



IT research infrastructure of Territori Aperti

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PARTNER

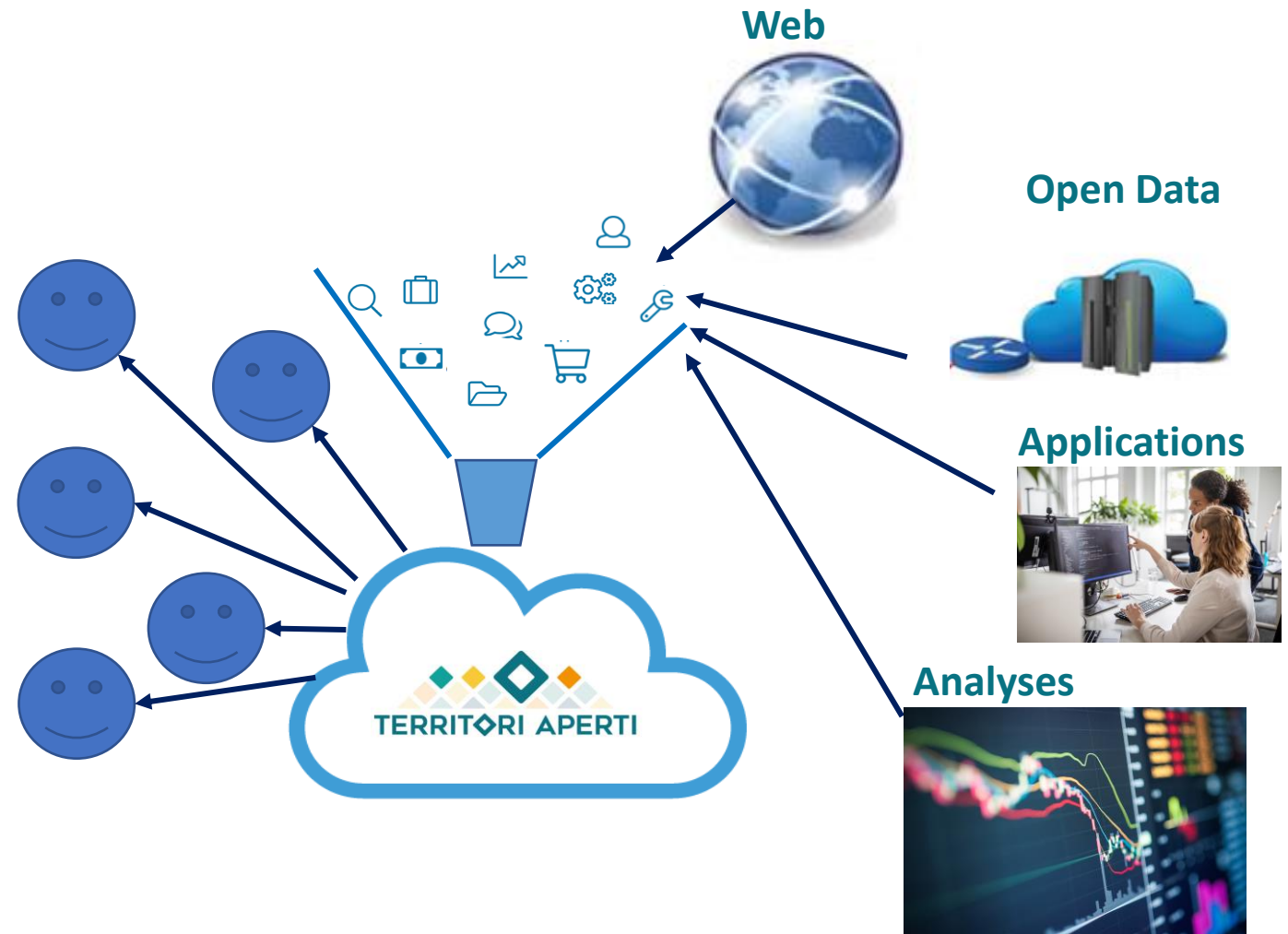


Outline

- Main goals of Territori Aperti
- Territori Aperti Main Website
- Territori Aperti Gateway
- Territori Aperti Toolkit

Main goal of Territori Aperti

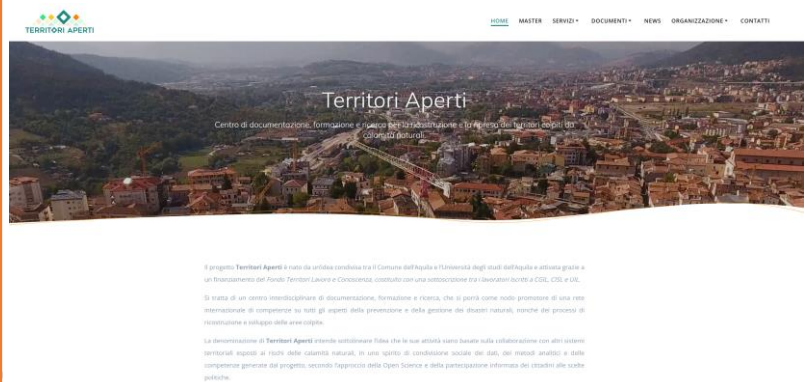
- Territori Aperti follows the *open science* principle
- It will make available to users: **data, applications and analyses** about the management of natural disasters and reconstruction processes



IT infrastructure of Territori Aperti

Three main applications:

