

DigLogs

4.3.2 - Definition of players to be involved and roles in innovation deployment phase and collection of main feedbacks from private and public actors.

University of Trieste

Responsible partner: University of Trieste			
Involved partners: All			
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Notes: The following partners contributed to the content of the core sections: Port of Rijeka Authority, Port of Rovinj Authority, Port of Šibenik Authority, Aksentijevic Forensics and Consulting, Ltd,			

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Introduction

In the previous phases of the DIGLOGS project, the passenger mobility harmonization has been studied, selecting 5 innovation dealing with this topic. For each innovation, a dedicated pilot project will be carried out in the next phases of the DIGLOGS project. To assure an effective development of the selected technologies, a roadmap has been drafted for each of them. The roadmapping process is divided into three steps:

- First version of the roadmap (V1) carried out by the project partner in charge of the pilot project according to a common methodology.
- Stakeholders involvement aimed to revise the roadmap V1 to maximise the contribution of most important stakeholders in the project area
- Final version of the roadmap (V2) incorporating the stakeholder feedback.

Currently, the roadmaps V1 have been already finalised. Each partner in charge of a pilot-project shall collect stakeholders opinion according to the common methodology. In detail, each partner selected and inquired the most important stakeholders in the project area and contacted them to collect their feedbacks. To this end, each partner prepared a google form questionnaire which has been embedded into the Skrigno platform managed by PP2-Elevante maximising the project visibility. The platform includes a pilots' description and dedicated PowerPoint presentations. The stakeholder selection has been carried out based on the previously identified project target groups and they have been contacted by email, phone or video calls to gather the required information. All the results of the consultation have been conveyed in the google form surveys.

Sufficient quantity and quality of feedback from stakeholders have been received by the end of July 2020 for Croatian partners and by the end of September for the Italian ones. This delay has been mainly caused by COVID emergency and the summer vacation period, which hindered communication and feedback collection. This document reports the results of the stakeholder selection and the row results of their consultation.

1 Objectives of this document

The objective of this document is to provide a complete report of the stakeholder consultation aimed to define the final version of the roadmaps concerning the harmonization of passenger mobility in the project area. This document is strictly related to the D4.3.1, which reports the finalised roadmaps V1 for the harmonization of passenger mobility.

This document aims to provide the base for the definition of the final version of the roadmaps, carried out considering the opinion of the relevant stakeholders in the project area. Hence, here, no elaboration of the outcomes of the consultation is presented, but only the responses to the questionnaires are reported.

2 Results of the stakeholder consultation

In the present section, the results of the stakeholder consultation are presented. The specific results are provided for the following innovations dealing with passenger flow harmonization:

- Mobile solutions for passenger safety/security
- APP for data flows management of passengers (data integration for the development of new services for passengers)
- Digitalization of access control as a prerequisite for integration with the national PCS in Port of Sibenik
- Maritime Transport Management by linking PCS and national platform for Croatian ports V2
- Big Data / Data management solution for planning

The specific description of the innovation and the roadmaps V1 can be found in D4.3.1. For each innovation, the involved stakeholders are here presented and the results of the questionnaires are provided. The adopted questionnaires are also reported in the appendage to this document.

2.1 Mobile solutions for passenger safety/security

Reference selected innovation: **Mobile APP – UNITS**

This Report analyzes the results of the “*Possibility to increase onboard safety by means of Mobile technology*” for the stakeholders involved.

The results were collected up to date 29th September 2020, date in which questionnaire was closed.

4 answers have been provided.

2.1.1 Description of the Pilot Action

Keywords: Mobile technology, Evacuation, Passenger ship, Onboard application.

The mobile technology can help in reducing the time required for the ship evacuation and abandonment procedures. During and emergency, escape routes might be blocked due to fire or flooding, forcing people which is following evacuation signs to turn back and search for alternative routes. A mobile application, guiding passengers through the proper direction in the current situation might reduce such problems while avoiding congestions. Such a technology shall be based on the localisation of passengers (mobile phone, smart watch or other mobile devices) based on an infrastructure sustained by ship emergency grid and/or an independent source of power.

Bluetooth beacons can be adopted, designing a net capable to localise the passenger through the connections to the nearest beacons. Bluetooth beacons can be sustained by batteries, removing the need for cabling and thus reducing the installation time and costs (especially in case of retrofits of existing vessels). The localisation data can be collected through the net and transmitted to a backend application. The backend application shall be sustained by the emergency grid and possibly receive data from other onboard emergency systems (fire alarms, fire/watertight doors status, flooding sensors, etc.). The crew on the bridge can access localisation data in case of emergency in order to speed up crew reaction and the countermeasures elaboration. The mobile application can also allow the passengers to rise safety and security alerts to the attention of the crew, improving the situational awareness and a fast and effective reaction to safety and security threats.

Localisation data can be useful also during normal operation. They can be used to early detect unauthorised access to restricted areas, allowing a fast reaction of the onboard security team. Moreover, in case of onboard infections, the localisation records, usually not accessible in order to protect passengers' privacy, could be put at disposal of medical officers. The movements of infect passengers can be analysed in order to identify the passengers that came in contact with them. Then, through the adoption of test and quarantine, it will be easier to contain the infection growth onboard. Finally, localisation can be useful also for commercial purposes, such as allowing big data analysis, providing push notifications related to the passenger position and providing guidance onboard to reach desired destinations.

2.1.2 Stakeholders involved

Stakeholders involved belong to different fields (academic institutions, private companies having specific expertise in the field etc.).

4 answers have been provided. Below a list of some of the major contributors to the questionnaire results:

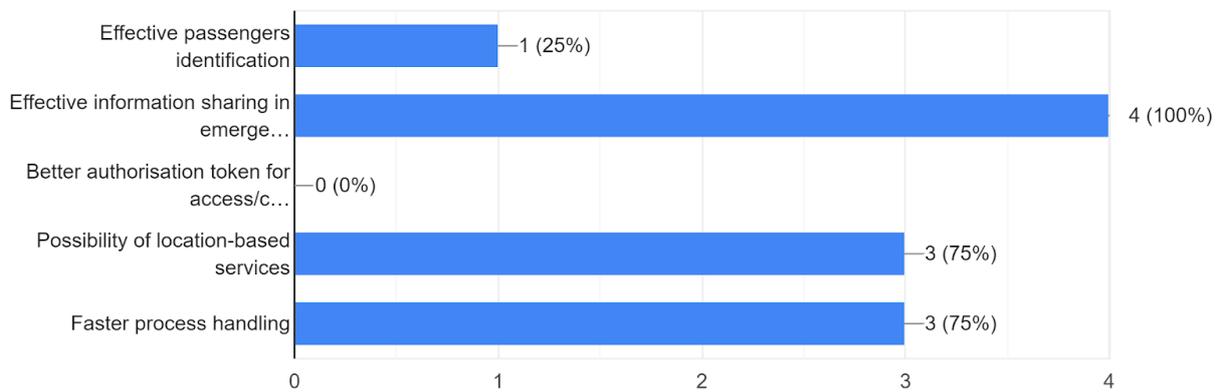
- Espereal Technologies S.r.l.s.
- Marinelab d.o.o.
- University of Trieste

2.1.3 Results of the questionnaire

SWOT Analysis

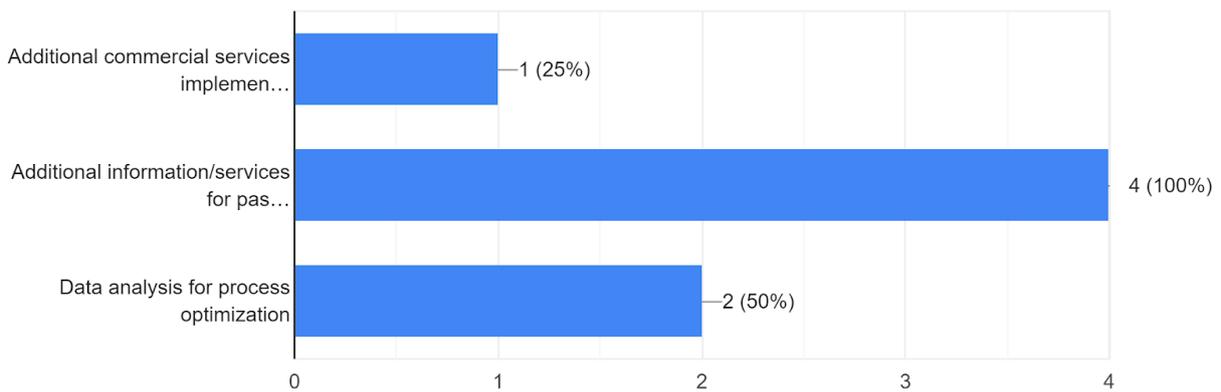
what benefits brought by the innovation do you think will give greater advantages to your business considering the relationships with the activities and the actors working in the logistics sector?

4 responses



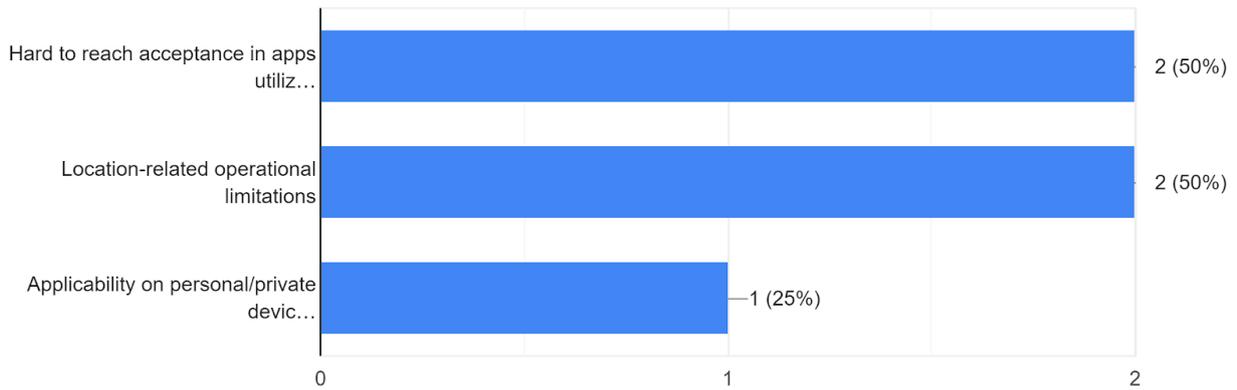
what new opportunities do you think the innovation will bring in the logistics sector considering your operational context?

4 responses



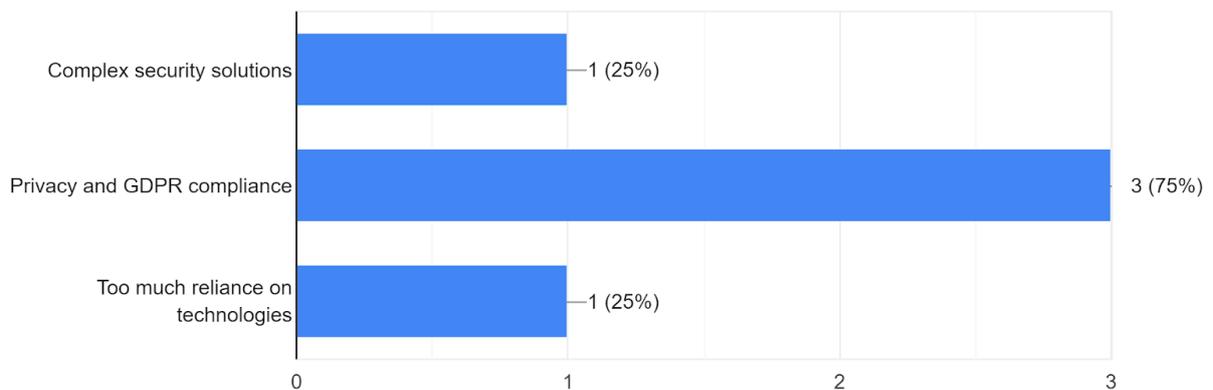
which innovation weaknesses do you think will likely make innovation implementation more difficult?

4 responses



what do you think will be the most relevant threats that likely make innovation deployment less effective?

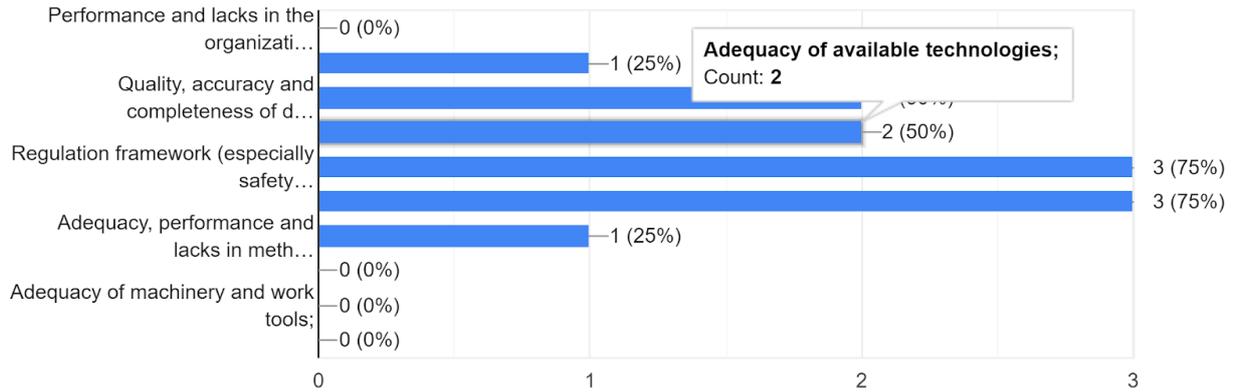
4 responses



Improvement of knowledge and awareness about internal assets and resources

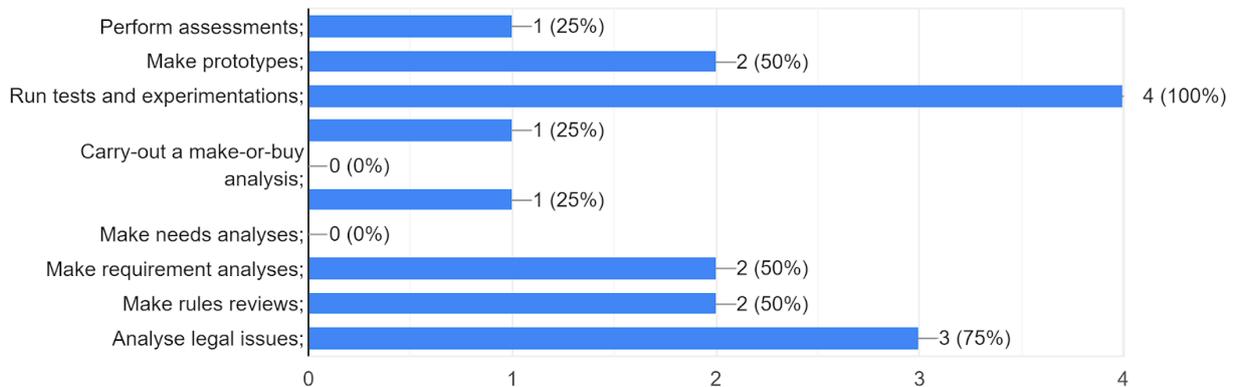
do you think there is the need to make specific analyses, tests or assessments to better know and understand one or more of the following aspects in order to deploy the innovation?

4 responses



what do you think are the most effective type of actions to carry out in order to achieve these objectives?

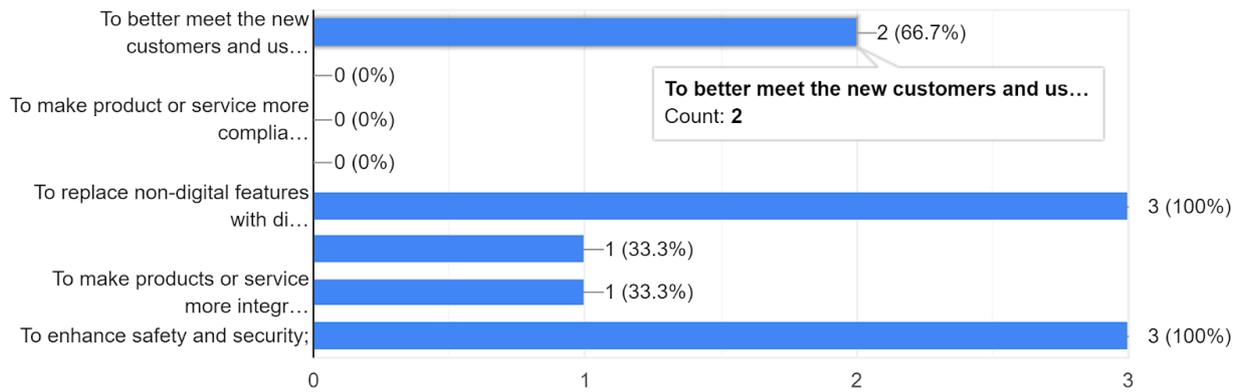
4 responses



Adaptation and innovation of products and services

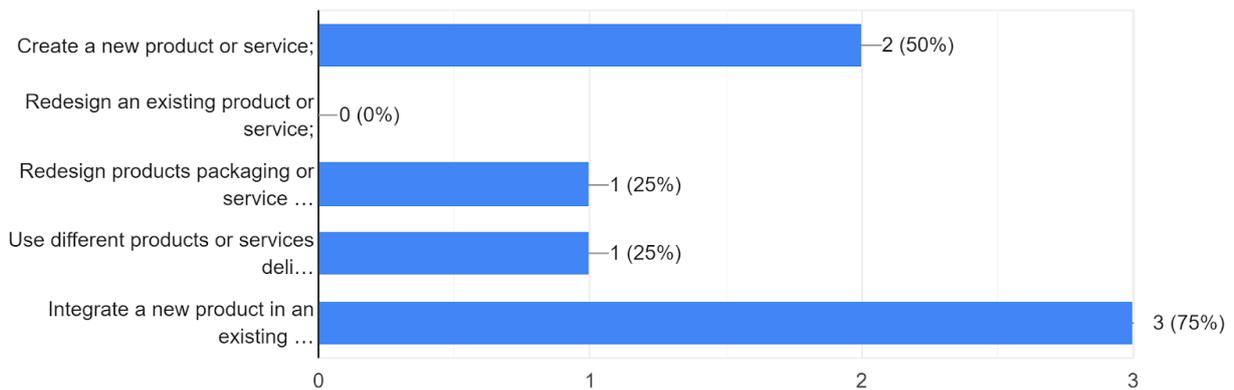
do you think you may need to change the specific features of some of your products or services in order to make your business compliant with the i...on for making you think you need to change them?

3 responses



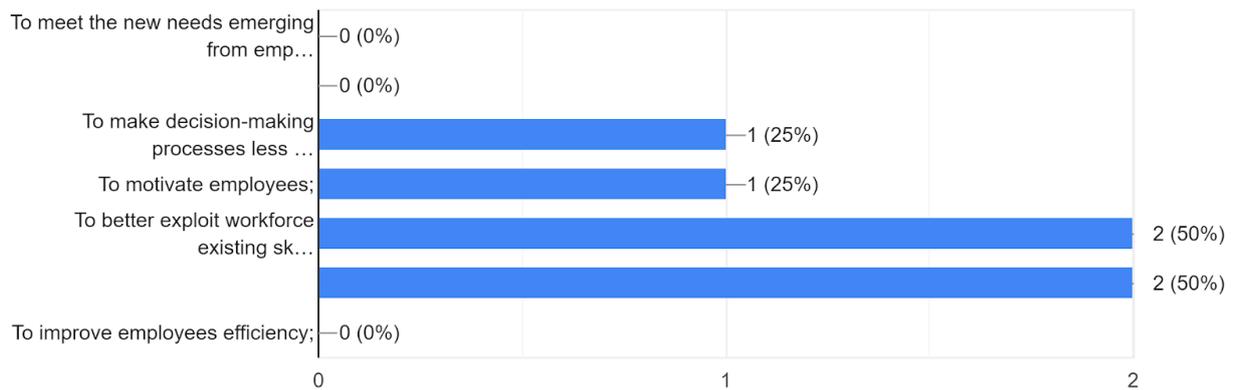
what do you think are the needed and/or most effective types of changes to make in order to improve products and services?

4 responses

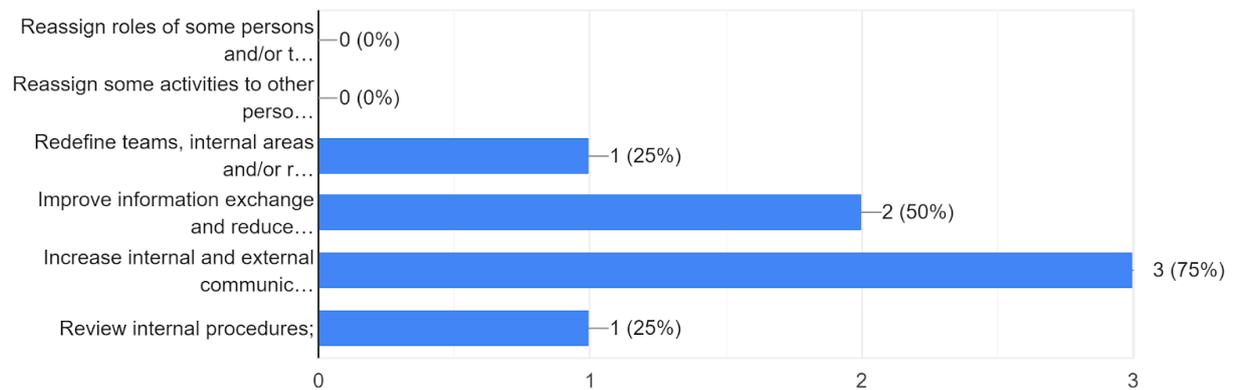


Organizational model improvement

do you think you may need to change something of your organizational model in order to make your business compliant with the innovation? What...e reason why you think you need to change them?
4 responses



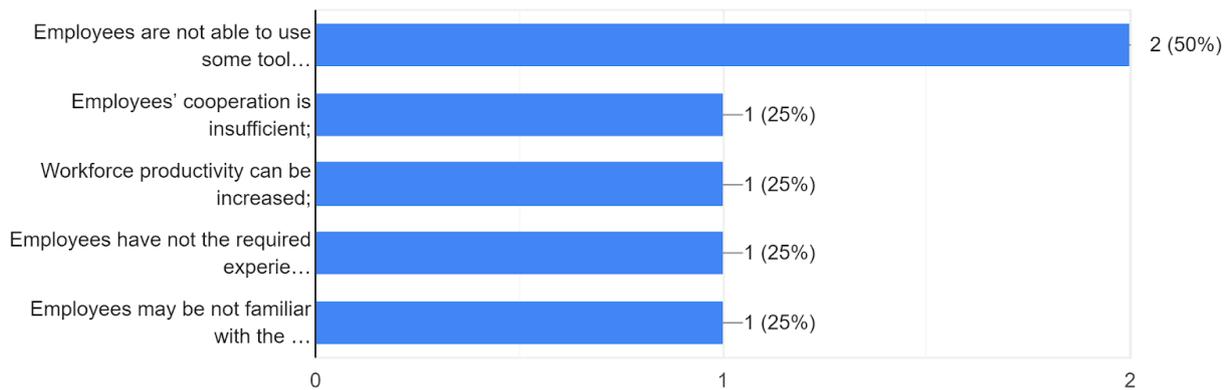
what do you think are the needed and/or most effective type of changes to be made in order to improve your organization model?
4 responses



Employees' skills and capabilities improvement

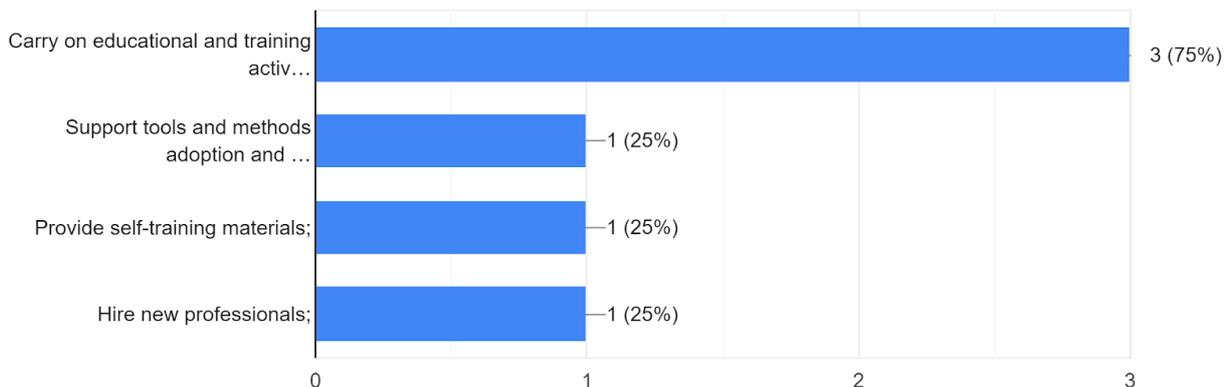
do you think you may need to improve the skills and capabilities of your employees in order to better deal with the innovation? What is the reason...ilities inside your organization are not adequate?

4 responses



what do you think are the needed and/or most effective types of actions to carry out in order to improve skills and capabilities within your organization?

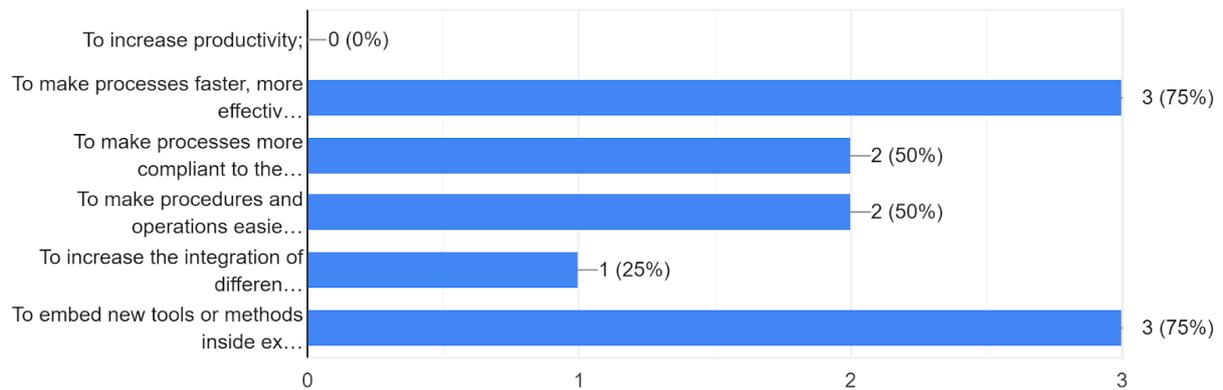
4 responses



Processes and procedures optimization

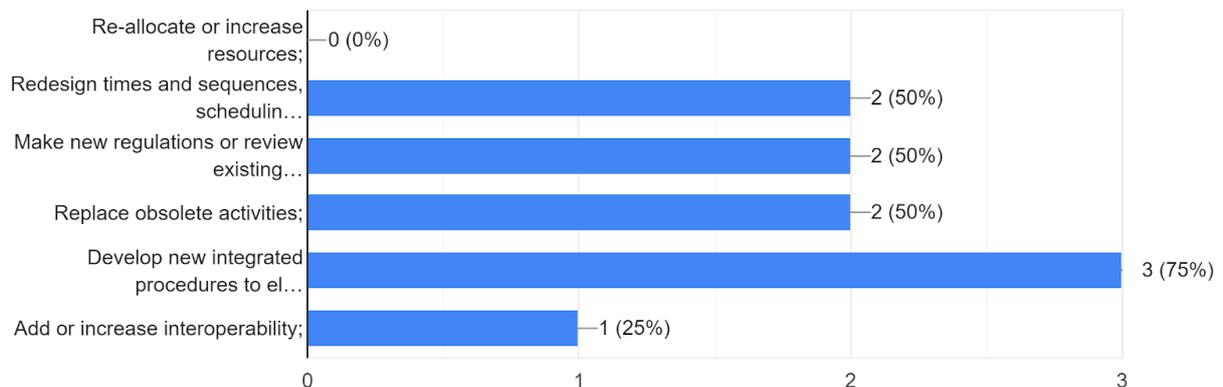
do you think you may need to modify your business processes or protocols and procedures in use within your organization to be more compliant with the reasons why you may need to optimize them?

4 responses



what do you think are the needed and/or most effective types of actions to be carried out in order to improve processes and procedures within your organization?

4 responses



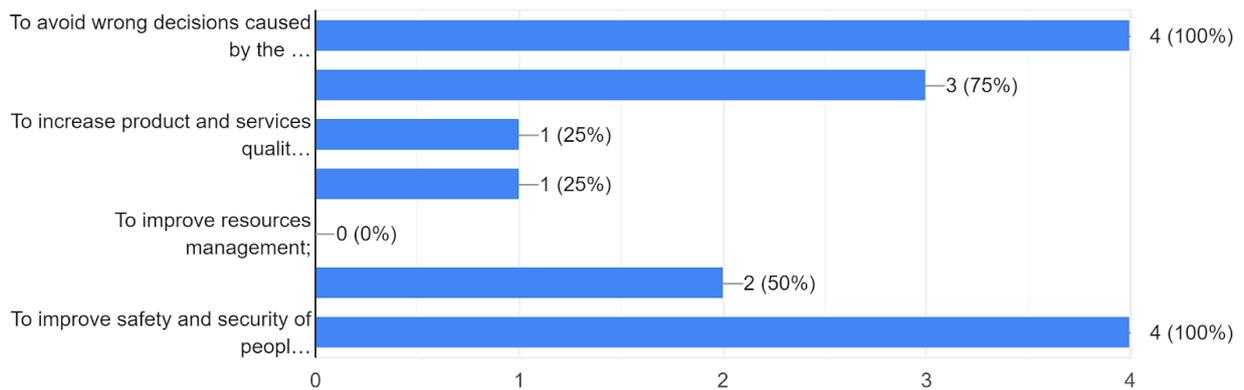
which processes, protocols or procedures do you think you need to optimize to better deal with the innovation implementation?

- customers' informations acquisition and internal communication
- data access polices, self-training and rules

Information assets improvement

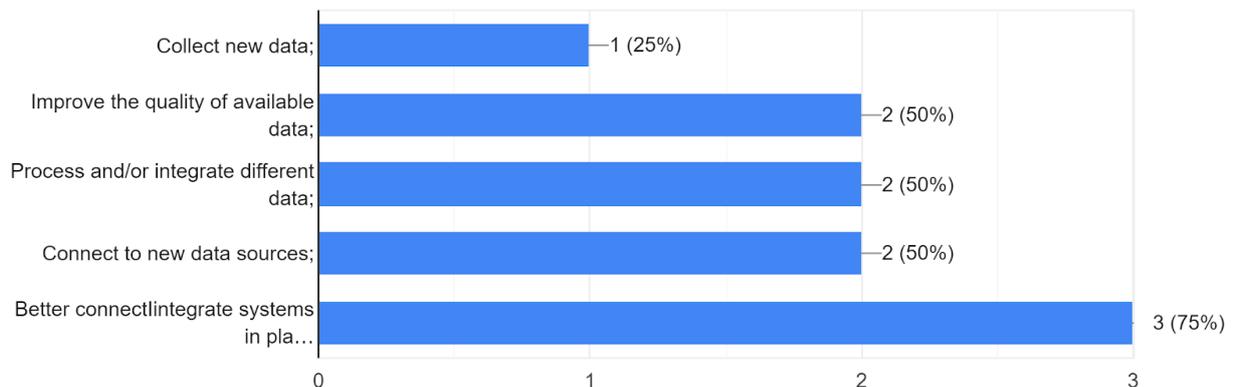
do you think you may need to improve the quality of information assets managed by your organization in order to gain more benefits from th...t more data or improve existing datasets' quality?

4 responses



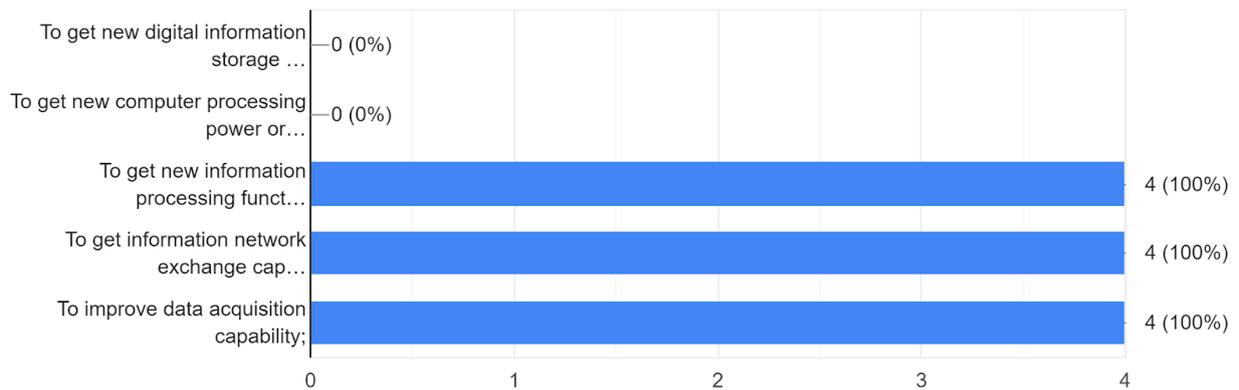
what kind of activity do you think you should carry-out to improve the quality of information assets managed by your organization?

4 responses

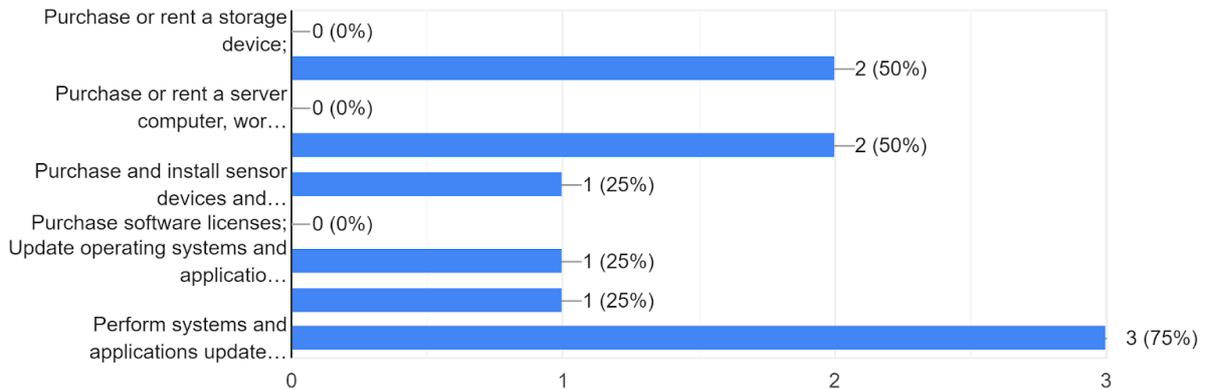


Information Technology IT infrastructure improvement

do you think you may need to improve your organization's IT infrastructure in order to gain more benefits from the innovation deployment? What do ...w IT tools or to improve the ones already in-use?
4 responses



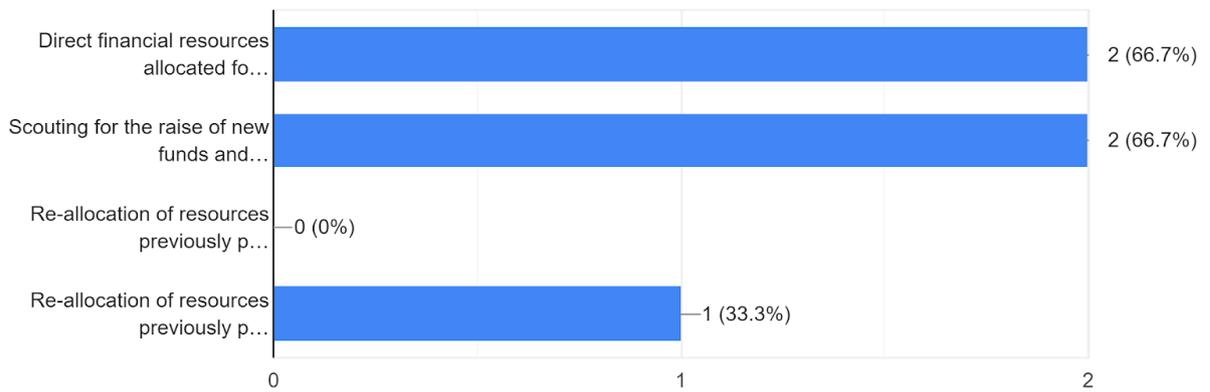
what kind of activities do you think you should carry-out in order to improve your organization's IT infrastructure?
4 responses



Financial resources allocation

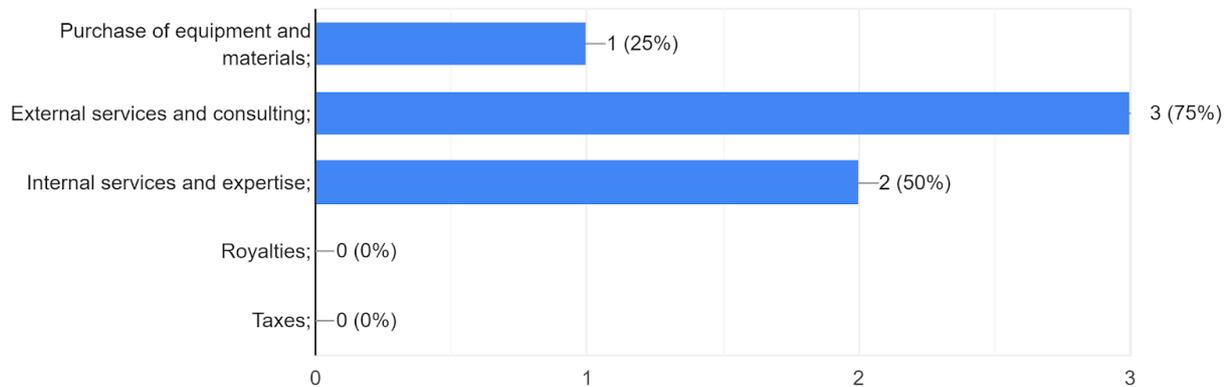
do you think your organization may need to allocate special resources to carry-out tasks or activities related to the innovation deployment or t...f financial operation do you think will be required?

3 responses



what kind of tasks do you think may require special resource allocation or re-allocation?

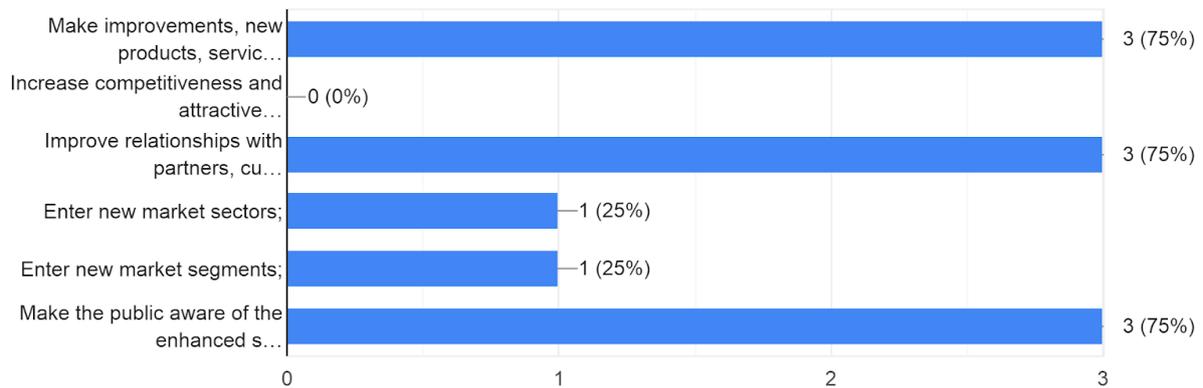
4 responses



Corporate image

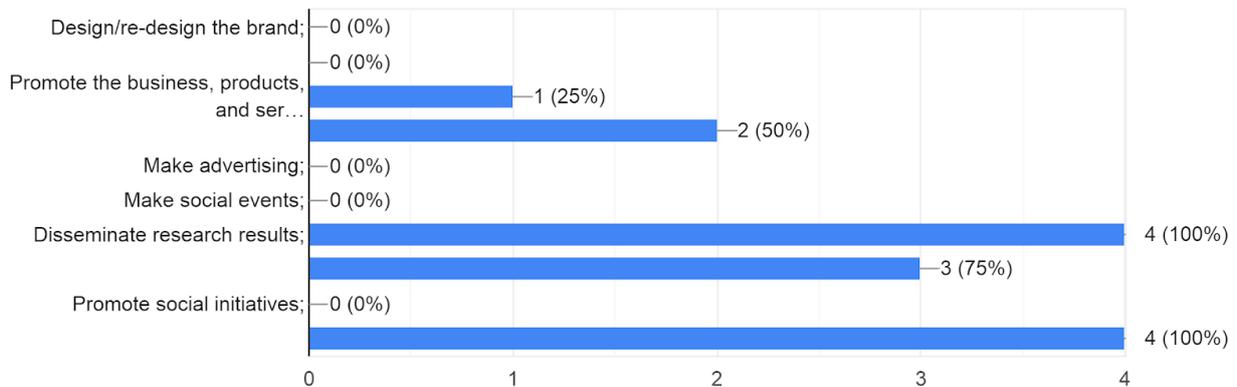
do you think there is the need to improve your organization's corporate image in order to better exploit the benefits of the innovation deployment?...u think are the main goals to improve your image?

4 responses



what actions/strategies do you think may be better to improve your corporate image in the innovation deployment scenario?

4 responses



Innovation impact assessment

Which aspects of the innovation are of particular interest to you?

- The possibility of enhancing safety and security onboard ships
- prototyping of new product with the help of simulation, data analytics and AI
- market development and business improvement

Which scenario would be most feasible to deploy?

- RoRo ships / small cruise ships
- introducing digital transformation to create new commercial services for end users
- attending European funded research projects

What benefits would that achieve? What would be the most valuable results?

- Increased passenger safety, reduction of evacuation time
- a competitive advantage in providing solution in mission/safety critical application scenarios
- new research development to meet customer's innovation needs

Can you think of the agenda beyond the deployment? How would your operations change?

What would be the main changes in your strategy?

- Based on market analysis and vision we can think about an agenda; shorted development times with prototyping; more intensive use of an open innovation approach.
- we need to be the leader of working groups or partnerships in research projects to avoid timelessness due to big shipping industries decisional viscosity

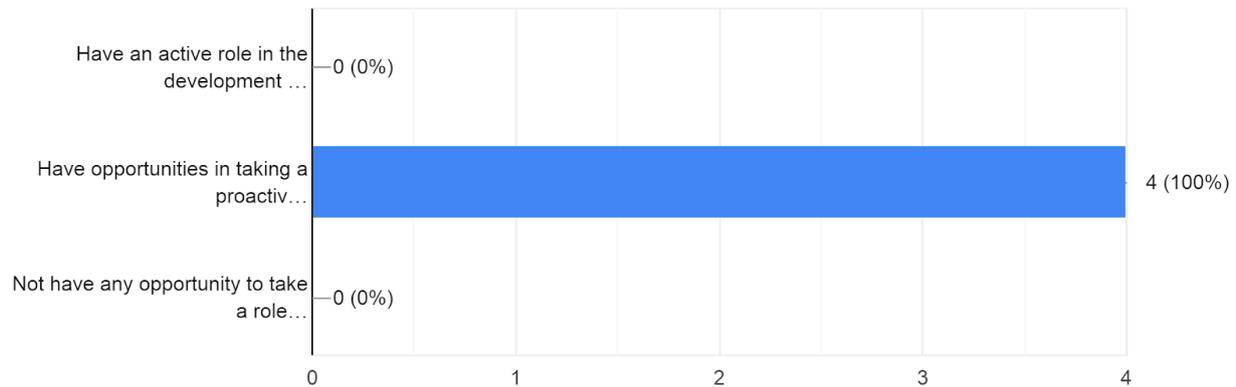
Thinking about the mid to long term, which changes to your industry do you think this innovation would bring? What would be the new competitive scenario?

- revision of evacuation standards
- creation of new market opportunities, new application scenarios and new business models
- to participate at any shipping related conference or meeting and propose our objectives in order to maritime safety and security

Policy scenario

Regarding the policy scenario in the context of the innovation deployment, does your organization

4 responses



Do you know if your area has regional or local policies in place, such as development regulations or written policies in adopted plans, that provide positive support of foster this type of innovation and/or foster digital ecosystems?

