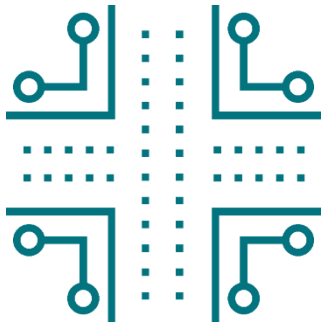


# NRENs Characteristics & Maeen's Update

Mohamad AlGhamdi  
Maeen

# Three Characteristics of NRENs:



Interconnecting  
Members



Peering with  
NRENs



Collaborative  
Infrastructure



# Interconnecting Members:

**27**

Universities

**3**

Hospitals

**20**

Government

**7**

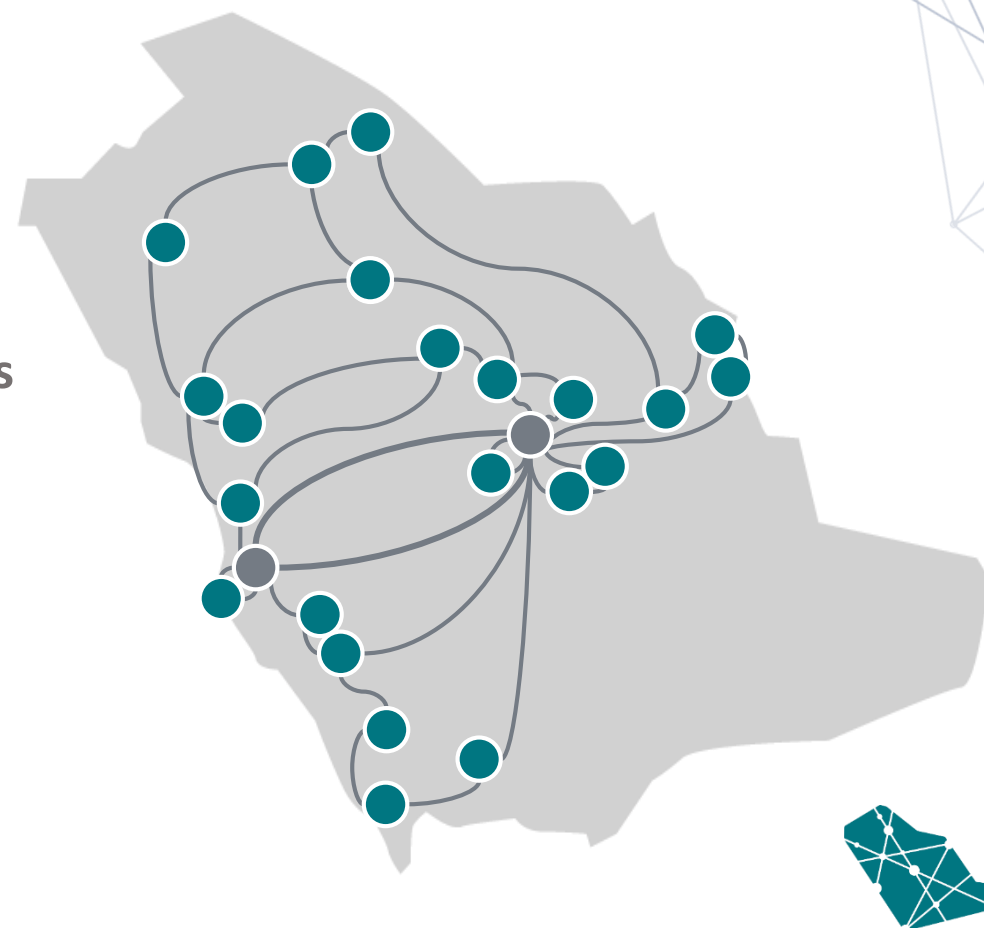
Res. Centers

**1.4M**

Users

**+30**

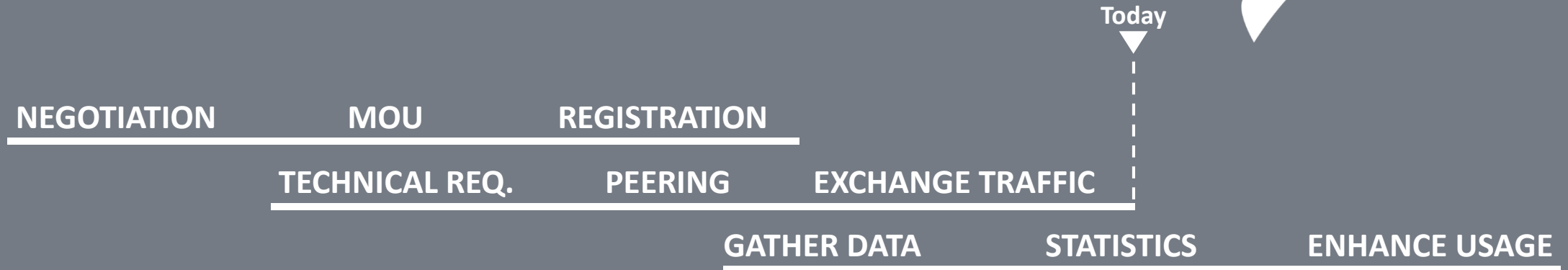
Gbps





# Peering with NRENs:

- INTERNET2





