



Distribution of MI-SAFE prototype tool

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Distribution of MI-SAFE prototype tool

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Content

Executive summary / Abstract.....	4
Scope	5
1. Introduction	6
2. Performed distribution events	7
2.1. MI-SAFE distribution in The Netherlands	7
2.2. MI-SAFE distribution in Romania.....	8
2.3. MI-SAFE distribution in Spain	10
2.4. MI-SAFE distribution in United Kingdom	12
2.5. Global MI-SAFE distribution	13
2.6. End-users feedback summary	17
3. Programmed distribution events	19
3.1. Programmed FAST/MI-SAFE events description	19
4. Website statistics	22



Executive summary / Abstract

The FAST project has developed the MI-SAFE package of services to help meet the requirements of managers and engineers who may implement nature based flood defence strategies. A key part of this process is the demonstration, release and distribution of the MI-SAFE package. This report describes the channels FAST uses for distribution of the MI-SAFE package at regional/national and European/global scales, with small groups and local language format for regional/national events and webinars and conference formats for European/global events. We describe the target, aim and structure of these events and give access to open resources through the FAST website and the MI-SAFE online web viewer to enable consultation (videos, presentations and public deliverables).

The FAST project is based on an agile interaction with end-users facilitating the continuous improvements of the MI-SAFE services. Feedback from end-users is collected during distribution events and summarized, as we consider this a very important step. This feedback mainly includes issues related to the open source nature of our services (resources availability and methodological procedures) or related to the levels of confidence in our three levels of services. However, there are other interesting questions and suggestions raised during these events and all of these interactions can be consulted in this report.

The FAST team considers the distribution of MI-SAFE package to facilitate the generation of shared-values as a key aspect of the project and will continue the distribution for the remainder of the project. Accordingly, there are still several distribution events planned for distribution of MI-SAFE and interactions with end-users at national and international scales. This report includes the list of future interactions and the opportunities they offer us for distribution and dissemination of MI-SAFE.



Scope

The FAST project has developed the MI-SAFE package of services to help meet the requirements of managers and engineers who may implement nature based flood defence strategies. This report, Deliverable D7.1, describes 1) the channels that FAST uses for distribution of the MI-SAFE package at regional, national, European and global scales, 2) how it gives access to open resources and 3) summarizes end-users feedback.



1. Introduction

The FAST project has developed the MI-SAFE package of services to help meet the requirements of managers and engineers who may implement nature based flood defence strategies. These services provide novel and useful functionalities for end-users and facilitate generation of shared-value that will generate growth and sustainable economic benefits throughout society.

To this end, a correct demonstration, release and distribution of the MI-SAFE package is crucial. This report describes the channels that FAST has used for distribution of the MI-SAFE package at regional, national, European and global scale, and summarizes end-users feedback during the process, supporting the process of continuous improvement.

The distribution of MI-SAFE aims to 1) provide information on the scientific background of the MI-SAFE services; 2) describe the products and services available; 3) demonstrate the broad potential of Advanced level services; but also to 4) define the MI-SAFE services after the life of the FAST project.

To cope with this aim FAST has designed a set of events targeting end-users at different scales, regional/national and European/global.

- Regional/national events are designed for a tailored interaction with end-users. With small groups and local language format, this format facilitates the tuning of the distribution to end-users with specific issues (work aims, environmental issues), optimizing our capacity for demonstration and obtaining more specific end-users feedback.
- European/global events are targeted to an international audience of professionals with interest on coastal areas. To cope with this scale, we use(d) webinar and conference formats. The webinar format allows global distribution and direct interaction with end-users. Additionally, this type of event can be easily recorded, facilitating the generation of resources for long-term consultation.

This report describes the distribution events, including end-users feedback and links to free resources in chapter 2. As the FAST team considers the distribution of MI-SAFE as a key aspect of the project, this process will be continued for the remainder of the project. Therefore, there are still several distribution events planned for national and international interactions. An overview of these events and the type of interaction planned for the distribution of MI-SAFE is given in chapter 3.



2. Performed distribution events

2.1. MI-SAFE distribution in The Netherlands

The MI-SAFE package was demonstrated during the National Delft Software Days (DSD) of 14th-15th of June 2017, with the participation of Kees Nederhoff, Jasper Dijkstra, Julia Vroom and Myra van der Meulen.

The participants of the DSD are mainly employees from consultancy firms, research institutes, universities, water boards and governmental organizations.

The aim of the demonstration was to introduce the MI-SAFE viewer and the access to our services to the public and get feedback.

2.1.1 Demonstration

The FAST stand was promoted during a pitch at the end of a plenary session of the DSD. The stand had different sides (Figure 1). In one of the sides, Kees Nederhoff gave a 2-hour demonstration on the case study of Tillingham, where he ran a model train of XBeach-VEG in non-hydrostatic model (wave overtopping component) with LISFLOOD (inundation component) for 1/100 year storm. This case study showed 1) how Earth Observation data can be used to detect where and how much vegetation there is and 2) how models like XBeach/LISFLOOD can be used to quantify the effect of vegetation on the reduction of overtopping and thus flooding of the hinterland.

On the other side of the stand, Jasper, Myra and Julia showed the possibilities of the MI-SAFE viewer in a live demonstration, focusing on the questions/areas of interest of the potential end-users.



