



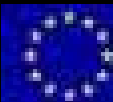
Julius Kühn-Institut

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Federal Research Centre for Cultivated Plants

www.jki.bund.de

Population level information management for crop wild relatives (PLIS)

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Agriculture and environment

Tasks

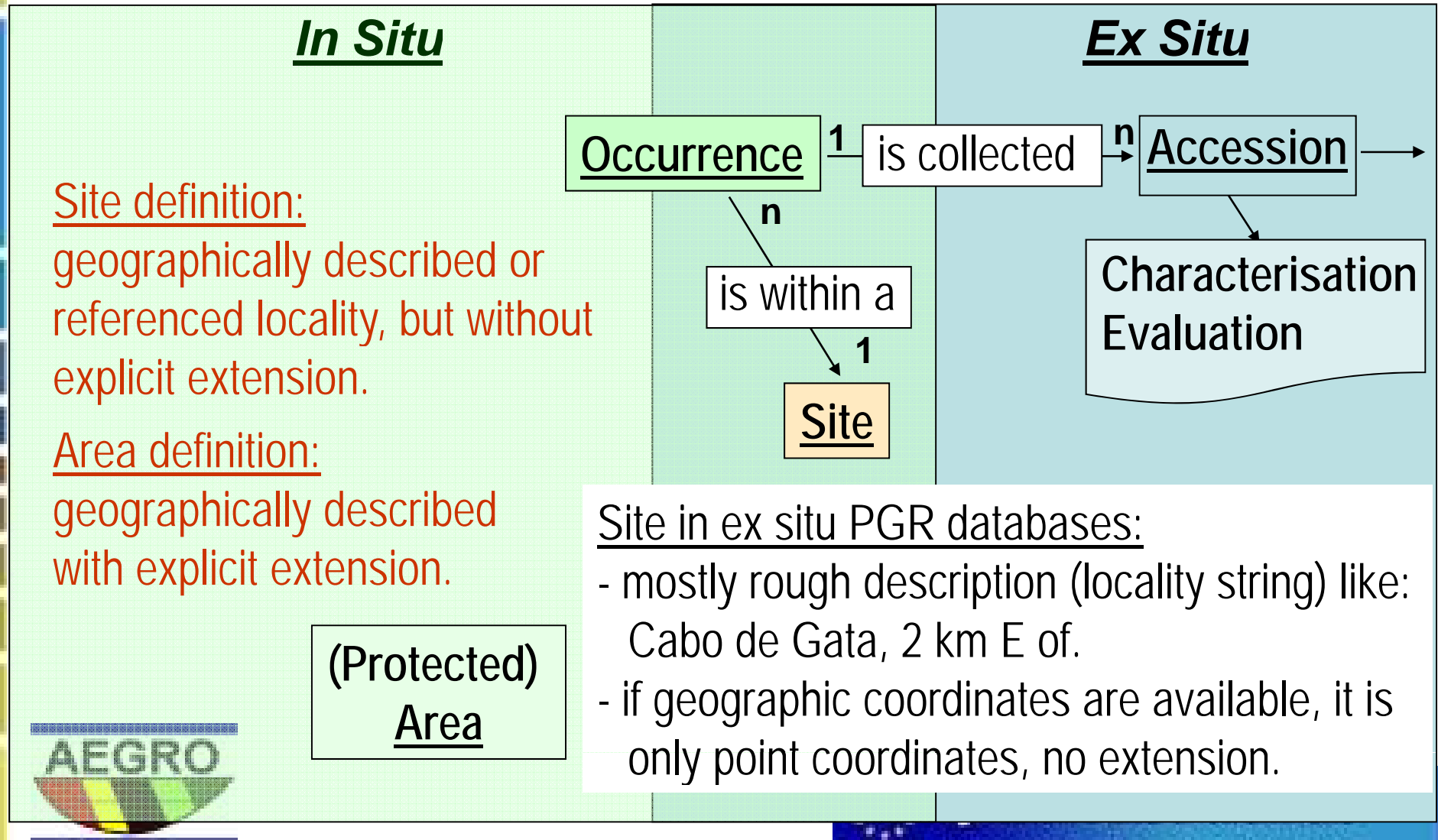


Population level information systems for model crops (*Avena*, *Beta*, *Brassica*, *Prunus*)

