BENEFITS AND OPPORTUNITIES OF ITALIAN CERTIFIED EMAIL (PEC): A CORNERSTONE OF DIGITAL TRUST SERVICES OF THE FUTURE

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Introduction

European policymakers and senior civil servants are looking for new ways to deliver citizen-centric services while reducing costs. The focus on the citizen-centric vision is widely shared across stakeholders, but the implementation of this vision must balance multiple challenges. Service quality, various budget priorities, legacy processes and systems, lack of skills, the "how to make" a citizen-oriented culture more pervasive among administrations, and the gap in digital literacy among citizens, businesses, and civil servants are at the top the challenge list.

Technology-enabled innovation is now more than ever a top priority for policymakers and senior public officials. The European Digital Compass[1] states, "By 2030, the EU's objective is to ensure that democratic life and public services online will be fully accessible for everyone, including persons with disabilities, and benefit from a best–in-class digital environment providing for easy-to-use, efficient, and personalized services and tools with high security and privacy standards." In line with this, the Italian National Recovery and Resilience Plan (PNRR) defines the following priority:[2] "Transforming Public Administration, making it simpler for citizens and businesses by reducing time and costs and contributing to the creation of new jobs."

AT A GLANCE

With the PEC (Posta Elettronica Certificata – Certified Email), Italy has paved the way for the whole of Europe in terms of digital trust services. Reaching various spheres of economic and social life, the benefits of the PEC go well beyond simplifying administrative procedures and practices.

KEY STATS

- IDC predicts that in 2026, there will be 20 million active PEC addresses in Italy, with a total of nearly 3.5 billion certified messages sent.
- In Italy for 2008–2022 period, the cumulative economic benefits derived from the use of the PEC amounted to roughly €3.5 billion.
- It is estimated that by 2026, this cumulative value will increase to €6 billion.

KEY TAKEAWAYS

The PEC serves as a cornerstone of digital trust services in Italy and is evolving within new frameworks and use cases.

The building blocks of this citizen- and business-centric vision are the principles and programs to make public (and private) digital services secure and inclusive, ensuring that European citizens have full trust in the digital world. This is why the European Union and member states have designed a legislative architecture, an interoperability framework, and good governance practices to provide digital trust services, from user identification and content certification to the secure transmission and storage of data and documents.

[1] eufordigital.eu/library/2030-digital-compass-the-european-way-for-the-digital-decade/
[2] www.italiadomani.gov.it/content/sogei-ng/it/en/il-piano/missioni-pnrr/digitalizzazione-e-innovazione.html

Italy has been a pioneer of trust services, with the Digital Administration Code[3] (Codice dell'Amministrazione Digitale), collecting and organizing rules regarding the digitalization of public administration (hereinafter also referred to as PA) in its interactions with citizens and businesses. These services have expanded over time and now include, for example, certified email, digital signatures[4], digital identity services such as SPID[5] (Sistema Pubblico di Identità Digitale – Public Digital Identity System), and CIE[6] (Carta di Identità Elettronica – Electronic ID). The widespread adoption of such digital trust services has not only streamlined and increased the security of interactions between public administrations, citizens, and businesses, but has also found extensive applications in the private sector.

With approximately 15 million active PEC[7] accounts and 2.5 billion messages sent in 2022, Italy's certified email system is the most popular trust service in the country, with widescale positive impacts, such as:

- Greater transparency and certainty in legally binding correspondence
- Reduction of travel costs and consequent decrease in emissions
- Increase in productivity, both in terms of postal cost reduction and savings in hours of work/full-time equivalent (FTE)
- Reduction of paper waste and consequent savings in storage space

Italy's investments in digital trust services have certainly not stopped there. The most recent example was the launch of the Digital Domicile[8] (Domicilio Digitale) platform, which has paved the way for the further expansion of use cases around digital trust services.

The Future of Secure Digital Services in the European Context

With the establishment of the "Digital Decade 2030" program, the European Union aims to achieve a shared goal with all member states: ensuring the advancement and widespread use of both traditional and emerging technologies by providing individuals and businesses with the tools for an inclusive, sustainable, and prosperous future.

This plan is based on four strategic goals:

1. **Design and deliver digital infrastructures to ensure security, sovereignty, and sustainability.** The increased use of digital services, accelerated by the pandemic, has highlighted the need for Europe to invest in security, digital sovereignty, and environmental sustainability to boost technological infrastructure.
2. **Digitalize the citizen experience offered by public administrations.** Public administrations are redesigning processes and integrating databases to ensure digital services are streamlined, user friendly, and aligned with key principles, such as requesting citizen data only once in a lifetime ("once only").

[3] docs.italia.it/italia/piano-triennale-ict/codice-amministrazione-digitale-docs/it/v2021-07-30/index.html
[4] www.agid.gov.it/en/platforms/qualified-electronic-signature
[5] www.agid.gov.it/en/platforms/spid
[6] www.cartaidentita.interno.gov.it/en/home/
[7] www.agid.gov.it/it/piattaforme/posta-elettronica-certificata/statistiche-utilizzo-pec
[8] domiciliodigitale.gov.it/dgit/home/public/#!/home

3. **Position technological innovation as a lever of competitiveness for the private sector.** Technological innovation is a fundamental key for the private sector to gain competitiveness at the European and global level, creating jobs of the future.
4. **Align digital skills with the Future of Work in the third millennium.** Workers from all member states must be able to use digital devices and services to remain competitive in the workforce and take advantage of intuitive services.

Pivotal in achieving the goals presented by "Digital Decade 2030" is the principle of **digital trust**. It is intended to ensure that different public and private entities, using common standards, are digitally recognized and accredited, ensuring the reliability of the exchange, transmission, and storage of content. Benefits are seen in increased communication security and reduced costs. The European regulatory framework for digital trust services is evolving to ensure that identity management, access to online accounts, interactions with public administration, and commercial interactions occur securely and transparently. An example of this is the eIDAS regulation (Electronic Identification, Authentication, and Trust Services).[9] With this regulation, the European Union defines a legal framework aimed at providing greater simplicity, convenience, and security for the various public and private entities operating in the digital world, with a particular focus on:

- Allowing individuals and businesses to use national electronic identification systems to access online public services available in other EU countries.
- Creating a European single market for digital trust services that can operate seamlessly across borders and have the same legal status as their traditional paper equivalents.

