AUTOMATION OF PUBLIC SERVICES & ROBOTICS: HOW PUBLIC AUTHORITIES CAN DEAL WITH IT

WEBINAR

19th January 2023

Watch the replay video of the webinar via:
https://youtu.be/h_4D8YvkpVg

Welcome

Stephan Corvers
CEO & Founder
Corvers Procurement Services BV

Introduction & Agenda

House rules

It is possible to ask questions in the private chat

The recording of the webinar will be made available on the EAFIP website

The list of participants will not be disseminated

In case there are technical problems, the session will be recorded and published

AGENDA

TIME (CET)	TOPIC	SPEAKER/PARTICIPANTS
9:25 – 9:30	Registration to the platform	Participants can ensure that the platform's functionalities are working fine
9:30 – 9:35	**Welcome & Introduction** House rules Agenda	**Stephan Corvers** CEO – Corvers **Lieve Bos** EC Policy Officer - DG Connect
9:35 – 10:05	**Robot Process Automation** *Intelligent Automation of procurement processes*	**Eija Hartikainen** Palkeet, Finland
10:05 – 10:35	**Robotics in the health system supply chain** *Cutting, packing and distribution of medicines*	**Karl Farrugia** CPSU, Malta
10:35– 10:45	**Q&A**	
10:45 – 11:00	**COFFEE BREAK**	
11:00 – 11:30	**Algorithmic systems for** *automated parking control*	**Leendert Miedema** Municipality of Amsterdam, Netherlands
11:30 – 12:00	**Automation of public services in several sectors** *EAFIP examples*	**Ana Lucia Jaramillo** Corvers Procurement Services, Netherlands
12:00– 12:20	**Q&A**	
12:20 – 12:30	**Conclusions & future events**	**Stephan Corvers**

PART I

Robot Process Automation

Intelligent Automation of procurement processes

Eija Hartikainen
Palkeet
Finland

Robotic Process Automation

Intelligent Automation of procurement processes

19.1.2023

Eija Hartikainen
Development Manager
Intelligent Automation Team

Palkeet
FINNISH GOVERNMENT SHARED SERVICES CENTRE FOR FINANCE AND HR

palkeet.fi

Financial and HR services for renewing public administration

Financial services

- Requisitions and expense management
- Revenue processing
- Accounting and internal accounting

HR services

- HRM services
- Recruiting services
- Competence management services
- Travel service

Expert services

- Reporting services
- Employer information reporting and simulation services
- Management reporting service
- Analysis services
- Smart automation services
- Project services

Support and maintenance services

- User support
- User rights management
- Application control
- System version management and further development

We develop services for customer needs

- Renewal of HR research
- Project Financial Coordinator

Serving the entire public administration sector

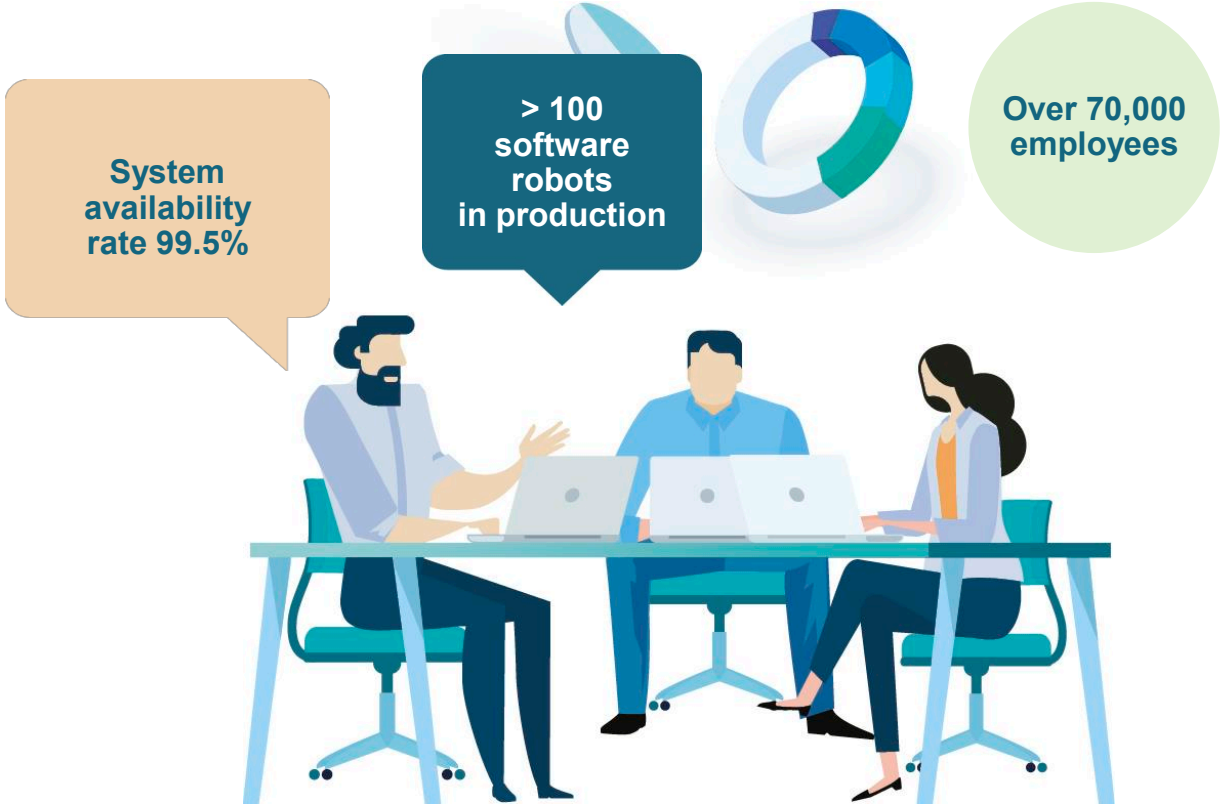
Cost Efficiency Through Centralisation

Turnover
€58.9 million

Personnel costs
approx. €30.0 million

Service purchases
approx. €23.1 million

Rents
approx. €2.2 million



1.2 million purchase and grant invoices

0.6 million sales invoices

1.2 million payslips

0.2 million travel invoices

Financial statements for 63 accounting units, 7 funds and 3 other customers

Improving productivity of Finance and HR by implementing RPA

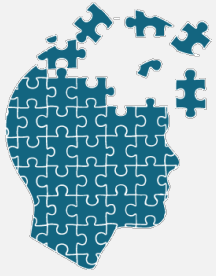
2015 → 2016 → 2017 → 2018 → 2019 → 2020 → 2025

1.Finnish Government had outlined future goals for productivity leap **at least 20 % by 2020.**

2.Business processes and system architechture for Finance and HR were standardized. This has enabled increased **process automation** and further development of **information management**.

3.Automation of knowledge work is **changing our business**.

It has been estimated that 47 % of the US workforce and 36 % of Finnish workforce are at high risk to be replaced by robots within the next 10-20 years



- **Manual work can be reduced 20–50 % by 2025**
  - Development of processes and related solutions
  - Utilizing software robotics and other new technologies that increase automation
  - Agile implementation and continuous learning
- Decreasing overall process costs and decreased service costs for SSC customers (agencies)
- Improve service quality, better risk management, development and management of production processes with knowledge

RPA journey

> 100
RPA use cases in service production

> 50
RPA use cases for customers

2023 — Intelligent automation service for customers

2022 — Robots working as co-workers

2020 — RPA team starting, building in-house Center of Excellence

2019 — RPA implementation project
Learning by doing with vendor

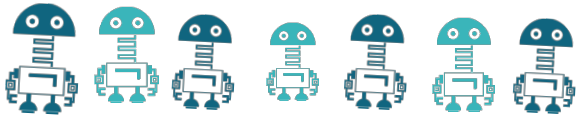
2018 — Project funding and procurement of tools : EU-procurement, usability test for RPA-tool

2017 — RPA pre-study: looking for benefits, use cases, vendors

2016

2015

Digital Future is now - Robots are Working at Palkeet

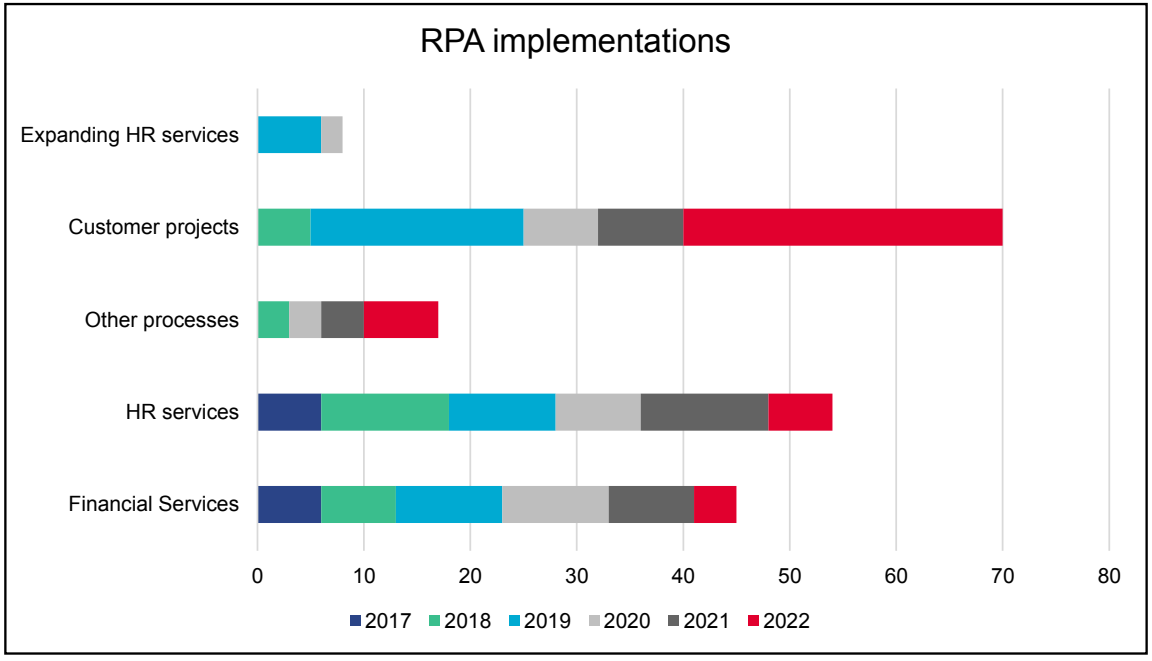


Financial processes

- Checking numbers on expense receipts and the content requirements
- Routing expense receipts
- Management of supplier information
- Verifying and balancing expence receipts
- Balancing accounting data
- Verifying balance sheet accouts after accounting period
- Monitoring travel expence bill
- Importing the budget

HR processes

- Verifying data case of contract changes
- Information (e.g. training and info meeting absences) transfer from the temporary table
- Reporting on the baseline accumulations in service time calculations
- Balancing payments and gathering the information from notifications on accidents and financial support
- Automating the payroll processing
- Personal salary changes and info by email



Palkeet RPA Achievements (June 2021)

28
Software robots running 569 automated tasks

93 000
Person-hours saved since 2016

33 000
Hours of manual-labor savings in 2020

1,8
Million invoices processed by robots

[Palkeet RPA story by UiPath]

Accounting for purchase invoices using machine learning

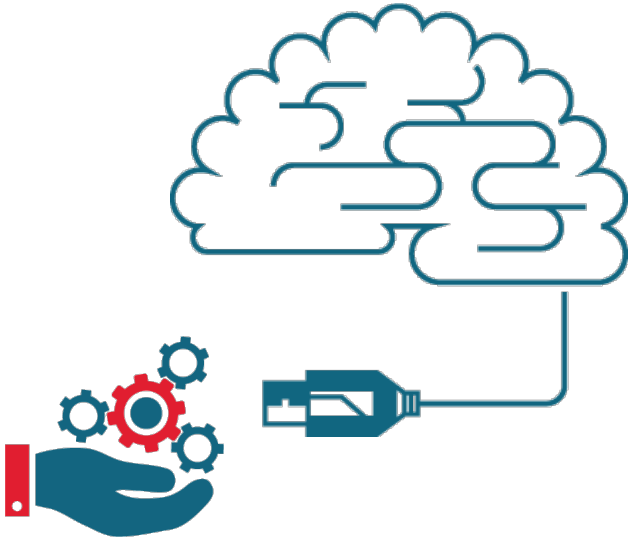
Project 1/2021 - 4/2022

Background

- The State Treasury ordered state offices to transfer accounting for puchase invoices to the service centre, and it would increase the need of personnel resources for the manual accounting.

Target

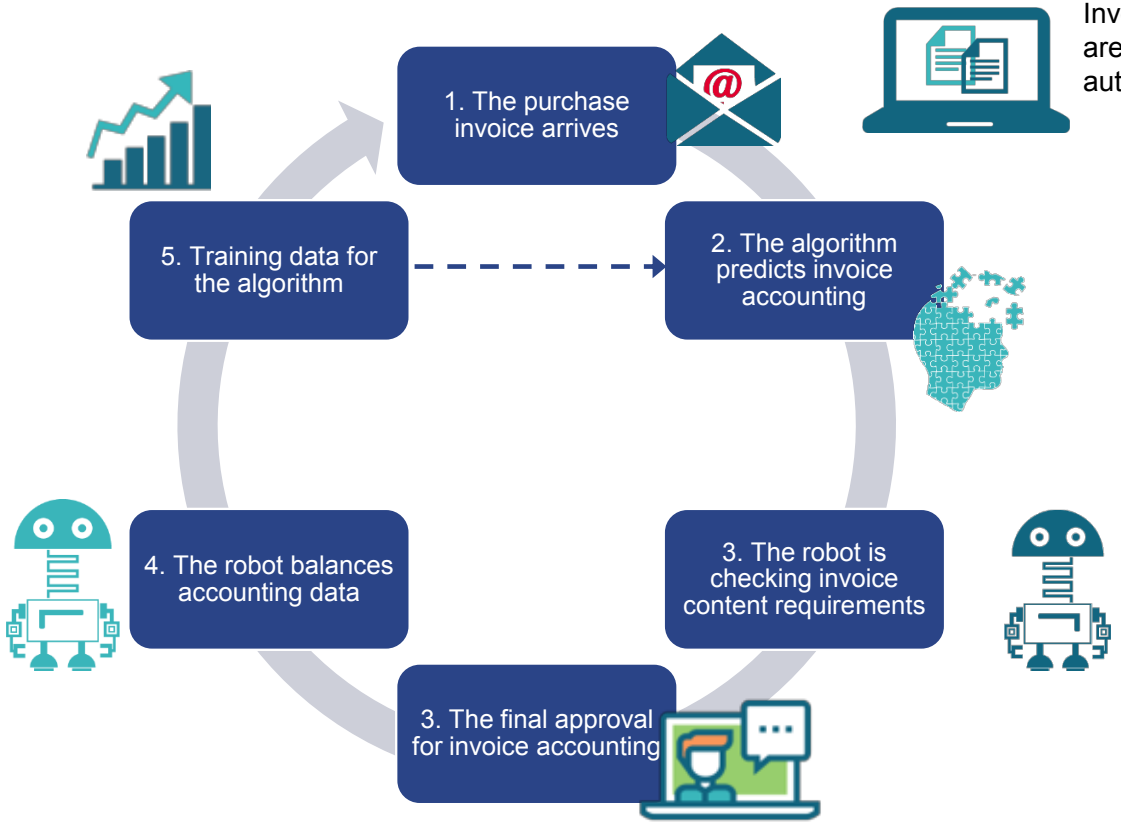
- A new solution to replace manual accounting of purchase e-invoices with machine learning (SaaS) that enables automatic routing of purchase invoices.
- Deployment for 66 state offices



Benefits

- The cost of manual work will be reduced
  → 2,5 Me savings in 9 year
- Quality of accounting will be improved
- The processing of purchase invoices will be more efficient

Accounting for purchase invoices using AI and RPA



Invoices based on order and contract are processed by invoice system automation

Lessons learned

Lessons learned

Intelligent automation roadmap

Virtual agents, speech recognition, conversational AI, cognitive neural networks

Natural language processing, picture recognition

Processing of non-structured data, forecasts, machine learning

Automation to rule-based routine tasks and processing structural data

Service Production by unified financial and HR-systems utilizing ”office-automation”

Hyperautomation

Process Mining & Analytics

AI

RPA

Application Integration

Workflow

2022

AI-solution

PowerBI

Robot Framework

2016

UiPath RPA

Winshuttle

Microsoft Excel ja Access

Automation in IT-systems

End-to-end process automation, monitoring and analysis

Automation of sequental tasks

Automation of single tasks

Thank you!

Eija Hartikainen, Development Manager
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Palkeet

FINNISH GOVERNMENT
SHARED SERVICES CENTRE
FOR FINANCE AND HR

Robotics in the health system supply chain

Cutting, packing and distribution of medicines

Karl Farrugia
CPSU
Malta

USING TECHNOLOGICAL ENHANCEMENTS IN THE AREAS OF PHARMA, MEDICAL MATERIALS AND SURGICAL DEVICES

ING KARL FARRUGIA

MANAGING DIRECTOR

MINISTRY FOR HEALTH MALTA

OUR VISION

".....where health care providers are utilizing the latest technology facilitating a patient-centered model of care with minimum disruption and opportunity for error"

.....OUR GOALS

1. Taking Patient Safety to the next level
2. Minimizing opportunity for Medication Errors at all stages
3. Minimizing opportunity for medicines, medical materials and equipment unavailability when needed
4. Improve or replace current inefficient systems
5. Minimize paperwork
6. Minimize avoidable waste

THE OPPORTUNITY

".....where health care providers utilize the latest technology to communicate their supply needs with minimum disruption and opportunity for error"

The problems of today cannot be solved with the technology of yesterday ....

