TIP Trusted
Information
Partners

Basic functions and definitions for the TIP-ecosystem

Introduction

This document describes the basic functions required for a mature and fully functioning ecosystem as described in the TIP[1] two-pager. Definitions of concepts necessary for understanding basic functions are given in the following chapter. This document leverages insights from the *Willeke paper*[2], *the Greenpaper*[3] and the *Business analysis and Experiments*[4] done in the context of Standard Business Reporting renewal. The basic functions as described in this document are to be implemented with qualified electronic trust services as described in the European eIDAS regulation[5].The final chapter describes how these basic functions can be used for qualified information exchange.

Note: Comments on this document are appreciated via a message on our [LinkedIn account](#).

Definitions of concepts

In this chapter definitions of key concepts are given which are used in this document and in the documents describing the basic functions.

Basic concept	Description	Dutch
TIP-ecosystem	The whole of system agreements, standards and facilities that applies to all participants in Trusted Information Partners.	TIP-ecosysteem
Actor	An *Actor* can be a natural person or a legal person, potentially acting with the role of a *Recognised profession.* Within the governance of TIP, it is determined which *Actors* are identified.	Actor
Recognised profession	A role that is occupied by an *Actor* and that is associated with such unique rights and obligations that it is desirable to be able to distinguish between the actions that this person performs from his or her profession and the other actions that this person performs. Think of a doctor, chartered	Erkend beroep

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[1] TIP, March 2022, Eenvoudig en betrouwbaar online zaken doen. See [link](#)

[2] Dijkhuis, S., Van Wijk, R., Dorhout, H., & Bharosa, N., 2018, When Willeke can get rid of paperwork: A lean infrastructure for qualified information exchange based on trusted identities. See [link](#)

[3] Van Wijk, R., Van Oosterhout, R., Klimbie, R., Mulder, M., 2019-10-24, Greenpaper: Vertrouwd S2S Ecosysteem. Available on request

[4] SBR Verniewing, 04-05-2020Business analyse: toepassing van een Trusted Online Ecosysteem voor SBR & SBR Vernieuwing. Beproeven Trusted Online Ecosysteem in het kader van SBR Vernieuwing. Available on request.

[5] EU Regulation No. 2024/1183. See [link](#)

	accountant or judge. In the Netherlands *Recognised professions* are determined by law. For example lists, see Dutch law see [Link](#) and EU law ([link](#)).	
Authorisation	A declaration by an *Actor*, provided to another *Actor*, on the basis of which the latter can perform a specified set of actions. An *Authorisation* has a lifecycle with a predetermined start time and an optional end time. *Authorisations* can be revocable or non-revocable.	Machtiging
Mandate (proxy)	A specific form of *Authorisation:* a declaration by the represented *Actor* or someone else authorised to do so (e.g. a judge), on the basis of which the representing *Actor* may perform a specified set of actions from the *Acting Space* of the represented *Actor*. These actions have legal effect only for the represented *Actor*.	Mandaat , volmacht
Acting space	An *Acting space* is a system that enables one or more natural persons to perform actions with possible legal consequences for one specific *Actor*. This provides access to the *Basic functions* described in this document for a natural person. A natural person can configure an *Acting space* to perform certain actions in an automated way. One *Actor* can use several *Acting spaces*. A *Wallet* may be used for (remote) control of an *Acting space*.	Handelings-omgeving
Wallet	An application that allows the *Actor* to store identity data, credentials and attributes linked to their identity (as a natural person and legal person), to provide them to relying parties on request via an *Acting space* and to use them for authentication in an *Acting space* or other systems, online and offline, and to create electronic signatures and seals. The requirements for *Wallets* in the TIP ecosystem will be listed in the document "TIP assessment framework for *Acting spaces*".	Wallet