# Peering with NRENs:

- **Top Destinations (March 2019)**

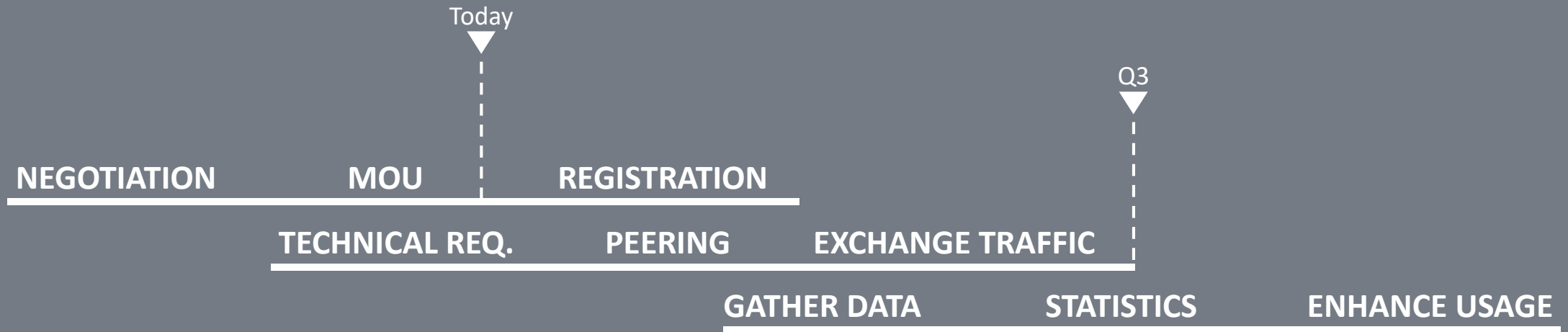
#	Destination	Country
1	INTERNET2	US
2	Michigan Educational Research Information Triad – Merit	US
3	GARR - Italian academic and research network	IT
4	United States Geological Survey - EROS Data Center	US
5	Software Engineering Institute	US
6	National Oceanic and Atmospheric Administration – NOAA	US
7	RWTH Aachen University	DE
8	National Library of Medicine (NLM)	US
9	UniNet Network Operation Center	TH
10	Massachusetts General Hospital	US





