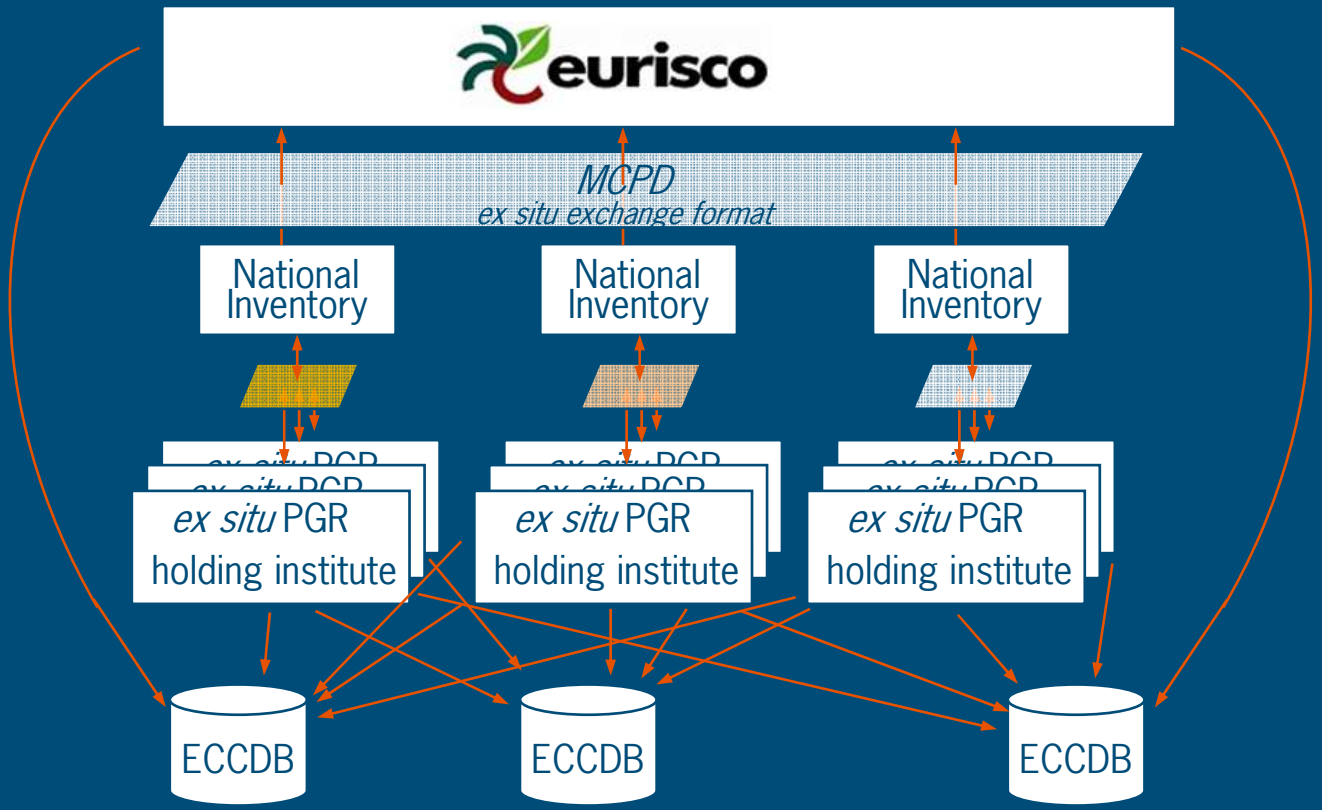
PGR Information Landscape

- the presentation
  - components of the landscape
    - systems at institutional level
    - systems at national level
    - systems at European level
  - changes in the landscape
  - technical developments and challenges
  - next steps
  - conclusions

PGR Information Landscape

- the current landscape



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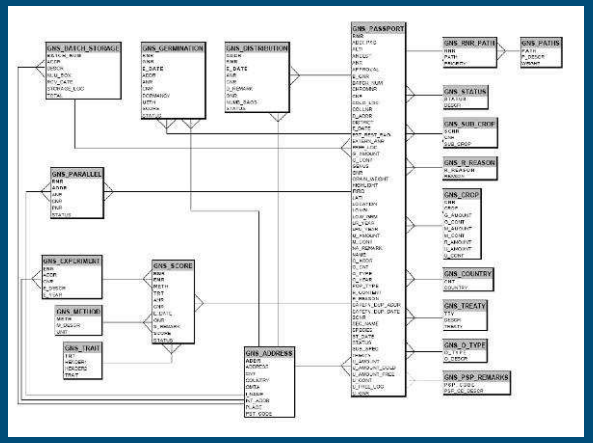
- basic elements of the landscape: local documentation systems of actors conserving PGR
  - paper
  - spreadsheets
  - database management software (DBMS)

