



# Evaluation of the Numericanal project

**Roundberry  
Projects**

Author: Angela Baines  
Email: [info@roundberry.co.uk](mailto:info@roundberry.co.uk)  
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## Executive Summary

*“We have learned a lot, I think that is the most important. Everybody has made a lot of effort to get things done”.*

*“The benefits that CRT have had from this project have been phenomenal, and we are very pleased with what has been delivered through the funding, which has been truly transformational”.*

This holistic evaluation assesses the outcomes, impacts and delivery of the European Union Interreg IVB funded Numericanal project. It has been based on feedback from project partners, observation at meetings and project documentation.

Numericanal has brought about significant technological advance to the smaller waterways in NorthWest Europe. It has developed, trialled and implemented innovative technologies such as Smartphone Apps to improve safety and communication with waterways users, control centre systems, mobile working technology and remote operation of structures. Some of these technologies were not previously available to users of small craft. These tangible outputs and their impacts are explained in the report. The partners consider that the delivery of a Control Centre Common Model has been their most significant achievement.

It has been possible to establish a number of longer term outcomes resulting from Numericanal and examples are given. These cover:

- Improved safety on waterways
- Strengthened transnational working
- Efficiency improvements
- New ways of working
- Improved waterways maintained as part of the cultural heritage
- Tourist information and visitor economy benefits
- Increased potential for commercial navigation on smaller inland waterways.

Despite the successful outcomes there have been a number of challenges to project delivery. The two most significant have been resource changes within organisations meaning the project started slowly, and also the pace of technological change which affected the proposed outputs.

Nevertheless the evaluation concludes that the project was successful due to strong leadership and a willingness by all the partners to embrace new technological solutions. Partners benefitted from the capital investments which have made their organisations more cost effective and efficient and good practice has been disseminated to improve safety for waterways users.

A number of recommendations have been made. These are influenced by the evident delays to delivery as well as considering project management aspects, they can be summarised as:

- Increasing uptake of the Apps by waterways users, especially those relating to safety

- Ensuring dissemination of the technological developments around control centres and remote working to waterways organisations
- For future projects to consider how such technological developments can demonstrate a Return on Investment.

# 1. About this evaluation

## 1.1 Introduction

Roundberry Projects was appointed in June 2015 to carry out a holistic evaluation of the European Union Interreg IV B funded Numerical project.

The client's brief was for this evaluation to:

- assess the outcomes and impacts of this transnational project,
- consider aspects of partnership working in the delivery of the Numerical project and,
- provide a record of the project's achievements and challenges that can be used to encourage take up of the project's outputs by all partners and more widely, and finally,
- recognise and celebrate all aspects of the Numerical project's contribution to the development and initial piloting of innovative canal and waterway management solutions.

How we can exploit the results of our work, pilots, and transfer the good practices across NWE

## 1.2 Methodology

This report results from a qualitative approach to evaluation to provide a holistic view of the project.

In doing so there has been considerable use of the extensive project documentation submitted to and received from the funders - the European Commission's INTERREG IV B programme. This has been supplemented by surveys of and/or interviews with project partners and observations and reports at the partners' steering group meetings in Amsterdam (September 2014), Brussels (July 2015) and Hatton (October 2015). Surveys and interviews have focussed on partners' assessments of the **outcomes** that have, or should, result from the actions and the project as a whole and the **process of partnership working** in the delivery of the project.

A technical evaluation as part of (WP5A16) of some of the outputs has been undertaken by one of the project partners, CETIC, and these are also considered within this evaluation.

Because of the timescales and the dispersed nature of the pilot schemes in this project, it has not been possible to undertake interviews with the end users of the schemes financed by the project. However consultation with waterways users has been carried out by partners as part of the project delivery.

## 2. About this project

### 2.1 Overview

The Numerical project has been enabled by finance from the European Commission's INTERREG IVB programme with match funding from the project partners.

Starting in May 2011 the project spanned 56 months to end in September 2015. Funding of €1,658,453.07 was granted towards an overall eligible project budget of €3,316,906.13. Final project spend information was not available before this report was finalised.

The project covered waterways organisations in North West Europe (NWE) with the initial project partners being:

Partner	Country	Comments
LEAD PARTNER		
Canals & Rivers Trust	UK	Known as British Waterways until July 2012
Voies Navigables de France	FR	
CETIC - Centre of Excellence in Information and Communication Technologies	BE	
Gemeente Eindhoven	NL	
Gemeente Eijsden-Margraten	NL	
Waterrecreatie Nederland	NL	Known as Stichting Recreatietoervaart Nederland (SRN) until 2014
Midlands Regional Authority	IR	Withdrew from project in 2012

There were 11 observer organisations which included:

Finow Canal, City of Bremen, Germany  
Ville de Visé, Belgium  
Maastricht, Netherlands  
Scottish Canals (British Waterways until 2012), UK

### 2.2 Context and background

Navigable inland waterways are a significant feature of many regions in North Western Europe and a major contributor to economies and the environment. Waterways form part of the EU's high capacity TEN-T<sup>1</sup> network with the European Commission stating:

*"The potential for increasing the modal share of inland waterway transport is significant. Compared to other modes of transport which are often confronted with congestion and capacity problems, inland waterway transport is characterised by its reliability, energy efficiency and major capacity for increased exploitation. The European Commission aims to*

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<sup>1</sup> Trans European Network - Transport – the EU's transport infrastructure policy

*promote and strengthen the competitive position of inland waterways in the transport system, and to facilitate its integration into the intermodal logistics chain.”<sup>2</sup>*

The TEN-T policy is supported by the EU’s River Information Services (RIS) Directive (2005/44/EC) relating to ICT developments and Platina, which is the implementation platform for the EU Naiades<sup>3</sup> investment programme for inland waterways.

However much of this development has gone into the larger waterways of class IV and above. Numericanal's overall objective therefore was to strengthen the management of smaller dimension waterways that provide a transport function and/or feed into the TEN-T network, through innovative ICT based approaches and tools.

## 2.3 Project rationale

There were a number of drivers for the partners in embarking on this project.

### a) Resources

Set against the context of the strategic importance of inland waterways is the increasing pressures on resources. The partners felt, therefore, a need to develop and implement innovative models such as for financing and maintenance of these waterways. ICT and e-services have become important considerations for strengthening the attractiveness and efficient management of waterways.

### b) Safety and services for waterways users

It was also believed that Numericanal would result in improved safety as well as better services for waterways users. Smaller waterways feed into the main ‘trunk’ network so there was a need to increase compatibility’ or standardisation of smaller waterways with each other and the larger waterways across Europe.

### c) Transnational nature of waterways

There were multiple cross-border implications for smaller waterways. Given the wide range of organisations involved in managing regional waterways (local / regional authorities plus national navigation organisations) there was a need to share knowledge and experience of new technologies (which would be new to some) to come up with common approaches, achieve greater operational efficiency and avoid ‘re-inventing the wheel’.

Again, as these smaller waterways feed into the main trunk network they may be cross-border in nature. There is a need to ensure that systems developed are compatible with each other and with those used on the larger waterways and across the EU territory and so account needs to be taken of differing administrative, navigation and regulatory systems.

### d) Waterway resources

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<sup>2</sup> [http://ec.europa.eu/transport/modes/inland/index\\_en.htm](http://ec.europa.eu/transport/modes/inland/index_en.htm)

<sup>3</sup> Further background at: [http://ec.europa.eu/transport/modes/inland/promotion/index\\_en.htm](http://ec.europa.eu/transport/modes/inland/promotion/index_en.htm) this through their work carried out in th

The partners also hoped that better management of waterway resources would be enabled through improved technology.

## 2.4 Project aims and methodology

The partners planned to connect the regional and national strengths, knowledge and experience of the 7 partners in the field of ICT and waterways management through a transnational strategy of developing pilot projects of e-services, information & communications along smaller dimension waterways.

Through the approach using local pilot actions it was anticipated that an outcome would be to increase the potential of commercial navigation along the smaller inland waterways.

The Numerical project specifically aimed to:

- Identify and analyse existing **good practices and possible new approaches** and services, taking account of the needs of waterways users and managing authorities (WP1)
- Develop and pilot the provision for **ICT based information for users**, based on mobile technology (WP2)
- Develop and pilot new technology based approaches to **promoting navigational safety**, including the management of potential conflicts between commercial & leisure users of the waterways (WP3)
- Develop and pilot appropriate **ICT based waterway control & management systems** (WP4)
- Evaluate the pilot actions, taking account of feedback from users and **rollout the results / lessons learnt to other regional waterways throughout the NWE area** (WP5).

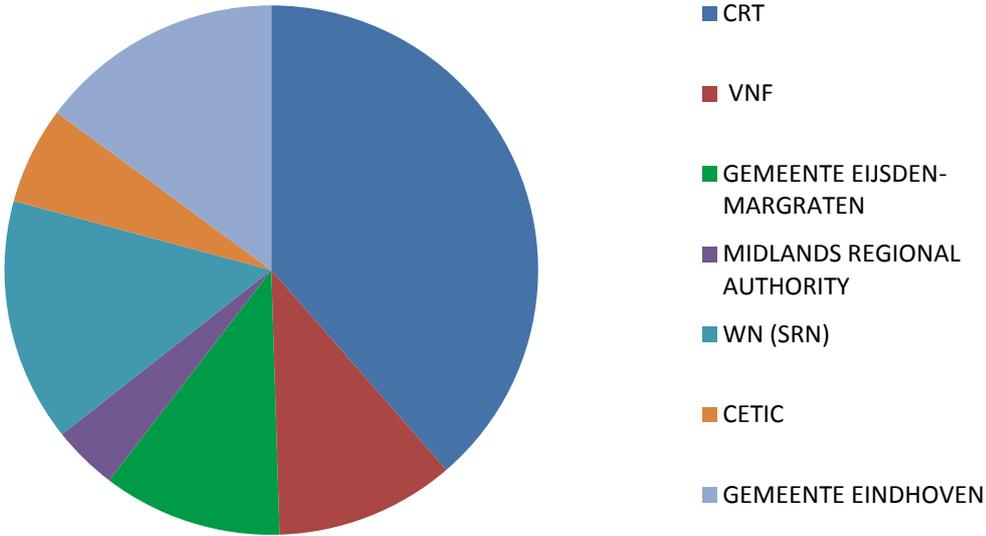
These aims would be reached by undertaking pilot initiatives investigating:

- Model approaches for providing services and information to waterway users, using mobile communications technology;
- A transnational approach to nautical safety on inland waterways to facilitate multifunctional use and a growth in the transport functions of waterways;
- Model approaches for the development of Waterway Control Centres to secure the more efficient & cost effective management of the waterway infrastructure.

