



Intelligent technology for automating digitisation



Tero Mononen European GBIF Nodes Meeting 2013, 6.3.2013, Joensuu

Leverage from
the EU
2007-2013

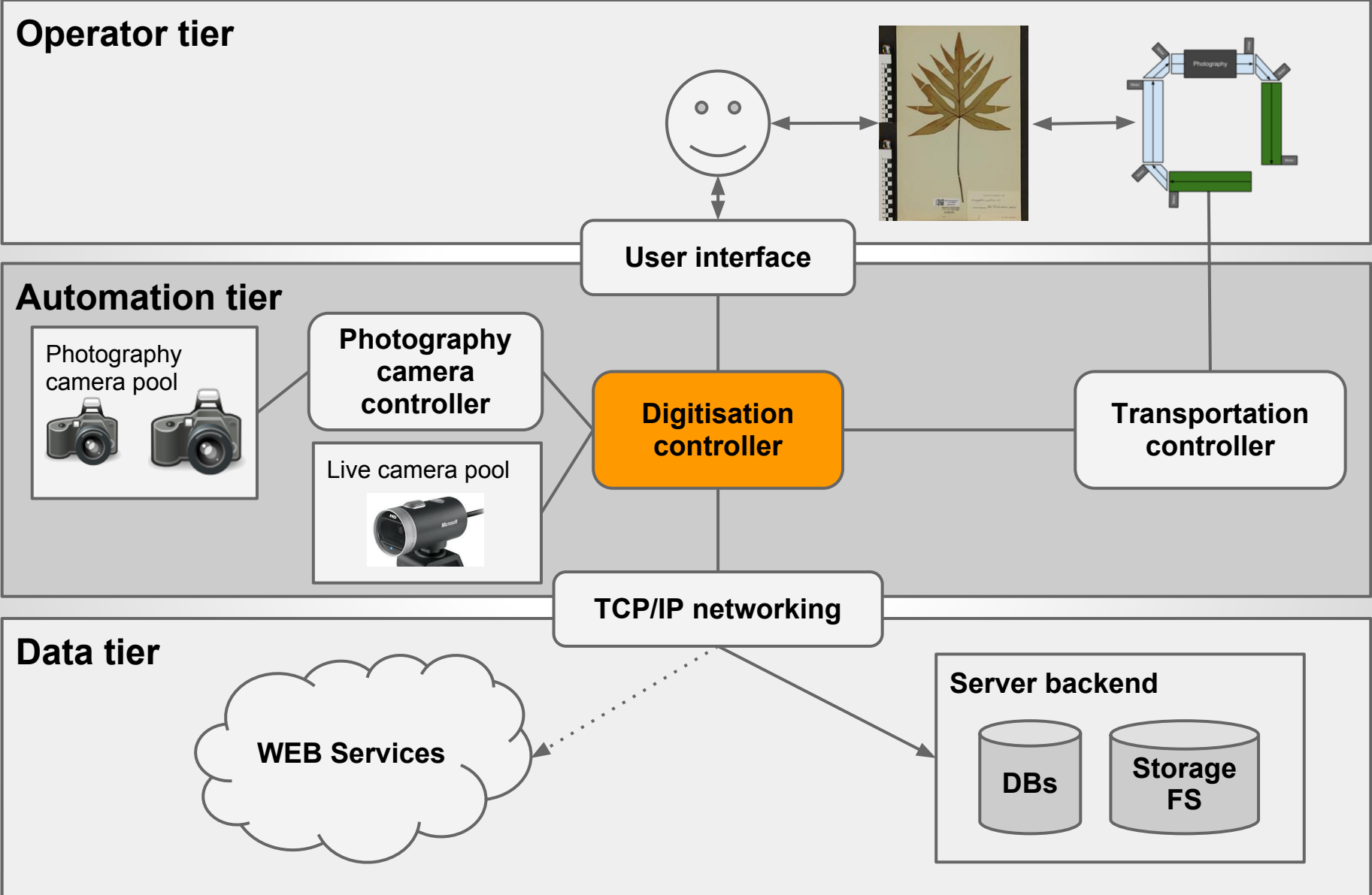


Technology

- Basis
 - Maximizing imaging throughput by automation
 - Cost-effective
 - Customizable
 - Modular
 - COTS components
- Main components
 - Conveyor belt system
 - Digital cameras
 - PCs
- Digitisation environment
 - Servers
 - Network communication



