Co-funded by the
Erasmus+ Programme
of the European Union

National Report
France

Digitalization of Service Processes in Facility Management

With the collaboration of

ARSEG L'association des Directeurs de l'Environnement de Travail

The project

The project aims to cover three main objectives: the first one is to study the real situation of the FM market in terms of digitalization and analyse its impact on the future qualifications or skills that professionals in the sector should have.

The second one is to obtain a list of recommendations for the use of emerging technologies that have an impact on FM and apply them to the educational sector and to the market practice itself.

Finally, we want to develop more modern teaching and learning techniques that can be incorporated into undergraduate or higher education programs in Facility Management or similar careers.

The works have 5 different phases or milestones:

1. Study of trends in digitalization in FM
2. Creating a new digitalization agenda
3. Development of training workshops for teachers
4. Hackathons for students
5. Final report

The project calendar has been extended due to the market situation, estimating its completion at the end of 2022. Until that date, partial deliverables or sectorial studies will be produced.

> “FMgoesDIGI is the largest study made at international level on the maturity of the FM market on digitalization issues”

FMgoesDIGI project is co-funded by the Erasmus+ Programme of the European Union

DHBW the Baden-Württemberg Cooperative University is a German institution of higher education. It offers dual-education bachelor's degree programs in cooperation with industry and non-profit institutions in the areas of social services, business administration and engineering.

FMHOUSE is a privately owned company working in the field of Facility Management. Acting as an independent body, provides specialised consultancy, training and research services for all kind of clients, end users and service providers at the international level.

Metropolia University of Applied Sciences is the largest University of Applied Sciences in Finland situated in Helsinki. The university has four fields of study: culture, business, health care and social services, and technology. Teaching is also provided in English.

UPM Polytechnic University of Madrid is a public university, located in Madrid, Spain. It was founded in 1971 as the result of merging different Technical Schools of Engineering and Architecture, with over 35,000 students attending classes every year.

Partners

The working group of the **FMgoesDIGI** project is made up of teams from four organizations representing 3 different countries:

- DHBW (Germany)
- FMHOUSE (Spain)
- Metropolia (Finland)
- UPM (Spain)

The development is done jointly, although each one is responsible for specific tasks and the organization of periodic workshops. The administration and coordination is the responsibility of the DHBW.

In addition to these four organizations, there are collaborators who contribute at different times, carrying out different tasks depending on the needs.

About ARSEG (Association des Directeurs de l'Environnement de Travail)

With over 2000 professionals and 6 regional delegations, ARSEG is France's main Facility Management association. For almost five decades, our goal has been to place our sector at the heart of every company's performance. To do this, we have focused on:

- Developing and professionalizing Facility Management.
- Reinforcing exchanges between our members and other associations in France and abroad.
- Promoting and improving knowledge on Facility Management.

ARSEG L'association des Directeurs de l'Environnement de Travail

The values we defend are solidarity, progress, and ethics:

Solidarity:

- Helping members throughout their careers (content, job board, etc.)
- Making sure members stay in touch with each other.

Progress:

- Being open to new ideas
- Fostering innovation.

Ethics:

- Placing ethics are the core of our organization.

The Questionnaire

As the first exercise of the **FMgoesDIGI** project, it was necessary to know the market's perception of the different technologies, especially the most incipient or disruptive ones. In the analysis, all the possible ones were listed and then an evaluation was made to choose the most appropriate ones. It was necessary that they were fully applicable, that they be accessible and that there were at least two real examples implemented. After this exercise, the 25 that are part of the questionnaire remained.

Following questions were asked:

· Country from where you answer

· Type of profile (client company, service provider or academy)

· Sub-group of each profile

· Evaluation of each technology, according to the following scale:

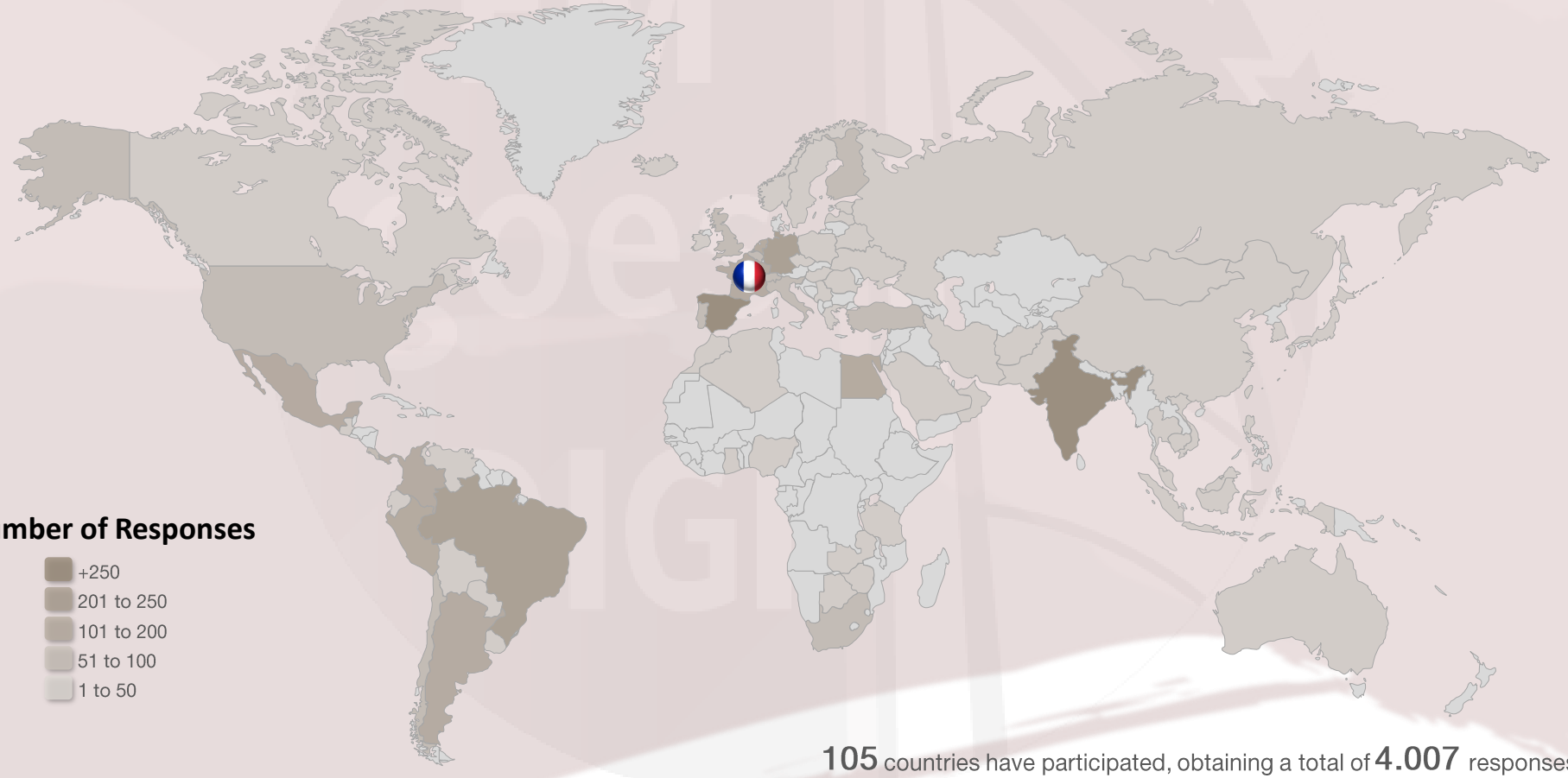
- I am using it
- Sporadic use
- Exploring to use it
- Heard but not applicable
- Would like to know
- Never heard

List of selected technologies

1. 3D Scanning
2. 3D Printing
3. 5G network
4. AMI - Advance Metering Infrastructure
5. AR - Artificial Reality (augmented, virtual and mixed reality)
6. BIM - Building Information Modelling
7. Biometrics Systems
8. Blockchain based tools
9. BAS - Building Automatization Systems
10. BMS - Building Management Systems
11. Business Intelligence tools
12. CAFM - Computer Assisted tools
13. Digital Twins models
14. Drones & Microdrones
15. GD - Generative Design
16. GIS - Geographic Information Systems
17. Holograms
18. Human Augmentation
19. INS - Indoor Navigation Systems
20. LIDAR - Laser Imaging Detection and Ranging
21. Applications for Mobile Devices
22. Remote Maintenance Services - Tele maintenance
23. RFID - Radio Frequency Identification
24. Robots
25. VA - Virtual Assistants

Responses by country

The questionnaire was distributed openly, online, through social networks and contacts of the partners.

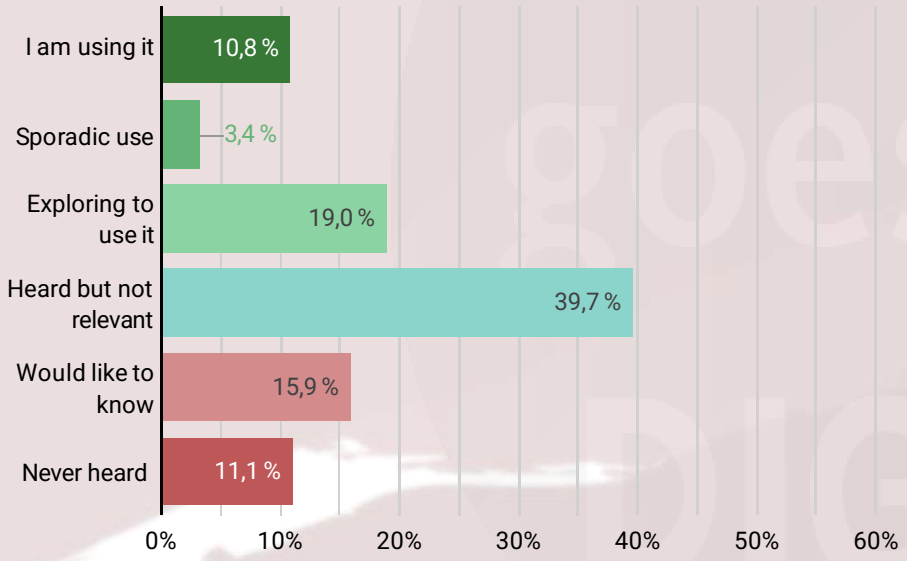


105 countries have participated, obtaining a total of **4.007** responses.

102 responses have been collected from France

1 3D Scanning

It is the process of analyzing a real object to recreate its shape and appearance digitally in a three-dimensional model. In FM it is used to improve building security processes and maintain accurate records for maintenance and renovations.