# Peering with NRENs:

- GÉANT





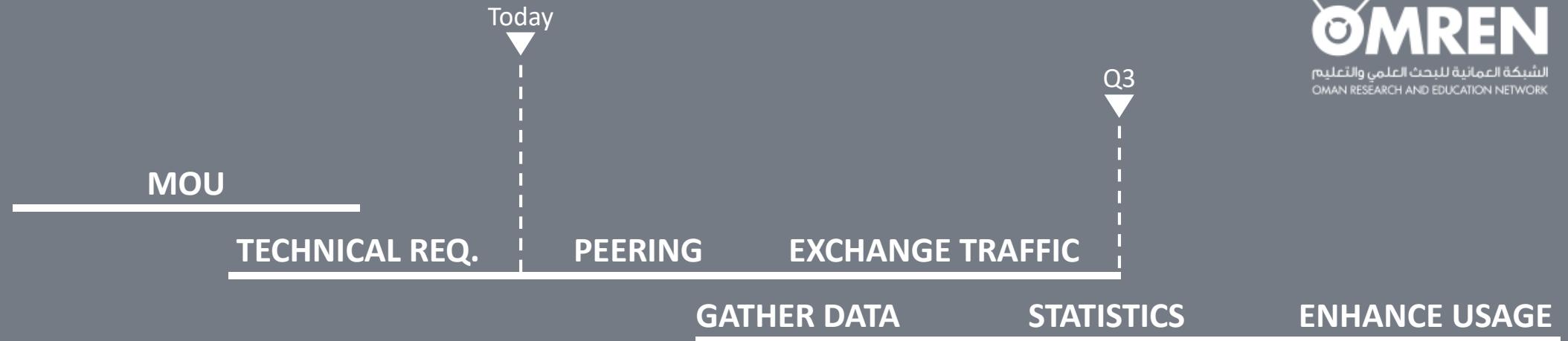
# Peering with NRENs:



ankabut  
عنكبوت



**OMREN**  
الشبكة العمانية للبحث العلمي والتعليم  
OMAN RESEARCH AND EDUCATION NETWORK





# Collaborative Infrastructure:

- **Maeen Federation (terminology)**

**Federation** : organizations that agree to interoperate under a certain rule set. Operated by NRENs.

**IDP** : Identity Provider (ex.university, research center ..etc).

**SP** : Service Provider (ex.NREN, university, research center ..etc).

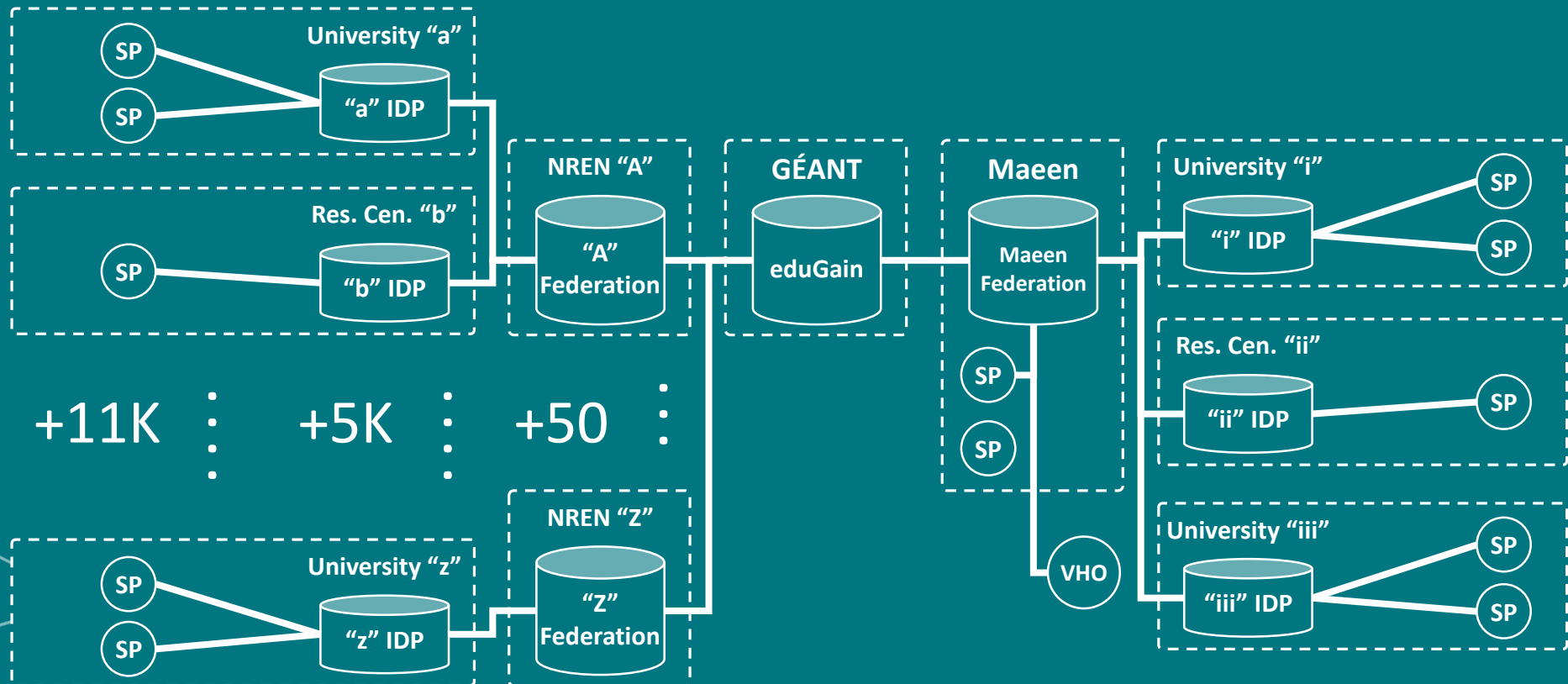
**VHO** : Virtual Home Organization (user with no organization).





