Bundesministerium
Bildung, Wissenschaft und Forschung

Time Machine

Time Machine
pma focus 2021

Robert Sablatnig, TMD & CVL, TU Wien

21/10/2021

Zurück in die Zukunft: Von der Vision zur großen internationalen Organisation – Die Time Machine Organisation

Robert Sablatnig

Time Machine Organisation / Computer Vision Lab, TU Wien

Join us on a journey through time

Time Machine

Big Data of the Past

Time Machine

Robert Sablatnig, TMG & CVL, TU Wien
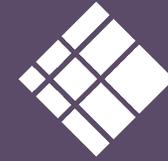4

Let´s build a Time Machine!

It should be possible ...

- To **move through time** as easily as we move through space

- To **simulate** possible futures / possible pasts

- To **integrate** historical data into people´s **everyday lives**

Time Machine: Challenges

- **Digital Humanities** invent **new tools** to **travel** not only in space, but also **through time**.
- Can we build "**Google maps**" of the past?
- Can we build "**Facebooks**" of the past?
- Can we build **time machines**?

What is needed?

We need not just novel technologies, but disruptive ones changing paradigms

PAST   FUTURE

- New technologies for a **scanning infrastructure** able to **digitize massive amounts** of objects

- Fundamental **breakthroughs** in **artificial intelligence**, **robotics** and **ICT**

- Unique **alliance** between the **best European players** in Humanities, sciences, technologies and culture
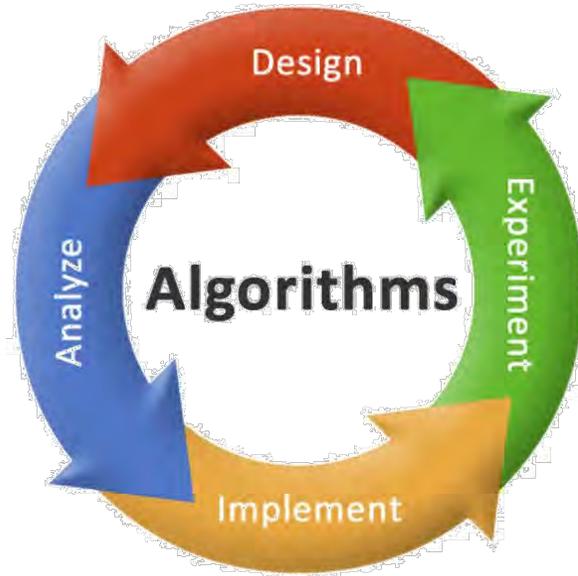
Technological Background of a Time Machine!
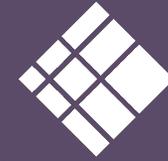
Time Machine & ICT

Smart algorithms that extract information and create knowledge from noisy, heterogeneous and complex data at massive scale like:
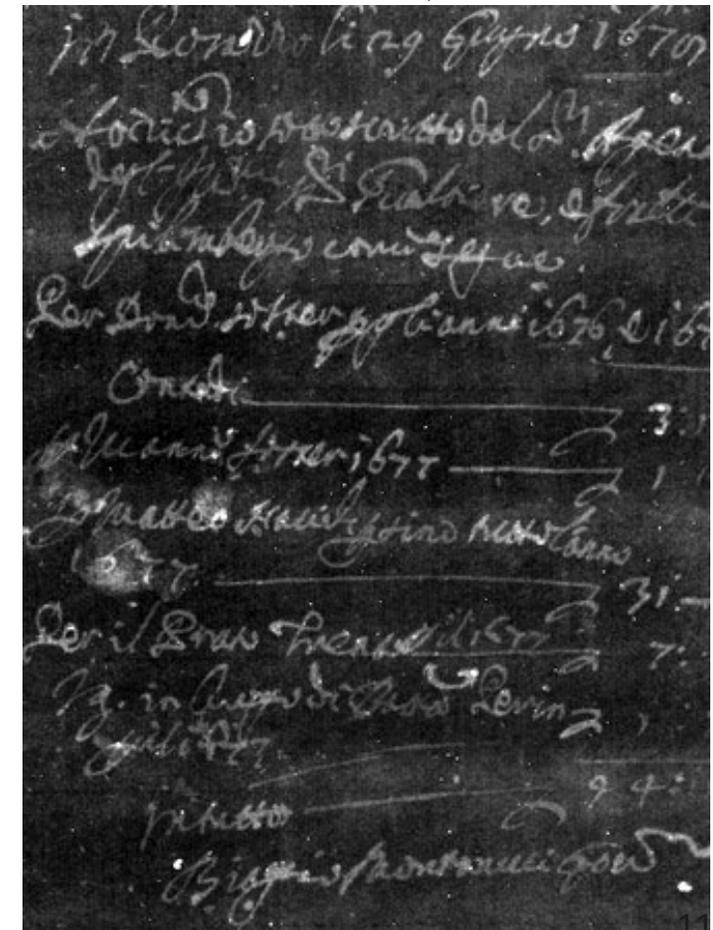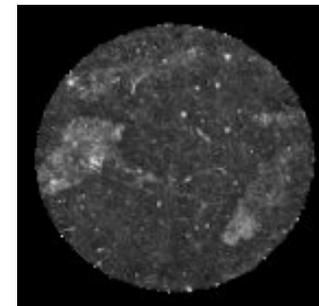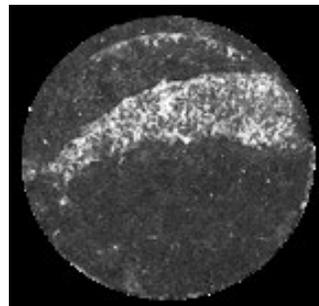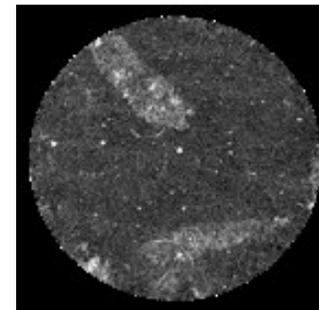
- Medieval manuscripts,
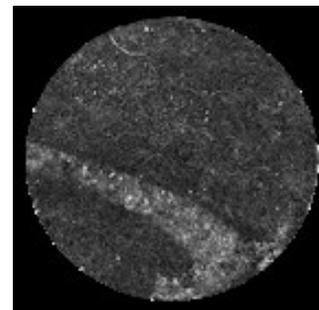- Collections of **objects** and cultural **artefacts**,
- Recent **smartphone** and **satellite** images,
- **Multimodal content** from websites and platforms.