TECHNOLOGIES

- A smart prescription system - detects errors and drug interactions
- A robot that repackages bulk medicine into uni-dose
- A robot that stores uni-dose medicine
- A robot that dispenses medicines
- A robot that links the dispensing robot with Pneumatic Tube System (PTS)
- Bar-code and RFID administration
- Compounding network
- A decentralized robot for selected therapy areas - MARIO cabinets
- An electronic mailbox for reordering bin replenishment or “top-ups" - MERCURIO
- SMART cabinets and RFID closed loop technology

ADDITIONAL OPPORTUNITIES

- Free up pharmacists and nurses to perform clinical work
- Optimize inventory management
  - Free up stock from sitting on the shelves
  - Stop medicine from expiring unused
  - Forecasting from real usage
  - Automatic restock ordering
  - Just in time deliveries
- Consumption records and costs at patients level

PROCUREMENT PHILOSOPHY

- Our main goal was to do this project with ZERO budget
- We identified an opportunity of generating revenue through cost avoidance
- Payment model is through savings made as compared to an initial baseline activity
- All investment is being done by the concessionaire
- Sharing of savings is based on the return of investment
- No savings No payment

TENDERING PHASE - STAGE 1

Call was published through website.

Prequalification Questionnaire (PQQ)

- **Call open to all economic operators (Competitive Process).**
- **The pre-qualification questionnaire published**
- **Any economic operator could submit a request to participate in response to this call by providing the information for qualitative selection that was requested by the contracting authority in the PQQ document.**
- **Economic operators that meet the selection criteria were short-listed and eligible to proceed to the next stage.**

TENDERING PHASE - STAGE 2

Invitation to Participate in Dialogue (ITPD)

- **Opened to Candidates that qualified in terms of the PQQ.**
- **the invitation to participate in dialogue was published**
- **Shortlisted candidates were required to submit their initial (detailed technical) solution which included the features, software, hardware, materials, redundancy and all other factors requested by the Contracting Authority.**
- **Following the submission period, Contracting authority opened a dialogue with the short-listed participants in accordance with the relevant provisions, the aim of which was to identify and define the means best suited to satisfying the CA needs for this project. All aspects of the procurement with the chosen participants during this dialogue could be discussed until the CA can identify the solution or solutions which are capable of meeting its needs.**

TENDERING PHASE - STAGE 3

Best and Final Offer (BAFO)

This was a Best Price Quality Ratio tender.

- **Opened to Candidates that qualified in terms of the PQQ and the ITPD.**
- **Candidates had to submit their technical offer (including as a minimum, the features, software, hardware, materials, redundancy and all other factors included in the CA's requirement for the Detailed Solution).**
- **the Financial offer.**
- **The Concession Contract will be awarded to the tenderer submitting the offer with the Best Price/Quality Ratio (BPQR). The BPQR is established by weighing technical quality against price on a 70/30 basis respectively.**
- **The evaluation process will be split into three (3) stages:**

(i) Administrative Evaluation (Stage 1)

(ii) Technical Evaluation of Tenders (Stage 2)

(iii) Award Stage (Stage 3)

PHASES OF THE PROJECT

- **the preparation phase (*preparation for the Project, including the mobilization of the necessary resources in preparation for the implementation phase*);**
- **the implementation phase (*commence the design, manufacture, delivery and installation of the Concessionaire System for the Hospital Site. The Concessionaire System for the Hospital Site shall be fully installed, tested and operational by not later than the Scheduled Commercial Operations Date in accordance with the Implementation Plan*);**
- **the operational phase (*System shall be fully installed, tested and operational by the Concessionaire within each Hospital Ward during the Implementation Phase. The Concessionaire shall operate the Concessionaire System and perform the Services in accordance with the provisions of this Agreement*);**
- **the exit phase.**

MODULES WITHIN THE SYSTEM

- **Unit-Dosing: Concessionaire shall be responsible for replacing the existing manual process of preparing unit-doses. Concessionaire shall be responsible for installing an automated medication packaging system which shall provide quality assurance, eliminate confirmation bias and enhance patient safety.**
- **Pharmacy Robot: The Concessionaire shall install and operate the Pharmacy Robot.**
- **2-bin system: The Concessionaire shall be required to install 2-bin systems at Mater Dei Hospital (list of wards and day care centres of Mater Dei Hospital, including both the general hospital and Sir Anthony Mamo Oncology Centre, are set out in the definition of Health Care Sites).**
- **Smart cabinets: The Concessionaire shall be required to install smart cabinets at Mater Dei Hospital.**
- **Training and support: The Concessionaire shall be solely responsible for training of personnel of Health Care Sites where the Solution (or any part thereof) is installed. The Concessionaire shall also provide technical support services throughout the duration of the Concession.**

UNI-DOSE PROCES—THIRD YEAR AND ONWARDS

SUPPLIER

SLPA SAN GWAN WAREHOUSE

SLPA RECEIVES STOCK ON CONSIGN-MENT AND ARE ACCOUNTABLE

PUT AWAY BY SLPA EMPLOYEES

SLPA PULL STCOK OFF SHELVES

SLPA LOADS MEDICINE INTO ROBOT

UNI DOSE PRODUCTION

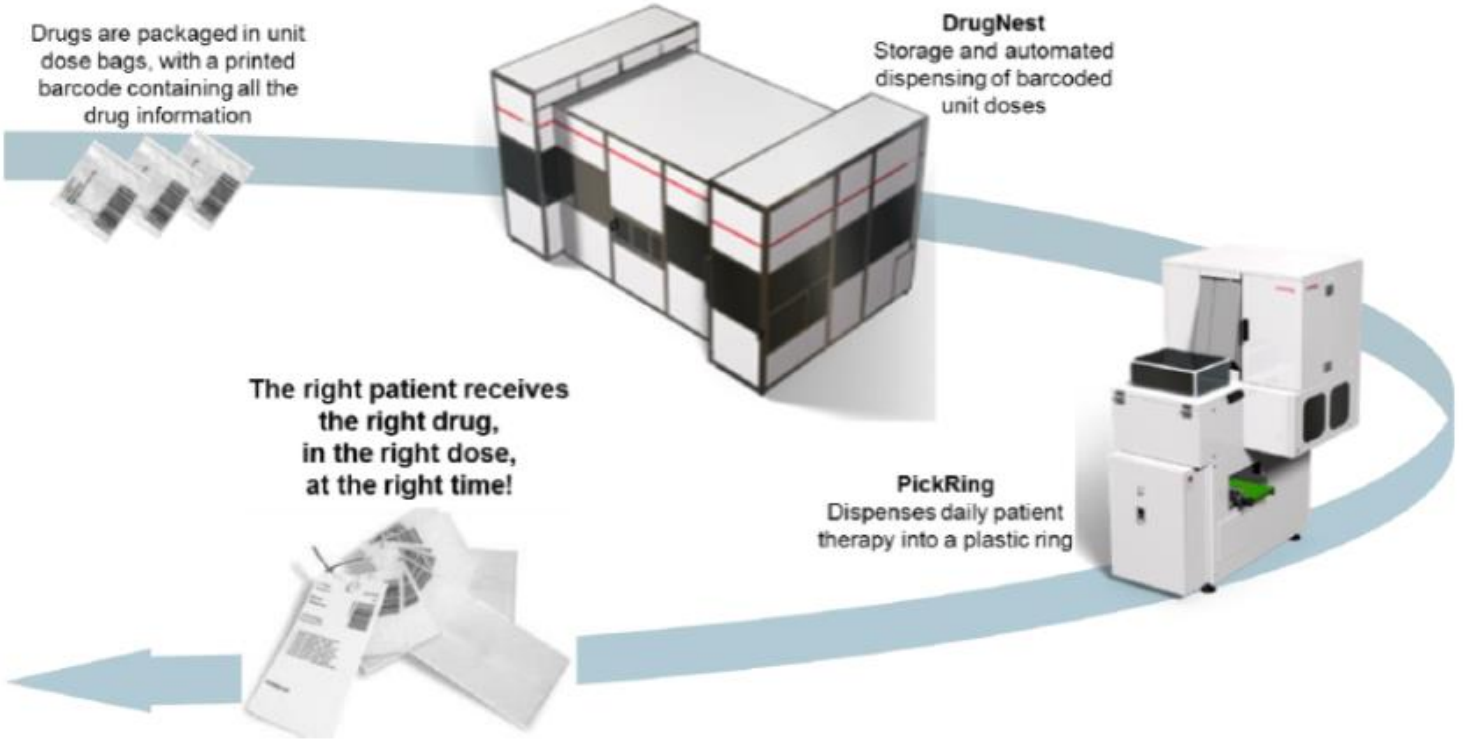
SLPA SHIPS UNI DOSES TO HOSPITAL

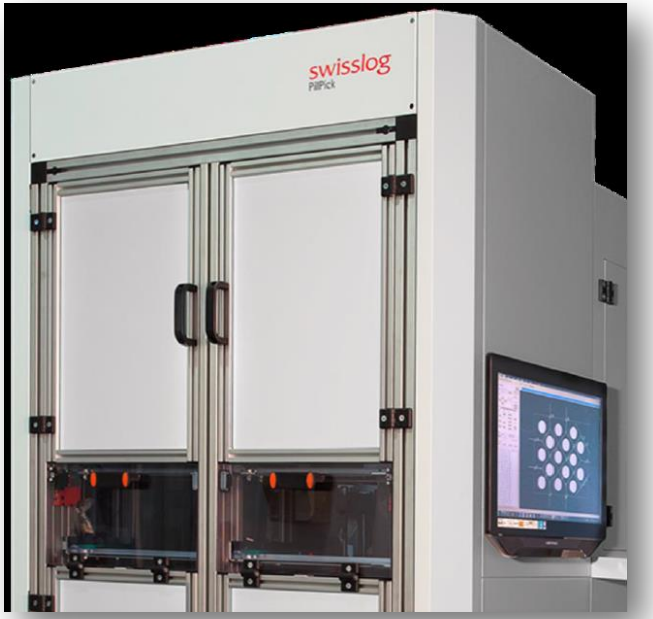
SLPA RECEIVES UNI DOSE IN HOSPITAL

SLPA LOADS UNI DOSES INTO ROBOT

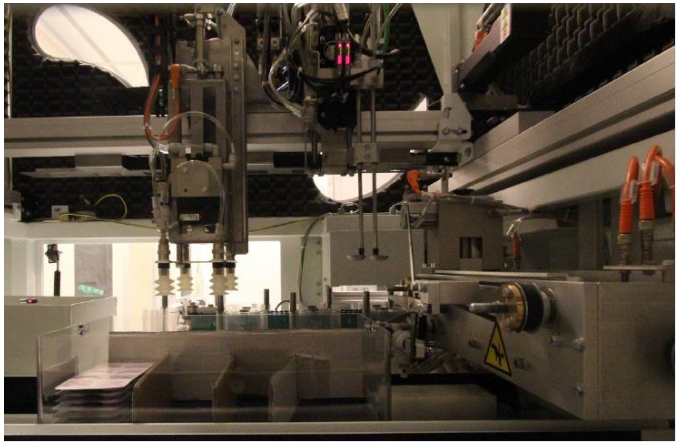
SLPA ROBOT READY TO DISPENSE

SLPA LOADS DOUBLE BINS / SMART


Drugs are packaged in unit dose bags, with a printed barcode containing all the drug information
DrugNest
Storage and automated dispensing of barcoded unit doses
The right patient receives the right drug, in the right dose, at the right time!
PickRing
Dispenses daily patient therapy into a plastic ring



Repackaging



central procurement & supplies unit
cpsu

Centralised

De-centralised

central procurement & supplies unit

cpsu

QUESTIONS?


why
when
who
where
what
why
QUESTIONS
who
how
where
who
what
how
how

Open discussion
Q&A

COFFEE BREAK

PART II

Algorithmic systems

for automated parking control

Leendert Miedema
Municipality of Amsterdam

Gemeente Amsterdam

Digital parking enforcement

Algorithm systems for automated parking control

Drs. Ing. Leendert Miedema, Senior advisor On-Street Parking
Parking department, City of Amsterdam

Digital parking enforcement

a.k.a algorithm systems for automated parking control

Technical Concept

Regulations & Privacy

Amsterdam currently has

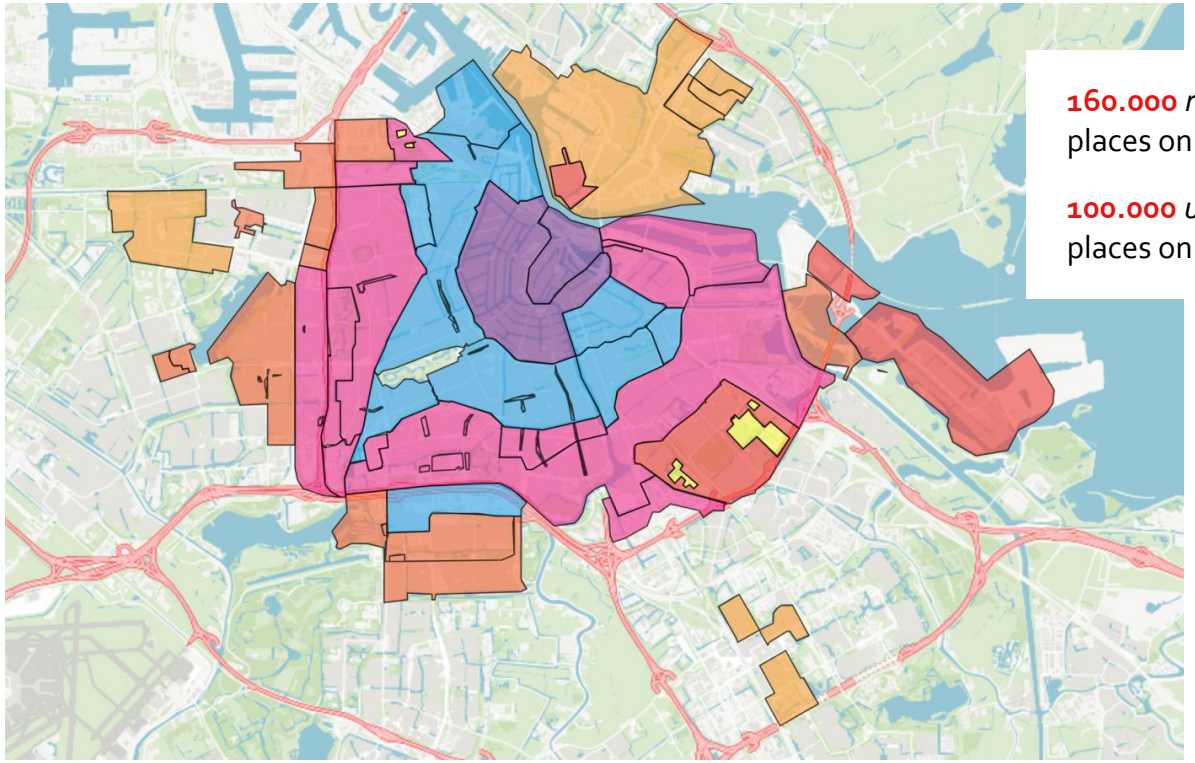
830.000
inhabitants

2 million in the
metropolitan region

400.000
cars

800.000
bicycles

Tariffs & Zones



160.000 *regulated* parking places on street

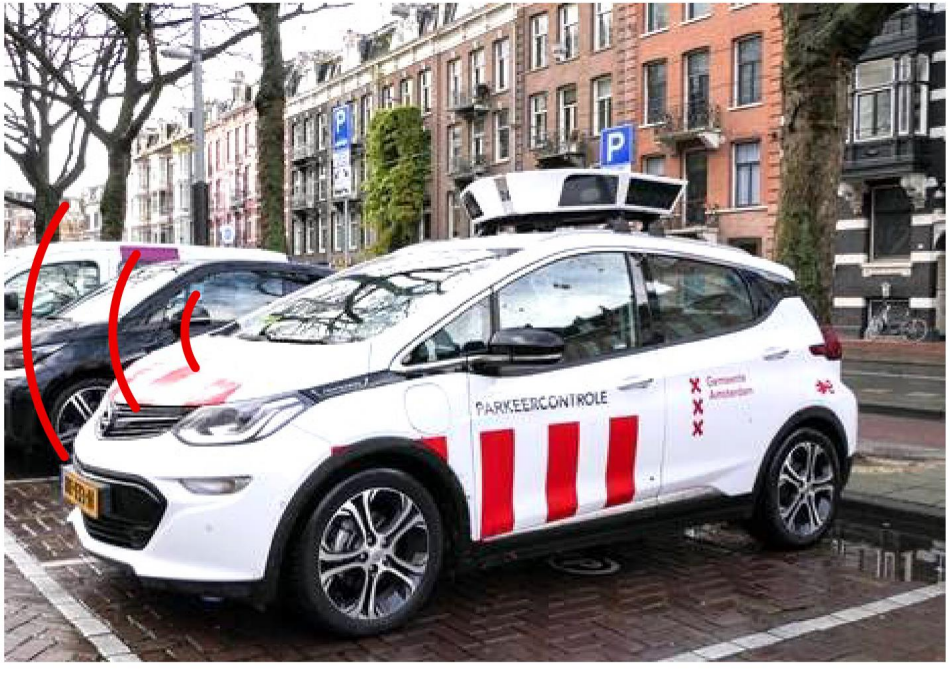
100.000 *unregulated* parking places on street

