



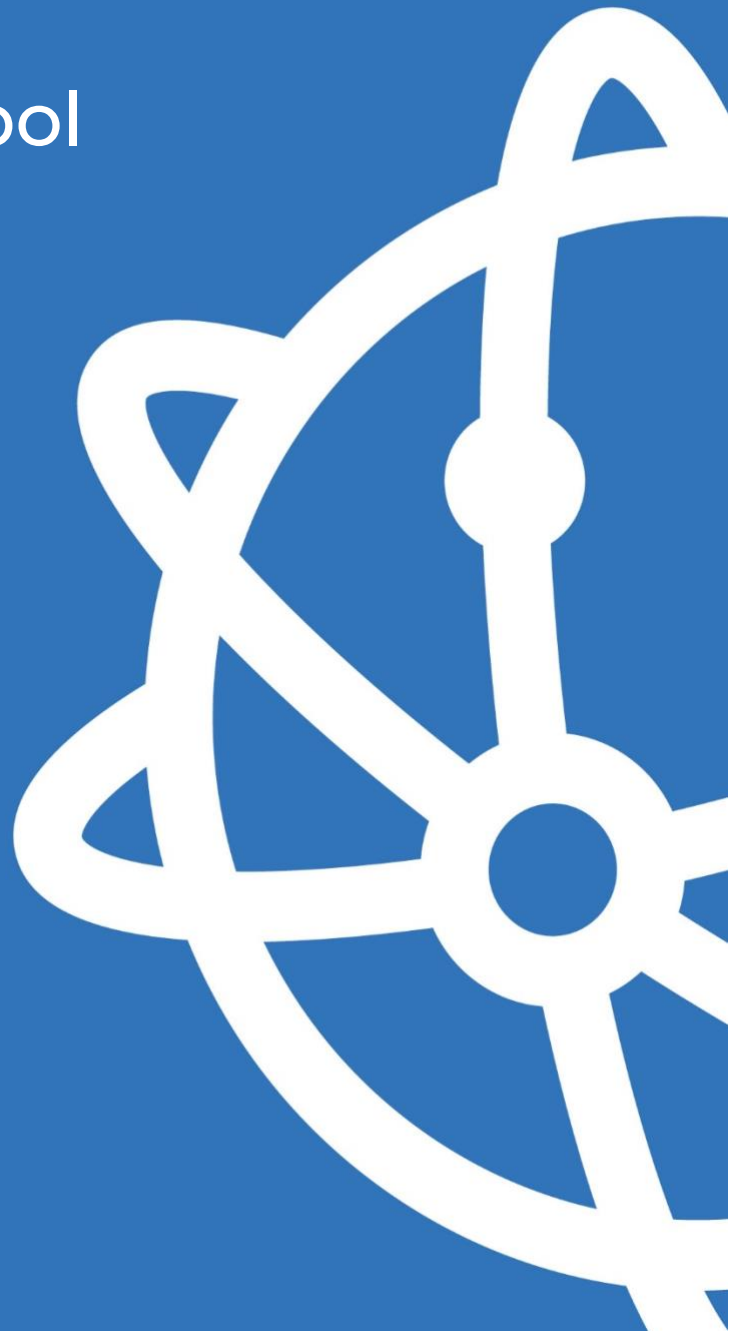
Peppol

The future is open

eInvoicing: Discovering Peppol

May 2024

Version 1.0



Discovering Peppol

eInvoicing – what problem are we trying to solve?

Trade is the key driver of economic growth at both domestic and global levels, and business success is critical for economic growth.

Every trade transaction results in a financial exchange between the buyer and seller. In the Business-to-Consumer world (B2C), payment is almost instantaneous, utilising either cash or the highly developed payment card system. But in the Business-to-Business (B2B) and Business-to-Government (B2G) sectors, almost every transaction results in an invoice, with payment following, often weeks or months, later.

These slow payment cycles can negatively impact business. Faster invoice processing improves cashflow and reduces business operating costs, improving **efficiency** and competitiveness.

- *eInvoicing helps to improve business efficiency*

At a national level, the collection of consumption tax (VAT, GST etc) typically equates to around 30% of government income. Nevertheless, most countries experience a shortfall in their expected consumption tax income. As an example, in the European Union, this **tax gap** equated to €93bn in 2020, equivalent to 9.1% of the expected income.