Example: 3-D Computed Tomography

detector

turntable

X-ray source

Example: Content Extraction

Automatic transcription

READ / Transcribus:
- **R**ecognition and
- **E**nrichment of
- **A**rchival
- **D**ocuments

"more than two turnheys from morning to night, without

"allowing them leesure for any other employment:.

No 8. Page 26. "If the undertaking were not unauitable

"to my character and habits of life (says the worthy Magis-

-trate I would not hesitate to contract for the profits of

the prisoners labour, (if they were allowed to worh in

"their respective callings, and in such other labour as is

"proper for prisoners,) and to pay the County £400 per

Server | Ove

○ All pages ○ Pages (5): 1-5   Options default (case sensitive) ▾   Compare

Advanced Statistics

▾ Layout An

Method:

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Overall	7.34%	2.45%	94.87%	98.94%	93.35%	95.19%	0.9425992779783394

Page	Word Error Rate	Char Error Rate	Word Accuracy	Char Accuracy	Bag Tokens Precision	Bag Tokens Recall	Bag Tokens F-Measure
Page 1	5.68 %	1.31 %	95.17 %	99.24 %	94.63 %	95.17	0.9490084985835694 %
Page 2	12.03 %	3.16 %	91.6 %	98.49 %	89.77 %	92.36	0.9104385423100679 %
Page 3	6.14 %	1.23 %	94.95 %	99.21 %	94.37 %	95.18	0.9477351916376305 %
Page 4	11.0 %	3.96 %	91.87 %	97.92 %	89.61 %	92.05	0.9081376795076361 %
Page 5	4.61 %	2.02 %	97.56 %	99.55 %	96.05 %	97.96	0.9699350355038525 %

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File/Folder name: DocId_52494

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Hypothesis (HTR Text)

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Quick Compare

Compare Versions in Textfile

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▾ Other Tools

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Add Baselines to Polygons

Add Polygons to Baselines

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50 000+
Registered **Users**

8 000+
HTR AI **Models trained**

20+ Million
Pages processed

Example: Information Modeling

Robert Sablatnig, TMO & CVL, TU Wien
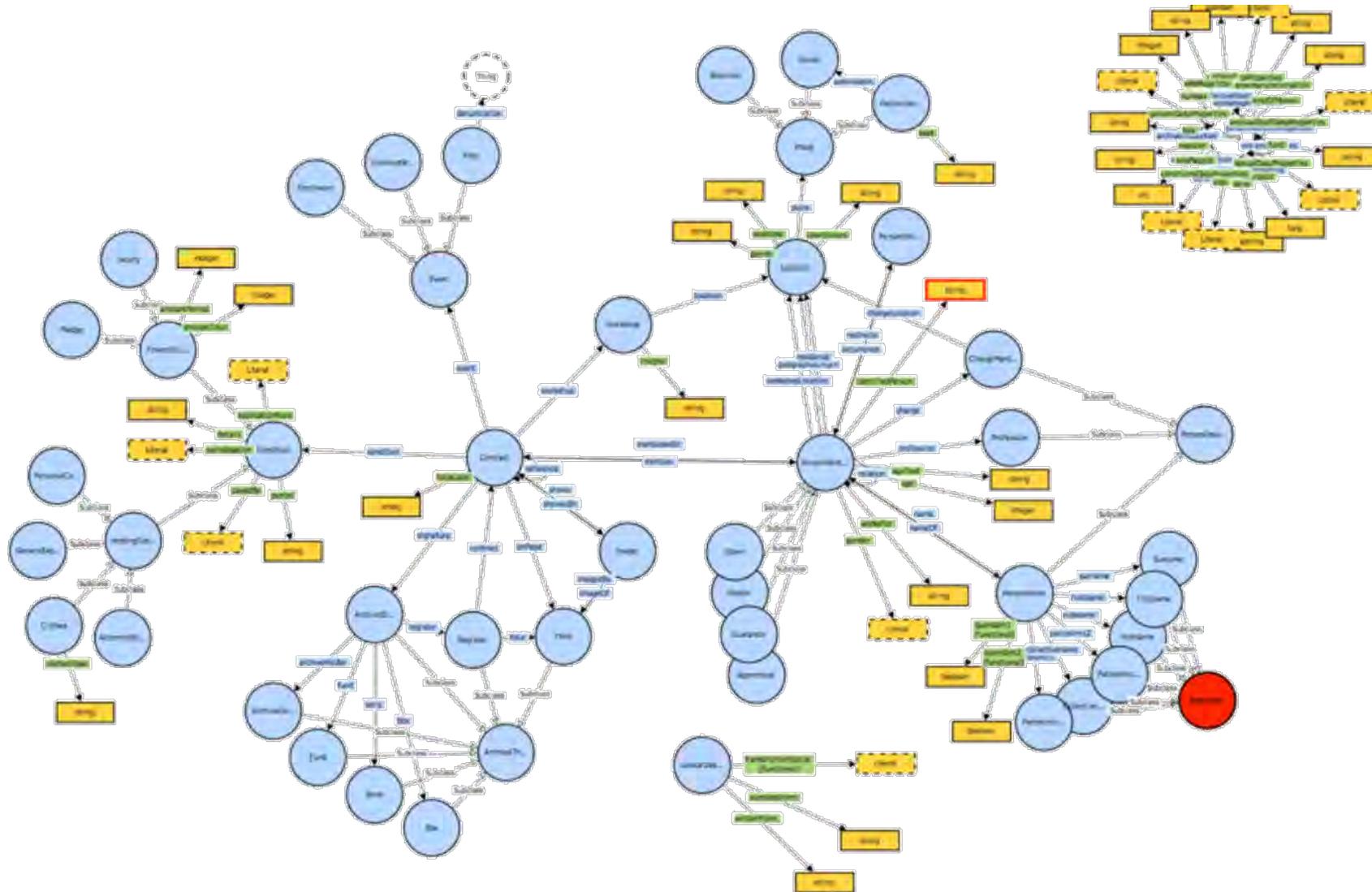
Example: Information System

