eReceipt guidelines

Table of Contents

PREFACE 2

1. DOCUMENT INFORMATION 3
   1.1. References 3
   1.2. CHANGE HISTORY 3
   1.3. PURPOSE OF THE DOCUMENT 3

2. VISION & OBJECTIVES 4
   2.1. The eReceipt market 4
   2.2. BINDING NATURE OF THE GUIDELINES 6
   2.3. COMMON LEGAL FRAMEWORK 6

3. Roles, responsibilities and obligations 7

4. Principles 9

5. THE FOUR-CORNER MODEL 10
   Delivering receipts in the Four-Corner Model 10

6. OVERVIEW OF THE eReceipt PROCESS and Use Cases 12
   6.1. Registration 12
   6.1.1. Option where the payment user is directed to register card information to the PSP 12
   6.1.2. Option for payment instrument information registered by the Issuer 14
   6.1.3. Option for registering the mobile payment instrument via the mobile payment application 16
   6.2. Purchase transaction 18
   6.2.1. Purchase transaction, method 1 18
   6.2.2. Purchase situation, method 2 (Three-Corner Model, description of existing service) 20
   6.3. eAddress information for financial management systems 22
   6.3.1. Forwarding the receipt and filling in additional information in the user's application (receipt application) 22
   6.3.2. Purchase transaction processing, the payer's travel and cost management system, the purchase transaction is attached to the eReceipt 24
   6.3.3. Transaction processing, the payer's purchase invoice processing system, obtaining the eReceipt 27
   6.3.4. Purchase transaction processing, the payer's purchase invoice processing system, the paper receipt is photographed or scanned 29
   6.3.5. Purchase transaction processing, the payer's travel and cost management system, the paper receipt is photographed or scanned, the purchase transaction is attached to the receipt 31
   6.3.6. Purchase transaction processing, the payer's travel and cost management system, the purchase transaction is attached to the eReceipt 34
   6.3.7. Purchase transaction processing, the payer's travel and cost management system, the paper receipt is photographed or scanned, the receipt is attached to the purchase transaction 37

7. General technical principles 40
   7.1. Encrypting the receipt 40
   7.2. The immutability of the receipt 40
   7.3. ID formats used in the receipt (eAddress, user ID) 40
   7.4. Other messages (feedback, refunds) 40
   7.5. Spatial data, carbon footprint, and other receipt information 41
   7.6. Used message descriptions 41

8. INQUIRY PROCESS 42

PREFACE

This Guidelines document has been compiled in the Real-Time Economy Ecosystems project coordinated by the Technology Industries of Finland in collaboration with representatives of over 40 companies, communities and public sector organisations. The Guidelines are available for use to all organisations or individuals willing to work in the eReceipt ecosystem and/or develop eReceipt services for organisations or consumers.

eReceipt is a receipt in a structured standardized format understandable to machines. All data fields can be automatically processed without manual data entry of receipt information. Thus, paper receipts, receipt pictures or PDF receipts are not considered as eReceipts.

The Guidelines describes the essential eReceipt ecosystem actors and technical and functional models enabling the transfer of the eReceipt in a structured form from the seller's systems to the sytem the buyer wants to use. With common operating models and standardised eReceipt data model all actors can develop various services to the companies and consumers, and furthermore these services will be interoperable without surplus integrations or data transformations.

The essential principles for eReceipt ecosystem:

- eReceipt is a standardised structured machine-readable data entity.
- There is a standard eAddress and identification method for transferring eReceipts.
- eReceipts are transferred in a four-corner model where the seller and the buyer can use different eReceipt operators and both actors can have only one agreement relationship.
- eReceipt and the payment methods are kept separate as well as the transfer of payment events. Thus, the eReceipt functionalities are ensured also in case of new emerging payment methods.
- eReceipt enables automation and provides for considerable cost reductions in the data handling processes.
- eReceipt data mass, about 1.7 billion credit or debit card payments in Finland in 2017, gives possibilities for many new company or consumer services.
- eReceipt is a prerequisite for real-time economy.

Finland occupies the top position in real-time economy. Finland is the only country in the world where the essential definitions and agreements between the main actors have been made to transfer eReceipts from the seller's system to the buyer's system without manual work.

The Guidelines developers anticipate mainstreaming of eReceipts by implementations of eReceipt services both for companies and consumers.

eReceipt operating model and the Guidelines will be further developed along with the experiences from pilots and other experimentations.

Feedback, comments and development ideas are welcome to the contact persons mentioned at www.rteco.fi >eKuitti

1. DOCUMENT INFORMATION

1.1. References

The list of documents referred to in the Guidelines:

- Transmitting card purchase receipts in the Finvoice format http://www.finanssiala.fi/finvoice/dokumentit/Transmitting_card_purchase_receipts_in_the_finvoice_format.pdf
- SEPA cards standardisation volume https://www.europeanpaymentscouncil.eu/news-insights/news/ecsg-publishes-new-version-sepa-cards-standardisation-volume-effective-today
- Act on the Obligation to Provide a Receipt for Cash Transactions (658/2013), https://www.finlex.fi/fi/laki/alkup/2013/20130658 (in Finnish)
- Finnish Tax Administration's guidelines on giving receipts https://www.vero.fi/en/About-us/information_and_material_on_taxatio/combating_the_grey_econom/kuitinantovelvollisuus_harmaan_talouden/the_rules_on_giving_receipts_to_custome/ (in Finnish)

1.2. CHANGE HISTORY

Issue number	Date	Reason for revision
V 1.0	Nov 23, 2018	

1.3. PURPOSE OF THE DOCUMENT

This document was created by the eReceipt working groups of the Real-Time Economy Ecosystems (RTECO) project. The purpose of the document is to clarify use cases and practices, in order to be able to transmit structured data in the eReceipt the eReceipt ecosystem. In the future, a rule book refined from this document and a framework agreement between operators will be required as a basis for the Four-Corner Model.

In this document, the term 'Participant' refers to any party that will be involved in the framework agreement and is thus compliant to the procedures agreed upon in the rule book.

The objectives of the Guidelines:

- To provide eReceipt guidance for B2C and B2B services
- To be the primary source for the definition of the rules and obligations
- To provide information to Participants and other relevant parties as to how the eReceipt ecosystem functions
- To support and to comply with the European model/format
- To provide involved parties relevant information to support development and operational activities
- To be in full compliance with RTECO project principles in Finland

2. VISION & OBJECTIVES

The eReceipt Guidelines provide a set of rules, practices and standards to be complied with by the Participants. The eReceipt Guidelines also provide a common basis on which the Participants can offer new and innovative services.

The main idea of the eReceipt scheme is to generate purchase data in structured form on row level. Digitised purchase data is transferred in real-time. The payment transaction associated with the purchase is transmitted through its own channel. The eReceipt is not a payment transaction but a specification of the items purchased and paid.

2.1. The eReceipt market

The Guidelines have been written from an end-to-end point of view. An overview of the costs and receipt processing in Finland is shown in Fig. 1.

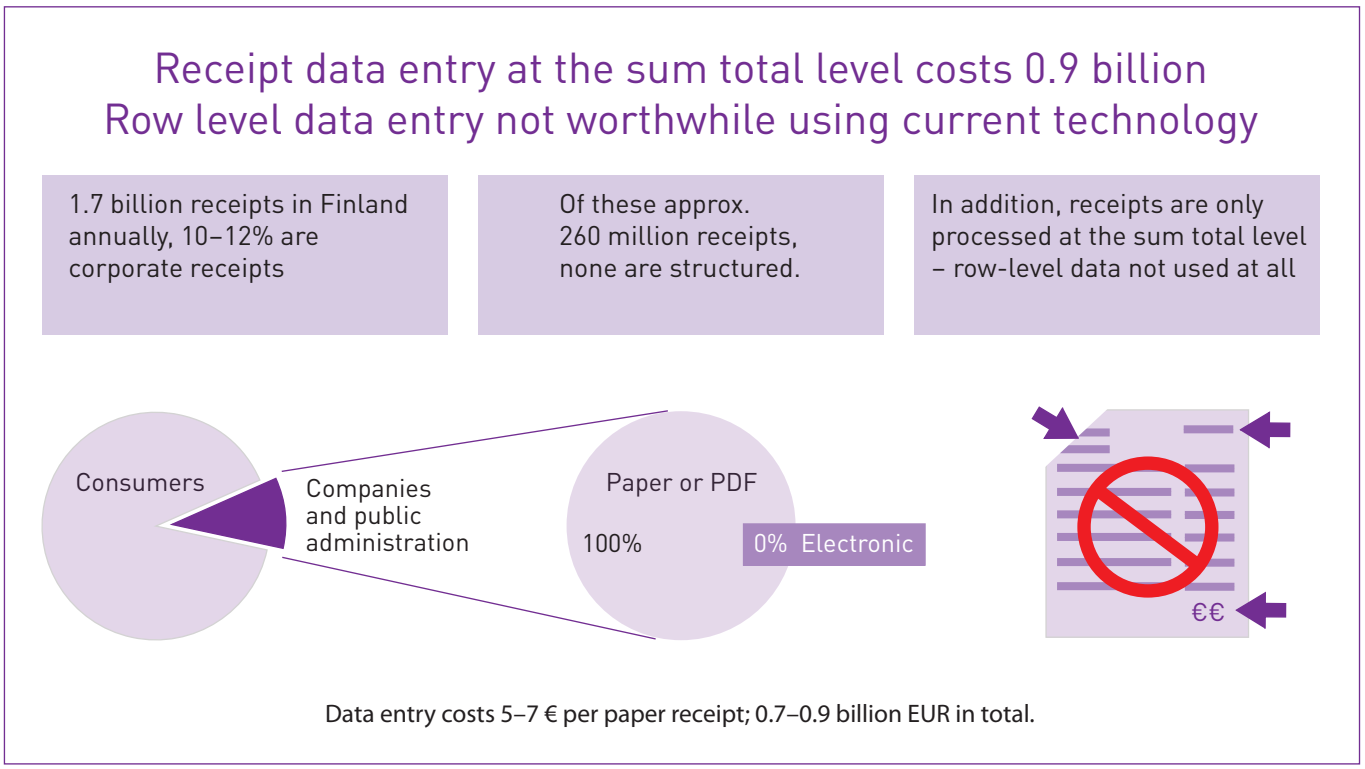

Figure 1. Overview of receipt processing costs.

