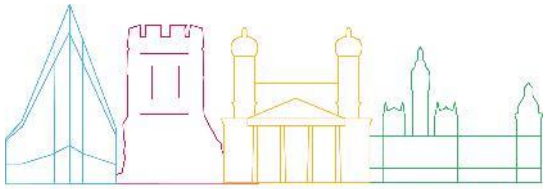
The ARCH Project: Overview

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no 820999.



Advancing Resilience of historic areas against Climate-related and other Hazards

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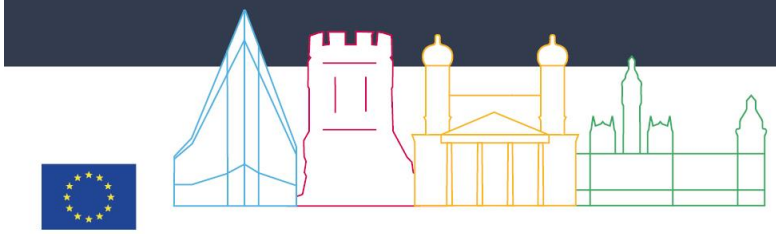
ARCH SAVING CULTURAL HERITAGE

The ARCH project
aims to better protect areas of cultural heritage from climatic and natural hazards by co-creating tools together with cities.

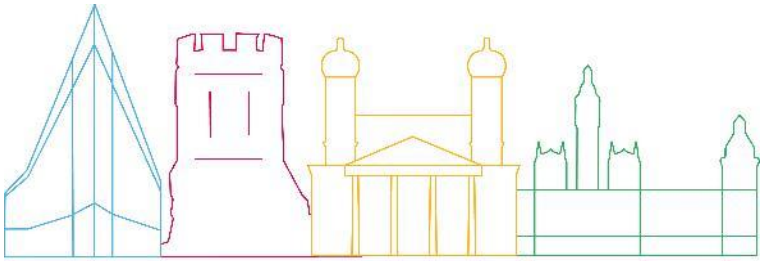


Funded by the Horizon 2020 Framework Programme of the European Union.

1. ARCH at a glance

ARCH at a glance

- European-funded research project
- Aims to better protect areas of cultural heritage from climatic and natural hazards
- By co-creating tools together with cities
- Timeframe: June 2019 – May 2022
- 15 partners:



Fraunhofer IAIS, DE	Hamburg, DE	RFSAT, IE
Bratislava, SK	ICLEI, DE	SOGESCA, IT
Camerino, IT	INGV, IT	Tecnalia, ES
DIN, DE	LNV, ES	UNIBA, SK
ENEA, IT	MÚOP, SK	UNICAM, IT