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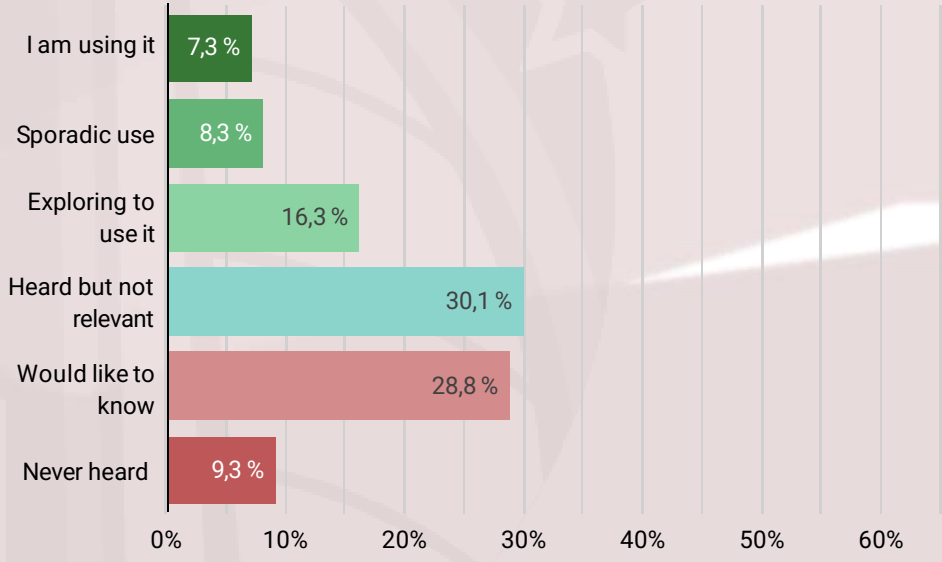

Global
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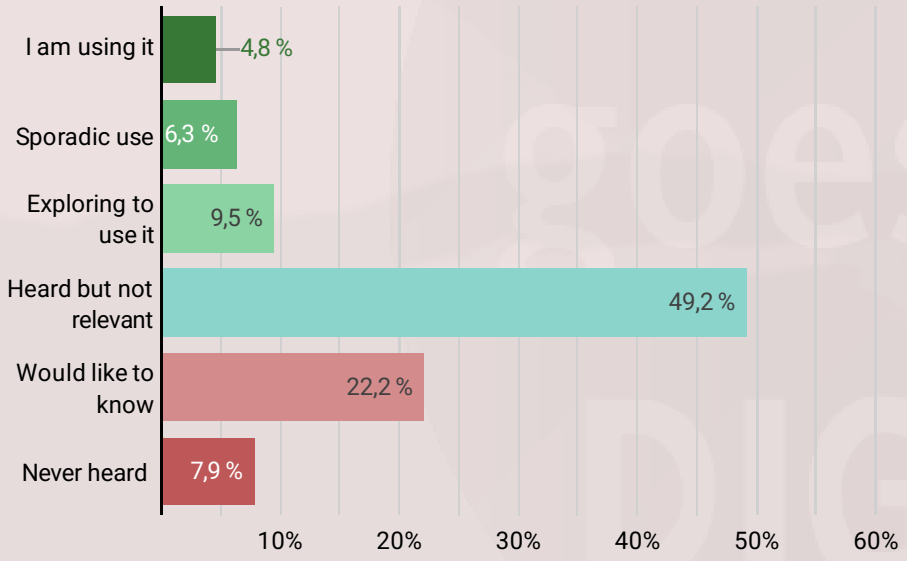
2 3D Printing

Creation of three-dimensional solid objects from a digital file. It is mainly used in the manufacture of spare parts or customized parts, increasing efficiency and improving the maintenance and useful life of equipment.



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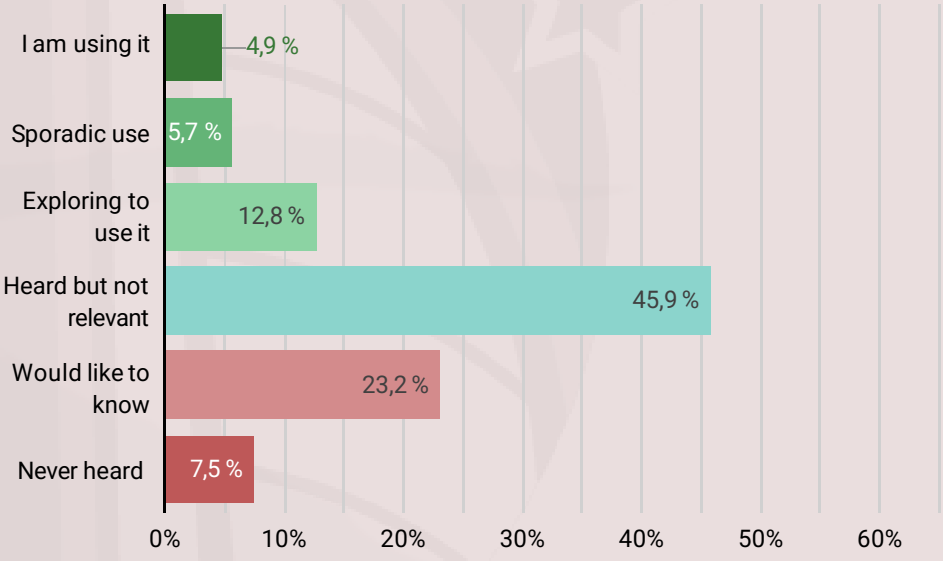

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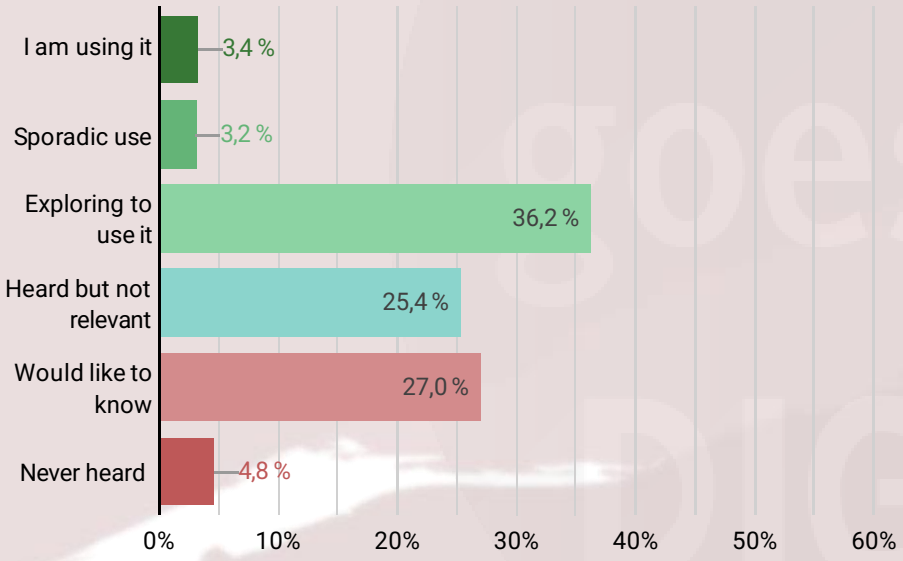
3 5G network

It is the fifth generation of mobile networks. It is a new global wireless standard, with which maximum data speeds of several Gbps can be achieved. With the improvement in connectivity, remote maintenance processes and more effective connections between systems are enabled.



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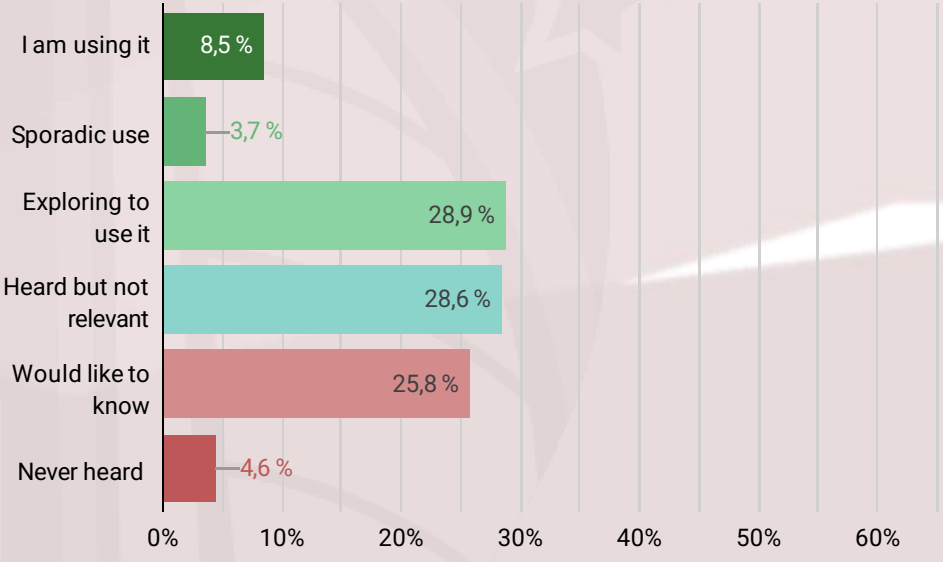

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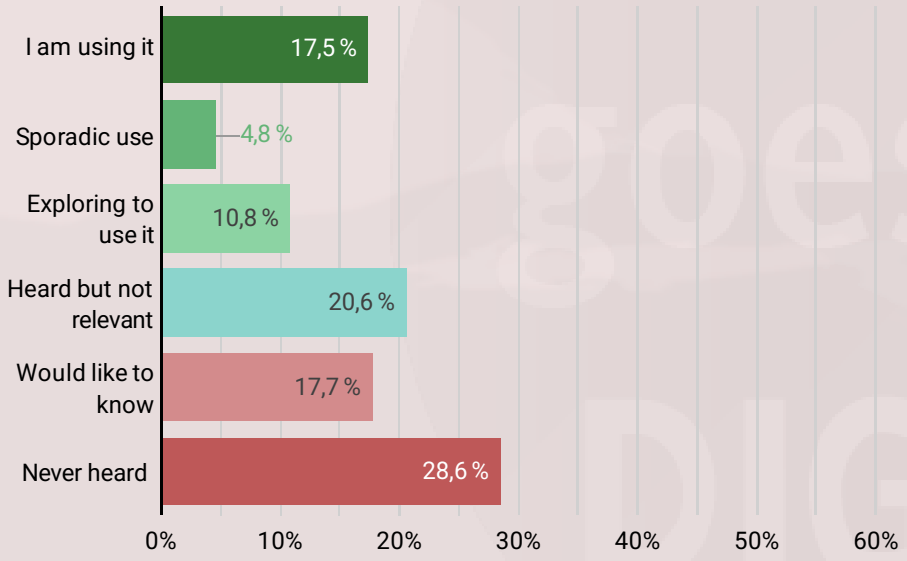
4 AMI - Advance Metering Infrastructure

It is an integrated system of smart meters, communication networks and data management elements, which allows bidirectional communication between services and users. The integration allows the generation of automated and highly accurate information, which translates into operational savings.



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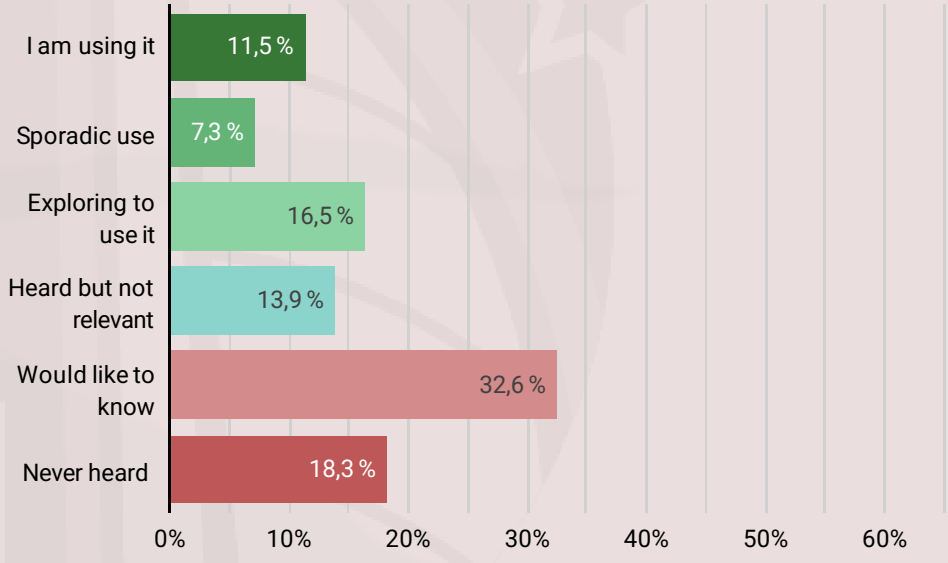

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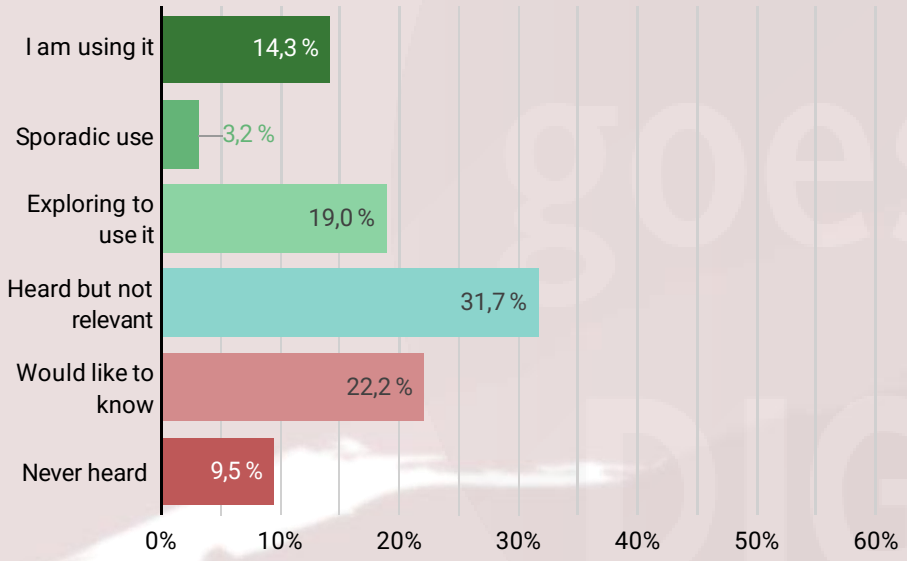
5 AR - Artificial Reality (augmented, virtual and mixed reality)

It consists of creating interactive immersive environments, based on video recognition technologies, that put the user in total contact and without limitations with the digital world. With these technologies, errors can be detected in the construction process or remote guided maintenance tasks can be carried out, among many other things.