Collecting the expected amount of consumption tax helps governments to reduce borrowing and/or increase public spending, thereby improving economic performance and competitiveness on the international stage.

- *eInvoicing helps to reduce the tax gap*

At Peppol, we believe that the **global opportunity** from eInvoicing equates:

- to around **1% of GDP** from improved business efficiency
- to around **1% of GDP** from increased consumption tax revenues

As businesses search for greater efficiencies and governments search for greater income, eInvoicing provides a proven path to achieve both.

You may rightly ask why these benefits have not already been universally realised. Read on to find out why and to discover how Peppol provides a solution to resolve these conceptually simple problems.

About eInvoicing

eInvoicing needs to be considered in two parts:

- the eInvoice itself
- the mechanism for sending and receiving an eInvoice

An eInvoice can be defined as an invoice that is created in a structured digital data format, designed for machine-to-machine processing without the need for manual intervention. To achieve its function, the data contained in an eInvoice does not need to be human readable.

It is important to recognise that an eInvoice **is not** a PDF, a digital image, or a digital document created in a spreadsheet. While these formats are human readable, they cannot be processed without manual intervention.

eInvoices are created in the IT systems of the seller and received into IT systems of the buyer. However, since sellers and buyers typically use different commercial off-the-shelf or customised IT systems, the ability of the buyer to automatically receive an eInvoice is constrained, unless:

- the invoice meets a **standardised data model**

The Peppol Business Interoperability Specifications (**BIS**) utilise the Universal Business Language (UBL), which is an ISO open standard.

However, while a standardised data model facilitates the creation of an eInvoice, it still has to be transmitted from the seller to the buyer.

Historically, a method of **data exchange** was established by attaching a file to an email, or by a point-to-point connection between each seller and buyer (a *two-corner* model). This evolved with third party EDI providers exchanging eInvoices between buyers and sellers in a *three-corner* model, utilising data models individually tailored for each client.

Whilst these two and three corner data exchange methods remain in widespread use, they either do not provide automation, or they require the seller and buyer to use the same system or service provider.

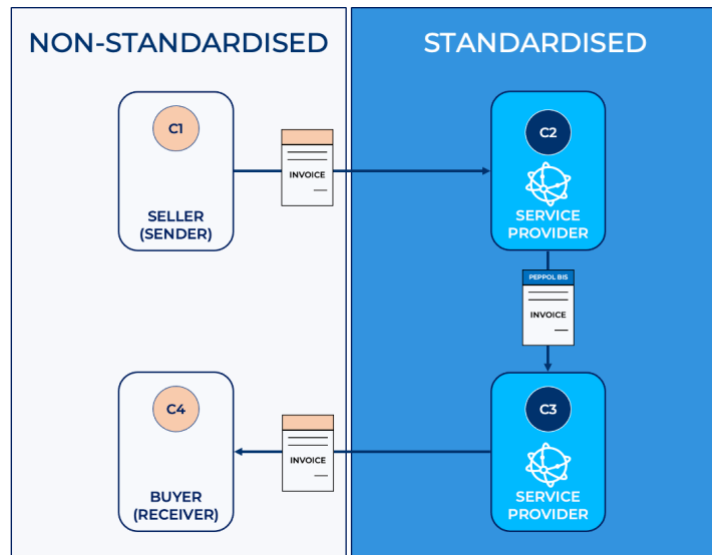
In recent years, Peppol has led the way in establishing a *four-corner* model, where eInvoices can be created in one system and received in another, through a network of connected service providers, where the senders and receivers choose their service provider independently of each other.

The four-corner model

As a business, you want to reach your customers and suppliers by using your existing systems. Having to run multiple systems and processes required by different trading partners is expensive and inefficient. The four-corner model overcomes this problem as shown in the diagram.

In the case of an eInvoice, the seller is shown at **Corner 1 (C1)** and the buyer is shown at **Corner 4 (C4)**.

The **service provider** at **Corner 2 (C2)** is appointed by C1 to send eInvoices (and any other electronic business document) on his behalf and, similarly, the **service provider** at **Corner 3 (C3)** is appointed by C4 to receive eInvoices on his behalf.



