VÚB BANKA

PSD2 documentation

API Documentation for 3rd parties

Novathon

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History of changes

Date	Version	Description of changes	Author
28.8.2018	1.0	Draft	developers@vub.sk
1.10.2018	1.1	Added information about sandbox	developers@vub.sk

Terms and Abbreviations

Abbreviation	Description
API	Application Programming Interface
AISP	Account Information Service Provider.
ASPSP	Account Servicing Payment Service Provider.
Authentication	TPP Identity confirmation.
Authorization	Verification of access to ASPSP resources.
Certificate	After the SCA RTS has been applied, it means a qualified certificate in the sense of e-IDAS.
Directive	PSD2 Directive. Directive of the European Parliament and of the Council (EU) 2015/2366.
EV	Extended Validation certificate
IBAN	International Bank Account Number.
JOSE	JSON Object Signing and Encryption.
OIDC	OpenID Connect
Optional input parameter	TPP can ignore this parameter.
Optional output Parameter	The ASPSP may fill the parameter value.
PIISP	Payment Instrument Issuer Service Provider
PISP	Payment Initiation Service Provider.
PSU	Payment Service User.
Resource	All access points of the ASPSP API for TPP access within PSD2.
RTS	Regulatory technical standards of the Europan Banking Authority

Abbreviation	Description
SCA	Strong Customer Authentication. Authentication of a payment service user means authentication based on the use of two or more elements that are categorized as knowledge (something the user knows only), ownership (something that only the user has), and inherence (something, the user is) and are independent in the sense that the violation of one element does not impair the reliability of the other elements, while being created in such a way as to protect the confidentiality of the authentication data.
TPP	Third Party Provider, i.e., a third party that is a payment service provider providing payment service users with a payment initiation or account information service or a payment service provider issuing card based payment facilities.

Contents

1. GOAL OF THE DOCUMENT

Main aim of the document is to describe API provided by VUB to PSD2 licensed third parties.

VUB provides bank interfaces to other licensed payment providers. Third party developers can integrate their applications with bank accounts, which can bring totally new user experience to bank clients. These services doesn't replace existing bank services, but their bring added value to clients.

This document describes VUB API, data flows among all participated parties, endpoints and attributes of API for Novathon purposes. During Novathon, only mock APIs will be published

Each API is described by OpenAPI specification in the form of Swagger files.
Part of the documentation is also Request/Response sample

2. BEFORE YOU START

Table 1 - VUB provides following set of an APIs.

Accounts information	API provides information and balances related to an account.
Accounts transactions	API provides list of transactions in defined range related to an account
Balance check	API provides information about sufficient balance with yes/no answer

Payments initiation and submission	API allows to initialize and execute the payment in XML format (pain.001)
Payment status	API provides actual information about initialized payment

Sandbox for testing mock APIs available on **https://api.novathon.vub.sk**

There are no validations implemented within the interfaces, except HTTP headers, which needs to be filled.

Data are random generated. Active operations such a Payment initiation doesn't perform real changes on account balance.

APIs provides consistent responses, so if you will perform more requests, with same values, you will receive the same response.

Swagger files for APIs are available at https://api.novathon.vub.sk/doc

3. ACCOUNT INFORMATION SERVICE PROVIDER

Chapter defines list of methods and alternative of flows provided for AISPs.

Endpoint	Method	Description
/api/v1/**accounts/information**	POST	**Account information** – service provide information and balances related to an account
/api/v1/**accounts/transactions**	POST	**Account transactions** – service provide list of transactions in defined date range related to an account

3.1. Header definition

Request header definition

Table 2 - Account information request header attributes

Attribute	Optionality	Type	Description
Content-Type	Mandatory	String	application/json or application/xml
Authorization	Mandatory	String	Authorization is defined in RFC 6750 - The OAuth 2.0 Authorization Framework: Bearer Token Usage
Request-ID	Mandatory	String	An unique identifier of a particular request message. Although it may be arbitrary string, it is strongly recommended to use a Universally Unique Ifentifier (UUID) version 4 form (RFC4122).
Correlation-ID	Optional	String	An unique correlation identifier correlates the request and the response messages as a pair especially useful for audit logs. Although it may be arbitrary string, it is strongly recommended to use a Universally Unique Ifentifier (UUID) version 4 form (RFC4122).
Process-ID	Optional	String	Identifier of a business or technical process to what the set of requests and response pairs are organized (e.g. paging of transaction history should have same Process-ID). Although it may be arbitrary string, it is strongly recommended to use a Universally Unique Ifentifier (UUID) version 4 form (RFC4122).
PSU–IP-Address	Mandatory	String	Identifier of a customer's IP address from which he/she is connected to the TPP infrastructure. It might be in the format of IPv4 o IPv6 address. ASPSP shall indicate which values are acceptable.
PSU-Device-OS	Mandatory	String	A customer's device and/or operating system identification from which he/she is connected to the TPP infrastructure.
PSU-User-Agent	Mandatory	String	A customer's web browser of other client device identification from which he/she is connected to the TPP infrastructure. Agent header field of the http request between PSU and TPP.)
PSU-Geo-Location	Optional	String	The GPS coordinates of the current customer's location in the moment of connection to the TPP infrastructure. (Required GPS format: Latitude, Longitude)
PSU-Last-Logged-Time	Optional	DateTime	Last date and time when user was logged to TPP app (RFC3339 format)
License_number	Optional	String	License number, assigned by local authority, which can be used for the lookup in local authority register (must be same as the one provided within EV (Extended validation) client certificate, which is used for mutual TLS)