- € 7,50
- € 6,00
- € 4,50
- € 3,50
- € 2,50
- € 1,40
- € 0,10

± 16 km

Enforcement by scan car

GPS position of the car & licence plate



Parking machines with licence plate number input

There are 2.600 parking machines

AB-CD-12

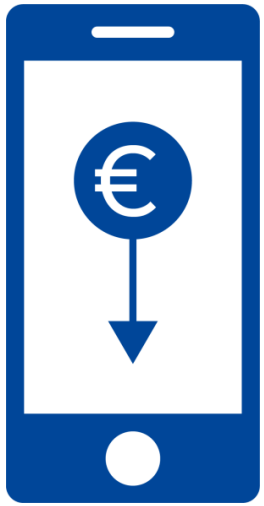
Number plate input is obligatory

PIN

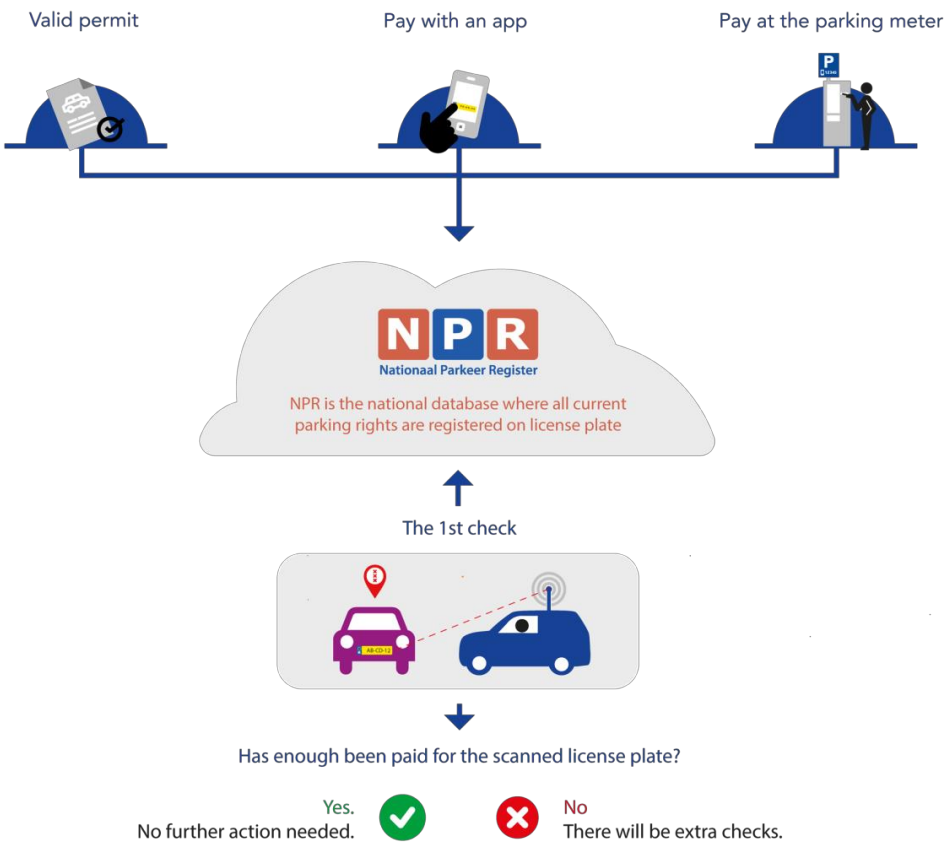
People can pay with **card** only

17 different providers

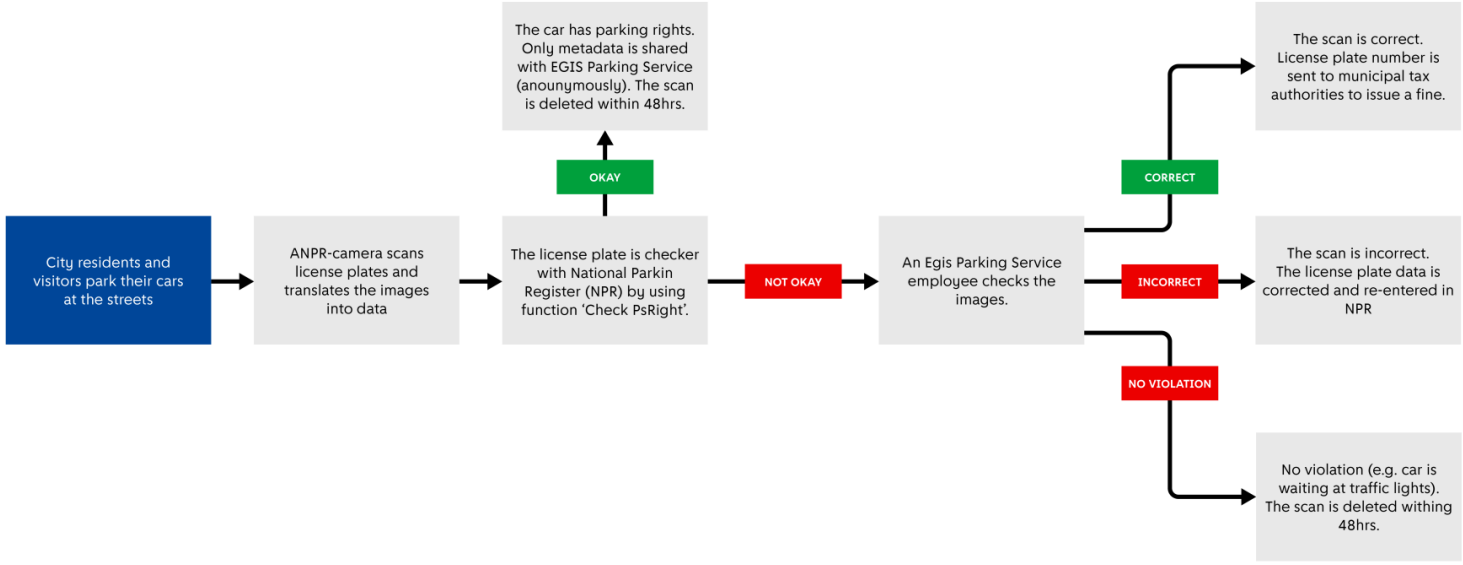
>70% smart phone payments



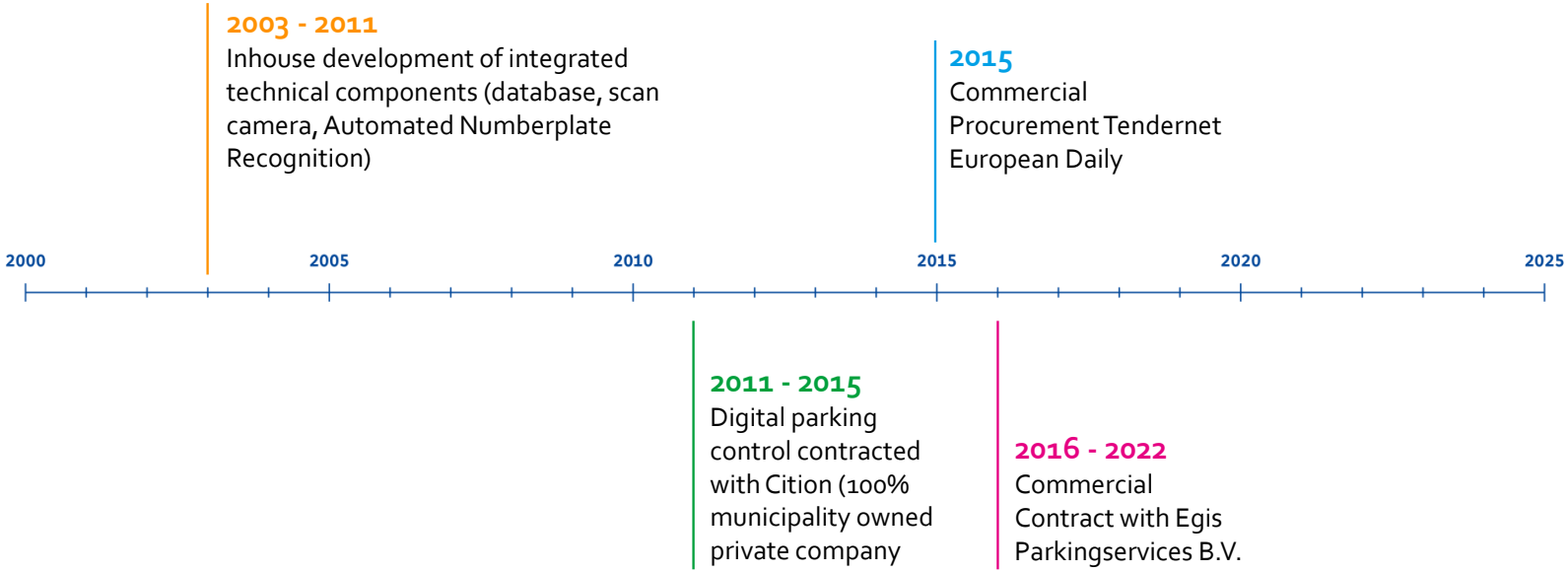
Digital parking enforcement - concept



Algorithmic Data Processing



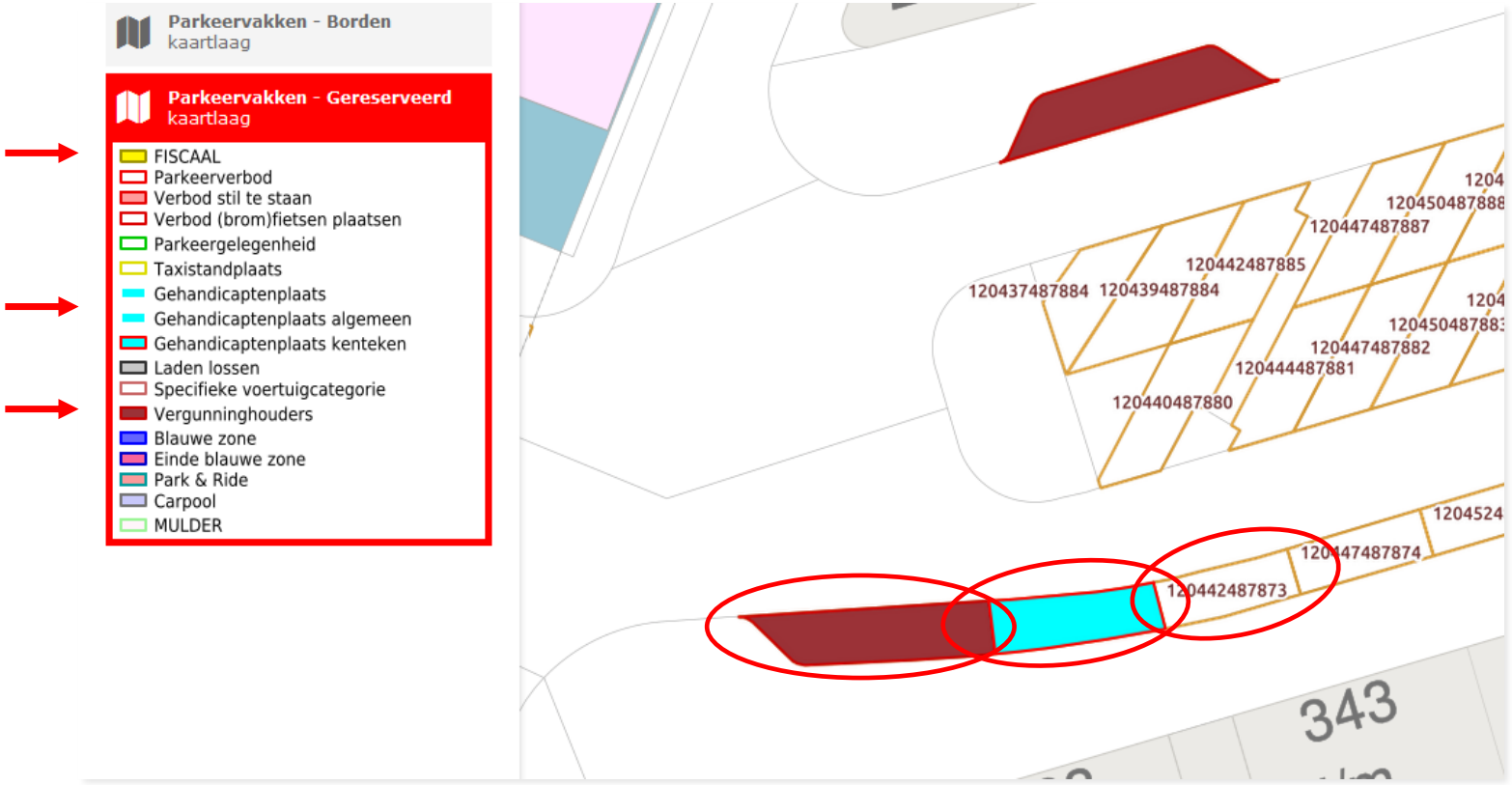
Pre Commercial Procurement?



Digital Parking Map

260.000 parking spots

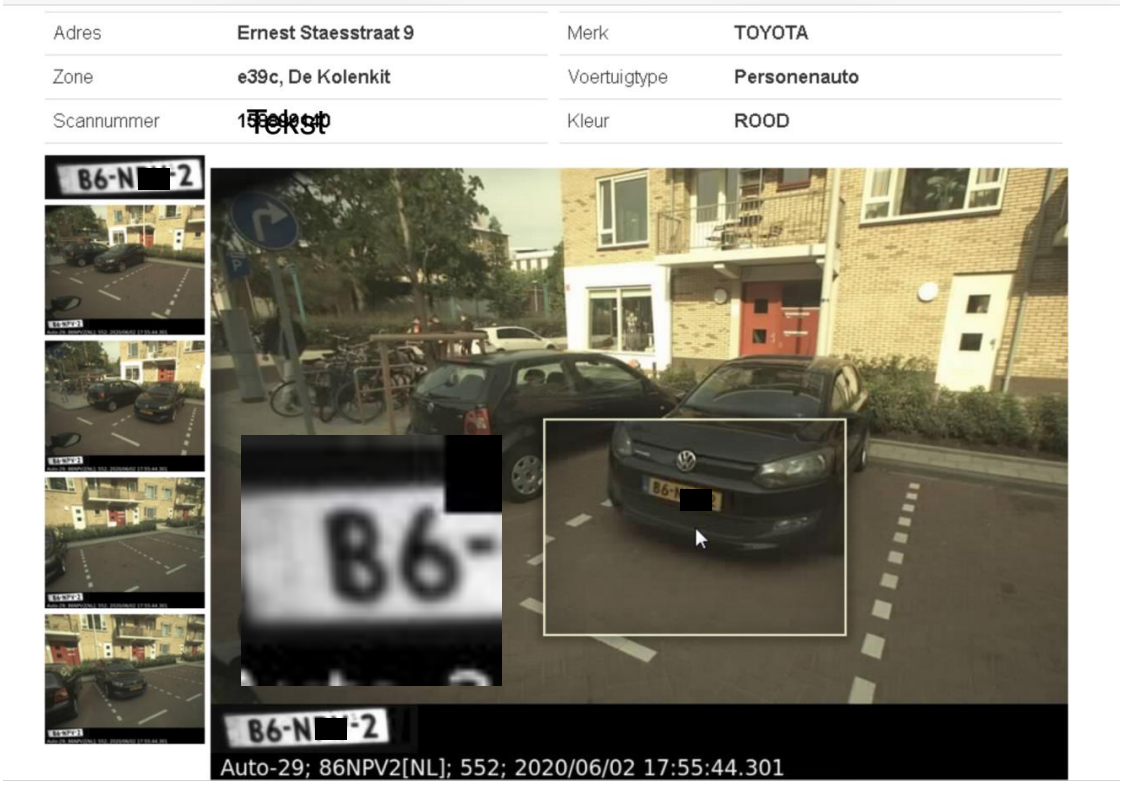
260.000 parking spots, with specific status, GPS-location and information



City Data: 100% accuracy required

No permit or payment found?

An employee of Desk Force will *always* assist.

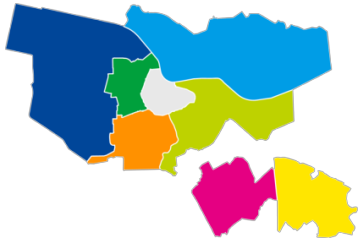


Extra care:

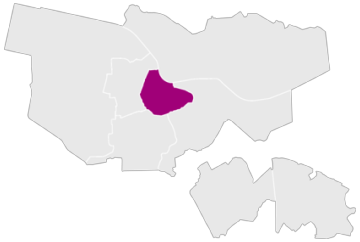
“Parking or stopping to unload passengers?”

Only samples are taken, no full surveillance 24/7 (1)

Any single parkingspot (for a car) is scanned **1-40 times per week.** Each scan has a duration of ± **5 seconds**



Residential areas
1-10 times per week



City centre
up to **6 times a day**

That's approx. **5-200 seconds** per parking spot/ car. Combined that's less than 4 minutes per week!

