QR Reader

Specification Software Interface

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Document History			
Version	**Description (comments)**	**Date**	**Author(s)**
0.1	First Version	15.9.2017	Thomas Fischler
0.2	XML-format description added, small improvements	21.9.2017	Thomas Fischler
0.3	Differentiate between RES (PayEye) and PRO scanner (Giromat)	22.9.2017	Thomas Fischler
1.0	First public version	24.9.2017	Thomas Fischler
1.1	Small wording changes (IND instead of RES) **StrNm** in the QR-Code XML-Structure changed to **StrtNm.** XSD Schema for the QR-Code data added (appendix 1)	7.3.2018	Thomas Fischler
1.2	**UltmCdtr** in the QR-Code XML-Structure changed to **UltmtCdtr**	7.5.2018	Thomas Fischler
1.3	Changes according to Swiss Payment Standards 2.0	12.2.2019	Thomas Fischler
1.3.1	E-Mail address changed	18.3.2019	Thomas Fischler
1.3.2	Small corrections Description of the various data transfer modes enhanced	8.5.2020	Thomas Fischler

Documents referred to

ID	Document	Date	Source
1	Swiss Implementation Guidelines QR-bill, Technical and professional specifications of the payment part with Swiss QR Code, V2.0	30 September 2019	SIX Interbank Clearing Ltd
2	ISR manual, Orange inpayment slip with reference number in CHF and in EUR	July 2017	Postfinance

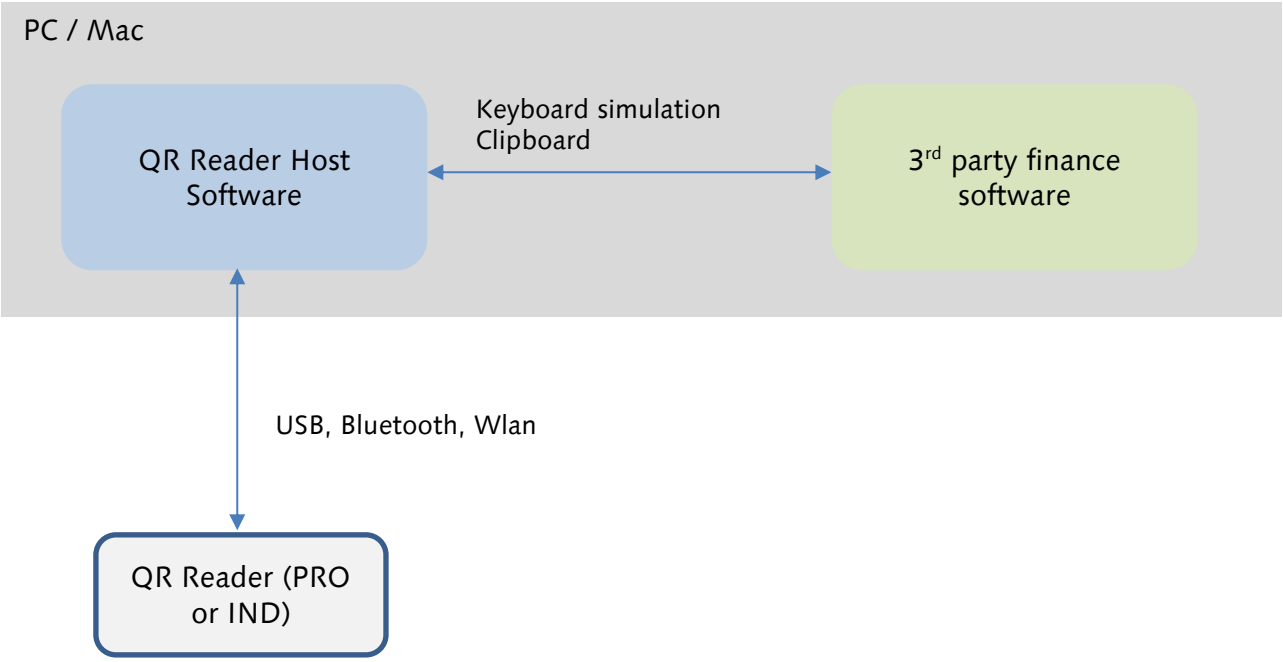
1 Overview

This document defines the data exchange interface between the QR Reader host software and 3rd party finance software programs.