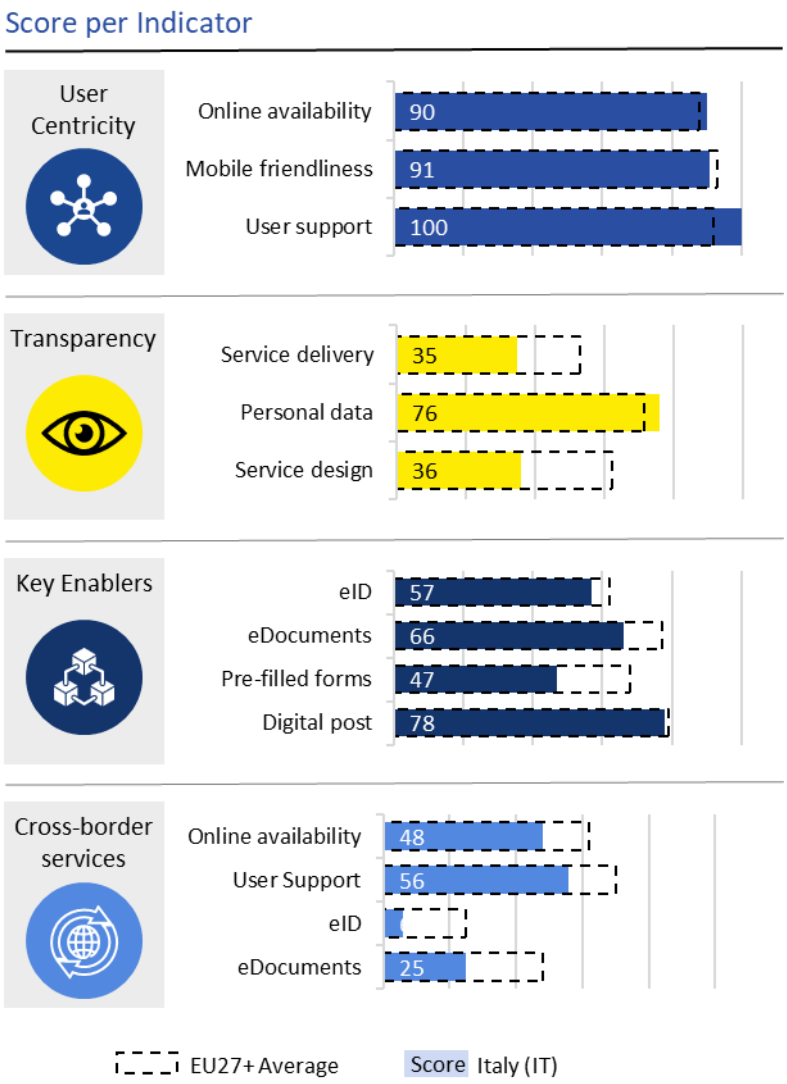
The implementation of eIDAS 2.0 in Europe aims to make life easier for citizens and businesses when they need to file tax returns, open bank accounts, enroll in schools and universities, make electronic payments online, submit bids for tenders online, and validate commercial and transportation contracts — both in their own country and in exchanges between European countries.

Digital Trust Services: The Italian Experience

In 2024, the implementation of the first version of eIDAS led to the development of many digital trust services at the member state level. Leading Italian examples in this field include the PEC certified email system (a precursor to eIDAS), the SPID authentication service, and the CIE. These electronic services are making Italy a front-runner in Europe. According to the latest edition of the EU's annual eGovernment Benchmark,[10] Italy is in line with the European average or in a better position compared to other countries regarding the availability of online services, transparency in the use of personal data, and communication using certified mail.

[9] digital-strategy.ec.europa.eu/it/policies/eidas-regulation
[10] digital-strategy.ec.europa.eu/en/library/egovernment-benchmark-2023

FIGURE 1
EU eGovernment Benchmark 2023



Source: European Commission, based on analyses provided by Capgemini, IDC, and Politecnico di Milano, 2023

However, as in most other EU countries, the usability of such services across the wider region is limited. In fact, services such as the PEC, despite anticipating the rules introduced by eIDAS, have no validity beyond national borders, and Italian citizens who have relations (of any nature and extent) with subjects residing in other member states cannot make use of such trusted services. For this reason, the EU is promoting common standards, such as the REM (Registered Electronic Mail), which will have the power to transform the Italian PEC into a **"European PEC,"** allowing Italian citizens, companies, and public administrations to exchange certified emails with legal validity beyond the country's borders.

The PEC is just one piece of the broader framework of Italian digital trust services. In fact, the coordinated action of the Agency for Digital Italy (AgID – Agenzia per l'Italia Digitale) and the ecosystem of qualified digital trust service providers has facilitated the development of a wide range of digital trust services for citizens, businesses, and public administrations.

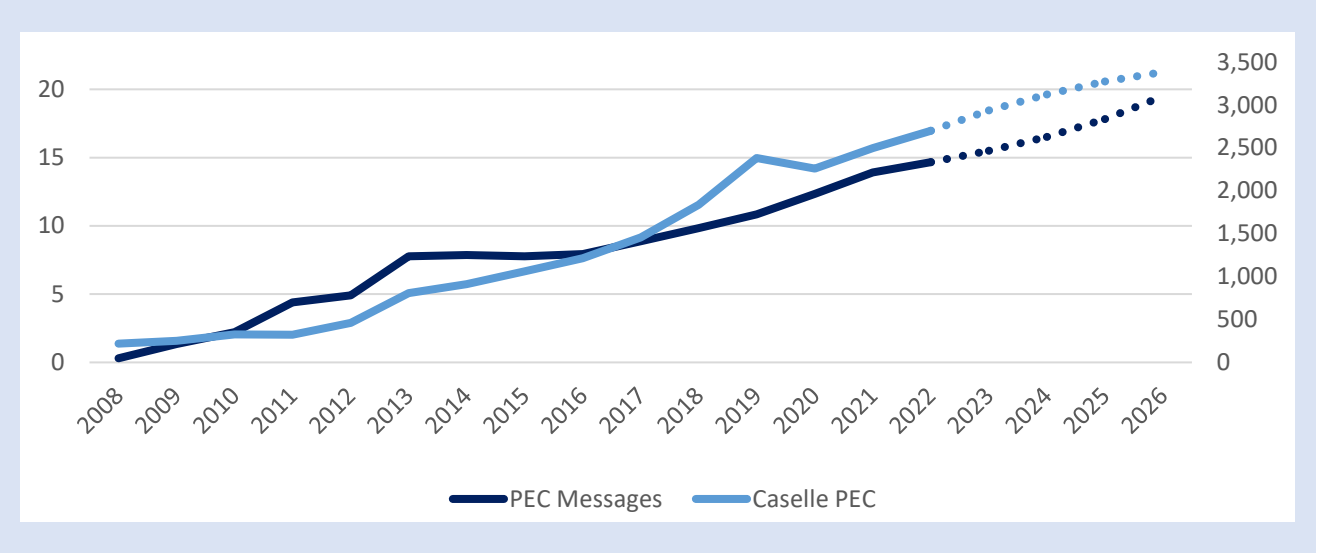
- **PEC:** A certified email system, for which Italy is the leader in terms of introduction and extensive use, that guarantees trusted electronic communications. The PEC guarantees legal validity, integrity, and authenticity of communications, enhancing the security and reliability of any exchanges.
- **SPID:** A digital identification service that allows citizens to access online services provided by public or private entities in a secure and reliable manner.
- **CIE:** The new electronic identity card, combining traditional identification functions with digital capabilities, allows citizens to authenticate themselves online securely so they can use digital services. SPID and CIE are distinct tools, but their usage is comparable within the realm of online authentication and digitalization of processes.
- **Digital Signature:** An advanced method for signing documents or digital messages with the aim of ensuring the authenticity, integrity, and non-repudiation of content, as only the signatory has the ability to sign the documents with a proprietary cryptographic key. Unlike SPID and CIE, this tool is valid and recognized outside Italian jurisdiction as well.
- **Digital Domicile:** Starting from June 6, 2023, adult citizens who hold a PEC address can elect their own digital domicile on INAD (Indice Nazionale dei Domicili Digitali – National Index of Digital Domiciles). The regulation aims to create a public registry of digital domiciles for citizens, where valid digital domiciles can be consulted for all communications with legal significance regarding citizens who have registered. The entity sending communications through the digital domicile will be able to rely on immediate confirmation of receipt.

