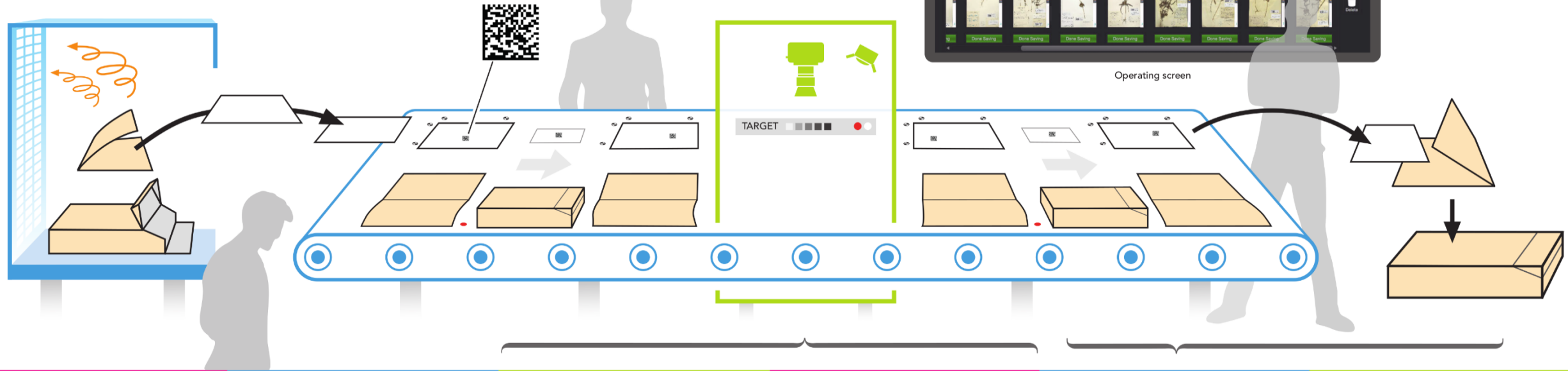


Sharing experiences on rapid digitization of herbarium specimens by conveyor belt

SwissCollNet Workshop Bern, 19.01.2024

Katja Rembold & Christian Sprecher





1 Preparation

- Selection of boxes
- Extract vapor
- Apply box barcode
- Apply cover barcode

2 Place material on conveyor belt

- Spread on the conveyor belt
- Multisheet token
- Straighten
- Apply sheet barcode

3 Digitizing

- Read barcode
- Multisheet yes/no
- Apply ICC profile
- Readout color
- Readout sharpness
- Feedback → retake

4 Processing

- Rotating
- Cropping
- Readout target
- Multisheet color code
- Merge metadata to CSV file format
- Save deliverables

5 Packing

- Order remains intact
- Logistic management
- Return material

6 Metadata entry

- Cover & label description
- Look-up lists
- Linking to databases
- Multisheet processing