State	Optional	String	If you want to test the services, this parameter should be set to "PSD2_TEST"

Response header definition

Table 3 - Account attributes response header attributes

Attribute	Optionality	Type	Description
Content-Type	Mandatory	String	application/json or application/xml
Response-ID	Mandatory	String	An unique identifier of a particular request message. Although it may be arbitrary string, it is strongly recommended to use a Universally Unique Ifentifier (UUID) version 4 form (RFC4122).
Correlation-ID	Optional	String	An unique correlation identifier correlates the request and the response messages as a pair especially useful for audit logs. Although it may be arbitrary string, it is strongly recommended to use a Universally Unique Ifentifier (UUID) version 4 form (RFC4122).
Process-ID	Optional	String	Identifier of a business or technical process to what the set of requests and response pairs are organized (e.g. paging of transaction history should have same Process-ID). Although it may be arbitrary string, it is strongly recommended to use a Universally Unique Ifentifier (UUID) version 4 form (RFC4122).

HTTP AISP Request header example:

Header

Content-Type: application/json
Authorization: Bearer IDWJJBCHQ5DZJWEMO7ZWM4DLYWOFWKXXRequest-ID: c2c48fc8-1f79-4934-a47b-56d61a28f351
Correlation-ID: 292163f5-4eee-4447-9292-5672fdf0013b
Process-ID: 4b88bf95-e129-42b8-a17d-1d2379810fbe
PSU-Last-Logged-Time: 2017-07-31T14:54:32+01:00
PSU–IP-Address: 192.168.0.100
PSU-Device-OS: iOS 11
PSU-User-Agent: Mozilla/5.0 (Windows NT 6.1) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/41.0.2228.0 Safari/537.36
PSU-Geo-Location: 48.145745, 17.116062
License_number: 12345678

HTTP AISP Response header example:

Header

Content-Type: application/json
Response-ID: ac30869e-29e2-40f7-83fb-ed1c6bdde216
Correlation-ID: 292163f5-4eee-4447-9292-5672fdf0013b
Process-ID: 4b88bf95-e129-42b8-a17d-1d2379810fbe

3.2. AISP: Account information

The operation provides the relevant data about PSU account identified by IBAN and two types of account balances: Interim booked and interim available balance. Only AISP is allowed to use current endpoint.

Request

Table 4 - Account information request attributes

Attributes structure Level 1	Optionality	Type	Description
iban	Mandatory	String [34]	International Bank Account Number (IBAN)

Sample request

```
{
  "iban": "SK6807200002891987426353"
}
```

Response (if no error)

Table 5 - Account information response attributes

Attributes sturcture Level 1	Level 2	Level 3	Optionality	Type	Description
account	*name*		Mandatory	String [70]	**Account name** - usually client name
account	*productName*		Optional	String [70]	**Product name** - commercial product designation
account	*type*		Optional	Enum	**Account type** is enumeration: ISO 20022 - Cash Account Type Code e.g. (CACC - Current account)
account	*baseCurrency*		Mandatory	String [3]	**Account currency** (currency code according to ISO 4217 - 3 capital letters)
balances	*typeCodeOrProprietary*		Mandatory	Enum	**Balance type** is enumeration: ISO 20022 - Balance Type Code. Following balances mandatory are published: - ITBD (Interim booked balance) - ITAV (Interim available balance)
balances	*amount*	*value*	Mandatory	Number Float [12.2]	**Balance amount.** Numeric value of the amount as a fractional number. The fractional part has a maximum of two digits
balances	*amount*	*currency*	Mandatory	String [3]	**Balance currency** (currency code according to ISO 4217 - 3 capital letters)

balances	*creditDebitIndicator*		Mandatory	Enum	**Credit/Debit indicator** is enumeration: - CRDT (Credit) - DBIT (Debit)
balances	*dateTime*		Mandatory	DateTime	**Timestamp of balances** (official local date and time of Slovak republic in RFC 3339 format)

Links to ISO 20022 enumerations:

- Account types: https://www.iso20022.org/standardsrepository/public/wqt/Description/mx/dico/codesets/_a3ed5tp-Ed-ak6NoX_4Aeg_-1826678245
- Balance type: https://www.iso20022.org/standardsrepository/public/wqt/Description/mx/dico/codesets/_bbFhQNp-Ed-ak6NoX_4Aeg_142948041

Sample response

```
{
  "account": {
    "name": "John Doe",
    "productName": "BestAccount",
    "type": "CACC",
    "baseCurrency": "EUR"
  },
  "balances": [
    {
      "typeCodeOrProprietary": "ITBD",
      "amount": {
        "value": 1234.56,
        "currency": "EUR"
      },
      "creditDebitIndicator": "CRDT",
      "dateTime": "2017-07-31T14:54:32+01:00"
    }
  ]
}
```

Error codes

Recommended set of HTTP Status codes and corresponding custom error codes:

HTTP Status	Error code	Description
400	**parameter_missing**	Mandatory parameter is missing
400	**parameter_invalid**	Value of input parameter is not valid
500, 503	**server_error**	Authorization server error.
Rest of HTTP Status codes and error codes are defined according to RFC 6749, Section 5.2		

3.3. AISP: Accounts transactions

The operation provides the list of financial transactions performed on a customer's bank account within a date period. Transaction history will only include transactions that affect the balance (reserved and booked transaction). Transactions will be ordered from the most recent to the oldest.

