THE Berlin GROUP

A EUROPEAN STANDARDS INITIATIVE


# NextGenPSD2 XS2A Framework

# Implementation Guidelines

# Extended Services

# AIS for Savings and Loans Accounts

Version 1.2

07 July 2023

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  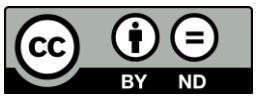
  

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## Contents

# 1 Introduction

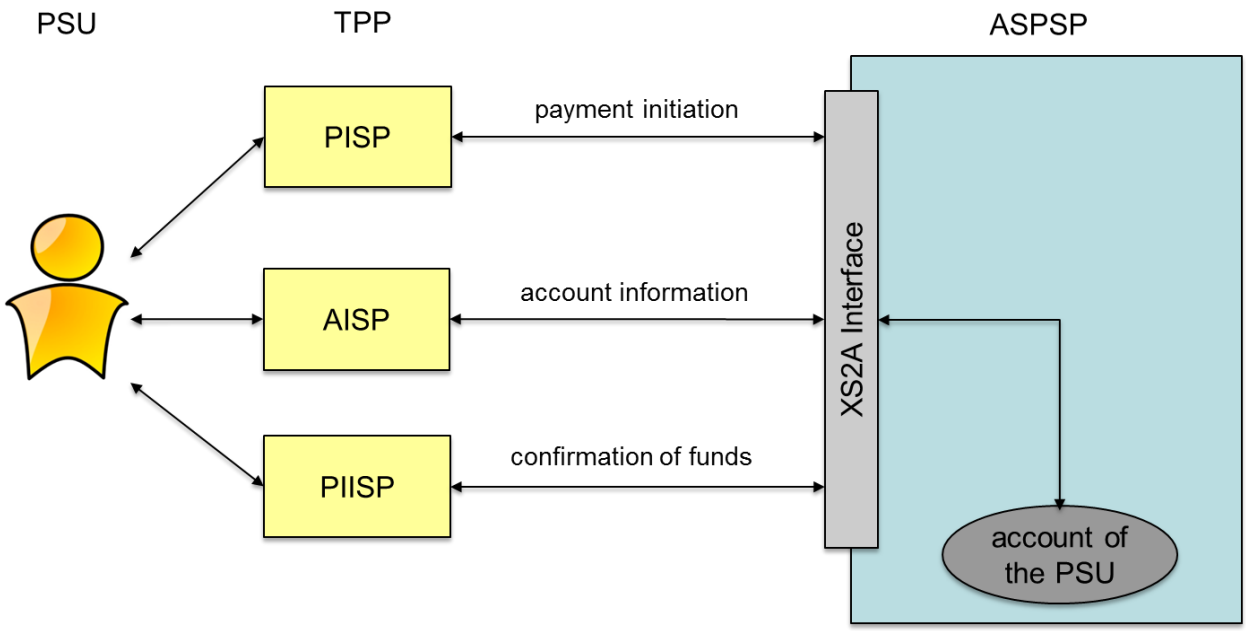
## 1.1 Background

With [PSD2] the European Union has published a new directive on payment services in the internal market. Member States had to adopt this directive into their national law until 13th of January 2018.

Among others [PSD2] contains regulations of new services to be operated by so called Third Party Payment Service Providers (TPP) on behalf of a Payment Service User (PSU). These new services are

- Payment Initiation Service (PIS) to be operated by a Payment Initiation Service Provider (PISP) TPP as defined by article 66 of [PSD2],
- Account Information Service (AIS) to be operated by an Account Information Service Provider (AISP) TPP as defined by article 67 of [PSD2], and
- Confirmation of the Availability of Funds service to be used by Payment Instrument Issuing Service Provider (PIISP) TPP as defined by article 65 of [PSD2].

For operating the new services a TPP needs to access the account of the PSU which is usually managed by another PSP called the Account Servicing Payment Service Provider (ASPSP). As shown in the following figure, an ASPSP has to provide an interface (called "PSD2 compliant Access to Account Interface" or short "XS2A Interface") to its systems to be used by a TPP for necessary accesses regulated by [PSD2]:



Further requirements on the implementation and usage of this interface are defined by a Regulatory Technical Standard (short RTS) from the European Banking Authority (short EBA), published in the Official Journal of the European Commission.

Currently, an account is assumed to be a payment account. Special endpoints for card accounts or (single) cards have also been defined, but most other types of accounts cannot or not fittingly be addressed via the defined endpoints. Specifically, the current endpoints do not provide a data model to cover the relevant information of a savings account or a loan account.

This point will be addressed in the following extension of the AIS protocol. For this aim, new endpoints will be defined for **savings account**s and **loan account**s.

Also an extension of the consent model to restrict access to only accounts of one type (e.g. savings accounts or loan accounts) will be defined. This extension will be compatible to other extensions with a similar aim.

To achieve this, three downward compatible changes will be made to the protocol:

1. A mechanism to specifically request access to only one accountType is defined.
2. New endpoints are defined to specifically request information on savings and loan accounts.

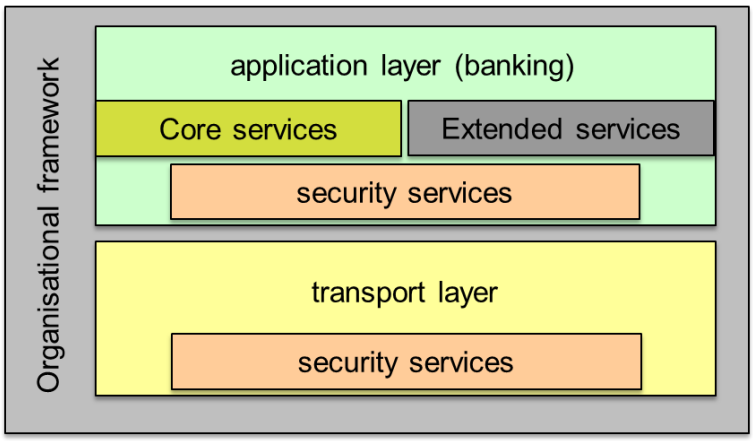
## 1.2 XS2A Interface Specification

This document is an extension of the NextGenPSD2 XS2A Specification which defines a standard for an XS2A Interface and by this reaching interoperability of the interfaces of ASPSPs at least for the core services defined by [PSD2].

The XS2A Interface is designed as a B2B interface between a TPP server and the ASPSP server. For the time being, the protocol defined in this document is a pure client-server protocol, assuming the TPP server being the client, i.e. all API calls are initiated by the TPP. In future steps, this protocol might be extended to a server-server protocol, where also the ASPSP initiates API calls towards the TPP.

The Interoperability Framework defines operational rules, requirements on the data model and a process description in [XS2A-OR].

This document details the standard in defining messages and detailed data structures for **extended services** of the XS2A Interface. For the specification the two layers shown in the following figure are distinguished:




This document now describes how the existing services for account information can be extended to provide account information on savings accounts and loan accounts. For both, savings and loan accounts, new endpoints are defined in order to provide the information.

**Remark for Future**: Please note that the Berlin Group NextGenPSD2 XS2A interface is still under constant development. Technical issues, which are already in discussion within the Berlin Group NextGenPSD2 working structure are mentioned in this document by "Remark for Future" to make the reader aware of upcoming potential changes.

