ARCTIC PACER

INVENTORY OF EXPERTISE

Northern Periphery and Arctic Programme 2014-2020

EUROPEAN UNION
Investing in your future
European Regional Development Fund

Arctic Cooperation

Table of Contents

1 Introduction

The purpose of this document is to gather and present the existing experiences (mainly technologies, methodologies and systems) shared by the ARCTIC PACER clustered projects. This is the result of the exercise made by the ARCTIC PACER partners identifying those experiences susceptible of being used to find solutions to the complex use cases that will be defined later in the project.

2 Structure of the information

The experiences are described putting special attention on their potential application to address complex use cases in public service provision. The information provided is aimed to explain how each experience can contribute to be part of the solution including main fields of application, the conditions for their transferability and lessons learnt from their implementation.

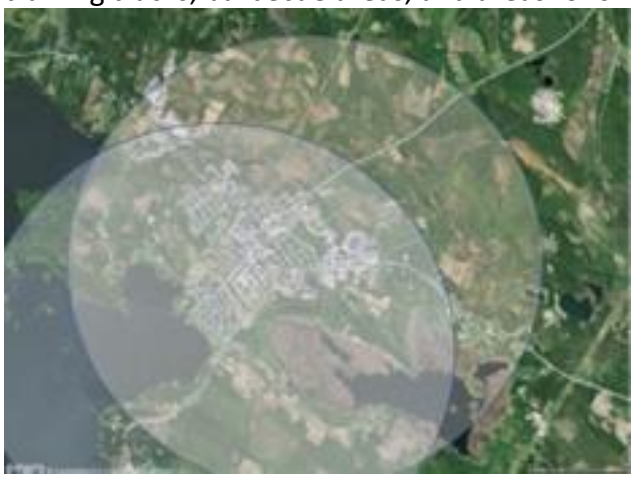
3 ARCTIC PACER experiences

A total of 9 experiences have been gathered:

Experience name	Sharing project	Type	Short description
Method for social and participative innovation	BitStream II	Methodology/ Technology	The method for social and participative innovation intends to allow different stakeholders to participate in digitally based co-design of public services. It is based on four tools, Lean canvas, Mash-up, customer journeys and sensors that gather data on how citizens use public services, which then could be used to improve existing services or develop new ones
Artificial intelligence powered conversational chatbots	EMERGREEN	Technology	A chatbot is a computer program or an artificial intelligence which conducts a conversation via auditory or textual methods. Such programs are often designed to convincingly simulate how a human would behave as a conversational partner. Artificial intelligence powered chatbots use Natural Language Processing (NLP) and Machine Learning (ML) to better understand human needs and provide a more natural, near-human level communication.
CBTL: Create, Build, Test, Learn	CYNIC	Methodology	The service is a format for a co-creation workshop. The CBTL format stands for an iterative process of: • Create: problem investigation and idea generation. • Build: low-fi prototyping to explore and learn about the problem and its potential solutions. • Test: evaluation and testing of prototypes to find constraints and formative improvements. Everything from ideas to prototypes can be tested.

Experience name	Sharing project	Type	Short description
			• Learn: conclusions on whether or not the tested candidate solution will solve the original problem for its intended users.
Stakeholder-driven service development	@geing Online	Methodology/ Technology	An online application aiming to increase opportunities for meaningful social activities among older adults, developed in a co-creation process with multiple stakeholder inclusion.
Co-production methodology	IMPROVE	Methodology	Methodology to guide in the process of co-producing new services with their communities in a living lab environment helping them to: • Establish the innovative living lab ecosystem formed by all the relevant stakeholders • Effectively carry out the needed adaptation and organizational change in each stakeholder • Provide the public services providers (civil servants, community managers, volunteers, social enterprises, etc) with the necessary tools and skills to act as local champions leading the process of co-producing the new services • Engage and involve the community • Co-produce user-centred, inclusive, responsive and transparent services
Method for business modelling	BitStream II	Methodology	The method consists of the model types: context, concept, goal/problem, process, and collaboration. The method focuses on simple graphical models that communicate well and that can be developed by employees, thereby supporting a bottom-up approach.
Information security training methodologies	CYNIC	Training	Training material for increasing awareness about digital information security as supports services for SMEs and IT consultancy companies. The focus is to bring together human and technical aspects, to incorporate information security risk management in ordinary work routines.
Assessment report on relevant Technologies, Methods and Systems for green growth type of services	EMERGREEN	Assessment report	Report assessing the relevant available technologies or methods in order to identify the most suitable ones to implement green growth public services.