The aim is to deliver receipts in a structured form easily understood by a computer, all the way from the receipt system to corporate, community or public administration financial systems.
Structured electronic receipts offer the following potential benefits:

Companies, communities and public administration

- Receipt information does not have to be saved manually to the financial systems, and the company can automate receipt processing.
- In terms of credit or debit card purchases, the savings from reduced data input work add up to appx. 900 million EUR per year in Finland (cf. Figure 1).
- The processing of cash purchase receipts generates cost savings, but estimating the extent has not been possible due to the unknown number of receipts from cash purchases.
- Financial systems get more extensive data from the row information in structured receipts.
- Broader receipt information enables superior, automated reporting of purchases and expenses.

- Receipt service companies will appear on the market to provide companies with more detailed client information.
- Sellers of products can order a targeted product recall, as the receipt info indicates to whom a potentially faulty or hazardous product has been sold.
- Receipt provider organisations will save receipt printer and material costs.
- Reduced paper usage lessens the environmental impact.
- A structured receipt allows companies to automate VAT processing, as well as any other process or new service requiring an original purchase receipt (e.g. customs clearance)
- Tax accrued by sales revenue can be monitored to combat the grey economy.

Consumers

- The consumer can receive a structured receipt in a mobile application or another application from the service provider, either for recording or forwarding.
- The consumer can also receive warranty receipts electronically and/or in an image format. This makes it easy for consumer to save the receipts electronically and find them when required.
- New companies providing services to consumers will appear, e.g. receipt service companies for managing consumers' finances.
- Structured receipts can be used to produce receipt services tailored to the elderly, visually impaired, and special needs groups.
- New services for time-saving and simplifying everyday life will be created, e.g. for situations requiring a receipt or proof of purchase to access a service. Documents will not need to be delivered, stored, searched for, or processed when the information is automatically forwarded to the party requiring receipt information.

Competition law aspects

For the transmission of electronic invoices and receipts, a market structure is being created in which a supervisory organisation uses a framework agreement to devise the necessary requirements and procedures for invoice and receipt intermediaries to ensure the operator network's functionality. Any operator fulfilling the conditions and agreeing to comply with the intermediary network's operating procedures may join the network. The aim is to create a competitive market for supplying electronic invoices and receipts, allowing both the biller and the payer to freely switch between providers.

The network complements the coming law on electronic invoicing by defining the technical practices of forwarding invoices and receipts, including the use of reception confirmation messages, along with the parties' responsibilities when transmitting invoices and receipts. Furthermore, a plan for controlled cessation of operations is required.

Any practice by traders intended to restrict or monitor production, markets, technological development, or investments is prohibited according to Article 5 of the Competition Act (948/2011). However, Article 6 of the Act allows a contract between traders or a procedure meant for optimising production or distribution of products or facilitating technological or economic development; leaves consumers a fair share of the resulting benefit; does not set restrictions on the traders concerned that are not essential for achieving the stated goals; and does not give these traders a chance to eliminate competition in terms of a substantial portion of the goods in question.

The goal of the operator network is to create the technological prerequisites for fully digital transmission of financial documents, along with a basis for competition between operators. This arrangement will improve the economy's efficiency, streamline day-to-day payment transactions, and considerably cut down on the administrative burden of companies, the public sector, and the general public alike. In addition, financial information in structured form is perfectly suited for creating all-new businesses and services to facilitate sensible and balanced financial management for consumers in particular, and solve issues related to, e.g. warranty and liability for defects.

The arrangement will ensure free access to the network and, when desired, the possibility to leave the network. The requirements set by the network are essential to ensure the reliability and safety of its operations. These requirements are based on open, international standards and are freely accessible to all. The exit strategy requirement is justified by considering the importance of the transmitted information and the associated retention obligations. The rules of the network account for every member's equal and reasonable opportunity for influence.

The arrangement facilitates technological and economic development, does not impose restrictions on operators unless these restrictions are essential for securing functionality, safety, and customer trust and position. This arrangement leaves consumers with a fair portion of the benefits and stops operators inside the network from eliminating competition to a significant degree.

2.2. BINDING NATURE OF THE GUIDELINES

This document serves as a template for the rule book to be written later. The decrees in the document are recommendations intended to ensure that new eReceipt implementations can be made based on common principles.

The issues specified in the document are to be transferred into the rule book later. The guidelines in the rule book will be binding to all Participants who sign the community's framework agreement.

The following basic principles will continually apply to Participants committed to the rule book:

Participants are free to choose their operating processes, or use intermediaries or outsource (partially or completely) to third parties. However, outsourcing or the use of intermediaries does not relieve Participants of the responsibilities defined in the Guidelines.

For the relationships between a Participant and its customer, the Guidelines specify the minimum requirements.

The Guidelines provide a single set of rules, practices and standards which are then to be implemented by individual Participants and potentially multiple infrastructure providers.

2.3. COMMON LEGAL FRAMEWORK

Legislation on the obligation to provide a receipt

The provision of receipts and the data content of receipts are determined in the Act on the Obligation to Provide a Receipt for Cash Transactions (658/2013):

"Traders must provide the purchaser of goods or services with a receipt of the payment if the payment is made in cash or in a way analogous to it. The receipt may also be provided electronically.

The receipt must contain the following data:

1) the name, contact details and business ID of the trader;
2) receipt issue date;
3) receipt ID number or other individualised data;
4) the number and type of the goods sold and the type of services;
5) the payment made for goods or services and the number of value-added tax by tax rate or the grounds for value-added tax by tax rate. "

Additional information is available in the Finnish Tax Administration guidelines: https://www.vero.fi/tietoa-verohallinnosta/tietoa_verotuksest/harmaan_talouden_torjunt/kuitinantovelvollisuus_harmaan_talouden/kuitinantovelvollisuus__usein_kysytty/ (in Finnish)

Information on card payment data required on the receipt can be found in SEPA Cards Standardisation Volume https://www.europeanpaymentscouncil.eu/news-insights/news/ecsg-publishes-new-version-sepa-cards-standardisation-volume-effective-today

3. Roles, responsibilities and obligations

Role	Definition	Responsibilities and obligations
Buyer	The company, organisation, or person who is ultimately responsible for the purchase.	**The company whose accounting system the eReceipt is exported to** - delivers payment from card purchases to the card's issuer - processes the cost in its accounting **Consumer** - Ensures the eReceipt's correctness at the payment
Payment instrument user	Consumer or person representing a company or organisation who makes the payment and receives the receipt to a receipt service.	- Ensures the eReceipt is correct and, if necessary, updates the required information in the eReceipt service (expense, cost centre, etc.) or in the accounting system
Payment instrument user ID	The person using the eReceipt service receives a unique user ID for the service	The user ID defines who the receipt is displayed to in the eReceipt service
eReceipt	Digitised purchase data in structured form on row level	A receipt in a structured form, readable by computer
eReceipt operator	API platform service between merchant and receipt service. Receipt platform allows merchants to deliver and/or present eReceipts to applications that consumers or companies are using. Service sending and/or receiving structured line item receipt data.	Forwards eReceipts belonging to another eReceipt operator according to the Four-Corner Model. Acknowledges received eReceipts. Responsible for the authenticity and integrity of the receipt data in standard form.
eReceipt service	API or other interface showing the receipts to the payment instrument user	Displays the receipt in a readable format. Provides the option to forward the eReceipt further Enables attaching additional information to the receipt. Enables registration of payment instrument or another purchaser ID.
Receipt data use application	Purchase invoice system, travel and cost management system or similar application covering the receipt's row-level data	
eReceipt archive service		Handles archiving eReceipts according to agreed terms. Enables use of the eReceipt archive
Issuer	The entity issuing the payment card.	The issuer forwards the seller's original filing reference to the buyer during the transaction
Merchant	The organisation operating a retail business and accepting payment cards as a method of payment for goods or services.	Makes eReceipt service agreement with own eReceipt service. Responsible for the receipt data's correctness, authenticity, and integrity.

Role	Definition	Responsibilities and obligations
EDI	The EDI (Electronic Data Interchange) ID for data transmission between organisations is defined in the SFS 5748 standard. The length of the EDI ID is 12...17 and is created from the business ID. The format of the ID is: 003799999999NNNNN • 0037 is a code in the ISO 6523 standard, from the Finnish Tax Administration. • 99999999 is the business ID with checkmarks, unhyphenated, written all as one. • NNNNN is the ID for the part of the community. The ID's maximum length is five characters and only numbers are allowed, written from left to right. The part of community ID is optional.	The receipt's MessageTransmissionDetails element must include the seller's EDI ID while the MessageReceiverDetails information requires the EDI ID of the receiving eReceipt service.
Payment Service Provider PSP, Payment Processor	Entity engaged by merchants to handle payment card transactions on their behalf. While payment processors typically provide acquiring services, payment processors are not considered acquirers (merchant banks) unless defined as such by a payment card brand. Also called a "payment gateway".	Serves as a payment service in accordance with PSD2 specification
Payment terminal vendor, e-commerce		
Point-of-sale (POS)	Hardware device used to accept customer card payments via swipe, dip, insert, or tap. Also called "point-of-sale" (POS) terminal. During in-store payment, receives the card payment with necessary holder's credentials. Also, other non-card payments such as invoices initiated at the payment terminal.	Creates an eReceipt both in physical trade and distance sales.