TPP -> Gateway: account information request [json] (with token)	
Description	The TPP invoke the services with access token.
Endpoint	POST /api/v1/accounts/transactions

Request

Table 6 - transaction history request attributes

Attributes structure Level 1	Optionality	Type	Description
iban	Mandatory	String [34]	International Bank Account Number (IBAN)
dateFrom	Optional	Date	The starting date of a date period for transaction history. Default value is actual day.
dateTo	Optional	Date	The end date of a date period for transaction history. ASPSPs provide transaction's history for at least 13 months. Default value is actual day.
pageSize	Optional	Integer	The number of records included in one page for displaying. Default value is 50 records. ASPSP has to supports at least 100 records on page.
page	Optional	Integer	The sequence number of a page in regards to page size for a record set. Because it starts at number 0, it should be considered as an offset from the beginning from a page set. Default value is 0.
status	Optional	Enum	Transaction status indicator is enumeration: - BOOK (booked transactions) - INFO (settled transactions) - ALL (all transactions) Default value is ALL

Sample request

```
{
  "dateFrom": "2017-07-31",
  "dateTo": "2017-08-01",
  "pageSize": 50,
  "page": 0,
  "iban": "SK6807200002891987426353",
  "status": "BOOKED"
}
```

Response (if no error)

Collection of information sets about customer's financial transactions executed at their bank account.

Attributes structure					Optionality	Type	Description
Level0	Level 1	Level 2	Level 3	Level 4			
pageCount					Optional	Number	Number of pages in the selected range
transactions	amount	value			*Mandatory*	*Number Float [12.2]*	**Transaction amount value** in account currency. Numeric value of the amount as a fractional number.
	amount	*currency*			Mandatory	String [3]	**Transaction amount currency**. Formated in Alphabetic codes from ISO 4712.
	creditDebitIndicator				Mandatory	Enum	**Credit/Debit indicator is enumeration:** - CRDT (Credit) - DBIT (Debit)
	reversalIndicator				Optional	boolean	The flag determining that it is the **reversal transaction** for some previous one.
	status				Mandatory	Enum	**The status of a transaction**, related to the query parameter 'transactionStatus'. Transaction status indicator is enumeration: - BOOK (booked transactions) - INFO (settled transactions
	bookingDate				Mandatory for booked tnx.	Date	**Transaction booking date.** The date of the execustion of the transaction.
	valueDate				Mandatory	Date	**Transaction value date.** The requested date by a bank customer to execute the transaction.
	bankTransactionCode				Optional	String [11]	**The category code** of the transaction type from the SBA's code list.
	transactionDetails	*references*	*accountServicerReference*		Optional	String [35]	**The unique identifier of the transaction generated by a ASPSP** that it should be considered as a ASPSP reference.

	transactionDetails	*references*	*instructionIdentification*		Optional	String [35]	Technical identification of the payment generated by a client.
	transactionDetails	*references*	*endToEndIdentification*		Mandatory in case this attribute is provided by client	String [35]	Unique identification defined by a requestor.
	transactionDetails	*references*	*transactionIdentification*		Optional	String [35]	The payment reference for related fees.
	transactionDetails	*references*	*mandateIdentification*		Mandatory for Direct debit tnx.	String [35]	The **mandate referece** as its reference number.
	transactionDetails	*references*	*chequeNumber*		Optional	String [35]	**For card transactions**, this is the card number in format **** **** **** 1111
	transactionDetails	*counterValueAmount*	*amount*	*value*	Optional	Number Float [12.2]	**Transaction amount value** in account currency.
	transactionDetails	*counterValueAmount*	*amount*	*currency*	Optional	String [3]	**Transaction amount currency**. Formated in Alphabetic codes from ISO 4712.
	transactionDetails	*counterValueAmount*	*currencyExchange*	*exchangeRate*	Optional	Number Float [12.2]	The used **exchange rate for conversion** from the instructed currency to the target account currency.
	transactionDetails	*relatedParties*	*debtor*	*name*	Optional	String [140]	**Name of the debtor**
	transactionDetails	*relatedParties*	*debtorAccount*	*identification*	Optional	String [34]	Unique identification of the **debtor account**, usually IBAN.

	transactionDetails	*relatedParties*	*creditor*	*name*	Optional	String [140]	**Name of the creditor**
	transactionDetails	*relatedParties*	*creditor*	*identification*	Optional	String [35]	The **creditor identifier** (CID) in the direct debit transaction.
	transactionDetails	*relatedParties*	*creditorAccount*	*identification*	Optional	String [34]	Unique identification of the **creditor account**, usually IBAN.
	transactionDetails	*relatedParties*	*tradingParty*	*name*	Optional	String [140]	Name of a third party. For card transaction, this is the name of merchant.
	transactionDetails	*relatedParties*	*tradingParty*	*identification*	Optional	String [35]	Unique identification of a third party. For card transaction, this is ID of merchant.
	transactionDetails	*relatedParties*	*tradingParty*	*merchantCode*	Optional	String [4]	A **Merchant Category Code** (MCC) coordinated by MasterCard and Visa.
	transactionDetails	*relatedAgents*	*debtorAgent*	*financialInstitutionIdentification*	Optional	String [11]	Corresponding identification of a **debtor bank** managing the account, usually Bank Identification Code (BIC).
	transactionDetails	*relatedAgents*	*creditorAgent*	*financialInstitutionIdentification*	Optional	String [11]	Corresponding identification of a **creditor bank** managing the account, usually Bank Identification Code (BIC).
	transactionDetails	*remittanceInformation*			Mandatory in case this attribute is provided by client	String [140]	The text aimed as the information for a receiver of the transaction.
	transactionDetails	*relatedDates*	*acceptanceDateTime*		Optional	Date	**Transaction entry date**. The date of receiving the transaction in a bank.
	transactionDetails	*additionalTransactionInformation*			Optional	String [140]	Bank transaction description.