Value-added service	Services that are offered, in many cases automated, via the *TIP-ecosystem* to record, enrich, provide or validate information with a predetermined level of assurance (e.g. querying authentic registers or services for validating or converting/consolidating messages).	Toegevoegde waarde dienst
Information chain	A linkage of *Actors* and *Added-value services* between which information is exchanged for one or more purposes (e.g. an *Information chain* for the purpose of applying for a mortgage loan). The outcome of an Information chain is often captured in a product for further use, such as a document, proof of submission or attestation of attributes.	Informatieketen
Customer process chain	A linkage of multiple information chains, in which the product of one *Information chain* is used as (sub) input for the next *Information chain*.	Klantproocesketen
(Service or chain) Specifications	The description of an *Added-value service*, *Information chain*, or *Customer process chain* that is accessible via the *TIP-ecosystem*, including process, form, availability and quality requirements. The purpose of *Service or chain specifications* is, among other things, to guarantee legal certainty by informing *Actors* in advance about the way in which they can comply with certain obligations, agreements or requests in the *TIP-ecosystem*. *Service or chain specifications* can be publicly available or mutually agreed upon by *Actors*.	Dienst- of Ketenspecificaties
(Service or chain) Responsible	The *Actor* responsible for making and keeping a specific *Information chain* or *Added-value service* available in the *TIP-ecosystem*. This *Actor* draws up *the Service or chain specifications* and makes them (publicly) known. *A Chain responsible* can also act as an *Actor* in a self-defined information exchange process. For example, a government party can set up electronic channels via the *TIP-*	Dienst - of Ketenverant-woordelijke

	ecosystem for information that it wishes to receive from companies.	
Adapter service	An *Adapter service* provides the connection between the *TIP-ecosystem* and existing platforms for information exchange. *Adapter services* enable actors in the *TIP-ecosystem* and users of an existing platform to communicate with each other.	Koppeldienst

Basic functions

This chapter defines the Basic functions of TIP. Basic functions are the functions necessary to achieve qualified information exchange. This table gives a brief description of the basic function, all basic functions are described in more detail in separate documents

Basic functions	Description	Frameworks to be used for completion	Dutch
Exchanging data	This function facilitates the exchange of data between *Acting spaces,* while maintaining data integrity and confidentiality. This function may also generate evidence of transaction completion, including evidence assuring dispatch from and delivery to the correct party at a certain point in time.	eIDAS trust service: • qualified Electronic Registered Delivery Service (qERDS) in accordance with four corner model as described in ETSI EN 319522. Technical standard for interface to be determined.	Uitwisselen gegevens
Signing data	Makes it possible, by means of electronic signatures, seals and timestamps, to obtain certainty about the authenticity of exchanged data, the existence of data at a certain point in time and the position of *Actors* regarding this data.	eIDAS trust service: • qualified Electronic Signature • qualified Electronic Seal • qualified Electronic Timestamp	Ondertekenen gegevens

| | | Guideline for implementation: ETSI TR 119 100

Standard for signature policy:

ETSI TS 119 172 | |
|---|---|---|---|
| *Validating signatures* | Used to ensure the validity of an electronic signature, seal or time stamp. | eIDAS Trust Service:

• qualified Validation Service for qualified Electronic Signatures | Valideren ondertekening |
| *Attestation of attributes*[6] | Enables *Actors* to identify themselves at a high assurance level by sharing one or more attributes (i.e. properties, characteristics or qualities of an *Actor* (e.g. age, name, diplomas obtained, etc.)). | eIDAS Trust Service:

• qualified Attestation of Attributes | Bewijzen eigenschap |
| *Archiving data* | Facilitating the receipt, storage, deletion and transmission of electronic data or documents to preserve their integrity, correctness of origin and legal characteristics throughout their retention period. It is often used in combination with the *Signature preservation* function. | eIDAS Trust service:

• qualified Electronic Archiving | Archiveren gegevens |
| *Preserving signatures* | Adding a qualified electronic timestamp and additional validation data[7] to a document before algorithms, keys and other cryptographic data, used in creating the original signature of this document, become weak or associated certificates expire or are revoked. This proves that the | eIDAS Trust service:

• qualified Preservation Service for qualified Electronic Signatures (article 34) | Bewaren ondertekening |

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[6] The relationship with identification to use other basic functions needs further elaboration. This also applies to identification as referred to in H2 of eIDAS.

[7] See ETSI EN 319 102-1 V1.3.1 (2021-11) for explanation.