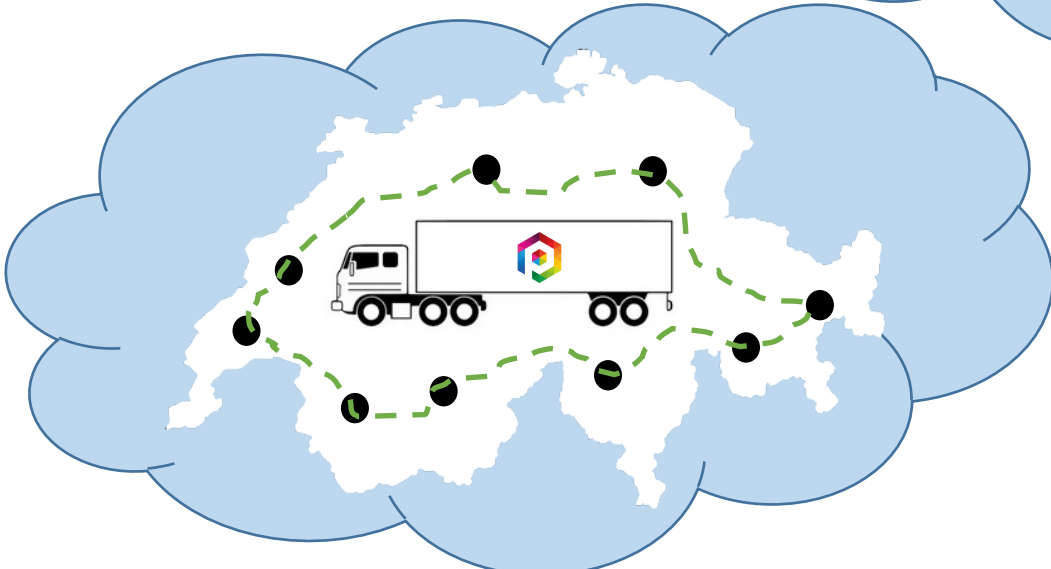
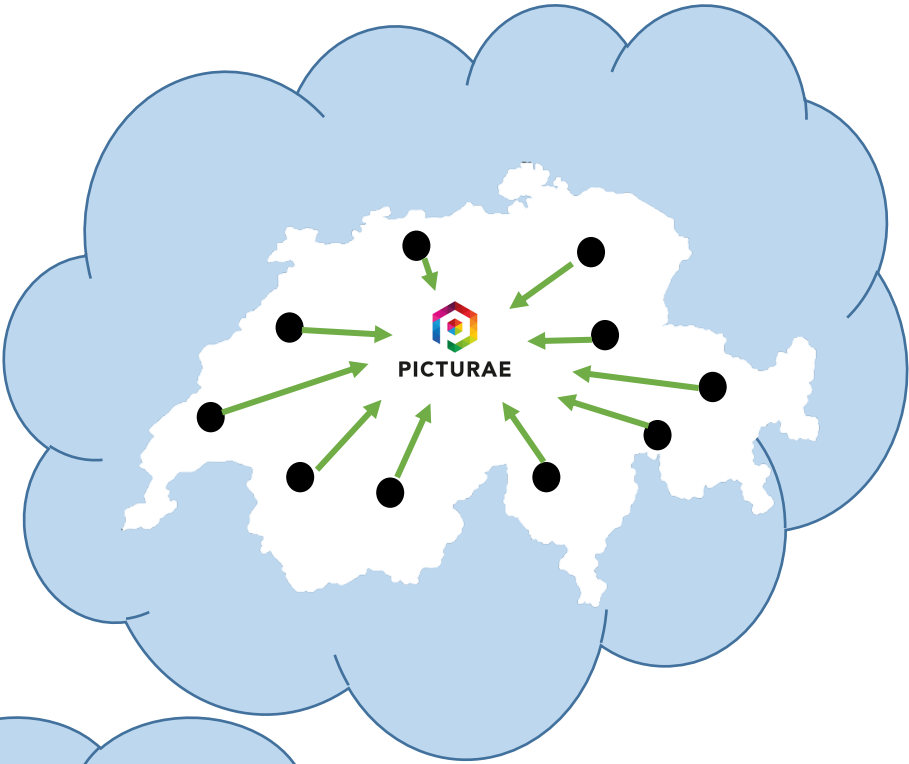
Background



