



GIS-Based Infrastructure Management System for Optimized Response
to Extreme Events of Terrestrial Transport Networks



SAFEWAY Website (10.12)

December 2018 (V1.0)
April 2019 (V1.2)

PUBLIC



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 769255.

SAFEWAY

GIS-BASED INFRASTRUCTURE MANAGEMENT SYSTEM FOR OPTIMIZED RESPONSE TO EXTREME EVENTS OF TERRESTRIAL TRANSPORT NETWORKS

Grant Agreement No. 769255

SAFEWAY Website

WP 10 Exploitation, Dissemination and
Communication

Deliverable ID	D10.12
Deliverable name	SAFEWAY Website
Lead partner	DEMO
Contributors	UVIGO

PUBLIC

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SAFEWAY Project Synopsis



According to European TEN-T guidelines, due consideration must be given to the risk assessments and adaptation measures during infrastructure planning, in order to improve resilience to disasters. SAFEWAY's aim is to design, validate and implement holistic methods, strategies, tools and technical interventions to significantly increase the resilience of inland transport infrastructure. SAFEWAY leads to significantly improved resilience of transport infrastructures, developing a holistic toolset with transversal application to anticipate and mitigate the effects extreme events at all modes of disaster cycle:

1. **"Preparation"**: substantial improvement of risk prediction, monitoring and decision tools contributing to anticipate, prevent and prepare critical assets for the damage impacts;
2. **"Response and Recovery"**: the incorporation of SAFEWAY IT solutions into emergency plans, and real-time optimal communication with operators and end users (via crowdsourcing and social media);
3. **"Mitigation"**: improving precision in the adoption of mitigation actions (by impact analysis of different scenarios) together with new construction systems and materials, contributing to the resistance & absorption of the damage impact.

SAFEWAY consortium has 15 partners that cover multidisciplinary and multi-sectorial business fields associated with resilience of transport infrastructure in Europe: national transport infrastructure managers & operators, a main global infrastructure operator, partners able to provide various data sources with large coverage in real time, comprehensive ITC solutions, and leading experts in resilience, risk databases, remote sensing-based inspection, and decision systems based on predictive modelling.

SAFEWAY will carry-out 4 real case studies distributed through 4 countries, linked to 5 corridors of the TEN-T Core Network. SAFEWAY has as main expected impacts:

1. at least 20% improvement in mobility; and
2. at least 20% lower cost of infrastructure maintenance.

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Document Information

Document Name	SAFEWAY Website		
Version No.	V1.2		
Due date Annex I	31/12/2018		
Report date	29/01/2019 (updated in 23/04/2019)		
Number of pages	23		
Lead Author	Maurijn Neumann (DEMO)		
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Dissemination level	Public		

Document History

Ver.	Date	Description	Authors	Checked by
0.0	08/01/2019	Creation of the document	M. Neumann	A. Colombano
1.0	29/01/2019	Final version	M. Neumann	B. Riveiro
1.1	15/04/2019	Document updated following EU Project Officer advice	C. Perez-Collazo	B. Riveiro
1.2	23/04/2019	Figure 7 updated	M. Neumann	C. Perez-Collazo

Document Approval

Ver.	Name	Position in project	Beneficiary	Date	Visa
1.0	Dr. Belén Riveiro	Project Coordinator	UVIGO	29/01/2019	BR
1.2	Dr. Belén Riveiro	Project Coordinator	UVIGO	23/04/2019	BR

Executive Summary

The Deliverable D10.12 report, "SAFEWAY Website", describes the project website created for external and internal communication purposes. This deliverable tackles the motivation laying behind the concept of the website, its structure and main aspects. This document goes describes the content and structure of both the public and private websites of the project, together with links to social media platform (e.g., Twitter).

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1. Introduction

Within SAFEWAY project, WP10 - EXPLOITATION, DISSEMINATION AND COMMUNICATION. The main objective of WP10, as described in the Grant Agreement, This WP will develop appropriate strategies for IP management, dissemination and communication and exploitation of project results. In addition, standardization issues will be tackled. Moreover, knowledge transfers among the partners and beyond is also envisaged.

Deliverable D10.12 "SAFEWAY Website" describes the key points of design, execution, content, usage, and a to showcase the project evolution, social media updates, results and further developments of the project.

The website constitutes a key communication tool to increase project visibility and impact towards industrial communities, researchers and general public. It is also a key tool for sharing information between all SAFEWAY partners.

2. Public Website

The public website will act as a communication and dissemination channel for the project's results and for involving and enlarging the stakeholders' community. In addition, it will serve as the main interface towards organisations and people outside of the SAFEWAY project consortium who are interested in the work and achievements of the project.