- No
- not sure about that, just signals of change that the economic crisis could accelerate
- we need they improve local policies

Does your organization have to be compliant to special guidelines, authority regulations, or published policies in adopting the innovation?

- No
- Sure. we should
- of course - all international maritime technical and legislative roles

Do you think your organization will benefit from special guidelines, authority regulations, or published policies in the innovation deployment scenario?

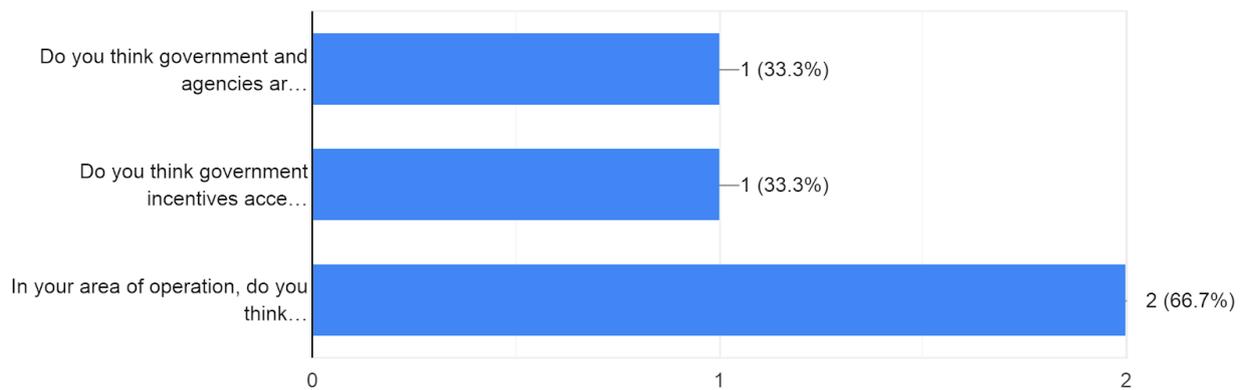
- No
- absolutely yes
- May be. This is related to the specific scenario applied

Did your organization advocate some policies related to the context of this innovation? If yes, can you list them?

- No
- With the current state of our technologies and solutions and standing in the market we are not mature to say that
- not yet, but we started aimed contact with several classification bodies

Regarding cybersecurity and privacy challenges:

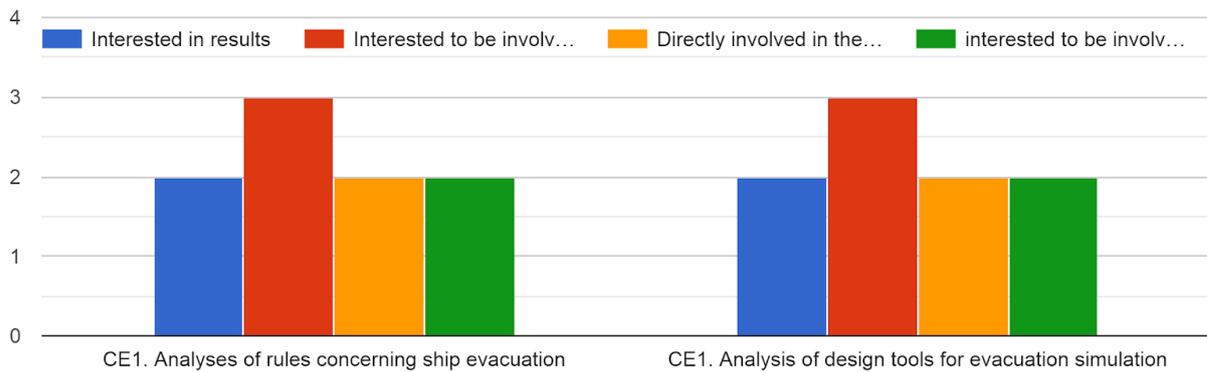
3 responses



Roadmap

Phase 1 – Preliminary Assessment

Current situation analysis - subtasks



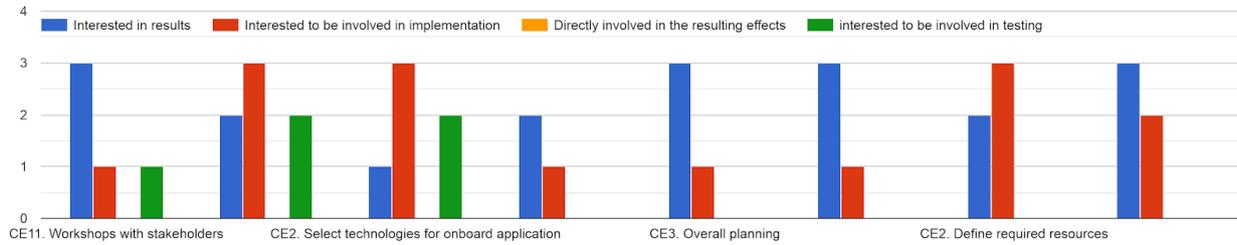
Are other subtasks required? Please, specify

- On going ship risk assessment

Can you provide a time estimate for this phase?

- 2 months
- 12/18 months
- 1 year

Overall Design - subtasks

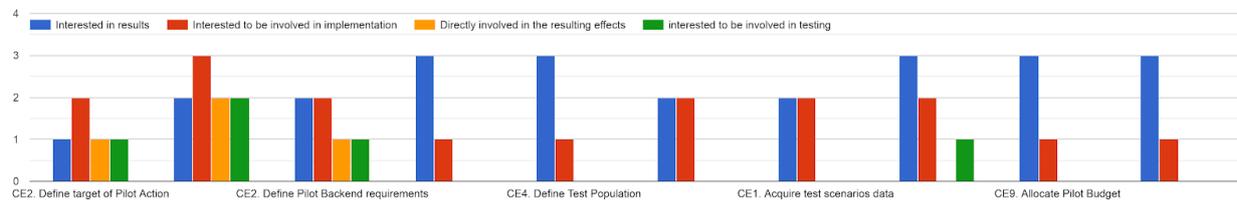


Can you provide a time estimate for this phase?

- 3 months
- 6/12 months

Phase 2 – Pilot Action

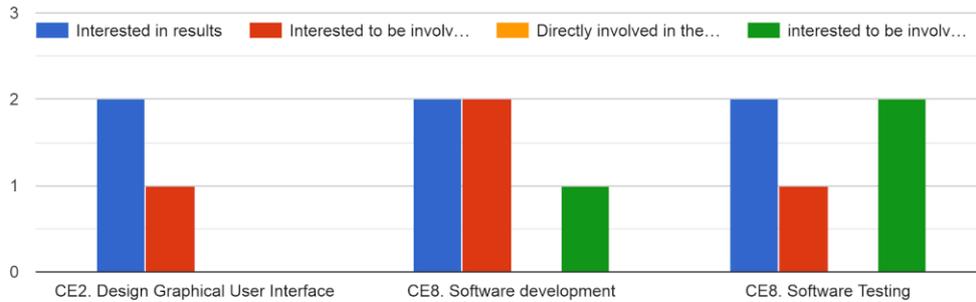
Pilot planning - subtasks



Can you provide a time estimate for this phase?

- 1 months
- 6/12 months

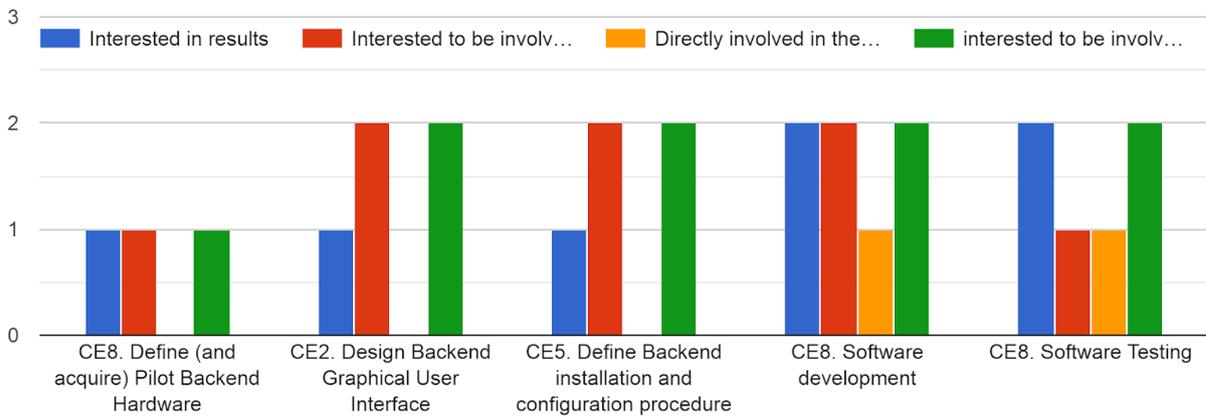
Pilot Mobile App Development - subtasks



Can you provide a time estimate for this phase?

- 1 months
- 6 months

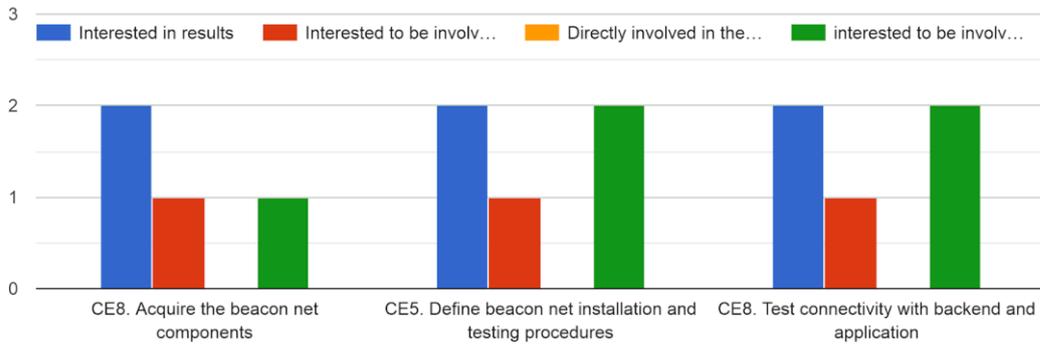
Pilot Backend Development - subtasks



Can you provide a time estimate for this phase?

- 1 month

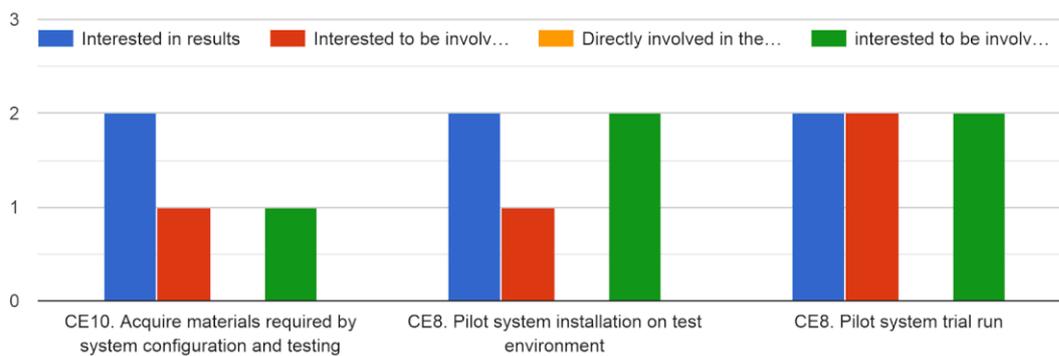
Beacon Net Development - subtasks



Can you provide a time estimate for this phase?

- 2 weeks
- 6 months

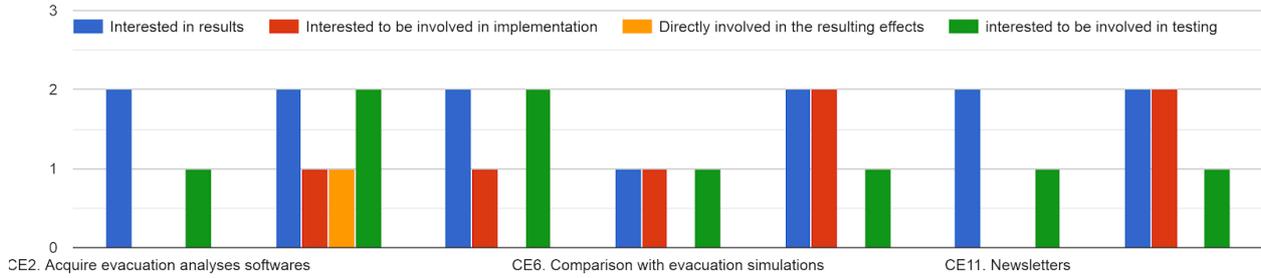
Configuration and Testing - subtasks



Can you provide a time estimate for this phase?

- 2 weeks

Experimental Testing - subtasks

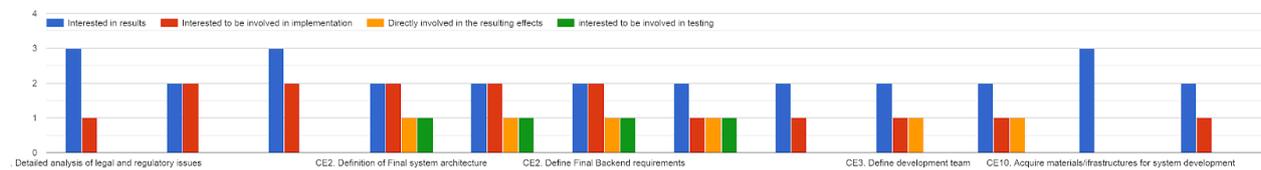


Can you provide a time estimate for this phase?

- 3 month

Phase3 – System Development

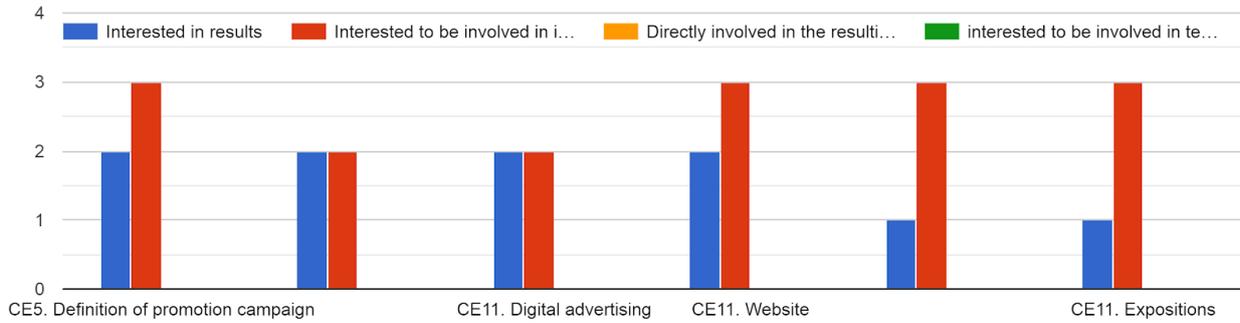
Final System Design - subtasks



Can you provide a time estimate for this phase?

- 6 month

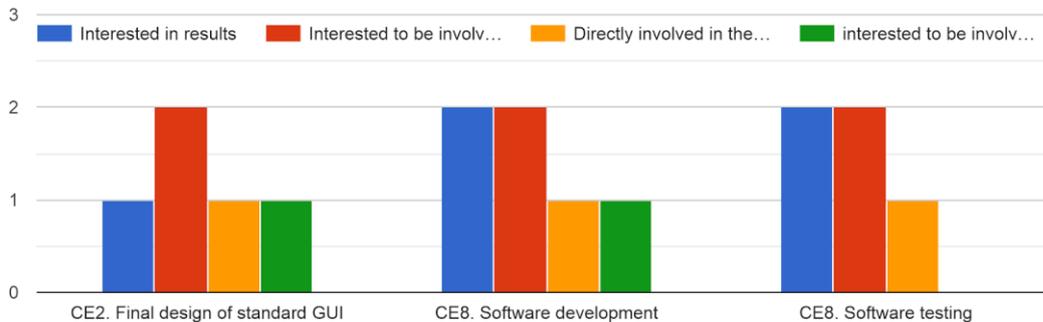
Commercial Placement - subtasks



Can you provide a time estimate for this phase?

- 6 month

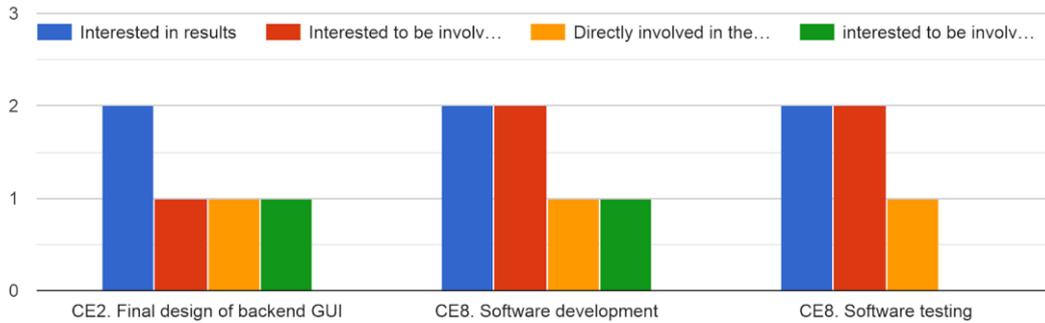
Mobile App Development - subtasks



Can you provide a time estimate for this phase?

- 9 month

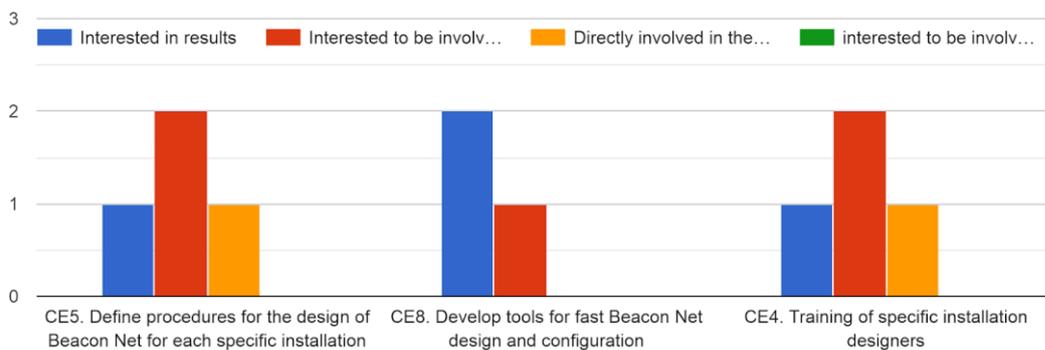
Backend Development - subtasks



Can you provide a time estimate for this phase?

- 9 month
- 18/24 months

Beacon Net Development - subtasks

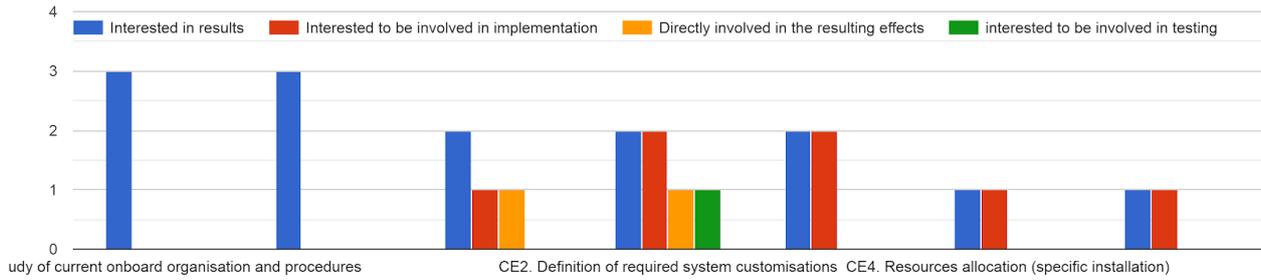


Can you provide a time estimate for this phase?

- 5 month
- 12 months

Phase 4 – Placement on the market

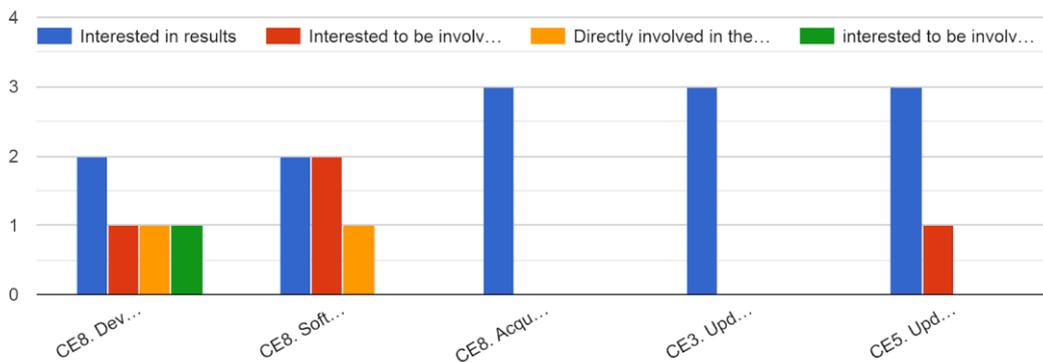
Data acquisition - subtasks



Can you provide a time estimate for this phase?

- 9 month
- 6 months

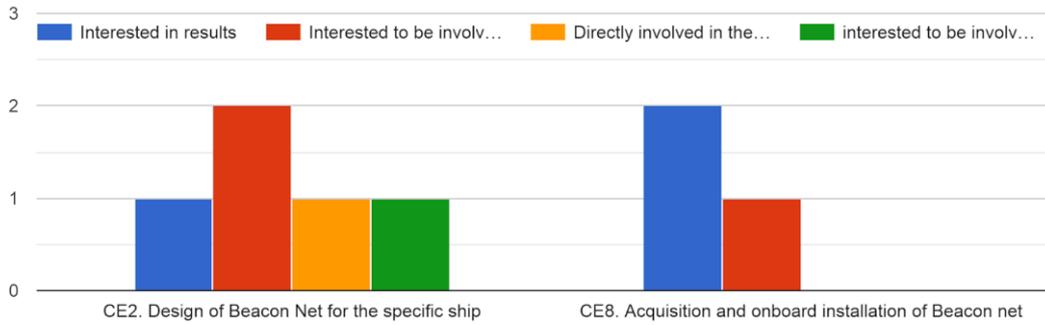
Applications customisation/integration - subtasks



Can you provide a time estimate for this phase?

- 5 month
- 6/12 months

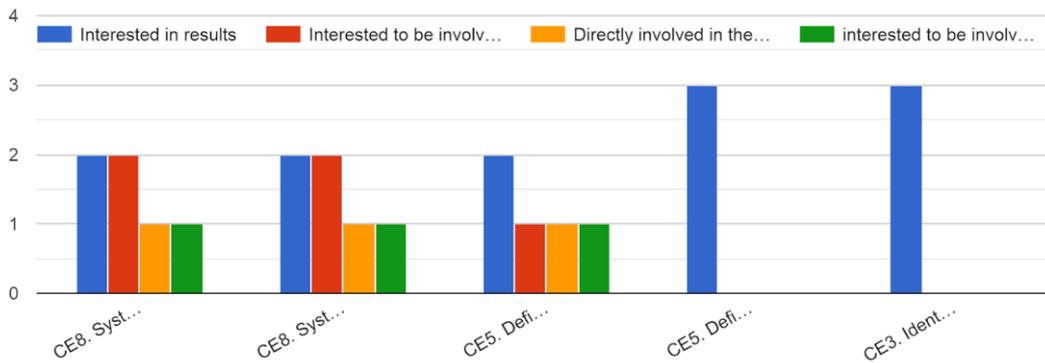
Beacon net installation - subtasks



Can you provide a time estimate for this phase?

- 2 month
- 6 months

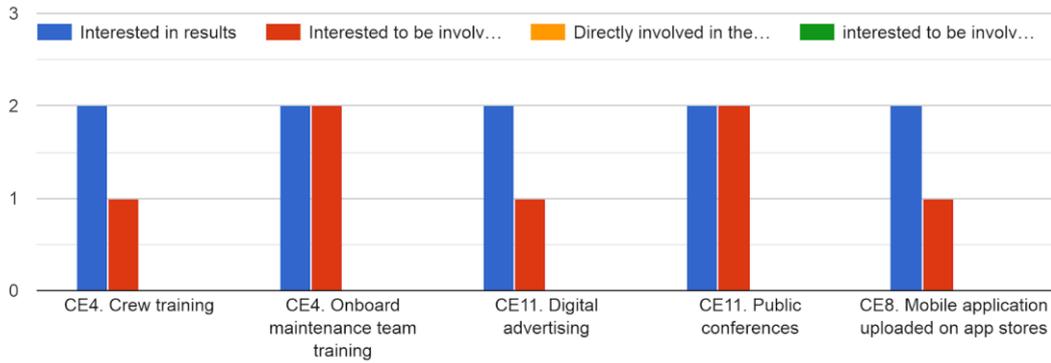
Onboard Configuration and testing - subtasks



Can you provide a time estimate for this phase?

- 1 month
- 6 months

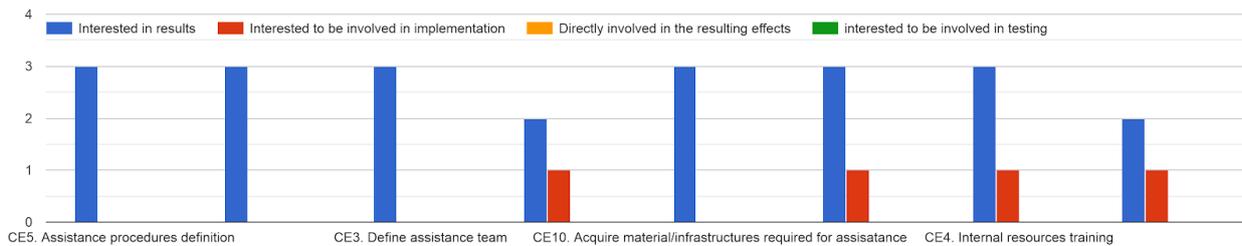
Starting system operation - subtasks



Can you provide a time estimate for this phase?

- 1 month
- 8/10 months

Assistance/Maintenance - subtasks



Can you provide a time estimate for this phase?

- 3 month
- 6 months

2.2 APP for data flows management of passengers (data integration for the development of new services for passengers)

Reference selected innovation: **APP for data flows management of passengers – Port of Rijeka Authority**

This Report analyzes the results of the “*Questionnaire Port / Vessel traffic management - data integration for the development of new services for passengers*” for the stakeholders involved.

The results were collected up to date 27th July 2020, date in which questionnaire was closed.

12 answers have been provided.

2.2.1 Description of the Pilot Action

Keywords: VTMIS, ICT, security, port, tracking.

Port/Vessel Traffic Management Systems (VTMIS) are specialized Information Systems aimed at performing real-time vessel tracking and status monitoring in order to better manage traffic inside port, river and coastal areas. VTMIS has both management and safety/security purposes and they are based on a sensor network and transponders to fast and secure localize and identify ships within the monitored area. VTMIS data streams generate a large amount of raw geo-data that can be stored for statistical analysis purposes, since they have a high potential in extracting new valuable information using special processing techniques. In many cases, VTMIS platforms are done by integrating already existing tracking and/or identification systems.

2.2.2 Stakeholders involved

Stakeholders involved belong to different fields (transport operators, shippers, service providers etc.).

12 answers have been provided. Below a list of some of the major contributors to the questionnaire results:

- Split Port Authority
- Liburnia Maritime Agency
- Safran
- Logistics/Chartering/Agency /Shipping

- Regional Development Agency of the Primorje-Gorski Kotar County-Gorski Kotar County
- Croatian Chamber of Economy-Rijeka County Chamber
- HŽ cargo
- Maersk
- Express d.o.o.

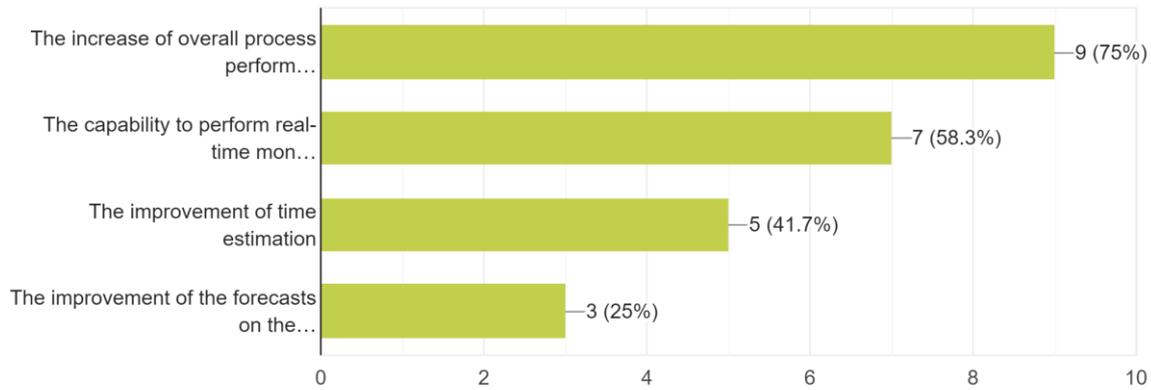
2.2.3 Results of the questionnaire

In order to reach a more immediate comprehension, answers are further analyzed and interpreted, as follows.

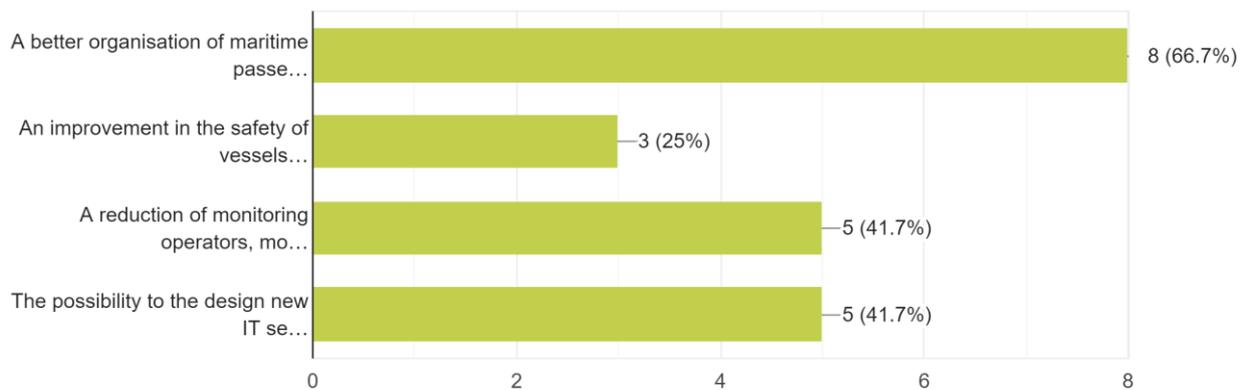
Section 1: benefits and risks related to the innovation

Q01

A: what benefits brought by the innovation do you think will give greater advantages to your business considering the relationships with the act... actors working in the passenger logistics sector?
12 responses

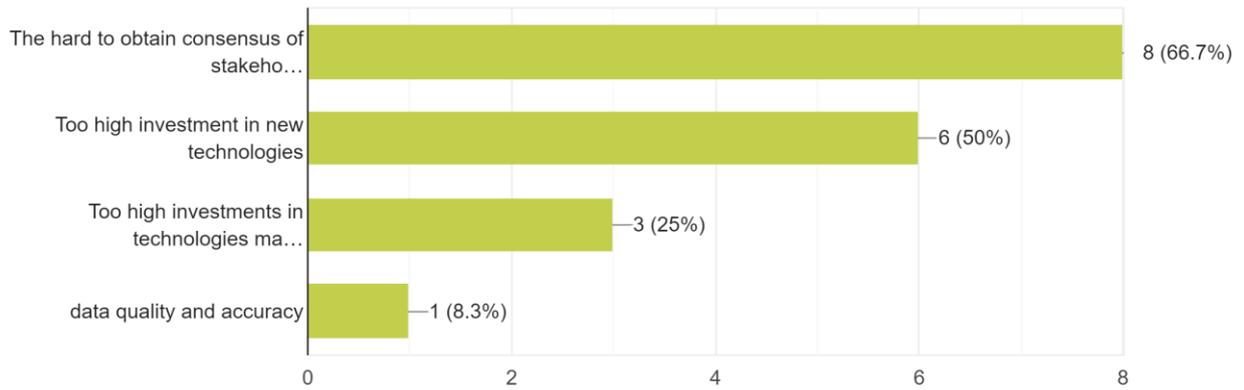


B: what new opportunities do you think the innovation will bring in the passenger logistics sector considering your operational context?
12 responses



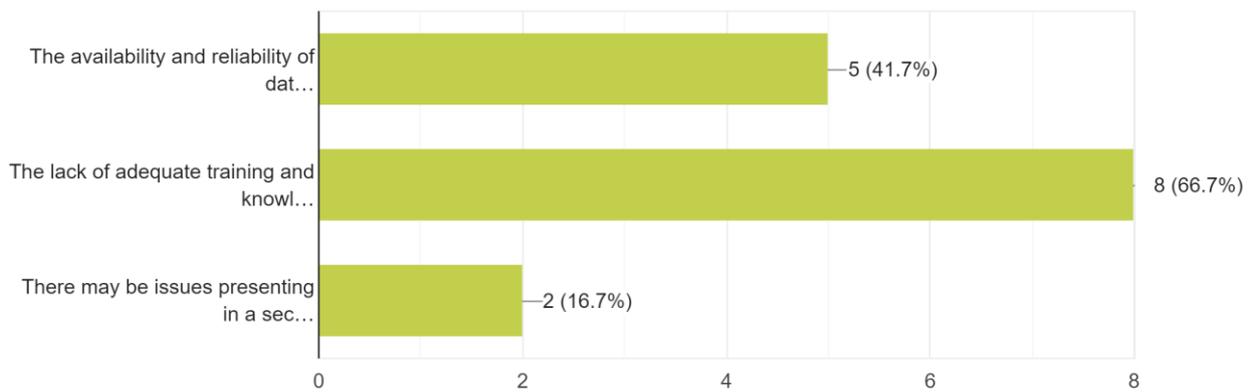
C: which innovation weaknesses do you think will likely make innovation implementation more difficult?

12 responses



D: what do you think will be the most concrete threats that likely make innovation deployment less effective?

12 responses

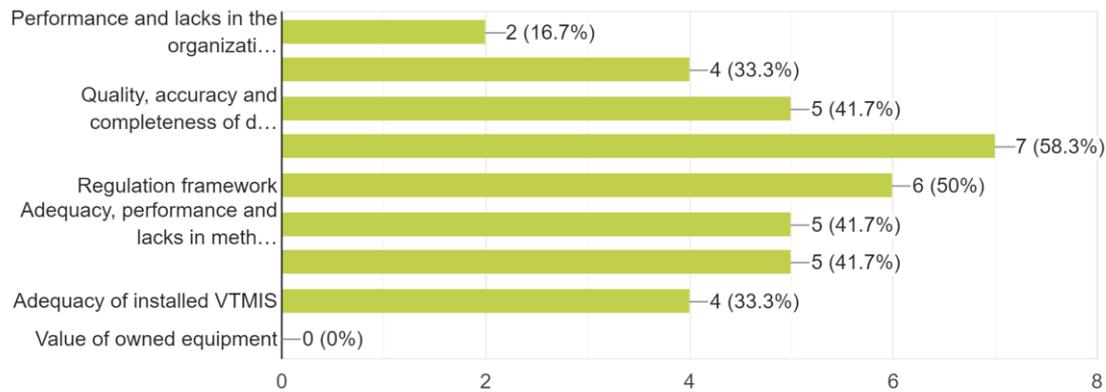


Section 2: needed actions for innovation deployment

Q01) Improvement of knowledge and awareness about internal assets and resources

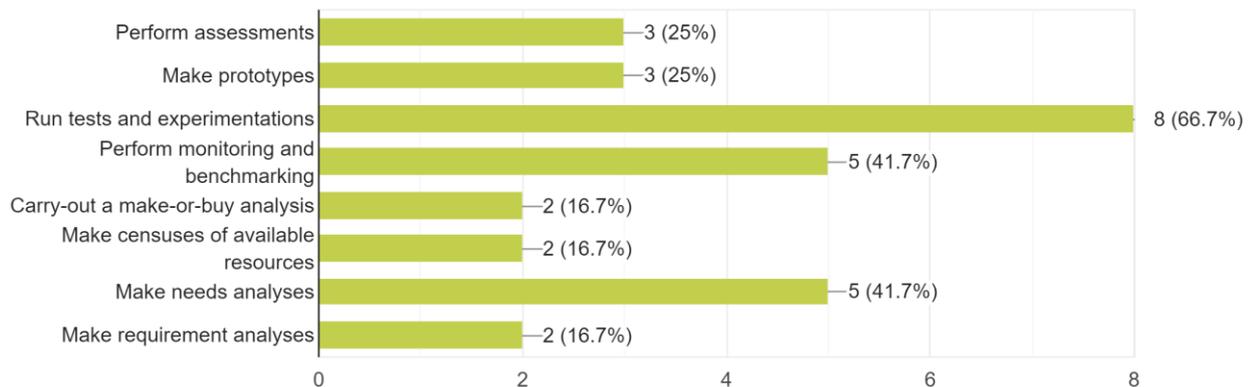
A: do you think there is the need to make specific analyses, test or assessments to better know and understand one or more of the following aspects in order to deploy the innovation?

12 responses



B: what do you think are the most effective type of actions to carry-out in order to achieve these objectives?

12 responses

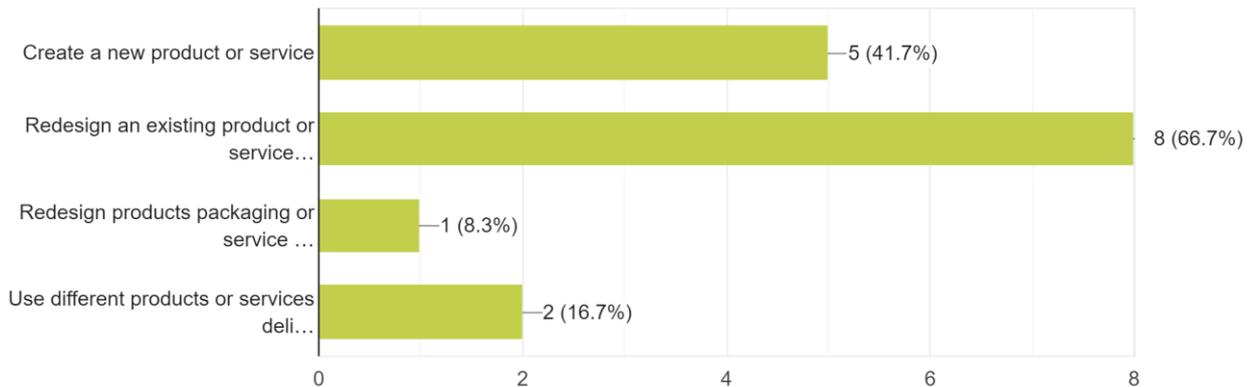


Q02) Adaptation and innovation of products and services

A: do you think you may need to change the specific features of some of your products or services in order to make your business complian...e reason why you think you need to change them?
12 responses

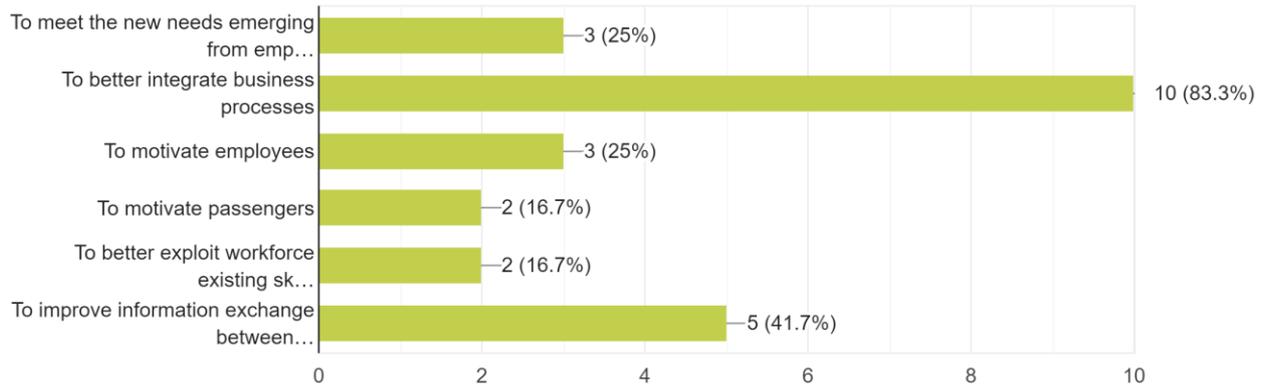


B: what do you think are the needed and/or most effective type of changes to make in order to improve products and services?
12 responses

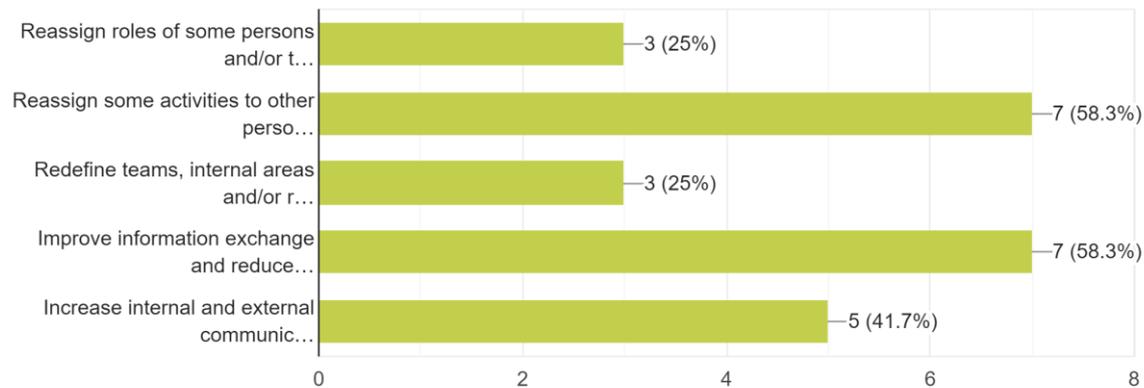


Q03) Organizational model improvement

A: do you think you may need to change something of your organizational model in order to make your business compliant with the innovation? What...e reason why you think you need to change them?
12 responses

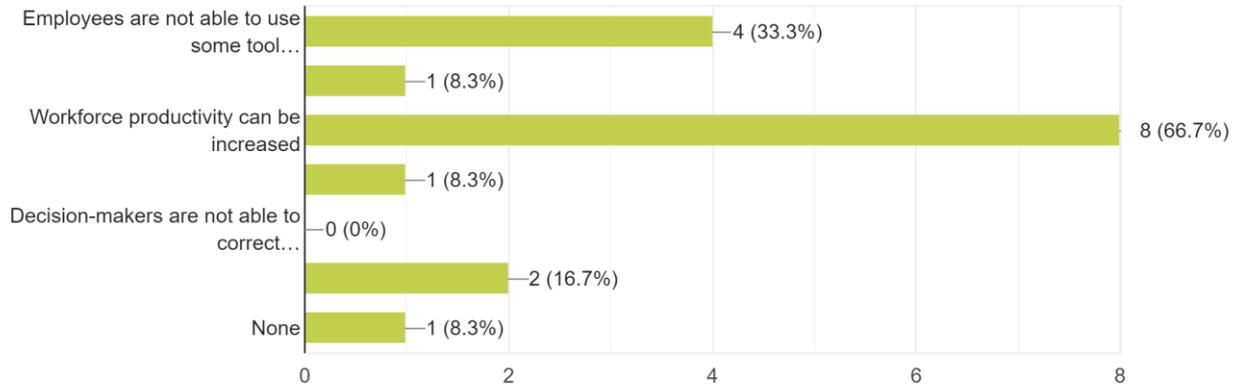


B: what do you think are the needed and/or most effective type of changes to make in order to improve your organization model?
12 responses

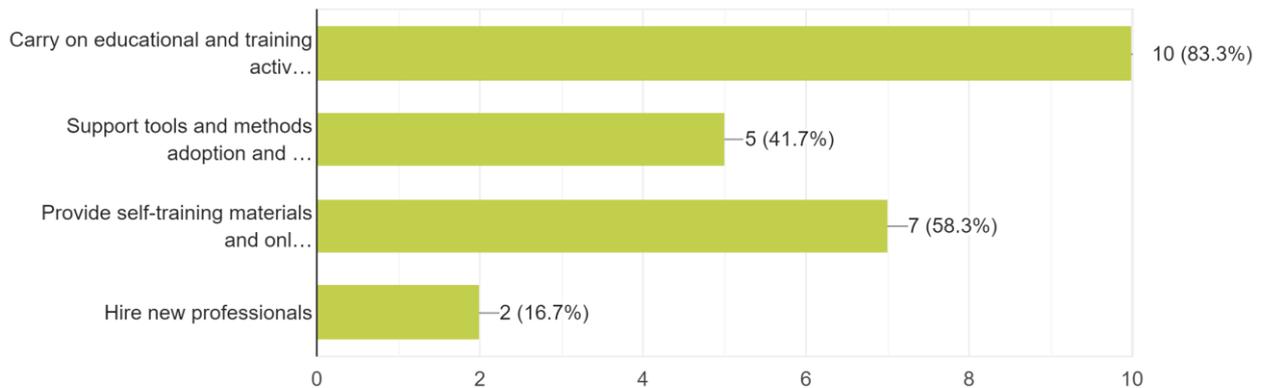


Q04) Employees' skills and capabilities improvement

A: do you think you may need to improve skills and capabilities of your employees or decision-makers in order to better deal with the in...ibilities inside your organization are not adequate?
12 responses



B: what do you think are the needed and/or most effective type of actions to carry-out in order to improve skills and capabilities within your organization?
12 responses



C: what do you think are the most critical lack of skills and capabilities that can limit your organization in dealing with the innovation implementation scenario?

n/a

Reluctance to adopt new processes and trends

organization of business, communication

support tools

High percentage of employees without interests in digital trends

-

N/A

Lack of professional tools that will integrate into the new system

None

Lack of knowledge and skills

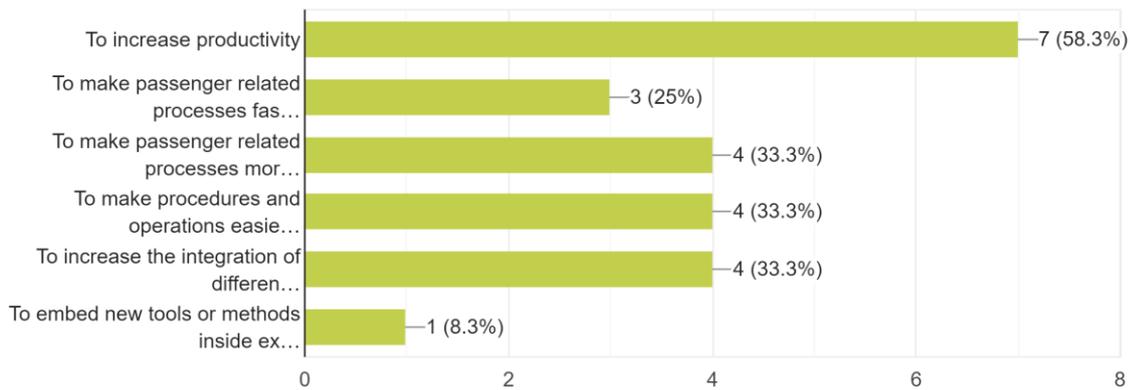
Limited digital and computer literacy

using new technologies

Q05) Processes and procedures optimization

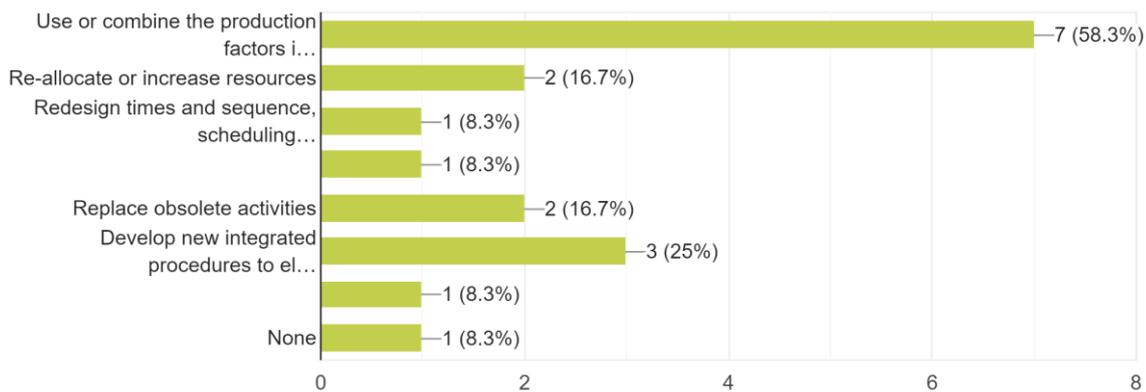
A: do you think you may need to modify your business processes or protocols and procedures in use within your organization to be more complian... the reasons why you may need to optimize them?