L'herbier vaudois 2.0
des plantes séchées au Big Data

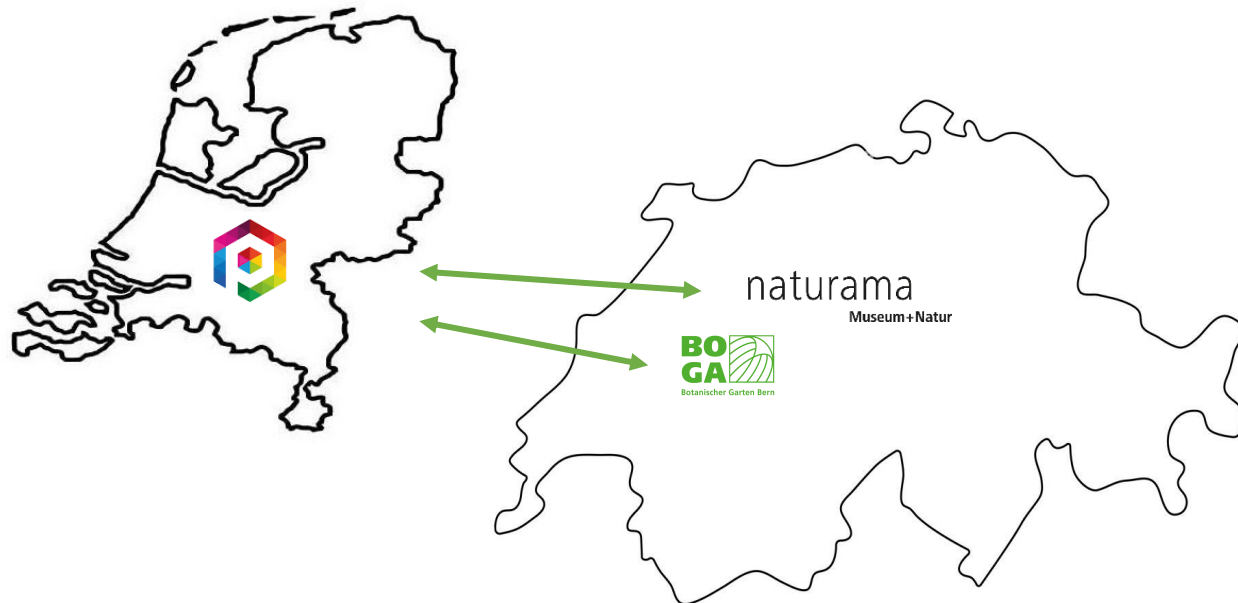
Exposition
26|13
février avril
2018

Places de Milan, Montriand, LAUSANNE
Tous les jours de 10h à 18h
Entrée libre



Background

- First online meeting with Picturae on **28th September 2021** with 11 institutions
- Not necessarily suitable for all collections
- 2 project partners: naturama &  Botanischer Garten Bern
Museum+Natur
- SwissCollNet project SCN122-BE
- 05.2022 – 04.2024



**UNI
FR**



Preparations

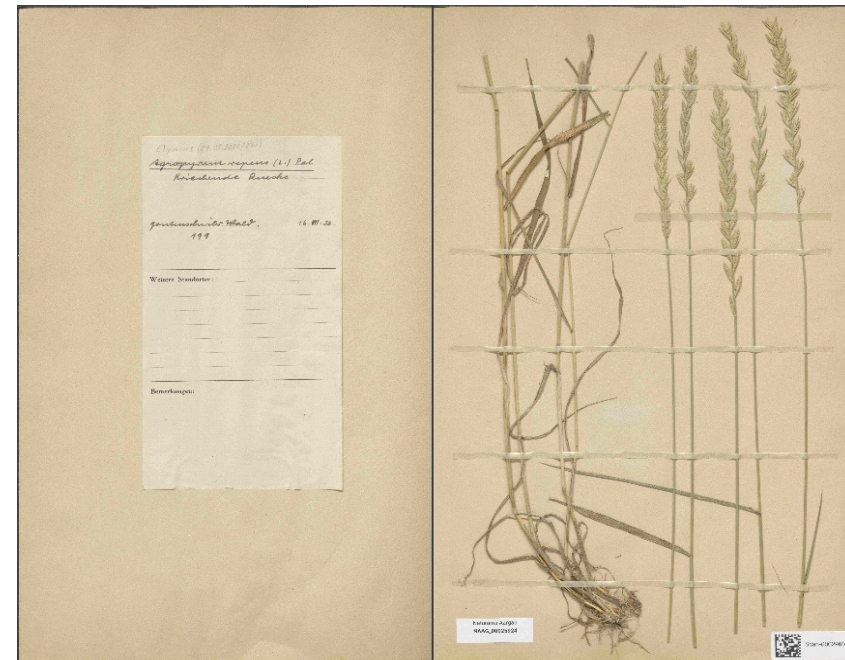
- Employment of two staff members
- Set up the contract and workflow with Picturae
- Delays due to paternal leave of project manager and management changes at Picturae
- Meantime: packing and cleaning of collections
- New accurate cost calculation with Picturae
- Contract revised and signed in August 2022