## 2.5 Project funding

The initial total project budget was €3,316,906.13 with each partner organisation's allocation reflecting the cost of the deliverables and CRT's Lead Partner responsibilities.

# Budget Allocation



### 3. Have the project outputs been achieved?

#### 3.1 Forecast project outputs

This wide-ranging, transnational project had 31 specific outputs, plus around 27 other outputs which were grouped into actions and allocated to 5 specific work packages as below. Indicators were also established for the purposes of monitoring the progress of the project towards these outputs.

The five work packages were:

- WP1: Analyse existing good practices and identify potential new practices
- WP2: Develop / pilot use of mobile technology information for users (Smartphones / lock operating etc)
- WP3: Develop / pilot new technology approaches to safety, particularly conflicts between smaller leisure boats and freight/commercial boats. (Congestion/danger zones, training)
- WP4: Develop / pilot ICT waterway control & management systems (CRT / Eindhoven Control Centres)
- WP5: Evaluate these WPs and roll out results and lessons learned

Details of the planned work packages and associated outputs are shown in the table below. These demonstrate the wide range of actions necessary to successfully deliver the project.

ACTION NO.	DESCRIPTION	OUTPUTS
WP1A1	<p><u>ACTION NAME: Analysis of existing practices</u>  <u>PARTNERS: CRT (Lead), with all partners involved in implementing the action</u>  The aim of this action is to identify, collect &amp; assess innovative ICT-based approaches and services for waterway management.</p>	<p>Output 1.1.1 Good practice handbook  Output 1.1.2 Good practice workshop  Output 1.1.3 Synopsis of stakeholders in each country  Output 1.1.4 Local &amp; transnational stakeholder group meetings / consultation</p> <p>In addition, this action will also involve the establishment of the local and transnational stakeholder groups, which will be consulted on user needs and the identification of good practices. These groups will subsequently act as a “sounding board” for the developments undertaken through WPs 2, 3 &amp; 4.</p>
WP1A2	<p><u>ACTION NAME: Connectivity/regulatory issues</u>  <u>PARTNERS: CRT (lead), supported by all partners. Specific technical support will be provided by CETIC</u></p> <p>A first predictive coverage map of eligibility (3G LTE, WiMAX, DSL) will be carried out for each territory. Partners will also analyse existing legal frameworks and regulations (including policies, plans, restrictions, requirements etc.) concerning the conditions of access and marketing of electronic communications services and the exchange of digital data.</p>	<p>Output 1.2.1 Predictive mobile communications coverage map for each territory  Output 1.2.2 Online catalogue of national &amp; EU regulatory provisions related to ICT for waterway management</p>

WP2A3	<p>ACTION NAME: <u>Diagnostic and model for the development of the wifi based app system.</u></p> <p><u>PARTNERS: VNF will lead the action in close cooperation with Eijsden-Margraten and CETIC</u></p> <p>The aim of this action is to assess the needs of the waterway users in terms of information in order to develop a model for a wifi based application.</p>	<p>Output 2.1.1 Analysis report of users need in France and The Netherlands</p> <p>Output 2.1.2 Evaluation of technical requirement for both VNF and Eijsden-Margraten</p> <p>Output 2.1.3 Selection of data to be included in the application</p> <p>Output 2.1.4 Common model for a waterways wifi based application</p> <p>Output 2.1.5 Process for implementation in other partners regions</p>
WP2A4	<p>ACTION NAME: <u>Setting up a cross border WIFI based app system for information waterway users in the Netherlands</u></p> <p><u>PARTNERS: Eijsden-Margraten lead, supported by VNF and CETIC</u></p> <p>At the waterway junction of the Maas in the Netherlands and the Albertcanal in Belgium a giant new lock is under construction. This is one of the 30 priority EU-Essen projects of the Trans European Network. It will enable, in 2015, ships of 220m long and 10 m height to pass. This lock complex is, apart from via Antwerp, the only route to go to Belgium/France. The city council of Eijsden-Margraten controls all water sport and leisure facilities on the waterway. The objective of this action is to jointly create a wifi based internet system, delivering safety and navigation information to passing ships and to inform them about regulations, documents required etc.</p>	<p>Output 2.2.1. one wifi-based application</p> <p>Output 2.2.2 site visit for all partners</p> <p>Output 2.2.3 A report on the pilot action, which will be used to support the development of a roll-out strategy for Midlands Regional Authority and the wider dissemination of results.</p>

WP2A5	<p><u>ACTION NAME: Setting up a cross border WIFI based app system for information to waterway users in France</u>  <u>PARTNERS: Voies Navigables de France lead, supported by Eijsden-Margraten and CETIC</u></p> <p>The pilot on the Sambre / Oise rivers within the Numerical project follows on from a series of studies carried out by VNF focussing on this waterway to improve its economical value in terms of multifunctional use. The aim of the pilot is to develop a wifi system application gathering all this information together for a better dissemination at a local level and for the development of commercial and leisure activity on the waterway.</p>	<p>1 Wifi based application system for vessel skippers  1 transfer visit report  1 communication seminar  1 report on the pilot action  1 training session with the new application</p>
WP2A6	<p><u>ACTION NAME: Investigate how the approaches developed through the pilot actions might be rolled up out to other waterways within NW Europe, through developing a pilot strategy for replication in the Midlands Regional Authority</u>  <u>PARTNERS: Midlands Regional Authority</u></p> <p>Midlands Regional Authority will develop a plan for rolling out the results of the pilot actions in WP2 in a rural area in Ireland.</p>	<p>1. Replication Plan for Midlands Region, Ireland; 2 transfer visits; roll-out input to WP5.</p>
WP3A7	<p><u>ACTION NAME: Danger zoning and use of ICT and Apps for waterway safety</u>  <u>PARTNERS: VNF is leading the implementation of this action in strong cooperation with SRN and involving all PPs as well as external stakeholders</u></p> <p>This targets users (commercial vessels and pleasure craft), waterway managing bodies and stakeholders e.g. the ship building sector where ICT applications for gathering/dissemination of data on nautical safety and danger zones are relevant for the technical equipment and service platforms for these ships. WP3A7 is inspired by local projects such as „Varen Samen Je Doen” translated into transnational actions and valorisation.</p>	<p>Output 3.1.1 Inventory of data on danger zones and other bottlenecks in PP regions  Output 3.1.2 Initial study on ICT applications, Apps that can be used in data collection and dissemination on danger zones (also based on good practices, study visits, analysis carried out earlier in the project)  Output: 3.1.3 Developed ICT platform and functions for gathering and dissemination of information on danger zones, for other infrastructural data and for safety advice particularly benefiting users but also waterway managing authorities and other governance bodies (to be rolled out in demonstration phase in WP3A9).  Output: 3.1.4 Apps for Iphone and Android for dissemination of information on danger zones, for other infrastructural data and for safety advice particularly benefiting users but also waterway managing authorities and other governance bodies (to be rolled out in</p>

		demonstration phase in WP3A9). Output: 3.1.5 Wifi hotspot network facilitating the access to various safety and good nautical advice information Output: 3.1.6 Nautical TomTom featuring specific functions on safety zones Also the safety Apps will be tested in the pilots under WP2 and WP4. "
WP3A8	<p><u>ACTION NAME: Education platform and training on nautical safety</u> <u>PARTNERS: SRN is leading the implementation of this action in strong cooperation with all PPs but also external stakeholders</u></p> <p>The education platform will be designed using ICT tools to facilitate its roll out in all PP regions as well as in other European regions. The PPs will develop this education platform in cooperation with decision-making bodies on nautical safety, international, national or local organisations representing waterway users to ensure that the educational platform has the right objectives, approach, content and format.</p>	<p>Output 3.2.1 Final educational programme comprising printed materials, safety web portal, Open Days and volunteer training objective, content and approach Output 3.2.2 Certification methodology and criteria for certifying volunteer trainers Output 3.2.3 Safety web portals in national language (under Project website) Output 3.2.4 Brochures and leaflets Output 3.2.5 Help desk function operated by SRN Output 3.2.6 Contextual marketing/promotional framework for guiding local/regional marketing efforts to enhance visibility and impact</p>
WP3A9	<p><u>ACTION NAME: Roll-out of the nautical safety applications and programmes</u> <u>PARTNERS: SRN is leading the implementation of WP3A9 in strong cooperation with VNF &amp; the rest of the Partners, together with external stakeholders</u></p> <p>WP3A9 will roll-out the ICT and Apps toolkit (that was developed as combined activity under WP2), the educational platform and training developed under WP3A7 and WP3A8, in cooperation with the transnational stakeholder group &amp; the main decision-making bodies on nautical safety, members of Yacht clubs, marinas or rental companies about safe boating.</p>	<p>Output 3.3.1 3-5 volunteers receiving training and Trainers Licence per PP region Output 3.3.2 6 Open Days per partner region, with some 40 people participating per each session Output 3.3.3 6 volunteer 1-day trainings per partner region between May 2014 and October 2015 Output 3.3.4 10-20 people trained per training (e.g. 60-120 in total per PP region) Output 3.3.5 Evaluation sheets and selected interviews Output 3.3.6 Final evaluation report (link with WP5)</p>

