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## BEFORE YOU START

To find an innovative solution, we need to move **from an unmet need** as defined internally within your organisation to a specific **challenge description** that is understandable by an innovative solution provider (or any interested stakeholder).

The challenge will include the **technical and business requirements** that the innovative solution should address as well as the expected impact of such a solution.

Doing this exercise, it is worth it because it:

- Eases the process of communicating your need to the market and attracting the best innovation supplier.
- Helps suppliers of innovative solutions to adapt their offer to your specific needs.
- Facilitates the collection of feedback by other public authorities who might have similar needs.

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## YOUR UNMET NEED

The **challenge description** is a **public document** as part of the Hackathon. Innovative solution suppliers will read it and will assess whether they can offer you a solution. They will also decide whether the effort is worth it. Therefore, be concise and as clear as possible.

### Your institution & its general purpose

Our research institute is a public scientific hospitalization and treatment institution that deals with cancer patients. We therefore provide both support to the sick person and seek solutions and strategies to combat the cause of their suffering. The CRO of Aviano, the national cancer institute, has a catchment area of users centered in the North/East of Italy, but has relevance throughout the national territory.

The data: 453,000 outpatient services. 20,000 radiotherapy treatments, about 2,300 surgeries, and just over 6,300 hospitalizations  
45% of users come from outside the region

### What is the challenge or problem your institutions faces?

Patients being treated for oncological diseases must undergo treatments with drugs that generally produce very debilitating side effects. Even the most recent active ingredients used create serious imbalances in the body. A possible solution for this problem is Therapeutic Drug Monitoring, which involves the administration of customized treatment on the specific patient in

order to avoid dangerous overdoses for the reasons described above or inefficient treatments. Each person is different from the others and requires personalized treatment. In many countries, TDM is already in force for various drugs and many other nations are aligning themselves with this monitoring. In countries where TDM has become a reality, patients lead a more peaceful life and are more likely to overcome the challenge that involves them. Access to the cures for problems related to overdose is lower and so are the expenses for the health system. Currently, the way to determine the concentration of the active ingredient of the drug in the patient's blood consists of analytical techniques such as HPLC combined with mass spectrometry. This analytical methodology is very expensive, even 500,000 euros and requires qualified personnel and long times for execution. So not all patients can have significant data to build personalized care. We have therefore looked for alternative, cheaper and faster solutions, such as point of care. The analytical technique chosen at the basis of the point of care that we are developing is electrochemistry: we study the electrical intensity underlying redox processes that take place in the molecules of the drugs present in the patient's blood, in contact with the disposable electrode material, varying the potential imposed on the system. By selecting the most suitable reagents to conduct the analysis and the specific potential at which the redox occurs, it is possible to create a universal system towards all pharmaceutical molecules that are electrochemically active. It is very important that our point of care works on whole blood and not on plasma. This goal is achieved thanks to microfluidic systems for the separation of blood components.

### **What is the main objective of the challenge?**

The main objective is to improve the quality of life of patients being treated thanks to personalized care. This could be done thanks to the electrochemical POC that we are developing in our institute in collaboration with important companies in the sector. The POC must be as transportable as possible, economical and easy to use even by patients.

### **Compulsory functional requirement**

Together with the characteristics just described, POC must have good reliability and analytical robustness, as well as having a good part of the disposable components, in particular the measuring electrode. Currently, screen printed electrodes can be a good option, although they often have variability.

### **Desired functional requirements**

An added value to the POC could be given by the presence of a connection system to the internet network that can transmit the patient's data to the treating physician and help the specialist in defining the treatment.

### **Do you have any idea of a product or service already on the market which could solve your problem?**

There are some devices on the market that can perform a chemical analysis of drugs in biological fluids alternative to HPLC/MASS but very often they are expensive and difficult to use by non-specialists and in any case always specific

for a single drug. There are no systems that are optimal for all drugs used in cancer treatment, indeed there are solutions for only a few active ingredients..

**Are there public institutions coming to mind which have developed appropriate or similar solutions?**

Many public research institutes are investigating biosensor-based analysis techniques. Our research team also carries out studies in this area, but it must be clarified that these systems produce very expensive and specific analytical solutions for individual drug, because they are based on the interaction between target molecule and receptor. This translates into great economic criticalities in the marketing phase, also leaving many categories of drugs uncovered, not of interest because they are used by few subjects, or because the molecules of these drugs do not provide a reliable response in interactions with receptors.