12 responses



B: what do you think are the needed and/or most effective type of actions to carry-out in order to improve skills and capabilities within your organization?

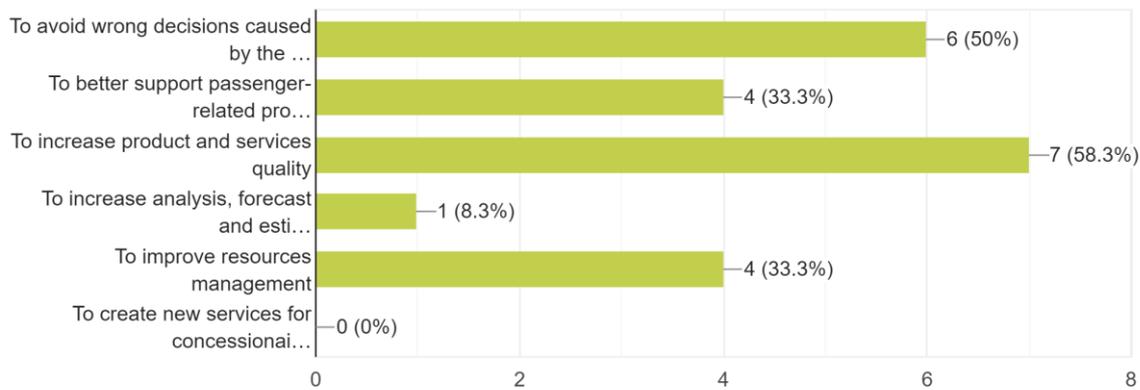
12 responses



Q06) Information assets improvement

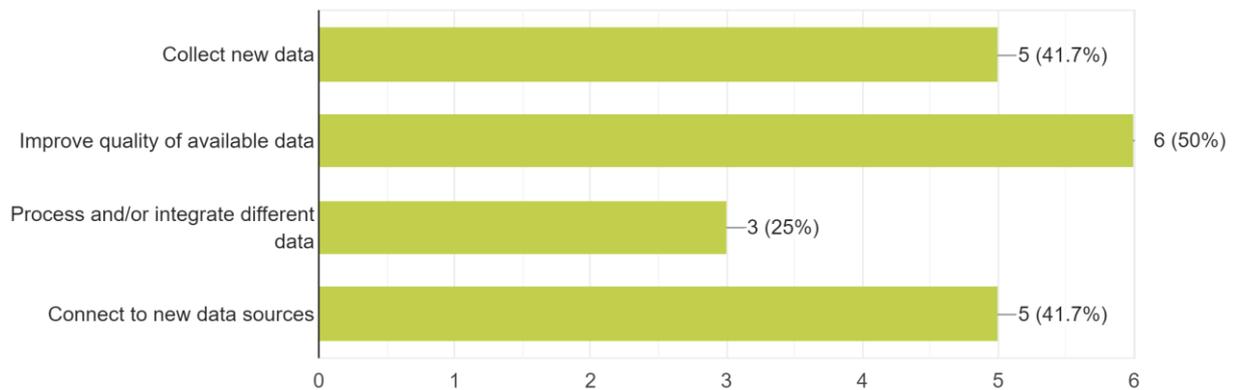
A: do you think you may need to improve the quality of information assets managed by your organization in order to gain more benefits from t...et more data or improve existing datasets quality?

12 responses



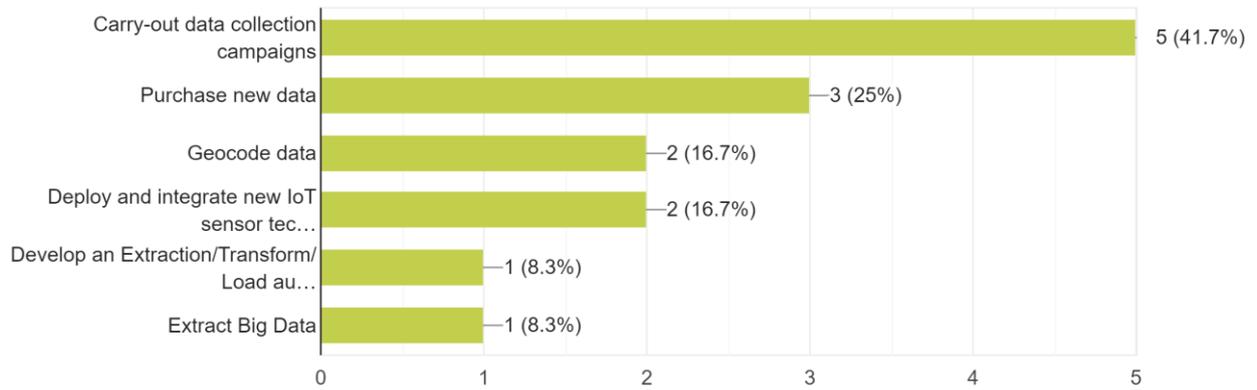
B: what kind of activity do you think you should carry-out to improve the quality of information assets managed by your organization?

12 responses



C: what do you think you should do to get the data you need or to improve data quality in your organization's business context?

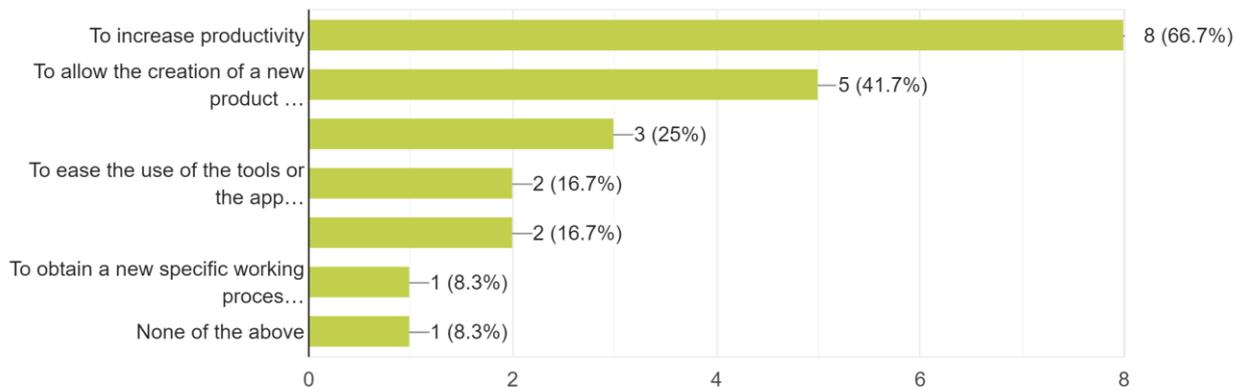
12 responses



Q07) Machinery and equipment improvement

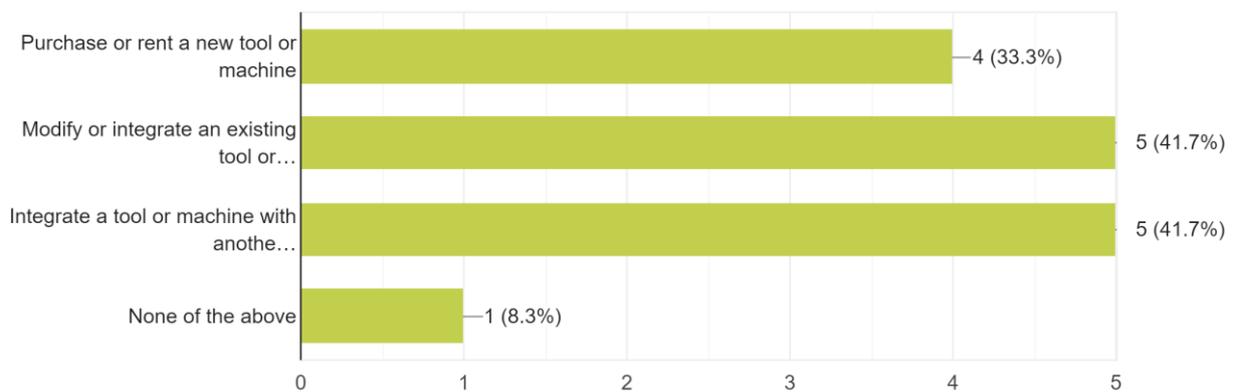
A: do you think you may need to improve other machinery and production equipment owned by your organization in order to gain more benefits fr... the functionalities of in-use machinery and tools?

12 responses



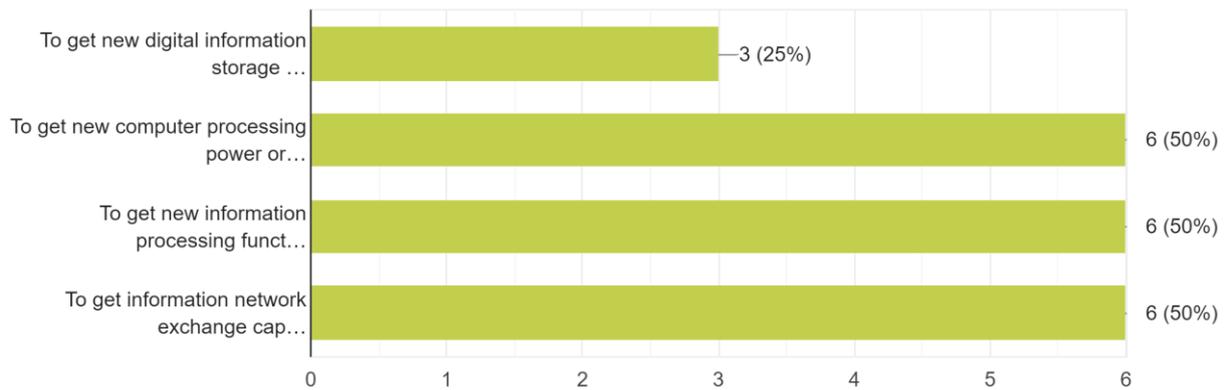
B: what kind of activities do you think you should carry-out in order to improve machinery and production equipment owned by your organization?

12 responses

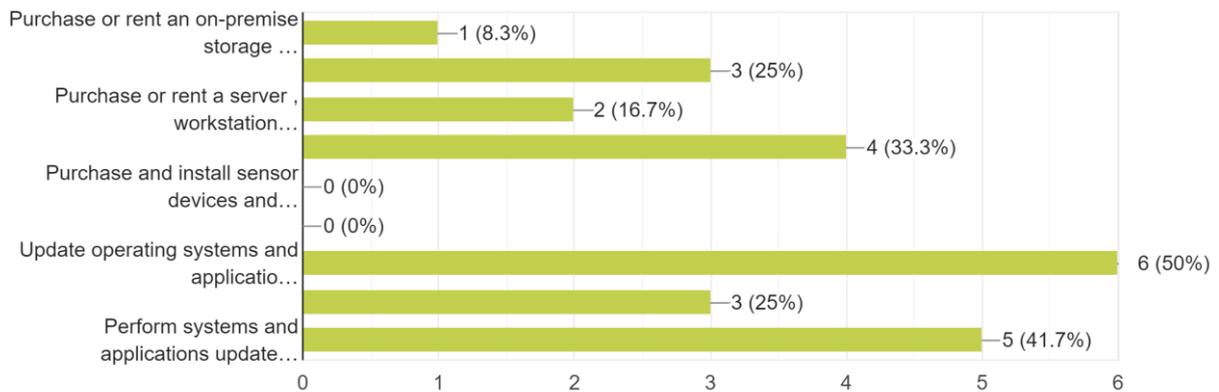


Q08) Information Technology IT infrastructure improvement

A: do you think you may need to improve your organizations' IT infrastructure in order to gain more benefits from the innovation deployment? What do ...w IT tools or to improve the ones already in-use?
12 responses



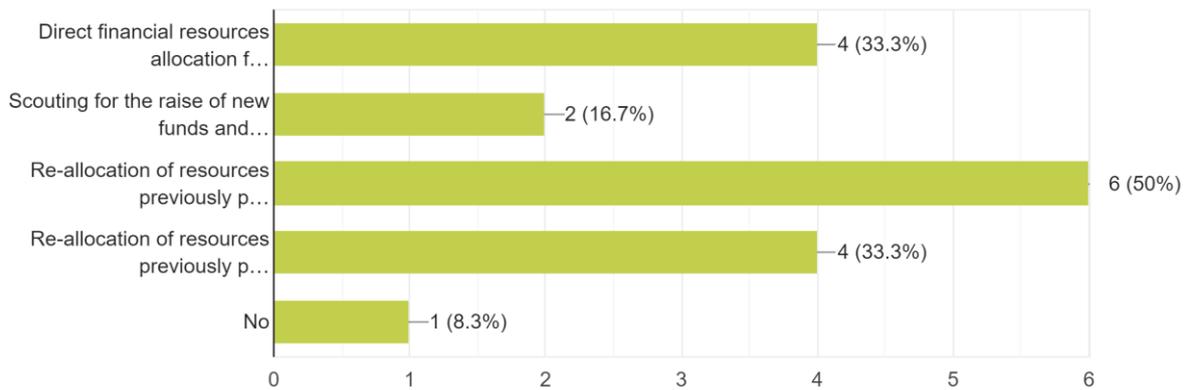
B: what kind of activities do you think you should carry-out in order to improve your organizations' IT infrastructure?
12 responses



Q09) Financial resources allocation

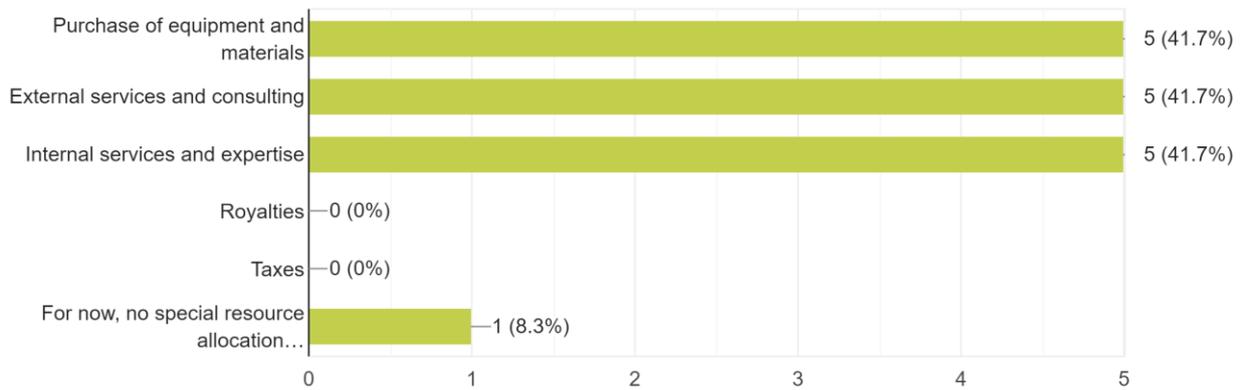
A: do you think your organization may need to allocate special resources to carry-out tasks or activities related to the innovation deployment, or ... financial operation do you think will be required?

12 responses



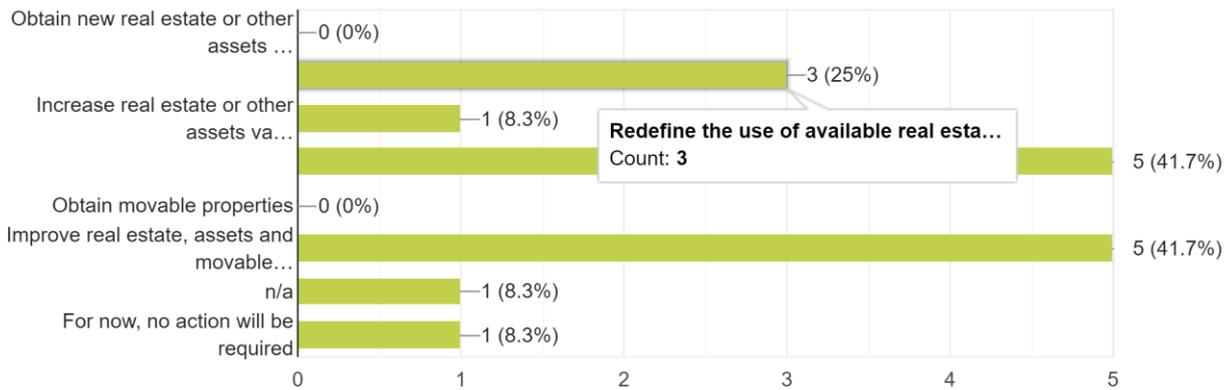
B: what kind of tasks do you think may require special resource allocation or re-allocation?

12 responses



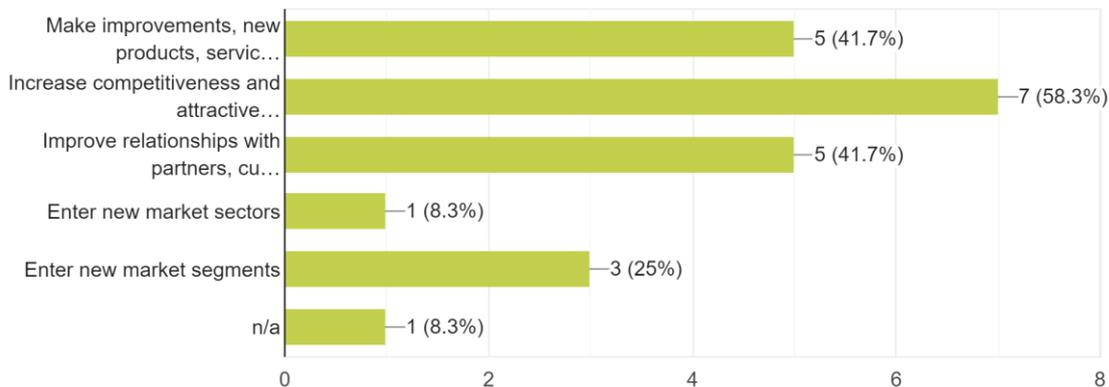
Q10) Goods and real estate

A: do you think your organization may need to obtain special goods or real estate to carry-out tasks or activities related to the innovation deploy...What kind of actions do you think will be required?
12 responses



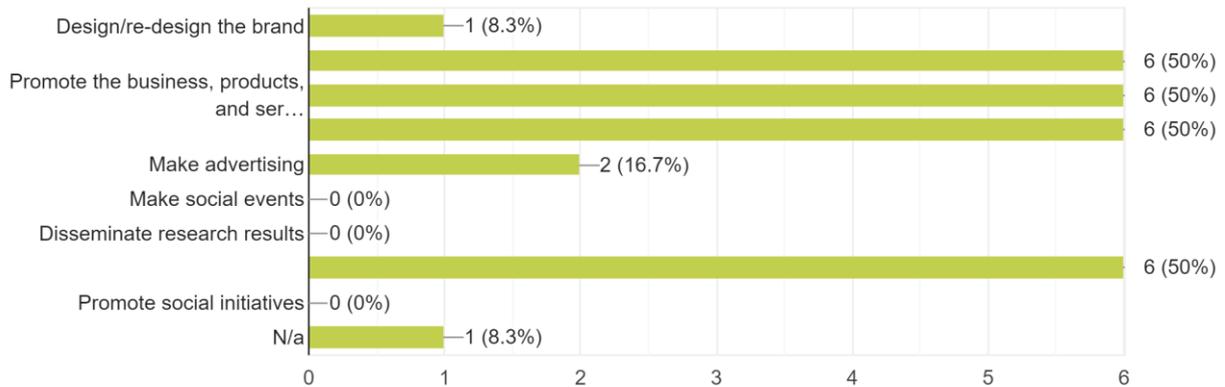
Q11) Corporate image

A: do you think there is the need to improve your organization's corporate image in order to better exploit the benefits of the innovation deployment?...u think are the main goals to improve your image?
12 responses



B: what actions/strategies do you think may be better to improve your corporate image in the innovation deployment scenario?

12 responses



Q12) Innovation impact assessment

A: Which aspects of the innovation are of particular interest to you?

N/a

Data acquisition and data analysis
digitalization

Create a new product or service

Remote access and monitoring

New IT technologies and human resources

/

Thermal and night vision

Data availability since it can exactly pinpoint every small vessel or other vehicle present or approaching the passenger terminal.

Promotion of companies which are members of CCE

Higher employee per area efficiency

the ones connected with multimodal transport

B: Which scenario would be most feasible to deploy?

n/a

New image and better service for the clients

Promote the business, products, and service using social media

Market research

Physical installation and notification

New/modified IT technologies

/

Cloud solution with easy access by all stakeholders

It is not possible to assess which scenario would be most feasible to deploy, but it would be effective to have available data on public transport and on vessels or other vehicles present or approaching the passenger terminal.

Depends on stakeholders interests

Mobile phones platform application deployment with good and easy to reach documentation

Adaptation and innovation of products and services

C: What benefits would that achieve? What would be the most valuable results?

n/a

Better image and easier internal decisions

faster efficiency in everything

Make improvements, new products, services, and features known to the public

Better accuracy and faster data acquisition

effective business, better corp btw partners and customers

/

More efficient and easier vision during nigh and low visibility conditions

Data availability, Timely information

Cooperation and common interests of stakeholders, promotion and common result

Easy to access and always available service regardless where you are physically

better service

D: Can you think of the agenda beyond the deployment? How would your operations change? What would be the main changes in your strategy?

/

n/a

Better workload and efficiency

less work, more money

Approach of employees to new business processes

There would be imminent process changes and redefinition of the tasks beyond stakeholders

better communications with customers, better understanding of internal and external factors, better IT knowledge, faster business procedure

We could provide more efficient and faster service to the customers

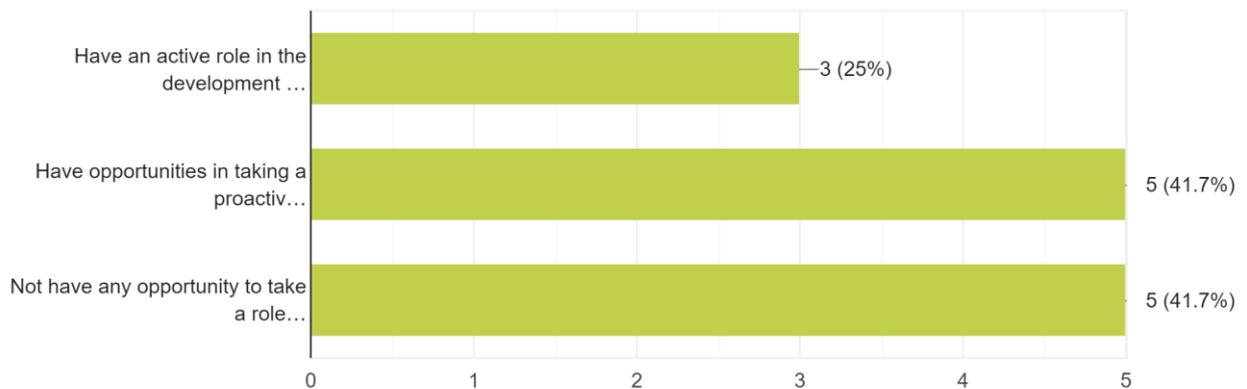
For best result communication with the companies is necessary

Always available and easy to reach data and service

it's hard to say at this moment

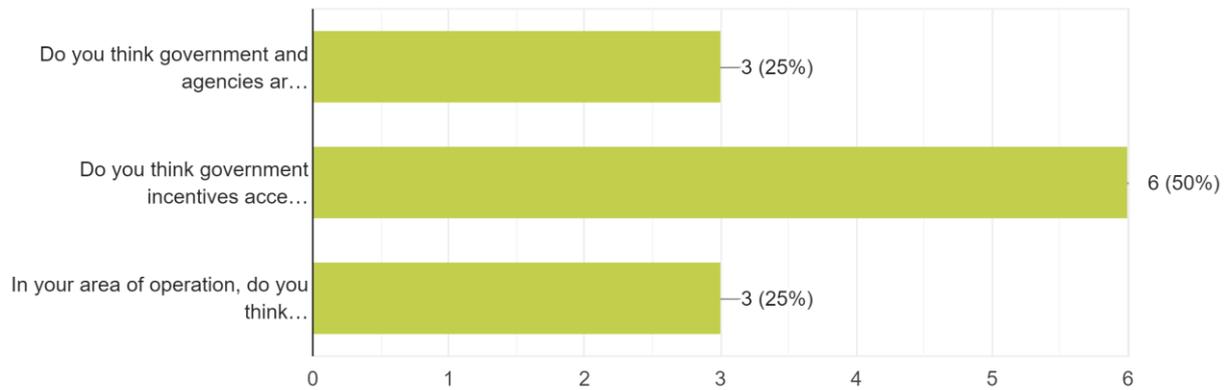
Q13) Policy scenario

A: Regarding the policy scenario in the context of the innovation deployment, do you organization:
 12 responses



B. Regarding cyber security and privacy challenges:

12 responses

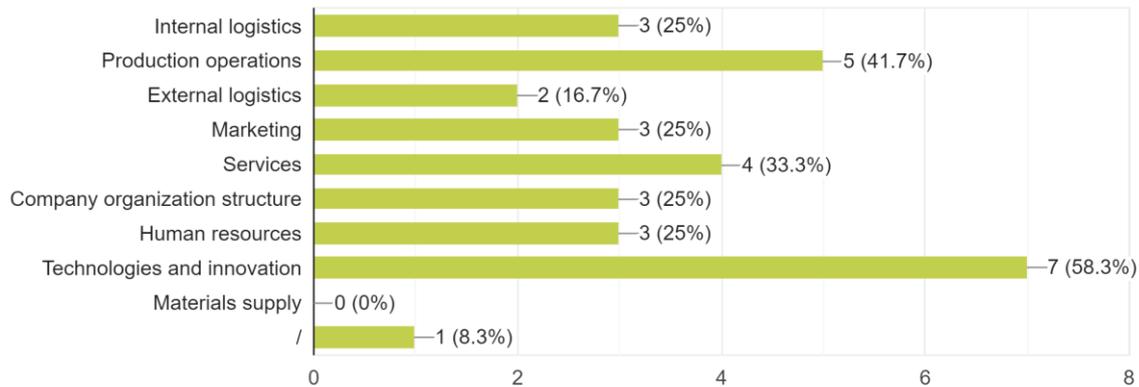


What kind of policies and legislations are important for stimulating innovation?

- n/A
- Services
- develop. , economic and legal policy
- /
- Smart specialisation strategy
- Effective and fast legislation

C. In your area of operation, which type of value chain do you think are being supported by economic policies?

12 responses



D. What are impediments to free and fair competition within the maritime passenger traffic sector?

/

n/a

Fair and transparent incentives

bad connection

Services and Marketing

Clear and precise rules that allows all the stakeholders to be involved

-

Open standards and publicly available information easy to get too

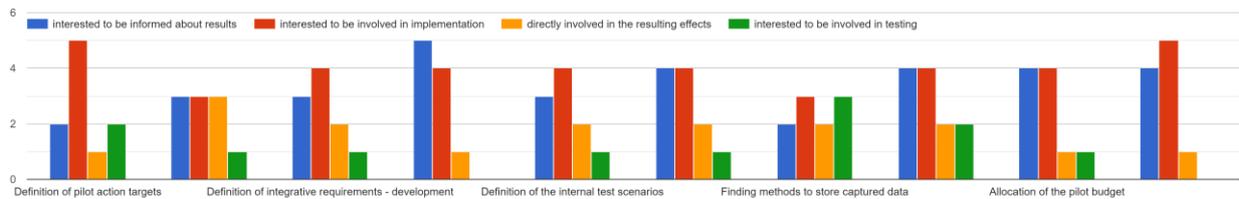
Barriers to market access and regulatory interventions

Transparency with consistent and stable regulatory system

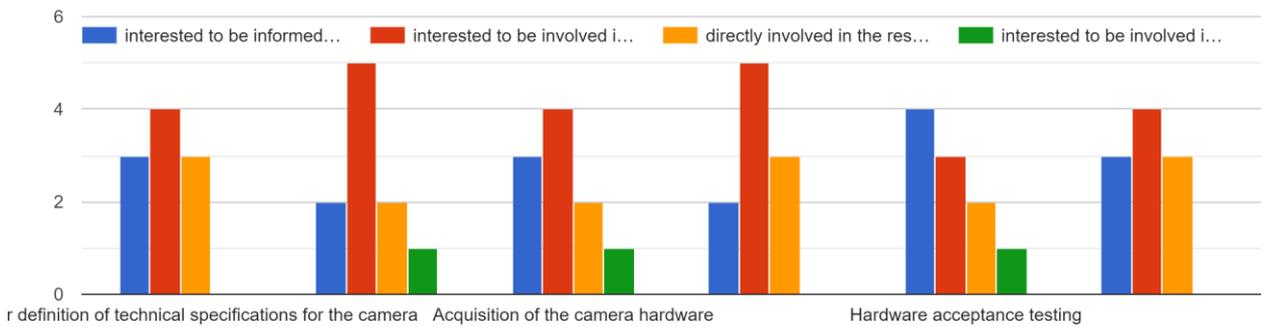
not familiar

Section 3: innovation deployment roadmap

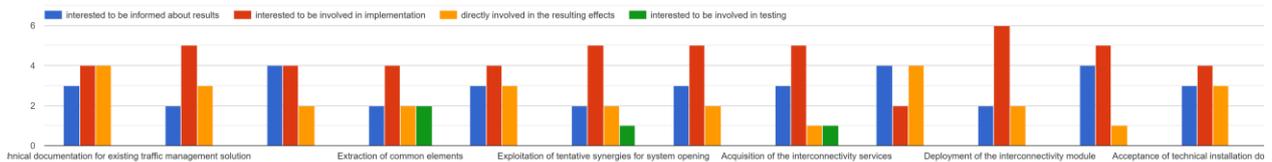
Pilot Planning



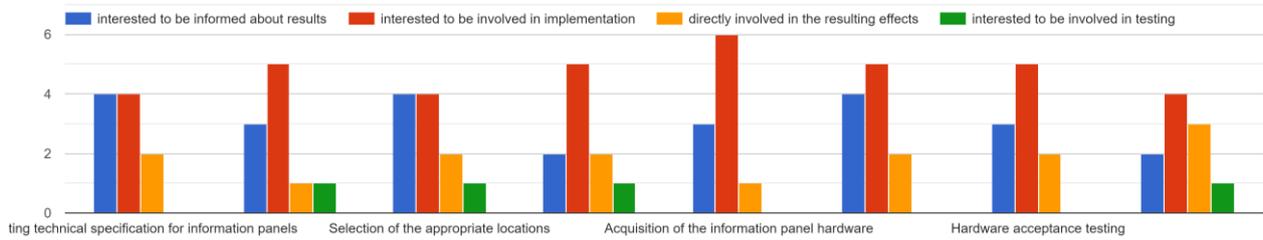
Pilot Technical Equipment Installation



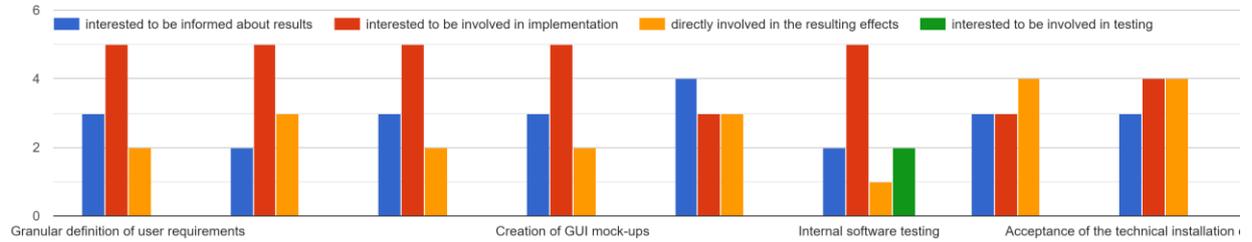
Pilot Integrative Development



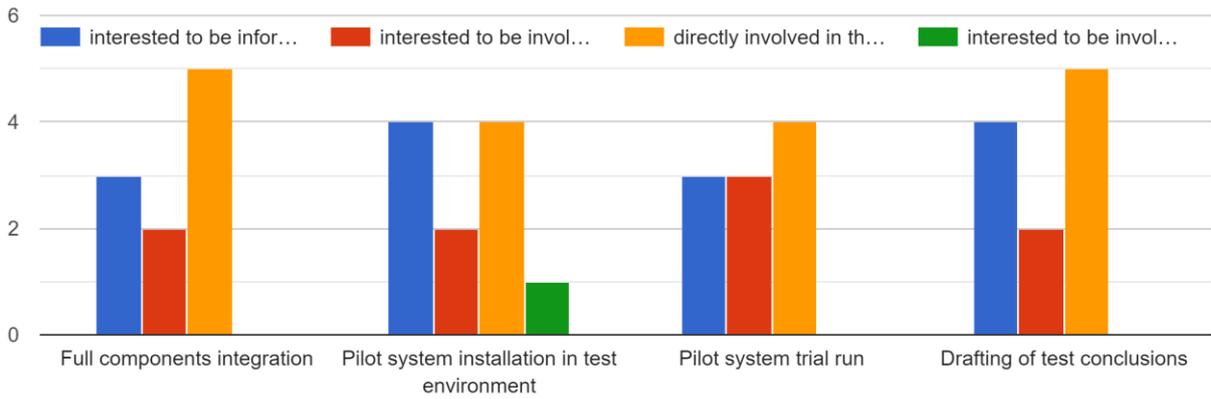
Information panel deployment



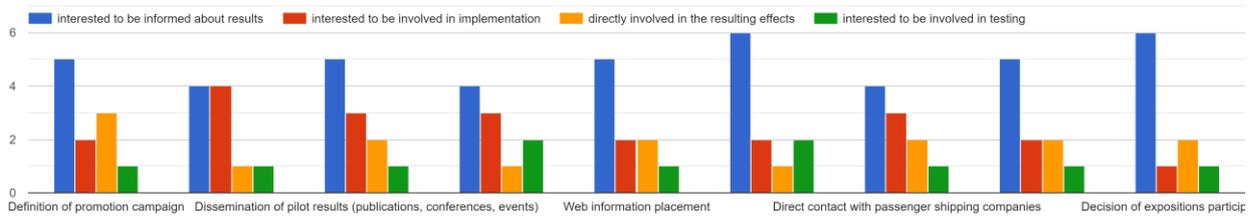
Deployment of end users (passengers) information tools



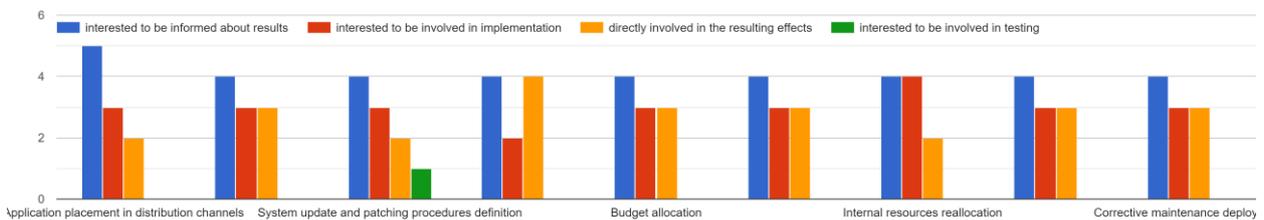
Configuration and Testing



Post-project activities



Commencing with operative system exploitation and maintenance



2.3 Digitalization of access control as a prerequisite for integration with the national PCS in Port of Šibenik

Reference selected innovation: Implementation of digital access control – Port of Šibenik Authority

This Report analyzes the results of the “*Innovative solution for access control*” for the stakeholder involved.

The results were collected up to date 27th July 2020, date in which questionnaire was closed.

15 answers have been provided.

2.3.1 Description of the Pilot Action

Keywords: PCS, ISPS, digital, access, passengers

Description: Creation of a national PCS has been ongoing as of beginning of 2018., and should be completed by the end of 2020, to be handed over to particular local Port Authorities for adjustment to local realities and requirements. The PCS package does not have a dedicated access control module suitable for passenger flow oversight. As a part of the pilot, automated digital system in line with ISPS, other port security rules and current access regulations will be developed, introducing innovative solutions with all applicable features and integrations for data submission and permits issuing and processing in order to grant granular access and achieve control over identified passenger target group stakeholders up to the level of statistical data processing.

2.3.2 Stakeholders involved

Stakeholders involved belong to different fields (transport operators, shippers, service providers etc.), identified during preliminary analysis.

15 answers have been provided. Below a list of some of the major contributors to the questionnaire results:

- Autotransport d.d.
- Catamaran line d.o.o.
- Inter cruises Croatia

- Tour Operator
- Oat travel/ Grand Circle
- Intermodal Transport Cluster
- Stari Velim d.o.o.
- Port Authority of Sibenik-Knin County
- Luka Šibenik (Port of Sibenik)
- Marinetek Adriatic
- Petrokemija d.d., tvornica gnojiva
- Adriatic DMC d.o.o.
- Pražen putovanja d.o.o.
- HŽ Putnički prijevoz d.o.o.
- G&V Line Iadera

2.3.3 Results of the questionnaire

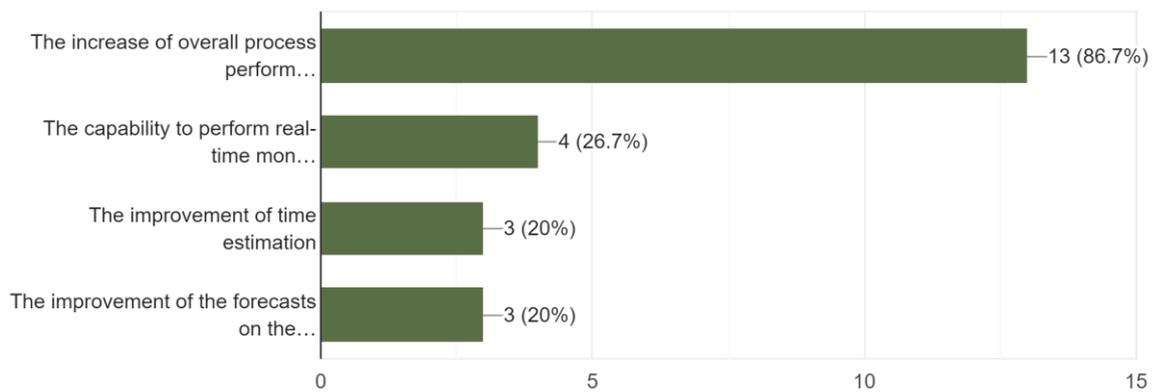
In order to reach a more immediate comprehension, comprehensive analysis of the results along with interpretation is enclosed.

Section 1: benefits and risks related to the innovation

Q01

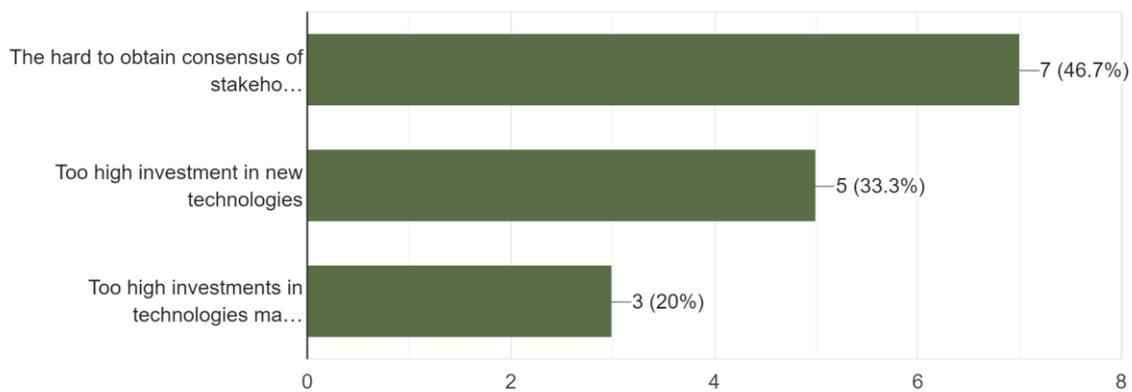
A: what benefits brought by the innovation do you think will give greater advantages to your business considering the relationships with the act... actors working in the passenger logistics sector?

