



Generative AI with Cybersecurity for Internet Applications development (GALICIA) – Survey

The objective of GALICIA (<https://www.galicia-project.eu/>) is to provide a platform for automated verification of LLM (Large Language Model) generated code against a set of test cases in automation, encompassing a large case study of industrial relevance in the telecom sector. To this end, GALICIA will assist through and encompass the complete life cycle from the source code automatically generated by LLM, i.e. from the natural language functional requirements and security specifications provided by users, to the formal verification of the LLM generated code based on users' natural language specifications. GALICIA's contribution to digital resilience will be to prove in a selected number of industrial case studies how automated testing of LLM generated code can formally prove and ensure compliance against user-defined requirements and given standards. The ambition is to verify source code generated by Generative AI and analyse its limits, thus building trust in Generative AI.

GALICIA project has been selected, among others, for financing support by NGI SARGASSO (<https://ngisargasso.eu/>) a European Union funded acceleration programme for next-generation internet technologies. GALICIA is a Novareckon project (<https://www.novareckon.it/en/>), our project partners are Mind in a Box Inc (<https://mindinabox.ai/>) a subsidiary of Inmind Technologies, a known Canadian ITC company, and Hal Service (<https://www.mywic.it/>) that will provide business critical internet application to be used as a test case.

Survey Objectives

As part of the GALICIA project, a consultation was launched that involved users of innovative SMEs and Start-ups, Research Centers, Large companies, Industries Associations, and Innovation Hubs, European and Canadian, to learn about their experience and their point of view regarding the innovation prospects of the project.

The consultation, launched at the end of October '24 will be closed for end of February '25. This report is to share the partial results collected until the 8th January 2025. The final survey report will be shared in March '25.

Survey Methodology

The survey management and collected data are managed through Google Forms.

The link to the survey was sent to direct contact list of the project partners, and it was shared through social media, and Industries association that share it to their associates.

Survey Results

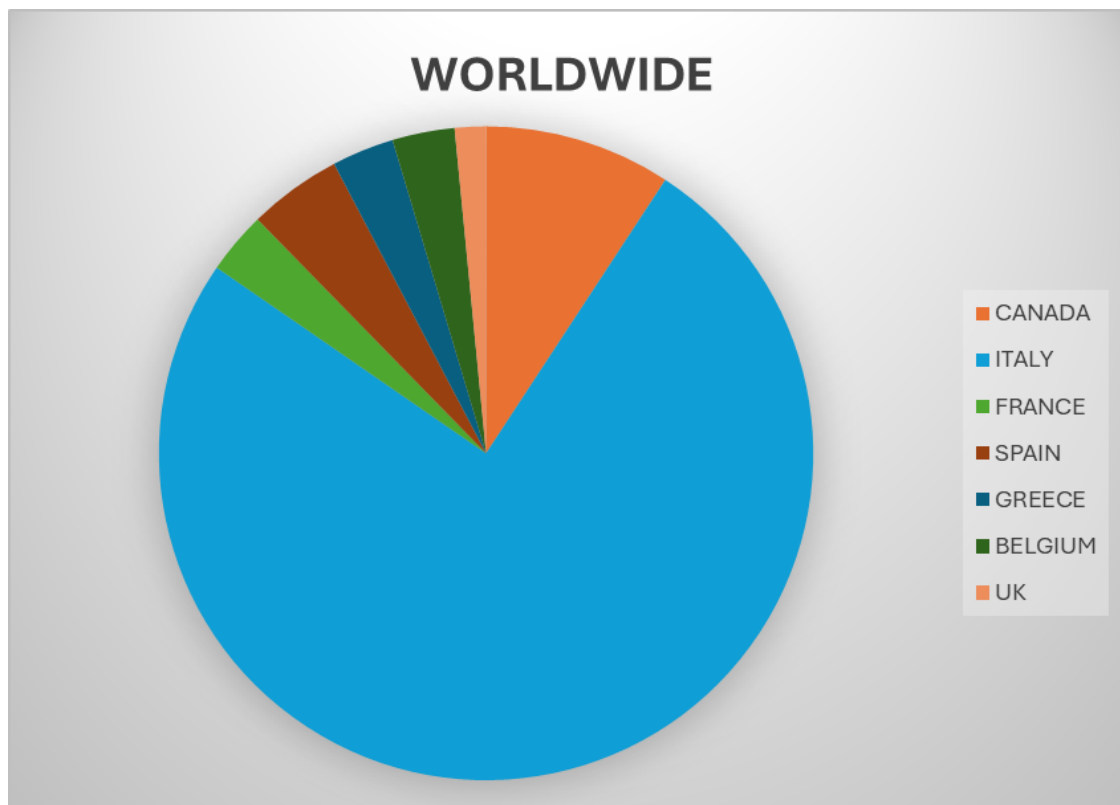
Geography of respondents and profile of the organisations