# Collaborative Infrastructure:

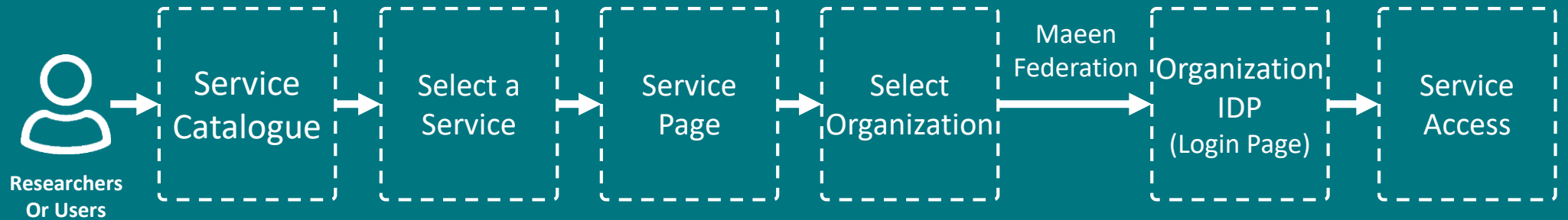
- Maeen Federation (architecture)





# Collaborative Infrastructure:

- **Maeen Federation (process flow)**





# Collaborative Infrastructure:

- **Maeen Federation (references)**

**Federation Map:**

<https://refeds.org/federations/federations-map>

**Services, Federations, and IDPs:**

<https://met.refeds.org/>

**Internet2 Service Catalogue:**

<https://www.internet2.edu/cloud-services/>





# Collaborative Infrastructure:

- **Maeen Federation (open services)**