WP4A10	<p><u>ACTION NAME: Define common Control Centre (CC) model and operations</u>  <u>PARTNERS: CRT (Lead), with all partners supporting the concept design</u></p> <p>This action will establish a common model for the Control Centres including operation, functions and systems. The Centres will provide a centralised contact and delivery point for managing inland waterways. Shared understanding will be reached on the purpose and objectives of Centres and integration with existing internal and external systems within partner countries and Europe. This will include collaboration between CRT, Eindhoven and future Centres to be developed elsewhere. CRT and Eindhoven will use this model to develop the pilot actions WP4A11 and WP4A12. The model will be designed to be transferrable to regions elsewhere.</p>	<p>The concrete outputs of this action are to establish the control centre model, incorporating</p> <ul style="list-style-type: none"> <li>• Evaluation by all partners of existing control centre models and effectiveness</li> <li>• Evaluation of regulatory and other technical requirements</li> <li>• Common model for waterways management control centres (CRT)</li> <li>• Specification of control centre models for England and Wales, and the City of Eindhoven</li> <li>• Process for transnational exchange</li> </ul> <p>Other outputs linked to this action include:</p> <ul style="list-style-type: none"> <li>• Consultation with stakeholders on expectations</li> <li>• Agreement on purpose and objectives</li> <li>• List of centre functions and systems</li> <li>• Agreement on personnel role descriptions"</li> </ul>
WP4A11	<p><u>ACTION NAME: Design &amp; development of pilot Control Centre in the UK (Gloucestershire)</u>  <u>PARTNERS: CRT (Lead), supported by City of Eindhoven, VNF &amp; Cetic</u></p> <p>This action will deliver a pilot Control Centre for the waterways in England &amp; Wales, located in Gloucestershire. The action will put in place the systems and infrastructures required for the Control Centre</p>	<p>CRT will establish a functioning control centre for waterway management including tools, systems and interfaces. The centre will demonstrate ICT as a means for resource efficiency by enabling, through remote control and monitoring, effective deployment of manpower skills. The pilot will also deliver:-</p> <ul style="list-style-type: none"> <li>• 1 site visit for all partners (in conjunction with an SG meeting)</li> <li>• 2 transfer visits involving city of Eindhoven &amp; VNF</li> <li>• A report on the pilot action, which will be used to support the development of a roll-out strategy for Eijsden-Margraten and the wider dissemination of results</li> <li>• A launch event for the Centre</li> <li>• Training material for CRT staff and to support the roll-out of the action.</li> </ul> <p>The control centre and the demonstration of ICT tools will provide a catalyst for uptake in other NW Europe cities, regions and countries. Partners will use these strategically significant facilities to communicate opportunities and potential benefits to a wide and varied audience including organisations from the waterway, ICT and policy sectors. The</p>

		Centre will also help increase awareness and appreciation of the waterways as a resource and, by advancing management practices, secure resource availability and engage stakeholders for longer-term sustainability.
WP4A12	<p>ACTION NAME: <u>Design &amp; development of pilot Control Centre in the Netherlands (Eindhoven)</u></p> <p>PARTNERS: <u>City of Eindhoven (Lead), supported by CRT, VNF &amp; Cetic</u></p> <p>This action will deliver a pilot Control Centre for the Beatrixcanal in Eindhoven (Netherlands). The action will put in place the systems and infrastructures required for the Control Centre.</p>	<p>City of Eindhoven will establish a functioning control centre for waterways management including tools, systems and interfaces, together with associated vessel tracking and management systems. The centre will demonstrate ICT as a means for resource efficiency by enabling remote management &amp; administration of vessels. The pilot will also deliver:-</p> <ul style="list-style-type: none"> <li>• 1 site visit for all partners (in conjunction with an SG meeting)</li> <li>• 2 transfer visits involving CRT &amp; VNF</li> <li>• A report on the pilot action, which will be used to support the development of a roll-out strategy for Eijsden-Margraten and the wider dissemination of results</li> <li>• A launch event for the Centre</li> </ul> <p>The control centre and the demonstration of ICT tools will provide a catalyst for uptake in other NW Europe cities, regions and countries. Partners will use these strategically significant facilities to communicate opportunities and potential benefits to a wide and varied audience including organisations from the waterway, ICT and policy sectors. The Centre will also help increase awareness and appreciation of the waterways as a resource and, by advancing management practices, secure resource availability and engage stakeholders for longer-term sustainability.</p>

WP4A13	<p><u>ACTION NAME: Replication &amp; roll-out: Eijsden-Margraten (Netherlands)</u>  <u>PARTNERS: Eijsden-Margraten, CRT, City of Eindhoven, VNF, SRN, CETIC, sub partners Riemst(B) and Visé(B)</u></p> <p>Eijsden-Margraten will develop a plan for rolling out the results of the 2 pilot actions in WP4 on the River Maas in the Eijsden-Margraten area. Eijsden-Margraten will participate in two transfer visits to CRT and Eindhoven to facilitate a greater understanding of the actions developed.</p>	<p>1 replication plan for Eijsden-Margraten;  2 transfer visits;  Roll-out inputs to WP5.</p>
WP5A14	<p><u>ACTION NAME: Define the global model and the evaluation methodology</u>  <u>PARTNERS: CETIC (Lead), with all partners and observers providing inputs and participating in the review process</u></p> <p>The evaluation methodology will be developed for the 7 pilots from the outset and take as a starting point the delivery objectives of the leader of each pilot. These leaders will agree measures for the success of each pilot (e.g. range of types of vessel served, ease of use by users, ability to accommodate different waterway characteristics, availability of wifi signals, suitability for leisure or commercial users, suitability for navigation authorities including ease of refinement / updating, capture of feedback, etc) Pilot leaders will identify and list the minimum information required by the users and Navigation authorities to satisfy those objectives e.g. reduction in accident / incidents / complaints in hazardous areas. They will assess the level of take up of the application by users for each identified type of vessel (commercial, powered, leisure, unpowered leisure, etc).</p>	<p>The concrete outputs of this action are:</p> <ul style="list-style-type: none"> <li>• To define the list and format of the results to be archived for the pilots</li> <li>• To provide a methodology, i.e. guidelines to be used by the partners managing pilot for collecting this data, and by CETIC afterwards to interpret these data</li> </ul> <p>It is very important to note that these outputs will be validated by all partners and observers; the exploitation of the pilot results is then guaranteed.</p>

WP5A15	<p>ACTION NAME: <u>Support the data gathering process during all the pilot phases</u>  PARTNERS: <u>CETIC (Lead), leaders of WP2 (VNF), WP3 (SRN), WP4 (CRT). Indirect participation of other partners involved in pilot actions</u></p> <p>This action will ensure that all the pilot actions will follow the same methodology to collect the data and then to allow a consistent evaluation of their results.</p>	<p>The concrete outputs of this action are:</p> <ul style="list-style-type: none"> <li>• To refine the methodology into clearer guidelines each time that it is required, i.e. according to the questions or difficulties encountered by the pilot leaders.</li> <li>• To collect all data according to the methodology in an organised way in order to facilitate their interpretation.</li> </ul>
WP5A16	<p>ACTION NAME: <u>Evaluation of the pilot results</u>  PARTNERS: <u>CETIC (Lead), with all partners and observers participating in the review process</u></p> <p>Once the pilot phases end, CETIC will generate a first draft of the evaluation report from the collected data, by strictly applying the predefined methodology. The report will</p> <ul style="list-style-type: none"> <li>• outline the conclusions for each pilot;</li> <li>• present the results for the global model, allowing to extrapolate results to other configurations.</li> </ul>	<p>The concrete outputs of this action are:</p> <ul style="list-style-type: none"> <li>• To provide the evaluation report including two parts, the detailed results for the pilots and the conclusions for exploitation of the global model applicable to any situation in NWE.</li> <li>• To update methodology following the issues encountered in the interpretation of the results of the pilots.</li> </ul> <p>It is very important to note that these outputs will be validated by all partners and observers; the exploitation of the evaluation report outside of the scope of the participants is then guaranteed.</p>

<p>WP5A17</p>	<p>ACTION NAME: <u>Investigate and prepare the roll out to other waterways within NW Europe</u>  PARTNERS: <u>CRT, VNF, Midland regional authorities, SRN, Igretec with support of CETIC</u></p> <p>A Strategy for the roll out of project results across other parts of North West Europe will be developed including an extended framework for a Business plan to be used by NWE Waterway authorities. It will rely on the partners' knowledge of existing solutions to identify, not only a global strategy for this roll out, but also a priority action plan to initiate the implementation of this strategy. The framework will integrate the results of the pilots carried out in the project. It will also take account of the replication plans produced for Midlands Region under WP2 and Eijsden-Margraten under WP4. The roll-out strategy will take into account known existing systems and propose an approach to identify the priorities for the deployment of new services as studied in the project</p>	<p>The concrete outputs of this action are</p> <ol style="list-style-type: none"> <li>(1) the definition of a global and generic roll out strategy defining actions and taking into account the existing situations in NWE;</li> <li>(2) specific actions to be carried out by national authorities to roll out results to other waterways under their control;</li> <li>(3) an on-going platform to support the development of new technology for managing smaller &amp; regional waterways.</li> </ol> <p>The corresponding document will emphasise the opportunities of the services studied in Numerical project and will provide guidelines for their deployment. Realistic data about roadmaps and investment will allow candidate authorities to realise this roll-out strategy. This document will be largely distributed through the dissemination channels of the project. Articles and news will be produced by all relevant partners through their own communication tools to enhance as far as possible its visibility in the domain of inland waterways at least for the whole North Western Europe.</p>
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## 3.2 Progress towards achieving outputs

Through this evaluation process the partners' progress in delivering all the specific outputs has been monitored. At the Steering Group meeting in July 2015 there appeared to be quite some progress to be made before completion. Partners were urged to update the Lead Partner with the documents and progress reports necessary to demonstrate delivery of outputs.

By the time this report was finalised in November 2015 it appears that all the outputs agreed with the JTS (through Requests for Changes as applicable) have been delivered. This is a commendable achievement for a transnational project of some complexity.

A table recording all the outputs and their delivery is included in the Appendices of this report.

## 3.3 Tangible outputs

Many of the outputs listed above related to milestones in project delivery so an overview of the tangible project outputs achieved is shown below.

- A good practice handbook. (WP1A1)
- An analysis report of connectivity and regulatory issues regarding technology uptake on waterways. (WP1A2 Output1.2.1)
- A navigational App which has mooring availability and promotes the Eijsden-Margraten region to tourists for the Maastricht to Visé canal. The App is available in Dutch, French, German and English (WP2A4)
- PoGo App for boaters in France and replicated in Netherlands, England & Wales (WP2A5)
- Safeguarder App for waterway intersections in the Netherlands, France and UK (WP3 A7, Output 3.1.4)
- Safety brochures for waterways users in Dutch, English, German and French. (WP3A8 Output 3.2.4)
- A "Safe boating in Europe" leaflet produced (WP3A8 Output 3.2.4)
- A boater's handbook being produced for Dutch boaters based on the British (CRT) handbook. (Handbook available electronically). (WP3A8 Output 3.2.4)
- Safeboating.eu website – queries to this website are triaged by WN and passed on to relevant partners for answer (WP3A8 Output 3.2.5)
- A report on a model for Common Control Centre for waterways authorities around Europe (WP4A10)
- A mobile working app for canal maintenance staff in England and Wales (WP4A11)
- A remote canals control centre at Hatton, UK (WP4A11)
- A remotely controlled, laser guided bridge on Gloucester & Sharpness Canal, UK (WP4A11)
- A 3G/ wifi/ Cloud-based control system for the Beatrix Canal – Eindhoven (WP4A12)
- A feasibility study for the construction of a new lock on the river Maas in Belgium to separate pleasure and recreational craft from commercial traffic at the Ternaaien super lock near Eijsden-Margraten

### 3.3.1 Overview of the tangible outputs

#### **A good practice handbook (WP1A1)**

The Numerical partners have completed a very useful handbook which identifies examples of good practice focussing on two main subjects: the operation of inland waterway structures, and secondly communication on the waterways for safe boating and managing water resources

The handbook is aimed at experienced waterway users and operational managers. It sets out the different types of structures and locks found in NWE, explains the key features of the example sites with photographs and diagrams and provides links for further information or research.