Territori Aperti Main Website



Territori Aperti Gateway



EXPLORATORIES

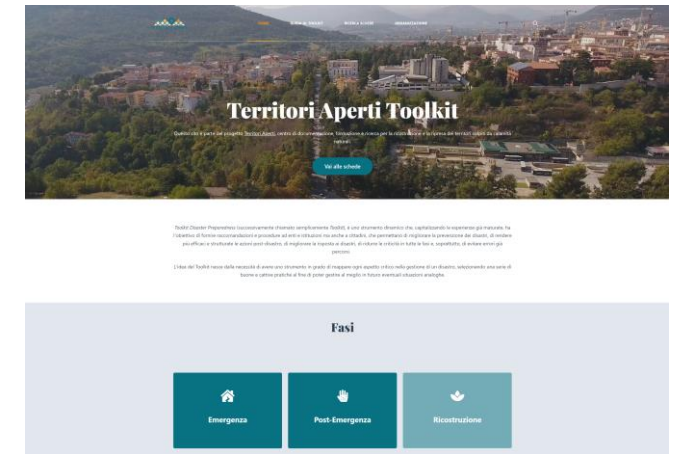


Disaster Recovery

Tools for monitoring, analysis and improvement of post-disaster reconstruction processes in socio-economic areas, spatial planning, environmental health and cooperation processes between national and international institutions. These tools use and enhance the data and knowledge contained in the information system of the Territori Aperti project.

Disaster Recovery allows the development of synthetic indicators, compatible and comparable with those recognized as effective in the topics of economic development, social progress and health efficacy. It also provides useful elements, including guidelines, for the reconstruction process ensuring a reconstruction that improves the safety of the population and the environment and which is sustainable in all areas of interest.

Territori Aperti Toolkit



Fasi



Territori Aperti Webisite

<https://territoriaperti.univaq.it/>

Territori Aperti Website

- Entry point to all the services of Territori Aperti
- Lists all the news related to the project
- Repository of all scientific publications and thesis made under the project
- Available both in Italian and English

The screenshot shows the homepage of the Territori Aperti website. At the top, there is a navigation bar with links for HOME, MASTER, SERVIZI, DOCUMENTI, NEWS, ORGANIZZAZIONE, and CONTATTI. Below the navigation bar is a large banner image of a town with the text "Territori Aperti" and "Centro di documentazione, formazione e servizi per la ricostruzione e la gestione del territorio".

The main content area features four circular icons representing different services:

- SISTEMA INFORMATIVO**: Sistema integrato di raccolta e condivisione locale del materiale informativo.
- FORMAZIONE E COMUNICAZIONE**: Master specialistico e open course di formazione in Gestione del territorio, tutela e gestione del management tecnico amministrativo degli enti locali.
- RICERCA**: Centro specializzato per l'aggiornamento tecnico e scientifico degli enti locali.
- TOOLKIT**: Documento di lavoro che fornisce raccomandazioni ed evidenze, indicazioni e obiettivi, per supportare la pianificazione dei disastri, rendere più efficaci e strutturate le azioni per il disaster management in risposta ai rischi, ridurre la vulnerabilità e aumentare la resilienza degli enti locali.

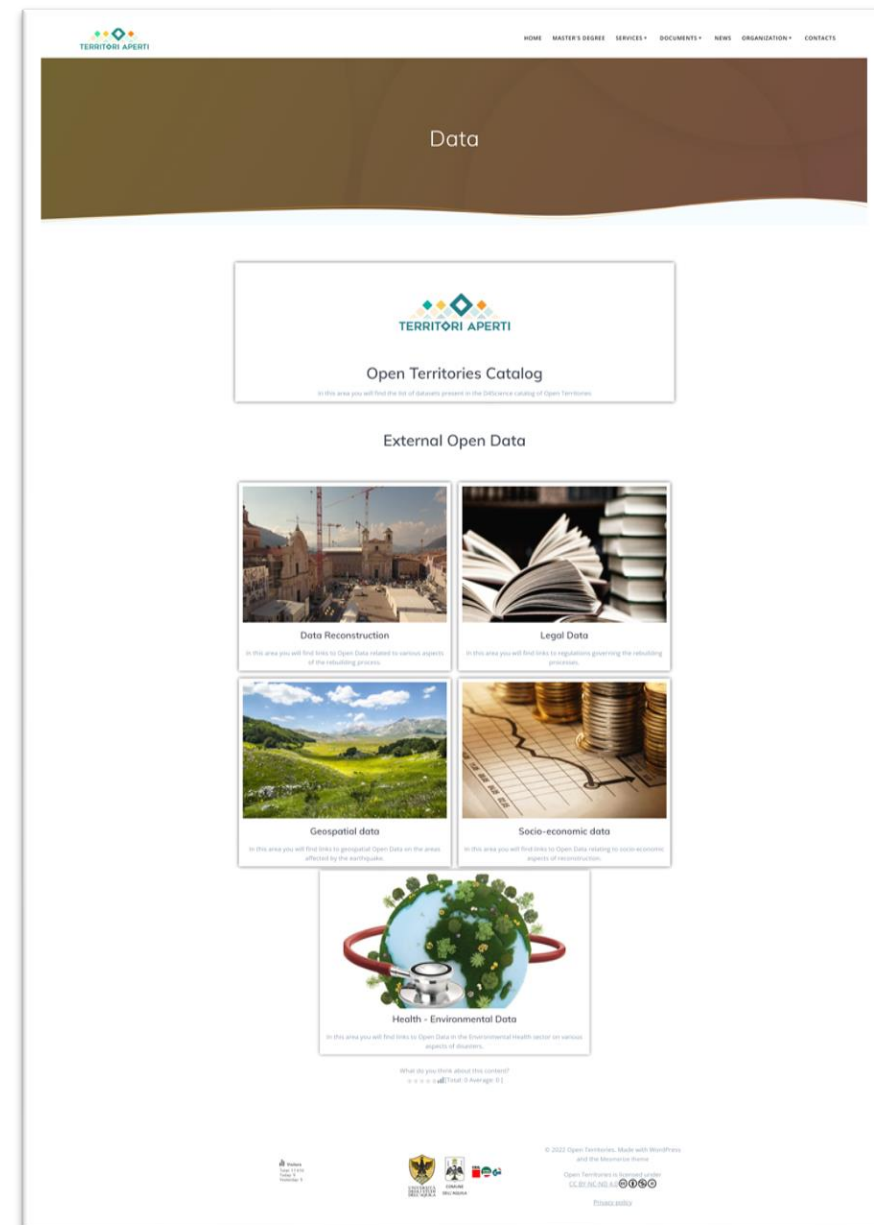
Below the icons, there is a section titled "Spesometro" showing a progress bar with the values 923.532,14€ and 1.800,000€, and a "Tutti i dati" button.