Only samples are taken, no full surveillance 24/7 (2)

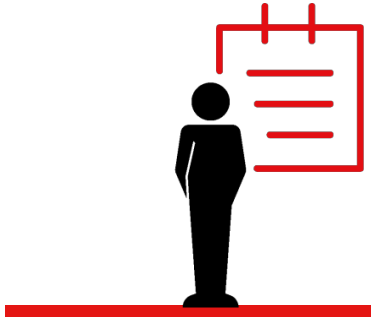
- Total scan volume per year: **40 million scans**

- Payment rate: **82%**
- To Desk Force (no parking right): **1,5 million scans**
- Fines (only these are matched to name and adress): **0,5 million**

Results of digital enforcement

- Payment rate: up from 72% to 82% (excl. Permitholders)
  - Net result 2022: ca. 300 milion euro
- 50% savings on enforcement costs (!)
- Less agression against enforcement officers
- Better use of enforcement as a tool to regulate parking space

Digital parking enforcement



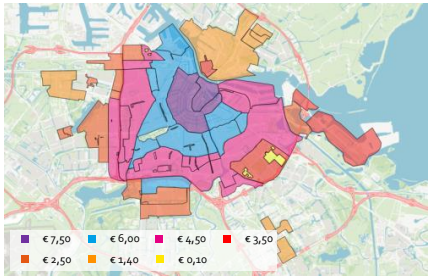
Technical Concept

Regulations & Privacy

Regulations

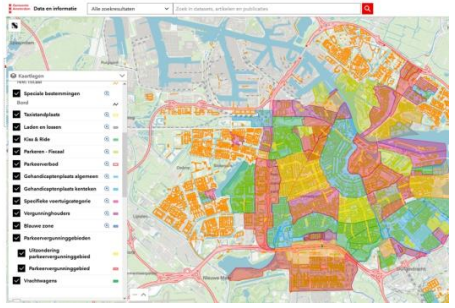
- Parking regulation
  - Permits (14 different types: resident, business, handicap, care giver, visitor, 'green', etc)
  - Requirements, per permit type
- Numberplate input is mandatory
- Mobile phone app is allowed

Tariffs & Zones



- Parking Tax regulation
  - Permitzones
  - Tariffs
  - Fines

Digital parking map

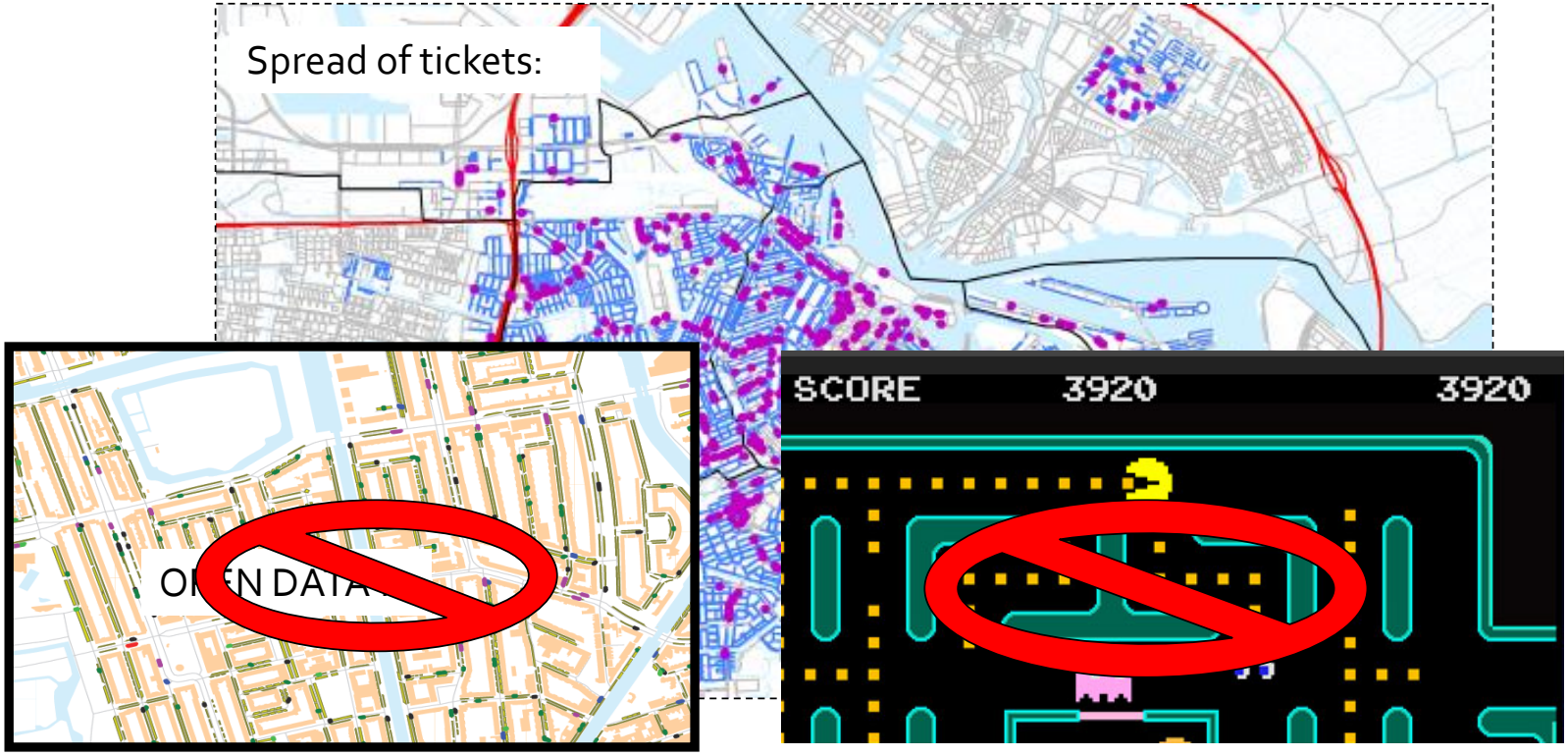


Privacy & Security

'license plate number = personal data'

- Privacy protocol / (European Convention on Human Rights)
- Compliant with 'General Data Protection Regulation' (GDPR)
- Privacy by design / privacy by default:
  - Numberplate encryption to 40 characters
  - One-Way queries only: number plate –> parking right / location / time
  - No back tracking: 

Data



Questions?

Leendert Miedema

Advisor On Street Parking
L.miedema@amsterdam.nl

Automation of public services in several sectors

Examples of EAFIP

Ana Lucia Jaramillo

Corvers Procurement Services B.V.

Outline

1. What regulatory requirements shall Innovation Procurement projects consider?
2. How can public procurers maximize the benefits throughout the cycle of the contracts?
3. Use case examples in different sectors
4. Do’s & takeaways

Poll

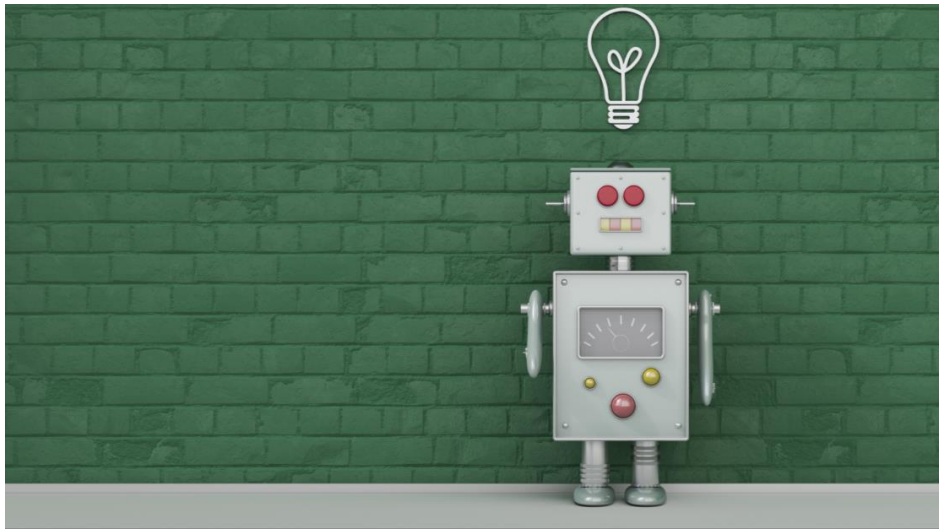
Let us know…

Poll

- Have you procured Robot Process Automation or Robotic solutions?

(a) YES

(b) NO



Poll

- Will you procure Robot Process Automation or Robotic solutions?

(a) YES

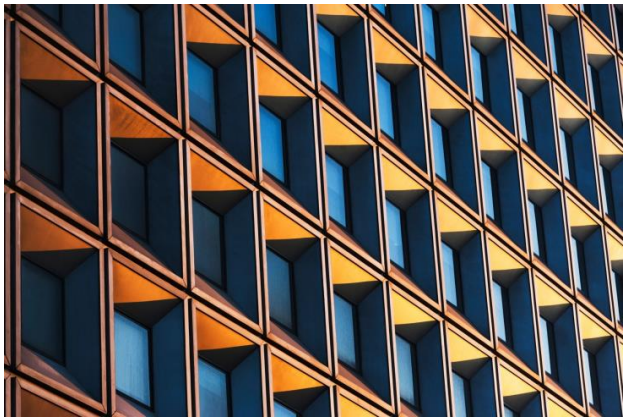
(b) NO

Poll

- Are you aware of the relevant regulatory framework on data, AI and cybersecurity in Europe?

(a) YES

(b) NO



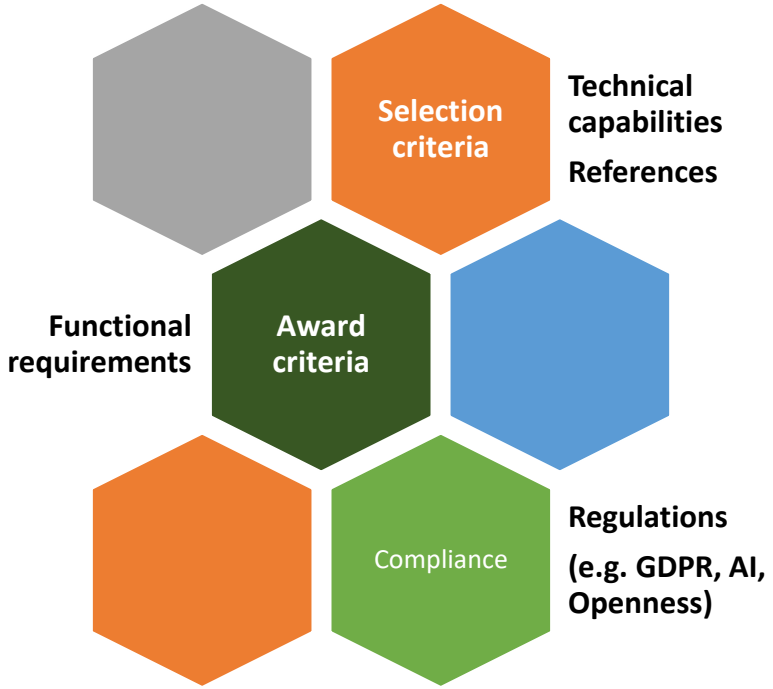
Regulatory requirements

To consider in Innovation Procurement

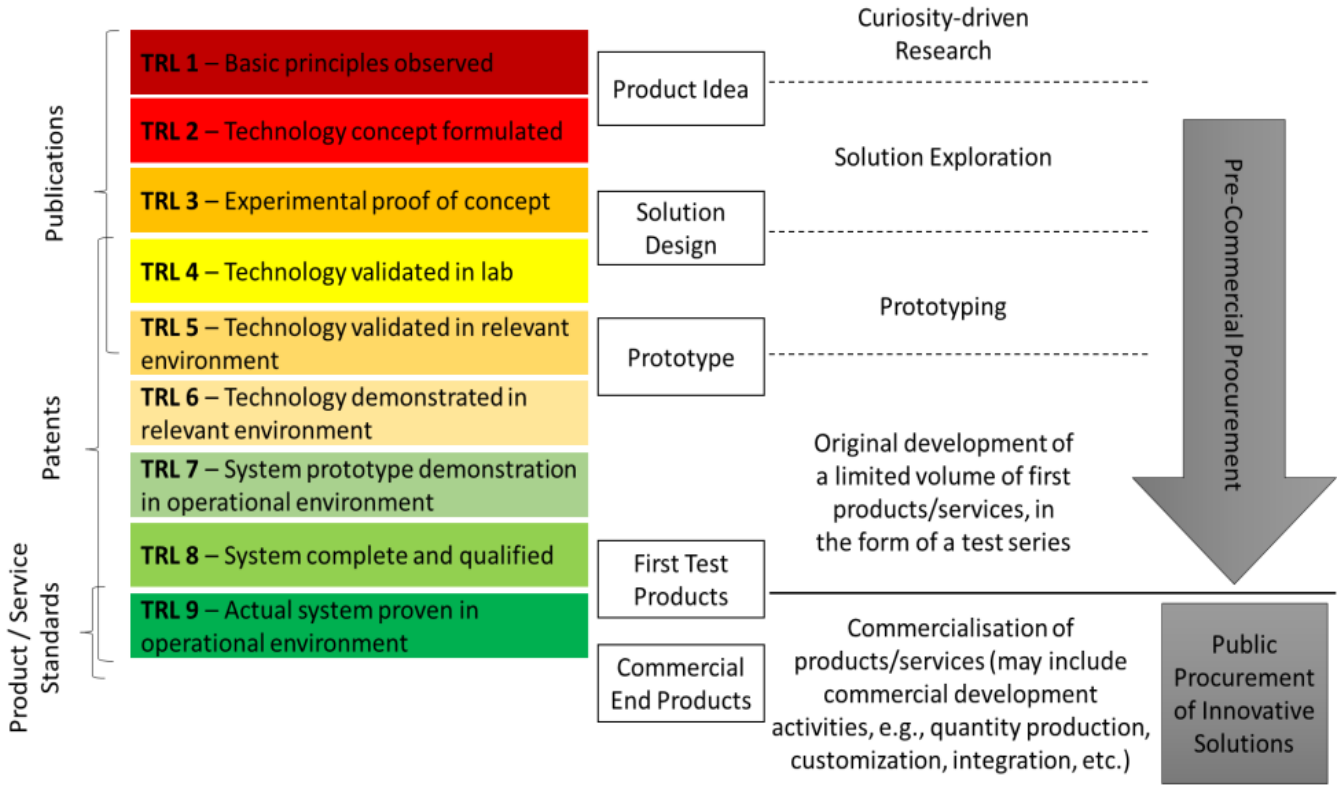
Regulatory requirements

- **PCP**
  - No solutions in the market
  - R&D services exempted from the EU Public Procurement Directives.
  - Compliance with TFEU principles
  - Risk-benefit sharing
  - Competitive phases
  - **TRL 3 -8**
- **PPI**
  - Innovative solutions closer to the market
  - Different procedures available under the EU Public Procurement Directives.
  - Testing possibilities
  - **Higher TRL 7-9**
  - First customer

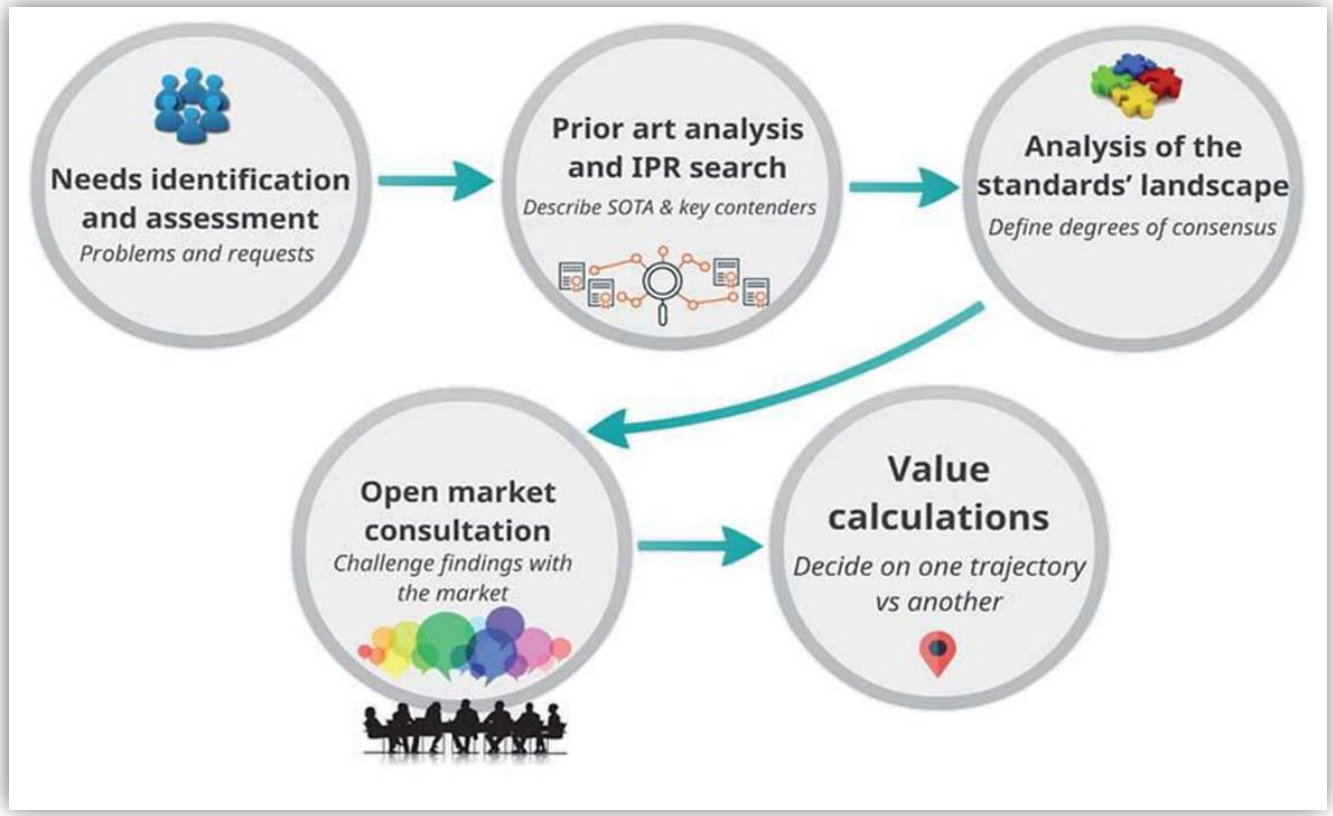
For a more detailed presentation see:
EAFIP Webinar Introduction to Innovation Procurement
www.eafip.eu/webinars