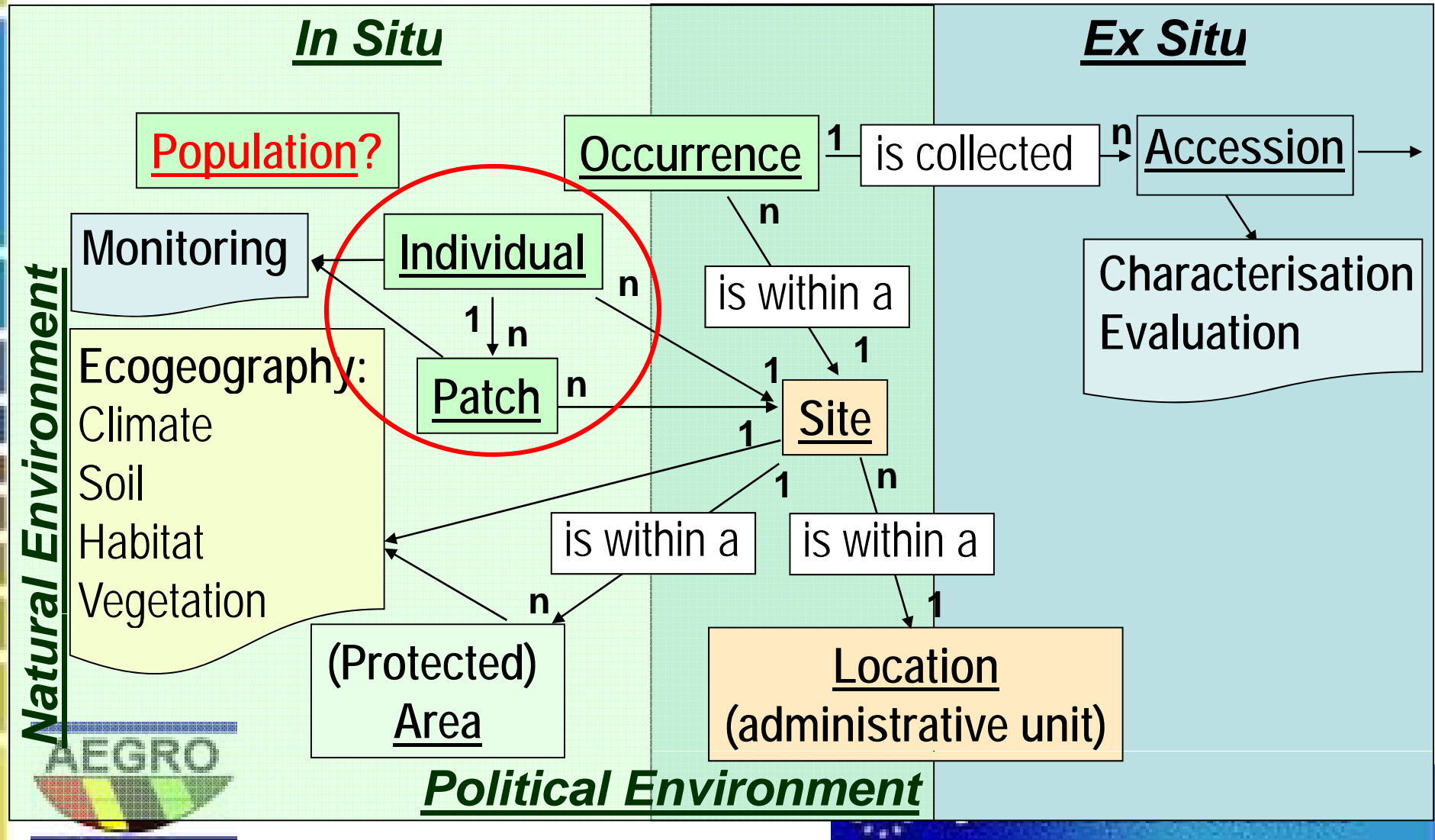
- Development of information models for *in situ* management of plant genetic resources field work on the population level.
- Integration of historical occurrence (distribution) data.
- Development of a web application for information on already known sites and additional tools supporting *in situ* field work.
- Propose concepts for data exchange and the integration of project results in existing information systems (e.g. the European Central Crop Databases).