The mandatory use of the PEC for public administrations, especially for official communications between offices and various entities within public administration, or for professionals communicating with public administrations (e.g., lawyers needing to communicate with court clerks), has made the PEC one of the most widely used digital trust services. It has also gradually extended its application to communications between individuals. The number of citizens who own a PEC address is increasing, and it is expected that the introduction of digital domiciles will further increase the number of users and the number of messages exchanged.

If the digital domicile becomes a regulatory requirement for citizens, the PEC could become the preferred channel for communications with legal value, replacing traditional postal communications. This quantitative analysis is based on a conservative assumption that by 2026, just under 18% of citizens aged between 18 and 65 will have their own PEC account. As of today, the development of the relationship between citizens and public administration on one side, and between citizens and businesses on the other, is still in a preliminary stage, but shows greater growth potential in the medium term.

FIGURE 2

Trend of PEC Accounts and Messages, 2008–2026 (Millions)

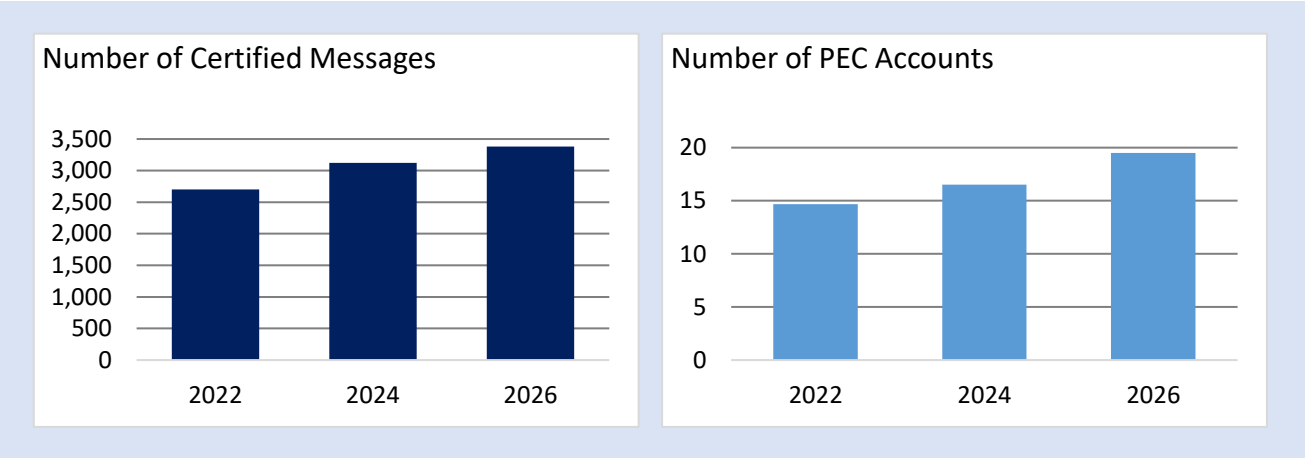


Source: IDC analysis of AgID data, 2023

The data presented in Figures 2 and 3 show that both the number of PEC accounts and number of messages received will increase. This growth is happening in the context of near saturation in the public administration market, and almost equally so in the enterprise market, where new PEC addresses will only be created in the case of new companies being established. IDC estimates that by 2026, there will be 20 million PEC addresses in Italy that will send approximately almost 3.5 billion certified messages.

FIGURE 3

Number of Messages and PEC Accounts (Millions)