On receiving an eInvoice from C1, C2 creates a standardised **Peppol** eInvoice for transmission to C3. Before sending the standardised eInvoice, C2 uses validation tools to ensure that the eInvoice is compliant with the standardised data model and can be received by C3.

The Peppol eInvoice is received by C3 who converts it to a format required by C4, enabling the eInvoice to be consumed by the systems used by C4.

Note that both C1 and C4 operate in a non-standardised environment, which means that they can retain their existing systems and processes.

However, as many software vendors supply systems that natively produce and consume Peppol eInvoices, their customers at C1 and C4 are already able to send and receive Peppol eInvoices through C2 and C3, without the need for transformation, thereby achieving **straight-through processing**.

Of course, sellers are also buyers, and each use their respective service provider to both send eInvoices (as C1) and receive eInvoices (as C4).

- only **one point of connection** is needed to reach the whole network

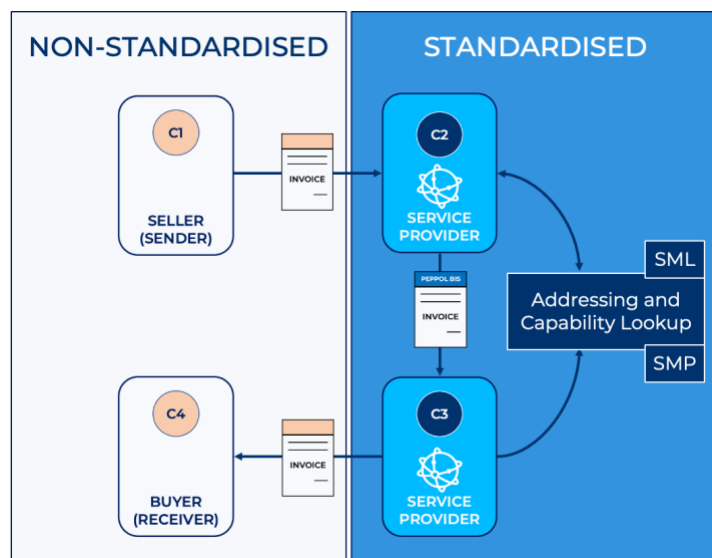
Discovery

Each service provider acts as an **access point** to the Peppol Network, providing the connections in the four-corner model to ensure that each business only needs one service provider to send and receive eInvoices.

However, in the same way that email connections and telephone networks need to know how to route the message or call to the intended receiver, so the access point at C2 in the four-corner model needs to discover where to send the eInvoice. This requires an **addressing** service.

Before sending the eInvoice, C2 also needs to discover whether the intended receiver at C4 is capable of receiving the eInvoice, requiring a **capability lookup** service.

In Peppol, these addressing and capability lookup services are provided through the Service Metadata Locator (**SML**) and the Service Metadata Publisher (**SMP**), as shown in the diagram.



The SMP is a decentralised registry operated by Peppol service providers. Most, but not all, Peppol access point providers also offer SMP services, while a minority of Peppol service providers offer SMP services only. The SML is a central component in the Peppol Network, and is operated by the European Commission.

To enable the addressing and capability lookup service to function, each SMP is initially registered in the SML by the Peppol SMP service provider. Each C3 access point then uses an SMP to register their C4 customers (**participants**) in the SML. The C3 access point then registers their C4 participant **receiving capabilities** in an SMP, listing the Peppol specifications that the participant can receive, such as a Peppol eInvoice.

