

Design and development of IT systems in the port of Ploče community

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INTRODUCTION



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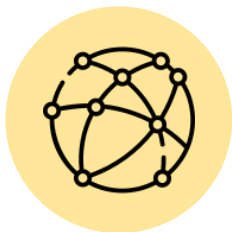
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Global trends and changes have a significant local influence



Global Context

- Port systems have undergone significant and profound changes in the last decade
- Volatility in energy prices; structure of cargo; supply chain disruptions
- Maritime and transshipment technology had a significant impact
- Increased investments, but long term decreased costs



Transformational impact of IT

- Wider and deeper application of IT made business activities in ports more transparent, faster and more efficient
- Significant financial resources continue to be invested due to positive experiences in the past, at global and local levels
- Locally, PPA is availing PCS system to accelerate and optimize the exchange of documents and data in the port community



IT in the port of Ploče area

- PPA continues to undertake initiatives to facilitate the execution of port processes to make the port more competitive and attractive to current and future users
- Port IT ecosystem becomes more complex and diverse. PCS is still in the main focus, but complete state of IT of all port community members needs to be considered to define the strategic plan and guidelines
- Given the diversity of port community members, it is not simple to define IT strategy in a way that one single model meets the needs of all participants

The aim of feasibility study is to analyze the situation, identify opportunities for improvement in a structured and understandable way, and define initiatives that would lead to an increase in the information systems maturity levels in the port of Ploče area.

- 1 Which existing IT systems are **critically important** for the port community?
- 2 How to ensure that IT systems **meet different business needs** of port stakeholders?
- 3 How to ensure that the use of IT systems **brings measurable benefits** to port stakeholders?
- 4 What criteria to use to clearly set the limit of **responsibility in financing and developing IT systems** in the port community?
- 5 Which **functionalities, activities and initiatives** to run in the short and medium term to increase the number of users of port IT systems?

CURRENT SITUATION



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The existing IT environment in the port community of the Ploče port is complex and consists of commercially, functionally, organizationally and technologically diverse systems.

Ownership

- Government
- Commercial
- Internal

Functional overlaps and differences

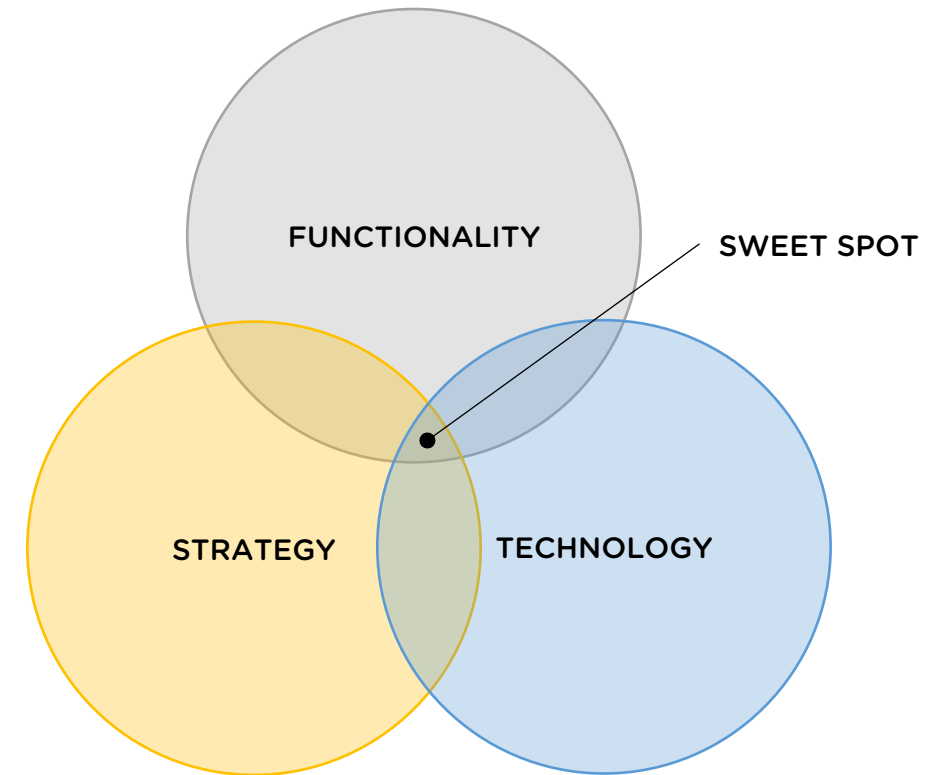
- Vessel calls

Different technologies

- Legacy client/server architecture
- New generation technology

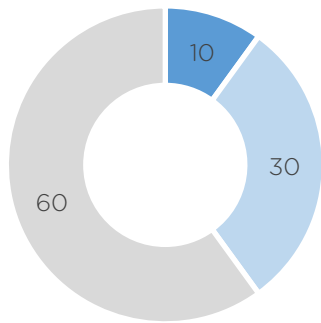
Ongoing initiatives

- PCS, CIMIS, Atlas, ...