Figure 1. Shots of the distribution of MI-SAFE during the National Delft software days 2017.

2.1.2 Participant feedback

The pitch about the FAST stand was a good trigger for people to visit the stand and have a chat. There was good interaction with the people visiting the stand and some nice discussions. All persons we spoke with were very engaged in the discussion on vegetation as a part of the safety measures and seemed impressed about the work done in the FAST project. Some highlights of discussions:



- Is it possible to use FAST for the dike safety assessment along main rivers / lakes? **Yes, this would be possible if we extend the viewer for those areas. This could be part of advanced services.**
- Could FAST be used in an operational matter (i.e. determine real-time the LAI for a certain area)? **Right now the viewer does not provide this information, but extension of the viewer could include this. This would be an advanced service.**
- What is the international applicability on for example mangrove coasts (what are the horizontal distribution of vegetation properties)? **The viewer already includes mangrove coasts.**
- A quick scan of Nature Based Flood Defence possibilities related to mangrove coasts was considered very useful, the translation to required crest height helps to emphasize the possible economic gains even if the difference in waves is small.
- Can the tool be used for calibration (rainfall-runoff) models using vegetation presence and roughness? **Resolution is too coarse for these small ditches (1-2 m wide), storing all the images requires work and the water boards are not willing to pay much for likely marginal gains.**
- A geotechnical engineer from Fugro was interested in the MI-SAFE tool, mainly in the possibilities of looking at vegetation for wave attenuation in geotechnical designs (we are now in contact).
- A civil engineer from Witteveen+Bos consultancy was interested in the MI-SAFE tool, mainly in the possibilities of looking at vegetation for wave attenuation in flood safety designs in the Netherlands and abroad (we are now in contact).
- A professional from the Dutch Government Rijkswaterstaat was interested in the MI-SAFE tool, mainly in the possibilities of looking at vegetation types and area change in time in relation to wave attenuation in flood safety designs and required inputs for Water Framework Directive in the Netherlands and abroad (we are now in contact).

2.2. MI-SAFE distribution in Romania

Due to summer holidays and the large distance between Bucharest and the Romanian study sites, the distribution of MI-SAFE in Romania has been split into two events:

1. Regional distribution of MI-SAFE package (18 July 2017, held in Jurilovca Town)
2. National distribution of MI-SAFE package (planned for September – October 2017 in Bucharest).

2.2.1 Regional MI-SAFE distribution

This event was organized and performed by Adrian Stanica and Albert Scricciu.

The regional event was organized for end-users working with or living close to the study sites from Jurilovca Town and Ilistria Town (Table 1). The event was organised with the support of the local authority from Jurilovca Town (Figure 2).

Our main goal was to present the MI-SAFE package, starting with a short presentation about the FAST project, and focusing on the Romanian study sites and their importance for the project to



encourage the feedback from the participants (as they have a very good knowledge of these study sites and their particularities).

Table 1. List of participants in the Romanian event for regional distribution of MI-SAFE

Attendee	Institution	End-user archetype
Teleuca Galina	Jurilovca Town Hall	Public Administration
Sbarcea Madalina	National Institute for Research and Development "Danube Delta"	Research Institute
Bondarev Dan	National Institute for Research and Development "Danube Delta"	Research Institute
Stan Dumitru		Public Administration
	Ceamurlia de Jos Town Hall	
Bucur Ion	Danube Delta Biosphere Reserve Authority	Public Administration
Mierla Marian	National Institute for Research and Development "Danube Delta"	Research Institute
Jenica Hanganu	National Institute for Research and Development "Danube Delta"	Research Institute
Ditcov Cornel	Sarichioi Town Hall	Public Administration
Adrian Stanica	FAST consortium - GeoEcoMar	Organizers
Albert Scriciu	FAST consortium - GeoEcoMar	Organizers

2.2.1.1 Event structure

The structure of this distribution event was:

- Aim of the FAST project (30 min).
- The MI-SAFE package: Services and values (60 min).
- Examples of local application of MI-SAFE services focusing on the Romanian study sites (30 min).
- Round table: MI-SAFE services and Nature Based Solutions (30 min).

The slides of this event are available via the FAST website (<http://www.fast-space-project.eu/index.php/results/presentations-and-posters>).



Figure 2. Shots of the regional distribution event of MI-SAFE in Romania.

2.2.2 Participant feedback

End-users were positively impressed by our project and MI-SAFE services. They felt very connected with FAST project as they are working in or living close to the Romanian study sites.

The most interesting inputs from end-users can be summarized like:



- How can we grant access to the Advanced Level of services?
- Can the MI-SAFE viewer be applied to determine the effect of re-connecting the Razelm-Sinoe-Lagoon-System (RSLS) with the sea? **The services developed under the MI-SAFE umbrella can be adapted in order to meet the requirements.**
- Can the MI-SAFE viewer provide information on sediment dynamics? **During our two years field monitoring campaigns, we have performed observations on sediment dynamics that can be made available.**
- The FAST project is presenting solutions that were used in the past but now are forgotten.
- Where and when can we see more projects or products similar to FAST and MI-SAFE? **Please, join the FAST community to be kept informed.**

2.3. MI-SAFE distribution in Spain

For Spanish distribution of MI-SAFE, we invited a selected group of potential end-users with competences/interests at regional and national level. Although all of them were very interested, the end-users with national scope could not make it to the meeting. Therefore, we decided to split the Spanish distribution of MI-SAFE into two events, one at regional scale and another at national scale. The regional distribution of the MI-SAFE package has been performed the last 11th July 2017. For the national distribution of MI-SAFE, we are planning a specific session in October 2017.