Actually CREALOGIX supports two different QR reader models:

- QR Reader PRO – Professional Editon – QR GiroMat
- QR Reader IND – Individual Edition – PayEye

1.1 System architecture



- QR bill payment
- inpayment slip with reference number
- IBAN (only IND)
- Address (only IND)
- Free Text (only IND)

The CREALOGIX QR Readers are capable of reading QR codes and the code line of the current Swiss ISR.
The QR Reader IND can additionally read IBAN fields and free text like addresses.

The Host Software receives the data from the scanning device over an USB, Bluetooth or WLAN connection and can send the data after some processing to 3rd party finance software applications like accounting systems or e-banking applications.

The data can be sent to the 3rd party application in two ways:

a) **Keyboard simulation**: host software simulates keypresses from the user and writes the data directly into an input field or a form or the target application.

b) **Clipboard transfer**: host software stores the data to the global system clipboard of the underlying operating system and sends afterwards a defined global hotkey combination to the target application which triggers the reading of the clipboard by the target application. Alternatively, the host software can execute a simple past command.

2 Data transfer mode

2.1 Keyboard simulation

With keyboard simulation mode all data from the device will be written directly at the current cursor position into the focused application.
This method has the advantage that it will work with all types of applications. The application needs no changes or additional features since regular user input will be simulated.

The QR Reader software is capable of handling simple situations like entering the data into one big input field but can also handle more complex input forms with separate input fields for the different values and navigate automatically from field to field.

2.1.1 One field input method

The simplest form of keyboard simulated input is the writing of the whole data content directly into one input field of the application.

2.1.2 Supported data formats

Supported is RAW or XML data

2.2 Clipboard transfer

Instead of a keyboard simulated input a more advanced clipboard transfer method can be used. This works only if the 3rd party application is already prepared for this input type. Clipboard transfer has, compared with the keyboard simulation, some clear advantages: input will be faster if bigger amounts of data must be transferred, the target application can directly read the clipboard without any need for a special input field.

2.2.1 Direct clipboard transfer

With direct clipboard transfer enabled the QR Reader host software will write the data as text directly into the system clipboard. The 3rd application may read the data from the clipboard directly from the OS without the need of an intermediate input box in the GUI of the target application.

The clipboard reading can be done for example with the help of the .NET Clipboard class and the methods GetData or with any clipboard handling library your programming environment supports.

Workflow:

- User scans the data with QR Reader
- Data will be processed by the QR Reader host software and then written as text to the system clipboard
- QR Reader host software sends the defined global keyboard shortcut
- The 3rd party application receives the global keyboard shortcut as a trigger to read the clipboard
- The application reads the data from the clipboard and continues with the processing of the data

2.2.2 Paste from the clipboard by the 3rd party application

Instead of writing the data to a input box if the 3rd party application with the help of keyboard input simulation the 3rd party application pasts the data with the standard ctrl-v/cmd-v operation from the clipboard.

Workflow:

- User scans the data with QR Reader
- Data will be processed by the QR Reader host software and then written as text to the system clipboard
- QR Reader host software sends the defined global keyboard shortcut
- The 3rd party application receives the global keyboard shortcut as a trigger to read the clipboard
- The application pasts the data from the clipboard (ctrl-v/cmd-v) and continues with the processing of the data

2.2.3 Paste from the clipboard by the PayEye host application

Same as 2.2.2 but the host application executes the paste.

Workflow:

- User scans the data with QR Reader
- Data will be processed by the QR Reader host software and then written as text to the system clipboard
- The QR Reader host software executes a past command
- The application continues with the processing of the data

2.2.4 Supported data formats

Clipboard transfer supports RAW and XML data.

2.3 Defining the data transfer mode

The QR Reader host software uses a database with over 400 known applications and their supported input methods. The user defines the used application in the configuration of the QR Reader host software.

QR Reader host software can also send keypresses for initiating the transfer process (for example "F8" for opening the input field) and additional needed keypresses.