The "Ultime news" section features three news items:

- Terremoto, pandemia e guerra "parlano" lo stesso linguaggio: il 9 aprile all'Aquila viene lanciato il "Toolkit di Territori Aperti" per affrontare le emergenze e le ricostruzioni**
- Seminario GISLAB - Fabrizio Antenucci (Università dell'Aquila) "Disentangling the productivity paradox in Europe: sectoral bottlenecks of technical progress."**
- Aperte le iscrizioni alla terza edizione del Master in Management tecnico-amministrativo post-catastrofe negli enti locali**

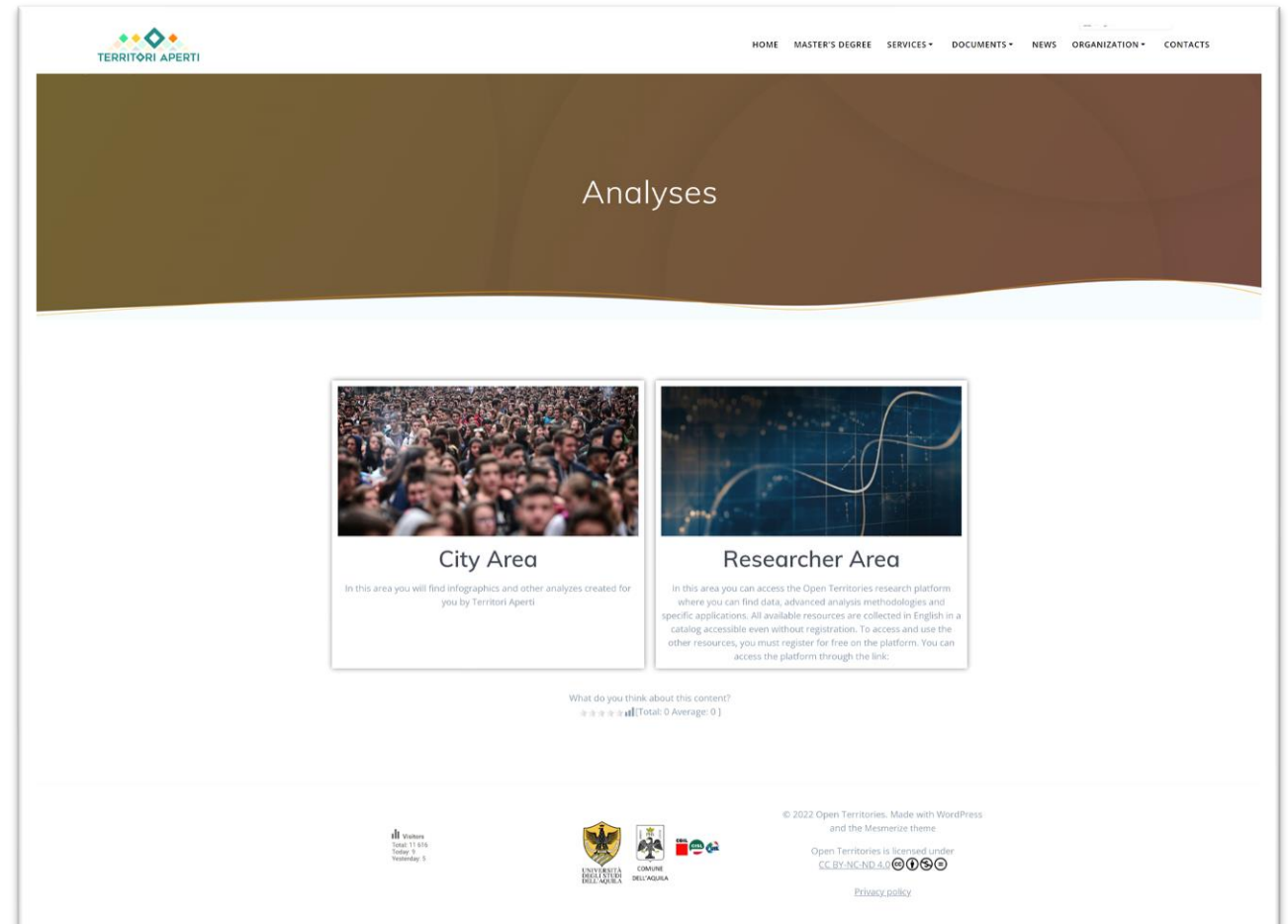
Open Data page

- Available under the *Services* menu entry
- Collection of Open Data available online divided by scope
- Each section contains a series of links to Open Data repositories about different aspects of natural calamities