Source: IDC analysis of AgID data, 2023

Current and Future Use Cases in Public Administrations

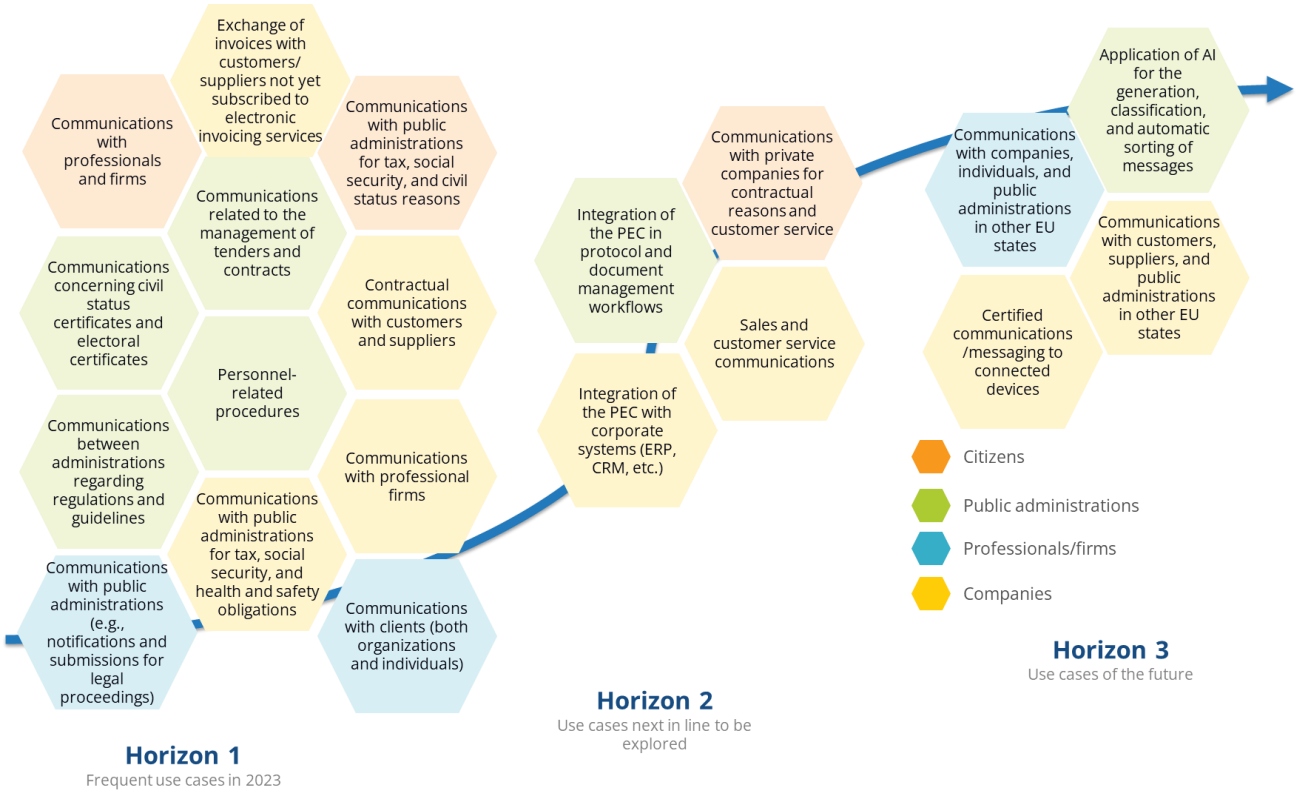
The PEC has been a daily tool for many years for public administrations, both in their interactions with each other and with citizens and businesses. It is used for communications related to citizen registries and electoral records between municipalities and other entities, for handling civil service HR management cases and related social security obligations, for managing public tender processes and supply contracts, and for large central administrations like ministries and authorities that exchange official communications regarding decrees, regulations, and guidelines.

For some sectors of the public administration, the PEC constitutes the backbone of digital services. For example, in the justice ecosystem, the PEC serves as the IT infrastructure for the electronic civil process. Each judicial office has a PEC address to receive electronic filings from law firms. Each filing consists of a PEC exchange flow with XML attachments. Each submission corresponds to a second PEC that includes the receipt. Then, for each office, there are automatic controls to verify if the filing is formally correct; at this point, a second confirmation receipt is sent, and the filing is transmitted to the registry. The registry conducts eligibility checks and sends an additional confirmation PEC message.

Despite the widespread use of the PEC in public administrations, there is still ample room to better exploit its potential. Specifically, there is the opportunity to better integrate the PEC tool with other systems that support document workflows and archiving, not only to further reduce the need to print, sign, and scan documents but also to speed up the distribution of PEC messages from each administration's central mailbox to the relevant offices in various fields. In certain areas, such as the aforementioned justice sector, such integration is already in place. However, most public administrations are still in the initial stages of implementing APIs, artificial intelligence, and robotic process automation tools aimed at maximizing the benefits for employees and citizens.

FIGURE 4

The Horizon of Use Cases for the PEC



Source: IDC, 2023

Current and Future Use Cases for Companies

For businesses, the PEC has led to significant cost and time savings thanks to a major streamlining of bureaucratic procedures in relation to everything from sending fiscal and social security documents to managing workplace health and safety obligations. Considering the current widespread use of PEC messages in relationships between businesses and public administrations, its future potential lies in the relationship between businesses and citizens. This ranges from contracts with suppliers, banking, and credit institutions, such as for financing for the purchase of capital goods, to mass communication with clients (e.g., updating price lists). In this case, as with public administrations, to maximize benefits, investments should focus on a more seamless integration of PEC services with other business tools, such as CRM (customer relationship management) and ERP (enterprise resource planning) systems. Finally, for the over 100,000 Italian companies that export products and services,[11] the extension of PEC communications to clients, suppliers, and public administrations in other European countries is of particular interest.

[11] www.corriere.it/economia/aziende/23_ottobre_06/export-qual-l-andamento-imprese-italiane-luglio-calo- 77percento-5a660826-6381-11ee-a93d-90604c651c50.shtml

Current and Future Use Cases for Professionals

For lawyers, accountants, and other professional firms, the PEC has become an "essential everyday tool" from which "there is no going back", as testified by one of the law firms interviewed by IDC during this research.

Even in small to medium-sized firms, professionals send at least five or six PEC emails per day for indemnity requests, warnings, default notices, and other communications. In 95% of cases, it has become unnecessary to visit post offices and public administrations, eliminating a significant amount of work that junior staff used to perform, such as filing documents and sending traditional mails. This precious time can be reallocated to value-added tasks such as research, studies, and drafting consultation briefs for clients.

Current and Future Use Cases for Private Citizens

PEC accounts have also become somewhat popular among private citizens, particularly early adopters who are familiar with digital technologies. However, the system is not widely used, with usage often limited to official communications with public administrations, utility companies (electricity, telecommunications, pay TV, etc.), and interactions with accountants, lawyers, and property managers.

The benefits, however, are already there and outweigh the annual subscription cost. For example, the PEC eliminates the need to visit a post office or public administration office, and it also avoids having to navigate through call centers that "bounce the consumer" from one operator to another. The Digital Domicile system, as a tool for guaranteeing the security of communications with public administrations, along with the desire to extend this reliability to contractual and customer service communications with banks, insurance companies, and other businesses, promises to further expand the use of PEC among private citizens.

Capitalizing on the PEC for the Future of Trust Services

With around 15 million active[12] mailboxes and over 2.5 billion messages sent in 2022, the PEC is the most widely used trust service in Italy. The prospective proliferation of this tool, spurred by greater adoption among private citizens, will lead to an expansion of its benefits.

The most significant financial benefit of using the PEC is the cost savings derived from replacing a pricing system based on the weight of individual paper correspondence with a subscription-based pricing system that has no limit on messages. The costs associated with sending paper communications far outweigh those incurred from using a PEC-certified email address.