Links to enumerations:

- The category code of the transaction type from the SBA's code list can be find in document „*xmlstatement_sk_v2.4_2016.docx*“ in section „*4.3.3 Transaction Codes*“: http://www.sbaonline.sk/files/subory/KPS/verejne/xmlstatement_sk_v2.4_2016.docx

Sample response


```
{
  "pageCount": 100,
  "transactions": [
    {
      "amount": {
        "value": 1234.56,
        "currency": "EUR"
      },
      "creditDebitIndicator": "CRDT",
      "reversalIndicator": false,
      "status": "BOOKED",
      "bookingDate": "2017-08-11",
      "valueDate": "2017-08-11",
      "bankTransactionCode": "CO11",
      "transactionDetails": {
        "references": {
          "accountServicerReference": "0e24e604dbf144d5ae64a19b1baedd27",
          "instructionIdentification": "9b76608457de48b2be531bd2804ae0b7",
          "endToEndIdentification": "/VS123/SS456/KS0308",
          "transactionIdentification": "9579749f59a74af5ab1778ac26e42f3b",
          "mandateIdentification": "343ed098e0c74e15b3813a04cf529a1f",
          "chequeNumber": "**** **** **** 1111"
        },
        "counterValueAmount": {
          "amount": {
            "value": 1234.56,
            "currency": "EUR"
          },
          "currencyExchange": {
            "exchangeRate": 1234.56
          }
        },
        "relatedParties": {
          "debtor": {
            "name": "Joe Doe"
          },
          "debtorAccount": {
            "identification": "SK6807200002891987426353"
          },
          "creditor": {
            "name": "Jane Doe",
            "identification": "c28a41eaee9e4bf78e1b654df1672bc1"
          },
          "creditorAccount": {
            "identification": "SK6807200002891987426353"
          },
          "tradingParty": {
            "name": "Merchant ID",
            "identification": "AAA-GG-SSSS",
            "merchantCode": "3370"
          }
        },
        "relatedAgents": {
```

```
          "debtorAgent": {
            "financialInstitutionIdentification": "GIBASKBX"
          },
          "creditorAgent": {
            "financialInstitutionIdentification": "GIBASKBX"
          }
        },
        "remittanceInformation": "Message for the receiver.",
        "relatedDates": {
          "acceptanceDateTime": "2017-08-11"
        },
        "additionalTransactionInformation": "Payment order (EB Sporopay)"
      }
    }
  ]
}
```


Error codes

Recommended set of HTTP Status codes and corresponding custom error codes:

HTTP Status	Error code	Description
400	**parameter_missing**	Mandatory parameter is missing
400	**parameter_invalid**	Value of input parameter is not valid
500, 503	**server_error**	Authorization server error.
Rest of HTTP Status codes and error codes are defined according to RFC 6749, Section 5.2		

4. PAYMENT INSTRUMENT ISSUER SERVICE PROVIDER

In following sections describe technical definition of provided endpoints for PIISPs.

Endpoint	Method	Description
/api/v1**/accounts/balanceCheck**	POST	**Balance check** – service provide information about sufficient balance with the yes/no answer

4.1. Header definition

Attribute	Optionality	Type	Description
Content-Type	Mandatory	String	application/json or application/xml
Authorization	Mandatory	String	Authorization is defined in RFC 6750 - The OAuth 2.0 Authorization Framework: Bearer Token Usage
Request-ID	Mandatory	String	An unique identifier of a particular request message. Although it may be arbitrary string, it is strongly recommended to use a Universally Unique Ifentifier (UUID) version 4 form (RFC4122).
Correlation-ID	Optional	String	An unique correlation identifier correlates the request and the response messages as a pair especially useful for audit logs. Although it may be arbitrary string, it is strongly recommended to use a Universally Unique Ifentifier (UUID) version 4 form (RFC4122).
Process-ID	Optional	String	Identifier of a business or technical process to what the set of requests and response pairs are organized (e.g. paging of transaction history should have same Process-ID). Although it may be arbitrary string, it is strongly recommended to use a Universally Unique Ifentifier (UUID) version 4 form (RFC4122).
PSU–IP-Address	Mandatory	String	Identifier of a customer's IP address from which he/she is connected to the TPP infrastructure. It might be in the format of IPv4 o IPv6 address. ASPSP shall indicate which values are acceptable.
PSU-Device-OS	Mandatory	String	A customer's device and/or operating system identification from which he/she is connected to the TPP infrastructure.
PSU-User-Agent	Mandatory	String	A customer's web browser of other client device identification from which he/she is connected to the TPP infrastructure. Agent header field of the http request between PSU and TPP.)
PSU-Geo-Location	Optional	String	The GPS coordinates of the current customer's location in the moment of connection to the TPP infrastructure. (Required GPS format: Latitude, Longitude)
PSU-Last-Logged-Time	Optional	DateTime	Last date and time when user was logged to TPP app (RFC3339 format)
License_number	Optional	String	License number, assigned by local authority, which can be used for the lookup in local authority register (must be same as the one provided within EV (Extended validation) client certificate, which is used for mutual TLS)
State	Optional	String	If you want to test the services, this parameter should be set to "PSD2_TEST"

