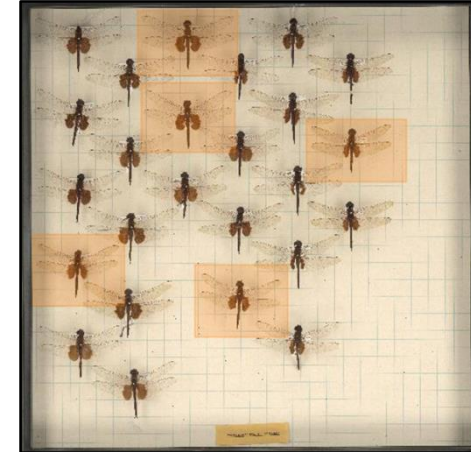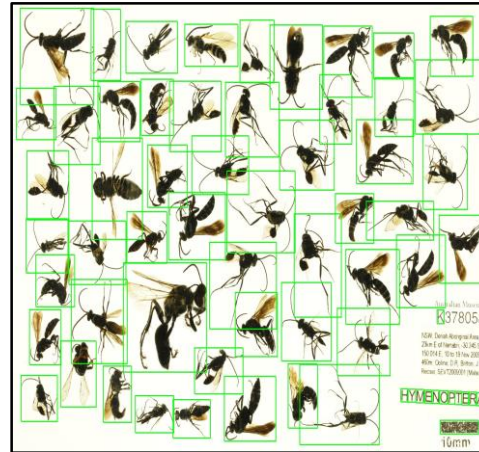# Drawer digitisation of biological collections and its future

Digitisation of Biological Collections : Australia, Canberra - April 2015

Nicole Fisher

"Existing taxonomic processes have served us well for centuries but are clearly inadequate for the challenge at hand.

The taxonomic community must rally around a common vision……

It is time to approach taxonomy as a large scale international science."

Quentin Wheeler, Peter Raven and Edward O. Wilson
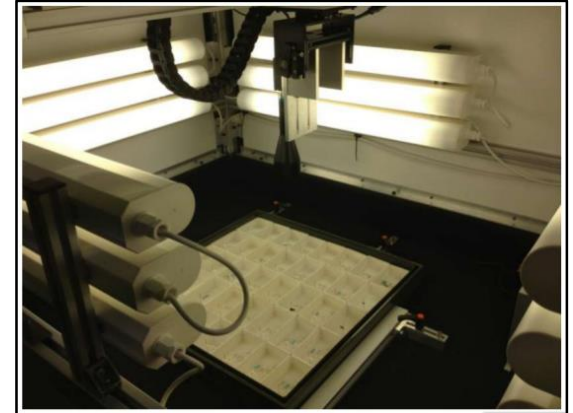
CSIRO

Outline :

- **Drawer digitisation in Australia**

- **Global achievements & initiatives**

- **Challenges & opportunities**

- **Acknowledgements**

Drawer digitisation begins
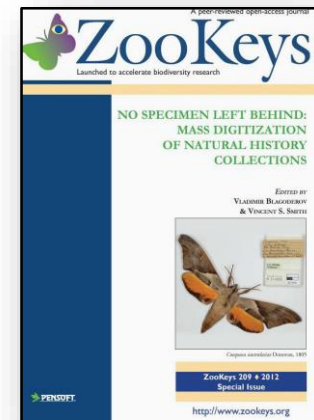
~ 2011   Imaging of insect drawers

- ANIC – Australian National Insect Collection
- QM - Queensland Museum
- AM - Australia Museum

2012   Zookeys Special Edition : Global Digitisation

(includes ANIC's whole drawer project in Australia)

2013   Developed international digitisation standard workflows

(iDigBio's Pinned Things in Trays and Drawers Working Group)

2013   Established with iDigBio
"International Whole-drawer Digitisation Interest Group"
https://www.idigbio.org/wiki/index.php/Drawer_Imaging_Group