	document[8] existed at the time a new timestamp was applied, making it possible to prove the validity of the signatures over a longer period of time.		
Authorizing an Actor[9]	Functionality for recording, managing and using *Authorisations* (and therefore also *Mandates*), enabling *Actors* within the *TIP-ecosystem* to grant each other powers.	• Basic function *Signing data* for recording an expression of will and guaranteeing authenticity. • Basic function *Exchanging data* for data exchange. • Best practice standards in the field of access control (eg XACML, t.b.d.).	Machtigen actor
Providing Value-added Services	Functionality and standards that make it possible to unlock different types of *Added-value services* in the *TIP-ecosystem*. In principle, it is possible for any provider to develop services that can be purchased within the *TIP-ecosystem*, provided they comply with the standards established for this purpose. Different types of *Added-value services* can be identified, each based on its own standard. *Added-value services* are made accessible via an *Acting space* that is related to the *Service responsible*.	• Basic functions where possible (e.g. *Signing data* to ensure authenticity and *Exchanging data* for data exchange). • Relevant best practices where possible if a functionality requires standardisation and cannot be replaced with a basic function (t.b.d.).	Ontsluiten toegevoegde waarde diensten
Publishing service or chain specifications	This functionality makes it possible for *a Service or chain responsible* to publish *Service or chain specifications*.	• *Service or chain specifications* will be documented in the form of a signature	Publiceren dienst- en ketenspecificaties

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[8] For example, an agreement saved by an entrepreneur for a long term order with electronic signature of the customer

[9] TIP does not exclude the use of other (existing) authorization standards. These could be made available via an added value service within TIP, for example.
This may have consequences for the support of such standards by *Operating Environments*.

Consulting service chain specifications	This functionality enables consulting (publicly) published *Service or chain specifications*.	policy in accordance with ETSI TS 119 172. • Other relevant best practices where possible (t.b.d.).	Raadplegen Dienst- en ketenspecificaties
Making Payments	Allows payments to be made within the context of the *TIP-ecosystem*. Payments may benefit TIP governance, providers of basic functions and *Actors* acting within the *TIP-ecosystem* (including providers of *Added-value services*).	• Relevant best practices where possible (t.b.d.).	Verrichten betaling

Designing a qualified information exchange

How are the TIP basic functions used in Practice?

It all starts with an Acting space

Willeke's paper emphasizes that meaningful and trustworthy digital interactions require both *Actors* to be on an equal footing in terms of their ability to participate. This concept is echoed in a Green Paper, which supports the idea that for digital interactions to be effective, each *Actor* must have equitable access and control over the tools necessary for participation.

From an architectural standpoint, this balance is achieved by ensuring that each *Acting Space*, and therefore each *Actor,* possesses a set of essential TIP building blocks: the basic functions. These building blocks include the attestation of attributes (such as proving identity), exchanging data, signing data, and archiving data. Each *Actor* is enabled to select and maintain sole control over these functions, ensuring autonomy in the digital space.

These functions are seamlessly provided through what is known as an "*Acting space*", a system of digital services envisioned by TIP to operate in e-society, leveraging an open market. This open market would be characterized by a variety of service offerings, fostering choice, resilience, and innovation. The competition in this market would also ensure that services are cost-effective and tailored to meet the diverse needs of different *Actors*.

Actors in this context are either natural persons or legal entities, each with unique needs and preferences. As a result, *Acting spaces* will vary, offering different interaction patterns, whether through human interfaces on web and app platforms or through machine-to-machine interactions. Figure 1 in the paper illustrates that every *Actor* is equipped with an *Acting space*, enabling interaction with all other *Actors*.

Establishing Information chains in the TIP-ecosystem

In our digital interactions, it is crucial to structure how *Actors* engage in specific use cases to ensure that outcomes are fair, consistent, and compliant with legal and domain-specific regulations. To achieve this, the Green Paper outlines how a vast array of diverse information chains can be constructed using a recurring set of basic functions. These TIP basic functions are designed at a high level of abstraction, allowing them to be reused across many different information chains. However, their configuration can be adapted to make them highly specific to a particular domain or case.

This adaptability fosters an ecosystem where various *information chains* can be configured, and various *value-added services* can be easily accessed. While these *value-added services* may be very

domain-specific, they are made accessible in a standardized, generic manner, facilitating broad usability.

The adoption of TIP standards within an *Information chain* is driven by domain governance. It is the responsibility of domains and their governing bodies to decide when and how deeply to adopt TIP. The pace of this adoption is also determined by the domains themselves. To support this process, the TIP partnership provides numerous resources, including best practices and technical descriptions of the TIP building blocks.

One critical component in this ecosystem is how C*hain specifications* are published. This is managed through a specific building block called 'Publishing Chain and Service Specifications.' This building block outlines how these specifications are made available in a machine-readable format, allowing *Acting spaces* to effectively consume and utilize them.