Request header definition

Attribute	Optionality	Type	Description
Content-Type	Mandatory	String	application/json or application/xml
Response-ID	Mandatory	String	An unique identifier of a particular request message. Although it may be arbitrary string, it is strongly recommended to use a Universally Unique Ifentifier (UUID) version 4 form (RFC4122).
Correlation-ID	Optional	String	An unique correlation identifier correlates the request and the response messages as a pair especially useful for audit logs. Although it may be arbitrary string, it is strongly recommended to use a Universally Unique Ifentifier (UUID) version 4 form (RFC4122).
Process-ID	Optional	String	Identifier of a business or technical process to what the set of requests and response pairs are organized (e.g. paging of transaction history should have same Process-ID). Although it may be arbitrary string, it is strongly recommended to use a Universally Unique Ifentifier (UUID) version 4 form (RFC4122).

Request header definition

Sample request header

```
Content-Type: application/json
Authorization: Bearer IDWJJBCHQ5DZJWEMO7ZWM4DLYWOFWKXX
Request-ID: c2c48fc8-1f79-4934-a47b-56d61a28f351
Correlation-ID: 292163f5-4eee-4447-9292-5672fdf0013b
Process-ID: 4b88bf95-e129-42b8-a17d-1d2379810fbe
PSU-Last-Logged-Time: 2017-07-31T14:54:32+01:00
PSU–IP-Address: 192.168.0.100
PSU-Device-OS: iOS 11
PSU-User-Agent: Mozilla/5.0 (Windows NT 6.1) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/41.0.2228.0 Safari/537.36
PSU-Geo-Location: 48.145745, 17.116062
License_number: 12345678
```

Sample response header

```
Content-Type: application/json
Response-ID: ac30869e-29e2-40f7-83fb-ed1c6bdde216
Correlation-ID: 292163f5-4eee-4447-9292-5672fdf0013b
Process-ID: 4b88bf95-e129-42b8-a17d-1d2379810fbe
```

The operation provides the resolution whether the balance of a bank customer's account identified by IBAN is sufficient for asked amount.

4.2. Balance check

Endpoint: POST /api/v1/accounts/balanceCheck

Request

Attributes structure			Optionality	Type	Description
Level 1	**Level 2**	**Level 3**			
instructionIdentification			Mandatory	String	**Technical identification of payment**, generated by the PIISP
creationDateTime			Optional	DateTime	**The date and time** in RFC3339 format at which a particular action has been requested or executed.
iban			Mandatory	String [34]	**International Bank Account Number** (IBAN)
amount	*value*		Mandatory	Number Float [12.2]	**Transaction amount value**. Numeric value of the amount as a fractional number.
amount	*currency*		Mandatory	String [3]	**Transaction amount currency**. Formated in Alphabetic codes from ISO 4712.
relatedParties	*tradingParty*	*identification*	Optional	String [35]	Unique identification of a third party. For card transaction, this is ID of merchant.
relatedParties	*tradingParty*	*name*	Optional	String [140]	Name of a third party. For card transaction, this is the name of merchant.
relatedParties	*tradingParty*	*address*	Optional	String [70]	**Merchant cummulative address** identification usually containing concatenation of street name, street number, etc.
relatedParties	*tradingParty*	*countryCode*	Optional	String [2]	The two letter **merchant country code** adopted from ISO3166.
relatedParties	*tradingParty*	*merchantCode*	Optional	String [4]	A **Merchant Category Code** (MCC) coordinated by MasterCard and Visa.
references	*chequeNumber*		Optional	String [35]	**For card transactions**, this is the card number in format **** **** **** 1111
references	*holderName*		Optional	String[35]	**Card holder name**

Sample request

```
{
  "instructionIdentification": "9b76608457de48b2be531bd2804ae0b7",
  "creationDateTime": "2017-07-31T14:54:32+01:00",
```

```
    "iban": "SK6807200002891987426353",
    "amount": {
      "value": 1234.56,
      "currency": "EUR"
    },
    "relatedParties": {
      "tradingParty": {
        "identification": "AAA-GG-SSSS",
        "name": "Merchant ID",
        "address": "My street 123, MyLand",
        "countryCode": "SK",
        "merchantCode": "3370"
      }
    },
    "references": {
      "chequeNumber": "**** **** **** 1111",
      "holderName": "Jane Doe"
    }
  }
```


Response (if no error)

Attributes structure Level 1	Optionality	Type	Description
response	Mandatory	Enum	**response** is enumeration: - APPR (sufficient funds on the account) - DECL (insufficient funds in the account)
dateTime	Mandatory	DateTime	**The date and time** in RFC3339 format at which a particular action has been requested or executed.

Sample response


```
  {
    "response": "APPR",
    "dateTime": "2017-07-31T14:54:32+01:00"
  }
```


Error codes

Recommended set of HTTP Status codes and corresponding custom error codes:

HTTP Status	Error code	Description
400	**parameter_missing**	Mandatory parameter is missing
400	**parameter_invalid**	Value of input parameter is not valid
500, 503	**server_error**	Authorization server error.
Rest of HTTP Status codes and error codes are defined according to RFC 6749, Section 5.2		

5. PAYMENT INITIATION SERVICE PROVIDER

Chapter defines list of services and alternative of flows provided for PISPs.