15 responses



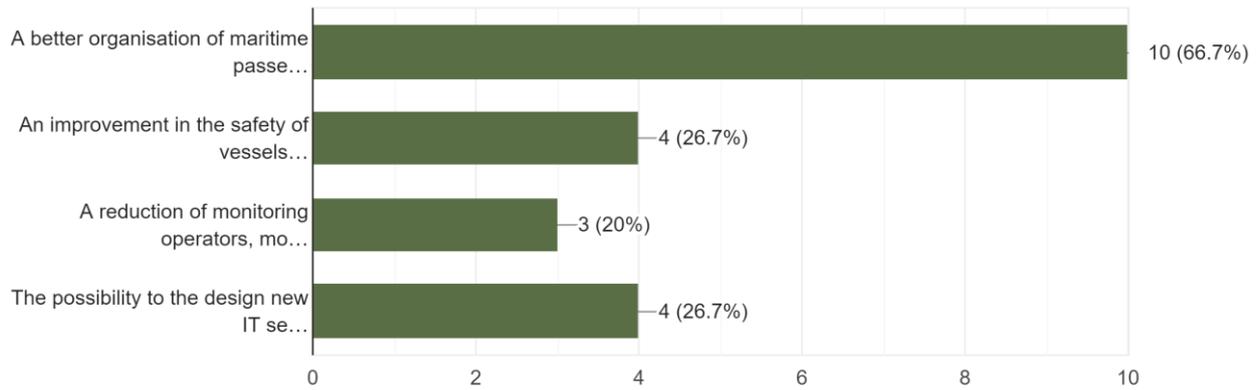
C: which innovation weaknesses do you think will likely make innovation implementation more difficult?

15 responses



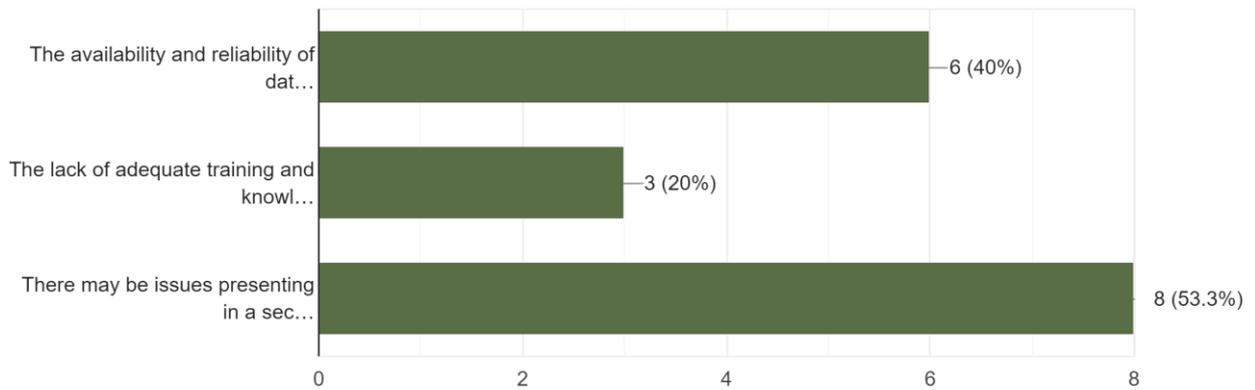
B: what new opportunities do you think the innovation will bring in the passenger logistics sector considering your operational context?

15 responses



D: what do you think will be the most concrete threats that likely make innovation deployment less effective?

15 responses

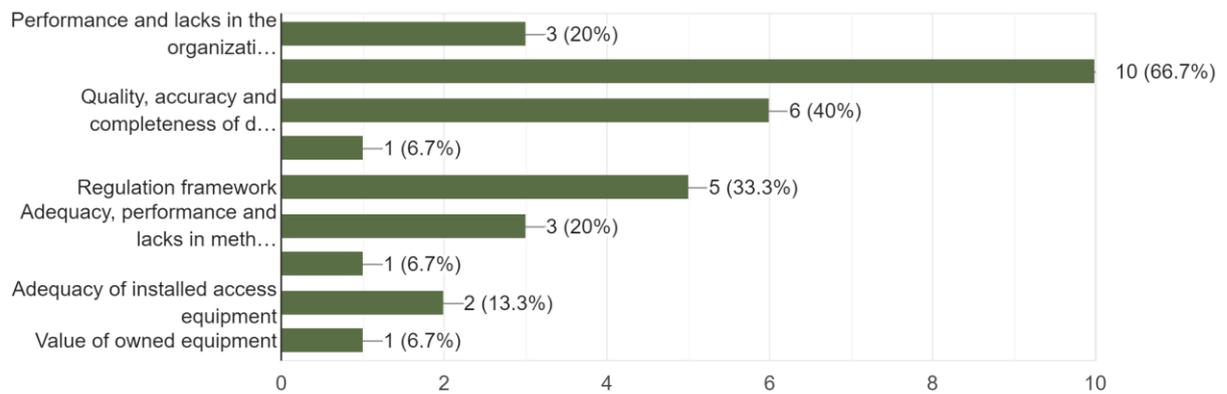


Section 2: needed actions for innovation deployment

Q01) Improvement of knowledge and awareness about internal assets and resources

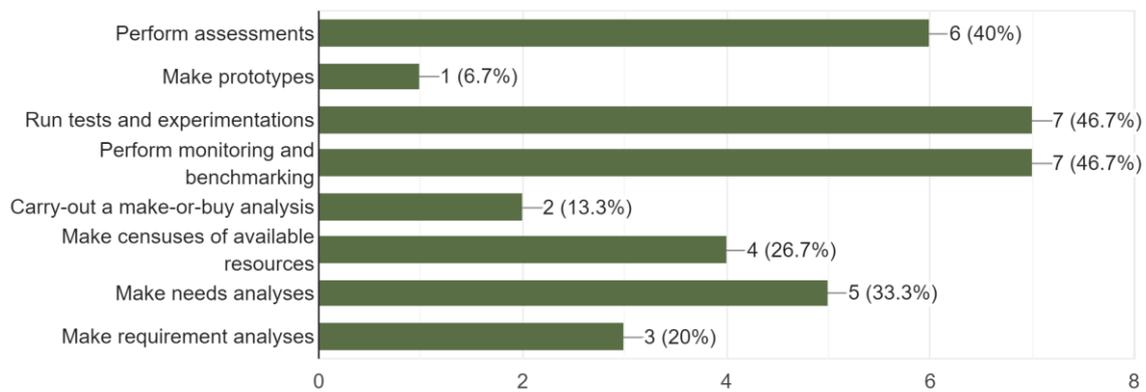
A: do you think there is the need to make specific analyses, test or assessments to better know and understand one or more of the following aspects in order to deploy the innovation?

15 responses



B: what do you think are the most effective type of actions to carry-out in order to achieve these objectives?

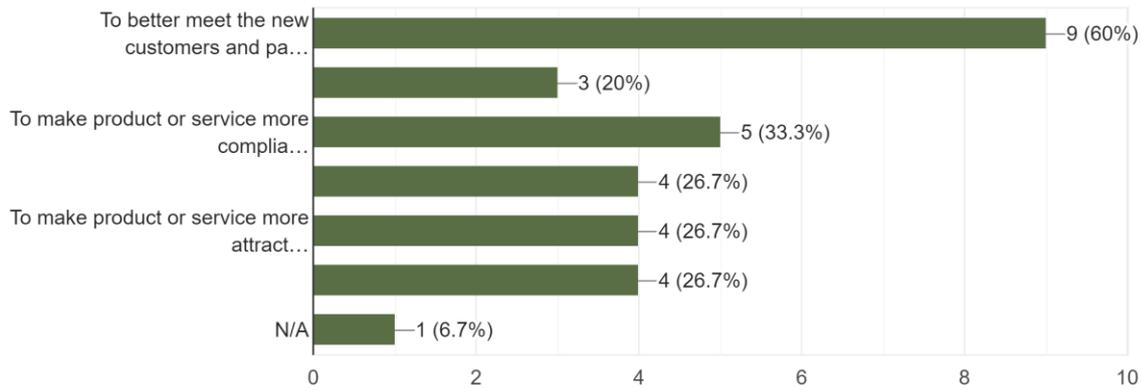
15 responses



Q02) Adaptation and innovation of products and services

A: do you think you may need to change the specific features of some of your products or services in order to make your business complian...e reason why you think you need to change them?

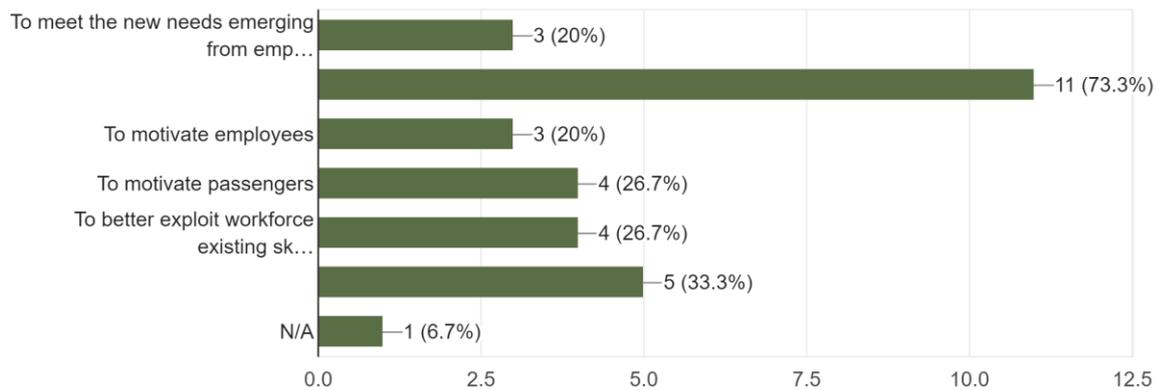
15 responses



Q03) Organizational model improvement

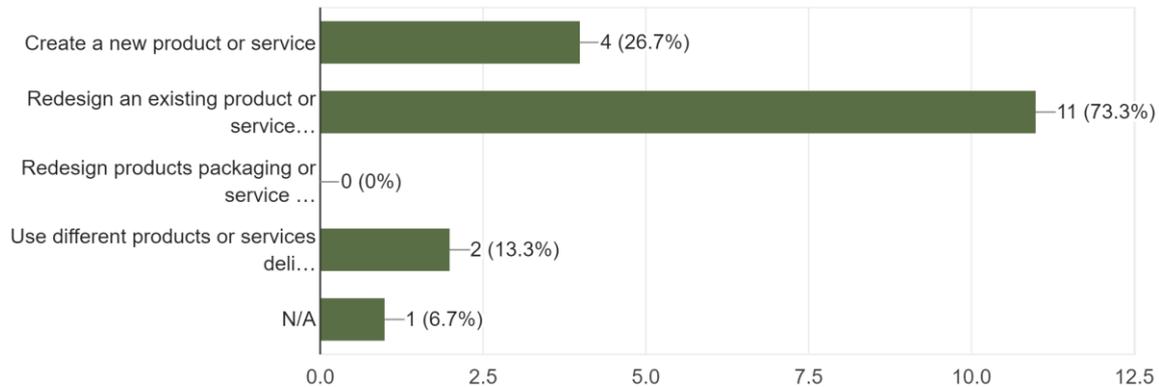
A: do you think you may need to change something of your organizational model in order to make your business compliant with the innovation? Wha...e reason why you think you need to change them?

15 responses



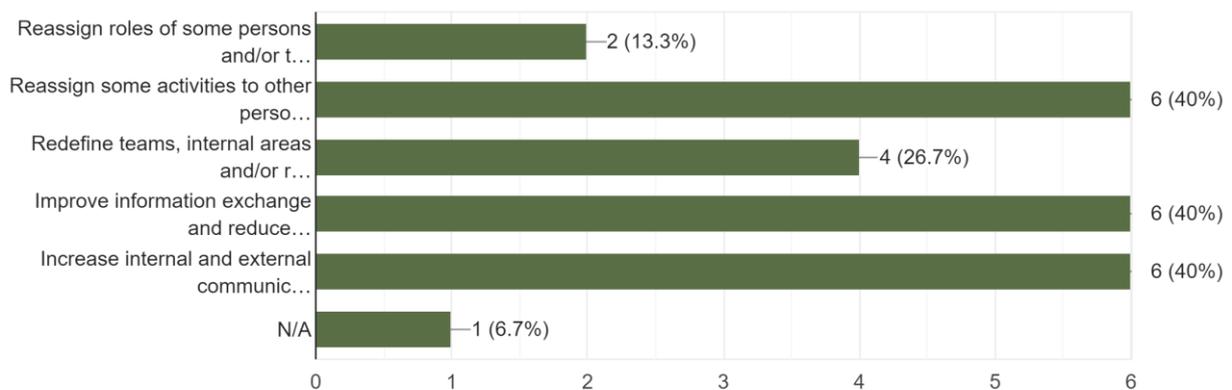
B: what do you think are the needed and/or most effective type of changes to make in order to improve products and services?

15 responses



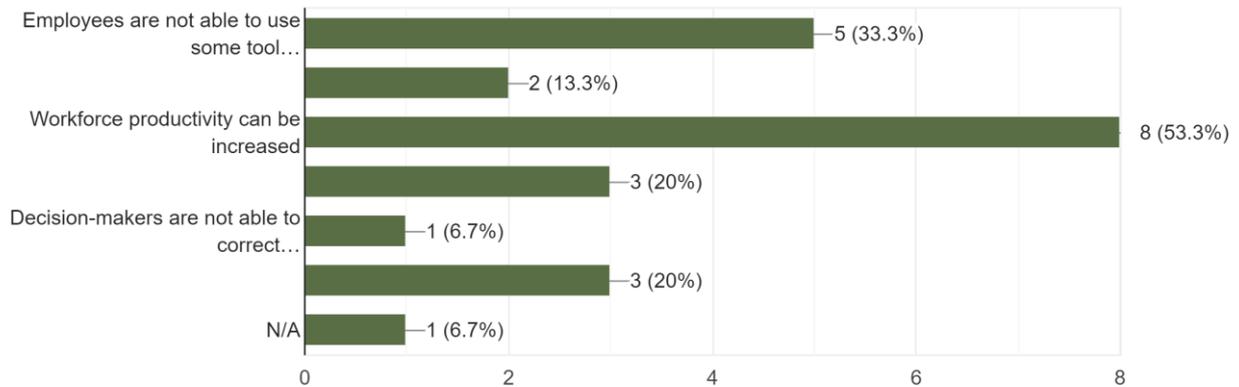
B: what do you think are the needed and/or most effective type of changes to make in order to improve your organization model?

15 responses

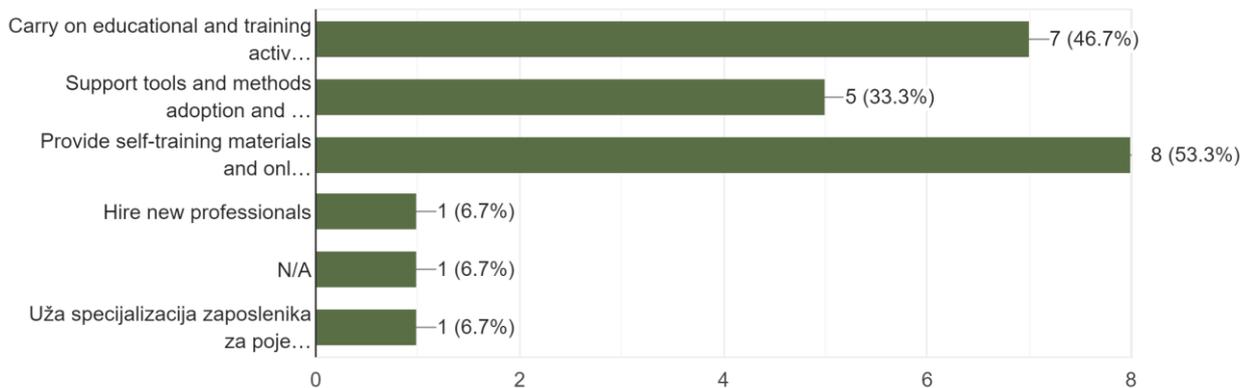


Q04) Employees' skills and capabilities improvement

A: do you think you may need to improve skills and capabilities of your employees or decision-makers in order to better deal with the in...ibilities inside your organization are not adequate?
15 responses



B: what do you think are the needed and/or most effective type of actions to carry-out in order to improve skills and capabilities within your organization?
15 responses



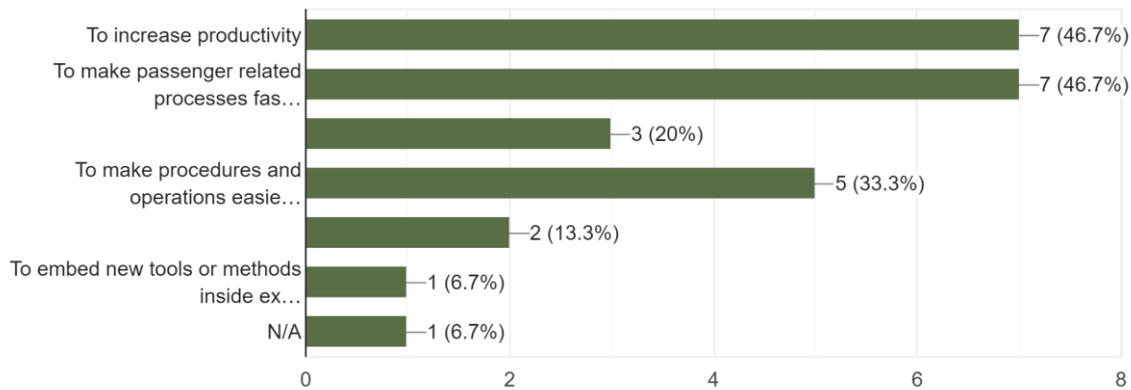
C: what do you think are the most critical lack of skills and capabilities that can limit your organization in dealing with the innovation implementation scenario?

N/A
aaabbbacccc

We will need a special education of the new innovation
 no
 Lack of educational and training activities for employees and decision-makers.
 Insufficient quality of employees and decision-makers
 -
 IT

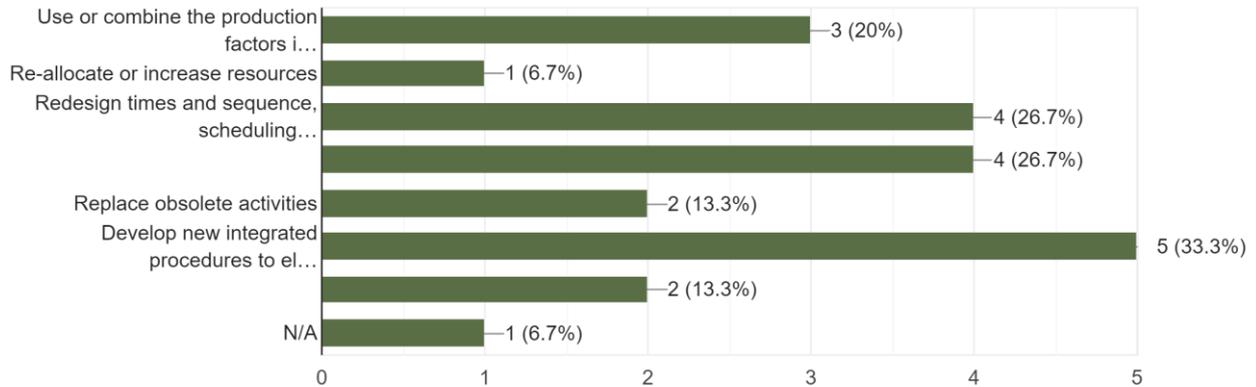
Q05) Processes and procedures optimization

A: do you think you may need to modify your business processes or protocols and procedures in use within your organization to be more complian... the reasons why you may need to optimize them?
 15 responses



B: what do you think are the needed and/or most effective type of actions to carry-out in order to improve skills and capabilities within your organization?

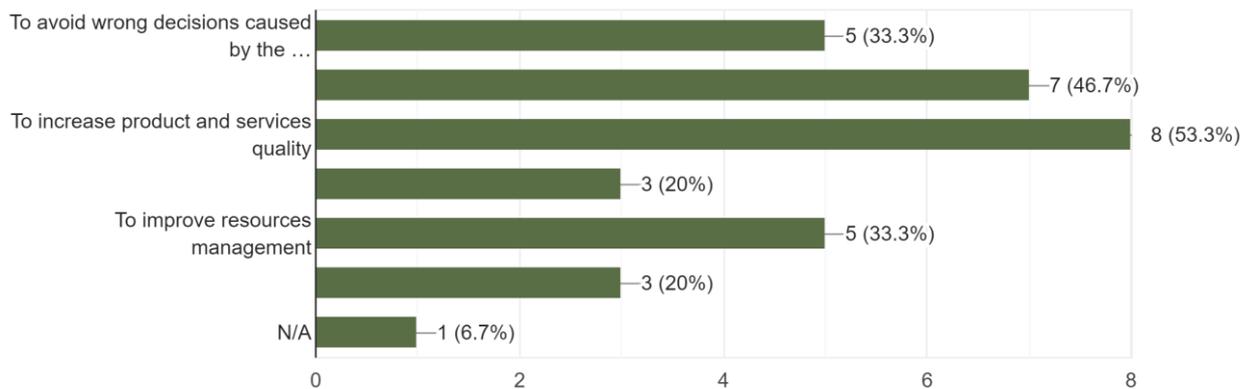
15 responses



Q06) Information assets improvement

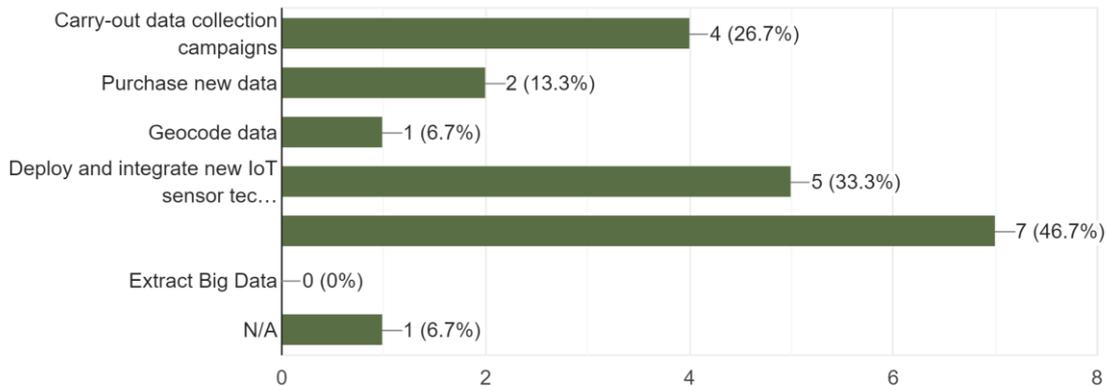
A: do you think you may need to improve the quality of information assets managed by your organization in order to gain more benefits from t...et more data or improve existing datasets quality?

15 responses



C: what do you think you should do to get the data you need or to improve data quality in your organization's business context?

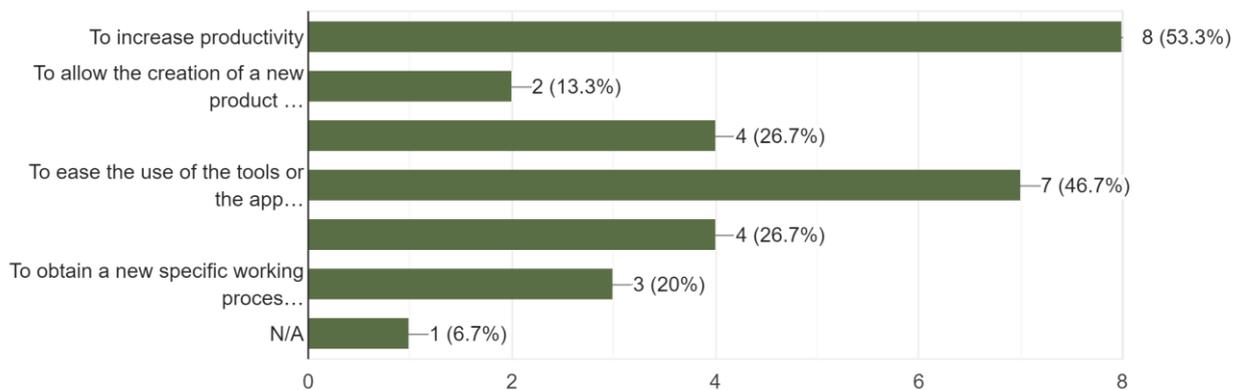
15 responses



Q07) Machinery and equipment improvement

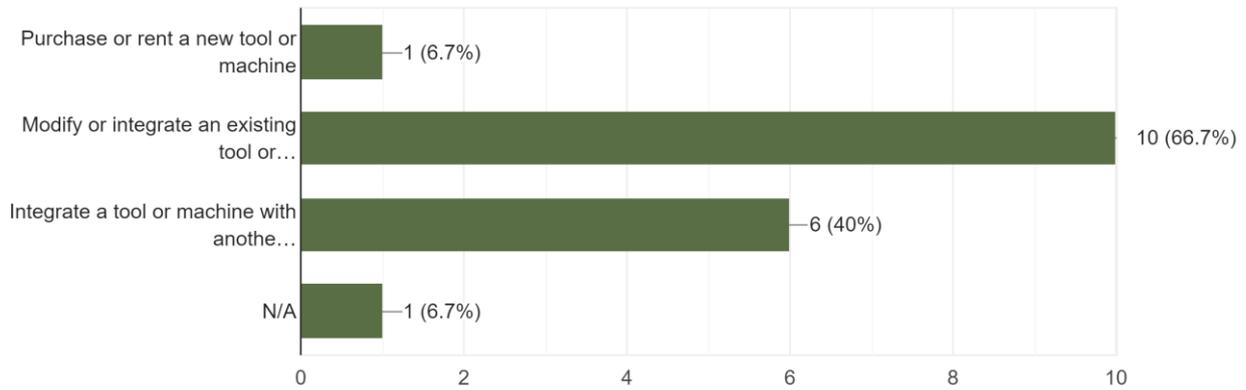
A: do you think you may need to improve other machinery and production equipment owned by your organization in order to gain more benefits fr... the functionalities of in-use machinery and tools?

15 responses



B: what kind of activities do you think you should carry-out in order to improve machinery and production equipment owned by your organization?

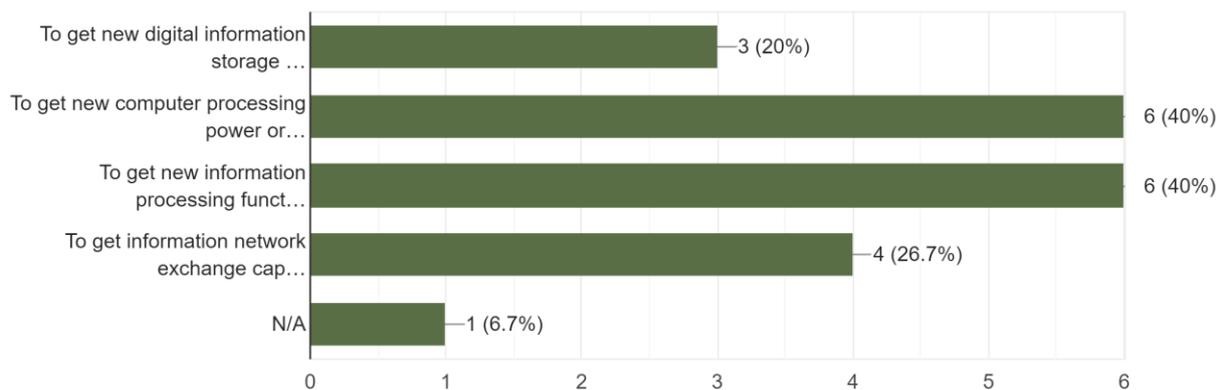
15 responses



Q08) Information Technology IT infrastructure improvement

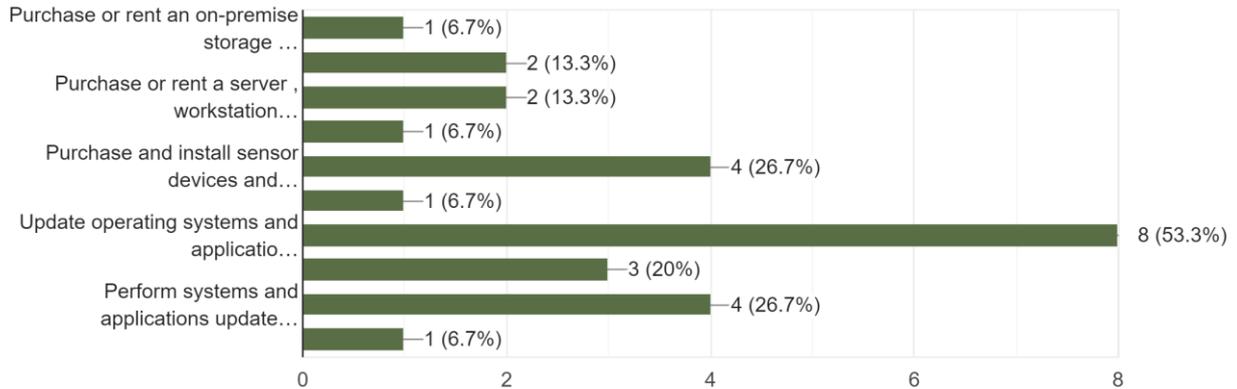
A: do you think you may need to improve your organizations' IT infrastructure in order to gain more benefits from the innovation deployment? What do ...w IT tools or to improve the ones already in-use?

15 responses



B: what kind of activities do you think you should carry-out in order to improve your organizations' IT infrastructure?

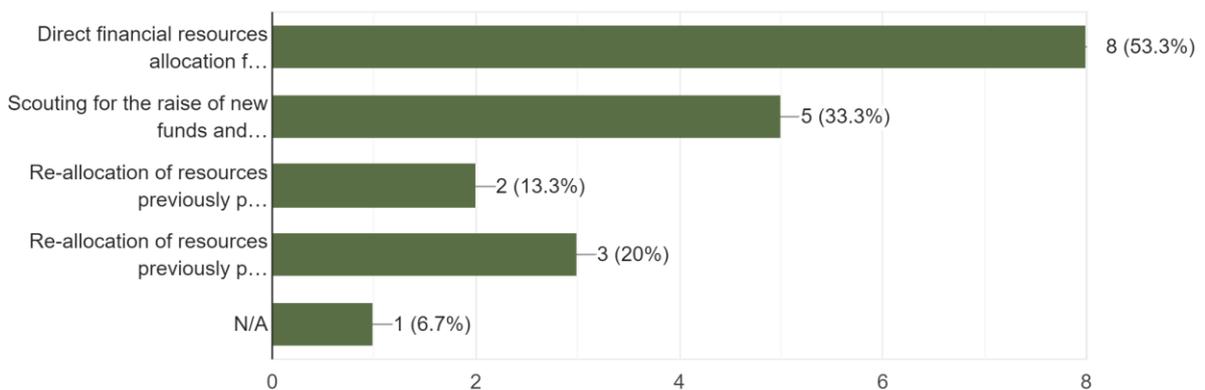
15 responses



Q09) Financial resources allocation

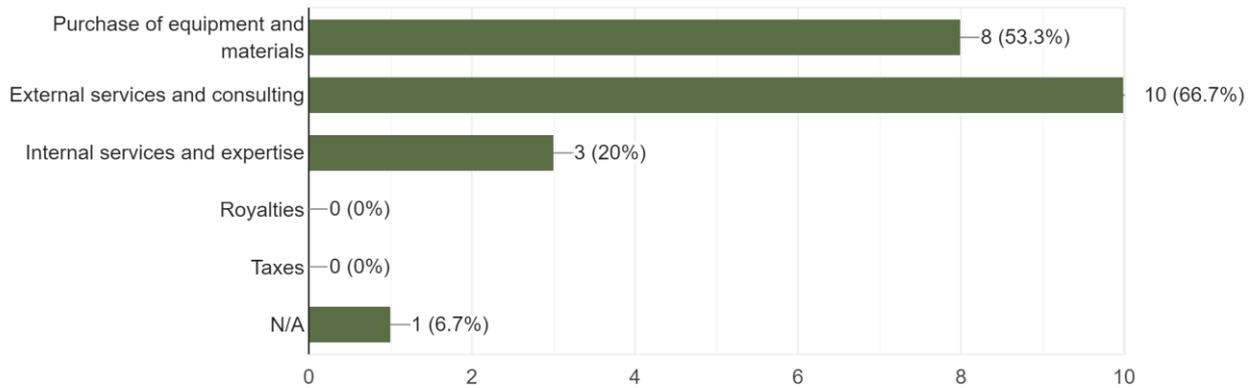
A: do you think your organization may need to allocate special resources to carry-out tasks or activities related to the innovation deployment, or ... financial operation do you think will be required?

15 responses



B: what kind of tasks do you think may require special resource allocation or re-allocation?

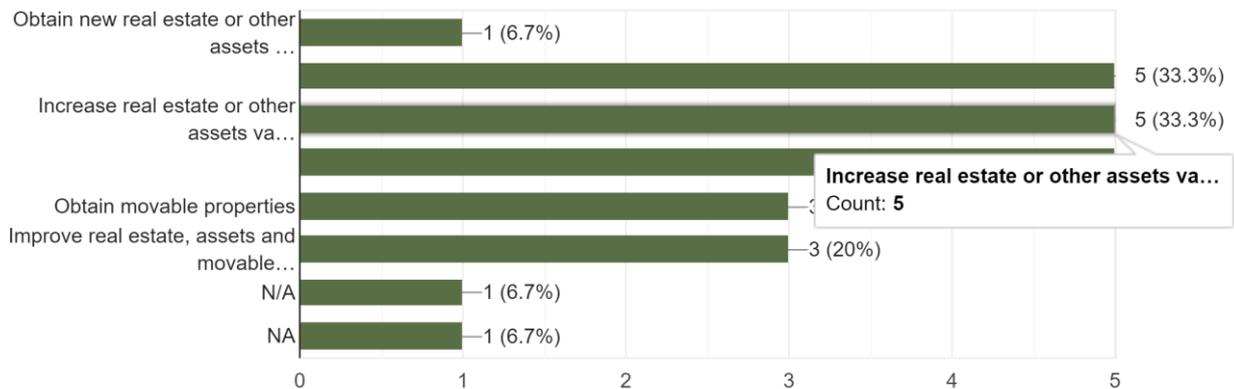
15 responses



Q10) Goods and real estate

A: do you think your organization may need to obtain special goods or real estate to carry-out tasks or activities related to the innovation deploy...What kind of actions do you think will be required?

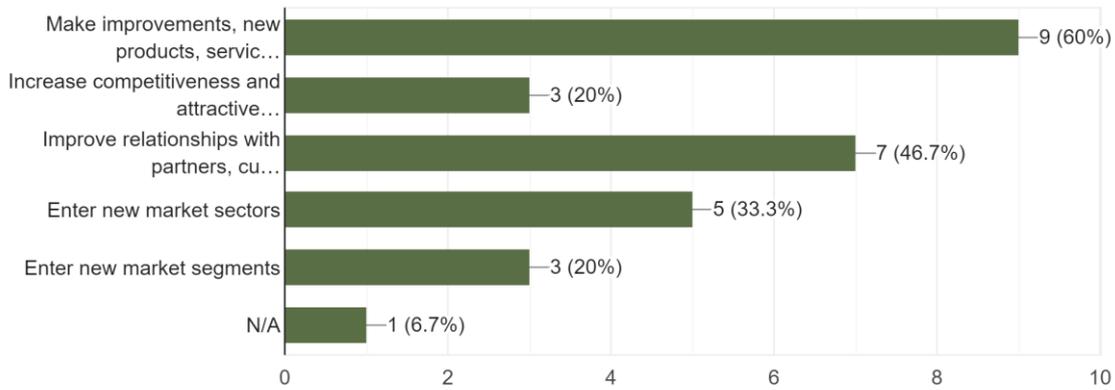
15 responses



Q11) Corporate image

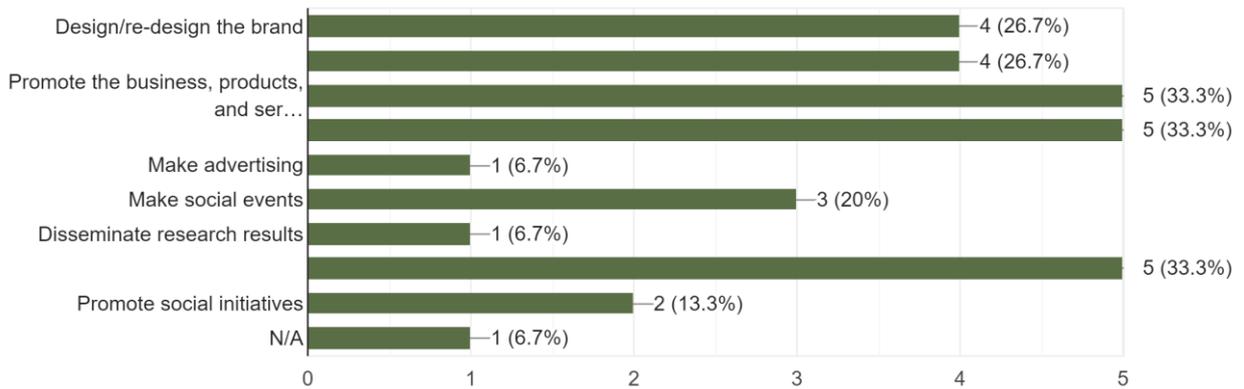
A: do you think there is the need to improve your organization's corporate image in order to better exploit the benefits of the innovation deployment?...u think are the main goals to improve your image?

15 responses



B: what actions/strategies do you think may be better to improve your corporate image in the innovation deployment scenario?

15 responses



Q12) Innovation impact assessment

A: Which aspects of the innovation are of particular interest to you?

tttgggrrrrr

n/a

Cruise ships and permission for the entrance for the driver and guides in the port

N/A

Sharing of data for the use in the new project proposals

.

Scouting for the raise of new funds and resources to be used for the innovation - IT
simplicity, functionality

-

NA

New software

Active role in development of passenger terminal i Šibenik port.

Razvoj novih usluga

Brži ulaz / izlaz iz lučkog područja

B: Which scenario would be most feasible to deploy?

N/A

vvvbbbnnnnn

n/a

Get permission for our port service asap

.

Cooperation with good practices, education, project management.
adaptation and development

-

NA

Easy to operate and good value for money

New technologies are needed.

Edukacija zaposlenika i organizacijski redizajn

Digitalizacija i umrežavanje kontrolnih mehanizama

C: What benefits would that achieve? What would be the most valuable results?

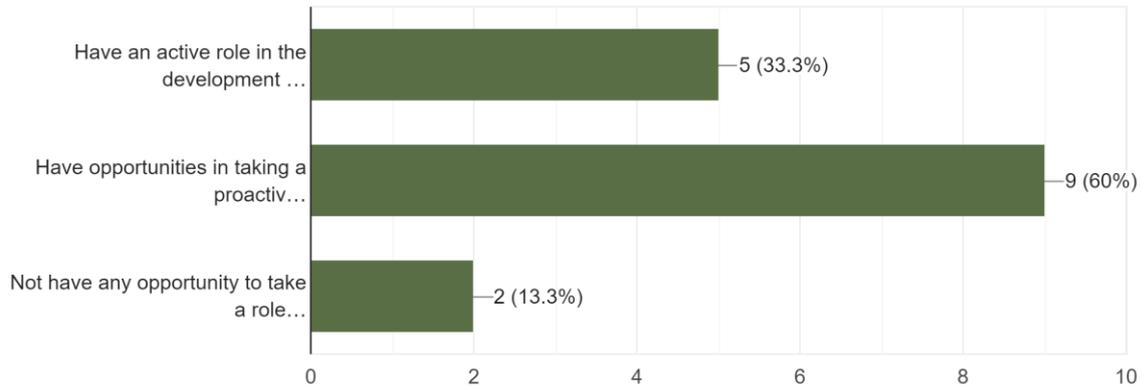
N/A
gggggghhhhhh
n/a
We will get more quality service
.
networking and education - step 1
existence and profitability
-
NA
Shorter working process
Easier and safer passenger flow.
Jačanje unutarnjih kapaciteta za daljnji razvoj
Brzina i kontrola servisa i usluge

D: Can you think of the agenda beyond the deployment? How would your operations change? What would be the main changes in your strategy? 15 responses

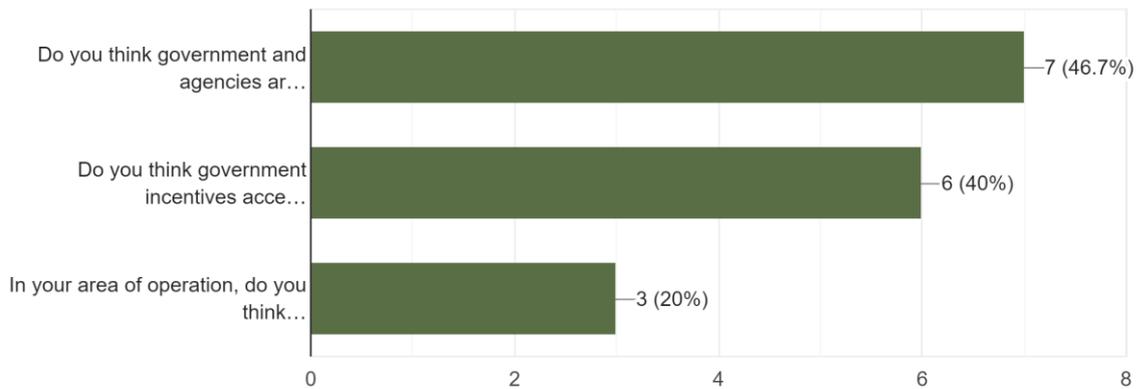
N/A
nnnnnnmmmmmm
n/a
Our operation will be better and faster
.
Learning and Education Strategy
progress
-
NA
More business with the same number of employees
More efficient for all of us!
Fleksibilnost u razvoju novih proizvoda i usluga
Ubrzavanje servisnih procesa

Q13) Policy scenario

A: Regarding the policy scenario in the context of the innovation deployment, do you organization:
15 responses



B. Regarding cyber security and privacy challenges:
15 responses



What kind of policies and legislations are important for stimulating innovation?