The public SAFEWAY website has been formally launched before the kick-off meeting at the beginning of the project (September 2018). The URL address is <https://www.safeway-project.eu>. The content will be updated and extended regularly for the whole duration of the project.

Parts of the public website and the available publications/downloads, as well as the information regarding the project made available via the company websites of the consortium partners and will be used for local dissemination (in English and/or in the national languages).

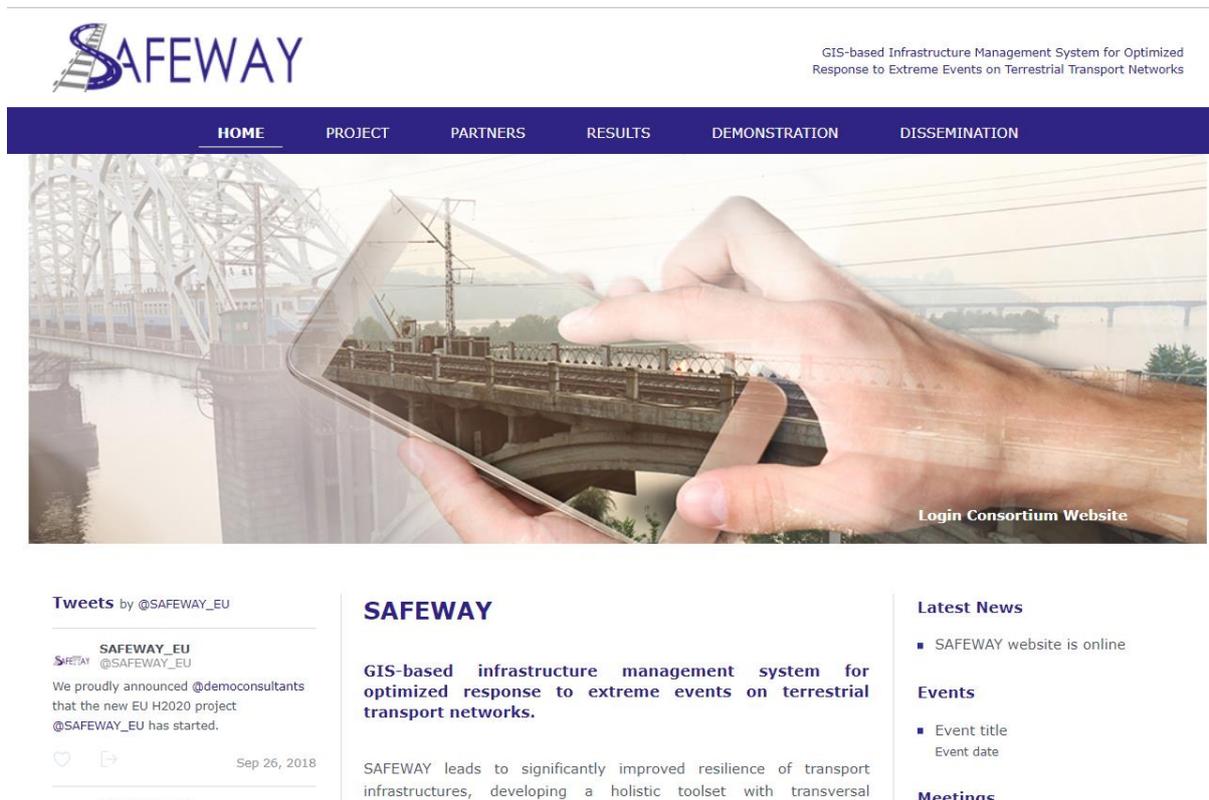


Figure 1: Home page

2.1 Website structure

The website has a main navigation menu below the website header. It is structured as follows:

- HOME (Figure 1)
- PROJECT (Figure 2)
 - Rationale
 - Main Aim
 - Benefits
 - Technical Objectives
 - Work Program
- PARTNERS (Figure 3)
 - University of Vigo
 - Norwegian Geotechnical Institute
 - University of Cambridge
 - Insitu Engineering
 - DEMO Consultants
 - University of Minho
 - Planetek Italia
 - Infrastructure Management Consultants
 - Ferrovial Agroman
 - Infraestruturas de Portugal
 - Network Rail
 - BeTR
 - Innovactory
 - TØI
 - Texas A&M Transportation Institute
- RESULTS (Figure 4)
- DEMONSTRATION (Figure 5)
 - Case 1: Portugal
 - Case 2: Spain
 - Case 3: United Kingdom
 - Case 4: The Netherlands
- DISSEMINATION (Figure 6)
 - Publications
 - Presentations
 - Trainings
 - Movies
 - Other