	A	B	C
1	January	Product 1	Product 2
2	North	12.5	15
3	South		
4	East		

	A	B	C	D
1	February	Product 1	Product 2	Produ
2	North	13.2	12.8	
3	South			
4	East			

	A	B	C	D
1	March	Product 1	Product 2	Produ
2	North	12.6	13.2	
3	South	9	14.5	
4	East	12.2	16.8	

	A	B	C	D
1	First Quarter	Product 1	Product 2	Produ
2	North	38.3	41	
3	South	39.6	45.1	
4	East	37.1	43.2	



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- database management software (DBMS)
  - popular brands: MySQL, MS-Access, Oracle
  - allows for proper database management
    - data integrity
    - data security
    - data processing
  - requires investments
    - license, installation and maintenance
  - requires application based on data-model
    - define structure of the data (what data?)
    - define and implement the functionalities

PGR Information Landscape

- data categories
  - genebank management data
    - internal use only (data models vary)
  - passport data
    - broad external use (institute, national, European, incl. breeders)
    - fairly standardized (MCPD-list)
  - characterization & evaluation data
    - broad external use (breeders, researchers, others incl. institutes)
    - range of models varying level of detail
  - data about distribution and use of germplasm
    - institute (internal), national, international administration (e.g. Treaty)

PGR Information Landscape

- coding systems for *ex situ* PGR documentation
  - hardly any standard coding systems, controlled vocabularies or ontologies are available
    - MCPD contains or refers to coding systems for a/o countries, origin types, population types
    - institute codes remains a problem – attempt of World Information and Early Warning System on Plant Genetic Resources (WIEWS)
    - trait names – several standards are available (Bioversity, UPOV) – rather low acceptance, incomplete crop coverage, inconsistency amongst standards
    - no systems for taxonomy, or other descriptors (user type, coordinate type, etc.)

PGR Information Landscape

- systems at national level
  - most prominent: National Inventory
    - initiated by EPGRIS project as part of the establishment of EURISCO
    - established in most European countries – 1.1 million accessions in 38 countries
    - standardized data (MCPD)
    - act as national interface to systems at regional or global level
    - not always optimally accessible individually - all accessible via EURISCO
    - content at discretion of National Focal Point (NFP)
    - restricted to passport data
    - good entry point for coordination and capacity building

PGR Information Landscape

- systems at regional level
  - European Central Crop Databases (ECCDBs)
    - long history – role of ECPGR
    - role in collaboration (GENRES projects)
    - very many established: 62 ECCDBs with 0.75 million accessions
    - mainly passport data, some (12 ECCDBs) with C&E data
    - data come directly from local systems plus EURISCO
    - wide variety with regard to completeness, data quality, age of datasets, inclusion of C&E data, and possibility to search or download them via the web

PGR Information Landscape

- systems at regional level
  - EURISCO
    - established by EU project EPGRIS (2000-2003)
    - now under responsibility of ECPGR
    - managed by Bioversity in collaboration with National Focal Points of National Inventories
    - 1.1 million accessions from >240 holding institutions in 38 participating countries
    - new interface recently introduced
    - data from National Inventories – some are old !

PGR Information Landscape

- changes in the landscape
  - requirements International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) and the Convention on Biological Diversity (CBD)
    - registration of MLS material – EURISCO can easily accommodate
    - reporting of transactions - EURISCO might play a role
  - new global Accession Level Information System (ALIS) is being established
    - EURISCO can act as data source
  - AEGIS requires a level of data management
    - EURISCO can easily accommodate

PGR Information Landscape

- changes in the landscape
  - role of ECCDBs is changing from passport data gathering points to crop specific PGR entry points
    - C&E data and research results (markers etc.) are more relevant
    - new roles might arise (catalyze crop groups activities: improving data quality at data source, supporting activities related to AEGIS, creating crop portals)
    - new role requires EURISCO to be the one-stop-shop for passport data

PGR Information Landscape

- technological changes
  - quality of data is getting higher
    - experts are ‘closer to the data’
    - higher exposure of data
  - other types of data are becoming available and required
    - the user requires C&E data
      - making these accessible proves to be a major challenge
    - molecular and other types of data are being generated
  - more services can be provided
    - on-line access allows on-line ordering and handling MTAs

PGR Information Landscape

- technological changes
  - establishment of virtual genebanks
    - data sources and data providers are separated – web-services allow direct access for computers to databases
    - user can search and order material from a combination of genebanks without needing to know where the data / material comes from
    - technology is available (ref GBIF), agreement on the policy level and an upgrade of most local systems is required
  - crop portals
    - changing the focus from the data provider (genebank) to specific user groups (breeders / scientists / policy makers)
    - data from a variety of sources, incl. genebanks, scientific literature

PGR Information Landscape

- technological changes
  - relationship EURISCO – ECCDBs
    - EURISCO should be the ‘source’ for passport data, giving web-service access - but: National Inventories need to be completed
    - ECCDBs should develop into crop portals
      - more interfacing
      - more services
      - less databasing

