Deliverable D3.1

Virtual Compilation of toolbox

Revision	Organization	Date and visa (approving person)
Written by	RAN	25.03.2024 (Jon Hall)
Checked and approved by	RCCC	26.03.2024 (Bettina Koelle)
Validated and released by	University of Twente	26.03.2024 (Cees van Westen)

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Information Table

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Abstract

Virtual compilation of toolbox. A compilation of virtual tools working with effective approaches for Disaster Risk Reduction (DRR) and adaptation. The output is an inventory of tools available for organisations and individuals involved in building resilience and disaster risk reduction. These include local, regional and national governments, NGO's, CSO's, communities, researchers, etc.
The output will be accessible via the internet (https://www.cmine.eu/topics/35391/page/d31-toolbox). It will be fully searchable and will continue to grow during the PARATUS project. The inventory is also planned to be a 'shared product' of the Societal Resilience Cluster as a jointly owned and contributed to knowledge database for other EU projects.

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Document History

Version	Date	Author	Description
v1 draft	26.02.2024	Sjirk Meijer	First Draft
v2 final	22.03.2024	Sjirk Meijer	Final draft resulting from feedback
	26.03.2024	Cees van Westen	Review and submission

Disclosure Statement:

About PARATUS:

The PARATUS project aims to increase the preparedness of first and second responders in the face of multi-hazard events and to reduce the risks related to impacts on various sectors resulting from complex disasters. The outcome is to develop a cloud-based Online Service Platform that offers support in reducing dynamic risk scenarios and systemic vulnerability caused by multi-hazard disasters. To achieve these objectives, the project will perform in-depth assessments of complex interactions between hazards and their resulting impacts in various sectors, analyse the current risk situation and study how alternative future scenarios could change multi-hazard impact chains. Based on this analysis, scenarios of multi-hazard impacts will be co-designed with stakeholders and developed in four case study areas (including the Caribbean, Romania, Istanbul, and Alpine regions).

Acronyms used in this document

Acronym	Definition
CSIR	Centre for Scientific and Industrial Research, South Africa
CERIS	Community for European Research and Innovation for Security
CMINE	The Crisis Management Innovation Network Europe
D	Deliverable
DRR	Disaster Risk Reduction
EU	European Union
EURAC	EURAC Research
ITC	Faculty of Geo-Information Sciences and Earth Observation
ITU	Istanbul Technical University
IMM	Istanbul Metropolitan Municipality
KNMI	Royal Netherlands Meteorological Institute
M	Month

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PARATUS	Increasing Preparedness and Resilience of European Communities by Co-Developing Services Using Dynamic Systemic Risk Assessment
RAN	Resilience Advisors Network
REA	The European Research Executive Agency
RCCC	Red Cross Red Crescent Climate Centre
UT	University of Twente
WP	Work Package

Executive Summary

This note describes creation and compilation of a toolbox which has been undertaken following an exploration of adaptation and mitigation options as part of a co-creation process with a range of stakeholders and in the application case study sites.

It describes the methodology used to create the toolbox, addressing two lines of work to create a broad content available for end users supporting disaster resilience building, also helpful in disaster risk reduction:

1. The PARATUS-line (internal) and
2. The Societal Resilience Cluster[1] (external) line.

The Deliverable is the toolbox itself but this note aims to describe its purpose, its design, access to it and the ambitions for its continued growth and use through the remainder of the project and beyond. The toolbox can be accessed via the PARATUS Stakeholder Hub here:

https://www.cmine.eu/topics/35391/page/d31-toolbox

[1] The Societal Resilience Cluster is a structured group of 20+ projects involved in disaster resilience and Disaster Risk Reduction. The cluster is hosted by CMINE and endorsed by REA and CERIS to work together on dissemination, information sharing and sustainability of project results

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1 Introduction to WP3 and D3.1

WP3 focuses on existing approaches for DRR and Climate Resilience. A subset of this is Task 3.1 which involves an analyses of disaster risk management approaches against the key EU policy areas including health, environment, climate change adaptation, cohesion, agriculture, transport, energy, research, and innovation resulting in a report mapping approaches from the global Sendai targets and priorities, through evolving EU goals on to local impact.

Specific focus on risk perceptions and awareness, multi-hazard risk reduction strategies, stakeholder engagement and inclusion of disadvantaged groups and the compilation of a toolbox to be tested during the Application Study workshops and later integrated with the Online Service Platform.

This note describes creation of compilation of the toolbox which has been undertaken following an exploration of adaptation and mitigation options as part of a co-creation process with a range of stakeholders in the application case study sites.

The objectives of D3.1 are

1. Analysis of disaster risk management approaches to disaster risk and resilience building and
2. creation of an overview of existing tools, later to be integrated in the online service platform (WP4).

