

Title: Practical aspects of PCP
Subtitle: How does PCP work in practice?

Provided by experts of Corvers, ISEMI and Municipality of Haarlem

4th April 2023



Welcome & introduction

Agenda of the webinar:

11:00-11:05 Welcome & introduction

11:05-11:20 How can public authorities benefit from Climate Services?

11:20-11:35 EAFIP step-by-step methodology: how to successfully prepare an Innovation Procurement

11:35-11:45 Practical examples of Innovation Procurement of Climate Services

11:45-11:55 Lessons learned and recommendations on practical aspects of Innovation Procurement

11:55-12:00 Sum up



Houskeeping

1

Workshop will be recorded



2

Please ensure you are muted



3

Use 'raise hand' function to signal you wish to speak



4

If possible, please turn on your video



5

Use chat function to share your questions/suggestions



Title: How can public authorities benefit from Climate Services?

Jozef Kubinec, ISEMI

4th April 2023



Application domains

Marine and coastal environments



Energy & Utilities



Sustainable urban communities



Agriculture, Forestry and other land use

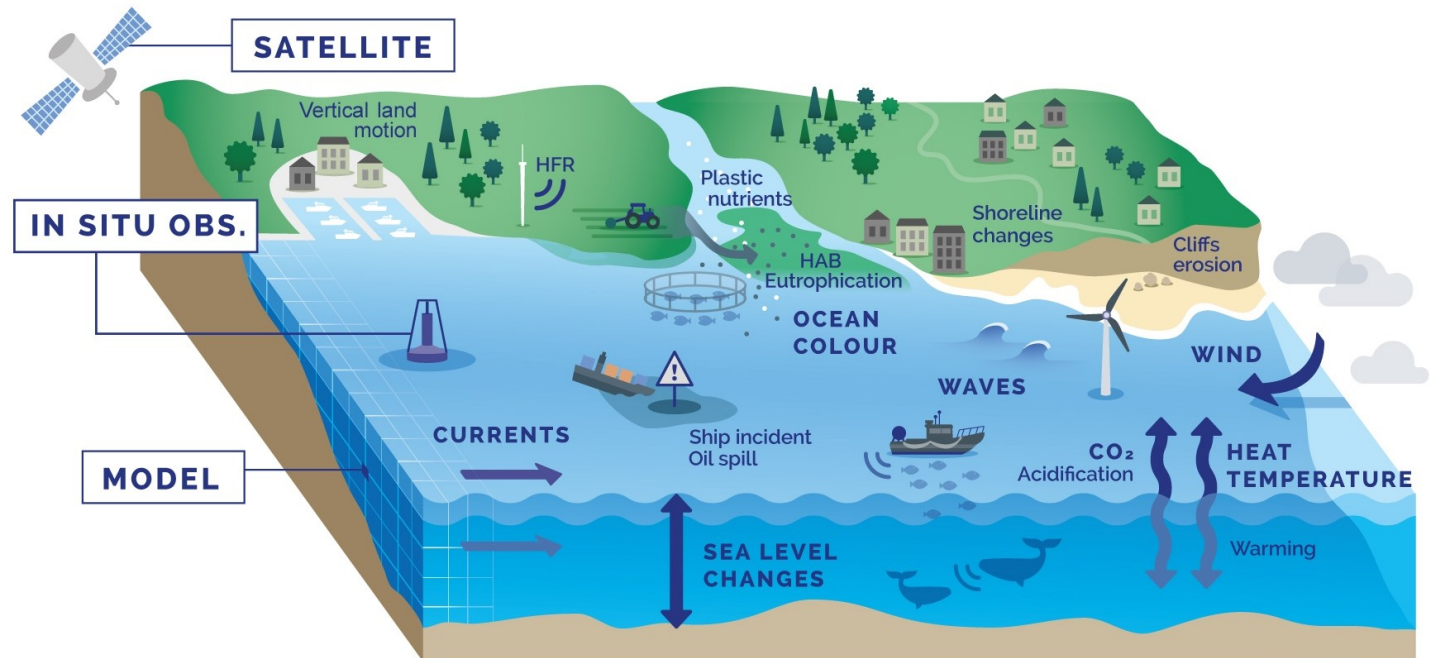


Civil security & protection



Marine and coastal environment - Definition

- Aquatic environments with high levels of dissolved salt
- Includes open ocean, the deep-sea ocean and coastal marine ecosystems
- CS rely on EO data for precise nowcasting and forecasting, informing ocean weather algorithms, and monitoring parameters influencing water quality



Credits: [Monitoring Marine Coastal Hazards with Earth Observations and Copernicus Data | CMEMS](#)

Marine and coastal environment – Examples of usage

Category: Environmental monitoring

Example of usage: Marine pollution monitoring

List of applications: SAR-based and optical satellite data can be used for detecting and monitoring of oil spills and marine litter. EO also provides forecasts of sea currents and sea-surface heights (altimetry), sea-surface salinity, sea-surface temperature, ocean colour and sea-ice data - useful for monitoring and forecasting the course of the pollution. Moreover, remote sensing data can also contribute to identifying the polluters

Credits: [The 2022 Market report is now available for download!](#) | [EU Agency for the Space Programme \(europa.eu\)](#)



Credits: [Remote Sensing | Free Full-Text | Measuring Marine Plastic Debris from Space: Initial Assessment of Observation Requirements \(mdpi.com\)](#)

Energy and utilities - Definition



- Includes all activities related to water supply, sewage services, electricity, dams, and natural gas
- CS rely on EO data for forecasting and nowcasting, planning and optimisation of renewable energy (onshore and offshore wind, solar, tidal and wave), and monitoring of strategic for the utilities sector infrastructure (e.g. dams, pipelines)

Credits: [Globe's solar and wind energy sites mapped for the first time \(smart-energy.com\)](#)

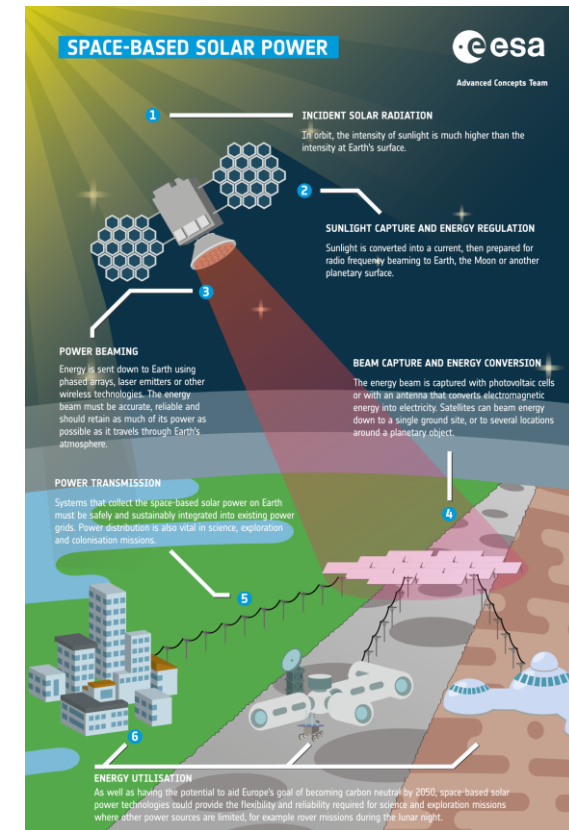
Energy and utilities – Examples of usage

Category: Environmental impact monitoring

Example of usage: Environmental impact assessment of energy and mineral resources plant

List of applications: EO can support the mitigation of energy/mining effects of the environment through continuous monitoring of relevant environmental characteristics and through the capacity of EO to detect changes. Relevant products and services include coastal ecosystems monitoring, water quality monitoring, air quality monitoring, erosion monitoring, pollution monitoring, vegetation monitoring, etc. In some cases, EO-based products could also include the production of environmental impact assessment “certificate”

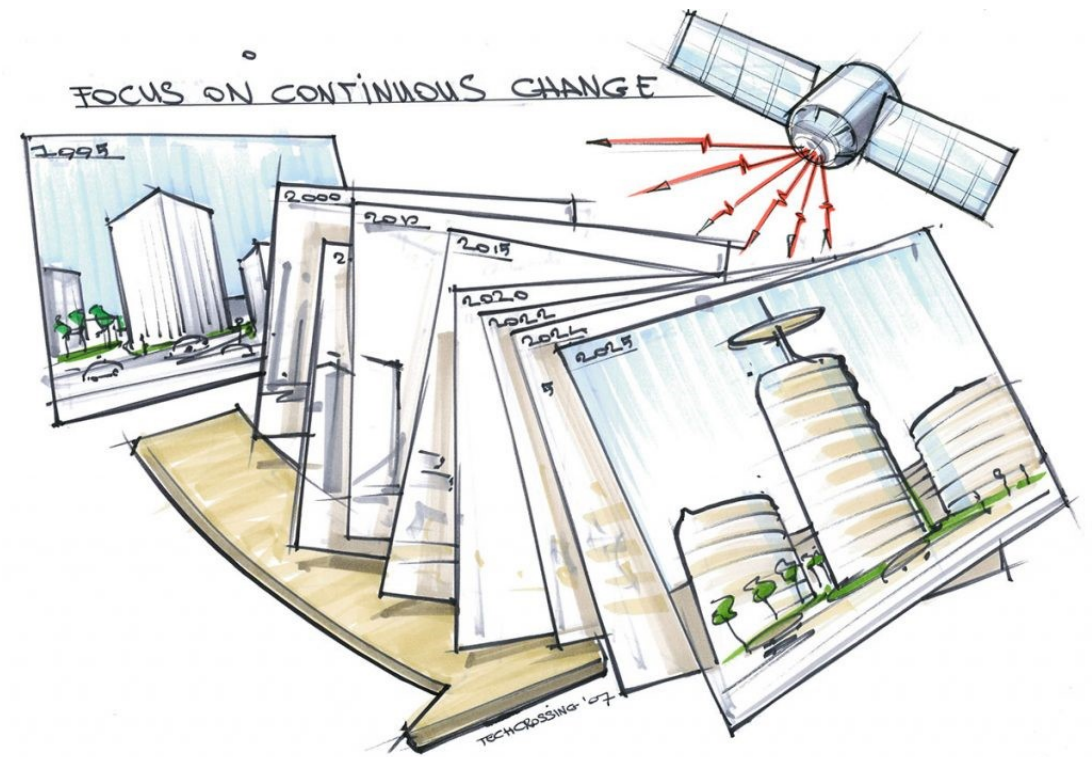
Credits: [The 2022 Market report is now available for download!](#)
[EU Agency for the Space Programme \(europa.eu\)](#)



