

## Bayer use case proposal and expertise – EU call [HORIZON-CL4-2023-HUMAN-01-03](#)

Below, we sketch two Bayer relevant use cases for the EU proposal ([HORIZON-CL4-2023-HUMAN-01-03](#))

### Question-answering system for medical inquiries

- **Short description:** Development of a multilingual machine learning system that can answer patients' questions on medicine based on regulatory documents. The system must learn effectively from low-resources, and be factually correct. It should also have a size that allows for easy deployment (e.g., inference on a single GPU).
- **Background:** Patients often have questions about safety, efficacy, and side effects of medications. However, regulatory documents can be difficult for patients to navigate and understand.
- **Benefit:** A language model trained on these documents could provide patients from multiple countries with accurate and understandable answers to their questions, while also ensuring compliance with regulatory requirements. This would enable pharmaceutical companies to better meet the needs of patients and improve patient outcomes.

### Question-answering system for biomedical research

- **Short description:** Development of a machine learning system that can answer research questions from a variety of scientific sources for pharma R&D. The system must return factually correct answers.
- **Background:** In biomedical research, understanding the current research landscape is crucial for developing hypotheses for further research, target discovery, or drug development. Researchers often spend a lot of time reading and organizing existing literature to answer questions about biological processes and events. Language models can be used with information retrieval engines to help scientists summarize knowledge about genes, pipelines, compounds, and biological processes.
- **Benefit:** This would enable faster research outcomes (faster and more accurate hypothesis building, and therefore faster target identification, validation and drug discovery), and boost development of precision medicine techniques that have been in the past often overlooked
- **Expertise provided by Bayer:**
  - expertise in regulatory data; gene, disease, and target discovery data, and their usage for use case definition in the pharmaceutical industry
  - natural language processing technical expertise in the pharmaceutical industry; support and advise in model development to accurately capture the nuances of industry-specific language
  - potential access to internal data to further enhance model development and effectiveness (to be clarified on a case-by-case basis in accordance with legal and regulatory requirements)
  - Bayer contacts: Angelo Ziletti ([angelo.ziletti@bayer.com](mailto:angelo.ziletti@bayer.com)), Nikola Milosevic ([nicola.milosevic@bayer.com](mailto:nicola.milosevic@bayer.com))