2.3.1 Regional MI-SAFE distribution

This event was organized by Gloria Peralta, Edward Morris and Javier Benavente, being targeted for end-users that face coastal issues in Andalusia (Spain). This group of end-users included the core of previously interviewed end-users (documented in FAST Deliverables 5.6,5.7,5.8), but also other potential end-users with interests or competences in these coastal areas (Figure 3, Table 2).



Figure 3. Shots of the regional distribution event of MI-SAFE in Spain.

The aim of the event was provide a full description of the products and services developed under the MI-SAFE package, to demonstrate the high potential of the Advanced level services with local application examples and to define how the FAST-team could provide continuation of these services beyond the life time of the FAST project. This event also offered us the opportunity to learn from end-user perspectives on what to improve and in what end-user's work topics MI-SAFE is offering the most relevant services.



Table 2. List of participants in the Spanish event for regional distribution of MI-SAFE

Attendee	Institution	End-user archetype
Antonio Gómez	Junta de Andalucía - Natural Protected Areas	Public Administration
Antonio Silva	Atlántida Medio Ambiente SL.	Private company
Juan Antonio Martín	Atlántida Medio Ambiente SL.	Private company
Emma Huertas	Department of Ecology and Coastal Management - CSIC-ICMAN	Research Institutions
Maria Soledad Vivas	Junta Andalucía (CMAOT) - Leader of Life Blue Natura project	Public Administration
Antonio Bejarano	Seville Port Authority	Public Administration
José Ojeda	Physic Geography and Regional geographic analysis - University de Seville	Research Institutions
Andrés Romero	RQUER TYS	Private company
Patricia Cristobal	Atlántida Medio Ambiente SL.	Private company

2.3.1.1 Event structure

The structure of this event included:

- Aim of the FAST project (30 min).
- The MI-SAFE package: Services and values, including demonstration on how to use the MI-SAFE viewer (60 min).
- Coffee break (20 min)
- Examples of local application of the MI-SAFE services (45 min).
- Round table: MI-SAFE services for coastal issues in Andalusia (45 min).

The slides of this event are available via the FAST website (<http://www.fast-space-project.eu/index.php/results/presentations-and-posters>).

2.3.2 Participant feedback

End-users were very optimistic about MI-SAFE. They understood that the Educational level is a very good tool for a preliminary assessment of the potential of including nature in flood protection, but that locally a high spatial resolution is required to reach enough accuracy. This creates a demand for the Advanced Level of services.

The most interesting inputs from the end-users are summarized as follows:

- Is there a protocol for requesting Advanced Level services? **Yes, we are working on a general template to define our commercial SLA. To request Advanced Level services, the first step is contacting the FAST consortium. You can contact the consortium using the forms available in the viewer (community or issues), or using our Facebook page or twitter accounts. Or you can contact any of our partners directly.**
- Using the MI-SAFE viewer for the first time is not intuitive. A tutorial may be handy. **We have a tutorial-movie to help with the first time you access MI-SAFE. This is accessible in the viewer.**
- Any time series services? **Not on the Educational or the Expert level, but we offer this as Advanced Level service. See Tillingham study site for example.**



- The global scale is clearly a unique trait of MI-SAFE. However, does MI-SAFE have the capacity to be applied to small-scale projects with better levels of confidence? **Yes, the quality of our models depends on the resources feeding the model and the corresponding calibration. And both depend on the quality of the information for elevation, vegetation and water parameters. For small scale projects, we can also produce this information as Advanced Level services.**
- Is it possible to make very small scale projects, for example evaluating the effects of ameliorative actions on flood risk (like setting back the defence wall of a salt farm combined with the establishment of saltmarsh plants)? **Yes, drone resources or LiDAR provide very high-resolution spatial data. The Tillingham example includes drone derived imagery.**
- Is it possible to apply MI-SAFE Advanced Level services to get information on coastal ecosystem services like CO₂ trapping capacity (Blue Carbon)? Even with rough results, could it be possible to predict changes over a span of 50 - 100 years? **There are existing models like SLAM (sea level accretion model) that use vegetation type and elevation to predict temporal changes on vegetation. The MI-SAFE Advanced Level services could explore the possibility of applying these types of models to our data and modelling services to evaluate the capacity for predictions. Our open data structure makes integrating of datasets relatively easy. Additionally, with resources already developed within MI-SAFE, it seems feasible to evaluate other coastal ecosystem services like Blue Carbon.**
- REDIAM is a node of open source resources (data and tools) that is very happy to make the MI-SAFE viewer and the data of the catalogue available from their node. Is there any possibility to open a folder with REDIAM resources in the viewer that could be shown on the map? **We will explore if REDIAM resources are relevant for MI-SAFE and if open data connections can be made.**
- The MI-SAFE viewer is a great tool to provide a first approximation of the viability of coastal projects. However, right now they only provide screen information and results needs to be captured manually. The possibility of producing an automatic report in pdf (including the corresponding information, logos and disclaimer) would be very useful. This report can be a plus of quality for organizations that have to document these preliminary reports. **We consider implementing this functionality in the viewer.**
- Is the MI-SAFE viewer going to provide any service on sediment stability? **This is currently linked to vegetation stability (the vegetation change map). The Aquaduct software, linked to the viewer, shows changes of land/water boundaries.**