Table 1: PARATUS Deliverables D3.1 – D3.5

#	Name	Due date (month)	Description
D3.1	Virtual compilation of toolbox	18	Lead Beneficiary: RAN Strategy, case study protocols, including template for follow up
D3.2	Guide to stress test future decision making	26	Lead Beneficiary: RCCC A co-produced guide to stress testing decision making .
D3.3	Report of adaptation options	32	Lead Beneficiary: RCCC A co-designed guide of adaptation options, resulting from Case Studies.
D3.4	Serious Game	34	Lead Beneficiary: CRS One serious game based on immersive user experience has been designed and tested
D3.5	Augmented Reality Game	44	Lead Beneficiary: CRS One AR game has been designed and tested and is publicly available.

The Deliverable D3.1 is the toolbox itself (described below). This note aims to describe its purpose, its design, access to it and the ambitions for its continued growth and use through the remainder of the project and beyond.

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2 Background information

In PARATUS, the research and innovation objectives are translated into a methodology consisting of four main components: looking back, today's future, adapting to changes, and developing the user-cantered risk assessment and mitigation service. Therefore, PARATUS is examining existing tools and approaches to support application in the context of compound and cascading risks. The toolbox will be actively used by the application case study partners and stakeholders, and we will document the application and possible new tools that were used in the co-production process.

3 Introduction to Compilation of virtual toolbox

This document reflects the plan of action undertaken in task 3.1 in the PARATUS project and outlines completion of the Deliverable D3.1. The actions have been undertaken in the first eighteen months of the PARARTUS project. Task 3.1 is described in the PARATUS Description of Action (DoA) and can be dissected into three parts. The first part is (text PARATUS DoA):

1. ***"Analysis of current and planned approaches to disaster risk and resilience-building on the experiences of organizations outside of Europe, within Europe, and in specific regions and localities where local projects have been launched by UNISDR and specific projects. Co-development with cities and critical infrastructure providers, consultations with the CMINE Network (over 1000 crisis managers), and resources of the Resilience Advisors Network (150 senior resilience practitioners)."***

The analysis has been undertaken (and continues) both through primary research and in active participation in the Societal Resilience Cluster (SRC). The SRC provided access for PARATUS partners to the developed practices, processes and end-user interactions of other projects. The shared interest of the projects to leave a sustainable legacy creates willingness to share and learn.

2. ***"Analyses of disaster risk management approaches against the key EU policy areas including health, environment, climate change adaptation, cohesion, agriculture, transport, energy, research, and innovation resulting in a report mapping approaches from the global Sendai targets and priorities, through evolving EU goals on to local impact. Specific focus on risk perceptions and awareness, multi-hazard risk reduction strategies, stakeholder engagement and inclusion of disadvantaged groups."***

The analysis now forms part of the virtual compilation of toolbox which is the deliverable of this task (D3.1) and which is described in the sections following. The data entries were evaluated using the Sustainable Development Goals and the European Goals for climate, health and Environment.

3. ***"Overview of existing tools (e.g. the Enhanced Vulnerability and Capacity Assessment tool currently used by the Red Cross Red Crescent movement) and compilation of a toolbox to be tested during the Application Study workshops and integrated with the Online Service Platform."***

This overview describes the 'Virtual Compilation of Toolbox' (D3.1). In the following text, a description is offered of the activities that have led to the Virtual Toolbox.

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Operational objectives

As mentioned in the PARATUS DoA, the objectives were to create an inventory of tools/ instruments for improvement of disaster resilience and disaster risk reduction, which:

- are available, accessible and ready to use,
- can be used/ tested in the Application Study Workshops

The inventory is intended to be integrated in the PARATUS Online Service Platform which will contain the PARATUS toolbox. It is designed to continue to grow throughout the project.

Output

The output of the task is an inventory of tools available for organisations and individuals involved in building resilience and disaster risk reduction. These include local, regional and national governments, NGO's, CSO's, communities, researchers, etc.

The output will be accessible via the internet. It will be fully searchable and will continue to grow during the PARATUS project. The inventory is also planned to be a 'shared product' of the Societal Resilience Cluster as a jointly owned and contributed to knowledge database for other projects.

Specifically the output is:

1. a list of worldwide used/ developed tools for improving disaster resilience and/or Disaster Risk Reduction. (In first instance, an Excel workbook) and,
2. a User Interface to access the data and enter new tools.

The output is structured so it can be merged with tool inventories, solution catalogues, and project directories from associated (Horizon Europe) projects with the focus on societal resilience.

