THE FRAMEWORK PROGRAMME FOR RESEARCH AND INNOVATION

HORIZON 2020

VIM PAY

HORIZON 2020

Project Number 683612

V1 of the VIMpay app

1.2

30 October 2015

Final

Public distribution

petaFuel

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0.1	Document outline and first content	25 August 2015
0.5	First version	22 September 2015
1.1	Final version for review	21 October 2015
1.2	Final	30 October 2015

Executive Summary

This document constitutes deliverable *D 1.1 V1 of the VIMpay app* of Work package 1 (WP1) of the VIMpay project.

While the deliverable itself is the first version of the demonstrator app of the VIMpay app, which can be downloaded online (c.f. [1]), this document describes the details of the implementation of the various functionalities and acts as a report on the application.

1 Scope of this deliverable

This deliverable describes the functionalities, User Interface and implementation of them for version 1 of the VIMpay app, the initial release.

The deliverable will first outline general architectural and design decisions of the implementation and then detail on the use cases as required.

2 Functionalities overview

The VIMpay App in version 1 combines existing functionalities of the petaFuel 123Banking and Prepaid MasterCard app. In short VIMpay provides a way to manage all your third party bank accounts and your petaFuel Prepaid MasterCards within a single application. All your bank accounts will be listed and revenues, standing orders or scheduled transactions of these are available as well. SEPA based transactions with your bank accounts are provided using the PIN/TAN security method.

VIMpay provides built in functionality for a petaFuel Prepaid MasterCard, you can manage your card details or replenish your card within seconds using the instant replenishment functionality.

The business requirements for version 1 have been defined in [2].

3 Programming details

3.1 Security

Securing the data of the users is the most important task for a banking application. VIMpay uses the highest security standards to achieve the best protection for the sensitive data.

3.1.1 App level security

The database, which is used to store customer data locally, is encrypted with a hybrid encryption method using **RSA** and **AES-256**. This allows fast AES-256 encryption for the specific entries in the database using a database encryption key. The database encryption key itself is encrypted with the RSA (2048 bit) private key (KEK). This RSA private key is again protected with the user PIN using **PBKDF2** (password based key derivation function 2) for key derivation and once more AES-256 as encryption method.

In order to protect the user data even more VIMpay checks if the user’s smartphone is "rooted". Rooted means that user and other apps have access to the restricted system area. In this situation the app informs the user that his device will be classified as vulnerable and that he should not use VIMpay on this device. We still allow the usage of the application on rooted phones.

Please note: In an upcoming version of VIMpay the user will have the ability to use the App without a PIN. The private key (KEK) will then be stored securely on petaFuel server and will be transferred to the app when needed. The same authentication credentials of the VIMpay account are used for securing the data transfer. The benefit then is that background services are available like loading the revenues of configured bank accounts. This is not available in version 1.

3.1.2 Communication

All components in the VIMpay app are using the petaFuel Security Framework which provides several cryptographic methods. This also includes methods to establish secured network connections like HTTPS. The framework allows to specify a set of allowed servers by defining a keystore which contains all trusted certificates of them (Certificate Pinning).
Please note that the Security Framework does not implement its own cryptographic mechanisms but rather consolidates the existing standards to allow for an easier cross-platform use.

The REST communication is secured by HTTPS transport, using token and HMAC validation described in Deliverable 3.1 Architecture design for the VIMpay API [Message authentication] [3].

3.2 Architecture and engines

As any complex application VIMpay uses different components to implement different functionalities. In the context of this deliverable we call these components “engines”.

VIMpay uses existing engines from the petaFuel 123Banking and Prepaid MasterCard App as well as a new implemented engine for the open REST API leading to an application architecture as shown in Fig. 1.

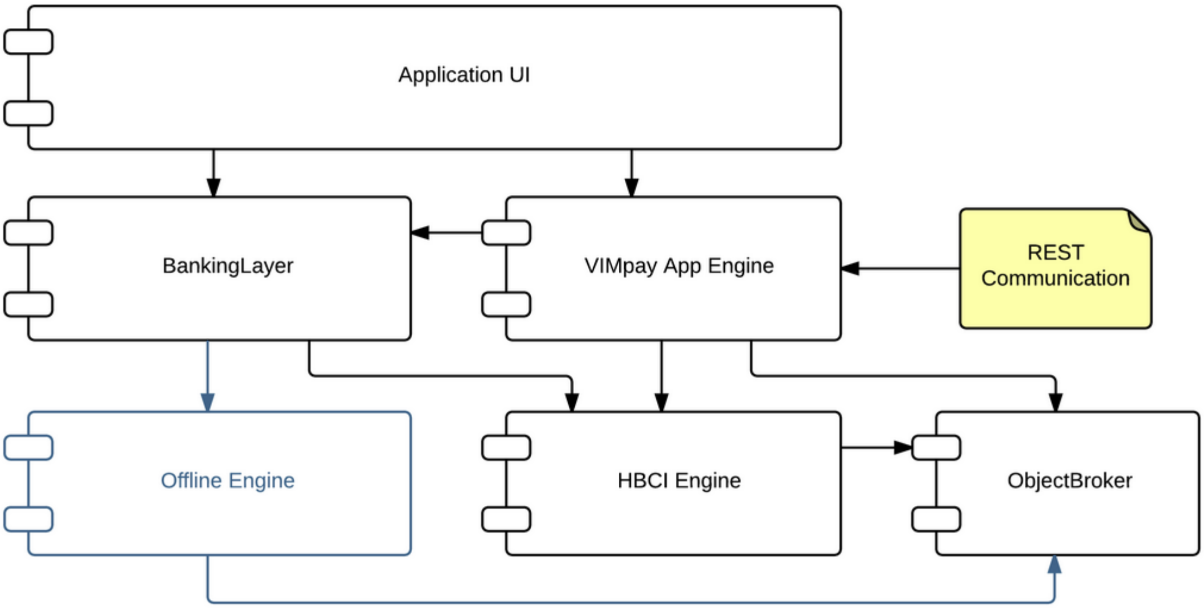


Figure 1 VIMpay app architecture

3.2.1 HBCI Engine

The HBCI Engine provides management for HBCI bank accounts. This includes login into bank accounts, list all your bank accounts and show detailed information like balance and revenues of them.

Creating new single SEPA transactions, scheduled transactions and standing orders are parts of the HBCI Engine, too. All on mobile phone available TAN methods iTAN, mobileTAN, photoTAN, opticalTAN and pushTAN for transactions are included.

3.2.2 Banking Layer

The BankingLayer covers banking engines like the HBCI Engine or a hypothetical Offline Engine which may be included in later releases. This helps to divide business from user interface logic.

In a future release of VIMpay a new ScreenScraping Engine will be implemented in order to support bank accounts without HBCI functionality.

3.2.3 VIMpay App Engine

The VIMpay App Engine manages the connection between the petaFuel VIMpay Backend and the VIMpay App. The VIMpay App Engine is implemented as a REST client using our internal pfREST-Client library.

3.2.4 ObjectBroker

All engines are using the ObjectBroker library which manages the persistent storage of the VIMpay App. The ObjectBroker also encrypts necessary fields in the database or creates an index for searching through the encrypted database.

4 Use case implementations

In Deliverable 5.1 ([2]) we have established the business requirements for version 1 of the VIMpay app. The following tables show the requirements relevant for the mobile app and their mapping to the responsible engine if applicable.

VIMpay Card Management & KYC	VIMpay App Engine	HBCI Engine
The app should provide an easy, simple and fast registration for Prepaid MasterCard, using eMail address or cell phone number. Following additional data is necessary: date of birth, reference account and address.	X	
The app should verify eMail address or cell phone number during registration.	X	
Because of safety reasons, the app should only allow SEPA online bank accounts for registration.	X	X
The app should create a VIMpay account, containing a virtual Prepaid-MasterCard, by registration.	X	X
The VIMpay Card shall be displayed visually. Card data needs to be viewed and can be used for online payments.	X	
The app should replenish the card directly with a certain amount by instant replenishment. The maximum amount of the VIMpay card is 300,- EUR.	X	X
The VIMpay account shall allow access to see the card data from multiple devices.	X	
With the app it is possible to change personal data and deactivate the VIMpay account.	X	
The app should communicate with the backend, using an API.	X	

Security	
The app should encrypt all data to protect from unauthorized access.	Hybrid RSA (2048 bit) and AES-256 are used and provided by the petaFuel SecurityFramework.
The app should give the opportunity to define a PIN to protect from unauthorized access.	An App PIN is necessary for V1 of the App.
The app may be lock on inactivity.	This is done in the UI itself. The user is able to change the display timeout in the settings.