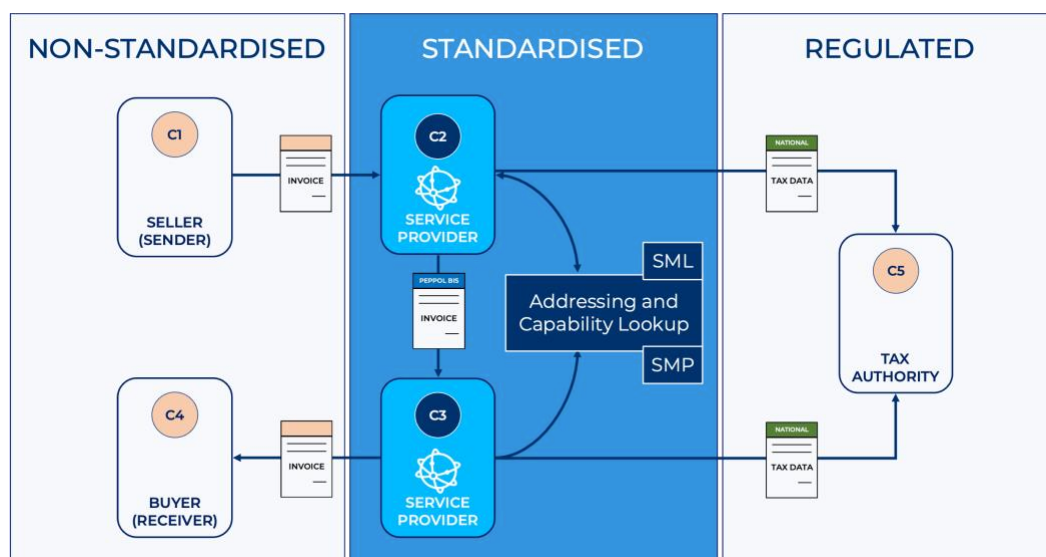
At the transactional level, in **near-real time**, C2 accesses the SML to locate the C3 service provider acting for C4, and then accesses the SMP to discover the receiving capabilities of C4, before sending the eInvoice.

Extending the four-corner model

eInvoicing is increasingly being leveraged by tax administrations to improve business efficiency and increase consumption tax collection, through the introduction of Digital Reporting Requirements (DRR), also known as Continuous Transaction Controls (CTC).

Tax administrations require data at a transactional level from businesses to enable consumption tax to be reported in near-real time, enabling faster collection and facilitating a reduction in the tax gap.

The Peppol four-corner model provides a solid foundation for governments to implement DRR/CTC requirements. By adding a fifth corner to the model, as shown in the diagram, the eInvoicing model can simply be extended to meet the reporting requirements of tax administrations at the same time as meeting the needs of businesses.



Since the required data already exists in each individual invoice, tax administrations can leverage eInvoicing to capture the data required for DRR/CTC. Businesses benefit by re-using a single mechanism to meet their eInvoicing requirements and meet the needs of tax administrations.

As well as DRR/CTC, governments are beginning to require digital reporting from businesses for other policy initiatives, such as Environmental, Social, and Governance (ESG) reporting. By adopting the five-corner model, businesses and governments can realise their eInvoicing and eReporting obligations through the Peppol Network.

OpenPeppol participation

The Peppol approach to creating and exchanging eInvoices is increasingly being adopted around the world. OpenPeppol is the international membership association that implements Peppol, and any organisation can apply for membership, subject to due diligence processes, in one of four categories of membership:

- **Peppol Authorities** – government agencies that drive the adoption of Peppol in their jurisdiction
- **End Users** – commercial and governmental organisations that are trading partners buying and selling goods and services
- **Service Providers** – commercial organisations that provide Peppol services to sellers and buyers, although some End Users may operate their own Access Point to connect to the Peppol Network
- **Observers** – typically industry organisations, academic institutions, consulting firms, and prospective members of other categories



While end users are not required to be members of OpenPeppol to send and receive Peppol messages, more than **one million** end users are registered to receive Peppol messages. Since senders of Peppol messages do not need to be registered in the network, the total number of organisations connected to the Peppol Network exceeds one million.

Although OpenPeppol has public and private sector members in 45 countries, Peppol messages can be sent and received by any organisation in any country, provided they are registered in the network.

The number of registered receivers and service providers rises every week, while typically two new Peppol Authorities are established every year.

Driving global interoperability

Exporting businesses need real-time automation with their customers to maximise efficiency and to manage cash-flow, while tax administrations need real-time automation to maximise consumption and customs tax collection. The scale of cross-border trade is significant, with global exports equating to 22% of global GDP in 2021.

Exports from countries with a Peppol Authority equates to 32% of global exports, and exports between countries with a Peppol Authority equates to 39% of their combined exports.