4. Principles

Adhering to eReceipt guidelines is grounded in compliance with the following principles:

- The recipient of the eReceipt /Buyer should have the right to select which receipt service company it uses.
- The Merchants can select the receipt service company they use or they can also select a payment terminal service to forward the eReceipts.
- The form of the eReceipt should be standard (starting point is the Finance Finland Finvoice data requirements)
- The operating model should be the Four-Corner model. Closed three-corner models are also possible, but these must be able to provide information outside the system or receive it from outside if required.
- The operating model should be open to new eReceipt service providers who meet the criteria.
- The eReceipt should be viewable in the display application "quickly enough" after the payment.
- The aim is to have bi-directional eReceipts enabling the vendor to contact the customer after the payment (for example using a web link).
- eReceipt processing must comply with the GDPR regulation and European Data Protection Board (EDPB) guidelines.
- The material moving in a structured eReceipt cannot include pictures, but an eReceipt can have a link to vendor's services.
- Each Participant needs to determine how to achieve compliancy to the Guidelines. There are several ways for Participants to send and receive eReceipt.

5. THE FOUR-CORNER MODEL

The following diagram gives an overview of the contractual relationships and interaction between the main actors.

A. It is recommended to adapt services to Four-Corner Model to avoid an endless number of point-to-point intergrations and agreements.
B. Importance of the Four-Corner Model increases for cases of large international and cross-border merchants.
C. For limited scope and in existing integrations, it is possible to use direct Three-Corner Model integrations

Delivering receipts in the Four-Corner Model

	POS System	Seller's receipt operator	Payer's receipt operator	User's application	User
1	Creates the eReceipt, adds the **payer's** receipt service operator's **eAddress** and **User ID**				
	Delivers the receipt to **the seller's receipt operator**				
2		**The seller's receipt operator** receives the receipt. Uses the eAddress to identify the receipt belonging to another receipt operator. Forwards **the receipt to the payer's receipt operator**			
3			**The payer's receipt operator** receives the receipt, forwards it to the user's application		
4				**The user's application** receives the receipt, adding it to the user's account based on the user ID. If necessary, the payer's name and address (VAT requirement) and the purchaser's identification, e.g. employee ID number, can be added to the receipt	
5					The user sees the receipt in the **receipt data application**

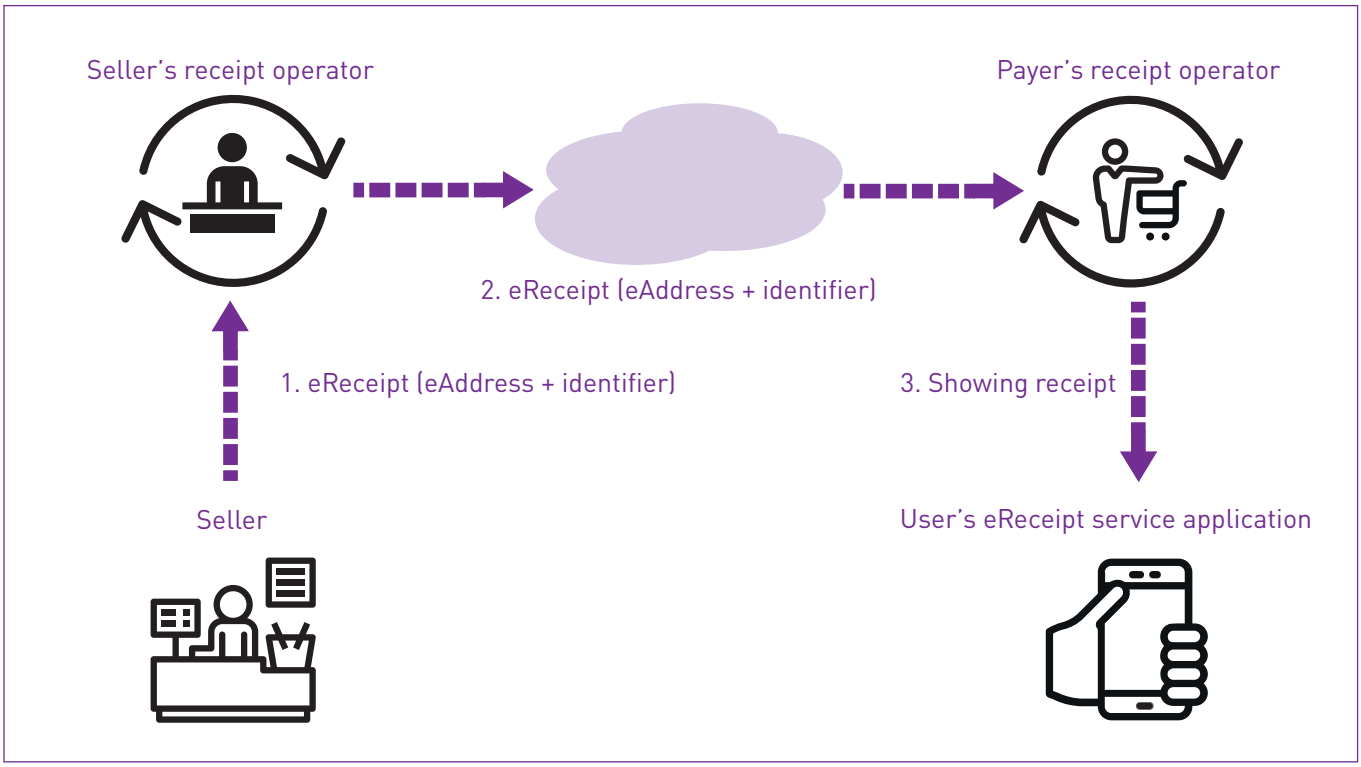

Figure 2. Basic principles of the Four-Corner Model.

The actors are bound together by a few relationships, identified in Fig. 2 by numbers.

The contractual relationships include:

- Between the Buyer and the Seller regarding the provision of goods and services and/or the requirement to make a payment. This may or may not be reflected in a formal legal contract. This relationship does not form part of the operation of the Guidelines.
- Between the Buyer's and the Seller's eReceipt service provider concerning the eReceipt and services to be provided and their related terms and conditions. This relationship is not governed by the Guidelines, but the contract will, as a minimum, cover elements relevant to the sending of an eReceipt as required by the Guidelines.
- The terms and conditions between the seller and the service provider used by the seller, and the purchaser and their service provider, are outside the scope of these Guidelines, but service contracts should account for the demands of data interchange between service providers.

6. OVERVIEW OF THE eReceipt PROCESS AND USE CASES

This section covers the various use cases of the eReceipt process, from registration to financial management software. In terms of registration, three options are described:

- The users themselves register the payment instrument
- The issuer registers the payment instrument
- Registration is handled through the mobile payment application.

During a purchase transaction, the eReceipt can be delivered to the buyer from the POS system via receipt operators, or the seller delivers the receipts to their own receipt operator also used by the buyer. In the future, the aim of receipt operators is delivering eReceipts according to the Four-Corner Model.

In accounting use cases, the eReceipt processing is described in the purchase invoice system and travel and cost management system.

6.1. Registration

The payer registers the information of the payment card or another payment instrument to the PSP via the receipt data application for the receipts to be delivered. The consumer gives consent to receipt delivery. The PSP sends the eAddress information to the seller.

6.1.1. Option where the payment user is directed to register card information to the PSP

	Payment instrument user	User's application	PSP
1	**The payment instrument user** chooses their **eReceipt service**		
2	**The eReceipt service** directs **the payment instrument user** to register the card details on the PSP's service		
3	**The payment instrument user** enters the card details (card number and expiry date) in the PSP's service		
4		**The payment instrument user's eReceipt service** delivers the eReceipt service company's **eAddress (EDI)** and generates a **user ID**. **The user ID** ensures that **the eReceipt** is directed to the payment instrument user. This information can be used to forward the eReceipt **from the store's receipt service company to the user's eReceipt service**	
5			**The PSP** files the data in its own registry (card details, eAddress, user ID)