N/A

n/a

Regulatory reform and innovation
proactive and meaningful

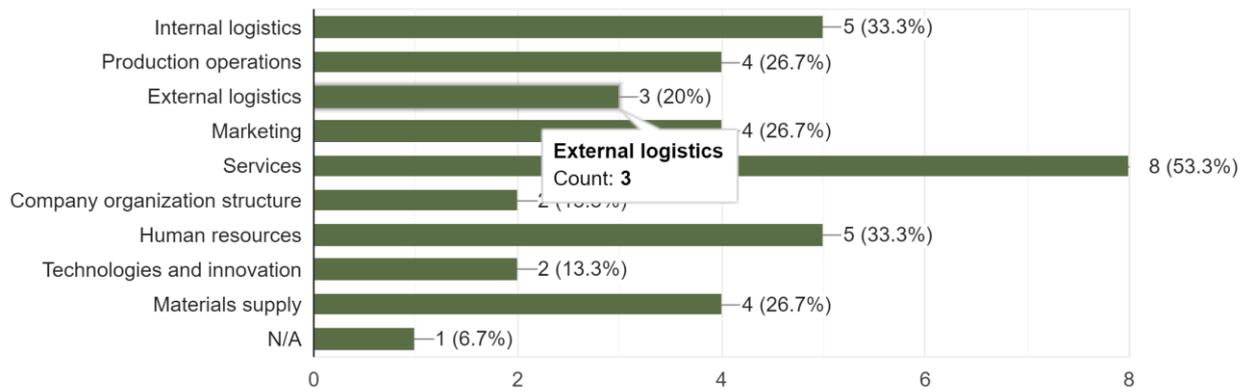
NA

not like we have for the last 30 years

razumijevanje logističkih servisa u pomorskoj industriji

C. In your area of operation, which type of value chain do you think are being supported by economic policies?

15 responses



D. What are impediments to free and fair competition within the maritime passenger traffic sector?

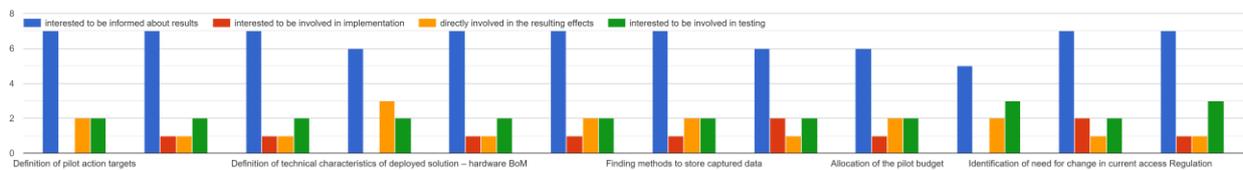
N/A
 mmmmmkkkkkk
 n/a

Free flow, undisturbed development and normal traffic flow to create a level playing-field so that ship operators cannot address their financial issues by simply cutting corners and compromising on safety, security and environmental performance.
 obsolescence (both personnel and technical)

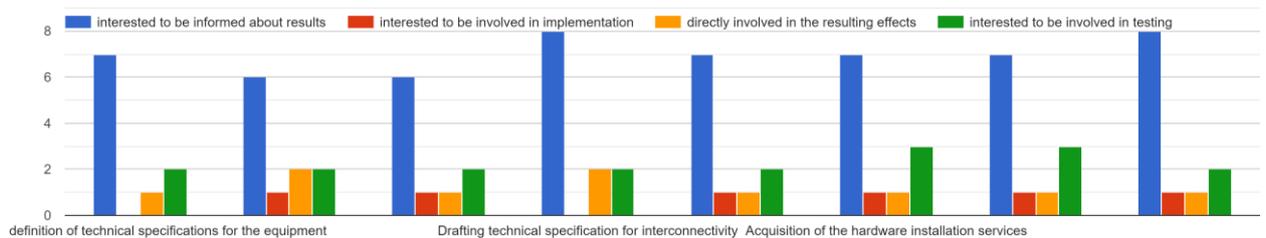
-
 NA
 Price dumping
 don't know
 Ne znam
 Javna nabava

Section 3: innovation deployment roadmap

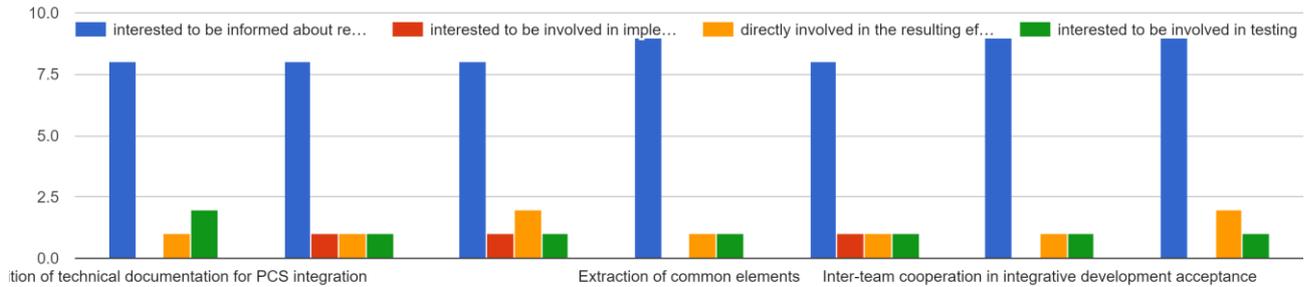
Pilot Planning



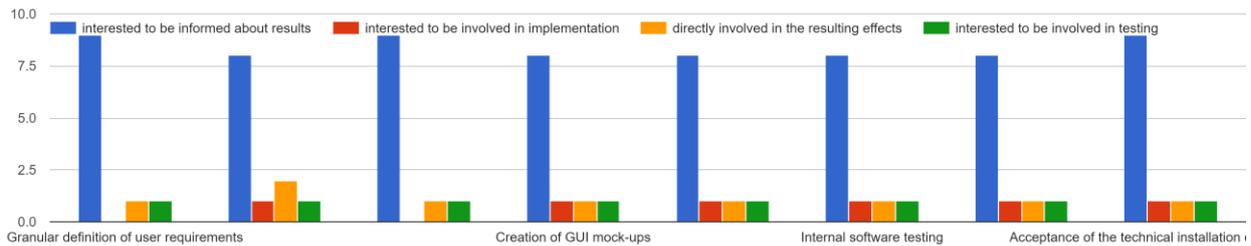
Pilot Technical Equipment Installation



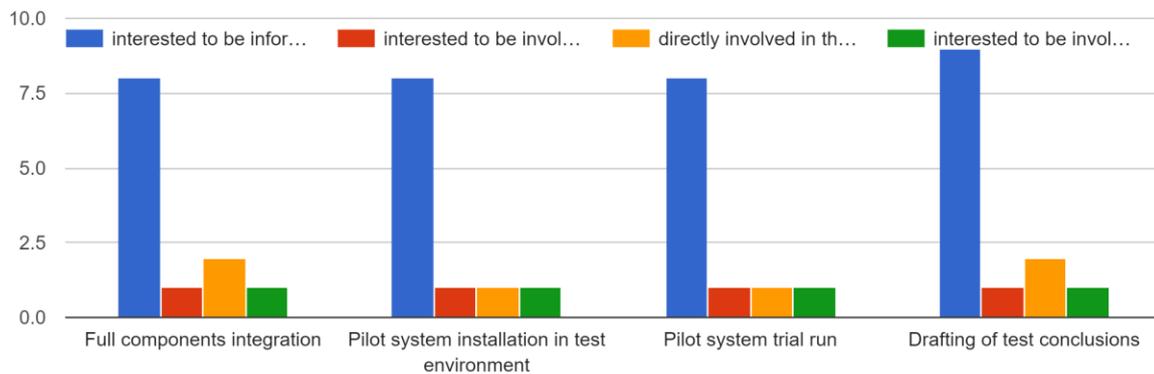
Pilot Integrative Development



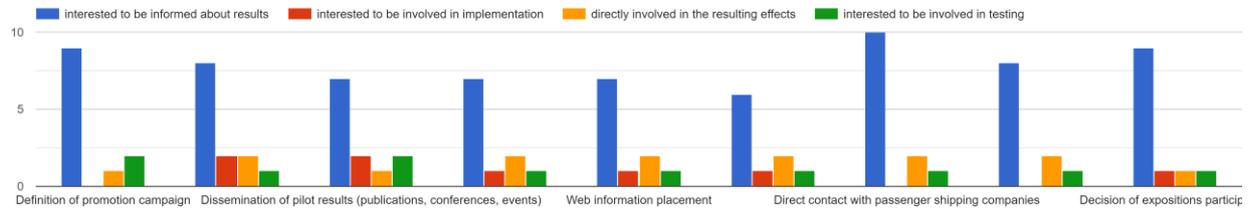
Deployment of end users (passengers) visual information tools



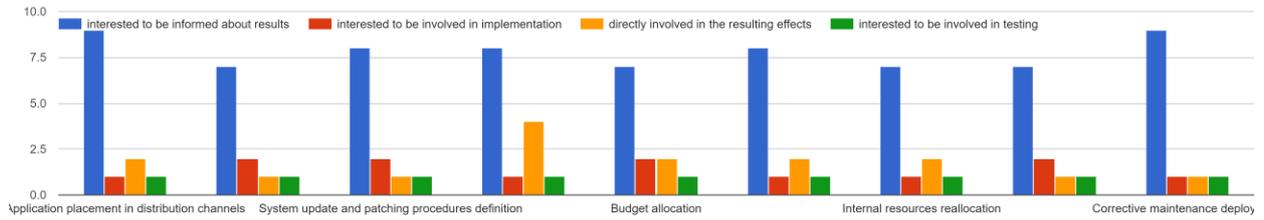
Configuration and Testing



Post-project activities



Commencing with operative system exploitation and maintenance



2.4 Maritime Transport Management by linking PCS and national platform for Croatian ports

Reference selected innovation: Management solution for passengers and freight transport combination – Port of Rovinj Authority

This Report analyzes the results of the “*Introducing IT in port management processes*” questionnaire for the stakeholders involved.

The results were collected up to date 27th July 2020, date when the questionnaire was closed.

10 responses have been collected.

2.4.1 Description of the Pilot Action

Keywords: PCS, ICT, Single Window

Port Community System – PCS – is a public (often Internet-based) platform enabling the smart and secure exchange of information between stakeholders involved in seaport operations. It provides a Single Window environment in which report formalities, processes, and procedures can be carried on in a digital way connecting other IT systems by specific interoperable interfaces. PCS enables better harmonization of information, standardization of data flows, data centralization, redundancy reduction, easy data submission for all members of the port community. In short, a PCS can be described as a central point for an organization to deliver or receive information.

2.4.2 Stakeholders involved

Stakeholders involved belong to different fields (transport operators, shippers, service providers etc.). 10 answers have been provided. Below a list of some of the major contributors to the questionnaire results:

- Lučka uprava Poreč
- B.W.A. d.o.o.
- Ars nautika d.o.o.
- Maistra d.d.
- Kompas d.o.o.
- L.P. - POMOĆ JAHTAMA d.o.o.

- Ex novo d.o.o.
- Sunny way
- Venezia lines srl

2.4.3 Results of the questionnaire

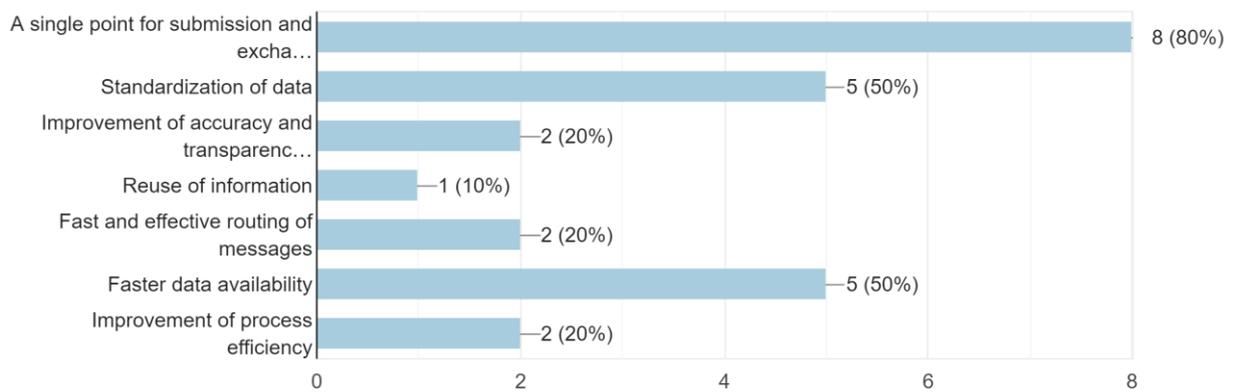
In order to reach a more immediate comprehension, questionnaire answers are processed and presented using statistics methodology and visual tools.

Section 1: benefits and risks related to the innovation

Q01

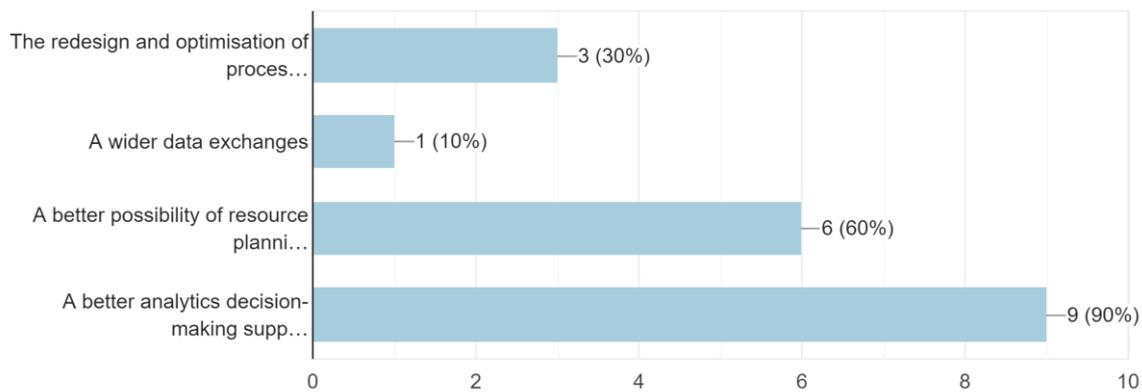
A: what benefits brought by the innovation do you think will give greater advantages to your business considering the relationships with the acti...ies and the actors working in the logistics sector?

10 responses



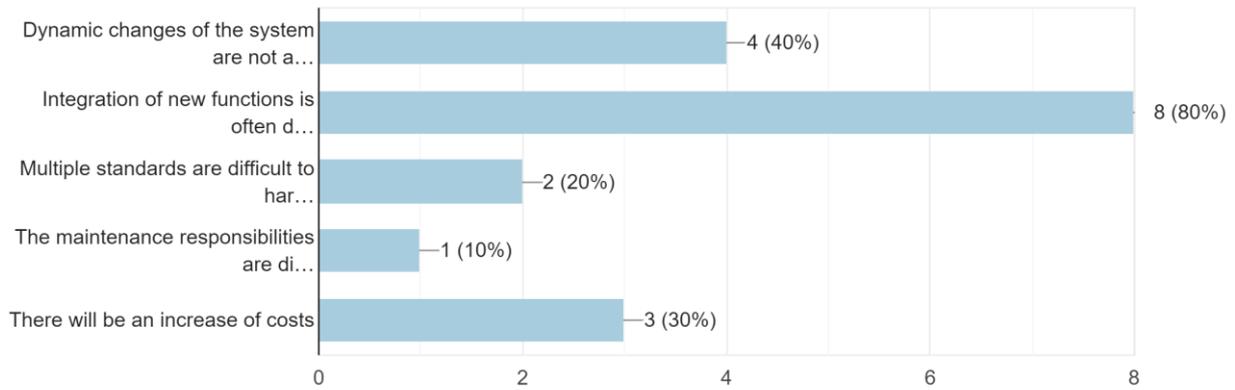
B: what new opportunities do you think the innovation will bring in the logistics sector considering your operational context?

10 responses



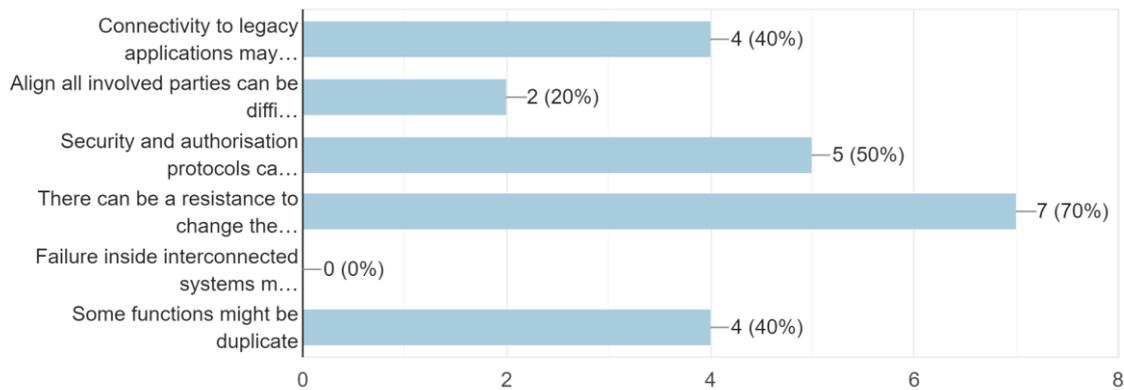
C: which innovation weaknesses do you think will likely make innovation implementation more difficult?

10 responses



D: what do you think will be the most concrete threats that likely make innovation deployment less effective?

10 responses

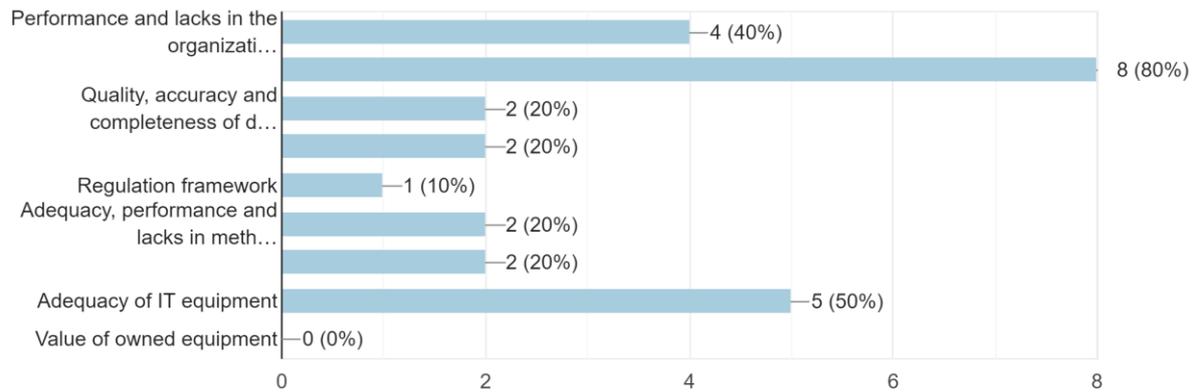


Section 2: needed actions for innovation deployment

Q01) Improvement of knowledge and awareness about internal assets and resources

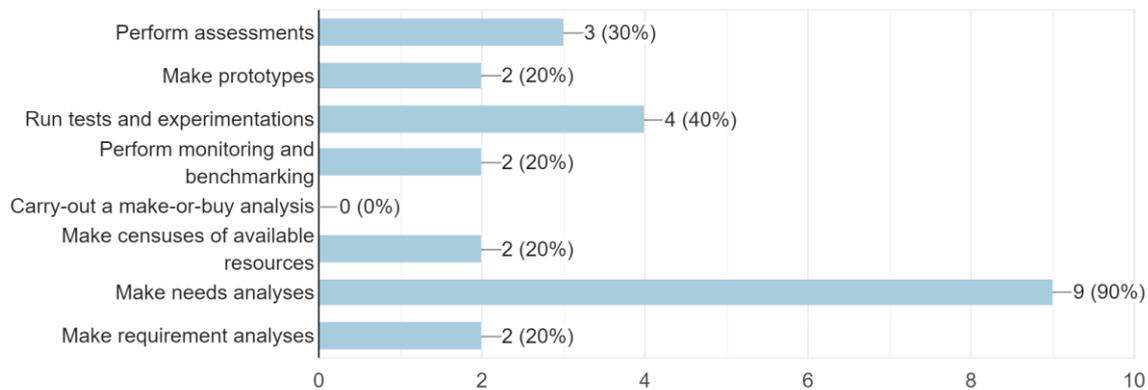
A: do you think there is the need to make specific analyses, test or assessments to better know and understand one or more of the following aspects in order to deploy the innovation?

10 responses



B: what do you think are the most effective type of actions to carry-out in order to achieve these objectives?

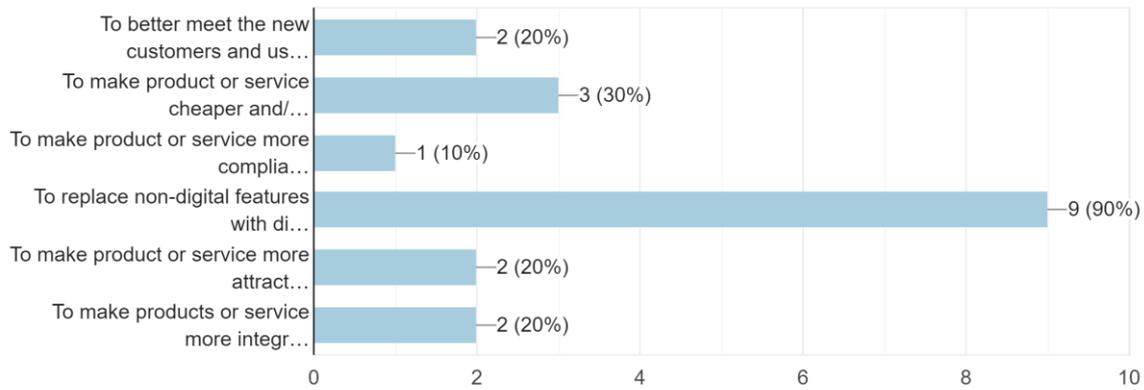
10 responses



Q02) Adaptation and innovation of products and services

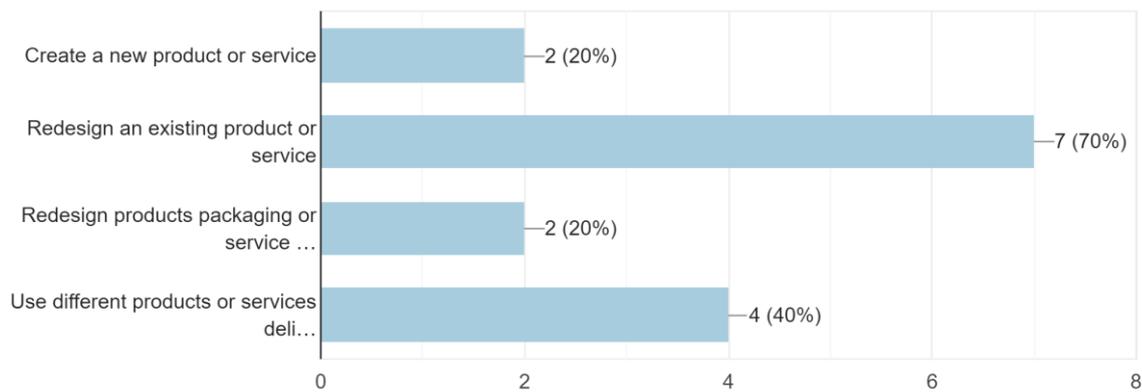
A: do you think you may need to change the specific features of some of your products or services in order to make your business complian...e reason why you think you need to change them?

10 responses



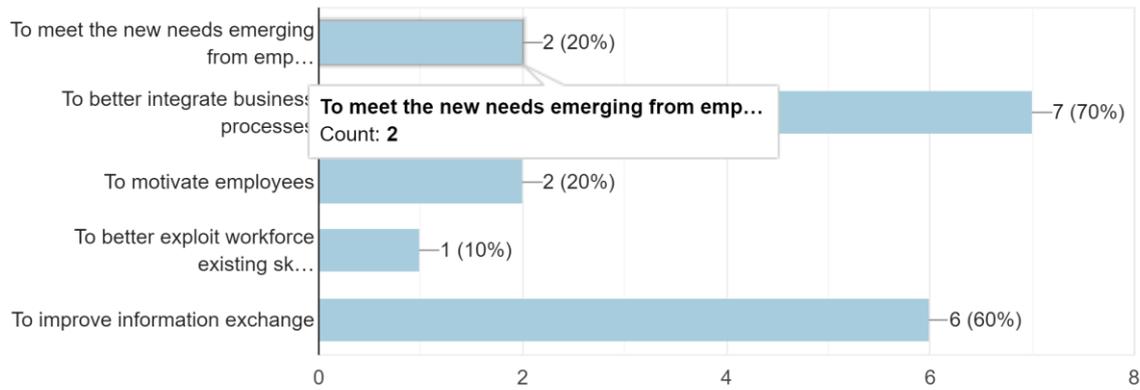
B: what do you think are the needed and/or most effective type of changes to make in order to improve products and services?

10 responses

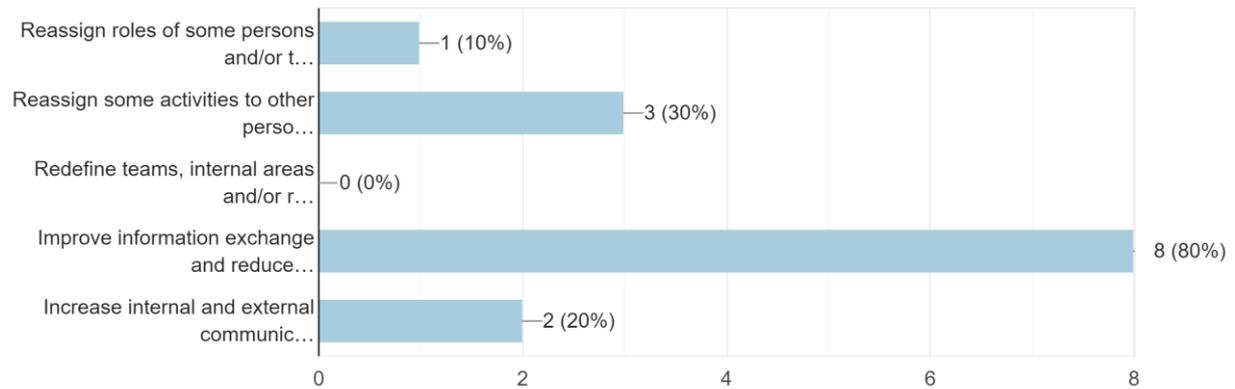


Q03) Organizational model improvement

A: do you think you may need to change something of your organizational model in order to make your business compliant with the innovation (PCS...e reason why you think you need to change them?
10 responses



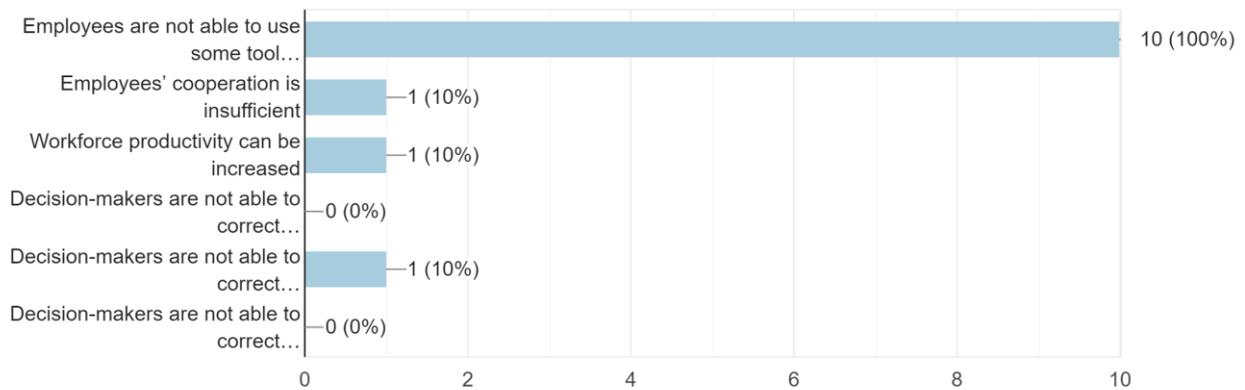
B: what do you think are the needed and/or most effective type of changes to make in order to improve your organization model?
10 responses



Q04) Employees' skills and capabilities improvement

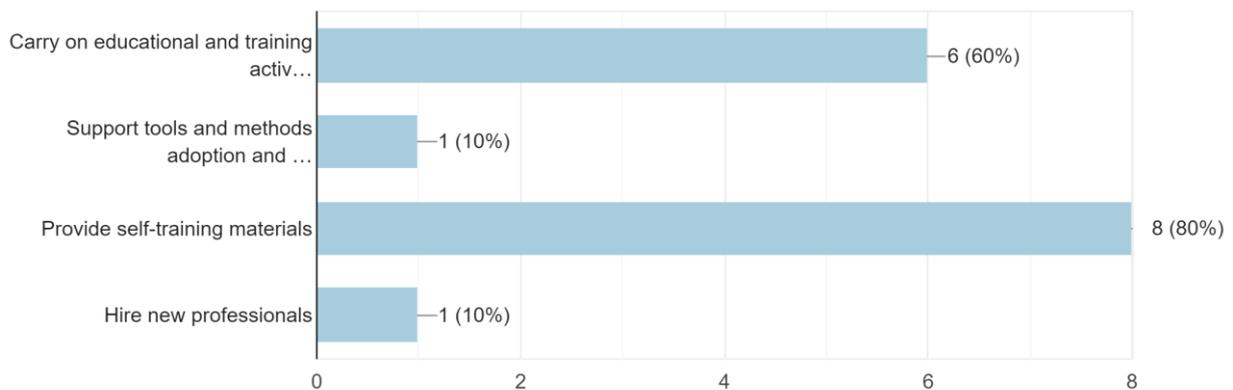
A: do you think you may need to improve skills and capabilities of your employees or decision-makers in order to better deal with the in...ibilities inside your organization are not adequate?

10 responses



B: what do you think are the needed and/or most effective type of actions to carry-out in order to improve skills and capabilities within your organization?

10 responses

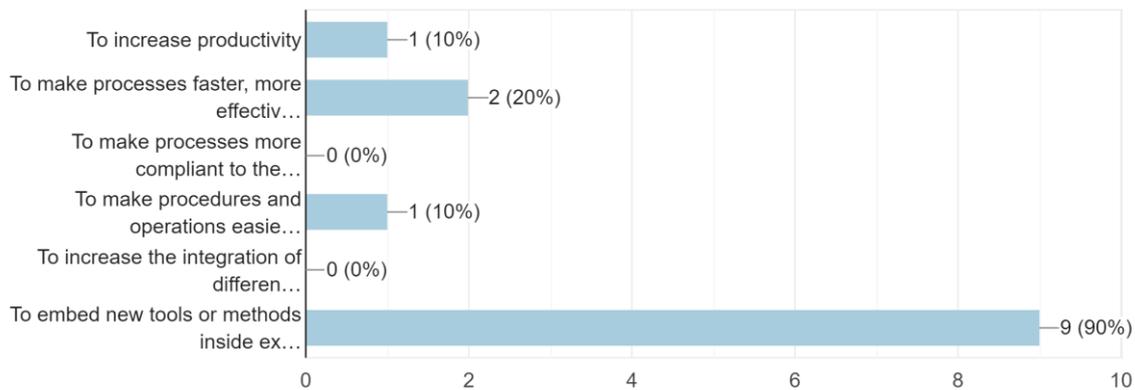


C: what do you think are the most critical lack of skills and capabilities that can limit your organization in dealing with the innovation implementation scenario?

- IT skills
- IT skills and time of my employers
- no
- computer literacy
- Nothing
- nothing
- misunderstanding of innovation

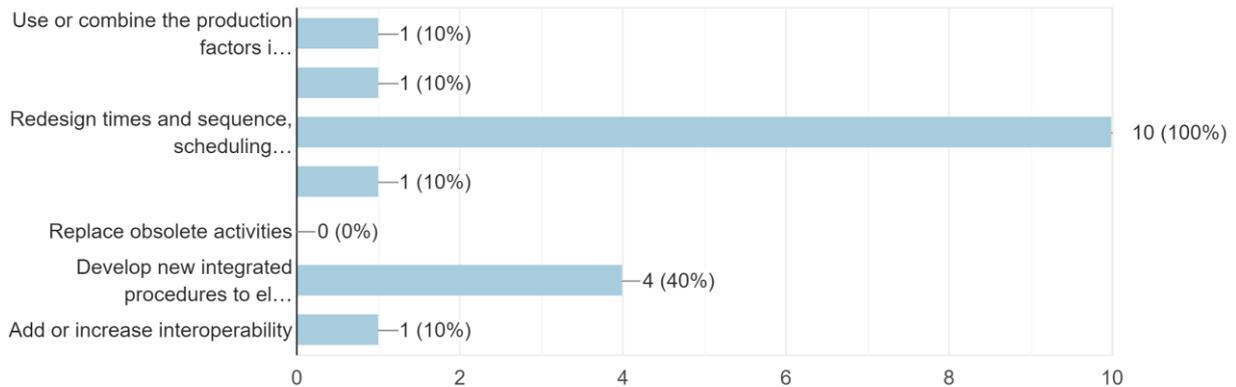
Q05) Processes and procedures optimization

A: do you think you may need to modify your business processes or protocols and procedures in use within your organization to be more complian... the reasons why you may need to optimize them?
 10 responses



B: what do you think are the needed and/or most effective type of actions to carry-out in order to improve skills and capabilities within your organization?

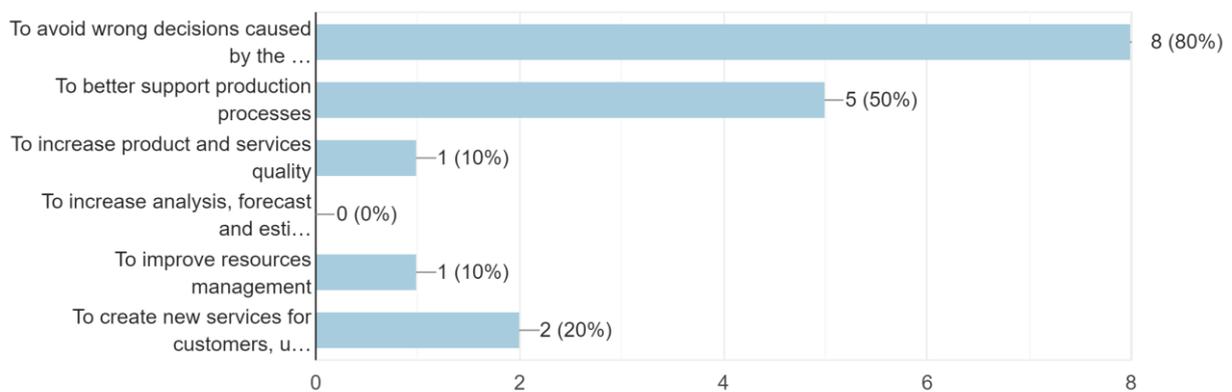
10 responses



Q06) Information assets improvement

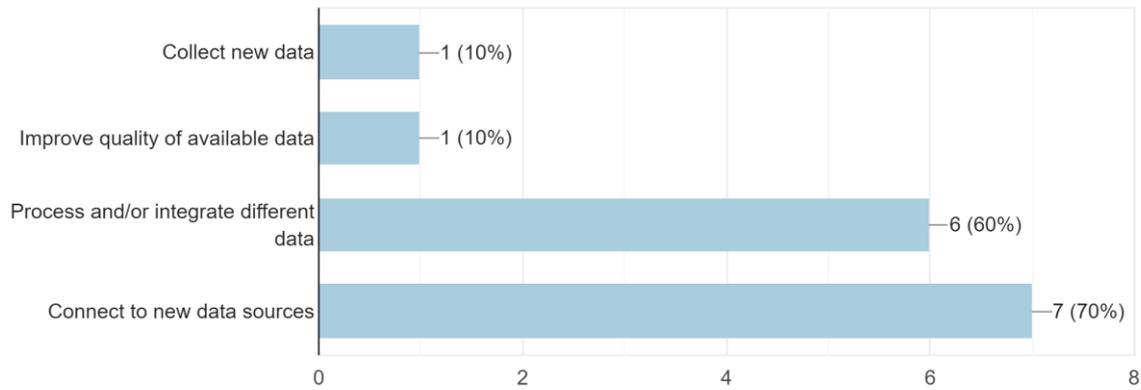
A: do you think you may need to improve the quality of information assets managed by your organization in order to gain more benefits from t...et more data or improve existing datasets quality?

10 responses



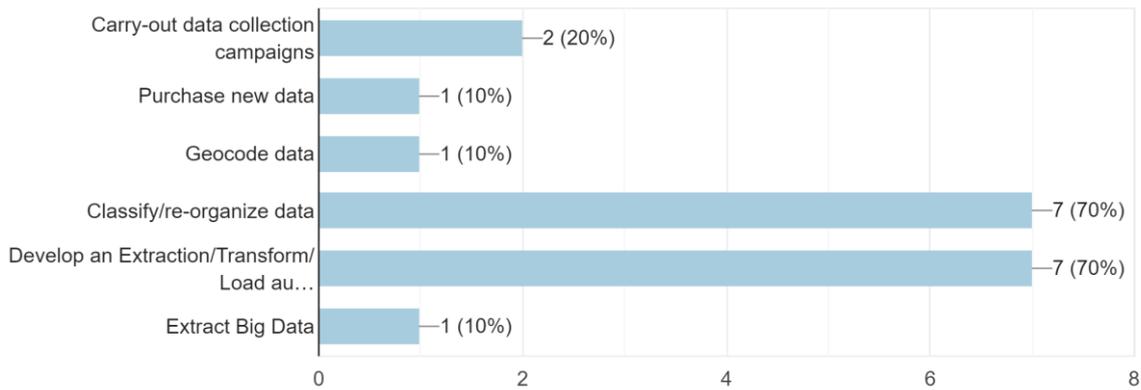
B: what kind of activity do you think you should carry-out to improve the quality of information assets managed by your organization?

10 responses



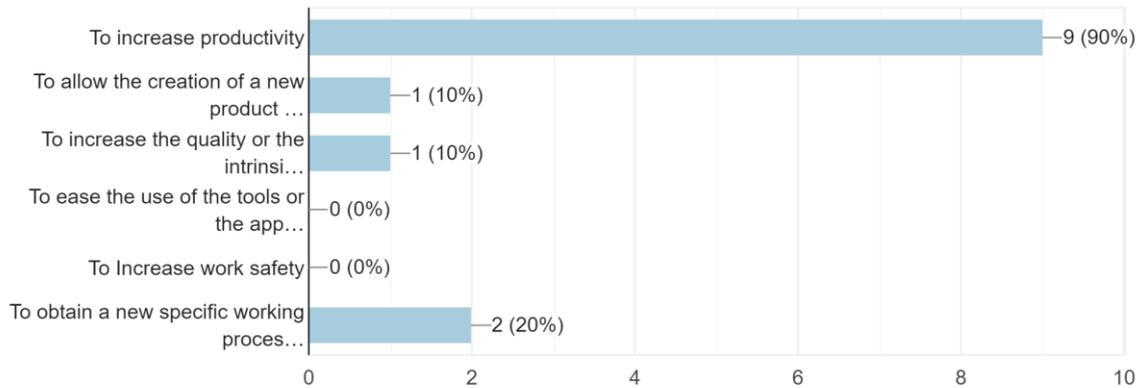
C: what do you think you should do to get the data you need or to improve data quality in your organization's business context?

10 responses

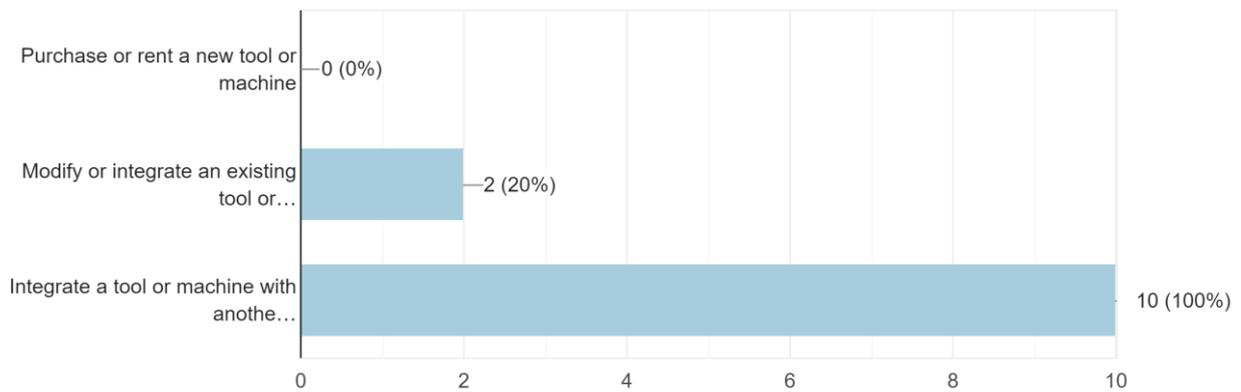


Q07) Machinery and equipment improvement

A: do you think you may need to improve machinery and production equipment owned by your organization in order to gain more benefits from th...the functionalities of in-use machinery and tools?
10 responses

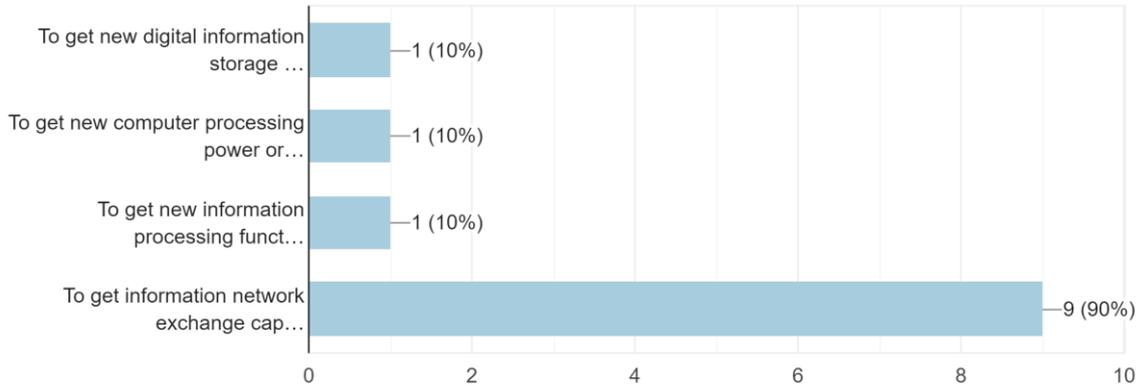


B: what kind of activities do you think you should carry-out in order to improve machinery and production equipment owned by your organization?
10 responses

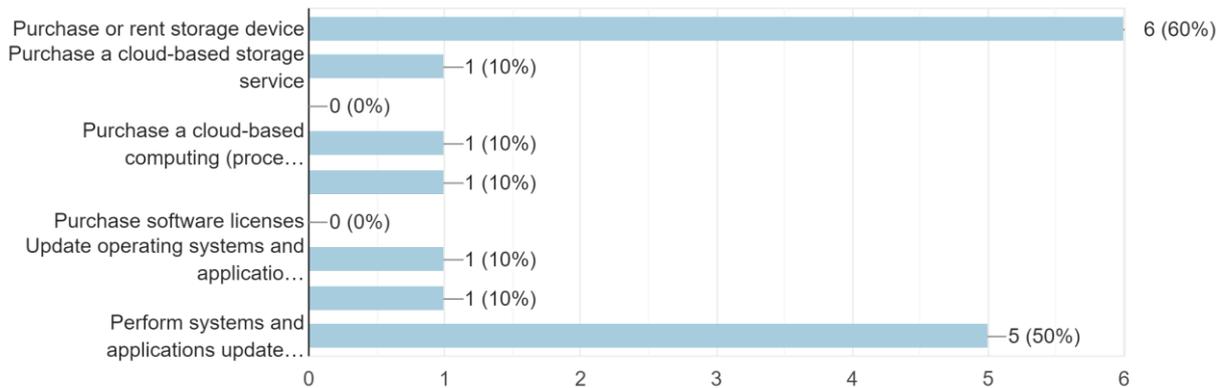


Q08) Information Technology IT infrastructure improvement

A: do you think you may need to improve your organizations' IT infrastructure in order to gain more benefits from the innovation deployment? What do ...w IT tools or to improve the ones already in-use?
10 responses

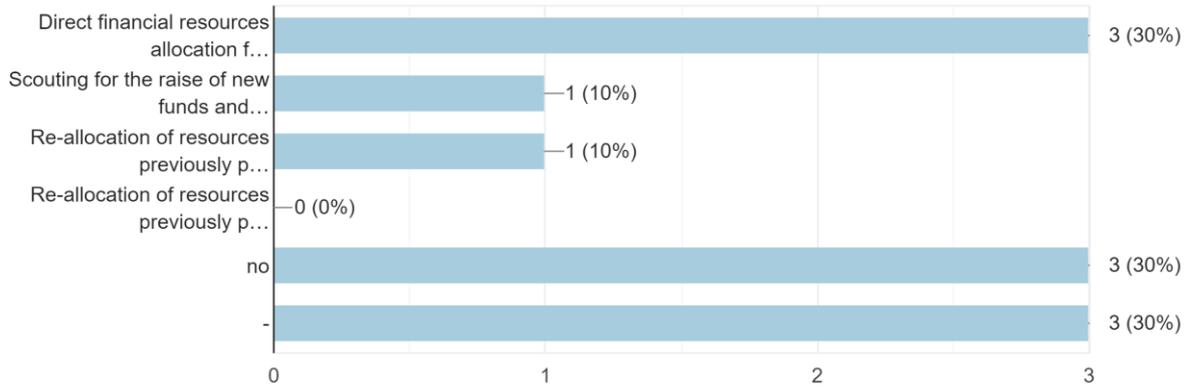


B: what kind of activities do you think you should carry-out in order to improve your organizations' IT infrastructure?
10 responses

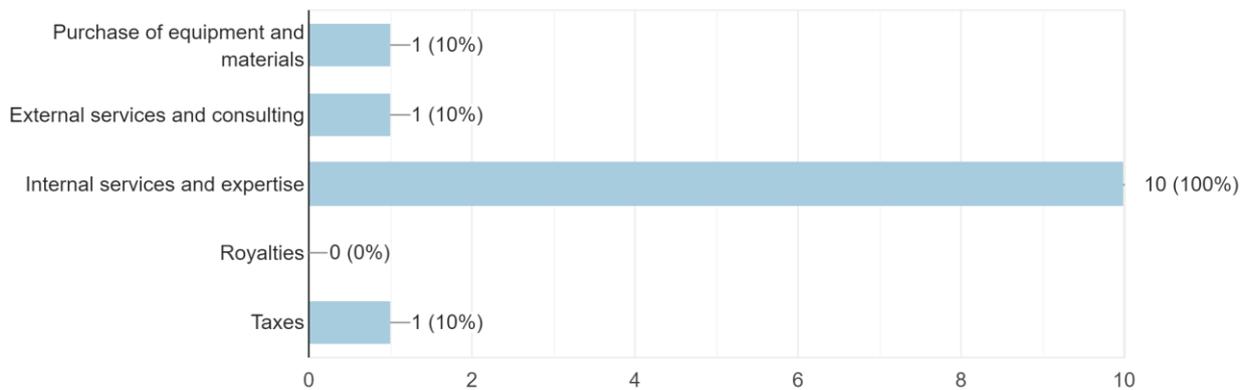


Q09) Financial resources allocation

A: do you think your organization may need to allocate special resources to carry-out tasks or activities related to the innovation deployment, or ... financial operation do you think will be required?
10 responses

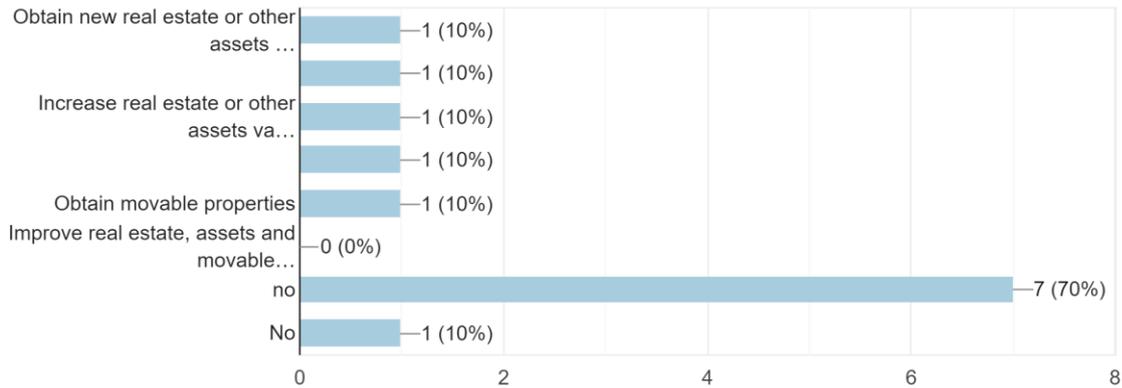


B: what kind of tasks do you think may require special resource allocation or re-allocation?
10 responses



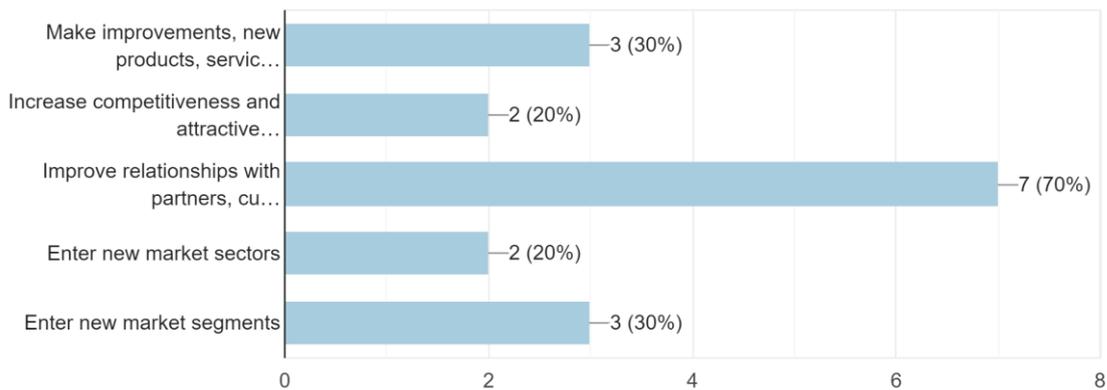
Q10) Goods and real estate

A: do you think your organization may need to obtain special goods or real estate to carry-out tasks or activities related to the innovation deploy...What kind of actions do you think will be required?
10 responses



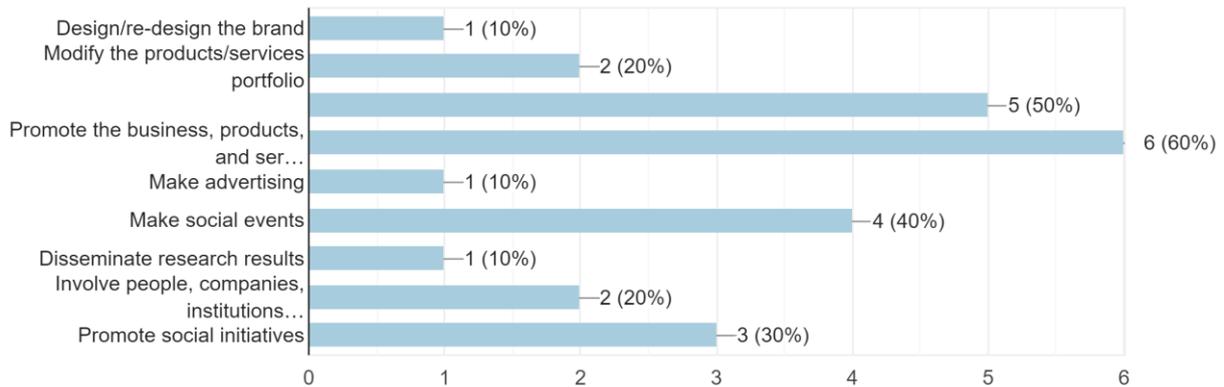
Q11) Corporate image

A: do you think there is the need to improve your organization's corporate image in order to better exploit the benefits of the innovation deployment?...u think are the main goals to improve your image?
10 responses



B: what actions/strategies do you think may be better to improve your corporate image in the innovation deployment scenario?