The ARCH team, kick-off meeting 2019, Bratislava, Slovakia

2. Why are we doing this?

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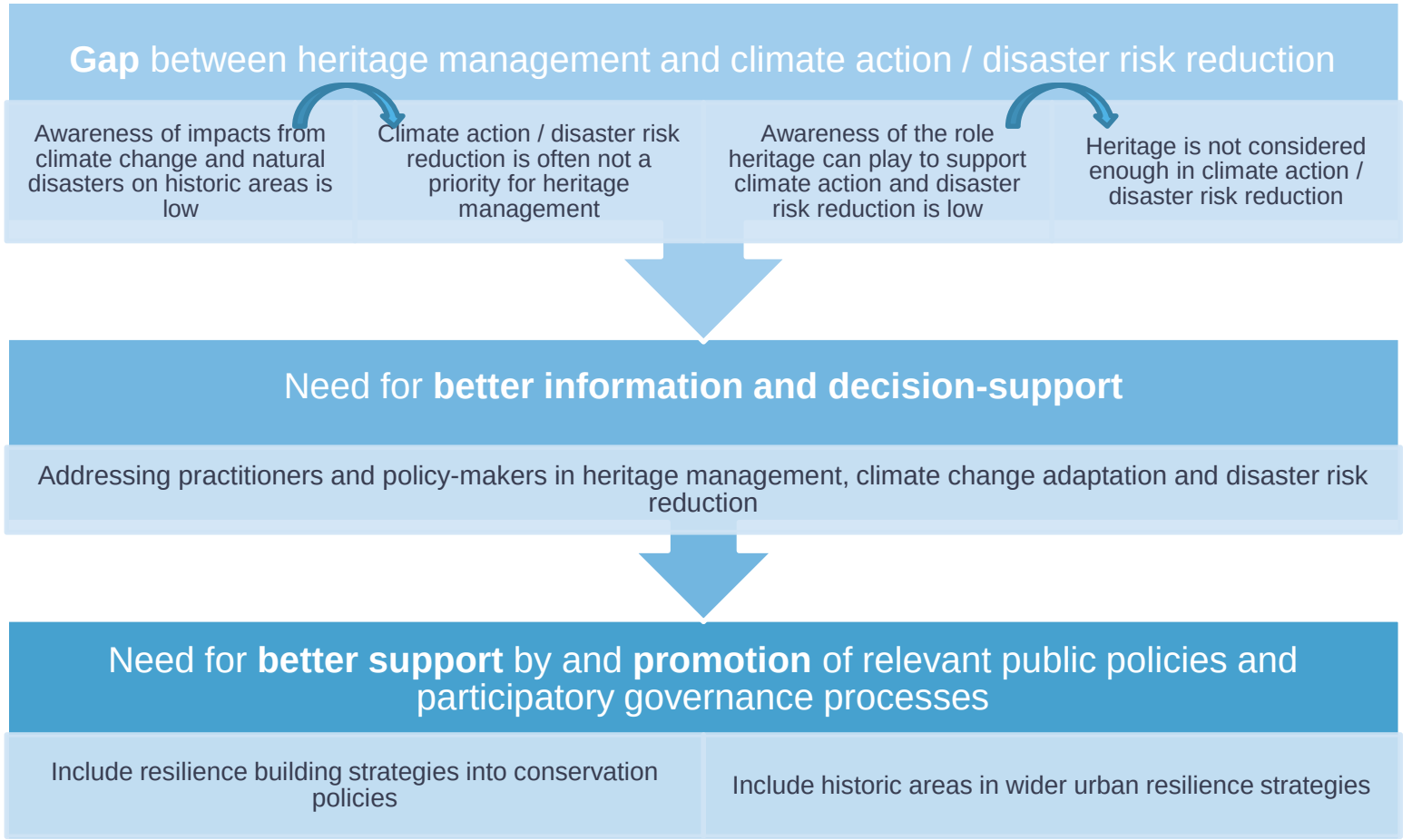
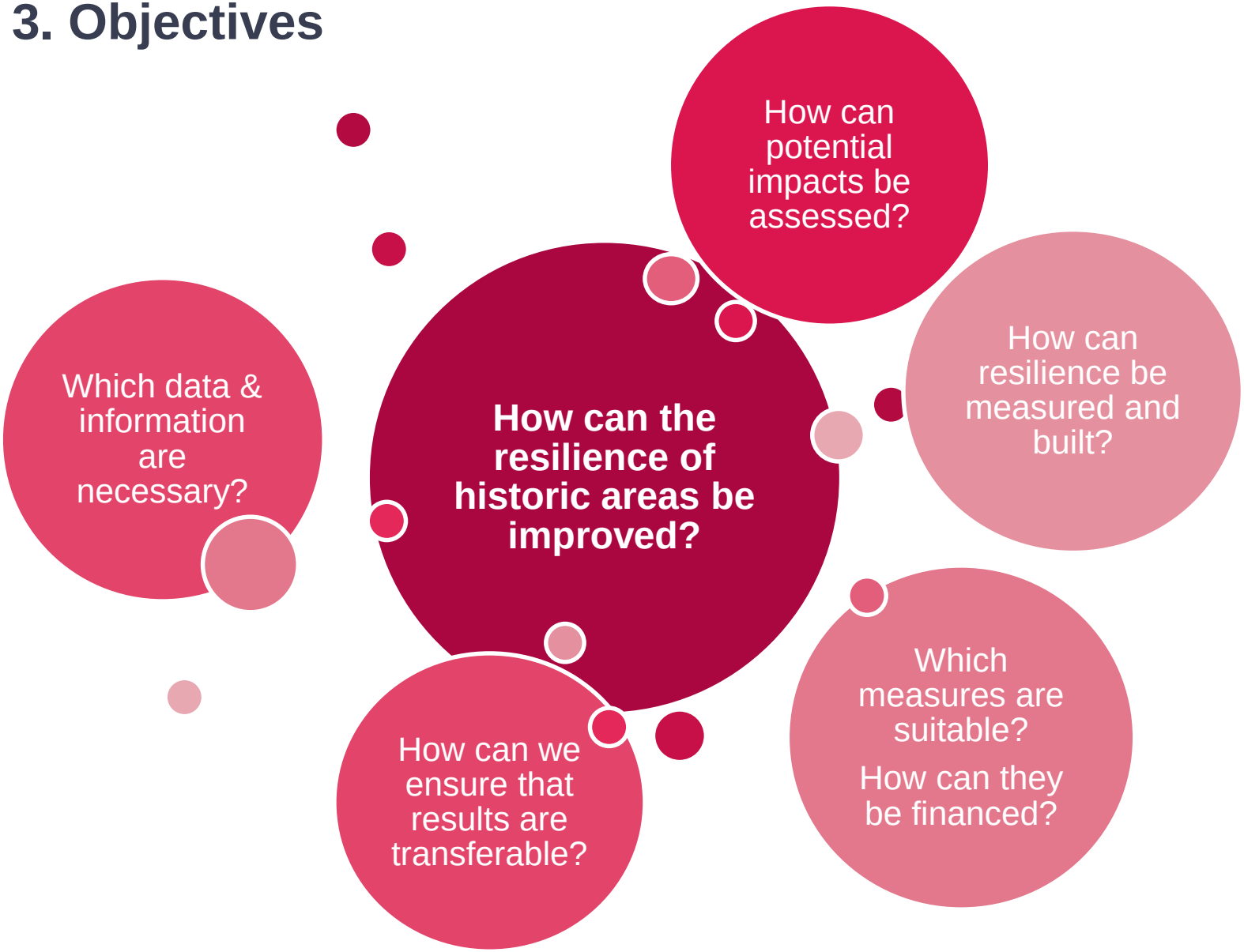


Damage to quay walls in the Speicherstadt, Hamburg. Image credits: the City of Hamburg