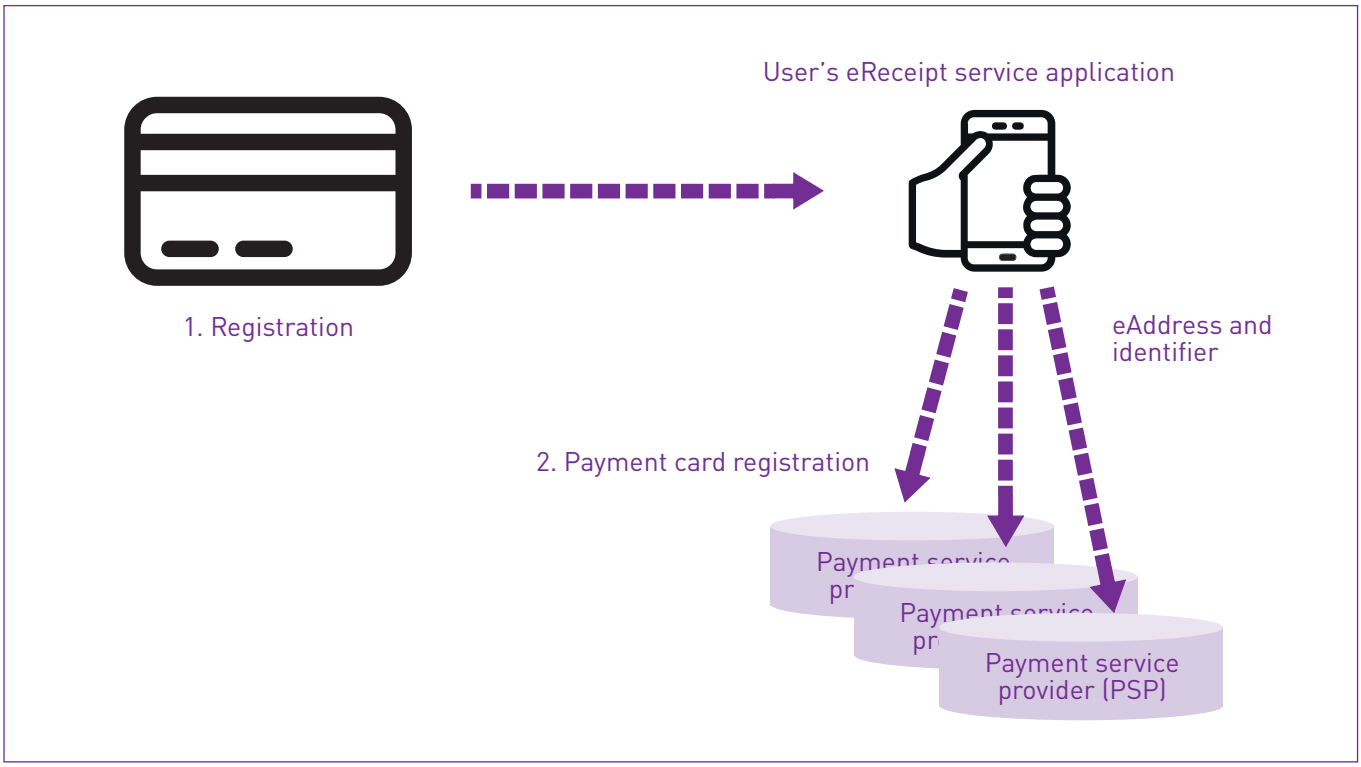

Figure 3. Registering a payment card for the PSP.

6.1.2. Option for payment instrument information registered by the Issuer

	User	User's application	Issuer	PSP
1	**The payment instrument user** chooses their **eReceipt service**			
2	**The eReceipt service** directs **the payment instrument user** to register the card details on the **issuer's** service			
3	The user chooses the payment instrument they want to connect eReceipts to			
4		**The payment instrument user's eReceipt service** delivers the eReceipt service company's **eAddress (EDI)** and generates a **user ID**. This information can be used to forward the eReceipt **from the store's receipt service company to the user's eReceipt service**		
5			**The issuer files the data** (card details, eAddress, user ID) to their own registry, so eReceipts allocated to the tokenised numbers can be directed to the correct **eReceipt service.**	
6			**The issuer** transmits the data to **the PSP**	
7				**The PSP** files the data to its own registry (card details, eAddress, user ID)

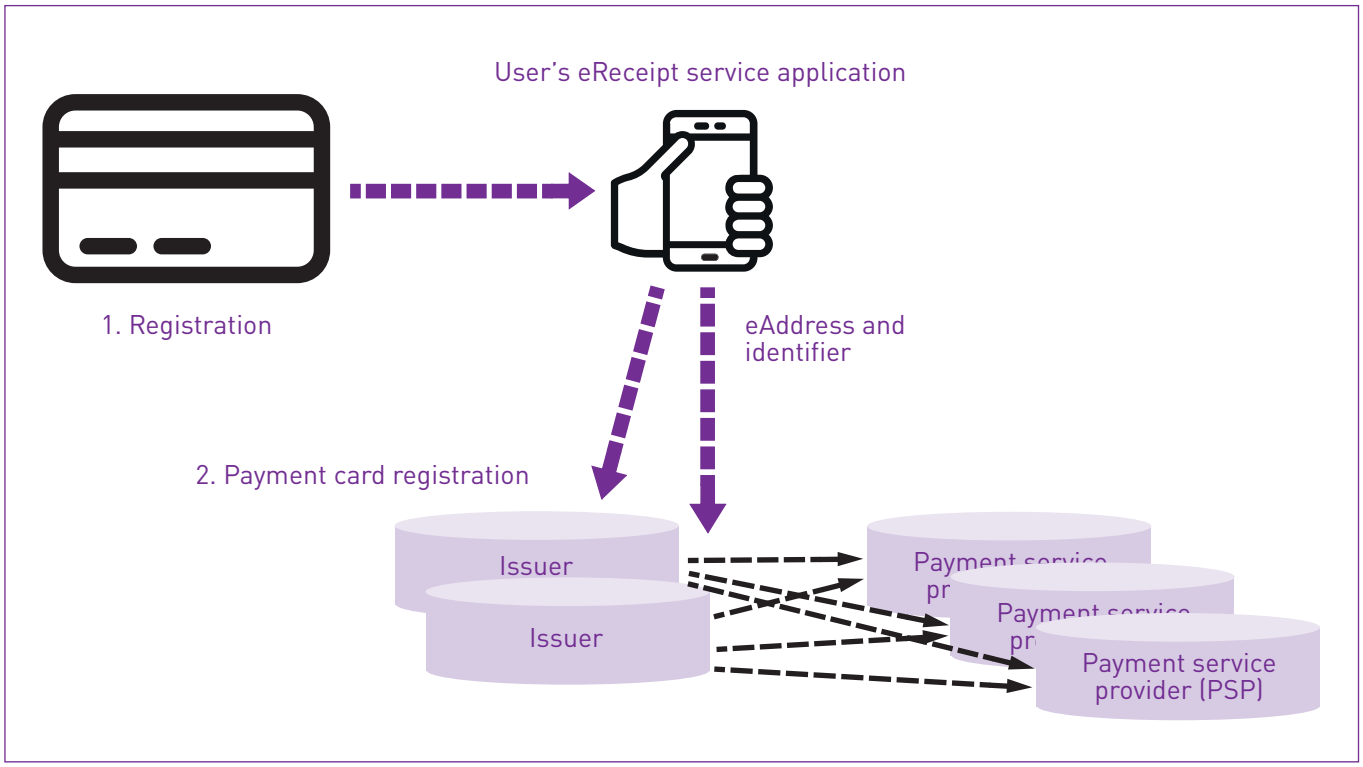

Figure 4. Payment instrument registration via the Issuer's service.

6.1.3. Option for registering the mobile payment instrument via the mobile payment application

	User	User's mobile application
1	**The payment instrument user** chooses their **eReceipt service**	
2	**The user** selects "Add mobile payment" in the **eReceipt service** application **The eReceipt service** creates a QR code containing information about the **eReceipt service company's eAddress (EDI)** and user ID, and displays it on screen.	
3	**The user** launches the mobile payment application and uses it to read the QR code	
4		**The mobile payment application** registers the information in its files (eAddress, user ID, phone number)

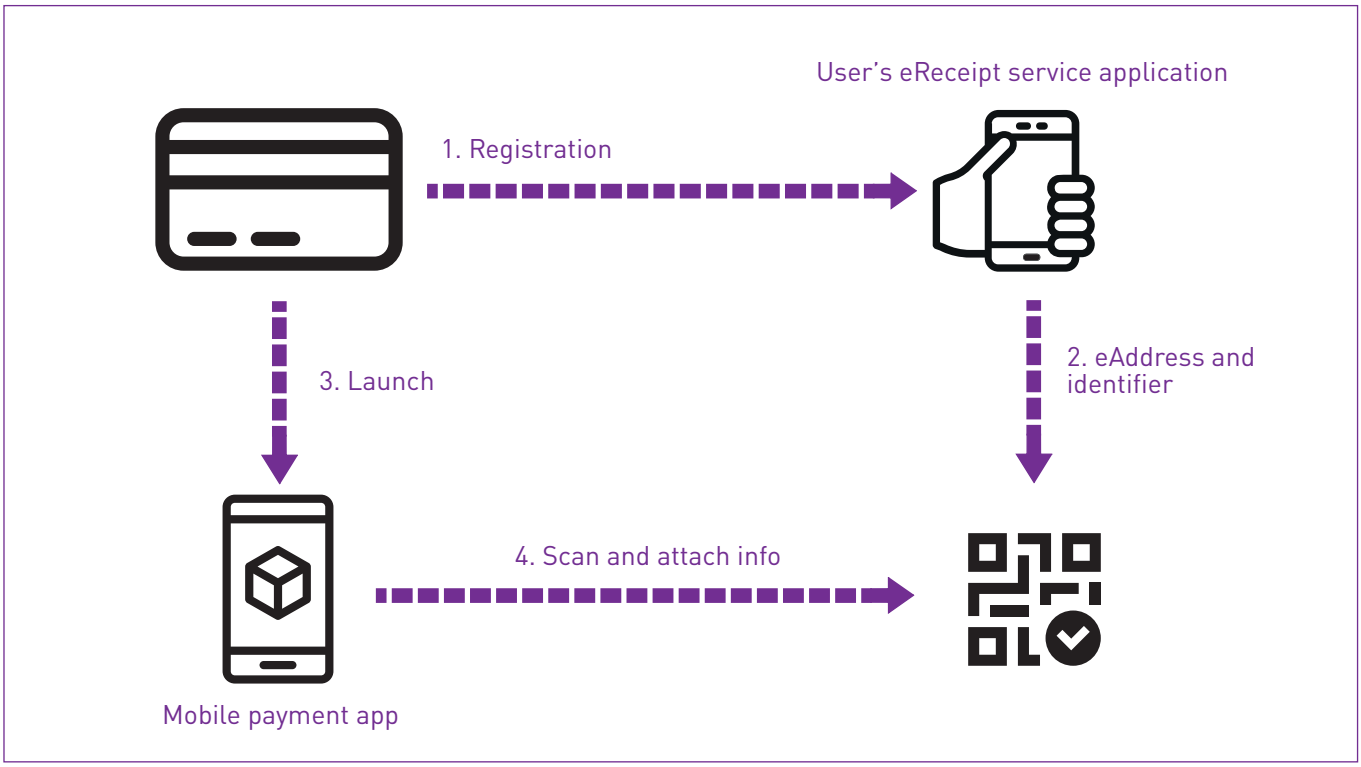

Figure 5. Registering a mobile payment instrument, method 1.

