



oVERFLOW

Vulnerability assessment of embankments and bridges
exposed to flooding hazards

UCPM project (12/2019 – 12/2021)



European Union's Horizon 2020 Framework Programme
Union Civil Protection Mechanism
Grant Agreement Number 874421





Project Acronym:

oVERFLOW

Programme:

UCPM-2019-PP-AG, EU Civil Protection Mechanism

Call:

UCPM-2019-PP-PREV-AG, Prevention in civil protection and marine pollution

Project start:

01.12.2019.

Project duration:

24 months

Estimated Project Cost:

€ 586,192.00



Requested EU Contribution:

€ 498,260.00






Coordinator:

■ Faculty of Civil Engineering, Univ. Of Zagreb   (prof. Meho Saša Kovačević)

Partners:

■ Infra Plan Konzalting, Croatia  

■ GEKOM - geofizikalno i ekološko modeliranje d.o.o., Croatia 

■ Veiligheidsregio Zuid - Holland Zuid, Netherlands 

■ INGEO BV, Netherlands  

■ Zavod za Gradbenistvo Slovenije, Slovenia  

■ Admin. of the Rep. of Slovenia for Civil Protection and Disaster Relief, Slovenia

Letter of Support:

■ National Protection and Rescue Directorate DUZS MHUP, Croatia 

■ HEI / Institute

■ SME

■ CPA



Reasons for the project implementation

- Flooding is a significant threat to human-life, ecosystems, cultural heritage and society. In recent years Europe has experienced some of the largest flood events in its history. The three partner countries in the oVERFLOW project are particularly vulnerable to cross-border flooding from major European river systems.
- The resilience a flood defense system is controlled by the weakest link.
- The state-of-the-art risk assessment method for embankments, VNK2 method developed in Netherlands, is burdened by several uncertainties, dominantly linked with lack of adequate methodology to assess the condition of existing flood protection embankments and associated failure mechanisms.
- In the same time, the floods have severe impact on bridges, influencing not just their functionality and safety, but also affecting their performance as critical elements of the evacuation routes.