Restriction:

a) PISP can initialize and authorize only single payment order. No bulk/batch payments are allowed.

In following sections describe technical definition of provided endpoints for PISPs.

Endpoints	Method	Description
/api/v1**/payments/standard/iso**	POST	**Standard payment initialization** – service allows to initialize payment in XML format (PAIN.001)
/api/v1**/payments/submission**	POST	**Standard payment submission** – service allows to authorization of initialized payment
/api/v1**/payments/{orderId}/status**	GET	**Payment order status** – service provide actual information about initialized payment

5.1. Header definition

Recommended set of request and response headers for PISP endpoints

Attribute	Optionality	Type	Description
Content-Type	Mandatory	String	application/json or application/xml
Authorization	Mandatory	String	Authorization is defined in RFC 6750 - The OAuth 2.0 Authorization Framework: Bearer Token Usage
Request-ID	Mandatory	String	An unique identifier of a particular request message. Although it may be arbitrary string, it is strongly recommended to use a Universally Unique Ifentifier (UUID) version 4 form (RFC4122).
Correlation-ID	Optional	String	An unique correlation identifier correlates the request and the response messages as a pair especially useful for audit logs. Although it may be arbitrary string, it is strongly recommended to use a Universally Unique Ifentifier (UUID) version 4 form (RFC4122).
Process-ID	Optional	String	Identifier of a business or technical process to what the set of requests and response pairs are organized (e.g. paging of transaction history should have same Process-ID). Although it may be arbitrary string, it is strongly recommended to use a Universally Unique Ifentifier (UUID) version 4 form (RFC4122).
PSU–IP-Address	Mandatory	String	Identifier of a customer's IP address from which he/she is connected to the TPP infrastructure. It might be in the format of IPv4 o IPv6 address. ASPSP shall indicate which values are acceptable.
PSU-Device-OS	Mandatory	String	A customer's device and/or operating system identification from which he/she is connected to the TPP infrastructure.
PSU-User-Agent	Mandatory	String	A customer's web browser of other client device identification from which he/she is connected to the TPP infrastructure. Agent header field of the http request between PSU and TPP.)
PSU-Geo-Location	Optional	String	The GPS coordinates of the current customer's location in the moment of connection to the TPP infrastructure. (Required GPS format: Latitude, Longitude)
PSU-Last-Logged-Time	Optional	DateTime	Last date and time when user was logged to TPP app (RFC3339 format)
License_number	Optional	String	License number, assigned by local authority, which can be used for the lookup in local authority register (must be same as the one provided within EV (Extended validation) client certificate, which is used for mutual TLS)

State	Optional	String	If you want to test the services, this parameter should be set to "PSD2_TEST"

Request header definition

Attribute	Optionality	Type	Description
Content-Type	Mandatory	String	application/json or application/xml
Response-ID	Mandatory	String	An unique identifier of a particular request message. Although it may be arbitrary string, it is strongly recommended to use a Universally Unique Ifentifier (UUID) version 4 form (RFC4122).
Correlation-ID	Optional	String	An unique correlation identifier correlates the request and the response messages as a pair especially useful for audit logs. Although it may be arbitrary string, it is strongly recommended to use a Universally Unique Ifentifier (UUID) version 4 form (RFC4122).
Process-ID	Optional	String	Identifier of a business or technical process to what the set of requests and response pairs are organized (e.g. paging of transaction history should have same Process-ID). Although it may be arbitrary string, it is strongly recommended to use a Universally Unique Ifentifier (UUID) version 4 form (RFC4122).

Response header

Sample request Header

```
Content-Type: application/json
Authorization: Bearer IDWJJBCHQ5DZJWEMO7ZWM4DLYWOFWKXX
Request-ID: c2c48fc8-1f79-4934-a47b-56d61a28f351
Correlation-ID: 292163f5-4eee-4447-9292-5672fdf0013b
Process-ID: 4b88bf95-e129-42b8-a17d-1d2379810fbe
PSU-Last-Logged-Time: 2017-07-31T14:54:32+01:00
PSU–IP-Address: 192.168.0.100
PSU-Device-OS: iOS 11
PSU-User-Agent: Mozilla/5.0 (Windows NT 6.1) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/41.0.2228.0 Safari/537.36
PSU-Geo-Location: 48.145745, 17.116062
License_number: 12345678
```

Sample response Header

```
Content-Type: application/json
Response-ID: ac30869e-29e2-40f7-83fb-ed1c6bdde216
Correlation-ID: 292163f5-4eee-4447-9292-5672fdf0013b
Process-ID: 4b88bf95-e129-42b8-a17d-1d2379810fbe
```

5.2. PISP: Payment initiation

The operation allows initialize payment in XML format (PAIN.001). The PISP sends a ISO20022 pain.001 based structure that specifies the payment activation request that is related to a commercial transaction between a PSU and the merchant.