ASVe, Avogaria di comun, Libro d'oro, reg. 58, c. 228

Battista Nani

Robert Sablatnig, TMO & CVL, TU Wien
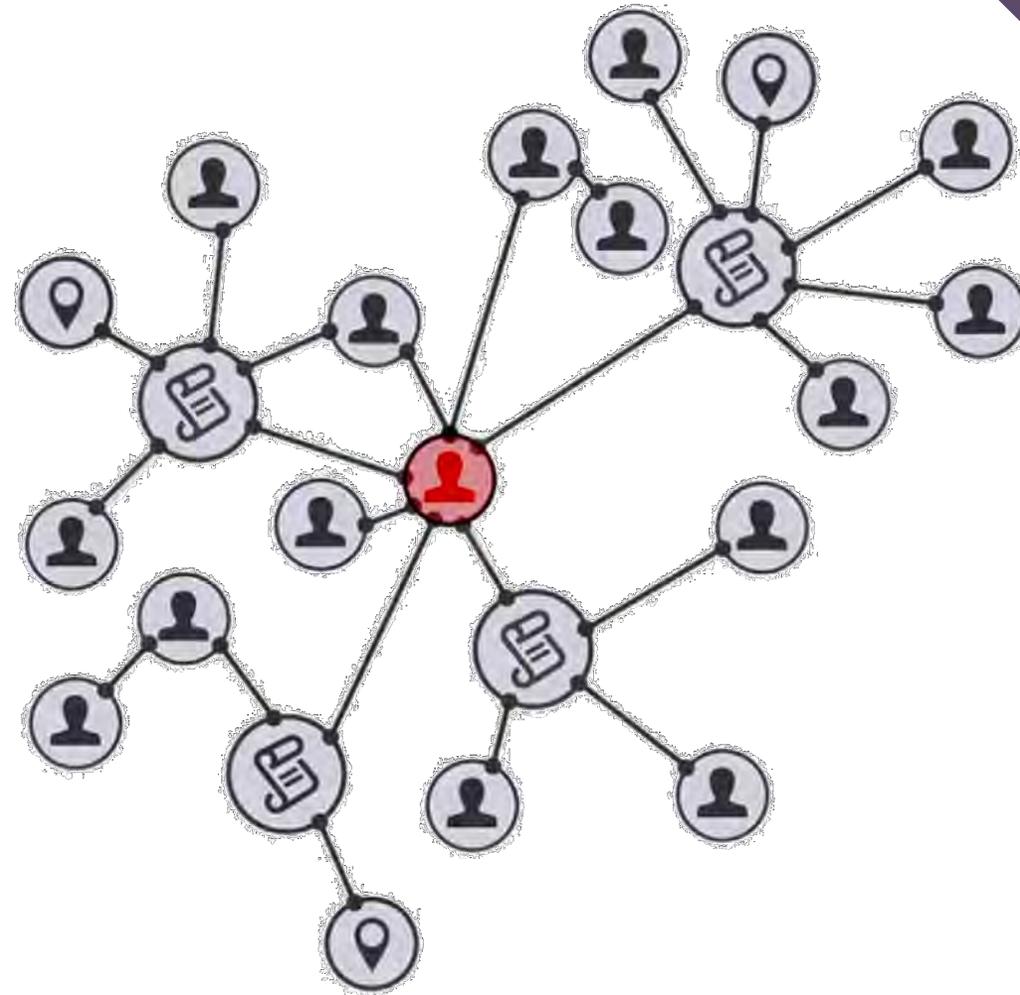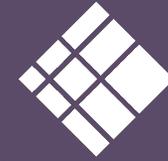
Time Machine is ...

First of all ...

... a strong vision for the technological future of cultural heritage!

History

A virtual time machine for Venice

- 2012: Starting point Venice Time Machine (Frederic Kaplan)
- 2017: Expanding project to Europe in general
- 2017: Request for consortium members (summer)
- 2018: "**F**(uture and) **E**(merging) **T**(echnologies) Flagships" - Program by EU (funding € 1 bn. per project / 10 years)
    - January – May 2018: **Preproposal** (selected out of 33)
    - May – November 2018: **2nd Preproposal** (selected out of 17 as **best project**)
- 2019: Coordination and Support Action (CSA)- project: final proposal with detailed roadmaps of activity (funding € 1 mn.)
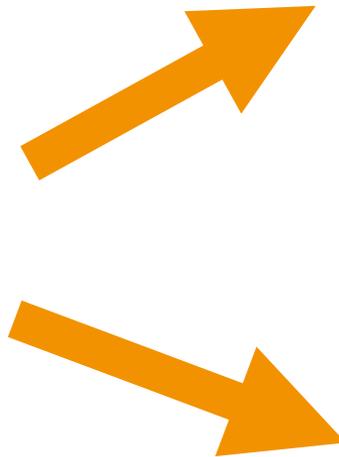- 2020: EU - FET Flagship Program canceled
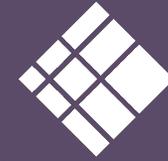
Organizational Structure 2019

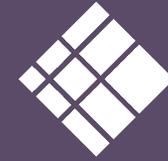1.3.2019 - 28.2.2020
CSA-project (Funding: 1 mn.)

