



Inno4Vac OPEN CALL Sub-Topic 4

Back- and Frontend for Cloud-Enabled Open Online Platform for Vaccine Manufacturing Modelling

- **Background on Inno4Vac:**

Vaccines are among the most effective measures to protect from infectious diseases. However, vaccine development remains costly, time-consuming, and risky. The EU-funded Inno4Vac project proposes an ambitious programme to harness the latest advances in immunology, disease modelling, and modelling for tackling persistent scientific bottlenecks in vaccine development and for de-risking and accelerating this process. Artificial intelligence, combined with big data and computational modelling, is used to build an open-access and cloud-based platform for *in silico* vaccine efficacy assessment and development. Controlled human infection models and cell-based human *in vitro* 3D models are developed to enable early evaluation of vaccine efficacy and prediction of immune protection. Finally, an open source *in silico* simulation platform guides the production of vaccine candidates and associated stability testing.

More information on the [Inno4Vac project](#) website.

- **Challenges, objectives, state-of-the-art technologies/technology platform/scientific capabilities identified by the consortium as needed for the progression of the project:**

The open source *in silico* platform for modelling manufacturing process and stability testing requires the establishment of a user-friendly interface with powerful scripting capabilities and graphical elements that can be remotely accessed through a web browser. The platform must include state-of-the-art technologies for advanced user management and end-to-end encryption of data storage, transfer, and backup to protect data and code from unauthorized access. Further important objectives are real-time collaborative tools to allow joint coding, model-based process analysis, and design from remote sites. The technology platform must encompass isolated compute environments to avoid version conflicts and to ensure full reproducibility of simulation workflows and results with specific software versions. Equally important are scalable distributed/cloud computing technologies with automated encryption of data storage and transfer.

Integrated research data management tools (RDM) for simulation workflows and metadata using FAIR (Findable, Accessible, Interoperable, Reusable) principles, analogue to an electronic lab notebook for computer simulations pose particular challenges. Major outcome will be a publicly accessible open online platform with private/restricted environments for collaborative method development and application across partner institutions. Another important outcome will be the platform technology itself, which should also be published as open source.

- Timeline for development of research data management tool: 1 year
- Timeline for development of open online platform: 1 year

- **Type of technology(ies)/expertise invited in the call:**

Provision of the above-described state-of-the-art collaborative tools for joint development and application of computational tools in bioprocess design and operation. This particularly requires innovative software and deployment technologies to enable scalability, real-time collaboration, sustainability of software development and application, safe and private environments, optimized user-friendliness. Guidance with integrating the developed platform into private/company cloud environments, connection to proprietary data lakes, etc. Maintenance, education, support of the platform. Capability to host the developed platform and software tools until the end of the Inno4Vac project (currently planned for February 28th 2027) and analysis of the requirements and costs, and definition of a concept for long-term operation.

- **Contribution to the ongoing activities:**

In ongoing activities, current Inno4Vac partners contribute specific software solutions to guide the production of vaccine candidates and associated stability testing. Separate software packages address the rational design, operation and control of industrial bioreactors, including hydrodynamics and cell metabolism, centrifugation, chromatography, filtration, and storage of vaccine products. The open call targets the joint hosting, integration, and dissemination of these individual codes as enabling technologies for internal and external use.

- **Details of the proposal preparation and submission process including application form/s and guidelines:**

All application forms must be completed in English, submitted in PDF-format and are not to exceed 15 pages in length including attachments. Applications must be emailed to Tiziana Spadafina (spadafina@sclavo.org), with the "Inno4Vac Open Call_ organization's name", in the subject line of the email. Your application will be acknowledged within 3 days of receiving your application.

- Applications must be successfully received by Tiziana Spadafina no later than Friday 23 August 2024. Under no circumstances will the Inno4Vac Management Team accept responsibility for lost emails or consider applications received after the deadline. The proposals will be reviewed by selected members of the Inno4Vac Steering Committee. The selected proposal(s) will be finally validated/ approved. All applicants will be notified via email of the results of their application upon completion of the selection process (2 months after the closure of the call)

- **Contacts:**

- For scientific reference: ST project leader: Daniel Bracewell (d.bracewell@ucl.ac.uk)
- For administrative information: SVA contact: Tiziana Spadafina (spadafina@sclavo.org)

- **Submission closing date:** Friday 23 August 2024

- **Selection criteria:**

Proposals will be assessed according to the following minimum criteria:

- 1. Scientific Excellence**

- Quality of proposal
- Credibility of the proposed methodology

- 2. Impact of the research**

- The extent to which the outputs of the proposed project would contribute to the expected impact of the Inno4vac work program under the relevant topic.
- Any substantial impacts not mentioned in the Inno4vac work program that would enhance innovation capacity of the Inno4vac project or create new market opportunities

- 3. Quality and efficiency of the implementation**

- Quality and effectiveness of the work plan, including extent to which the timelines and resources assigned to each task are in line with their objectives and deliverables.
 - Extent to which the proposal brings the necessary expertise
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- **Eligibility for funding**
Applicants must be eligible for funding according to [the Article 1 of the Commission Delegated Regulation No 622/2014 of 14 February 2014 Article 10 of H2020 Regulation \(EU\) No 1290/2013](#).
 - **The amount of funding or financial contribution to be allocated.**
A financial contribution of 265.000 € can only be used to reimburse eligible costs of the project, in accordance with [article 6 IMI2 Model Grant Agreement](#).
 - **Other relevant information (e.g. specific terms in the Consortium Agreement).**
Key/non-negotiable terms: selected organisations will have to access and to sign the existing Consortium Agreement, without the possibility to change the terms, and will have to sign the Inno4Vac Grant