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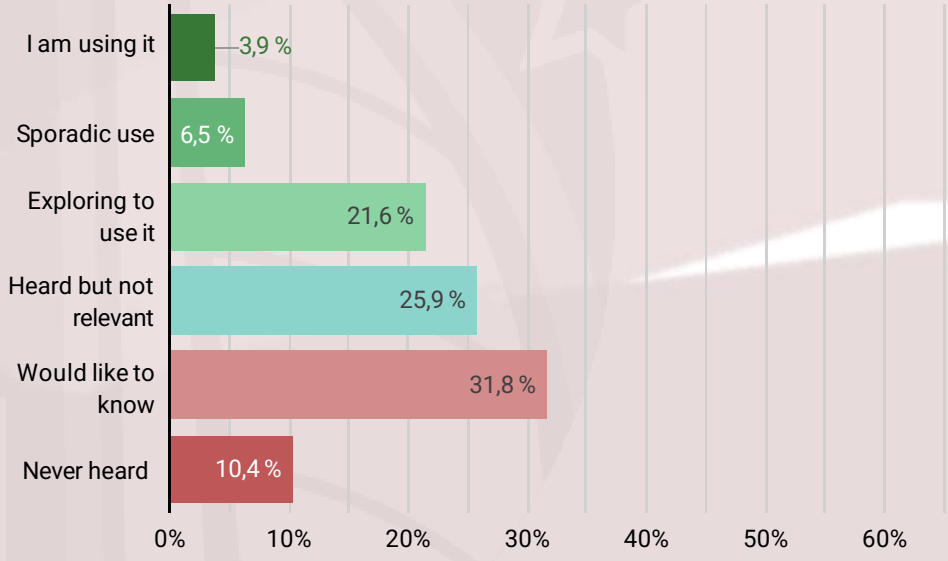

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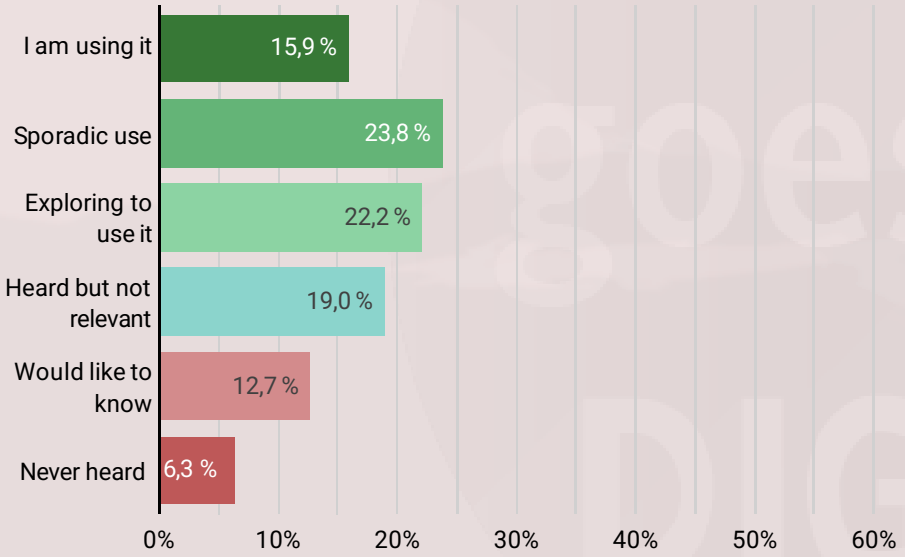
6 BIM - Building Information Modelling

Comprehensive process of creating and managing information related to a physical asset, where its digital representation is produced throughout its life cycle. With this you can improve decision making in real time, and streamline processes such as construction, documentation and maintenance.



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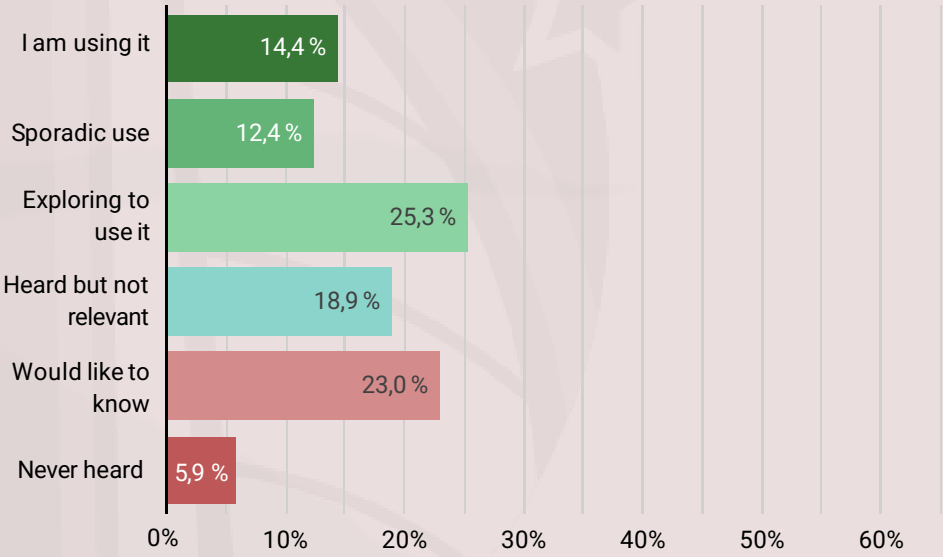

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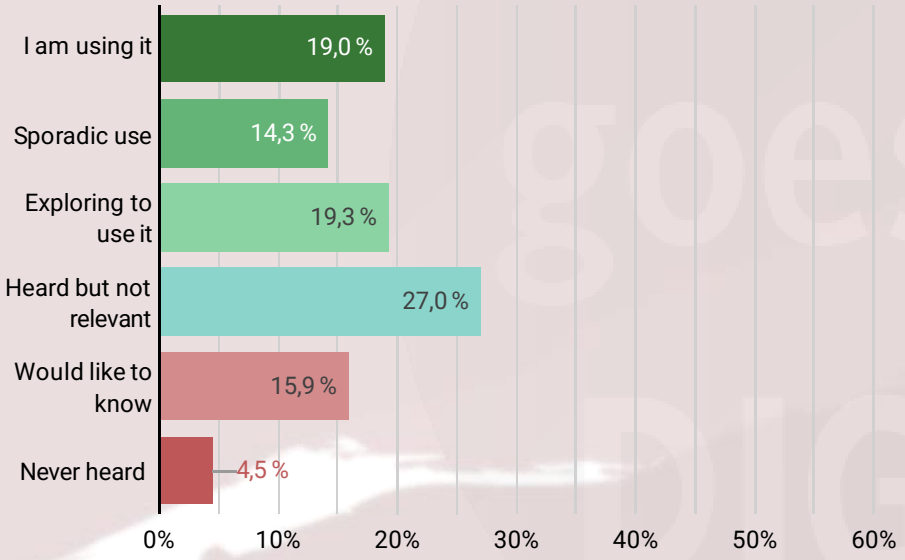
7 Biometrics Systems

It is the use of specific data about unique biological traits of an individual, to generate information by which that individual can be effectively identified. With this technology it is possible to facilitate access control, the granting of permissions or the identification of features to analyze sensations or behaviors.



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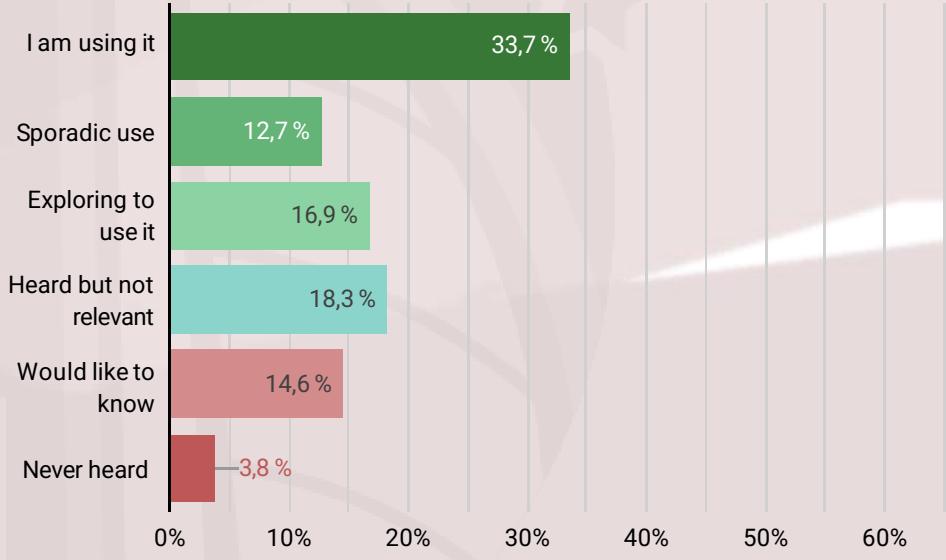

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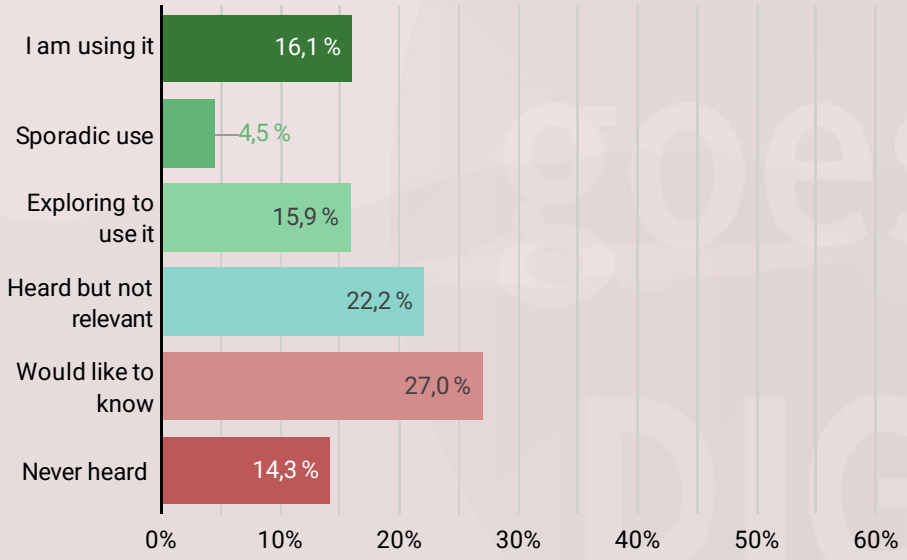
8 Blockchain based tools

Decentralized database that maintains an ever-growing list of ordered records, called cryptographically protected blocks. With this, you can have a simplified way of storing and securing data and documents, creating unique traceability and coding.