Credits: [ESA - Space-based solar power](#)

Sustainable urban communities - Definition

- Green and sustainable urban communities operate their human, natural, and financial capital with the goal to meet current and future needs in a sustainable manner, while prioritising a long-term perspective
- CS rely on EO data for assessing and forecasting air quality and pollen concentration and assisting urban planning and operations (monitoring and preventing heat islands, building greener cities) and optimizing green cities, in particular when these are implementing elements of a smart (e.g., IoT) infrastructure



Credits: [Earth observation for Smart Cities \(neo.nl\)](https://neo.nl/)

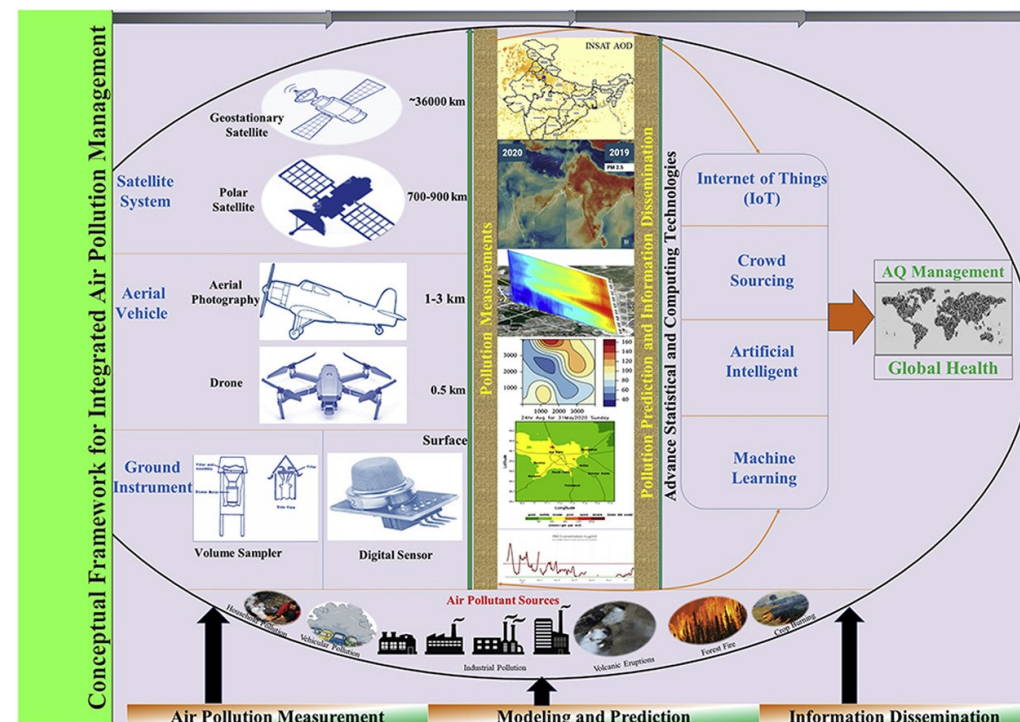
Sustainable urban communities – Examples of usage

Category: Environmental monitoring

Example of usage: Air quality monitoring in urban environments

List of applications: Using satellite data and in-situ measurements, EO can support detecting, collecting, and interpreting information on a multitude of air pollutants, including their origins, movement, and expected health risks.

Credits: [The 2022 Market report is now available for download!](#) | [EU Agency for the Space Programme \(europa.eu\)](#)



Credits: [Sensors and systems for air quality assessment monitoring and management: A review - ScienceDirect](#)

Agriculture, forestry and other land uses - Definition



- Includes crops, forests, animals, micro-organisms
- CS using EO in the domain of AFOLU can contribute to a more optimised and sustainable exploitation of the land (based on precision agriculture, natural resources management) as well as counter the growing challenges related to the climate crises (e.g., providing forecasting and alerts on extreme weather events)

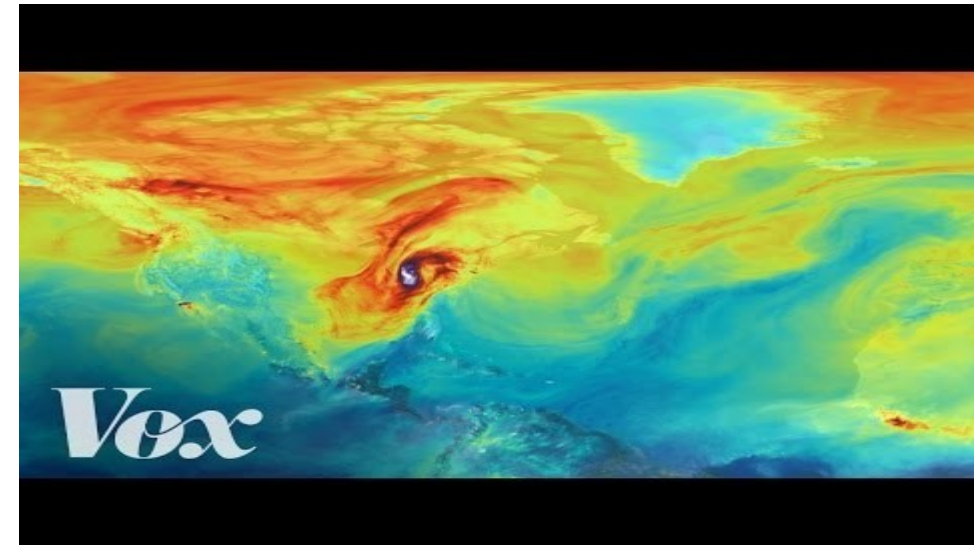
Credits: [Precision Agriculture Solutions For Agribusiness Needs \(eos.com\)](https://eos.com)

Agriculture, forestry and other land uses – Examples of usage

Category: Environmental monitoring

Example of usage: Carbon capture & content assessment

List of applications: The monitoring of agricultural vegetation and grassland cover through EO can help inform carbon sink capacity of different terrains. EO can also be used to monitor the maintenance of agricultural practices which pertain to CO2 sequestration.



Credits: [The 2022 Market report is now available for download! | EU Agency for the Space Programme \(europa.eu\)](#)

Credits: [\(248\) A visual tour of the world's CO2 emissions - YouTube](#)

Civil security and protection - Definition

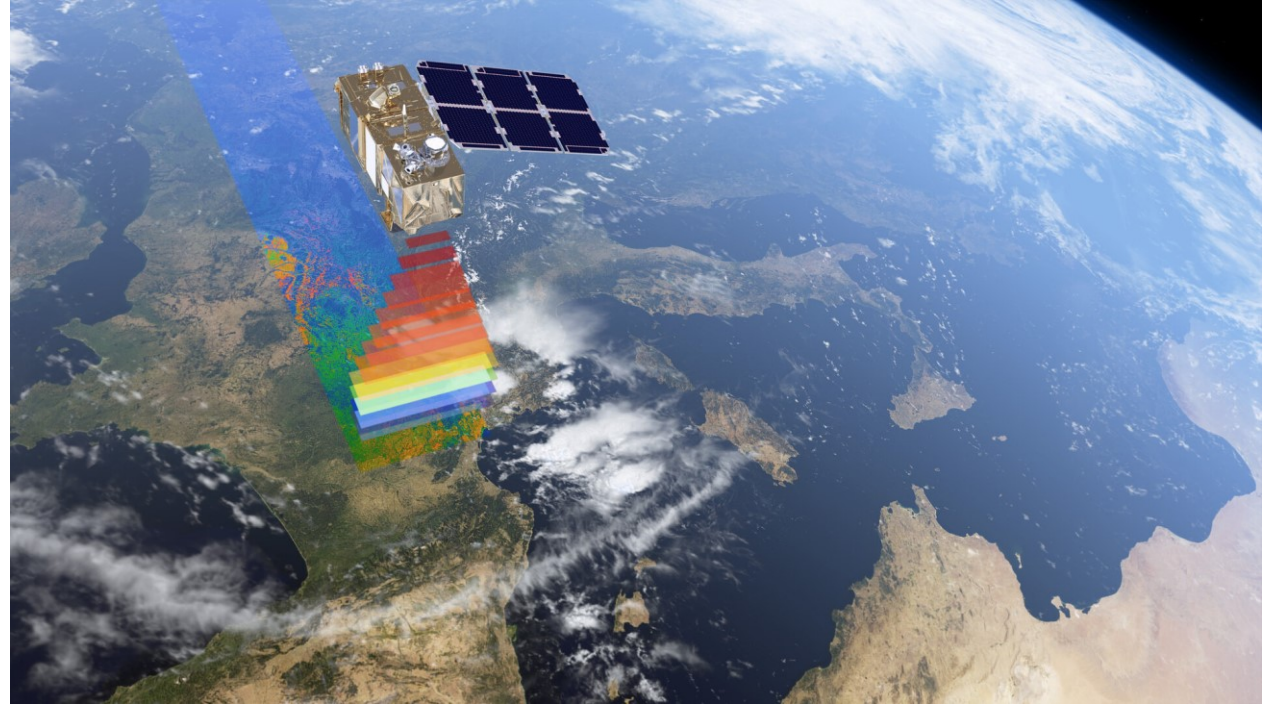
- Includes the policies, bodies and mechanisms that a country or region has in place to protect it against new and urgent threats to the security of people and/or the functioning of critical infrastructures
- CS using EO can feed into systems monitoring extreme events and sending automated events to civil authorities and/or the population



Credits: [Civil Security From Space Industry Day | ESA TIA](#)

Civil security and protection

- EO capabilities are used in response to emergency management situations such as drought, earthquake, extreme temperatures, flood, landslide, mass movement, storm, volcanic activity, avalanches and tsunamis.
- Downstream applications EO are deployed in all phases of emergency management, from preparedness and early warning to rapid mapping and post-event analysis.



