

Proyecto eB2 EarlyDel

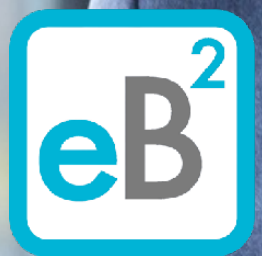
Antonio Artés



evidence-Based Behavior

Jornadas CPI en salud, 11 de abril de 2024

Inteligencia artificial para tu bienestar



Inteligencia Artificial **para**
tu bienestar

somos eB2

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The background of the slide features a dark blue gradient. On the left, there is a large, semi-transparent fingerprint graphic. On the right, a hand is shown holding a bright, glowing white sphere, with light rays emanating from it. The overall theme suggests digital identity and security.

El proceso de CPI

Open call

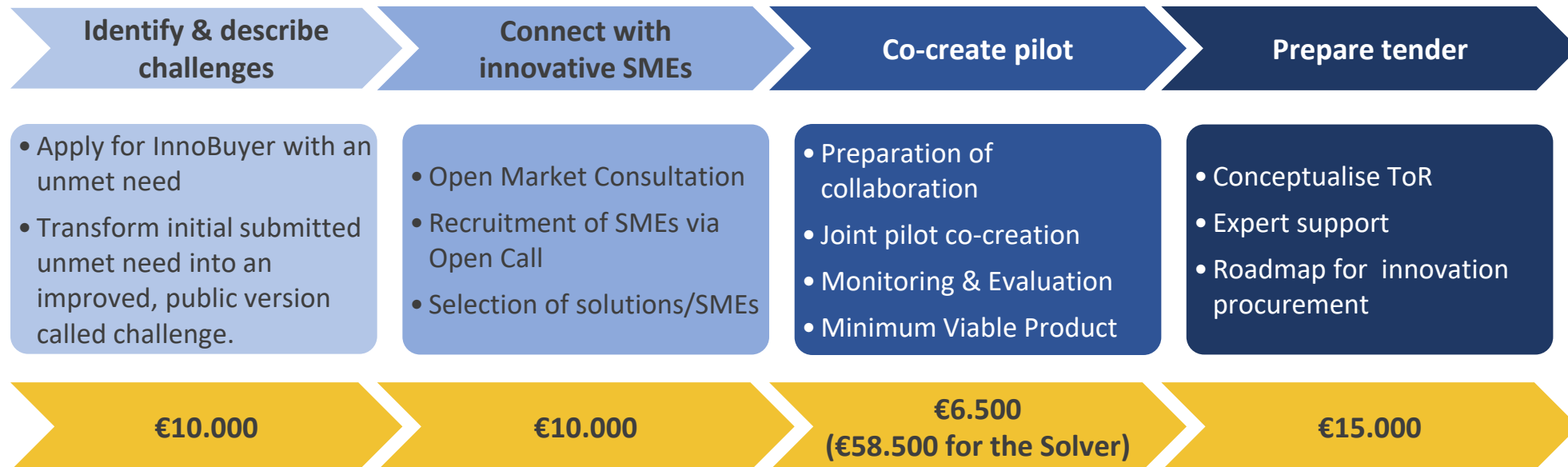
Inviting **EIC SMEs** to co-create pilots
with public organisations

Learn more and apply



InnoBuyer in a nutshell

Expertise and funding support for organisations with unmet innovation needs



Totally funded by the EU | Reduced paperwork | Demand-driven

INNOBUYER CALL FOR SOLVERS GUIDELINES FOR APPLICANTS

Who can apply	Small and medium-sized enterprises (SMEs) Other eligibility criteria may apply as described in section 4
Open call timeline	From the 25th of October 2023 to the 24th of January 2024 at 17:00 Central European Time (CET).
Activities to be funded	Co-creation and deployment of a pilot in collaboration with a public organisation (Challenger) Development of Terms of Reference specifications
Duration of the activities	10 months
Funding available	Total: 1.200.000 Euros - Up to 58.500 Euros per selected Solver - Up to 21.500 Euros per selected Challenger
Number of applications to be selected	15 applications are expected to be selected
Type of funding	Grant (equity-free)