The total number of responders at the 8th January 2025 are 63.

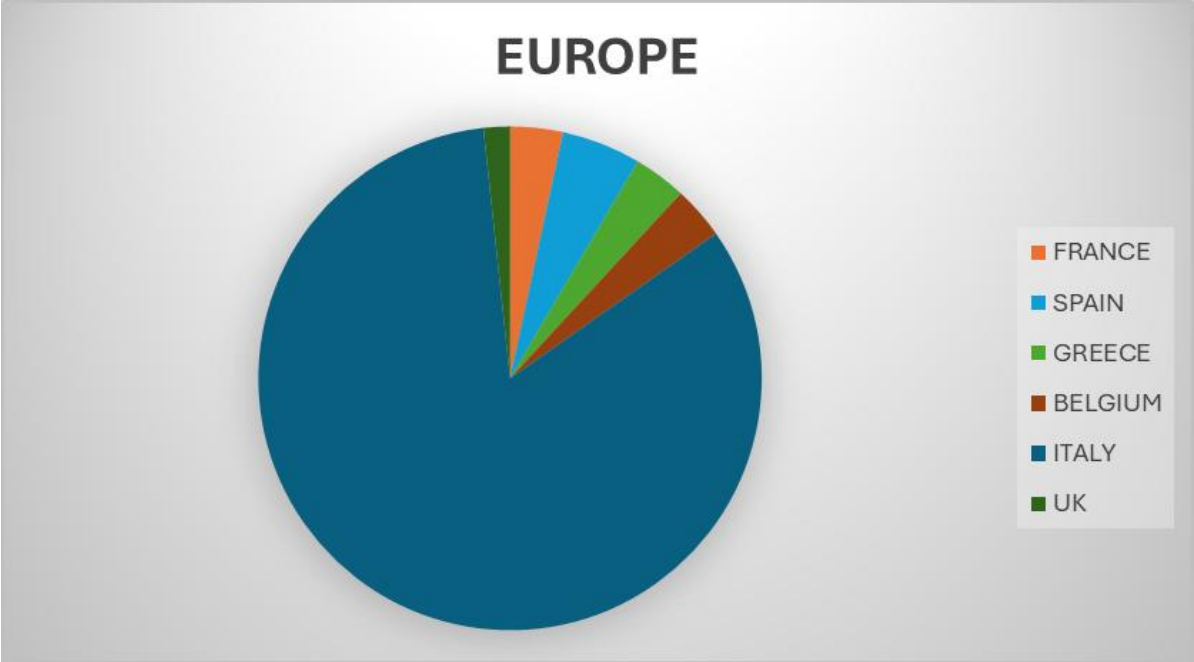
Most of the them are from European countries, in order of numerousness Italy, flowed by Spain, France, Greece, and Belgium, while from Canada responders are 9% of the total.

Within Italy the distribution is among 11 regions over 20.