**EDUOPEN:** <https://learn.eduopen.org/>

**Virtual Campus University of Bamberg:** <https://vc.uni-bamberg.de/shibboleth>

**Austrian Academy of Science:** <https://www.oeaw.ac.at/acdh/tools/>

**Adobe Connect provided by INFN Catania:** <https://connect.ct.infn.it/shibboleth>

**DARIAH-DE - Data Modeling Environment:** <https://dme.de.dariah.eu/dme>

**Database of English Learner Texts (DELT):** <https://delt.acdh.oeaw.ac.at/>

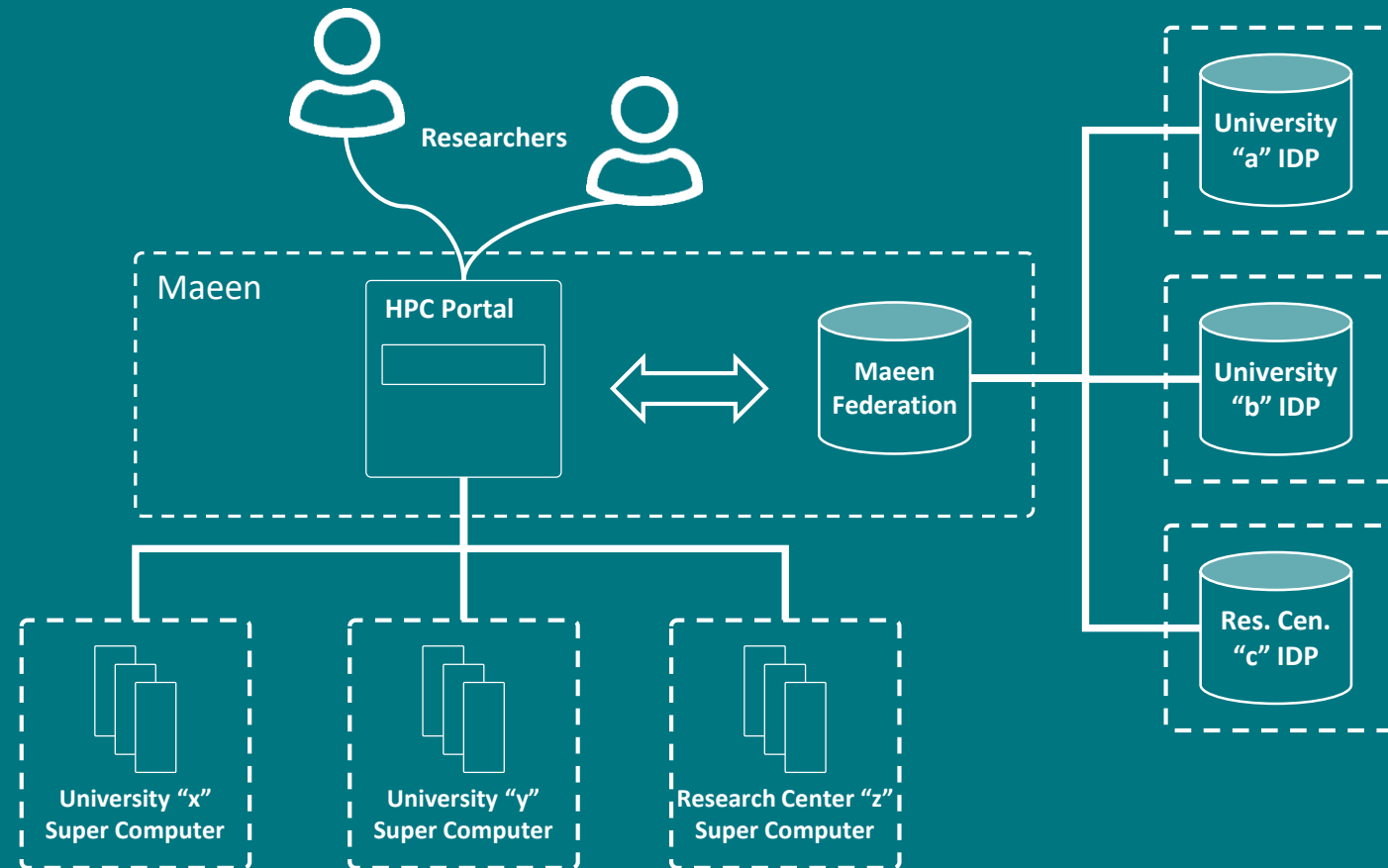
**Digital Repository for the CLARIN Research Infrastructure provided by ILC-CNR:**  
<https://dspace-clarin-it.ilc.cnr.it>