3.2 Method for social and participative innovation (BitStream II)

Brief description
The method for social and participative innovation intends to allow different stakeholders to participate in digitally based co-design of public services. It is based on four tools, Lean canvas, Mash-up, customer journeys and sensors that gather data on how citizens use public services, which then could be used to improve existing services or develop new ones .
Main fields of application and impact generated
The method is tested in Norsjö village, which has the advantage of being a quite small physical area. We set up a LoRaWan network in Norsjö that can be described as a star topology with gateways as bridges between sensors and a central server. LoRa was chosen since that it is an open and widely spread platform, including an open, non-profit association sharing their experiences. By placing two gateways at central locations in Norsjö, the network covers a large part of the central village area. Each gateway is expected to cover a radius of three kilometers (see figure below). The reason for also including the outskirts of the town is to cover leisure areas such as cross-country skiing tracks, cross-training tracks, barbecue areas, and areas for swimming and hiking.  During BitStream II we have conducted three major tests of the LoRaWAN network: (1) Sensors placed at the cross-country skiing trail, (2) Sensors placed at the public bath, and (3) Sensors placed in four classrooms, and in the canteen at the local school. In all three tests we also have developed visualizations of the sensor data with the purpose of communicate information to the general public and to create a discussion of the quality of the services provided by Norsjö municipality. The visualization of the sensor data from the public bath was published on Norsjö municipality's website and the visualization of data from the cross-country skiing trail was published on the local ski club's website. The visualization of sensor data from the school test is published so that it is accessible by school staff, but the ambition is to also make it accessible for the pupils and their parents. This is a more advanced visualization that is actually a dashboard, which in real-time shows the sound level in the four classrooms and in the canteen, see http://ljud.norsjo.se. The visualization of sensor data from the cross-country skiing trail test can be found at http://temperatur.norsjo.se. All three test have been successful and have clearly showed that sensor data can be very useful in business development.

Transferability
The method is open and free of use for whoever is interested in the co-production of public services with their communities but applying the sensor part of it requires some recourses. The LoRaWan network, or similar technologies, must be obtained and set up, and sensors must also be obtained and placed at appropriate locations. Also, visualizations of the sensor data have to be developed.
Other info
This work is described in the articles *Co-producing public value through IoT and social media* and *Challenges in using IoT in public spaces*. These research papers of the project published in conferences are available through their publishers (due to copyright reasons), and public libraries that provides this kind of publications.
Lessons learnt
• The importance of context; various public contexts are viewed as more or less private by the persons visiting them which makes privacy in public contexts an important factor to manage • Data-driven analytics require qualitative analyses as well as quantitative analyses • Suspicious black boxes in some cases need to be re-designed, that is, sensors that look suspicious may be destroyed or taken down by persons feeling unsecure about them • Visualizations of sensor data should take into account different stakeholders; different stakeholder groups have different motives and requirements, which affect the choice of visualization method • The demand for services is not the same in rural areas as in cities; it is not about avoiding traffic and queues • Sensor data is data about how citizens actually use public services, which means that they have the potential to help decisionmakers make decisions that are better substantiated

Potential application in ARCTIC PACER selected areas

Education
The method for social and participative innovation intends to allow different stakeholders to participate in digitally based co-design of public services. It is based on four tools, Lean canvas, Mash-up, customer journeys and sensors that gather data on how citizens use public services, which then could be used to improve existing services or develop new ones. This approach is a kind of open innovation method involving citizens in design and redesign of public services. The general character of the method implies that it can be applied in any area in which it is possible to use sensors to gather data on how citizens use the services that public institutions are offering within the area. However, in order to be used by public servants we believe that they need education/competence development in different forms.

Planning
See Education above. As the method for social and participative innovation intends to allow different stakeholders to participate in digitally based co-design of public services, it is especially useful in planning processes. Originally it was developed for this purpose, and to be used in business development in different public areas. However, it is probably not enough that different public organizations in different rural areas build capacity in business development and participative innovation. There is also a need for competence hubs (or centres of excellence, or…) that can facilitate for instance solution sharing and competence in using tools and methods (perhaps an idea for a new project application?)