Technology readiness levels



EAFIP methodology

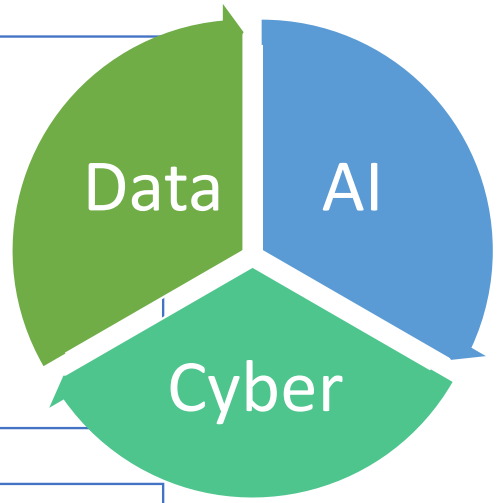


Regulatory requirements

Regulatory requirements

Regulatory framework

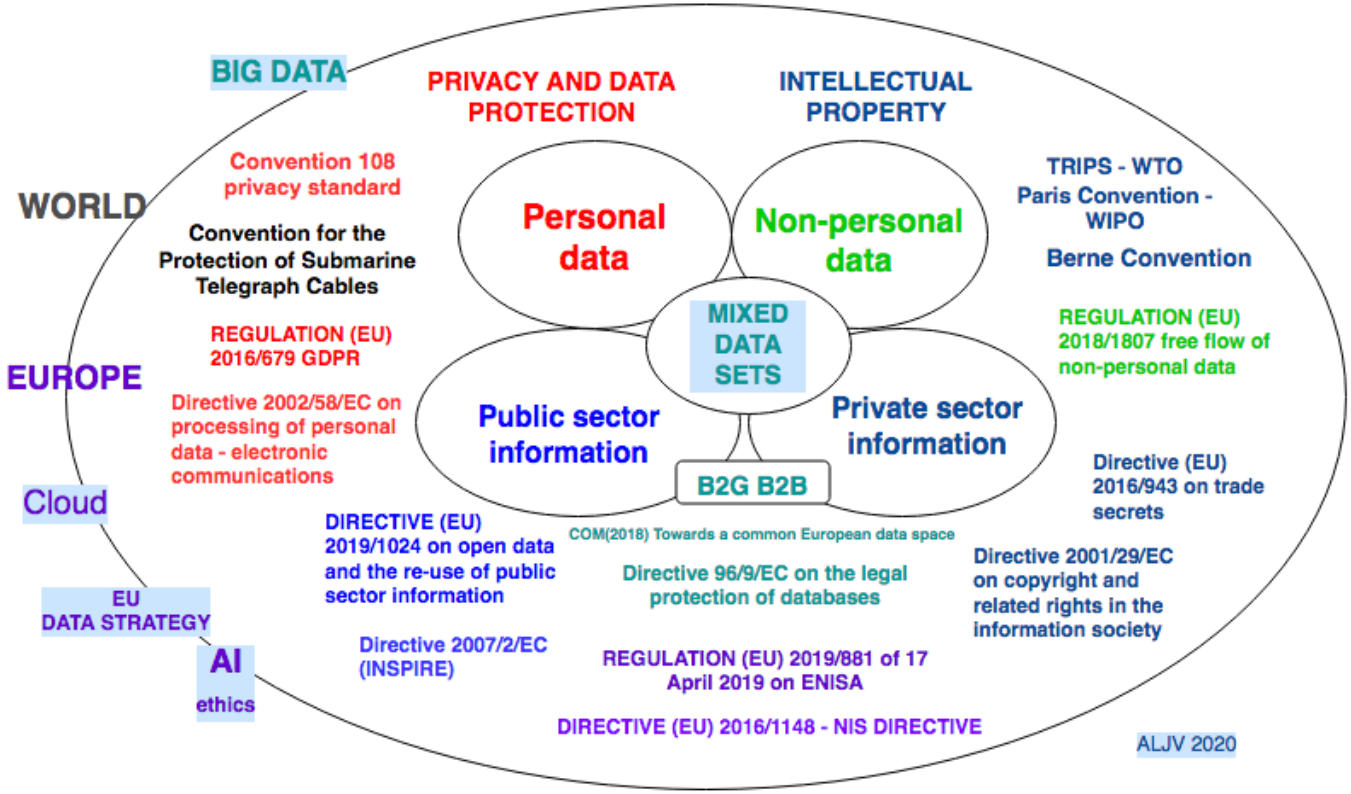
- General Data Protection Regulation (GDPR)
- Open Data Directive
- Regulation for the free flow of non-personal data
- Directive on the Protection of Trade Secrets.
- NIS Directive (II)
- AI Regulation (proposal)
- Interoperable Europe Act (proposal)



Policy & challenges in the digital era

- European Interoperability Framework for Smart Cities and Communities (EIF4SCC).
- Human-centric technology
- Ethic & social responsible
- Risk assessment

Overview of the regulatory framework

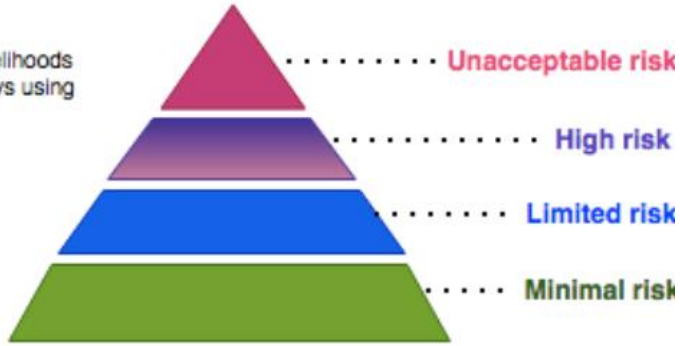


AI Regulation (proposal): Risk-based approach

Unacceptable risk: All AI systems considered a clear threat to the safety, livelihoods and rights of people will be banned, from social scoring by governments to toys using voice assistance that encourages dangerous behaviour.

Limited risk, i.e. AI systems with specific transparency obligations: When using AI systems such as chatbots, users should be aware that they are interacting with a machine so they can take an informed decision to continue or step back.

Minimal risk: The proposal allows the free use of applications such as AI-enabled video games or spam filters. The vast majority of AI systems currently used in the EU fall into this category, where they represent minimal or no risk.



High-risk AI systems will be subject to strict obligations before they can be put on the market:

- Adequate risk assessment and mitigation systems;
- High quality of the datasets feeding the system to minimise risks and discriminatory outcomes;
- Logging of activity to ensure traceability of results
- Detailed documentation providing all information necessary on the system and its purpose for authorities to assess its compliance;
- Clear and adequate information to the user;
- Appropriate human oversight measures to minimise risk;
- High level of robustness, security and accuracy.

High-risk: AI systems identified as high-risk include AI technology used in

Critical infrastructures (e.g. transport), that could put the life and health of citizens at risk;

Educational or vocational training, that may determine the access to education and professional course of someone's life (e.g. scoring of exams);

Safety components of products (e.g. AI application in robot-assisted surgery);

Employment, workers management and access to self-employment (e.g. CV-sorting software for recruitment procedures);

Essential private and public services (e.g. credit scoring denying citizens opportunity to obtain a loan);

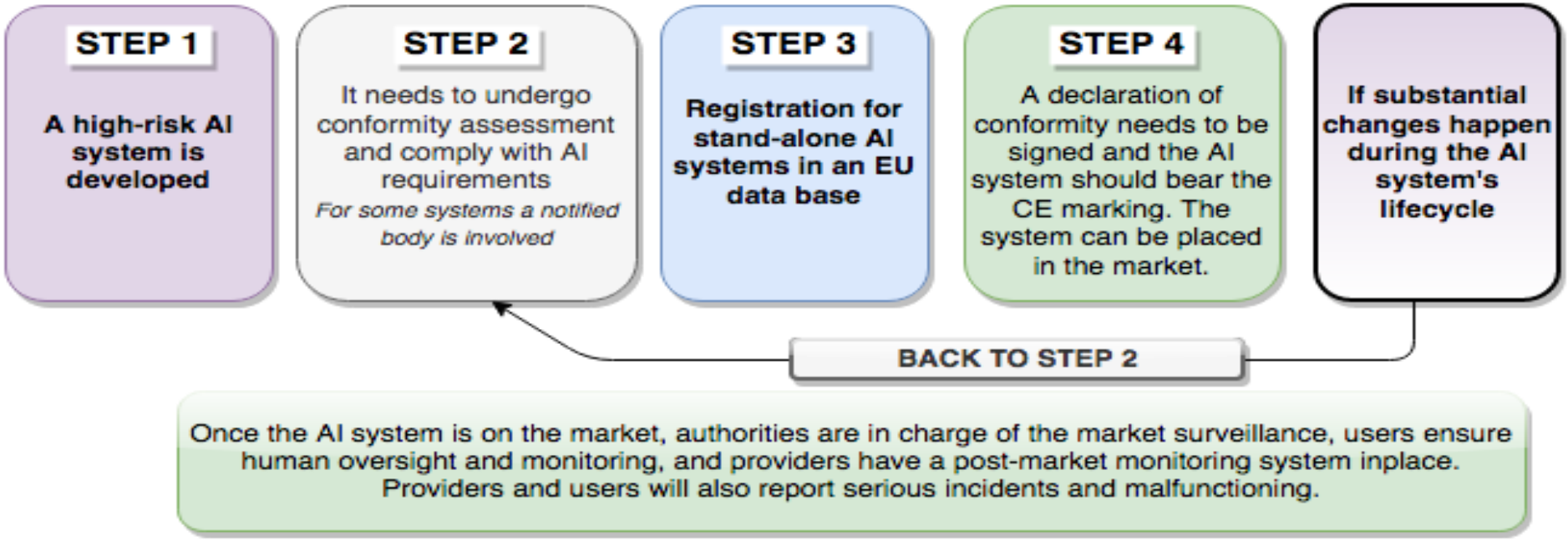
Law enforcement that may interfere with people's fundamental rights (e.g. evaluation of the reliability of evidence);

Migration, asylum and border control management (e.g. verification of authenticity of travel documents);

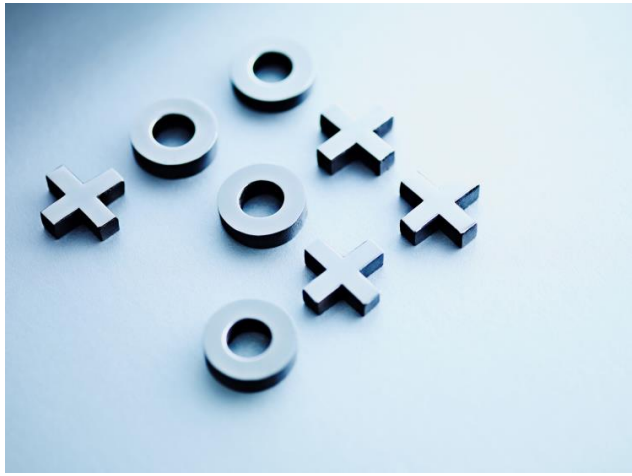
Administration of justice and democratic processes (e.g. applying the law to a concrete set of facts).

Commission (Regulatory framework proposal on Artificial Intelligence) <https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai

Compliance steps based on Regulatory framework proposal on AI



Commission (Regulatory framework proposal on Artificial Intelligence) https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai

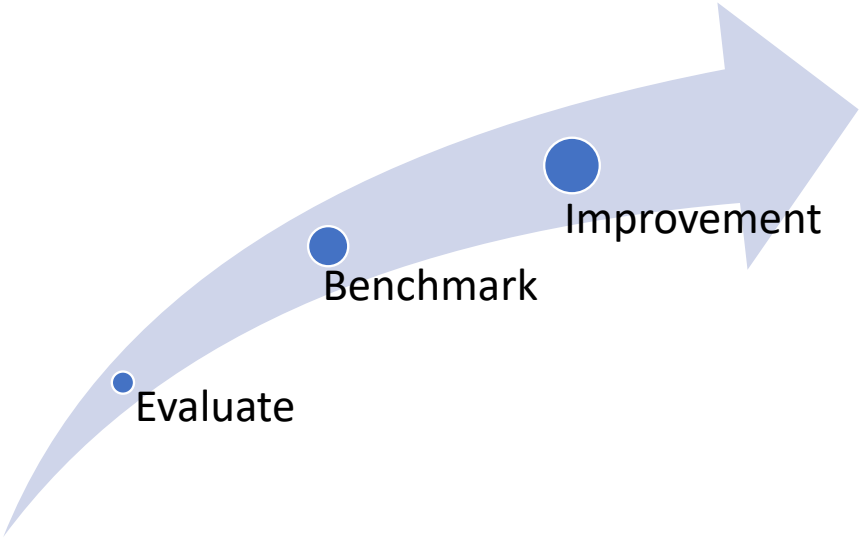


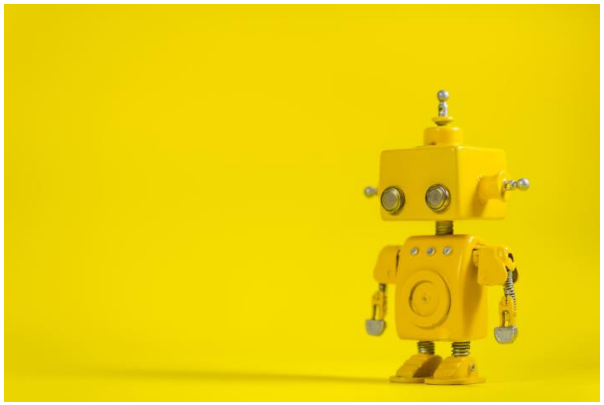
Benefits

Throughout the cycle of the contract

Benefits throughout the cycle of the contracts

- PCP:
  - Evaluation at end of phase report
  - Data protection impact assessment
- In PPI:
  - Testing
  - Value Engineering Proposals



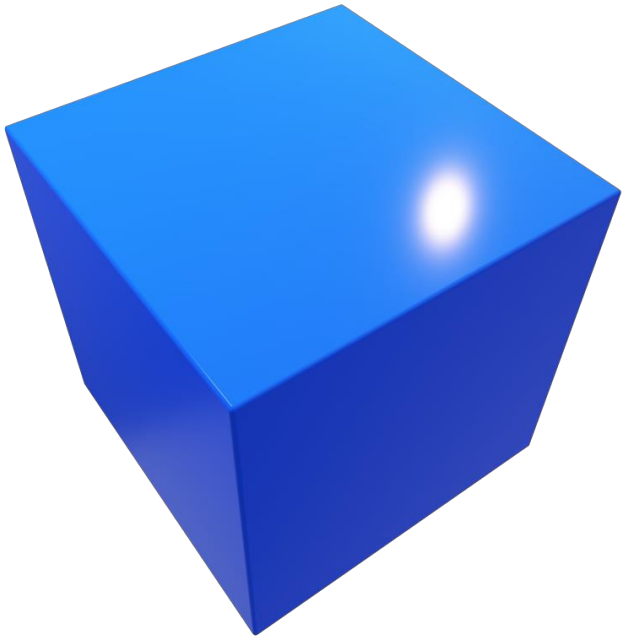


Use case examples

In diverse sectors

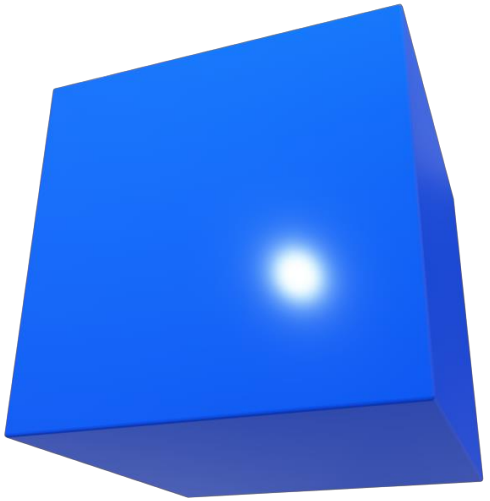
Use case examples

No.	Sector	Public procurer	Project
1.	Water	WBL	Wauter II – AI PCP
2.	Security	13 PTOs Lead procurer: Kemea	PREVENT PCP
3.	Smart cities Mobility	Public buyers: STIB-MIVB (lead) CIRB-CIBG, Brussels Mobility Parking.Brussels	Muntstroom PCP
4.	Transport	ProRail	ATO - Goa4



Use case examples

No.	Project	Sector	Contact	Use case	Technology
1.	Wauter II- AI-ML PCP	Water	Léon V.	Value in the water chain	Big Data & AI Machine Learning Digital Twin
2.	PREVENT PCP	Security	Youssef B.	Enhanced security in PTO	Video analytics & algorithms
3.	Muntstroom PCP	Smart cities	Rick M.	People flow in Muntplein	Data analytics & algorithms
4.	ATO Goa4	Transport	Thymo V.	Testing Goa4	Autonomous train



WBL Wauter II - AI models for wastewater management

- Digital Twin transport system
- Machine Learning
- Maintenance
- Predicting
- Security

[Waterschapsbedrijf Limburg (WBL) - European Assistance for Innovation Procurement (eafip.eu)]

[Innovatief inkopen - WBL]

WBL Business needs

- Future proof plug and play software in the cloud
- Big Data platform
- Artificial Intelligence software to:
  - Integrate weather forecasts
  - Support predictive maintenance
  - Build digital twins

Source: Leon V.