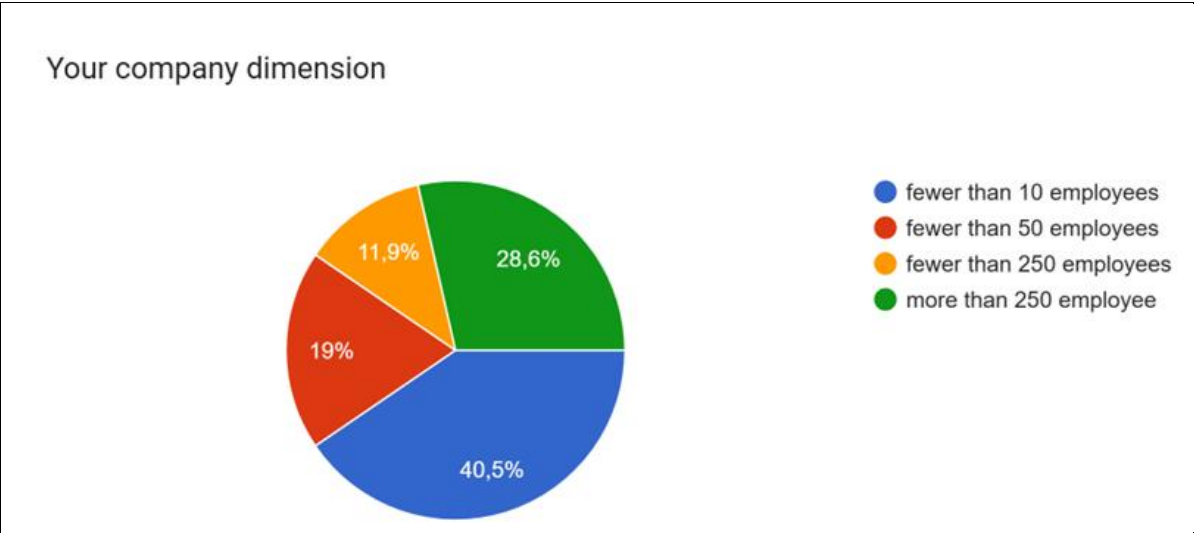
Respondents are representative of innovative SMEs and Start-ups, Research Centers, Large companies, Industries Associations, and Innovation Hubs. Most respondents are from Small Medium organisations (71.4%), Lage Enterprises are represented by 28.6%.



Source: GALICIA Survey data from Google Forms



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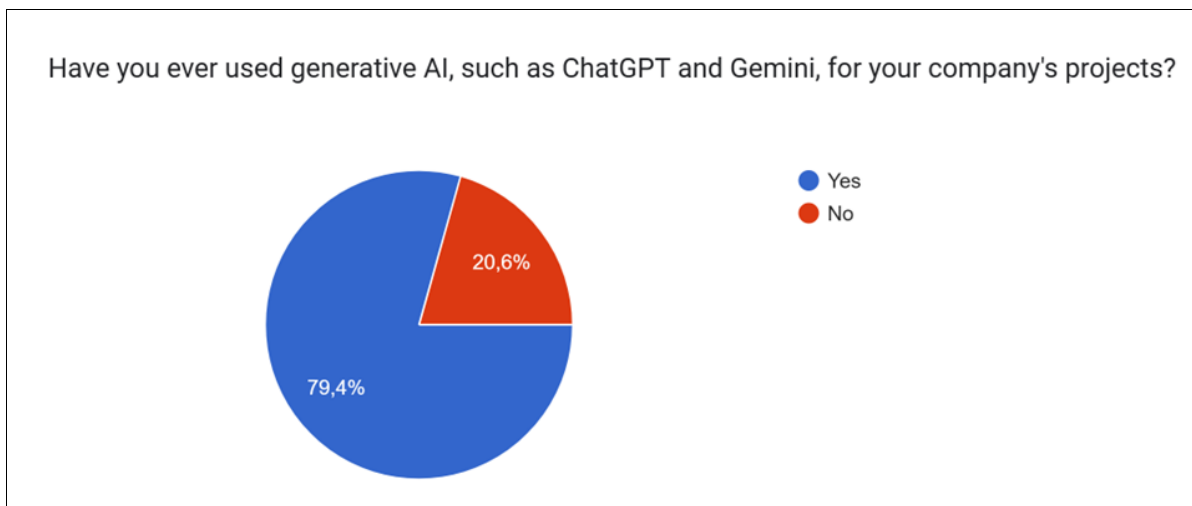
Source: GALICIA Survey data from Google Forms