#### **Analysis of connectivity and regulatory issues affecting technology uptake on waterways (WP1A2)**

Partners had identified that mobile technologies offered significant opportunities for improving the management of waterways, however, the availability of internet access was perceived as a stumbling block.

An analysis was therefore carried out by CETIC (for WP1 A2) of the availability and use of communication technologies in France, the UK and the Netherlands. The report examines Automatic Identification Systems (AIS), River Information Systems (RIS), Wi-Fi, mobile communications and other technologies, such as marine VHF radio, in the three countries.

This document provides a useful overview of communications availability and could be circulated more widely outside the partnership to stakeholders and others unconnected with canals and inland waterways. However the Synthesis in section 6 appears to be incomplete.

#### **A navigational safety and tourism promotional App for the Eijsden-Margraten region Maastricht to Visé canal. (WP2A4 & WP4A13)**

For this pilot Wi-Fi hotspots have been installed along the waterway so that boaters can use the Smartphone App. Based around the premise that communication improves safety, the App provides real time information on the location of freight vessels (by linking to AIS) making the canal safer for leisure users in smaller craft as well as providing the rules for navigating locks and weirs.

The municipal authorities in the area are keen to promote the region to tourists and the App also provides information for boaters on marinas, attractions, restaurants to encourage them to visit along with information on local history and points of interest. It is also available in French, English and German as well as Dutch.

Introduction of this technology is expected to improve the safety of leisure boaters on a stretch of waterway which is increasingly being used by commercial craft. The provision of information about the wider area for tourists should also bring economic benefits to local businesses.

### **PoGo App for boaters in France and replicated in Netherlands, England & Wales (WP2A5/6)**

PoGo is named from the French Petites Ondes, Grandes Ondes (short waves, long waves) and allows boaters to communicate with each other through the App. It also provides vital information for boaters such as lock timetables, notices for skippers and safety information. As well as being available in French there are Dutch, English and German versions reflecting the transnational nature of French waterways. This App has been replicated for use in the Netherlands and in Wales on the Montgomery Canal using the VNF source code. It also incorporates safety information and “near miss” reporting developed through WP3A7. The range of items that are included on the PoGo App such as the facility to add warnings (updated in real time) and information have existed for a while in e.g. in River Information Systems (RIS) but smaller boaters can now get the same or similar type of information at the press of a key on a Smartphone.

This App is expected to improve boater safety and enhance appreciation of the waterway environment.

### **Safeguarder App for waterway intersections in the Netherlands, France and UK (WP3 A7, Output 3.1.4)**

In developing this App for Smartphone and mobile devices used by boaters, data has been provided by the Dutch, French and UK partners about dangerous junctions/crossings on the waterway networks. The App shows boaters how to approach these junctions and navigate in the correct manner to reduce the likelihood of accidents. Boaters can also report near misses through the App. This will result in much improved waterway safety.

### **Safe boating resources (WP3A8 & 9)**

A range of useful resources to improve safety, particularly amongst recreational boaters, but also professional skippers has been created as part of the project. These can be found at: [www.numericanal.eu](http://www.numericanal.eu) under the Safe Boating heading and [www.safeboating.eu](http://www.safeboating.eu) .

“Sail together!” brochures have been created in four languages explaining boating rules, how to approach junctions, communication and emergency information. A number of videos have also been produced which quickly convey safety messages.

Through the project boaters’ safety information for each partner country has been drawn together on the Numericanal website. A website [www.safeboating.eu](http://www.safeboating.eu) has also been established.

A number of training sessions and open days to accompany these resources and the Safeguarder App (WP3A7) have been delivered by WN. Volunteers have also been trained to further cascade the information.

### **A report on common control centre model for Europe (WP4A10)**

At the project outset a key objective was to develop a common model for waterways control centres across North West Europe. This was set out in WP4A10 and anticipated to be used to develop the pilot actions in WP4A11 and WP4A12 (control centres in the UK and Eindhoven). After project start-up the partners realised that, with technological advances,

and a clearer understanding of each partners' needs, large physical control centres may not be appropriate because control systems and Apps supported by smaller control centres could be more relevant and cost effective, therefore this report was commissioned.

Hyder Consulting's "Control Centre - European Common Model" examines the partners' needs and establishes a flexible model for control centres. The report "looks at the system level hardware architecture of the Control Centre, the directives that are applicable to the Control Centre and those associated with it." The report could be used by waterways authorities in partner countries and other EU member states as a good starting point for developing specifications for control centre projects.

Partner and stakeholder feedback on the report was sought by the report authors during production and comments were incorporated into the final report. Partners had fed back that the report covered the key issues.

#### **A mobile working App for canal maintenance staff in England and Wales (WP4A11)**

CRT's mobile working App has enabled handheld devices to be given to maintenance staff. This has replaced a paper system of recording maintenance work and the new system gives CRT far more accurate information on how long particular maintenance tasks take, which is useful for planning. Information on which tasks have been carried out can now be gathered within 1 week whereas before this development it took almost 3 months.

It also provides the maintenance staff with more information while out on site which helps in diagnosing problems and also pre-empting problems such as flooding. This will bring cost and efficiency improvements.

#### **A remote canals control centre at Hatton, UK (WP4A11)**

The CRT established a Control Centre in part of their offices at Hatton, Warwickshire. This site is geographically central in England and Wales. The Control Centre will house equipment and staff to be able to remotely operate structures such as bridges and locks around England and Wales. It is also the base for the team who manage the work scheduling for the mobile working App system (as above). Development work carried out for the pilot meant that the CRT has found more flexible ways of monitoring structures and activities such as by, Wi-Fi, hand held devices, infrared laser technology, etc. and some of these could be operated remotely by users on boats. Therefore the Control Centre needs fewer staff and less equipment than originally envisaged bringing additional cost savings in the future.

#### **A remotely controlled, laser guided bridge on Gloucester & Sharpness Canal, UK (WP4A11)**

The Gloucester & Sharpness Canal has 14 bridges, all with bridge keepers. In the winter very few boats passed through and the canal has been closed to boaters so resource can be used more efficiently. This pilot scheme on one bridge on the canal, at Sandfield, differs from those new or existing systems in the Netherlands and France as here the bridge will be **user** operated by boaters who have downloaded an App to their Smartphone. Only those with a boat licence will be able to download the App. A Wi-Fi network has been installed at the site to ensure that Smartphones can work even if no 3G or 4G signal is available. Lasers have been installed on the bridge plus a CCTV system and fixed equipment for boaters or

bridge users to contact the control centre. The control centre staff monitor operation and emergency services vehicles are able to lock the bridge open for road traffic if necessary.

### **A 3G/ wifi/ Cloud-based control system for the Beatrix Canal – Eindhoven (WP4A12)**

The Beatrix canal at Eindhoven is heavily used by freight traffic and is the gateway to several smaller canals. A priority here was to develop a system that could help with efficient harbour administration as well as delivering a safer environment for all vessels and water users. A useful overview can be seen on the video at <http://numericanal.eu/beatrice-canal-safety>.

Using a Cloud service on a dedicated server at City of Eindhoven, the control system shows all users on the canal at any one time from canoeists to freight. From the data captured they now have fuller reporting on canal usage by pleasure boating, canoes and freighters. Canoeists can enter details of their trip on to the system via a kiosk so that large vessels are aware. Lasers on the canal relay messages to the control centre regarding vessels on the waterway. The Smartphone App also allows captains to inform the harbour of their arrival, taxes to be collected and messages regarding maintenance or safety to be passed to the control centre. There is an Area Manager Dashboard for management and monitoring by the authority.

This development will improve safety for leisure users of the waterway and bring administrative efficiencies for the local authority.

## **3.4 Technical evaluation of the pilots**

At the project outset technical support and an evaluation of the pilot actions was planned with this being carried out by the project partner, CETIC.

### **3.4.1 Software Requirements Specification**

In 2014 a Software Requirements Specification was drafted for the four pilots contributing to WP3A7, WP3 A11 and WP3A13. It set out the high level requirements and the stakeholders, end users, constraints, facts and assumptions. This appears to be a solid approach. The aim was to enable the exchange of data between partners, and as a basis for specifying a common system interconnecting the partners' requirements. The report identified the problem of the lack of internet connectivity in some waterways locations. It also concluded that "An integrated solution seems to be impossible for the moment due differences in technical infrastructure and due to some constraints and legal issues. The application reference should be the VNF pilot since they are in advance in their developments and a first prototype already works on mobile phone."

These were key recommendations which appear to have formed the basis for the pilot delivery.

### **3.4.2 Architecture Analyses**

Six technical evaluation reports have been completed examining the design and development elements of the Numerical project.. CETIC carried out technical evaluations of the system architecture of four Apps as part of WP5 Actions A14-16. These were for the

control centre in Eindhoven (WP4A12) and Eijsden-Margraten Safeguarding App (WP4A13) as well as VNF's PoGo App (WP2A5) and WN's Safeguarder App (WP3A7).

Quality profiles range from 77% to 96% with risks mainly in the low and medium categories although the Waterrecreatie Nederland App has two high risk criteria, one in functional stability and the other in performance efficiency. The reports provide recommendations on how all these risks can be mitigated.

All four reports recommend that the documentation of the architecture could be improved by describing the "4+1" views of the architecture which encompasses Logical, Development, Process and Physical views plus Scenarios. A Functional Test Scenario report was also produced with templates for the pilots for WN, VNF and Eijsden-Margraten. The recommendations made in this set of reports should be used by the partners when their Apps are being updated. But it is not clear how these compare technically with what has been ultimately delivered.

In addition a Quality Audit of the PoGo system (Audit Qualité Système PoGo) was completed for the VNF. This examined the source code and analysed any connected risks to the system's stability operating on both the Android and iOS platforms. Although some recommendations were made regarding the positioning of rules this was essentially about system maintenance and the analysis concluded that the system met the expected quality norms.

## 4. Project delivery

### 4.1 Project management

#### 4.1.1 Overview

After project start up there were a number of unplanned changes to the project which threatened successful project delivery. It is evident from monitoring reports and talking to partners that this delayed implementation and lead to some changes in the envisaged outputs.

