SaferPlaces Global Platform

AI-based Digital Twin Solution for Flood Risk Intelligence in Urban Areas

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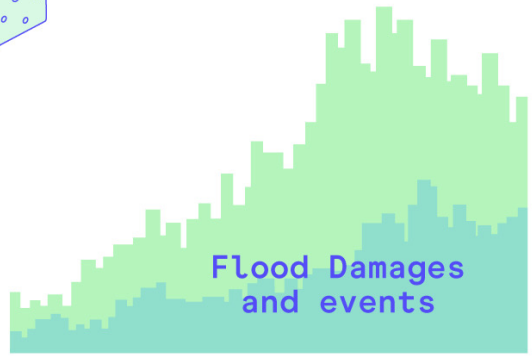
THE CHALLENGE

Will you be prepared for the next flood event in your city?



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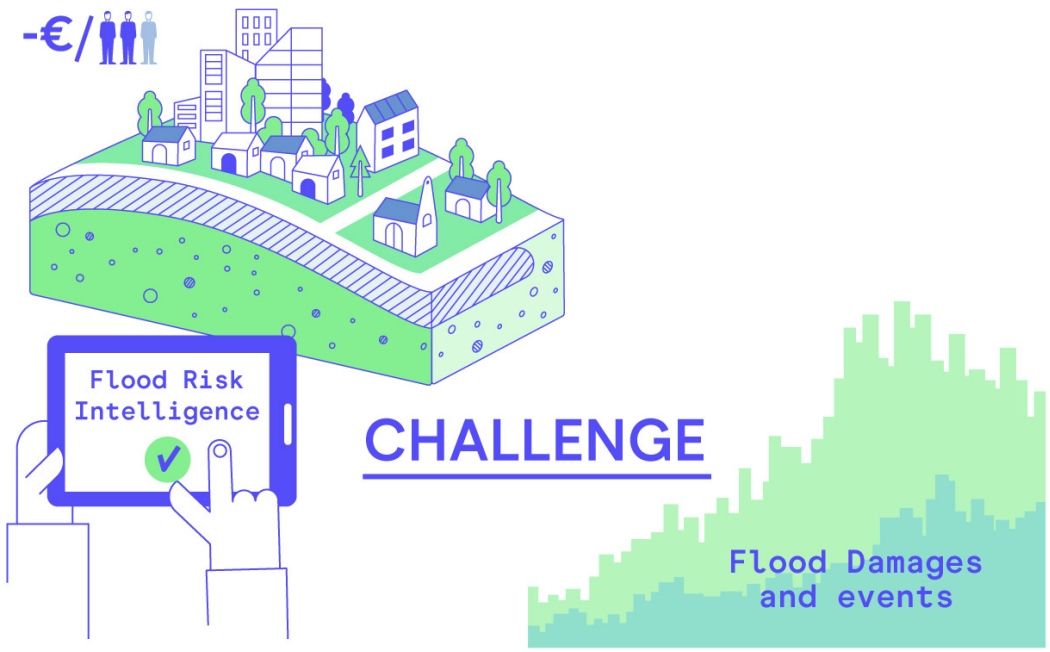
- Natural Disasters and Flood Damages are increasing in our cities

- **44%** flooding over other disasters
- **> 600B** $ global economic losses
- **1.6B** people affected worldwide

Source: **UNDRR**, The human cost of disaster, an overview of the last 20 years (2000-2019)

Facing Urban Flood Worldwide



- Municipalities,
- Urban Planners
- Citizen
- Fintech & Insurance Companies

need appropriate flood risk intelligence

Flood Risk Intelligence:

- High Resolution data: parcel/building level
- Past, Real-time and future scenarios

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Facing Urban Flood Worldwide

- 3 types of floods Hazards
  - Pluvial
  - Fluvial
  - Coastal

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Facing Urban Flood Worldwide

- Investment in flood risk mitigation measures like NBS
- Build preparedness and climate resilience to protect assets and reduce damages

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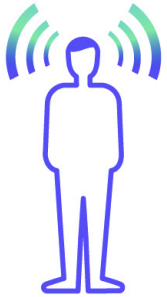
Current Gaps