10 responses



Q12) Innovation impact assessment

A: Which aspects of the innovation are of particular interest to you?

- Faster reservations
- Better data integration
- Data and mooring security
- Data security and faster work
- Data exchange
- Faster work
- Faster processes
- sharing data, access to more information, time saving
- /

B: Which scenario would be most feasible to deploy?

- Full IT development
- Data overview
- mobile application for mooring reservation
-
- accounting application

Mobile application
nothing
cheaper fee
step by step introducing people to new innovation
/

C: What benefits would that achieve? What would be the most valuable results?

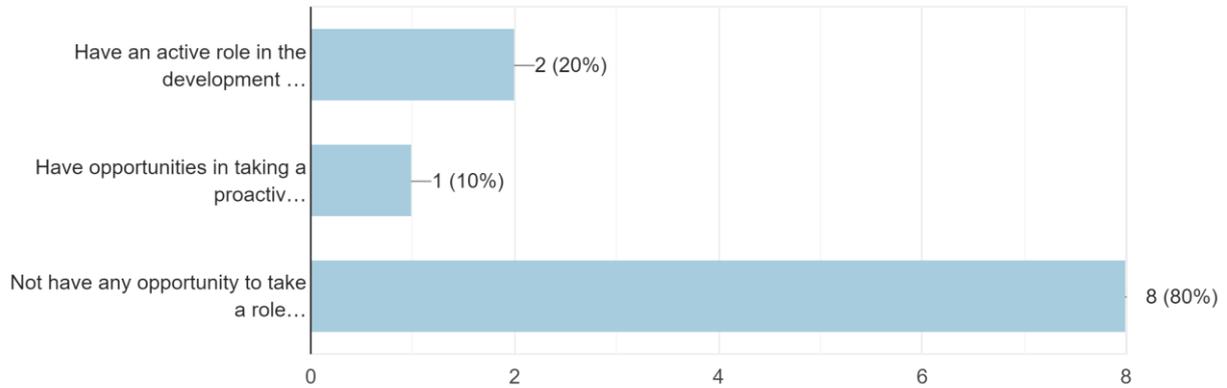
-
Faster work
Better security of data
nothing
Mobile office
cheaper services - cheaper selling
time saving
/

D: Can you think of the agenda beyond the deployment? How would your operations change? What would be the main changes in your strategy?

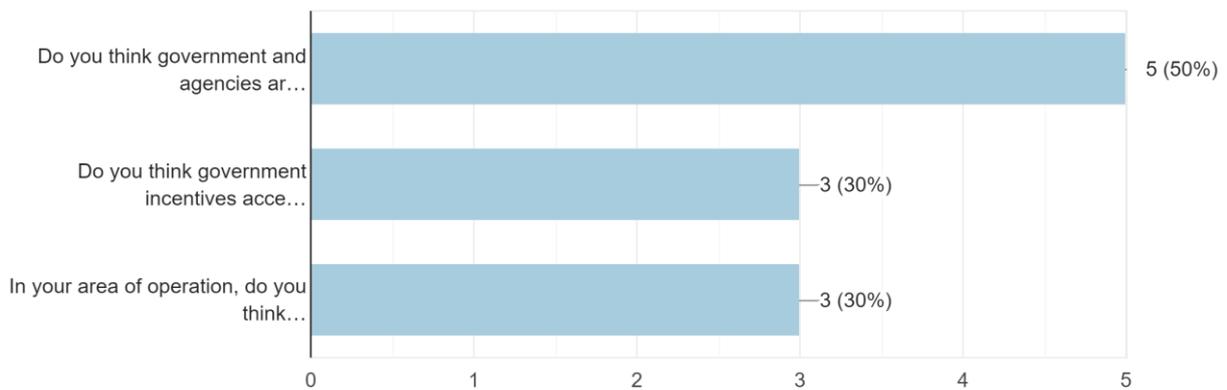
no
nothing
Data integration
-
I am unable to answer
/

Q13) Policy scenario

A: Regarding the policy scenario in the context of the innovation deployment, do you organization:
10 responses



B. Regarding cyber security and privacy challenges:
10 responses



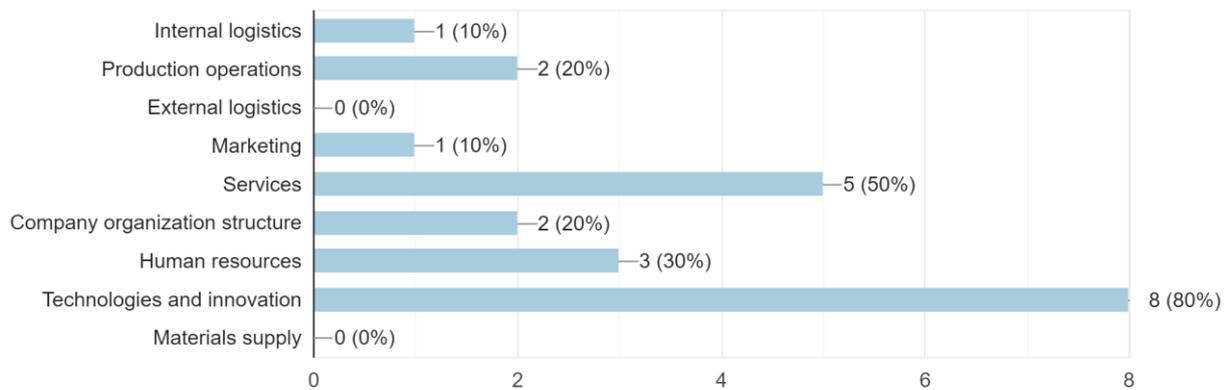
What kind of policies and legislations are important for stimulating innovation?

-
- Data integration
- IT security
- Tax regulation

Data security
 Cyber security
 tax reduction and less bureaucracy
 /

C. In your area of operation, which type of value chain do you think are being supported by economic policies?

10 responses

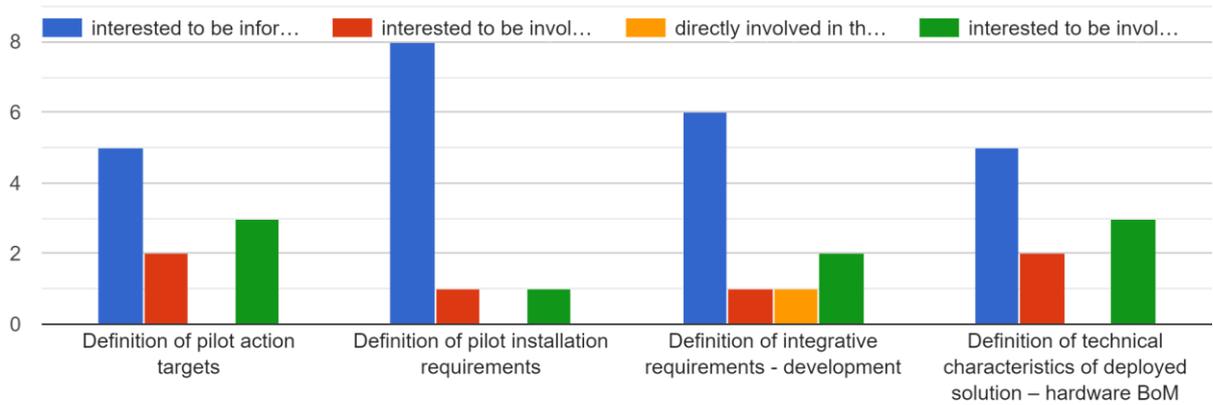


D. What are impediments to free and fair competition within the sector?

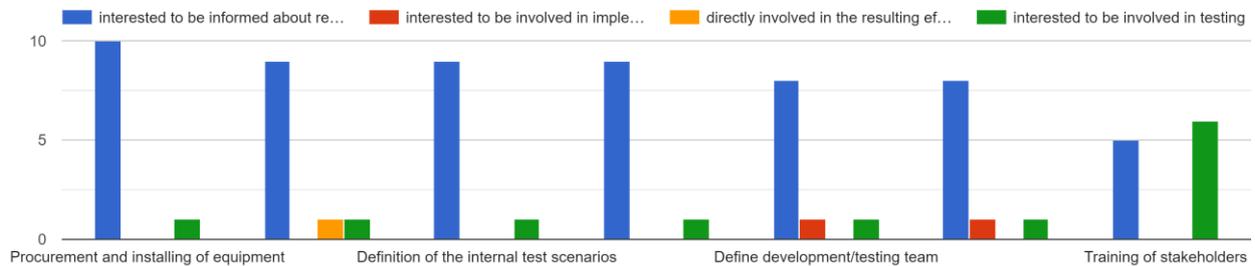
-
 tourists
 Fair deal
 Tourism
 misunderstanding of the sector by the government
 /

Section 3: innovation deployment roadmap

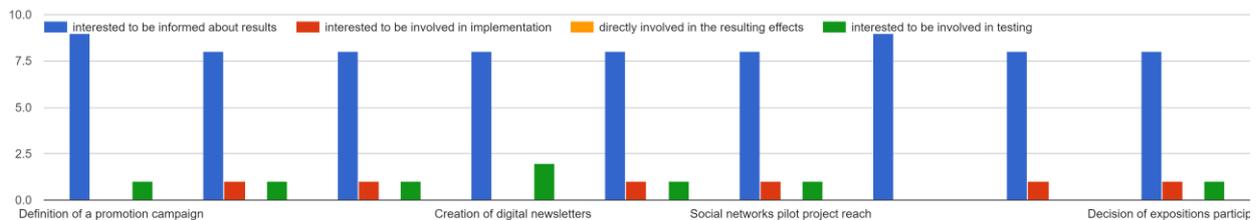
Pilot Planning



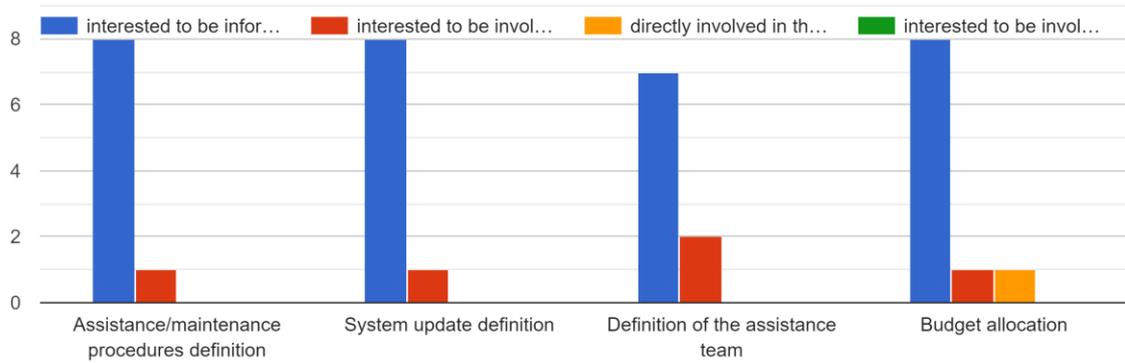
Pilot implementation



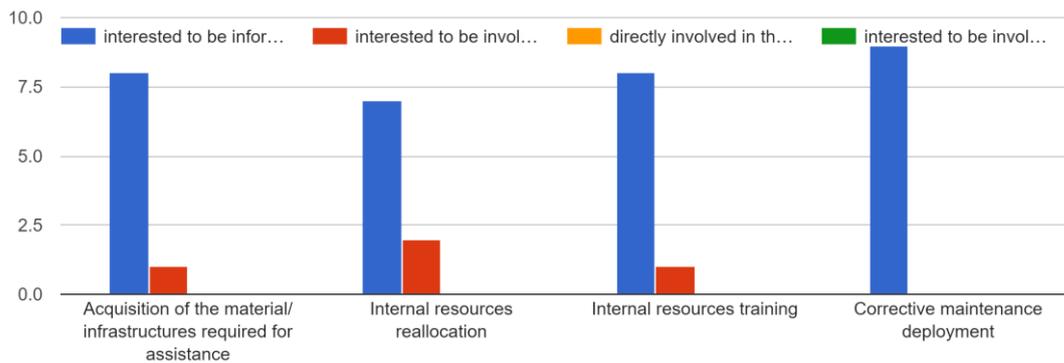
Promotion, dissemination and consultation



Exploitation and maintenance planning



Exploitation and maintenance execution



2.5 Big Data / Data management solution for planning

Reference selected innovation: **Spatial Data Infrastructure version 1 and skill enhancement for Venice port - CFLI, Intermodal Logistics Training Consortium**

Total number of responses: 13

2.5.1 Description of the Pilot Action

Big Data and Data Management solutions are integrated information systems aimed at manage and process the huge amount of data generated inside and outside the maritime transport network including a large variety of dataset containing information about ships, freight, weather data, labour costs, oil and metal prices, operators' work, as well as those produced by bridge equipment such as Voyage Data Recorder (VDR) and Automatic Identification System (AIS). Many of these datasets are georeferenced, and most of them can be georeferenced by correlating them to some others; anyway, to obtain the best results from these data, in terms of added value in knowledge and management capability, effective and usable management, processing and visualization tools, as well as special methodologies, are needed. Big Data Management and Analytics techniques may be helpful in decision-making and operational processes, enabling stakeholders to make optimizations and predictions and perform faster decisions.

2.5.2 Stakeholders involved

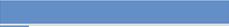
Not available

2.5.3 Results of the questionnaire

A: what benefits brought by the innovation do you think will give greater advantages to your business considering the relationships with the activities and the actors working in the logistics sector?

<i>Increase of efficiency, safety and resource utilization</i>	11	
<i>Improvements in collaboration between stakeholders</i>	10	
<i>Capability to process various and heterogeneous data sources</i>	7	
<i>Possibility to integrate Smart IoT devices</i>	3	
<i>Possibility to process, manage and visualize real-time data</i>	8	
<i>Faster processing and analysis of data</i>	7	

B: what new opportunities do you think the innovation will bring in the logistics sector considering your operational context?

<i>The fostering of smarter products and services</i>	11	
<i>Improvements in safety and reduced environmental impact</i>	3	
<i>Gathering new useful information processing unstructured data</i>	8	
<i>New methodologies and technologies to improve DSS processes support</i>	1	
<i>Others.....</i>	0	

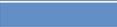
C: which innovation weaknesses do you think will likely make innovation implementation more difficult?

<i>Too high investments in technologies</i>	6	
<i>The need for development of new-generation devices</i>	3	
<i>Lack of knowledge and understanding making difficult to interpret complex outputs</i>	4	
<i>Difficulty in classifying unstructured and inhomogeneous information</i>	6	
<i>Difficult in the management of data ownership and grants</i>	4	
<i>Need for high specialized expertise</i>	3	
<i>Others.....</i>	2	

Others:

- i divieti in capo ai vari settori della P.A. di scambiarsi i dati
- limitata volontà da parte di alcuni soggetti alla condivisione dei dati

D: what do you think will be the most concrete threats that likely make innovation deployment less effective?

<i>Issues can arise in data access and sharing</i>	7	
<i>Processes might depend too much on data sources quality and availability</i>	5	
<i>Long processing times can cause issues</i>	2	
<i>There can be security issues related to cyber-threats, data retention and system reliability</i>	7	
<i>Regulations regarding the digitalization might differ from each country causing issues</i>	7	
<i>Others.....</i>	2	

Others:

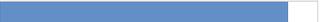
- i divieti in capo ai vari settori della P.A. di scambiarsi i dati
- difficoltà di interfaccia tra i diversi software gestionali / cambio sulle professionalità e possibile impatto negativo sull'occupazione per i soggetti con profilo professionale più basso

Section 2: needed actions for innovation deployment

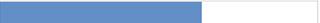
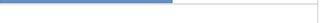
Q01) Improvement of knowledge and awareness about internal assets and resources

Internal assets and resources are the core value of an organization and include all physical and intangible resources, from financial, knowledge and organizational resources to machinery, technologies, workforce and real estate. Note that this context element is about the knowledge about both intrinsic values of items and their productivity and performances; indeed, it is very important to have the most accurate and detailed report of available resources in order to develop any subsequent planning and design action.

A: do you think there is the need to make specific analyses, test or assessments to better know and understand one or more of the following aspects in order to deploy the innovation?

<i>Performance and lacks in the organization model</i>	10	
<i>Skills, capabilities, and productivity of workforce</i>	7	
<i>Adequacy of available technologies</i>	5	
<i>Regulation framework</i>	4	
<i>Adequacy, performance and lacks in methods, procedures and protocols</i>	6	
<i>Amount of financial resources and funding opportunities</i>	4	
<i>Adequacy of machinery and work tools</i>	1	
<i>Value of owned real estate</i>	1	
<i>Others</i>	0	

B: what do you think are the most effective type of actions to carry-out in order to achieve these objectives?

<i>Perform assessments</i>	7	
<i>Make prototypes</i>	1	
<i>Run tests and experimentations</i>	10	
<i>Perform monitoring and benchmarking</i>	6	
<i>Carry-out a make-or-buy analysis</i>	1	
<i>Make censuses of available resources</i>	3	
<i>Make needs analyses</i>	7	
<i>Make requirement analyses</i>	6	
<i>Others</i>	0	

C: what do you think are the needed and/or most effective analyses, assessments, tests, or other knowledge-improving activities needed to better plan and design the innovation implementation and deployment?

- Mappatura di flussi e procedure con focus su tecnologie necessarie VS a disposizione.
- Gap Analysis e valutazione degli investimenti per raggiungere la situazione TO BE ideale.
- Valutazione dei problemi di relazione e mantenimento della competitività dei protagonisti del processo logistico.
- Risorse umane adeguate.
- Analisi del processo di produzione e di erogazione, censimento delle fonti di dati.
- Rimuovere i divieti in capo ai vari settori della P.A. di scambiarsi i dati.
- Analisi di mercato in funzione all'obiettivo da raggiungere.
- Verifica dei best practice mondiali, adattamento alle necessità locali e valutazione dei problemi di relazione da attori della community.

Q02) Adaptation and innovation of products and services

Products and services are the core business of a company or an institution. Changing a product or a service does not mean changing the production or the provision process but changing the specific features of a product or a service. Changing products and services is often a response of some modification of the broader context of the production and provision process.

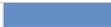
A: do you think you may need to change the specific features of some of your products or services in order to make your business compliant with the innovation? What is the reason why you think you need to change them?

To better meet the new customers and users' needs	9	
To make product or service cheaper and/or more effective	4	
To make product or service more compliant to the innovation	4	
To replace non-digital features with digital ones or add new digital-based features	8	
To make product or service more attractive or usable	2	
To make products or service more integrated with other products or services	9	
Others	1	

Others:

- Processi di innovazione e-commerce

B: what do you think are the needed and/or most effective type of changes to make in order to improve products and services?

Create a new product or service	4	
Redesign an existing product or service	8	
Redesign products packaging or service delivery	1	
Use different products or services delivery/provision ways and channels	8	
Others	0	

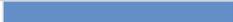
C: what do you think are the products and services that have to be created or modified and how? (e.g. development of a new information service for customers or suppliers, design of a new packaging with identification system, dematerialization of documents, porting of a service to a web-oriented systems)

- sviluppo di un nuovo servizio di informazione per clienti o fornitori, dematerializzazione di documenti, gestionali nativi cloud
- omogeneizzazione delle procedure presso tutti i Porti nazionali e le Navi
- communication e web marketing
- trasferimento di servizio su web, dematerializzazione dei documenti e ingenerizzazione dell'erelazioni tra attori del processo logistico
- Dematerializzazione dei documenti attraverso una maggiore digitalizzazione interna all'azienda
- processi paper-less
- riorganizzazione dei servizi con utilizzo risorse esterne
- Dematerializzazione di documenti. Accessibilità real-time ad informazioni utili. Aggiornamenti e modifiche a due vie di fasi di tracciabilità (anche documentale).
- dematerializzazione di documenti, trasferimento di un servizio su sistemi orientati al web
- sviluppo di un nuovo servizio di informazione
- vedi sopra

Q03) Organizational model improvement

Organisation model is how responsibilities and activities are assigned to persons or teams referring to specific business areas. It can also include other aspects such as relationships network, materials' sharing, information exchange and communication modalities.

A: do you think you may need to change something of your organizational model in order to make your business compliant with the innovation? What is the reason why you think you need to change them?

To meet the new needs emerging from employees and decision-makers	4	
To better integrate business processes	8	
To motivate employees	2	
To better exploit workforce existing skills and capabilities	5	
To improve information exchange	7	
Others	1	

Others:

- per eliminare il 50% della forza lavoro attuale

B: what do you think are the needed and/or most effective type of changes to make in order to improve your organization model?

Reassign roles of some persons and/or teams	6	
Reassign some activities to other persons or teams	3	
Redefine teams, internal areas and/or relationships between persons, teams, and areas	5	
Improve information exchange and reduce redundancy and inconsistency of communication	7	
Increase internal and external communication	4	
Others	1	

Others:

- Utilizzare diversi modi o canali di erogazione / fornitura di prodotti o servizi

C: what do you think are the main changes needed about roles and assignments, teams, information exchange and communication methods in order to better deal with the innovation implementation?

- promuovere i dipendenti, aumentando loro grado e stipendio
- migliorare la comunicazione, eliminare la ridondanza e assegnare ruoli chiari all'interno del team
- Migliorare lo scambio di informazioni e un'analisi interna dei ruoli e attitudini lavorative
- motivi già espressi nelle precedenti risposte
- eliminare i documenti cartacei di stampa funzionale
- Mappatura delle competenze. Gap Analysis di competenze. Piani di formazione o redistribuzione delle mansioni.
- vedi sopra

Q04) Employees' skills and capabilities improvement

Skills and capabilities are what human resources are able to do within the organization in relation of their education and expertise. Human resources are one of the primary production factors of a company or an institution.

A: do you think you may need to improve skills and capabilities of your employees or decision-makers in order to better deal with the innovation? What is the reason why you think skills and capabilities inside your organization are not adequate?

<i>Employees are not able to use some tools and apply some procedures</i>	4	
<i>Employees' cooperation is insufficient</i>	2	
<i>Workforce productivity can be increased</i>	5	
<i>Decision-makers are not able to correctly define workgroups and internal areas subdivision</i>	2	
<i>Decision-makers are not able to correctly understand/assess inputs, outputs and times of production ...</i>	6	
<i>Decision-makers are not able to correctly forecast skills and capabilities needs</i>	1	
<i>Others</i>	2	

Others:

- No
- nessuna annotazione, l'azienda vanta 50 anni di esperienza nel settore

B: what do you think are the needed and/or most effective type of actions to carry-out in order to improve skills and capabilities within your organization?

<i>Carry on educational and training activities for employees and decision-makers</i>	8	
<i>Support tools and methods adoption and utilization</i>	10	
<i>Provide self-training materials</i>	3	
<i>Hire new professionals</i>	1	
<i>Others</i>	2	

Others:

- No
- nessuna annotazione, l'azienda vanta 50 anni di esperienza nel settore

C: what do you think are the most critical lack of skills and capabilities that can limit your organization in dealing with the innovation implementation scenario?

- le fantasie erotiche che qualche settore della P.A. potrà voler introdurre (cfr Pmis)
- mancanza di formazione
- condivisione sulla visione del futuro e adeguamento dello staff ai nuovi processi
- Mancanza di specializzazione e formazione del personale
- nessuna annotazione
- flessibilità del personale e volontà allo studio del cambiamento legislativo
- Capacita' di utilizzare gli strumenti informatici
- formazione all'uso di nuove tecnologie e strumenti di analisi

D: if needed, what do you think are the best strategies and programmes to improve skills and capabilities within the specific context of your organization? (e.g. refresher courses, workshops, training on the job / coaching, e-learning, recruiting)

- e-learning, reclutamento
- eliminando il 50% delle risorse attuali, i rimanenti studieranno le nuove applicazioni di notte e di domenica ed entro due settimane saranno pronti.
- corsi aggiornamento e formazione
- coaching interno, reclutamento
- Attività di formazione interna all'azienda sulla conoscenza del mercato e della gestione aziendale
- reclutamento
- corsi aggiornamento
- Formazione on the job. Workshop.
- integrare i corsi di aggiornamento con workshop, formazione sul lavoro / coaching interno, e-learning.

Q05) Processes and procedures optimization

Processes, procedures, protocols, and regulations concern how products and services are provided. Optimizing processes and procedures does not mean modifying assets, infrastructures, materials, and workforce which are other factors; it means changing the way production factors and assets are combined to get to the final product.

A: do you think you may need to modify your business processes or protocols and procedures in use within your organization to be more compliant with the innovation? What do you think can be the reasons why you may need to optimize them?

<i>To increase productivity</i>	5	
<i>To make processes faster, more effective and eliminate bottlenecks</i>	5	
<i>To make processes more compliant to the innovation and exploit the digitalization</i>	5	
<i>To make procedures and operations easier for employees</i>	4	
<i>To increase the integration of different processes and exploit synergies</i>	4	
<i>To embed new tools or methods inside existing processes or define new processes based on the use of new tools</i>	4	
<i>Others</i>	2	

Others:

- nessuna annotazione
- la riduzione del 50% le attuali risorse umane

B: what do you think are the needed and/or most effective type of actions to carry-out in order to improve skills and capabilities within your organization?

<i>Use or combine the production factors in a smarter way</i>	1	
<i>Re-allocate or increase resources</i>	2	
<i>Redesign times and sequence, scheduling, relationships between resources and processes</i>	6	
<i>Make new regulations or review existing ones</i>	0	
<i>Replace obsolete activities</i>	6	
<i>Develop new integrated procedures to eliminate redundant activities</i>	6	
<i>Add or increase interoperability</i>	5	
<i>Others</i>	1	

Others:

- nessuna annotazione

C: which processes, protocols or procedures do you think you need to optimize to better deal with the innovation implementation? (e.g. data access policies, on-site inspections, information exchange between offices, traffic regulation)

- azzeramento delle discrezionalità di funzionari della P.A.
- implementazione comunicazione ed interazione tra reparti nelle sedi e sedi
- migliorare lo scambio di informazioni tra reparti
- Ispezioni in loco e analisi della struttura aziendale
- nessuna annotazione
- scambio informazioni fra uffici
- politiche di accesso ai dati, scambio di informazioni tra uffici

Q06) Information assets improvement

In logistics decision-making processes, the information assets are the main support resource. In this era, digital structured information is mostly called “the new oil” with reference to the power of using data sources and data streams flowing through the IT networks to obtain better operational and business performances, with particular focus on geospatial information and Big Data.

A: do you think you may need to improve the quality of information assets managed by your organization in order to gain more benefits from the innovation deployment? What do you think can be the reasons why you may need to get more data or improve existing datasets quality?

<i>To avoid wrong decisions caused by the use of bad data quality or lack of data</i>	4	
<i>To better support production processes</i>	4	
<i>To increase product and services quality</i>	6	
<i>To increase analysis, forecast and estimation capability</i>	7	
<i>To improve resources management</i>	2	
<i>To create new services for customers, users and suppliers</i>	3	
<i>Others</i>	1	

Others:

- l'azienda dipende dalla divisione ICT dell'Armatore MSC

B: what kind of activity do you think you should carry-out to improve the quality of information assets managed by your organization?

<i>Collect new data</i>	2	
<i>Improve quality of available data</i>	5	
<i>Process and/or integrate different data</i>	9	
<i>Connect to new data sources</i>	5	
<i>Others</i>	1	

Others:

- nessuna annotazione

C: what do you think you should do to get the data you need or to improve data quality in your organization's business context?

Carry-out data collection campaigns	1
Purchase new data	6
Geocode data	3
Classify/re-organize data	5
Develop an Extraction/Transform/Load automated system	8
Extract Big Data	5
Others	1

Others:

- nessuna annotazione

D: what new data do you think you will need? Which data you own needs improvement or integration? What kind of processing and/or integration of data do you think you need in order to improve your business in the context of the innovation deployment? (e.g. real time location of cargos, traffic amount inside port area zones, statistics about passengers, estimation of times)

- tutte quelle indicazioni di intelligence relative alle merci e relativi vettori che abbiano già completato l'attività.
- statistiche sul movimento e destinazioni dei carichi
- posizione delle merci, direttrici di traffico nei vari porti, dati sui punti di forza e debolezze dei vsri porti
- Analisi delle performance dei reparti in base alle statistiche nazionali
- dati già manipolati dall'azienda
- stima sui tempi di messa a disposizione dei dati da parte delle autorità amministrative
- posizione in tempo reale dei carichi, quantità di traffico all'interno delle zone portuali, statistiche sui passeggeri, stima dei tempi
- quantità e tipologia di traffico tipico della zona e dati relativi all'inefficienza (soste / problemi burocratici/tempi allo scarico..)

Q07) Information Technology IT infrastructure improvement

The IT infrastructure of an organization usually includes hardware devices, software tools and network connectivity.

A: do you think you may need to improve your organizations' IT infrastructure in order to gain more benefits from the innovation deployment? What do you think can be the reasons why you may need to obtain new IT tools or to improve the ones already in-use?

To get new digital information storage capacity or increase available (more room)	3
To get new computer processing power or increase available (more speed)	2
To get new information processing functions or update existing (better results)	6
To get information network exchange capability or increase its performance (improve sharing)	7
Others	2

Others:

- nil
- no

B: what kind of activities do you think you should carry-out in order to improve your organizations' IT infrastructure?

Purchase or rent a storage device	1	
Purchase a cloud-based storage service	6	
Purchase or rent a server computer, workstations, client or personal computers.	1	
Purchase a cloud-based computing (processing) solution	5	
Purchase and install sensor devices and/or actuators	3	
Purchase software licenses	2	
Update operating systems and applications	5	
Purchase and install network devices and infrastructures	4	
Perform systems and applications update, tuning and maintenance	0	
Others	2	

Others:

- server non gestiti dall'azienda
- no

C: what new IT tool or device do you think you will need? Which IT equipment you own needs improvement or integration in order to improve your production process or organizational model in the context of the innovation deployment? (e.g. a new sensor system, a document management system, a data server, a firewall, a mobile app software license update, a new IT infrastructure maintenance service for the warehouse)

- siamo già sovra strutturati
- gestione ed elaborazione documentale
- Sistema di gestione dei documenti
- abbiamo adottato switch intelligenti Huawei di ultima generazione
- NO
- Sistema di gestione dei documenti
- Sensori ed interfacce di raccolta dati operativi
- vedi sopra

Q08) Financial resources allocation

Available financial resources can include one or more project budgets or financing funds and may consider future needs that may occur due to project evolution and unexpected events.

A: do you think your organization may need to allocate special resources to carry-out tasks or activities related to the innovation deployment, or to re-allocate previously placed resources? What kind of financial operation do you think will be required?

Direct financial resources allocation for the needed actions	7	
Scouting for the raise of new funds and resources to be used for the innovation	3	
Re-allocation of resources previously placed for other tasks of the innovation	3	
Re-allocation of resources previously placed for other projects or activities	1	
Others	2	

Others:

- nil
- no

B: what kind of tasks do you think may require special resource allocation or re-allocation?

Purchase of equipment and materials	6	
External services and consulting	6	
Internal services and expertise	1	
Royalties	1	
Taxes	0	
Others	2	

Others:

- nil
- no

C: what do you think can be the equipment and materials to purchase, and services or consulting to pay to deal with the innovation implementation?

- nil
- l'innovazione passa necessariamente per lo sviluppo di network quindi hardware e software che supporti ciò
- Hardware da orientare ad un lavoro maggiormente flessibile
- apparecchiature informatiche
- implementazione programmi software
- Archiviazione Cloud. SW di time management e planning.
- da verificare post progettazione

Q9) Innovation impact assessment

A: Which aspects of the innovation are of particular interest to you?

- omogeneizzazione delle norme e loro applicazione, scambio dati tra la P.A.
- aumento della capacità di analisi del mercato e quindi delle scelte produttive
- azzeramento delle ridondanze, dematerializzazione dei processi, comunicazione in tempo reale
- Machine learning
- tutti gli aspetti dell'innovazione sono decisi dall'Armatore
- gestione ed elaborazione pratiche da remoto a livello nazionale in qualsiasi luogo di trovi l'operatore
- La possibilità di accedere real time a dati utili a minimizzare l'impatto ambientale ed economico, aggiornabili e facilmente contestualizzabili.
- Incrementare lo scambio di dati e ridurre la ridondanza
- gestione delle informazioni

B: Which scenario would be most feasible to deploy?

- ricreare completamente la P.A.; ad evitare le resistenze degli attuali settori coinvolti
- indicazione sulla situazione del mercato e indirizzo risorse
- come già scritto bisogna sviluppare network in grado di dare certezze alle comunicazioni, azzerare le ridondanze e sviluppare le comunicazioni machine to machine
- Software che connetta i soggetti che appartengono al sistema portuale in un contesto blockchain
- nessuna annotazione
- no

- Coinvolgimento di attori che condividano gli obiettivi del progetto, dispongano delle risorse finanziarie necessarie ed inseriscano all'interno delle proprie attività aziendali una pianificazione per l'implementazione dello stesso.
- Un gruppo di lavoro ristretto e rappresentativo delle diverse realtà interessate

C: What benefits would that achieve? What would be the most valuable results?

- nessuno, semplicemente il progetto non troverà applicazione pratica
- ottimizzazione produzione ed erogazione servizi
- aumento della produttività attraverso il miglioramento della qualità e l'azzeramento dei tempi morti
- Maggiore rapidità nelle operazioni
- nessuna annotazione
- abbattimento costi di gestione
- Efficienza. Minor impatto ambientale. Tracciabilità. Creazione di una storicità dei dati per massimizzare i punti precedenti.
- Maggiore informazione e riduzione spreco di tempo
- analisi predittive / profilazione del mercato per comprenderne i bisogni

Q10) Policy scenario

In the innovation deployment scenario, many activities are strongly related to policies and regulations obligations and requirements.

A: Do you know if your area has regional or local policies in place, such as development regulations or written policies in adopted plans, that provide positive support of foster this type of innovation and/or foster digital ecosystems?

- la politica e la partitica non si interessa delle necessità dei singoli, e non ha interesse a divulgare tali opportunità
- no
- vagamente
- No
- la spett.le General Management di Genova ci fornisce supporto
- no inerente
- Sono a conoscenza di alcuni bandi regionali che permettono di acquistare SW/HW finalizzati alla digitalizzazione dei processi.
- No
- no
- no

B: Does your organization have to be compliant to special guidelines, authority regulations, or published policies in adopting the innovation?

- siamo volutamente apolitici ed apolitici
- no
- no
- No
- certificazione AEO-F
- no
- No.
- Non so
- no

- si

C: Do you think your organization will benefit from special guidelines, authority regulations, or published policies in the innovation deployment scenario?

- no
- si
- non lo so
- Non lo so
- nessuna annotazione
- no
- Sì.
- E' possibile solo previo coinvolgimento nello sviluppo dell'innovazione
- Si

D: Did your organization advocate some policies related to the context of this innovation? If yes, can you list them?

- si, ma senza ottenere rispondenza alcuna dall'Autorità preposta
- abbiamo concluso nel 2019 un progetto di innovazione del prodotto
- No
- adeguamento GDPR, protocollo Covid-19, corsi sicurezza
- no
- Non so
- no
- progetti IT per riconsegna rapida di container e sistema di prenotazione per servizi speciali riferiti ai container

E. Regarding cyber security and privacy challenges:

<i>Do you think government and agencies are ahead of the curve in terms of supporting industry to find ...</i>	4	
<i>Do you think government incentives accelerate the adoption of new technology in this field?</i>	3	
<i>In your area of operation, do you think there are coherent industry regulations in place for effective controls?</i>	1	

What kind of policies and legislations are important for stimulating innovation?

- rimuovere i divieti in capo ai vari settori della P.A. sullo scambio dei dati
- sicuramente una politica di prevenzione e condanne adeguate
- Incentivi governativi per alleggerire il peso economico dell'assunzione di nuove tecnologie
- ne abbiamo già troppe
- trasparenza, comunicazione e collaborazione con le amministrazioni centrali
- Politiche che facilitino meritocraticamente investimenti economici nel breve termine a fronte dell'effettivo e coerente utilizzo degli stessi.
- Politiche di digitalizzazione degli enti pubblici

G. What do you think are bottlenecks in laws and regulations?

- Requisiti. Burocrazia. Assenza di monitoraggio.
- La lentezza nell'investire nell'infrastruttura porto
- leggi e regolamenti spesso non rispondenti alla realtà del lavoro
- Non so
- i divieti in capo ai vari settori della P.A. sullo scambio dei dati
- applicazione diversa nel territorio nazionale e comunitario
- eccesso di burocrazia
- le norme sono molto più lente del mercato

H. Do you know whether there are specific innovation policies including institutional coordination of investments in research and development across the sector? Can you list which type of innovation they refer to?

- nil
- no
- no
- No
- incentivi alla ricerca e sviluppo difficilmente applicabili all'azienda
- no
- No
- No

Section 3: innovation deployment roadmap

This is a first version of the pilot action implementation plan and midterm perspectives.

Please, identify the tasks you are interested in, or in which you think you are/will be involved and check the related boxes.