Project

- **Rationale**
- Main Aim
- Benefits
- Technical Objectives
- Work Program

Rationale

The modern society is increasingly dependent on transportation networks for its daily activities. The ability of the transport system to function during adverse conditions and quickly recover to acceptable levels of service after an extreme event is fundamental to the wellbeing of people within society. The current increased focus on resilience is driven by a raised awareness of extreme events due to natural hazards such as, heat and cold waves, river and coastal floods, droughts, wildfires or windstorms, where climate change also affects the severity and frequency of these events; and man-made events such as accidents, man-made fires and terrorism. These comprise most extreme situations, both natural as well as man-made, which cannot be anticipated solely based on conventional risk forecasting methods. Sudden events' response implies annual expenditures in the EU+ critical infrastructures of €0.8 billion and are expected to increase up to €12 billion by the end of this century[1]. Similar rates could be considered according to EU cohesion policy funds; studies indicate that annual damages to EU regional infrastructures will rise from €146 million /year to €556 million/year by 20201. The World Economic Forum strongly recommends investment in predictive (or condition-based) and Risk-based (or reliability-centered) maintenance[2] as a strategy to optimize infrastructures condition. In terms of human lives, a recent study published by the Directorate for Sustainable Resources of the EC JRC estimates that 152,000 deaths a year could be caused by weather-related disasters in the last quarter of the 21st century if there is not improvement in the policies that contribute to reduce the impact of extreme weather events[3].

[1] Forzieri, G., Bianchi, A., Marin Herrera, M.A., Batista e Silva, F., Feyen, L. and Lavallo, C., 2015. Resilience of large investments and critical infrastructures in Europe to climate change. EUR 27598 EN. Luxembourg (Luxembourg): Publications Office of the European Union.

Figure 2: Project page

Partners

- **University of Vigo**
- Norwegian Geotechnical Institute
- The University of Cambridge
- Insitu Engineering
- DEMO Consultants
- University of Minho
- Planetek Italia
- Infrastructure Management Consultants
- Ferroviario Agroman
- Infraestruturas de Portugal
- Network Rail
- BeTR
- Innovactory
- TØI
- Texas A&M Transportation Institute

UNIVERSIDADE DE VIGO

Universidade de Vigo

DESCRIPTION OF THE LEGAL ENTITY AND ITS MAIN TASKS

The University of Vigo is a public University located in Galicia (Northwest of Spain). UVIGO has placed a considerable emphasis on R&D activities by way of numerous internal funded projects, as well as through its various services and research centres. This support has enormously increased the scientific output and the capacity to obtain external resources. In the last three years more than 950 projects confirm the cooperation of the University with the enterprises and economic associations of the region (Galicia) and the nation (Spain). In the same way, more than 25 national and European patents have been applied by UVIGO in the last years. Moreover, UVIGO participates every year in the Framework Programme and other initiatives of the EU; more than 50 European Projects has been developed since the year 2007 (some of them coordinated by UVIGO), with a return of more than 25 million of euros (including more than 15 projects from H2020).

Researchers from the University of Vigo have built recognised and supported activities, and are well-known by colleagues through their participation in numerous national and international programmes, stays at prestigious European and American Universities, and visits of famous researchers from the international scientific community.

Three research groups of the University are participating in SAFEWAY: Applied Geotechnologies-GEOTECH, Corrosion Engineering and Materials-ENCOMAT, Energetic Technology Group-GTE. These three groups integrate 31 professors and 38 researchers. The three groups are internationally recognized in their respective fields of research and have been awarded by the national governments due to the impact of their R&D&I activities. In the last 3 years these groups have participated in 6 International projects and 15 national with an average annual income of 983kEUR.

CV OF THE PERSONS

Dr. Belén Riveiro Rodríguez (Female) is an Associate Professor at the Department of Materials Engineering, Applied Mechanics and Construction at the University of Vigo. She

Figure 3: Partners page

Results

In this section the final public results (deliverable reports) of the SAFEWAY project will be published.

Figure 4: Results page

- Case 1
- Case 2
- Case 3
- Case 4

DEMONSTRATION

Pilots

SAFEWAY innovation will be validated in 4 near-real life scenarios in order to test and validate effectiveness and transferability. SAFEWAY proposes four case studies along five corridors of the European core network (TEN-T). These case studies cover major potential hazards (floods, drought, fire, earthquakes and landslides) and consider the human provoked disasters (fires, accidents, and terrorism impact). They represent a huge amount of critical infrastructures: more than 75,400 km of rail networks and 5 roads, and singular points such as: 1,270 bridges, 24 tunnels, and 129 railway stations and multi-modal platforms, which are the most vulnerable elements.