Earthquake damage in Camerino

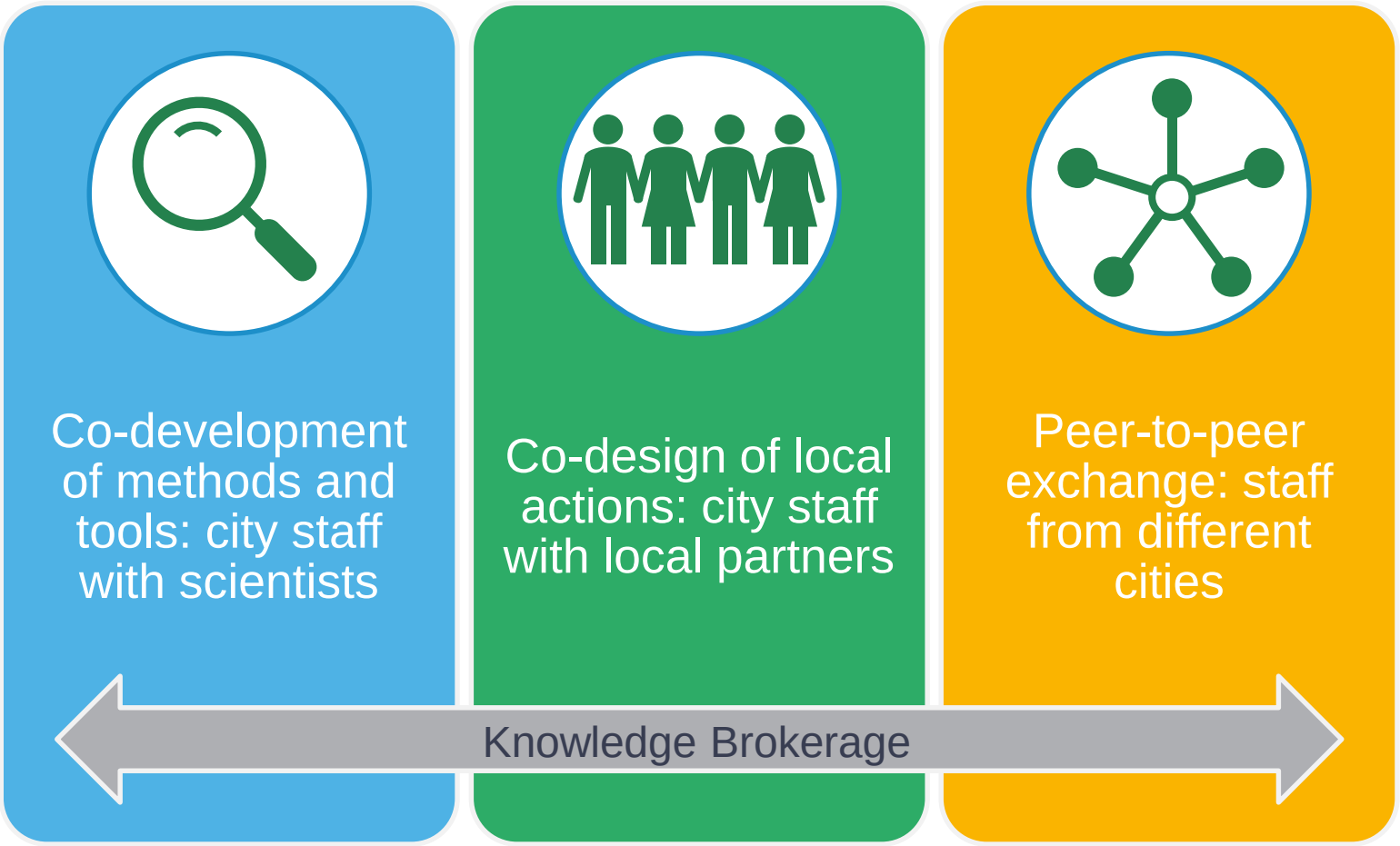
3. Objectives

3. Objectives

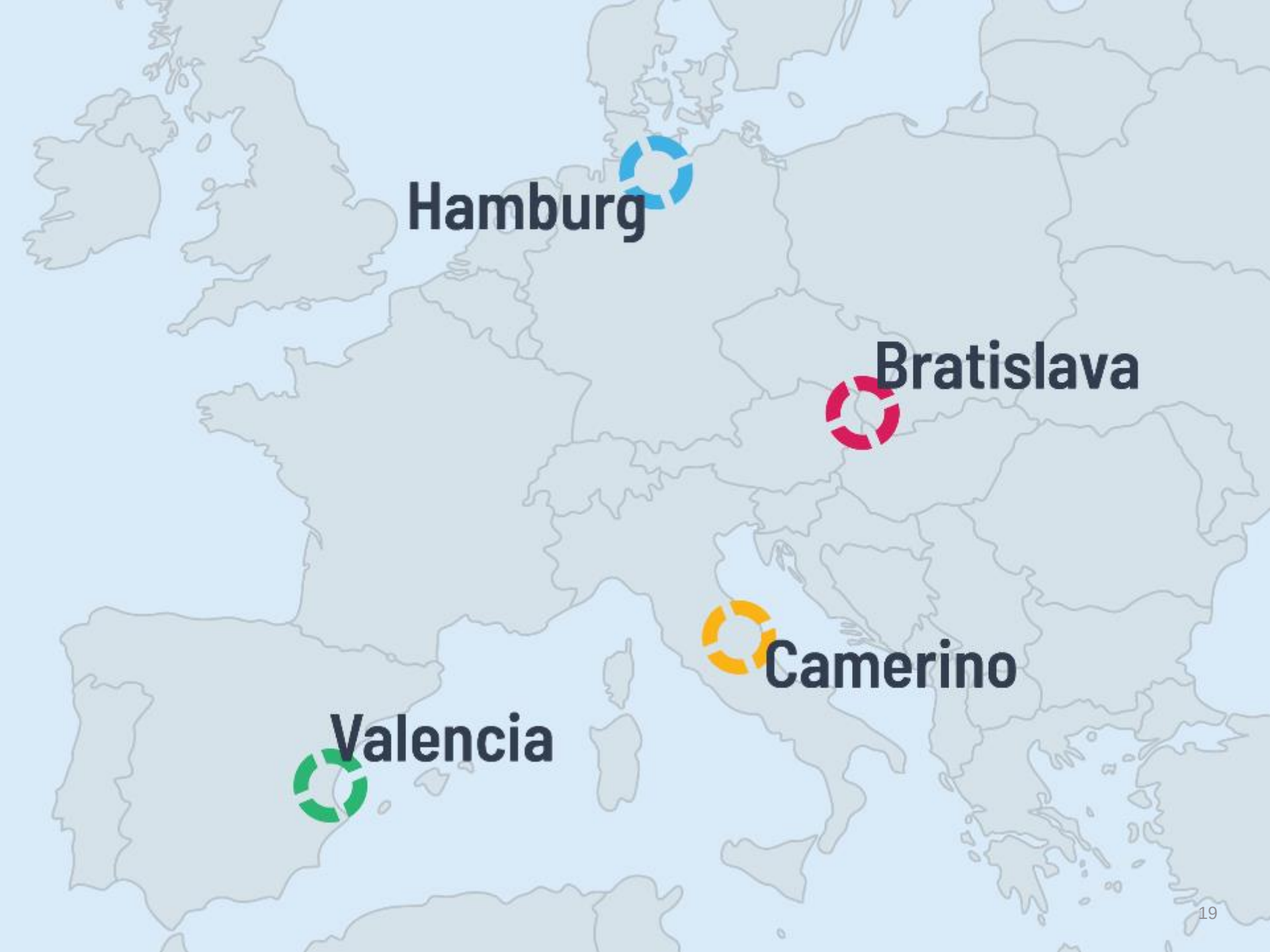


4. How are we doing this?

4. How we are doing this: Co-creation



5. ARCH Cities


Hamburg
Bratislava
Camerino
Valencia

5.1 ARCH Cities: Bratislava, Slovakia

Heritage assets

Medieval town centre, Bratislava castle, Celtic acropolis & pottery kiln, St. Jacob's Chapel, Devin Castle, Devinska Kobyla nature reserve.

Hazards

Extreme temperatures, flooding, extreme precipitation, water scarcity, wind, mass movement, erosion, pollution, insects & micro-organisms.

Impacts

Damage to built infrastructure; injuries & fatalities; loss of ecosystem services, access & function, heritage value, traditional knowledge, skills, and customs; economic losses.

Image credits: the City of Bratislava.

5.2 ARCH Cities: Camerino, Italy

Heritage assets

Historic town centre, Ducal palace, Santa Maria in Via church, civic and diocesan artwork collections.

Hazards

Extreme precipitation, seismic activity, mass movement.

Impacts

Damage to built infrastructure; injuries & fatalities; loss of ecosystem services, access & function, heritage value, traditional knowledge, skills, and customs; economic losses.

Image credits: Municipality of Camerino.

5.3 ARCH Cities: Hamburg, Germany

Heritage assets

Speicherstadt & Kontorhaus district

Hazards

Extreme temperatures, flooding, extreme precipitation, water scarcity, wave action, insects & microorganisms.

Impacts

Damage to built infrastructure; injuries & fatalities, loss heritage value, access & function; economic losses.

Image credits: the City of Hamburg; ARCH project.

5.4 ARCH Cities: València, Spain

Heritage assets

Huerta peri-urban fertile, irrigated farmland, Albufera wetland and natural park.

Hazards

Extreme temperatures, flooding, lightning, extreme precipitation, water scarcity, wave action, erosion, wildfires, insects & micro-organisms

Impacts

Damage to built infrastructure; injuries & fatalities; loss of ecosystem services, access & function, heritage value, traditional knowledge, skills, and customs; economic losses.

Image credits: the City of Valencia; Bruno Almela for Generalitat Valenciana.

5.5 Key expected results

Bratislava: Update to *Action plan for mitigation and adaptation to climate change 2030*, awareness-raising

Camerino: Improved risk assessment methods, real-time monitoring, risk scenarios.