The Digital Twin

- The Digital Twin uses a Big Data platform and **Artificial Intelligence algorithms** to better map the operation of the transport system. With the system, WBL can better detect the concentrations of the COVID virus, PFAS (poly- and perfluoroalkyl substances) and pesticides in the sewage water, but also damage to the infrastructure such as pipe breaks.
- **The tender was designed in such a way that WBL's partners in the Limburg water chain can also use it without having to tender again.**
- **Open software, open standards, FRAND, escrow**

Digital Twin - WBL

Lessons learned

- The Business Case is crucial
- Know the market
- PCP is only possible with partners
- Pay for the design and the prototype
- Migrating to the Cloud is rethinking from CAPEX to OPEX
- Without IT architecture tools it is not possible to implement a solution.

Source: Léon V.

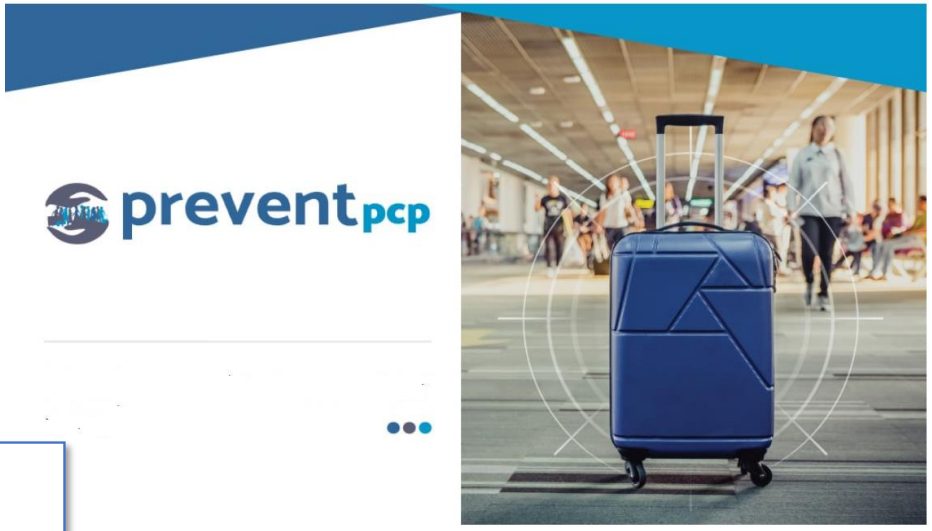
WBL WINS EUROPEAN INNOVATION PROCUREMENT AWARD 2021

- On the 25th of November 2021 Waterschapsbedrijf Limburg (WBL) won the first prize at the European Innovation Procurement Awards (EUIPA) 2021 in the 'Facing societal challenges' category for its integrated PCP & PPI project.

- The Waterschapsbedrijf Limburg (WBL) – Dutch wastewater treatment company – launched a full-blown procurement project. The project, which tackles both innovation and circularity, combined three different lots (process automation, security and big data) with a PCP (that builds on and supports the three lots). The PCP results are integrated as part of the big data PPI to support process automation and security. The purchased solution will improve management of wastewater transportation pipelines by allowing WBL to continuously monitor their correct functioning and proactively tackle issues.

PREVENT-PCP: Augmenting the security in public areas

- Video analytics & algorithms
- Data Protection Impact Assessment
- Machine Learning
- Interoperability



Timely automatic detection of potentially dangerous unattended items, identification and tracking of perpetrators, and advanced crisis management system

PREVENT PCP - Augmenting the security in public areas (prevent-pcp.eu)

Data protection in PREVENT PCP

Processing of data solely for the purposes set out by the controller (PTOs). In case the contractor has to process personal data:

- The personal data shall only be processed within the territory of the European Union and will not leave that territory.
- The data shall only be held in data centres located with the territory of the European Union.
- No access shall be given to such data outside of the European Union.
- The contractor may not change the location of data processing without the prior written authorisation of the contracting authority.
- Any transfer of personal data to third countries or international organisations requirements laid down in Chapter V of Regulation (EU)2018/1725

REGULATION (EU) 2016/679 OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (Text with EEA relevance)

REGULATION (EU) 2018/1725 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data, and repealing Regulation (EC) No 45/2001 and Decision No 1247/2002/EC

General principles relating to processing of personal data: lawfulness, fairness and transparency; purpose limitation; data minimization; accuracy; storage limitations; integrity and confidentiality; accountability.

- Tenderer is expected to understand all the GDPR aspects that the solution will have to comply with once deployed but the Tenderer is not expected to act as a (data) controller or processor.
- Tenderer should develop a solution that allows the Public Buyers and the PTOs to be compliant with the GDPR and data protection law

PREVENT-PCP Tender criteria

Exclusion criteria

- **Conflict of Interest**
- **Breach of obligations relating to the payment of taxes or social security contributions**
- **Bankruptcy & professional misconduct**
- **Criminal offences**
- **Proposed solution already available in the market**
- **Compliance with GDPR**
- **Compliance with Minimum Documentation requirements**

Pass/fail award criteria

- Compliance with the definition of R&D services
- Compatibility with other public financing
- Compliance with the requirements regarding the place of performance of the contract
- Compliance with ethics requirements

Selection criteria

- **Tenderer should develop a solution that allows the Public Buyers and the PTOs to be compliant with the GDPR and data protection law**
- Suitability to pursue the professional activity
- Ability to perform R&D up to original development of the first products or services and to commercially exploit the results of the PCP, including intangible results in particular IPRs
- Demonstration of expertise and working experience required to undertake an innovative R&D project that entails relevant technology
- Ability of the personnel to implement privacy and security-by-design in projects from a technical development perspective.
- At least one reference case of implementing a video analytics project related to the Public Safety field or a PTO environment or a critical infrastructure environment.

Weighted award criteria

Impact on the challenge

- Level of match with the requirements 35%
- The approach demonstrates commercial feasibility and a realistic commercialization plan, including the market analysis 5%

Validity of the technical approach

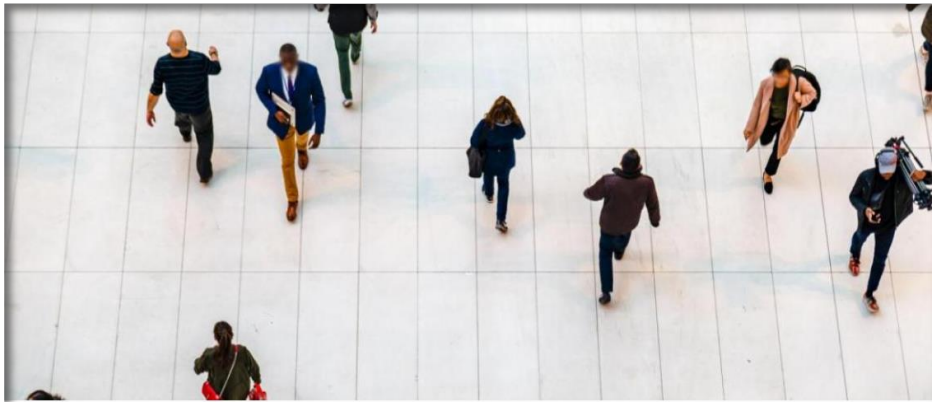
- Quality of the methodology – Design, development and installation of the solution 15%
- Expertise skills of the technical team 15%

Quality of the tender

- Quality of the proposal 5%
- Quality of the methodology - Project management 10%
- Expertise of the project management team 5%
- Similar projects enlightened in the proposal (PCP, R&D, Video Analytics Development) 10%

Muntstroom PCP people flow data & analytics

- Data Protection
- Machine Learning
- Data sharing
- Multiple users / stakeholders



Muntstroom PCP is the first European PCP on people flow data & analytics.

The PCP is a first step of an innovation procurement programme to enhance the attractiveness of the Brussels Capital Region for pedestrians and the use of the data on pedestrian flows.

Muntstroom, the first European PCP on people flow data & analytics | Agoria

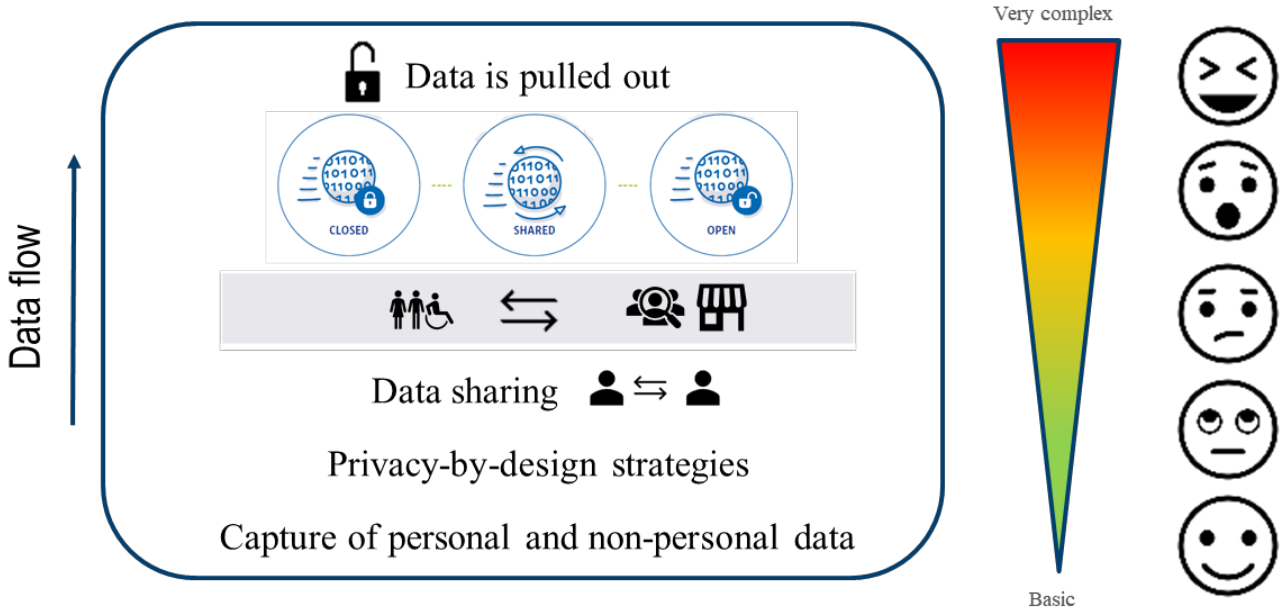
Open Market Consultation

Outreach to stakeholders

- Need of intermediate parties for the outreach to market parties
- Make use of the interests of each party
  - > The wish to involve more Brussels SMEs and start-ups
  - > The wish to promote Innovation Procurement projects
  - > ….
- 2 market consultations were organised:
  - > Open Market Consultation (parties interested in the PCP tender)
  - > Open Client Dialogue (potential users of the to-be-produced people flow data)

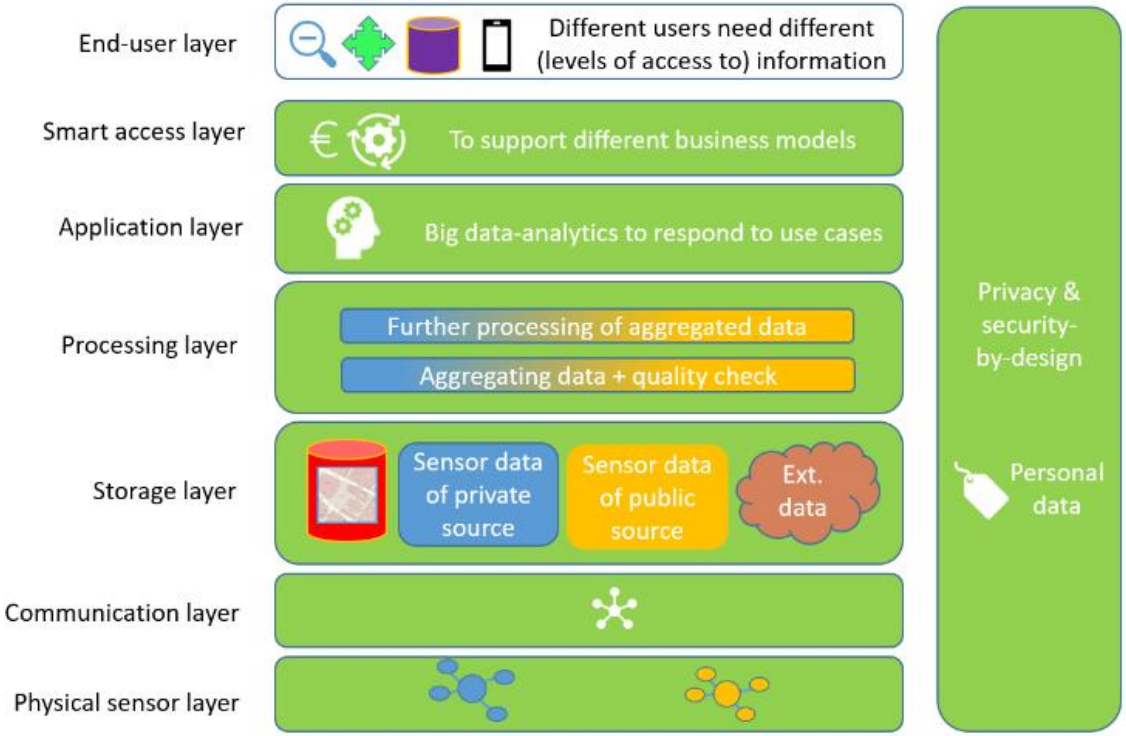
Source: Rick M.

Privacy is NOT a fixed boundary, it is an innovation challenge!

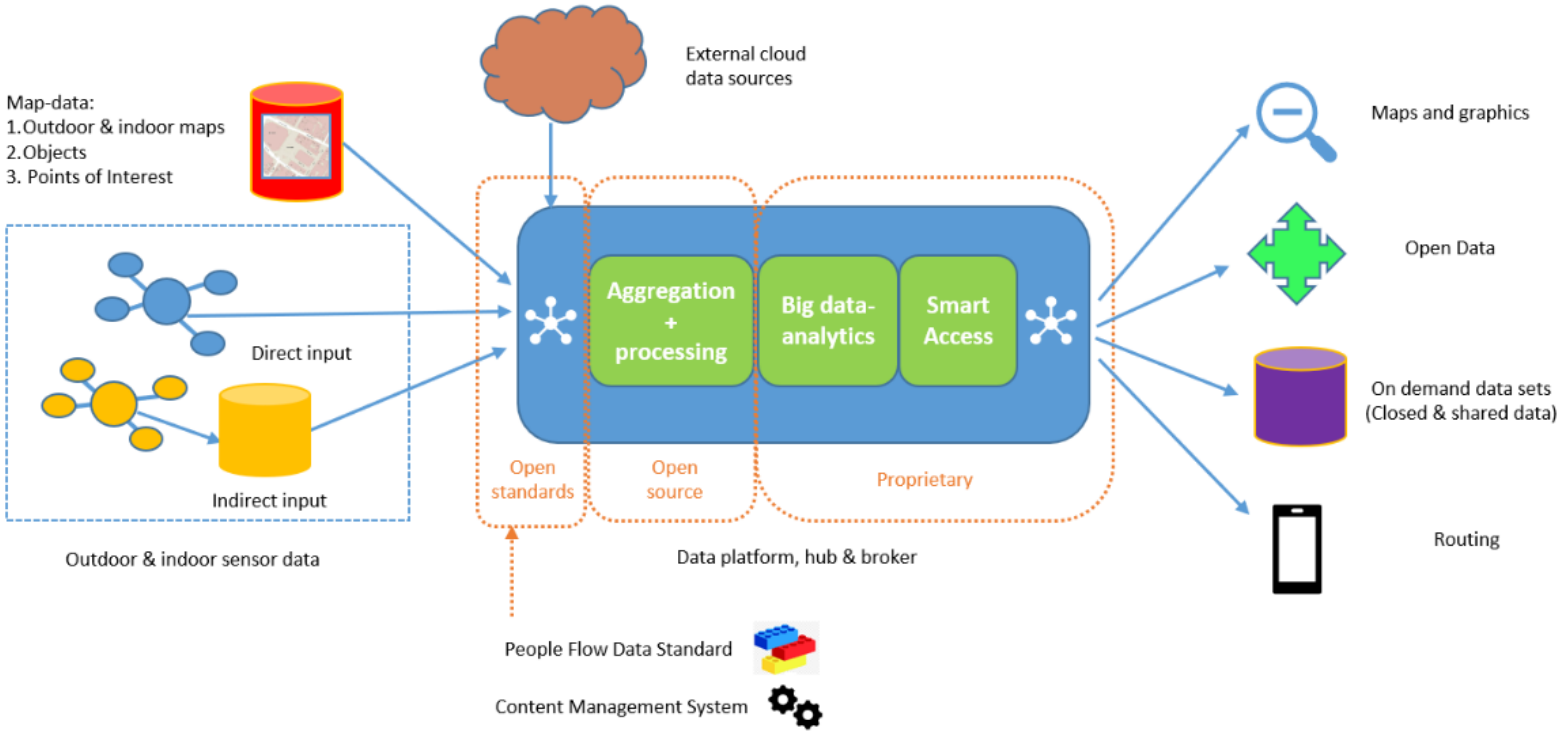


Source: Muntstroom

Layers


End-user layer
Different users need different (levels of access to) information
Smart access layer
To support different business models
Application layer
Big data-analytics to respond to use cases
Processing layer
Further processing of aggregated data
Aggregating data + quality check
Storage layer
Sensor data of private source
Sensor data of public source
Ext. data
Communication layer
Physical sensor layer
Privacy & security-by-design
Personal data

System overview



Use cases

		Use case	Subject
Analytics		1. Pedestrians analytics	Understanding "the" pedestrian.
		2. Analysis on reasons of movements	Understand why pedestrians move around.
		3. Event analytics	Understanding the behaviour of pedestrians that visit events (specific zones and specific time horizon).
		4. Crowd analytics: security	Understand and react to security issues.
		5. Crowd analytics: COVID	Understand and react to social distancing issues.
		6. Mobility hub analytics: usage of specific public transport lines	Quantify the alighting, onboardings, people onboard and interchanges.
		7. Mobility hub analytics: transfers	Understand how travellers transfer between public transport lines.
		8. Asset management	Understand how pedestrians / travellers make use of assets.
		9. Commercial analytics: Shopping policy and research	Understand the vitality of a street, its commercial attractiveness and the commercial potential of a specific location.
		10. Commercial analytics: Individual shop	Understand the relation between the people flow and individual marketing strategies.
		11. Traffic light analytics	Understand the impact of traffic lights on people flow and indicators e.g. safety.
Routing		12. PMR routing: Wheelchair	Defining and testing step-free routes.
		13. PMR routing: Partially sighted person	Defining and testing the routing of a partially sighted person.
		14. Indoor routing: Subsurface	Defining and testing routing within underground corridors.
		15. Indoor routing: Building	Defining and testing routing within a building.
Access		16. Smart access	Testing the technologies to support different business models.