SAFEWAY Case Studies on TEN-T CORE NETWORK CORRIDORS

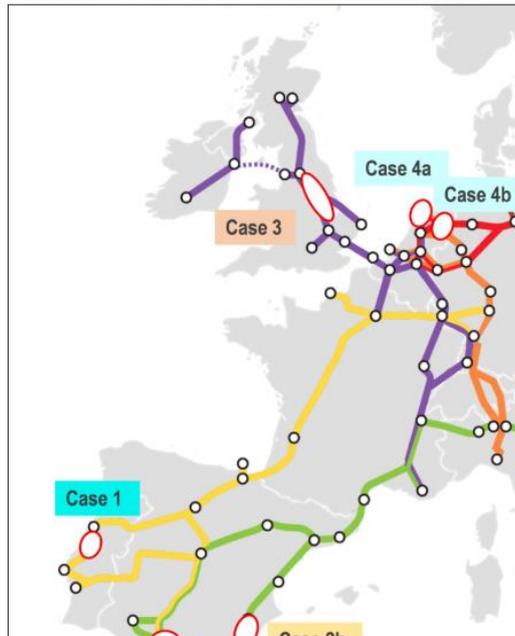


Figure 5: Demonstration page

Dissemination

In this sections all dissemination activities regarding SAFEWAY will be published.

- Publications
- Presentations
- Trainings
- Movies
- Other

Figure 6: Dissemination page

2.2 EU funding acknowledgement

The emblems and acknowledgment of EU funding of the project is visible in the footer of every page on the public website. (**iError! No se encuentra el origen de la referencia.**)

Coordinator

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Login Consortium Website

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Figure 7: EU funding acknowledgement

2.3 Content

Content management of the public website will be done by DEMO Consultants with support from all consortium partners. All the partners are responsible for providing content for the public website relevant to their contributions and activities within the project.

The role and task distribution concerning the public website are described in the Description of Action of the SAFEWAY project.

In short, the content management will be done by DEMO Consultants, who is responsible for the implications of external communications from the project.

In addition, DMO ensures the website hosting and technical support. When documents need to be uploaded on the public website, DMO will upload them first on the DMO-server due to security reasons and make them available for download from the SAFEWAY website through links.

DEMO Consultants will keep the public website online until 2 years after the project's completion. Depending on the exploitation plan that will be developed in the course of the project, this post-project website may be transferred into a commercial website for offering and selling of the project results.

2.3.1 Initial update schedule

- M1 (September 2018): Launch of website
- M4 (December 2018): First update
- M7-39: The SAFEWAY website will be updated every 3 months within the project duration. In 2018 - 2021: the updates will take place every year in March, June, September and December.
- M42 (March 2022): Final update and transfer to post-project (commercial) website

2.3.2 Content Management System (CMS)

CMS is a computer application that supports the creation and modification of digital content using a common user interface and thus supporting multiple users. DEMO as webmaster owns the login credentials to work with this CMS. DEMO uses a free cross-browser WYSIWYG (What you See Is What You Get) editor.

2.4 Links to Social Media

Social Media are enriching existing professional networks and knowledge exchange platforms and ensure a wide reach of targeted audiences defined within SAFEWAY.

The following social media groups have been activated for SAFEWAY. Emblems are located in the footer, on the bottom right on every page.

2.4.1 Twitter

Twitter is an online news and social networking service and was ranked as one of the most visited websites worldwide. The SAFEWAY_EU account has been created on Twitter at the beginning of the project. A twitter feed is visible in the left-hand column on the home page (Figure 1).

Link: https://twitter.com/SAFEWAY_EU (Figure 8)



Figure 8: SAFEWAY Twitter

The social media accounts and updates are managed by DEMO Consultants in harmonization with the updates published on the public website.