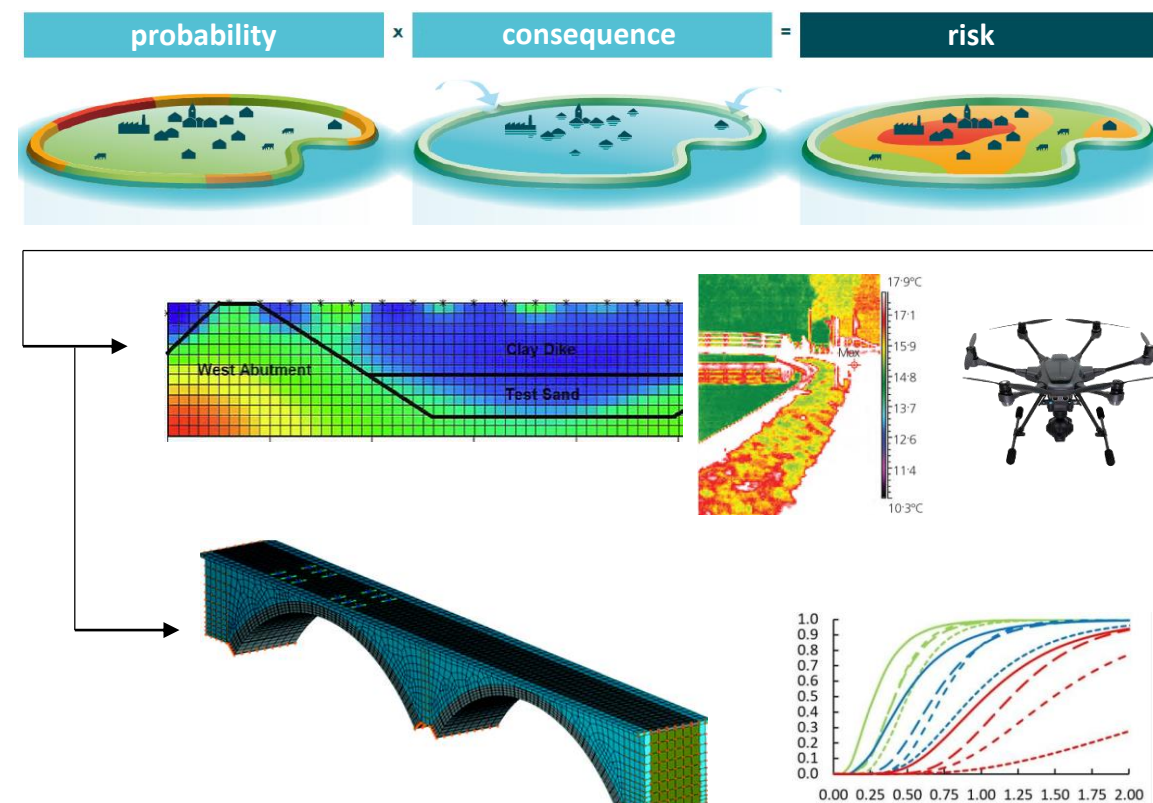


Project summary

- **Main aim:** enhanced methodology for the vulnerability assessment of embankment and bridges to floods.

This will be achieved by:

1. Reducing the known uncertainties in the VNK2 approach using techniques and procedures developed by the partners within the recent H2020 projects (DestinationRAIL, GOSafe, SAFE 10-T), including the application of:
 - i. Non-destructive geophysical investigations, advanced sensors and UAV equipped with multiple camera.
 - ii. Calibration of advanced numerical models based on investigation results, with development of the fragility curves for embankments and bridges



Project summary

2. Implementation of the methodology on the two case – study pilot sites in Croatia and Netherlands in order to:
 - i. have transfer of knowledge on the risk assessment;
 1. phase: existing 'VNK2' methodology → HR and SLO
 2. phase: enhanced 'oVERFLOW' methodology → NL, HR and SLO
 - ii. validate new technologies and to increase TRL
 - iii. enable validation of oVERFLOW results and their exploitation by the target audience (CPAs and IMs)



Tentative dates and places for major events / follow up



| Number | Meeting type | Month | Month and year | Location |
|--------|---|-------|----------------|---|
| 0 | Kick-off meeting | 1 | December 2019 | Zagreb |
| 1 | Meeting with CPAs, authorities and IMs in order to discuss the case study area covered with scenarios | 3 | February 2020 | Zagreb |
| 2 | 1st consortium meeting Demonstration of in-situ investigation and monitoring for embankments on trial locations, presence of CPAs, authority and IMs | 6 | May 2020 | Karlovac (visit to case study) & Zagreb |
| 3 | WP2 & WP4 meeting on data transfer protocols | 10 | September 2020 | Ljubljana |
| 4 | Participation at conference FLOODrisk | 10 | September 2020 | Budapest |
| 5 | 2nd consortium meeting Demonstration of in-situ investigation and monitoring works for bridges on trial locations, presence of CPAs, authority and IMs | 12 | November 2020 | Dordrecht (visit to case study) & Delft |
| 6 | Agreement with user groups on relevant direct and indirect impacts to flooding events | 14 | January 2021 | Delft |
| 7 | Participation at conference ICFR: International Conference on Flood Resilience | 15 | February 2021 | Barcelona |
| 8 | WP5 and WP6 Meeting in Zagreb, workshop and exchange of information | 17 | April 2021 | Zagreb |
| 9 | 3rd consortium meeting and WP2, WP4 and WP5 workshops | 18 | May 2021 | Ljubljana |
| 10 | Workshop on integration of risk forecasting tool into existing CPAs procedures in case of high-impact flooding events | 20 | July 2021 | Delft |
| 11 | Workshop with authorities and infrastructure owners on the adaptation strategies to flood events | 22 | September 2021 | Ljubljana |
| 12 | 4th consortium meeting and Final Conference | 24 | November 2021 | Zagreb |