Two levels

Sustainable organization:
Time Machine Organization

Time Machine Organization

Time Machine Organisation (TMO)

- Setting up TMO as a formal organization was crucial to **secure continuity** after the Time Machine **CSA** ended on 28th February 2020.

- **Primary aims**:
  - Secure **proper funding** after the CSA project ends.
  - **Personnel continuity** and a **smooth transition process** are absolutely vital for the future of Time Machine

Who is part of the organization?
A unique alliance of leading European institutions

Time Machine is conformed by …

- 600+ consortium members from 45 countries

- 226 of Europe´s top academic and research institutions

- 123 Private sector partners from SMEs to international companies

  - 127 Internationally-acclaimed **G**alleries, **L**ibraries, **A**rchives and **M**useums
  - 22 European institution bodies
  - 67 Civil society and industry associations
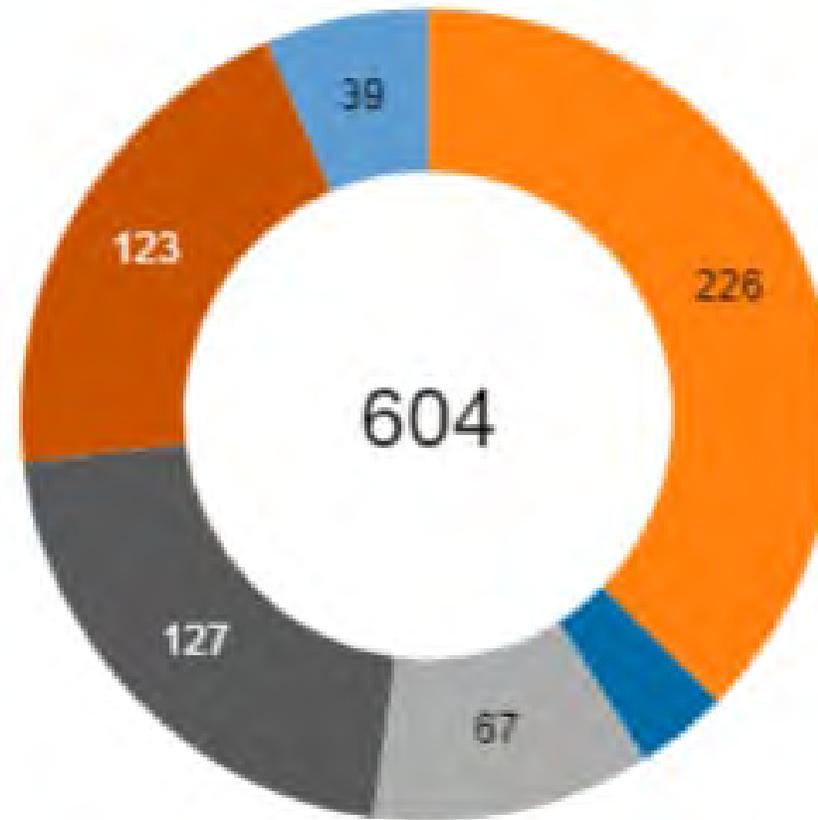
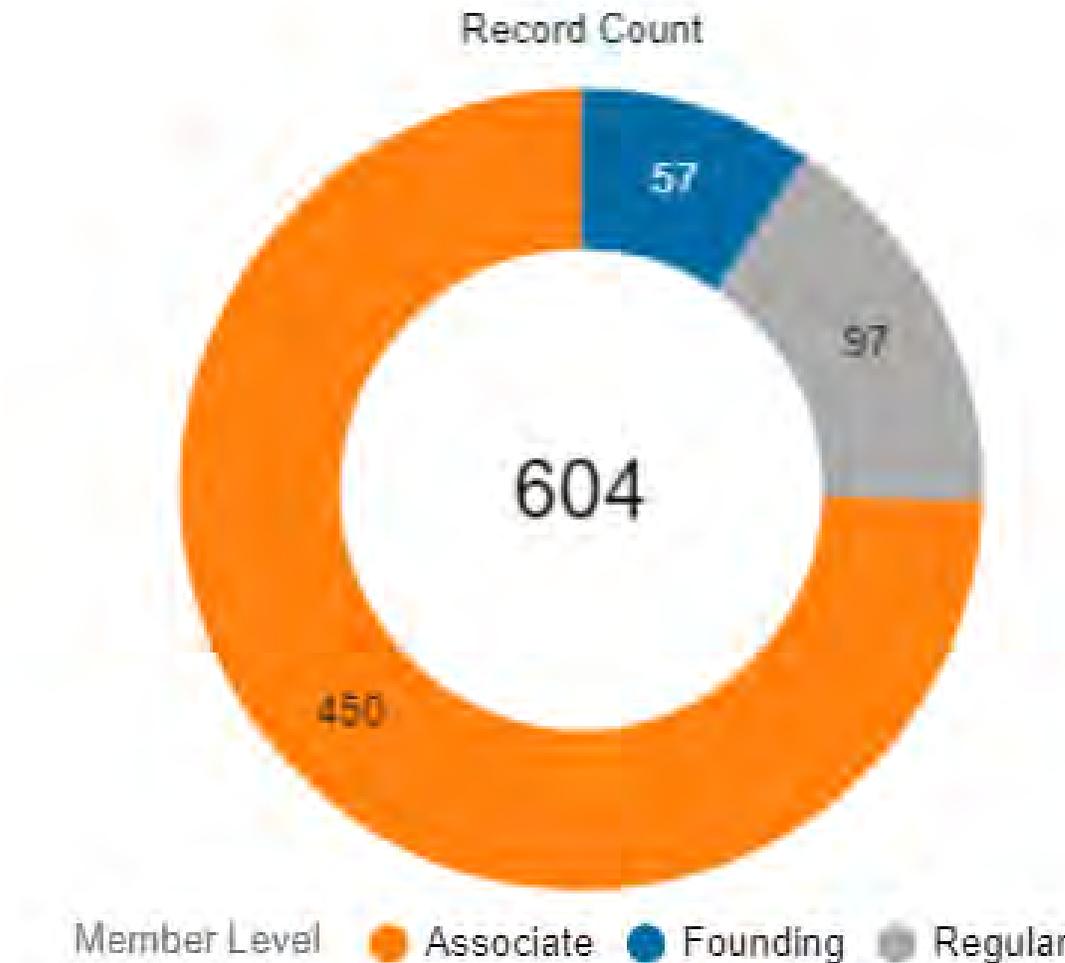Robert Sablatnig, TMO & CVL, TU Wien

