**Functional Specifications of the IBAN Register
of Latvijas Banka**

Contents

1. Linking IBANs to mobile phone numbers

Within the framework of the instant payment service (hereinafter, the IPS) of the electronic clearing system of Latvijas Banka (hereinafter, the EKS), Latvijas Banka offers an additional service – the IBAN Register. The purpose of the IBAN Register is to ensure a possibility of identifying the IBAN and BIC corresponding to the mobile phone number in order to make the initiation of payments easier by using mobile phone numbers. The IBAN Register contains information about the mobile phone numbers, IBANs and the related information of the customers of the EKS participants that have applied for using the IBAN Register (hereinafter, the IBAN Register user).

The operation of the IBAN Register is based on an exchange of XML messages between the IBAN Register and the IBAN Register users.

The following messages shall be used:
1) Information request message;
2) Reply message to information request message;
3) Information request rejection message;
4) New information submission message;
5) Confirmation message of information entry;
6) Request message for information deletion from the IBAN Register;
7) Confirmation message of information deletion from the IBAN Register;
8) Notification message on information deletion from the IBAN Register.

Each message shall be sent separately. Part of the messages sent shall be digitally signed (see Section 6.).

Messages between the IBAN Register user and the IBAN Register shall be exchanged using the *Advanced Message Queuing Protocol* (AMQP).

Information request message shall be sent to the IBAN Register prior to initiating an instant payment. In the mobile payment application, the customer shall indicate the mobile phone number of the beneficiary; at this moment an information request message for the respective beneficiary's information is sent to the IBAN Register. The received reply shall be shown to the customer who can make sure that it is the corresponding information of the beneficiary and initiate the payment subsequently.

2. Message processing procedures

Schemes and their descriptions have been included in this section for reference only.

2.1 Successful information request and initiation of a payment
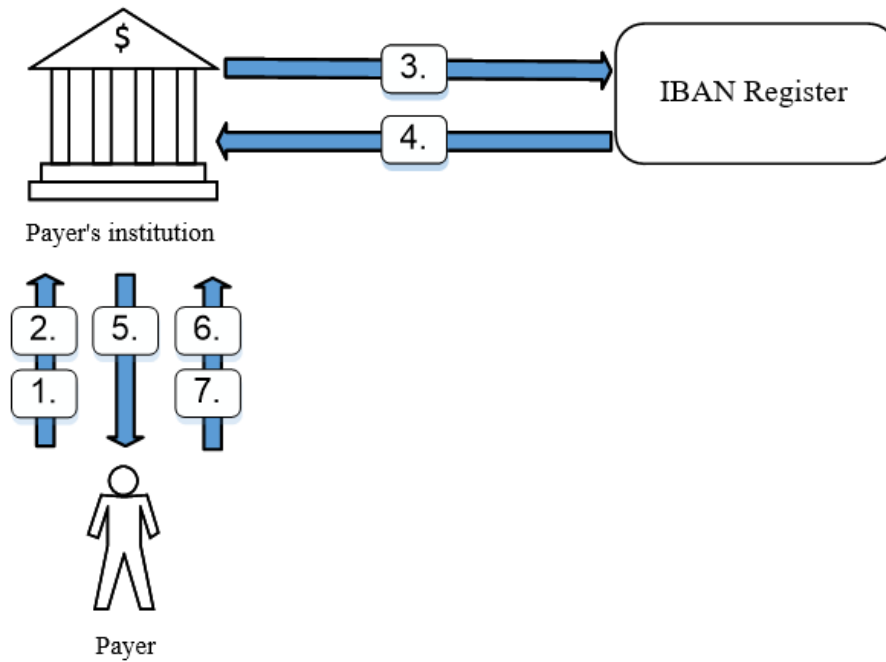
1. The payer fills in information about the beneficiary in the mobile payment application, indicating the mobile phone number of the beneficiary.
2. The mobile payment application sends a request for an IBAN corresponding to the specified mobile phone number to the payer's institution which is an IBAN Register user (the EKS does not stipulate any format requirements).
3. The payer's institution sends an information request message to the IBAN Register.
4. The IBAN Register sends the requested information to the payer's institution;
5. The payer's institution forwards the information on the IBAN corresponding to the mobile phone number to the payer's mobile application.
6. In the mobile application the beneficiary's data are filled in the respective payment elements.
7. The payer initiates a payment in the mobile payment application.