High resolution data gaps

Lack of flood data and risk maps
Uneven coverage at global level

Complex tools for selected experts

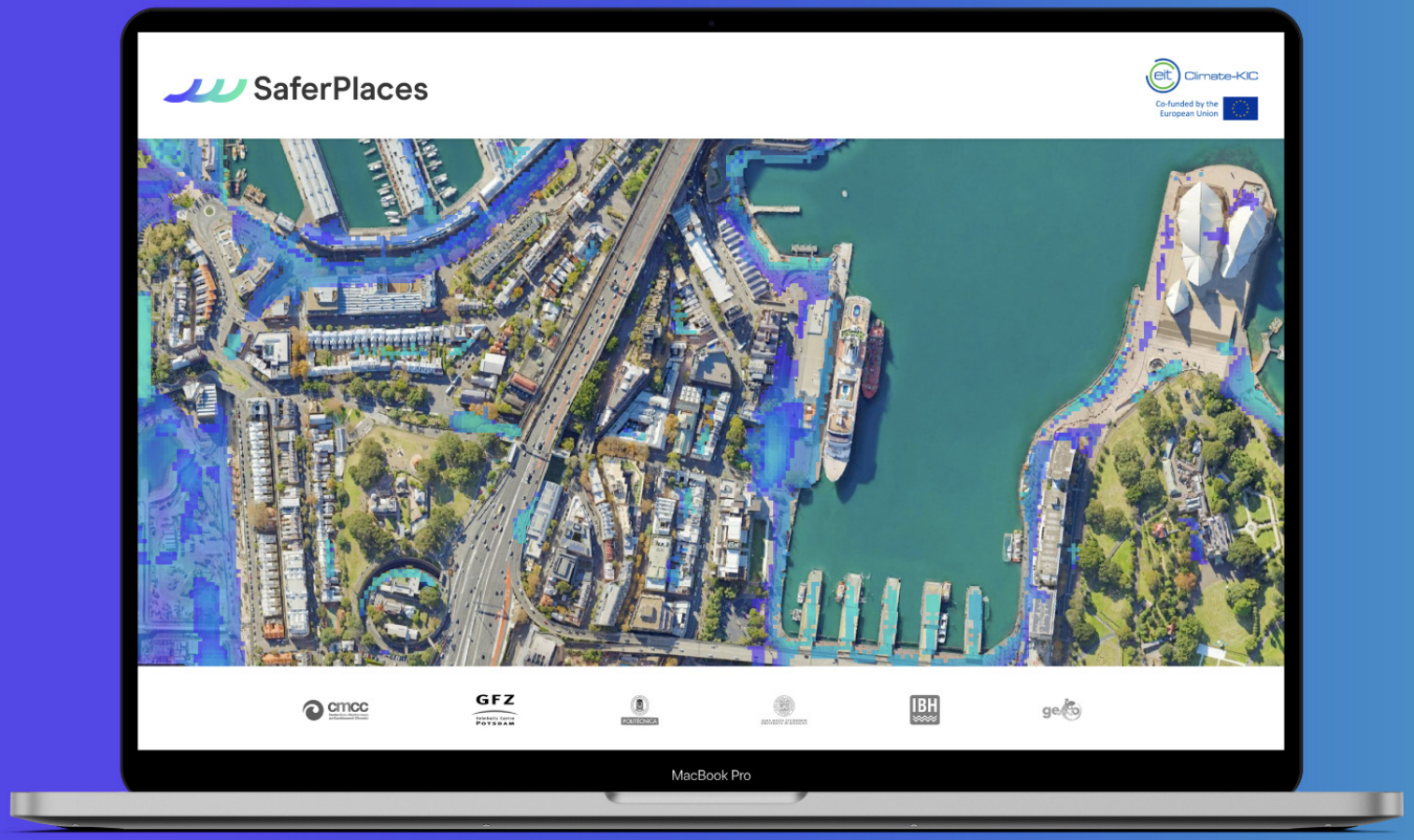
Cost, Time and CPU-intensive Solutions.
Targeted highly Skilled professionals



Limited Access Lack of Democratization

Limited in-house time and Resources.
Multiple hazards/damages and climate scenarios