Population Level Information in the world of genetic resources documentation



Population Level Information in the world of genetic resources documentation



Implementations:



CWR CyberTracker (Mobile)

CWRIS-PLIS (Web)

The image shows two overlapping screenshots. On the left is a mobile application interface with a black header containing 'Welcome', 'Start', and 'Help'. Below the header, it displays 'Crop Wild R' and '2010'. There are input fields for 'Observer Name' (containing 'Andreas Katsiotis') and 'Survey Identifier' (with a 'Tap to E' prompt). A green bar at the bottom contains the word 'Start' and a navigation arrow. On the right is a web browser screenshot of the 'CWRIS-AEGRO - Population Level Information System'. The browser address bar shows 'http://www.jki.de/...'. The page features the AEGRO logo, the system title, and the European Union flag with the text 'Agriculture and environment'. A navigation menu includes 'Home', 'Search by location', 'Search by protected area', 'Search by taxon name', and 'Search by taxon name and location'. The main content area contains a welcome message, project details (AGRI GENRES 057), and contact information for the Julius-Kühn-Institute.

Techologies



Mobile

CyberTracker Software

- Workflow oriented
- Graphical configuration of workflows

Web

JBoss Web Development Suite

- Object oriented
- PL: Java – JEE5 Frameworks (Java Server Faces (JSF) – Seam – Hibernate)
- GMaps4Jsf: an Interface for the use of Google Maps Services with JSF



Data Sources / Downloads



Occurrence and genetic resources data:

The Global Biodiversity Information Facility (GBIF)

The European Internet Search Catalogue (EURISCO)

The USDA Germplasm Resources Information Network (GRIN).

Data downloadable from PCGRIN

The European Central Crop Databases (IDBB, EADB)

EUROSTAT administrative geographic units:

NUTS (Nomenclature of territorial units),

LAU (Local Administrative Units)

Protected areas:

NATURA 2000 sites database

Taxonomic reference:

CWRIS - Euro + Med, IDBB, EADB

Searching through a geographic hierarchy



Data acquisition with Cybertracker

Data Type	C	A	Almeria4	ESPProtectedAreas
Acquire general geographic inform	AUT	Andalucía	Almería	Alto de Bahama
Acquire site information	CYP	Canarias	Cádiz	Area Esteparia de La Mancha No
Site Monitoring	DEU	Castilla L	Córdoba	Area Esteparia del Campo de Co
	ESP	Cataluña	Granada	Area Marina del Cap Mariscal
	FIN	Comunida	Huelva	Area Marina del Nord de Menora
	FR	Occitania	Lyon	Arbes del Duero
	ga		Olula de Castro	Arzapalag de Cabrera
			Olula del Rio	Bahia de Cadiz

Web Search

Location

PORTUGAL ▼ 233 Countries
 Continente ▼ 1 Regions
 Centro ▼ 5 Provinces
 Pinhal Litoral ▼ 17 Districts
 Leiria ▼ 21 Locations

Search by protected area

ES ▼ Countries (ISO2)
 regulation ▼ 1 Regulations
 ES0000048 ▼ 1 area codes
 CABO DE GATA-NUAR ▼ 1 Area names
 areaType ▼ 1 Area types

Note: you cannot start different result outputs concurrently! Google and KML Mapping will take considerable time!

3 occurrences geo-referenced [show occurrences in Google Maps](#) [generate KML for Google Earth](#)

[list all occurrences](#)

Searching through a taxonomic hierarchy



Data acquisition with Cybertracker



Web Search

Search by taxon

clear EURO+Med 1 Taxonomic systems

clear Brassica 1 Genera

clear bioniana 60 Species

clear subspecies 1 Subspecies

System	Validity	Scientif
EURO+Med	synonym	Brassica bioniana Mazzola et Raimor
EURO+Med	synonym	Brassica drepanensis (Carnel) Damar
EURO+Med	synonym	Brassica oleracea L. subsp. villosa (B
EURO+Med	accepted	Brassica villosa Bivona ex Spreng.

select all



Working with historical data



CWRIS-AEGRO - Population Level Information Sys

Home Search by location Search by protected area Search by taxon name Search by taxon id

Location

clear PORTUGAL 1 Countries

clear selected regions 6 Regions

clear selected provinces 0 Provinces

clear selected districts 10 Districts

clear fields

Note: you cannot start different result outputs concurrently! Google

149 occurrences per page

17 occurrences not geo-referenced

Download

Microsoft Excel - OccurrenceList.xls [Schreibgeschützt]

File Edit Insert Format Extras Data Window Help

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5	50583	PRT, Dis						Lusitania			750	Helictotrichon sulca			Fontes
6	57518	PRT, Lac		NE				Lusitania			650	Avena strigosa Sch	19440520		Fontes
7	2517	PRT, Lac						Foreign li				Avena barbata Pot			Pedro
8	12657	PRT, Pro										Avena L.	20000626		M. Vel
9	12666	PRT, Pro						Encornia				Avena L.	20000626		M. Vel