Collection browser

Extraction work from drawer images

- Image segmentation – insect veins (Changming Sun)
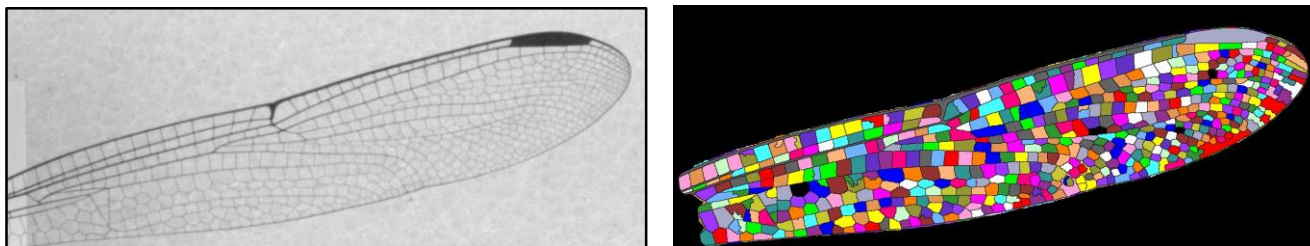
- Insect soups (Paul Flemons & Changming Sun)
automated algorithms to sort insects based on size

CSIRO

Drawer segmentation & annotations

- computer visualisation
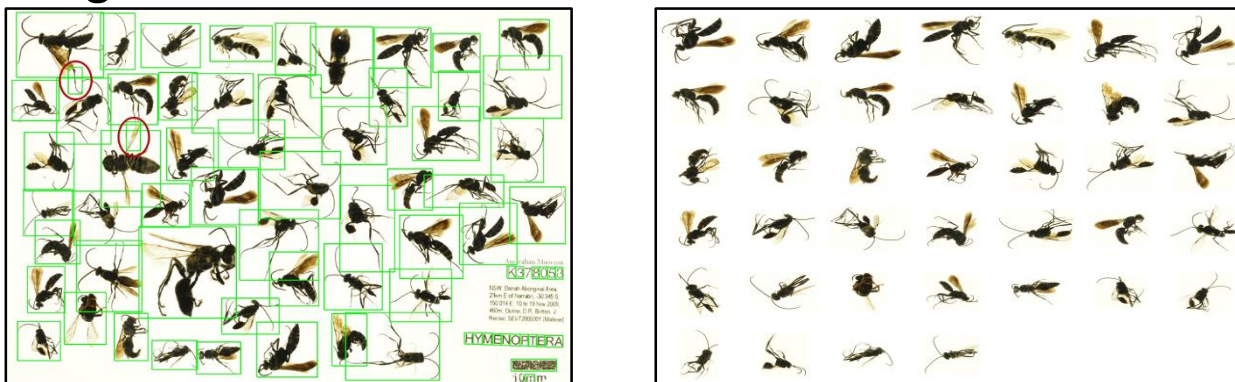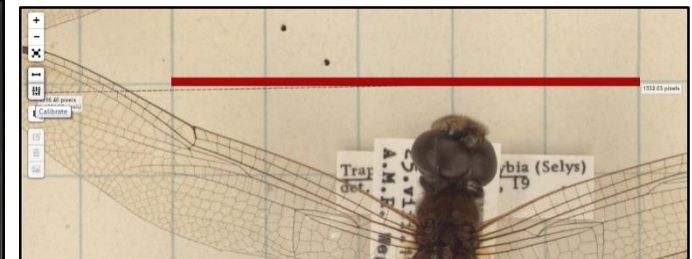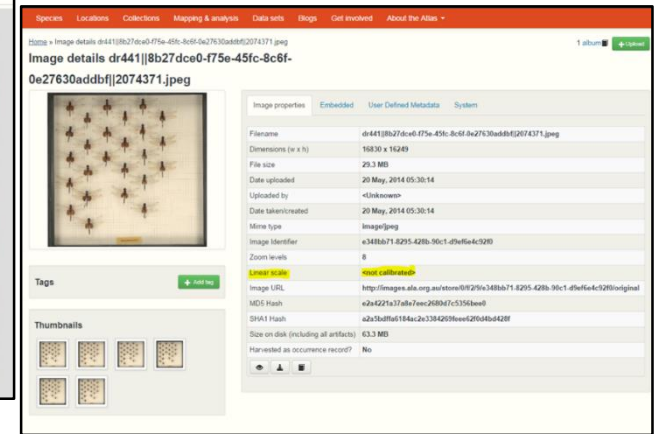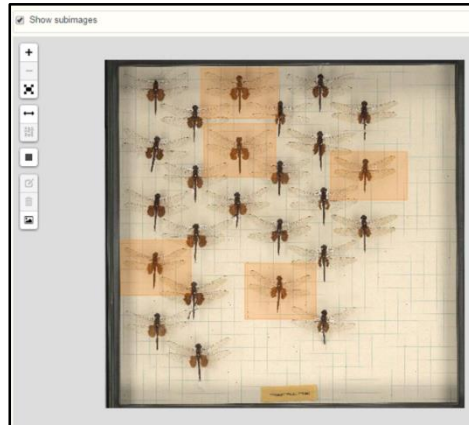
- mapping & analysis tools