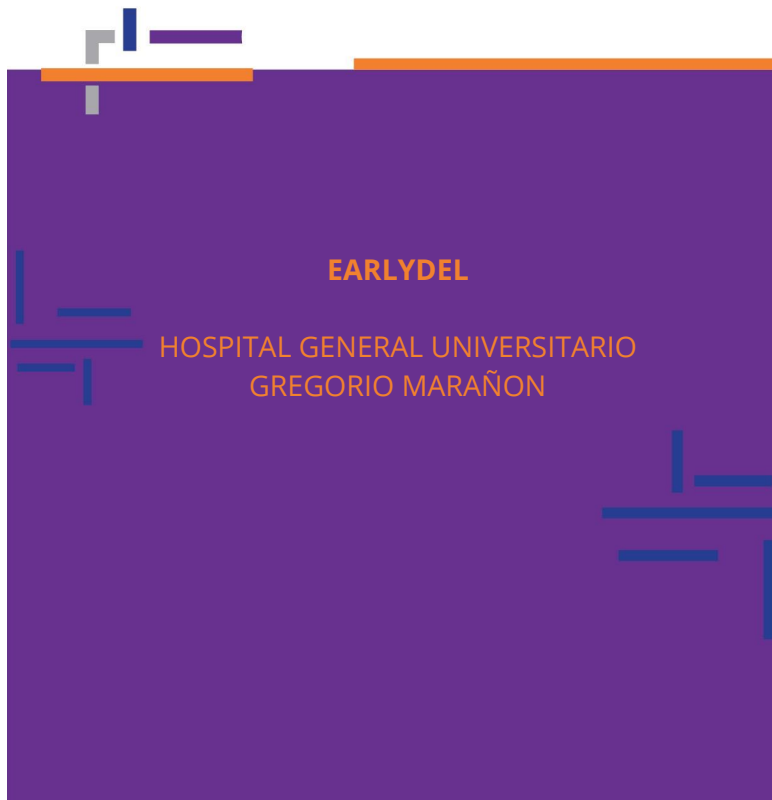


El reto



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FUNDESALUD	BLOODMANSYS	Healthcare	Advanced blood transfusion management system	Link
Fundación para la Investigación Biomédica del Hospital Gregorio Marañón	Earlydel	Healthcare	Predictive tool for early detection of delirium in hospitalized patients	Link
Ayuntamiento de las Rozas de Madrid	MOTINN	Transports	Charging points network for electric bikes and scooters, in green and natural areas.	Link



CHALLENGE MAIN OBJECTIVES

Develop and validate a predictive algorithm or analytical model that enables doctors and nurses in hospital units to identify patients who are at a higher risk of developing delirium. This will aid in making informed decisions to prevent adverse events and unnecessary hospital stays.

Furthermore, the Challenger would like to understand the clinical parameters associated with the onset of delirium to optimize internal processes within the hospital units.

To explore everyday life experiences of patients with delirium during the hospital stay, from hospital discharge until 6 months follow-up, focusing on their health-related quality of life and cognitive function.

The secondary objective will be to facilitate systematic consideration of the barriers and implementation strategies needed to incorporate early detection systems for delirium prevention in wards.

SOLUTION FUNCTIONAL REQUIREMENTS

Compulsory functional requirements

Compulsory functional requirements for an early delirium detection system

- The Solvers will use the analytical intake of the hospital, and the solution they provide should have the capability to predict and alert delirium or agitation episodes. This means that the solution will analyze the data available in the hospital's analytical intake, such as patient records, vital signs, behavioural patterns, and other relevant information, to identify potential signs of delirium or agitation in patients. When the

Desirable functional requirements

- **Trend Analysis:** The system should analyse patient data over time to identify patterns and trends associated with delirium development, enabling proactive interventions and prevention strategies.
- **Decision support:** Incorporating a hospital delirium decision support system into clinical workflows, healthcare teams can improve patient outcomes, reduce

EXPECTED IMPACTS AND KPIS

The success of the pilot will be determined by the effectiveness of the predictive algorithm in identifying patients at risk of delirium as well as complications that can be avoided.