Account Setup	
The app should give an overview of all online banks.	During third party account login a list of all bank accounts is shown. That list is integrated in the app.

The app shall offer a simple and easy way log into an online bank account.	The HBCI login data is used, usually an User-ID and a password.
The app may give support in case of problems.	The user is able to contact our support or his bank. The contact data of his bank is shown in the app.

Account Overview	
The app should display all accounts.	The app receives all third party bank accounts using the HBCI protocol and displays them in a list.
The app should display the revenues of an account.	The app receives all revenues of a bank account using the HBCI protocol and displays them in a list.
The app should display the details of a revenue.	The app shows all received details of a revenue in a separate view.
The app shall offer a possibility to search all revenues.	The app allows the user to search for revenues by keywords.
The app may offer a possibility to filter revenues.	The app allows the user to filter his revenues.
The app may support the export of revenues.	The app allows the user to export specific revenues as a PDF.
The app shall support the management of terminated transactions and standing orders.	The user is able to see and delete all his scheduled transactions and standing orders.

Transactions	
The app should offer a SEPA transaction.	This is available for third party bank accounts using HBCI.
The app shall offer a shortlist of recipients to choose from.	There is a list shown with already parsed recipients of HBCI revenues.
The app should be able to create terminated transactions and standing orders.	It is possible to create new scheduled transactions and standing orders using HBCI.

4.1 Use case 1: Third party account registration

To log in a third party bank account the user needs to navigate to the account setup. The user has to choose the correct bank shown in the HBCI bank list.

By selecting a bank of the list the App communicates with the HBCI bank server to receive necessary information in order to log in, this is done using the existing HBCI Engine of petaFuel's 123Banking App.

If there is no entry for a specific bank in the list that bank actually doesn't support the HBCI protocol.

After choosing a supported bank the user has to enter his bank account login data, in most cases a User-ID and PIN.

The entered data is now transferred to the HBCI server to receive all bank account information. If the server responds with an error it is shown and the user is able to correct the entered login data.

If everything works fine the bank account is now successfully setup.

4.2 Use case 2: Third party account management

The user is able to manage all the furnished bank accounts in the settings of the VIMpay app.

Change login information, password, bank account alias or order of the accounts.

If there is no interest in managing an account any longer, the user is able to delete it. All of these functionalities are implemented in the HBCI Engine.

4.3 Use case 3: Third party account SEPA payment

VIMpay allows to execute SEPA based bank transactions using all possible TAN methods for mobile phones. This includes iTAN, mobile or SMS TAN, opticalTAN, photoTAN or pushTAN.

To create a new transaction the user has to navigate to the transfer page. Now the user has to choose a possible bank account which will be used for the next transaction or if there is only one account capable of sending SEPA based transactions that account is used and the user will be directly forwarded to the next page.

The user has to enter the recipient data, usually the name, IBAN and BIC, or choose the data of a list of recipient generated based on the revenue data.

In the next step the user has to fill in the amount and purpose for the transaction.

If the user wants to create a single based transaction the already entered data is sufficient.

Optionally the user is able to create a new standing order or a scheduled transaction by selecting the desired option.

4.4 Use case 4: The user can register for a VIMpay Basic card

In order to register a new VIMpay Basic card the user has to enter some information about himself, this includes his date of birth, email address or phone number and a password for the VIMpay account. The user also needs a furnished bank account to proceed, which is used to provide the name and IBAN.

To complete the registration the user have to accept the terms and conditions and confirm the registration by either entering the activation code sent to your mobile phone or clicking the activation link in the email. If the user wants to use his registered card, he have to enter his address.

The registration is sent to the VIMpay Backend using the VIMpay App engine.

4.5 Use case 5: The user can see his card details in the app

All necessary card information is shown in the Internet view. This includes all the needed data to use the card for online payment like the credit card number, CVC, cardholder name and expiration date. The VIMpay app receives the information from our server.

4.6 Use case 6: The user will replenish his VIMpay Card

In order to use the VIMpay card the user needs to replenish it. This process is called instant replenishment and will be executed in the VIMpay backend triggered by a REST call.

To execute an instant replenishment some preconditions have to be fulfilled.

1. a registered VIMpay card is necessary
2. the maximum amount of instant replenishments per day has not been reached (one per day using VIMpay basic)
3. the daily amount must be sufficient (15€ per day using VIMpay basic)
4. the reference bank account of the VIMpay card must be setup

Now the user is able to initialize an instant replenishment, during that the App loads the maximum replenishment amount for the next execution. The user has now the option to replenish his card with an amount up to the maximum.

After entering the desired amount the app requests a new instant replenishment using the VIMpay App engine and receives an approval code which will be used for security reasons.

The approval code, the amount and the recipient data are filled in the SEPA transaction which will be executed using the reference account of the VIMpay card. The SEPA transaction is executed using the HBCI Engine.

After the SEPA transaction is finished the HBCI protocol is sent to the VIMpay Backend using the VIMpay App Engine in order to perform security checks and if all checks are passed the VIMpay card is replenished instantly with the selected amount.

If an error occurred the card won't be replenished and the amount will be credited when the normal SEPA transaction has been booked.

5 Implementation of functionalities

5.1 Non-Card based Payments

The whole bank account management is covered by the HBCI Engine. The Engine is implemented compatible to the HBCI 2.2 and 3.0 protocol version. The protocol is server-client based and the communication is initialized by the client and the server respond to the messages. Each message is divided in groups called "Segments". A Segment defines one specific part of the message, like header or trailer. Most Segments describe actions to receive information of your bank accounts like the actual balance or revenues. There are also Segments to create new transactions and these have to be confirmed by a TAN.

The communication is secured by using HTTPS and PIN/TAN.

We are aware of the fact that HBCI is a Germany-specific protocol. However, our application design allows to plug in new banking engines as required for other countries.

5.2 Card based functionalities

The VIMpay App Engine is implemented compatible to the petaFuel API and acts as REST client. The communication is secured by using HTTPS and client authentication. All client request parameter are transmitted as x-www-form-urlencoded and the server responds with JSON format.

In the following table all available API methods as used in the app are listed.

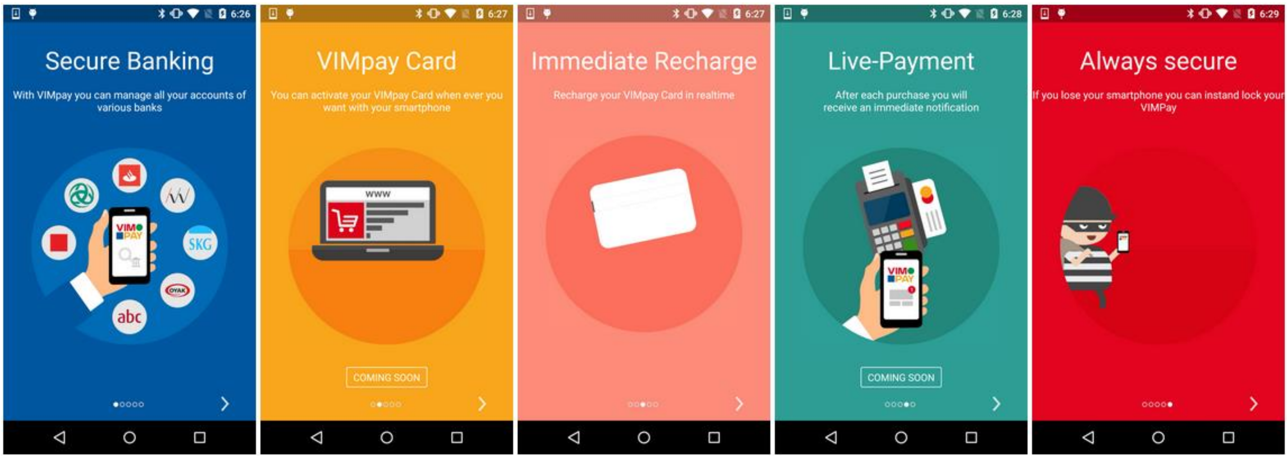
Method	Function	Access
/card/canceled	Checks if a card is canceled	Restricted
/cardclosure/	Cancel a card	Restricted
/cardclosure/reasons	Get all reasons for cancelling a card	Public
/confirmation/resend/{type}	Resend the confirmation SMS code or the confirmation email	Restricted
/confirmation/{type}	Confirm a pending registration	Restricted
/instantreplenishment/maxamount	Get the maximum amount for the next instant replenishment	Restricted and secured (HMAC)
/instantreplenishment/request	Begin a new instant replenishment by requesting an approval code	Restricted and secured (HMAC)
/instantreplenishment/send	Finish a previously started instant replenishment	Restricted and secured (HMAC)
/user/address	Get or change the current address data of the user	Restricted
/user/changepassword	Change the current VIMpay account password	Restricted
/user/login	Receive access to the restricted methods by logging in to your VIMpay account	Public
/user/{email}/dsnames	Get dsnames for a given email address	Public
/user/registerreferenceaccount	Register a new VIMpay card	Public
/user/active	Check the activation status of a user account	Restricted
/user/escortstatus	Check the escort status of a VIMpay card	restricted

6 User interface

Please note: The screens shown are design samples taken from an earlier development version of the app and are intended to show the workflows. Please ignore any typos.