Diffusion of generative AI inside organisations

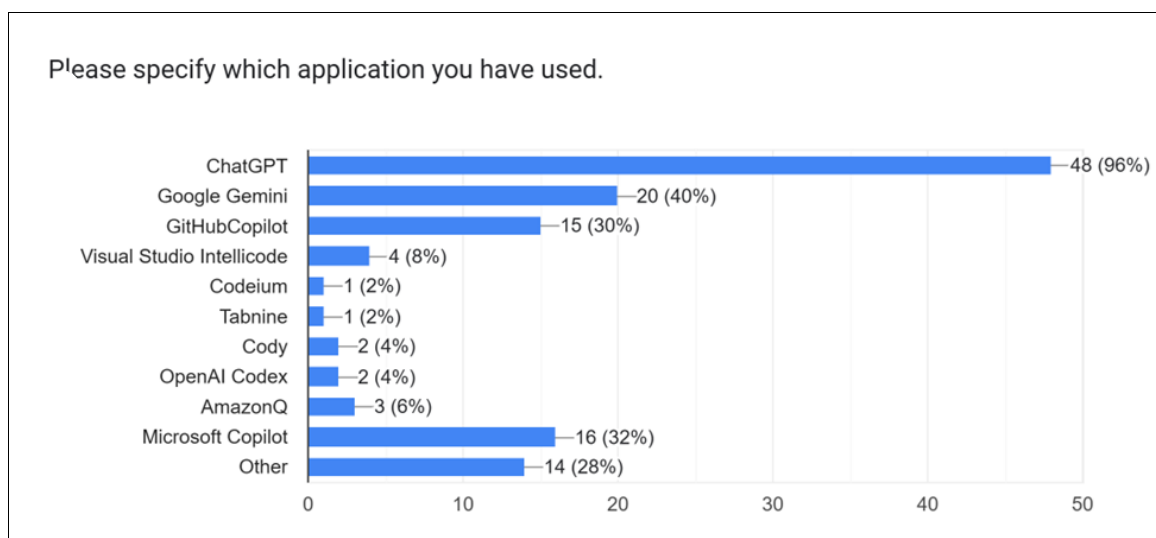
Generative AI is widespread in the organisations and its use varies with respect to the activities for which it is used in companies. The 79.4% of the respondents have used generative AI for their company projects. Most of users experienced the use of generative AI for Software development (60%), followed by Graphic and Video design, Marketing and Sales, and Customer support.

The most used applications are: ChatGPT (96%), Google Gemini (40%), Microsoft Copilot (32%).

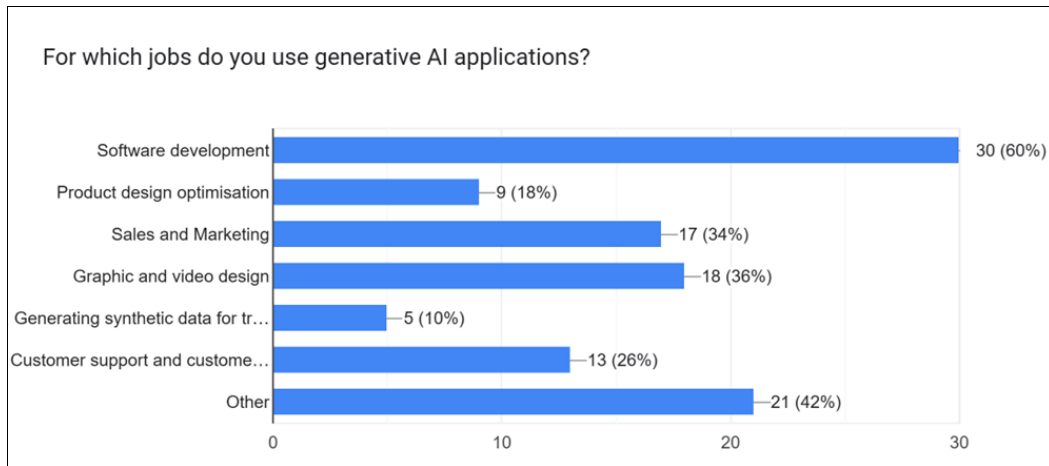
In software development, Generative AI is mainly used for automatic generation of code in Python language (65.9%), followed by JavaScript, Java, and C# - C++.