The Time Machine Consortium

- Institution / Type

Legend:
- Civil Society Organisation
- GLAM
- Other
- Private or Industrial Sector
- Academic and Research Institution
- Associated Programme or Network

Values: 39, 123, 226, 127, 67, 604 (center)

The Time Machine Consortium

- Members

Record Count
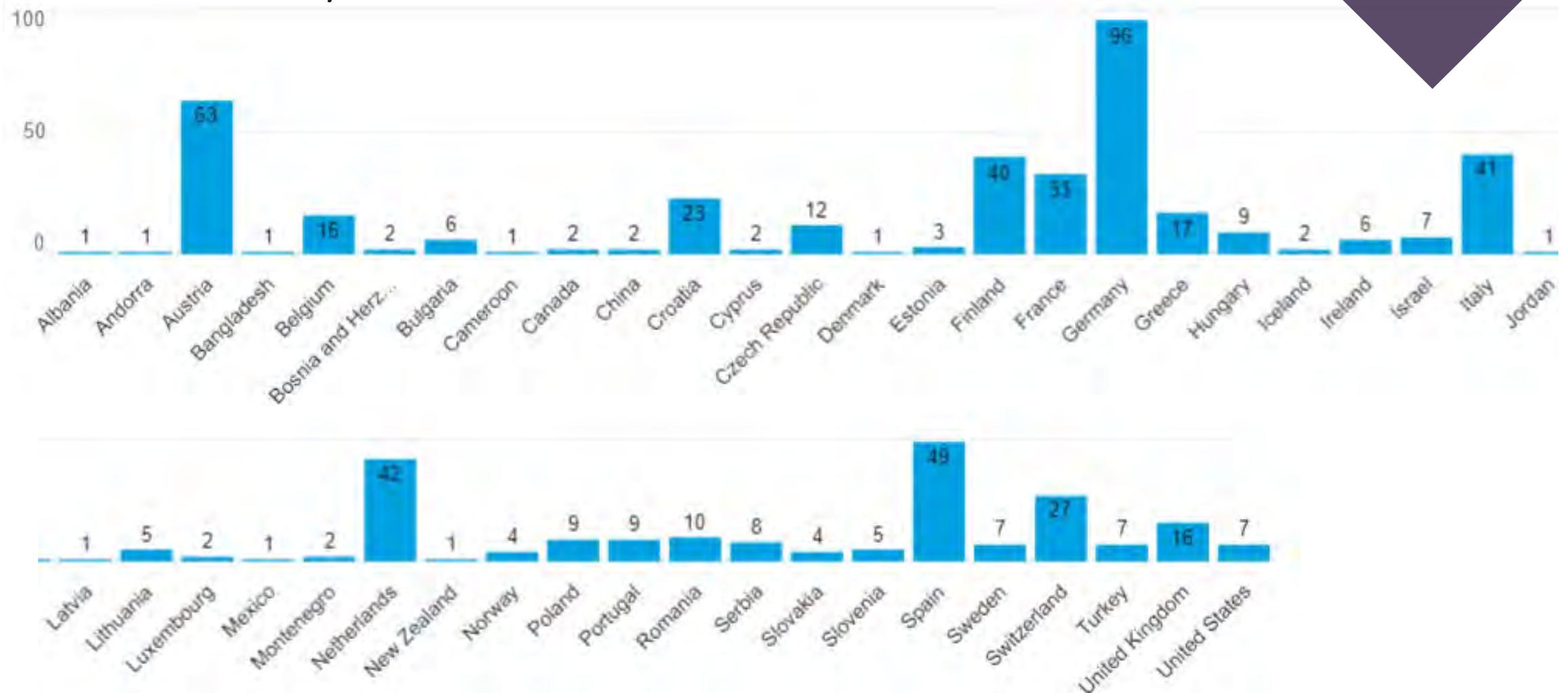
604

57
97
450

Member Level ● Associate ● Founding ● Regular

The Time Machine Consortium

- Institution / Countries

Legal Background

TMO: Legal Background

- Legal form: **Association** under Austrian law
- **Non-profit** organization
- Registration in Austrian Central Associations´ Register
- English version = translation of original German version
- **Consultation process** 12 August – 2 September 2020 (67 responses)