6.1 Slideshow and first launch

The slideshow contains five short video clips and shows an introduction to the user about the current and upcoming features in the app. It is possible to swipe between the pages.



Secure Banking

With VIMpay you can manage all your accounts of various banks

VIMpay Card

You can activate your VIMpay Card when ever you want with your smartphone

COMING SOON

Immediate Recharge

Recharge your VIMpay Card in realtime

Live-Payment

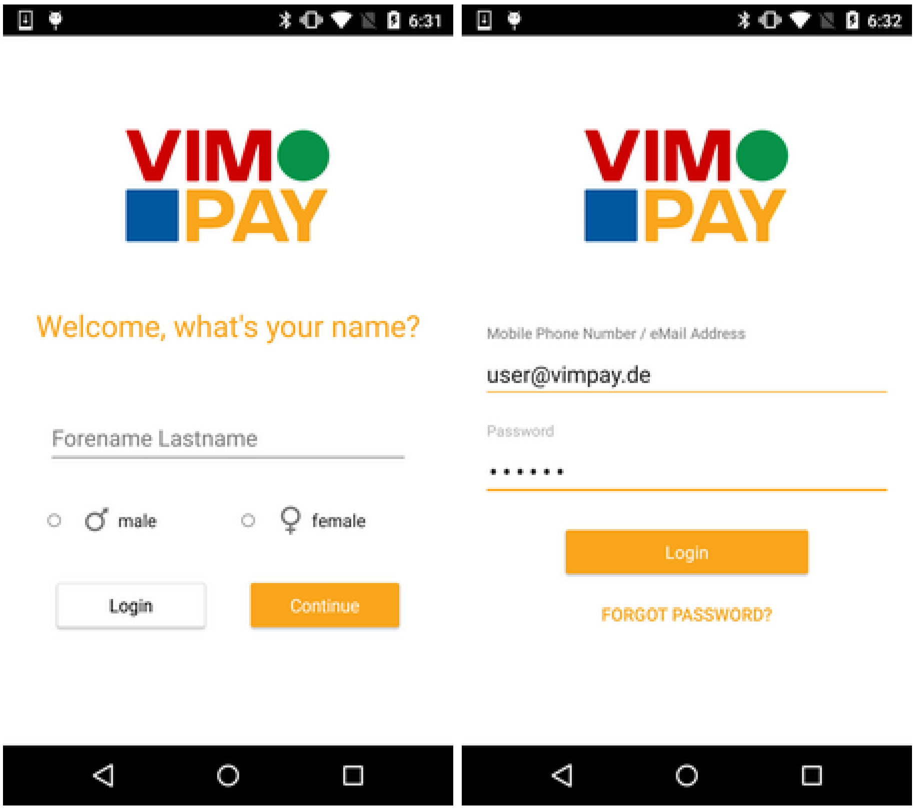
After each purchase you will receive an immediate notification

COMING SOON

Always secure

If you lose your smartphone you can instand lock your VIMPay

After the slideshow the user have to enter his name for later use. Existing users can directly switch to the login page via the login button. At the login page the user have to enter his credentials.



Welcome, what's your name?

Forename Lastname

○ ♂ male ○ ♀ female

Login Continue

Mobile Phone Number / eMail Address

user@vimpay.de

Password

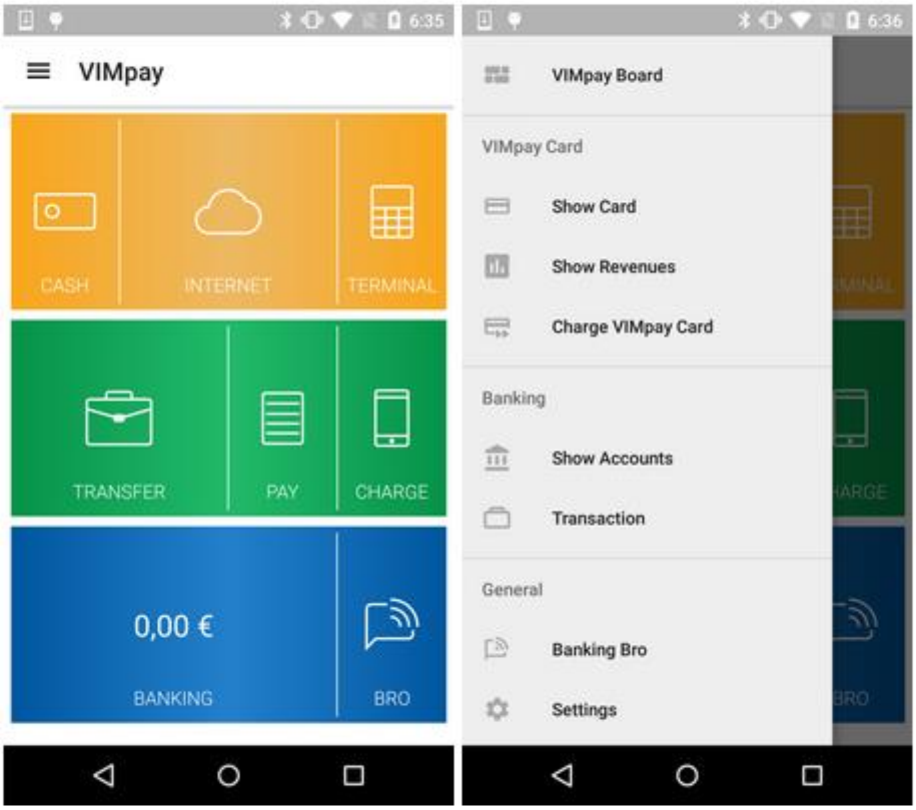
••••••

Login

FORGOT PASSWORD?

6.2 VIMpay Board

This is the main entry point of the app and shows the main functionality of VIMpay. The App contains a navigation slide bar, called navigation drawer, which can be used in most parts of the app. Using the navigation drawer is an easy way to change between pages anywhere in the app.