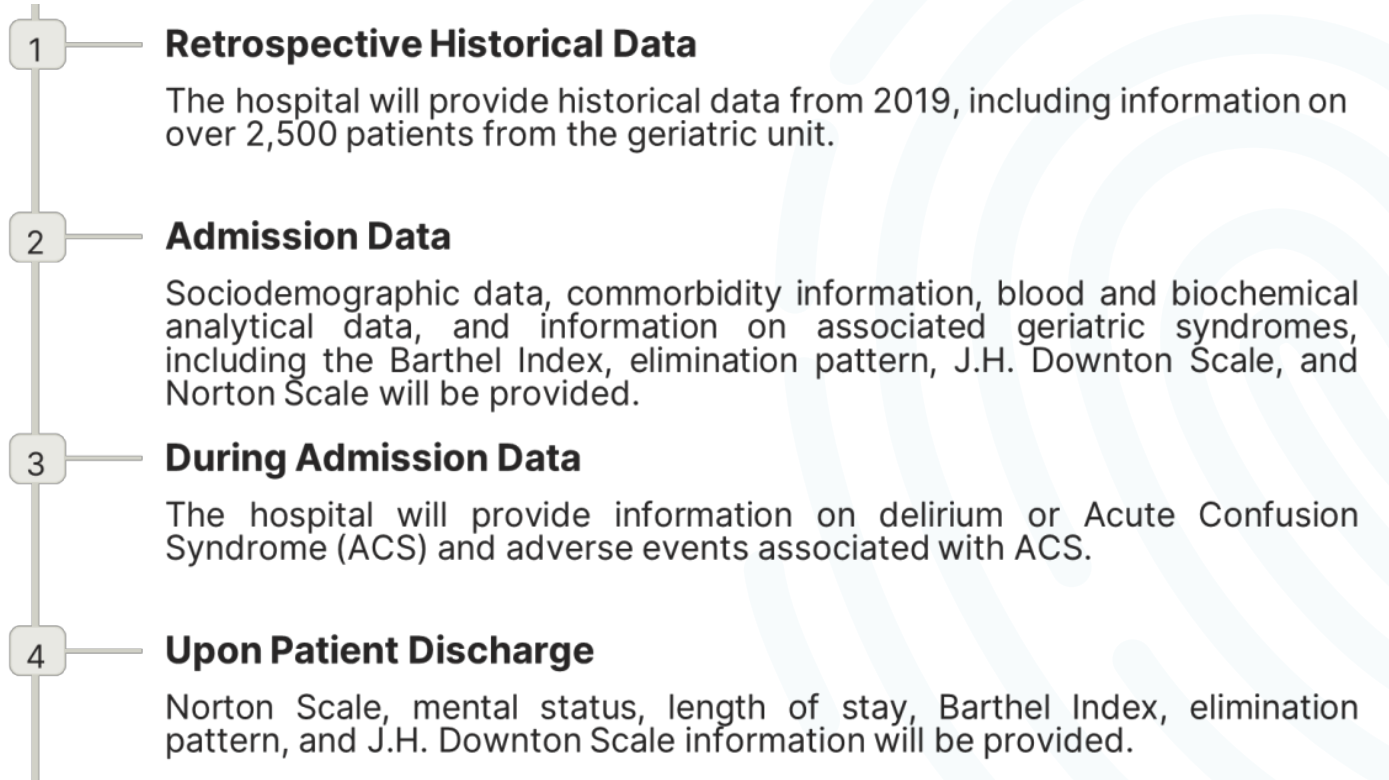
Delirium Detection Rate = (Number of Delirium Cases Detected / Total Number of Patients at Risk or Screened) x 100

This KPI calculates the percentage of delirium cases that were successfully identified through