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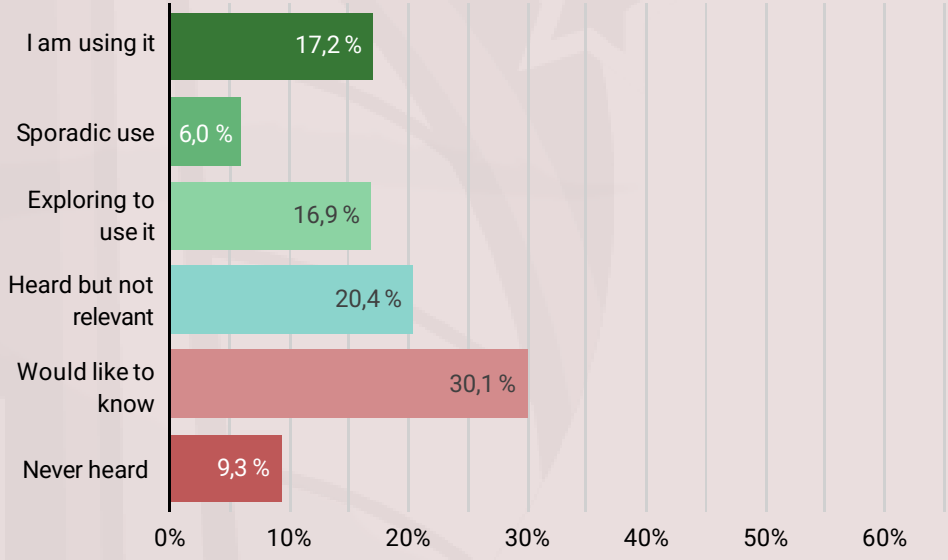

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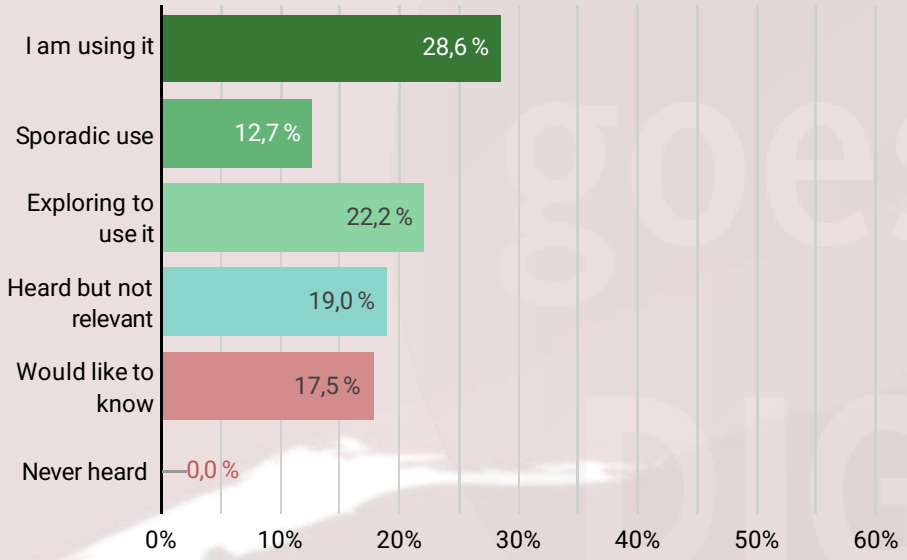
9 BAS - Building Automatization Systems

Systems that provide automatic control and monitoring, but also allow equipment to be activated or deactivated remotely. Being centralized, actions can be viewed from a central point, which helps decision-making and speeds up response.



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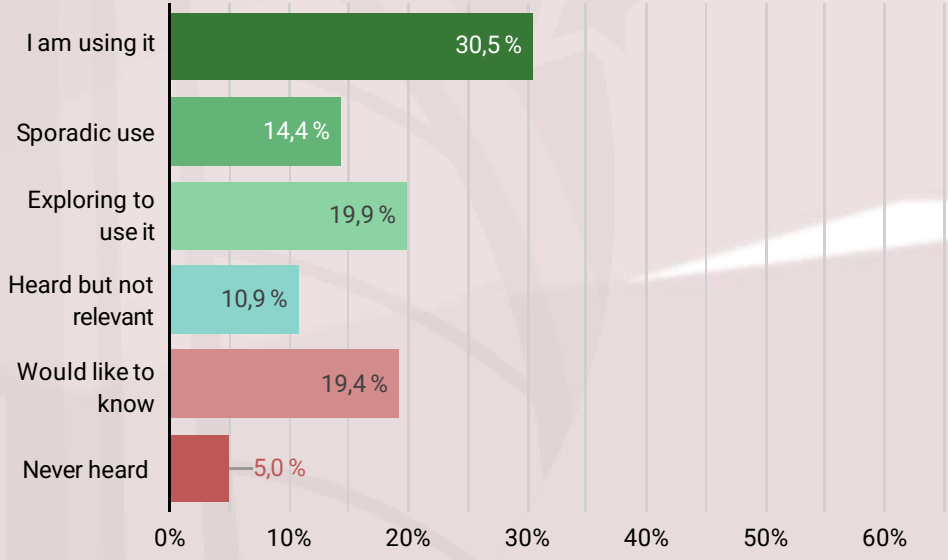

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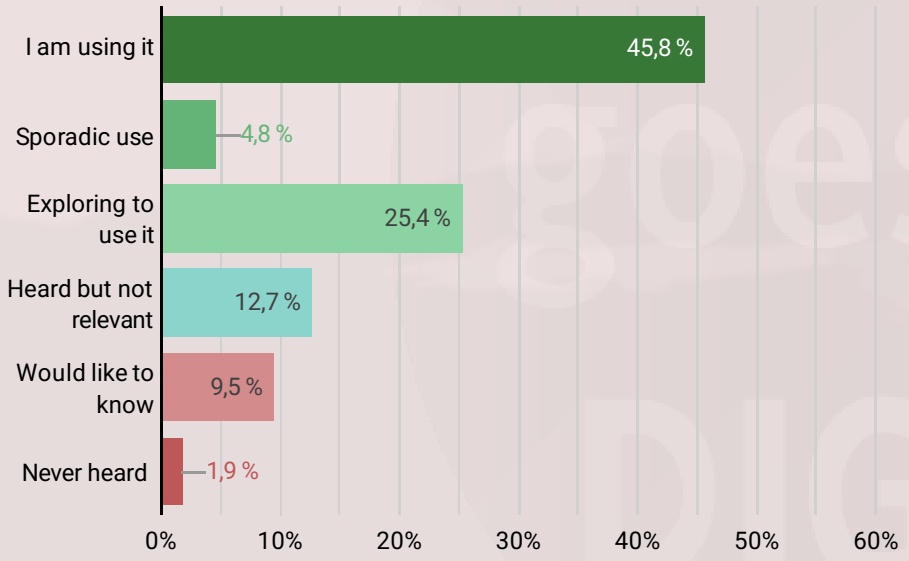
10 BMS - Building Management Systems

Software specialized in controlling and monitoring the equipment of a building in a centralized way, providing effective supervision and reports. With this technology it is possible, for example, to reduce the costs associated with energy and water consumption in a building.



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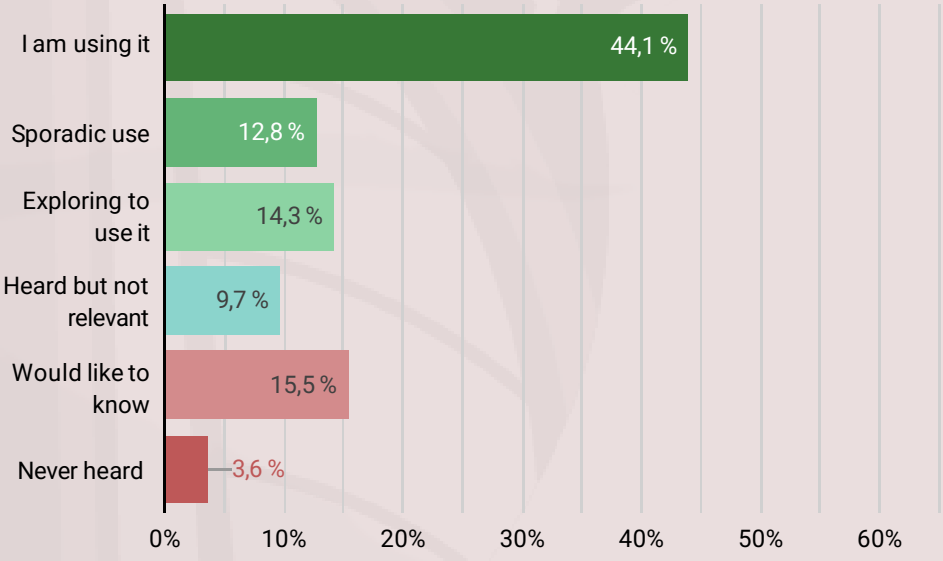

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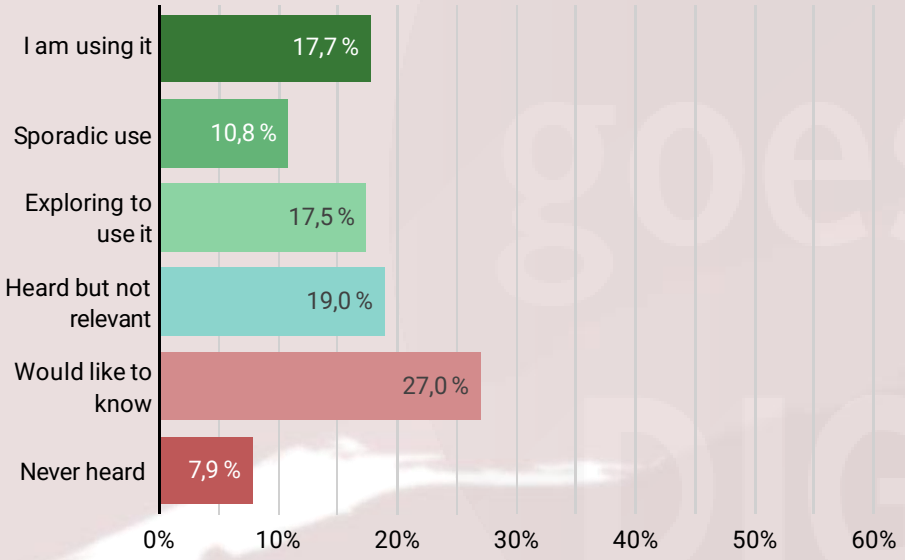
11 BI - Business Intelligence tools

Software that aids in the collection, transformation, and presentation of large amounts of both structured and unstructured data. With this software it is possible to have reports, dashboards and visualizations that allow strategic decision making based on complex information.



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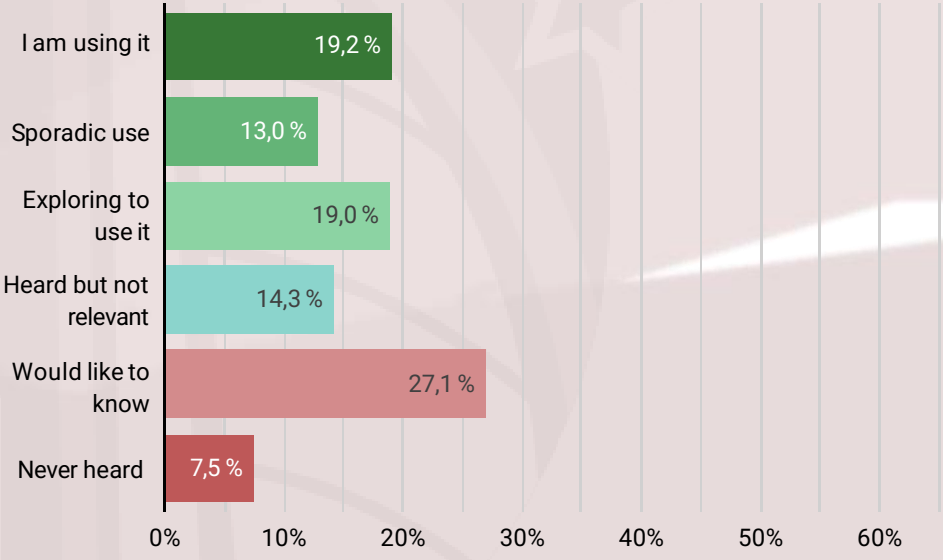

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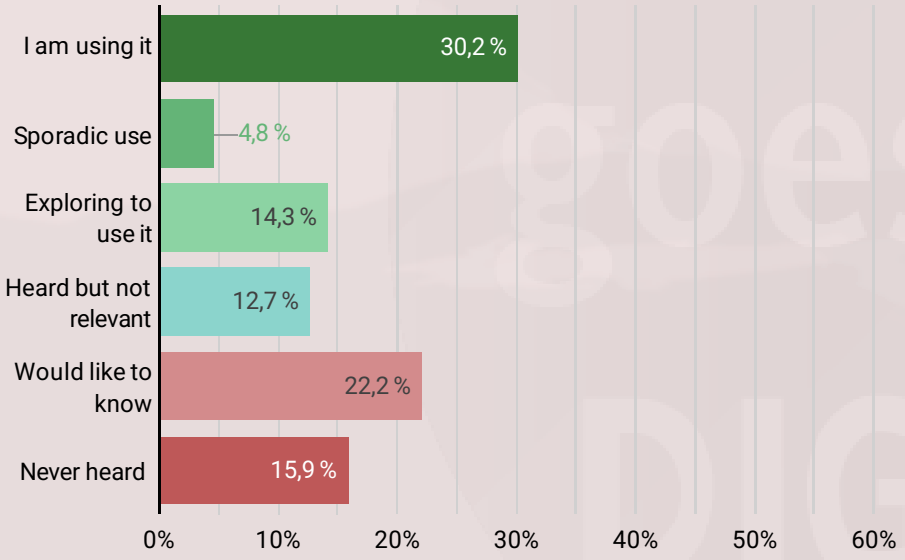
12 CAFM - Computer Assisted tools

Specialized software to coordinate activities in the physical workplace and relate it to the organization's facilities, people, and operations. With this type of tools, the management capacity and the response to requests or indecency are increased.