4 Methodology

In creating the toolbox, two lines of work were followed to create a broad content available for end users supporting disaster resilience building, also helpful in disaster risk reduction. Both lines of work are complementary:

3. The PARATUS-line (internal) and
4. The Societal Resilience Cluster[2] (external) line.

The PARATUS line focussed on information that was available to project partners. In this line, project partners provided their knowledge of known tools for incorporation into a shared list of tools. The tools brought in by this line were part of a knowledge legacy of partners, intrinsically more focussed and related to the tool development with PARATUS. The list is complemented with a 'list of lists', which is a reference-tool to inventories from other projects.

[2] The Societal Resilience Cluster is a structured group of 20+ projects involved in disaster resilience and Disaster Risk Reduction. The cluster is hosted by CMINE and endorsed by REA and CERIS to work together on dissemination, information sharing and sustainability of project results

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The shared directory building with other projects in the Societal Resilience Cluster (**The Cluster Line**) is an on-going process of gathering input from projects resulting in a library. This library contains tools, solutions and research and innovation products either completed or, in "close-to-market" stages of development which provide a source of knowledge for End users and other stakeholders in European projects wider audiences of communities, governments (local, regional, national), responder organisations, NGOs, CSOs etc.

Both activity lines met in a joint catalogue which will be accessible via the PARATUS Online Service Platform and also via CMINE. It is intended for partners to add entries and continue to build the Toolbox after the conclusion of the Task.

The development of the Cluster line and presentation of the Toolbox on CMINE is enabled by the capacity in PARATUS and a new project, SYNERGIES for the development of the Societal Resilience Cluster.

Figure 1: The PARATUS Stakeholder Hub is going to be shared with other projects of the SRC cluster, and the tool will be shared.

The PARATUS-line (Step by step approach)

Constitute basic list with known initiatives, programmes, tools

Clarification of data fields

1. Programme/ framework
2. Tool name
3. Lead organisation/ owner + Weblink
4. Date of publication
5. Tooltype (assessment, step-by-step policy, technological, good practices, tec.)
6. Target group (governments, communities, researchers, etc)
7. Hazard (all hazard, earthquake, etc)
8. Resilience dimension[3] (Social, Economic, Governance, Environment, Infrastructure, DRR)
9. Disaster Risk Reduction phase (early warning, communication, prevention, mitigation, preparedness, response, recovery)

[3] Dimensions used to define community resilience in RESILOC project (Nr. 833671)

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10. UN's Strategic Development Goals (SDG)
11. EU Sustainable, Environment, Health and Climate Goals[4][5][6]
12. Text description
13. Weblinks

Entry of known frameworks and tools

The master list was filled with the first 70+ known tools, intended to offer examples for later entries.

Consultation with PARATUS partners in T3.1

The PARATUS partners were asked:

- to review the entry fields,
- add tools known to them.
- Add known resources (other directories)

For the purpose of data entry, a form was developed. This form guided the partners to enter the data in a structured consistent way.

Consultation with all PARATUS partners, especially the end-user/ case partners,

Partners were asked to add missing tools. For this, an overview of already entered tools were given. The entries used the same data entry form.

The Cluster line (HEU Societal Resilience Cluster of projects)

Consultation with Societal Resilience Cluster partners

Other project in the same domain were requested to undertake a similar task to further build the inventory, testing and applying those already registered. The Cluster offered a unique possibility to bring shared knowledge together as a basis for the objectives of the PARATUS project whilst also benefiting the broader objectives of Horizon research and future projects in the domain.

This consultation also had a data gathering component.

The three consultations (PARATUS task partners, PARATUS end-users and SRC-projects) were parallel actions.

Develop a presentation system and sustainable entry system

[4] EU-Goals from EC communication: 'Forging a climate-resilient Europe - the new EU Strategy on Adaptation to Climate Change', COM(2021) 82 final, 24-2-2021
[5] European Disaster Resilience Goals: Commission Recommendation of 8.2.2023 on Union disaster resilience goals
[6] EU Global Health Strategy: Better Health For All in a Changing World, EW-04-22-331-EN-N, ISBN 978-92-76-60497-6, 2022