Beyond the primary economic impact on users, PEC usage also generates additional positive outcomes. These benefits, which IDC highlights and presents in this document with a focus on the important underlying economic and sustainability themes, are as follows: reduction in travel/mileage, decrease in CO2 emissions, elimination of waiting times at post offices, reduction of document storage space, and reduction of trees being knocked down.

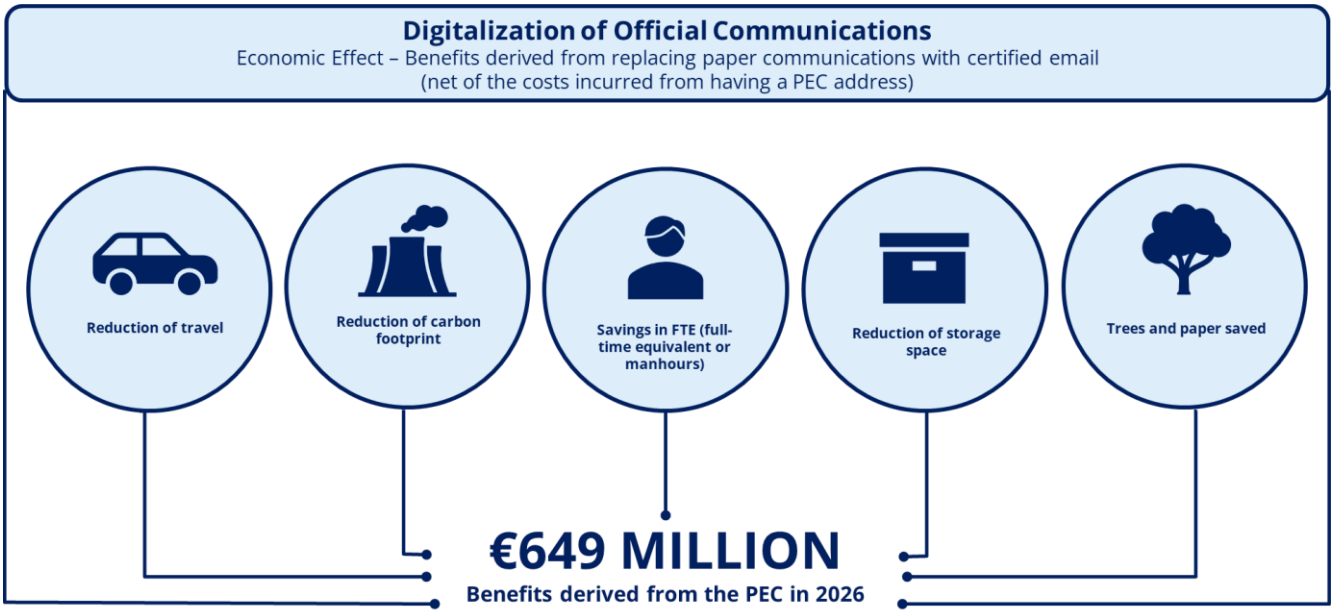
[12] www.agid.gov.it/it/piattaforme/posta-elettronica-certificata/statistiche-utilizzo-pec

Based on the analysis of historical data, in 2026 alone, the total net benefits of using PEC messages will amount to approximately €650 million. With specific reference to data on secondary benefits concerning economic and sustainability issues, IDC expects:

- 349 million kilometers of unnecessary travel to be saved, thanks to the elimination of trips to post offices, public offices, and company headquarters;
- 107,000 tons of CO2 not to be emitted, due to the drastic reduction in travel impacting the carbon footprint of individuals and organizations;
- 3,113 FTEs13 to be saved, thanks to the immediacy of document exchanges and the reduction of travel and waiting times at post offices;
- 1.7 million square meters of archive space to be saved;
- 70,921 trees to be saved due to the reduced use of paper.

These material benefits could not exist without the immaterial pillar of PEC, namely its value in terms of certainty, transparency, and thus confidence in communications.

FIGURE 5
Benefits Derived from Using the PEC in Place of Traditional Mail

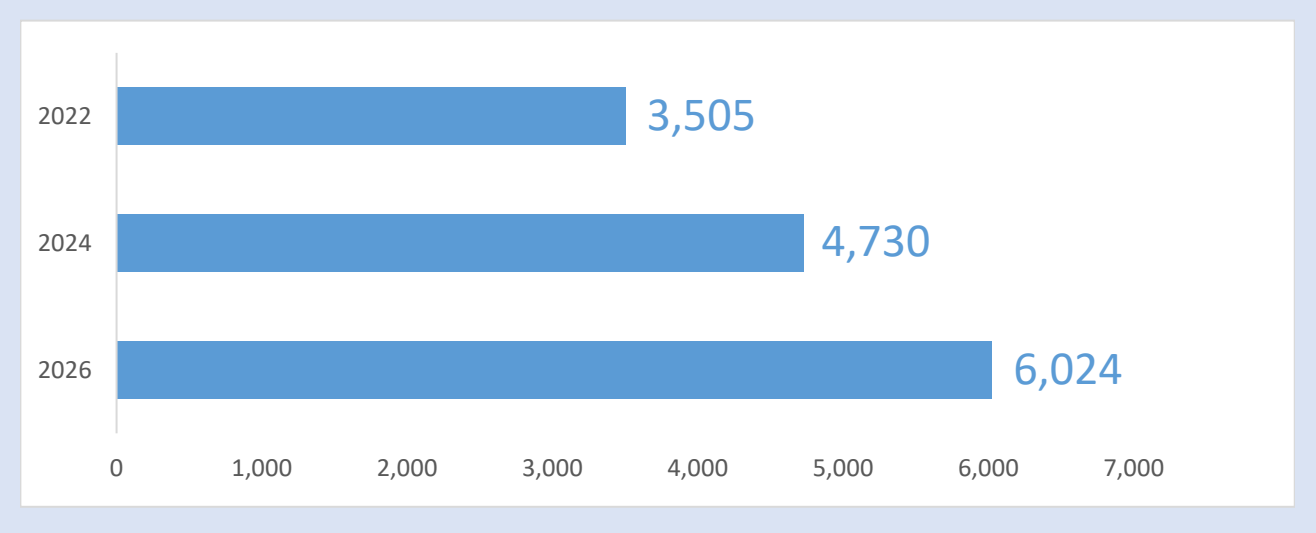


Source: IDC, 2023

Observing the benefits since the introduction of the PEC, a picture of constantly growing values emerges. Based on analysis of historical data, from 2008 to 2022, the cumulative economic benefits derived from the use of the PEC are estimated to be around €3.5 billion for the Italian market. According to future estimates for the period 2023–2026, the cumulative net benefits of the PEC will be around €2.5 billion (Figure 6).