TMO: Institutions

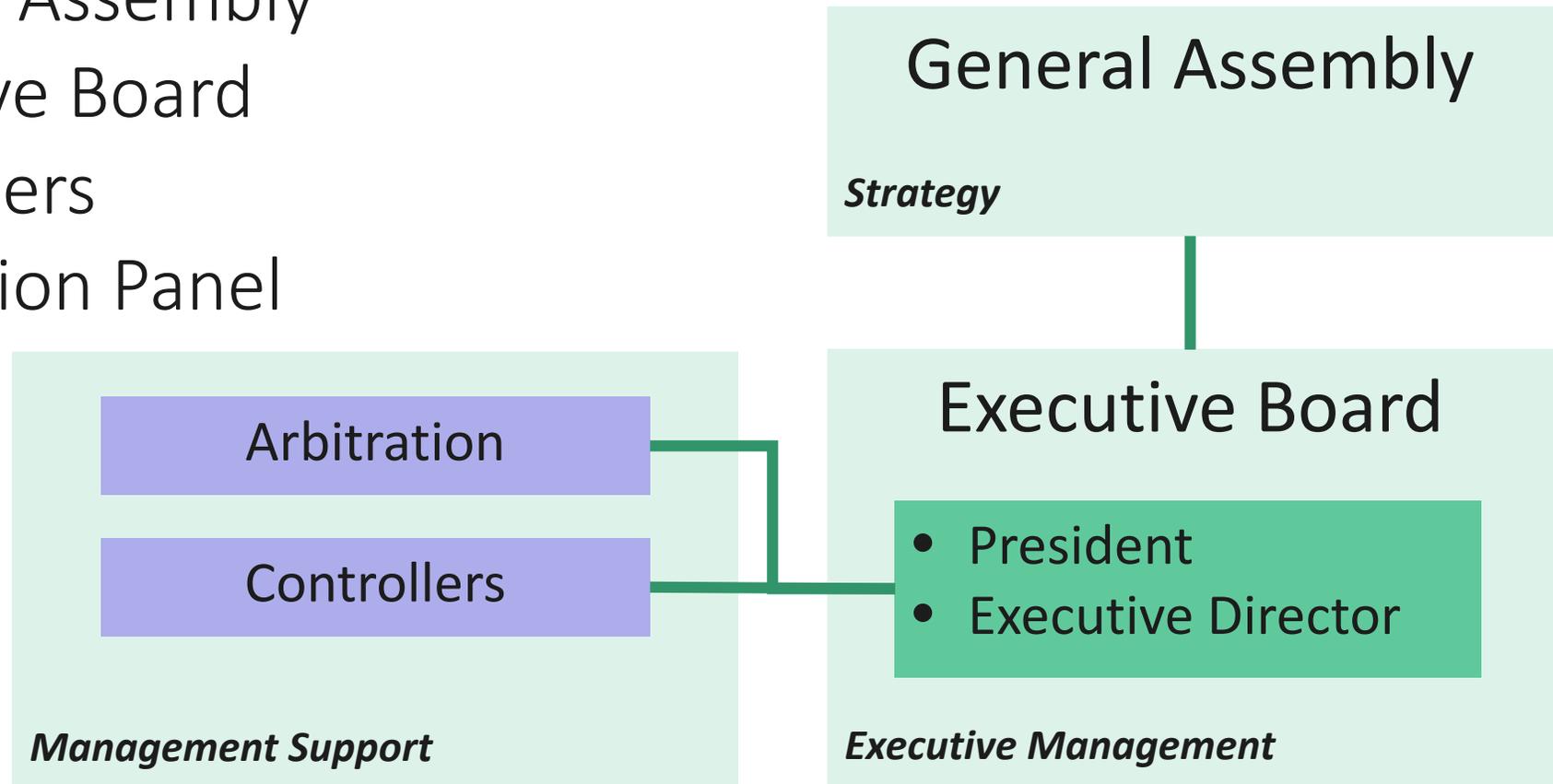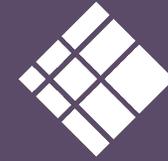Association Institutions:

- General Assembly
- Executive Board
- Controllers
- Arbitration Panel

General Assembly

Strategy

Executive Board

- President
- Executive Director

Arbitration

Controllers

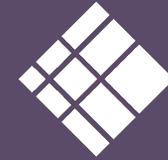*Management Support*

Executive Management

TMO Institutions

- General Assembly
  - **Annual** assembly of members
  - **Approval** of **professional** and **financial policy** and **reports** from Executive Board
  - **Election** of institutional bodies

TMO: Institutions
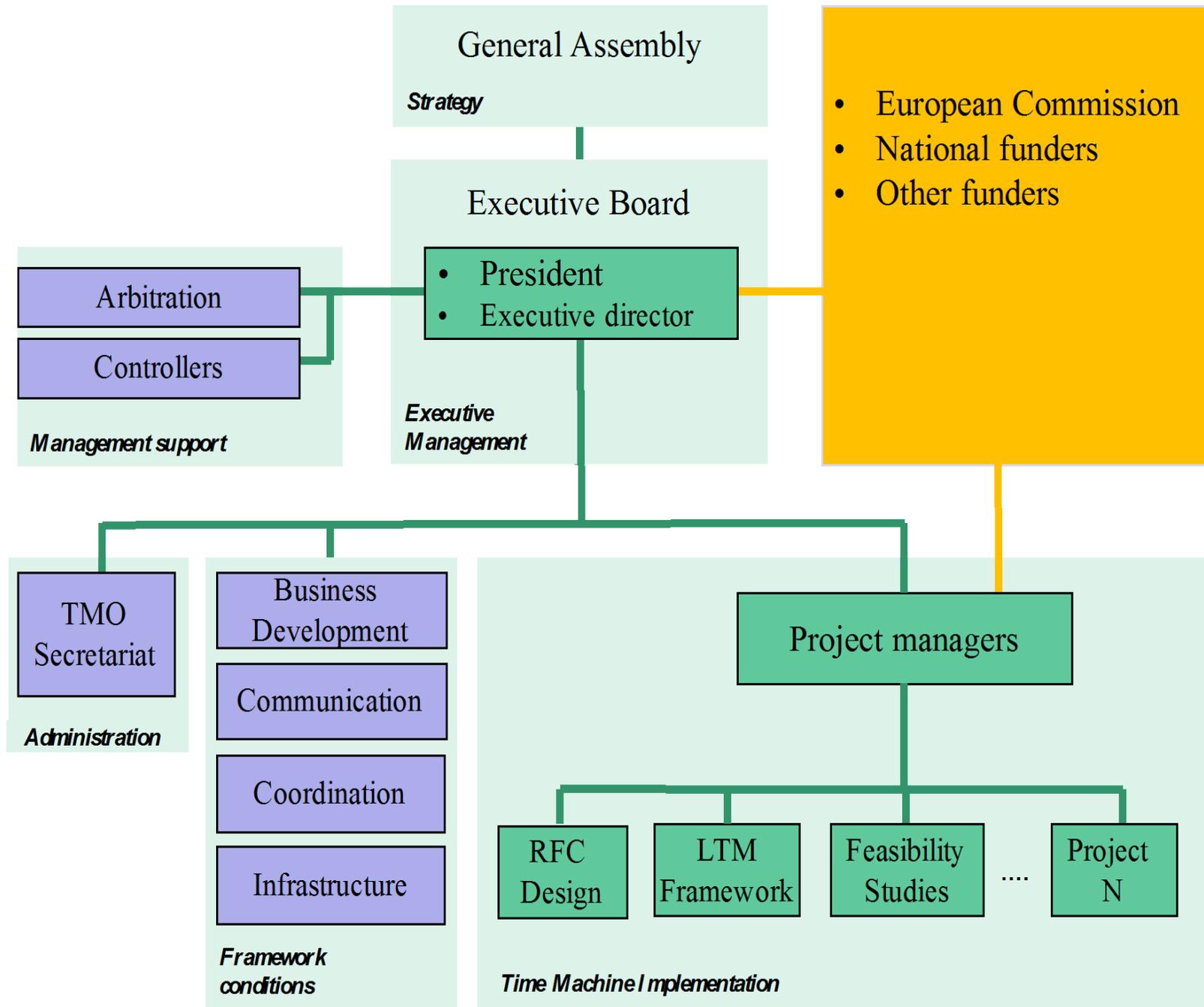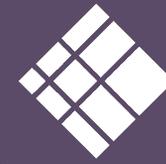
- Executive Board
  - **Voluntary**, not remunerated
  - **Founding members only**, have the right to coopt regular members
  - Term = **4 years**
  - Annual accounts and reports
  - Appointment of **Exec. Director** responsible for operative part of the Association
  - Particular obligations of board members