## 1.3 Document History

| Version | Change/Note | Approved |
|---|---|---|
| 1.0 | Initial version | 19 April 2021 by openFinance TF |
| 1.1 | Editorial clarifications that saving accounts are offered on a dedicated endpoint separated from current accounts in Section 4.2.1 and Section 5.4.1.<br><br>A remark was added that the balance endpoint can easily provide the original starting loan amount, cp. Section 6.3.1.<br><br>Dedicated hyperlinks added for Links type for savings and loan accounts in Section 7.1.5 | 27 April 2022 by openFinance TF |
| 1.2 | Editorial errors in several chapters corrected (also addressing a minor number of attribute naming).<br><br>Added the reason attribute in data type "Interest" in Section 7.2.3.<br><br>Added Section 7.2.6.3 and 7.2.6.5 for examples of the usage of the new sub attribute "reason" for arrears or maximum/minimum of two interest rates to be applied.<br><br>The requirements were discussed and accepted within CR 0101, CR 0102 | 07 July 2023 by openFinance TF |
| | | |
| | | |
| | | |

## 2 Character Sets and Notations

For definition on character Sets and Notations as well as for request and response notations refer to Chapter 2 of [XS2A-IG].

## 3 Transport Layer

For details on the transport Layer, please refer to Chapter 3 in [XS2A-IG].

# 4 Application Layer: Guiding Principles

The following extension will define requests for a TPP to get information on savings accounts and loan accounts. As the two are independent from each other, the extension is done modularly:

- Chapter 5 describes the extension for savings accounts
- Chapter 6 describes the extension for loan accounts
- Chapters 7 describes the extension of existing Complex Data Types and the definition of new data types. This chapter is relevant for both savings accounts and loan accounts.

ASPSPs that decide to only implement one of the services can therefore ignore the chapter that addresses the changes for the service they do not intend to implement.

## 4.1 Sealing Requirements

The ASPSP may require the TPP to sign request messages. This requirement shall be stated in the ASPSP documentation. The signing requirements are defined in [XS2A-IG]. No specific requirements are defined for the Account Information Services on savings accounts or loan accounts.

## 4.2 API Access Methods

### 4.2.1 Savings Accounts Endpoints

The following table gives an overview on the HTTP access methods supported by the new API endpoint and by resources created through this API.

| Endpoints/Resources | Method | Condition | Description |
|---|---|---|---|
| savings | GET | Mandatory | Read all identifiers of the savings account, to which an access has been granted to through the /consents endpoint by the PSU. In addition, relevant information about the savings accounts and hyperlinks to corresponding savings account information resources are provided if a related consent has been already granted.<br><br>Section 5.1. |

| Endpoints/Resources | Method | Condition | Description |
|---|---|---|---|
| savings/{savings-account-id} | GET | Mandatory | Read detailed information about the addressed savings account.<br><br>Section 5.2. |
| savings/{savings-account-id}/balances | GET | Mandatory | Read detailed balance information about the addressed savings account.<br><br>Section 5.3. |
| savings/{savings-account-id}/transactions | GET | Mandatory | Read transaction reports or transaction lists related to a given savings account. For a given savings account, additional parameters are e.g. the attributes "dateFrom" and "dateTo".<br><br>Section 5.4. |

### 4.2.2 Loan Accounts Endpoints

The following table gives an overview on the HTTP access methods supported by the new API endpoint and by resources created through this API.

| Endpoints/Resources | Method | Condition | Description |
|---|---|---|---|
| loans | GET | Mandatory | Read all identifiers of the loan account, to which an access has been granted to through the /consents endpoint by the PSU. In addition, relevant information about the loan accounts and hyperlinks to corresponding loan account information resources are provided if a related consent has been already granted.<br><br>Section 6.1. |
| loans/{loan-account-id} | GET | Mandatory | Read detailed information about the addressed loan account. |

| Endpoints/Resources | Method | Condition | Description |
|---|---|---|---|
| | | | Section 6.2. |
| loans/{loan-account-id}/balances | GET | Mandatory | Read detailed balance information about the addressed loan account.<br><br>Section 6.3. |
| loans/{loan-account-id}/transactions | GET | Mandatory | Read transaction reports or transaction lists related to a given loan account. For a given loan account, additional parameters are e.g. the attributes "dateFrom" and "dateTo".<br><br>Section 6.4. |

### 4.3 Specifics in Submission of Consents

Like a (regular payment) account, specific savings accounts can be addressed in a consent request by identifying the account by its IBAN. In some cases, a savings / loan account might not be connected to any globally defined identifier. Therefore, the additional element "other" is used, which might be provided instead of or in addition to an IBAN thereby identifying the specific account, for which a consent is requested. The "other" element has already been introduced for domestic purposes in [XS2A-DOM-IG].

Also, neither an IBAN nor an ID provided in the "other" element might be sufficient to *uniquely* identify a specific savings account. Therefore, an additional "serialNumber" might also be contained in the details of an account. The "serialNumber" is still missing in this version of the implementation guidelines to leave it more open for discussion. The discussion should reflect the intention, that a consent shall be granted irrespective of a sub-account's serialNumber. If, for example, a savings account is identified by IBAN DEXXXXX… and has two sub-accounts with serialNumbers 1 and 2, the consent shall always be granted for IBAN DEXXXXX… . (Only) when the TPP requests an account list, the two sub-accounts with its respective serialNumbers shall be revealed.

Additionally, a savings account can be addressed by an Account Access Object containing an identifier of the savings account / loan account accompanied by the specification of the cashAccountType to Type "SVGS" / "LOAN" (see Section 7.1). A consent of this type will grant the access to the related savings account / loan account, if the ASPSP supports the corresponding endpoints at all.

As a third / fourth way to establish a savings specific consent, the TPP can request a bank-offered consent or a global consent but restricting the requested access to a certain cashAccountType – e.g. "SVGS" or "LOAN". A consent of this type will grant the access to

accounts of only the related type (e.g. savings account / loan account), if the ASPSP supports the corresponding endpoints at all (which is always the case for savings accounts as they are reached through endpoints for payment accounts).

### Examples for Establish Consent Requests

**Remark:** No specific requirements for responses, for examples for responses cp. Section 6.3.1 of [XS2A-IG].

#### *Request for a dedicated consent on transactions and balances of a dedicated savings account (uniquely identified by its IBAN)*

```
POST https://api.testbank.com/v1/consents
Content-Type:           application/json
X-Request-ID:           99391c7e-ad88-49ec-a2ad-99ddcb1f7756
PSU-IP-Address:         192.168.8.78
PSU-User-Agent:          Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date:                   Sun, 06 Aug 2017 15:05:37 GMT

{
  "access": {
      "balances": [
          { "iban": "DE40100100103307118608" }, /* balances of a savings
account
        ],
       "transactions": [
          { "iban": "DE40100100103307118608" }, /* transactions of a
savings account
        ]
    },
  "recurringIndicator": true,
  "validUntil": "2017-11-01",
  "frequencyPerDay": 4

}
```

#### *Request for access to all savings accounts behind a specific IBAN*

```
POST https://api.testbank.com/v1/consents
Content-Type:           application/json
X-Request-ID:           99391c7e-ad88-49ec-a2ad-99ddcb1f7756
PSU-IP-Address:         192.168.8.78
```

```
PSU-User-Agent:          Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date:                    Sun, 06 Aug 2017 15:05:37 GMT

{
  "access": {
      "balances": [
          { "iban": "DE40100100103307118608" }, /* balances of an account
irrespective of its type
          { "iban": "DE02100100109307118603",
            "cashAccountType": "SVGS" /* balances of all savings accounts
behind this IBAN
          }
        ],
       "transactions": [
          { "iban": "DE02100100109307118603",
            "cashAccountType": "SVGS"} /* transactions of all savings
accounts behind this IBAN
        ]
    },
  "recurringIndicator": true,
  "validUntil": "2017-11-01",
  "frequencyPerDay": 4

}
```