2.2 The requested information not found in the IBAN Register
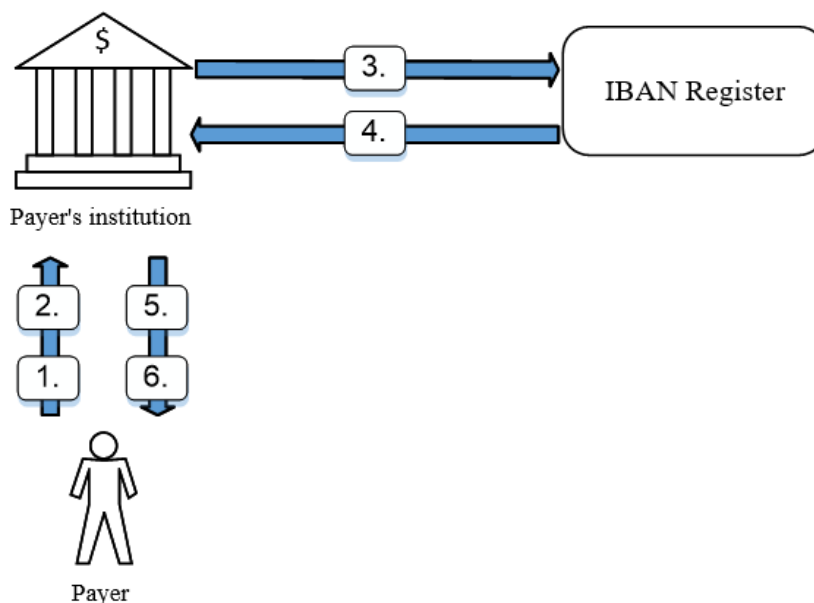
1. The payer fills in information about the beneficiary in the mobile payment application, indicating the mobile phone number of the beneficiary.
2. The mobile payment application sends a request for an IBAN corresponding to the specified mobile phone number to the payer's institution which is an IBAN Register user (the EKS does not stipulate any format requirements).
3. The payer's institution sends the IBAN Register an information request message.
4. The IBAN Register sends a message to the payer's institution that the information has not been found.
5. The payer's institution forwards the above information to the payer's mobile application.
6. The payer can see in the mobile application that no corresponding information has been found for the indicated mobile phone number and another mobile phone number can be specified or the beneficiary's IBAN can be indicated.

3. General requirements for preparing messages

3.1 Character encoding

UTF-8 encoding is used for character encoding with a respective reference in the XML file header.

Example
```
<?xml version="1.0" encoding="UTF-8">
```

The following UTF-8 character set can be used in the messages:
– capital letters of the Latin alphabet (from A to Z);
– small letters of the Latin alphabet (from a to z);
– digits;
– characters – '/', '-', '?', ':', '(', ')', '.', ',', '"', '+';
– space.

Latin alphabet letters with Latvian language diacritical marks may be used in the messages. The IBAN Register processes all UTF-8 characters without verifying what character sets are supported by each IBAN Register user.

3.2 Indication of a mobile phone number

In all messages where the mobile phone number is required, the mobile phone number shall be stated in a separate element <PhoneNum> and the country code of the mobile phone number shall be stated in a separate element <PhoneCtryCd>.