Hamburg: Update to the management plan of the Speicherstadt and Kontorhaus districts, monitoring tools, digital inventory of buildings

Valencia: Improved resilience of cultural heritage landscapes Huerta and Albufera, improved knowledge on how they support the city of Valencia in adapting to climate change

6. What are we building?

6. What are the ARCH solutions for?

Collecting information on hazards and vulnerabilities

Assessing risks and resilience of historic areas under different scenarios

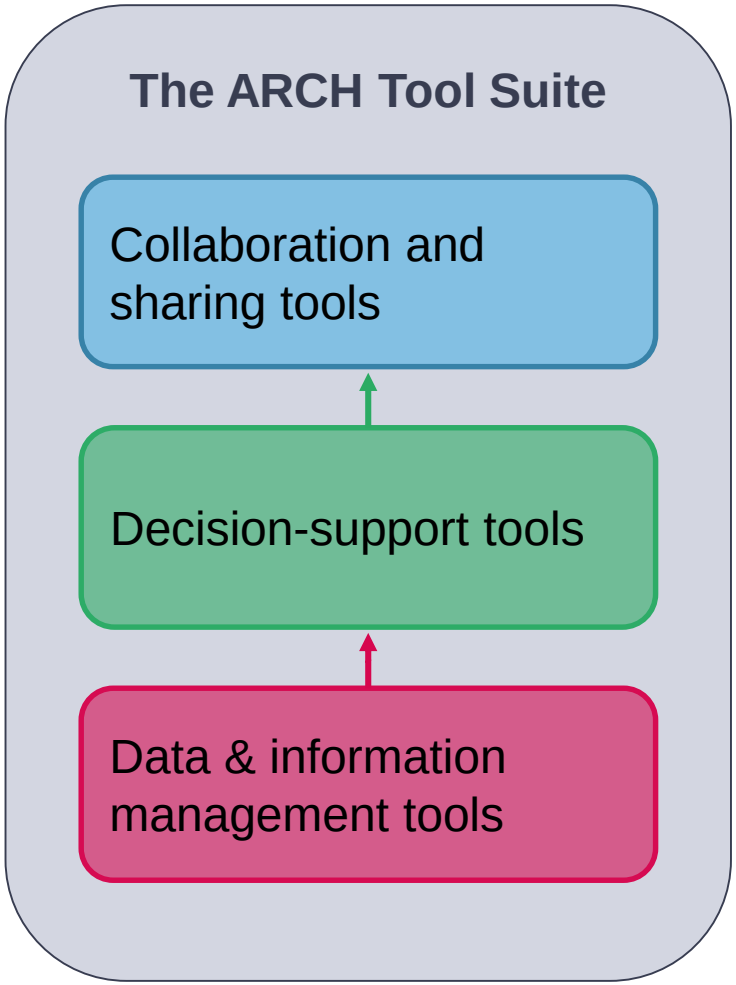
Identifying effective pathways and action plans to increase resilience

Building the business case for investing in resilience

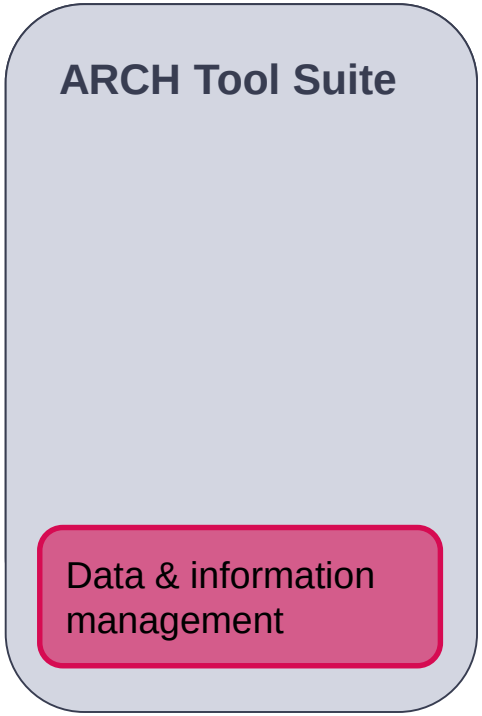
Involving all relevant actors and sharing information

6. What are we building?

An integrated suite of tools for resilience assessment & management



6. What are we building?



Systems for data capturing & information management that will combine:

Environmental data

- meteorological and hydro-geological
- seismic and geological
- climate change

Data about historic areas and assets

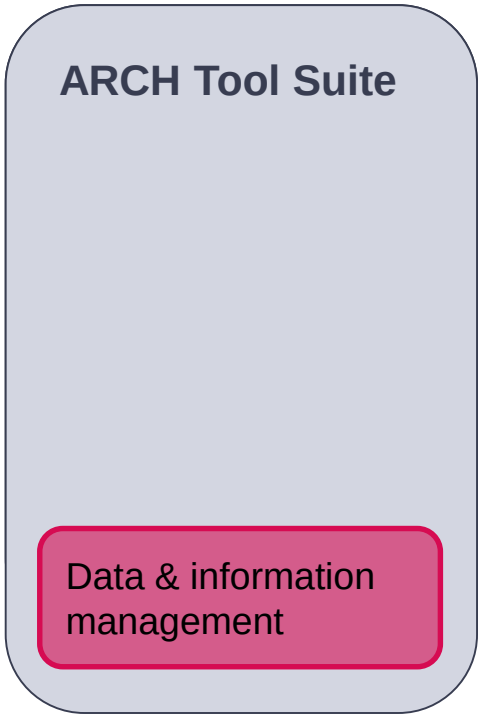
- movable and immovable heritage, critical infrastructures, landscape assets
- digital elevation models, structural and material properties, landscape features
- measurements of physical and chemical/biological parameters, information on conservation state, census/population data

6. What are we building?

Systems for data capturing & information management

Historic Area Information System, HArIS

- a database of **geo-referenced information** of historic areas
- enabling end-users to access information about **past and current conditions** of historic areas, including 3D geometry and material information.