3 Data formats

3.1 RAW Data

The data will be transferred exactly as scanned.

QR-Code data will be transferred as defined in [1] chapter 4.

Examples (data will be transferred without the surrounding ""):

IBAN (only QR Reader IND):
"CH5600787007718974201"

QR-Code:
"
SPC
0200
1
CH4431999123000889012
S
Robert Schneider AG
Rue du Lac
1268
2501
Biel
CH

1949.75
CHF
S
Pia-Maria Rutschmann-Schnyder
Grosse Marktgasse
28
9400
Rorschach
CH
QRR
210000000003139471430009017
Instruction of 15.09.2019
EPD
"

Inpayment slip code line
"0100000057157>030027350320332020030014705+ 010279404>"

3.2 XML Data

The complete dataset will be written as XML-formatted data.

3.2.1 QR-Code data

The XML structure is derived from [1] chapter 4.3.3.

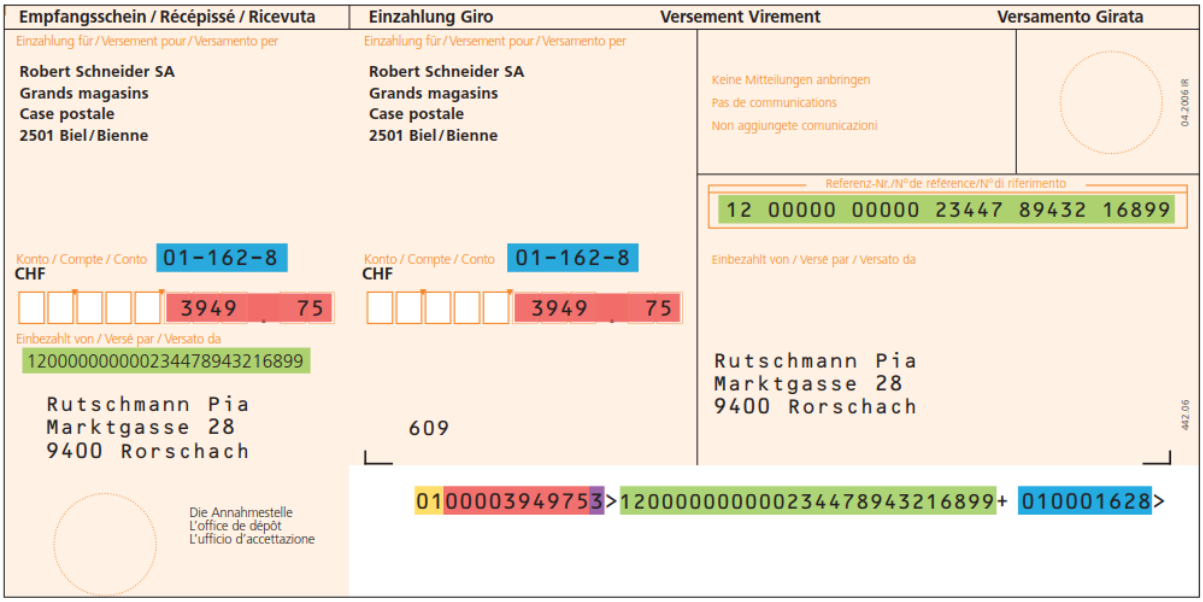
```
<QRCH>
   <Header>
      <QRType/>
      <Version/>
      <Coding/>
   </Header>
   <CdtrInf>
      <IBAN/>
      <Cdtr>
         <AdrTp/>
         <Name/>
         <StrtNmOrAdrLine1/>
         <BldgNbOrAdrLine2/>
         <PstCd/>
         <TwnNm/>
         <Ctry/>
      </Cdtr>
   </CdtrInf>
   <UltmtCdtr>
      <AdrTp/>
      <Name/>
      <StrtNmOrAdrLine1/>
      <BldgNbOrAdrLine2/>
      <PstCd/>
      <TwnNm/>
      <Ctry/>
   </UltmtCdtr>
   <CcyAmt>
      <Amt/>
      <Ccy/>
   </CcyAmt>
   <UltmtDbtr>
      <AdrTp/>
      <Name/>
      <StrtNmOrAdrLine1/>
      <BldgNbOrAdrLine2/>
      <PstCd/>
      <TwnNm/>
      <Ctry/>
   </UltmtDbtr>
   <RmtInf>
      <Tp/>
      <Ref/>
      <AddInf>
         <Ustrd/>
         <Trailer/>
         <StrdBkgInf/>
      </AddInf>
   </RmtInf>
   <AltPmtInf>
      <AltPmt/>
   </AltPmtInf>
</QRCH>
```