4. Messages

4.1 Information request message

To receive the IBAN corresponding to the specified mobile phone number, the IBAN Register user shall send an information request message. An information request message shall be an XML message with the following structure:

No.	Usage	Element	Format	Description
1.	[1..1]	└┬ <IBANRqst>		IBAN request
2.	[1..1]	├─ <MsgId>	X	Message indentifier

No	Usage	Element	Format	Description
3.	[1..1]	├ `<MsgType>`	Code "GET"	Message type specification; only code "GET" is allowed in the information request message
4.	[1..1]	├ `<SndgInst>`	X	Sending institution's BIC
5.	[1..1]	├ `<ClientId>`	X	Unique identifier of the sending institution's customer
6.	[1..1]	└ `<IBANItem>`		
7.	[1..1]	├ `<PhoneNum>`	X	Phone number
8.	[1..1]	└ `<PhoneCtryCd>`	X	Country code of the phone number

4.2 Reply message to information request message

Upon receiving the information request message referred to in Paragraph 4.1herein, the IBAN Register processes it and sends a reply in the form of an XML message containing information on the IBAN corresponding to the specified mobile phone number.

No	Usage	Element	Format	Description
1.	[1..1]	└ `<IBANInfo>`		
2.	[1..1]	├ `<MsgId>`	X	Message indentifier
3.	[1..1]	├ `<RelMsgId>`	X	Identifier of the information request message which the current message replies to
4.	[1..1]	├ `<MsgType>`	Code "GET"	Message type specification; only code "GET" is allowed
5.	[1..1]	├ `<MsgStatus>`	Code "ACCP"	Message status code – the message has been accepted and processed
6.	[1..1]	├ `<MsgCode>`	Code "ACCP"	If accepted, the value shall always be "ACCP"
7.	[1..1]	└ `<IBANItems>`		
8.	[1..1]	└ `<IBANItem>`		
9.	[1..1]	├ `<BIC>`	X	BIC of the institution servicing the account
10.	[1..1]	├ `<IBAN>`	X	IBAN
11.	[1..1]	├ `<PhoneNum>`	X	Mobile phone number
12.	[1..1]	├ `<PhoneCtryCd>`	X	Country code of the mobile phone number
13.	{Or	├ `<Org>`		
14.	[1..1]	│ ├ `<Name>`	X	Name of the legal person
15.	[1..1]	│ ├ `<NmAlias>`	X	Alias
16.	[1..0]	│ └ `<OrgNumber>`	X	Registration number
17.	Or}	└ `<Person>`		
18.	[1..1]	├ `<Name>`	X	Name and surname of the natural person
19.	[1..1]	└ `<NmAlias>`	X	Alias
20.	[1..1]	└ `<AccDtTm>`	X	Date when the entry takes effect

4.3 Information request rejection message

When it is impossible to provide the IBAN Register user with the information according to an information request message, the IBAN Register shall send the information requester an information request rejection message with the following structure:

No	Usage	Element	Format	Description
1.	[1..1]	└┬ \<IBANInfo>		
2.	[1..1]	├─ \<MsgId>	X	Message indentifier
3.	[1..1]	├─ \<RelMsgId>	X	Identifier of the information request message which the current message replies to
4.	[1..1]	├─ \<MsgType>	Code "GET"	Message type specification; only code "GET" is allowed
5.	[1..1]	├─ \<MsgStatus>	Code "RJCT"	Message status code – the message has been rejected
6.	[1..1]	└─ \<MsgCode>	Code	Code of the reason for rejection (Paragraph **Kļūda! Nav atrasts atsauces avots.**)

4.4 New information submission message

Modification submitted to the IBAN Register shall take effect within two hours after the message has been submitted to the register. The reply message confirming successful registration of the modification shall contain the date and time when the modification takes effect.

To submit a new link between a mobile phone number and an IBAN, an IBAN Register user shall send a new information submission message. A new information submission message is an XML message with the following structure:

No	Usage	Element	Format	Description
1.	[1..1]	└┬ \<IBANRqst>		
2.	[1..1]	├─ \<MsgId>	X	Message indentifier
3.	[1..1]	├─ \<MsgType>	Code "PUT"	Message type specification; only code "PUT" is allowed in the information submission request message
4.	[1..1]	├─ \<SndgInst>	X	Sending institution's BIC
5.	[1..1]	└┬ \<IBANItem>		
6.	[1..1]	├─ \<BIC>	X	BIC of the institution servicing the account
7.	[1..1]	├─ \<IBAN>	X	IBAN
8.	[1..1]	├─ \<PhoneNum>	X	Mobile phone number
9.	[1..1]	├─ \<PhoneCtryCd>	X	Country code of the mobile phone number
10.	{Or	├┬ \<OrgId>		
11.	[1..1]	│└┬ \<Org>		
12.	[1..1]	│ ├─ \<Name>	X	Name of the legal person
13.	[1..1]	│ ├─ \<NmAlias>	X	Alias
14.	[1..1]	│ └─ \<OrgNumber>	X	Registration number
15.	Or}	└┬ \<PrvtId>		
16.	[1..1]	└┬ \<Person>		
17.	[1..1]	├─ \<Name>	X	Name and surname of the natural person
18.	[1..1]	└─ \<NmAlias>	X	Alias

4.5 Confirmation message of information entry

No	Usage	Element	Format	Description

No	Usage	Element	Format	Description
1.	[1..1]	└┬ <IBANInfo>		
2.	[1..1]	├ <MsgId>	X	Message identifier
3.	[1..1]	├ <RelMsgId>	X	Identifier of the information request message which the current message replies to
4.	[1..1]	├ <MsgType>	Code "PUT"	Message type specification; only code "PUT" is allowed
5.	[1..1]	├ <MsgStatus>	Code "ACCP"	Message status code – the message task has been implemented
6.	[1..1]	├ <MsgCode>	Code "ACCP"	If accepted, the value shall always be "ACCP"
7.	[1..1]	└ <AccDtTm>	X	Date and time when the changes take effect.

4.6 Request message for information deletion from the IBAN Register

No	Usage	Element	Format	Description
1.	[1..1]	└┬ <IBANRqst>		
2.	[1..1]	├ <MsgId>	X	Message indentifier
3.	[1..1]	├ <MsgType>	Code "DELETE"	Message type specification; only code "DELETE" is allowed in the information deletion message
4.	[1..1]	└┬ <IBANItem>		
5.	[1..1]	├ <BIC>	X	BIC of the institution servicing the account
6.	[1..1]	├ <PhoneNum>	X	Mobile phone number
7.	[1..1]	└ <PhoneCtryCd>	X	Country code of the mobile phone number

4.7 Confirmation message of information deletion from the IBAN Register

No	Usage	Element	Format	Description
1.	[1..1]	└┬ <IBANInfo>		
2.	[1..1]	├ <MsgId>	X	Message indentifier
3.	[1..1]	├ <RelMsgId>	X	Identifier of the request message for information deletion from the IBAN Register which the current message replies to
4.	[1..1]	├ <MsgType>	Code "DELETE"	Message type specification; only code "DELETE" is allowed
5.	[1..1]	├ <MsgStatus>	Code "ACCP"	Message status code – the message task has been implemented
6.	[1..1]	└ <MsgCode>	Code "ACCP"	If accepted, the value shall always be "ACCP"

4.8 Modifying an IBAN Register entry

To modify the information entered in the IBAN Register, an IBAN Register user shall submit a new information submission message. The modified information shall take effect within two hours after the modification has been submitted. Messages related to modifying information entered in the IBAN Register shall be digitally signed.

4.9 Notification message on information deletion from the IBAN Register

If a new information submission message has been submitted to the IBAN Register and the mobile phone number specified in the message has already been entered in the IBAN Register, a notification message on information deletion from the IBAN Register shall be sent to the IBAN Register user who had previously submitted that information. A notification message on information deletion from the IBAN Register is an XML message with the following structure:

No	Usage	Element	Format	Description
1.	[1..1]	└┬ <IBANRqst>		
2.	[1..1]	├─ <MsgId>	X	Message indentifier
3.	[1..1]	├─ <MsgType>	Code "OWN"	Message type specification; only code "OWN" is allowed
4.	[1..1]	└┬ <IBANItem>		
5.	[1..1]	├─ <PhoneNum>	X	Mobile phone number
6.	[1..1]	├─ <PhoneCtryCd>	X	Country code of the mobile phone number
7.	[1..1]	└─ <AccDtTm>		Date and time when the changes take effect.