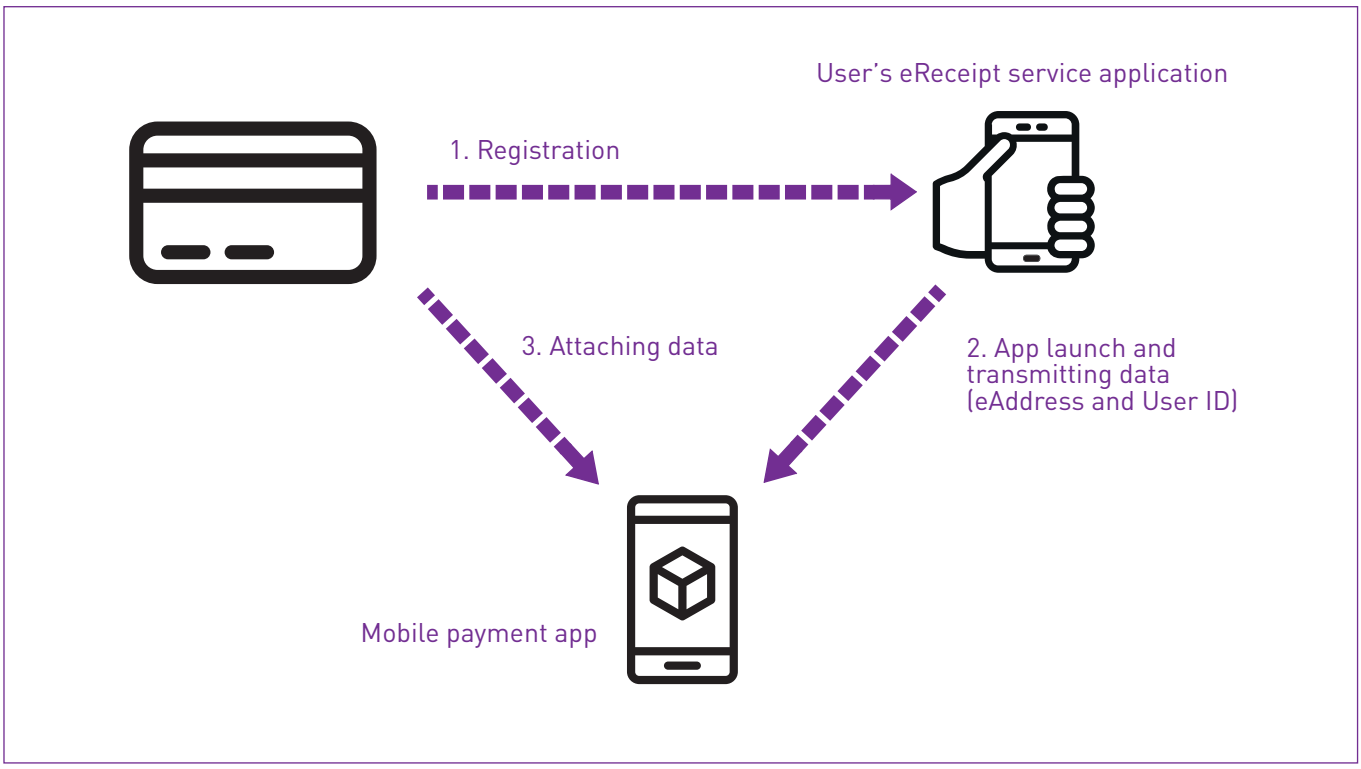

Figure 6. Registering a mobile payment instrument, method 2.

6.2. Purchase transaction

6.2.1. Purchase transaction, method 1

	User	User's application	PSP	POS system	Deliverer of receipt
1	The user pays with the registered card				
2			Transmitting payment and finding eAddress and user ID in PSP's own register		
3			Forwards the receipt operator's eAddress and user ID to the POS system		
4				Creates the eReceipt, adds the **payer's** receipt service operator's **eAddress** and **User ID**	
5				Delivers the receipt to **the seller's receipt operator**	
6					Receives a receipt and passes it **to the receipt** operator of the payer's eReceipt service based on the eAddress
7		**The payer's eReceipt service** receives the receipt, adding it to the user's account based on the user ID. If necessary, the payer's name and address (VAT requirement) and the purchaser's identification, e.g. employee ID number, can be added to the receipt			
8	The user sees the receipt in the **eReceipt service application**				
9		**The payer's eReceipt service's receipt operator** delivers the receipt to the services desired by the user (accounting application, travel and cost system, bank)			

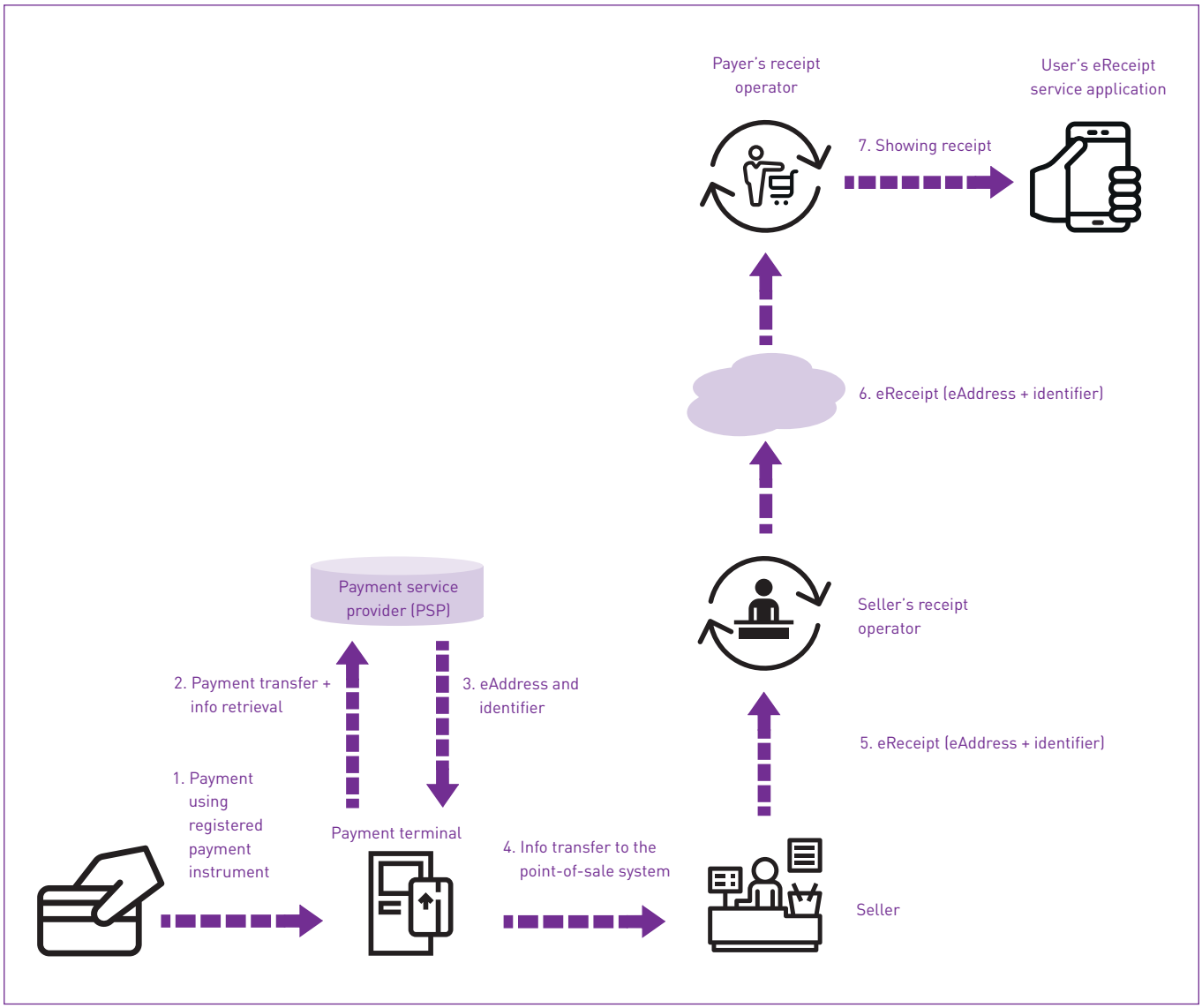

Figure 7. Payment and receipt delivery.