Credits: [The 2022 Market report is now available for download! | EU Agency for the Space Programme \(europa.eu\)](#)

Credits: [ESA - Earth Observation Programmes](#)

Civil security and protection

Earth Observation provides information for emergency response and disaster risk management at each of the following stages:

- **For preparedness, prevention, risk reduction and recovery phases**, EO provides risk assessment and simulation models.
- **For early warning**, EO provides continuous observations and forecasts for many types of disasters such as flooding (e.g. hydrological modelling), earthquakes (e.g. surface deformation), landslides (e.g. terrain deformation), volcanic eruptions (e.g. atmospheric composition), tsunamis (e.g. wave height), wild fires (e.g. moisture conditions) and others.
- **During a disaster**, EO provided rapid mapping (e.g. crowd-sourced mapping updates) allowing emergency responses to be coordinated as efficiently as possible.
- Finally, **during post-event analysis**, the comparison of recent and archival EO data assists relevant actors with an accurate damage assessment.

Credits: [The 2022 Market report is now available for download! | EU Agency for the Space Programme \(europa.eu\)](#)

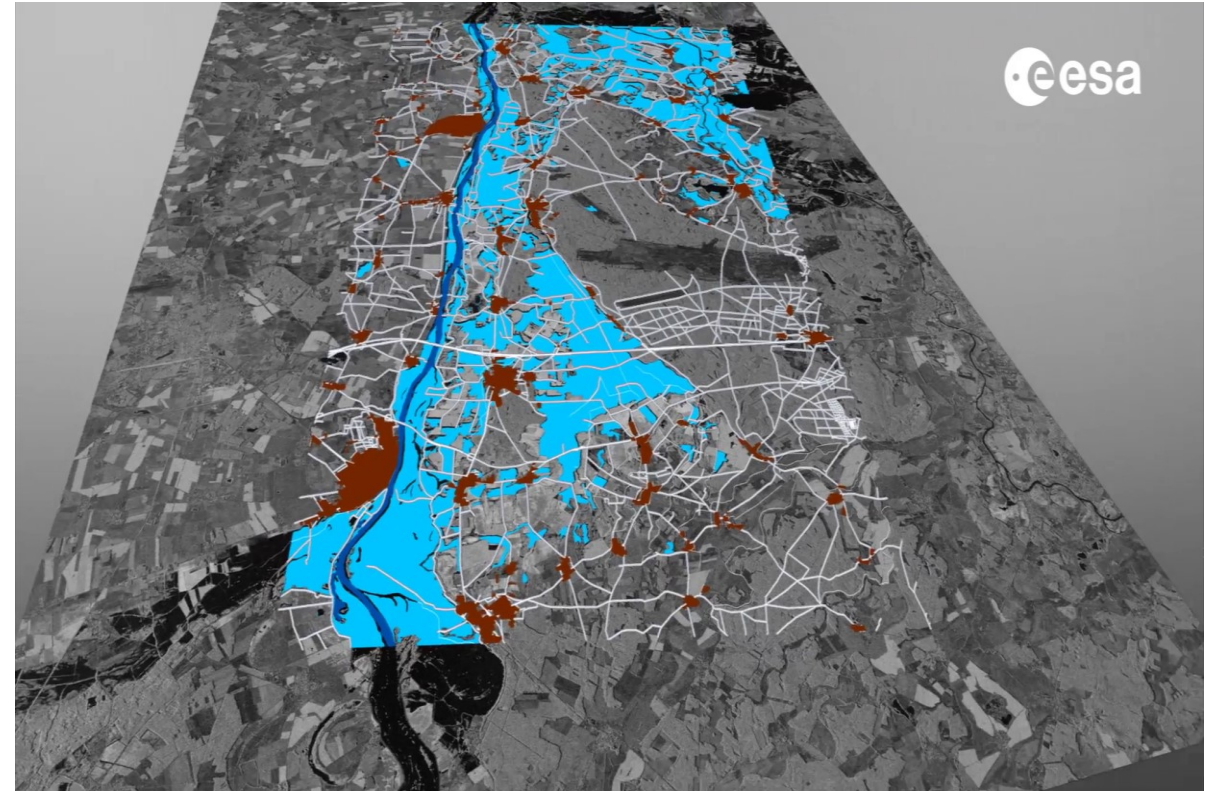
Credits: [ESA - Earth Observation Programmes](#)

Civil security and protection

Example of usage:
Rapid mapping of floods

Applications:

- Floods across central Europe caused widespread damage in 2013.
- Maps based on satellite data can help emergency services plan their response to such events. Through the Copernicus Emergency Management Service, 118 maps were produced to assist in flood relief



Credits: [ESA - Earth Observation Programmes](#)

Civil security and protection



Example of usage:

First response – Turkey – Syria earthquakes

Applications:

- By combining Earth observation assets from different space agencies, the Charter „Space and Major Disaster“ provides satellite images of the affected areas to define the extent of the disaster and support local teams with their rescue efforts.
- More than 350 crisis images were delivered. They can be used to generate damage and situation maps to help estimate the hazard impact and manage relief actions in the affected areas

Credits: [ESA - Earth Observation Programmes](#)

EAFIP step-by-step methodology:

how to successfully prepare an Innovation Procurement

Ana Lucia Jaramillo

Corvers Procurement Services B.V.



Agenda

1. Introduction to Innovation Procurement: PCP and PPI
2. The EAFIP step-by-step before, during and after the procurement
3. Preparatory steps and examples
4. Conclusions

Poll question 1

- Have you participated in an Innovation Procurement Project?
 - Yes
 - No

Go to www.menti.com and use the code 1684 4530

 Mentimeter

Instructions

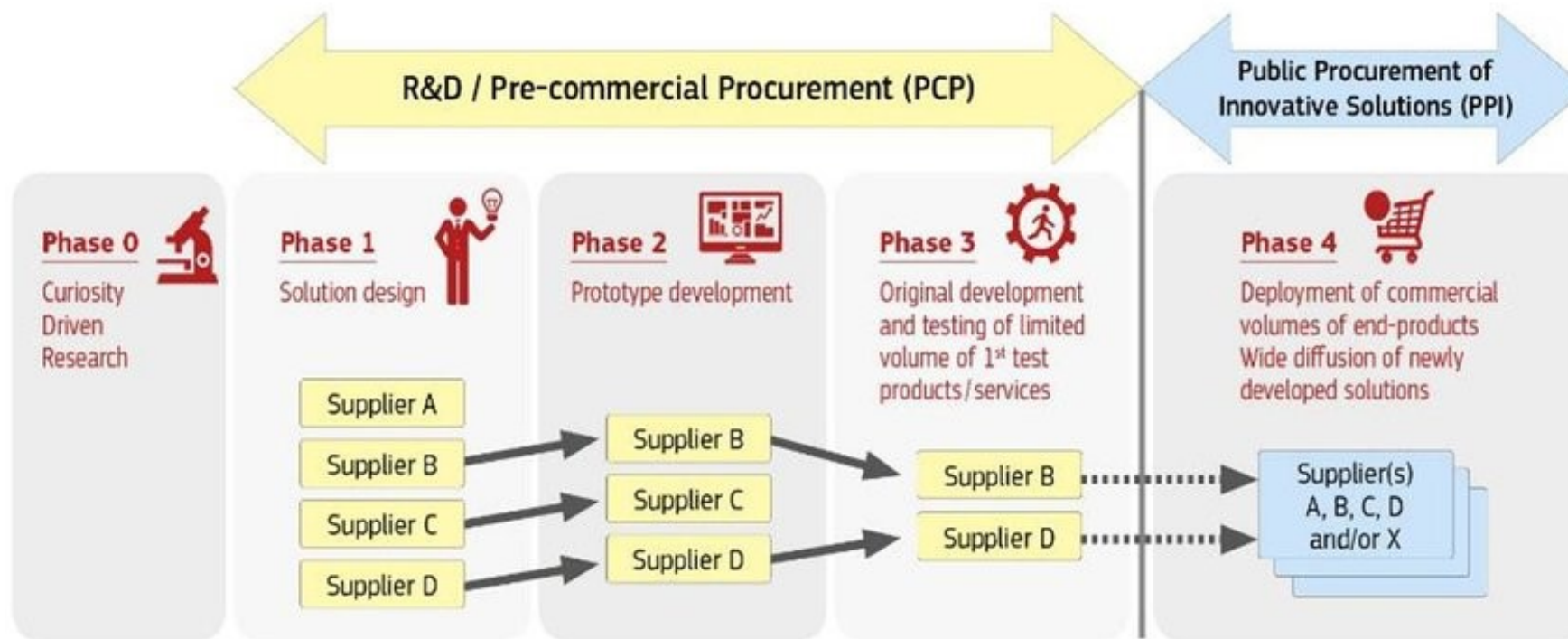
Go to
www.menti.com
Enter the code
1684 4530