Endpoint: POST /api/v1/payments/standard/iso

Request

Message contains xml: pain.001.001.03

- Link to message definition: https://www.iso20022.org/documents/general/Payments_Maintenance_2009.zip
- Link to message examples: https://www.iso20022.org/documents/messages/pain/instances/pain.001.001.03.zip

Sample request

```
<?xml version="1.0"?>
 <Document xmlns="urn:iso:std:iso:20022:tech:xsd:pain.001.001.03">
  <CstmrCdtTrfInitn>
   <GrpHdr>
    <MsgId>ABC/123456/XXX000</MsgId>
    <CreDtTm>2018-01-11T08:30:00</CreDtTm>
    <NbOfTxs>1</NbOfTxs>
    <CtrlSum>1.11</CtrlSum>
    <InitgPty>
     <Nm>Test PSD2</Nm>
      <Id>
       <OrgId>
        <Othr>
         <Id>ffdc2f2d-1288-4212-be381</Id>
        </Othr>
       </OrgId>
      </Id>
    </InitgPty>
   </GrpHdr>
   <PmtInf>
    <PmtInfId>A2018-01-08</PmtInfId>
    <PmtMtd>TRF</PmtMtd>
    <NbOfTxs>1</NbOfTxs>
    <CtrlSum>1.11</CtrlSum>
    <PmtTpInf>
     <InstrPrty>NORM</InstrPrty>
     <SvcLvl>
      <Cd>NURG</Cd>
     </SvcLvl>
    <CtgyPurp>
     <Cd>SEPA</Cd>
    </CtgyPurp>
   </PmtTpInf>
   <ReqdExctnDt>2018-01-11</ReqdExctnDt>
    <Dbtr>
     <Nm>Test PSD2</Nm>
    </Dbtr>
    <DbtrAcct>
     <Id>
      <IBAN>SK3102000000002624762547</IBAN>
```

```
        </Id>
       </DbtrAcct>
       <DbtrAgt>
        <FinInstnId>
         <BIC>SUBASKBX</BIC>
        </FinInstnId>
       </DbtrAgt>
       <CdtTrfTxInf>
        <PmtId>
         <InstrId>A/2018-01-11</InstrId>
         <EndToEndId>/VS1234567890/KS0000/SS1234567890</EndToEndId>
        </PmtId>
        <Amt>
         <InstdAmt Ccy="EUR">1.11</InstdAmt>
        </Amt>
        <ChrgBr>SHAR</ChrgBr>
        <UltmtDbtr>
         <Nm>Test PSD2</Nm>
         <Id>
          <OrgId>
           <Othr>
            <Id>12345</Id>
           </Othr>
          </OrgId>
         </Id>
        </UltmtDbtr>
        <CdtrAgt>
         <FinInstnId>
          <BIC>TATRSKBX</BIC>
         </FinInstnId>
        </CdtrAgt>
        <Cdtr>
         <Nm>Test PSD2</Nm>
        </Cdtr>
        <CdtrAcct>
         <Id>
          <IBAN>SK3511000000002624762547</IBAN>
         </Id>
        </CdtrAcct>
        <Purp>
         <Cd>ACCT</Cd>
        </Purp>
        <RmtInf>
         <Ustrd>The Second Payment Service Directive</Ustrd>
        </RmtInf>
       </CdtTrfTxInf>
      </PmtInf>
     </CstmrCdtTrfInitn>
    </Document>
```

Response (if no error)

Message contains xml: pain.002.001.03

Attribute	XML structure mapping	Optionality	Type	Description

orderId	TxInfAndSts/AcctSvcrRef	Mandatory	String (35)	**OrderId is** Unique reference, as assigned by the account servicing institution, to unambiguously identify the instruction.
status	TxInfAndSts/TxSts	Mandatory	Enum	**Transaction status indicator** is enumeration: - ACTC (AcceptedTechnicalValidation) - ACWC (AcceptedWithChange) - RJCT (Rejected)
reasonCode	TxInfAndSts/StsRsnInf/Rsn	Optional	Enum	ISO 20022 **Rejected Status Reason Code**
statusDateTime	GrpHdr/CreDtTm	Mandatory	Enum	**Transaction entry date**. The date of receiving the transaction in a bank.

- Link to definitions: https://www.iso20022.org/documents/general/Payments_Maintenance_2009.zip
- Link to message examples: https://www.iso20022.org/documents/messages/pain/instances/pain.002.001.03.zip
- Links to enumerations:
  Status Reason Code
  https://www.iso20022.org/sites/default/files/documents/External_code_lists/ExternalCodeSets_4Q2017_05Mar2018_v1.xls, (sheets: 16-StatusReason, 60-ReceivedReason, 61-AcceptedReason, 62-PendingProcessingReason, 63-RejectedReason

Sample response

```
{
  "orderId": "248a00f8cdaa465da98455f4df5ad417",
  "status": "ACTC",
  "reasonCode": "MONY",
  "statusDateTime": "2018-08-30T18:34:39.348Z"
}
```

Error codes

Recommended set of HTTP Status codes and corresponding custom error codes:

HTTP Status	Error code	Description
400	**parameter_missing**	Mandatory parameter is missing
400	**parameter_invalid**	Value of input parameter is not valid
500, 503	**server_error**	Authorization server error.
Rest of HTTP Status codes and error codes are defined according to RFC 6749, Section 5.2		

5.3. PISP: Payment submission

The operation provides authorization of initialized payment.

Endpoint: POST /api/v1/payments/submission

Request

The authorization header will contain a "bearer token" that coresppond to "payment order".