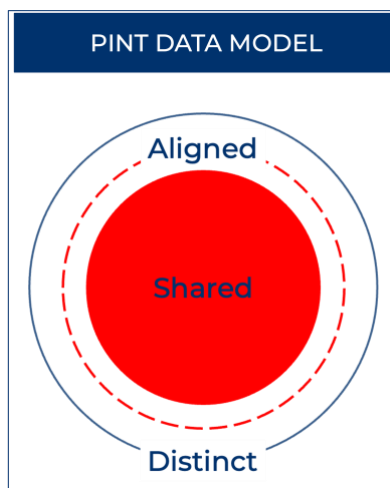
As Peppol becomes increasingly adopted around the world, the need for interoperability to support these requirements arising from cross-border trade becomes ever more important.



Export values 2021 (source: World Bank)

To meet this need for global interoperability, where business can seamlessly exchange eInvoices across borders, Peppol has developed the **Peppol International Invoice**, also known as **PINT**. This is a development of the Peppol BIS eInvoice specifications, with three key features that, taken together, facilitate cross-border interoperability.

Peppol has shown that there is a core dataset common to all invoice transactions. In the PINT data model, this is the **shared** element, which is business-driven, with content around trading parties, items, prices and amounts. The shared element covers around 80% of invoice content.



The **aligned** element is legally driven, with the content around tax information that varies across jurisdictions, but can be aligned. This typically covers around 15% of invoice content.

The **distinct** element covers around 5% of invoice content, typically in relation to organisational identifiers that are jurisdiction-specific.

Each jurisdiction will have its own PINT specification supporting both domestic and cross-border exchange. PINT is implemented in several Asia Pacific countries and will be extended to all jurisdictions over time.

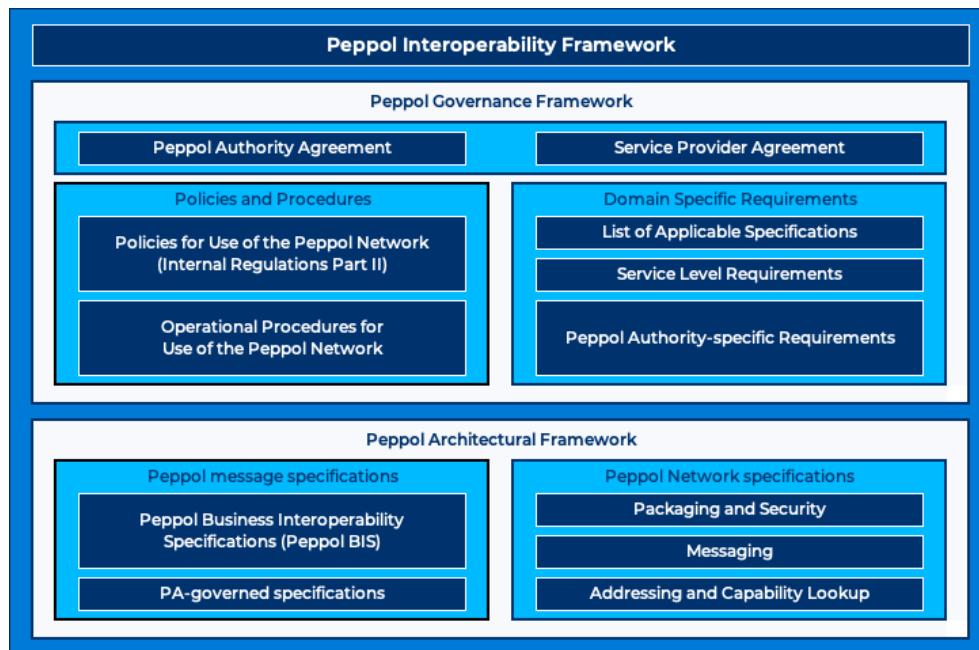
Peppol Interoperability Framework

In isolation, the Peppol Business Interoperability Specifications and the Peppol Network are not sufficient to create an open, interoperable, and secure global network for the exchange of electronic business documents.

For sellers and buyers to successfully exchange business documents across the Peppol Network, a set of **rules and specifications** are required to ensure that all organisations involved in the Peppol Network act together to provide a trusted environment.