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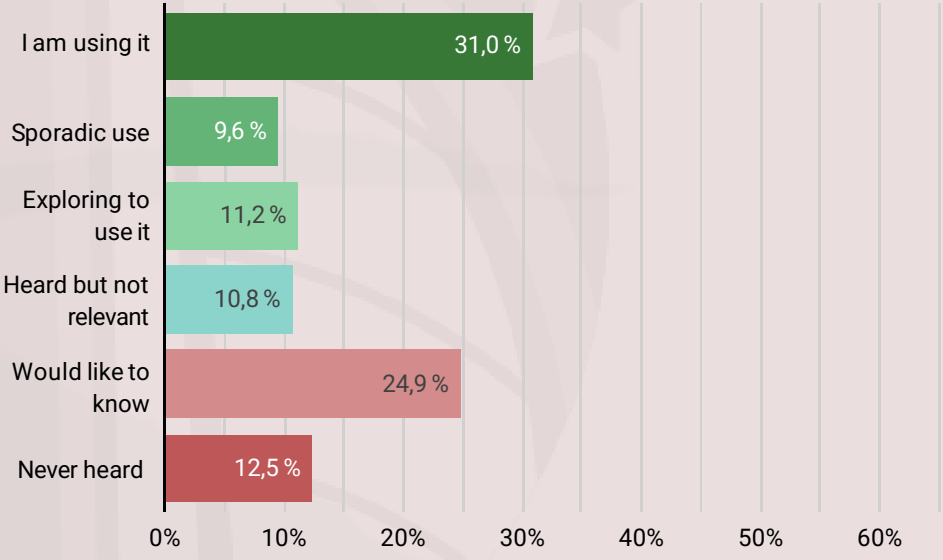

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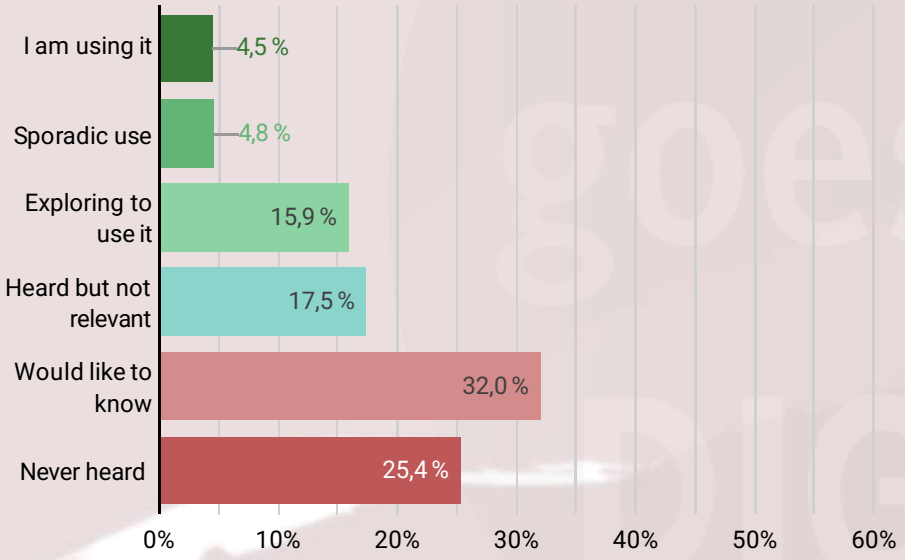
13 Digital twins models

It is the creation of a detailed digital replica of a physical asset, including systems, processes and devices. It allows monitoring and simulating behavior, identifying trends and errors, allowing action even before construction.



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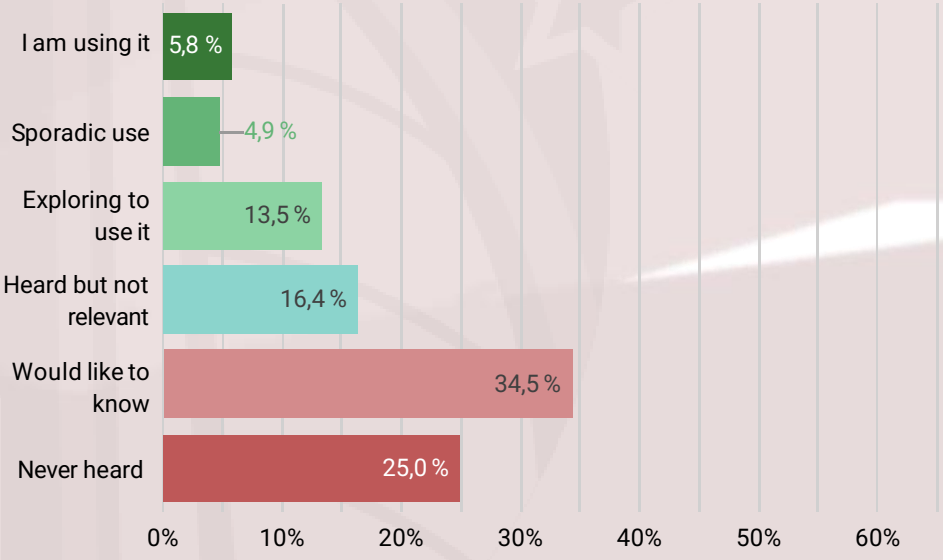

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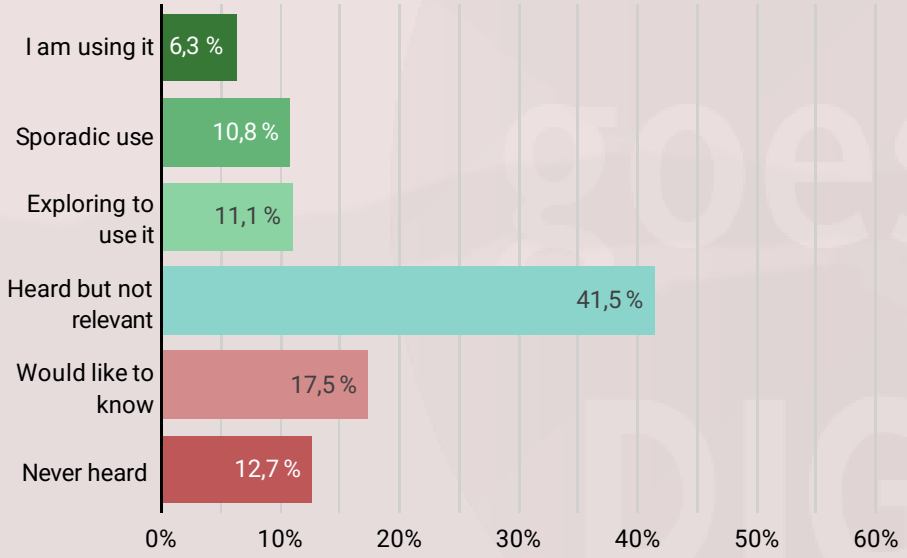
14 Drones & Microdrones

Unmanned aerial portable vehicles capable of flying over any element and carrying out visual inspections. They can transmit images of buildings, machinery, or equipment in inaccessible locations, to a remote-control point, or on land far from danger.



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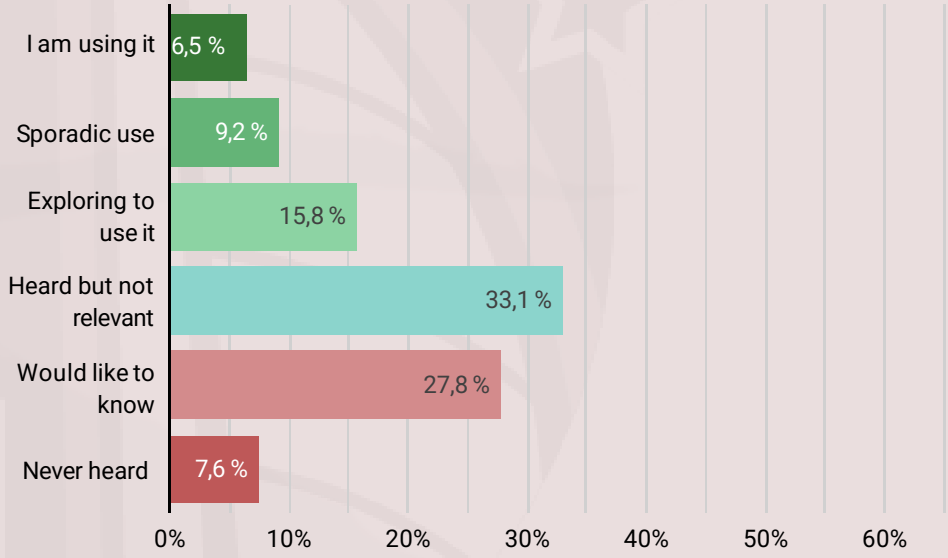

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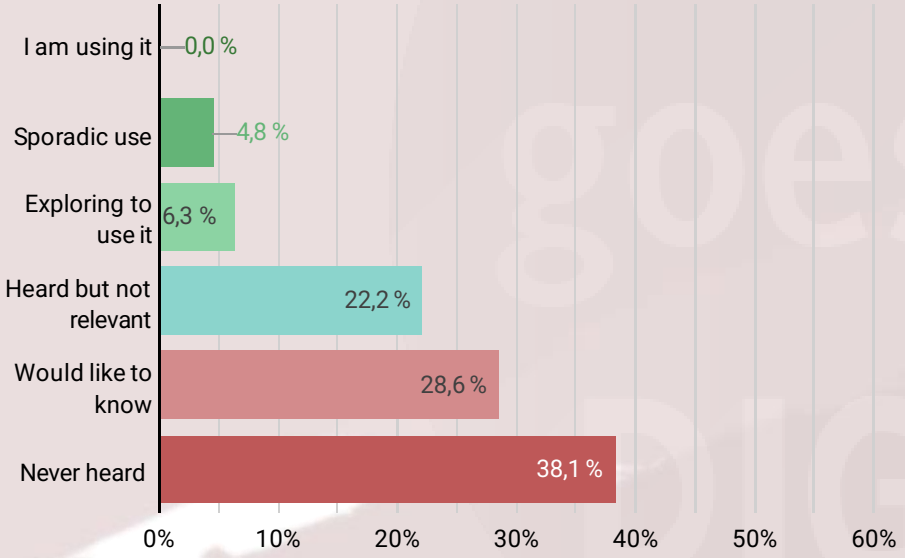
15 GD - Generative Design

It is an exploration process, where all possible permutations of a solution are contemplated, quickly generating design alternatives. With this technology, project decisions can be anticipated, improving the proposed models and quickly determining what works best.