Digitisation tiers



User interface for operator

Machine vision Manual control **Stop** **Controller** Uploading Archiving Archive

H_general_sanikkaiset


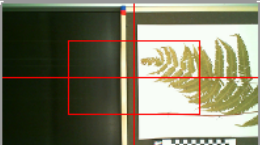
126 Samples 256 Photos
120 Average samples per hour
17/20/24 Digitisation times (min/avg/max)

Outcome Photo monitor

Uploading **Set done** **Uploading: Off**

Time	ID	Group	Images	Q-Color	Q-Sharp	State
2013-03-04 09:24:12	H.1697897	H_general_sanikk...	2			Imaged
2013-03-04 09:23:33	H.1711867	H_general_sanikk...	2			Imaged
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H.1697899



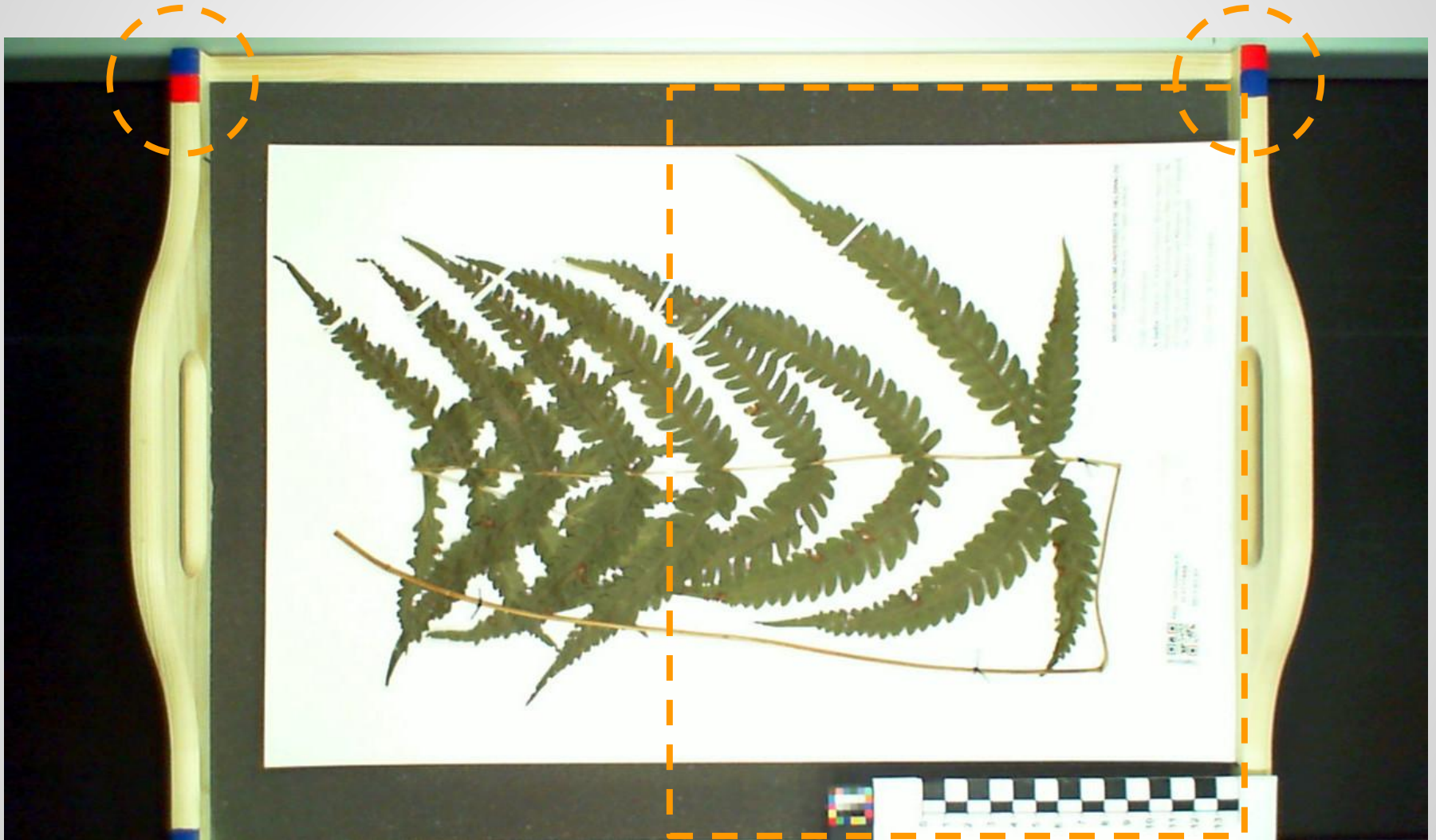
Preview Log

Machine vision