Analyses page

- Available under the *Services* menu entry
- Divided in two sections
- *City Area* contains analyses and infographics about different aspects of natural calamities
- *Research Area* is a link to the Territori Aperti Gateway



Territori Aperti Gateway

<https://territoriaperti.d4science.org/>

Territori Aperti Gateway

- Main research infrastructure of Territori Aperti
- Built on top of the D4Science platform developed by the SoBigData++ project
- Available in English
- Made of different components

Welcome to the Territori Aperti Gateway, the open research infrastructure of Territori Aperti

Territori Aperti Catalogue

Insert keywords here

See All Items See All Types

Method (107) Dataset (96) JournalArticle (75) TrainingMaterial (42) ConferencePaper (24) Experiment (19)

Exploratories

Disaster Recovery

Tools for monitoring, analysis and improvement of post-disaster reconstruction processes in socio-economic areas, spatial planning, environmental-health and cooperation processes between n ...
[Read More »](#)

Pandemic Recovery

The recent appearance of respiratory diseases caused by a new coronavirus, called SARS-CoV-2, represents a global public health challenge. Its rapid spread has prompted the international h ...
[Read More »](#)

Virtual Laboratories

TerritoriAperti Lab

TerritoriAperti Lab is a virtual laboratory where users can develop their algorithms on a Jupyter notebook environment (JupyterHub), import, integrate their methods (wr ...
[Read More »](#)

Applications

CO-GUARD

Remote monitoring system for quarantined people - COVID 19.
Only selected doctors have access to this application.
Enter in CO-GUARD

Giordano's home VREs [↗](#)

Name	Owner	Last modified
Ch2-Complete	OS	16 May 12:17 21
Ch3	OS	17 May 09:15 21
Ch3-Testing	OS	31 May 17:46 21
demv	me	21 Feb 15:32 22
TestCodeHack	OS	26 Apr 12:55 21

Show 5 entries Previous **1** Next

1 to 5 of 5 items

Hackaton L'Aquila 2021

Hack@EO L'Aquila 2021

Hack@EO L'Aquila 2021 is a Data hackathon focused on understanding the effect of a natural disaster on the communities' social development. The underlying question is how data analysis can help make better choices in rebuilding a more sustainable city that takes care of citizens. Territori Aperti project promotes the hackathon in collaboration with the SoBigData++, University of L'Aquila.

Exploratories

- Collection of *stories*
- Each *story* is related to a research project
- Each *story* contains a description of the research project and all the data and materials related to it (linking them from the *Catalogue*)
- Two exploratories available: *Disaster Recovery* and *Pandemic Recovery*

The image shows two screenshots of the TA-Analytics application. The left screenshot displays a 'Catalogue' page with search filters and a list of items. The right screenshot shows an 'Exploratory' dashboard for 'TERRITORI APERTI' with data tables and a line chart.

Catalogue

Insert keywords here

393 items, 3 organisation, 18 groups, 15 types

Name	Owner	Last modified
Industria/Real ...	[Green icon]	14 Aug 17 02:20
Territori Aperti pptx	[Green icon]	29 Jun 16 12:20

1 to 2 of 2 items

View Managers and Groups

TA-Analytics Architecture

TA-Analytics is an application for the collection and analysis of Open Data that provides an interface for building interactive dashboards shareable among all the users. Here are its main components and the interaction among them:

```
graph TD
    OpenData[Open Data Repositories] --> DataImporter[Data Importer]
    OpenData --> SQL[SQL Database]
    DataImporter --> SQL
    SQL --> App[Data Analytics and Visualization app]
```

Figure 1: TA-ANALYTICS Architecture

The Data Importer application is the one responsible of downloading data from different repositories. In this first release the application interacts only with the ISTAT (<http://dat.istat.it>) repository using its REST APIs. The raw data are then stored on an SQL database and accessed via the Data Analytics application.

The Data Analytics application allows the user to:

- Analyze, visualize and download the data obtained by the Data Importer app;
- Upload his own datasets as CSV or XLS files inside the system;
- Create interactive dashboards to share datasets and analysis.

Below are two examples of dashboards showing their possible uses:

TERRITORI APERTI

Anni

Valore Assoluto				Indicizzazione: 1995=100				Quote		
Anno	Abruzzo	Italia	Mezzogiorno	Anno	Abruzzo	Italia	Mezzogiorno	Anno	Abr/It	Abr/Mez
1995	19.424,8	988.243	238.035	1995	100	100	100	1995	1,97	8,16
1996	20.638,6	1.045.973	251.314	1996	106	106	106	1996	1,97	8,21
1997	21.312,7	1.092.257	263.768	1997	110	111	111	1997	1,95	8,08
1998	21.827,9	1.158.856	274.869	1998	112	115	115	1998	1,92	7,94
1999	22.615,0	1.175.150	284.493	1999	116	119	120	1999	1,92	7,95
2000	24.134,8	1.241.513	299.192	2000	124	126	126	2000	1,94	8,07
2001	25.259,9	1.304.137	314.783	2001	130	132	132	2001	1,94	8,02
2002	25.780,5	1.350.259	324.162	2002	133	137	136	2002	1,91	7,95
2003	26.221,8	1.394.693	333.400	2003	135	141	140	2003	1,88	7,86
2004	26.373,4	1.432.319	344.602	2004	136	147	145	2004	1,82	7,85

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Quote dell'Abruzzo sul PIL italiano e del Mezzogiorno
(percentuali sui valori a prezzi correnti)

Line chart showing the percentage of Abruzzo's GDP relative to Italy and the South of Italy from 1995 to 2018. The Y-axis represents the percentage (7-10), and the X-axis represents the year. Two series are shown: 'Abruzzo-Italia' (green line) and 'Abruzzo-Mezzogiorno' (orange line).