Or use QR code

2. Introduction to Innovation Procurement: PCP and PPI

*Innovation Procurement happens when **public buyers** acquire the **development or deployment of pioneering innovative solutions** to address specific mid-to-long term public sector needs.*



Poll question 2

- Are you familiar with Pre-Commercial Procurement (PCP)?
 - Yes, I have experience with it
 - Yes, I know the main concepts
 - No

Go to www.menti.com and use the code 1684 4530

 Mentimeter

Instructions

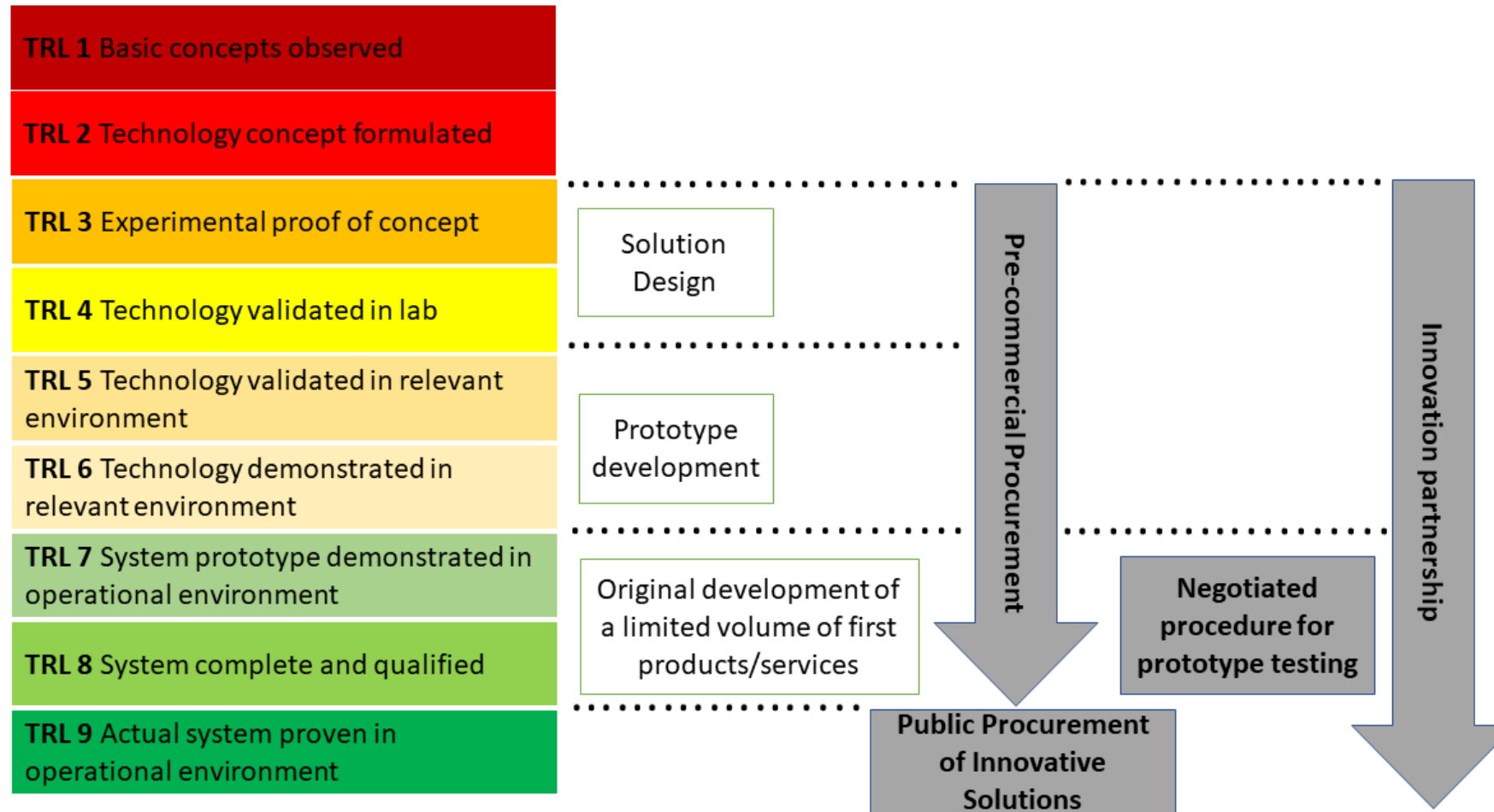
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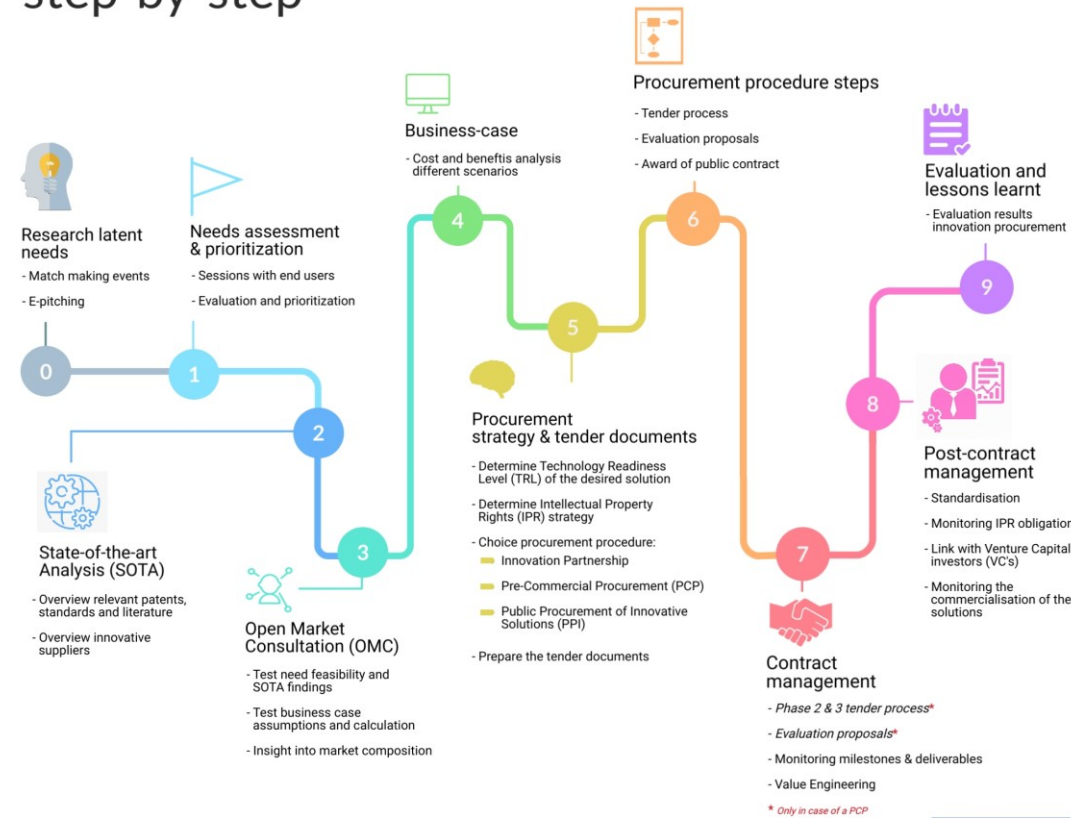
Technology Readiness Level (TRL)