- An interface between software and real world
- Based on 1280 x 800 px real-time video stream
- 10 FPS
- Camera above the conveyor belt

Machine vision

Plant example



Machine vision

Insect example

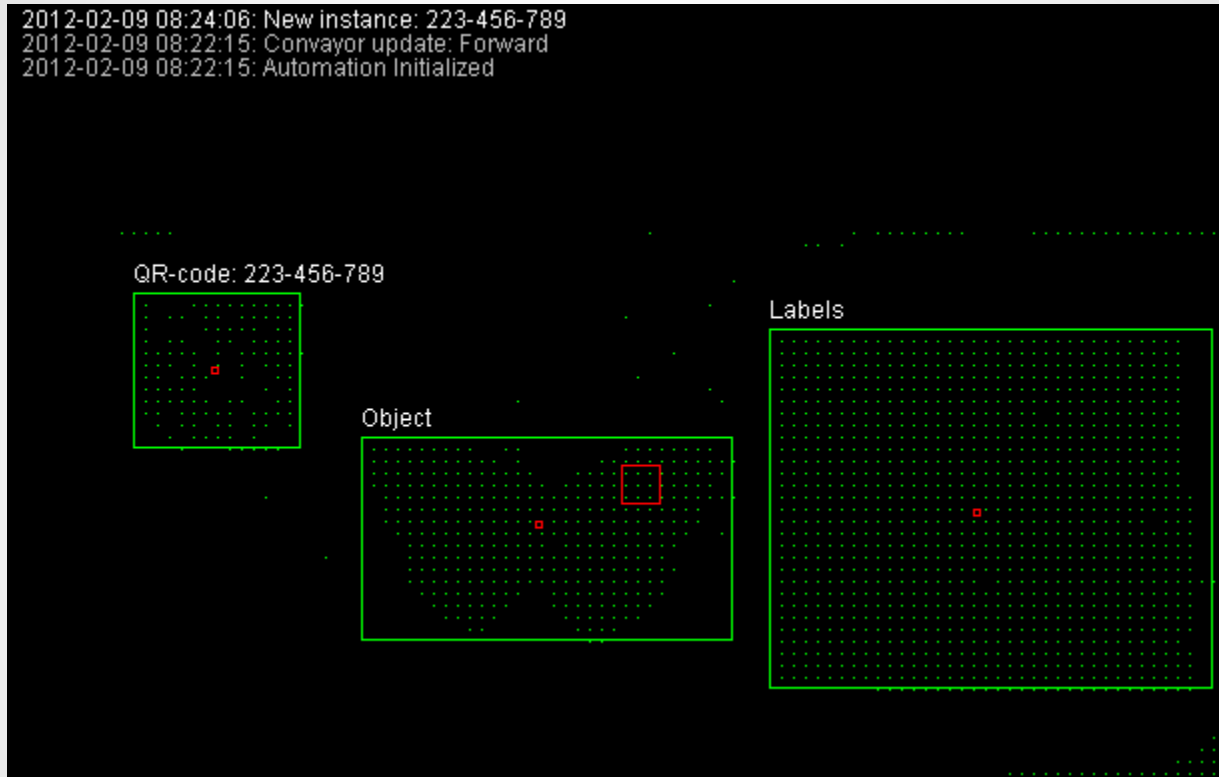


Image analysis

6048 x 4032 px



Modes

Building sample specific functionalities

- *A Mode* is a predefined series of actions in digitisation for specific sample type
- Currently implemented modes
 - Plant mode
 - Two photos per sample (top and bottom)
 - 1 cm overlapping area
 - Insect mode
 - Search of insects and focusing points
 - Two photos per insect (insect and labels)
- Easy to add new modes

to be continued in demonstration...

Thank you!