3.3 Artificial intelligence powered conversational chatbots (EMERGREEN)

Brief description
A chatbot is a computer program or an artificial intelligence which conducts a conversation via auditory or textual methods. Such programs are often designed to convincingly simulate how a human would behave as a conversational partner. Artificial intelligence powered chatbots use Natural Language Processing (NLP) and Machine Learning (ML) to better understand human needs and provide a more natural, near-human level communication.
Main fields of application and impact generated
Chatbots can assist public services providers in automatising more routine tasks, freeing up officials for more sophisticated tasks. The fields of application are huge, not only in public but also private sectors including: • E-commerce: customer support, products suggestions, discounts offers, service reservation • Travel & Tourism: vacation planning, reservations, queries and complaints • Medicine and mental health: depression treatment therapy, healthcare inquiries • Banking: common requests answering, transactional support • Toys: character emulation (dolls) • Company internal platforms: automate internal processes (sick leave request, knowledge unlock) • General information: date/time, weather - what to wear advise, song/tune recognition In the case of EMERGREEN, the chatbot is been applied in waste management and energy advisory services. See more details in section for potential for application
Transferability
The chatbot technologies in EMERGREEN are easily transferable. They are open source and the main work required would come from the development of the knowledge base to train the chatbot.

Potential application in ARCTIC PACER selected areas

Environment
The chatbot technology if being used in the EMERGREEN project to implement the following services: • **Zero waste circular management service** A service to change public behaviour towards achieving a zero-waste circular district. The service particularly will: 1) Improve accessibility to sustainability information for members of the public and businesses, including those in peripheral areas; 2) Improve communications on Waste and Recycling services through digital offerings; and 3) Better deliver the service to the public with reduced staff overheads (reduced number of calls into agents). This service uses chatbot technologies providing an online response service on information regarding waste, bin collecting, recycling services, etc. 24 hours a day 7 days a week. It is also aimed at helping people report issues more easily and freeing council staff from dealing with mundane enquiries concentrating instead on more complex questions. This service will be tested in Derry and Strabane (Northern Ireland). The main stakeholders for this service include Derry City and Strabane District Council as the service provider and the general public in the Derry City and Strabane District, particularly those in the rural communities. • **Green growth advisory services** A service to assist advisors in their task of providing advice to the community to be more energy efficient and solve the issue they have to reach a wider audience. In particular, the new service will use chatbot technologies to: 1) Improve communications on energy and climate with businesses and the general public; and 2) Improve the public awareness of the available services, grants and overall efficiency of different energy options. Currently, this service is delivered via phone calls and face to face meetings with part-time advisers and thus limiting its availability. This service will be tested in Västernorrland (Sweden). Primary stakeholder of this service are members of the public or citizens who need information and advice on solar panels, heating, electricity consumption, lighting and subsidized financing possibilities for installing energy-efficient equipment. Other secondary stakeholders and beneficiaries of this new service are local energy advisors who currently have very limited availability to provide information and advice to the citizens, local energy suppliers. People looking for information related to climate change, businesses, and policymakers are also important stakeholders.
Planning
Chatbot can be a very useful tool to provide reply to consultations about planning permission processes. They can also be used as an interactive way to gather feedback on participatory planning processes.

Social and Healthcare
Chatbots have been used recently to provide information and assistance to patients in the detection of COVID-19 symptoms. The NPA project ChatPal is using chatbot technology to provide citizens access to psychotherapeutic support using a computer-based intervention service which will be in the form of a conversational user interface, or chatbot. This chatbot service will be available 24/7 and allows users to receive support through a natural voice or text based conversation that is driven by artificial intelligence.