5. Message uniqueness validation rules

When receiving messages on modifications in the IBAN Register, the IBAN Register shall make duplicate message detection checks. If in the newly submitted message all data used in the duplication checks are identical to those in a previously received message, the newly submitted message shall be rejected.

No.	Description
1.	Date of receiving the message in the IBAN Register
2.	BIC of the message sender (instant payment service participant)
3.	Message indentifier
4.	Message type

6. Digitally signed messages

The following messages shall be signed digitally by an IBAN Register user:

- new information submission message;
- request message for information deletion from the IBAN Register.

The IBAN Register shall sign digitally a reply message to an information request message.

For signing messages, the IBAN Register user shall use the signing keys of the advanced security system user provided by Latvijas Banka. To verify the signature, the public part of the certificate shall be included in the signature attributes. An XML document signing scheme, recommended by W3C, shall be used for signing. The entire message shall be signed, incorporating the signature in the message content. When verifying the signature, the signature part shall not be included in the message checksum calculation.

Message signature contents:

```
<Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
<SignedInfo>
  <CanonicalizationMethod
        Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
  <SignatureMethod
        Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha256"/>
  <Reference URI="">
 <Transforms>
<Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-
signature" />   </Transforms>
    <DigestMethod
Algorithm="http://www.w3.org/2000/09/xmldsig#sha256"/>
   <DigestValue></DigestValue>
  </Reference>
</SignedInfo>
<SignatureValue></SignatureValue>
<KeyInfo>
<X509Data>
    <X509Certificate></X509Certificate>
</X509Data>
</KeyInfo>
</Signature>
```

Description of mandatory elements of the signature

Element	Attributes	Description
CanonicalizationMethod	Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"	The following shall be indicated: http://www.w3.org/TR/2001/REC-xml-c14n-20010315
SignatureMethod	Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha256"	Indicates the signature algorithm. The following shall be indicated: http://www.w3.org/2000/09/xmldsig#rsa-sha256.
Reference	URI="	Defines the reference to the message section to be signed; as the entire message will be signed and the signature will be added after signing, URI=" shall be indicated.
Transform	Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature"	The method of adding signature shall be indicated: "http://www.w3.org/2000/09/xmldsig#enveloped-signature"
DigestMethod	Algorithm="http://www.w3.org/2000/09/xmldsig#sha256"	Indicates the checksum calculation algorithm. http://www.w3.org/2000/09/xmldsig#sha256 shall be indicated.
DigestValue		Indicates the message checksum. The value shall be indicated in base64 encoding.
SignatureValue		Indicates the digital signature of the message. The value

		shall be indicated in base64 encoding.
X509Certificate		Indicates the certificate used for signing the message. The value shall be indicated in base64 encoding.

7. List of all phone numbers included in the IBAN Register

The IBAN Register offers any IBAN Register user a possibility to receive the list of all mobile phone numbers entered in the IBAN Register. As the list is quite sizeable, the request for the list shall be submitted and the list shall be sent via the file exchange service. Users can apply for this option via the IPS workstation. If an IBAN Register user has applied for the receipt of the list, every day at 8.00 a.m. the IBAN Register will send the file containing the list of all mobile phone numbers entered in the IBAN Register to the IBAN Register user via the file exchange service.

7.1 File names

The list of all mobile phone numbers entered in the IBAN Register shall be sent as a compressed (in Zip file format), encrypted and digitally signed file. A unique name shall be assigned to this file in the format ccdddnnnn.ext, where:
cc – file type "SP";
ddd – the date expressed as a number of days from the beginning of the current year (e.g. 1 January shall be "001", 25 February shall be "056");
nnnn – file sequence number on the respective value date;
ext – extension of a compressed file ".zip";
ext – extension of an encrypted and digitally signed file ".p7m".

7.2 List of mobile phone numbers

The list of mobile phone numbers shall be included in type "SP" file which is compressed, encrypted and digitally signed.