Figure 2: Example of informative dashboard

This is an example of informative dashboard showing the result of an analysis made on a dataset collected by the application. In particular this dashboard shows the contribution of the PIL from Abruzzo to the PIL from Italy and South of Italy and its variation over time.

Territorio: Italia | Edizione: Mag-2020 | Periodo: 2016, 2017, 2018

ANNO: 2016, 2017, 2018 | TERRITORIO: Italia | EDIZIONE: Mag 2020

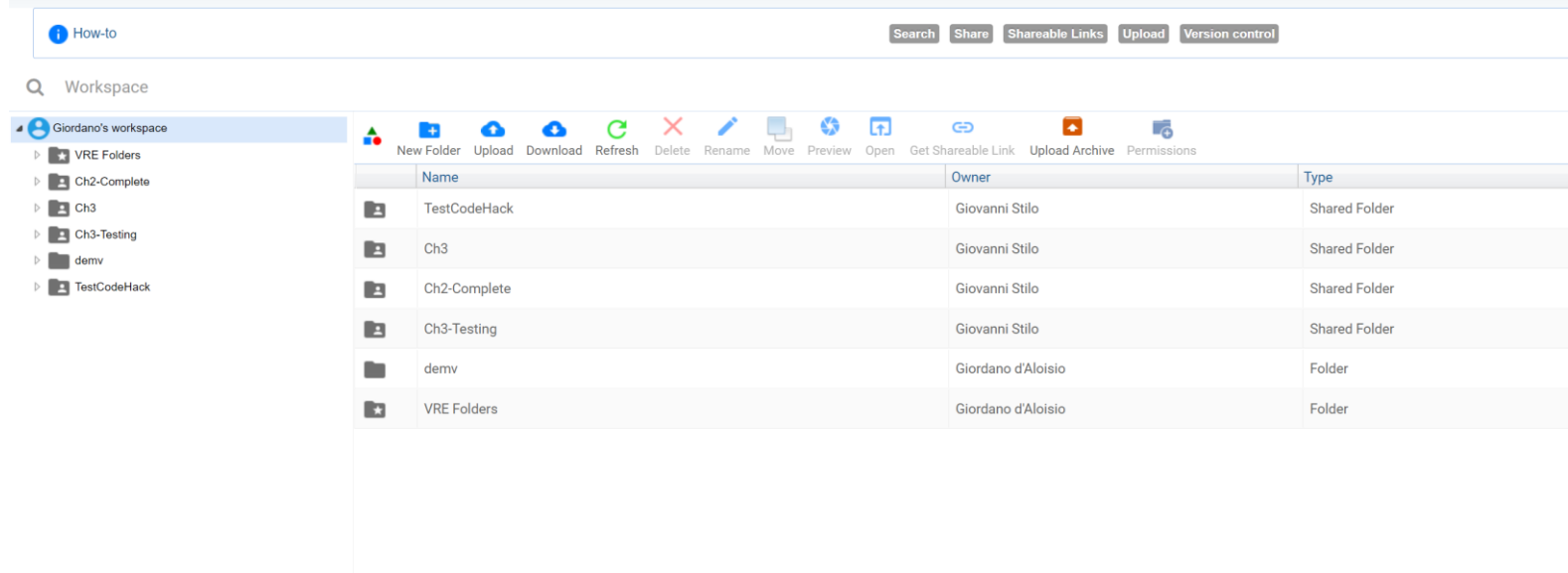
Catalogue

- Main repository of methods, analyses and datasets developed by the Territori Aperti project
- All the resources are available to download after registering to the platform
- Items can be linked and shared on other websites and platforms

The screenshot displays the 'Territori Aperti Catalogue' website. The header shows the navigation path: Home / Organisations / Territori Aperti. The main content area is divided into a left sidebar and a right main panel. The sidebar contains the 'Territori Aperti' logo, a description of the catalog, and statistics: 3 Followers and 14 Items. Below this is a map with a 'Filter by location' button and a list of organisations, including 'Territori Aperti (14)'. The main panel features a search bar, a filter for 'Include Sub-Organizations', and a list of 14 items. The first item is 'Debiaser for Multiple Variables', a method with a 'python' tag. The second is 'Effective Response to Natural Disasters', a dataset with 'CSV' tags. The third is 'Dataset Andamento delle economie colpite da calamita naturali', a dataset with 'XLSX' tags. The fourth is 'Territorial Economic Accounts', a dataset with 'ZIP' and 'DOCX' tags. The fifth is 'Business enterprise dataset', a dataset with 'DOCX' and 'ZIP' tags.