Interest / Involvement options → (check the boxes related to the desired tasks)		interested to be informed about results	interested to be involved in implementation	directly involved in the resulting effects	interested to be involved in testing
Roadmap actions and tasks ↓					
1. Pilot action “Spatial Data Management System” (year 1)					
2.					
Pilot planning					
	<i>Target definition</i>	7	4	1	2
	<i>User needs analysis</i>	4	5	1	2
	<i>Involved processes and services analysis</i>	5	5	2	2
	<i>Spatial data set to be used for the pilot implementation</i>	6	3	1	1

	<i>Hardware/Software prerequisites definition</i>	6	3	1	1
	<i>Definition of data-driven processes to be included in the pilot</i>	5	3	1	3
	<i>Training and educational program</i>	5	6	2	3
Process and services optimization					
	<i>Definition of processes and services to be re-designed</i>	5	6	1	2
	<i>Identification of spatial-data-driven support to processes and services</i>	6	3	0	2
	<i>Workshop with involved users / first educational programme</i>	6	2	0	5
	<i>Process / service re-design</i>	4	4	0	3
	<i>Performance assessment and evaluation</i>	5	2	1	3
	<i>Final review</i>	7	2	0	3
Spatial datasets acquisition					
	<i>Definition of the spatial data packages for the pilot test</i>	8	1	1	1
	<i>Data acquisition</i>	8	1	1	1
	<i>Optimization and pre-processing training on the job</i>	6	2	2	1
Spatial Data Infrastructure implementation					
	<i>Data model design</i>	8	1	1	3
	<i>Performance requirements analysis</i>	8	1	1	2
	<i>IT infrastructure implementation (HW/SW)</i>	6	2	1	1
	<i>Network configuration</i>	8	1	2	1
Data migration					
	<i>Workshop with involved users</i>	8	2	1	3
	<i>Spatial data conversion and migration training on the job</i>	6	2	2	2
Procedures implementation					
	<i>Objectives analysis</i>	7	2	1	2
	<i>Procedures development training on the job</i>	8	2	1	1
	<i>Information design and delivery workshop</i>	6	3	2	1
	<i>Decision support effectiveness assessment and review workshop</i>	8	2	1	1
Dissemination					
	<i>Publications, conferences, events</i>	6	2	0	3
	<i>Websites, newsletter, social media</i>	8	1	0	2
	<i>Stage 2 promotion</i>	6	2	1	2
Found raising					
	<i>Scouting workshop for founding opportunities to implement stage 2</i>	6	1	0	2
3. implementation of real-time data and whole department core dataset (year 2)					
Macro activities					
	<i>Stage planning</i>	7	1	1	2
	<i>Processes and services optimization</i>	8	2	1	2
	<i>Spatial datasets acquisition</i>	7	1	0	1
	<i>Data migration</i>				
	<i>Training</i>	6	2	2	2
	<i>Metadata system implementation</i>				
	<i>Dissemination</i>	7	0	0	1
4. inter-department implementation (year 3)					
Macro activities					
	<i>Stage planning</i>	6	0	0	1
	<i>Processes and services optimization</i>	6	1	0	1
	<i>Spatial datasets acquisition</i>	6	1	0	1
	<i>Data migration</i>				
	<i>Training</i>	4	1	1	1

	<i>Dissemination</i>	5	1	0	1
5. interoperability protocols deployment for external actors' cooperation (years 4-5)					
Macro activities					
	<i>Stage planning</i>	6	0	0	1
	<i>Process and services optimization</i>	5	2	0	1
	<i>Spatial datasets acquisition</i>	5	1	1	1
	<i>Data migration</i>				
	<i>Training</i>	5	1	1	1
	<i>Metadata system implementation</i>				
	<i>Dissemination</i>	6	0	0	1

3 Final considerations

The present document presented the results coming from stakeholder consultation. This will be the base for the revision of the roadmaps related to passenger flow harmonization and the definition of their final version. The presented results are not homogeneous since they reflect the specific importance given to different aspects depending on the innovation they deal with. Nevertheless, they provide an interesting information source thanks to the collaboration of a wide spectrum of stakeholders from the project area.

Appendage 1: Mobile solutions for passenger safety/security

Reference selected innovation: **Mobile APP – UNITS**

WP4 – action 2 stakeholder consultation questionnaire

Mobile solution for safety and security

Section 1: benefits and risks related to the innovation

Q01

A Mobile solution for Safety / Security is an innovation especially thought for a large passenger ship operational scenario in case of fire/flooding emergencies. In this scenario, after a casualty, ship abandonment can be required. Hence, during evacuation procedure passengers need to be guided to the safe area and then to lifeboats. The innovation is a smart mobile solution based on short range RF communication and location-based services that help passengers and crew during safety and security procedures in getting the right instructions and useful information to shorten times of security procedure, avoid mistakes and improve communication, notification, and organization.

A: what benefits brought by the innovation do you think will give greater advantages to your business considering the relationships with the activities and the actors working in the logistics sector?

- An effective passengers' identification
- A more effective information sharing during emergencies
- Use of an authorisation token for access/credentials for several services
- Possibility to provide new location-based services
- A faster process handling
- Others

B: what new opportunities do you think the innovation will bring in the logistics sector considering your operational context?

- The implementation of additional commercial services
- The provision of additional information and services for passengers
- The enabling of data analysis techniques for process optimization
- Others.....

C: which innovation weaknesses do you think will likely make innovation implementation more difficult?

- An acceptance in apps utilization by users can be hard to reach
- Some specific locations can cause some operational limitations

- The applicability on personal/private devices is not always ensured
- Others.....

D: what do you think will be the most concrete threats that likely make innovation deployment less effective?

- The technical solutions for security might be complex
- The compliance to privacy regulations and GDPR might be complex and costly
- Too much reliance on technologies can lead to not doing the necessary in-place checks
- Others.....

Section 2: needed actions for innovation deployment

Q01) Improvement of knowledge and awareness about internal assets and resources

Internal assets and resources are the core value of an organization and include all physical and intangible resources, from financial, knowledge and organizational resources to machinery, technologies, workforce and real estate. Note that this context element is about the knowledge about both intrinsic values of items and their productivity and performances; indeed, it is very important to have the most accurate and detailed report of available resources in order to develop any subsequent planning and design action.

A: do you think there is the need to make specific analyses, test or assessments to better know and understand one or more of the following aspects in order to deploy the innovation?

- Performance and lacks in the organization model
- Skills, capabilities, and productivity of workforce
- Quality, accuracy and completeness of data and information
- Adequacy of available technologies
- Regulation framework
- Adequacy, performance and lacks in methods, procedures and protocols
- Amount of financial resources and funding opportunities
- Adequacy of machinery and work tools
- Value of owned real estate
- Others

B: what do you think are the most effective type of actions to carry-out in order to achieve these objectives?

- Perform assessments
- Make prototypes
- Run tests and experimentations

- Perform monitoring and benchmarking
- Carry-out a make-or-buy analysis
- Make censuses of available resources
- Make needs analyses
- Make requirement analyses
- Others

C: what do you think are the needed and/or most effective analyses, assessments, tests, or other knowledge-improving activities needed to better plan and design the innovation implementation and deployment? (e.g. production process analysis, market scouting, data sources census, relationship issues assessment)

Q02) Adaptation and innovation of products and services

Products and services are the core business of a company or an institution. Changing a product or a service does not mean changing the production or the provision process but changing the specific features of a product or a service. Changing products and services is often a response of some modification of the broader context of the production and provision process.

A: do you think you may need to change the specific features of some of your products or services in order to make your business compliant with the innovation? What is the reason why you think you need to change them?

- To better meet the new customers and users' needs
- To make product or service cheaper and/or more effective
- To make product or service more compliant to the innovation
- To replace non-digital features with digital ones or add new digital-based features
- To make product or service more attractive or usable
- To make products or service more integrated with other products or services
- Others

B: what do you think are the needed and/or most effective type of changes to make in order to improve products and services?

- Create a new product or service
- Redesign an existing product or service
- Redesign products packaging or service delivery

- Use different products or services delivery/provision ways and channels
- Others

C: what do you think are the products and services that have to be created or modified and how? (e.g. development of a new information service for customers or suppliers, design of a new packaging with identification system, dematerialization of documents, porting of a service to a web-oriented systems)

Q03) Organizational model improvement

Organisation model is how responsibilities and activities are assigned to persons or teams referring to specific business areas. It can also include other aspects such as relationships network, materials' sharing, information exchange and communication modalities.

A: do you think you may need to change something of your organizational model in order to make your business compliant with the innovation? What is the reason why you think you need to change them?

- To meet the new needs emerging from employees and decision-makers
- To better integrate business processes
- To motivate employees
- To better exploit workforce existing skills and capabilities
- To improve information exchange
- Others

B: what do you think are the needed and/or most effective type of changes to make in order to improve your organization model?

- Reassign roles of some persons and/or teams
- Reassign some activities to other persons or teams
- Redefine teams, internal areas and/or relationships between persons, teams, and areas
- Improve information exchange and reduce redundancy and inconsistency of communication
- Increase internal and external communication
- Others

C: what do you think are the main changes needed about roles and assignments, teams, information exchange and communication methods in order to better deal with the innovation implementation?

Q04) Employees' skills and capabilities improvement

Skills and capabilities are what human resources are able to do within the organization in relation of their education and expertise. Human resources are one of the primary production factors of a company or an institution.

A: do you think you may need to improve skills and capabilities of your employees or decision-makers in order to better deal with the innovation? What is the reason why you think skills and capabilities inside your organization are not adequate?

- Employees are not able to use some tools and apply some procedures
- Employees' cooperation is insufficient
- Workforce productivity can be increased
- Decision-makers are not able to correctly define workgroups and internal areas subdivision
- Decision-makers are not able to correctly understand/assess inputs, outputs and times of production and service provision processes
- Decision-makers are not able to correctly forecast skills and capabilities needs
- Others

B: what do you think are the needed and/or most effective type of actions to carry-out in order to improve skills and capabilities within your organization?

- Carry on educational and training activities for employees and decision-makers
- Support tools and methods adoption and utilization
- Provide self-training materials
- Hire new professionals
- Others

C: what do you think are the most critical lack of skills and capabilities that can limit your organization in dealing with the innovation implementation scenario?

D: if needed, what do you think are the best strategies and programmes to improve skills and capabilities within the specific context of your organization? (e.g. refresher courses, workshops, training on the job / coaching, e-learning, recruiting)

Q05) Processes and procedures optimization

Processes, procedures, protocols, and regulations concern how products and services are provided. Optimizing processes and procedures does not mean modifying assets, infrastructures, materials, and workforce which are other factors; it means changing the way production factors and assets are combined to get to the final product.

A: do you think you may need to modify your business processes or protocols and procedures in use within your organization to be more compliant with the innovation? What do you think can be the reasons why you may need to optimize them?

- To increase productivity
- To make processes faster, more effective and eliminate bottlenecks
- To make processes more compliant to the innovation and exploit the digitalization
- To make procedures and operations easier for employees
- To increase the integration of different processes and exploit synergies
- To embed new tools or methods inside existing processes or define new processes based on the use of new tools and methods
- Others

B: what do you think are the needed and/or most effective type of actions to carry-out in order to improve skills and capabilities within your organization?

- Use or combine the production factors in a smarter way
- Re-allocate or increase resources
- Redesign times and sequence, scheduling, relationships between resources and processes
- Make new regulations or review existing ones
- Replace obsolete activities
- Develop new integrated procedures to eliminate redundant activities
- Add or increase interoperability
- Others

C: which processes, protocols or procedures do you think you need to optimize to better deal with the innovation implementation? (e.g. data access policies, on-site inspections, information exchange between offices, traffic regulation)

Q06) Information assets improvement

In logistics decision-making processes, the information assets are the main support resource. In this era, digital structured information is mostly called “the new oil” with reference to the power of using data sources and data streams flowing through the IT networks to obtain better operational and business performances, with particular focus on geospatial information and Big Data.

A: do you think you may need to improve the quality of information assets managed by your organization in order to gain more benefits from the innovation deployment? What do you think can be the reasons why you may need to get more data or improve existing datasets quality?

- To avoid wrong decisions caused by the use of bad data quality or lack of data
- To better support production processes
- To increase product and services quality
- To increase analysis, forecast and estimation capability
- To improve resources management
- To create new services for customers, users and suppliers
- Others

B: what kind of activity do you think you should carry-out to improve the quality of information assets managed by your organization?

- Collect new data
- Improve quality of available data
- Process and/or integrate different data
- Connect to new data sources
- Others

C: what do you think you should do to get the data you need or to improve data quality in your organization’s business context?

- Carry-out data collection campaigns
- Purchase new data

- Geocode data
- Classify/re-organize data
- Develop an Extraction/Transform/Load automated system
- Extract Big Data
- Others

D: what new data do you think you will need? Which data you own needs improvement or integration? What kind of processing and/or integration of data do you think you need in order to improve your business in the context of the innovation deployment? (e.g. real time location of cargos, traffic amount inside port area zones, statistics about passengers, estimation of times)

Q07) Machinery and equipment improvement

Machinery and other equipment are the set of physical production tools of the organization, except Information Technologies hardware tools.

A: do you think you may need to improve machinery and production equipment owned by your organization in order to gain more benefits from the innovation deployment? What do you think can be the reasons why you may need to obtain new equipment or to improve the functionalities of in-use machinery and tools?

- To increase productivity
- To allow the creation of a new product or the provision of a new service
- To increase the quality or the intrinsic value of a product or a service
- To ease the use of the tools or the application of work procedures
- To Increase work safety
- To obtain a new specific working process function
- Others

B: what kind of activities do you think you should carry-out in order to improve machinery and production equipment owned by your organization?

- Purchase or rent a new tool or machine
- Modify or integrate an existing tool or machine
- Integrate a tool or machine with another one or with a system
- Others

C: what new tool or machine do you think you will need? Which equipment you own needs improvement or integration in order to improve your production process in the context of the innovation deployment? (e.g. a new electro-mechanical system, a security update for a machine, a new energy distribution slot)

Q08) Information Technology IT infrastructure improvement

The IT infrastructure of an organization usually includes hardware devices, software tools and network connectivity.

A: do you think you may need to improve your organizations’ IT infrastructure in order to gain more benefits from the innovation deployment? What do you think can be the reasons why you may need to obtain new IT tools or to improve the ones already in-use?

- To get new digital information storage capacity or increase available (more room)
- To get new computer processing power or increase available (more speed)
- To get new information processing functions or update existing (better results)
- To get information network exchange capability or increase its performance (improve sharing)
- Others

B: what kind of activities do you think you should carry-out in order to improve your organizations’ IT infrastructure?

- Purchase or rent a storage device
- Purchase a cloud-based storage service
- Purchase or rent a server computer, workstations, client or personal computers.
- Purchase a cloud-based computing (processing) solution
- Purchase and install sensor devices and/or actuators
- Purchase software licenses
- Update operating systems and applications
- Purchase and install network devices and infrastructures
- Perform systems and applications update, tuning and maintenance
- Others

C: what new IT tool or device do you think you will need? Which IT equipment you own needs improvement or integration in order to improve your production process or organizational model in the context of the innovation deployment? (e.g. a new sensor system, a document management

system, a data server, a firewall, a mobile app software license update, a new IT infrastructure maintenance service for the warehouse)

Q09) Financial resources allocation

Available financial resources can include one or more project budgets or financing funds and may consider future needs that may occur due to project evolution and unexpected events.

A: do you think your organization may need to allocate special resources to carry-out tasks or activities related to the innovation deployment, or to re-allocate previously placed resources? What kind of financial operation do you think will be required?

- Direct financial resources allocation for the needed actions
- Scouting for the raise of new funds and resources to be used for the innovation
- Re-allocation of resources previously placed for other tasks of the innovation
- Re-allocation of resources previously placed for other projects or activities
- Others

B: what kind of tasks do you think may require special resource allocation or re-allocation?

- Purchase of equipment and materials
- External services and consulting
- Internal services and expertise
- Royalties
- Taxes
- Others

C: what do you think can be the equipment and materials to purchase, and services or consulting to pay to deal with the innovation implementation?

Q10) Goods and real estate

Goods and real estate are tangible assets that have intrinsic or operational value which can be considered part of production or service provision processes. Machinery and equipment are excluded.

A: do you think your organization may need to obtain special goods or real estate to carry-out tasks or activities related to the innovation deployment? What kind of actions do you think will be required?

- Obtain new real estate or other assets needed for some production or service provision processes
- Redefine the use of available real estate or assets according to production or service provision process
- Increase real estate or other assets value
- Improve real estate or asset features
- Obtain movable properties
- Improve real estate, assets and movable properties quality, usability or durability
- Others

B: what good or asset do you think may need to be obtained or improved, and how? (e.g. a new warehouse, rooms or office barrier-free, electrified dock, warning signs for open spaces)

Q11) Corporate image

Corporate image is how the company or institution is evaluated and considered by others. It is known to have an intrinsic value related to several factors like communication strategy, marketing strategy, identity design, customer relationship, social responsibility, products and services portfolio and others.

A: do you think there is the need to improve your organization’s corporate image in order to better exploit the benefits of the innovation deployment? What do you think are the main goals to improve your image?

- Make improvements, new products, services, and features known to the public
- Increase competitiveness and attractiveness
- Improve relationships with partners, customers and suppliers
- Enter new market sectors
- Enter new market segments
- Others

B: what actions/strategies do you think may be better to improve your corporate image in the innovation deployment scenario?

- Design/re-design the brand
- Modify the products/services portfolio
- Promote the business, products, and services through the traditional media
- Promote the business, products, and service using social media
- Make advertising
- Make social events
- Disseminate research results
- Involve people, companies, institutions, and professionals in live activities
- Promote social initiatives
- Others

C: what communication activities, design actions or events do you think you may need to better exploit the benefits of the innovation deployment? (e.g. brochures, logo design, virtual games, contests, digital advertising, newsletter, public conferences, websites)

Q12) Innovation impact assessment

A: Which aspects of the innovation are of particular interest to you?

B: Which scenario would be most feasible to deploy?

C: What benefits would that achieve? What would be the most valuable results?

D: Can you think of the agenda beyond the deployment? How would your operations change? What would be the main changes in your strategy?

Q13) Policy scenario

In the innovation deployment scenario, many activities are strongly related to policies and regulations obligations and requirements.

A: Regarding the policy scenario in the context of the innovation deployment, do you organization:

- Have an active role in the development of policies and regulations?
- Have opportunities in taking a proactive role in the development of policies and regulations?
- Not have any opportunity to take a role in the development of policies and regulations?

B: Do you know if your area has regional or local policies in place, such as development regulations or written policies in adopted plans, that provide positive support of foster this type of innovation and/or foster digital ecosystems?

C: Does your organization have to be compliant to special guidelines, authority regulations, or published policies in adopting the innovation?

D: Do you think your organization will benefit from special guidelines, authority regulations, or published policies in the innovation deployment scenario?

E: Did your organization advocate some policies related to the context of this innovation? If yes, can you list them?

F. Regarding cyber security and privacy challenges:

- Do you think government and agencies are ahead of the curve in terms of supporting industry to find solutions to emerging threats?
- Do you think government incentives accelerate the adoption of new technology in this field?
- In your area of operation, do you think there are coherent industry regulations in place for effective controls?
- What kind of policies and legislations are important for stimulating innovation?

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G. In your area of operation, which type of value chain do you think are being supported by economic policies?

- Internal logistics
- Production operations
- External logistics
- Marketing
- Services
- Company organization structure
- Human resources
- Technologies and innovation
- Materials supply

Other

Please provide a brief description:

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.....
.....

H. What do you think are bottlenecks in laws and regulations?

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.....
.....

I. Do you know whether there are specific innovation policies including institutional coordination of investments in research and development across the sector? Can you list which type of innovation they refer to?

.....
.....
.....

J. What do you think are the key barriers to investment and doing business in your sector? (e.g. enforcing contracts, property rights issues, finance issues, lack of trade facilitation/customs)

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.....
.....

K. What are impediments to free and fair competition within the sector?

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.....
.....

Section 3: innovation deployment roadmap

This is a first plan of pilot action implementation and innovation deployment.

Please, identify the tasks you are interested in, or in which you think you are/will be involved and check the related boxes.

Interest / Involvement options → <i>(check the boxes related to the desired tasks)</i>	interested to be informed about results interested to be involved in implementation directly involved in the resulting effects interested to be involved in testing ... some about the time other... ..
Roadmap actions and tasks ↓	
Preliminary assessment	
Current situation analysis	
Analyses of rules concerning ship evacuation	<input type="checkbox"/>
Analysis of design tools for evacuation simulation	<input type="checkbox"/>
Overall Design	
Workshops with stakeholders	<input type="checkbox"/>
Define a new approach to detect and monitor a safety/security emergency	<input type="checkbox"/>
Select technologies for onboard application	<input type="checkbox"/>
SWOT analyses	<input type="checkbox"/>
Overall planning	<input type="checkbox"/>
Feedback from stakeholders	<input type="checkbox"/>
Define required resources	<input type="checkbox"/>
Overall budget plan	<input type="checkbox"/>
Pilot action	
Pilot Planning	
Define target of Pilot Action	<input type="checkbox"/>
Define Pilot App requirements	<input type="checkbox"/>
Define Pilot Backend requirements	<input type="checkbox"/>
Define Pilot Beacon net requirements	<input type="checkbox"/>
Define Test Population	<input type="checkbox"/>
Identify test scenarios	<input type="checkbox"/>
Acquire test scenarios data	<input type="checkbox"/>
Define development/testing team	<input type="checkbox"/>
Allocate Pilot Budget	<input type="checkbox"/>
Recruiting/resources allocation	<input type="checkbox"/>

Pilot Mobile App Development									
	<i>Design Graphical User Interface</i>								
	<i>Software development</i>								
	<i>Software Testing</i>								
Pilot Backend Development									
	<i>Define (and acquire) Pilot Backend Hardware</i>								
	<i>Design Backend Graphical User Interface</i>								
	<i>Define Backend installation and configuration procedure</i>								
	<i>Software development</i>								
	<i>Software Testing</i>								
Beacon Net Development									
	<i>Acquire the beacon net components</i>								
	<i>Define beacon net installation and testing procedures</i>								
	<i>Test connectivity with backend and application</i>								
Configuration and Testing									
	<i>Acquire materials required by system configuration and testing</i>								
	<i>Pilot system installation on test environment</i>								
	<i>Pilot system trial run</i>								
Experimental Testing									
	<i>Acquire evacuation analyses softwares</i>								
	<i>Instructions to test population</i>								
	<i>Comparison of population behaviour with and without mobile application</i>								
	<i>Comparison with evacuation simulations</i>								
	<i>Dissemination of pilot results (publications, conferences, events)</i>								
	<i>Newsletters</i>								
	<i>Direct contacts with shipping companies</i>								
System development									
Final System Design									
	<i>Detailed analysis of legal and regulatory issues</i>								
	<i>Selection of decision algorithms to provide directions to passengers</i>								
	<i>Selection of interfaces with onboard automation</i>								
	<i>Definition of Final system architecture</i>								
	<i>Define Final App requirements</i>								
	<i>Define Final Backend requirements</i>								
	<i>Define Final Beacon net requirements</i>								
	<i>Define a standard proposal for the review of onboard emergency procedures</i>								
	<i>Define development team</i>								
	<i>Budget revision</i>								
	<i>Acquire materials/infrastructure for system development</i>								
	<i>Recruiting/resources allocation</i>								
Commercial Placement									
	<i>Definition of promotion campaign</i>								
	<i>Brochures</i>								
	<i>Digital advertising</i>								
	<i>Website</i>								
	<i>Contacts with shipping companies</i>								
	<i>Expositions</i>								
Mobile App Development									
	<i>Final design of standard GUI</i>								

Appendage 2: APP for data flows management of passengers (data integration for the development of new services for passengers)

Reference selected innovation: **APP for data flows management of passengers – Port of Rijeka Authority**

WP4 – action 2 stakeholder consultation questionnaire

Port / Vessel traffic management - data integration for the development of new services for passengers

Section 1: benefits and risks related to the innovation

Q01

Port/Vessel Traffic Management Systems (VTMIS) are specialized Information Systems aimed at performing real-time vessel tracking and status monitoring in order to better manage traffic inside port, river and coastal areas. VTMIS has both management and safety/security purposes and they are based on a sensor network and transponders to fast and secure localize and identify ships within the monitored area. VTMIS data streams generate a large amount of raw geo-data that can be stored for statistical analysis purposes, since they have a high potential in extracting new valuable information using special processing techniques. In many cases, VTMIS platforms are done by integrating already existing tracking and/or identification systems.

A: what benefits brought by the innovation do you think will give greater advantages to your business considering the relationships with the activities and the actors working in the passenger logistics sector?

- The increase of overall process performances
- The capability to perform real-time monitoring
- The improvement of time estimation
- The improvement of the forecasts on the use of resources
- Others

B: what new opportunities do you think the innovation will bring in the passenger logistics sector considering your operational context?

- A better organisation of maritime passenger
- An improvement in the safety of vessels, cargo, passengers, and onshore resources

- A reduction of monitoring operators, monitoring and operations tracking activities and costs
- The possibility to the design new IT services and applications based on real-time data
- Others.....

C: which innovation weaknesses do you think will likely make innovation implementation more difficult?

- The hard to obtain consensus of stakeholders to share their data
- Too high investment in new technologies
- Too high investments in technologies maintenance
- Others.....

D: what do you think will be the most concrete threats that likely make innovation deployment less effective?

- The availability and reliability of data cannot be always guaranteed
- The lack of adequate training and knowledge can lead to data misuse and misinterpretation
- There may be issues presenting in a secure way VTMS data sources to the end users
- Others.....

Section 2: needed actions for innovation deployment

Q01) Improvement of knowledge and awareness about internal assets and resources

Internal assets and resources are the core value of an organization and include all physical and intangible resources, from financial, knowledge and organizational resources to machinery, technologies, workforce and real estate. Note that this context element is about the knowledge about both intrinsic values of items and their productivity and performances; indeed, it is very important to have the most accurate and detailed report of available resources in order to develop any subsequent planning and design action.

A: do you think there is the need to make specific analyses, test or assessments to better know and understand one or more of the following aspects in order to deploy the innovation?

- Performance and lacks in the organization model
- Skills, capabilities, and productivity of workforce
- Quality, accuracy and completeness of data and information
- Adequacy of available technologies
- Regulation framework
- Adequacy, performance and lacks in methods, procedures and protocols
- Amount of financial resources and funding opportunities
- Adequacy of installed VTMS
- Value of owned equipment

- Others

B: what do you think are the most effective type of actions to carry-out in order to achieve these objectives?

- Perform assessments
- Make prototypes
- Run tests and experimentations
- Perform monitoring and benchmarking
- Carry-out a make-or-buy analysis
- Make censuses of available resources
- Make needs analyses
- Make requirement analyses
- Others

C: what do you think are the needed and/or most effective analyses, assessments, tests, or other knowledge-improving activities needed to better plan and design the innovation implementation and deployment? (e.g. production process analysis, market scouting, data sources census, relationship issues assessment)

Q02) Adaptation and innovation of products and services

Products and services are the core business of a company or an institution. Changing a product or a service does not mean changing the production or the provision process but changing the specific features of a product or a service. Changing products and services is often a response of some modification of the broader context of the production and provision process.

A: do you think you may need to change the specific features of some of your products or services in order to make your business compliant with the innovation? What is the reason why you think you need to change them?

- To better meet the new customers and passengers’ needs
- To make product or service cheaper and/or more effective
- To make product or service more compliant to the innovation
- To replace non-digital features with digital ones or add new digital-based features
- To make product or service more attractive or usable
- To make products or service more integrated with other products or services

- Others

B: what do you think are the needed and/or most effective type of changes to make in order to improve products and services?

- Create a new product or service
- Redesign an existing product or service (includes incremental innovation)
- Redesign products packaging or service delivery
- Use different products or services delivery/provision ways and channels
- Others

C: what do you think are the products and services that have to be created or modified and how? *(e.g. development of a new information service for customers or suppliers, design of a new packaging with identification system, dematerialization of documents, porting of a service to a web-oriented systems)*

Q03) Organizational model improvement

Organisation model is how responsibilities and activities are assigned to persons or teams referring to specific business areas. It can also include other aspects such as relationships network, materials' sharing, information exchange and communication modalities.

A: do you think you may need to change something of your organizational model in order to make your business compliant with the innovation? What is the reason why you think you need to change them?

- To meet the new needs emerging from employees and decision-makers
- To better integrate business processes
- To motivate employees
- To motivate passengers
- To better exploit workforce existing skills and capabilities
- To improve information exchange between organization and passengers
- Others

B: what do you think are the needed and/or most effective type of changes to make in order to improve your organization model?

- Reassign roles of some persons and/or teams
- Reassign some activities to other persons or teams
- Redefine teams, internal areas and/or relationships between persons, teams, and areas

- Improve information exchange and reduce redundancy and inconsistency of communication
- Increase internal and external communication
- Others

C: what do you think are the main changes needed about roles and assignments, teams, information exchange and communication methods in order to better deal with the innovation implementation?

Q04) Employees' skills and capabilities improvement

Skills and capabilities are what human resources are able to do within the organization in relation of their education and expertise. Human resources are one of the primary production factors of a company or an institution.

A: do you think you may need to improve skills and capabilities of your employees or decision-makers in order to better deal with the innovation? What is the reason why you think skills and capabilities inside your organization are not adequate?

- Employees are not able to use some tools and apply some procedures related to passengers
- Employees' cooperation is insufficient
- Workforce productivity can be increased
- Decision-makers are not able to correctly define workgroups and internal areas subdivision
- Decision-makers are not able to correctly understand/assess inputs, outputs and times of production and service provision processes
- Decision-makers are not able to correctly forecast skills and capabilities needs
- Others

B: what do you think are the needed and/or most effective type of actions to carry-out in order to improve skills and capabilities within your organization?

- Carry on educational and training activities for employees and decision-makers
- Support tools and methods adoption and utilization
- Provide self-training materials and online tutorials
- Hire new professionals
- Others

C: what do you think are the most critical lack of skills and capabilities that can limit your organization in dealing with the innovation implementation scenario?

D: if needed, what do you think are the best strategies and programmes to improve skills and capabilities within the specific context of your organization? (e.g. refresher courses, workshops, training on the job / coaching, e-learning, recruiting)

Q05) Processes and procedures optimization

Processes, procedures, protocols, and regulations concern how products and services are provided. Optimizing processes and procedures does not mean modifying assets, infrastructures, materials, and workforce which are other factors; it means changing the way production factors and assets are combined to get to the final product.

A: do you think you may need to modify your business processes or protocols and procedures in use within your organization to be more compliant with the innovation? What do you think can be the reasons why you may need to optimize them?

- To increase productivity
- To make passenger related processes faster, more effective and eliminate bottlenecks
- To make passenger related processes more compliant to the innovation and exploit the digitalization
- To make procedures and operations easier for employees
- To increase the integration of different processes and exploit synergies
- To embed new tools or methods inside existing processes or define new processes based on the use of new tools and methods
- Others

B: what do you think are the needed and/or most effective type of actions to carry-out in order to improve skills and capabilities within your organization?

- Use or combine the production factors in a smarter way
- Re-allocate or increase resources

- Redesign times and sequence, scheduling, relationships between resources and processes
- Make new regulations or review existing ones
- Replace obsolete activities
- Develop new integrated procedures to eliminate redundant activities
- Add or increase systems' interoperability
- Others

C: which processes, protocols or procedures do you think you need to optimize to better deal with the innovation implementation? (e.g. data access policies, on-site inspections, information exchange between offices, traffic regulation)

Q06) Information assets improvement

In logistics decision-making processes, the information assets are the main support resource. In this era, digital structured information is mostly called “the new oil” with reference to the power of using data sources and data streams flowing through the IT networks to obtain better operational and business performances, with particular focus on geospatial information and Big Data.

A: do you think you may need to improve the quality of information assets managed by your organization in order to gain more benefits from the innovation deployment? What do you think can be the reasons why you may need to get more data or improve existing datasets quality?

- To avoid wrong decisions caused by the use of bad data quality or lack of data
- To better support passenger-related processes
- To increase product and services quality
- To increase analysis, forecast and estimation capability
- To improve resources management
- To create new services for concessionaires, passengers and suppliers
- Others

B: what kind of activity do you think you should carry-out to improve the quality of information assets managed by your organization?

- Collect new data
- Improve quality of available data

- Process and/or integrate different data
- Connect to new data sources
- Others

C: what do you think you should do to get the data you need or to improve data quality in your organization’s business context?

- Carry-out data collection campaigns
- Purchase new data
- Geocode data
- Deploy and integrate new IoT sensor technologies to collect data
- Develop an Extraction/Transform/Load automated system
- Extract Big Data
- Others

D: what new data do you think you will need? Which data you own needs improvement or integration? What kind of processing and/or integration of data do you think you need in order to improve your business in the context of the passenger innovation deployment? (e.g. real time location of passengers, traffic volume inside port area zones, statistics about passengers, estimation of arrival and departure times)

Q07) Machinery and equipment improvement

Machinery and other equipment are the set of physical production tools of the organization, except Information Technologies hardware tools.

A: do you think you may need to improve other machinery and production equipment owned by your organization in order to gain more benefits from the innovation deployment? What do you think can be the reasons why you may need to obtain new equipment or to improve the functionalities of in-use machinery and tools?

- To increase productivity
- To allow the creation of a new product or the provision of a new service
- To increase the quality or the intrinsic value of a passenger related product or a service
- To ease the use of the tools or the application of work procedures
- To Increase passenger flow safety
- To obtain a new specific working process function

- Others

B: what kind of activities do you think you should carry-out in order to improve machinery and production equipment owned by your organization?

- Purchase or rent a new tool or machine
- Modify or integrate an existing tool or machine
- Integrate a tool or machine with another one or with a system
- Others

C: what new tool or machine do you think you will need? Which equipment you own needs improvement or integration in order to improve your production process in the context of the innovation deployment? (e.g. a new electro-mechanical system, a security update for a machine, a new energy distribution slot)

Q08) Information Technology IT infrastructure improvement

The IT infrastructure of an organization usually includes hardware devices, software tools and network connectivity.

A: do you think you may need to improve your organizations' IT infrastructure in order to gain more benefits from the innovation deployment? What do you think can be the reasons why you may need to obtain new IT tools or to improve the ones already in-use?

- To get new digital information storage capacity or increase available (more space)
- To get new computer processing power or increase available (more speed)
- To get new information processing functions or update existing (better results)
- To get information network exchange capability or increase its performance (improve sharing/connectivity)
- Others

B: what kind of activities do you think you should carry-out in order to improve your organizations' IT infrastructure?

- Purchase or rent an on-premise storage device
- Purchase a cloud-based storage service
- Purchase or rent a server , workstations, client or personal computers.
- Purchase a cloud-based computing (processing) solution

- Purchase and install sensor devices and/or actuators
- Purchase or rent software licenses
- Update operating systems and applications
- Purchase and install network devices and infrastructures
- Perform systems and applications update, tuning and maintenance
- Others

C: what new IT tool or device do you think you will need? Which IT equipment you own needs improvement or integration in order to improve your production process or organizational model in the context of the innovation deployment? (e.g. a new sensor system, a document management system, a data server, a firewall, a mobile app software license update, a new IT infrastructure maintenance service for the warehouse)

Q09) Financial resources allocation

Available financial resources can include one or more project budgets or financing funds and may consider future needs that may occur due to project evolution and unexpected events.

A: do you think your organization may need to allocate special resources to carry-out tasks or activities related to the innovation deployment, or to re-allocate previously placed resources? What kind of financial operation do you think will be required?

- Direct financial resources allocation for the needed actions
- Scouting for the raise of new funds and resources to be used for the innovation
- Re-allocation of resources previously placed for other tasks of the innovation
- Re-allocation of resources previously placed for other projects or activities
- Others

B: what kind of tasks do you think may require special resource allocation or re-allocation?

- Purchase of equipment and materials
- External services and consulting
- Internal services and expertise
- Royalties
- Taxes
- Others

C: what do you think can be the equipment and materials to purchase, and services or consulting to pay to deal with the innovation implementation?

Q10) Goods and real estate

Goods and real estate are tangible assets that have intrinsic or operational value which can be considered part of production or service provision processes. Machinery and equipment are excluded.

A: do you think your organization may need to obtain special goods or real estate to carry-out tasks or activities related to the innovation deployment? What kind of actions do you think will be required?

- Obtain new real estate or other assets needed for some production or service provision processes
- Redefine the use of available real estate or assets according to production or service provision process
- Increase real estate or other assets value
- Improve real estate or asset features
- Obtain movable properties
- Improve real estate, assets and movable properties quality, usability or durability
- Others

B: what good or asset do you think may need to be obtained or improved, and how? (e.g. a new warehouse, rooms or office barrier-free, electrified dock, warning signs for open spaces)

Q11) Corporate image

Corporate image is how the company or institution is evaluated and considered by others. It is known to have an intrinsic value related to several factors like communication strategy, marketing strategy, identity design, customer relationship, social responsibility, products and services portfolio and others.

A: do you think there is the need to improve your organization’s corporate image in order to better exploit the benefits of the innovation deployment? What do you think are the main goals to improve your image?

- Make improvements, new products, services, and features known to the public
- Increase competitiveness and attractiveness
- Improve relationships with partners, customers and suppliers
- Enter new market sectors
- Enter new market segments
- Others

B: what actions/strategies do you think may be better to improve your corporate image in the innovation deployment scenario?

- Design/re-design the brand
- Modify the products/services portfolio
- Promote the business, products, and services through the traditional media
- Promote the business, products, and service using social media
- Make advertising
- Make social events
- Disseminate research results
- Involve people, companies, institutions, and professionals in live activities
- Promote social initiatives
- Others

C: what communication activities, design actions or events do you think you may need to better exploit the benefits of the innovation deployment? (e.g. brochures, logo design, virtual games, contests, digital advertising, newsletter, public conferences, websites)

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Q12) Innovation impact assessment

A: Which aspects of the innovation are of particular interest to you?

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B: Which scenario would be most feasible to deploy?

C: What benefits would that achieve? What would be the most valuable results?

D: Can you think of the agenda beyond the deployment? How would your operations change? What would be the main changes in your strategy?

Q13) Policy scenario

In the innovation deployment scenario, many activities are strongly related to policies and regulations obligations and requirements.

A: Regarding the policy scenario in the context of the innovation deployment, do you organization:

- Have an active role in the development of policies and regulations?
- Have opportunities in taking a proactive role in the development of policies and regulations?
- Not have any opportunity to take a role in the development of policies and regulations?

B: Do you know if your area has regional or local policies in place, such as development regulations or written policies in adopted plans, that provide positive support of foster this type of innovation and/or foster digital ecosystems?

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C: Does your organization have to be compliant to special guidelines, authority regulations, or published policies in adopting the innovation?

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D: Do you think your organization will benefit from special guidelines, authority regulations, or published policies in the innovation deployment scenario?

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E: Did your organization advocate some policies related to the context of this innovation? If yes, can you list them?

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F. Regarding cyber security and privacy challenges:

- Do you think government and agencies are ahead of the curve in terms of supporting industry to find solutions to emerging threats?
- Do you think government incentives accelerate the adoption of new technology in this field?
- In your area of operation, do you think there are coherent industry regulations in place for effective controls?
- What kind of policies and legislations are important for stimulating innovation?

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G. In your area of operation, which type of value chain do you think are being supported by economic policies?

- Internal logistics
- Production operations

- External logistics
- Marketing
- Services
- Company organization structure
- Human resources
- Technologies and innovation
- Materials supply
- Other

Please provide a brief description:

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H. What do you think are bottlenecks in laws and regulations?

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I. Do you know whether there are specific innovation policies including institutional coordination of investments in research and development across the sector? Can you list which type of innovation they refer to?

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J. What do you think are the key barriers to investment and doing business in your sector? (e.g. enforcing contracts, property rights issues, finance issues, lack of trade facilitation/customs)

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K. What are impediments to free and fair competition within the maritime passenger traffic sector?

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Section 3: innovation deployment roadmap

This is a first plan of pilot action implementation and innovation deployment.

In the first year, the pilot action which is aimed at provision of sufficient coverage of the area inside Rijeka port breakwater especially in term of detection, diversification and identification of smaller targets in close proximity to one another. Since area inside of breakwater is designated for commercial cargo vessels including service vessels supporting them (i.e. tugs, pilots, etc.) but also fishing vessels, yachts and leisure boats, end users and operators serving them would benefit from covering the area with camera solution which would provide another possibility of insight into traffic and redundancy to the existing radar system giving the passengers and identified stakeholder inside target groups improved situational awareness.

Please, identify the tasks you are interested in, or in which you think you are/will be involved and check the related boxes.

Interest / Involvement options → <i>(check the boxes related to the desired tasks)</i>	
Roadmap actions and tasks ↓ Pilot Planning 1. CE3 - Definition of pilot action targets 2. CE7 - Definition of pilot installation requirements	interested to be informed about results interested to be involved in implementation directly involved in the resulting effects interested to be involved in testing

3. CE8 - Definition of integrative requirements - development
4. CE7 - Definition of technical characteristics of deployed solution – hardware BoM
5. CE3 - Definition of the internal test scenarios
6. CE3 - Identification of the test scenarios
7. CE8 - Finding methods to store captured data
8. CE4 - Define development/testing team
9. CE9 - Allocation of the pilot budget
10. CE4 - Recruiting/resources allocation

Pilot Technical Equipment Installation

1. CE7 - Granular definition of technical specifications for the camera
2. CE7 - Selection of a suitable location for installation
3. CE10 - Acquisition of the camera hardware
4. CE10 - Acquisition of the installation services
5. CE7 - Hardware acceptance testing
6. CE8 - Acceptance of technical installation documentation

Pilot Integrative Development

1. CE1 - Acquisition of technical documentation for existing traffic management solution
2. CE1 - Analysis of technical documentation for existing traffic management solution
3. CE3 - Back to back analysis of legacy systems versus new solution
4. CE3 - Extraction of common elements
5. CE6 - Definition of communication between systems
6. CE2 - Exploitation of tentative synergies for system opening
7. CE2 - Drafting technical specification for interconnectivity
8. CE8 - Acquisition of the interconnectivity services
9. CE8 - Development of the interconnectivity module
10. CE8 - Deployment of the interconnectivity module
11. CE1 - Software acceptance testing
12. CE8 - Acceptance of technical installation documentation

Information panel deployment

1. CE1 - Drafting technical specification for information panels
2. CE2 - Analysis of criteria for appropriate locations for installation
3. CE7 - Selection of the appropriate locations
4. CE1 - Drafting technical specification for interconnectivity
5. CE7 - Acquisition of the information panel hardware
6. CE8 - Acquisition of the installation services
7. CE7 - Hardware acceptance testing
8. CE8 - Acceptance of the technical installation documentation

Deployment of end users (passengers) information tools

1. CE1 - Granular definition of user requirements
2. CE2 - Selection of appropriate development technologies
3. CE4 - Translation of user requirements into software functional specification

4. CE6 - Creation of GUI mock-ups
5. CE6 - Acquisition of application integration services
6. CE4 - Internal software testing
7. CE5 - User acceptance testing
8. CE8 - Acceptance of the technical installation documentation

Configuration and Testing

1. CE6 - Full components integration
2. CE1 - Pilot system installation in test environment
3. CE6 - Pilot system trial run
4. CE2 - Drafting of test conclusions

Post-project activities

1. CE2 - Definition of promotion campaign
2. CE2 - Decision on dissemination of project visibility materials
3. CE5 - Dissemination of pilot results (publications, conferences, events)
4. CE2 - Creation of digital newsletters
5. CE8 - Web information placement
6. CE2 - Social networks pilot project reach
7. CE2 - Direct contact with passenger shipping companies
8. CE2 - Exploration of venues to reach end users (passengers)
9. CE2 - Decision of expositions participation

Commencing with operative system exploitation and maintenance

1. CE8 - Application placement in distribution channels
2. CE4 - Assistance/maintenance procedures definition
3. CE8 - System update and patching procedures definition
4. CE4 - Definition of the assistance team
5. CE9 - Budget allocation
6. CE7 - Acquisition of the material/infrastructures required for assistance
7. CE4 - Internal resources reallocation
8. CE1 - Internal resources training
9. CE2 - Corrective maintenance deployment

Appendage 3: Digitalization of access control as a prerequisite for integration with the national PCS in Port of Šibenik

Reference selected innovation: Implementation of digital access control – Port of Šibenik Authority

Below enclosed the results of the questionnaire.

WP4 – action 2 stakeholder consultation questionnaire

Innovative solution for access control

Section 1: benefits and risks related to the innovation

Q01

Creation of a national PCS has been ongoing as of beginning of 2018., and should be completed by the end of 2020, to be handed over to particular local Port Authorities for adjustment to local realities and requirements. The PCS package does not have a dedicated access control module suitable for passenger flow oversight. As a part of the pilot, automated digital system in line with ISPS, other port security rules and current access regulations will be developed, introducing innovative solutions with all applicable features and integrations for data submission and permits issuing and processing in order to grant granular access and achieve control over identified passenger target group stakeholders up to the level of statistical data processing.

A: what benefits brought by the innovation do you think will give greater advantages to your business considering the relationships with the activities and the actors working in the passenger logistics sector?

- The increase of overall process performances
- The capability to perform real-time monitoring
- The improvement of time estimation
- The improvement of the forecasts on the use of resources
- Others

B: what new opportunities do you think the innovation will bring in the passenger logistics sector considering your operational context?

- A better organisation of maritime passenger
- An improvement in the safety of vessels, cargo, passengers, and onshore resources
- A reduction of monitoring operators, monitoring and operations tracking activities and costs
- The possibility to the design new IT services and applications based on real-time data
- Others.....

C: which innovation weaknesses do you think will likely make innovation implementation more difficult?

- The hard to obtain consensus of stakeholders to share their data
- Too high investment in new technologies
- Too high investments in technologies maintenance
- Others.....

D: what do you think will be the most concrete threats that likely make innovation deployment less effective?

- The availability and reliability of data cannot be always guaranteed
- The lack of adequate training and knowledge can lead to data misuse and misinterpretation
- There may be issues presenting in a secure way VTMS data sources to the end users
- Others.....