### *Request for access to a specific savings account not identifyable by an IBAN*

```
POST https://api.testbank.com/v1/consents
Content-Type:            application/json
X-Request-ID:            99391c7e-ad88-49ec-a2ad-99ddcb1f7756
PSU-IP-Address:          192.168.8.78
PSU-User-Agent:          Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date:                    Sun, 06 Aug 2017 15:05:37 GMT

{
  "access": {
      "balances": [
          { "other": {"identification": "MyProprietaryID-0001"} },
          { "other": {"identification": "MyProprietaryID-0002"}, }
        ],
       "transactions": [
          { "other": {"identification": "MyProprietaryID-0001"}}
        ]
    },
```

```
  "recurringIndicator": true,
  "validUntil": "2017-11-01",
  "frequencyPerDay": 4
}
```

### *Request for a bank driven consent, restricted to the related savings accounts*

```
POST https://api.testbank.com/v1/consents
Content-Type            application/json
X-Request-ID            99391c7e-ad88-49ec-a2ad-99ddcb1f7756
PSU-IP-Address          192.168.8.78
PSU-User-Agent           Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date                    Sun, 06 Aug 2017 15:05:37 GMT

{"access":
      {"balances": [],
       "transactions": [],
      "restrictedTo": ["SVGS"]},
 "recurringIndicator": true,
 "validUntil": "2017-11-01",
 "frequencyPerDay": 4
}
```

### *Request for access to a loan account behind a specific IBAN*

```
POST https://api.testbank.com/v1/consents
Content-Type:           application/json
X-Request-ID:           99391c7e-ad88-49ec-a2ad-99ddcb1f7756
PSU-IP-Address:         192.168.8.78
PSU-User-Agent:          Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date:                   Sun, 06 Aug 2017 15:05:37 GMT

{
  "access": {
      "balances": [
          { "iban": "DE40100100103307118608" }, /* balances of an account
irrespective of its type
          { "iban": "DE02100100109307118603",
            "cashAccountType": "LOAN" /* balances of all loan accounts
behind this IBAN
          }
```

```
        ],
       "transactions": [
          { "iban": "DE02100100109307118603",
            "cashAccountType": "LOAN"} /* transactions of all loan accounts
behind this IBAN
        ]
    },
  "recurringIndicator": true,
  "validUntil": "2017-11-01",
  "frequencyPerDay": 4

}
```

***Request for a global consent, restricted to cash account types (ignoring savings accounts an loan accounts)***

```
POST https://api.testbank.com/v1/consents
Content-Type            application/json
X-Request-ID            99391c7e-ad88-49ec-a2ad-99ddcb1f7756
PSU-IP-Address          192.168.8.78
PSU-User-Agent           Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date                    Sun, 06 Aug 2017 15:05:37 GMT

{"access":
      {"allPSD2": "allAccounts",
      "restrictedTo": ["CACC"]
      },
 "recurringIndicator": true,
 "validUntil": "2017-11-01",
 "frequencyPerDay": 4
}
```

**Remark:** The latter example is relevant only in communities or for ASPSP which are offering the endpoints different from cash accounts (e.g. savings accounts, loan accounts, card accounts). In other markets, this restriction attribute is not supported.

### Multicurrency Accounts

For savings and loan accounts, there are no specific multicurrency accounts defined. If an ASPSP provides savings and/ or loans in multiple currencies, it must provide distinct account resources, each representing a saving / loan in one specific currency.

## 4.4 Additional Error Information

No specific additional error information is needed for the extended service for savings accounts or loan accounts.

## 4.5 Status Information

### Status Information for the AIS within the Establish Consent Process

No specific status information needed for the extended service for savings accounts or loan accounts.

# 5 New Message Types for Savings Accounts

New message types / endpoints are defined for this extended service as follows.

## 5.1 Read Savings Account List

### 5.1.1 Request

### Call

```
GET /v1/savings
```

Reads a list of savings accounts potentially with additional information, e.g. balance information. It is assumed that a consent of the PSU to this access is already given and stored on the ASPSP system. The addressed list of savings accounts depends then on the stored consent addressed by consentId, respectively the OAuth2 access token.

### Query Parameters

No specific query parameter.

### Request Header

| Attribute | Type | Condition | Description |
|---|---|---|---|
| X-Request-ID | UUID | Mandatory | ID of the request, unique to the call, as determined by the initiating party. |
| PSU-IP-Address | String | Conditional | The forwarded IP Address header field consists of |

| Attribute | Type | Condition | Description |
|---|---|---|---|
| | | | the corresponding HTTP request IP Address field between PSU and TPP. It shall be contained if and only if this request was actively initiated by the PSU. |
| Consent-ID | String | Mandatory | Identification of the corresponding consent as granted by the PSU. |
| Authorization | String | Conditional | Is contained only, if an OAuth2 based SCA was performed in the corresponding mandate transaction or if OAuth2 has been used in a pre-step. |

**Request Body**

No request body.

### 5.1.2 Response

**Response Code**

HTTP Response Code equals 200.

**Response Header**

| Attribute | Type | Condition | Description |
|---|---|---|---|
| X-Request-ID | UUID | Mandatory | ID of the request, unique to the call, as determined by the initiating party. |

**Response Body**

| Attribute | Type | Condition | Description |
|---|---|---|---|
| savingsAccounts | Array of Account Details | Mandatory | Descriptions of the accessible savings accounts. |

**Remark:** The same syntactical structure is used to transport savings account information as (payment) account information.

### 5.1.3 Examples

Request (without PSU involvement)

```
GET https://api.testbank.com/v1/savings


Accept:           application/json
X-Request-ID:           99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Consent-ID:             qwer3456tzui7890
PSU-User-Agent:         Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date:                   Thu, 29 Oct 2020 15:05:37 GMT
```