**Internet2 Collaboration Wiki Spaces – similar to VO of EduGain:**  
<https://spaces.internet2.edu/>



# Collaborative Infrastructure:

- HPC Portal

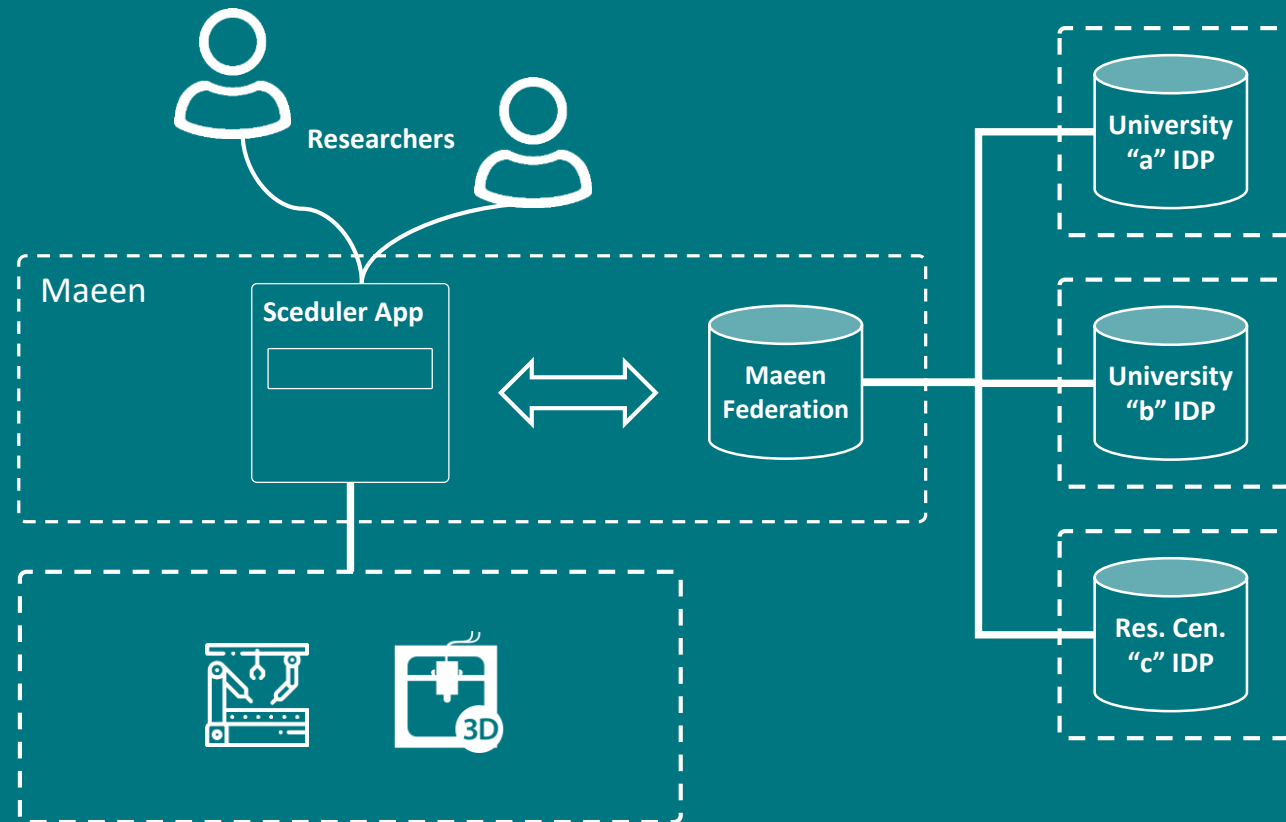




# Collaborative Infrastructure:

- Innovation for Industry 4.0 (ICI 4.0)

<http://ici4.sa>





# Collaborative Infrastructure:

- **Virtual Data Center (vDC)**
  - Infrastructure as a Services (IaaS).
  - 475 Service is up and running.
  - Primary, Disaster Recovery, or load-balanced
  - Examples:





# Thank you!