The solution

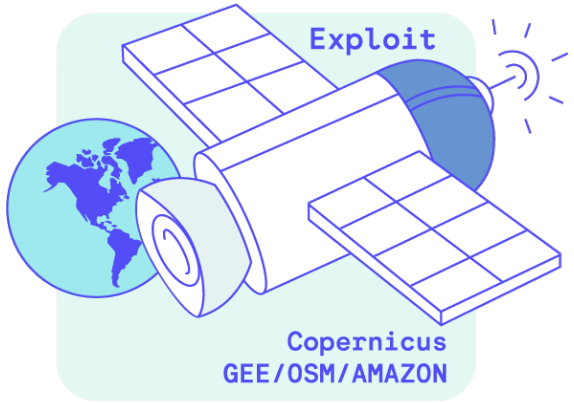


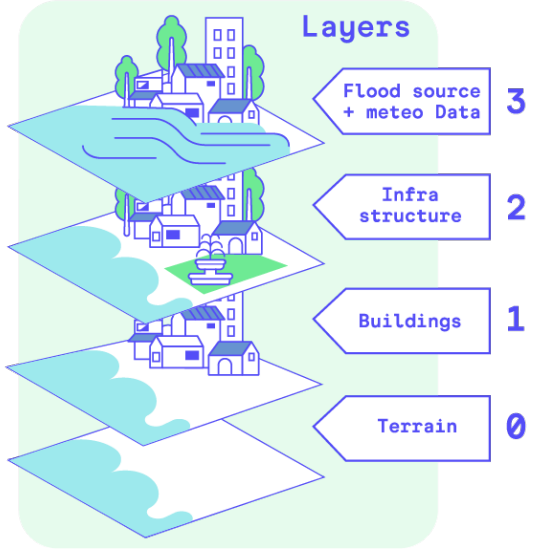
Digital Twin Solution

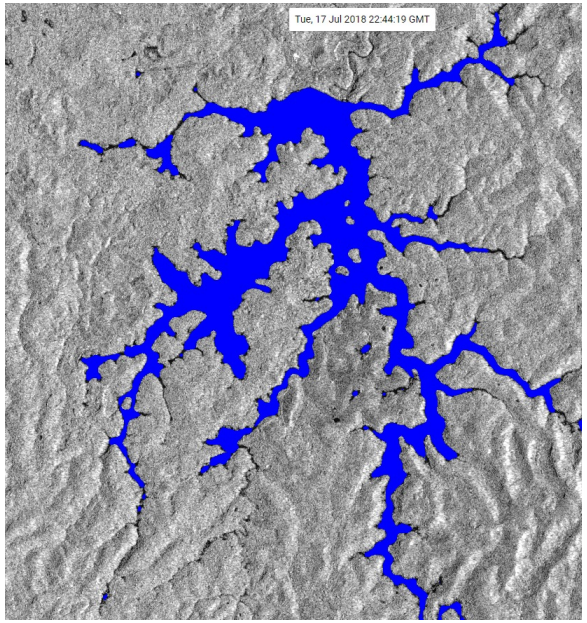
THE SOLUTION

SaferPlaces

A Digital Twin for Urban Flooding



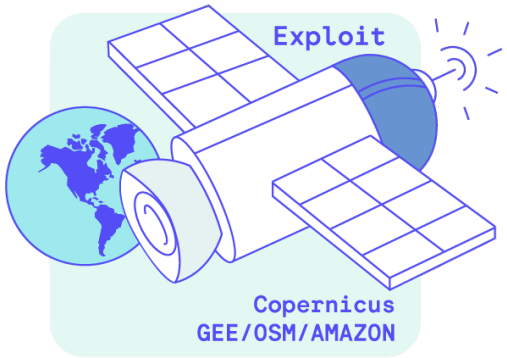


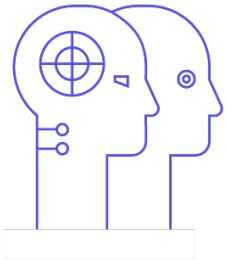


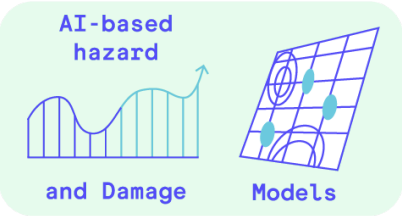
- Exploit Big Open EO and Geospatial Data:
  - Copernicus CDS
  - Copernicus Satellite
  - ESA
  - GEE,
  - OSM,
  - AMAZON,
  - UP42 Airbus
  - DataCube
  - ICEYE
  - Capella Space