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*The Vienna Health Care Group (Wiener Gesundheitsverbund, WIGEV) is a publicly owned healthcare organization operated by the City of Vienna. It is a non private company but functions as a municipal enterprise without its own legal personality, acting on behalf of the city<sup>1</sup>.*

*WIGEV serves a vast population, with over 5.2 million outpatient contacts and 243,636 inpatient admissions recorded in 2024<sup>2</sup>. It employs around 30,000 staff members across 7 clinics, 9 nursing homes, and 1 therapy center, making it one of the largest healthcare providers in Europe<sup>3</sup>.*

*The services provided include acute medical care, long-term nursing, psychological support, and professional training in health and nursing professions. WIGEV also manages 13 educational institutions for healthcare training<sup>1</sup>.*

*The annual budget approved by the Vienna City Council was previously around €5.2 billion, with €2.9 billion allocated to personnel costs.*

### **What is the challenge or problem your institutions faces?**

*Nursing care plans are currently created and maintained manually based on dispersed patient documentation (e.g., admission assessments, progress notes, physician orders, vitals, labs, risk scores). This process is time-consuming, varies in quality, and is difficult to keep up-to-date during shift changes and high workload.*

*Key pain points include:*

- *High documentation burden for nurses and limited time at the bedside*
- *Inconsistent structure and terminology across teams and wards*
- *Delays and omissions when relevant information is buried in free-text notes*
- *Fragmented IT landscape with limited interoperability and duplicate entries*
- *Risk of missed risks/interventions, affecting patient outcomes and staff satisfaction*

### **What is the main objective of the challenge?**

*Design and pilot an AI-powered Nursing Care Plan Assistant that automatically drafts and maintains patient-specific care plans from existing documentation. The assistant should map relevant findings to standard nursing languages (e.g., NANDA-I diagnoses, NIC interventions, NOC outcomes), suggest goals and interventions with rationales, and keep plans current as new data arrives—always with nurse-in-the-loop oversight. Target outcomes: reduced documentation time, improved standardisation and safety, better continuity across shifts, and higher staff satisfaction.*

### **Compulsory functional requirement**

- EHR/HIS integration via standards (e.g., HL7® FHIR®/HL7 v2) for secure read/write of assessments, notes, vitals, labs, orders, and existing care-plan modules
- Multimodal data ingestion: structured data (vitals, scales such as Braden/Morse/pain) and unstructured text (nursing/medical notes, discharge summaries)
- Evidence-based mapping to nursing standards (NANDA-I, NIC, NOC) with local policy/protocol alignment
- Draft care-plan generation: problems/diagnoses, goals/outcomes (with target values), interventions with frequency and rationales, and prioritisation
- Explainability: transparent links to source documentation (sentence- and data-level traceability) and confidence indicators
- Nurse-in-the-loop workflow: quick edit, accept/decline suggestions, versioning, and full audit trail (who/what/when/why)
- Role-based access control; integration with existing identity management
- GDPR compliance and data security: encryption, data minimisation, data residency, logging, and retention aligned with hospital policy
- Safety guardrails: no autonomous orders; clear clinical decision support disclaimers; override and escalation paths
- Multilingual UI/content (at least German and English); plain language support for patient-facing artifacts



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*[Aspects you might want to include are the type of organisation, public or privately owned, number of end-users, services provided, and annual spending, among others.]*

Resah is a leading French public Central Purchasing Body (CPB) specialized in the public health procurement sector, with a team of 250 professionals. It supports over 3,900 hospitals, healthcare & social welfare institutions, as well as regional authorities. With more than 5,700 contracts, Resah offers tailored procurement solutions which cover all needs of its beneficiaries, across a wide range of 12 categories, representing a purchasing volume exceeded €3.2 billion in 2024.

In addition, as strong advocate for sustainable and innovation procurement, Resah created its own Innovation Center to support the identification and procurement of innovative and sustainable solutions, by collaborating with a variety of innovation key stakeholders and by facilitating the access to public tenders for start-ups and SMEs. The CPB has awarded ISO 20400:2017 for sustainable procurement and ISO 26000 certifications and social responsibility.