Section 2: needed actions for innovation deployment

Q01) Improvement of knowledge and awareness about internal assets and resources

Internal assets and resources are the core value of an organization and include all physical and intangible resources, from financial, knowledge and organizational resources to machinery, technologies, workforce and real estate. Note that this context element is about the knowledge about both intrinsic values of items and their productivity and performances; indeed, it is very important to have the most accurate and detailed report of available resources in order to develop any subsequent planning and design action.

A: do you think there is the need to make specific analyses, test or assessments to better know and understand one or more of the following aspects in order to deploy the innovation?

- Performance and lacks in the organization model
- Skills, capabilities, and productivity of workforce
- Quality, accuracy and completeness of data and information
- Adequacy of available technologies
- Regulation framework
- Adequacy, performance and lacks in methods, procedures and protocols
- Amount of financial resources and funding opportunities
- Adequacy of installed VTMS
- Value of owned equipment
- Others

B: what do you think are the most effective type of actions to carry-out in order to achieve these objectives?

- Perform assessments
- Make prototypes
- Run tests and experimentations
- Perform monitoring and benchmarking
- Carry-out a make-or-buy analysis
- Make censuses of available resources
- Make needs analyses
- Make requirement analyses
- Others

C: what do you think are the needed and/or most effective analyses, assessments, tests, or other knowledge-improving activities needed to better plan and design the innovation implementation and deployment? (e.g. production process analysis, market scouting, data sources census, relationship issues assessment)

Q02) Adaptation and innovation of products and services

Products and services are the core business of a company or an institution. Changing a product or a service does not mean changing the production or the provision process but changing the specific features of a product or a service. Changing products and services is often a response of some modification of the broader context of the production and provision process.

A: do you think you may need to change the specific features of some of your products or services in order to make your business compliant with the innovation? What is the reason why you think you need to change them?

- To better meet the new customers and passengers' needs
- To make product or service cheaper and/or more effective
- To make product or service more compliant to the innovation
- To replace non-digital features with digital ones or add new digital-based features
- To make product or service more attractive or usable
- To make products or service more integrated with other products or services
- Others

B: what do you think are the needed and/or most effective type of changes to make in order to improve products and services?

- Create a new product or service
- Redesign an existing product or service (includes incremental innovation)
- Redesign products packaging or service delivery
- Use different products or services delivery/provision ways and channels
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C: what do you think are the products and services that have to be created or modified and how? (e.g. development of a new information service for customers or suppliers, design of a new packaging with identification system, dematerialization of documents, porting of a service to a web-oriented systems)

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A: do you think you may need to change something of your organizational model in order to make your business compliant with the innovation? What is the reason why you think you need to change them?

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- To motivate employees
- To motivate passengers
- To better exploit workforce existing skills and capabilities
- To improve information exchange between organization and passengers
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B: what do you think are the needed and/or most effective type of changes to make in order to improve your organization model?

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- Reassign some activities to other persons or teams
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- Increase internal and external communication
- Others

C: what do you think are the main changes needed about roles and assignments, teams, information exchange and communication methods in order to better deal with the innovation implementation?

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A: do you think you may need to improve skills and capabilities of your employees or decision-makers in order to better deal with the innovation? What is the reason why you think skills and capabilities inside your organization are not adequate?

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B: what do you think are the needed and/or most effective type of actions to carry-out in order to improve skills and capabilities within your organization?

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B: what do you think are the needed and/or most effective type of actions to carry-out in order to improve skills and capabilities within your organization?

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- Extract Big Data
- Others

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Q07) Machinery and equipment improvement

Machinery and other equipment are the set of physical production tools of the organization, except Information Technologies hardware tools.

A: do you think you may need to improve other machinery and production equipment owned by your organization in order to gain more benefits from the innovation deployment? What do you think can be the reasons why you may need to obtain new equipment or to improve the functionalities of in-use machinery and tools?

- To increase productivity
- To allow the creation of a new product or the provision of a new service
- To increase the quality or the intrinsic value of a passenger related product or a service
- To ease the use of the tools or the application of work procedures
- To Increase passenger flow safety
- To obtain a new specific working process function
- Others

B: what kind of activities do you think you should carry-out in order to improve machinery and production equipment owned by your organization?

- Purchase or rent a new tool or machine
- Modify or integrate an existing tool or machine
- Integrate a tool or machine with another one or with a system
- Others

C: what new tool or machine do you think you will need? Which equipment you own needs improvement or integration in order to improve your production process in the context of the innovation deployment? (e.g. a new electro-mechanical system, a security update for a machine, a new energy distribution slot)

Q08) Information Technology IT infrastructure improvement

The IT infrastructure of an organization usually includes hardware devices, software tools and network connectivity.

A: do you think you may need to improve your organizations' IT infrastructure in order to gain more benefits from the innovation deployment? What do you think can be the reasons why you may need to obtain new IT tools or to improve the ones already in-use?

- To get new digital information storage capacity or increase available (more space)
- To get new computer processing power or increase available (more speed)
- To get new information processing functions or update existing (better results)
- To get information network exchange capability or increase its performance (improve sharing/connectivity)
- Others

B: what kind of activities do you think you should carry-out in order to improve your organizations' IT infrastructure?

- Purchase or rent an on-premise storage device
- Purchase a cloud-based storage service
- Purchase or rent a server , workstations, client or personal computers.
- Purchase a cloud-based computing (processing) solution
- Purchase and install sensor devices and/or actuators

- Purchase or rent software licenses
- Update operating systems and applications
- Purchase and install network devices and infrastructures
- Perform systems and applications update, tuning and maintenance
- Others

C: what new IT tool or device do you think you will need? Which IT equipment you own needs improvement or integration in order to improve your production process or organizational model in the context of the innovation deployment? (e.g. a new sensor system, a document management system, a data server, a firewall, a mobile app software license update, a new IT infrastructure maintenance service for the warehouse)

Q09) Financial resources allocation

Available financial resources can include one or more project budgets or financing funds and may consider future needs that may occur due to project evolution and unexpected events.

A: do you think your organization may need to allocate special resources to carry-out tasks or activities related to the innovation deployment, or to re-allocate previously placed resources? What kind of financial operation do you think will be required?

- Direct financial resources allocation for the needed actions
- Scouting for the raise of new funds and resources to be used for the innovation
- Re-allocation of resources previously placed for other tasks of the innovation
- Re-allocation of resources previously placed for other projects or activities
- Others

B: what kind of tasks do you think may require special resource allocation or re-allocation?

- Purchase of equipment and materials
- External services and consulting
- Internal services and expertise
- Royalties
- Taxes
- Others

C: what do you think can be the equipment and materials to purchase, and services or consulting to pay to deal with the innovation implementation?

Q10) Goods and real estate

Goods and real estate are tangible assets that have intrinsic or operational value which can be considered part of production or service provision processes. Machinery and equipment are excluded.

A: do you think your organization may need to obtain special goods or real estate to carry-out tasks or activities related to the innovation deployment? What kind of actions do you think will be required?

- Obtain new real estate or other assets needed for some production or service provision processes
- Redefine the use of available real estate or assets according to production or service provision process
- Increase real estate or other assets value
- Improve real estate or asset features
- Obtain movable properties
- Improve real estate, assets and movable properties quality, usability or durability
- Others

B: what good or asset do you think may need to be obtained or improved, and how? (e.g. a new warehouse, rooms or office barrier-free, electrified dock, warning signs for open spaces)

Q11) Corporate image

Corporate image is how the company or institution is evaluated and considered by others. It is known to have an intrinsic value related to several factors like communication strategy, marketing strategy, identity design, customer relationship, social responsibility, products and services portfolio and others.

A: do you think there is the need to improve your organization’s corporate image in order to better exploit the benefits of the innovation deployment? What do you think are the main goals to improve your image?

- Make improvements, new products, services, and features known to the public
- Increase competitiveness and attractiveness
- Improve relationships with partners, customers and suppliers
- Enter new market sectors
- Enter new market segments
- Others

B: what actions/strategies do you think may be better to improve your corporate image in the innovation deployment scenario?

- Design/re-design the brand
- Modify the products/services portfolio
- Promote the business, products, and services through the traditional media
- Promote the business, products, and service using social media
- Make advertising
- Make social events
- Disseminate research results
- Involve people, companies, institutions, and professionals in live activities
- Promote social initiatives
- Others

C: what communication activities, design actions or events do you think you may need to better exploit the benefits of the innovation deployment? (e.g. brochures, logo design, virtual games, contests, digital advertising, newsletter, public conferences, websites)

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Q12) Innovation impact assessment

A: Which aspects of the innovation are of particular interest to you?

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B: Which scenario would be most feasible to deploy?

C: What benefits would that achieve? What would be the most valuable results?

D: Can you think of the agenda beyond the deployment? How would your operations change? What would be the main changes in your strategy?

Q13) Policy scenario

In the innovation deployment scenario, many activities are strongly related to policies and regulations obligations and requirements.

A: Regarding the policy scenario in the context of the innovation deployment, do you organization:

- Have an active role in the development of policies and regulations?
- Have opportunities in taking a proactive role in the development of policies and regulations?
- Not have any opportunity to take a role in the development of policies and regulations?

B: Do you know if your area has regional or local policies in place, such as development regulations or written policies in adopted plans, that provide positive support of foster this type of innovation and/or foster digital ecosystems?

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C: Does your organization have to be compliant to special guidelines, authority regulations, or published policies in adopting the innovation?

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D: Do you think your organization will benefit from special guidelines, authority regulations, or published policies in the innovation deployment scenario?

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E: Did your organization advocate some policies related to the context of this innovation? If yes, can you list them?

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F. Regarding cyber security and privacy challenges:

- Do you think government and agencies are ahead of the curve in terms of supporting industry to find solutions to emerging threats?
- Do you think government incentives accelerate the adoption of new technology in this field?
- In your area of operation, do you think there are coherent industry regulations in place for effective controls?
- What kind of policies and legislations are important for stimulating innovation?

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G. In your area of operation, which type of value chain do you think are being supported by economic policies?

- Internal logistics
- Production operations

- External logistics
- Marketing
- Services
- Company organization structure
- Human resources
- Technologies and innovation
- Materials supply
- Other

Please provide a brief description:

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H. What do you think are bottlenecks in laws and regulations?

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I. Do you know whether there are specific innovation policies including institutional coordination of investments in research and development across the sector? Can you list which type of innovation they refer to?

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J. What do you think are the key barriers to investment and doing business in your sector? (e.g. enforcing contracts, property rights issues, finance issues, lack of trade facilitation/customs)

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K. What are impediments to free and fair competition within the maritime passenger traffic sector?

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Section 3: innovation deployment roadmap

This is a first plan of pilot action implementation and innovation deployment.

In the first year, the pilot action which is aimed at sustaining incremental innovation, that digitalizes a process that is currently executed manually and presents a large obstacle in modernization of processes inside port of Šibenik, but also is not addressed within the scope of the new to-be PCS system that will also be deployed in the port of Šibenik. This is a new **digital access control system, fully aligned with current business needs, whose full scope is to be defined by the future functional analysis**, and that may encompass stakeholders whose activities are aimed towards processes underlying passengers disembarking and boarding cruisers and passenger ships, port concessionaires, business personnel, vehicles, drivers, containers and other stakeholders within identified target groups. Presently, access control to the Port of Šibenik area is governed by the subject Regulation about identification cards of the Port of Šibenik Authority from 11th September 2015. ID cards used for ingress and egress control and access to information, cargo, premises and operative port spaces are used to identify persons and vehicles and they are particular to a certain person or vehicle and non transferrable. There is also a quite detailed pricing list for permit issuing, as it presents a source of revenue for the Port of Šibenik Authority, in force as of 6th January 2017.

Enforcement is still implemented in physical form, using manual labour and plastic cards, causing delays, excessive consumption of time and other resources, and diminishing integration and analytics, contrary to the ISPS requirements and modern business process execution inside ports.

Please, identify the tasks you are interested in, or in which you think you are/will be involved and check the related boxes.

Interest / Involvement options →
(check the boxes related to the desired tasks)

Roadmap actions and tasks ↓

interested to be informed about results
 interested to be involved in implementation
 directly involved in the resulting effects
 interested to be involved in testing
 other(enter own requirement)

Appendage 4: Maritime Transport Management by linking PCS and national platform for Croatian ports

Section 1: benefits and risks related to the innovation

Q01

Port Community System – PCS – is a public (often Internet-based) platform enabling the smart and secure exchange of information between stakeholders involved in seaport operations. It provides a Single Window environment in which report formalities, processes, and procedures can be carried on in a digital way connecting other IT systems by specific interoperable interfaces. PCS enables better harmonization of information, standardization of data flows, data centralization, redundancy reduction, easy data submission for all members of the port community. In short, a PCS can be described as a central point for an organization to deliver or receive information.

A: what benefits brought by the innovation do you think will give greater advantages to your business considering the relationships with the activities and the actors working in the logistics sector?

- A single point for submission and exchange of data
- Standardization of data
- Improvement of accuracy and transparency of information
- Reuse of information
- Fast and effective routing of messages
- Faster data availability
- Improvement of process efficiency
- Others

B: what new opportunities do you think the innovation will bring in the logistics sector considering your operational context?

- The redesign and optimisation of processes
- A wider data exchanges
- A better possibility of resource planning
- A better analytics decision-making support
- Others.....

C: which innovation weaknesses do you think will likely make innovation implementation more difficult?

- Dynamic changes of the system are not allowed
- Integration of new functions is often difficult

- Multiple standards are difficult to harmonize
- The maintenance responsibilities are difficult to establish
- There will be an increase of costs
- Others.....

D: what do you think will be the most concrete threats that likely make innovation deployment less effective?

- Connectivity to legacy applications may create issues
- Align all involved parties can be difficult
- Security and authorisation protocols can be difficult to implement
- There can be a resistance to change the way of work by employees or decision-makers
- Failure inside interconnected systems might easily propagate
- Some functions might be duplicate
- Others.....

Section 2: needed actions for innovation deployment

Q01) Improvement of knowledge and awareness about internal assets and resources

Internal assets and resources are the core value of an organization and include all physical and intangible resources, from financial, knowledge and organizational resources to machinery, technologies, workforce and real estate. Note that this context element is about the knowledge about both intrinsic values of items and their productivity and performances; indeed, it is very important to have the most accurate and detailed report of available resources in order to develop any subsequent planning and design action.

A: do you think there is the need to make specific analyses, test or assessments to better know and understand one or more of the following aspects in order to deploy the innovation?

- Performance and lacks in the organization model
- Skills, capabilities, and productivity of workforce
- Quality, accuracy and completeness of data and information
- Adequacy of available technologies
- Regulation framework
- Adequacy, performance and lacks in methods, procedures and protocols
- Amount of financial resources and funding opportunities
- Adequacy of IT equipment
- Value of owned equipment

- Others

B: what do you think are the most effective type of actions to carry-out in order to achieve these objectives?

- Perform assessments
- Make prototypes
- Run tests and experimentations
- Perform monitoring and benchmarking
- Carry-out a make-or-buy analysis
- Make censuses of available resources
- Make needs analyses
- Make requirement analyses
- Others

C: what do you think are the needed and/or most effective analyses, assessments, tests, or other knowledge-improving activities needed to better plan and design the innovation implementation and deployment? (e.g. production process analysis, market scouting, data sources census, relationship issues assessment)

Q02) Adaptation and innovation of products and services

Products and services are the core business of a company or an institution. Changing a product or a service does not mean changing the production or the provision process but changing the specific features of a product or a service. Changing products and services is often a response of some modification of the broader context of the production and provision process.

A: do you think you may need to change the specific features of some of your products or services in order to make your business compliant with the innovation (PCS)? What is the reason why you think you need to change them?

- To better meet the new customers and users' needs
- To make product or service cheaper and/or more effective
- To make product or service more compliant to the innovation
- To replace non-digital features with digital ones or add new digital-based features

- To make product or service more attractive or usable
- To make products or service more integrated with other products or services
- Others

B: what do you think are the needed and/or most effective type of changes to make in order to improve products and services?

- Create a new product or service
- Redesign an existing product or service
- Redesign products packaging or service delivery
- Use different products or services delivery/provision ways and channels
- Others

C: what do you think are the products and services that have to be created or modified and how? (e.g. development of a new information service for customers or suppliers, design of a new packaging with identification system, dematerialization of documents, porting of a service to a web-oriented systems)

Q03) Organizational model improvement

Organisation model is how responsibilities and activities are assigned to persons or teams referring to specific business areas. It can also include other aspects such as relationships network, materials' sharing, information exchange and communication modalities.

A: do you think you may need to change something of your organizational model in order to make your business compliant with the innovation (PCS)? What is the reason why you think you need to change them?

- To meet the new needs emerging from employees and decision-makers
- To better integrate business processes
- To motivate employees
- To better exploit workforce existing skills and capabilities
- To improve information exchange
- Others

B: what do you think are the needed and/or most effective type of changes to make in order to improve your organization model?

- Reassign roles of some persons and/or teams
- Reassign some activities to other persons or teams
- Redefine teams, internal areas and/or relationships between persons, teams, and areas
- Improve information exchange and reduce redundancy and inconsistency of communication
- Increase internal and external communication
- Others

C: what do you think are the main changes needed about roles and assignments, teams, information exchange and communication methods in order to better deal with the innovation implementation?

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Q04) Employees' skills and capabilities improvement

Skills and capabilities are what human resources are able to do within the organization in relation of their education and expertise. Human resources are one of the primary production factors of a company or an institution.

A: do you think you may need to improve skills and capabilities of your employees or decision-makers in order to better deal with the innovation (PCS)? What is the reason why you think skills and capabilities inside your organization are not adequate?

- Employees are not able to use some tools and apply some procedures
- Employees' cooperation is insufficient
- Workforce productivity can be increased
- Decision-makers are not able to correctly define workgroups and internal areas subdivision
- Decision-makers are not able to correctly understand/assess inputs, outputs and times of production and service provision processes
- Decision-makers are not able to correctly forecast skills and capabilities needs
- Others

B: what do you think are the needed and/or most effective type of actions to carry-out in order to improve skills and capabilities within your organization?

- Carry on educational and training activities for employees and decision-makers

- Support tools and methods adoption and utilization
- Provide self-training materials
- Hire new professionals
- Others

C: what do you think are the most critical lack of skills and capabilities that can limit your organization in dealing with the innovation implementation scenario?

D: if needed, what do you think are the best strategies and programmes to improve skills and capabilities within the specific context of your organization? (e.g. refresher courses, workshops, training on the job / coaching, e-learning, recruiting)

Q05) Processes and procedures optimization

Processes, procedures, protocols, and regulations concern how products and services are provided. Optimizing processes and procedures does not mean modifying assets, infrastructures, materials, and workforce which are other factors; it means changing the way production factors and assets are combined to get to the final product.

A: do you think you may need to modify your business processes or protocols and procedures in use within your organization to be more compliant with the innovation? What do you think can be the reasons why you may need to optimize them?

- To increase productivity
- To make processes faster, more effective and eliminate bottlenecks
- To make processes more compliant to the innovation and exploit the digitalization
- To make procedures and operations easier for employees
- To increase the integration of different processes and exploit synergies

- To embed new tools or methods inside existing processes or define new processes based on the use of new tools and methods
- Others

B: what do you think are the needed and/or most effective type of actions to carry-out in order to improve skills and capabilities within your organization?

- Use or combine the production factors in a smarter way
- Re-allocate or increase own resources
- Redesign times and sequence, scheduling, relationships between resources and processes
- Make new regulations or review existing ones
- Replace obsolete activities
- Develop new integrated procedures to eliminate redundant activities
- Add or increase interoperability
- Others

C: which processes, protocols or procedures do you think you need to optimize to better deal with the innovation implementation? (e.g. data access policies, on-site inspections, information exchange between offices, traffic regulation)

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Q06) Information assets improvement

In logistics decision-making processes, the information assets are the main support resource. In this era, digital structured information is mostly called “the new oil” with reference to the power of using data sources and data streams flowing through the IT networks to obtain better operational and business performances, with particular focus on geospatial information and Big Data.

A: do you think you may need to improve the quality of information assets managed by your organization in order to gain more benefits from the innovation deployment? What do you think can be the reasons why you may need to get more data or improve existing datasets quality?

- To avoid wrong decisions caused by the use of bad data quality or lack of data
- To better support production processes
- To increase product and services quality
- To increase analysis, forecast and estimation capability
- To improve resources management
- To create new services for customers, users and suppliers
- Others

B: what kind of activity do you think you should carry-out to improve the quality of information assets managed by your organization?

- Collect new data
- Improve quality of available data
- Process and/or integrate different data
- Connect to new data sources
- Others

C: what do you think you should do to get the data you need or to improve data quality in your organization's business context?

- Carry-out data collection campaigns
- Purchase new data
- Geocode data
- Classify/re-organize data
- Develop an Extraction/Transform/Load automated system
- Extract Big Data
- Others

D: what new data do you think you will need? Which data you own needs improvement or integration? What kind of processing and/or integration of data do you think you need in order to improve your business in the context of the innovation deployment? (e.g. real time location of cargos, traffic amount inside port area zones, statistics about passengers, estimation of times)

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Q07) Machinery and equipment improvement

Machinery and other equipment are the set of physical production tools of the organization, except Information Technologies hardware tools.

A: do you think you may need to improve machinery and production equipment owned by your organization in order to gain more benefits from the innovation deployment? What do you think can be the reasons why you may need to obtain new equipment or to improve the functionalities of in-use machinery and tools?

- To increase productivity
- To allow the creation of a new product or the provision of a new service
- To increase the quality or the intrinsic value of a product or a service
- To ease the use of the tools or the application of work procedures
- To Increase work safety
- To obtain a new specific working process function
- Others

B: what kind of activities do you think you should carry-out in order to improve machinery and production equipment owned by your organization?

- Purchase or rent a new tool or machine
- Modify or integrate an existing tool or machine
- Integrate a tool or machine with another one or with a system
- Others

C: what new tool or machine do you think you will need? Which equipment you own needs improvement or integration in order to improve your production process in the context of the innovation deployment? (e.g. a new electro-mechanical system, a security update for a machine, a new energy distribution slot)

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Q08) Information Technology IT infrastructure improvement

The IT infrastructure of an organization usually includes hardware devices, software tools and network connectivity.

A: do you think you may need to improve your organizations’ IT infrastructure in order to gain more benefits from the innovation deployment? What do you think can be the reasons why you may need to obtain new IT tools or to improve the ones already in-use?

- To get new digital information storage capacity or increase available (more room)
- To get new computer processing power or increase available (more speed)
- To get new information processing functions or update existing (better results)
- To get information network exchange capability or increase its performance (improve sharing)
- Others

B: what kind of activities do you think you should carry-out in order to improve your organizations’ IT infrastructure?

- Purchase or rent a storage device
- Purchase a cloud-based storage service
- Purchase or rent a server computer, workstations, client or personal computers.
- Purchase a cloud-based computing (processing) solution
- Purchase and install sensor devices and/or actuators
- Purchase software licenses
- Update operating systems and applications
- Purchase and install network devices and infrastructures
- Perform systems and applications update, tuning and maintenance
- Others

C: what new IT tool or device do you think you will need? Which IT equipment you own needs improvement or integration in order to improve your production process or organizational model in the context of the innovation deployment? (e.g. a new sensor system, a document management system, a data server, a firewall, a mobile app software license update, a new IT infrastructure maintenance service for the warehouse)

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Q09) Financial resources allocation

Available financial resources can include one or more project budgets or financing funds and may consider future needs that may occur due to project evolution and unexpected events.

A: do you think your organization may need to allocate special resources to carry-out tasks or activities related to the innovation deployment, or to re-allocate previously placed resources? What kind of financial operation do you think will be required?

- Direct financial resources allocation for the needed actions
- Scouting for the raise of new funds and resources to be used for the innovation
- Re-allocation of resources previously placed for other tasks of the innovation
- Re-allocation of resources previously placed for other projects or activities
- Others

B: what kind of tasks do you think may require special resource allocation or re-allocation?

- Purchase of equipment and materials
- External services and consulting
- Internal services and expertise
- Royalties
- Taxes
- Others

C: what do you think can be the equipment and materials to purchase, and services or consulting to pay to deal with the innovation implementation?

Q10) Goods and real estate

Goods and real estate are tangible assets that have intrinsic or operational value which can be considered part of production or service provision processes. Machinery and equipment are excluded.

A: do you think your organization may need to obtain special goods or real estate to carry-out tasks or activities related to the innovation deployment? What kind of actions do you think will be required?

- Obtain new real estate or other assets needed for some production or service provision processes
- Redefine the use of available real estate or assets according to production or service provision process
- Increase real estate or other assets value

- Improve real estate or asset features
- Obtain movable properties
- Improve real estate, assets and movable properties quality, usability or durability
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B: what good or asset do you think may need to be obtained or improved, and how? (e.g. a new warehouse, rooms or office barrier-free, electrified dock, warning signs for open spaces)

Q11) Corporate image

Corporate image is how the company or institution is evaluated and considered by others. It is known to have an intrinsic value related to several factors like communication strategy, marketing strategy, identity design, customer relationship, social responsibility, products and services portfolio and others.

A: do you think there is the need to improve your organization’s corporate image in order to better exploit the benefits of the innovation deployment? What do you think are the main goals to improve your image?

- Make improvements, new products, services, and features known to the public
- Increase competitiveness and attractiveness
- Improve relationships with partners, customers and suppliers
- Enter new market sectors
- Enter new market segments
- Others

B: what actions/strategies do you think may be better to improve your corporate image in the innovation deployment scenario?

- Design/re-design the brand
- Modify the products/services portfolio
- Promote the business, products, and services through the traditional media
- Promote the business, products, and service using social media
- Make advertising
- Make social events
- Disseminate research results

- Involve people, companies, institutions, and professionals in live activities
- Promote social initiatives
- Others

C: what communication activities, design actions or events do you think you may need to better exploit the benefits of the innovation deployment? (e.g. brochures, logo design, virtual games, contests, digital advertising, newsletter, public conferences, websites)

Q12) Innovation impact assessment

A: Which aspects of the innovation are of particular interest to you?

B: Which scenario would be most feasible to deploy?

C: What benefits would that achieve? What would be the most valuable results?

D: Can you think of the agenda beyond the deployment? How would your operations change? What would be the main changes in your strategy?

Q13) Policy scenario

In the innovation deployment scenario, many activities are strongly related to policies and regulations obligations and requirements.

A: Regarding the policy scenario in the context of the innovation deployment, do you organization:

- Have an active role in the development of policies and regulations?
- Have opportunities in taking a proactive role in the development of policies and regulations?
- Not have any opportunity to take a role in the development of policies and regulations?

B: Do you know if your area has regional or local policies in place, such as development regulations or written policies in adopted plans, that provide positive support of foster this type of innovation and/or foster digital ecosystems?

C: Does your organization have to be compliant to special guidelines, authority regulations, or published policies in adopting the innovation?

D: Do you think your organization will benefit from special guidelines, authority regulations, or published policies in the innovation deployment scenario?

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E: Did your organization advocate some policies related to the context of this innovation? If yes, can you list them?

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F. Regarding cyber security and privacy challenges:

- Do you think government and agencies are ahead of the curve in terms of supporting industry to find solutions to emerging threats?
- Do you think government incentives accelerate the adoption of new technology in this field?
- In your area of operation, do you think there are coherent industry regulations in place for effective controls?
- What kind of policies and legislations are important for stimulating innovation?

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G. In your area of operation, which type of value chain do you think are being supported by economic policies?

- Internal logistics
- Production operations
- External logistics
- Marketing
- Services
- Company organization structure
- Human resources
- Technologies and innovation
- Materials supply

Other

Please provide a brief description:

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H. What do you think are bottlenecks in laws and regulations?

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I. Do you know whether there are specific innovation policies including institutional coordination of investments in research and development across the sector? Can you list which type of innovation they refer to?

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J. What do you think are the key barriers to investment and doing business in your sector? (e.g. enforcing contracts, property rights issues, finance issues, lack of trade facilitation/customs)

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K. What are impediments to free and fair competition within the sector?

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Section 3: innovation deployment roadmap

This is a first plan of pilot action implementation and innovation deployment.

In the first year, it will be implemented the pilot action which is aimed at implementation of an application that integrates the operational and accounting system of the Rovinj Port Authority's operations and it will serve as PCS. The application enables mooring reservation system, graphic mooring occupancy management, billing via mobile application, creating daily, monthly and annual reports, generating mooring contracts, automatic invoicing, CRM-Integrated Email System, accounting, paying invoices and automated importing of bank statements.

Please, identify the tasks you are interested in, or in which you think you are/will be involved and check the related boxes.

Interest / Involvement options → <i>(check the boxes related to the desired tasks)</i>		interested to be informed about results interested to be involved in implementation directly involved in the resulting effects interested to be involved in testing			
Roadmap actions and tasks ↓					
	CE1. Definition of pilot action targets				
	CE8. Definition of pilot installation requirements				
	CE3. Analysis of all operation processes				
	CE3. Analysis of all administrative processes				
	CE8. Procurement and installing of equipment				
	CE8. Modification of the application to the needs of the Port Authority				

Appendage 5: Big Data / Data management solution for planning

Reference selected innovation: **Spatial Data Infrastructure version 1 and skill enhancement for Venice port - CFLI, Intermodal Logistics Training Consortium**

Section 1: benefits and risks related to the innovation

Q01

Big Data and Data Management solutions are integrated information systems aimed at manage and process the huge amount of data generated inside and outside the maritime transport network including a large variety of dataset containing information about ships, freight, weather data, labour costs, oil and metal prices, operators' work, as well as those produced by bridge equipment such as Voyage Data Recorder (VDR) and Automatic Identification System (AIS). Many of these datasets are georeferenced, and most of them can be georeferenced by correlating them to some others; anyway, to obtain the best results from these data, in terms of added value in knowledge and management capability, effective and usable management, processing and visualization tools, as well as special methodologies, are needed. Big Data Management and Analytics techniques may be helpful in decision-making and operational processes, enabling stakeholders to make optimizations and predictions and perform faster decisions.

A: what benefits brought by the innovation do you think will give greater advantages to your business considering the relationships with the activities and the actors working in the logistics sector?

- Increase of efficiency, safety and resource utilization
- Improvements in collaboration between stakeholders
- Capability to process various and heterogeneous data sources
- Possibility to integrate Smart IoT devices
- Possibility to process, manage and visualize real-time data
- Faster processing and analysis of data
- Others

B: what new opportunities do you think the innovation will bring in the logistics sector considering your operational context?

- The fostering of smarter products and services
- Improvements in safety and reduced environmental impact
- Gathering new useful information processing unstructured data
- New methodologies and technologies to improve DSS processes support
- Others.....

C: which innovation weaknesses do you think will likely make innovation implementation more difficult?

- Too high investments in technologies
- The need for development of new-generation devices
- Lack of knowledge and understanding making difficult to interpret complex outputs
- Difficulty in classifying unstructured and inhomogeneous information
- Difficult in the management of data ownership and grants
- Need for high specialized expertise
- Others.....

D: what do you think will be the most concrete threats that likely make innovation deployment less effective?

- Issues can arise in data access and sharing
- Processes might depend too much on data sources quality and availability
- Long processing times can cause issues
- There can be security issues related to cyber-threats, data retention and system reliability
- Regulations regarding the digitalization might differ from each country causing issues
- Others.....

Section 2: needed actions for innovation deployment

Q01) Improvement of knowledge and awareness about internal assets and resources

Internal assets and resources are the core value of an organization and include all physical and intangible resources, from financial, knowledge and organizational resources to machinery, technologies, workforce and real estate. Note that this context element is about the knowledge about both intrinsic values of items and their productivity and performances; indeed, it is very important to have the most accurate and detailed report of available resources in order to develop any subsequent planning and design action.

A: do you think there is the need to make specific analyses, test or assessments to better know and understand one or more of the following aspects in order to deploy the innovation?

- Performance and lacks in the organization model
- Skills, capabilities, and productivity of workforce
- Adequacy of available technologies
- Regulation framework
- Adequacy, performance and lacks in methods, procedures and protocols

- Amount of financial resources and funding opportunities
- Adequacy of machinery and work tools
- Value of owned real estate
- Others

B: what do you think are the most effective type of actions to carry-out in order to achieve these objectives?

- Perform assessments
- Make prototypes
- Run tests and experimentations
- Perform monitoring and benchmarking
- Carry-out a make-or-buy analysis
- Make censuses of available resources
- Make needs analyses
- Make requirement analyses
- Others

C: what do you think are the needed and/or most effective analyses, assessments, tests, or other knowledge-improving activities needed to better plan and design the innovation implementation and deployment? (e.g. production process analysis, market scouting, data sources census, relationship issues assessment)

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Q02) Adaptation and innovation of products and services

Products and services are the core business of a company or an institution. Changing a product or a service does not mean changing the production or the provision process but changing the specific features of a product or a service. Changing products and services is often a response of some modification of the broader context of the production and provision process.

A: do you think you may need to change the specific features of some of your products or services in order to make your business compliant with the innovation? What is the reason why you think you need to change them?

- To better meet the new customers and users' needs
- To make product or service cheaper and/or more effective
- To make product or service more compliant to the innovation

- To replace non-digital features with digital ones or add new digital-based features
- To make product or service more attractive or usable
- To make products or service more integrated with other products or services
- Others

B: what do you think are the needed and/or most effective type of changes to make in order to improve products and services?

- Create a new product or service
- Redesign an existing product or service
- Redesign products packaging or service delivery
- Use different products or services delivery/provision ways and channels
- Others

C: what do you think are the products and services that have to be created or modified and how? (e.g. development of a new information service for customers or suppliers, design of a new packaging with identification system, dematerialization of documents, porting of a service to a web-oriented systems)

Q03) Organizational model improvement

Organisation model is how responsibilities and activities are assigned to persons or teams referring to specific business areas. It can also include other aspects such as relationships network, materials' sharing, information exchange and communication modalities.

A: do you think you may need to change something of your organizational model in order to make your business compliant with the innovation? What is the reason why you think you need to change them?

- To meet the new needs emerging from employees and decision-makers
- To better integrate business processes
- To motivate employees
- To better exploit workforce existing skills and capabilities
- To improve information exchange
- Others

B: what do you think are the needed and/or most effective type of changes to make in order to improve your organization model?

- Reassign roles of some persons and/or teams
- Reassign some activities to other persons or teams
- Redefine teams, internal areas and/or relationships between persons, teams, and areas
- Improve information exchange and reduce redundancy and inconsistency of communication
- Increase internal and external communication
- Others

C: what do you think are the main changes needed about roles and assignments, teams, information exchange and communication methods in order to better deal with the innovation implementation?

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Q04) Employees' skills and capabilities improvement

Skills and capabilities are what human resources are able to do within the organization in relation of their education and expertise. Human resources are one of the primary production factors of a company or an institution.

A: do you think you may need to improve skills and capabilities of your employees or decision-makers in order to better deal with the innovation? What is the reason why you think skills and capabilities inside your organization are not adequate?

- Employees are not able to use some tools and apply some procedures
- Employees' cooperation is insufficient
- Workforce productivity can be increased
- Decision-makers are not able to correctly define workgroups and internal areas subdivision
- Decision-makers are not able to correctly understand/assess inputs, outputs and times of production and service provision processes
- Decision-makers are not able to correctly forecast skills and capabilities needs
- Others

B: what do you think are the needed and/or most effective type of actions to carry-out in order to improve skills and capabilities within your organization?

- Carry on educational and training activities for employees and decision-makers
- Support tools and methods adoption and utilization
- Provide self-training materials
- Hire new professionals

Others

C: what do you think are the most critical lack of skills and capabilities that can limit your organization in dealing with the innovation implementation scenario?

D: if needed, what do you think are the best strategies and programmes to improve skills and capabilities within the specific context of your organization? (e.g. refresher courses, workshops, training on the job / coaching, e-learning, recruiting)

Q05) Processes and procedures optimization

Processes, procedures, protocols, and regulations concern how products and services are provided. Optimizing processes and procedures does not mean modifying assets, infrastructures, materials, and workforce which are other factors; it means changing the way production factors and assets are combined to get to the final product.

A: do you think you may need to modify your business processes or protocols and procedures in use within your organization to be more compliant with the innovation? What do you think can be the reasons why you may need to optimize them?

- To increase productivity
- To make processes faster, more effective and eliminate bottlenecks
- To make processes more compliant to the innovation and exploit the digitalization
- To make procedures and operations easier for employees
- To increase the integration of different processes and exploit synergies
- To embed new tools or methods inside existing processes or define new processes based on the use of new tools and methods
- Others

B: what do you think are the needed and/or most effective type of actions to carry-out in order to improve skills and capabilities within your organization?

- Use or combine the production factors in a smarter way
- Re-allocate or increase resources
- Redesign times and sequence, scheduling, relationships between resources and processes
- Make new regulations or review existing ones
- Replace obsolete activities
- Develop new integrated procedures to eliminate redundant activities
- Add or increase interoperability
- Others

C: which processes, protocols or procedures do you think you need to optimize to better deal with the innovation implementation? (e.g. data access policies, on-site inspections, information exchange between offices, traffic regulation)

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Q06) Information assets improvement

In logistics decision-making processes, the information assets are the main support resource. In this era, digital structured information is mostly called “the new oil” with reference to the power of using data sources and data streams flowing through the IT networks to obtain better operational and business performances, with particular focus on geospatial information and Big Data.

A: do you think you may need to improve the quality of information assets managed by your organization in order to gain more benefits from the innovation deployment? What do you think can be the reasons why you may need to get more data or improve existing datasets quality?

- To avoid wrong decisions caused by the use of bad data quality or lack of data
- To better support production processes
- To increase product and services quality
- To increase analysis, forecast and estimation capability
- To improve resources management
- To create new services for customers, users and suppliers
- Others

B: what kind of activity do you think you should carry-out to improve the quality of information assets managed by your organization?

- Collect new data
- Improve quality of available data
- Process and/or integrate different data
- Connect to new data sources
- Others

C: what do you think you should do to get the data you need or to improve data quality in your organization's business context?

- Carry-out data collection campaigns
- Purchase new data
- Geocode data
- Classify/re-organize data
- Develop an Extraction/Transform/Load automated system
- Extract Big Data
- Others

D: what new data do you think you will need? Which data you own needs improvement or integration? What kind of processing and/or integration of data do you think you need in order to improve your business in the context of the innovation deployment? (e.g. real time location of cargos, traffic amount inside port area zones, statistics about passengers, estimation of times)

Q07) Information Technology IT infrastructure improvement

The IT infrastructure of an organization usually includes hardware devices, software tools and network connectivity.

A: do you think you may need to improve your organizations' IT infrastructure in order to gain more benefits from the innovation deployment? What do you think can be the reasons why you may need to obtain new IT tools or to improve the ones already in-use?

- To get new digital information storage capacity or increase available (more room)
- To get new computer processing power or increase available (more speed)
- To get new information processing functions or update existing (better results)
- To get information network exchange capability or increase its performance (improve sharing)
- Others

B: what kind of activities do you think you should carry-out in order to improve your organizations' IT infrastructure?

- Purchase or rent a storage device
- Purchase a cloud-based storage service
- Purchase or rent a server computer, workstations, client or personal computers.
- Purchase a cloud-based computing (processing) solution
- Purchase and install sensor devices and/or actuators
- Purchase software licenses
- Update operating systems and applications
- Purchase and install network devices and infrastructures
- Perform systems and applications update, tuning and maintenance
- Others

C: what new IT tool or device do you think you will need? Which IT equipment you own needs improvement or integration in order to improve your production process or organizational model in the context of the innovation deployment? (e.g. a new sensor system, a document management system, a data server, a firewall, a mobile app software license update, a new IT infrastructure maintenance service for the warehouse)

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Q08) Financial resources allocation

Available financial resources can include one or more project budgets or financing funds and may consider future needs that may occur due to project evolution and unexpected events.

A: do you think your organization may need to allocate special resources to carry-out tasks or activities related to the innovation deployment, or to re-allocate previously placed resources? What kind of financial operation do you think will be required?

- Direct financial resources allocation for the needed actions
- Scouting for the raise of new funds and resources to be used for the innovation
- Re-allocation of resources previously placed for other tasks of the innovation
- Re-allocation of resources previously placed for other projects or activities
- Others

B: what kind of tasks do you think may require special resource allocation or re-allocation?

- Purchase of equipment and materials
- External services and consulting
- Internal services and expertise
- Royalties
- Taxes
- Others

C: what do you think can be the equipment and materials to purchase, and services or consulting to pay to deal with the innovation implementation?

Q9) Innovation impact assessment

A: Which aspects of the innovation are of particular interest to you?

B: Which scenario would be most feasible to deploy?

C: What benefits would that achieve? What would be the most valuable results?

Q10) Policy scenario

In the innovation deployment scenario, many activities are strongly related to policies and regulations obligations and requirements.

A: Do you know if your area has regional or local policies in place, such as development regulations or written policies in adopted plans, that provide positive support of foster this type of innovation and/or foster digital ecosystems?

B: Does your organization have to be compliant to special guidelines, authority regulations, or published policies in adopting the innovation?

C: Do you think your organization will benefit from special guidelines, authority regulations, or published policies in the innovation deployment scenario?

D: Did your organization advocate some policies related to the context of this innovation? If yes, can you list them?

E. Regarding cyber security and privacy challenges:

- Do you think government and agencies are ahead of the curve in terms of supporting industry to find solutions to emerging threats?
- Do you think government incentives accelerate the adoption of new technology in this field?
- In your area of operation, do you think there are coherent industry regulations in place for effective controls?
- What kind of policies and legislations are important for stimulating innovation?

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G. What do you think are bottlenecks in laws and regulations?

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H. Do you know whether there are specific innovation policies including institutional coordination of investments in research and development across the sector? Can you list which type of innovation they refer to?

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Section 3: innovation deployment roadmap

This is a first version of the pilot action implementation plan and midterm perspectives.

Please, identify the tasks you are interested in, or in which you think you are/will be involved and check the related boxes.

Interest / Involvement options → <i>(check the boxes related to the desired tasks)</i>		interested to be informed about results	interested to be involved in implementation	directly involved in the resulting effects	interested to be involved in testing
Roadmap actions and tasks ↓					
1. Pilot action “Spatial Data Management System” (year 1)					
Pilot planning					
	<i>Target definition</i>				
	<i>User needs analysis</i>				
	<i>Involved processes and services analysis</i>				
	<i>Spatial data set to be used for the pilot implementation</i>				
	<i>Hardware/Software prerequisites definition</i>				
	<i>Definition of data-driven processes to be included in the pilot</i>				
	<i>Training and educational program</i>				
Process and services optimization					
	<i>Definition of processes and services to be re-designed</i>				
	<i>Identification of spatial-data-driven support to processes and services</i>				
	<i>Workshop with involved users / first educational programme</i>				
	<i>Process / service re-design</i>				
	<i>Performance assessment and evaluation</i>				
	<i>Final review</i>				
Spatial datasets acquisition					
	<i>Definition of the spatial data packages for the pilot test</i>				
	<i>Data acquisition</i>				
	<i>Optimization and pre-processing training on the job</i>				
Spatial Data Infrastructure implementation					
	<i>Data model design</i>				
	<i>Performance requirements analysis</i>				
	<i>IT infrastructure implementation (HW/SW)</i>				
	<i>Network configuration</i>				
Data migration					
	<i>Workshop with involved users</i>				
	<i>Spatial data conversion and migration training on the job</i>				

Procedures implementation					
	<i>Objectives analysis</i>				
	<i>Procedures development training on the job</i>				
	<i>Information design and delivery workshop</i>				
	<i>Decision support effectiveness assessment and review workshop</i>				
Dissemination					
	<i>Publications, conferences, events</i>				
	<i>Websites, newsletter, social media</i>				
	<i>Stage 2 promotion</i>				
Found raising					
	<i>Scouting workshop for founding opportunities to implement stage 2</i>				
2. implementation of real-time data and whole department core dataset (year 2)					
Macro activities					
	<i>Stage planning</i>				
	<i>Processes and services optimization</i>				
	<i>Spatial datasets acquisition</i>				
	<i>Data migration</i>				
	<i>Training</i>				
	<i>Metadata system implementation</i>				
	<i>Dissemination</i>				
3. inter-department implementation (year 3)					
Macro activities					
	<i>Stage planning</i>				
	<i>Processes and services optimization</i>				
	<i>Spatial datasets acquisition</i>				
	<i>Data migration</i>				
	<i>Training</i>				
	<i>Dissemination</i>				
4. interoperability protocols deployment for external actors' cooperation (years 4-5)					
Macro activities					
	<i>Stage planning</i>				
	<i>Process and services optimization</i>				
	<i>Spatial datasets acquisition</i>				
	<i>Data migration</i>				
	<i>Training</i>				
	<i>Metadata system implementation</i>				
	<i>Dissemination</i>				