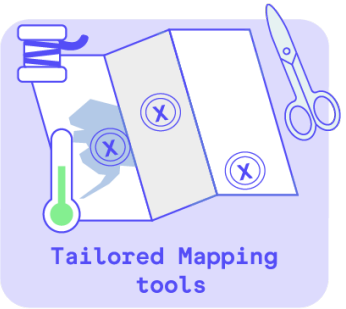
THE SOLUTION

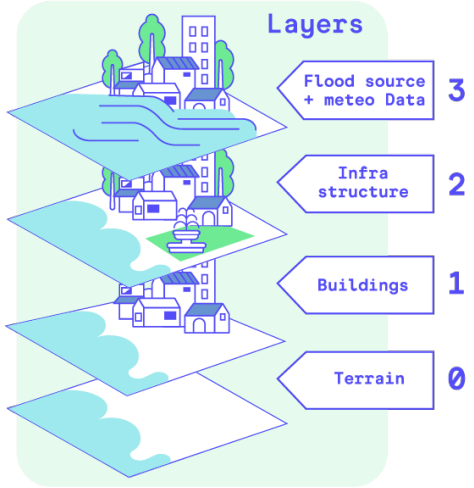
A Digital Twin for Urban Flooding





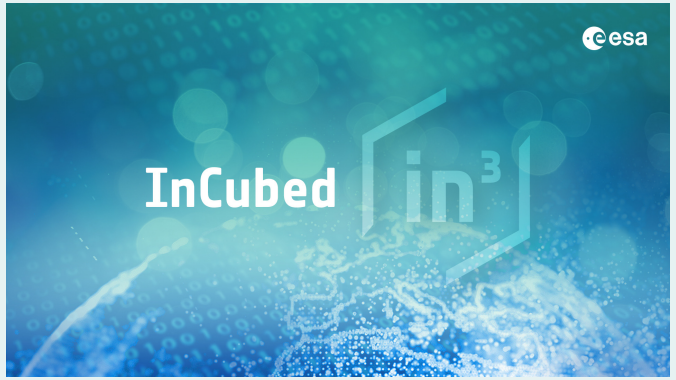






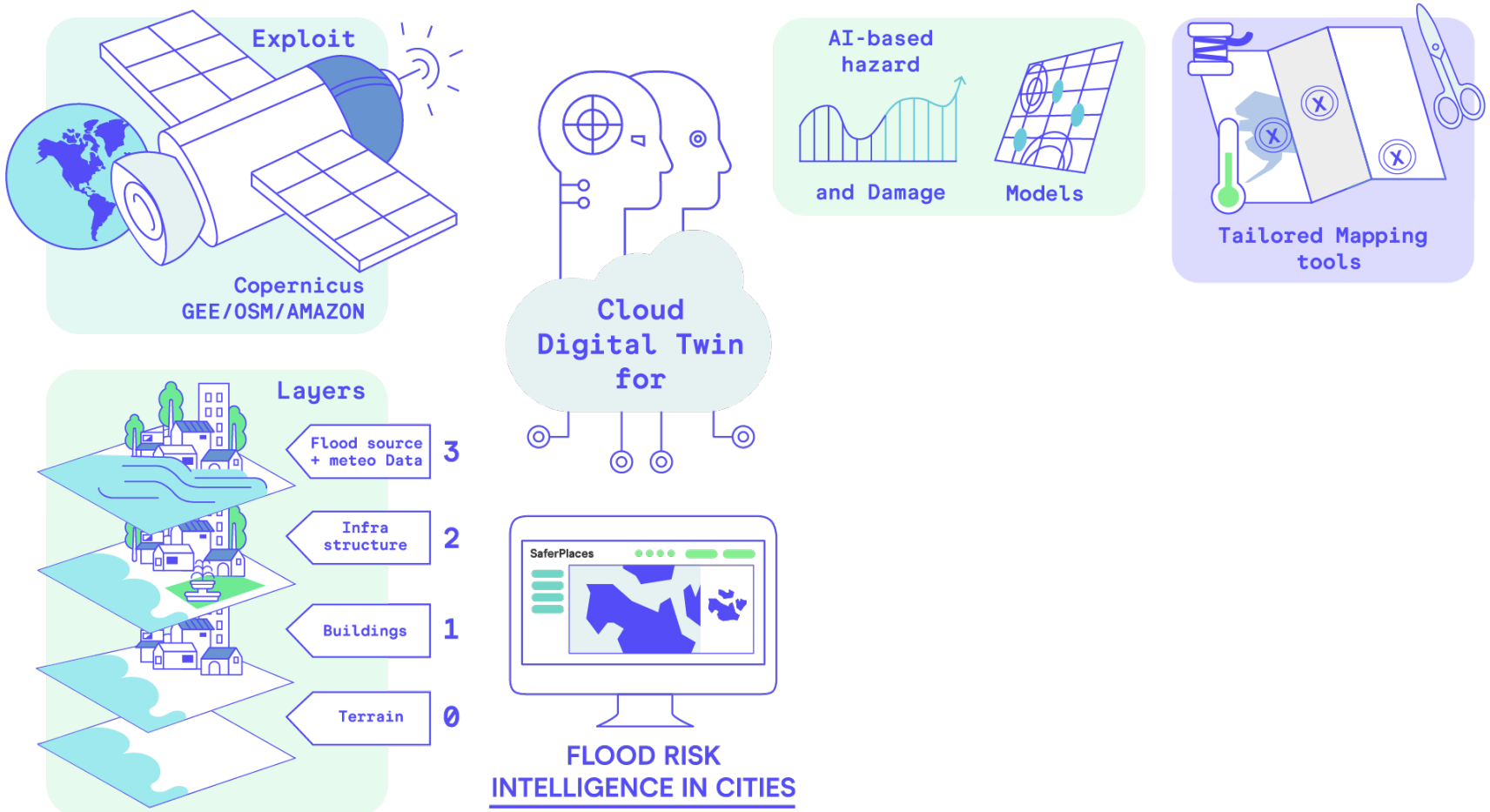
SaferPlaces

- Innovative and fast
  AI and physical-based flood hazard and damage models tailored for urban areas
- ESA InCubed: New Satellite-based functions
  - Water Mask Extraction
  - DEM generation
  - Rainfall Intensity