Beyond its core activity of purchasing, Resah provides strategic procurement support, logistic and change management services, leveraging the expertise of its Knowledge Hub.

At the European level, Resah is an active participant in EU-funded projects and a co-founder of EHPPA (European Health Public Procurement Alliance), a network of 11 public and non-profit CPB dedicated to the healthcare sector across Europe.

*Nota bene:*

*Resah, as a CPB, is not the end-user of the solutions/contracts. To define these following topics of interest and this list of needs, several procurement department categories have been consulted at Resah. During the project, Resah will have the possibility to directly consult the healthcare facilities (members of Resah) to finetune and prioritize needs.*

**What is the challenge or problem your institutions faces?**

*[Explain the context around the challenge. How is the problem solved currently? Who and how many are affected by the problem? What are the current economic, social, environmental impact of the problem? What is the motivation to solve the problem? If the answer can be broken down into several sub-problems please only choose the one being most relevant for you]*

**Context :**

On January 1st, 2025, the new European Directive on Urban Wastewater Treatment entered into force, strengthening the rules regarding wastewater treatment for better protection of public health and the environment

Certain provisions are particularly relevant:

- **Enhanced removal of nutrients and micropollutants:** Stricter standards are introduced for the removal of nutrients from urban wastewater, and new requirements have also been set for the treatment of micropollutants.
- **Systematic monitoring:** There is now an obligation to monitor microplastics, PFAS (persistent chemical substances), and certain public health parameters such as antimicrobial resistance, as well as viruses like SARS-CoV-2 when a public health emergency is declared.

Indeed, French local authorities are directly concerned and will need to adapt by implementing wastewater treatment and enhanced monitoring systems within their territories.

All public buildings and technical facilities (schools, central kitchens, swimming pools, laboratories, healthcare establishments, technical stations, etc.) generate specific liquid effluents such as greasy water, chlorinated water, water containing chemical or biological residues, and cleaning water with detergents, among others.

The management of effluents and liquid discharges from these buildings and technical facilities is essential to ensure water quality and environmental protection. All these wastewater streams, depending on their nature, are pre-treated, monitored, traced, and sometimes declared.



### **Challenge:**

To date, there seems to be no comprehensive global integrated solution capable of managing, tracking, monitoring, and alerting on the quality of effluents and liquid discharges from public buildings and technical facilities.

### **What is the main objective of the challenge?**

*[Briefly state what you aim to accomplish by solving this problem.*

*Example: "The main objective is to improve the quality of life perceived by epileptic patients by facilitating a more convenient communication with their doctor and empowering them to better manage the disease."]*

The main objective of this challenge is to improve and optimize the management of effluents and liquid discharges from public buildings and technical facilities by implementing an integrated system for the management, traceability, monitoring, and alerting of liquid effluents produced in these structures. The deployment of such a global solution would help reduce the environmental impact of public buildings and technical facilities.

Implementing this global integrated system for the management, traceability, monitoring, and alerting of liquid effluents produced in public buildings and technical facilities would achieve the following objectives:

- Improved environmental management and compliance
- Reduced pollution risks
- Optimized operations
- Increased transparency
- Support for sustainable decision-making

### **Compulsory functional requirement**

*[List the requirements that must be met. Without these, the solution would not address the challenge.]*

The innovative aspect of this challenge lies primarily in its structure — that is, the development of a global, integrated system.

The integrated system combines digital tools (software, applications, databases, IoT, etc.) with field-based actions. It is therefore a hybrid, global integrated system.

Key functionalities of the integrated system:

- **Mapping and characterization of discharge points:** Inventory and identification of discharge points in buildings and their characteristics. It is essential to identify the different types of wastewater generated since, depending on their typology, they must be collected through separate



networks to facilitate treatment and isolate problematic flows in case of pollution.