Example:

```
<QRCH>
   <Header>
      <QRType>SPC</QRType>
      <Version>0200</Version>
      <Coding>1</Coding>
   </Header>
   <CdtrInf>
      <IBAN>CH4431999123000889012</IBAN>
      <Cdtr>
         <AdrTp>S</AdrTp>
         <Name>Robert Schneider AG</Name>
         <StrtNmOrAdrLine1>Rue du Lac</StrtNmOrAdrLine1>
         <BldgNbOrAdrLine2>1268</BldgNbOrAdrLine2>
         <PstCd>2501</PstCd>
         <TwnNm>Biel</TwnNm>
         <Ctry>CH</Ctry>
      </Cdtr>
   </CdtrInf>
   <UltmtCdtr>
      <AdrTp></AdrTp>
      <Name></Name>
      <StrtNmOrAdrLine1></StrtNmOrAdrLine1>
      <BldgNbOrAdrLine2></BldgNbOrAdrLine2>
      <PstCd></PstCd>
      <TwnNm></TwnNm>
      <Ctry></Ctry>
   </UltmtCdtr>
   <CcyAmt>
      <Amt>1949.75</Amt>
      <Ccy>CHF</Ccy>
   </CcyAmt>
   <UltmtDbtr>
      <AdrTp>S</AdrTp>
      <Name>Pia-Maria Rutschmann-Schnyder</Name>
      <StrtNmOrAdrLine1>Grosse Marktgasse</StrtNmOrAdrLine1>
      <BldgNbOrAdrLine2>28</BldgNbOrAdrLine2>
      <PstCd>9400</PstCd>
      <TwnNm>Rorschach</TwnNm>
      <Ctry>CH</Ctry>
   </UltmtDbtr>
   <RmtInf>
      <Tp>QRR</Tp>
      <Ref>210000000003139471430009017</Ref>
      <AddInf>
         <Ustrd>Instruction of 15.09.2019</Ustrd>
         <Trailer>EPD</Trailer>
       <StrdBkgInf>//S1/01/20170309/11/10201409/20/14000000/22/36958/30/CH106017086/40
         /1020/41/30</StrdBkgInf>
      </AddInf>
   </RmtInf>
   <AltPmtInf>
      <AltPmt></AltPmt>
   </AltPmtInf>
</QRCH>
```

3.2.2 Inpayment slip data

XML data structure is derived from [2] chapter 5.5.1.5 "Composition of code line"



- slip type (coded)
- amount
- check digit of slip type and amount
- reference number (+ check digit)
- subscriber number

```
<INPSL>
   <SlType/>
   <Amt/>
   <ChkDigit/>
   <Ref/>
   <SubNbr/>
</INPSL>
```

Example:
Original codeline: "0100000057157>030027350320332020030014705+ 010279404>"

XML-data:

```
<INPSL>
   <SlType>01</SlType>
   <Amt>57.15</Amt>
   <ChkDigit>7</ChkDigit>
   <Ref>030027350320332020030014705</Ref>
   <SubNbr>010279404</SubNbr>
</INPSL>
```

3.2.3 IBAN (only QR Reader IND)

IBAN data will be transferred in a simple XML block

```
<IBAN>
</IBAN>
```

Example:

<IBAN>CH5600787007718974201</IBAN>

3.2.4 Address / Free text (only QR Reader IND)

Address data as well as every free text will be transferred as captured.

```
<TEXT>
</TEXT>
```

Example:

<TEXT>
Frau Mustermann
Musterstrasse 12
1234 Muster
</TEXT>