- segmentation specimens
  out from drawers

✓Crowdsourcing
these activities ?

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Beyond the Box competition

- Technology that increases the speed and accuracy of digitising a drawer of insect specimens and their associated data

- To solve a problem that is hindering scientific research and innovation – the inability to quickly and accurately digitise specimens and associated data in a drawer of insects

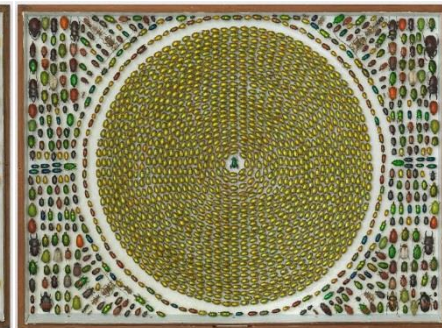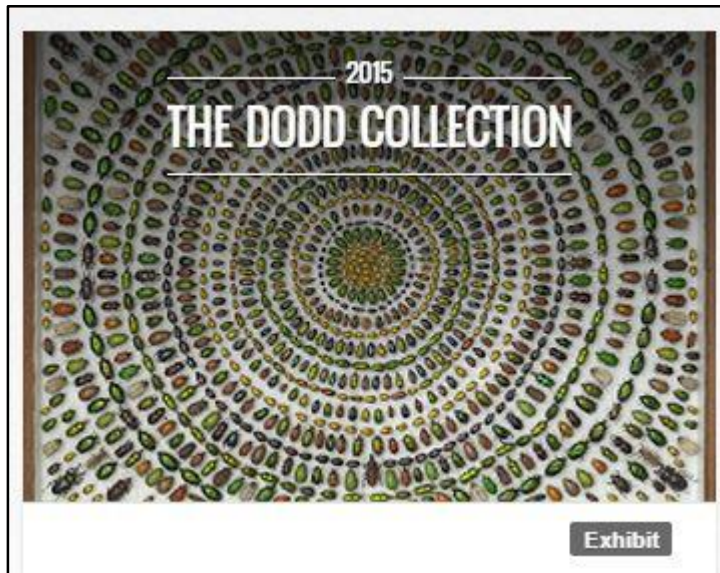**Digitisation competition - $1 million**

Google Cultural Institute

Discover exhibits and collections from museums and archives all around the world. Explore cultural treasures in extraordinary detail, from hidden gems to masterpieces.

Create your own galleries and share favorite finds with friends.

New! Museums, galleries, archives: discover **Google Open Gallery**, powerful free tools to bring your content online.