General Assembly

Strategy

Executive Board

- President
- Executive director

Arbitration

Controllers

Management support

Executive Management

- European Commission
- National funders
- Other funders

TMO Secretariat

Administration

Business Development

Communication

Coordination

Infrastructure

Framework conditions

Project managers

RFC Design

LTM Framework

Feasibility Studies

....

Project N

Time Machine Implementation

Time Machine

Time Machine Organization

- **Executive Board** (10), **Operational Team** (10) **Ambassadors** (50+).

- Headquartered in **Vienna** (AT), additional offices in Lausanne, Amsterdam, Budapest and Jena.

- Network of over **50 Time Machine Ambassadors** spanned across **Europe**, firmly based on the European continent.

EXECUTIVE BOARD

Andreas Maier
Science and Technology

Dorit Raines
Deputy Secretary TMO

Frédéric Kaplan
President TMO

Harry Verwayen
Vice president TMO

Isabella di Lenardo
Local Time Machines

Julia Noordegraaf
Vice president TMO

Robert Sablatnig
Treasurer TMO

Sander Münster
Project Scouting Service Lead Strategist and Secretary TMO
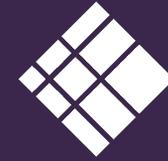
Thomas Aigner
Vice president TMO

Valérie Couet-Brunet
Deputy Treasurer TMO

Service Examples

Local Time Machines

Jerusalem 2000 BCE-2000

Amsterdam 1550-2000

Antwerp 1500-2000

Europe Time Machine

Dresden 1200-2000

Paris 1000-2000

Lower Austria 800-2000

Naples 800-2000

Utrecht 40-2000

Venice 1000-2000

Budapest 1680-1990

Nuremberg 1000-2000

Ghent-Bruges 800-2000

Regensburg 1200-2000
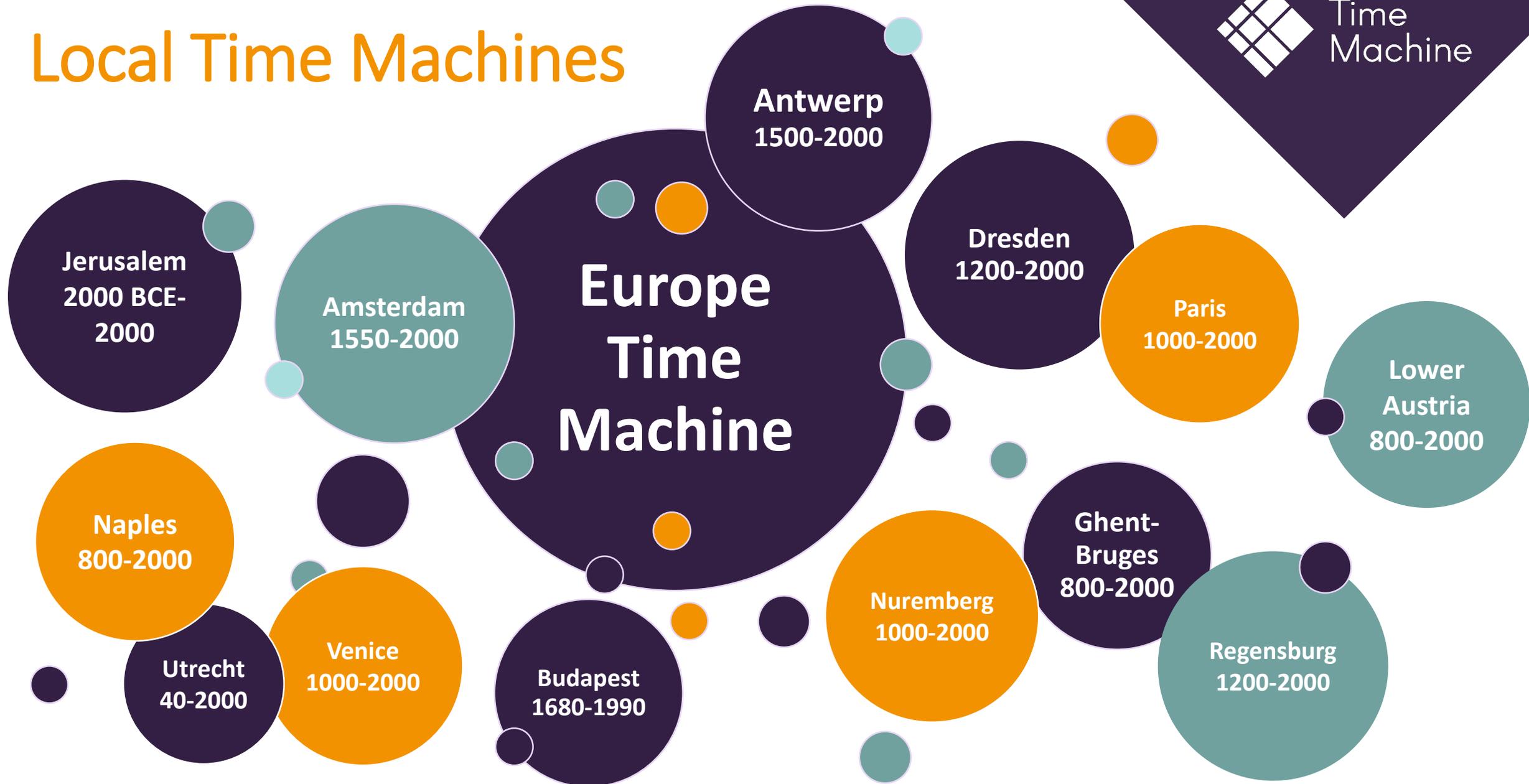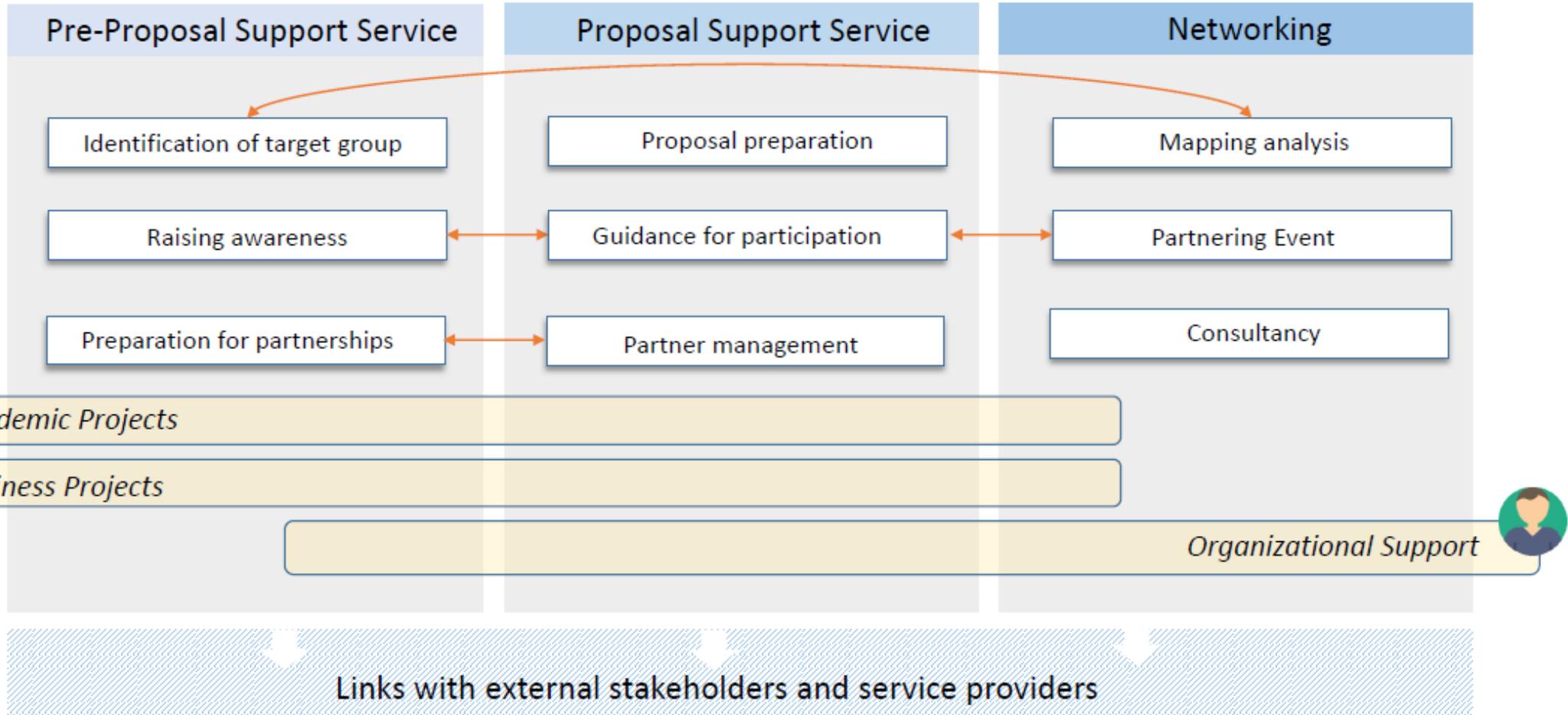
Time Machine

Project Scouting Service Functions and Tasks

Conclusions

- Nine Years of development from Idea to Organization
- Primary motivation for members: Funding
- Legal form: Association
- 600+ members
- Communication & Expert Database, Service
- Common Goal: Digitization, Analysis, and Information Modelling (and Funding)

Time Machine

THANK YOU !

Time Machine | Time Machine Organisation
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