Response

```
HTTP/1.x 200 Ok
X-Request-ID:           99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Content-Type:           application/json
Date:                   Thu, 29 Oct 2020 15:05:38 GMT
{
  "savingsAccounts":
    [{
      "resourceId": "3dc3d5b3-7023-4848-9853-f5400a64e81g",
      "other": {"identification": "MyProprietaryID-0001"},
      "currency": "EUR",
      "ownerName": "Paul Simpson",
      "name": "Savings 1a",
      "product": "Saving Account",
      "cashAccountType": "SVGS",
       "interest":[
         {"type": "FIXD" ,
          "rate":
               [{"percentage": "1.5",     /*mandatory
                 "fromAmount": {"currency": "EUR", "amount": "0.0"},
                 "toAmount": {"currency": "EUR", "amount": "2000"}
                  },
                  {"percentage": "0.1",   /*mandatory
                 "fromAmount": {"currency": "EUR", "amount": "2000"}
                }],
          "toDateTime": "2017-01-05T23:59:59"
```

```
        },
        {"type": "FIXD" ,
         "rate":
              [{"percentage": "0.5",     /*mandatory
                "fromAmount": {"currency": "EUR", "amount": "0.0"},
                "toAmount": {"currency": "EUR", "amount": "2000"}
                 },
                 {"percentage": "0.1",   /*mandatory
                "fromAmount": {"currency": "EUR", "amount": "2000"}
               }],
          "fromDateTime": "2017-01-06T00:00:00"
        }
       ],
      "relatedDates":{
         "contractStartDate": "2016-01-01",
         "contractEndDate": "2026-01-01",
         "contractAvailabilityDate" : "2019-01-01"
       },
       "balances":
      [{"balanceAmount": {"currency": "EUR", "amount": 5000.00"},
        "balanceType": "closingBooked",
        "referenceDate": "2020-10-01"
      }],
      "_links":
      {
        "balances": {"href": "/v1/savings/3dc3d5b3-7023-4848-9853-
f5400a64e81g/balances" },
        "transactions": {"href": "/v1/savings/3dc3d5b3-7023-4848-9853-
f5400a64e81g/transactions" }
      }
    },
    {
      "resourceId": "3dc3d5b3-7023-4848-9853-f5400a64e813",
      "other": {"identification": "MyProprietaryID-0002"},
      "currency": "EUR",
      "ownerName": "Paul Simpson",
      "name": "Savings 1b",
      "product": "Saving Account",
      "cashAccountType": "SVGS",
       "interest":[
        {"type": "FIXD" ,
         "rate":
              [{"percentage": "1.5",     /*mandatory
                "fromAmount": {"currency": "EUR", "amount": "0.0"},
                "toAmount": {"currency": "EUR", "amount": "2000"}
```

```
                  },
                  {"percentage": "0.1",   /*mandatory
                 "fromAmount": {"currency": "EUR", "amount": "2000"}
                }],
          "toDateTime": "2017-01-05T23:59:59"
         },
         {"type": "FIXD" ,
          "rate":
               [{"percentage": "0.5",     /*mandatory
                 "fromAmount": {"currency": "EUR", "amount": "0.0"},
                 "toAmount": {"currency": "EUR", "amount": "2000"}
                  },
                  {"percentage": "0.1",   /*mandatory
                 "fromAmount": {"currency": "EUR", "amount": "2000"}
                }],
          "fromDateTime": "2017-01-06T00:00:00"
         }
        ],
      "relatedDates":{
         "contractSstartDate": "2016-01-01",
         "contractEndDate": "2026-01-01",
         "contractAvailabilityDate" : "2019-01-01"
       },
       "balances":
      [{"balanceAmount": {"currency": "EUR", "amount": 4000.00"},
        "balanceType": "closingBooked",
        "referenceDate": "2020-10-01"
      }],
      "_links":
      {
        "balances": {"href": "/v1/savings/3dc3d5b3-7023-4848-9853-
f5400a64e813/balances" },
        "transactions": {"href": "/v1/savings/3dc3d5b3-7023-4848-9853-
f5400a64e813/transactions" }
      }
    },
    {
      "resourceId": "3dc3d5b3-5765-4848-9853-f5400a64e81g",
      "iban": "DE23100100101234567 99",
      "currency": "XXX",
      "ownerName": "Paul Simpson",
      "name": "Savings 2",
      "product": "Saving Account",
      "cashAccountType": "SVGS",
       "interest":[
```

```
{"type": "FIXD" ,
 "rate":
      [{"percentage": "1.5",     /*mandatory
        "fromAmount": {"currency": "EUR", "amount": "0.0"},
        "toAmount": {"currency": "EUR", "amount": "2000"}
         },
         {"percentage": "0.1",   /*mandatory
        "fromAmount": {"currency": "EUR", "amount": "2000"}
       }],
 "toDateTime": "2017-01-05T23:59:59"
},
{"type": "FIXD" ,
 "rate":
      [{"percentage": "0.5",     /*mandatory
        "fromAmount": {"currency": "EUR", "amount": "0.0"},
        "toAmount": {"currency": "EUR", "amount": "2000"}
         },
         {"percentage": "0.1",   /*mandatory
        "fromAmount": {"currency": "EUR", "amount": "2000"}
       }],
 "fromDateTime": "2017-01-06T00:00:00"
},
{"type": "FIXD" ,
 "rate":
      [{"percentage": "1.5",     /*mandatory
        "fromAmount": {"currency": "ILS", "amount": "0.0"},
        "toAmount": {"currency": "ILS", "amount": "8000"}
         },
         {"percentage": "0.1",   /*mandatory
        "fromAmount": {"currency": "ILS", "amount": "8000"}
       }],
 "toDateTime": "2017-01-05T23:59:59"
},
{"type": "FIXD" ,
 "rate":
      [{"percentage": "0.5",     /*mandatory
        "fromAmount": {"currency": "ILS", "amount": "0.0"},
        "toAmount": {"currency": "ILS", "amount": "8000"}
         },
         {"percentage": "0.1",   /*mandatory
        "fromAmount": {"currency": "ILS", "amount": "8000"}
       }],
 "fromDateTime": "2017-01-06T00:00:00"
}
],
```

```
      "relatedDates":{
         "contractStartDate": "2016-01-01",
         "contractEndDate": "2026-01-01",
         "contractAvailabilityDate" : "2019-01-01"
       },
       "balances":
      [{"balanceAmount": {"currency": "EUR", "amount": 10000.00"},
        "balanceType": "closingBooked",
        "referenceDate": "2020-10-01"
      },
       {"balanceAmount": {"currency": "ILS", "amount": 40000.00"},
        "balanceType": "closingBooked",
        "referenceDate": "2020-10-01"
      }],
      "_links":
      {
        "balances": {"href": "/v1/savings/3dc3d5b3-5765-4848-9853-
f5400a64e81g/balances" },
        "transactions": {"href": "/v1/savings/3dc3d5b3-5765-4848-9853-
f5400a64e81g/transactions" }
      }
    }
]
}
```


## 5.2 Read Savings Account Details

### 5.2.1 Request

#### Call

```
GET /v1/savings/{savings-account-id}
```

Reads details about a savings account. It is assumed that a consent of the PSU to this access is already given and stored on the ASPSP system. The addressed details of this account depends then on the stored consent addressed by consentId, respectively the OAuth2 access token.

#### Path Parameters

| Attribute | Type | Description |
|---|---|---|
| savings-account-id | String | This identification is denoting the addressed savings account. The savings-account-id is retrieved by using a "Read Savings |

| Attribute | Type | Description |
|---|---|---|
| | | Account List". The savings-account-id is the "resourceId" attribute of the savings account structure. Its value is constant at least throughout the lifecycle of a given consent. |

**Query Parameters**

No specific query parameter.

**Request Header**

| Attribute | Type | Condition | Description |
|---|---|---|---|
| X-Request-ID | UUID | Mandatory | ID of the request, unique to the call, as determined by the initiating party. |
| PSU-IP-Address | String | Conditional | The forwarded IP Address header field consists of the corresponding HTTP request IP Address field between PSU and TPP. It shall be contained if and only if this request was actively initiated by the PSU. |
| Consent-ID | String | Mandatory | Identification of the corresponding consent as granted by the PSU. |
| Authorization | String | Conditional | Is contained only, if an OAuth2 based SCA was performed in the corresponding mandate transaction or if OAuth2 has been used in a pre-step. |

**Request Body**

No request body.

### 5.2.2 Response

**Response Code**

HTTP Response Code equals 200.

**Response Header**

| Attribute | Type | Condition | Description |
|---|---|---|---|
| X-Request-ID | UUID | Mandatory | ID of the request, unique to the call, as determined by the initiating party. |

**Response Body**

| Attribute | Type | Condition | Description |
|---|---|---|---|
| savingsAccount | Account Details | Mandatory | Description of the addressed savings account. |

**Remark:** The same syntactical structure is used to transport savings account information as (payment) account information.