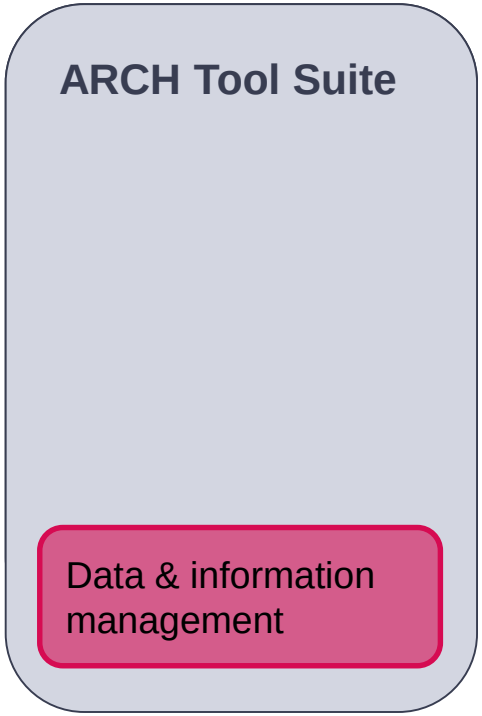


6. What are we building?

Systems for data capturing & information management

Threats and Hazard Information System, THIS

- a database of **geo-referenced environmental threat indicators**
- enabling end-users to access geo-referenced information about **past and real-time** environmental threat indicators for historic areas

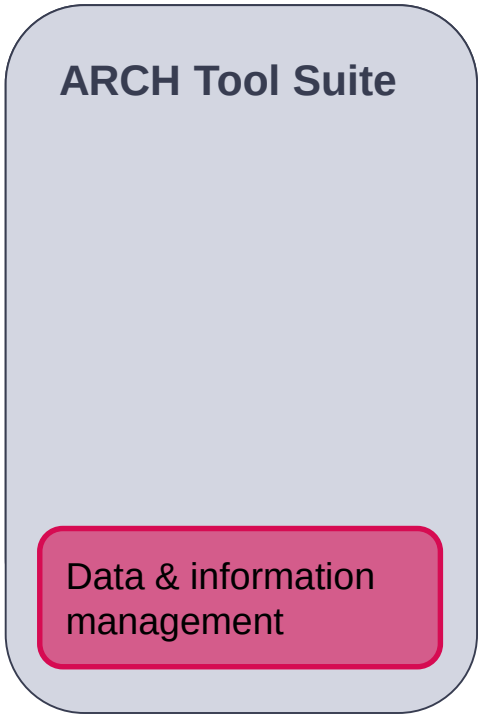


6. What are we building?

Systems for identification, planning, and financing of resilience measures

Resilience Options Inventory

- a **library** of resilience-building measures
- providing end-users with access to **harmonised information** about resilience measures, in order to identify suitable measures to increase the resilience of historic areas

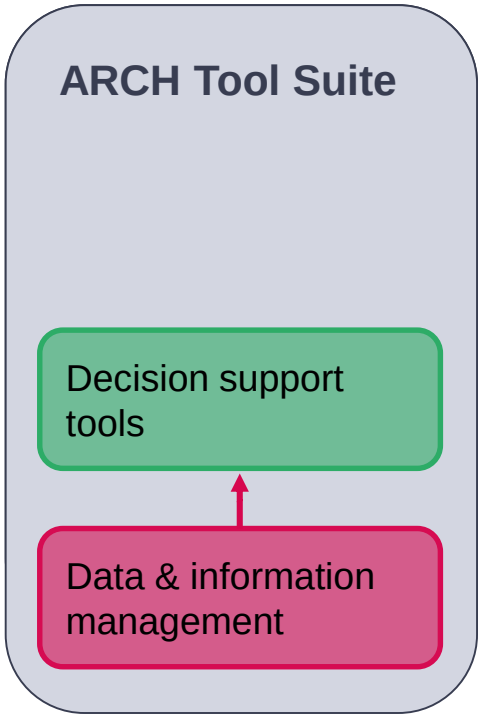


6. What are we building?

Systems for identification, planning, and financing of resilience measures

Pathway Visualisation Tool, PVT

- a graphical tool to **design resilience implementation plans**
- enabling end-users to graphically design resilience pathways in order to build resilience by **identifying, prioritising and sequencing** resilience measures for implementation