[13] The FTE is the number of resources planned or used to complete a specific task. One FTE is equivalent to one person employed full time (40 hours per week).

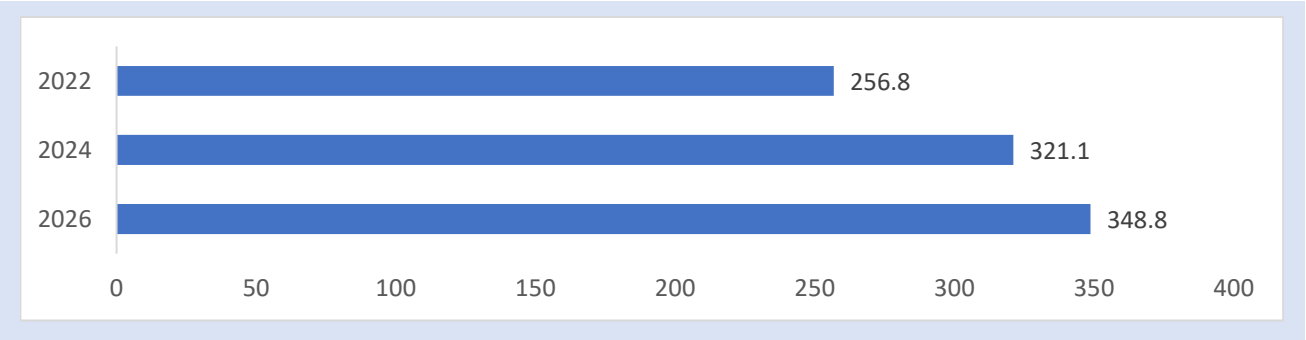
FIGURE 6
The PEC's Cumulative Benefits Since 2008 (€ Million)



Fonte: IDC, 2023

Looking more closely, we observe different categories of secondary cumulative and monetary benefits in addition to the reduction of travel,[14] as a result of the avoided trips of citizens, professionals, businesses, and public administrations from their homes or offices to physically reach post offices and access mailing services (Figure 7). For this general benefit, IDC estimates that in 2026, the reduction in travel thanks to usage of PEC messages will reach 349 million km, an increase of 35.8% compared to historical data from 2022.

FIGURE 7
Reduction of Travel (km Millions – Annual Estimates)



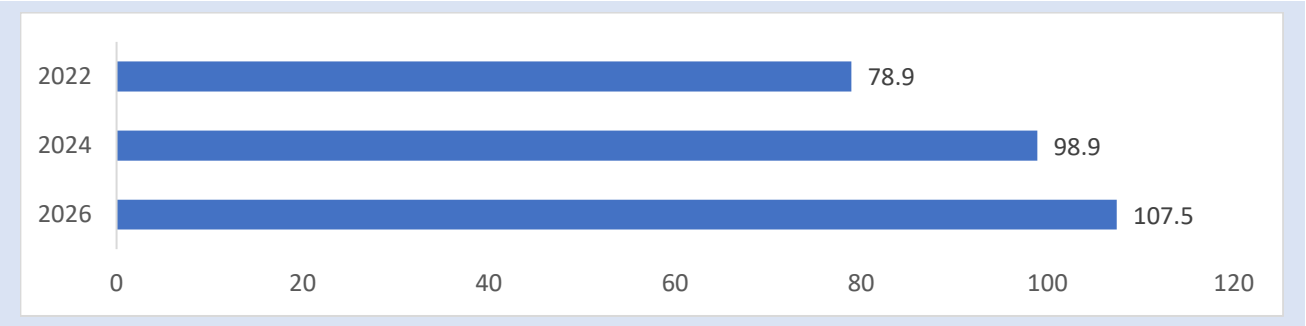
Source: IDC, 2023

The first monetary category relates to the reduction of the carbon footprint of the subjects involved in the study (Figure 8). The use of vehicles to transport individuals and businesses from homes and offices to post offices, as well as the postal fleets themselves, generate enormous amounts of CO2. The PEC contributes to a reduction of the carbon footprint. In 2026, a saving of 107,000 tons of CO2 is expected.

[14] Quantitative analysis does not provide the economic value of the reduction in travel/mobility because this value is implicitly reflected in the quantification of the economic value of other benefits.

FIGURE 8

Reduction of the Carbon Footprint ('000 Tons of CO2 – Annual Estimates)

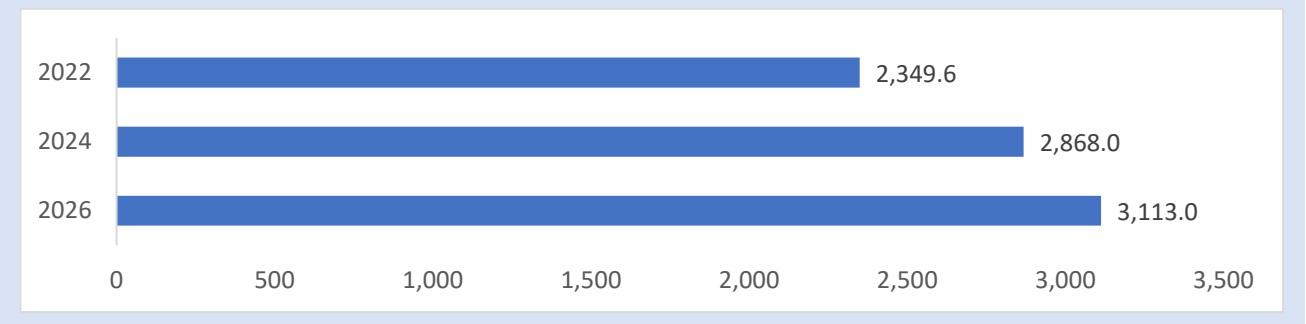


Source: IDC, 2023

The second monetary aspect refers to the elimination of waiting times at post offices, calculated in annual FTEs. In Italy, the average access time to postal services is approximately 16 minutes; therefore, remote access via computer enables a significant reduction in waiting times. By 2026, the savings will amount to 3,113 FTEs (Figure 9).