### 5.2.3 Example

Request (without PSU involvement)

```
GET https://api.testbank.com/v1/savings/3dc3d5b3-7023-4848-9853-
f5400a64e81g


Accept:           application/json
X-Request-ID:           99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Consent-ID:             qwer3456tzui7890
PSU-User-Agent:         Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date:                   Thu, 29 Oct 2020 15:05:37 GMT
```

Response

```
HTTP/1.x 200 Ok
X-Request-ID:           99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Content-Type:           application/json
Date:                   Thu, 29 Oct 2020 15:05:38 GMT


{
```

```
"savingsAccount":
  {
    "resourceId": "3dc3d5b3-7023-4848-9853-f5400a64e81g",
    "iban": "DE23100100101234567888",
    "currency": "EUR",
    "ownerName": "Paul Simpson",
    "name": "Savings 1",
    "product": "Saving Account",
    "cashAccountType": "SVGS",
    "status": "enabled",
     "interest":[
       {"type": "FIXD" ,
        "rate":
             [{"percentage": "1.5",     /*mandatory
               "fromAmount": {"currency": "EUR", "amount": "0.0"},
               "toAmount": {"currency": "EUR", "amount": "2000"}
                },
                {"percentage": "0.1",   /*mandatory
               "fromAmount": {"currency": "EUR", "amount": "2000"}
              }],
        "toDateTime": "2017-01-05T23:59:59"
       },
       {"type": "FIXD" ,
        "rate":
             [{"percentage": "0.5",     /*mandatory
               "fromAmount": {"currency": "EUR", "amount": "0.0"},
               "toAmount": {"currency": "EUR", "amount": "2000"}
                },
                {"percentage": "0.1",   /*mandatory
               "fromAmount": {"currency": "EUR", "amount": "2000"}
              }],
        "fromDateTime": "2017-01-06T00:00:00"
       }
      ],
    "relatedDates":{
       "contractStartDate": "2016-01-01",
       "contractEndDate": "2026-01-01",
       "contractAvailabilityDate" : "2019-01-01"
     },
     "balances":
    [{"balanceAmount": {"currency": "EUR", "amount": 5000.00"},
      "balanceType": "closingBooked",
      "referenceDate": "2020-10-01"
    }],
    "_links":
```

```
      {
        "balances": {"href": "/v1/savings/3dc3d5b3-7023-4848-9853-
f5400a64e81g/balances" },
        "transactions": {"href": "/v1/savings/3dc3d5b3-7023-4848-9853-
f5400a64e81g/transactions" }
      }
}
```

## 5.3 Read Savings Account Balances

### 5.3.1 Request

#### Call

```
GET /v1/savings/{savings-account-id}/balances
```

Reads balance data from a given savings account addressed by "savings-account-id".

#### Path Parameters

| Attribute | Type | Description |
|---|---|---|
| savings-account-id | String | This identification is denoting the addressed savings account. The savings-account-id is retrieved by using a "Read Savings Account List" call. The savings-account-id is the "resourceId" attribute of the account structure. Its value is constant at least throughout the lifecycle of a given consent. |

#### Query Parameters

No specific query parameter.

#### Request Header

| Attribute | Type | Condition | Description |
|---|---|---|---|
| X-Request-ID | UUID | Mandatory | ID of the request, unique to the call, as determined by the initiating party. |

| Attribute | Type | Condition | Description |
|---|---|---|---|
| PSU-IP-Address | String | Conditional | The forwarded IP Address header field consists of the corresponding HTTP request IP Address field between PSU and TPP. It shall be contained if and only if this request was actively initiated by the PSU. |
| Consent-ID | String | Mandatory | Identification of the corresponding consent as granted by the PSU. |
| Authorization | String | Conditional | Is contained only, if an OAuth2 based SCA was performed in the corresponding mandate transaction or if OAuth2 has been used in a pre-step. |

**Request Body**

No request body.

### 5.3.2 Response

**Response Code**

HTTP Response Code equals 200.

**Response Header**

| Attribute | Type | Condition | Description |
|---|---|---|---|
| X-Request-ID | UUID | Mandatory | ID of the request, unique to the call, as determined by the initiating party. |

**Response Body**

| Attribute | Type | Condition | Description |
|---|---|---|---|
| savingsAccount | Account Reference | Optional | Identifier of the addressed savings-account. |

| Attribute | Type | Condition | Description |
|---|---|---|---|
| | | | **Remark for Future**: Might be mandated in a later version. |
| balances | Array of Balance | Mandatory | |

### 5.3.3 Example

```
GET https://api.testbank.com/v1/savings/3dc3d5b3-7023-4848-9853-
f5400a64e81g/balances


Accept:           application/json
X-Request-ID:           99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Consent-ID:             qwer3456tzui7890
PSU-User-Agent:         Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date:                   Thu, 29 Oct 2020 15:05:37 GMT
```

Response

```
HTTP/1.x 200 Ok
X-Request-ID:           99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Content-Type:           application/json
Date:                   Thu, 29 Oct 2020 15:05:38 GMT


{
  "savingsAccount": {"iban": "DE23100100101234567888"},
  "balances":
      [{"balanceAmount": {"currency": "EUR", "amount": "5000.00"},
        "balanceType": "closingBooked",
        "referenceDate": "2020-10-20"
       }]
}
```

## 5.4 Read Savings Account Transaction List

### 5.4.1 Request

**Call**

```
GET /v1/savings/{savings-account-id}/transactions {query-parameters}
```

Reads transaction data from a given savings account addressed by "savings-account-id". This can be booked or pending transactions.

**Note:** The ASPSP might use standard compression methods on application level for the response message as indicated in the content encoding header.

**Remark:** Please note that the PATH might be already given in detail by the response of the "Read Savings Account List" call within the _links subfield.

**Path Parameters**

| Attribute | Type | Description |
|---|---|---|
| savings-account-id | String | This identification is denoting the addressed savings account. The savings-account-id is retrieved by using a "Read Savings Account List" call. The savings-account-id is the "resourceId" attribute of the account structure. Its value is constant at least throughout the lifecycle of a given consent. |

**Query Parameters**

| Attribute | Type | Condition | Description |
|---|---|---|---|
| dateFrom | ISODate | Conditional | Starting date (inclusive the date dateFrom) of the transaction list, mandated if no delta access is required and if bookingStatus does not equal "information".<br><br>For booked transactions, the relevant date is the booking date. For pending transactions, the relevant date is the entry date, which may not be transparent neither in this API nor other channels of the ASPSP. |
| dateTo | ISODate | Optional | End date (inclusive the date dateTo) of the transaction list, default is "now" if not given. Might be ignored if a delta function is used. |

| Attribute | Type | Condition | Description |
|---|---|---|---|
| | | | For booked transactions, the relevant date is the booking date. For pending transactions, the relevant date is the entry date, which may not be transparent neither in this API nor other channels of the ASPSP. |
| entryReferenceFrom | String | Optional if supported by API provider | This data attribute is indicating that the AISP is in favour to get all transactions after the transaction with identification entryReferenceFrom alternatively to the above defined period. This is a implementation of a delta access.<br><br>If this data element is contained, the entries "dateFrom" and "dateTo" might be ignored by the ASPSP if a delta report is supported. |
| bookingStatus | String | Mandatory | Permitted codes are "booked", "pending" and "both".<br><br>"booked" shall be supported by the ASPSP.<br><br>To support the "pending" and "both" feature is optional for the ASPSP, Error code if not supported. If supported, "both" means to request transaction reports of transaction of bookingStatus either "pending" or "booked".<br><br>The "information" feature does not apply to savings accounts. Therefore, the booking status “information” is not supported on the savings endpoint. If bookingStatus="information", the response of the ASPSP shall be a corresponding error code (PARAMETER_NOT_SUPPORTED). |

| Attribute | Type | Condition | Description |
|---|---|---|---|
| deltaList | Boolean | Optional if supported by API provider | This data attribute is indicating that the AISP is in favour to get all transactions after the last report access for this PSU on the addressed account. This is another implementation of a delta access-report.<br><br>This delta indicator might be rejected by the ASPSP if this function is not supported.<br><br>If this data element is contained, the entries "dateFrom" and "dateTo" might be ignored by the ASPSP if a delta report is supported. |