Personal workspace

- Collection of personal files which can then be used in other points of the website
- Main page for managing and upload files to the platform
- Available after registration



The screenshot displays a web-based workspace interface. At the top, there is a navigation bar with a 'How-to' link and buttons for 'Search', 'Share', 'Shareable Links', 'Upload', and 'Version control'. Below this is a search bar containing the text 'Workspace'. The main area is divided into a left sidebar and a central content area. The sidebar shows a tree view of folders under 'Giordano's workspace', including 'VRE Folders', 'Ch2-Complete', 'Ch3', 'Ch3-Testing', 'demv', and 'TestCodeHack'. The central content area features a toolbar with icons for 'New Folder', 'Upload', 'Download', 'Refresh', 'Delete', 'Rename', 'Move', 'Preview', 'Open', 'Get Shareable Link', 'Upload Archive', and 'Permissions'. Below the toolbar is a table listing files and folders.

Name	Owner	Type
TestCodeHack	Giovanni Stilo	Shared Folder
Ch3	Giovanni Stilo	Shared Folder
Ch2-Complete	Giovanni Stilo	Shared Folder
Ch3-Testing	Giovanni Stilo	Shared Folder
demv	Giordano d'Aloisio	Folder
VRE Folders	Giordano d'Aloisio	Folder

Virtual laboratories

- Place where execute analyses and methods in the cluster using files from the workspace
- It is made of a JupyterHub engine for the execution of analytical tasks, RStudio platform and DataMiner engine for the execution of analytical methods

The screenshot displays the user interface of the TerritoriAperti Lab. At the top, a navigation bar includes tabs for Administration, Analytics, R Studio, JupyterHub, Communication, Members, and How-to. Below the navigation bar, a 'START' button is visible. The main content area is divided into three columns:

- JupyterHub:** Describes it as a development and integration environment for R, Python, and other languages. It lists three power sources: DataMiner servers (16 cores, 32 GB RAM), RStudio servers (16 cores, 32 GB RAM), and JupyterHub (4 cores, 8 GB RAM per notebook). It notes that JupyterHub is provided by D4Science with support from EGI.eu.
- RStudio:** Describes it as an integrated development environment for R, including a console, editor, and plotting tools. It notes that the environment is preconfigured with libraries and packages for data analytics tasks.
- DataMiner:** Describes it as an Analytics Engine that permits the execution of an array of analytics methods by transparently relying on distributed computing infrastructure. It mentions that executions can run on multi-core machines or on different computational platforms like D4Science and commercial Cloud providers.

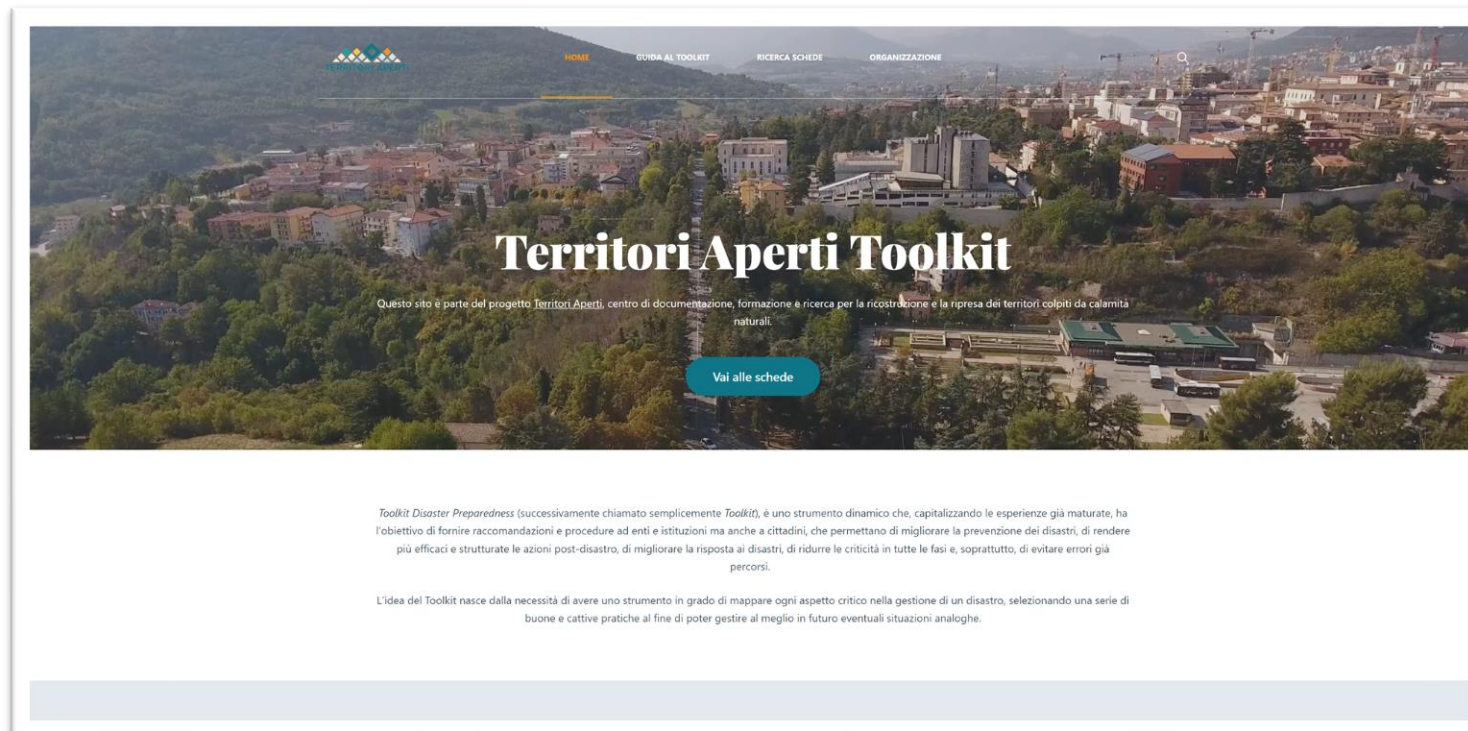
At the bottom of the interface, there is a file explorer for 'TerritoriApertiLab' showing a table with columns for Name, Owner, and Last modified. The table is currently empty, displaying the message 'This folder is empty'. Below the table, it shows 'Showing 0 to 0 of 0 entries' and a 'Go to shared workspace' link. On the right side, there is an 'About' section with the TerritoriAperti Lab logo and a description of the virtual laboratory's purpose, along with a 'View Managers' button.

