

An automated mass-digitisation infrastructure for natural history collections

*Tero Mononen, Julien Pignolet, Mahdi Sajid, Janne Karppinen,
Jouni Hiltunen, Riitta Tegelberg & Hannu Saarenmaa
Joensuu, Finland, www.digitarium.fi*

Digitarium is a service centre established in 2010 for outsourcing digitisation. The system shown here is available both as service in Joensuu, Finland, and infrastructure that can be delivered to other locations.

We have developed an intelligent, automated digitisation "assembly line". The main objectives have been:

- Speed
- Multi-functionality
- Image quality

Current speed of digitisation is 100-300 images per hour, depending on the set-up.

The system supports multiple set-ups. Currently implemented are:

- Herbarium sheets, imaged in two parts
- Insects, separate image of the insect and the labels



Maximum image quality is reached using high-end digital cameras in optically isolated photography environment.



The digitisation process

1 Loading zone

An operator tags the samples with QR-code containing a unique URI. Then he/she loads the input conveyor belt with up to 5 trays carrying the samples. The wave of trays is moved to the buffering queue by pressing of a button.



2 Buffering queue

The operator's actions are not time critical, because a buffering queue feeds the imaging station, maximising the throughput of the system. Queuing is controlled by the imaging station.



3 The imaging station

The incoming samples are recognised by image pattern matching. They are imaged automatically using predefined settings for the current sample type. The operator is able to monitor the digitisation process in real time.



4 Unloading

The operator unloads the samples from another buffered conveyor belt.



5 Transcribing

Further steps of the digitisation take place from a backlog of images, which have been categorised by organism group and geography. Due to the large number of images, crowd-sourcing is an interesting option, which is being tested.

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