2. The EAFIP step-by-step before, during and after the procurement



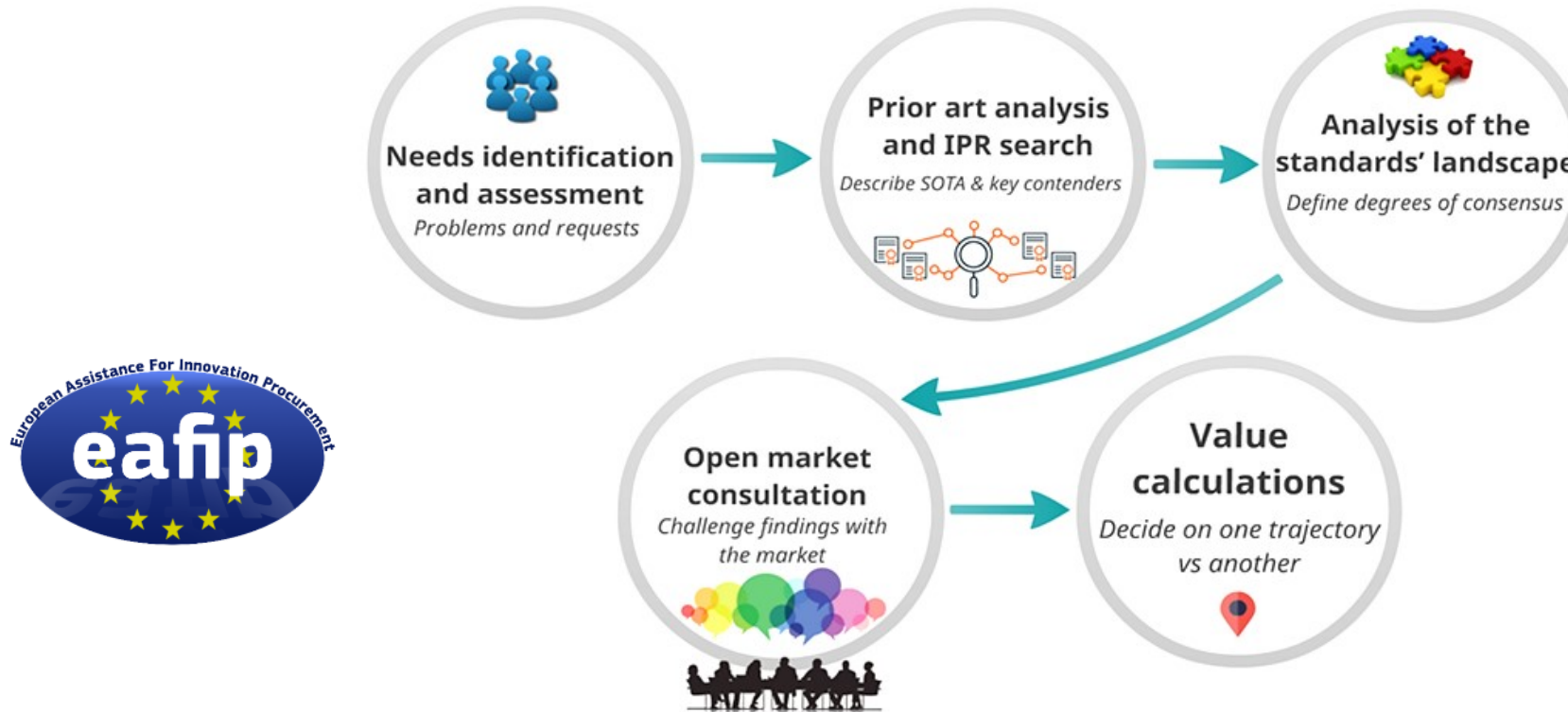
EAFIP methodology step-by-step



CREATED BY CORVERS PROCUREMENT SERVICES BV



3. Preparatory steps and examples



➤ EAFIP business case methodology

Step 1. Needs identification and assessment



Innovation procurement starts with an “unmet need”, which is “*a requirement or set of requirements that public procurers have now or (preferably) one that public procurers will have in the future, that current products, services or arrangements cannot meet, or can only do so at excessive cost or with unacceptable risk.*”

Department for Business Innovation & Skills: “Delivering best value through innovation. Forward Commitment Procurement. Practical Pathways to buy Innovative Solutions”, UK Innovate

ADVANTAGES of an early, proper needs identification and assessment:

- ❑ Allow *time* for an effective *understanding of the need*
- ❑ Create the *right basis for the subsequent step*: prior art analysis and IPR search
- ❑ Ensure a proper *information of the market*
- ❑ *Avoid* the *risk* of unidentified unmet needs turning into urgent problems
- ❑ Ease the translation into *outcome-based* requirements




How to identify and assess needs

⚠ *Multiple methods to identify and assess a need.*

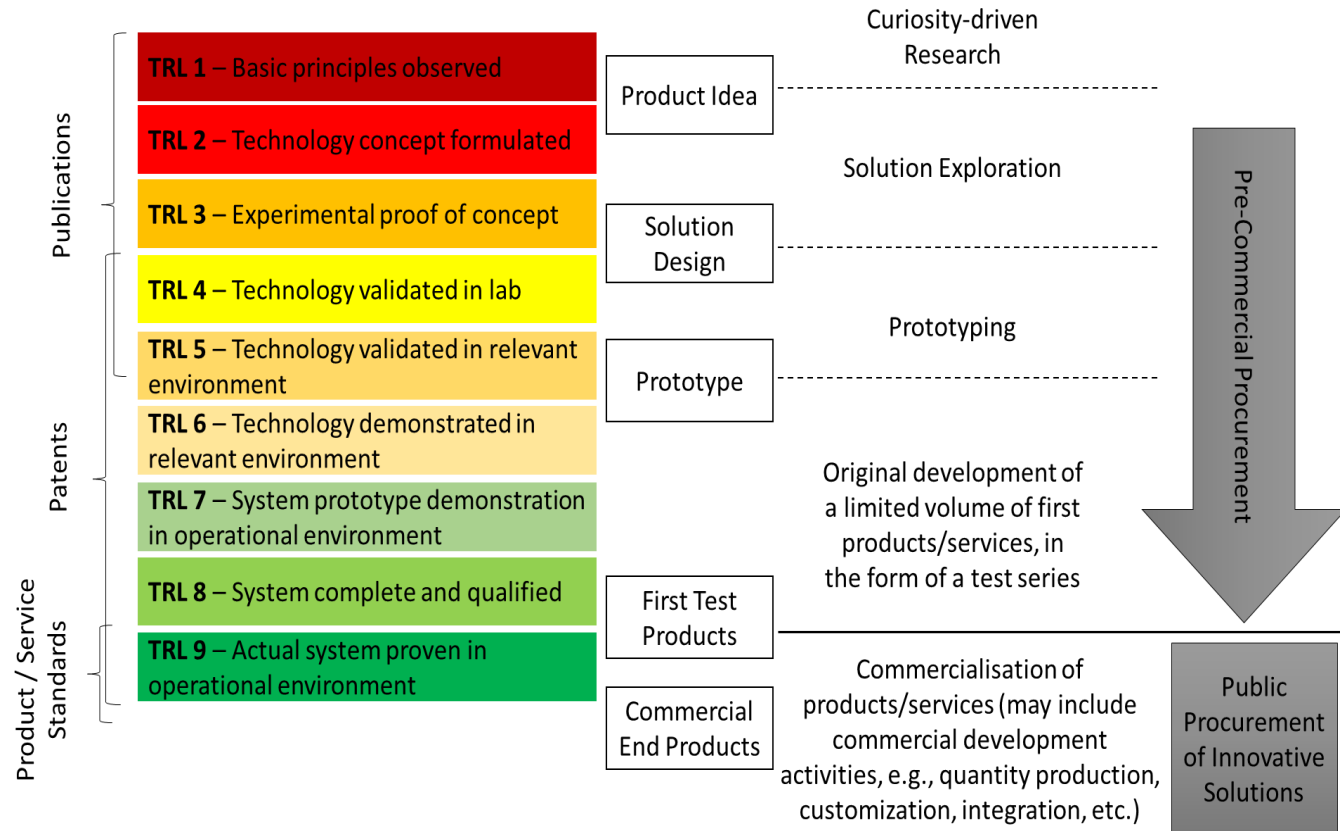
Public procurer should initiate discussions with the relevant stakeholders - in particular end-users

- ✓ **Internal meetings / informal chats** in which only representatives of the public procurer organization participate
- ✓ **Senior management workshops** - strategic perspective - support and approval for (additional) required financial resources for the procurement
- ✓ **Discussions structured into focus groups** (e.g. different types of activities of the public procurer). Could include representatives of the public procurer, external experts, stakeholders
- ✓ **Surveys Customers' / end-users' workshops** (e.g. CPBs that are not the final end-users)

Step 2. Prior art analysis and IPR search = SOTA

?	PRIOR ART ANALYSIS	IPR SEARCH					
What	All information currently in the public domain (scientific publications, reports, existing products) – IPR protected or not	A search of registered intellectual property held in a national or international database					
When	Once the needs are identified	Once the needs are identified					
Why	<p>Validate identified need(s)</p> <table border="1" data-bbox="642 836 1302 1258"> <tr> <td data-bbox="642 836 973 1100">Solutions to the identified need are already available? Or will become available before the start of the procurement?</td> <td data-bbox="973 836 1302 1100">No need for an innovation procurement. An existing solution can be procured.</td> </tr> <tr> <td data-bbox="642 1100 973 1258">Novelty of the identified need(s)?</td> <td data-bbox="973 1100 1302 1258">Select the best Innovation Procurement strategy</td> </tr> </table>	Solutions to the identified need are already available? Or will become available before the start of the procurement?	No need for an innovation procurement. An existing solution can be procured.	Novelty of the identified need(s)?	Select the best Innovation Procurement strategy	<p>Guarantee that the technological solutions to be developed are innovative and can thus be protected by IPR; → Alternatively, it will reveal whether there is a provider who owns all IPR needed to develop the solution to the identified need(s).</p>	
Solutions to the identified need are already available? Or will become available before the start of the procurement?	No need for an innovation procurement. An existing solution can be procured.						
Novelty of the identified need(s)?	Select the best Innovation Procurement strategy						

Identifying the TRL and the procurement method



Possible Interpretations

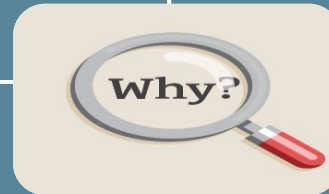
- Few patents, much literature, few standards
 - Justification for **radical innovation** (Pre-Commercial Procurement)
 - Standardization strategy
- Many patents, much literature, many standards
 - Saturated research area;
 - Justification for
 - Incremental innovation** (Public Procurement of Innovative Solutions)
 - Off-the-shelf** procurement
 - If mandated to conduct a PCP, find a new area

IPR search

The **IPR search** finds out **which of the information available in the public domain** (existing products, ongoing product development and published ideas) **is already protected by IPRs** by **searching for registered intellectual property**

Identify if the technological solutions to be developed are innovative and can be protected by IPR.

Avoid IPR infringement
Are there providers who own "key IPRs" needed to develop the solution? → evaluation of the licensing policy.



Identifying potential (unknown) candidates for Innovation Procurement.

Understanding the innovative geographical landscape from IPR, literature and standards

How to conduct and IPR search

1. Keyword searches - number of different formulations and not too specific in the wording.
2. Patent classification searches

▲ <https://worldwide.espacenet.com/>

- ✓ The patent's '**abstract**' provides with a useful summary of the invention and helps to determine the relevance of the invention.
- ✓ The key part of the patent document is the '**patent claims**'
→ scope of exclusivity the patent claims.



▲ *Reading the patent claim is a technical activity and may require specific expertise.*

IPR search findings

	Each need is met...		Some needs are met...	No needs are met
N° of patents meeting the needs	By a single patent	By multiple patents	By some patents	No relevant patents exist
Recommended strategic action	Buy Off-the-Shelf if the patent is embedded in a market-ready solution	Conduct a PPI for a supplier to integrate the IPR into one solution; with desired adaptation/design changes	Conduct a PCP beginning at later TRLs	The need is 'novel'; Conduct a 3 phase PCP beginning at TRL 3 or 4.
Risk regarding blocking IPR	Low; purchase from a single supplier	High; agreement required between many patent owners plus the solution integrator; IPR may be "novelty destroying" and market is "saturated"	Moderate; IPR must be integrated into a new solution or worked around	Low; there is no IPR to infringe upon; a "white space" enabling innovation.