The British partner, the Canal & River Trust (CRT) became lead partner and made progress in re-establishing the partnership after a potential Belgian partner withdrew during the application process.

Once the project was approved there appears to have been a delay in really starting the work of the project. Partners report that alongside the lengthy application process several organisations were experiencing considerable change which affected the project's progress. The factors subject to change included organisations' financial and staff resourcing, the availability of relevant staff and also technological change. During this period the Irish partner, Midlands Regional Authority, also withdrew from the project. Unfortunately the key CRT staff member became terminally ill and this forced another delay on the project as sadly roles had to be re-assigned and new staff familiarised with the work.

As a result, from the monitoring reports and records of actions, it seems that project delivery started in earnest in early 2013. A re-appraisal was made of the partners' individual project needs and available resources. From this the approach changed to looking more to App-based technologies rather than common control centres. Several "Requests for Changes" were submitted to the funder. A "Revised Application" was approved by the European Commission in June 2014 which reduced the total budget to €3,316,906.

In September 2014 a "mid-term event" was held in Maastricht, followed the next day by a Steering Group meeting in Amsterdam, which the partners believe proved to be a very important for the project's progress. It provided a valuable stakeholder review and input in to the project's work and outputs was provided. The Steering Group meeting used external consultants to examine progress on outputs within each work package and to work with the partners to address each output and commit to undertaking the necessary actions to ensure delivery within the project's timescales.

The Chairman of The Barge Association (DBA) who is also a member of the European Boating Association (EBA) Inland Waterways Group, wrote a report that considered the 'half term' report posted on the Numericanal website and made some recommendations on information accessibility for recreational boaters.

Before this mid-term point there had been delays on a number of fronts. In addition to the factors already mentioned these appear to have been around the provision of information or data due to problems in accessing the data and also some legal problems relating to data

sharing. This did slow down replication of some outputs in other partner organisations meaning that the benefits may not have been felt by partners before the end of the project.

From this point onwards there appears to have been a real drive by the partners to deliver the projected outputs by the end of the claim period.

#### **4.1.2 Project monitoring and reporting**

The partners have submitted the required 6 monthly project progress reports and financial claims to the European Commission's Joint Technical Secretariat (JTS) with the first report submitted in November 2013. The progress reports and financial claims have usually been submitted shortly after the JTS's deadline.

The Lead Partner has received 3 monitoring reports back from the JTS regarding submitted progress reports. These reports have been assessed to be satisfactory or average, for instance the JTS monitoring report 2 asks for progress reports to link actions more closely to the outputs and work packages.

The progress reports set out work on the delivery of outputs and indicators, for instance meetings with stakeholders, as well as explaining problems that had been encountered and changes made to the implementation plan. The progress report of November 2013 identifies that "staff resourcing will continue to be an issue throughout the project as staff from within organisations move on" and this presents further challenges because "the subject matter in Numericanal is very technical and the structure of the project is relatively complex". In response the Lead Partner clearly made efforts to "ensure everyone has a greater understanding".

In general, the JTS monitoring reports have expressed concern about delays to the project questioning whether outputs and the spend profile can be caught up, and identified changes to, or deviations, from the action plan. The navigability and availability of evidence of outputs on the programme website is also featured.

Discussions at the Steering Group meetings observed by the evaluator have demonstrated that the Lead Partner has taken on board comments from the JTS and passed these on to partners.

#### **4.1.3 Finance and claims management**

Although the JTS consistently expressed concern about the delays in spending compared to the expected profile, in general the audit and financial control data provided by First Level Controllers was found to be good.

The project budget was reduced because of the departure of the MRA and also because of funding restrictions affecting Gemeente Eindhoven leading to their budget for this activity being cut from €549,000 to €300,000. As a result a revised Application was submitted and approved in July 2014 with the total budget being €3,316,906 of which the ERDF allocation was €1,658,453 (50%). This is a reduction of 10.6% from the original budget of €3,711,292.

It was clear from observations at partnership meetings that various partners had concerns about dates seeming to change for deadlines or that their internal systems made it difficult to meet deadlines. Not all partners provided promptly the information requested for monitoring purposes or initially followed the correct procedure for claims<sup>4</sup>

The JTS also requested that “on the spot checks” needed to be carried out by all partners’ First Level Controllers but these had not been done by all by January 2015.

#### **4.1.4 Project publicity and communication**

Concerns about publicity, branding and communication appear to be a recurring theme in JTS monitoring reports. In reports 1 and 2 these related to low visibility, use of other websites and not linking back to main project website, and a lack of evidence of cooperation between partners.

Since the mid-term event the partners seem to have made greater efforts to publicise Numericanal with videos being created which succinctly demonstrate the outputs. An attractive project website (<http://numericanal.eu/>) has been created. Information has been added to the website, however the project documentation does not always give a comprehensive view of what has been achieved or the context for the information. Hyper links to leaflets do not work, and the site can be difficult to navigate. However, the Lead Partner has commissioned support to continue to develop and update the website until 2019 meaning these concerns will be addressed.

Partners report that they have publicised the project in relevant publications. A Twitter account has also been set up which has 55 followers. There does not appear to be a comprehensive record of media coverage.

The evaluator presumes that where there have been physical investments these will incorporate the relevant EU and Interreg IVB branding. It is not clear whether all Apps are able to publicise the funder – logos are not obvious on the PoGo App for instance, although a reference is made to EU funding. Towards the end of the project the Lead Partner has brought in additional Communications and Marketing resource and it is expected that this will enable Numericanal’s achievements to be celebrated.

#### **4.1.5 Transnational working**

Evidence of enhanced transnational working is a priority for the Interreg IVB funding programme. In the first monitoring report the JTS noted that transnationality and co-operation seemed limited between partners. Later some good examples were noted for instance in joint decision making and working on Apps and GIS systems, and also on volunteering programmes. However a request was still noted for further efforts at transnational communication, for instance on project videos. The project partners consider that their organisations have benefitted significantly from transnational working through this project. Numericanal developments have been shared more widely through the NIWE (Network for Inland Waterways in Europe).

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<sup>4</sup> JTS reports

In practice Numerical has enabled much closer working between the partners with evidence of several exchange visits and also Skype or email discussions to deliver outputs. The development of the boater information Apps for the UK and Netherlands based on the French VNF platform is an excellent example of partners from different member states working together bringing efficiencies.

A transnational stakeholder group review was held at the mid-term event in the Netherlands in September 2014. For example there have been a series of exchanges between CRT, Eindhoven and VNF technical staff looking at remote control structures. The control systems and centres (WP4) delivered by the CRT, Eindhoven and Eijsden-Margraten have also seen much partner involvement through technical advice and transfer visits. The Eindhoven team identified that their control system had directly resulted from partner input in the following ways:

- CRT laser technology and remote control
- VNF their APP development with a number of substantive examples
- Eijsden-Margraten on the subject of safety
- WN provided maps and information concerning safe boating.
- CETIC supported the technical development

The project partners researched jointly a number of Control Centres around Europe and their effectiveness. Through this research, and discussion, they were able to agree a 'Common Model' and the findings were drawn together in the Hyder report.

Developing the Dangerzoning work (WP3A7) was the result of close working between WN, VNF and CETIC. And in delivering the roll-out and training element associated with this in WP3A9 CRT advised WN on setting up a volunteers network. Volunteering is a much stronger concept in the UK than some of the other partner countries and the CRT team have also shown the German sub-partners how volunteers are an essential part of delivering the CRT's functions.

## 4.2 Partners' impressions of project delivery

### 4.2.1 Overview

In evaluating the project representatives of the partner organisations were asked for feedback about project delivery as well as the impacts of the project outputs. Generally partners looked at project delivery in terms of the actions in which they were involved and whether that was delivered/changed.

Feedback from all the partners has shown that they have positive attitudes to the Numerical project and feel that they have learnt a lot from participation as well as achieved a lot in technical advancement. There is acknowledgement that that not all the original outputs could be met because of technical problems such as availability of AIS or Wi-Fi.

The slow start to the project clearly put pressure on the partners to deliver some complex technical solutions within the timeframe. The Lead Partner noted that “perhaps not all partners understood linkages between the actions and how not progressing their actions may hold up others”<sup>5</sup> and there were obvious tensions between some partners at one or two partnership meetings. However, by the last steering group meeting in October 2015 the focus was far more on how much had been achieved, and looking ahead to potential future joint projects.

#### **4.2.2 Partners’ knowledge gained and shared through transnational working**

Through working together to deliver Numerical partners have gained a deeper understanding of the differences in regulations and conditions in each partner state. A major benefit to all parties is the shared technical expertise around automated and remote controlled structures. Partners gave examples:

a) Organisational capabilities

Numerical exposed the differences between organisations of the resource in terms of both staff time and finance that they have been able to invest in delivering parts of the project.

b) Automation and remote control

There are differing levels of automation used for locks and bridges on waterways across NWE. In France and the UK most locks are manually operated, whereas in the Netherlands they are automated. However, there are some remote-control locks in France, mainly on large waterways, so leisure boaters are given a dedicated remote controller device as they enter the waterway. Commercial craft also have this capability via their Automatic Identification Systems. In contrast this system of a dedicated remote control device would not be sustainable in the UK where there is hardly any commercial traffic, and therefore very little AIS use, but very heavy leisure usage.

For the CRT’s development of the laser guided remote control pilot at Sandfield swing bridge technical expertise learnt from partners in Eindhoven and Eijsden-Margraten was used. They also visited examples of remote operation in France and saw how the difference in context between the UK and France (dominance of leisure users) meant that a different solution to how boaters operate structures remotely was needed. In turn, VNF technical staff learnt from the Sandfield swing bridge pilot that remote operation of bridges could be possible by Smartphone App whereas before this was considered unviable.

c) Managing change

The CRT found that the control centres development is a great technical improvement through enabling the remote operation of bridges and structures, but it also brought staff disquiet as there were concerns about redundancies. The pilot project was delayed due to concerns raised by local residents about safety, traffic congestion and redundancies. This necessitated a public consultation process and gained media attention. CRT has been clear that the system meets national safety standards and that the technology has been properly

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<sup>5</sup> Progress report October 2013

trialled at Sandfield Bridge, with 4,500 successful bridge openings in 7 months, via the app on the bridge-keeper's smart phone. It is now being phased in for boaters.

d) Enhanced cooperation

After meeting through the Numerical project Eijsden-Margraten and Eindhoven have worked together on other shared interests for instance looking at lock placement in relation to smaller & larger waterways<sup>6</sup>.