The list of mobile phone numbers shall be structured as follows:

No.	Usage	Element	For-mat	Description
1.	[1..1]	└┬ <FastIBANPhoneList>		
2.	[1..1]	├ <CreDtTm>	X	Date and time when the message was created
3.	[1..1]	└┬ <PhoneItems>		
4.	[1..n]	└┬ <PhoneItem>		
5.	[1..1]	├ <PhoneNum>	X	Mobile phone number
6.	[1..1]	└ <PhoneCtryCd>	X	Country code of the mobile phone number

8. List of all information submitted by the IBAN Register user

The IBAN Register offers any IBAN Register user a possibility to request a list of all information submitted by it to the IBAN Register. As the list is quite sizeable, the request

for the list shall be submitted and the list shall be sent via the file exchange service. The initiation of sending the list is also possible via the IPS workstation.

8.1 File names

The list of all information submitted by an IBAN Register user to the IBAN Register shall be sent as a compressed (in Zip file format), encrypted and digitally signed file. A unique name is assigned to this file in the format ccdddnnnn.ext, where:
cc – file type
ddd – the date expressed as a number of days from the beginning of the current year (e.g. 1 January shall be "001", 25 February shall be "056");
nnnn – file sequence number on the respective value date;
ext – extension of a compressed file ".zip";
ext – extension of an encrypted and digitally signed file ".p7m").

Allowed file types:
"SQ" – request,
"SA" – list,
"SE" – error, compilation of the list failed.

8.2 Request for the list of all information submitted to the IBAN Register by an IBAN Register user

To receive the list of all information submitted to the IBAN Register by an IBAN Register user, it shall submit a request message with the following structure:

No	Usage	Element	Format	Description
1.	[1..1]	└┬ `<IBANRqst>`		
2.	[1..1]	├─ `<MsgId>`	X	Message indentifier
3.	[1..1]	├─ `<MsgType>`	Code "GET"	Message type specification; only code "GET" is allowed
4.	[1..1]	└┬ `<IBANItem>`		
5.	[1..1]	└─ `<BIC>`	X	BIC of the IBAN Register user

This message shall be included in type "SQ" file. This file need not be encrypted or digitally signed.

8.3 Reply to a request message for the list of all information submitted to the IBAN Register by an IBAN Register user

Upon receiving a request message for the list referred to in Paragraph 8.2herein, the IBAN Register shall process it and send a reply in the form of an XML message, included in a separate file and sent via the file exchange service. This message shall be included in type "SA" file which is encrypted and digitally signed.

Message with all information submitted to the IBAN Register by an IBAN Register user shall be generated according to the following structure:

No	Usage	Element	Format	Description
1.	[1..1]	└┬ `<IBANInfo>`		
2.	[1..1]	├─ `<MsgId>`	X	Message indentifier

3.	[1..1]	└─ <RelMsgId>	X	Identifier of the information request message which the current message replies to
4.	[1..1]	├─ <MsgType>	Code "GET"	Message type specification; only code "GET" is allowed in the message
5.	[1..1]	├─ <MsgStatus>	Code "ACCP"	Message status code – the message has been accepted and processed
6.	[1..1]	├─ <MsgCode>	Code "ACCP"	If accepted, the value shall always be "ACCP"
7.	[1..1]	└─ <IBANItems>		
8.	[1..n]	└─ <IBANItem>		
9.	[1..1]	├─ <BIC>	X	BIC of the institution servicing the account
10.	[1..1]	├─ <IBAN>	X	IBAN
11.	[1..1]	├─ <PhoneNum>	X	Mobile phone number
12.	[1..1]	├─ <PhoneCtryCd>	X	Country code of the mobile phone number
13.	[1..1]	├─ <AccDtTm>	X	Date and time when the Register entry took effect
14.	{Or	├─ <OrgId>		
15.	[1..1]	└─ <Org>		
16.	[1..1]	├─ <Name>	X	Name of the legal person
17.	[1..1]	├─ <NmAlias>	X	Alias
18.	[1..1]	└─ <OrgNumber>	X	Registration number
19.	Or}	└─ <PrvtId>		
20.	[1..1]	└─ <Person>		
21.	[1..1]	├─ <Name>	X	Name and surname of the natural person
22.	[1..1]	└─ <NmAlias>	X	Alias