- **Data collection and centralization:** Analysis results and data from various sources (sensors, reports, interventions).
- **Traceability and real-time monitoring:** Recording of volumes/quality; continuous monitoring of discharge quality (pH, temperature, pollutant concentration, etc.); diagnostics.
- **Alert system:** Real-time alerts upon anomaly detection, identifying its origin (leak, incident, accidental release of hazardous substances), reducing reaction time.
- **Regulatory compliance support:** Automated reporting and discharge traceability (flow calculations, annual pollution reports) to simplify legal compliance.
- **Decision-making support:** Data visualization (dashboards).
- **Interoperability with existing management systems.**

## Desired functional requirements

*[List the requirements that would be an added value for you, but that could be included or not depending on the supplier budget and time constraints.]*

**Adapt the integrated system to healthcare facilities with installations classified for environmental protection (ICPE) that produce specific effluents (medicines, antibiotics, contrast agents, pathogens, etc.), as well as industrial and technical types (kitchens, laundries, generators, HVAC systems), providing them with an optimization tool that enhances efficiency, safety, and environmental compliance.**

Some establishments are subject to ICPE regulations if their activities have an impact (water, air, or soil pollution, etc.) and may present hazards (fire, explosion, etc.) to the environment, health, and public safety.

Developing an integrated global system combining digital tools (software, applications, databases, IoT, etc.) and field actions would enable these establishments to optimize the management of their effluents and liquid discharges, which may contain micropollutants, hazardous waste, and specific chemical and biological substances.

Key functionalities of the integrated system - for healthcare facilities with ICPE-classified installations producing specific effluents (medicines, antibiotics, contrast agents, pathogens, etc.) and of industrial/technical type (kitchens, laundries, generators, HVAC)

- **Mapping of risk areas, identification, and characterization of discharge points**

*General services* (laundry, green spaces, kitchen, technical services, garage, parking, maintenance, air conditioning)

*Medical services* (laboratory, nuclear medicine, medical imaging, pharmacy, operating rooms, hemodialysis, dentistry, autopsy, pathology)

- **Data collection and centralization:** Analysis results and data from various sources (sensors, reports, interventions) in compliance with ICPE requirements (continuous and traceable self-monitoring of discharges).
- **Traceability and real-time monitoring:** Recording of volumes/quality to ensure full traceability of compliance with discharge limit values; continuous monitoring of discharge quality (pH, temperature, pollutant concentration).
- **Alert system:** Real-time alerts upon anomaly detection, identifying the source (leak, incident, accidental discharge of hazardous substances), reducing reaction time.
- **Regulatory compliance support:** Transmission of results, automated reporting to facilitate the production of documents/evidence required for ICPE inspections, traceability of discharges (flow calculations, annual pollution reports) simplifying legal compliance.
- **Decision-making support:** Data visualization (dashboards).
- **Interoperability with existing management systems.**

**Do you have any idea of a product or service already on the market which could solve your problem?**

N/A

**Are there public institutions coming to mind which have developed appropriate or similar solutions?**

N/A

- Interoperability with task/activities and nursing documentation modules to avoid duplicate entry

### **Desired functional requirements**

- **Continuous refresh:** *detect new notes/orders and suggest plan updates in real time*
- **Handover support:** *auto-generate concise shift summaries and task lists tied to the active care plan*
- **Patient education:** *create tailored education materials aligned to the plan and reading level, with translation support*
- **Analytics:** *dashboards for time saved, adherence to standards, variance analyses, and quality indicators (e.g., falls, pressure injury prevention bundle compliance)*
- **Predictive risk signals** *(e.g., falls, pressure injury, deterioration) to pre-emptively suggest interventions*
- **Voice input and mobile bedside workflow;** *offline-friendly capture with sync*
- **Local learning:** *adapt suggestions to ward-specific protocols while preserving global safety constraints*
- **Sandbox and A/B testing mode** *for evaluation without affecting live documentation*
- **Export/print of approved plans and patient summaries**

### **Do you have any idea of a product or service already on the market which could solve your problem?**

There is growing activity among EHR vendors and startups exploring generative AI for nursing documentation and care planning. We are open to solutions that integrate natively with our EHR/HIS or operate as a certified module, provided they meet the compulsory requirements above. (No endorsements; examples to be discussed during market dialogue.)

### **Are there public institutions coming to mind which have developed appropriate or similar solutions?**

We are aware of pilots in European health systems exploring AI-assisted care planning and documentation. We welcome references and validated evidence from comparable institutions during the Hackathon.