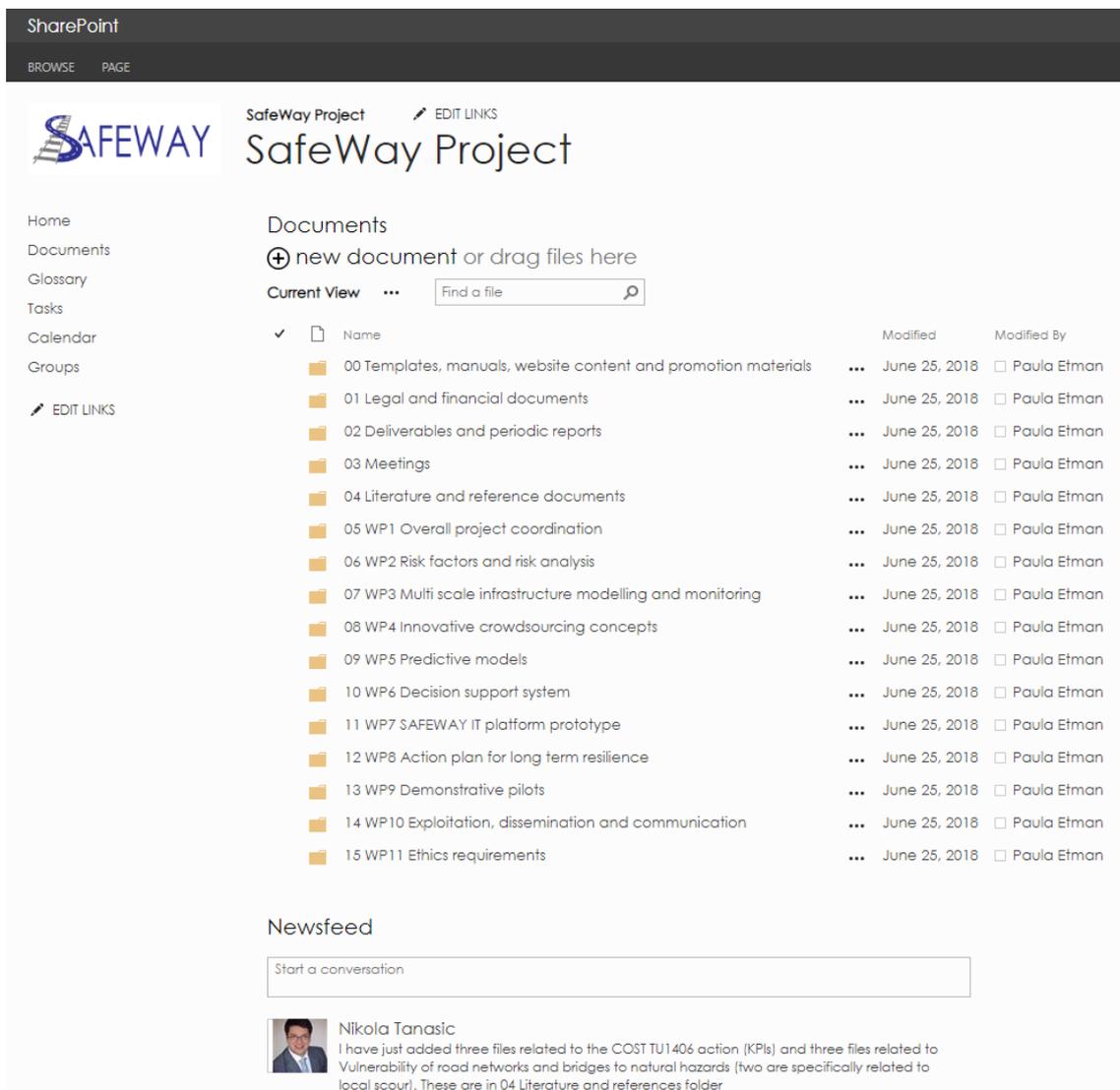
2.5 Security and Privacy

For safe exchange of data all connections to the website are made using the Hypertext Transfer Protocol Secure (HTTPS). Personal information is only collected after informed consent, safeguarded and fully compliant with the General Data Protection Regulation (GDPR).

3. Private Consortium Website

Next to the public website, an internal project website (SharePoint) has been set-up for information sharing among consortium partners. (Figure 9) Access to the SharePoint project website is possible both through the web-enabled portal as well as mobile devices (iPad App).

The internal project website of SAFEWAY was formally launched at the same time with the public website at the beginning of the project. The address is: <https://www.safeway-project.org>. The contents will be continuously updated and extended during the project. This is a restricted website which can be accessed only by the consortium partners and EC officials with login credentials.



The screenshot shows the SharePoint interface for the 'SafeWay Project'. The top navigation bar includes 'SharePoint', 'BROWSE', and 'PAGE'. The main header features the 'SAFEWAY' logo, 'SafeWay Project', and 'EDIT LINKS'. A left sidebar contains navigation options: Home, Documents, Glossary, Tasks, Calendar, Groups, and 'EDIT LINKS'. The central 'Documents' section has a '+ new document or drag files here' button and a search bar labeled 'Find a file'. Below this is a table of documents:

Name	Modified	Modified By
00 Templates, manuals, website content and promotion materials	June 25, 2018	Paula Etman
01 Legal and financial documents	June 25, 2018	Paula Etman
02 Deliverables and periodic reports	June 25, 2018	Paula Etman
03 Meetings	June 25, 2018	Paula Etman
04 Literature and reference documents	June 25, 2018	Paula Etman
05 WP1 Overall project coordination	June 25, 2018	Paula Etman
06 WP2 Risk factors and risk analysis	June 25, 2018	Paula Etman
07 WP3 Multi scale infrastructure modelling and monitoring	June 25, 2018	Paula Etman
08 WP4 Innovative crowdsourcing concepts	June 25, 2018	Paula Etman
09 WP5 Predictive models	June 25, 2018	Paula Etman
10 WP6 Decision support system	June 25, 2018	Paula Etman
11 WP7 SAFEWAY IT platform prototype	June 25, 2018	Paula Etman
12 WP8 Action plan for long term resilience	June 25, 2018	Paula Etman
13 WP9 Demonstrative pilots	June 25, 2018	Paula Etman
14 WP10 Exploitation, dissemination and communication	June 25, 2018	Paula Etman
15 WP11 Ethics requirements	June 25, 2018	Paula Etman

Below the document list is a 'Newsfeed' section with a 'Start a conversation' input field. A news item from Nikola Tanasic is visible, mentioning the addition of files related to the COST TU1406 action (KPIs) and vulnerability of road networks and bridges to natural hazards.

Figure 9: Private Consortium Documents and Newsfeed

3.1 Website structure

The private consortium website is organized as follows:

- Home (Figure 9)
- Documents (Figure 9)
 - 00 Templates, manuals, website content and promotion materials
 - 01 Presentation and report templates
 - 02 Content materials for public website
 - 03 Leaflets, posters and newsletters
 - 04 Manuals for SharePoint
 - 01 Legal and financial documents
 - 01 Grant Agreement
 - 02 Consortium Agreement
 - 03 Financial information
 - 04 Formal guidelines from European Commission
 - 02 Deliverables and periodic reports
 - 00 Draft deliverables
 - 01 Submitted deliverables
 - 00 Deliverables submitted to the Commission
 - 01 Internal Deliverables
 - 02 Draft periodic reports
 - 03 Submitted periodic reports
 - 03 Meetings
 - 01 Consortium meetings
 - 02 Project Technical Committee meetings
 - 03 Coordination Team meetings
 - 04 Advisory Board meetings
 - 05 WP meetings
 - 00 WP2 meetings
 - 01 WP3 meetings
 - 02 WP4 meetings
 - 03 WP5 meetings
 - 04 WP6 meetings
 - 05 WP7 meetings
 - 06 WP8 meetings
 - 07 WP9 meetings
 - 08 WP10 meetings
 - 04 Literature and reference documents
 - 01 Literature
 - 02 Other references
 - 05 WP1 Overall project coordination
 - 01 Working documents
 - 02 Presentations
 - 03 Draft deliverables
 - 06 WP2 Risk factors and risk analysis
 - 01 Working documents
 - 02 Presentations
 - 03 Draft deliverables

- 07 WP3 Multi scale infrastructure modelling and monitoring
 - 01 Working documents
 - 02 Presentations
 - 03 Draft deliverables
- 08 WP4 Innovative crowdsourcing concepts
 - 01 Working documents
 - 02 Presentations
 - 03 Draft deliverables
- 09 WP5 Predictive models
 - 01 Working documents
 - 02 Presentations
 - 03 Draft deliverables
- 10 WP6 Decision support system
 - 01 Working documents
 - 02 Presentations
 - 03 Draft deliverables
- 11 WP7 SAFEWAY IT platform prototype
 - 01 Working documents
 - 02 Presentations
 - 03 Draft deliverables
- 12 WP8 Action plan for long term resilience
 - 01 Working documents
 - 02 Presentations
 - 03 Draft deliverables
- 13 WP9 Demonstrative pilots
 - 01 Working documents
 - 02 Presentations
 - 03 Draft deliverables
- 14 WP10 Exploitation, dissemination and communication
 - 01 Working documents
 - 02 Presentations
 - 03 Draft deliverables
- 15 WP11 Ethics requirements
 - 01 Working documents
 - 02 Presentations
 - 03 Draft deliverables
- Glossary (Figure 10)
- Tasks (Figure 11)
- Calendar (Figure 12)
- Groups

SharePoint Newsfeed OneDrive Sites Maurijn Neumann

BROWSE ITEMS LIST

SAFEWAY SafeWay Project EDIT LINKS

Glossary Search this site

Home Documents Glossary Tasks Calendar Groups EDIT LINKS

new item or edit this list

All Items Find an item

Term	Abbreviation	Description
Building Information Modeling	BIM	BIM is a method for optimizing the design, execution and operation of building structures. The basis of BIM is formed by a 3D computer model which can be enhanced by adding further information, such as time, costs, utilization. It is not a software packag