Ruth Weber (Naturama)



Sven Imdorf (BOGA)



Envelope cover

Envelope inside

Timeline photographing process

Transport to Netherlands (1 day)

Start Digitizing

Transport back to Switzerland (1 day)

BOGA coll. finished (n= 57'000)

NAAG coll. finished (n= 34'394)

NAAG digitization interrupted

Resumption of NAAG digitization

19.08.22

03.10.22

26.10.22

11.11.22

13.04.23

17.05.23

07.06.23



- Transportation and preparation
- Photographing
- Digitization interrupted



Conveyor belt



Photo station

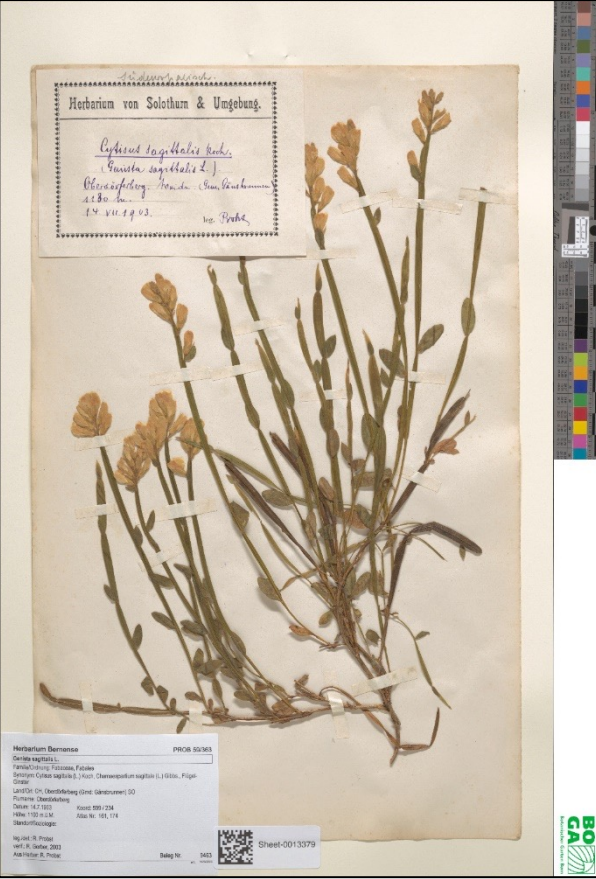
Photographs

naturama
Museum+Natur

- 34'394 herbarium specimens in 9 weeks
- Tabeltop scanner speed: 477 specimens per day



- 56'794 herbarium specimens in 3 weeks
- Conveyor belt speed: 3800 specimens per day



Data transcription

Started with delivery of first photographs in October 2022

Extremely time consuming process:

1. Creating new database
2. Connecting new and old inventory numbers
3. Transcribing label data information
4. Taxonomic update
5. Georeferencing (?)

disposition in collection TR_CRFATIMESTAMP 03/11/2022 06:16:52

CVR_NOTIZEN <Solothurner Herbar Etikette>

rightsHolder © Herbarium Bernense collectionCode Men Herbarium

basisOfRecord PreservedSpecimen institutionCode BERN

acceptedNameUsage Lilium maritagon L. Lilaceae

datasetName Solothurner Herbarien: Herbarium Hermann. scientificName Lilium maritagon L.