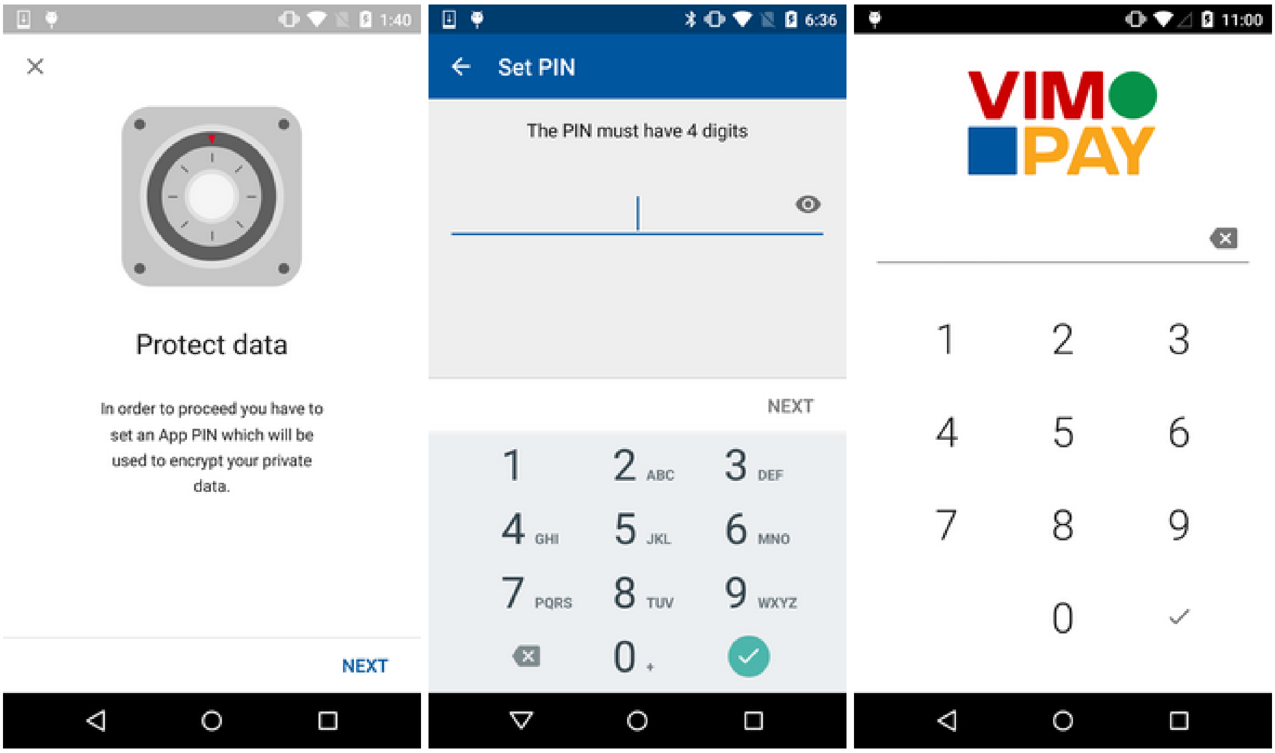


Title / navigation	**Function**
CASH	In upcoming version
INTERNET / Show Card	Navigates either to the registration if no VIMpay account is setup, or the card data overview page where the user can see his credit card number etc.
TERMINAL	In upcoming version
TRANSFER / Transaction	Navigates to the initialization of SEPA based bank account transactions
PAY	Navigates to wizard based SEPA bank account transfers (example: pay bills)
CHARGE	In upcoming version
BANKING / Show Accounts	Navigates to the bank account overview, this includes also the VIMpay cards
BRO / Banking Bro	In upcoming version

-/ Show revenues	Navigates to the revenues of the VIMpay card
-/ Charge/Replenish VIMpay Card	Navigates to the VIMpay Card replenishing page
-/ Settings	Navigates to the app settings

6.3 App PIN / Unlock

The user have to enter an app PIN to protect his data. The PIN is used to encrypt the sensitive data of the user. In order to use the app the user have to unlock it with the same PIN.



Protect data

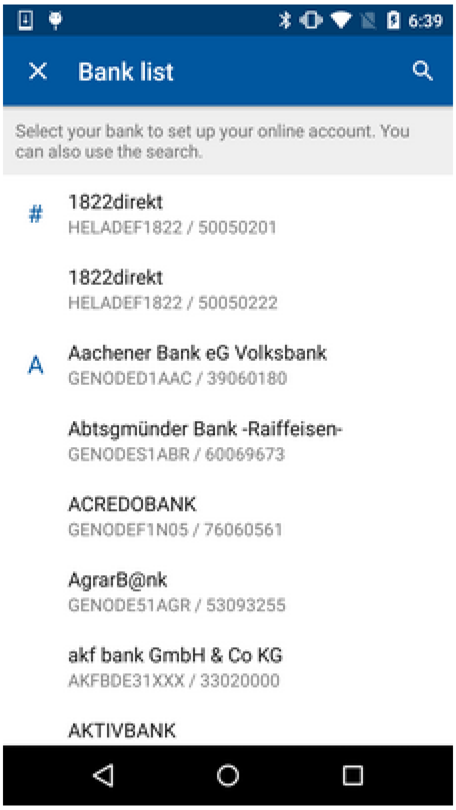
In order to proceed you have to set an App PIN which will be used to encrypt your private data.

Set PIN

The PIN must have 4 digits

6.4 Banking

The first time the user enters Banking he is required to enter his bank account information in order to use the banking functionality of VIMpay.

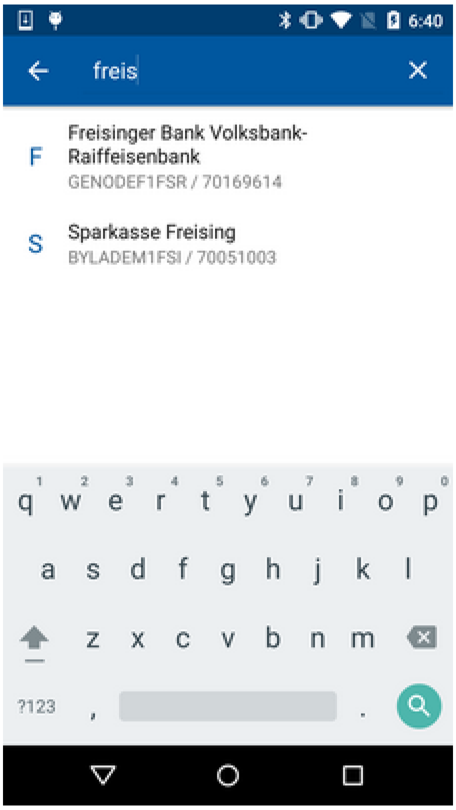


6:39

Bank list

Select your bank to set up your online account. You can also use the search.

#	1822direkt HELADEF1822 / 50050201
	1822direkt HELADEF1822 / 50050222
A	Aachener Bank eG Volksbank GENODED1AAC / 39060180
	Abtsgmünder Bank -Raiffeisen- GENODES1ABR / 60069673
	ACREDOBANK GENODEF1N05 / 76060561
	AgrarB@nk GENODE51AGR / 53093255
	akf bank GmbH & Co KG AKFBDE31XXX / 33020000
	AKTIVBANK

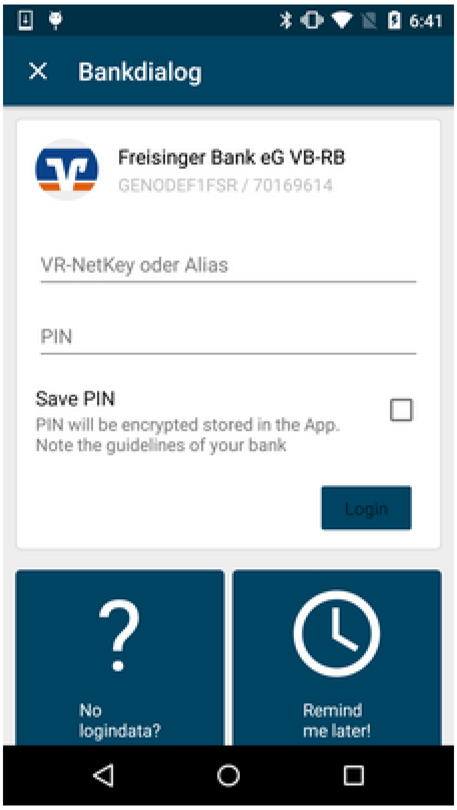


6:40

freis

F	Freisinger Bank Volksbank-Raiffeisenbank GENODEF1FSR / 70169614
S	Sparkasse Freising BYLADEM1FSI / 70051003

After selecting the bank at the filtered or standard bank list the user switches to the bank account information input screen.



6:41

Bankdialog

Freisinger Bank eG VB-RB
GENODEF1FSR / 70169614

VR-NetKey oder Alias

PIN

Save PIN
PIN will be encrypted stored in the App. Note the guidelines of your bank □

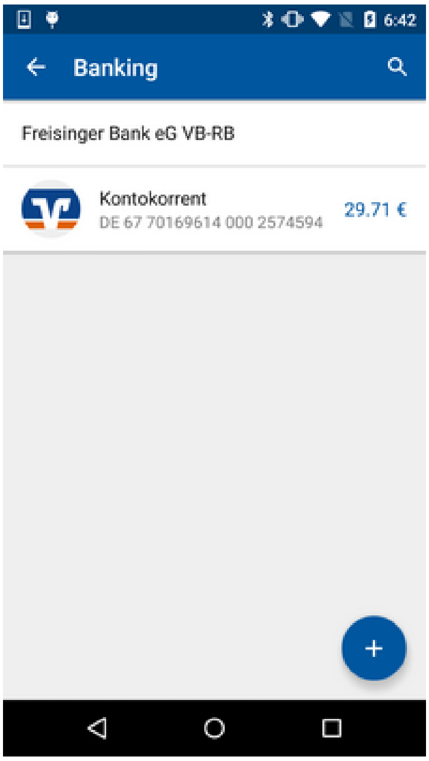
Login

No logindata?

Remind me later!