The perception of PCS as a key information system of the port community varies considerably from user to user.

Does PCS facilitate doing your business activities?

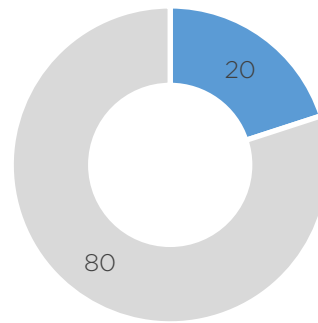


■ Yes ■ Partially ■ No

ALL USERS

"Central functionality of PCS, i.e. exchange of electronic documents between participants in port processes, is successfully implemented and is functioning as intended."

Do you consider PCS critical for doing your business activities?



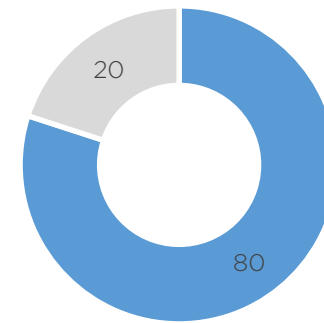
■ Yes ■ No

HIGH IT MATURITY USERS

"The value of PCS for us is not proportional to the value received by other participants due to our participation."

THEY NEED DATA!

Should PCS meet specific, operational business needs?



■ Yes ■ No

LOW IT MATURITY USERS

"We expect PCS to meet our operational functions, i.e. functions specific to our particular business activities, cargo types or internal organizational procedures."

THEY NEED FUNCTIONALITY!

Different understanding of the role and functionality of PCS is one of the essential reasons why the perception of the PCS's value is at a lower level than expected.