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5 Deliverable

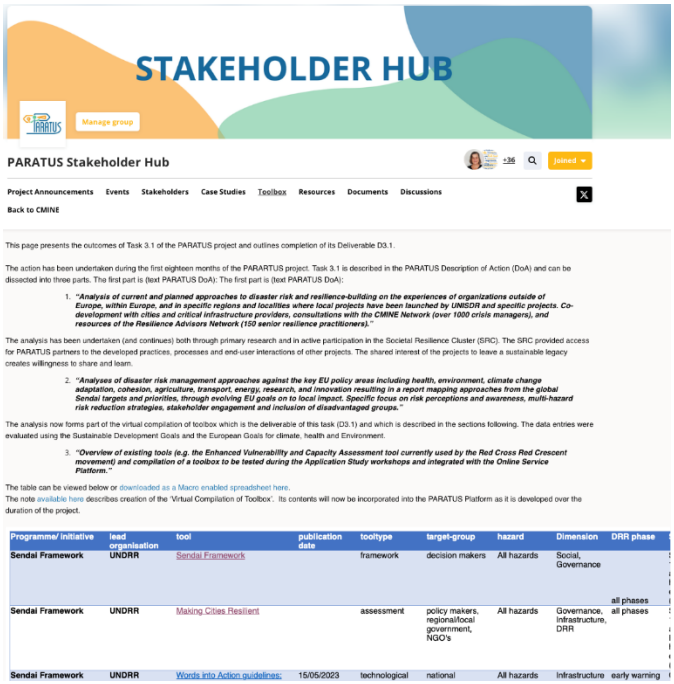

Figure 2: Screenshot of PARATUS toolbox (21-3-2024)

The Toolbox is compiled based on the entries by the partners and made available as part of the PARATUS stakeholder hub. The link to the toolbox is here: https://www.cmine.eu/topics/35391/page/d31-toolbox.

In Figure 1. a screenshot can be seen of the toolbox. Due to the size of the toolbox in the screen shot only a part of the directory is visible. Besides a text version of the toolbox the full excel-file can be downloaded and there is a link to a data entry form.

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6 Next Steps & Further development

During the PARATUS' project duration, the Toolbox is intended to be maintained. Integrations with the PARATUS platform and other initiatives will be undertaken and a user-interface will be further developed to access the data.

A further research aim is to enable some level of automatic rendering of new entries, for example by using AI to feed the Toolbox. This is part of the 'cluster line' action, with the aim to build sustainability over the project life time.

7 Ethics

PARATUS project activities follow a human centred approach. Co-development of the online and open-source PARATUS platform with various stakeholders is at the centre of the project. We will involve human subjects, i.e. experts and external stakeholders, via participatory research methods as volunteers participating in external stakeholders workshops, interviews and surveys. We will ensure and protect their privacy, dignity and integrity. In PARATUS, ethics are considered as an enabler to the project. Careful consideration of ethical aspects ensures trust building and long-term collaboration with stakeholders.

All activities adhere to both local and EU ethical regulations. We follow the ethical principles laid out in the European Code of Conduct for Research Integrity, the Netherlands Code of Conduct for Research Integrity and other national codes of conduct (non-EU countries, i.e. Türkiye, Thailand and UK; please see deliverable 7.3 for more information). No ethical issues are foreseen in these countries, as all activities are also allowed in EU member states. No local resources will be used, no material will be imported or exported, the countries are not 'low and/or middle income', and the situation in these countries will not put the individuals taking part in the activity at risk. Furthermore, as the project outcomes will be an online open source platform based on local characteristics, it will directly benefit those involved in the project.

The PARATUS project activities do not raise ethical issues but touch on various aspects that must be planned and addressed by the consortium in executing their research. Our activities involve research stakeholders and end-users, and therefore, they will be framed by ethics requirements and continuously checked for ethical compliance by the PARATUS Gender, Diversity, Ethics and Security Board (GDES).

The Ethics Board will also monitor compliance with the requirements regarding ethical, privacy and data protection issues throughout the project's lifetime.

The guiding principles behind all ethics-related activities must therefore be:

- All research activities serve to increase knowledge and have a duty to promote human well-being and protect the environment and other values.
- Do not harm: Researchers need to prevent direct and indirect harm to the values as far as possible.
- All activities must be compliant with the GDPR and applicable national regulation
- Realizing benefits, participants shall understand the benefit of involving in the activities
- Understanding impact, participants shall understand the impact of the research
- Protect the vulnerable
- Address bias

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- Minimize intrusion
- Minimize data
- Protect privacy
- Prevent identification of individuals
- Provide accountability

8 Reporting and impact

The Toolbox provides:

- input for the case study areas
- a base of knowledge for the PARATUS online Service Platform
- examples/ gaps for the development other tools in WP4

Users of the Virtual Toolbox can find a wealth of initiatives, innovations, frameworks and other tools and references will enable further study them.

In a wider perspective, the 'Cluster Line' of development is the first step to a repository of disaster resilience themed innovations and tools to be made available beyond the individual project's end users

In PARATUS we have created a stakeholder hub (For more information please visit D5.1 and 5.2) The creation of a project Stakeholder Hub aims to create a network of relevant stakeholders and initiatives linked to PARATUS. This will include a wide variety of organisations, experts, and initiatives. The idea is to engage with relevant stakeholders throughout the Hub which can participate in the co-creation of the project results. The Hub will furthermore enable stakeholders to share knowledge and serve as multipliers for dissemination activities.

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