THE SOLUTION

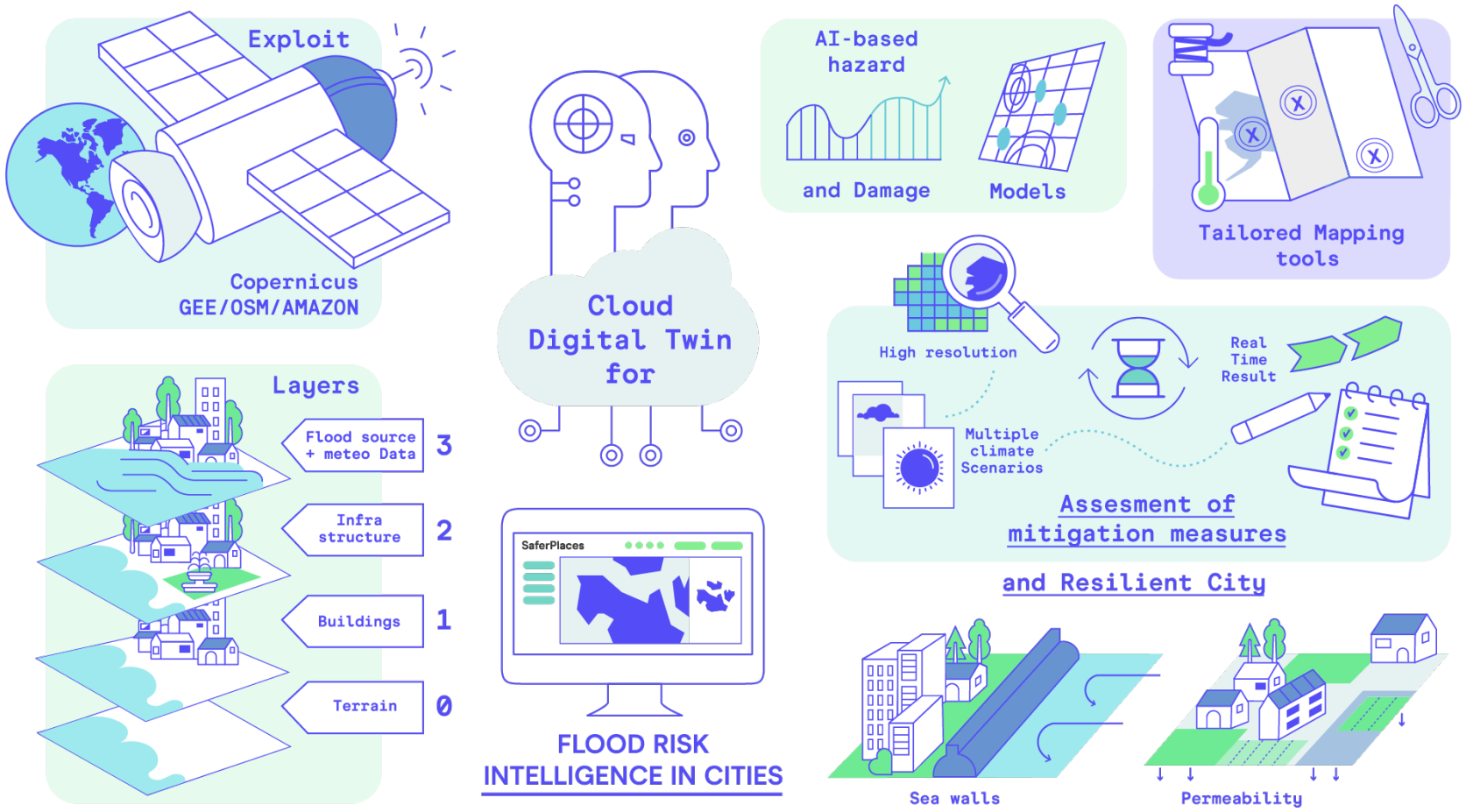
A Digital Twin for Urban Flooding



- Cloud Based Digital Twin for flood risk intelligence

THE SOLUTION

A Digital Twin for Urban Flooding



- What can SaferPlaces do?
  - Deploy cost-effective flood risk data at parcel level with global coverage
  - Support Design of adaptation and mitigation strategies for a resilient city
  - Support flood risk early warning

THE SOLUTION

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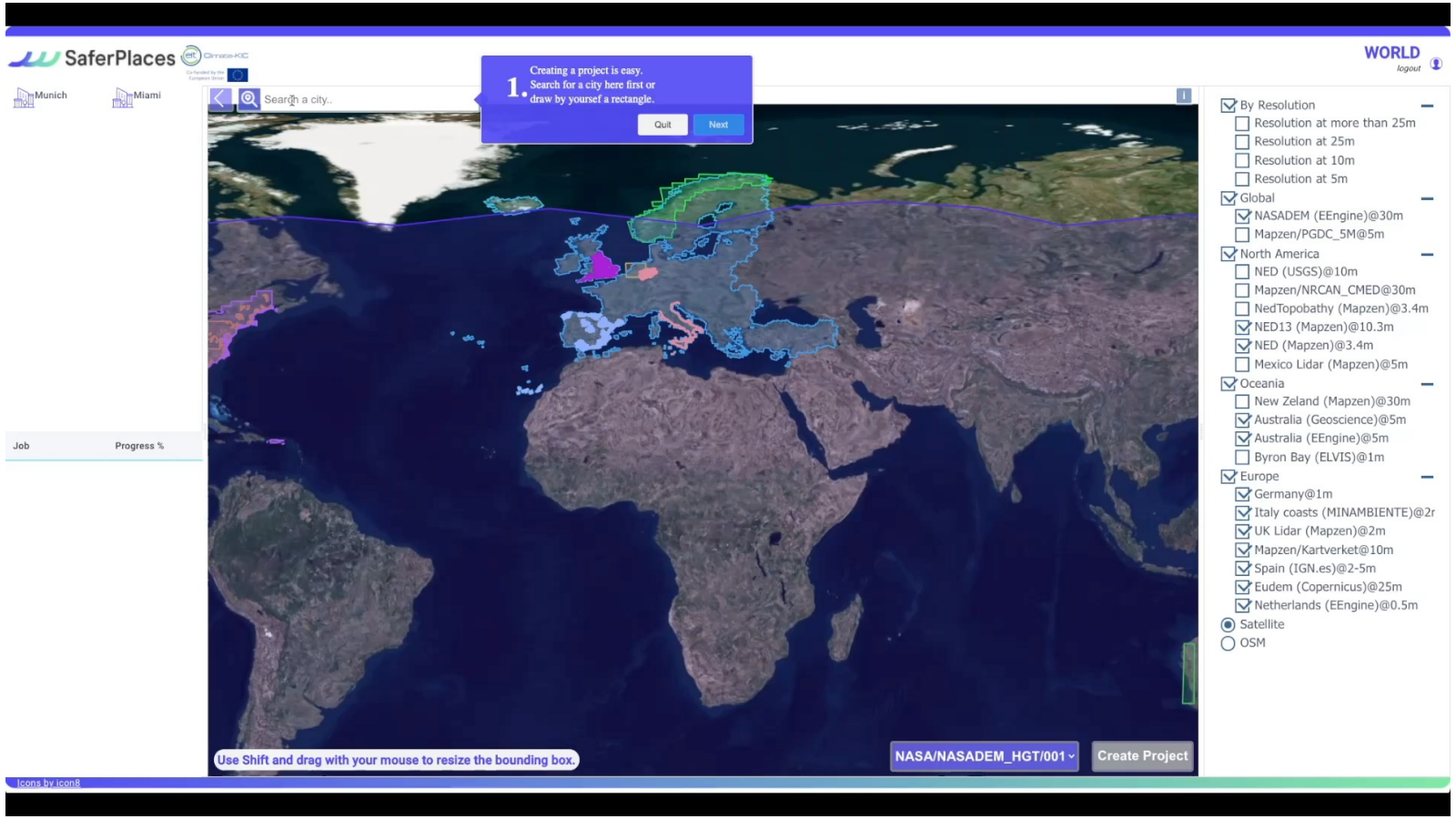
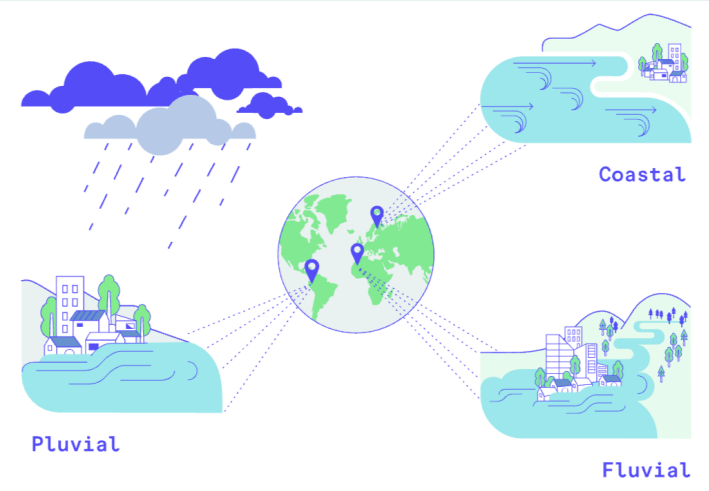
Global Flood Risk Intelligence at your fingertips