ORG_FULLLABEL Herbarium Bernense HUES 26/135; Lilium maritagon L. kingdom Planseae

Family/Ordnung: Ulmaceae, Liliales; class Ulmopsida

verbatimLocality Land/Ort: CH, Belp, Belpberg BE; Flurname: Belpberg; Datum: 25.5.1898; Koord: 604 / 193; Höhe: 520 m ue.M.; Atlas Nr: 264;

verbatimElevation 520 m.ue.M.

verbatimCoordinates 504 / 193

verbatimCoordSystem metres

verbatimSRS CH1903 / LV03

country CH Switzerland

continent Europe

stateProvince Bern

NPA & municipality 3123 Belp

locality Belp

Location Belpberg

habitat n.s.

minElevationInMeters 520

maxElevationInMeters 842

georeferStatus CP

IMG_DIGIDATE 03.11.2022

IMG_DIGILOC C:\Users\iam22c899\OneDrive -

IMG_DIGINUM Sheet-0017846.JPG ; Sheet-0017846.CR3

IMG_DIGITISED BY Picturea

BOGA Botanischer Garten Bern

UNUSED IN THIS LAYOUT BUT PRESENT IN THE DATABASE

WebViewerLink https://map.geo.admin.ch/?lang=en&topic=

nateUncertaintyInMeters 1000

Zusatzdaten-Erfassung

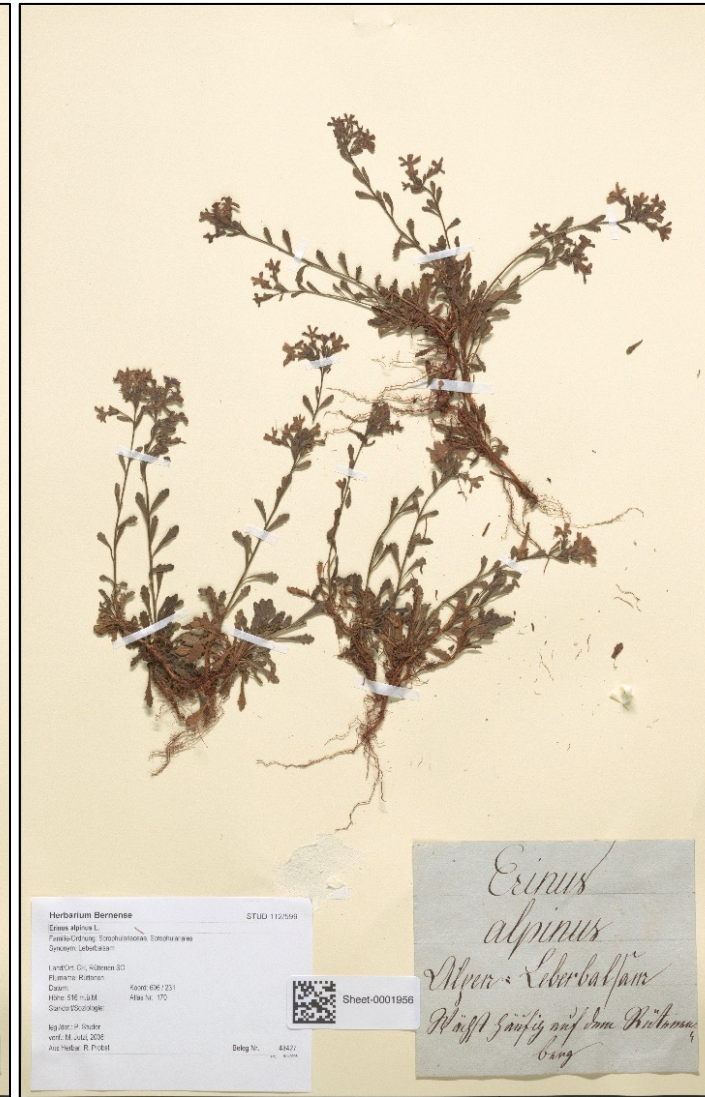
Neue Person erfassen

Neues Taxon erfassen

Neuen Ort erfassen

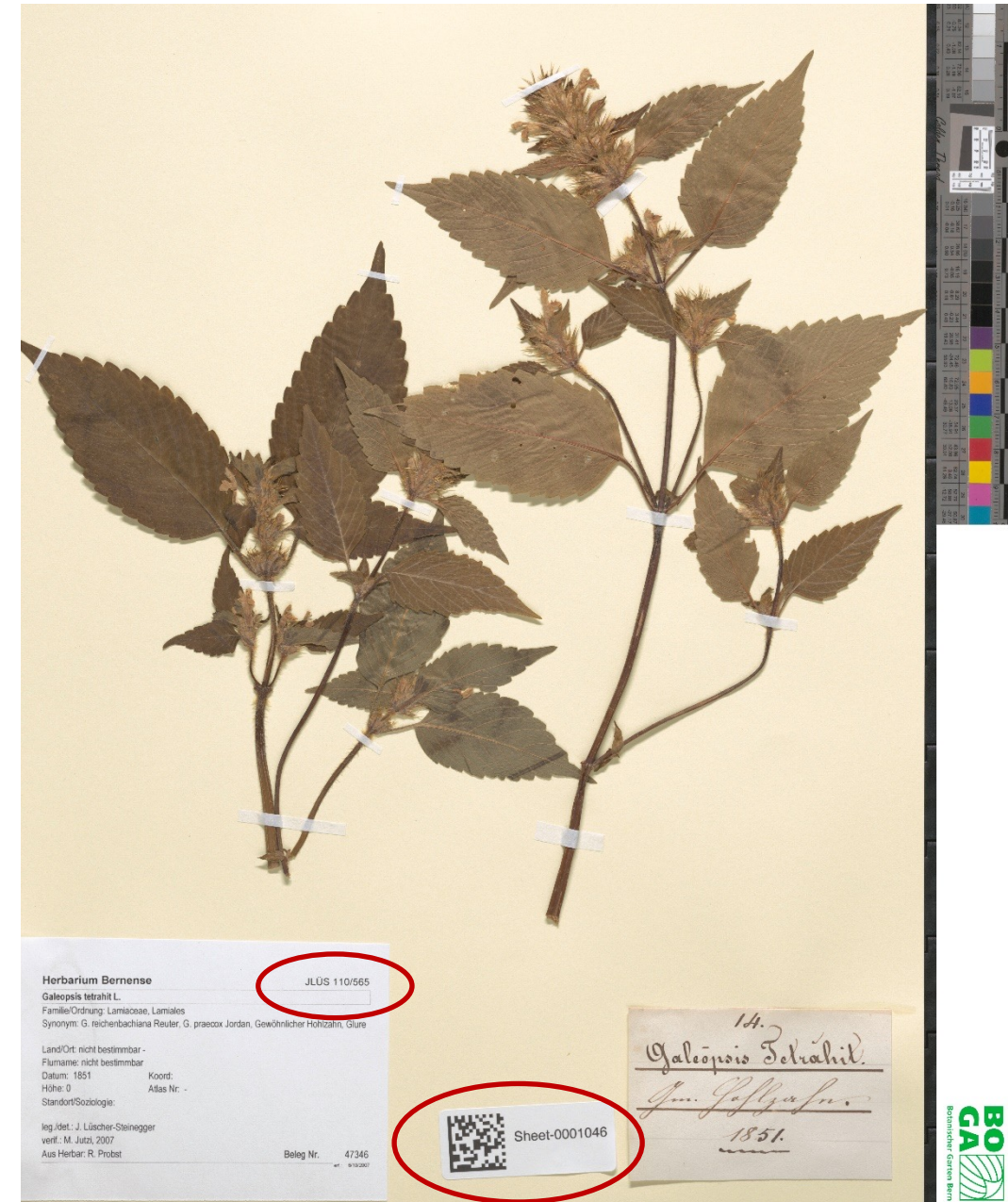
Problems encountered

- Differences in initial and final cost calculations
- Heterogeneity of specimens in Naturama collection
- Digitization-stop due to biocides
- Extra costs for pin removal
- Very low error rate (< 0.03%)
- Transcription takes longer than estimated