2.4. MI-SAFE distribution in United Kingdom

The team of the University of Cambridge had to postpone the distribution event to September (22th September 2017, Table 3) due to the holiday season and other obligations. Their event will be held after the last General Assembly of the FAST project, and the project coordinator will be participating (Mindert de Vries). For this event, national/regional users are invited.



2.5. Global MI-SAFE distribution

A webinar format has been chosen for worldwide distribution of the MI-SAFE package, consisting of two webinars: one with a comfortable timing for countries on the Western hemisphere (i.e. from Europe, America and Africa) and one with a comfortable timing for countries on the Eastern hemisphere (i.e. from Asia and Oceania). The first webinar took place on July 20th, 2017 from 16:00 to 18:00 CEST and the second one is scheduled for fall 2017 (see chapter 3).

These webinars have been targeted to an international audience of professionals with interest on coastal areas and aim to provide information on the scientific background of MI-SAFE, to describe of our products and services, to demonstrate the potential of the Advanced Level services and to clarify how clients can access the services offered by the FAST team beyond the life time of the FAST project.

The webinar of 20 July 2017 was hosted by Deltares (<https://goo.gl/Ghu88w>) and titled “The MI-SAFE package: Resources to implement nature based flood defence”. The webinar was presented by Mindert de Vries, Daphne van der Wal, Iris Möller, Kees Nederhoff, Joan Sala Calero and Gloria Peralta, having technical support from Julia Vroom and Edward Melger.

You can watch the webinar via FAST You Tube channel (<https://youtu.be/Dur7VINuvUQ>) or via the [FAST website](#). Besides, the slides of the presentation can also be downloaded from <https://doi.org/10.5281/zenodo.835278>.