Figure 10: Private consortium Glossary

SharePoint Newsfeed OneDrive Sites Carlos Perez-Gallazo

BROWSE TASKS LIST

SAFEWAY SafeWay Project EDIT LINKS

Tasks Search this site

Home Documents Glossary Tasks Calendar Groups EDIT LINKS

Today

Task	Start	End
WP1 Overall Project Coordination	9/1 - 2/28	2019 - 2020
T1.1 Financial, Legal and Administrative Management	9/1 - 2/28	2019 - 2020
T1.2 Monitoring and Risk Management of the Project	9/1 - 2/28	2019 - 2020
T1.3 The Strategic Management of the Project	9/1 - 2/28	2019 - 2020
WP2 Risk Factors and Risk Analysis	9/1 - 2/28	2019 - 2020
T2.1 Identification and mapping of threats and impacts leading to malfunctioning	9/1 - 8/31	2019 - 2020
T2.2 Modelling vulnerability and resilience in risk assessment of transportation networks	1/1 - 2/29	2019 - 2020
WP3 Multiscale Infrastructure Modeling & Monitoring	9/1 - 2/28	2019 - 2021
T3.1 Evaluation of data acquisition platforms for Multiscale Infrastructure Monitoring	9/1 - 8/31	2019 - 2020
T3.2 Spatio-Temporal data fusion optimization and georeferencing	9/1 - 8/31	2019 - 2020
T3.3 Automation capability of monitoring data analysis	12/1 - 2/28	2019 - 2020
WP4 Innovative Crowdsourcing Concepts	9/1 - 2/28	2019 - 2021
T4.1 Vehicle Data Crowdsourcing	9/1 - 9/28	2019 - 2020
T4.2 Human sensing and social media	11/1 - 11/30	2019 - 2020
T4.3 Accounting for user risk tolerance and psychological and behavioural aspects	12/1 - 2/28	2019 - 2020
WP5 Predictive Models	1/1 - 2/28	2019 - 2021
T5.1 Infrastructure predictive models	1/1 - 8/31	2019 - 2020