6.2.2. Purchase situation, method 2 (Three-Corner Model, description of existing service)

	User	User's application	PSP	POS system	Deliverer of receipt = receipt operator
1	The user pays with the registered card				
2			Payment forwarding and payment transaction data forwarding to the seller's receipt operator		
3					The receipt operator retrieves the receipt based on the transaction information
4				or the POS system sends all receipts to the receipt operator that picks out the receipts related to the transaction information and removes unconnected receipts	
5					The receipt operator delivers the receipts to receipt data applications chosen by the payer

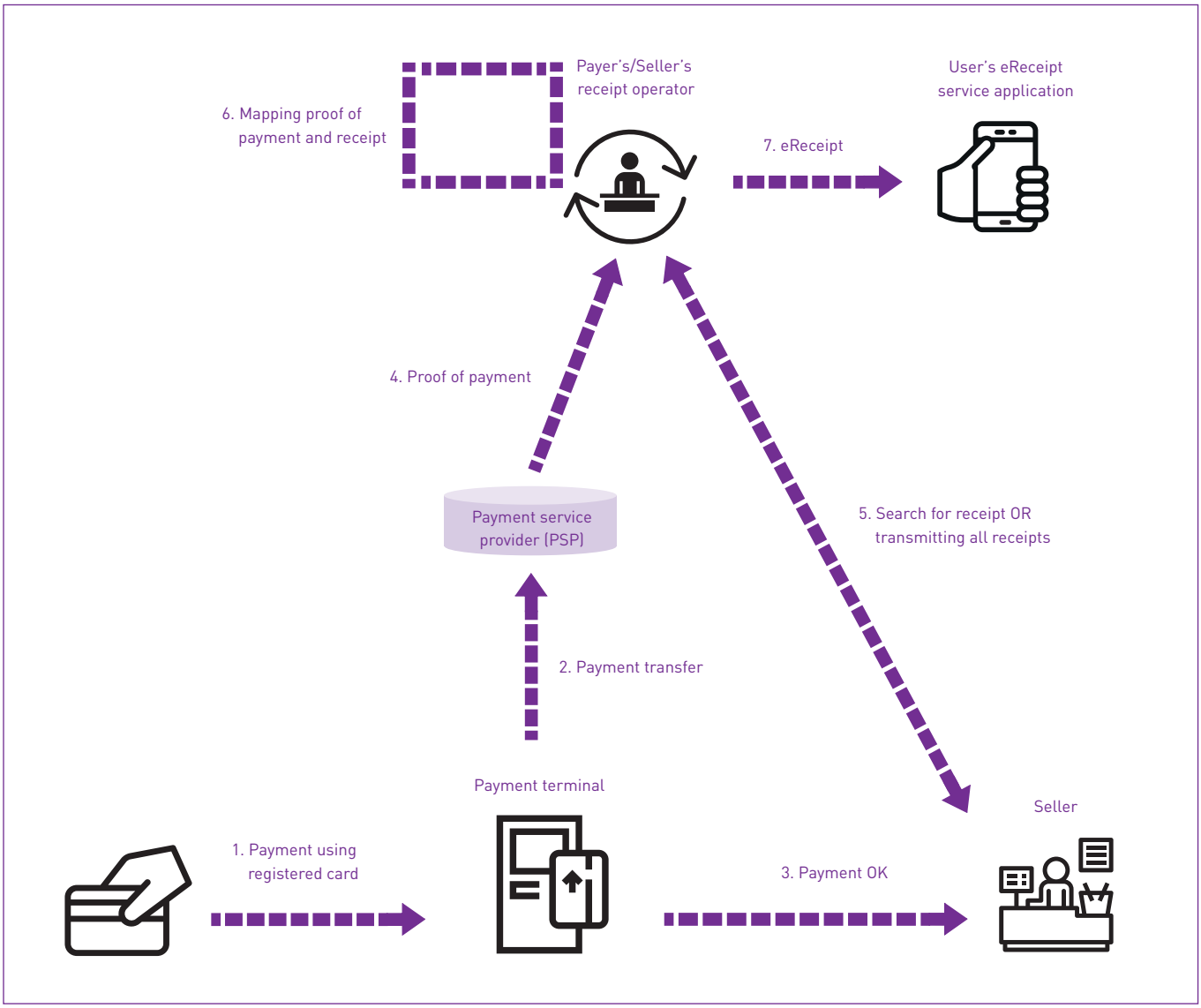

Figure 8. Purchase transaction and delivery of receipt (receipt search or forwarding all receipts to the operator).

This template does not support the Four-Corner Model:

- The user only gets structured receipts from receipt providers that have joined this service.
- The receipt provider cannot deliver receipts to users outside this service, because the eAddress and user ID required to direct the receipts to the user's receipt service are not known.
- The receipt provider may forward receipts to other payers by forming a contract with another receipt operator.
- The payer must also register for another receipt service to receive receipts from other outlets.

6.3. eReceipt data for financial management systems

6.3.1. Forwarding the receipt and filling in additional information in the user's application (receipt application)

Receipts can be delivered to services chosen by the user, including financial management systems where receipt processing can be automated with receipt data (the receipt with additional information). The transmission process of the receipt from the user's application to the financial management system is depicted in the image below. The receipt can be supplied either directly or via electronic invoicing infrastructure. Furthermore, the different options for receipt processing are described below. In use cases, the receipt is transmitted either as a structural eReceipt or as an image with additional information.

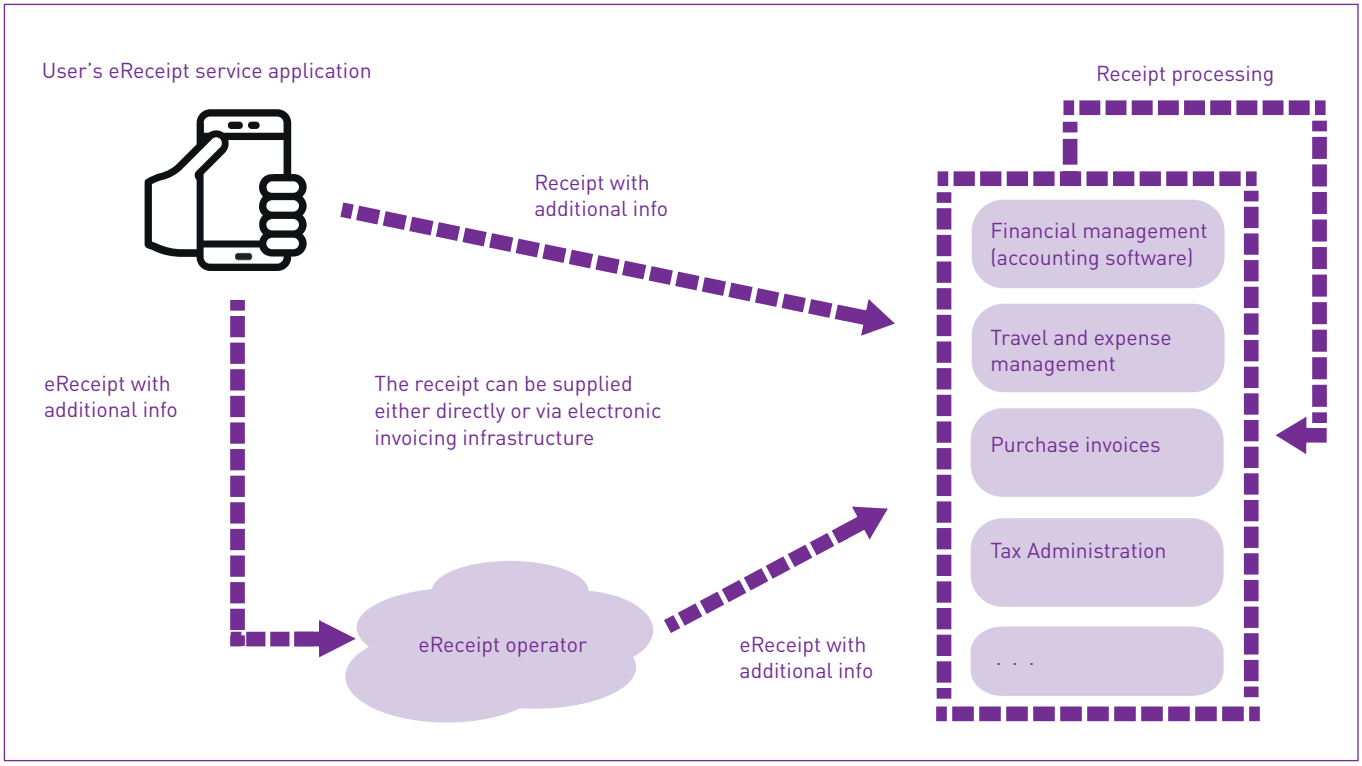

Figure 9. Delivering the receipt to the recipients and processing it.

A receipt delivered to a travel and cost management system can be supplemented with additional information in the receipt application. This information is specified below, so afterwards providing additional information in financial management systems should be limited to exceptional cases.

By default, the basic information (exported to the application either by mass running or by the cardholder) includes:

- Buyer ID (e.g. personal ID number)
- Company/organisation name and business ID
- Cost centre (optional)
- Project number (selection list, optional)
- Label/reason (e.g. participants, passengers)
- Picture taking date on a photographed receipt (incl. time of day)

1. Supplementary information for structured eReceipts (if not default)

- Cost centre (optional)
- Project number (selection list, optional)
- Label/reason (e.g. participants, passengers)

2. Supplementary information for photographed or PDF (or equivalent) receipts

- Cost centre (optional)
- Project number (selection list, optional)
- Label/reason (e.g. participants, passengers, purchased contribution)
- Purchase transaction date (the application offers image's date incl. time, which can be changed if necessary)
- Total purchase amount (gross)

6.3.2. Purchase transaction processing, the payer's travel and cost management system, the purchase transaction is attached to the eReceipt

In travel and cost management systems, the user handles the eReceipts while the system directs the purchase transaction provided by the issuer to the eReceipt.