#### 4.2.3 Partners' feedback on partnership working and cooperation

Comments from partner organisations reflected the fact that delivery had been challenging at times but overwhelmingly there was a sense that people had gained useful understanding of waterways operations in other countries. They had learnt from sharing knowledge and technical experience with the other organisations.

The partners' comments below demonstrate the positive legacy of Numerical.

*"Sometimes you need these difficulties to get the problems clear and get the most out of it. We have learned a lot, I think that is the most important. Everybody has made a lot of effort to get things done."*

*The most useful part of the project has been "getting together to share our experiences, good or bad, and to give advice or good ideas".*

*"Useful to be able to see that the needs and constraints facing organisations are not the same across the partnership."*

#### 4.2.4 Partners involvement in other transnational projects –

The partners were asked about their previous involvement in transnational projects and whether they were likely to seek to take part in future transnational projects.

Most partners had already worked on transnational projects for instance through Interreg I-IV, SIF, CORISMA

Some of the partners see Numerical as a continuation of other transnational projects such as Waterways Forward. Partners anticipated continuing to work together through Network for Inland Waterways in Europe (NIWE) <http://waterwaysnetwork.eu/>, continuing the Numerical Safe Boating programme, and also regarding remote operation by smart phone app versus dedicated remote control devices.

### 4.3 Stakeholders

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<sup>6</sup> Progress report October 2013

With a project of the size and complexity of Numericanal it would be possible to lose sight of the reason for the project which is to bring benefits to the waterways users as the end user. Marina managers and local residents might also be considered to be stakeholders, particularly in the case of CRT's remotely operated bridge at Sandfield.

As part of the project partners carried out a Stakeholder synopsis and brought together details of their stakeholders that would be directly or indirectly involved. They also considered the key groups of stakeholders that they wanted to engage with, particularly boating User Groups. This was foreseen to be towards the end of the formal project and in rolling out the developments.

From the progress reports all partners appear to have held meetings with their national waterways stakeholders throughout the process and this should have shaped what has been delivered. Several partners, particularly WN, are involved with waterways user groups and have updated these organisations on Numericanal's progress.

The Lead Partner has also involved waterways users in the oversight of the project. Following on from the mid-term event, the chairman of DBA – The Barge Association<sup>7</sup> who is also a delegate to the European Boating Association<sup>8</sup> was invited to consider progress so far and make recommendations. They endorsed the need for simple access to information on safety, regulations, stoppages and navigation conditions including large vessel movements. They also offered to be involved in user testing of solutions.

The principal concerns were that mobile phone coverage would not be wide enough to support systems for waterways users reliant on mobile devices so Wi-Fi hotspots should be used instead. There was also a view that whilst a range of information for boaters is available on the internet it can be difficult to find and access when away from a PC. This indicates a need for better, targeted information to boaters which is mobile-device friendly.

These points appear to have been taken onboard and another representative from the DBA was present at the final Steering Group meeting at Hatton in October 2015. She gave positive feedback to being included in the meeting and to most of the technical advances that have been enabled through Numericanal.

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<sup>7</sup> DBA – The Barge Association is a club for people from anywhere in the world interested in barges and barging. It has around 1700 members cruising and living on their barges in the UK and in Mainland Europe

<sup>8</sup> The EBA has members from 29 national federations, representing the interests of more than 1.5 million recreational boaters and 20 million active participants

## 5. Outcomes

Numerical's project partners are keen to highlight the wider outcomes and impacts that have been achieved through delivery of the project outputs. A number of positive outcomes have emerged from the progress reports and from feedback from partners and there are many tangible examples.

### 5.1 Improved safety on waterways

Safety is of fundamental importance to waterways users and of relevance to all European waterways as they are interconnected, but there are different issues in each member state or waterway. Partners agree that communication between waterway users in the same locality is vital.

For example, UK waterways are dominated by leisure traffic. In France and the Netherlands commercial traffic out numbers leisure craft, with commercial vessels also usually having Automated Identification Systems (AIS) or River Information Systems (RIS). These large vessels share the water with different types of leisure users such as canoeists and rowers as well as mechanised craft.

Therefore "what is important, is not the media we use, but only to get the necessary information to destination just on time"<sup>9</sup> and there the project's outputs have been able to deliver better safety in several ways:

Examples:

- a) The App for Eindhoven which has improved communication on the water between all users by ICT means to increase safety and efficiency
- b) WN has taken up the CRT's use of reporting of near misses. The PoGo App enables reporting of near misses in France, Netherlands and UK and the partners now plan to compare figures for near misses and accidents annually based on the data collected.
- c) Partners agree that using App technology makes it more likely to be able to communicate safety messages to young people who will be less experienced on the water and may be less wary.
- d) Discussions about safety zones has helped WN look at safety in a wider perspective. These are to be extended into Germany and France by the European Boating Association once the Numerical project has finished. There is also a potential Belgian partner organisation.
- e) WN has been able to provide bi-lingual information for Dutch boaters travelling to France or the UK and also provide information in French, English and German for boaters travelling into the Netherlands.
- f) The Safeguarder App developed through Numerical allows boaters to access on mobile devices instructions on how to safely navigate dangerous junctions in the UK, Netherlands and France.
- g) Eijsden-Margraten's App which provides information on the locations of all waterways users specifically aims to increase safety. It has been done due to the

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<sup>9</sup> Alaric Blakeway, VNF, Numerical EP presentation, Brussels July 2015

construction of the new super-lock which will increase the amount of freight traffic. Communication between waterway users is essential to safety.

- h) Eindhoven's App also enables waterways users to be able to locate other users, as well as assessing the navigation conditions and reporting hazards.

## 5.2 Strengthened transnational working

“Not re-inventing the wheel” has been an unofficial catch phrase of the purpose of Numericanal. The partners have always realised that they can learn from each other and the partners have committed to working together in the future.

### Examples

- a) The partners have shown the ability to respond to technological changes, and so having learned from other partners, led to Eindhoven implementing a wifi/3G cloud system to help manage the waterway instead of simply a control centre.
- b) VNF will continue to work with CRT regarding remote operation by smart phone app vs. dedicated remote control devices.
- c) The Safeboating.eu website has been created and there is agreement on handling boat users queries between the partners for the future.
- d) The European Boating Association is to roll out safe boating to Germany and Belgium
- e) The partners have worked together to look at cloud/ App/ GIS systems for tracking boat movements and found common solutions such as the VNF's PoGo App which has been replicated in the UK and Netherlands.
- f) UK National Harbour Masters Group impressed with SRN safety work and wanted to be involved in “warning devices for danger zones”.
- g) The VNF is also interested in the CRT's work on hydrological management, particularly with their Supervisory Control And Data Acquisition (SCADA) system (outwith Numericanal but feeds information to the new Apps) and will be looking at how this may be replicated in France.

## 5.3 Efficiency improvements

Within the context of continued pressure on finances partners must always seek efficiency improvements and these have been possible through the Numericanal project.

### Examples

- a) The PoGo App was based on a model initiated by the VNF and partners benefitted from being able to “piggy back” on this to replicate the App in the Netherlands and UK. VNF also found it useful to have partner input and feedback on the development.
- b) Eindhoven partners stated that they benefitted from the exchange of ideas regarding ICT possibilities such as the laser guided bridge

- c) Partners reported that it was useful to have CETIC's additional technical audit of their Apps so they could be sure that they were commissioning a quality product.
- d) Eindhoven's App means that the administration of the harbour tax will be easier to administer.
- e) The App also makes it easier for Beatrix canal users and staff in Eindhoven to report hazards and maintenance problems as well as tourist information related to the canal. This should lead to efficiency improvements in management and maintenance of the canal.
- f) Partners have also felt more enabled by exchange of knowledge between the partners "this exchange goes beyond Numericanal it is also about how you manage your organisation, how you communicate and how to get the most out of your stakeholders".
- g) VNF will continue to work with CRT regarding remote operation by smart phone app versus dedicated remote control devices to assess whether more efficient processes can be put in place. They will also investigate the SCADA system.
- h) CRT's mobile working App brings efficiencies for staff who can now go straight to a site at the start of a working day, negating the need to report into a base, and make reports on the work carried out during the day, again without physically having to go back to a base.
- i) As a result of CRT's remote controlled bridge opening pilot at Sandfield bridge the organisation could make cost savings of around £500,000 a year<sup>10</sup>. In addition it also means that the waterway can be open to boaters for longer periods when formerly it was not economically viable to have a bridge keeper on site all year round and so the canal was closed.
- j) In Eijsden-Margraten, the new App will enable boaters to reserve times for passing through the lock to reduce waiting times.

## 5.4 New ways of working

Whilst closely allied to the concept of improved efficiency the new ways of working that have developed are a separate, valuable, outcome of Numericanal.

### Examples

- a) WN has copied the concept of volunteers from the CRT, piggybacking on the CRT's training, handbook, policy and promotion material. WN's volunteer numbers are increasing as a result.
- b) Numericanal has been the first transnational project in this field for Gemeente Eindhoven. The new App is very user focussed putting power in users' hands to report problems.
- c) In France the PoGo App also encourages boaters/waterways users to become involved by reporting or exchanging information.

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<sup>10</sup> CRT, Gloucester & Sharpness canal, Remote-controlled bridges, Report on the Public Consultation March-June 2015

- d) CRT's mobile working App has enabled 764 handheld devices to be given to maintenance staff across England and Wales. This has replaced a paper system of recording maintenance work and the new system gives CRT far more accurate information on how long particular maintenance tasks take, which is useful for planning, as well as being able to see where staff are located so the nearest team member can be sent to deal with urgent problems.
- It also provides the maintenance staff with more information while out on site which helps in diagnosing problems and also pre-empting problems such as flooding.

## **5.5 Improved waterways maintained as part of our cultural heritage**

Numericanal has focussed on safety and delivering new technologies, however partners recognise the role of waterways in their geographic location as part of the cultural heritage.

### **Examples**

- a) VNF's App takes a wider view of the needs of boaters coming from other countries, particularly bearing in mind the transnational waterways network. It's about encouraging councils/municipal authorities to re-appropriate the waterways as part of their tourist offer and as a source of local pride.

## **5.6 Tourist information and the visitor economy – economic benefit**

Several of the Apps developed through Numericanal offer information to boaters about the local tourist offer such as restaurants and attractions as well as marinas and other services. There is no mechanism within the project data to measure the economic impact of any increase in boaters' use of these facilities.