Working with historical data: Display result sets on a map



The screenshot shows the AEGRO web interface. At the top left is the AEGRO logo, a stylized leaf with red, yellow, and green segments. To its right is the text 'CWRIS-AEGRO - Population System'. Below this is a navigation bar with 'Home', 'Search by location', 'Search by protected area', and 'Search'. The main content area is a map with a satellite view. A red arrow points to a red location marker on the map. A white information box is overlaid on the map, containing the following text: 'Lat: 37.22; Long: -7.83', 'protected area: Caldeirão', 'PRT, Region: Coimbra, Province: Alentejo, District: Alentejo', and 'Avoná - Avoná L. 1'. Below the map are controls for zooming and a 'Show original data' link.

The screenshot shows the Natura 2000 website. The browser address bar displays 'http://natura2000.eea.europa.eu/Natura2000/SDFPublic.aspx?site=PTCON0057'. The page title is 'NATURA 2000 - CLEAN STANDARD DATA FORM'. Below the title is the text: 'For Special Protection Areas (SPA) For Sites Eligible for identification as sites of community importance (SCI) and For Special Areas of Conservation (SAC)'. The site information is: 'SITE PTCO0057' and 'SITENAME Caldeirão'. A 'TABLE OF CONTENTS' section lists seven items: 1. SITE IDENTIFICATION, 2. SITE LOCATION, 3. ECOLOGICAL INFORMATION, 4. SITE DESCRIPTION, 5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES, 6. IMPACTS AND ACTIVITIES IN AND AROUND THE SITE, and 7. MAP OF THE SITE. A 'Print Standard Data Form' button is located below the table of contents. The first section, '1. SITE IDENTIFICATION', includes a 'Back to top' link, a '1.1 TYPE' section with the value 'C', and a '1.2 SITE CODE' section with the value 'PTCON0057'.

Working with historical data: "Correct" results



Karte Satellit Hybrid

Lat: 38.100000
Longitude: -9.000000
Avenda 3

Karte Satellit Hybrid

Marker has been dragged to (Latitude, Longitude) 38.437925901379000, -9.095607528686633 reverse geotoding not yet available

Show original data
Edit point
Edit data

agriculture and environment

Working with historical data: "Correct" results



Show original data
Edit point
Edit data



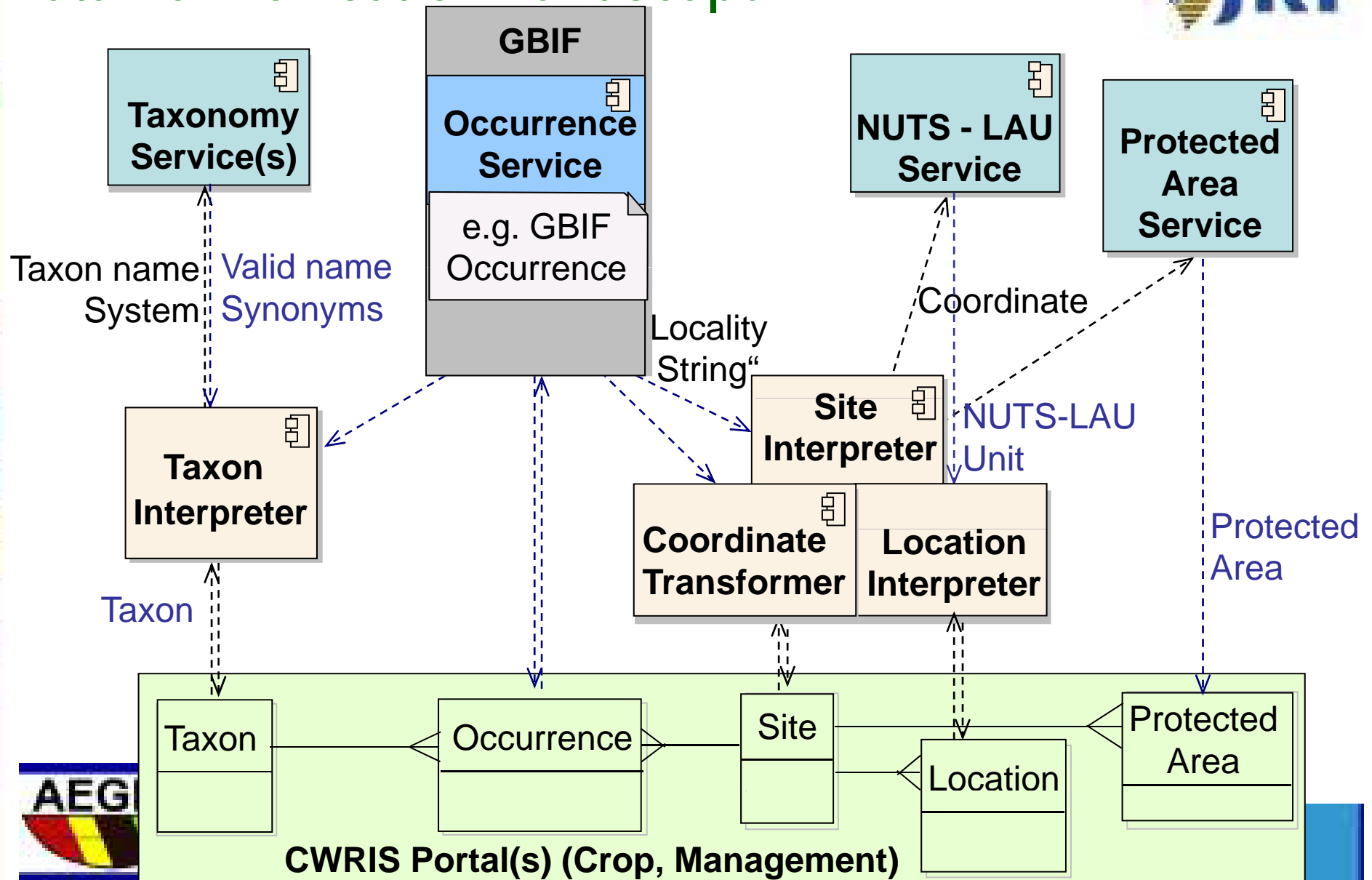
Home Search by location Search by protected area