Figure 11: Private Consortium Tasks

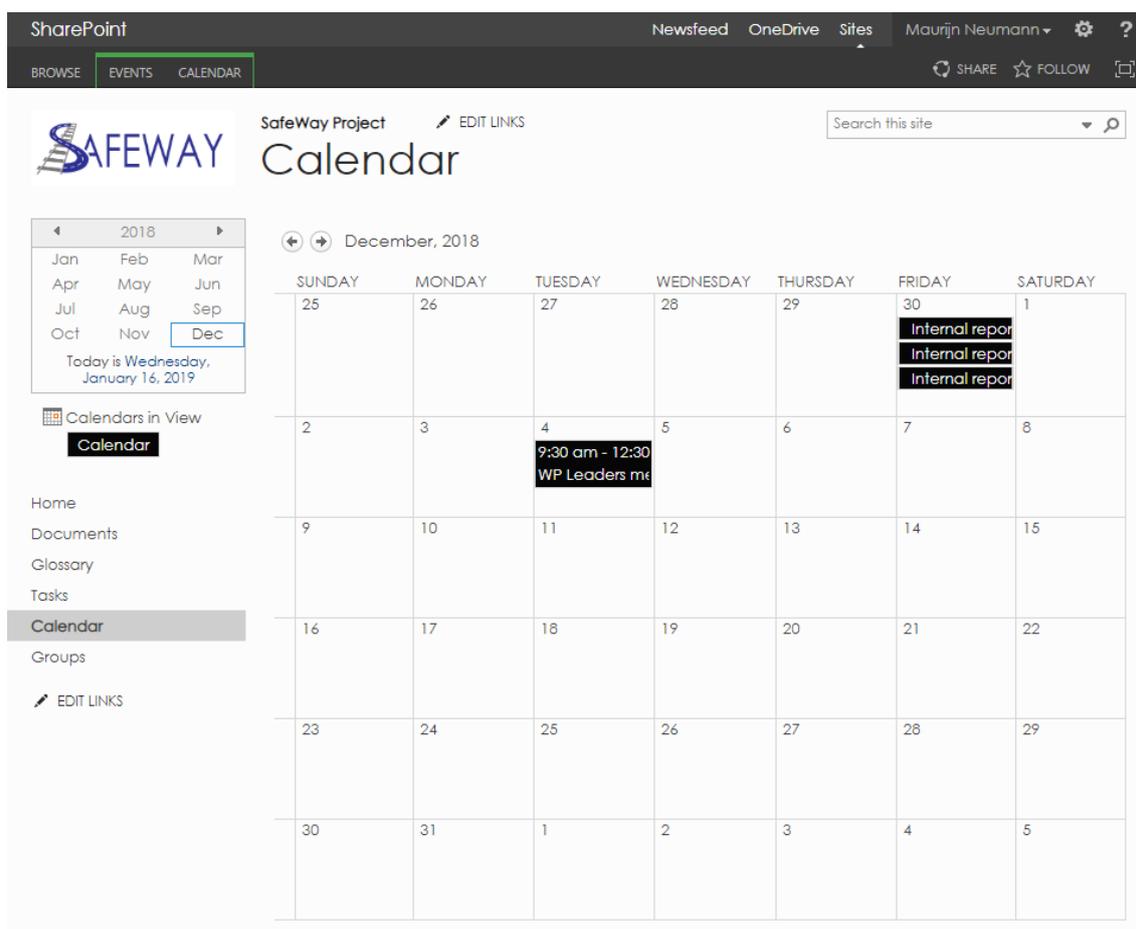


Figure 12: Private Consortium Calendar

3.2 Content

The Private Consortium Website is a collaborative platform, specifically called into action for the exchange of information. As such, content management is not centralized but rather distributed. Each registered user can add, modify and delete content in the categories they have access to.

There are no pre-scheduled updates.

User registration is centralized and under the overview of DEMO Consultants.

3.3 Accessibility

There are two ways to access the private consortium website:

- Web-enabled:
 - By logging in with own credentials through the public website <https://www.safeway-project.eu> under Login Consortium Project Website, or
 - By accessing directly, the SharePoint via <https://www.safeway-project.org>

A window will open where registered members will log in with their credentials.

- On-The-Go (iPad/iPhone App)
 - The Microsoft Sharepoint app (Figure 13) and SharePlus Office Mobile Client Lite (Figure 14) are examples of easy to use office apps On-The-Go for retrieving and editing SharePoint documents on mobile devices. This can be easily done with or without network connectivity and will sync the changes securely when back at the office. If a file was changed by someone else while out of the office, the app will detect the collision and ask what version to keep. Both examples are available for free from the Apple AppStore.
 - Apple AppStore.

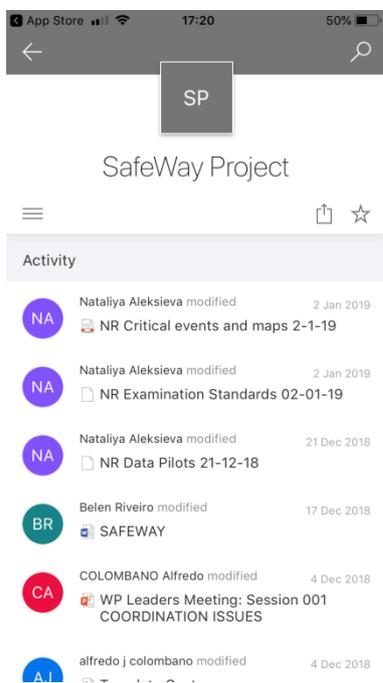


Figure 1: Microsoft SharePoint App

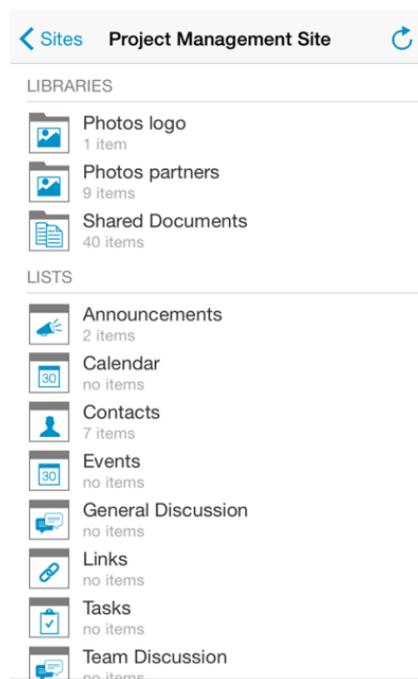


Figure 2: SharePlus Office Mobile Client

3.4 Security and Privacy

For safe exchange of data all connections to the website are made using the Hypertext Transfer Protocol Secure (HTTPS). Access to the private (SharePoint) website is restricted to dedicated user accounts, assigned by DEMO Consultants.

Personal information is only collected after informed consent, safeguarded and fully compliant with the General Data Protection Regulation (GDPR).

Acknowledgements

This periodic report was carried out in the framework of the GIS-Based Infrastructure Management System for Optimized Response to Extreme Events of Terrestrial Transport Networks (SAFEWAY) project, which has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 769255.

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