FIGURE 9

Elimination of Waiting Times (FTEs – Annual Estimates)

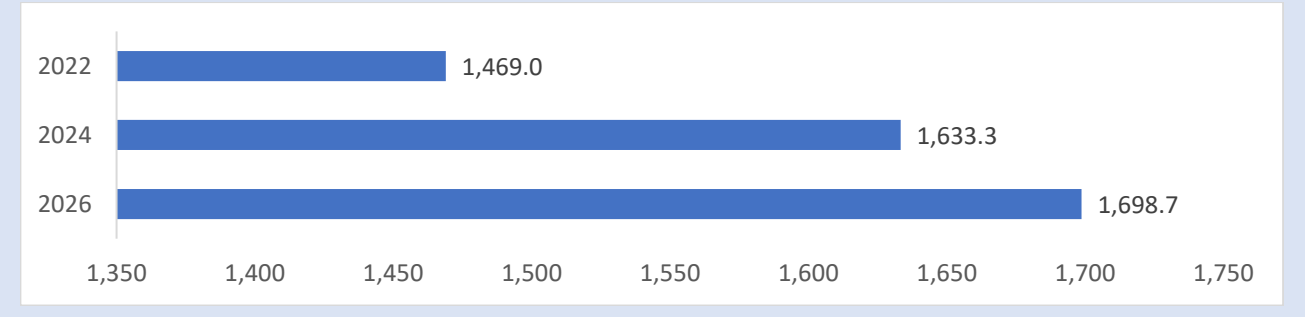


Source: IDC, 2023

The third monetary category measures the reduction of storage space (Figure 10). Assuming that one linear meter of archive takes up approximately 0.2 square meters, eliminating the need for the physical storage of documents and return receipts has a significant impact, especially for major users of the PEC. In fact, with the digital archiving of everything that was once paper correspondence, it becomes possible to free up an enormous amount of storage space. It is anticipated that by 2026, the savings will reach nearly 1.7 million square meters.

FIGURE 10

Freeing Up of Storage Space ('000 Square Meters – Annual Estimates)

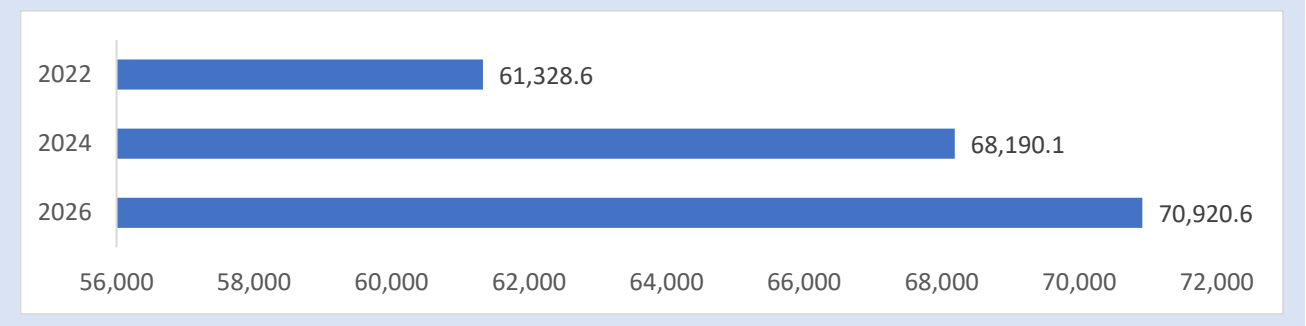


Source: IDC, 2023

The fourth monetary category quantifies the saving of trees used in the production of paper for documents, envelopes, postal receipt confirmations, and return receipt stubs (Figure 11). A tree with an average weight of 130 kg is capable of producing about 30.7 reams (which equals 153,000 sheets of paper). In 2026, there will be 70,921 trees saved from being knocked down thanks to the paper savings resulting from the use of the PEC.

FIGURE 11

Savings in Terms of Trees Saved (Number of Trees – Annual Estimates)



Source: IDC, 2023

From the above analysis, it is clear that there are several variables and components that contribute to the quantification of the cumulative benefits of using PEC accounts and messages as a replacement for traditional postal correspondence services.

Conclusions

The use of the PEC by companies, professionals, public administrations, and citizens is steadily increasing, indicating that Italy wants to keep up with the new pace of innovation. The PEC, along with all other digital trust services that facilitate interaction between individuals, businesses, and public administrations (e.g., CIE, SPID), simplifies communication processes and makes them more transparent.

With the introduction of the PEC, Italy has paved the way for the whole of Europe in terms of digital trust services. The benefits derived from the PEC go far beyond the simplification of procedures and administrative practices.

In 2026 alone, the total benefits of the PEC will amount to approximately €650 million, including the economic impact associated with the replacement of traditional mail, as well as savings in terms of reduced travel, carbon footprint, waiting times, storage space, and trees being knock down. These savings will amount to a total of €2.5 billion over the entire forecast period (2023-2026).

Looking at the analysis presented in this document from a wider European perspective, it is clear that Italy is starting from a strong foundation in terms of its digital trust services, especially looking ahead to the introduction of REM at the European level (where the PEC will play a central role and become the "European PEC"). However, there is still a need to improve other digital services such as electronic documents (for the purposes of international exchange) and the provision of pre-filled documents within the personal areas of various databases.

Citizens, professionals, public administrations, and employees of businesses all have a positive experience in using PEC services, as demonstrated by the constant growth in the number of PEC mailboxes and messages sent. This positive experience shows that the current use, limited to the Italian peninsula, islands, and foreign territories (e.g., embassies and consulates), offers great potential for extending these benefits with a "European PEC" and for further integrating this tool with other systems and business processes, such as supplier management and customer service.

The entities tasked with implementing Italy's digitalization plans have a clear vision of the goals to be achieved both nationally and internationally. Collaboration between EU member states will be beneficial for Italy, enabling the country to learn best practices from states that are more advanced on the path to digitalization. This collaboration will also present opportunities for Italy, as in the case of the PEC, to share its own best practices stemming from more than a decade of adopting this technology.

Methodology

In addition to the primary economic savings resulting from digitalizing communication, the quantitative analysis identifies further benefits of using the PEC compared to traditional mail, particularly regarding certified mail (i.e., registered mail, insured mail, judicial documents). Among the potential positive impacts of the PEC, the underlying quantitative analysis focuses on directly observable and measurable aspects of accessing and interacting with the postal system.

In particular, the additional benefits considered for the purposes of the quantitative analysis are as follows:

1. Reduction of travel involved
2. Decrease in carbon footprint
3. Elimination of waiting times
4. Reduction of storage spaces
5. Saving of paper and consequently trees

The quantification of the direct benefits of using the PEC is done via a statistical/econometric model composed of over 40 input variables that directly or indirectly determine the benefits. In formulating the primary hypotheses underpinning the quantitative model, particular effort was made to uphold the principle of a prudent and conservative estimate.