Figure 1 illustrates how *Acting spaces*, with their basic functions, exchange data seamlessly with other basic functions, such as *Value-added services*, within this structured ecosystem.
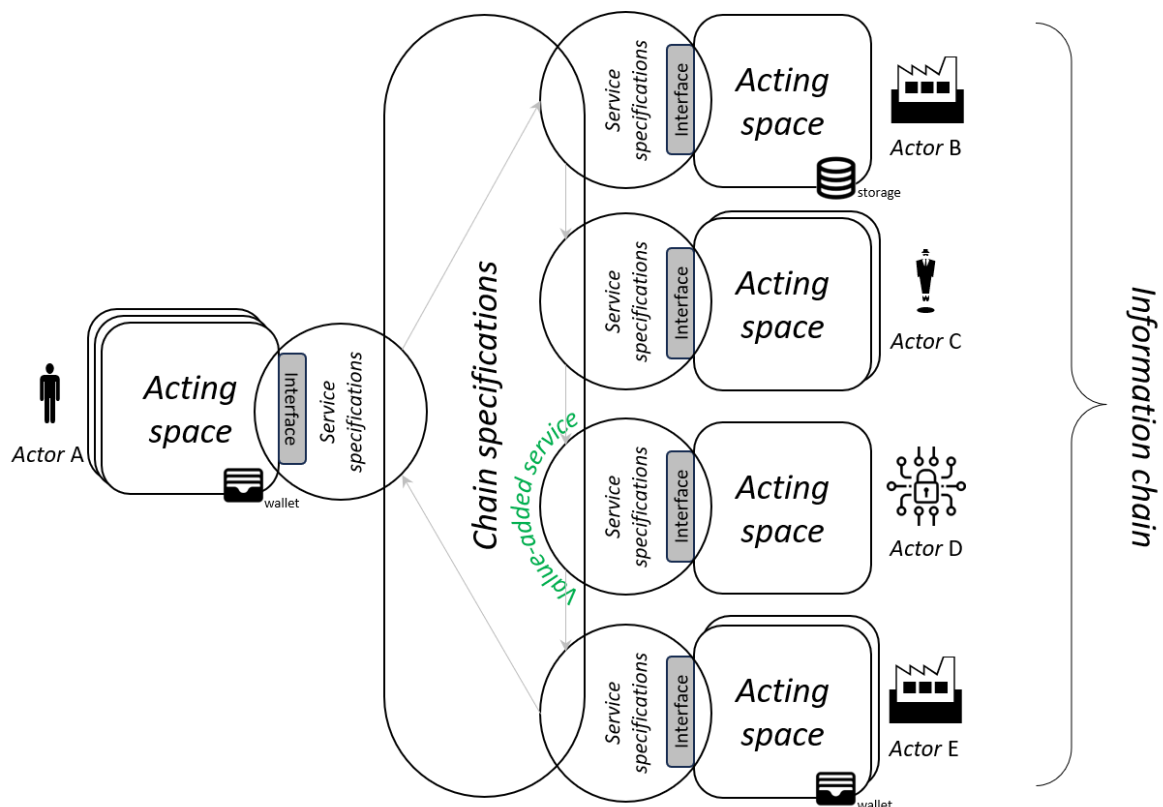

Figure 1: An overview of the relationship between various concepts of the *TIP-ecosystem*

Higher levels of harmonization and interoperability

The TIP-ecosystem is designed to enable harmonization and interoperability across multiple TIP implementations, bringing several key benefits.

1. **Seamless customer journeys**: By using the same TIP methodology, different domains can work more effectively towards harmonization and interoperability. For example, as illustrated in Figure 2, multiple *Information chains*, each with its own governance, can be structured so that the outcome of one chain serves as a suitable input for the next. This continuity ensures smoother transitions and more efficient processes.

2. **Faster adoption rates**: Once *Actors* are onboarded to an *Acting space* of their choice, they can easily interact with other *Information chains* that adhere to the same technical standards. This eliminates the need for *Actors* to invest additional resources in learning new tools or adapting to different domains. Instead, an installed base in one domain can seamlessly participate in others, making the process more efficient and cost-effective.

3. **A viable ecosystem**: The *TIP-ecosystem* fosters a viable and robust market for trust services. When multiple domains develop similar basic functions in isolation, it increases the economic burden on *Actors* and weakens the overall business case. In contrast, when domains share the same basic functions, it creates a larger market that supports more competition. This leads to better-tailored services at lower costs for *Actors*, as well as a more resilient ecosystem with less risk of vendor lock-in. Healthy competition encourages innovation and investment, further strengthening the ecosystem.