BUSINESS OPPORTUNITY

Market size

Delirium is an acute state of confusion characterized by an altered level of consciousness and impaired attention, resulting in cognitive and perceptual disturbances that cannot be explained by preexisting dementia. Its onset is rapid, typically occurring within a short timeframe of hours to days, and it tends to fluctuate throughout the day. Underlying medical conditions, substance intoxication, or medication side effects are commonly responsible for





El proceso de selección



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5 EVALUATION CRITERIA

The criteria for proposal evaluation will be the following:

TABLE 5 : INNOBUYER EVALUATION CRITERIA

CRITERIA	DESCRIPTION	WEIGHTING
Excellence	Extent that proposed solution is ambitious, has innovation potential, and is beyond the state of the art, enhancing the innovation capacity and the integration of new knowledge & the implementation of such innovations to the market.	30%
Alignment	The extent to which the solution is aligned with the targeted challenge, notably its compulsory requirements.	25%

CRITERIA	DESCRIPTION	WEIGHTING
Commitment	Extend to which the proposal demonstrates that the pilot impacts the challenger's business and ambition to go beyond the pilot implementation. In case of a challenge not proposed by InnoBuyer, the extent to which the Challenger shows a strong commitment and involvement will also be assessed.	20%
Implementation & value for money	Appropriateness of the pilot planning and budget associated with each phase. Appropriateness of the resources to implement the pilot and experience of team members in the challenger's sector.	25%

PROPOSAL

A.CONTACT INFORMATION	
Name of the SME	Evidence-Based Behavior S.L.
Country of headquarters	Spain
Sector of activity	Healthcare
Description of the SME	Evidence-Based Behavior (eB2) is a technology-based spin-off of the Universidad Carlos III de Madrid (UC3M) that has its origins in more than ten years of joint research between engineers and psychiatrists developing machine learning and Artificial Intelligence for patient monitoring and care. eB2 has a multidisciplinary team covering research, technical, clinical, business, organizational and management profiles that have developed the eB2-MindCare system for mental health and well-being.

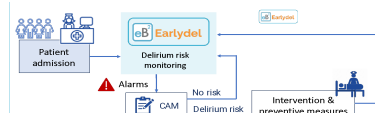
B.CHALLENGE TO ADDRESS

Challenge acronym (Identify the acronym of one of the twelve challenges proposed by InnoBuyer that you aim to address)	Earlydel
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C. SOLUTION DESCRIPTION

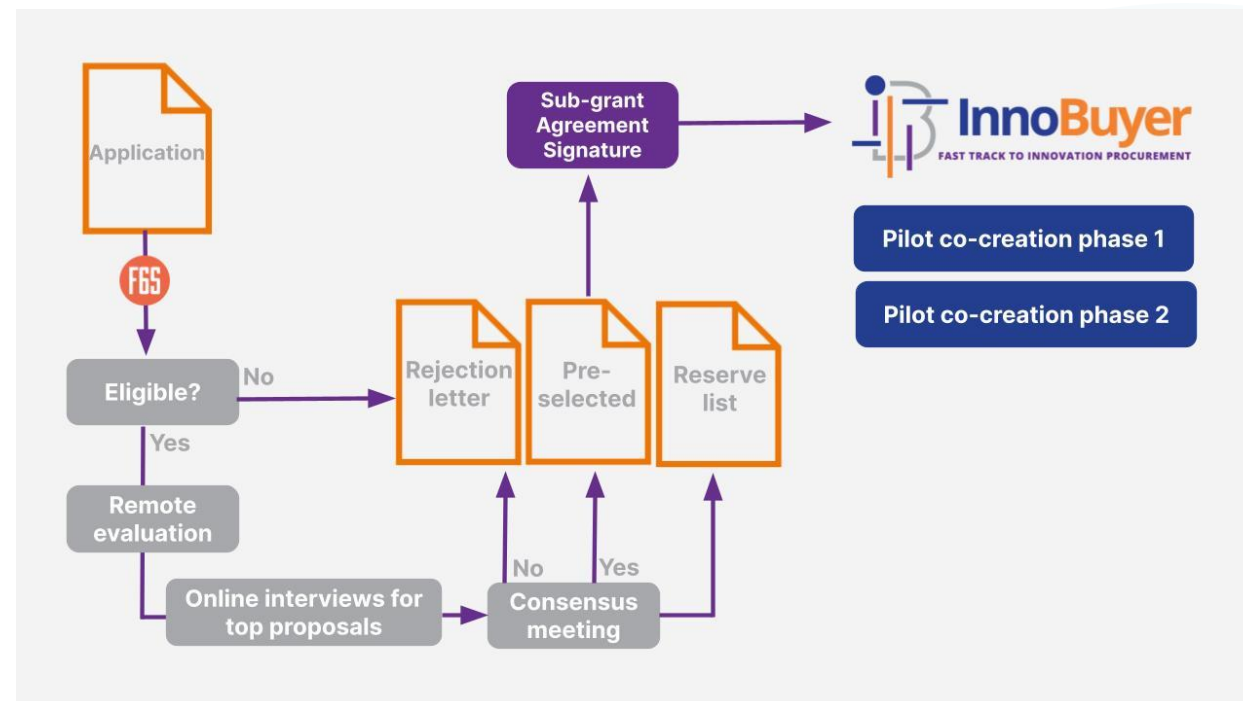
Describe the solution you propose to co-create with the challenger.
Explain its innovation potential, enhancing the integration of new knowledge.