Payment instrument user	User's system (travel and cost management system)	Accounting	Purchase invoice processing system	Issuer	Purchase ledger
The user sees the eReceipt in the receipt data application					
1. The user fills in the necessary extra information in the receipt data application					
2. Alternatively, the eReceipt is automatically transmitted to the travel and cost management system, where the information is supplemented if necessary					
The user accepts the eReceipt for delivery to the travel and cost management system (if not transmitted automatically)					
	The system receives or retrieves the eReceipts from the payer's eReceipt operator				
	The system directs the eReceipt to the user, to be attached to a travel or cost invoice				
The user attaches the receipt to the travel or cost invoice					
The user fills in any necessary extra information for the eReceipt in the travel and cost management system					

Payment instrument user	User's system (travel and cost management system)	Accounting	Purchase invoice processing system	Issuer	Purchase ledger
The user routes the travel or cost invoice for a round of verification and approval					
	The system targets the travel or cost invoice to the verifier				
				Purchase transaction delivery to the travel and cost management system	
	The system combines the purchase transaction information provided by the issuer with the details on the eReceipt (archival ID or reference)				
	The system activates the travel or cost invoice for verifier handling				
	The verifier checks the travel or cost invoice (or sends it back to the user for processing) and routes it to the approver				
	The approver accepts (or rejects) the travel or cost invoice				
	The approved travel or cost invoice is transferred to accounting (and payment, if purchased on a personal card)				

Payment instrument user	User's system (travel and cost management system)	Accounting	Purchase invoice processing system	Issuer	Purchase ledger
		The data is read into the accounting system and archived, the required invoice matching is performed, (possible reimbursements to the user are made)			
				Billing the previous month's (or other agreed billing interval's) purchase transactions from the customer organisation	
			The invoice is imported to, or retrieved by the purchase invoice processing system		
			The invoice is pre-processed and posted, or the posting is checked (if triggered by posting code), and the invoice's transactions are matched with ones processed in the travel and cost management system		
			The invoice is routed, verified, and approved		
			The approved invoice is transferred to the purchase ledger and accounting		
		The data is read into the accounting system and archived			The data is read into the purchase ledger
					The invoice is paid by its due date

6.3.3. Purchase transaction processing, the payer's purchase invoice processing system, obtaining the eReceipt

Cards are shared, and data is unavailable for forwarding to the travel and cost management system, or no travel and cost management system is in use. The eReceipt is attached to the issuer's invoice.

Payment instrument user	**User's system (purchase invoice processing system)**	**Accounting**	**Purchase ledger**	**Issuer**	
The user sees the eReceipt **in the receipt data application** (if the card is in the person's name)					
1. The user fills in the necessary extra information for eReceipt in the application					
2. Alternatively, the eReceipt is automatically transmitted to the purchase invoice processing system, where the information is supplemented if necessary					
The user accepts the eReceipt for delivery to the purchase invoice processing system (if not transmitted automatically)					
	The system receives or retrieves the eReceipts from the payer's eReceipt operator				
				Billing the previous month's (or other agreed billing interval's) purchase transactions from the customer organisation	
	The invoice is imported to, or retrieved by the system				

Payment instrument user	User's system (purchase invoice processing system)	Accounting	Purchase ledger	Issuer	
	The system combines the row-level data on the invoice provided by the issuer with the details on the eReceipt (archival ID or reference)				
	The invoice is pre-processed and posted (aim: the system performs the posting automatically based on the row-level data), and then routed for verification and approval				
	The invoice is verified and approved				
	The approved invoice is transferred to the purchase ledger and accounting				
			The data is read into the purchase ledger		
		The data is read into the accounting system and archived			
			The invoice is paid by its due date		

6.3.4. Purchase transaction processing, the payer's purchase invoice processing system, the paper receipt is photographed or scanned

An image or scan of the receipt is attached to the issuer's invoice.

Payment instrument user	**User's system (purchase invoice processing system)**	**Accounting**	**Purchase ledger**	**Issuer**	
The user photographs and sends to the mobile application the received **paper** receipt, fills in the necessary additional information, and sends the receipt to the payer's receipt operator					
	The system receives or retrieves the photographed receipt from the payer's eReceipt operator				
				Billing the previous month's (or other agreed billing interval's) purchase transactions from the customer organisation	
	The invoice is imported to, or retrieved by the system				
	Receipt details are matched with the row-level data on the invoice				
	The invoice is pre-processed and posted, (aim: the system performs the posting automatically based on the row-level data, requires presenting additional information on the invoice), scanned receipts are attached to the invoice				

Payment instrument user	User's system (purchase invoice processing system)	Accounting	Purchase ledger	Issuer	
	The invoice is routed for verification and approval				
	The invoice is verified and approved				
	The approved invoice is transferred to the purchase ledger and accounting				
			The data is read into the purchase ledger		
		The data is read into the accounting system and archived			
			The invoice is paid by its due date		

6.3.5. Purchase transaction processing, the payer's travel and cost management system, the paper receipt is photographed or scanned, the purchase transaction is attached to the receipt

In the travel and cost management system, the user processes the receipts photographed using the mobile application and supplemented with additional information, the system directs the purchase transaction provided by the issuer to the receipt, and the scanned receipt is attached to the invoice.

Payment instrument user	**User's system (travel and cost management)**	**Accounting**	**Purchase invoice processing system / purchase ledger**	**Issuer**	
The user photographs and sends to the mobile application the received **paper** receipt or image, fills in the necessary additional information, and sends the receipt to the payer's receipt operator					
	The travel and cost management system receives or retrieves the photographed receipt with additional information from the payer's eReceipt operator				
	The system directs the eReceipt to the user, to be attached to a travel or cost invoice				
The user attaches the receipt to the travel or cost invoice					
The user adds possibly required extra information on the invoice in the travel and cost management system and, if necessary, also scans the missing receipts to be attached to the travel or cost invoice, and provides the necessary extra information					

Payment instrument user	User's system (travel and cost management)	Accounting	Purchase invoice processing system / purchase ledger	Issuer	
The user routes the travel or cost invoice for a round of verification and approval					
	The system targets the travel or cost invoice to the verifier				
				Purchase transaction delivery to the travel and cost management system	
	The system combines the purchase transaction information provided by the issuer with the details on the eReceipt (archival ID or reference)				
	The system activates the travel or cost invoice for verifier handling				
	The verifier checks the travel or cost invoice (or sends it back to the user for processing) and routes it to the approver				
	The approver accepts (or rejects) the travel or cost invoice				
	The approved travel or cost invoice is transferred to accounting (and payment, if purchased on a personal card)				
		The data is read into the accounting system and archive, the required invoice matching is performed, (possible reimbursements to the user are made)			

Payment instrument user	User's system (travel and cost management)	Accounting	Purchase invoice processing system / purchase ledger	Issuer	
				Billing the previous month's (or other agreed billing interval's) purchase transactions from the customer organisation	
			The invoice is imported to, or retrieved by the purchase invoice processing system		
			The invoice is pre-processed and posted, or the posting is checked (if triggered by posting code), and the invoice's transactions are matched with transactions processed in the travel and cost management system		
			The invoice is routed, verified, and approved		
			The approved invoice is transferred to the purchase ledger and accounting		
			The data is read into the purchase ledger		
		The data is read into the accounting system and archived			
			The invoice is paid by its due date		

6.3.6. Purchase transaction processing, the payer's travel and cost management system, the eReceipt is attached to the purchase transaction

The eReceipt is attached to the travel and cost management system's purchase transaction after the issuer has delivered the purchase transaction data.

Payment instrument user	User's system (travel and cost management system)	Accounting	Purchase invoice processing system	Issuer	Purchase ledger
The user sees the eReceipt in the receipt data application					
1. The user fills in the necessary extra information in the receipt data application					
2. Alternatively, the eReceipt is automatically transmitted to the travel and cost management system, where the information is supplemented if necessary					
The user accepts the eReceipt for delivery to the travel and cost management system (if not transmitted automatically)					
	The system receives or retrieves the eReceipts from the payer's eReceipt operator				
				Purchase transaction delivery to the travel and cost management system	
	The system combines the purchase transaction information provided by the issuer with the details on the eReceipt (archival ID or reference)				

Payment instrument user	User's system (travel and cost management system)	Accounting	Purchase invoice processing system	Issuer	Purchase ledger
	The system directs the purchase transaction to the user				
The user attaches the purchase transaction to the travel or cost invoice					
The user fills in any necessary extra information for eReceipt in the travel and cost management system					
The user routes the travel or cost invoice for a round of verification and approval					
	The system targets the travel or cost invoice to the verifier				
	The verifier checks the travel or cost invoice (or sends it back to the user for processing) and routes it to the approver				
	The approver accepts (or rejects) the travel or cost invoice				
	The approved travel or cost invoice is transferred to accounting (and payment, if purchased on a personal card)				

Payment instrument user	User's system (travel and cost management system)	Accounting	Purchase invoice processing system	Issuer	Purchase ledger
		The data is read into the accounting system and archive, the required invoice matching is performed (possible reimbursements to the user are made)			
				Billing the previous month's (or other agreed billing interval's) purchase transactions from the customer organisation	
			The invoice is imported to, or retrieved by the purchase invoice processing system		
			The invoice is pre-processed and posted, or the posting is checked (if triggered by posting code), and the invoice's transactions are matched with transactions processed in the travel and cost management system		
			The invoice is routed, verified, and approved		
			The approved invoice is transferred to the purchase ledger and accounting		
		The data is read into the accounting system and archived			The data is read into the purchase ledger
					The invoice is paid by its due date

6.3.7. Purchase transaction processing, the payer's travel and cost management system, the paper receipt is photographed or scanned, the receipt is attached to the purchase transaction

The photographed or scanned receipt is attached to the travel and cost management system's purchase transaction after the issuer has delivered the purchase transactions.

