Digital Botanical Gardens Initiative

Who are we ?

UNIFR · unine·

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- Jardin Botanique de Neuchâtel (JBN)

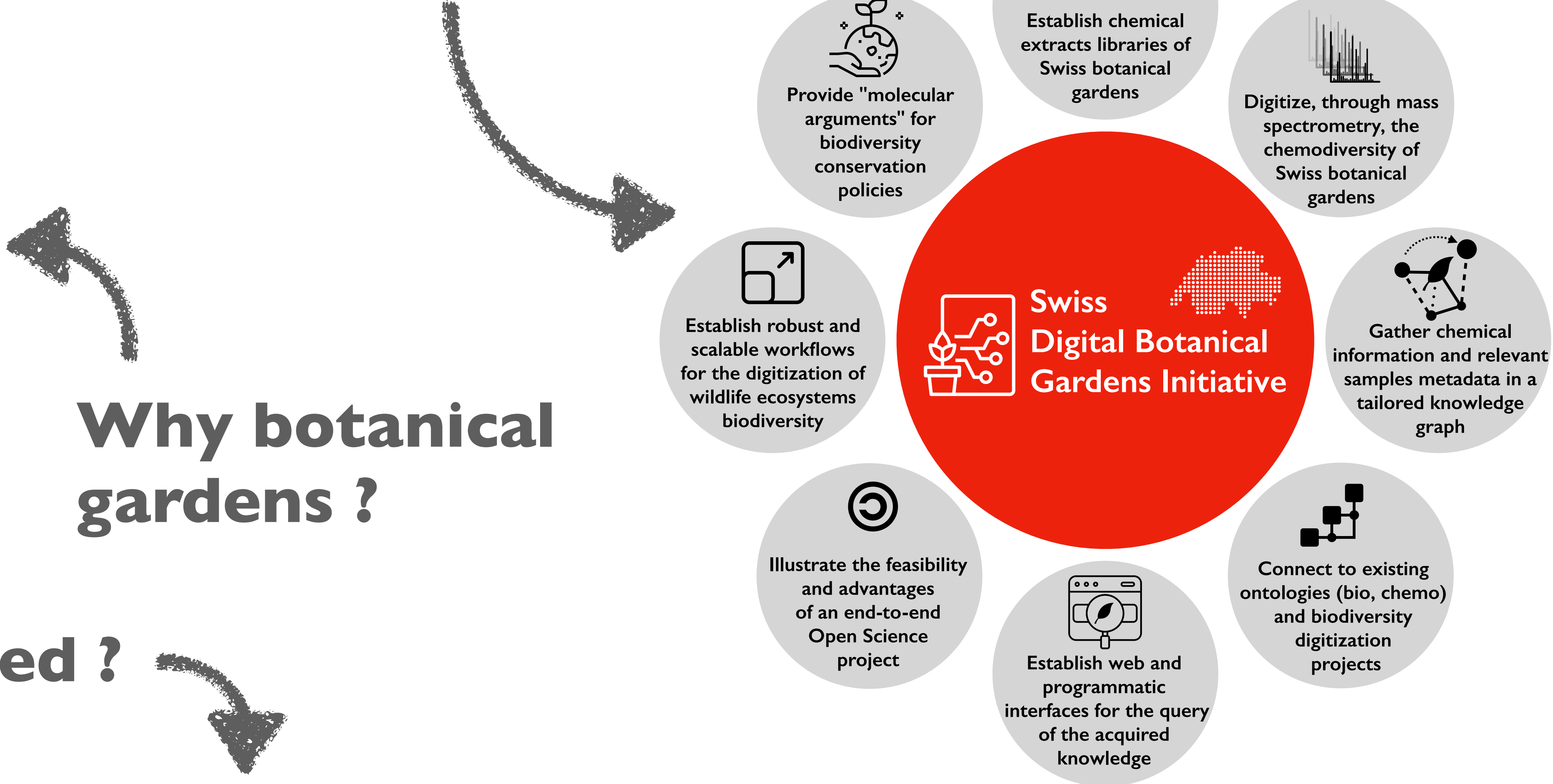https://github.com/digital-botanical-gardens-initiative
https://www.dbgi.org/dendron-dbgi/

Electronic version of this poster
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What are our main goals ?

Swiss Digital Botanical Gardens Initiative

- Establish chemical extracts libraries of Swiss botanical gardens
- Digitize, through mass spectrometry, the chemodiversity of Swiss botanical gardens
- Provide "molecular arguments" for biodiversity conservation policies
- Gather chemical information and relevant samples metadata in a tailored knowledge graph
- Establish robust and scalable workflows for the digitization of wildlife ecosystems biodiversity
- Connect to existing ontologies (bio, chemo) and biodiversity digitization projects
- Illustrate the feasibility and advantages of an end-to-end Open Science project
- Establish web and programmatic interfaces for the query of the acquired knowledge

Why botanical gardens ?

Wildlife ecosystems		
Diversity (species)	●●●●●
Sampling (easiness of)	●○○○○
Functions (understanding of)	●○○○○
Conditions (control of external)	●○○○○

Botanical gardens		
Diversity (species)	●●●○○
Sampling (easiness of)	●●●○○
Functions (understanding of)	●●○○○
Conditions (control of external)	●●●○○

Laboratory plants		
Diversity (species)	●○○○○
Sampling (easiness of)	●●●●○
Functions (understanding of)	●●●○○
Conditions (control of external)	●●●●●

How will we proceed ?

physical objects — **digital objects**

Botanical gardens → listing → Species list → taxonomic resolving → Phylogeny (OPEN Tree of Life, BotaLista)

Specimens → sampling → metadata collection → Sampling metadata
Specimens → metadata collection → Specimens metadata (iNaturalist, GBIF) → Relational Database → NocoDB interface

Dried plants collections → conservation → metadata collection → Dried Plants & Extracts metadata

Chemical extracts collections → extraction → metadata collection

Chemical extracts collections → mass spectrometry based digitization → MS data → spectral annotation → spectral organization → Molecular networks, MEMO fingerprints, Chemical structures

Plant Traits Ontology, WIKIDATA, ChEBI Ontology → Swiss DBGI KnowledgeGraph

Swiss DBGI KnowledgeGraph → Web interface, Programmatic interface (API) → Users community (Researchers, botanists, curators, public etc.)