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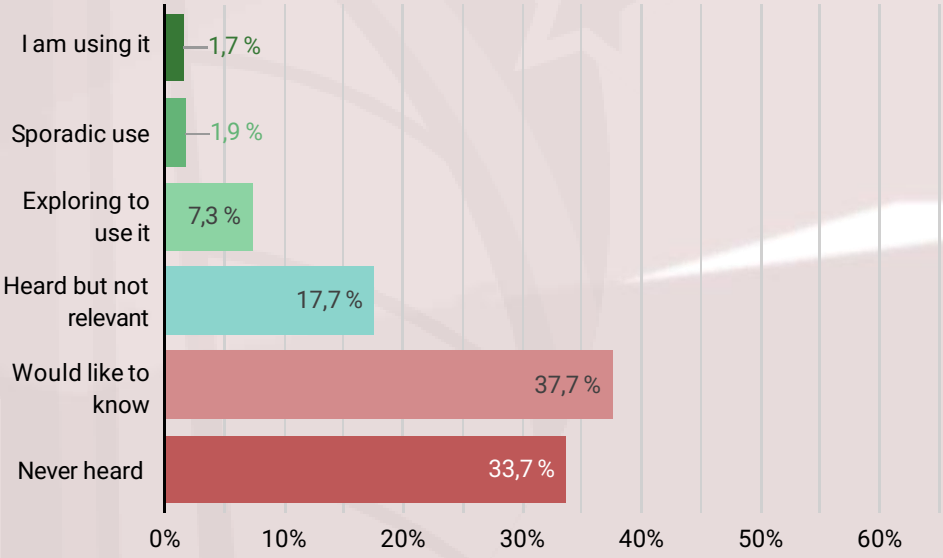

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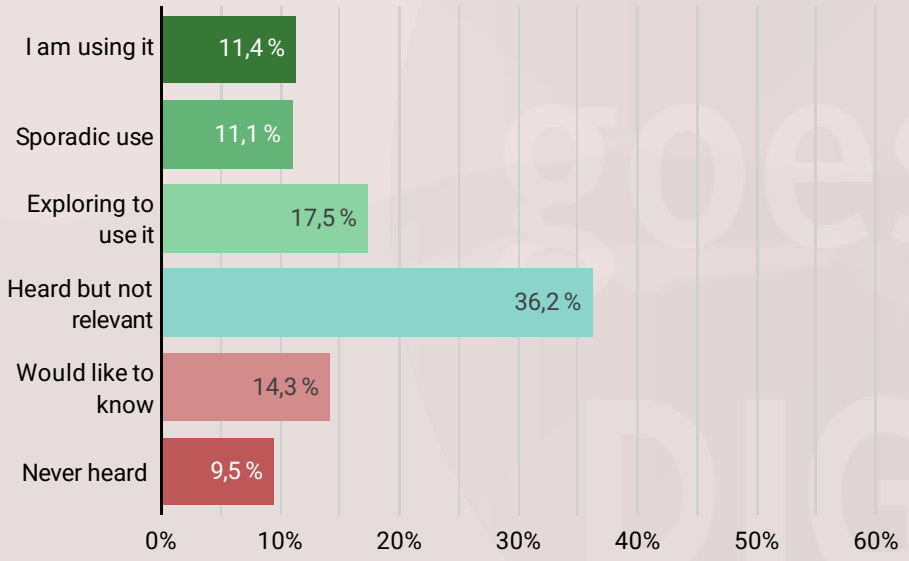
16 GIS - Geographic Information Systems

Complex methods that allow the use of spatial location and associate layers of information using maps and 3D scenes, helping to collect, manage and analyze geographic data.



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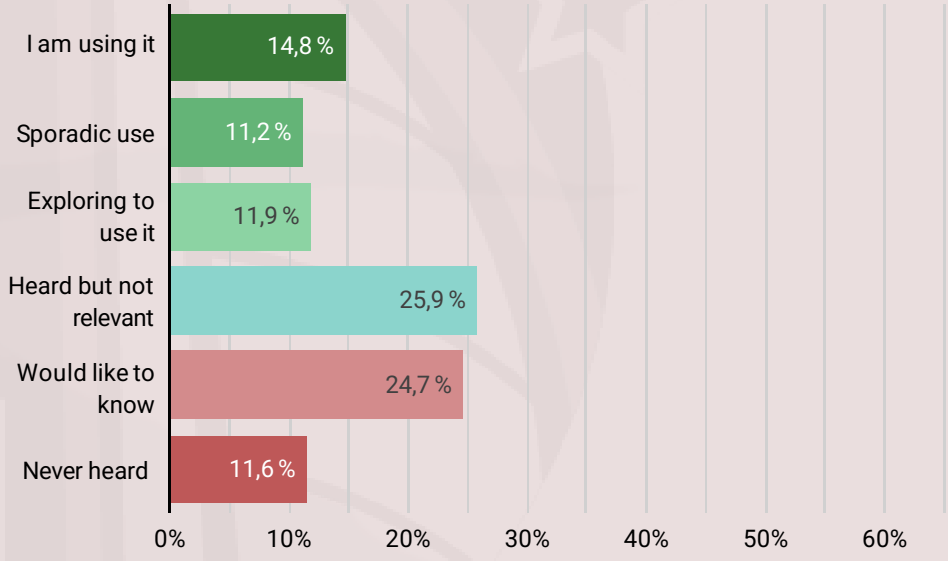

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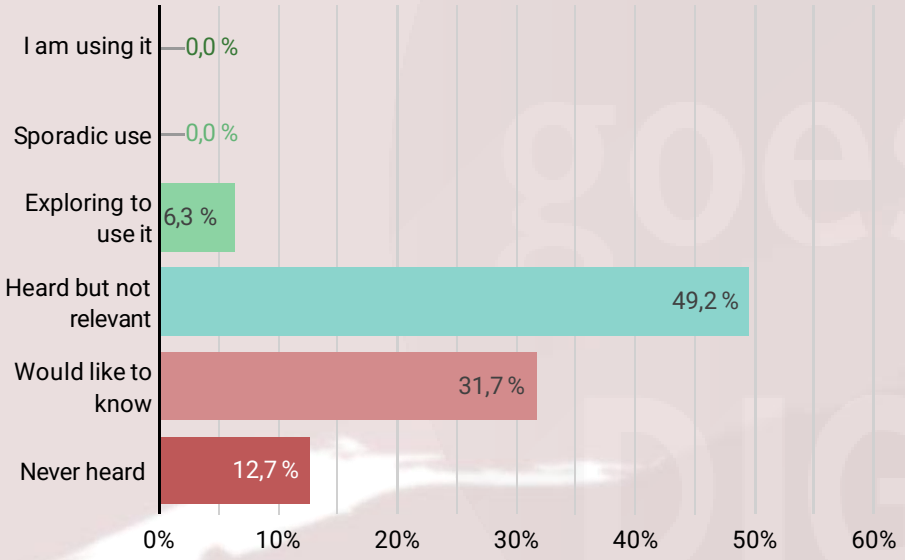
17 Holograms

It is an advanced photography technique that consists of creating three-dimensional images based on the use of light. They are connected to artificial intelligence programs that simulate people or scenes with volume and depth.



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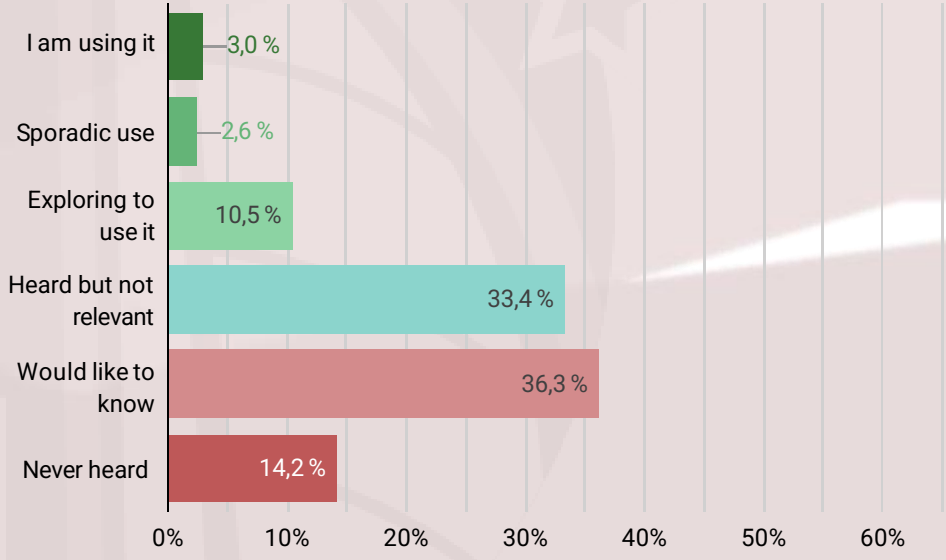

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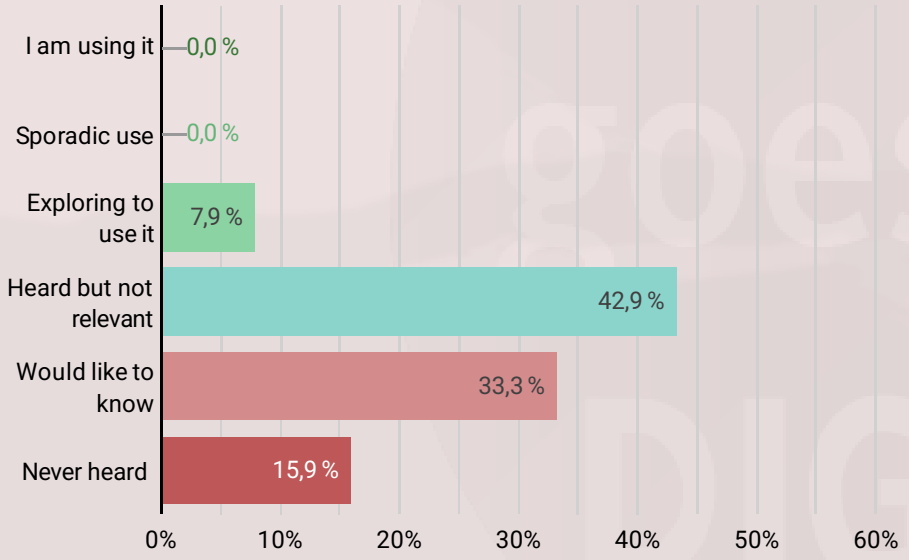
18 Human Augmentation

It is cognitive and physical enhancement by adding or expanding (bodily) functions with the help of technological means. It is mainly used to increase physical capacities in the development of routine activities such as maintenance and construction.



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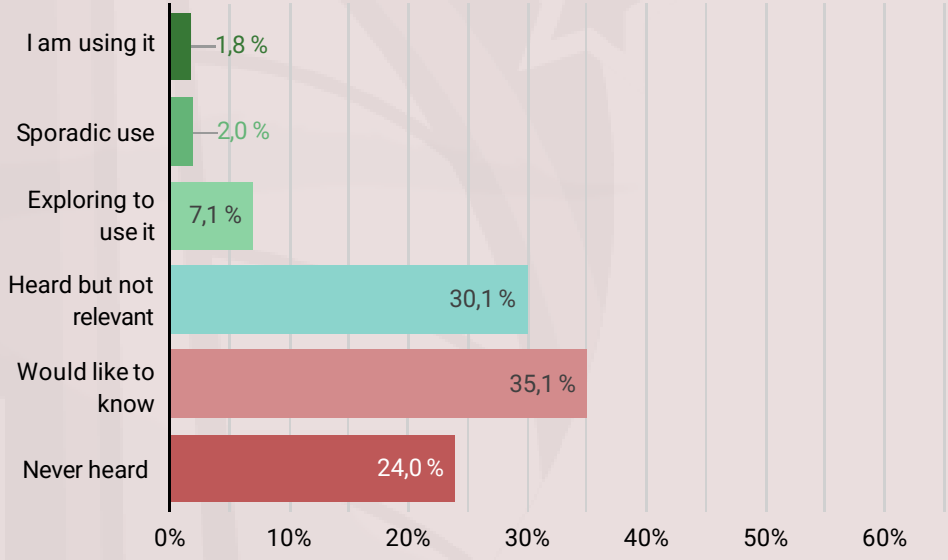

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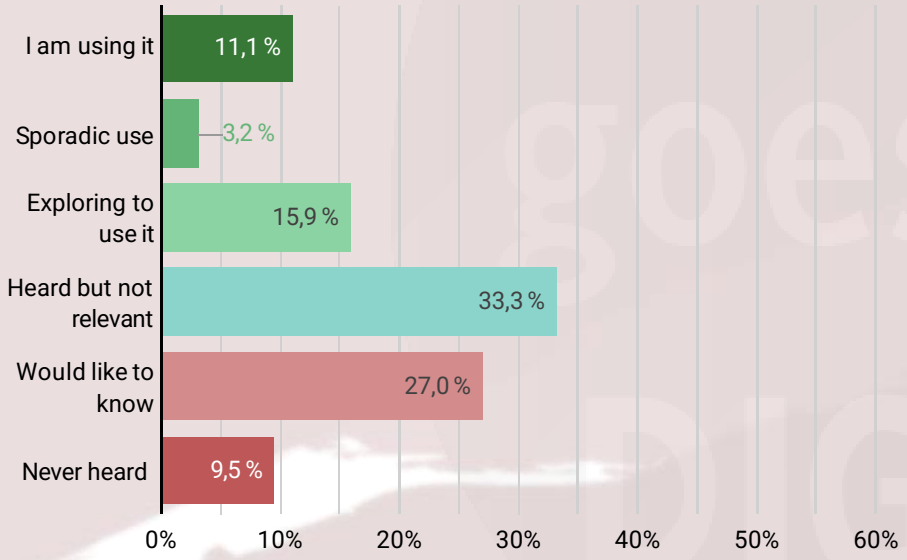
19 INS - Indoor Navigation Systems

It consists of creating a map of the interior of a building, which is displayed in an application or in a browser window and allows you to search for places and be guided to a specific point with interactive instructions.