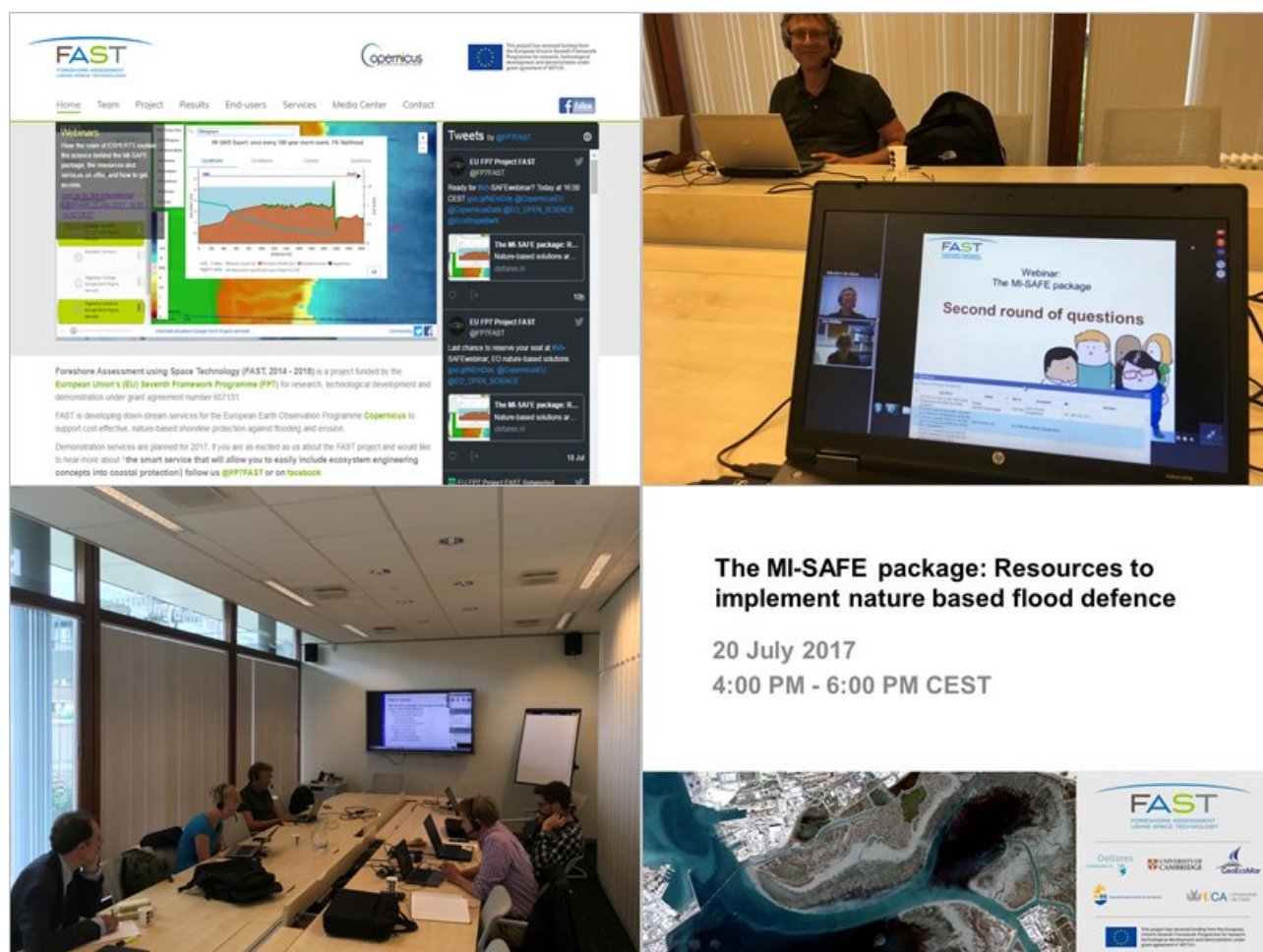


Figure 4. Shots of Deltares team during the first webinar for global MI-SAFE distribution.

The dissemination of this event included targeted distribution using international networks like the Deltares community and Copernicus event list (<http://copernicus.eu/events>), but also using national communication networks and the network of end-users collaborating with FAST. The webinar had a broad dissemination using website announcements and social media (<https://www.facebook.com/FastSpaceProject>, @FP7FAST, @MI-SAFE_services, LinkedIn).

2.5.1 Attendees

This webinar had more than 250 registrations and 122 attendees (Figure 5). The overall distribution of participants included 4 continents and 25 countries. Most participants were from Europe (ten countries, participants were mainly from The Netherlands, UK and Spain) and America (eight countries, with participants mainly from United States, Canada and Brazil), possibly due to the timing of the webinar (afternoon CEST).



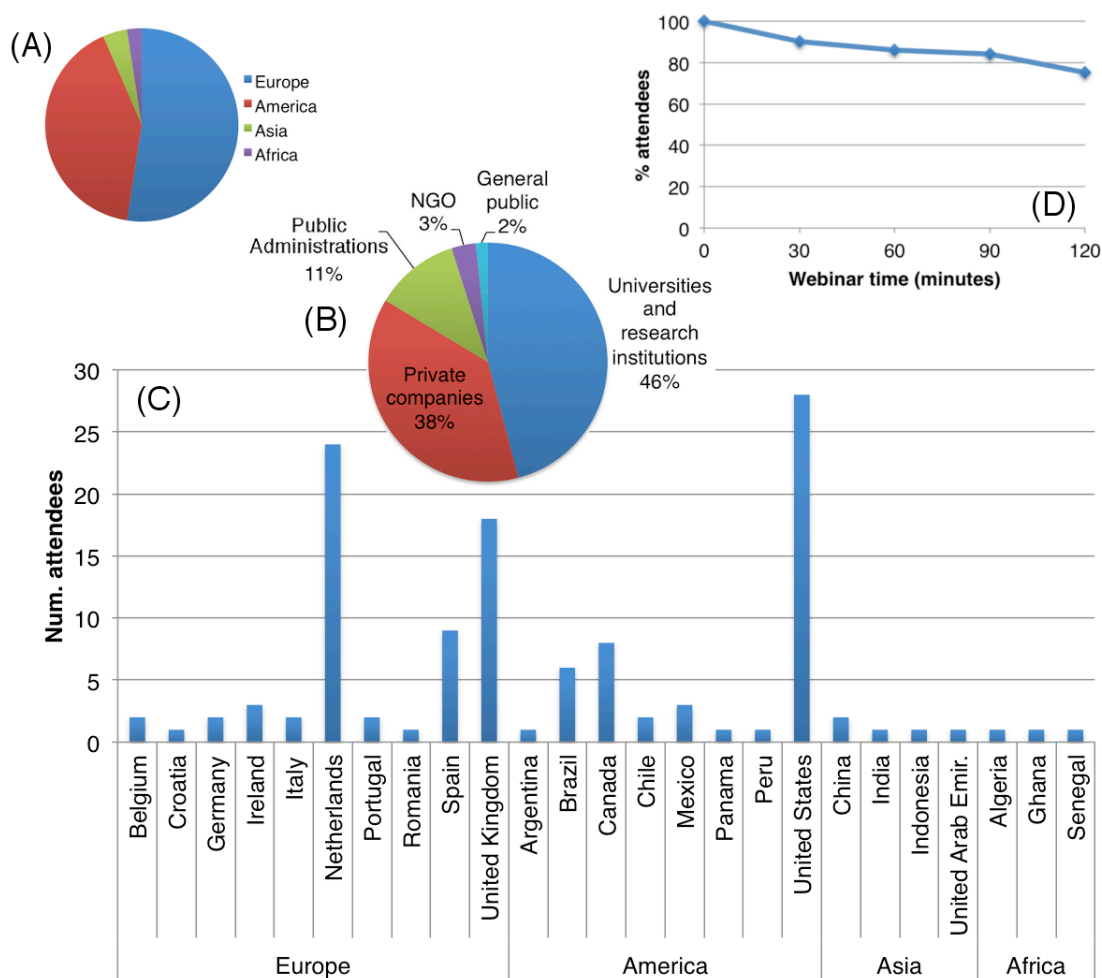


Figure 5. Analysis of attendance to the MI-SAFE webinar celebrated on 20th July 2017 according to the distribution of participants (A) per continent, (B) per customer archetype and (C) per country. (D) Permanence evolution of the attendees. We had 122 participants attending the webinar of 266 registrations.