TOP RECOGNIZED BENEFITS

TOP COMPLAINTS

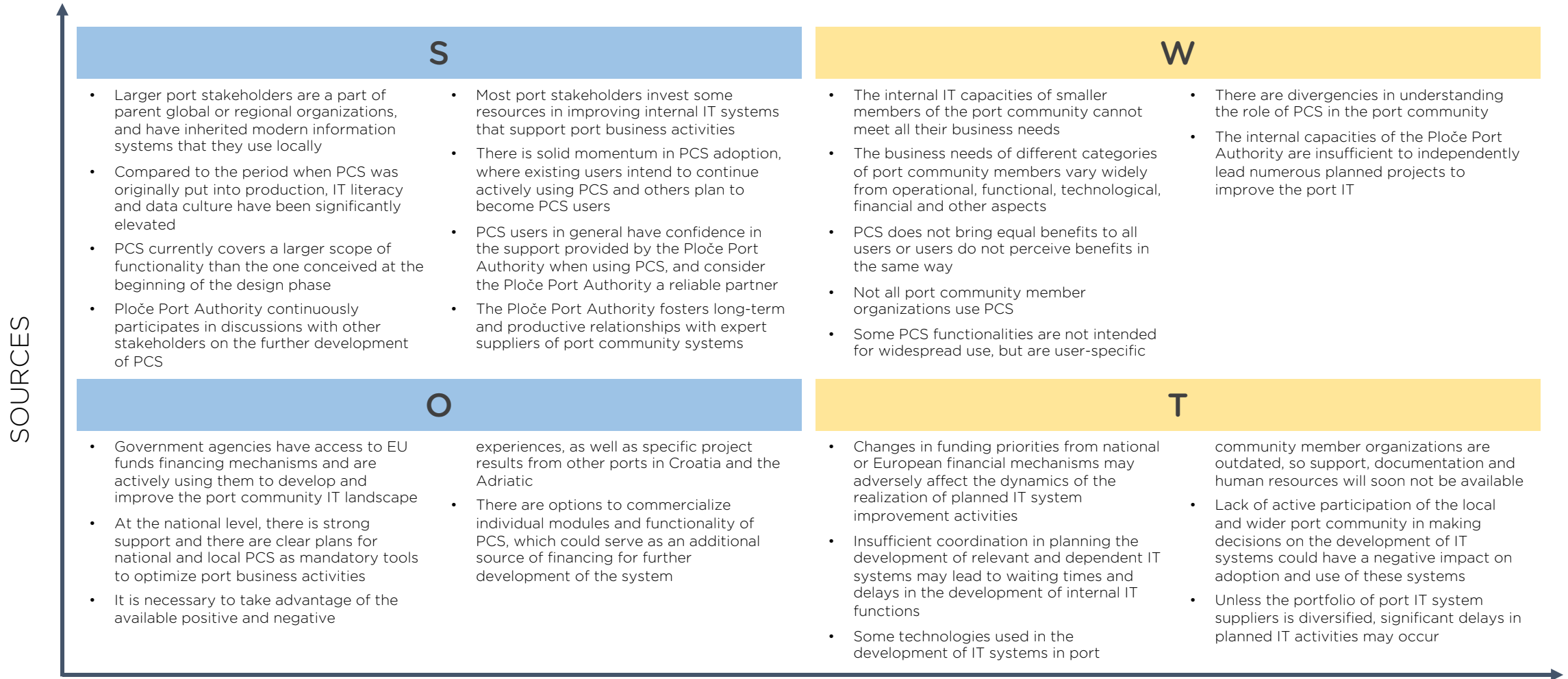
TOP UNRECOGNIZED BENEFITS

- 1 Saving time when sending and receiving port documents
- 2 Timely information about the position and status of land transportation means (trucks, trains, etc.)

- 1 Lack of discipline in entering and updating data within PCS
- 2 Orphan processes, i.e. processes that have been recorded as started but never recorded as completed

- 1 Reducing the frequency of occurrence of errors in data entry
- 2 Elimination of redundancy in data entry
- 3 Established confidence in the correctness and authenticity of data exchanged through PCS
- 4 Traceability of business documentation in electronic form

SWOT



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- Larger port stakeholders are a part of parent global or regional organizations, and have inherited modern information systems that they use locally
- Compared to the period when PCS was originally put into production, IT literacy and data culture have been significantly elevated
- PCS currently covers a larger scope of functionality than the one conceived at the beginning of the design phase
- Ploče Port Authority continuously participates in discussions with other stakeholders on the further development of PCS
- Most port stakeholders invest some resources in improving internal IT systems that support port business activities
- There is solid momentum in PCS adoption, where existing users intend to continue actively using PCS and others plan to become PCS users
- PCS users in general have confidence in the support provided by the Ploče Port Authority when using PCS, and consider the Ploče Port Authority a reliable partner
- The Ploče Port Authority fosters long-term and productive relationships with expert suppliers of port community systems

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- The internal IT capacities of smaller members of the port community cannot meet all their business needs
- The business needs of different categories of port community members vary widely from operational, functional, technological, financial and other aspects
- PCS does not bring equal benefits to all users or users do not perceive benefits in the same way
- Not all port community member organizations use PCS
- Some PCS functionalities are not intended for widespread use, but are user-specific
- There are divergencies in understanding the role of PCS in the port community
- The internal capacities of the Ploče Port Authority are insufficient to independently lead numerous planned projects to improve the port IT

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- Government agencies have access to EU funds financing mechanisms and are actively using them to develop and improve the port community IT landscape
- At the national level, there is strong support and there are clear plans for national and local PCS as mandatory tools to optimize port business activities
- It is necessary to take advantage of the available positive and negative experiences, as well as specific project results from other ports in Croatia and the Adriatic
- There are options to commercialize individual modules and functionality of PCS, which could serve as an additional source of financing for further development of the system

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- Changes in funding priorities from national or European financial mechanisms may adversely affect the dynamics of the realization of planned IT system improvement activities
- Insufficient coordination in planning the development of relevant and dependent IT systems may lead to waiting times and delays in the development of internal IT functions
- Some technologies used in the development of IT systems in port community member organizations are outdated, so support, documentation and human resources will soon not be available
- Lack of active participation of the local and wider port community in making decisions on the development of IT systems could have a negative impact on adoption and use of these systems
- Unless the portfolio of port IT system suppliers is diversified, significant delays in planned IT activities may occur

INFLUENCES

GUIDELINES FOR THE FUTURE



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All plans and strategies for development of local port IT ecosystems must be compliant with national and transnational plans and strategies on all perspectives (including technology, processes, and financing)

National Single Window

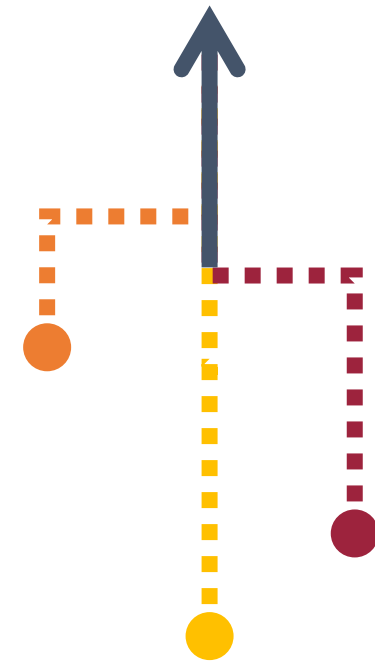
- MMPI has launched a national project to develop a single maritime interface
- Digitization of maritime formalities
- Integration of national administration IT systems with local systems.