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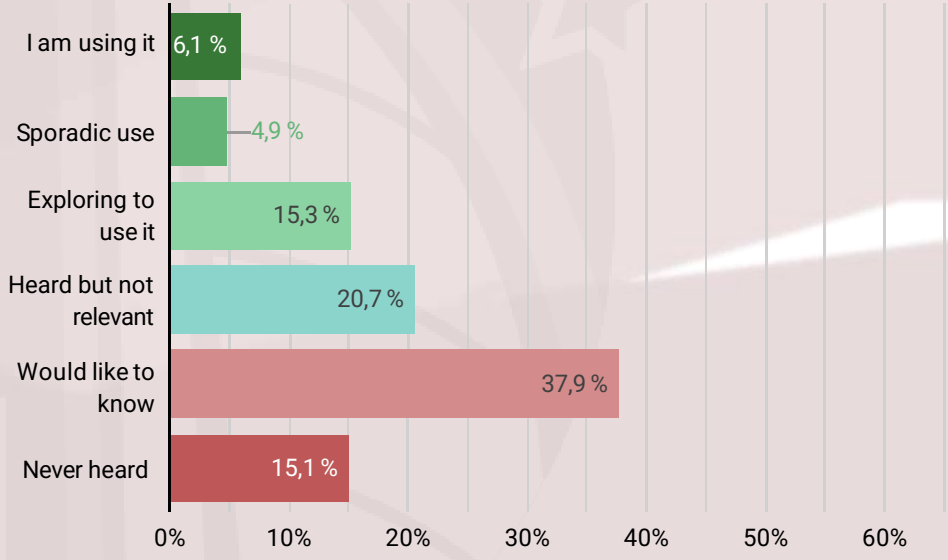

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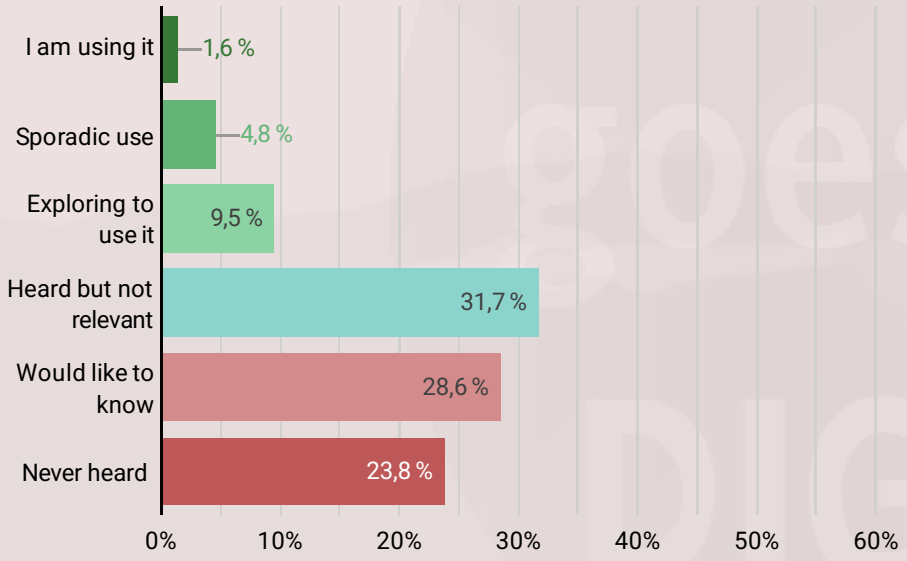
20 LIDAR - Laser Imaging Detection and Ranging

It is a remote sensing method that uses light in the form of a pulsed laser to measure ranges (varying distances) to Earth. This technology allows inspections of spaces and generation of plans automatically with high precision.



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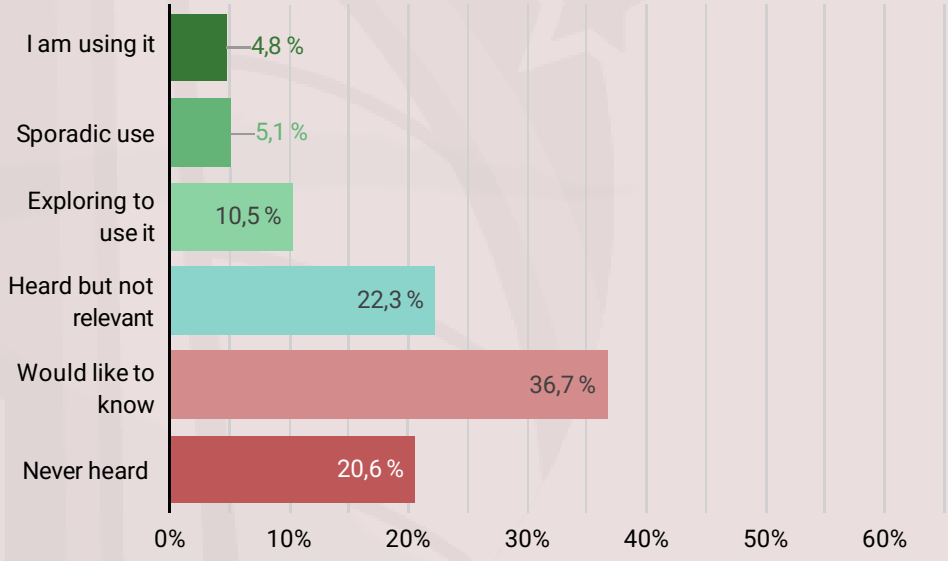

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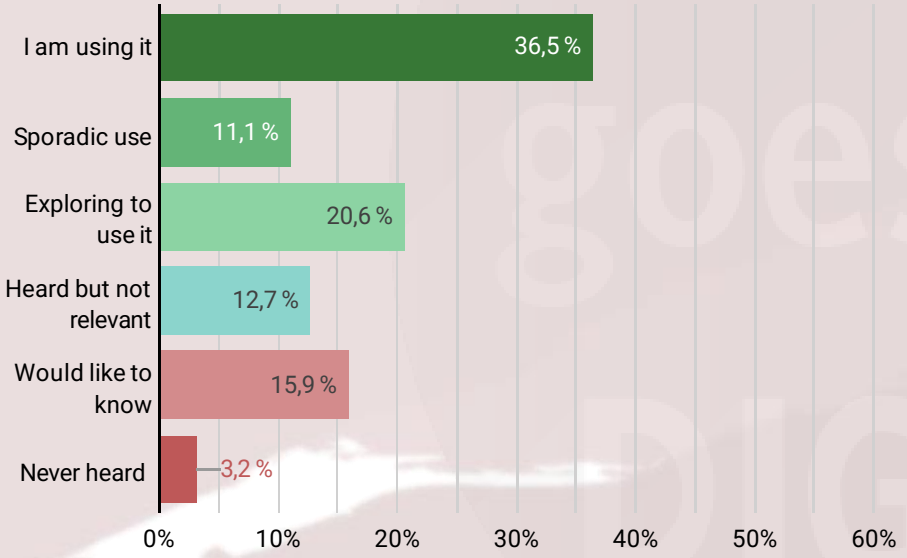
21 Applications for Mobile Devices

It is a type of software designed to run on a mobile device, such as a smartphone or tablet. This technology has been widely applied for all kinds of needs, especially for the improvement of user experience, effective control of facilities and service management.



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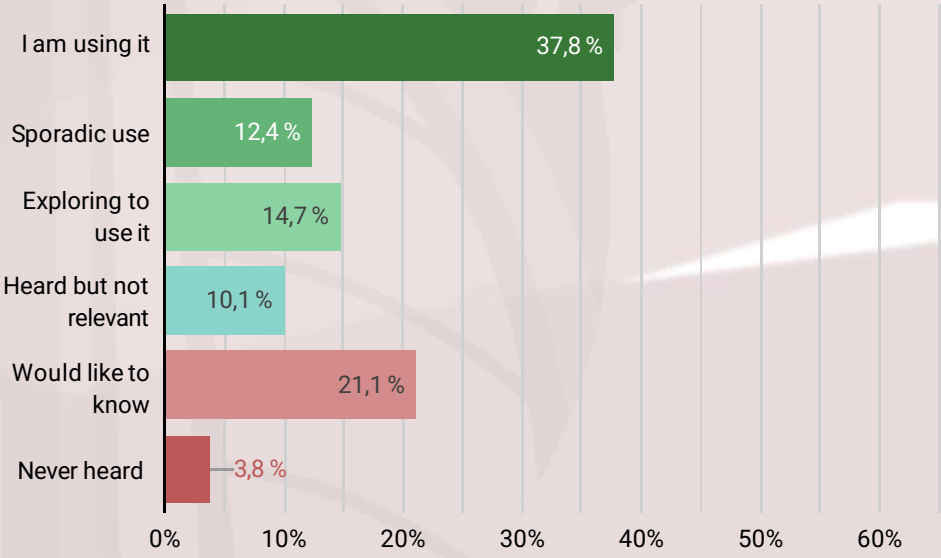

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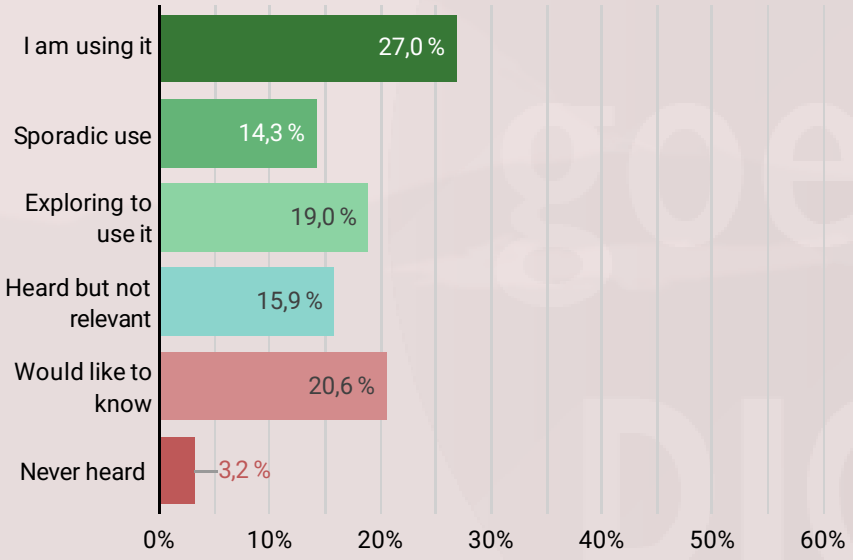
22 Remote Maintenance Services

Application of specific software on local systems, which can be accessed from another location, creating the appropriate means to monitor and control maintenance activities remotely.