- YOU can Activate the platform for every city world wide in 4 easy steps and in 5 minutes

SaferPlaces

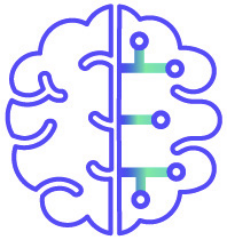
Technology & IPR

Digital Twin - Big Open Data

Climate Data - Copernicus

Geospatial Data – LIDAR
Google Earth Engine
Amazon S3
Open Street Map

Satellite Data
(Sentinel)
On site –IoT data



AI and Raster Algorithms IPR

Data driven and DEM
/raster-based
flood hazard models

Fast and cost-effective
algorithms

Bayesian Damage
Assessment
Algorithms

Cloud Computing

Scalable and Elastic
Resources

Real Time Fast
Processing

SaferPlaces

Science Proof Models

– We bring innovative flood risk data and tools from the research world to everyone

water

Safer_RAIN: A DEM-Based Hierarchical Filling-&-Spilling Algorithm for Pluvial Flood Hazard Assessment and Mapping across Large Urban Areas

Water, Volume 12, Issue 6 (June 2020)

ELSEVIER

SoftwareX
Volume 12, July–December 2020, 100588

Original software publication

BANSHEE–A MATLAB toolbox for Non-Parametric Bayesian Networks

Dominik Paprotny [a], Oswaldo Morales-Nápoles [b], Daniël T.H. Worm [c], Elisa Ragno [b]

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ELSEVIER

Environmental Modelling & Software
Volume 118, August 2019, Pages 172-186

A web application for hydrogeomorphic flood hazard mapping

Ricardo Tavares da Costa [a, b], Salvatore Manfreda [c], Valerio Luzzi [a], Caterina Samela [b, c], Paolo Mazzoli [a], Attilio Castellarin [b], Stefano Bagli [a]

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ELSEVIER

Journal of Hydrology: Regional Studies
Volume 32, December 2020, 100751

Changes in seasonality and magnitude of sub-daily rainfall extremes in Emilia-Romagna (Italy) and potential influence on regional rainfall frequency estimation

S. Persiano [a], E. Ferri [a, b], G. Antolini [b], A. Domeneghetti [a], V. Pavan [b], A. Castellarin [a]

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Nat. Hazards Earth Syst. Sci., 20, 323-343, 2020
https://doi.org/10.5194/nhess-20-323-2020
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Article | Assets | Peer review | Metrics | Related articles

Research article 28 Jan 2020

Estimating exposure of residential assets to natural hazards in Europe using open data

Dominik Paprotny[1], Heidi Kreibich[1], Oswaldo Morales-Nápoles[2], Paweł Terefenko[3], and Kai Schröter[1]

[1]Section Hydrology, Helmholtz Centre Potsdam, GFZ German Research Centre for Geosciences, Telegrafenberg, 14473 Potsdam, Germany
[2]Department of Hydraulic Engineering, Faculty of Civil Engineering and Geosciences, Delft University of Technology, Stevinweg 1, 2628CN Delft, the Netherlands
[3]Institute of Marine and Environmental Sciences, University of Szczecin, Adama Mickiewicza 16, 70-383 Szczecin, Poland

Correspondence: Dominik Paprotny (paprotny@gfz-potsdam.de)

Received: 23 Sep 2019 – Discussion started: 30 Sep 2019 – Revised: 22 Dec 2019 – Accepted: 07 Jan 2020 – Published: 28 Jan 2020

ELSEVIER

Science of The Total Environment
Volume 737, 1 October 2020, 140011

Exposure and vulnerability estimation for modelling flood losses to commercial assets in Europe

Dominik Paprotny [a], Heidi Kreibich [a], Oswaldo Morales-Nápoles [b], Attilio Castellarin [c], Francesca Carisi [c], Kai Schröter [a]

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https://doi.org/10.1016/j.scitotenv.2020.140011 Get rights and content

SaferPlaces

Our Unique Values

Inclusive & Accessible

Global coverage at high resolution
no need of complex
and resource-intensive models