### **Examples**

- a) The PoGo App in France aims to offer boaters coming from other countries more information about the local area.
- b) The Eijsden-Margraten and Eindhoven Apps offer information on restaurants and the wider area.

## **5.7 Increased potential of commercial navigation along the smaller inland waterways**

This objective was set out at the start of the project. It appears to be too early to demonstrate that this has been achieved yet, but it should be achieved through developments enabled because of the systems implemented through Numericanal.

### **Examples**

- a) A key objective for the Eindhoven control system was to enable more commercial ships to pass through the Beatrix canal. As the new control system becomes embedded this should enable more commercial boat traffic.
- b) After a Request for Changes Eijsden-Margraten has undertaken a feasibility study into the construction of a new lock on the River Maas at Lanaye (Belgium) which would allow the separation of leisure and commercial vessels. If constructed it would make navigation quicker for commercial traffic.

## 6. Conclusions

### 6.1 Overview

The Numerical project has brought benefits to waterways users in terms of safety, better access to marine information and better infrastructure. Project partners have benefitted from capital investments which will make their organisations more cost effective, more efficient and able to deliver improved services to waterways users. All these factors will bring benefits lasting substantially beyond the end of the project.

Several of the outputs have delivered innovative solutions making wise use of digital technology through Apps. The partners believe that delivering the Control Centre Common Model has been their most significant achievement due to the wide ranging information that had to be gathered and the issues addressed. These control systems also link to the technologies delivered in Work Packages 2 and 3. Although the change from the original project outputs from delivering control centres to control systems delayed delivery timescales it did lead to a more cost effective solution with, seemingly, a longer user-life. These Apps should also bring wider benefits to the businesses and communities along the waterways by enabling waterways users to travel in greater safety, by encouraging boaters to use local services and also to report hazards and maintenance problems.

Project delivery has not run smoothly due to the organisational and financial changes which affected nearly all the partners. It has run behind schedule and partners have been racing to catch up before the funding ends. There is an unavoidable sense that the goalposts changed after project start up and there was some confusion about what was to be delivered. However, there has been strong leadership from the Lead Partner and key staff at the partner organisations have clearly worked hard to get buy-in and cooperation from others within their organisations so that the outputs could be delivered.

Being so behind schedule has meant that possibly some opportunities for sharing experiences and establishing deeper co-operation have been missed, but nevertheless there are still some very good examples of cooperation and partnership working. The partners are keen to work together again and at the final steering group meeting there were ideas put forward for future collaboration.

Looking back to the original rationale for the project, the partners can be seen to have delivered improvements in terms of resources, safety and services and transnational

working, however any improvement to the management of waterway resources is less clearly defined.

Some very useful services for waterways users have been developed through the project, however, it is not clear from project documentation how well these have been publicised to the end-users. Publicity is also a concern in the JTS reports. Partly this lack of visibility may be due to a need to focus on delivering the actions within the deadlines, but the Apps and safety information can only succeed if users know they exist.

There appears to have been a constructive relationship with the project funders. It has been evident at Steering Group meetings that the Lead Partner has taken on board feedback from the European Commission's JTS and disseminated this to partners, although it is unfortunate that progress reports were not submitted on the deadline.

Full details of the final project costs were not available before completion of this report. However, as a simple Return on Investment calculation, for the CRT the remote control operation of Sandfield bridge should bring operational savings of £500,000 per year.

## 6.2 Good practices and new approaches

Throughout the duration of Numericanal the partners have looked for and aimed to replicate examples of best practice. The partners collaborated to produce a Good Practice Handbook aimed at experienced Waterway users and Operational Managers which will be made available on the Numericanal website.

The involvement of Waterrecreatie Nederlands has strengthened the partnership's work on safety of waterways users and safety is at the heart of the Safeguarder App as well as being a priority for the control systems in Eindhoven and Eijsden-Margraten. It has been possible to link all the safety information in one place and to give it a transnational nature. Having EU funding for work on the safety of waterways users has also given weight to this issue which not all stakeholders have seen as a priority in the past. WN's work with the EBA means that other countries are now taking up the safe boating initiative.

The project funding has allowed innovative approaches in the management of waterways to be introduced in the UK, Netherlands and France through new control systems and remote operations. The partners are unanimous that the exchange of ideas and information on good practice through Numericanal has been invaluable to them in delivering systems which meet their needs.

In the UK the mobile working App for CRT maintenance teams has changed the way they work. The remotely operated swing bridge pilot is the first of its kind by CRT and is being closely observed by the French partners who are particularly interested in the waterway user control by Smartphone App. From a mobile device App customers will be able to operate a lock / moveable bridge by their boat breaking RADAR beams. The RADAR beams check a boat's location for safety and use beams to operate the structure. This operation will not require any human interaction and trials have proved that all risks to boaters and the general public in the vicinity of the bridge will be accounted for and eliminated

Cost efficiencies have been delivered to nearly all partners because they were able to replicate and further develop the PoGo App initially developed by the VNF.

“A picture paints a thousand words” and the videos on the Numerical website are a very effective tool in explaining what Numerical has achieved but the website needs to be structured more clearly so they can be found easily.

### 6.3 Drivers of success

Numerical has successfully delivered a number of innovative pilots with good outcomes. This has been down to a strong lead partner working with the partners to focus on what needed to be done for actions to be completed. They brought in outside support to guide this when appropriate.

Although there was some confusion at the outset, the partners accepted that the context had changed and adapted their plans to exploit the benefits that the latest digital technology could offer. As the project has progressed it seems that partners have realised that useful benefits could accrue to their organisations through the pilots and became more cooperative.

### 6.4 Recommendations

Rolling out the results of Numerical

- a) Create a dissemination plan for celebrating the benefits of Numerical
- b) Disseminate to waterways authorities in Europe the benefits the innovations in control systems, mobile working and remote operation of structures by Smartphone App have brought to the project partners. A video based on the existing films would work well.
- c) The Numerical website should be re-organised to show more clearly the tangible outputs aimed at boaters, the technical advances of interest to those in waterways organisations (and keen boaters) and separate these from the project management-related information.
- d) Put on the Numerical website the reports on the Control Centre – European Common Model and the report on Availability and Use of Communication Technologies.
- e) As part of a dissemination plan the partnership should commit to the ideas broached at the final steering group meeting to aim to run a speaker session on Numerical at the World Canals Conference in Inverness in 2016.
- f) The Safeguarder App and safety brochures produced for Numerical are innovative and useful but need to be publicised more widely to waterways users.
- g) The PoGo App also needs to be more widely publicised to users
- h) Produce a short brochure, supported by a section on the Numerical website, that DBA members and other boating organisations could use to diffuse the results of the project.

- i) Continue to promote the Numerical website and the outputs via partner publications/outlets.
- j) Ensure that the website is search engine optimised.
- k) As all the Apps and control systems are updated heed should be taken of the recommendations of CETIC's technical evaluation reports.

#### Project management

- l) For future projects, ensure commitment to the project from senior management and that they have a clear understanding of the implications of the project in terms of staff workload in partnership working as well as in delivering the planned outputs.
- m) Ensure organisations, and the project network, has sufficiently shared information to be able to ensure project continuity if there are staff changes.
- n) For future projects consider having a member of the marketing team from at least one of the partners on the steering group so that messages can be better conveyed to waterways users.
- o) Consider how the benefits of technical innovations can be demonstrated in monetary terms to demonstrate a Return on Investment, for instance in additional visitor spend, costs saved etc.

## Appendices

### 1. References

Numerical.eu website and project documents  
 Documents on the Forge Database  
 CETIC - Availability and Use of Communication Technologies  
 CETIC – The Architecture Analysis for the Application of Eindhoven City  
 CETIC – The Architecture Analysis for the Application of Eijsden-Margraten City  
 CETIC – The Architecture Analysis for the Application of VNF  
 CETIC – The Architecture Analysis for the Application of Waterrecreatie Nederland  
 CETIC – Functional Test Scenarios  
 CETIC – Software Requirement Specification  
 CETIC – Quality Audit of PoGo System  
 Hyder Consulting (UK) Limited - Control Centre - European Common Model  
 Gemeente Eijsden-Margraten - Setting up a cross border WIFI based app system for information waterway users in the Netherlands  
 Gemeente Eijsden-Margraten - Information App download and rolling out  
 Gemeente Eindhoven - Presentation notes “2013-sep presentatie september 2013”  
 Pierre Kil of OpenRemote for Gemeente Eindhoven - Control Center - Beatrix kanaal  
 Proposal implementation presentation 3 December 2014  
 Andy Soper, DBA, Feedback on Numerical website project progress reports, 2014  
 Progress Reports: October 2013 (Short), April 2014 (Long), October 2014 (short), April 2015 (Long)  
 Monitoring Reports: 1,2,3

### 2. Abbreviations

Apps	Software Applications causing a computer to perform functions. Apps may be designed also to be run on smartphone and mobile devices
CRT	Canal & River Trust
DBA	The Barge Association
EBA	European Boating Association
JTS	Joint Technical Secretariat (part of the European Commission)
NWE	North-West Europe (Defined by the EU as: Belgium, France, Germany, Ireland, Luxembourg, Netherlands, UK, Switzerland)
NIWE	Network for Inland Waterways in Europe
SCADA	Supervisory Control And Data Acquisition – a telemetry system used by CRT
VNF	Voies Navigables de France
Wi-Fi	Wireless computer networking technology that allows electronic devices to connect in this instance to the internet
WN	Waterrecreatie Nederland, formerly SRN
WP	Work Package plus associated action point E.g. WP4A10

### 3. Table of delivery of detailed outputs as summarised in section 3.2

The table below sets out progress towards achieving each output. This records progress as at November 2015.

The table uses colour classifications to show **Red** = Not delivered; **Amber**= part delivered/in progress; and **Green** = completed.