2.5.2 Webinar structure

The structure and the timing of the webinar sections were:

- Welcome and short introduction
- The science behind MI-SAFE
 - WP3 (Remote sensing) (starts at 5:55)
 - WP4 (field measurements) (starts at 17:49)
 - WP5 (modelling and data integration) (starts at 37:54)
- First round of questions (starts at 53:08)
- The value of MI-SAFE
 - Demonstration of products (starts at 1:08:53)
 - Advanced level of Services (starts at 1:30:57)
 - MI-SAFE after the FAST project (starts at 1:42:33)
- Second round of questions (starts at 1:48:06)



2.5.3 Participant feedback

The seminar was considered a success with more than 74% of the attendees staying throughout the entire webinar (Figure 5), despite the relatively long length of 2 hours. The feedback from the audience was positive and the questions were very interesting. The most interesting questions raised during the webinar are summarized below.

- Do you validate the results from satellite image analysis (wave length reflection in vegetation, water, land) with field measurements? **Yes, we are using the information on vegetation derived from our direct ground-based measurements to validate the vegetation-related measures (such as NDVI) we derived from the EO products. See 'The science behind MI-SAFE' section of our webinar, or the link available in the viewer for details on methods used in the FAST project.**
- Is the intertidal bathymetry already accessible globally? **Yes.**
- What parts of the MI-SAFE package are already available to the end user? **Yes, all services you can display on the viewer (Educational and Expert levels) are freely available for end-users. Watch the second part of the webinar (the value of MI-SAFE) for more details on these services.**
- Is MI-SAFE applicable to river bathymetry and floodplains? **Yes, this would be possible if we extend the viewer for those areas. This could be requested as advanced services.**
- Why did you choose 1/10 years of return period (yrp) instead for example 1/200 yrp? For the 10 yrp you can have different combinations of water level and wave, how did you solve this issue? **The choice of the 1/10 yrp was arbitrary, but we are very careful using the same yrp on the source of information.**
- Is there any difference in evaluation of the effect of vegetation on wave attenuation between the hydrostatic and non-hydrostatic models? **We formulated the model to reproduce both in a similar manner. For surfbeat we needed to have an additional formulation in the momentum equation to be sure that the forces are correct. If you have enough computational power, we recommend using the non-hydrostatic model. However, the surfbeat has also performed very accurately in the past.**
- I'm interested in the diagram with wave height, steepness, water depth and the effect of any wave growth on the foreshore. Waves are created by wind and I'm curious to see what effect the wind has. **At this stage the simulation is not using wind as input during wave attenuation calculation. However, extreme wind events are driving the derivation of the boundary conditions wave dataset.**
- Question regarding accuracy of model simulation: Although you clearly have put a lot of effort in calibration, I imagine there are still many uncertainties (e.g. inaccuracies in data sets, modelling simplification, local geometry). How do you estimate accuracy in output? And do you think this affects application of the model? Are you able to identify areas where results are strong and where results should be taken with care? **Parts of this question are answered in public deliverables from the FAST project. Other parts are in the process of being publicly available as they are under process of publication. For details on these topics you can consult 'the science behind MI-SAFE' (MI-SAFE viewer), and our public deliverables, available via wiki on the viewer or the FAST website.**
- Question regarding modelling: How is the leaf area index used in the model? In your equations, I only saw influences of the number of stems and the stem diameter. **If you know the height of vegetation you can calculate the rest of the parameters. However, in the numerical model you use a simplistic solution using drag coefficients in the water column. For the Global level (Educational) we use an averaged drag coefficient depending on the type of vegetation. For the study sites, we calculate this coefficient using local EO data. You**



can see the more details of this method and the values we use in the link 'the science behind MI-SAFE' (available in the viewer).

- What is the reliability of MI-SAFE in areas out of the studied sites, for example in Mediterranean coasts? **MI-SAFE is not calibrated out of the study sites and our intertidal elevation map is not very useful for microtidal coasts as Mediterranean. We might also expect that the model has to be calibrated for the typical vegetation on Mediterranean coastal wetland.**
- How is MI-SAFE implemented at small scale? How can end-users use these services themselves? **We can provide training on how to use the model and the data layers. This is an Advanced Level of service (e.g. Delft Software Days or contact with the FAST consortium for other training opportunities). See the value of MI-SAFE for further details (available in the viewer).**
- It seems that all the study areas are related to temperate wetlands. Is there a similar effort to do the same for tropical wetlands other than mangroves? **There is evidence of the efficiency of tropical wetlands is acting as coastal protection features, too, but not from within the FAST project. We are keen to extend (and validate) our MI-SAFE package of services for tropical wetlands more specifically in the future. Do contact the project team if you see opportunities for this.**
- Be great to be able to derive an economic value for the saltmarsh based on the reduced damages from inundation....would help make a case for habitat maintenance and restoration. **We agree, would be a nice challenge for an advanced application. Links to efforts made globally to quantify the economic benefits of saltmarshes.**
- Is the model also useful for floating plant material? **XBEACH has not been developed to include floating plant material yet, but the open source approach allows third parties to develop such algorithms.**

2.6. End-users feedback summary

From all the distribution events, end-users feedback has similarities. This section summarizes the most relevant feedback and provides our own responses.