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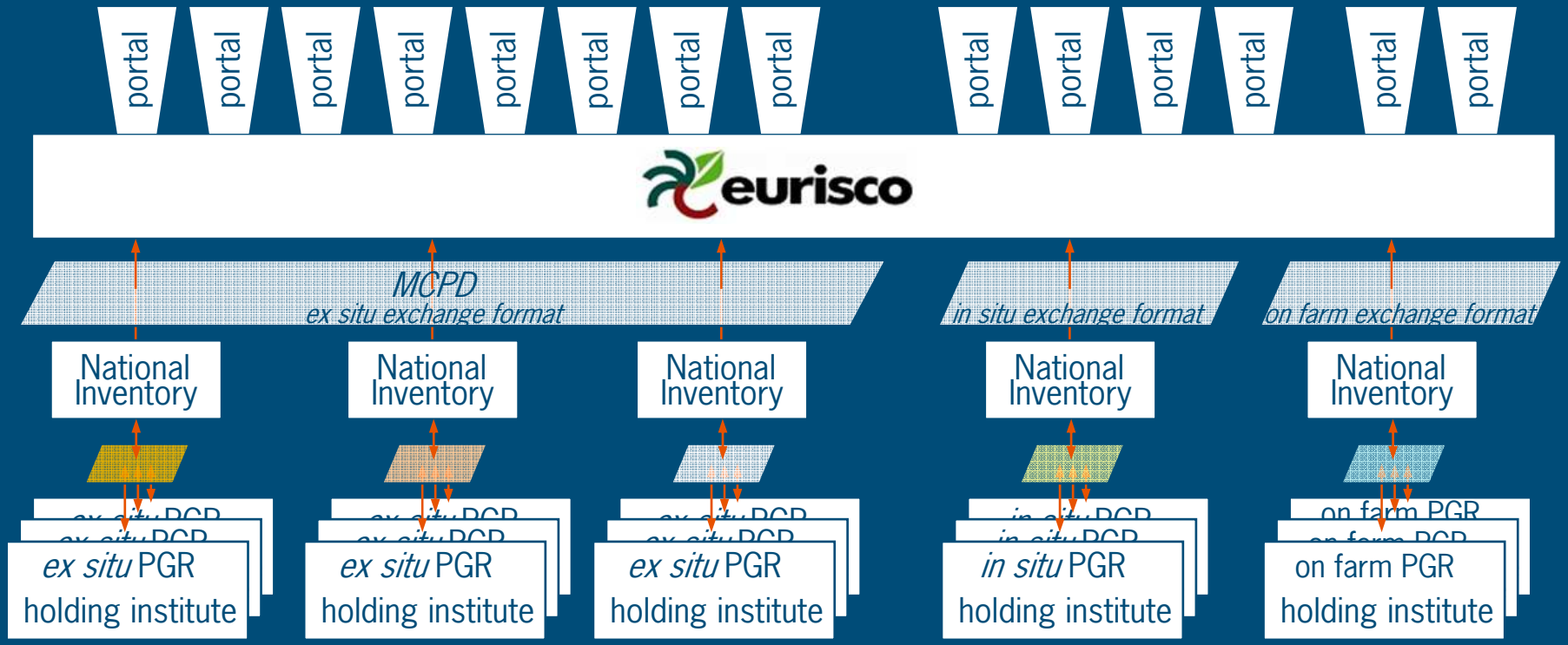
- the dreamscape



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- next steps
  - standards
    - develop and adopt more and better standards: e.g. C&E data
    - expansion of MCPD to accommodate Treaty and AEGIS requirements
    - compliance to Access to Biological Collection Data (ABCD)
    - introduction and use of life science identifiers (LSID)
  - technology
    - adopt existing technology to PGR community - establish few testing sites
    - invest in open source genebank documentation system (possibly GRIN-Global provides a starting point)

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- next steps
  - capacity building
    - many collaborating institutions still lack technical and personal capacity: need for teaching and training materials, teaching workshops, staff exchanges and other capacity building activities
    - for a start: NFPs and ECCDB managers provide a good audience
  - improve data quality
    - garbage in – garbage out
    - institutions should concentrate on improving their own data quality

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- coordination
  - current actors
    - ECPGR Documentation and Information Network Coordinating Group
    - EPGRIS3 (a self-funded initiative)
    - Global Crop Diversity Trust
    - Generation Challenge Programme (GCP)
    - Global Public Goods Programme (GPG2)
  - Europe could benefit more from these programs if more priority would be given, and more capacity would be made available to PGR documentation at all levels: institutional, national and European

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- concluding remarks
  - PGR documentation is crucial for PGR use and coordination of PGR activities
  - the technology is available
  - obstacles are
    - low data quality
    - low standardization
    - lack of technical knowledge
  - increasing priority of PGR documentation makes complete sense