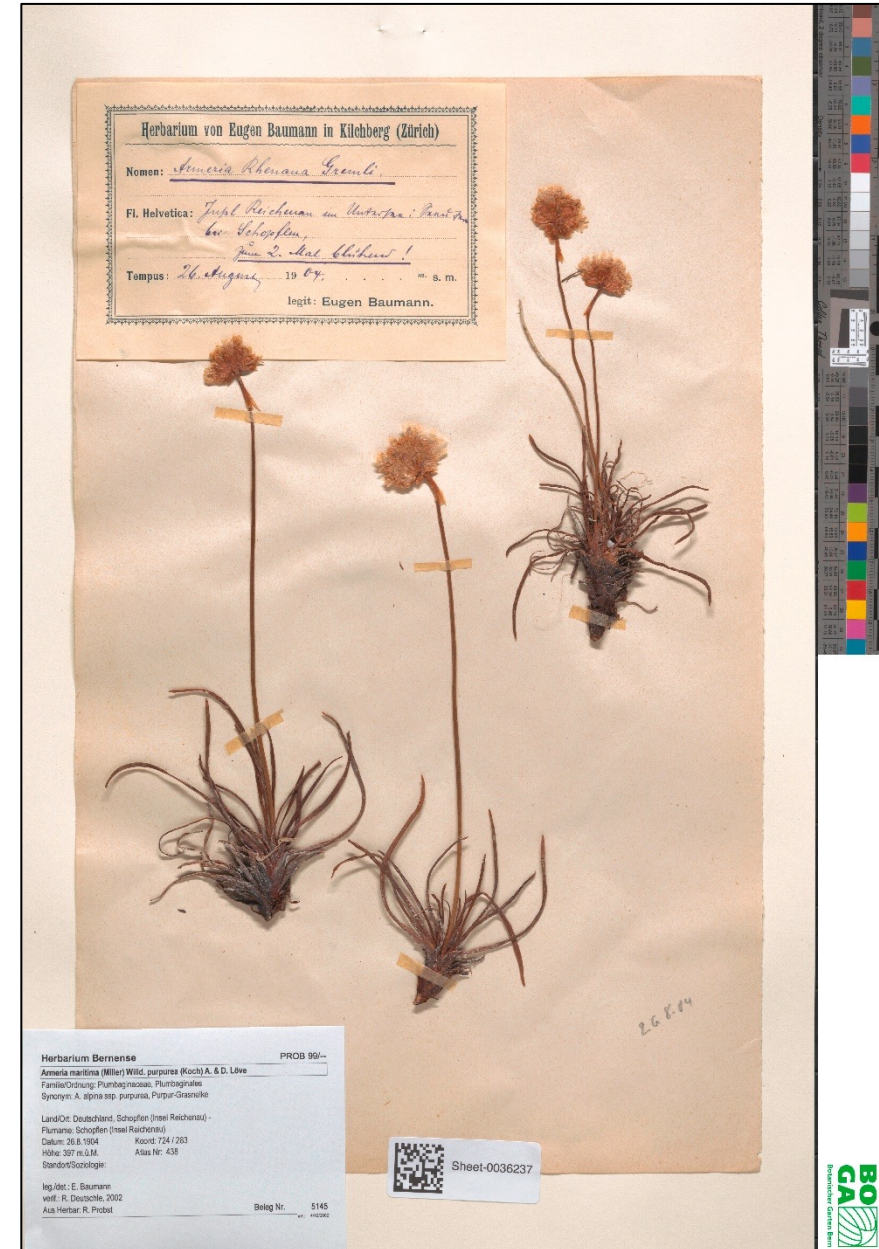
Successes

- 91'394 herbarium sheets photographed
- Collaboration of institutions saved transport costs and emissions
- Up to 40 times faster than with photo station
- Python code from Anne Morel



Conclusions

- Saves time and money
- Good quality photographs
- Low error rate
- Conveyor belt not suitable for all kind of specimens
- Photographing process is really fast – entire process adds up
- Communication is important
- **Would do it again!**



Swiss natural history collections network (SwissCollNet)

naturama

Museum+Natur

u^b

UNIVERSITÄT
BERN



Botanischer Garten Bern

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Burgergemeinde
Bern

SWISSLOS
*Fonds des
Kantons Solothurn*

Thank you very much for your attention!