3.4 CBTL: Create, Build, Test, Learn (CYNIC)

Brief description
The service is a format for a co-creation workshop. It is designed upon previous research on team-based innovation for products and services. The format has been used to train international innovation coaches in industry, as well as in running industrial workshops on new product development. The research it rests upon are mainly design thinking and agile logics for the development part, and entrepreneurial leadership for running the workshops. The basic format exists under different names, and is implemented and continuously used by other organisations, such as LTU Business, to run workshops with regional SMEs. The original method for the workshop was inspired from collaborations with Stanford University's ME310 course in year 2002. The CBTL format stands for an iterative process of: • Create: problem investigation and idea generation. • Build: low-fi prototyping to explore and learn about the problem and its potential solutions. • Test: evaluation and testing of prototypes to find constraints and formative improvements. Everything from ideas to prototypes can be tested. • Learn: conclusions on whether or not the tested candidate solution will solve the original problem for its intended users.
Main fields of application and impact generated
The co-creation workshop format is used within the Cynic project especially in early phases of design and development of innovative/new solutions. The workshop can be adapted to any type of industry or business to find out more about the problem to be solved and investigate a number of plausible solutions. The format is profoundly grounded in the participants point of view, that is they keep ownership of the ideas, but their process to investigate problems and solutions is facilitated by the workshop leader.
Transferability
The workshop is very much a co-located and co-created process. Yet, training of facilitators can be done, and has been done earlier. There are a number of described methods that works as a backbone for the workshop, and there are a number of extended versions that can be included for a longer period. Typically, the workshop is 1-3 hrs, but has also been run as a 1-2-day workshop. The cost related to training could be solved with project financing, and other costs are related to for example simpler workshop material.
Other info
Has been reported on in different publications, for example: A deep dive into creative thinking: the now-wow-how framework and Innovation supports for small-scale development in rural regions: a create, build, test and learn approach.

Lessons learnt
The facilitation demands a mindset of entrepreneurial exploration and formative assessment, since the facilitator should encourage the process and not impose own solutions to the problem. It is also important to manage different attitudes towards “serious play”, those that find “thinking together” as a waste of time, may not contribute to the co-creation but rather the opposite.

Potential application in ARCTIC PACER selected areas

Education
The process fits well to be introduced and implemented in student projects and commissioned education. The format has been implemented as constraints for assignments aiming to suggest novel solutions to “unknown”/open problem statements. This provides a structure for the students to hold on to, in an otherwise open-ended assignment.
Environment
The workshop can be used for complex design problems, like environmental challenges.
Planning
The workshop can be used for complex design problems, in any type of business and industry.
Social and Healthcare
The workshop can be used for complex design problems, in any type of business and industry.

3.5 Stakeholder-driven service development (@geing Online)

Brief description
Technology (an online application aiming to increase opportunities for meaningful social activities among older adults) is developed in a process with multiple stakeholder inclusion. The co-creation process involves older adults as potential users of the application, organizations in the public social and health care sector as potential future providers of the service and also regional SMEs in the IT sector who are responsible for technical coding of the application. Involved IT companies can potentially be responsible for running/operating the application after the project end. The regional SME involvement is also intended to support their competence in the eHealth field and in familiarizing themselves with older adults as a customer group. Project focal points: • Co-creating an application together with older adults in a user-centred and inclusive process • Involving regional SME(s) in the technical application development • Arranging various meeting opportunities for regional SMEs to interact with regional organizations and actors in the health and social sectors where new eHealth tools could be integrated (eco-system approach) • Supporting the longevity of the co-developed application in one or several organizations in the project region The project owners (Åbo Akademi University, Umeå University, Seinäjoki University of Applied Sciences) function as a facilitator creating fora for the cyclical testing of application prototypes among older potential users, and for regional organizations and IT company to meet and together develop application administration features relevant for the organizations as future providers of the service.
Main fields of application and impact generated
Multiple protocol guided sessions focusing on usability and user experience testing of application prototypes have been conducted with 57 older adults living in in rural and remote areas. The participants were of varying age and with varying internet-use experience. The sessions have taken in place in varying contexts: home environments, university settings, public spaces such as social meeting spaces for older adults in the Ostrobothnian, Southern Ostrobothnian and Västerbotten regions. In the fall of 2020, organizations in the same region are involved in developing the organizational, administrative aspects of the application together with a regional IT company. The process thus far has yielded noteable interest from regional organizations (some part of a broader national or international network) to collaborate in the co-creation process and later introduce the product in their organizational settings. • The co-creation process can form a best practice example for developing digital solutions together with groups encompassing many individuals less familiar with novel technologies applying an inclusive, user-centred approach

- The developed application will be used as a tool by regional organizations catering to the needs and wishes of older clients to increase users' access to meaningful social activities and to highlight the organizations' and other regional actors' activities targeting older adults
- The eco-system approach supports future collaboration and innovation development between regional public and private actors

Transferability

The applied process is especially relevant when working with a heterogeneous customer group where many have limited internet/ICT use experience, and service providers working with these client groups.
The terms of use with regard to the service (application), i.e. open source, licensing etc, will be confirmed during the autumn of 2020.
A project report (in Swedish) and brief versions of project work package summaries and recommendations (in Swedish, Finnish and English) will be available through the project website at the end of 2020.