The **net economic impact** involves estimating the economic benefit of replacing traditional mail with digital communications. The substitution rate of certified mail with the PEC has been estimated using econometric methods based on the dynamics of the PEC's adoption processes and the historical evolution of certified mail volumes as observed in the financial reports of major postal operators. The calculation of the economic value of the mail substituted assumes the standard price of certified mail, estimated based on the volumes and revenues derivable from financial reports (for quantitative analysis, a linear price increase is assumed).

The estimate of the **reduction in travel** is hypothesized as a function of: (i) the relative distances in the geographical coverage areas of post offices in Italy (based on Universal Postal Union statistics); (ii) the volume of certified mail (Poste Italiane statistics); (iii) the number of certified email messages (PEC) (AgID data); and (iv) the estimated substitution rate of certified mail/PEC (IDC processing based on Poste Italiane and AgID data).

The reduction of the **carbon footprint** is estimated using: (i) the estimated reduction in travel (as described in the previous paragraph); (ii) the carbon footprint conversion factors for travel (according to the Greenhouse Gas Protocol); and (iii) general data related to the national vehicle fleet (results obtained by IDC from ACI sources). The valuation price of the carbon footprint is based on the historical series of CO2 futures prices available on investing.com (with projections up to 2026). In 2008, it was approximately €21.7 per ton of CO2 emissions, and in 2022, it was €81.4. The estimate predicts a gradual decrease, with the historical series characterized by significant volatility.

The quantification of the **elimination of waiting times** hypothesizes this benefit as a function of: (i) the volume of certified mail; (ii) the number of PEC messages; (iii) the estimated substitution rate of certified mail/PEC (as described above); and (iv) the average waiting time at the post office (IDC processing based on ISTAT data). The elimination of waiting times is expressed in annual FTEs.

The FTE is a unit of measurement used to calculate worker productivity in an organization. FTE is calculated as the ratio between the actual hours worked and the number of full-time working

hours. Consequently, a full-time employee (40 hours per week) equals 1 FTE, while a part-time employee corresponds to a proportional value of the hours worked.

The calculation for the **reduced storage space** includes the following as input variables: (i) the number of PEC messages; (ii) the average holding time for a piece of certified mail in the postal system; (iii) the standard average weight of 1 linear meter of certified mail; and (iv) the standard weight of a piece of certified mail. The maximum holding duration depends on the type of communication and ranges from 15 to 180 days. For evaluation purposes, an average holding time of 10 days within the postal system is assumed. The reference standards for determining the size of storage spaces are taken from a document by the archival superintendence for Piedmont and the Aosta Valley, which indicates that 0.2 square meters of space is needed for 1 linear meter of archive and that 1 linear meter of documentation averages 60 kg in weight.

The estimate of **trees saved** is based on: (i) the number of certified mails replaced by the PEC; (ii) the standard weight of a certified mail item; and (iii) the estimated average volume of paper obtained from a tree.

The quantitative analysis was validated through interviews with PEC users. Specifically, IDC conducted over 10 interviews with a carefully selected group of relevant users and contacts in Italy, including private citizens, SMEs, enterprises, professionals and firms, public authorities, and institutional stakeholders. The goal was to gather viewpoints and opinions on usage experiences, perceived value, and expectations regarding the evolution of use cases on new platforms and digital services. This qualitative approach enhanced and validated the assumptions IDC used to create the quantitative model and helped contextualize with concrete examples, reported in this document, on the experience and daily use of the PEC.

MESSAGE FROM THE SPONSOR

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Aruba is a trust service provider operating in Europe through the group's two Certification Authorities — Aruba PEC and Actalis — which operate as Qualified Trust Service Providers in accordance with the eIDAS regulation. It is also one of the leading Italian service providers for cloud services, datacenters, web hosting, email, PEC, and domain registration. Since 1994, it has been enabling citizens, businesses, and public administrations to implement their digital projects, providing useful, secure, and sustainable technologies and services that, like the PEC, improve the lives and work of individuals and companies.
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Trust Technologies, an eIDAS Qualified Trust Service Provider, is a company within the TIM Group that designs and manages solutions for the digital transformation of processes for public administrations and private entities. Trust Technologies offers trust services such as electronic signature and timestamping, PEC, solutions for AgID and ACN compliant Digitalization and Qualified Preservation and serves as an identity provider and aggregator for the SPID Digital Identity system.
Fina out more at www.trusttechnologies.it/chi-siamo.

About the Analyst

Massimiliano Claps, Research Director

Massimiliano (Max) Claps is the research director of Government Insights at IDC EMEA. His research focuses on the impact of technological innovation on the public sector. Max also serves as the lead analyst globally for topics related to the public transport ecosystem and coordinates IDC's research on cross-industry strategies and use cases in EMEA. He has over 20 years of experience in the sector, having held roles as an analyst and manager at IDC, Gartner, and SAP. He contributes to various working groups of the ITU and the European Commission on topics related to smart cities, the metaverse, and citiverse.

Gabriele Roberti, Director Data & Analytics

Gabriele Roberti serves as director of data and analytics at IDC. His team supervises the delivery of regional quantitative research on IT strategies for vertical markets and custom analytics projects. He is directly involved in producing IDC's Channel Partner Ecosystem as well as key custom market model projects.

Erica Spinoni, Senior Research Analyst

Erica Spinoni supports two research groups, European Digital Business and European Future of Work. In her role, she advises ICT stakeholders on European market trends and studies the maturity of companies in their digital business strategies, short and long-term priorities, and digital use cases. Additionally, as a member of Future of Work practice, she examines how technologies are redefining working practices and how companies should adapt the working environment to meet the current and future needs of the workforce.

Barbora Pavlikova, Research Analyst

Barbora Pavlikova is the European lead for the Worldwide Augmented and Virtual Reality Spending Guide, focusing on spending trends for technologies at industry level and key use cases in the AR/VR market. She also supports other data products, including the Public Cloud Spending Guide and the ICT Spending Guide. Additionally, she is part of the working group dedicated to sustainability, where she investigates the impact of European sustainability regulations.

About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications, and consumer technology markets. With more than 1,300 analysts worldwide, IDC offers global, regional, and local expertise on technology, IT benchmarking and sourcing, and industry opportunities and trends in over 110 countries. IDC's analysis and insight helps IT professionals, business executives, and the investment community to make fact-based technology decisions and to achieve their key business objectives. Founded in 1964, IDC is a wholly owned subsidiary of International Data Group (IDG, Inc.).

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