Integration of NSW and other systems

- Key project in the context of improving and developing IT systems in the Ploče port community
- One of the main NSW features is a data bus to integrate CIMIS, E-Carina and other similar systems
- Most importantly, NSW data bus will be used to connect to local port community systems (Local Single Window)

INTESA project

- PPA participation in the INTESA project brings certain opportunities, but also commitments
- INTESA's aim to harmonize and optimize the complete maritime transport process in order to make port and maritime transport systems more efficient and secure
- Important part of INTESA is upgrading and developing port IT ecosystems



The fundamental step in defining the IT systems development strategy is to frame all current and future goals, initiatives and activities in a single mission statement.

"The Ploče Port Authority, in cooperation with other port stakeholders, is developing PCS as a central system for the most efficient exchange of electronic documents and other data between all port stakeholders and their IT systems, thereby facilitating their operations and generating additional business value."



C1 - PARTICIPATION

All members of the port community should exchange electronic documents through the PCS system.



C2 - COOPERATION

All members of the port community should contribute to the development of PCS, whether through ideas, opinions, work or funding.



C3 - EFFECTIVENESS

PCS should be the fastest, safest and most reliable way to exchange electronic documents between all port participants.



C4 - BENEFITS

PCS should facilitate executing the port stakeholders' business processes, thus bringing them added value.



C5 - INTEGRATION

All members of the port community should exchange electronic documents through the PCS system.

The principles of developing and improving PCS serve to clearly separate responsibility, prioritization, technological approaches and other aspects of the IT systems development.

1

RESPONSIBILITIES

- PPA owns, develops and maintains PCS. Other stakeholders own, develop and maintain their systems.
- PPA provides integration points to PCS. Other stakeholders adapt their systems for PCS integration points.
- PPA and other stakeholders are responsible for collaborating and communicating on topics related to PCS improvement and development

2

MODULE TYPES

Core modules - Distribution of digital documents and other data exchanged through messages. Used by all members.

Operational modules - Operational business processes of port community members. Used by some members.

Administration modules - Support the Ploče Port Authority services. Used by PPA only.

Integration modules - Integration of PCS and other IT systems in the port community. Used by some members.

3

IMPROVEMENT CRITERIA

- Functionality facilitates the performance of user business activities within the port community
- Functionality improves, accelerates, clarifies exchange of business documents between members of the port community
- Functionality uses, generates or exchanges the data required by at least two port community members (except PPA)
- Functionality uses, generates or exchanges data that each member of the port community interprets and understands in the same way

4

USER EXPERIENCE

- PCS user interfaces must be designed to allow the user to interact easily and quickly with PCS
- Avoid showing information that is not relevant to the user at that time, that is, in that step of the business process
- Divide the interfaces with a multitude of information into logical units that would be displayed on different screens
- Assign meaning to colors, so that users can know at first sight what they need to pay attention to

5

AVAILABILITY

- PCS and all its modules must always be available for use by members of the port community
- Each individual module must be implemented in an architecture that allows HA (High Availability)
- Each individual module must be compatible to, and accessible from personal computers and laptops, smartphones, tablets and other similar devices

6

INTEGRATION OPTIONS

ESB integration - Used to enable the exchange of individual digital documents, i.e. generating documents outside of PCS and sending them to PCS for distribution to other users

API integration - Used to enable the functionality of generating documents within the PCS, but through calls from external systems. Also, API integration can help achieve the functionality of exporting and importing larger amounts of data, structured in various ways