These rules are established through the **Peppol Interoperability Framework**, which provides a set of agreements, policies, procedures, and technical specifications that collectively ensure interoperability.

The Peppol Interoperability Framework is governed by OpenPeppol and regulates use of the Peppol Network through the **Peppol Architecture Framework** and the **Peppol Governance Framework**.



Peppol provides a consistent approach to core specifications that apply across all jurisdictions. However, there is flexibility, within defined parameters and approval processes, for Peppol Authorities to introduce national service domains and complementary message specifications.

In this way, new specifications and service areas can be **incubated** in a controlled environment before being made available across the Network.

Governance Framework

OpenPeppol was established in 2012 as a follow-up to the EU-funded 2008 eProcurement/eInvoicing large-scale pilot. As a **not-for-profit**, member-led international association, OpenPeppol is the legal organisation that establishes the **governance** arrangements for the use of Peppol.

The stakeholders in Peppol are the:

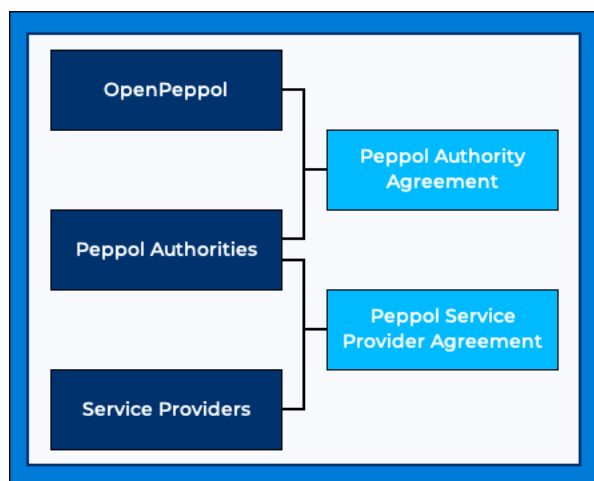
- sellers and buyers and that send and receive eInvoices
- service providers that provide Peppol services to sellers and buyers
- Peppol Authorities that drive Peppol adoption in their jurisdiction

OpenPeppol has established **standardised** legal agreements that set out the roles and responsibilities of Peppol Authorities and Peppol Service Providers, providing an open and transparent community, and ensuring that the technical specifications and business-level rules are consistently applied throughout the network.

The **Peppol Authority Agreement** is established between OpenPeppol and each Peppol Authority. Within defined parameters, Peppol Authorities are able to define **Peppol Authority Specific Requirements** (PASR) for use of the Peppol Network in their jurisdiction.

The **Peppol Service Provider Agreement** is established between each Peppol Authority and the Peppol Service Providers that are domiciled in their jurisdiction. If a service provider is domiciled in a jurisdiction without a Peppol Authority, the Service Provider Agreement is established between OpenPeppol, as the **Peppol Authority**, and the service provider.

The Governance Framework includes comprehensive Policies and Procedures for Use of the Peppol Network, and sets out the specifications and requirements applicable to individual service domains and jurisdictions.



Architectural Framework

Peppol-certified Service Providers provide Peppol business document exchange services to sellers and buyers. OpenPeppol has established a set of technical specifications for Peppol business documents, together with processes and specifications for the Peppol Network.

These specifications enable Peppol-certified Service Providers to deliver the necessary semantic and technical interoperability and include:

- Peppol Business Interoperability Specifications (**BIS**)
- Peppol Authority governed specifications
- Packaging and Security specifications, utilising the AS4 protocol
- Messaging specifications
- Addressing and Capability Lookup specifications

The Peppol BIS standardises electronic documents for validation and secure exchange between Peppol-certified Service Providers through the Peppol Network, supporting sellers and buyers around the world.

A set of tools and guidance is provided for service providers to implement the Peppol specifications and to implement the following components:

- Access Points, which are gateways that provide a standardised and secure mechanism to exchange a range of document types
- Service Metadata Publishers (SMPs), who provide the location and capabilities of sellers and buyers registered in the Peppol Network
- the Service Metadata Locator (SML), which maintains participant IDs and provides a DNS-based mechanism to discover the SMP where the data and receiving capabilities of a specific participant can be found

The Peppol Directory is a free-to-browse, open source service that makes it easy for sellers and buyers to find each other in the Peppol Network and identify the Peppol document types that can be received by each other.