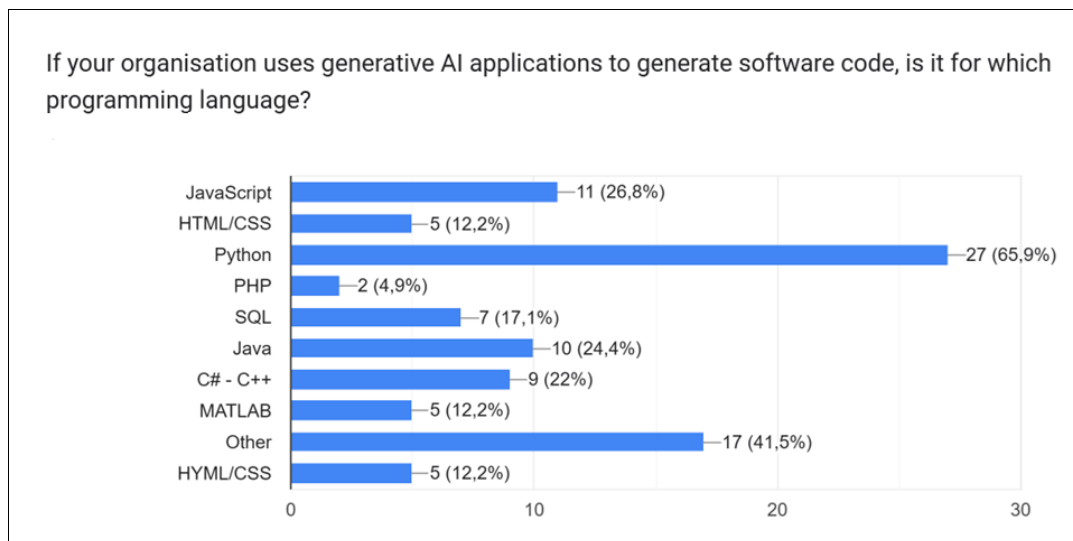
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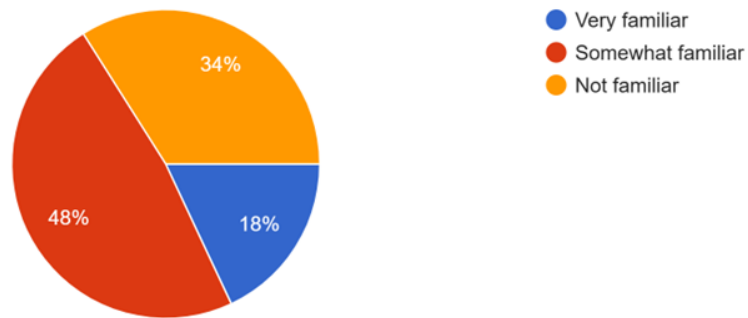
Source: GALICIA Survey data from Google Forms

Perception of cybersecurity relevance in AI generated software code

Most of respondents are very familiar and somewhat familiar with the concept of verifying source code generated by generative AI (66%). Moreover, for companies it is considered extremely important to analyse and understand the source code generated by AI for ensuring quality and for reducing risks (62%).