eB2 EarlyDel is an automated system that manages each patient's risk of delirium or acute confusional state (hereafter delirium risk) from admission to discharge. It has four main components:

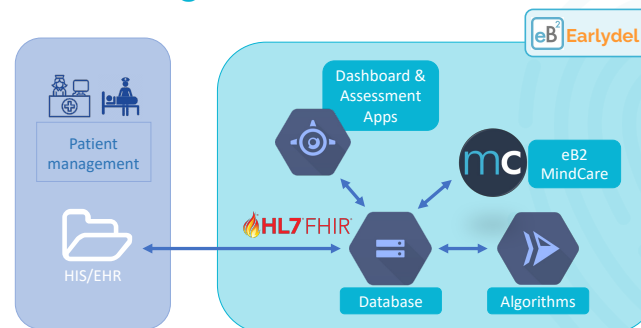


- Algorithms.** eB2 EarlyDel's core is built on algorithms that consider delirium risk as a dynamic value that changes over time. These algorithms provide real-time updates on delirium risk from the time of admission to the time of discharge. The algorithms generate various delirium risk measures such as global delirium risk, predicted CAM (acute onset and fluctuating course, inattention, disorganized thinking, consciousness), and adverse events risks (falls, injuries, agitation or removal of device). The algorithms are designed using Machine Learning (ML) methods and retrospective data provided by the Challenger team. They generate an initial value of delirium risk metrics based on the information available at admission and update these metrics using dynamic models and new information available in the EHR (Electronic Health Record) and assessments provided by nurses and physicians. The algorithms can generate alerts and providing explanations for abnormal values of risk.
- Data ingestion.** The process of collecting and importing data into the system is known as data ingestion. In this case, the algorithms are being fed with data from three different sources.

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Technical design



eB2 EarlyDel planning

Phase	Tasks	Months									
		1	2	3	4	5	6	7	8	9	10
I Algorithm Design	T1. Database preparation & curation	█									
	T2. Delirium Risk Algorithms Design & Evaluation		█	█	█	█					
	T3. Continuous Assessment & Early Detection Algorithms Design & Evaluation			█	█	█	█				
	T4. eB2 EarlyDel Functional Design				█	█	█	█			
	T5. eB2 Prototype Building & Testing					█	█	█	█		
II Algorithm Testing & Product Design	T6. Pilot Deployment & Execution						█	█	█	█	
	T7. Explainability Algorithms Design & Evaluation						█	█	█	█	
	T8. eB2 EarlyDel Design & Implementation						█	█	█	█	
	T9. Pilot Evaluation & Final Report							█	█	█	
Management	T10. Managing										

CO-CREATION AGREEMENT (TEMPLATE)

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