Scalable

Cross-sectorial cloud-web platform
to meet every need

Dynamic

Multiple flood scenarios
for evolving cities under changing
climate scenarios

Innovative

Simplified data-driven science-based
AI algorithm

Cost/Time effective

Deploys Flood Risk Intelligence in few
minutes worldwide

Democratic

Flood Risk Intelligenge
for a wider audience of Stakeholder

SaferPlaces

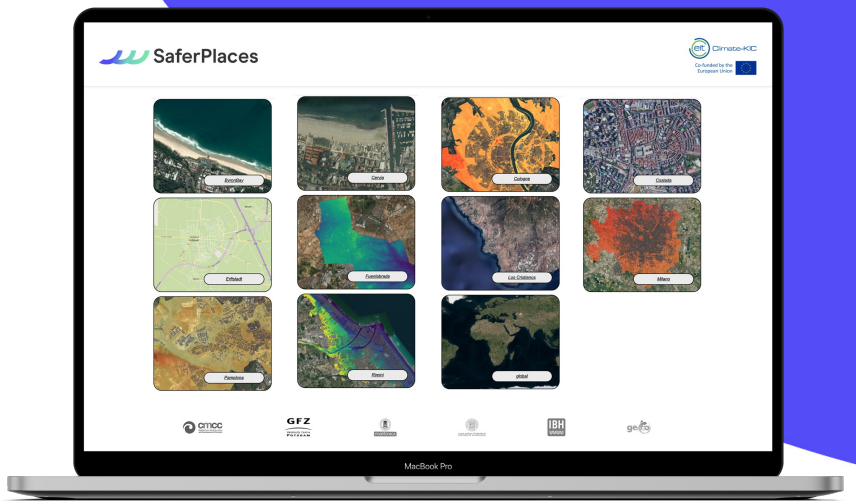
Our Story

- **Funded by EIT Climate/KIC for a 3 years R&D project with 1,8M Euro Investment** (Co-funded rate 40%)

- **We have a TRL7 Operative On-Line Prototype**
  - More than 10 Pilots Studies
  - Global Version ON-LINE
  - 300 Active/Registered Users in 2021 – 1500 active sessions in 2021

- **Year 2022**
  - 2022 GO2Market – First Customer campaign
  - Traction- 3 Paying customers
  - ESA In-cubed Program 300k euro Grant (70% founded)
  - EU Horizon IA Project 400k euro Grant (70% founded)
  - **Winners of Copernicus Prize Italy and finalist at the Copernicus Masters 2022**
  - Italian Insurtech Start-up of the year 2022– 3rd place
  - PhD PNRR co-funded with UNIBO

- **Global Market Leader in Urban Flood Risk Intelligence in 5y**



Copernicus masters

SaferPlaces

Our Partners

Copernicus masters

AZO Space of Innovation

esa

in3

cmcc Centro Euro-Mediterraneo sui Cambiamenti Climatici

GFZ Helmholtz Centre Potsdam

Alma Mater Studiorum Università di Bologna

IBH

Politécnica

MEEO Meteorological Environmental Earth Observation

geo

eit Climate-KIC

Co-funded by the European Union

aws activate

NVIDIA INCEPTION PROGRAM

SaferPlaces

Our Team

Stefano Bagli
PhD, CEO & Co-founder

Paolo Mazzoli
CSO & Co-founder

Francesca Renzi
COO, Project Management

Riccardo Cozzi
IT Developer

Attilio Castellarin
Professor of Hydraulic
Non Executive board mentor

Francesca Larosa
CFO, Economist
and Social Scientist

Valerio Luzzi
CTO Software Engineering
Product Dev

Conor Hickey
CMO Digital Marketing

Jaroslav Mysiak
Climate Scientist and Economist
Non Executive board mentor

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The Business Model

Solutions and competitors
Customer & Early Adopters
Scalable Business Model
Trasparent Pricing Strategy
Market size

Customers & Early Adopters

Emergency Authorities

Water and Energy Multi-utility

Real estate

Insurance and re-insurance

Municipalities

Finance and Banks

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Existing Solutions and Competitors

	SaferPlaces	Fathom	JBA	Jacobs	Zeppelin	3Di	Ambiental
Cloud-based	✓			✓		✓	
World wide coverage	✓	✓					
High resolution <= 5-10m	✓			✓		✓	✓
Flood Hazard	✓	✓	✓	✓	✓	✓	✓
Flood Damages	✓		✓	✓			
Climate Change Projections	✓		✓				✓
Mitigation and Adaption Tools	✓						
Early Warning	✓		✓				
Digital Twin	✓						

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Scalable Business Model

SaaS - Software as a Service

- Activation fee – price per square km and spatial resolution
- Annual Subscription: unlimited use of the cloud platform with all the functionalities (climate forecast, mitigation measure assessment, flood hazard/damage…)

DaaS – Data as a Service

- One Time Data and Flood Hazard/ Risk Maps Deployment API or GeoTIFF Download)
- Price per square km depending on spatial resolution and number of selected scenarios

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TAM Market Size – Global Market

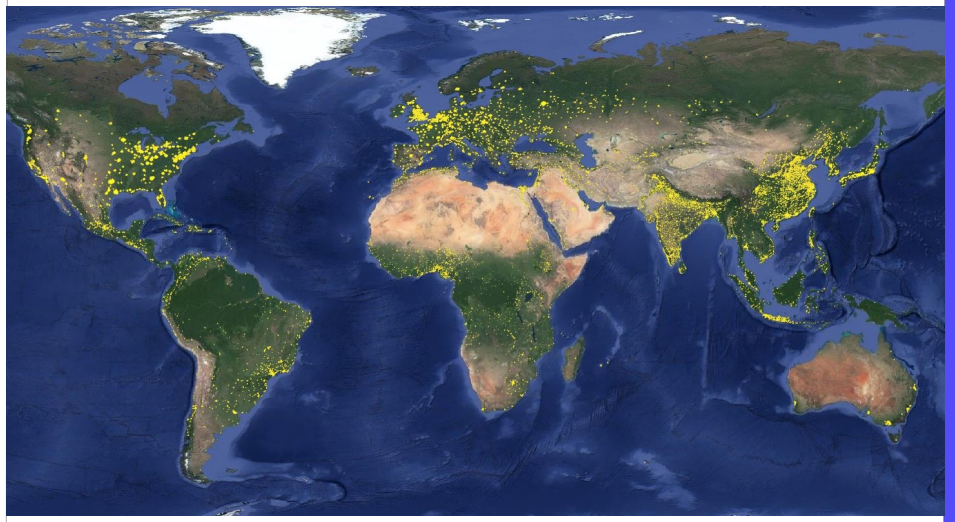
— **Target market**

- More then 35000 Municipalities in OECD's Functional Urban Areas*
- 2,5M - Km^2 FUAs**