Case study IPR search

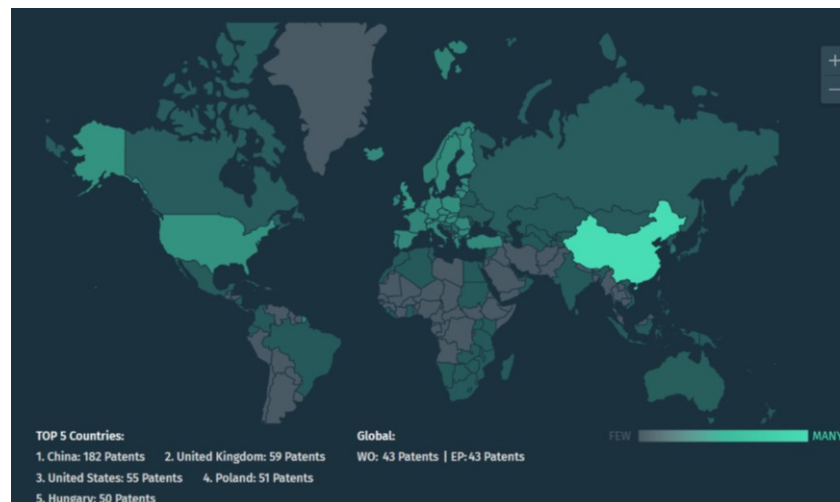
Type of search:

- IPR/patent search

Main keyword:

- *millimetric waves cameras*
- **Supporting wording:** image/imaging, scan/scanning, detect.

Geographical Overview



Applicant	Pat. Doc.	Families	Share	MC	TR
Nuctech Company Limited	110	33	5.89%	1.79	0.39
Tsinghua University	47	17	3.04%	1.29	0.35
Southeast University	45	39	6.96%	0.61	0
Tohoku University	35	8	1.43%	1.88	0
Trex Enterprises Corporation	34	5	0.89%	1.77	3.96
Masprodenkoh Kabushikikaisha	29	9	1.61%	1.87	0.1
SafeView Inc.	27	3	0.54%	1.55	0.53
Chuo Electronics Co. Ltd.	26	8	1.43%	1.86	0
Beijing Institute Of Radio Metrology And	24	21	3.75%	0.51	0
Dongguk University	23	16	2.86%	0.26	0.92

High TR	Low TC
Reflects a high TR of a patent, since subsequent patents have to cite the patent as prior art. A high TR value thus identifies leading technologies of a particular market segment.	Reflects a low TR of a patent, since subsequent patents are not citing the patent as prior art. A low TR value reflects that a patent either protects a niche technology or a technology that is not of relevance to other market participants.

IPR search example

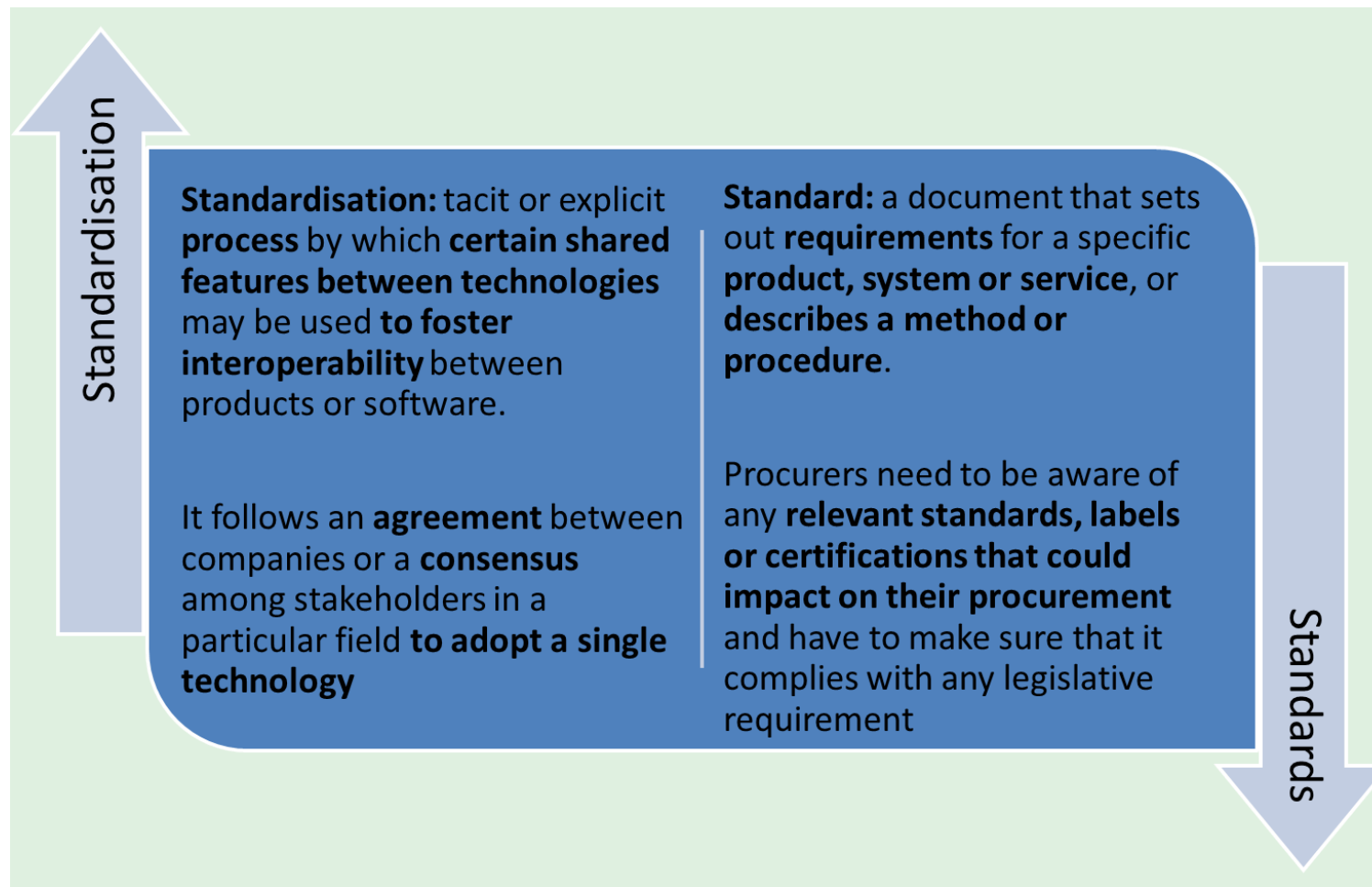


IPlytics Platform is an online-based **IP Analytics Tool** to analyze technology and market landscapes

The cloud-based SaaS service allows a **24/7 availability**

360-degree overview regarding patent filings, patent valuation, patent transfer, patent litigation, scientific articles, company information, start ups, standards and SEP declarations

Step 3. Analysis of the standards' landscape



Advantages of standardization in public procurement (for innovation)

- ✓ Standards enable interoperability/compatibility between old and novel products
- ✓ Include minimum quality/safety requirements (legislation). Proof procurer can request → Increase confidence in the quality, safety or superior performance
- ✓ Reduce costs and encourage innovation (consumers to benefit from greater competition and avoid 'lock in') → lower costs of the new products.
- ✓ Standards allow providers to focus their resources on producing products to a clear specification.
- ✓ If the level of standardization increases → aggregate public demand: procure jointly while meeting the demands of individual authorities.

Step 4. Open Market Consultations

Cross-check:

- Prior-art-analysis and IPR Search
- Analysis of the Standards' landscape
- Key contractual set-up and conditions for the procurement
- Project feasibility



- Clarifies whether the desired solution is already available and whether it can be purchased or developed, in a timely and cost-efficient manner.
- Informs the procurer about the risks and benefits of the various technological solutions that are available on the market or that are being developed.
- ***Makes suppliers aware of the public procurers' needs***

*Together with the Prior Art analysis and the IPR search, an **Open Market Consultation** can provide the legal justification to chose between a PCP, PPI or an Off-the-Shelf Procurement.*

Key aspects in an Open Market Consultation

1. Identified needs must be communicated openly and clearly

- ✓ Costs of the current solution.
- ✓ Share information obtained from the state-of-the-art analysis → validate and identify alternatives.

2. Mention the desire for an innovative outcome

- ✓ Specific technologies discovered in the state-of-the-art analysis.
- ✓ Performance-based or functional

3. Efficient planning of time and resources:

- ✓ In advance to disseminate the information and reach the audience.
- ✓ Ensure broad participation.
- ✓ Give the market operators enough time to ask questions, share their views and prepare for the upcoming procurement procedure.

4. Guarantee security of confidential information, trade secrets and intellectual property

- ✓ Encourage the participation of the private sector.

5. No regulations on how to engage in the dialogue → TFEU principles

- ✓ Clear separation between the tender and the *preliminary* market consultation
- ✓ Both the participants of the OMC and potential bidders under equal conditions and with the same information.

6. Publish and disseminate the report.



⚠ During an Open Market Consultation, compliance with TFEU principles (equal treatment, transparency, non-discrimination, proportionality) is a must.



Methods



Preliminary market consultations are regulated under the 2014 EU Public Procurement Directives:

- Articles 40 and 41 Directive 2014/24/EU
- Articles 58 and 59 Directive 2014/25/EU

Step 5. Business case – value calculations

A business case is a **tool** to support investment decisions before, during and after the project:

1. **before the project:** to determine whether there are enough economic reasons to start the project;
2. **during the project:** to decide whether or not to proceed with changes to the project content, the environment, or the pattern of the project phases; and
3. **after the project:** to assess whether the results achieved meet the public procurer's goals and, if needed, make adjustments accordingly.