FUTURE IMPROVEMENTS



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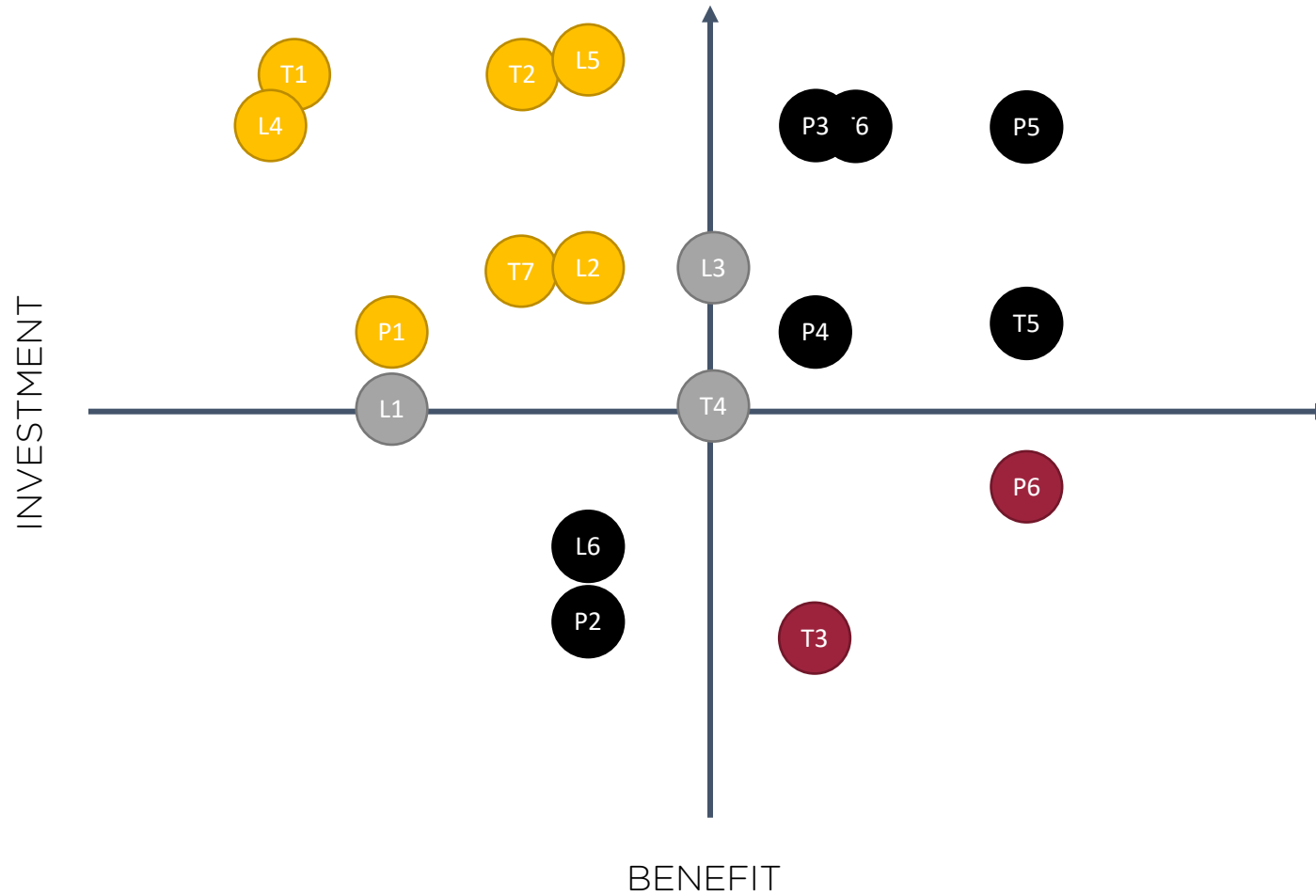
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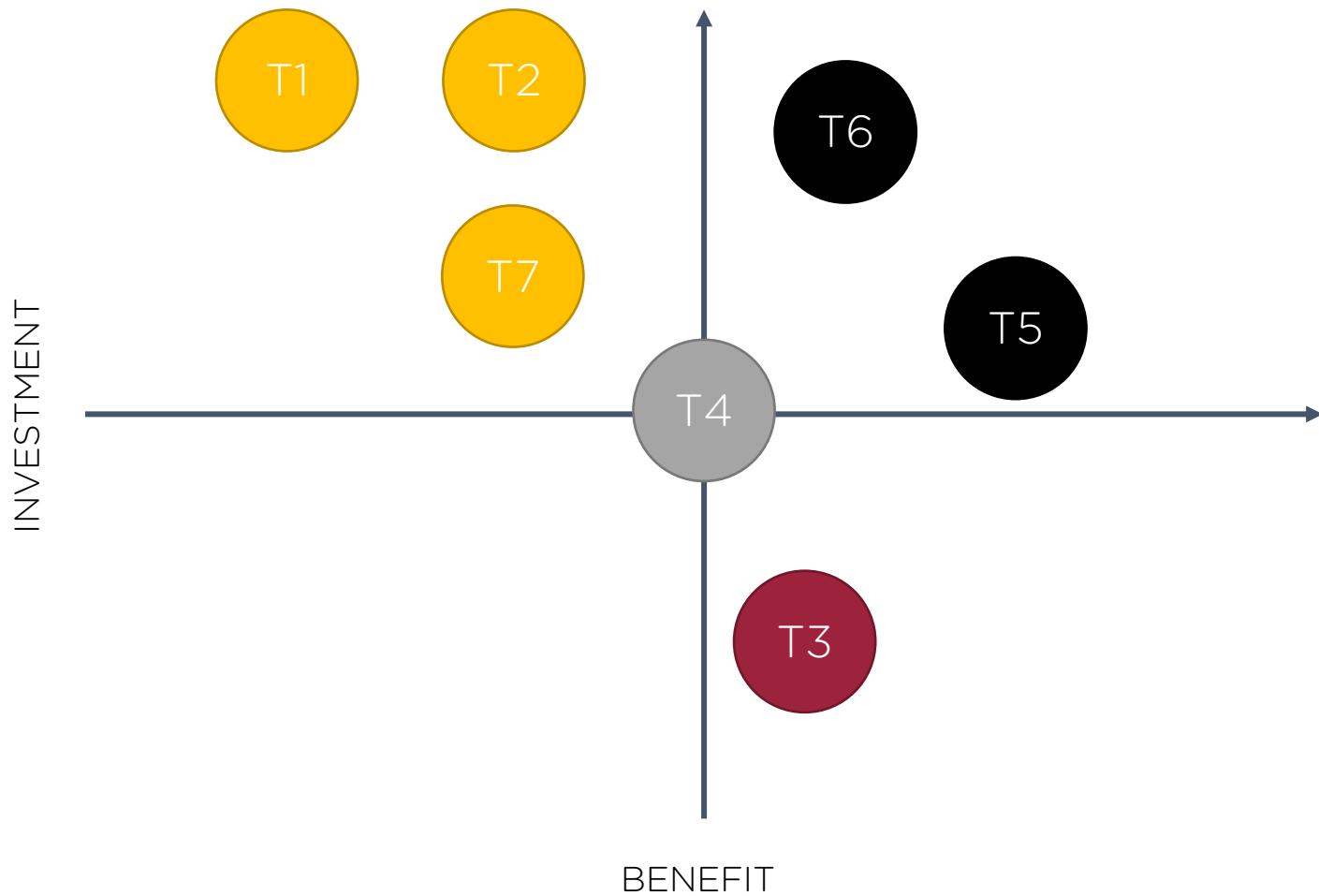
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On the value matrix below, all suggested improvements and activities are displayed. The value matrices for each of the three categories are shown in the corresponding sections.