— **TAM - 1 SaferPlaces license per main user type and city**

- Activation Fees (20 euro/Km2) – DaaS – 250 M euro
- Annual Sub. (5 euro/Km2-year) – SaaS – 62.5 M euro/year

— **SOM 1500 license with 1% TAM penetration rate**



* OECD - https://www.oecd.org/cfe/regionaldevelopment/functional-urban-areas.htm

** JRC/OECD FUA - https://ghsl.jrc.ec.europa.eu/download.php?ds=FUA

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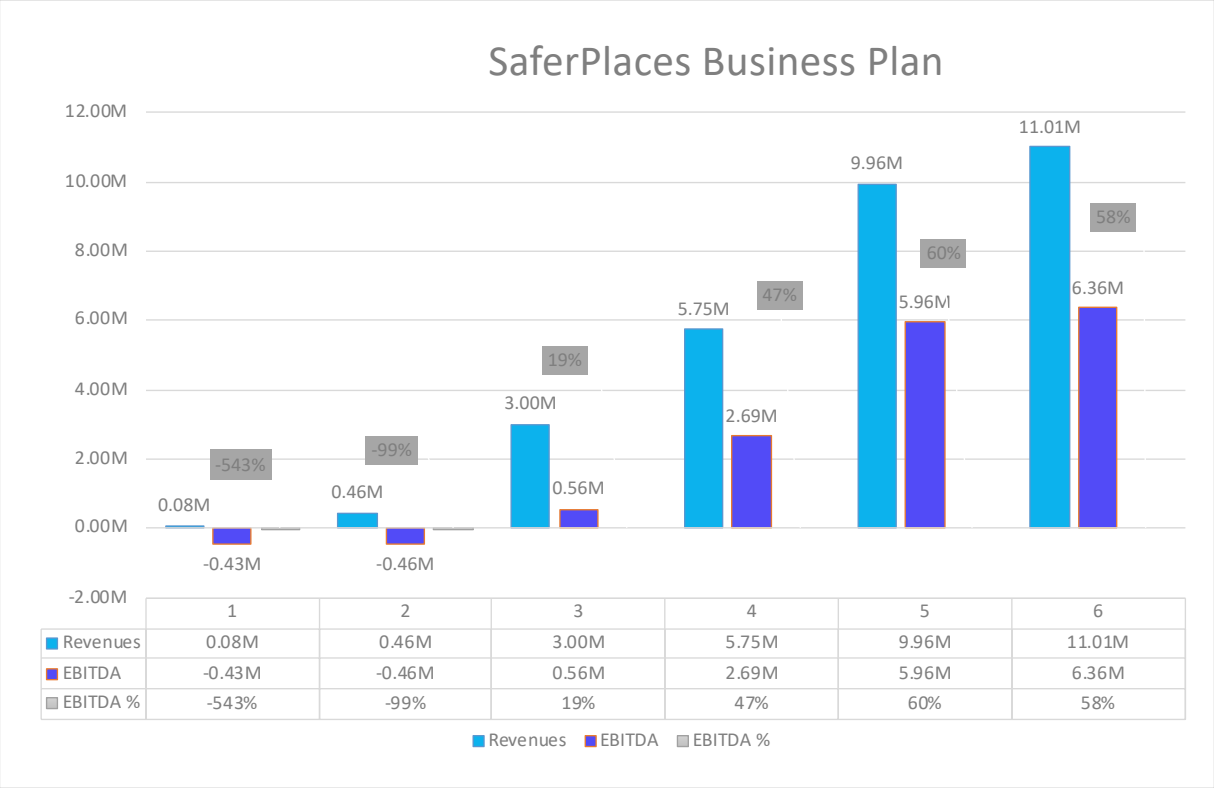
Forecasted operating activities (6yr horizon)

- Target is to reach 11M euro of revenue in 6 years



YEARS	LICENSES
1	4
2	30
3	200
4	500
5	1000
6	1500

Target Round RoadMap

SaferPlaces
TRL 7

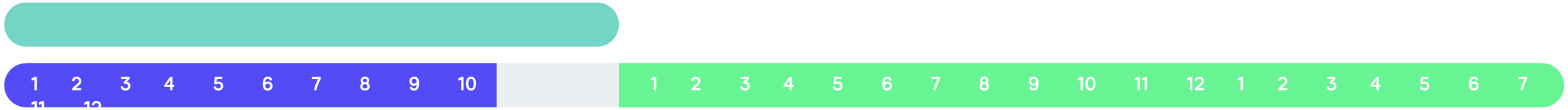
SaferPlaces
TRL 8

SaferPlaces
TRL 9

2023

2024

2025



TARGET ROUND – SERIES A
Pre-money startup value range 2.5–3 M EUR
1 M - EUR

TARGET ROUND – SERIES A
Investment 1 M - EUR

1M euro
Net Profit TARGET

R&D Technical improvement

Business development

Client acquisition

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Global Platform

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