- ✓ Expected benefits from doing the innovation procurement vs. drawbacks of not doing it
- ✓ Expected costs needed to implement the innovation procurement
- ✓ Expected time periods in which the costs and benefits occur
- ✓ Interest rate
- ✓ Risks

1. The *business as usual* scenario: not undertaking the innovation procurement.
2. The *best case scenario*: starting an innovation procurement and succeeding.
3. The *worst case scenario*: starting an innovation procurement project and not achieving its expected results.

Gain insight into project management

- Maximum cost to pay - Maximum budget
- Break-even time - Minimum time to implement a solution
- Lots?
- Minimum success probabilities, minimum revenues,
- Number of vendors to reduce the risk of non/delivery of solution

Business case example: Transport for London energy-efficient lighting

Option of different lighting technologies for 5 areas

- **Current:** T8 Linear fluorescent lights (LFLs)
- **Potential:** Light Emitting Diodes (LEDs)

01 Capital Costs (CAPEX)

- Cost of product

02 Operational Expenses (OPEX)

- Installation costs
- Energy costs
- Carbon tariffs

03 Operation and maintenance costs (O&M)

- Cleaning costs
- Storage costs
- Maintenance costs

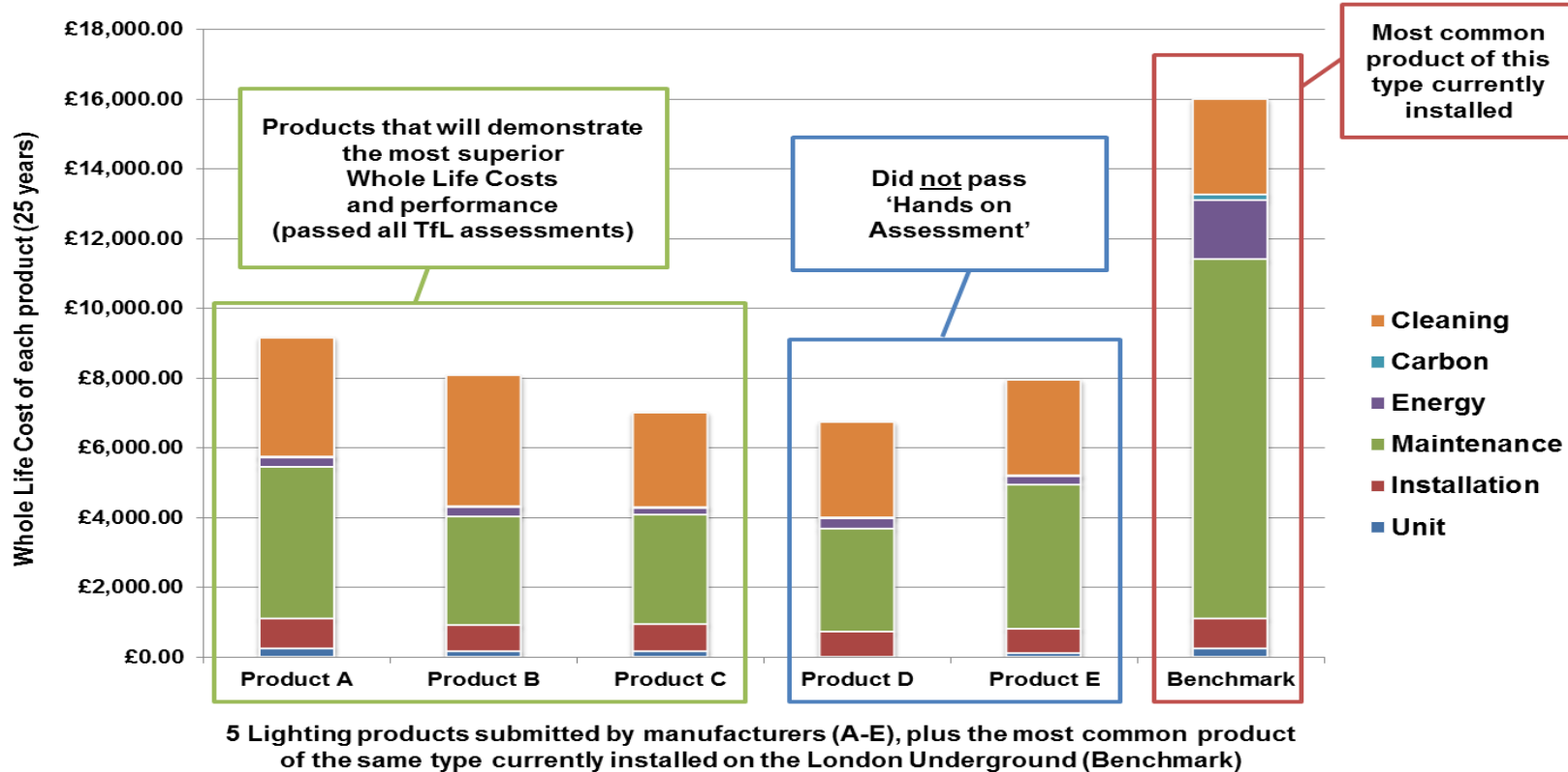
Target objectives

- Develop an implementation strategy to capture **highest short-term benefit**
- Identify areas with highest OPEX
 - **Shorter pay-back time**
 - **Higher Return on Investment (ROI)**
- Savings from this strategy could help cover higher upfront costs of the product
 - Made installation in other areas more attractive



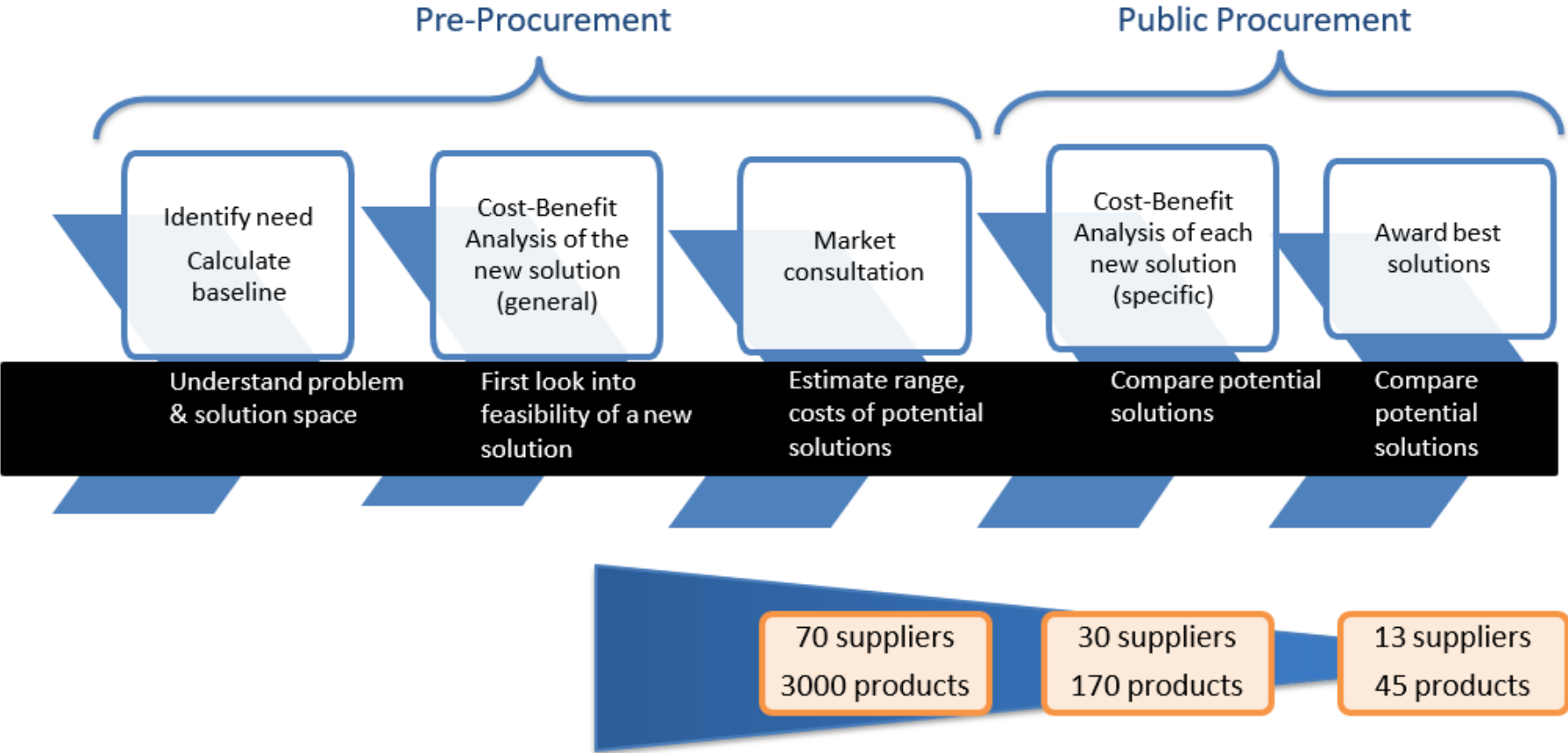
Business case example - LC comparison

Whole Life Cost comparison of Lighting Product Type 1
(1 of 16 types)



Source: EAFIP Toolkit www.eafip.eu

Business case example - summary



5. Conclusions



- Innovation Procurement has two modalities: Pre-Commercial Procurement (PCP) and Public Procurement of Innovative solutions (PPI).



It is important to understand when and how to use them based on the technology readiness level of the solutions.

- PCP is the purchase of R&D for breakthrough innovative solutions in a competitive process in phases.