Sample request

```
{
"orderId":"ffdc2f2d-1288-4212-be38-a011838ee051"
}
```

Response (if no error)

Attributes structure Level 1	Optionality	Type	Description
orderId	Mandatory	String	**OrderId is** Unique reference, as assigned by the account servicing institution, to unambiguously identify the instruction.
status	Mandatory	Enum	**Transaction status indicator** is enumeration: - ACTC (AcceptedTechnicalValidation) - ACWC (AcceptedWithChange) - RJCT (Rejected)
reasonCode	Optional	Enum	ISO 20022 **Rejected Status Reason Code**
statusDateTime	Mandatory	DateTime	**The date and time** in RFC3339 format at which a particular action has been requested or executed.

- Links to enumerations:
  Status Reason Code
  https://www.iso20022.org/sites/default/files/documents/External_code_lists/ExternalCodeSets_4Q2017_05Mar2018_v1.xls, (sheets: 16-StatusReason, 60-ReceivedReason, 61-AcceptedReason, 62-PendingProcessingReason, 63-RejectedReason

Sample response

```
{
"orderId":"ffdc2f2d-1288-4212-be38-a011838ee051",
"status":"ACTC",
"statusDateTime":"2017-10-03T14:02:32.807Z"
}
```

Error codes

Recommended set of HTTP Status codes and corresponding custom error codes:

HTTP Status	Error code	Description
400	**parameter_missing**	Mandatory parameter is missing
400	**parameter_invalid**	Value of input parameter is not valid
500, 503	**server_error**	Authorization server error.
Rest of HTTP Status codes and error codes are defined according to RFC 6749, Section 5.2		

5.4. PISP: Payment sTatus

The operation provides information about processing status of a received payment instruction based on payment orderId identification.

Endpoint: GET /api/v1/payments/{orderId}/status

Request

Payload is empty.

Response (if no error)

Attributes structure Level 1	Optionality	Type	Description
orderId	Mandatory	String	**OrderId is** Unique reference, as assigned by the account servicing institution, to unambiguously identify the instruction.
status	Mandatory	Enum	**Transaction status indicator** is enumeration: - ACTC (AcceptedTechnicalValidation) - ACWC (AcceptedWithChange) - RJCT (Rejected) - PDNG (Pending) - ACSP (AcceptedSettlementInProcess) - ACSC (AcceptedSettlementCompleted)
reasonCode	Optional	Enum	ISO 20022 **Rejected Status Reason Code**
statusDateTime	Mandatory	DateTime	**The date and time** in RFC3339 format at which a particular action has been requested or executed.

- Links to enumerations:
  Status Reason Code
  https://www.iso20022.org/sites/default/files/documents/External_code_lists/ExternalCodeSets_4Q2017_05Mar2018_v1.xls, (sheets: 16-StatusReason, 60-ReceivedReason, 61-AcceptedReason, 62-PendingProcessingReason, 63-RejectedReason

Sample response

```
{
  "orderId": "248a00f8cdaa465da98455f4df5ad417",
  "status": "ACTC",
  "reasonCode": "MONY",
  "statusDateTime": "2018-08-30T18:42:41.394Z"
}
```

Error codes

Recommended set of HTTP Status codes and corresponding custom error codes:

HTTP Status	Error code	Description
400	**parameter_missing**	Mandatory parameter is missing
400	**parameter_invalid**	Value of input parameter is not valid
500, 503	**server_error**	Authorization server error.
Rest of HTTP Status codes and error codes are defined according to RFC 6749, Section 5.2		

Expected flow of payment's states:

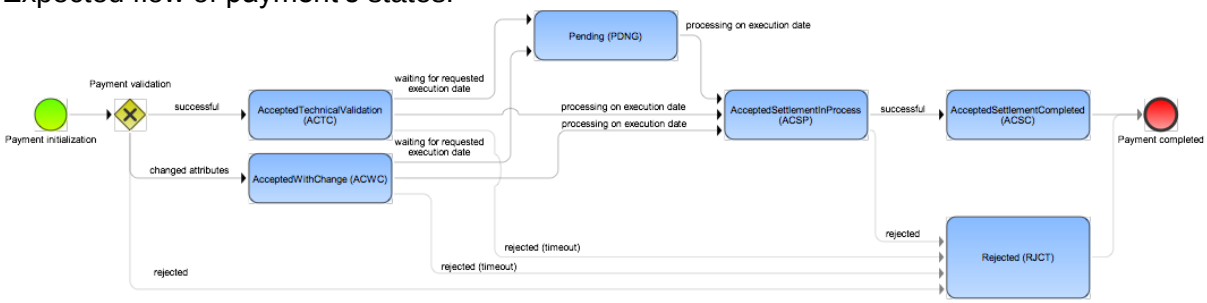

Figure 4: Flow of Payment's States

This operation provides following payment status codes:

Attribute	Description
ACTC	**AcceptedTechnicalValidation** - Authentication and syntactical and semantical validation are succes
ACWC	**AcceptedWithChange** - Instruction is accepted but a change will be made, such as date or remittanc
PDNG	**Pending** – payment initiation or individual transaction included in the payment initiation is pending. Fu perform.
ACSP	**AcceptedSettlementInProcess** - All preceding checks such as technical validation and customer pr payment initiation has been accepted for execution.
ACSC	**AcceptedSettlementCompleted** – Settlement on the debtor's account has been completed. Usage reports to the debtor that the transaction has been completed. Warning: this status is provided for trans information. It can only be used after bilateral agreement.
RJCT	**Rejected** - Payment initiation or individual transaction included in the payment initiation has been reje

- Link to definition: https://www.iso20022.org/standardsrepository/public/wqt/Description/mx/dico/codesets/_Z7RUV9p-Ed-ak6NoX_4Aeg_-481257913