**Request Header**

| Attribute | Type | Condition | Description |
|---|---|---|---|
| X-Request-ID | UUID | Mandatory | ID of the request, unique to the call, as determined by the initiating party. |
| PSU-IP-Address | String | Conditional | The forwarded IP Address header field consists of the corresponding HTTP request IP Address field between PSU and TPP. It shall be contained if and only if this request was actively initiated by the PSU. |
| Consent-ID | String | Mandatory | |
| Authorization | String | Conditional | Is contained only, if an OAuth2 based authentication was performed in a pre-step or an OAuth2 based SCA was performed in the related consent authorisation. |
| Accept | String | Optional | The TPP can indicate the formats of account reports supported together with a prioritisation following the HTTP header definition. |

| Attribute | Type | Condition | Description |
|---|---|---|---|
| | | | The formats supported by this specification are<br><br>• xml<br>• JSON<br>• text<br><br>**Remark**: Content types might be extended in the next version of the specification. This shall enable the TPP to address different camt.05x versions or different MT94x versions in a corporate context. The TPP then could e.g. say: "I prefer MT942, but take MT940 if MT942 is not available." |

**Remark:** The Berlin Group intends to apply for vnd-entries within the "accept" attribute for camt.05x and MT94x formats to scope with different account report formats available for the PSU e.g. in a corporate context. These values will be added to this specification as soon as available. This will then lead to expressions like /application/vnd.BerlinGroup.camt.053+xml etc. The TPP then could e.g. say: "I prefer camt.054, but take camt.053 if this is not available." This solution is recommended as a best practice until it is fully specified. In this example this would deliver the following accept header expression:

```
Accept: /application/vnd.BerlinGroup.camt.054+xml;q=0.9,
/application/vnd.BerlinGroup.camt.053+xml;q=0.8
```

**Request Body**

No request body.

### 5.4.2 Response

**Response Code**

HTTP Response Code equals 200.

**Response Header**

| Attribute | Type | Condition | Description |
|---|---|---|---|
| X-Request-ID | UUID | Mandatory | ID of the request, unique to the call, as determined by the initiating party. |

**Response Body**

In case the ASPSP returns a **camt.05x** XML structure, the response body consists of either a camt.052 or camt.053 format. The camt.052 may include pending payments which are not yet finally booked. The ASPSP will decide on the format due to the chosen parameters, specifically on the chosen dates relative to the time of the request. In addition the ASPSP might offer camt.054x structure e.g. in a corporate setting.

In case the ASPSP returns **a MT94x** content, the response body consists of an MT940 or MT942 format in a text structure. The MT942 may include pending payments which are not yet finally booked. The ASPSP will decide on the format due to the chosen parameters, specifically on the chosen dates relative to the time of the request.

A JSON response is defined as follows:

| Attribute | Type | Condition | Description |
|---|---|---|---|
| savingsAccount | Account Reference | optional | Identifier of the addressed savings account.<br><br>Remark for Future: It is recommended to use this data element. The condition might change to "mandatory" in a next version of the specification. |
| transactions | Account Report | Optional | JSON based account report.<br><br>This account report contains transactions resulting from the query parameters. |
| balances | Array of Balance | Optional | A list of balances regarding this account, which might be restricted to the current balance. |
| _links | Links | Optional | A list of hyperlinks to be recognised by the TPP.<br><br>Type of links admitted in this response:<br><br>"download": a link to a resource, where the transaction report might be downloaded from |

| Attribute | Type | Condition | Description |
|---|---|---|---|
| | | | in case where transaction reports have a huge size.<br><br>**Remark:** This feature shall only be used where camt-data is requested which has a huge size. |

### 5.4.3 Example

GET https://api.testbank.com/v1/savings/3dc3d5b3-7023-4848-9853-f5400a64e81g/transactions?dateFrom=2020-10-01?dateTo=2020-10-30?bookingStatus=both

```
Accept:           application/json
X-Request-ID:           99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Consent-ID:             qwer3456tzui7890
PSU-User-Agent:         Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date:                   Thu, 29 Oct 2020 15:05:37 GMT
```

Response

```
HTTP/1.x 200 Ok
X-Request-ID:           99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Content-Type:           application/json
Date:                   Thu, 29 Oct 2020 15:05:38 GMT
```

```
{
  "savingsAccount": {"iban": "DE23100100101234567888" },
  "transactions":
    {
    "booked":
      [{
         "transactionId": "1234567",
         "transactionAmount": {"currency": "EUR", "amount": "2000"},
         "bookingDate": "2020-10-01",
         "valueDate": "2020-10-02",
         "remittanceInformationUnstructured": "Example 1"
        },
        {
```

```
          "transactionId": "1234568",
          "transactionAmount": {"currency": "EUR", "amount": "2000"},
          "bookingDate": "2020-10-09",
          "valueDate": "2020-10-10",
          "remittanceInformationUnstructured": "Example 2"
         }
      ],
    "pending": /* used e.g. for the next expected entry in a monthly
saving plan
      [{
          "transactionId": "1234570",
          "transactionAmount": {"currency": "EUR", "amount": "2000"},
          "valueDate": "2020-10-30",
          "remittanceInformationUnstructured": "Example 4"
         }]
     }
}
```

# 6 New Message Types for Loan Accounts

New message types / endpoints are defined for this extended service as follows.

## 6.1 Read Loan Account List

### 6.1.1 Request

**Call**

```
GET /v1/loans
```

Reads a list of loan accounts potentially with additional information, e.g. balance information. It is assumed that a consent of the PSU to this access is already given and stored on the ASPSP system. The addressed list of loan accounts depends then on the stored consent addressed by consentId, respectively the OAuth2 access token.

**Query Parameters**

No specific query parameter.

**Request Header**

| Attribute | Type | Condition | Description |
|---|---|---|---|
| X-Request-ID | UUID | Mandatory | ID of the request, unique to the call, as determined by the initiating party. |
| PSU-IP-Address | String | Conditional | The forwarded IP Address header field consists of<br><br>the corresponding HTTP request IP Address field between PSU and TPP. It shall be contained if and only if this request was actively initiated by the PSU. |
| Consent-ID | String | Mandatory | Identification of the corresponding consent as granted by the PSU. |
| Authorization | String | Conditional | Is contained only, if an OAuth2 based SCA was performed in the corresponding mandate transaction or if OAuth2 has been used in a pre-step. |

**Request Body**

No request body.

### 6.1.2 Response

**Response Code**

HTTP Response Code equals 200.

**Response Header**

| Attribute | Type | Condition | Description |
|---|---|---|---|
| X-Request-ID | UUID | Mandatory | ID of the request, unique to the call, as determined by the initiating party. |

**Response Body**

| Attribute | Type | Condition | Description |
|---|---|---|---|
| loanAccounts | Array of Account Details | Mandatory | Descriptions of the accessible loans. |

**Remark:** The same syntactical structure is used to transport loan account information as (payment) account information.