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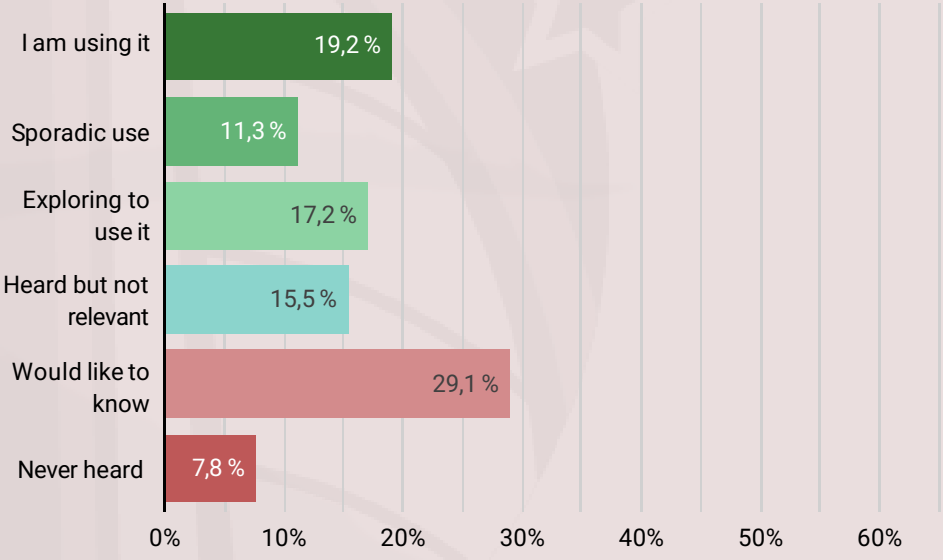

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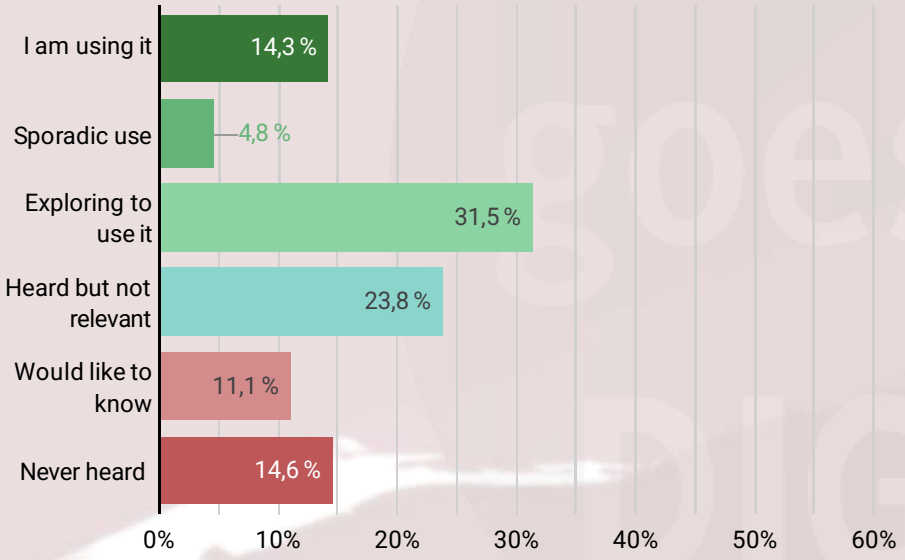
23 RFID - Radio Frequency Identification

They are remote data storage and retrieval systems that use devices called RFID tags, cards, or transponders. The fundamental purpose of RFID technology is to transmit the identity of an object (similar to a unique serial number) through radio waves, improving access, inventory and logistics control systems.



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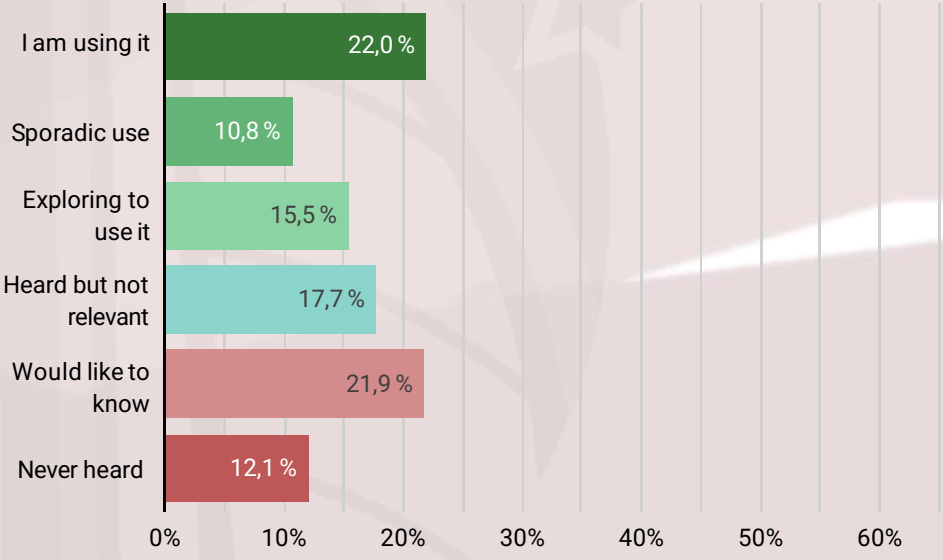

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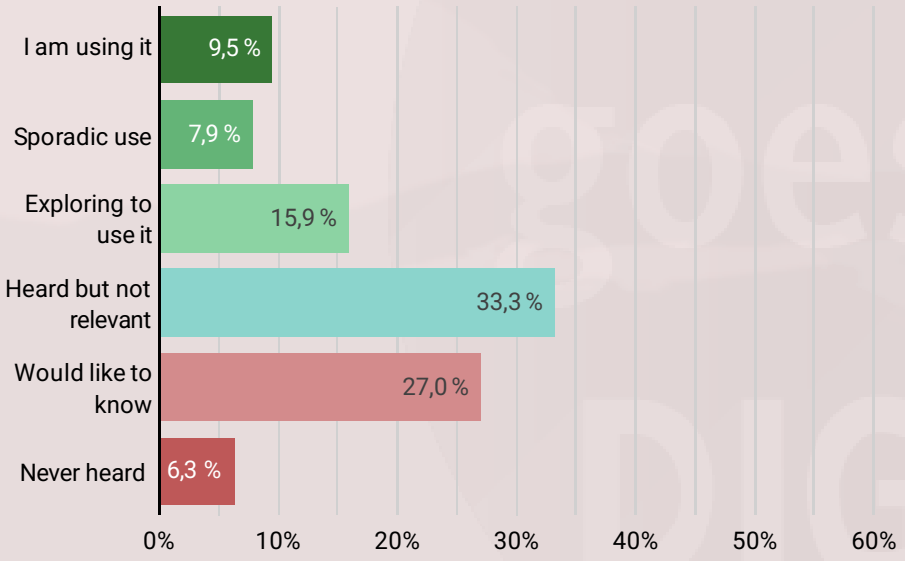
24 Robots

Autonomous machines capable of sensing their environment, performing calculations to make decisions, and take action in the real world. Commonly used in cleaning tasks, receiving users or in high-risk activities.



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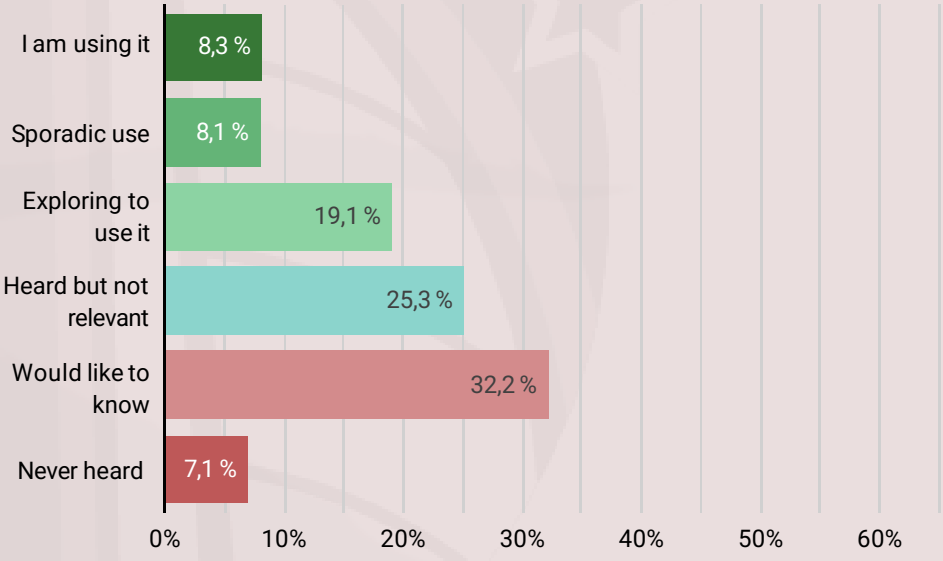

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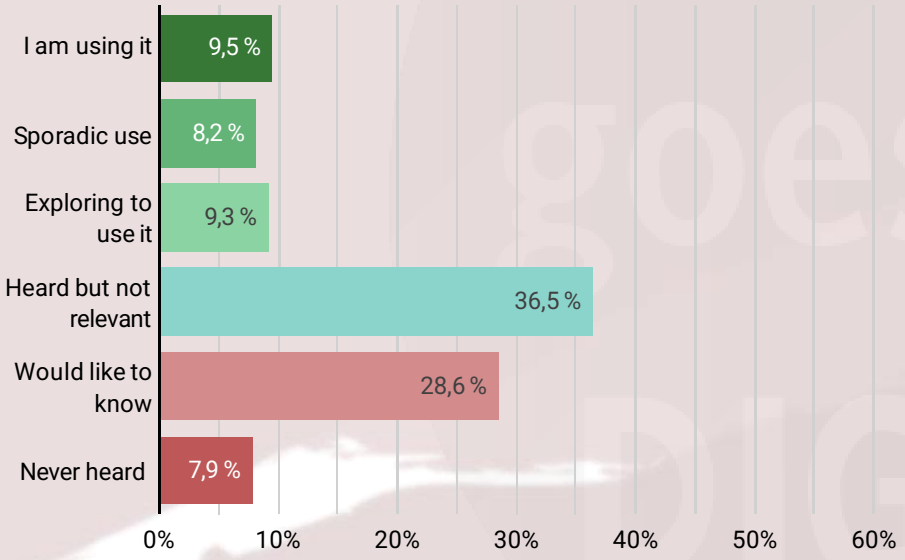
25 VA - Virtual Assistants

It is a software agent that can perform tasks or services for a person based on commands or questions. The term "chatbot" is sometimes used to refer to virtual assistants that are accessed generally or specifically through online chat.



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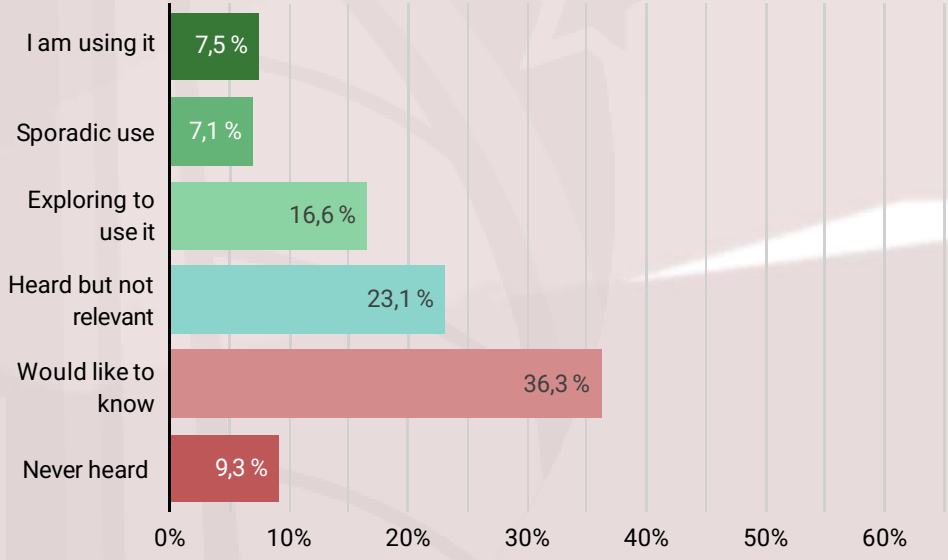

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observatoriofm@fm-house.com

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