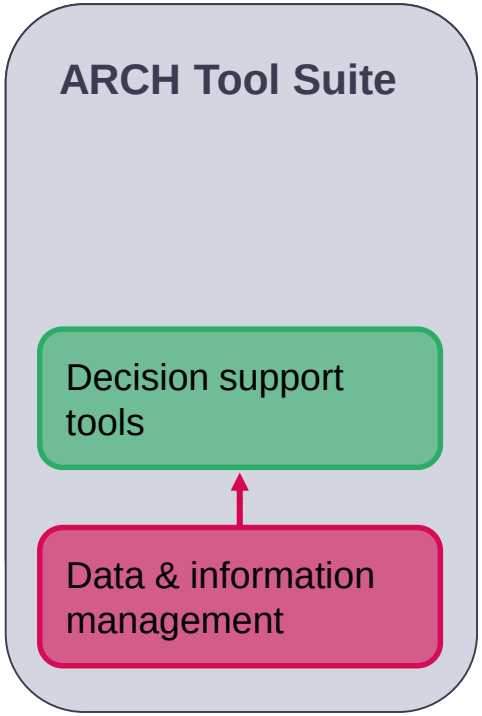


6. What are we building?

Systems for scenario-based impact & risk analysis

Decision Support System, ARCH DSS

- a web-based, **geographical information system platform** for decision support
- enabling end-users to conduct **scenario and risk analyses** for historic areas, including constant **monitoring**

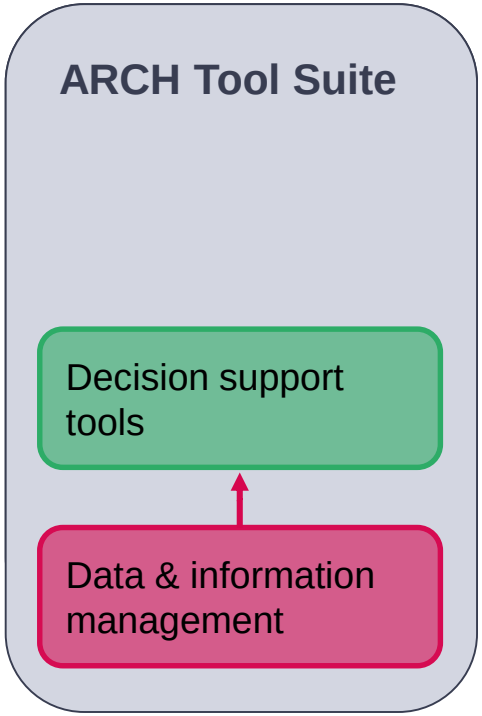


6. What are we building?

Systems for resilience assessment & management

Resilience Assessment Dashboard, ARCH RAD

- a web-based system for **resilience assessment**
- enabling end-users to perform **thorough or quick, guided** resilience self-assessments for historic areas, including **recommendations** for the use of other ARCH tools and methods

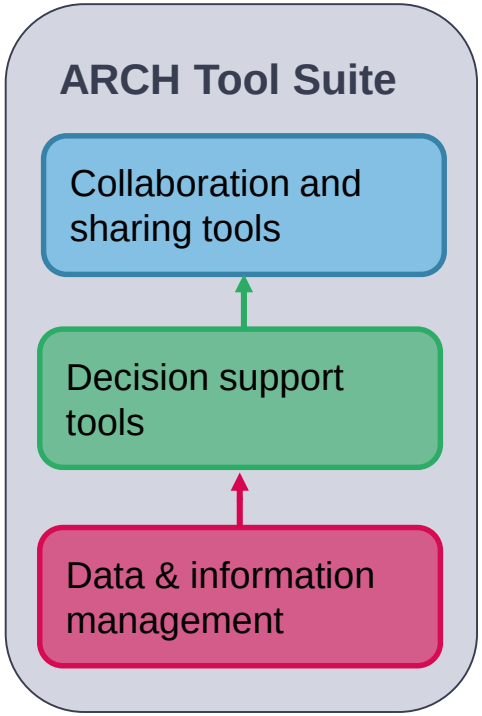


6. What are we building?

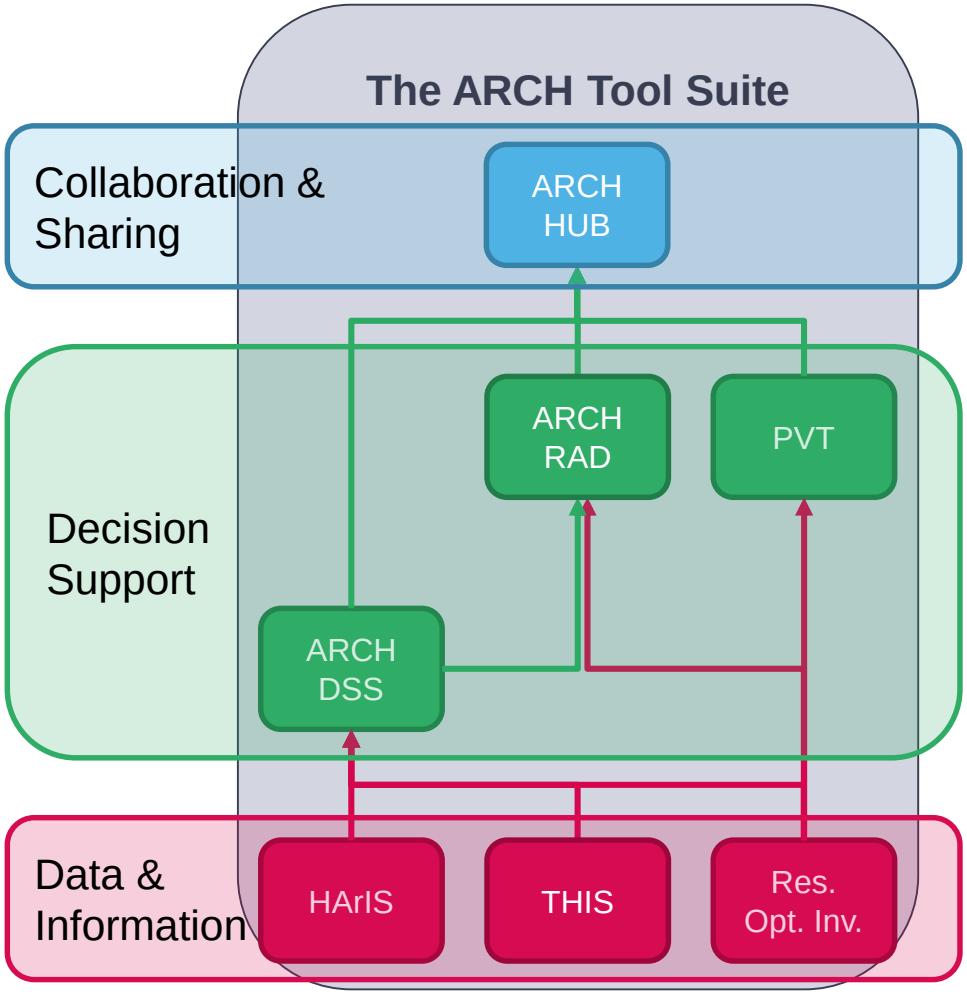
Systems for resilience assessment & management