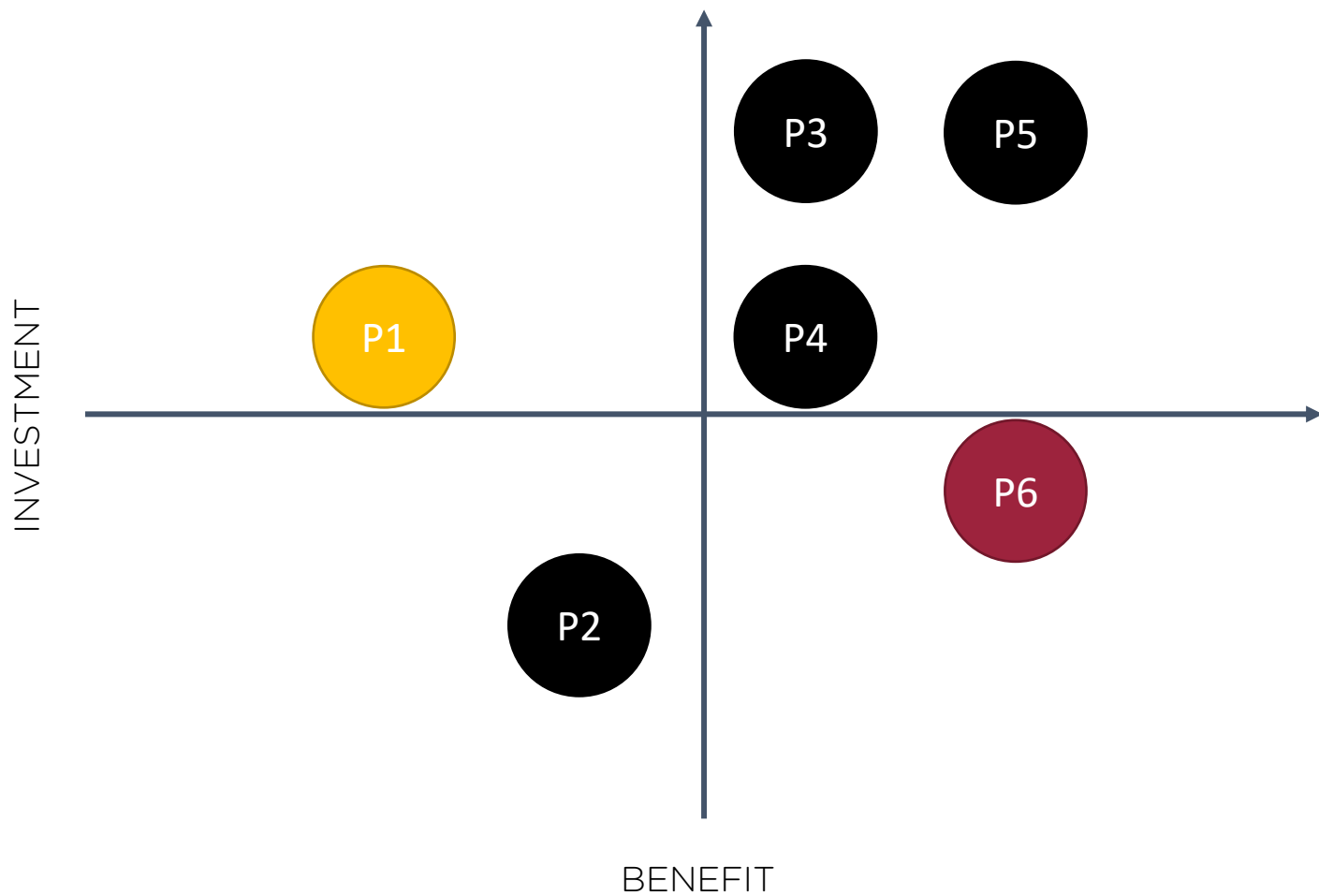








Technology



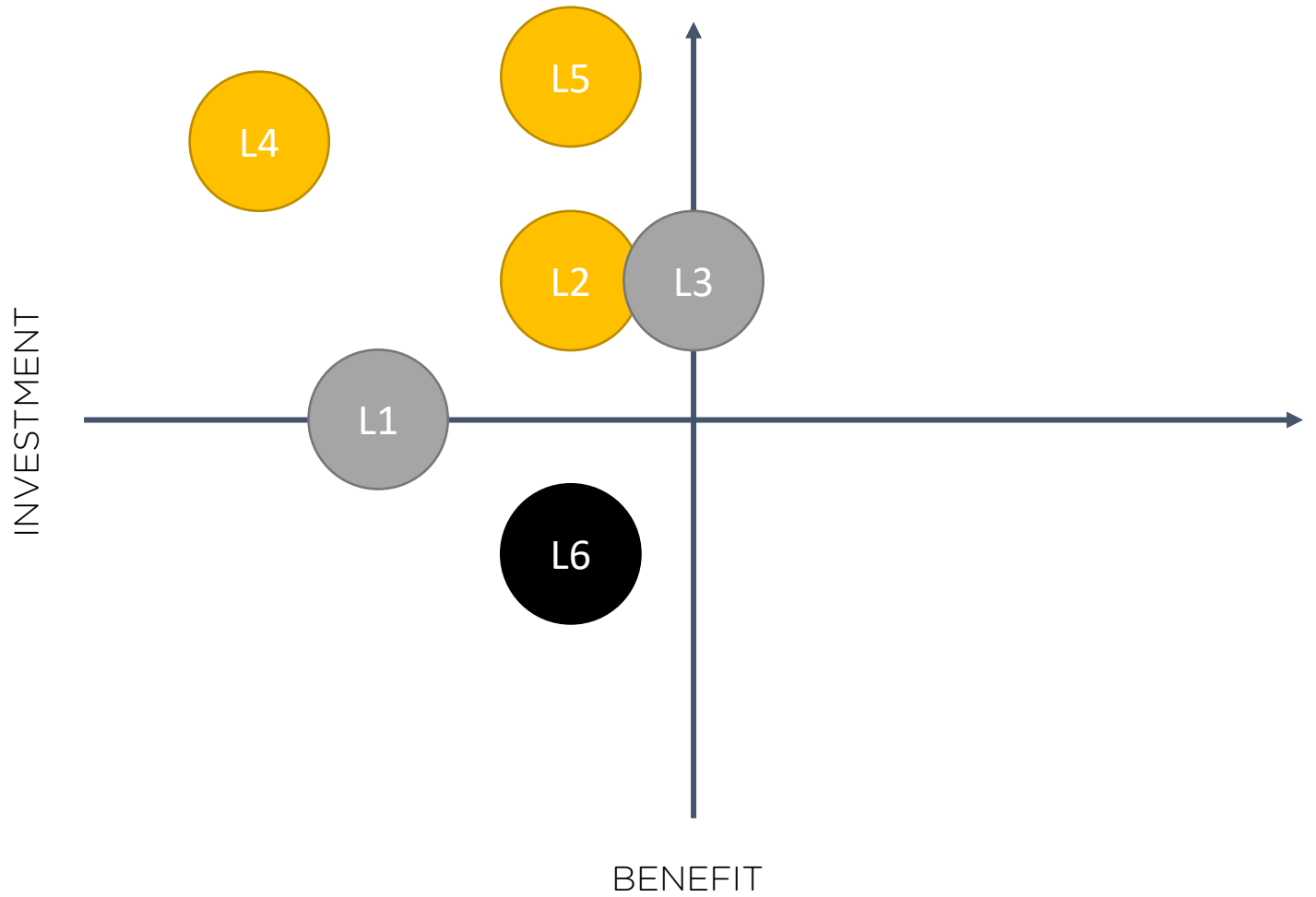
- T1 Integration module - CIMIS
- T2 Integration module - e-Carina
- T3 UI Optimization
- T4 Ticketing application
- T5 Open integration platform
- T6 Business data warehouse and analytics system
- T7 Strategy management system