To support this interoperability, the TIP-ecosystem has adopted a high level of assurance for digital identities, aligning with the standards set by EU policies for the Digital Decade[10]. This ensures that the *TIP-ecosystem* is secure, reliable, and suitable for a wide range of applications.

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[10] https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en
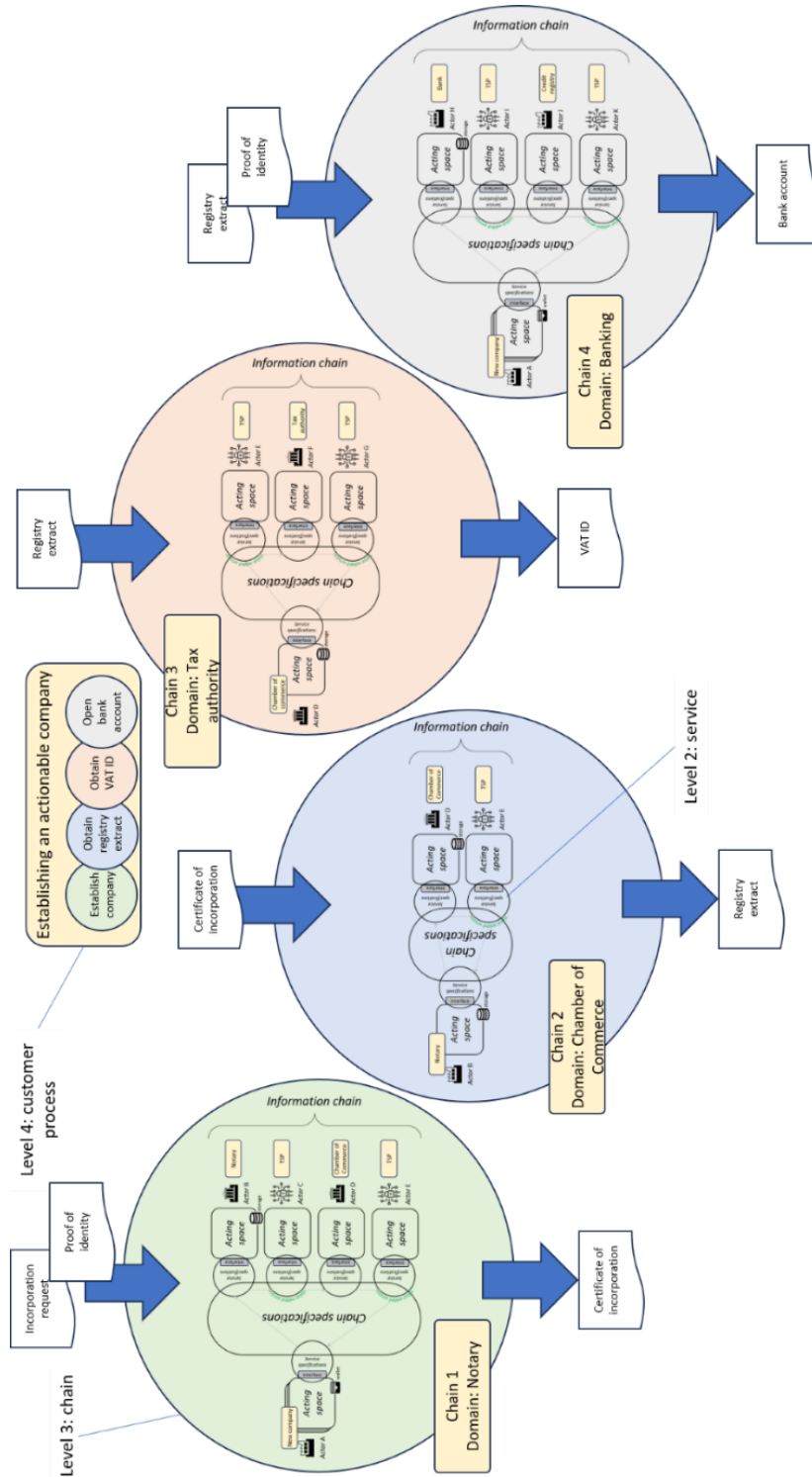
Figure 2: Harmonization between several domains with their own governance. A consistent customer process is created where the outcome of one chain is the input for another chain.