Other info

Include here additional info, links, videos, etc regarding the experience.
Project information and activity updates can be found here:
http://www.ageingonline.fi/
https://www.instagram.com/ageingonline/?hl=sv
https://www.facebook.com/geingonline/

Lessons learnt

Based on project experiences and results:

- Including persons (in this case older adults) without internet use experience in prototyping and co-creation processes is fully possible, and crucial to ensure user-friendliness and usability of tools and services and thereby the possibilities for ensuring the longevity and implementation of services after project completion
- Many standardized technical guidelines for application design may not be suitable for older adult customer groups
- Co-creation processes where universities function as a facilitator carry some challenges, as the universities are not the primary customer of the service being developed but are – as facilitators – responsible for legal and structural (timetable, financial) frameworks
- Public procurement processes for IT company services (technical development of tools/services) requiring detailed specifications of the end-product to be coded beforehand do not match well with an inclusive, agile co-creation process
- The importance of uniting the technological competence of the IT sector and the identified needs of the pressured public social and health care sector in innovation processes has been highlighted, as collaborative design and implementation activities is an identified success factor for the longevity of social innovations and new services

Potential application in ARCTIC PACER selected areas

Social and Healthcare

The product of the project and the co-creation process, the social application, is intended for use in (public) social and health sector organizations targeting older adult groups. Project activities in 2020 largely focus on imbedding the application in organizational settings in the region already during the project period. Service use will ideally expand outside of the current project region after the end of the project.
From a broader perspective, the applied process can be utilized in the development of various eHealth tools targeting older adults with varying/no internet use experience (or other groups with limited ICT use experience).

3.6 Co-production methodology (IMPROVE)

Brief description
Methodology developed within the IMPROVE project to guide regions in the process of co-producing new services with their communities in a living lab environment helping them to: • Establish the innovative living lab ecosystem formed by all the relevant stakeholders • Effectively carry out the needed adaptation and organizational change in each stakeholder • Provide the public services providers (civil servants, community managers, volunteers, social enterprises, etc) with the necessary tools and skills to act as local champions leading the process of co-producing the new services • Engage and involve the community • Co-produce user-centred, inclusive, responsive and transparent services The methodology includes a transnational dimension and also provides guidance for the establishment of the IMPROVE transboundary living lab and how the participating regions can have access to other centres of knowledge.
Main fields of application and impact generated
This methodology provides a framework to guide those organisations that want to involve their communities in the definition and provision of the public services. The framework has been defined flexible enough in order to be adapted to the different contexts and services areas. It presents a 5-step approach and stress on the importance of empowering intermediary facilitators (called local champions) as key actors in the process. These local champions can include civil servants, community managers, volunteers, social enterprises workers, planners and others depending on the service provided. In the case of IMPROVE the methodology was applied engaging with almost 100 local champions. **eCare/Health services** • ***eCare/eHealth Communication service (North Karelia):*** a service to connect citizens, public sector actors, companies and associations making the process more inclusive, accessible and interactive moving from the current top-down approach to a new way of co-produce and organize the services. • ***Safer and secure telecare services (Vasternorrland):*** a service oriented to making use of new ICT technologies (i.e. cameras, sensors, etc) to help carers feel safer and secure when supporting the growing number of elderly and disabled people, especially during the night or under bad weather conditions. • ***eHealth Messaging services (Sogn og Fjordane):*** a service that uses e-messaging to effectively communicate between the patient and different service providers.