In combination with the governance processes, security is achieved through the use of a Public Key Infrastructure using digital certificates; the use of AS4 as the transport protocol; and the use of an 'envelope' (SBDH) to 'wrap' the transaction data allowing routing without access to the data.

OpenPeppol organisation

The organisation of OpenPeppol is shown in the diagram. All members of the Association form the General Assembly which meets at least once every year to review performance for the prior year; to approve plans and budgets for the coming year; and to elect volunteers from the membership to different positions in the organisation.

The Election Committee decides on the eligibility of candidates that are proposed for elected positions.

The Secretary General has day-to-day responsibility for oversight and management of the Association.

The Domain Communities cover the different service domains established in OpenPeppol, and lead the development of Peppol specifications and related technical development activities. Change Management Boards decide on updates and amendments to policies, procedures, and specifications for their area of interest.

Stakeholder Communities represent the interests of their member types.

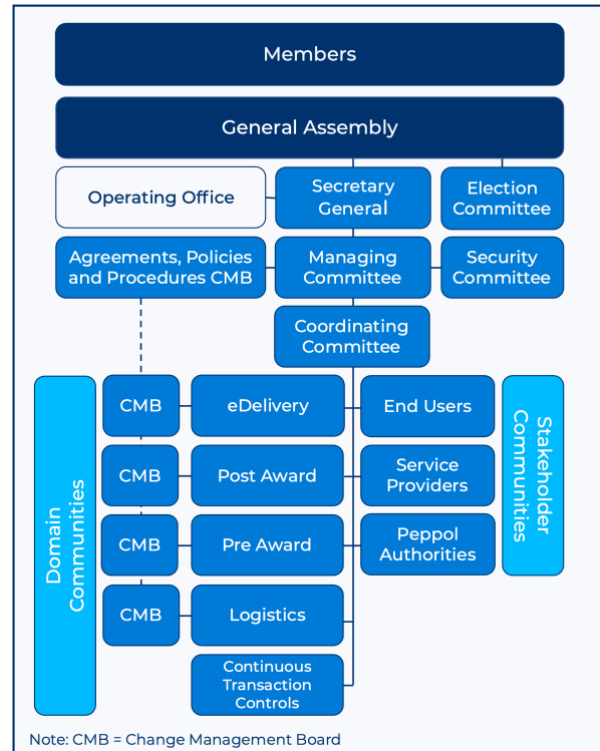
The leaders of each of the Domain and Stakeholder communities form the Coordinating Committee, ensuring alignment on cross-cutting activities.

The Agreements, Policies and Procedures CMB is responsible for development of the governance aspects of OpenPeppol.

The Security Committee is responsible for development of the Peppol Security Policy and driving the importance of a strong security culture.

The Managing Committee provides oversight of all activities undertaken by the Association, and comprises the Secretary General and two members from each of the Stakeholder Communities.

The Operating Office supports the day-to-day activities of the Association.



Join the Peppol journey

Peppol improves business efficiency between organisations by standardising the way electronic information is structured and exchanged.

Whilst eInvoicing is the key driver of Peppol adoption around the world, Peppol also offers an ever expanding range of business document specifications, most recently with the addition of logistics message types.

The Peppol framework enables interoperability and efficiency
B2G and B2B

Peppol CTC is a flexible approach, meeting the varying needs of tax administrations

The **Peppol International Invoice** enables cross-border and cross-continental interoperability

Peppol
Connect once – reach all

The Peppol Network was conceived so that individual business do not need to be members of OpenPeppol to send and receive eInvoices and other business documents, with Peppol business document exchange services being provided by Peppol-certified Service Providers.

If you are business and want to utilise Peppol, you can find a listing of all Peppol-certified Service Providers on the Peppol website here:

<https://peppol.org/members/peppol-certified-service-providers/>

If you are a government agency and want to find out more about Peppol and how we can help meet your needs, please email us directly.

If you are a service provider or business software developer and want to become Peppol certified, comprehensive technical and joining information can be found on the Peppol website.

More information

Website: www.peppol.org

eMail: info@peppol.eu