### 6.1.3 Examples

Request (without PSU involvement)

```
GET https://api.testbank.com/v1/loans

Accept:           application/json
X-Request-ID:           99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Consent-ID:             qwer3456tzui7890
PSU-User-Agent:         Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date:                   Thu, 29 Oct 2020 15:05:37 GMT
```

## Response

```
HTTP/1.x 200 Ok
X-Request-ID:           99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Content-Type:           application/json
Date:                   Thu, 29 Oct 2020 15:05:38 GMT
```


```
{
  "loanAccounts":[
    {
       "resourceId": "3dc3d5b3-7023-4848-9853-f5400a64e81g",
      "other": {"identification": "MyProprietaryID-0003"},
       "currency": "EUR",
       "ownerName": "Paul Simpson",
       "name": " Silver",
       "product": "Retail loan",
       "cashAccountType": "LOAN",
       "interest":[
         {"type": "FIXD" ,
          "rate":
               [{"percentage": "4.5"}
                ],
          "toDateTime": "2021-01-05T23:59:59"
          }
         ],
       "relatedDates":{
         "contractStartDate": "2017-01-01",
         "contractEndDate":"2023-01-01",
         "contractAvailabilityDate" : "2020-01-01"
       },
       "collateralsInvolved": false,
       "balances":
      [{"balanceAmount": {"currency": "EUR", "amount": "-80000.00"},
        "balanceType": "closingBooked",
        "referenceDate": "2020-10-30"
      }],
       "_links": {
    "balances": {"href": "/v1/loans/3dc3d5b3-7023-4848-9853-
f5400a64e81g/balances" },
    "transactions": {"href": "/v1/loans/3dc3d5b3-7023-4848-9853-
f5400a64e81g/transactions" }}
    },
```

```
    {
       "resourceId": "3dc3d5b3-7023-4848-9853-f5400a64e816",
      "other": {"identification": "MyProprietaryID-0004"},
       "currency": "EUR",
       "ownerName": "Paul Simpson",
       "name": " Silver",
       "product": "Retail loan",
       "cashAccountType": "LOAN",
       "interest":[
         {"type": "FIXD" ,
          "rate":
               [{"percentage": "4.5"}
                ],
          "toDateTime": "2021-01-05T23:59:59"
          }
         ],
       "relatedDates":{
         "contractStartDate": "2017-01-01",
         "contractEndDate":"2023-01-01",
         "contractAvailabilityDate" : "2020-01-01"
       },
       "collateralsInvolved": false,
       "balances":
      [{"balanceAmount": {"currency": "USD", "amount": "-10000.00"},
        "balanceType": "closingBooked",
        "referenceDate": "2020-10-30"
      }],
       "_links": {
    "balances": {"href": "/v1/loans/3dc3d5b3-7023-4848-9853-
f5400a64e816/balances" },
    "transactions": {"href": "/v1/loans/3dc3d5b3-7023-4848-9853-
f5400a64e816/transactions" }}
    },
    {
       "resourceId": "3dc3d5b3-10a4-4848-9853-f5400a64e81g",
       "iban": "DE40100100103307118608",
       "currency": "EUR",
       "ownerName": "Paul Simpson",
       "name": " Happy Home 2008",
       "product": "Mortgage loan",
       "cashAccountType": "LOAN",
       "interest":[
         {"type": "FIXD" ,
          "rate":
               [{"percentage": "2.0"}
```

```
                ],
            "toDateTime": "2039-12-31T23:59:59"
            }
          ],
        "relatedDates":{
          "contractStartDate": "2020-01-01",
          "contractEndDate":"2040-01-01",
          "contractAvailabilityDate" : "2030-01-01"
        },
        "collateralsInvolved": false,
        "balances":
       [{"balanceAmount": {"currency": "EUR", "amount": "-100000.00"},
         "balanceType": "closingBooked",
         "referenceDate": "2020-10-01"
       }],
        "_links": {
    "balances": {"href": "/v1/loans/3dc3d5b3-10a4-4848-9853-
f5400a64e81g/balances" },
    "transactions": {"href": "/v1/loans/3dc3d5b3-10a4-4848-9853-
f5400a64e81g/transactions" }}
    }
]}
```


## 6.2 Read Loan Account Details

### 6.2.1 Request

#### Call

```
GET /v1/loans/{loan-account-id}
```

Reads details about a loan account. It is assumed that a consent of the PSU to this access is already given and stored on the ASPSP system. The addressed details of this account depends then on the stored consent addressed by consentId, respectively the OAuth2 access token.

#### Path Parameters

| Attribute | Type | Description |
|---|---|---|
| loan-account-id | String | This identification is denoting the addressed loan-account. The loan-account-id is retrieved by using a "Read Loan Account List". The loan-account-id is the "resourceId" attribute |

| | | |
|---|---|---|
| | | of the loan account structure. Its value is constant at least throughout the lifecycle of a given consent. |

**Query Parameters**

No specific query parameter.

**Request Header**

| Attribute | Type | Condition | Description |
|---|---|---|---|
| X-Request-ID | UUID | Mandatory | ID of the request, unique to the call, as determined by the initiating party. |
| PSU-IP-Address | String | Conditional | The forwarded IP Address header field consists of the corresponding HTTP request IP Address field between PSU and TPP. It shall be contained if and only if this request was actively initiated by the PSU. |
| Consent-ID | String | Mandatory | Identification of the corresponding consent as granted by the PSU. |
| Authorization | String | Conditional | Is contained only, if an OAuth2 based SCA was performed in the corresponding mandate transaction or if OAuth2 has been used in a pre-step. |

**Request Body**

No request body.

### 6.2.2 Response

**Response Code**

HTTP Response Code equals 200.

**Response Header**

| Attribute | Type | Condition | Description |
|---|---|---|---|
| X-Request-ID | UUID | Mandatory | ID of the request, unique to the call, as determined by the initiating party. |

**Response Body**

| Attribute | Type | Condition | Description |
|---|---|---|---|
| loanAccount | Account Details | Mandatory | Description of the addressed loan account. |

**Remark:** The same syntactical structure is used to transport loan account information as (payment) account information.

### 6.2.3 Example 1 (standard loan account)

Request (without PSU involvement)

```
GET https://api.testbank.com/v1/loans/3dc3d5b3-7023-4848-9853-f5400a64e81g

Accept:           application/json
X-Request-ID:           99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Consent-ID:             qwer3456tzui7890
PSU-User-Agent:         Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date:                   Thu, 29 Oct 2020 15:05:37 GMT
```

Response

```
HTTP/1.x 200 Ok
X-Request-ID:           99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Content-Type:           application/json
Date:                   Thu, 29 Oct 2020 15:05:38 GMT



{
  "loanAccount":
```

```
    {
       "resourceId": "3dc3d5b3-7023-4848-9853-f5400a64e81g",
       "iban": "DE23100100101234567888",
       "currency": "EUR",
       "ownerName": "Paul Simpson",
       "name": " Silver",
       "product": "Retail loan",
       "cashAccountType": "LOAN",
       "status": "enabled",
       "interest":[
         {"type": "FIXD" ,
          "rate":
               [{"percentage": "4.5"}
                ],
          "toDateTime": "2021-01-05T23:59:59"
          }
         ],
       "relatedDates":{
         "contractStartDate": "2017-01-01",
         "contractEndDate":"2023-01-01",
         "contractAvailabilityDate" : "2020-01-01"
       },
       "collateralsInvolved": false,
       "balances":
      [{"balanceAmount": {"currency": "EUR", "amount": "-80000.00"},
        "balanceType": "closingBooked",
        "referenceDate": "2020-10-01"
      }],
       "_links": {
    "balances": {"href": "/v1/loans/3dc3d5b3-7023-4848-9853-
f5400a64e81g/balances" },
    "transactions": {"href": "/v1/loans/3dc3d5b3-7023-4848-9853-
f5400a64e81g/transactions" }}
    }
}
```


## 6.3 Read Loan Account Balances

### 6.3.1 Request

### Call

```
GET /v1/loans/{loan-account-id}/balances
```

Reads balance data from a given loan account addressed by "loan-account-id".