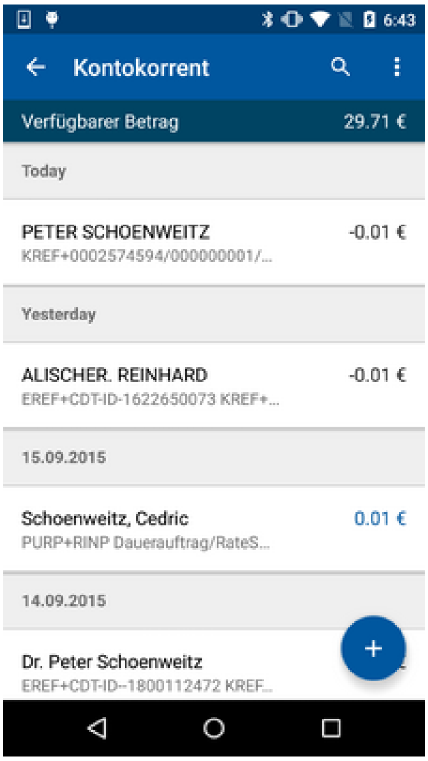
When bank accounts are available the account list is shown. The user can see his revenues of the specific account by touching it.

The overview shows a list of revenues sorted by date. In the list you see the amount of the transaction as well as the issuer and the purpose. The user can see even more details about a specific revenue by selecting it.



Freisinger Bank eG VB-RB

Kontokorrent 29.71 €
DE 67 70169614 000 2574594



Verfügbarer Betrag 29.71 €

Today

PETER SCHOENWEITZ -0.01 €
KREF+0002574594/000000001/...

Yesterday

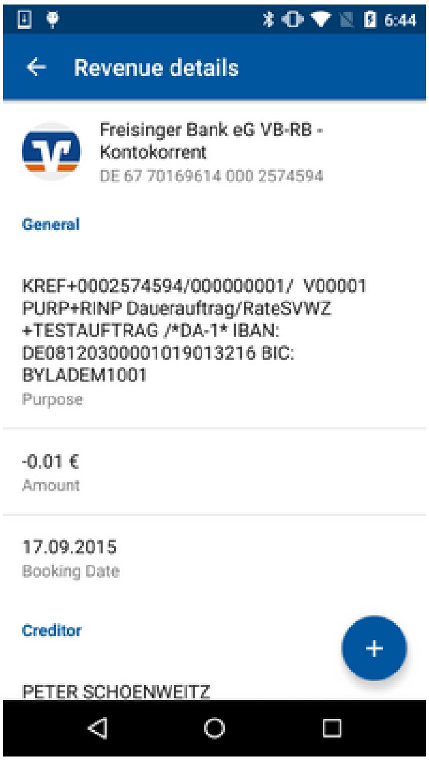
ALISCHER, REINHARD -0.01 €
EREF+CDT-ID-1622650073 KREF+...

15.09.2015

Schoenweitz, Cedric 0.01 €
PURP+RINP Dauerauftrag/RateS...

14.09.2015

Dr. Peter Schoenweitz
EREF+CDT-ID--1800112472 KREF...



Freisinger Bank eG VB-RB - Kontokorrent
DE 67 70169614 000 2574594

General

KREF+0002574594/000000001/ V00001 PURP+RINP Dauerauftrag/RateSVWZ +TESTAUFTRAG /*DA-1* IBAN: DE08120300001019013216 BIC: BYLADEM1001
Purpose

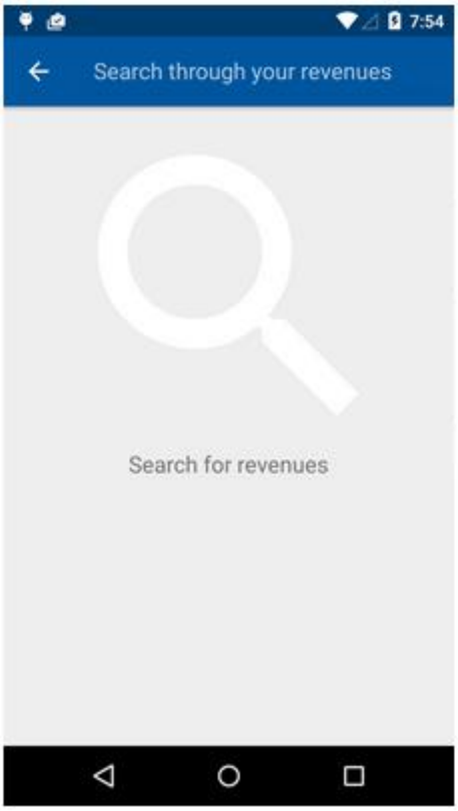
-0.01 €
Amount

17.09.2015
Booking Date

Creditor

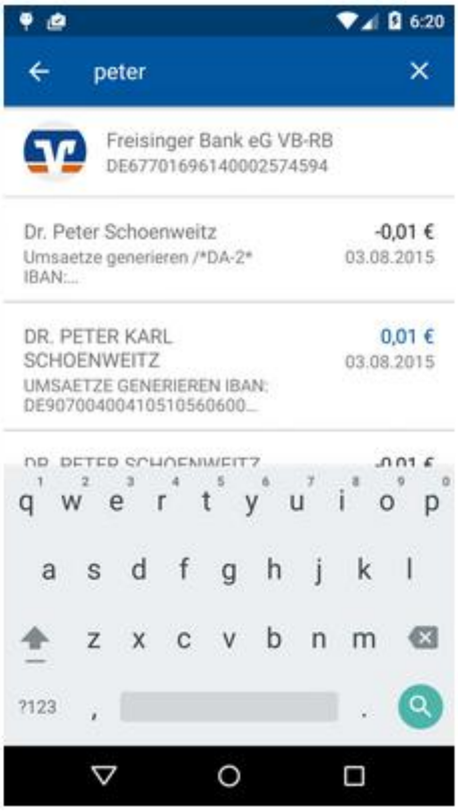
PETER SCHOENWEITZ

You can search through your revenues by typing the magnifier icon.



Search through your revenues

Search for revenues



Freisinger Bank eG VB-RB
DE67701696140002574594

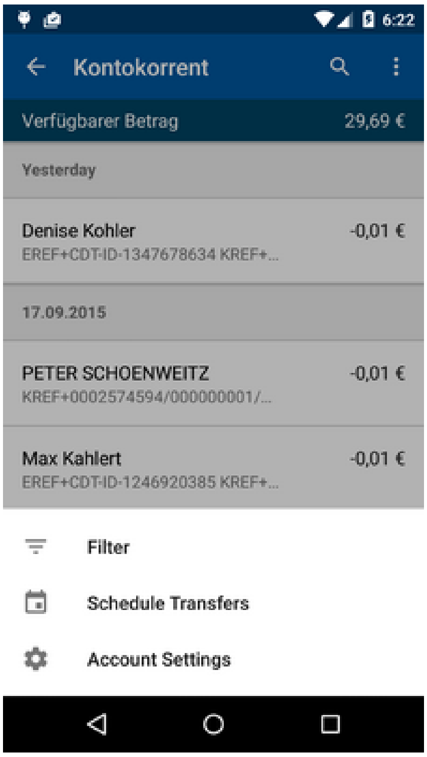
Dr. Peter Schoenweitz -0,01 €
Umsaetze generieren /*DA-2* IBAN:... 03.08.2015

DR. PETER KARL SCHOENWEITZ 0,01 €
UMSAETZE GENERIEREN IBAN: DE90700400410510560600... 03.08.2015

DR. PETER SCHOENWEITZ -0,01 €

By touching the right item in the top bar of the revenue overview it is possible to open a bottom sheet. The bottom sheet provides three different actions Filter, Schedule Transfers and Account Settings. The Account Settings are covered in the settings section.

In the Filter page you are able to filter revenues by a specific period and type. The button at the right bottom allows you to export your filtered revenues to a PDF file.



6:22

← Kontokorrent

Verfügbarer Betrag 29,69 €

Yesterday

Denise Kohler -0,01 €
EREF+CDT-ID-1347678634 KREF+...

17.09.2015

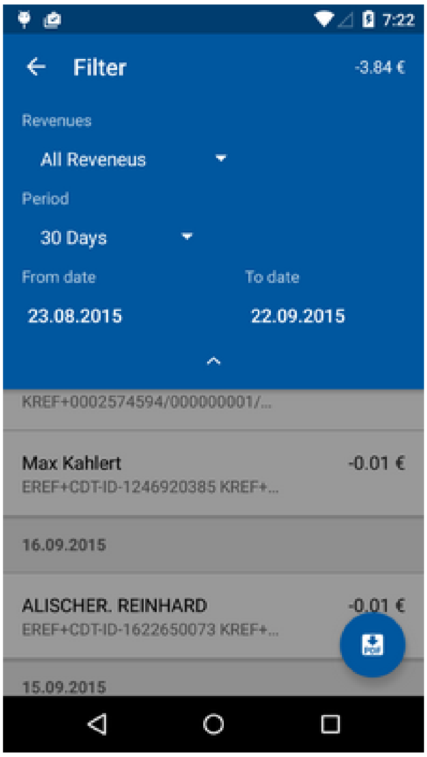
PETER SCHOENWEITZ -0,01 €
KREF+0002574594/000000001/...