ProRail – ATO Goa4

Two years of testing and research

- For the first time, ProRail, rail freight operator Lineas and technical supplier Alstom have had a freight locomotive run fully automatically. At a shunting yard in Oosterhout, during a demonstration for media and rail relations, we had the locomotive start, run and stop and react adequately to obstacles. This milestone was possible after more than two years of research and testing.
- Cameras and a radar were used to make images of the test area from a locomotive. Smart software learned to recognize obstacles on and next to the track while the train was running. The system was programmed in such a way that the train braked after seeing an obstacle or person.

Unmet Need of ProRail

I wish we had autonomous trains to check the rails, but we are not there yet. We see it somewhere in future, but until then we still drive trains with persons on it. In rail it's called ATO Autonomous Train Operation with different levels of automation. We tested Goa4 recently at a shunting yard https://www.prorail.nl/nieuws/automatisch-rangeren-oosterhout

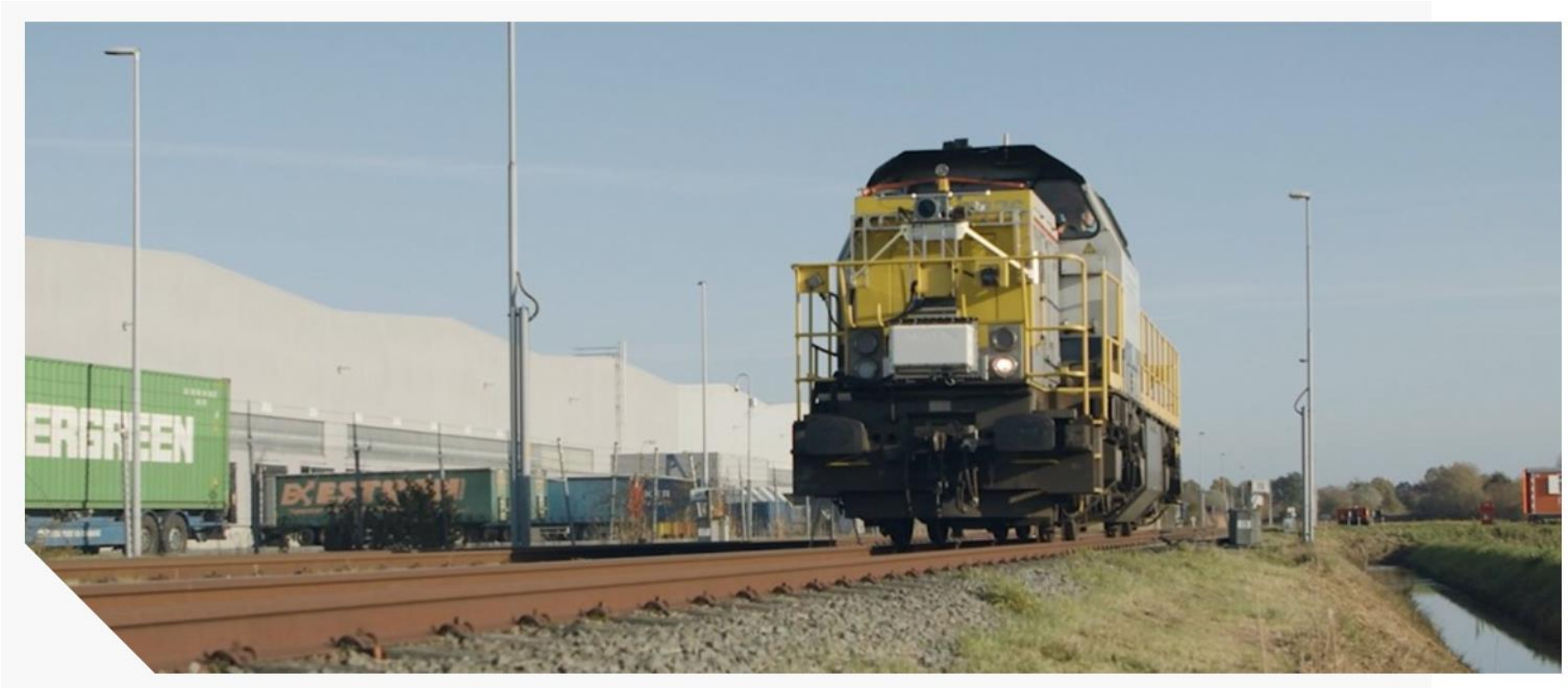
Source: Thymo V.

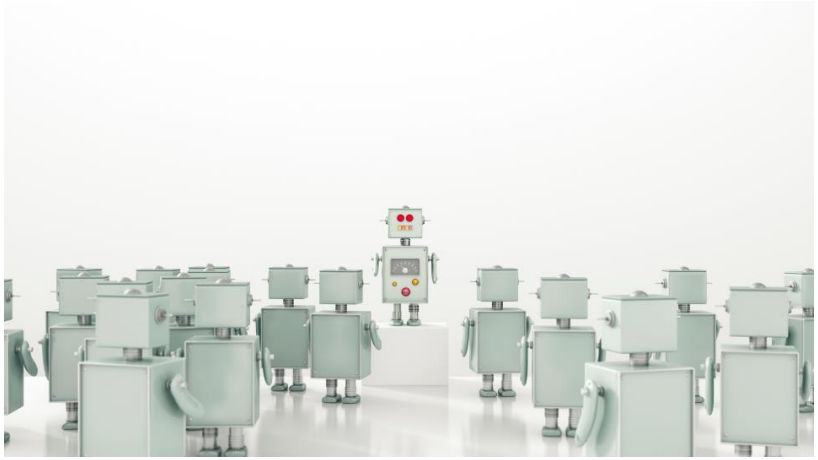
Automatisch rangeren Oosterhout | ProRail

ProRail's ATO programme

- The rail sector is in the middle of a technological development of digital systems for greater efficiency and even less impact on the environment. This is urgently needed in view of the demand for more rail capacity in the coming years.
- ProRail sees opportunities to use automatic shunting to make operations more efficient and safer and to contribute to objectives in the areas of capacity, punctuality and sustainability. With the achievement of the testing milestone in Oosterhout, a step has been taken towards the wider use of autonomous driving in the shunting process.
- Automated driving already exists in the metro world and ProRail is on its way to applying it in the rail sector as well. The success of the tests in Oosterhout is a new impetus in this direction. ProRail is also involved in follow-up trials that are planned in Europe.
- The automatic shunting trial is part of ProRail's ATO programme. Within this program ProRail has already carried out various tests with automatically controlled trains. Both the tests with freight and passenger trains proved successful.
- The report on this test will be published in 2023.

ATO Autonomous Train Operation - Goa4





Other examples

In Europe

Autonomous snowploughs

- Airports in Sweden and Norway

  Extremely busy in winter time

New framework agreement with Swedavia for self-driving snowploughs – Yeti Move

Avinor started in 2016 a PCP looking for solutions that could optimise the snow-clearing operations at the airport with regard to cost-benefit, safety, environmental impact and efficiency. It was a first in this sector in Norway that a public customer in this sector was challenging the market to innovate.

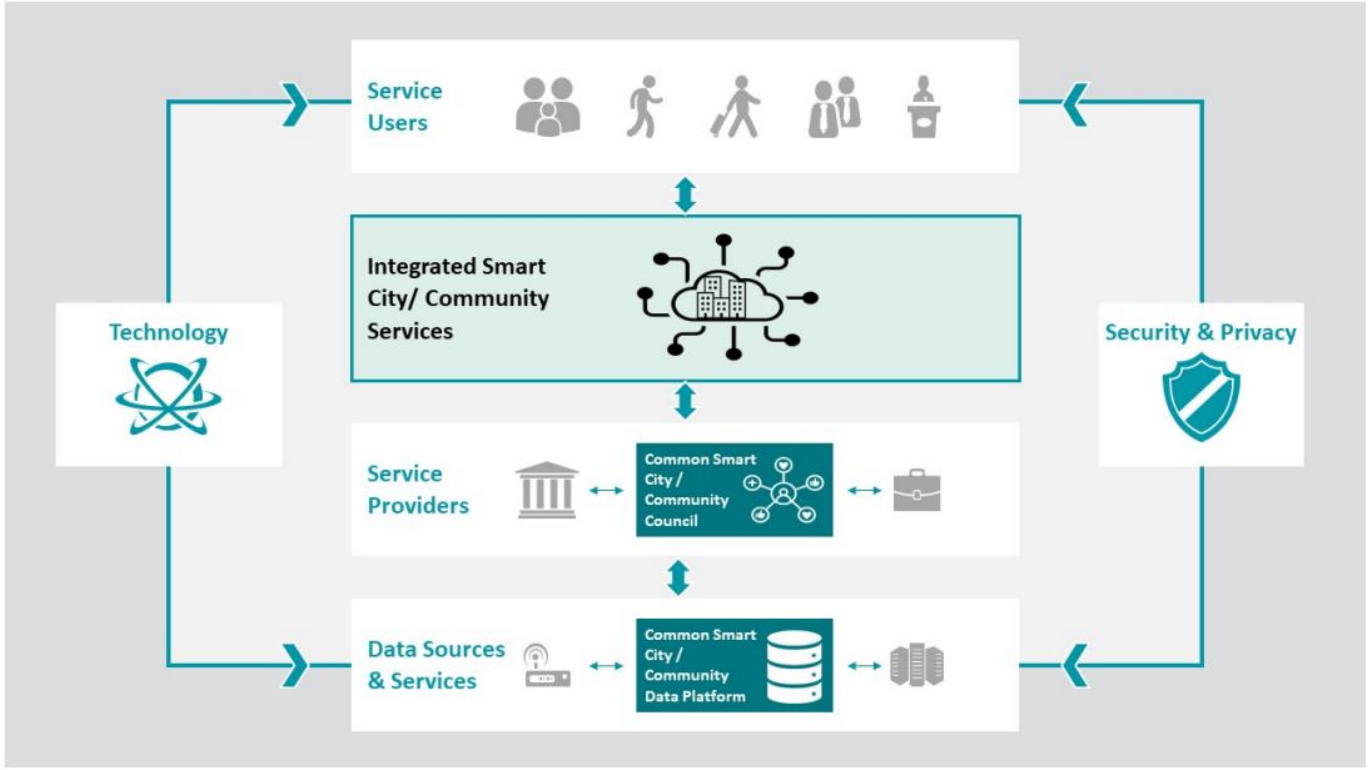
Yeti Snow technology came up with a driverless snowplough that could do the job. The company was setup in the run up to the pre-commercial procurement in 2015 by Semcon, a developer of autonomous systems for vehicles, and Øveraasen Snow Removal Systems, a Norwegian family business that been developing and manufacturing traditional snow ploughs, snow blowers and runway sweepers for more than 80 years.

No more stranded passengers at airports in the winter thanks to self-driving snow clearing vehicles | Shaping Europe's digital future (europa.eu)

Yetimove

[No more stranded passengers at airports in the winter thanks to self-driving snow clearing vehicles | Shaping Europe's digital future (europa.eu)]

Conceptual model for Integrated SCC Services



Proposal for Interoperability for Smart Cities and Communities

Source: EC (2021) Proposal for a European Interoperability Framework for Smart Cities and Communities (EIF4SCC)

Minimal Interoperability mechanisms (MIMs)

Open & Agile Smart Cities (OASC) initiative

Plus some additional fundamental building blocks

- Minimal Interoperability Mechanisms (MIMs) are the minimal but sufficient capabilities needed to achieve interoperability of data, systems, and services between buyers, suppliers and regulators across governance levels around the world.
- Because the mechanisms are based on an inclusive list of baselines and references, they take into account the different backgrounds of cities and communities and allow cities to achieve interoperability based on a minimal common ground.
- Implementation can be different, as long as crucial interoperability points in any given technical architecture use the same interoperability mechanisms.
- The MIMs are vendor neutral and technology agnostic, meaning that anybody can use them and integrate them in existing systems and offerings, complementing existing standards and technologies.

https://oascities.org/wp-content/uploads/2022/06/MIMs-Plus-LI.EU-Tech-Specs-v5-1.pdf

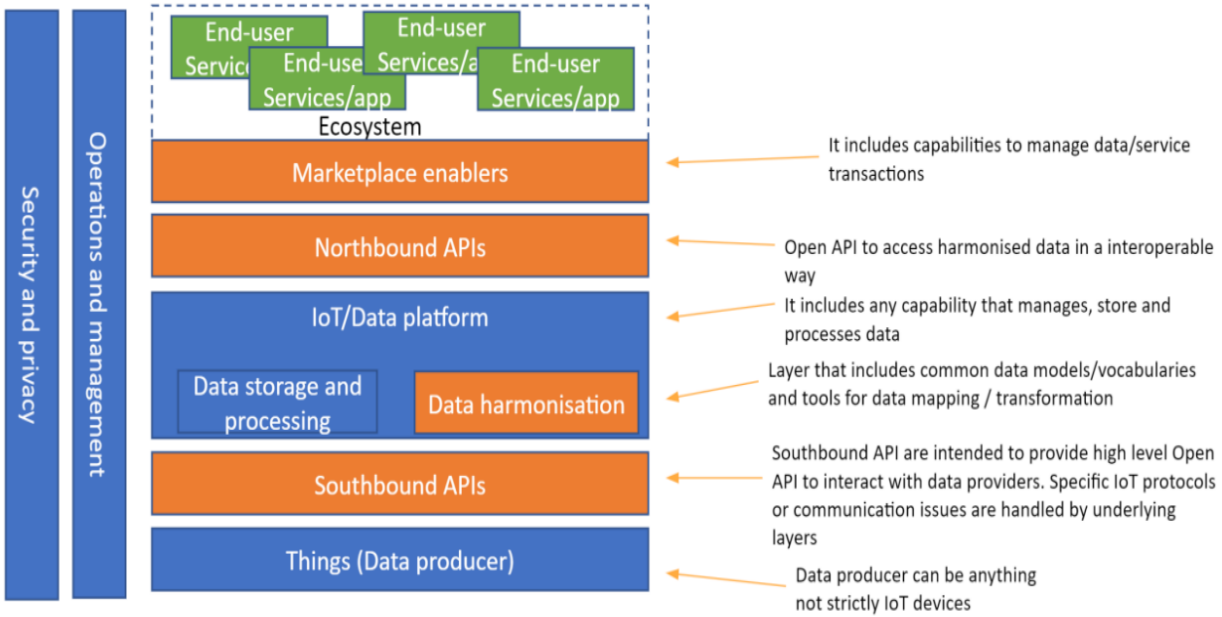
LI.EU declaration principles:

1. A citizen-centric approach;
2. A city-led approach at EU level;
3. The city as a citizen-driven and open innovation ecosystem;
4. Ethical and socially responsible access, use, sharing and management of data;
5. Technologies as key enablers;
6. Interoperable digital platforms based on open standards and technical specifications, Application Programming Interfaces (APIs) and shared data models.