8.4 Rejection of the request for the list of all information submitted to the IBAN Register by an IBAN Register user

Where the received request for the list of all information submitted to the IBAN Register by an IBAN Register user does not meet the requirements or it is not possible to provide the requested information, the IBAN register shall send the IBAN Register user an information request rejection message with the following structure:

No	Usage	Element	Format	Description
1.	[1..1]	└─ <IBANInfo>		
2.	[1..1]	├─ <MsgId>	X	Message indentifier
3.	[1..1]	├─ <RelMsgId>	X	Identifier of the information request message which the current message replies to
4.	[1..1]	├─ <MsgType>	Code "GET"	Message type specification; only code "GET" is allowed
5.	[1..1]	├─ <MsgStatus>	Code "RJCT"	Message status code – the message has been rejected
6.	[1..1]	└─ <MsgCode>	Code	Reason for the message rejection: see Paragraph **Kļūda! Nav atrasts atsauces avots.**

8.5 Reason Codes for IBAN Register message rejections

No.	Code	Description	Information request rejection message	Rejection of the request for the list of all entries registered by the IBAN Register user
1.	ACCP	The message is correct		
2.	NOTFOUND	The requested information has not been found	X	X
3.	NOTSIGNED	The message has not been digitally signed	X	X
4.	INVSIGNATURE	The message has not been signed with a valid digital signature	X	X
5.	BICMISMATCH	BIC does not match		X
6.	INVSCHEMA	The message does not meet the schema requirements	X	X

9. Data formats

9.1 MessageIdentification <MsgId>

Data type	Max35Text
Format	maxLength: 35 minLength: 1 Space is not allowed.

9.2 RelatedMessageIdentification <RelMsgId>

Data type	Max35Text
Format	maxLength: 35 minLength: 1 Space is not allowed.

9.3 BIC <BIC>

Data type	BICIdentifier
Format	[A-Z]{6,6}[A-Z2-9][A-NP-Z0-9]([A-Z0-9]{3,3}){0,1}

9.4 IBAN <IBAN>

Data type	IBANIdentifier
Format	[A-Z]{2,2}[0-9]{2,2}[a-zA-Z0-9]{1,30}

9.5 PhoneNum <PhoneNum>

Data type	phoneType
Format	[^\+[0-9]{11}

9.6 PhoneCountryCode <PhoneCtryCd>

Data type	CountryCode
Format	[0-9]{1,4}

9.7 OrgNumber <OrgNumber>

Data type	Max35Text

Format	[maxLength: 35
	minLength: 1

9.8 Name <Nm>

Data type	Max70Text
Format	maxLength: 70
	minLength: 1

9.9 NameAlias <NmAlias>

Data type	Max70Text
Format	maxLength: 70
	minLength: 1

9.10 OrgNumber <OrgNumber>

Data type	Max70Text
Format	maxLength: 70
	minLength: 1

9.11 MessageType <MsgType>

Data type	Code
Notes	Only the codes permitted in the respective message are allowed ("GET","DELETE", "OWN")

9.12 MessageStatus <MsgStatus>

Data type	Code
Notes	Only the codes permitted in the respective message are allowed ("ACCP", "RJCT").

9.13 MessageCode <MsgCode>

Data type	Code
Notes	Only the listed codes are allowed (Paragraph **Kļūda! Nav atrasts atsauces avots.**).

9.14 SendingInstitution <SndgInst>

Data type	BICIdentifier
Format	[A-Z]{6,6}[A-Z2-9][A-NP-Z0-9]([A-Z0-9]{3,3}){0,1}

9.15 ClientId <ClientId>

Data type	Max60Text
Format	maxLength: 60
	minLength: 1

9.16 AccDtTm <AccDtTm>

Data type	ISODateTime

Deputy Chairperson of the Board of Latvijas Banka   I. Posuma