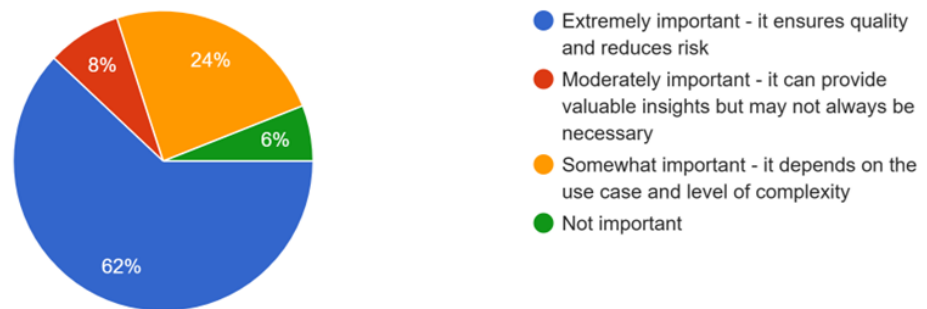
Interviewed used were asked how often they notice that the generated code has security flaws or does not match what you requested, and they responded that this happened in their experience very frequently for the 24% of respondents and sometimes for the 42% of them.

How familiar are you with the concept of verifying source code generated by generative AI?

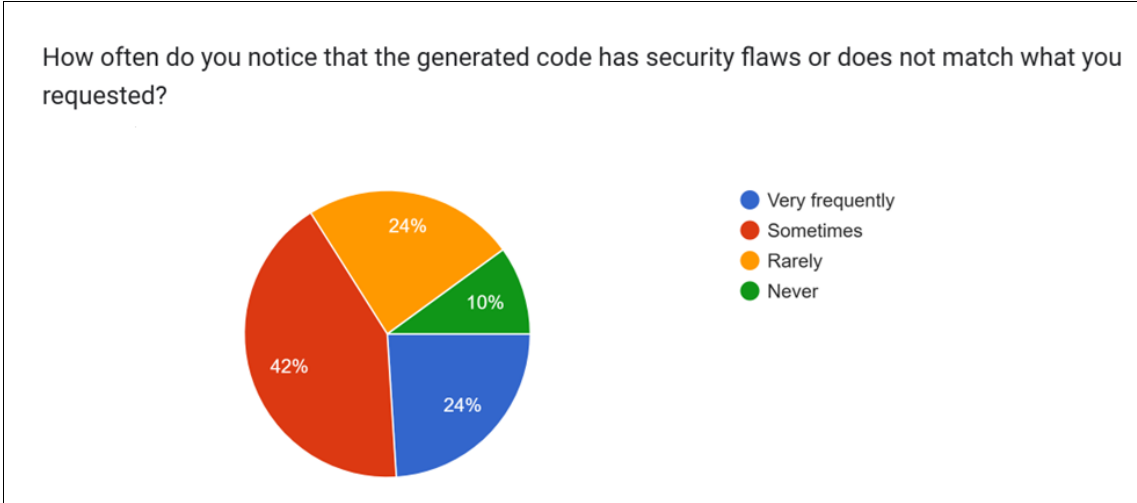


Source: GALICIA Survey data from Google Forms

How important is it for your company to thoroughly analyse and understand the source code generated by generative AI?



Source: GALICIA Survey data from Google Forms



Source: GALICIA Survey data from Google Forms

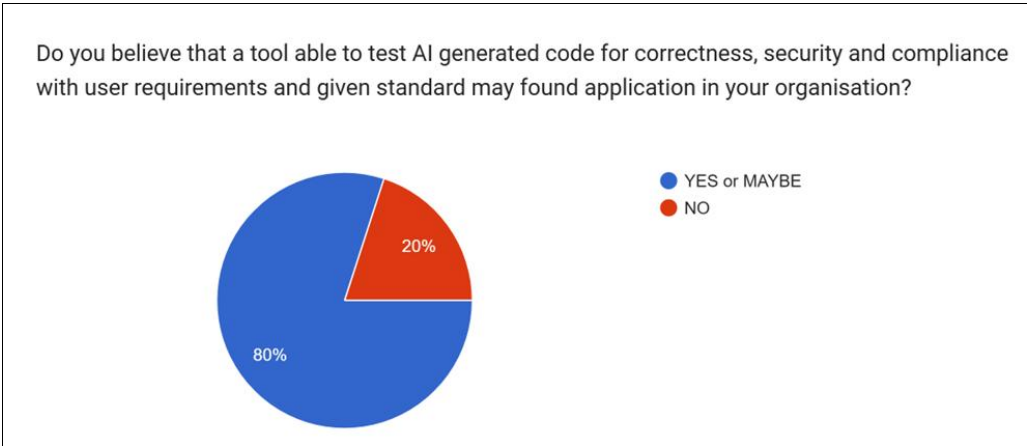
Need of tools for building trust in Generative AI

Most of respondents that are using generative AI for software development believe that that a tool able to test AI generated code for correctness, security and compliance with user requirements and given standard may found application in their organisation (80%).