**Note:** The original balance of the loan at the start date might be provided e.g. by a balance of type "openingBooked" and the referenceDate of the loan starting date.

### Path Parameters

| Attribute | Type | Description |
|---|---|---|
| loan-account-id | String | This identification is denoting the addressed loan account. The loan-account-id is retrieved by using a "Read Loan Account List" call. The loan-account-id is the "resourceId" attribute of the account structure. Its value is constant at least throughout the lifecycle of a given consent. |

### Query Parameters

No specific query parameter.

### Request Header

| Attribute | Type | Condition | Description |
|---|---|---|---|
| X-Request-ID | UUID | Mandatory | ID of the request, unique to the call, as determined by the initiating party. |
| PSU-IP-Address | String | Conditional | The forwarded IP Address header field consists of the corresponding HTTP request IP Address field between PSU and TPP. It shall be contained if and only if this request was actively initiated by the PSU. |
| Consent-ID | String | Mandatory | Identification of the corresponding consent as granted by the PSU. |
| Authorization | String | Conditional | Is contained only, if an OAuth2 based SCA was performed in the corresponding mandate transaction or if OAuth2 has been used in a pre-step. |

### Request Body

No request body.

### 6.3.2 Response

#### Response Code

HTTP Response Code equals 200.

#### Response Header

| Attribute | Type | Condition | Description |
|---|---|---|---|
| X-Request-ID | UUID | Mandatory | ID of the request, unique to the call, as determined by the initiating party. |

#### Response Body

| Attribute | Type | Condition | Description |
|---|---|---|---|
| loanAccount | Account Reference | Optional | Identifier of the addressed loan-account.<br><br>**Remark for Future**: Might be mandated in a later version. |
| balances | Array of Balance | Mandatory | |

**Remark:** The historic balance of the loan can be provided by returning a balance of any type together with the respective referenceDate. This applies specifically to the original loan amount by using the starting date as reference.

### 6.3.3 Example

Request (without PSU involvement)

```
GET https://api.testbank.com/v1/loans/3dc3d5b3-7023-4848-9853-
f5400a64e81g/balances

Accept:           application/json
X-Request-ID:           99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Consent-ID:             qwer3456tzui7890
PSU-User-Agent:         Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date:                   Thu, 29 Oct 2020 15:05:37 GMT
```

Response

```
HTTP/1.x 200 Ok
X-Request-ID:           99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Content-Type:           application/json
Date:                   Thu, 29 Oct 2020 15:05:38 GMT
```

```
{
  "loanAccount": {"iban": "DE23100100101234567888"},
  "balances":
      [{"balanceAmount": {"currency": "EUR", "amount": "-80000.00"},
        "balanceType": "closingBooked",
        "referenceDate": "2020-10-01"
           },
       {"balanceAmount": {"currency": "EUR","amount": "-82500.00"},
        "balanceType": "expected",
        "lastChangeDateTime": "2020-11-20T15:30:35.035Z"
       }]
}
```

## 6.4 Read Loan Account Transaction List

### 6.4.1 Request

**Call**

GET /v1/loans/{loan-account-id}/transactions {query-parameters}

Reads transaction data from a given loan account addressed by "loan-account-id". This can be booked or pending transactions.

**Note:** The ASPSP might use standard compression methods on application level for the response message as indicated in the content encoding header.

**Remark:** Please note that the PATH might be already given in detail by the response of the "Read Loan Account List" call within the _links subfield.

**Path Parameters**

| Attribute | Type | Description |
|---|---|---|
| loan-account-id | String | This identification is denoting the addressed loan account. The loan-account-id is retrieved by using a "Read Loan Account List" call. The loan-account-id is the "resourceId" attribute of the account structure. Its value is constant at least throughout the lifecycle of a given consent. |

**Query Parameters**

| Attribute | Type | Condition | Description |
|---|---|---|---|
| dateFrom | ISODate | Conditional | Starting date (inclusive the date dateFrom) of the transaction list, mandated if no delta access is required and if bookingStatus does not equal "information". Might be ignored if a delta function is used or if bookingStatus equals "information".<br><br>For booked transactions, the relevant date is the booking date. For pending transactions, the relevant date is the entry date, which may not be transparent neither in this API nor other channels of the ASPSP. |
| dateTo | ISODate | Optional | End date (inclusive the date dateTo) of the transaction list, default is "now" if not given. Might be ignored if a delta function is used.<br><br>For booked transactions, the relevant date is the booking date. For pending transactions, the relevant date is the entry date, which may not be transparent neither in this API nor other channels of the ASPSP. |
| entryReferenceFrom | String | Optional if supported by API provider | This data attribute is indicating that the AISP is in favour to get all transactions after the transaction with identification entryReferenceFrom alternatively to |

| Attribute | Type | Condition | Description |
|---|---|---|---|
| | | | the above defined period. This is a implementation of a delta access.<br><br>If this data element is contained, the entries "dateFrom" and "dateTo" might be ignored by the ASPSP if a delta report is supported. |
| bookingStatus | String | Mandatory | Permitted codes are "booked", "pending", "both" and "information".<br><br>"booked" shall be supported by the ASPSP.<br><br>To support the "pending" and "both" feature is optional for the ASPSP, Error code if not supported. If supported, "both" means to request transaction reports of transaction of bookingStatus either "pending" or "booked".<br><br>To support the "information" feature is optional for the ASPSP. If the ASPSP supports the "information" feature for loan accounts, the response shall contain the expected amortizations for this loan account. Error code if not supported. |
| deltaList | Boolean | Optional if supported by API provider | This data attribute is indicating that the AISP is in favour to get all transactions after the last report access for this PSU on the addressed account. This is another implementation of a delta access-report.<br><br>This delta indicator might be rejected by the ASPSP if this function is not supported.<br><br>If this data element is contained, the entries "dateFrom" and "dateTo" might be ignored by the ASPSP if a delta report is supported. |

**Request Header**

| Attribute | Type | Condition | Description |
|---|---|---|---|
| X-Request-ID | UUID | Mandatory | ID of the request, unique to the call, as determined by the initiating party. |
| PSU-IP-Address | String | Conditional | The forwarded IP Address header field consists of the corresponding HTTP request IP Address field between PSU and TPP. It shall be contained if and only if this request was actively initiated by the PSU. |
| Consent-ID | String | Mandatory | |
| Authorization | String | Conditional | Is contained only, if an OAuth2 based authentication was performed in a pre-step or an OAuth2 based SCA was performed in the related consent authorisation. |
| Accept | String | Optional | The TPP can indicate the formats of account reports supported together with a prioritisation following the HTTP header definition.<br><br>The formats supported by this specification are<br><br>• xml<br>• JSON<br>• text<br><br>**Remark**: Content types might be extended in the next version of the specification. This shall enable the TPP to address different camt.05x versions or different MT94x versions in a corporate context. The TPP then could e.g. say: "I prefer MT942, but take MT940 if MT942 is not available." |

**Remark:** The Berlin Group intends to apply for vnd-entries within the "accept" attribute for camt.05x and MT94x formats to scope with different account report formats available for the PSU e.g. in a corporate context. These values will be added to this specification as soon as available. This will then lead to expressions like /application/vnd.BerlinGroup.camt.053+xml etc. The TPP then could e.g. say: "I prefer camt.054, but take camt.053 if this is not available."