Location Site

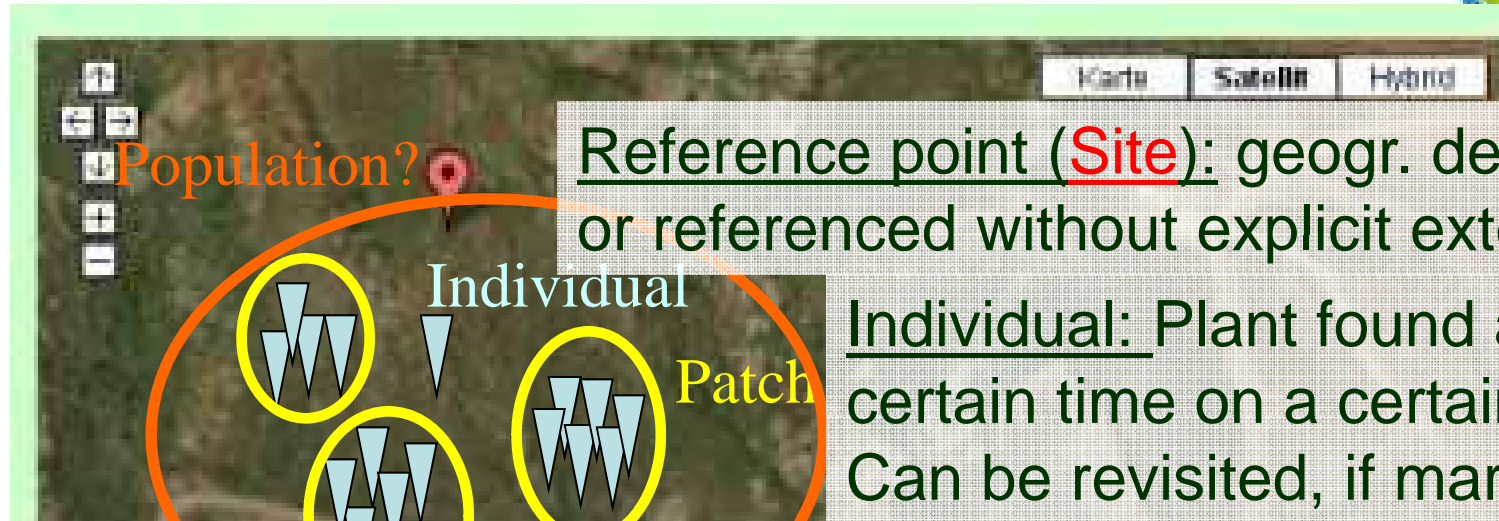
Location

<input type="button" value="clear"/>	PORTUGAL	▼	1 Countries
<input type="button" value="clear"/>	Continente	▼	6 Regions
<input type="button" value="clear"/>	Lisboa	▼	8 Provinces
<input type="button" value="clear"/>	Península de Setúbal	▼	18 Districts
<input type="button" value="clear"/>	Villa Fesca O	▼	32 Locations

Working with Historical Data: Suggestions for a Data Harmonisation Landscape



CWR Field Data: Levels of Aggregation



Reference point (**Site**): geogr. described or referenced without explicit extension.