Max Kahlert -0,01 €
EREF+CDT-ID-1246920385 KREF+...

Filter

Schedule Transfers

Account Settings



7:22

← Filter -3.84 €

Revenues

All Reveneus

Period

30 Days

From date 23.08.2015

To date 22.09.2015

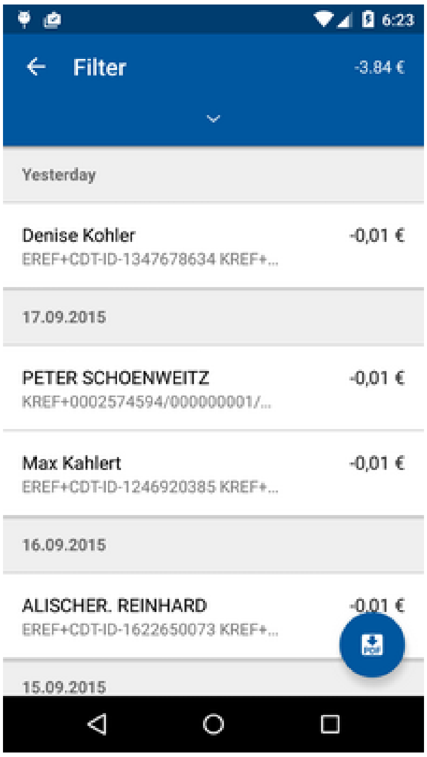
KREF+0002574594/000000001/...

Max Kahlert -0.01 €
EREF+CDT-ID-1246920385 KREF+...

16.09.2015

ALISCHER. REINHARD -0.01 €
EREF+CDT-ID-1622650073 KREF+...

15.09.2015



6:23

← Filter -3.84 €

Yesterday

Denise Kohler -0,01 €
EREF+CDT-ID-1347678634 KREF+...

17.09.2015

PETER SCHOENWEITZ -0,01 €
KREF+0002574594/000000001/...

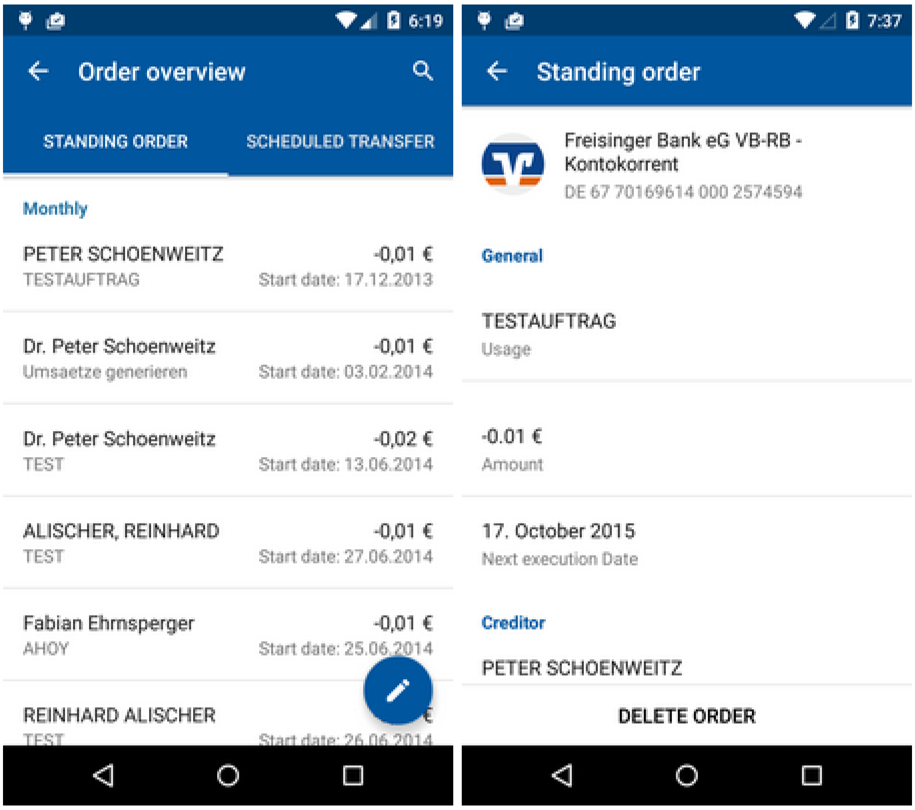
Max Kahlert -0,01 €
EREF+CDT-ID-1246920385 KREF+...

16.09.2015

ALISCHER. REINHARD -0,01 €
EREF+CDT-ID-1622650073 KREF+...

15.09.2015

In the Schedule Transfers page you see an overview of your standing orders and scheduled transfers. When you select a specific standing order or scheduled transfer you see more details like next execution date.



Order overview

STANDING ORDER | SCHEDULED TRANSFER

Monthly

PETER SCHOENWEITZ TESTAUFTRAG	-0,01 € Start date: 17.12.2013
Dr. Peter Schoenweitz Umsaetze generieren	-0,01 € Start date: 03.02.2014
Dr. Peter Schoenweitz TEST	-0,02 € Start date: 13.06.2014
ALISCHER, REINHARD TEST	-0,01 € Start date: 27.06.2014
Fabian Ehrnsperger AHOY	-0,01 € Start date: 25.06.2014
REINHARD ALISCHER TEST	€ Start date: 26.06.2014

Standing order

Freisinger Bank eG VB-RB - Kontokorrent
DE 67 70169614 000 2574594

General

TESTAUFTRAG
Usage

-0.01 €
Amount

17. October 2015
Next execution Date

Creditor

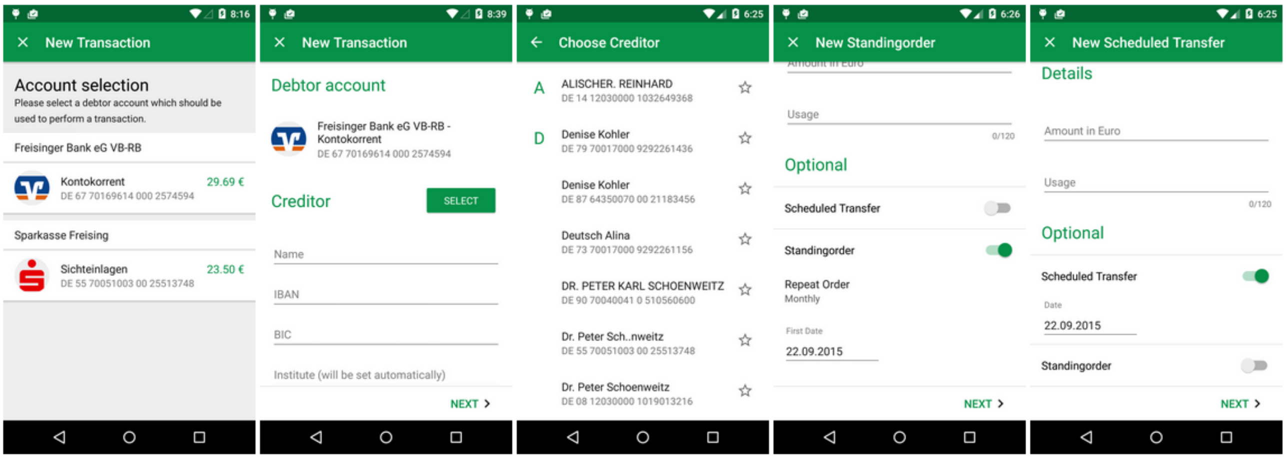
PETER SCHOENWEITZ

DELETE ORDER

6.5 Banking Transactions

When starting a new SEPA transaction you can choose the debitor account you want to use for the next transaction.

In the transaction mask you can select a recipient based on your revenue data. You are also able to create standing orders and scheduled bank transfers.



New Transaction

Account selection
Please select a debtor account which should be used to perform a transaction.