Processes



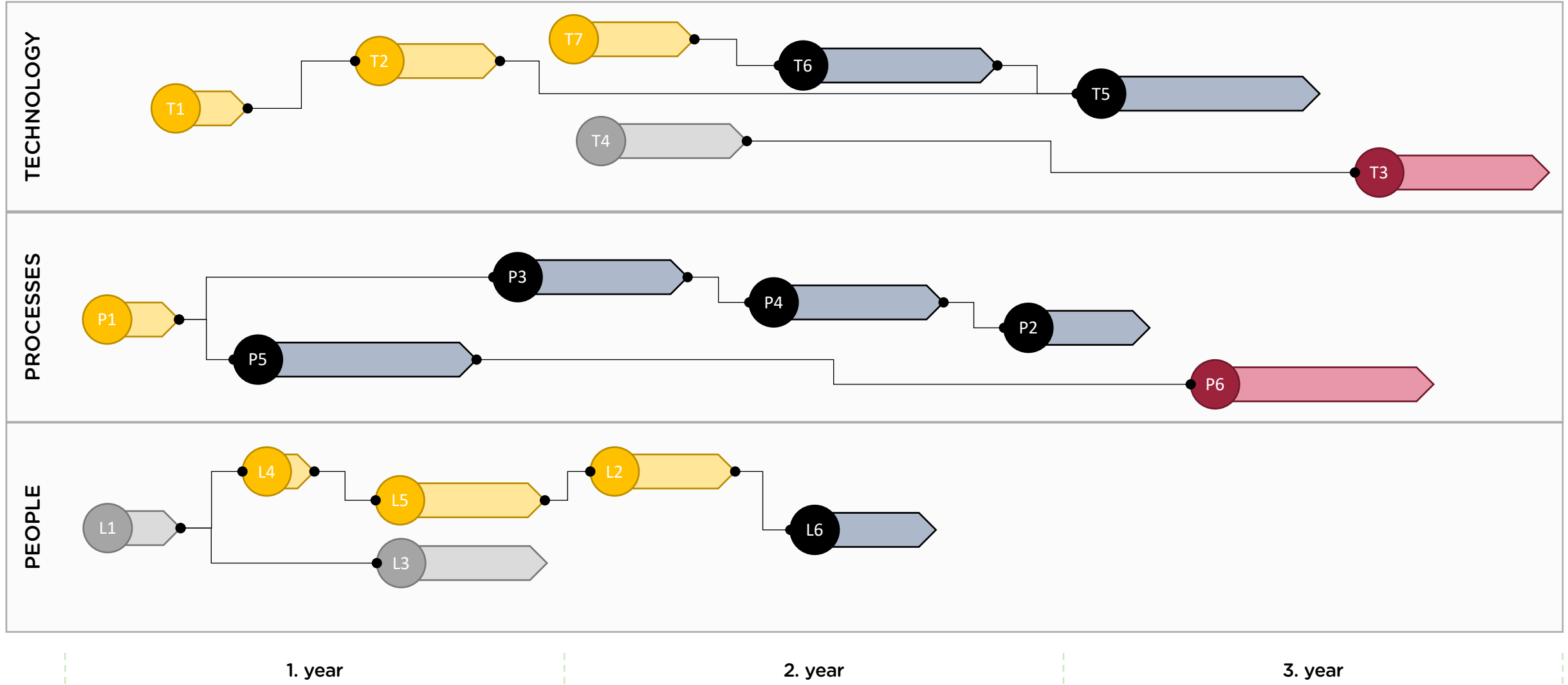
-  P1 PCS adoption and usage discipline monitoring
-  P2 Monitoring "orphan" processes
-  P3 Process wait time monitoring
-  P4 Process anomalies detection
-  P5 24/7 user support - 1st level
-  P6 24/7 user support - 2nd and 3rd level

People



- L1 Local action group
- L2 Collaboration tools
- L3 Idea management
- L4 Proactive communication on the PCS status topics
- L5 Net promoter score and periodic surveys
- L6 Communication program and activity plan

Roadmap



CONCLUSION



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In conclusion, the foundation of this strategy is the existing Port Community System Here is why:



National and cross-border initiatives are shaping the future of PCS by providing positive examples



PCS is scaling out in reach and capabilities, thus becoming a key port resource



Internal IT initiatives are welcome and encouraged, but delays in adopting PCS will cause issues




Port community must be actively involved in PCS development to eliminate risk and skepticism

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