Territori Aperti Toolkit

<https://toolkit.territoriaperti.univaq.it/>

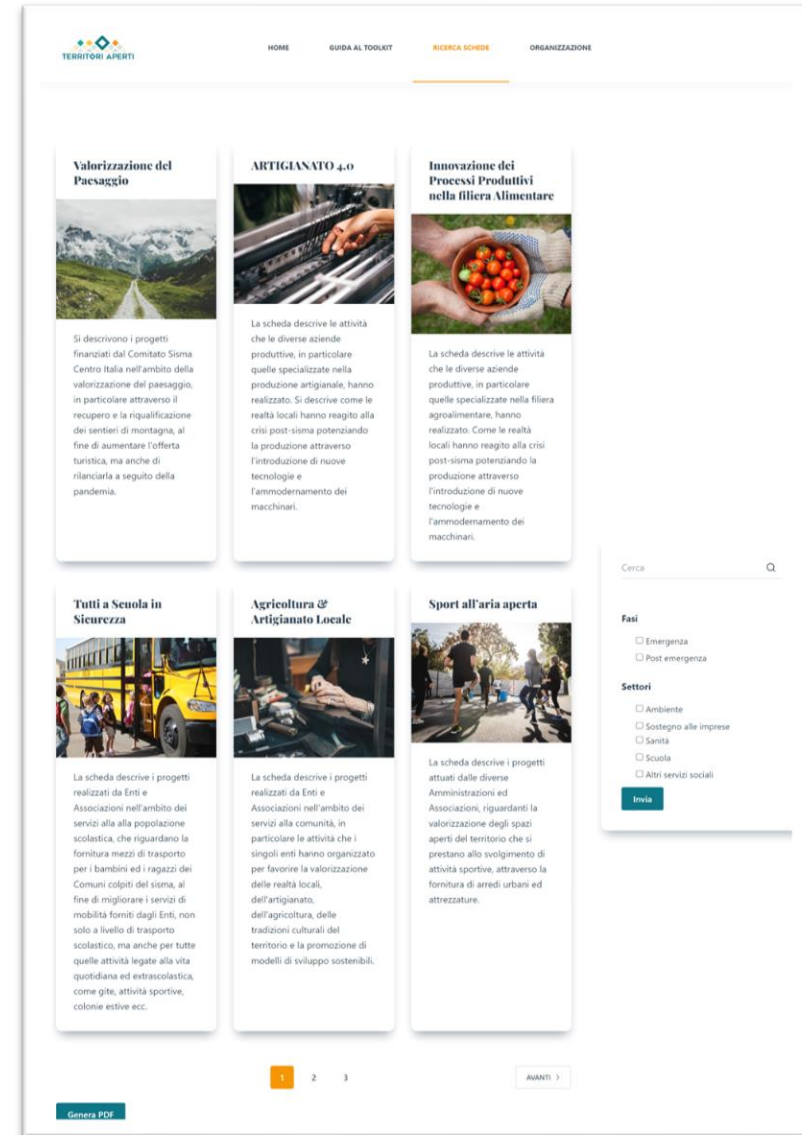
Territori Aperti Toolkit

- A collection of experiences and best practices about the management of natural disasters