The benefits they expect from such a tool span from time saving (84%), cost reduction (58%), improved security (56%), better customer satisfaction (24%) and revenue growth (10%).

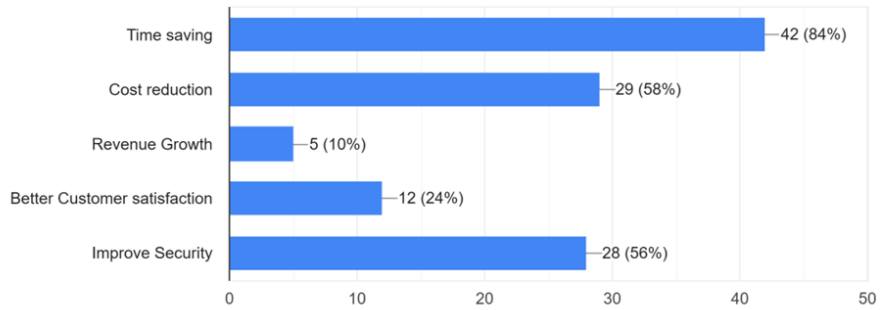
On a scale of 0 to 5, the 64% of respondents rate between 4 and 5 the benefits for their organisations from using a tool able to test AI generated code for correctness and security.

For the 50% of respondents such a new tool, able to assist developers in code generation, verification, and security, should be released as a plugin for integration within existing development environments, the 32.5% would prefer to have it as independent application to be installed in their development environments, the 17.5% see it as a specialized GPT available within existing platforms like OpenAI's GPT.



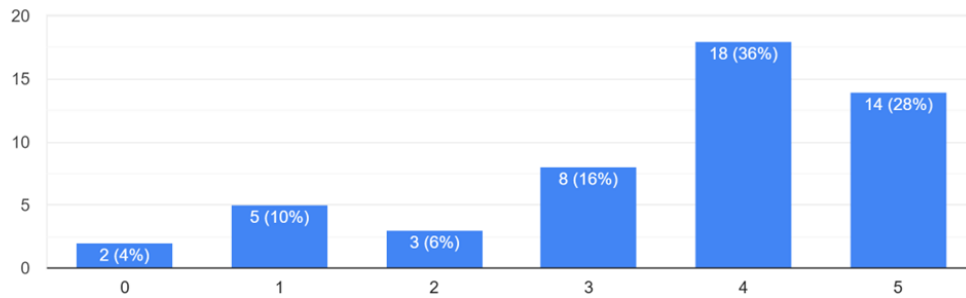
Source: GALICIA Survey data from Google Forms

Please, indicate the list of benefits that you could expect by using a tool able to test AI generated code for correctness, security, compliance with user requirements and standards.



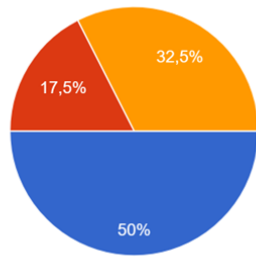
Source: GALICIA Survey data from Google Forms

On a scale of 0 to 5, how much would you rate the benefits for you organisation from using a tool able to test AI generated code for correctness and...iance with user requirements and given standards?



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How do you imagine that a new software able to assist developers in code generation, verification, and security could be released to interested users?



- Integration within a development environment: released as a plugin , for example as a Visual Studio Code Plugin
- Specialized GPT: available within platforms like OpenAI's GPT
- Independent application to be installed in you development environment

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