ACTION NO.	OUTPUTS	PROGRESS
WP1A1	Output 1.1.1 Good practice handbook Output 1.1.2 Good practice workshop Output 1.1.3 Synopsis of stakeholders in each country Output 1.1.4 Local & transnational stakeholder group meetings / consultation In addition, this action will also involve the establishment of the local and transnational stakeholder groups, which will be consulted on user needs and the identification of good practices. These groups will subsequently act as a “sounding board” for the developments undertaken through WPs 2, 3 & 4.	Output 1.1.1 A handbook has been created as a document available on the Numericanal website.
		Output 1.1.2 This action was delivered at the Mid-term event & reported on the website.
		Output 1.1.3 The partners have submitted information which has been uploaded to website
		Output 1.1.4 Eindhoven and EM held stakeholder meetings in Sept 2014. VNF held meetings early in the project and SRN have had meetings with national and regional user groups. Final events have been held at Hatton and Gloucester in the UK.
		Stakeholder groups: A transnational stakeholder group was held at the Mid-term event. In addition there have been DBA and EBA reviews, use of UK Harbourmaster Group, Eindhoven stakeholder group mtgs, VNF stakeholder mtgs
WP1A2	Output 1.2.1 Predictive mobile communications coverage map for each territory Output 1.2.2 Online catalogue of national & EU regulatory provisions related to ICT for waterway management	Output 1.2.1 Map completed and published on website.
		Output 1.2.2 CETIC has completed a report on the availability and use of Communication Technologies

WP2A3	<p>Output 2.1.1 Analysis report of users need in France and The Netherlands</p> <p>Output 2.1.2 Evaluation of technical requirement for both VNF and Eijsden-Margraten</p> <p>Output 2.1.3 Selection of data to be included in the application</p> <p>Output 2.1.4 Common model for a waterways wifi based application</p> <p>Output 2.1.5 Process for implementation in other partners regions</p>	Output 2.1.1 Completed to enable the Common model App to be delivered by partners..
		Output 2.1.2. Completed to enable the Common model App to be delivered by partners.
		Output 2.1.3 Completed to enable the Common model App to be delivered by partners.
		Output 2.1.4 Completed to enable the Common model App to be delivered by partners.
		Output 2.1.5 The PoGo App has been replicated in NL and UK.
WP2A4	<p>Output 2.2.1. one wifi-based application</p> <p>Output 2.2.2 site visit for all partners</p> <p>Output 2.2.3 A report on the pilot action, which will be used to support the development of a roll-out strategy for Midlands Regional Authority and the wider dissemination of results.</p>	Output 2.2.1Delivered
		Output 2.2.2 This has been completed
		Output 2.2.3 Report received from E-M
WP2A5	<p>Output 2.3.1. One Wifi based application system for vessel skippers</p> <p>Output 2.3.2. One transfer visit report</p> <p>Output 2.3.3. One communication seminar</p> <p>Output 2.3.4. One report on the pilot action</p> <p>Output 2.3.5 One training session with the new application</p>	Output 2.3.1 Completed
		Output 2.3.2 Completed by VNF.
		Output 2.3.3 Completed
		Output 2.3.4 Report completed by CB & VNF presentation
		Output 2.3.5 Delivered by VNF in June 2015
WP2A6	1. Replication Plan for Midlands Region, Ireland; 2 transfer visits; roll-out input to WP5.	in progress with MX Data
WP3A7	<p>Output 3.1.1 Inventory of data on danger zones and other bottlenecks in PP regions</p> <p>Output 3.1.2 Initial study on ICT applications, Apps that can be used in data collection and dissemination on danger zones (also based on good practices, study visits, analysis carried out earlier in the project)</p> <p>Output: 3.1.3 Developed ICT platform and functions for gathering and dissemination of</p>	Output 3.1.1: Completed and includes SOS database for comparison of near misses in the UK.
		Output 3.1.2: Completed

	<p>information on danger zones, for other infrastructural data and for safety advice particularly benefiting users but also waterway managing authorities and other governance bodies (to be rolled out in demonstration phase in WP3A9).</p> <p>Output: 3.1.4 Apps for Iphone and Android for dissemination of information on danger zones, for other infrastructural data and for safety advice particularly benefiting users but also waterway managing authorities and other governance bodies (to be rolled out in demonstration phase in WP3A9).</p> <p>Output: 3.1.5 Wifi hotspot network facilitating the access to various safety and good nautical advice information</p>	<p>Output 3.1.3: Completed</p> <p>Output 3.1.4 SRN-led App The Safeguarder has been developed and available in Google play and Apple store</p> <p>Output 3.1.5: Completed. However VNF will not install Wi-Fi hotspots due to cost but their App can deliver the output &amp; through 3G network.</p>
WP3A8	<p>Output 3.2.1 Final educational programme comprising printed materials, safety web portal, Open Days and volunteer training objective, content and approach</p> <p>Output 3.2.2 Certification methodology and criteria for certifying volunteer trainers</p> <p>Output 3.2.3 Safety web portals in national language (under Project website)</p> <p>Output 3.2.4 Brochures and leaflets</p> <p>Output 3.2.5 Help desk function operated by SRN</p> <p>Output 3.2.6 Contextual marketing/promotional framework for guiding local/regional marketing efforts to enhance visibility and impact</p>	<p>Output 3.2.1: Completed</p> <p>Output 3.2.1: Completed</p> <p>Output 3.2.3: Completed</p> <p>Output 3.2.4: Completed</p> <p>Output 3.2.5: Completed</p> <p>Output 3.3.6 Completed</p>
WP3A9	<p>Output 3.3.1 3-5 volunteers receiving training and Trainers Licence per PP region</p> <p>Output 3.3.2 6 Open Days per partner region, with some 40 people participating per each session</p> <p>Output 3.3.3 6 volunteer 1-day trainings per partner region between May 2014 and October 2015</p> <p>Output 3.3.4 10-20 people trained per training (e.g. 60-120 in total per PP region)</p> <p>Output 3.3.5 Evaluation sheets and selected interviews</p> <p>Output 3.3.6 Final evaluation report (link with WP5)</p>	<p>Output 3.3.1: Completed</p> <p>Output 3.3.2: Completed</p> <p>Output 3.3.3: Completed</p> <p>Output 3.3.4 Completed</p> <p>Output 3.3.5 Completed</p> <p>Output 3.3.6: Complete</p>

WP4A10	<p>The concrete outputs of this action are to establish the control centre model, incorporating</p> <ul style="list-style-type: none"> <li>• Evaluation by all partners of existing control centre models and effectiveness</li> <li>• Evaluation of regulatory and other technical requirements</li> <li>• Common model for waterways management control centres (CRT)</li> <li>• Specification of control centre models for England and Wales, and the City of Eindhoven</li> <li>• Process for transnational exchange</li> </ul> <p>Other outputs linked to this action include:          Consultation with stakeholders on expectations, Agreement on purpose and objectives List of centre functions and systems Agreement on personnel role descriptions"</p>	Evaluation of existing models completed
		Evaluation of regulatory etc requirements done via the Hyder report
		Included in the Hyder report
		Completed and included in the Hyder report
		Exchanges between CRT & Eindhoven have taken place.
		Other outputs were completed as part of the Hyder Common Model report
WP4A11	<p>CRT will establish a functioning control centre for waterway management including tools, systems and interfaces. The centre will demonstrate ICT as a means for resource efficiency by enabling, through remote control and monitoring, effective deployment of manpower skills. The pilot will also deliver:-</p> <ul style="list-style-type: none"> <li>• 1 site visit for all partners (in conjunction with an SG meeting)</li> <li>• 2 transfer visits involving city of Eindhoven &amp; VNF</li> <li>• A report on the pilot action, which will be used to support the development of a roll-out strategy for Eijsden-Margraten and the wider dissemination of results</li> <li>• A launch event for the Centre</li> <li>• Training material for CRT staff and to support the roll-out of the action.</li> </ul> <p>The control centre and the demonstration of ICT tools will provide a catalyst for uptake in other NW Europe cities, regions and countries. Partners will use these strategically significant facilities to communicate opportunities and potential benefits to a wide and varied audience including organisations from the waterway, ICT and policy sectors. The Centre will also help increase awareness and appreciation of the waterways as a resource and, by advancing management practices, secure resource availability and engage stakeholders for longer-term sustainability.</p>	Control centre delivered at Hatton.
		Partners visited the Sandfield Bridge site in October 2015
		Transfer visits with Eindhoven and VNF have taken place.
		A launch event took place in October 2015
		CRT staff have been trained and the centre is operational.

WP4A12	<p>City of Eindhoven will establish a functioning control centre for waterways management including tools, systems and interfaces, together with associated vessel tracking and management systems. The centre will demonstrate ICT as a means for resource efficiency by enabling remote management &amp; administration of vessels. The pilot will also deliver:-</p> <ul style="list-style-type: none"> <li>• 1 site visit for all partners (in conjunction with an SG meeting)</li> <li>• 2 transfer visits involving CRT &amp; VNF</li> <li>• A report on the pilot action, which will be used to support the development of a roll-out strategy for Eijsden-Margraten and the wider dissemination of results</li> <li>• A launch event for the Centre</li> </ul>	Control centre delivered
		Site visit carried out
		Transfer visits have taken place
		City of Eindhoven has held a launch event
WP4A13	<p>1 replication plan for Eijsden-Margraten; 2 transfer visits; Roll-out inputs to WP5.</p>	<p><i>As stated in 3.6.2 E-M will not establish a Control Centre, however they do plan to replicate the roll out of the mobile App for 'safeguarding' based on the Eindhoven experience. This will be completed by July 2015</i></p>
		Two transfer visits taken place
WP5A14	<p>The concrete outputs of this action are:</p> <ul style="list-style-type: none"> <li>• To define the list and format of the results to be archived for the pilots</li> <li>• To provide a methodology, i.e. guidelines to be used by the partners managing pilot for collecting this data, and by CETIC afterwards to interpret these data.</li> </ul>	<p>This was not done at the start of the project but the partners will archive info from the pilots.</p>
		<p>CETIC produced "The Definition of a Global Evaluation Methodology document" Localecon produced a report entitled Scoping the potentials for a Numerical holistic evaluation and this has been completed by Roundberry Projects.</p>
WP5A15	<p>The concrete outputs of this action are:</p> <ul style="list-style-type: none"> <li>• To refine the methodology into clearer guidelines each time that it is required, i.e. according to the questions or difficulties encountered by the pilot leaders.</li> <li>• To collect all data according to the methodology in an organised way in order to</li> </ul>	<p>This didn't happen. Instead, pilot leaders solved issues on an ad hoc basis and in consultation with partners when necessary</p>

	facilitate their interpretation.	Because the methodology was refined into clearer guidelines each time that it was required this didn't happen. Effectively the output was superseded
WP5A16	<p>The concrete outputs of this action are:</p> <ul style="list-style-type: none"> <li>• To provide the evaluation report including two parts, the detailed results for the pilots and the conclusions for exploitation of the global model applicable to any situation in NWE.</li> <li>• To update methodology following the issues encountered in the interpretation of the results of the pilots.</li> </ul> <p>It is very important to note that these outputs will be validated by all partners and observers; the exploitation of the evaluation report outside of the scope of the participants is then guaranteed.</p>	This is being delivered through this holistic evaluation of the project supported by reports by CETIC and Hyder.