Data & information platform ARCH HUB

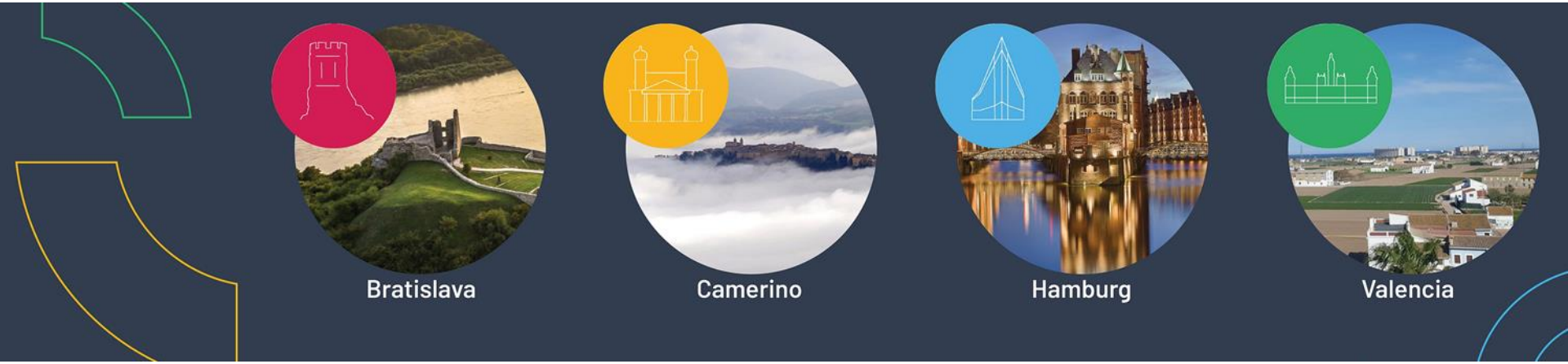
- a collaborative, web-based platform that **collects all the ARCH tools** as well as the linked information, methods and datasets
- Enabling end-users to **collaboratively manage** the resilience building process and **share** best practices



6. What are we building?



7. Making sure that ARCH results are used



Communicate

- www.savingculturalheritage.eu
-
- presentations at relevant events
- **open access** to tools, publications, and anonymised data

Cooperate

with relevant initiatives and projects:

- making use of already **existing tools**
- defining research agenda in **collaboration** with sister projects (e.g., SHELTER and HYPERION)
- **joint advocacy** on the European level

7. Making sure that ARCH results are used

Involving more cities

Ca.12 Keystone Cities will be involved in **knowledge exchange** and peer-to-peer learning for capacity building through webinars and workshops.

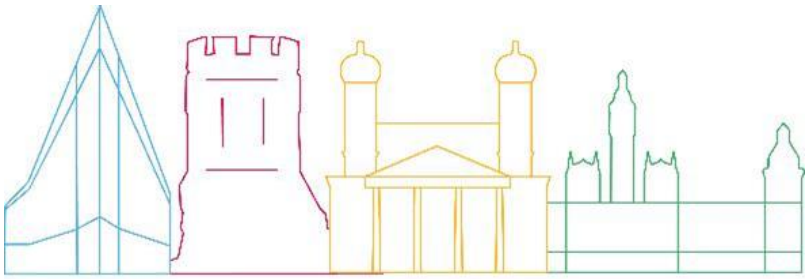
- They will be **teamed up** with the 4 Foundation Cities and introduced to the emerging project results.

Standardisation

Transfer of project results into national and international **standards.**

Aims:

- **ARCH Standard** (e.g. CEN Workshop Agreement)
- Adoption of ARCH Standard on national (e.g. DIN CWA) and international level (e.g. ISO)



ARCH

Thank you!

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