2.6.1 Open science - open services

During our distribution events, end-users frequently raised questions related with methodological issues, including:

How to validate spatial data layers obtained with satellites? / How or why did you choose the returns periods used in the MI-SAFE viewer? / How do you include vegetation parameters vegetation (like leaf area index) in the model?

FAST has made a major effort to work following the open source philosophy. This includes the open access to the methodological bases of the MI-SAFE services. Most of these questions have answer in 'the Science behind MI-SAFE' (available in the viewer) or in the public deliverables of the project (available at the FAST website and at the MI-SAFE viewer via a link). There is still some scientific information in the process of publication, but this is only a temporary limitation.

End-users also asked questions about the actual access to the MI-SAFE services.



The MI-SAFE services offered by the MI-SAFE viewer (Educational and Expert levels) are open and freely available for end-users. To have a full overview on this topic see the second part of the MI-SAFE webinar (the value of MI-SAFE).

2.6.2 Result uncertainties and new functionalities

Other topics raised by end-users were related to uncertainty issues, including:

Improvements of uncertainties for small scale projects or management decisions / model reliability in areas different to the study case.

Additionally, we also had a lot of questions regarding possibilities of new functionalities:

Dike safety in rivers and lakes / calibration (rainfall-runoff) models using vegetation presence and roughness / time series analysis / river and floodplain applications / wind effects / estimations of additional ecosystem services, like blue carbon service / estimations on saltmarsh economic value.

Most of these issues are related to the particularities of the services offered in the different levels of MI-SAFE (Educational, Expert and Advanced). Each of this levels provides similar services but with different applicability and level of uncertainty. The Educational level covers the global scale. This implies the need to feed the model with global spatial data layers (that cannot be calibrated or validated at global scale) and averaged parameters, limiting the outputs to quick scan purposes. The Expert level uses calibrated and validated data, decreasing the uncertainty of the results. Although this data has better levels of confidence than the Educational outputs, the size of a pixel (min. 10x10 m) of this data does not allow detecting the presence of narrow structures like dikes.

Fortunately, all these limitations are related to spatial resolution of the information feeding the model and the corresponding calibration for local particularities. The Advanced Level of MI-SAFE offers services to cope with these issues on request, including offering acquisition of new information (using satellite, LiDAR or drones), services for calibration (including field data acquisition to calibrate spatial data layers and model parameters) or modelling services to extend MI-SAFE to other coastal areas like river floodplains or services to quantify different ecosystem services.

2.6.3 Community

Where and when can we see more projects or products similar to FAST and MI-SAFE?

The initial page of the MI-SAFE viewer offers the possibility to join the FAST Community. Members of the community are informed about MI-SAFE news, updates, and other nature-based solutions data products.



3. Programmed distribution events

The distribution of MI-SAFE is a key process that should continue for the remainder of the project. Several of our distribution events have been postponed to the last semester of the project to continue the distribution and to be able to plan around the summer holiday season. The upcoming events (Table 3) include national events for the four FAST countries (The Netherlands, Romania, Spain and UK) and a second global distribution activity (2nd MI-SAFE webinar). Additionally, FAST has planned a number of dissemination activities that will contribute to the distribution of the MI-SAFE package at national, European and global scale (Table 3). Details on these activities and the expected contribution of the FAST project are described in next section.

Table 3. List of distribution and dissemination events programmed for the last part of the FAST project. Main distribution events are highlighted in green, dissemination ones in blue. Section 3.1 includes details and the role of the FAST project in these events.

Distribution and dissemination events	Country	Dates	A	S	O	N	D
37th International Association for Hydro-Environments Engineering and Research World Congress (IAHR 2017)	Malaysia	13 - 18 Aug					
British Society for Geomorphology	UK	4 - 6 Sep					
IX Jornadas Geomorfología Litoral	Spain	13-15 Sep					
National demonstration event UK	Cambridge, UK	22 Sep					
2nd MI-SAFE webinar	On-line	Sep - Oct					
EO Open science 2017	Italy	25-28 Sep					
Flood Expo	UK	27-28 Sep					
National demonstration event Spain	Spain	Sep-Oct					
National demonstration event Romania	Bucharest, RO	Sep-Oct					
Nature-based Solutions: From Innovation to Common-use	Estonia	24-26 Oct					
International Delft Software days 2017	Delft, NL	31 October					
Nationaal Deltacongres 2017	NL	2 Nov					
2017 Conference on Big Data from Space	France	28-30 Nov					