Individual: Plant found at a certain time on a certain place. Can be revisited, if marked.

Patch: Agglomeration of individuals of the same species: on revisiting, if a recorded patch area overlaps with a previous recorded one, they are considered the same patch. After fusion one of them is considered successor of both.

Example: *B. patellaris*: Cabo de Gata, 2 km E of

Population definition: Individuals with sexual recombination.

- > defined genetically, not geographically
- > in the field we can record only individuals and patches
- > aggregation to populations needs genetic analysis

Levels of aggregation in the CyberTracker Application - natural structuration



The screenshot displays the CyberTracker application interface with three main panels illustrating levels of aggregation:

- MonitoringType Panel:** A list of monitoring options including Demographic monitoring, Individual sampling, Patch Monitoring, Start new species, Start new site, and Start new location. Red arrows point from 'Individual sampling' to the 'Individual' panel and from 'Patch Monitoring' to the 'CohortCount' panel.
- Individual Panel:** Shows data for a specific individual:

Individual No.	6	Health Condition	Good
Sex	female	Stage	43
	male		44
	monoecious		45
			46
Comment	Puccinia coronata		
- CohortCount Panel:** Shows a summary table of counts across different life stages:

Seedling Stage (0-19)	Juvenile Stage (20-39)	Flowering Stage (40-69)	Senescent Stage (70-100)
46	11	87	19
47	12	88	20
48	13	89	21
49	14	90	22

At the bottom of the interface, there are input fields for 'Patch length (m)' (value: 12) and 'Patch width (m)' (value: 4), along with navigation icons and a footer logo for AEGRO.

Levels of aggregation in the CyberTracker Application – experimental designs



The screenshot displays the CyberTracker application interface, which is organized into several panels and windows. On the left, a vertical navigation menu lists various actions under the heading 'ActionType':

- Define monitoring plot
- Count species in transect
- Single species monitoring
- Start new site
- Start new location

Two red arrows point from the 'Define monitoring plot' and 'Single species monitoring' items in the menu to their respective windows in the main application area.

The main application area is divided into several windows:

- ActionType**: A menu window listing the actions.
- MonitoringTarget**: A window for defining monitoring targets, showing 'MonitoringPlot' and 'Help' buttons, and a 'Count species in plot' action.
- MonitoringPlot**: A window for defining monitoring plots, showing 'MonitoringPlot' and 'Help' buttons, and a 'Count species in plot' action.
- ReferencePoints**: A window for defining reference points, showing 'ReferencePoints' and 'Help' buttons, and a 'Count species in plot' action.
- Transect**: A window for defining transects, showing 'Transect' and 'Help' buttons, and a 'Count species in plot' action.
- AvenaNumbers**: A window for recording Avena numbers, showing 'Count Avena' and 'Help' buttons, and a list of Avena species with their corresponding counts.

The **AvenaNumbers** window displays the following data:

Species	Count
damascena	0 0 0
falua	0 0 5
hirtula	0 0 0
insularis	0 0 1
longiglumis	0 1 0
ludoviciana	0 2 2
macrostachya	0 0 0
magna	0 0 0
murphyi	0 0 5

The **Transect** window shows the following information:

- Transect No: 0 0 1
- Transect length (m): 45
- Record start and end point with white arrow. Go to start counting with next.

The application interface includes a bottom navigation bar with various icons for navigation and data management.





Thanks for your attention



Work of the Location and Site Interpreter



Locality String:

Clay soil along bank of canal at Port-du-Collet, 2km S of Bourgnuf-En-Retz, Loire-Atlantique County.

AdministrativeUnit:

Location String (NUTS, LAU):

FRA, Region: Ouest, Province: Pays de la Loire, District: Loire Atlantique, Location: Bourgneuf en Retz.

Site:

Site name:	Port-du-Collet
DistanceFromLocation:	2
DistanceUnit:	km
DirectionFromLocation:	S
Description:	Clay soil along bank of canal