Spatial planning services

- ***Spatial Planning Service and Community Participation (Donegal):*** this is a step away from the traditional "Open for Public Consultation" time period, and into the realm of ongoing public contribution of local planning issues and the constant gathering of those issues in an online Spatial GIS application.
- ***eParticipation Spatial Planning Service (Borgarbyggð):*** This service will be designed to promote citizen participation and collaborative problem solving in municipality governance. It will be based on a website that allows citizens to submit policy proposals to the municipal government. These ideas would be publicly accessible and can be debated by other participants and revised.
- ***ePlanning Service (Derry and Strabane):*** A service to enhance the level and manner of public engagement at key stages of the Local Development Plan process in a format that will help to ensure that such engagement and feedback is actively utilized to steer and shape the progress of the plan preparation.

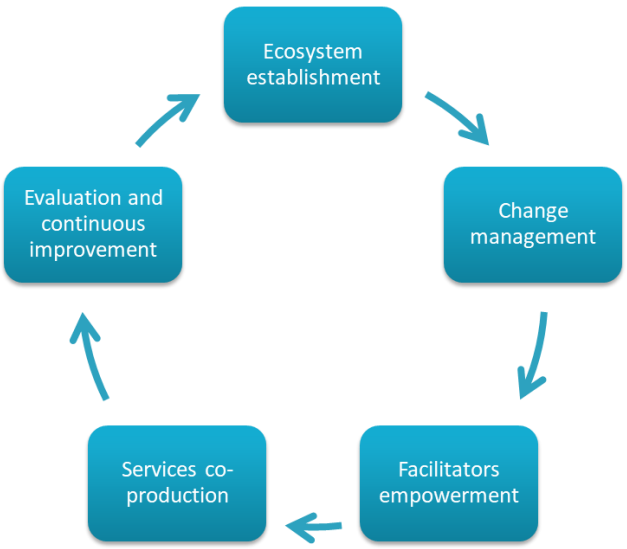
More info can be accessed here.

Transferability

The methodology is open and free of use for whoever is interested in the co-production of public services with their communities.
The methodology can be accessed and downloaded in the IMPROVE website through the following link: IMPROVE CO-PRODUCTION METHODOLOGY

Other info

Include here additional info, links, videos, etc regarding the experience.



Potential application in ARCTIC PACER selected areas

Planning
The methodology was applied in the delivery of the following spatial planning services**:** • ***Spatial Planning Service and Community Participation (Donegal):*** this is a step away from the traditional "Open for Public Consultation" time period, and into the realm of ongoing public contribution of local planning issues and the constant gathering of those issues in an online Spatial GIS application. • ***eParticipation Spatial Planning Service (Borgarbyggð):*** This service will be designed to promote citizen participation and collaborative problem solving in municipality governance. It will be based on a website that allows citizens to submit policy proposals to the municipal government. These ideas would be publicly accessible and can be debated by other participants and revised. • ***ePlanning Service (Derry and Strabane):*** A service to enhance the level and manner of public engagement at key stages of the Local Development Plan process in a format that will help to ensure that such engagement and feedback is actively utilized to steer and shape the progress of the plan preparation. More info can be accessed here.
Social and Healthcare
The methodology was applied in the delivery of the following eCare/Health services: • ***eCare/eHealth Communication service (North Karelia):*** a service to connect citizens, public sector actors, companies and associations making the process more inclusive, accessible and interactive moving from the current top-down approach to a new way of co-produce and organize the services. • ***Safer and secure telecare services (Vasternorrland):*** a service oriented to making use of new ICT technologies (i.e. cameras, sensors, etc) to help carers feel safer and secure when supporting the growing number of elderly and disabled people, especially during the night or under bad weather conditions. • ***eHealth Messaging services (Sogn og Fjordane):*** a service that uses e-messaging to effectively communicate between the patient and different service providers.