3.1. Programmed FAST/MI-SAFE events description

- 37th International Association for Hydro-Environments Engineering and Research World Congress (IAHR 2017).** 13-18 Aug 2017 / Kuala Lumpur (Malaysia). *Bregje van Wesenbeeck (Deltares)*. Large conference of the International Association for Hydraulic Research to present and discuss latest advance in hydraulic research. FAST and MI-SAFE services will be presented in an oral presentation within the session “The path to resiliency in low gradient coastal regions for present and future conditions”.
- British Society for Geomorphology.** 4 - 6 Sep 2017 / Univ. Hull (UK). *Ben Evans (UCam)*. FAST will present results in sediment stability.
- IX Jornadas de Geomorfología Litoral.** 13-15 Sep 2017 / Menorca (Spain). *Javier Benavente (UCA)*. Coastal geomorphology forum to discuss research, technical advances and experiences in coastal management. FAST will take this opportunity to disseminate (and demonstrate) the MI-SAFE services to the Spanish coastal geomorphology community.
- National distribution event in United Kingdom.** 22 Sep 2017 / Cambridge, UK. The UCam team and the project leader (Mindert de Vries) will perform a national distribution event with a selection of British end-users focussing on coastal issues.



5. **EO Open science 2017**. 25-28 Sep 2017 / Frascati (Italy). *Edward Morris (UCA)*. This conference aims to explore new challenges and opportunities for EO research created by the rapid advances in Information and Communications Technologies (ICT). FAST will take this opportunity to disseminate (and demonstrate) the MI-SAFE services to the international community working on Earth Observation and Copernicus.
6. **Flood Expo**. 27-28 Sep 2017 / London (UK). *Mindert de Vries (Deltares)*. The Flood Expo is the world's largest exhibition and conference designed to showcase the latest innovations in the way flooding is predicted, prevented, and managed by bringing together the latest solutions, the most innovative suppliers, and the industry's greatest schedule of seminars led by the world's most prominent experts. FAST will take this opportunity to demonstrate the MI-SAFE services to the international community.
7. **2nd MI-SAFE webinar**. Late September-October 2017 / online. To cope with the target of a global distribution of MI-SAFE, the FAST consortium organizes a second webinar to give the opportunity to end-users from the Eastern hemisphere to participate. The time of this webinar is not yet set, but will be early in the morning for Central European countries. Any update for this second webinar will be announced on the FAST website.
8. **National distribution event in Romania**. September – October 2017 / Bucharest (Romania). The GeoEcoMar team is organizing a meeting with Romanian end-users with competences and interests in coastal areas at national level for distribution of the MI-SAFE package.
9. **National distribution event in Spain**. October 2017 / Spain. The UCA team is organizing a meeting with Spanish end-users with competences and interests on coastal areas at national scale to distribute the MI-SAFE package.
10. **Nature-based Solutions: From Innovation to Common-use. 24-26 Oct 2017 /Tallinn, Estonia**. Flagship conference organized by the Estonian government as part of their presidency of the EU. This conference will address nature-targeted innovation actions involving all societal actors. It will host leading scientists, policymakers and entrepreneurs from around the world who will share their experience on how nature-based innovation and eco-innovative technologies can be implemented in many areas of life. The FAST consortium is organizing a special session in this conference targeted at a wide audience of stakeholders (end-users, scientists, and policy-makers from local to EU-level), in order to share lessons learned, present the MI-SAFE package services, and discuss linkages to running and foreseen initiatives.
11. **International Delft Software days 2017 (DSD17)**. 31 Oct 2017 / Delft (NL). The international DSD is a large event organized annually by Deltares to show the latest open software developments, the best modelling practices and the most powerful pre- and post-processing tools in the field of geohydrology, surface-water hydrology, hydrodynamics, morphology, water quality & ecology, and data sciences, for rivers, lakes, and oceans, coastal, estuarine, urban and industrial environments to an international audience. The FAST team will organize a workshop for the third time during the DSD to demonstrate and train how to use MI-SAFE Advanced modelling services to the international community. We



are planning to host a full day FAST seminar on 31 October in concert with the XBeach 10 year jubilee meeting.

12. **Nationaal Deltacongres 2017**. 2 Nov 2017 / Leeuwarden (NL). *Mindert de Vries (Deltares)*.

This is the yearly national event linked to the Dutch Delta programme. The audience contains all parties involved in flood safety planning, management and engineering.

Deltares will setup a booth and share FAST and MI-SAFE products.

13. **2017 Conference on Big Data from Space**. 28-30 November / Toulouse, France. *Joan Sala Calero (Deltares)*. International conference to explore synergetic use of Big data.

Targeted to researchers, engineers, users, infrastructure and service providers. FAST will take this opportunity to disseminate the Educational and Expert modelling services of MI-SAFE to the international community working on Big Data.



4. Website statistics

Information collected between 01-05-2017 and 31-07-2017 using Google Analytics

Country	Sessions	% New Sessions	New Users
Netherlands	242	41,32%	100
Spain	133	54,14%	72
United States	45	73,33%	33
United Kingdom	18	72,22%	13
Italy	10	70,00%	7
Taiwan	9	44,44%	4
Brazil	7	100,00%	7
Denmark	7	28,57%	2
Australia	6	66,67%	4
Romania	6	50,00%	3
TOTAL	533	53,47%	285

User Type	Sessions	% New Sessions	New Users	Bounce Rate	Pages / Session	Duration
New Visitor	285	100,00%	285	85,26%	1,24	70,38
Returning Visitor	248	0,00%	0	83,06%	1,27	93,78
	533	53,47%	285	84,24%	1,25	81,27