Google **Cultural Institute**

Google **Cultural Institute**

- Create your own gallery to compare, view drawers

Open Drawer Project

- annotate
- crowdsource sub imaging of the drawer
- integrate type images associated with the drawer
- searched by taxon = drawers from different collections exposed side by side
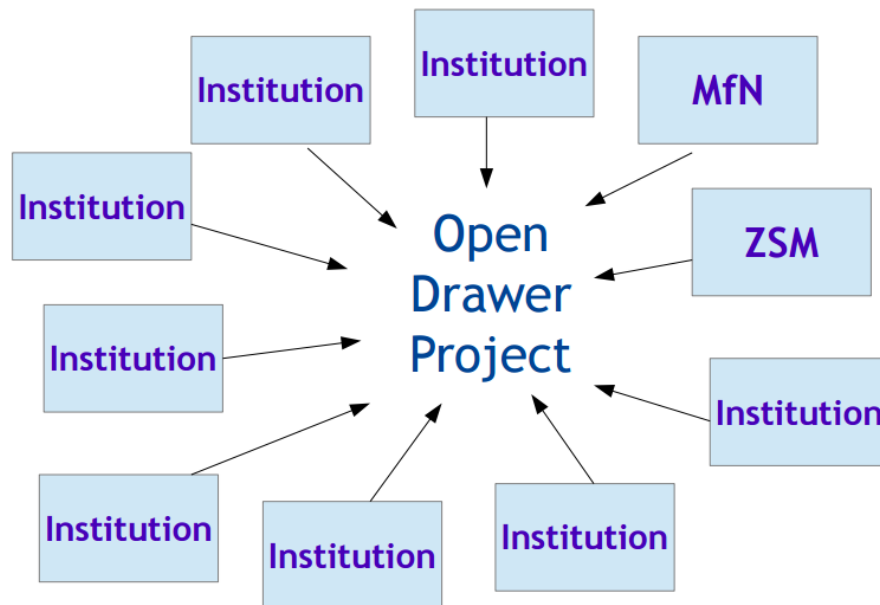
Project partners

Berlin Museum portal, partners of the ERDF pilot projects
Botanic Garden and Botanical Museum of the University of Berlin
University of Kansas, USA
Natural History Museum in Stockholm, Sweden
Naturalis Biodiversity Center Leiden, The Netherlands
Natural History Museum London, UK
Atlas of Living Australia, Canberra, Australia
SmartDrive Huntingdon, UK
FU Berlin
Konrad Zuse Center for Information Technology (ZIB)
Leibniz composite Goportis
Nestor Network of Expertise

Registration of drawers & specimens

- **GPS located drawers**
    …..access the collection from a physical distance using ARCIS
- **QR / barcodes**
- **RFID chips on pins**
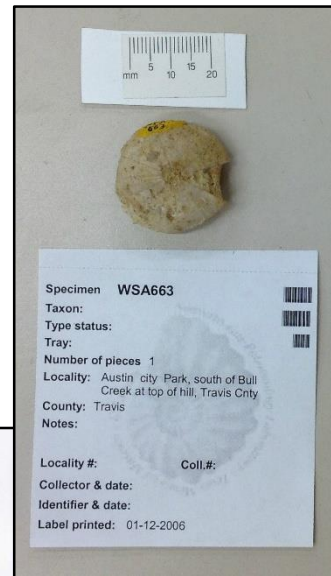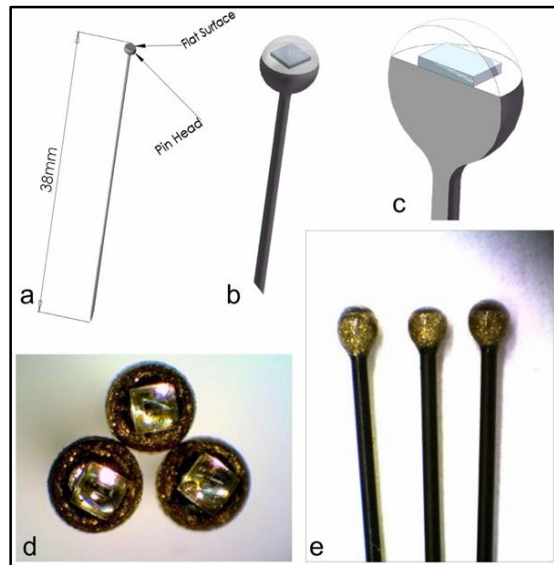
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Challenges & opportunities

- Don't have the complete solution in drawer digitisation

- 2 way data feed- link annotations made on whole drawer images to individual specimen <u>AND</u> send that information back to the source data base.

- Strategic approach to digitisation partnerships & stakeholders

- Lack of a workforce/resources to digitise

- Various models for digitisation as we work in a digitised collaborative world

outsource it   do it ourselves

volunteers   internships   crowd source it

digitise on demand   OR win a Million $ competition ☺

CSIRO

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Acknowledgements

- CSIRO
- ALA
- iDigBio

- Paul Flemons
- Changming Sun

- ALA Collection Browser
- Beyond the Box
- Google Cultural Institute
- Open Drawer Project

Thank you 谢谢

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Nicole Fisher

Australian National Insect Collection (ANIC)
CSIRO National Research Collections of Australia