3.7 Method for business modelling (BitStream II)

Brief description
The method for business modelling is the main method for innovative business development that BitStream II has developed. It is based on an expanded version of the approach in Eriksson & Penker's book "*Business Modelling with UML*" (2000) and the Unified Modelling Language (UML). The method consists of the model types: context, concept, goal/problem, process, and collaboration. The method focuses on simple graphical models that communicate well and that can be developed by employees, thereby supporting a bottom-up approach. Although some of these models could be enhanced and detailed to specify requirements for IT solutions in much the same way as software developers would do, that is not the intent.
Main fields of application and impact generated
The models of the method for business modelling are intended to communicate understanding of a problem among different actors and support analysis and planning on management and employee levels. Therefore, the modelling is done by those who work in the processes and really know them and is used to enhance common understanding and problem-solving abilities between groups of people in the organization. By keeping the method simple it supports innovation work in public organizations that is based on developing and using local competence in business modelling. Another advantage of the method is that also provides a system approach on the business processes modeled.
Transferability
The methodology is open and free of use for whoever is interested in modelling of business processes in public organizations.
Other info
The guidelines for how to use the method is documented in a book, which also contains examples from the modelling done by project participants. Kjell Ellingsen has been the editor and main author of the book, with contributions from co-authors from the organizations participating in BitStream II. It can be downloaded from the project website, bitstreamproject.org, but at the moment it is only available in Norwegian.

3.8 Information security training methodologies (CYNIC)

Brief description
The Cynic project has developed training material for increasing awareness about digital information security as supports services for SMEs and IT consultancy companies. The focus is to bring together human and technical aspects, to incorporate information security risk management in ordinary work routines: By this, the training material has taken the form of: • A mobile information security lab, Instance lab. This is aimed for practical training at the SME sites. • Interactive exercises for the Instance lab, are under development, they will support and engage SMEs in realistic actions under fictive threats. • A card deck game for information security. This service builds upon gamification and is an easy to use training material to start understanding the concepts and terms of risks, vulnerabilities and countermeasures. It has been found successful as a team building activity to inspire further training. • An online awareness application, called Riskify. This training material shed light on how differently risk assessments are done by different stakeholders.
Main fields of application and impact generated
The awareness tools developed within the project are directed to enable information security training for SMEs (from any industry or business type). This is done in order to include risk management into the design of new digital services, but also to increase knowledge of vulnerabilities, risks and threats that SMEs and their products can be exposed to due to an increased digitalization. The guiding logics is based on a socio-technical perspective, thus bridging a gap in human behaviour that cannot be fulfilled by technical solutions.
Transferability
Online parts of the information security training are open (or will be open) and free for use of whoever interested. Workshops/training will be provided openly and free for companies and organisations in the Northern part of Sweden and Finland during the project time. Other interested can access workshops/training by a paying travel costs in the case of project members traveling to another place outside the Interreg North program area. The workshop is for free for inbound participants.
Other info
The training material can be found at: **https://www.cynic.se/training/** The project has arranged and hosted a large open event in collaboration with companies: **https://cybernorth.se**

3.9 Assessment report on relevant Technologies, Methods and Systems for green growth type of services (EMERGREEN)

Brief description
More than an experience, this report, developed within the EMERGREEN project, is set to take the stock of the existing experiences in the EMERGREEN partner regions and to assess the relevant available technologies or methods in order to inform the partners in the choice of the most suitable ones for the planned services. We consider that these experiences, in addition to the services that are under development in the EMERGREEN project at the moment, can be considered as a relevant input when defining the new solutions for the ARCTIC PACER complex use cases.
Main fields of application and impact generated
The report was used by the partners in the EMERGREEN project to identify and assess those experiences available in the participant regions. Rather than starting from scratch, the idea was to maximise the existing knowledge and expertise in the regions to address the development of the planned green growth public services in the project. The specific fields of application relate to waste management (in Chapter 2.1) and renewable energy and energy saving (in Chapter 2.2). Next, it pulls together experiences related to sustainability education and learning (Chapter 2.3). It also includes non-specific service areas by including existing experiences pertaining to and driven by the citizen engagement with innovative methods (Chapter 2.4). Chapter 2.5 comprises a wide exploratory inventory of different technologies or methods with citizen participation in mind. Like the previous chapter with the citizen engagement and participation as the driving motive, this chapter is not referring to any specific public service sector. This account was carried out in view of the subsequent development of “Intelligent green participation service”. The report was a valuable asset for partners when defining their services. It helped to the co-design process by following a practical approach on what could be developed based on successful experiences and existing knowledge in the partnership.
Transferability
The report is public and accessible for consultation to third parties. Furthermore, and since the ownership of experiences belongs to EMERGREEN partners, additional info or exchange of knowledge can be made in the framework of the ARCTIC PACER if required.
Other info
The report can be accessed here: EMERGREEN assessment report on relevant Technologies, Methods and Systems