Payment instrument user	User's system (travel and cost management)	Accounting	Purchase invoice processing system / purchase ledger	Issuer
The user photographs and sends to the mobile application the received **paper** receipt or image, fills in the necessary additional information, and sends the receipt to the payer's receipt operator				
	The travel and cost management system receives or retrieves the photographed receipt with additional information from the payer's eReceipt operator			
				Purchase transaction delivery to the travel and cost management system
	The system combines the purchase transaction information provided by the issuer with the details on the eReceipt (archival ID or reference)			
	The system directs the eReceipt to the user, to be attached to a travel or cost invoice			
The user attaches the purchase transaction to the travel or cost invoice				

Payment instrument user	User's system (travel and cost management)	Accounting	Purchase invoice processing system / purchase ledger	Issuer
The user adds possibly required extra information for the purchase transaction in the travel and cost management system and, if necessary, also scans the missing receipts to be attached to the travel or cost invoice, and provides the necessary extra information				
The user routes the travel or cost invoice for a round of verification and approval				
	The verifier checks the travel or cost invoice (or sends it back to the user for processing) and routes it to the approver			
	The approver accepts (or rejects) the travel or cost invoice			
	The approved travel or cost invoice is transferred to accounting (and payment, if purchased on a personal card)			
		The data is read into the accounting system and archive, the required invoice matching is performed, (possible reimbursements to the user are made)		
				Billing the previous month's (or other agreed billing interval's) purchase transactions from the customer organisation
			The invoice is imported to, or retrieved by the purchase invoice processing system	

Payment instrument user	User's system (travel and cost management)	Accounting	Purchase invoice processing system / purchase ledger	Issuer
			The invoice is pre-processed and posted, or the posting is checked (if triggered by posting code), and the invoice's transactions are matched with ones processed in the travel and cost management system	
			The invoice is routed, verified, and approved	
			The approved invoice is transferred to the purchase ledger and accounting	
			The data is read into the purchase ledger	
		The data is read into the accounting system and archived		
			The invoice is paid by its due date	

7. General technical principles

7.1. Encrypting the receipt

The receipt is delivered to the seller's receipt operator according to either the Finvoice 3.0 description or a newer message description (or a message description agreed upon by the parties) in such a way that a structured eReceipt can be created. Encrypting the receipt is not needed, it is unnecessary and may even be harmful. Encryption would generate key management problems when receipts are handled by different parties. Outside the systems, the information on the receipt cannot be connected to the payer as is (i.e. the raw receipt data is anonymous).

7.2. The immutability of the receipt

To ensure the immutability of the receipt, two authenticators are planned to be added to it. These authenticators do not need to be created yet at this stage, as their calculation algorithms and contents have not yet been decided.

One of the authenticators for receipt immutability is a single-way public encryption check character that can be used by any party handling the receipt to ensure the receipt's contents have not been inadvertently or intentionally altered. This is a non-threaded check character that has been calculated from the essential information on the receipt, such as seller information, VAT information, date, and total amount. The smaller the number of items the check character is based on, the easier it is to update the scheme.

Another authenticator is meant for the authorities. It will be implemented in a blockchain-type mode, so the check character on the previous receipt is an input to the next receipt. This check character is threaded and requires access to receipt continuums.

7.3. ID formats used in the receipt (eAddress, user ID)

The eAddress and user ID of the user's eReceipt service company are a central component of eReceipt. This information adheres to the following format:

The eAddress is the EDI ID, as with e-invoice operators. The format is identical (country code + VAT number + 5 chosen characters). In this way, an eReceipt can also be transmitted via electronic invoicing infrastructure if needed.

The eAddress must be entered in the MessageReceiverDetails information of the receipt's MessageTransmissionDetails element along with an operator ID, if available

- The receipt provider is required to fill in the information in the MessageTransmissionDetails element, at least for the eAddress
- If the receipt is delivered via electronic invoicing infrastructure, the operator EDI is required; otherwise, the field value can be set to NONE

User ID format could be in the form of YYYXXXXXX

- where YYY is the receipt service company's own combination of letters, e.g. RHO or KLO
- where XXXXXX is an alphanumeric string whose length can vary between 1 to 10 characters

7.4. Other messages (feedback, refunds)

Other messages related to eReceipt, such as feedback (interactive vs. broadcast) and returns (claims) are interesting and involve several perspectives. At this stage, the definitions of these messages have been excluded from this coverage.

7.5. Spatial data, carbon footprint, and other receipt information

The Finvoice e-invoice format is the common format for electronic invoicing. It is used as the eReceipt format with special features. An implementation guide has been created exclusively for it, specifically describing the unique characteristics of card purchase receipts. When using the industry-specific code (ImplementationCode) ECR1 (Electronic Card Receipt), the content message description in the card purchase receipt's implementation guide is adhered to. This does not contain all the information related to the receipt. A separate implementation guide has been created for this purpose. Change requirements and new fields have been added to this guide. The implementation guide contains more detailed information on these.

7.6. Used message descriptions

Figure 10 depicts the movements of the receipt between different stages and different actors of the ecosystem. Each stage describes the message description that moves between two actors. Thus, the receiving party can identify inbound traffic from the interface. The implementation is easier and generic. Two actors may agree on their own message description, but care must be taken to ensure enough data is transmitted to allow forming a structured eReceipt.

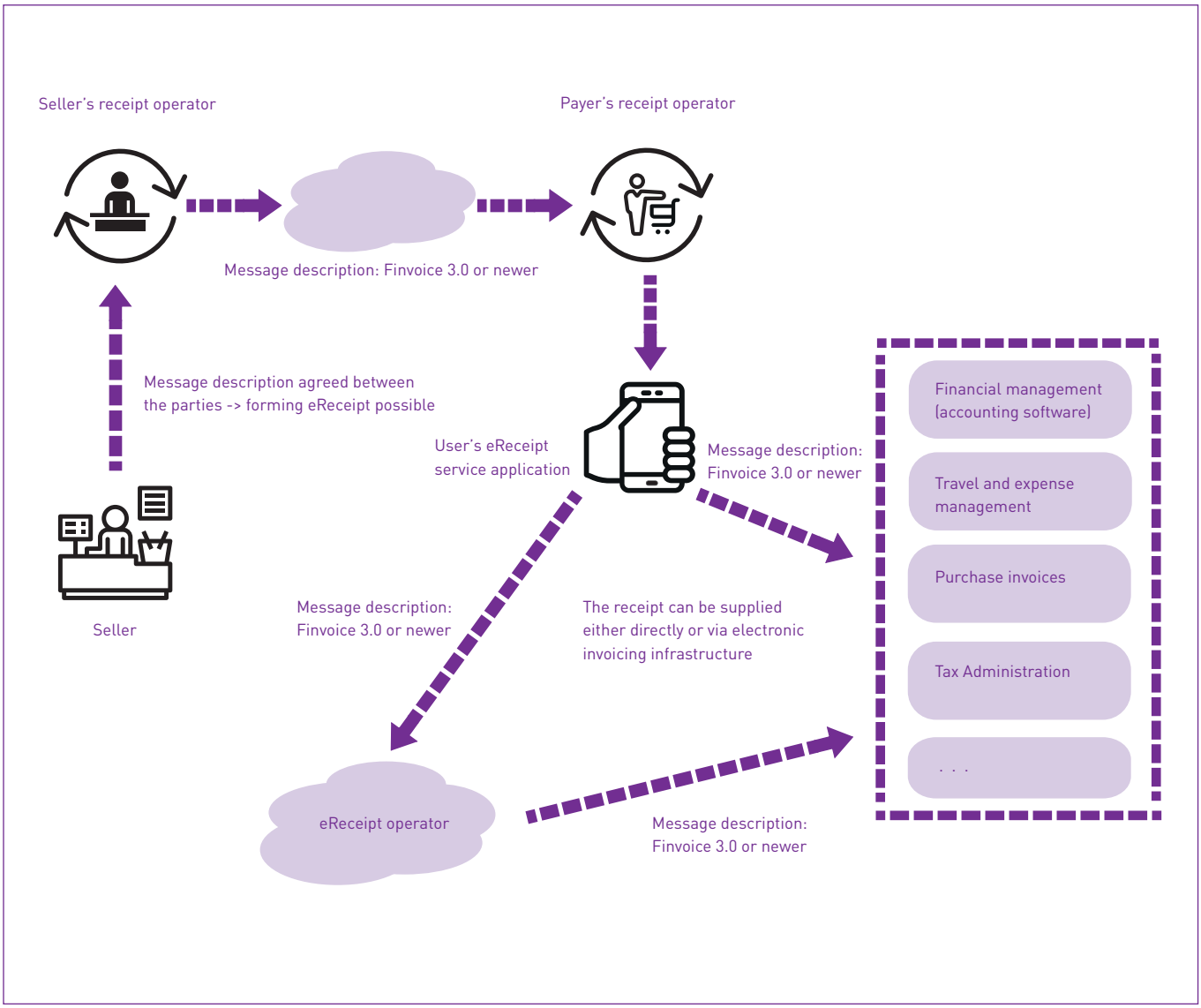

Figure 10. Message descriptions used in different stages of the ecosystem.

8. INQUIRY PROCESS

Receipt operators deliver receipts as a Finvoice message description. The following table lists the possible error situations and response codes that may occur during transfer.

HTTP response status	Error code in http Content	Description
200 (OK)	-	Receipt received successfully
404 (NOT FOUND)	100	Seller information was not enough i.e., SellerOrganisationTaxCode and SellerOrganisationName
404 (NOT FOUND)	101	Receipt receiver not found given as query parameter detail
400 (BAD REQUEST)	200	Receipt is not valid Finvoice XML
400 (BAD REQUEST)	207	Invalid ToIdentifier, it is empty or null
400 (BAD REQUEST)	208	Receipt operator has no connection with given ToIdentifier operator
500 (INTERNAL SERVER ERROR)	300	Error occurred on server side

Table 1. Error and response codes.

Technology Industries
of Finland