Freisinger Bank eG VB-RB

Kontokorrent DE 67 70169614 000 2574594	29.69 €

Sparkasse Freising

Sichteinlagen DE 55 70051003 00 25513748	23.50 €

New Transaction

Debtor account

Freisinger Bank eG VB-RB - Kontokorrent
DE 67 70169614 000 2574594

Creditor SELECT

Name

IBAN

BIC

Institute (will be set automatically)

NEXT >

Choose Creditor

A
ALISCHER. REINHARD ☆
DE 14 12030000 1032649368

D
Denise Kohler ☆
DE 79 70017000 9292261436

Denise Kohler ☆
DE 87 64350070 00 21183456

Deutsch Alina ☆
DE 73 70017000 9292261156

DR. PETER KARL SCHOENWEITZ ☆
DE 90 70040041 0 510560600

Dr. Peter Sch..nweitz ☆
DE 55 70051003 00 25513748

Dr. Peter Schoenweitz ☆
DE 08 12030000 1019013216

New Standingorder

Amount in Euro

Usage
0/120

Optional

Scheduled Transfer ○

Standingorder ●

Repeat Order
Monthly

First Date
22.09.2015

NEXT >

New Scheduled Transfer

Details

Amount in Euro

Usage
0/120

Optional

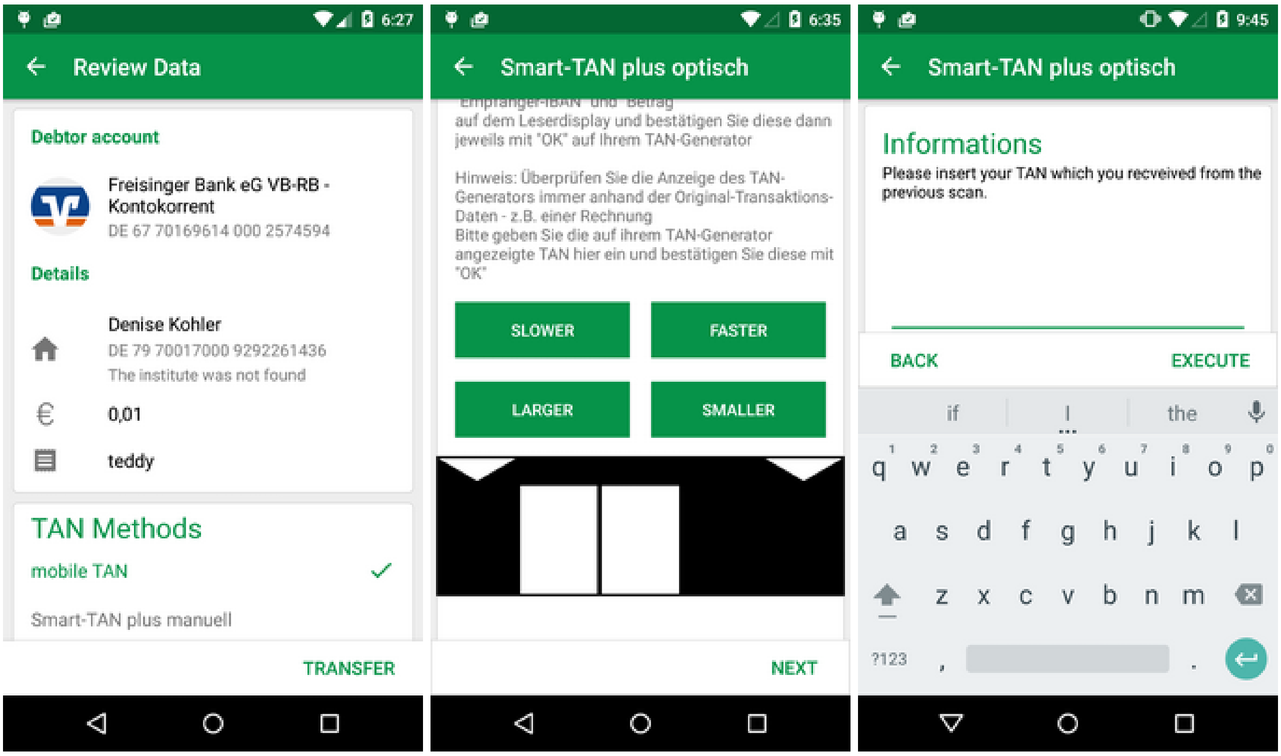
Scheduled Transfer ●

Date
22.09.2015

Standingorder ○

NEXT >

After entering all the data you see a review page where you also can choose your TAN methods. The next screen shows the TAN info/generating page. In the following page you have to enter your TAN for the specific transaction.



Review Data

Debtor account

Freisinger Bank eG VB-RB - Kontokorrent
DE 67 70169614 000 2574594

Details

Denise Kohler
DE 79 70017000 9292261436
The institute was not found

€ 0,01

teddy

TAN Methods

mobile TAN ✓

Smart-TAN plus manuell

TRANSFER

Smart-TAN plus optisch

Empfänger-IBAN und Betrag auf dem Leserdisplay und bestätigen Sie diese dann jeweils mit "OK" auf Ihrem TAN-Generator

Hinweis: Überprüfen Sie die Anzeige des TAN-Generators immer anhand der Original-Transaktions-Daten - z.B. einer Rechnung
Bitte geben Sie die auf ihrem TAN-Generator angezeigte TAN hier ein und bestätigen Sie diese mit "OK"

SLOWER FASTER
LARGER SMALLER

NEXT

Smart-TAN plus optisch

Informations

Please insert your TAN which you recveived from the previous scan.

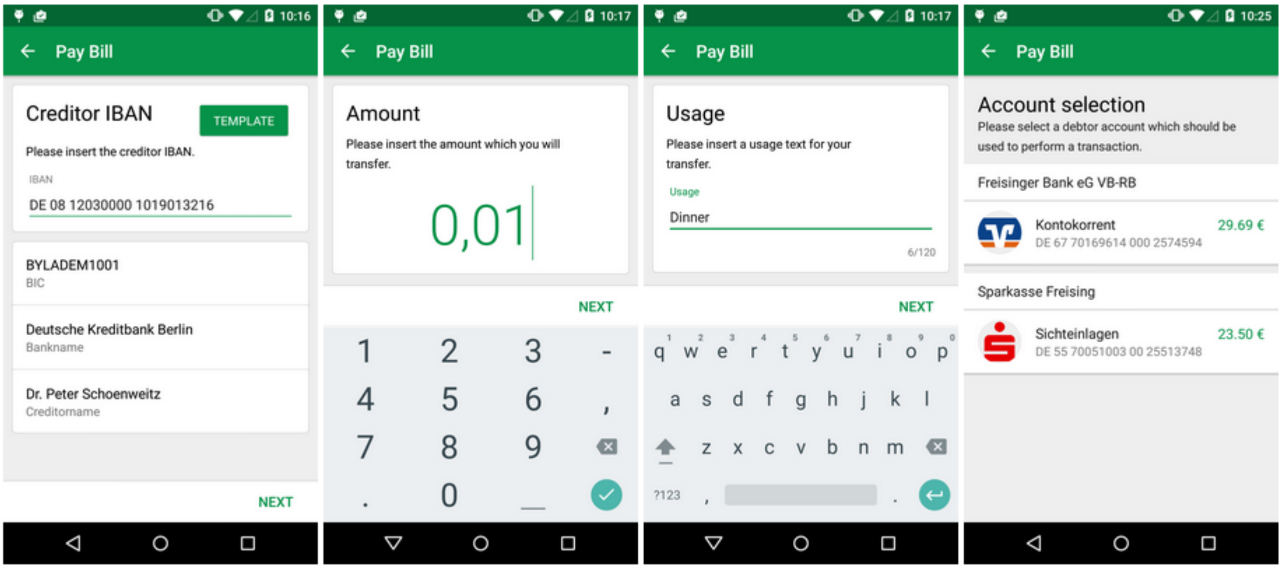
BACK EXECUTE

6.6 Pay

Pay is a wizard based bank account transaction and helps the user to proceed step by step.

In the first screen you can either choose a recipient from your revenues or enter the IBAN directly. After that you have to enter the amount. In the next page you can provide a usage (purpose) for this transaction.

When all the data is entered you have to choose the debtor account. This is the last page of the wizard which is followed by the normal transaction review data screen.



Pay Bill

Creditor IBAN TEMPLATE

Please insert the creditor IBAN.

IBAN: DE 08 12030000 1019013216

BYLADEM1001
BIC

Deutsche Kreditbank Berlin
Bankname

Dr. Peter Schoenweitz
Creditorname

NEXT

Pay Bill

Amount

Please insert the amount which you will transfer.

0,01

NEXT

Pay Bill

Usage

Please insert a usage text for your transfer.