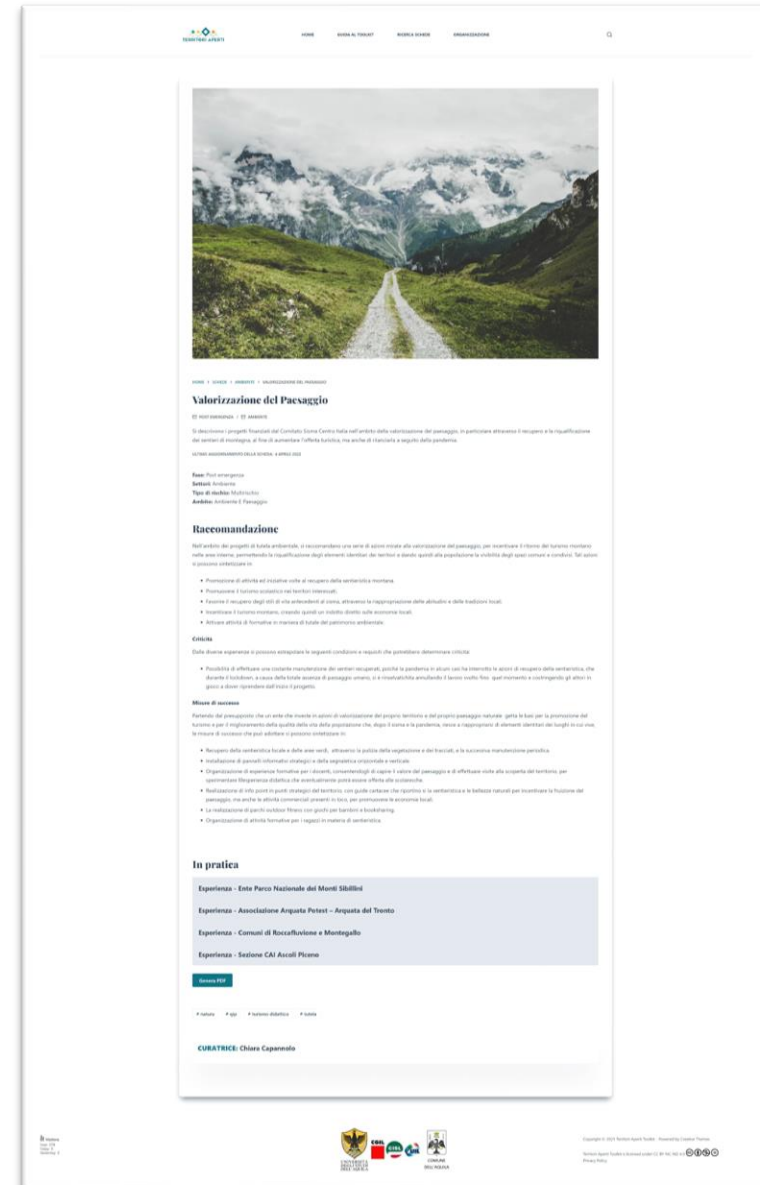
Collection of experiences

- Each experience is collected inside a form
- These experiences are extracted from different sources and are distinguished in phases and sectors
- They can be filtered from the website using the sidebar form



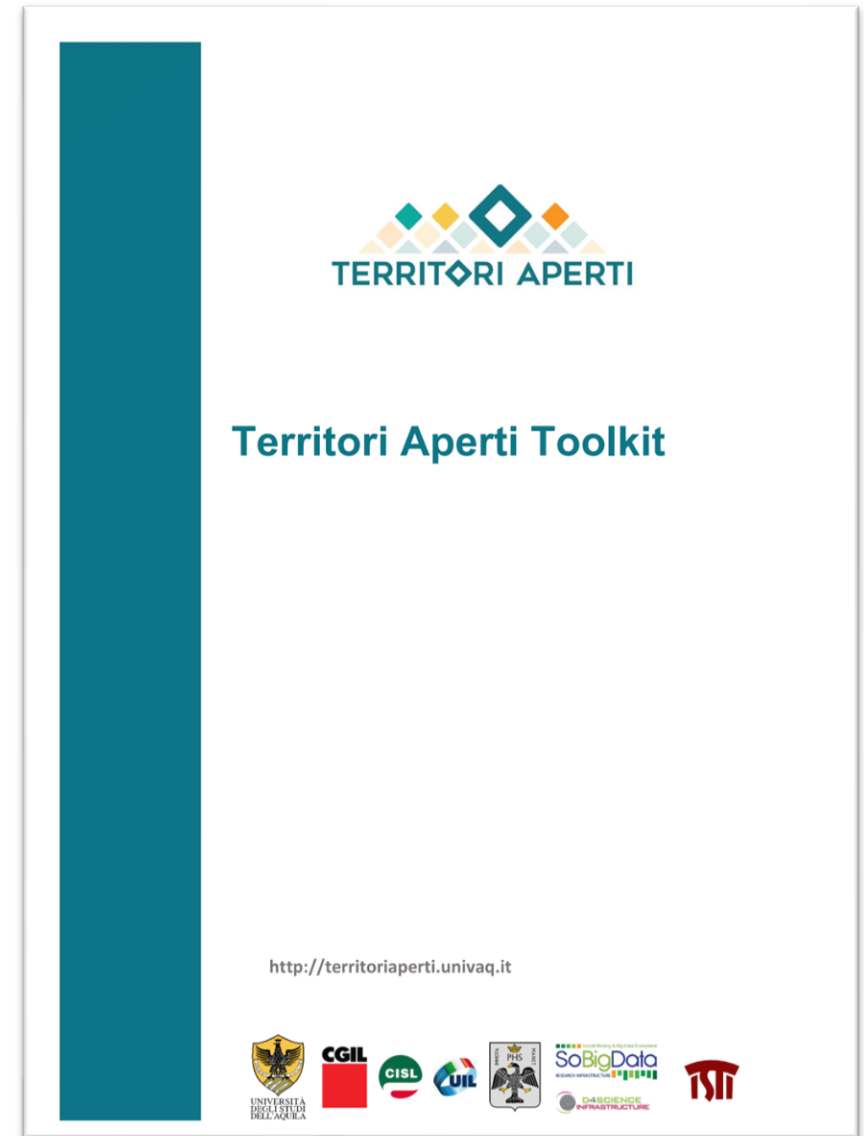
Experience description

- Each experience is described using a set of common fields
- Are highlighted the best and worst practices derived from each experience



PDF Generation

- It is possible to generate a PDF of one or more forms from the dedicated buttons
- Each PDF contains the same information available on the website and an explanation of the different fields of each form



Future works

TA - Analytics

- In the future, we are working to publish TA-Analytics
- An application which will allow user to make interactive analytical dashboards using Open Data collected from open APIs
- The collected data will be periodically updated automatically and so will be the dashboards made with them

Thank you for your attention!