The market analysis and IPR search validated by a market consultation and a business case can provide the grounds of novelty/room for innovation to conduct a PCP.

- The 5 main preparatory steps of an innovation procurement are essential to define the procurement strategy.



The EAFIP Business Case Methodology has 5 steps: (1) Needs analysis; (2) SOTA; (3) Standards analysis; (4) Open Market consultation; and (5) Business case (value) calculations.

Thank you!

Ana Lucia Jaramillo
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Corvers Procurement Services B.V.

CORVERS
COMMERCIAL & LEGAL AFFAIRS



Practical examples of Innovation Procurement of Climate Services and lessons learned and recommendations on practical aspects of Innovation Procurement

Valentina Schippers, Municipality of Haarlem

4th April 2023



Practical examples of Innovation Procurement of Climate Services

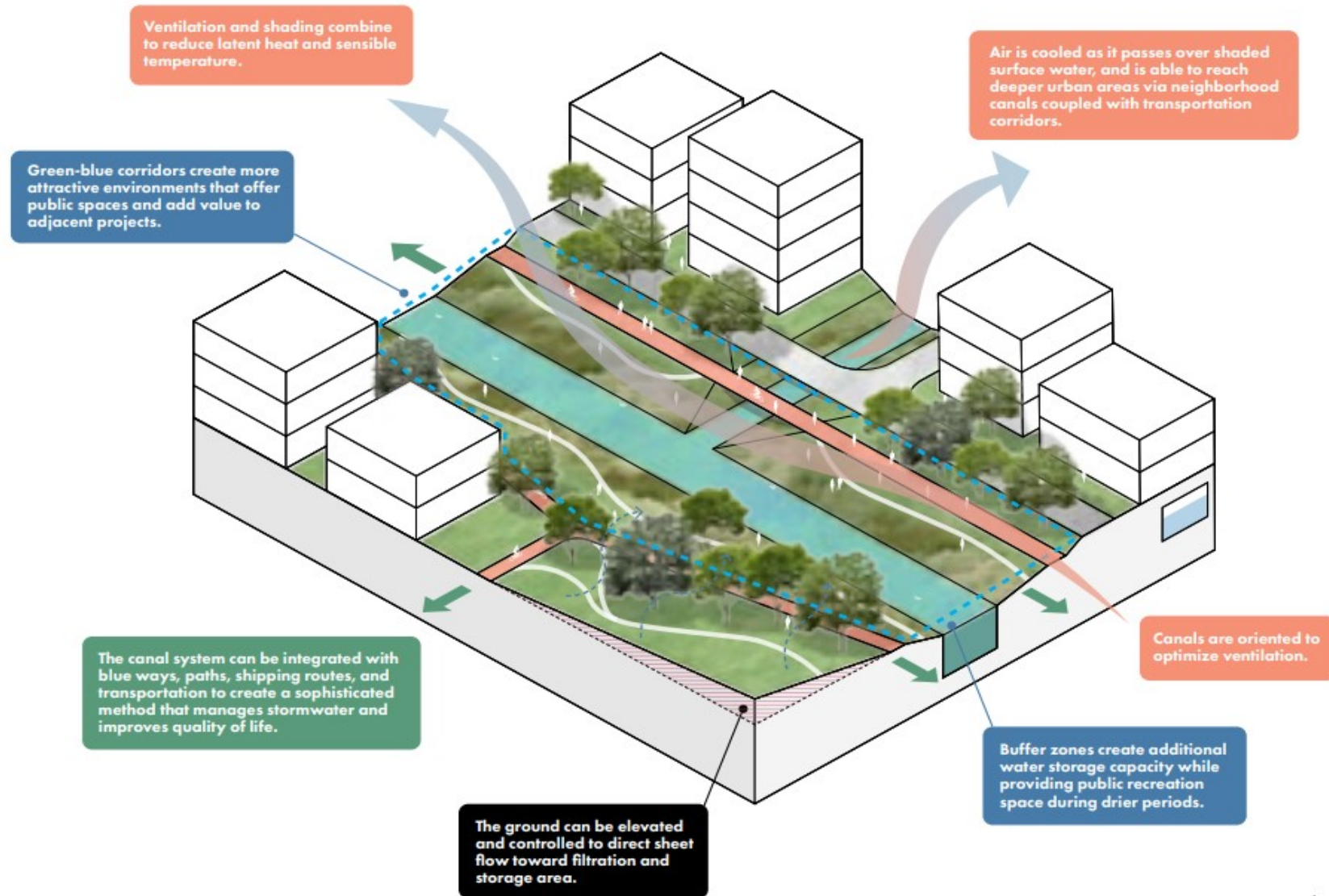
Metropolis Region of Amsterdam is working with the following basic climate adaptation security level for buildings:

1. **Water overflow** (e.g. due to heavy rainfalls)
2. **Drought** (water shortage)
3. **Heat** (high temperature)
4. **Floods** (e.g. river floods)

And of course including Nature Inclusiveness and Biodiversity!



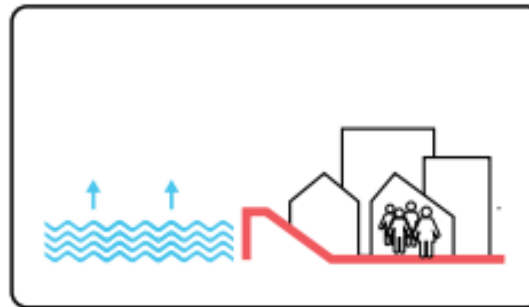
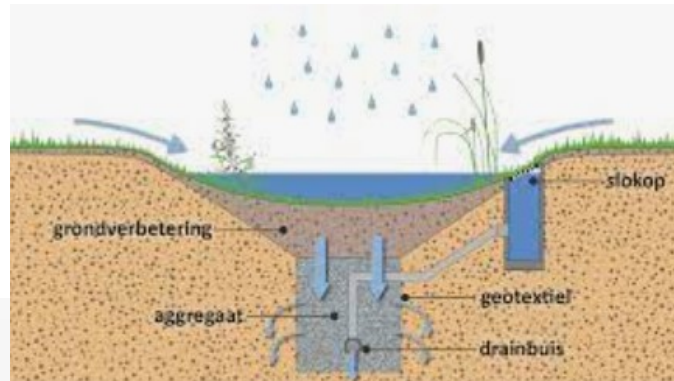
Good practice: adapt climate change through innovation procurement, resilience by design



Procuring Climate Services that support systemic climate action

Water overflow (e.g. due to heavy rainfalls): some examples

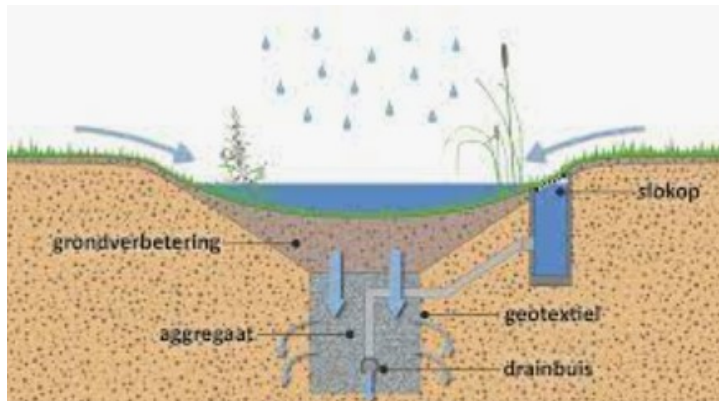
- climate adaptative design
- raised buildings
- so-called wadis
- water barriers



Procuring Climate Services that support systemic climate action

Drought (water shortage): some examples

- Buffer zones for water storage
- So-called wadis
- Use a rain barrel to collect rainwater



Procuring Climate Services that support systemic climate action

Heat (high temperature): some examples

isolation



more green / trees



green roofs



green walls



Procuring Climate Services that support systemic climate action

Example of basis security level of heat:

Normative heat day offers the plan area a healthy and attractive living environment and microclimate. –

- Shadow: There is at least 30% shade for major slow traffic routes and places to stay in the plan area during the highest sun position in the summer.
- Cool places: Cool places (minimum 200 m²) are within walking distance (300 meters) present.
- Roofs: At least 50% of all roofs are heat-resistant or cooling equipped/built to prevent warming of the urban area.
- Vital and vulnerable: Vital and vulnerable functions must be able to withstand heat.
- Indoor temperature: Homes do not get too hot during heat (< 27 °C) and cooling does not lead to heating of the (living) spaces in the immediate vicinity

Lessons learned on practical aspects of Innovation Procurement

- Procurement need – Objective of the procurement
- Tackling the problem - Procurement approach
- PCP as a procurement method works well
- Phased approach helped small businesses participate and grow
- Innovative new products available that solve the problem
- Low procurement investment can mobilise industry to bring great new things to the market





Procuring Climate Services that support systemic climate action

The following categories are designated as vital and vulnerable:

- energy
- telecom/ICT
- water chain (drinking water and wastewater)
- health
- chemistry
- pumping stations
- main infrastructure



Procuring Climate Services that support systemic climate action

- Market consultation
- The basic security level has been used as an input for the tenders
- Earth Observation



Recommendations on practical aspects of Innovation Procurement

- **Limit the scope to Research&Development (R&D) services:** R&D can cover activities such as solution exploration and design, prototyping, up to the original development of a limited volume of first services in the form of a test series.
- **Share risk-benefit with industry:** Public authorities and industry should share risks and benefits of the R&D services needed to develop new innovative solutions on climate services.
- **The pre-commercial procurement (PCP) excludes State aid:** the PCP process must be designed to ensure competition, transparency, openness, fairness, and pricing at market conditions to identify the best possible solutions the market can offer.





Any questions?

4th April 2023

Webinar Practical aspects of PCP