European way of Digital Transformation in cities & communities

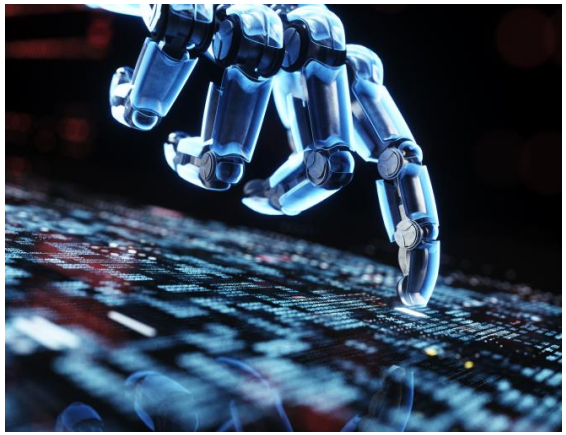
https://living-in.eu/group/commitments/mims-plus-version-5-final

MIMs & High level architecture



MIM	Subject	Name	Status
MIM1	Context	OASC MIM1: Context Information Management	Governance
MIM2	Data Models	OASC MIM2: Shared Data Models	Governance
MIM3	Contracts	OASC MIM3: Ecosystem Transactions Management	Capability
MIM4	Trust	OASC MIM4: Personal Data Management	Capability
MIM5	Transparency	OASC MIM5: Fair Artificial Intelligence	Capability
MIM6	Security	OASC MIM6: Security management	Work item
MIM7	Places	OASC MIM7: Geospatial information management	Capability
MIM8	Indicators	OASC MIM8: Ecosystem indicator management	Work item
MIM9	Analytics	OASC MIM9: Data Analytics Management	Work item
MIM10	Resources	OASC MIM10: Resource Impact Assessment	Work item

https://oascities.org/wp-content/uploads/2022/06/MIMs-Plus-LI.EU-Tech-Specs-v5-1.pdf

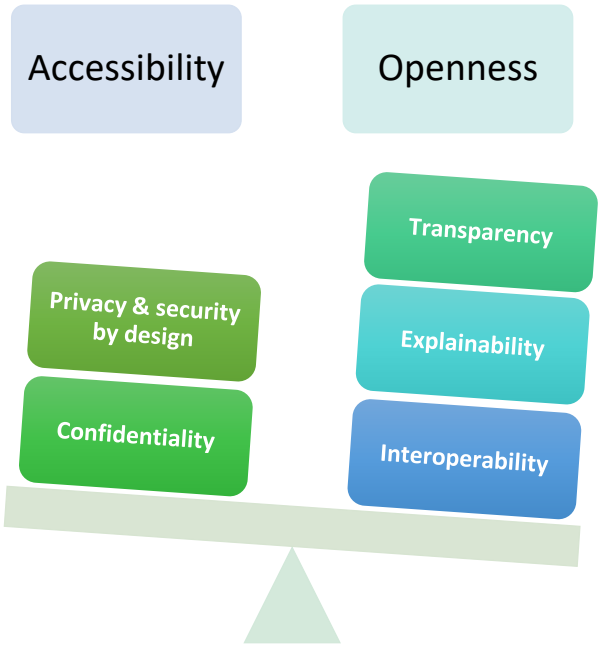


Do’s & Takeaways

For your Innovation Procurement

Do’s

- As far as possible under the legislation in force, **ask users once only and relevant-only information,** ensuring a fully transparent process on how data is used.
- **Ensure transparency on data sharing collaborations** between and within government, citizens, businesses and organisations.
- **Use open standards and open technical specifications** when developing local data platform and services, include multiple access and assistance channels to ensure that users can choose the option that best addresses their needs and/or preferences.

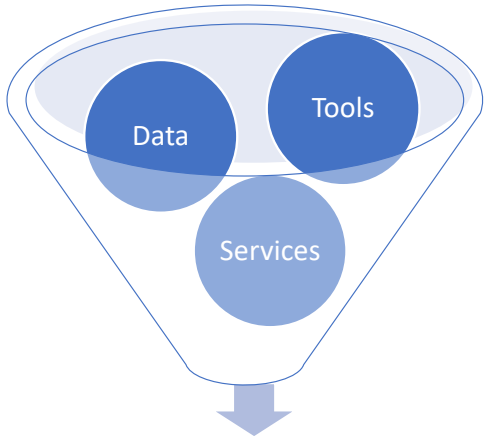


Do’s

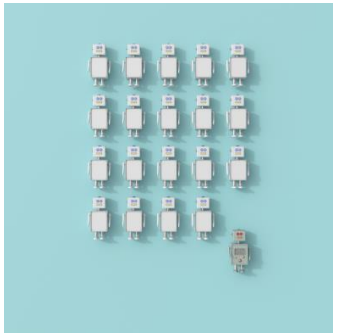
- **Ensure that accessibility** (including for people with disabilities, the elderly and other disadvantaged groups) **is taken into consideration during the procurement, design, development, implementation and monitoring phase of service provision**, including by following e-accessibility specifications at regional, national, European or international level.

- **Reuse and share solutions, data, tools and services** by cooperating with different stakeholders in the design, development, implementation and monitoring phase of service provision at local, regional, national and European levels.

- **Establish, publish and maintain API design framework(s) to facilitate the automation of data sharing and data access** to enable the development of (new) services and solutions.



New services & solutions

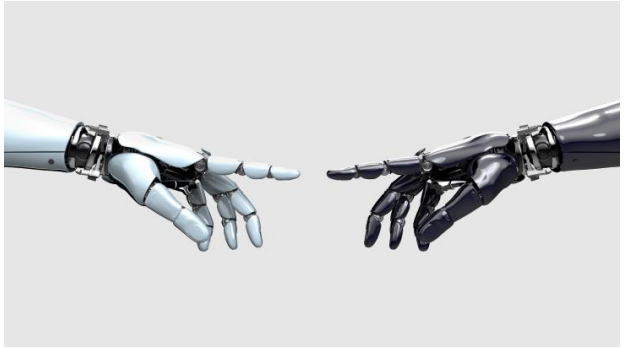


Do's

- **Support and/or promote best practices among stakeholders**, at an early stage of any (new) service design, development and implementation phase.

- **Ensure that diverse stakeholders** (inhabitants, businesses, visitors, organisations and cities/ communities administrators) **are involved in a multidisciplinary process of definition and/or design of interoperable services** so that societal and cultural differences (organisational, economic, ethnic, religious beliefs, gender, language) are accounted for.

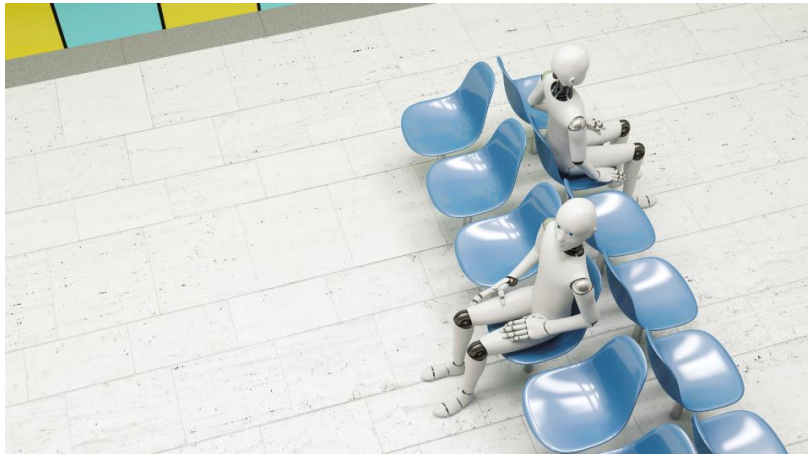
- **Monitor and audit software codes and ensure transparent and accountable use of AI algorithms,** to avoid biases (economic, ethnic, religious beliefs, gender, etc.) that can discriminate people.



Do’s

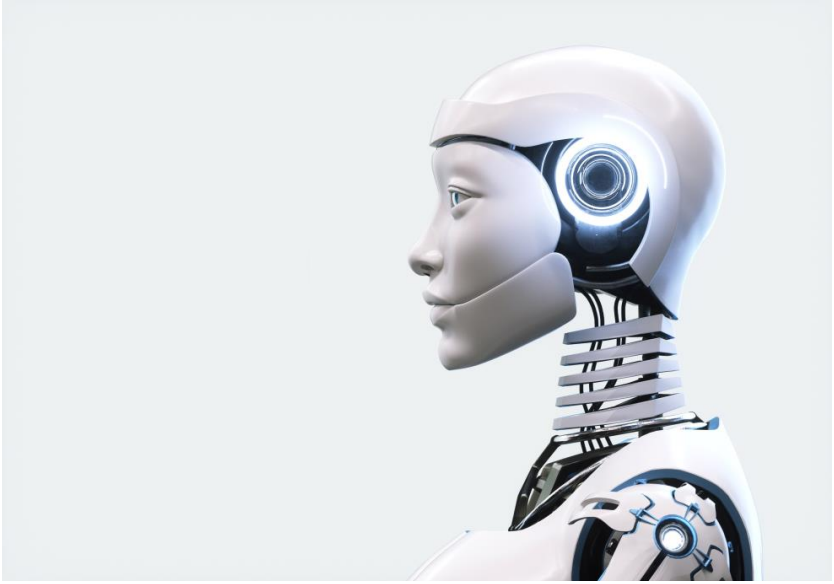
- **Communicate the right to access and reuse of solutions, data, tools and services.** The legal permission for facilitating access and reuse, such as Creative Commons Licenses, should be standardised as much as possible.

- **Use commonly agreed open standards and open technical specifications for achieving interoperability of data, systems, and services**, to support cities/ communities and suppliers during the design, development and implementation phase of new services or reengineer existing ones (to avoid “reinventing the wheel”).



Takeaways 1

- Legal regulatory framework
- EAFIP methodology
- Use case methodology
- Provisions in tender documents
- Contract management



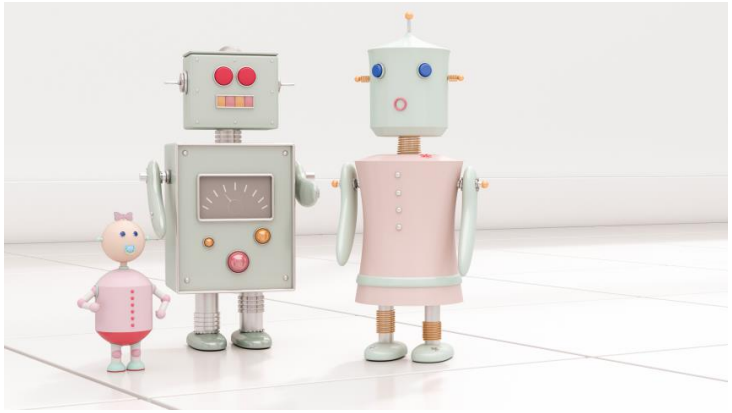
Takeaways 2

- **Support and/or promote best practices among stakeholders**, at an early stage of any (new) service design, development and implementation phase.
- **Ensure that diverse stakeholders are involved in a multidisciplinary process of definition and/or design of interoperable services** so that societal and cultural differences (organisational, economic, ethnic, religious beliefs, gender, language) are accounted for.
- **Monitor and audit software codes and ensure transparent and accountable use of AI algorithms,** to avoid biases (economic, ethnic, religious beliefs, gender, etc.) that can discriminate people.
- **Communicate the right to access and reuse of solutions, data, tools and services.** The legal permission for facilitating access and reuse, such as Creative Commons Licenses, should be standardised as much as possible.
- **Use commonly agreed open standards and open technical specifications for achieving interoperability of data, systems, and services**, to support cities/ communities and suppliers during the design, development and implementation phase of new services or reengineer existing ones (to avoid “reinventing the wheel”).

Open discussion
Q&A

Key actions

- Apply a step by step methodology for innovation procurement.
- Keep in mind the regulatory framework for data, IPR, AI & cybersecurity
- Achieve cost efficiency through centralisation and improve productivity using RPA.
- The digital future is now, communication and collaboration is a must.
- Use open standards, models and specifications such as the MIMS plus.
- Utilize the latest technology to improve public services.
- Ensure privacy & security by design.



Closure and future events

Future events

WEBINAR

Construction, infrastructure & energy innovations in ICT related projects

17 March 2023

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Thank you for your attention

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EAFIP WORKSHOP-WEBINAR #3

AUTOMATION OF PUBLIC SERVICES & ROBOTICS: HOW PUBLIC AUTHORITIES CAN DEAL WITH IT

19th January 2023

Q&A

PART I.

Robot Process Automation. Intelligent Automation of procurement processes

Speaker: Eija Hartikainen**,** *Palkeet, Finland*

	Question	Answer
1.	**The internal lessons learnt are clear form Palkeet´s presentation, but what were the lessons learnt for the suppliers and the technology vendors?**	The contractors wanted to be part of this service automation, so it was easy to work with them. If the customer does not have a clear direction and a pre-examination of automation ready, it is worth proceeding with a pre-examination and defining the organization's prioritized automations before implementation. The implementation of the RPA environment can take time if the customer has special security requirements. A seemingly quick and easy implementation may not be realized.
2.	**Are there any guidance/lessons learnt that Palkeet can share with other buyers on how to deal with the contractors?**	Prepare the procurement requirements well and use usability testing as one of the procurement criteria. With the results of the usability test, you can see if the supplier's technology works in your environment. Also pay attention to robot management and reporting tools.
3.	**How did Palkeet formulate the use cases?**	The current state of the use cases was described, i.e. how the task is performed manually. In addition, the target state was described, but with the cooperation of the supplier's and the customer's experts, a solution was found on how to automate the task. It is worth considering the development of the process, because the task can be performed smarter with automation than the previous manual task.

Robotics in the health system supply chain. Cutting, packing and distribution of medicines

Speaker: Karl Farrugia, *CPSU, Malta*

	Question	Answer
1.	**How did CPSU justify that the contract will last for 15 years?**	To justify the duration, CPSU engaged with financial experts analyse the situation and estimate the time of return of investment. Moreover, in order to launch a concession, an approval is mandatory, so due justification is needed.
2.	**During the exit phase, is it possible to extend the contract if CPSU is happy with how the concession is working? Or is CPSU mandated to go back to the market again? Or will CPSU assume the service (will it become public and responsibility of the hospital)?**	CPSU has three options: 1. CPSU can buy the equipment at the market value of the time and take over the process. Not likely. 2. Direct negotiation with supplier to improve conditions. By then CPSU will know how it works and have more information about potential savings 3. CPSU can also extend the contract.
3.	**How much waste does CPSU save annually? During the negotiations with vendors, what baseline was defined in this regard?**	This is the first year where CPSU is making savings because they could not improve before due to covid. CPSU expects 10% to 15% of avoidance. From a budget of 60-70 million, the savings will be of 6 to 7 million per year.
4.	**What has CPSU learnt from this whole awarding process? What would CPSU do different (e.g., to avoid that a contractor decides not to participate anymore)?**	CPSU would not have published the pre-qualification questionnaire without having duly disseminated the upcoming procurement procedure. Open Market Consultations are extremely helpful. Duly inform the market.
5.	**Does CPSU already have some projects in mind to replicate this model?**	Concessions contracts have been implemented (e.g., in catering), but this is the first time where the budget was zero and they want to extend this model to other sectors as well.
6.	**This is one of the few times, where we have encountered a concession (D.2014/23/EU), what kind of clauses has CPSU included to ensure that the contractor introduces the latest technology on a regular basis?**	They have included clauses to improve the technology on a regular basis. E.g., there is an 8-year period to renovate equipment. After 8 year the contractor is not mandated to make these changes. The reason is that the upgrades cost money. Only if the modification is deemed beneficial, they will be made.

7.	**It may be difficult to have suppliers in this specific sector. Did CPSU has individual suppliers or a consortium?**	The contractor is a Consortium. Companies with different skills (e.g., one concessionaire specialised in cabinets, the other in dosing) decided to join forces to submit a tender. In fact, CPSU had a sole tenderer, that in the end decided not to participate because he was not capable of providing the service on his own.
8.	**Cybersecurity, personal data, how are you dealing with the upcoming changes in the legislation?**	Candidates were mandated to meet with the government GDPR and security departments, so that they were also aware of the complexity of a changing and mandatory legislation. The contract also includes clauses in this regard, as they want to avoid a contractor who, during the implementation, is not capable of maintaining high security standards.

PART II.

Algorithmic systems *for automated parking control*

Speaker: Leendert Miedema, M*unicipality of Amsterdam, Netherlands*

	Question	Answer
1..	**How long are the images and data saved for?**	This is difficult to reply because there are many places where data is stored. The scan car loses the information as soon as it is switched off. The scan logs of cars with permit of sufficient payment are deleted after 48 hours. Scan logs of cars without permit of sufficient payment are stored for 13 weeks to allow for objections and/or appeal.
2.	**The Municipality of Amsterdam is sharing data to the market as a result of the Open Data Directive. The goal of this Directive is that companies can offer new services as a result of this open data. Has the Municipality of Amsterdam seen an uptake of this data and the development of new services in your market sector?**	Yes, that is the case. From a combination of a Parking-app provider and Google, some companies have developed a service to supply information to visitors of Amsterdam looking for available parking spots, depending on how busy the area is. It is, some argue, not beneficial for the Municipality of Amsterdam to have a 100% occupancy rate. It is fine to have some friction vacancy, because otherwise a visitor might be

		forced to drive to the other side of the city to park. But the market is really following this up.

Automation of public services in several sectors *EAFIP examples*

Speaker: Ana Lucia Jaramillo, *Corvers Procurement Services, Netherlands*

	Question	Answer
1.	**Are there some clear DONT´S in innovation procurement?**	Do not miss to follow the EAFIP step by step methodology. Do not miss forward managing and foreseeing the conditions and provisions that you need/want to include in your procurement documents/contracts. Do not skip engaging with the market, communicating the exact needs, formulating the use cases and involving users in the definition of the needs and the use cases.
2.	**Which level of AI risk is associated with Intelligent Automation solutions such as Intelligent Documents Processing?**	It may depend on where the system AI is used, and the information contained in the documents. For example, if the documents are related to the administration of justice it is consider at high risk.