Usage: Dinner

6/120

NEXT

Pay Bill

Account selection

Please select a debtor account which should be used to perform a transaction.

Freisinger Bank eG VB-RB

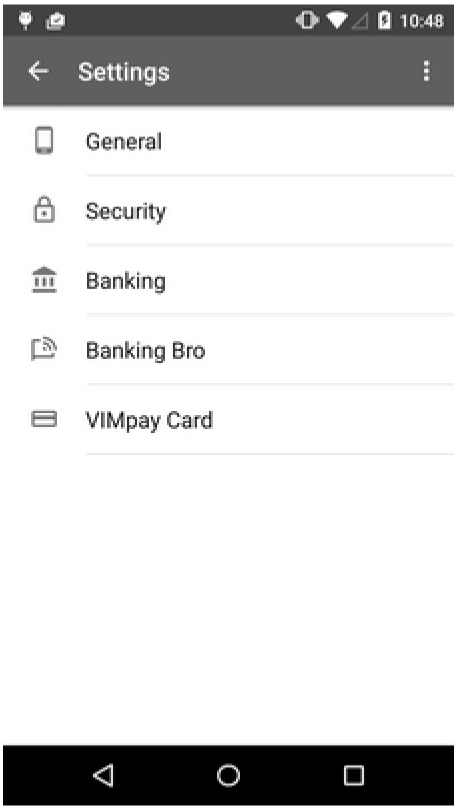
Kontokorrent DE 67 70169614 000 2574594	29.69 €

Sparkasse Freising

Sichteinlagen DE 55 70051003 00 25513748	23.50 €

6.7 Settings

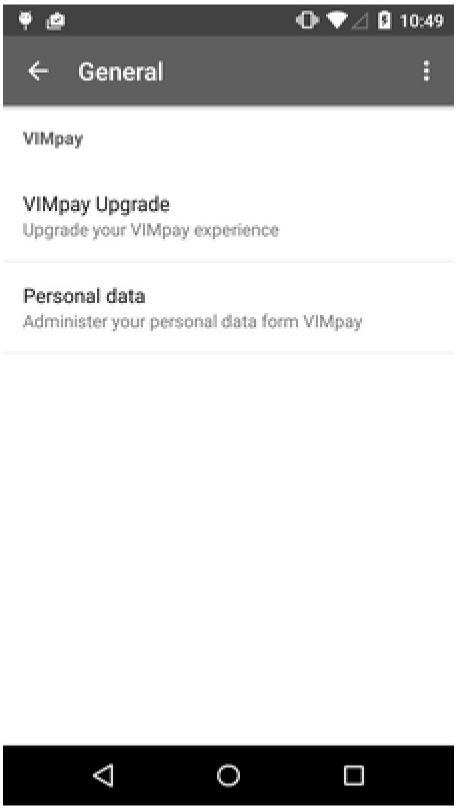
The main settings page shows an overview for several categories.



Category	function
General	Navigates to the general settings overview
Security	Navigates to the security settings overview
Banking	Navigates tot the banking settings overview
Banking Bro	Placeholder
VIMpay Card	placeholder

6.7.1 General

On this page you can navigate to the VIMpay Upgrade or Personal data section. The Change personal data page allows you to change several fields of your VIMpay account.

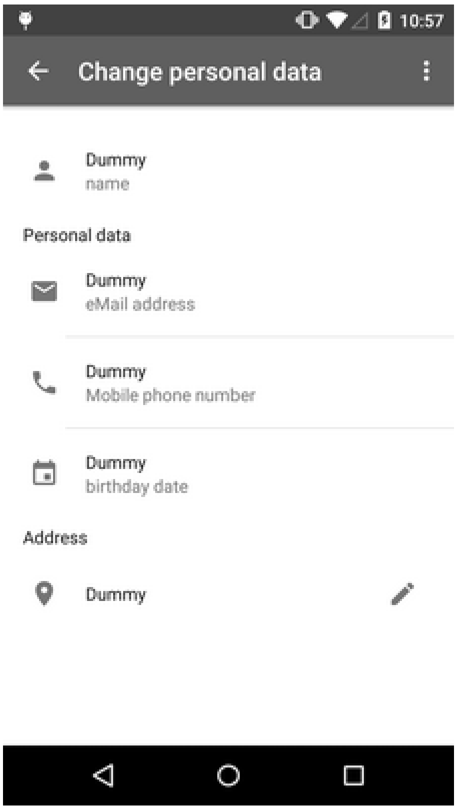


General

VIMpay

VIMpay Upgrade
Upgrade your VIMpay experience

Personal data
Administer your personal data form VIMpay



Change personal data

Dummy
name

Personal data

Dummy
eMail address

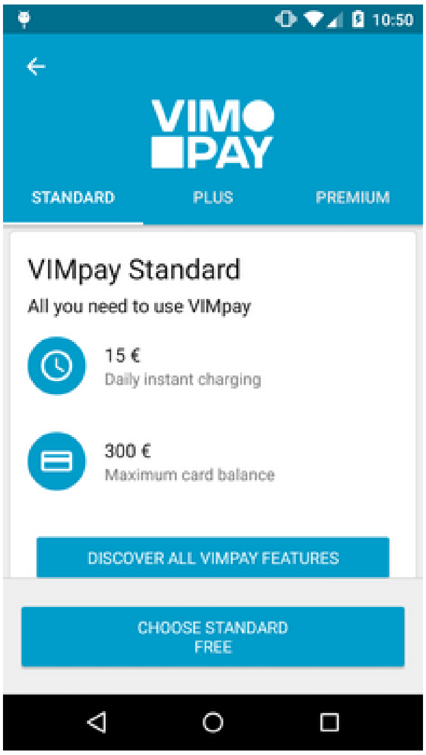
Dummy
Mobile phone number

Dummy
birthday date

Address

Dummy

The VIMpay Upgrade page provides three tabs, Standard, Plus and Premium. Each tab shows the features of the selected version.



STANDARD PLUS PREMIUM

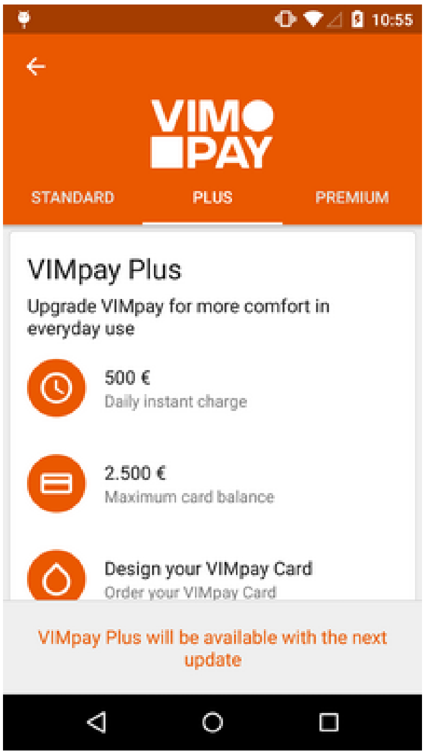
VIMpay Standard
All you need to use VIMpay

15 €
Daily instant charging

300 €
Maximum card balance

DISCOVER ALL VIMPAY FEATURES

CHOOSE STANDARD
FREE



STANDARD PLUS PREMIUM

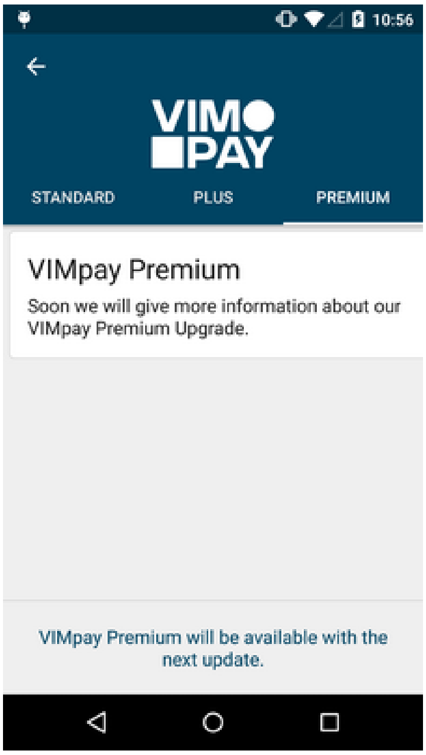
VIMpay Plus
Upgrade VIMpay for more comfort in everyday use

500 €
Daily instant charge

2.500 €
Maximum card balance

Design your VIMpay Card
Order your VIMpay Card

VIMpay Plus will be available with the next update



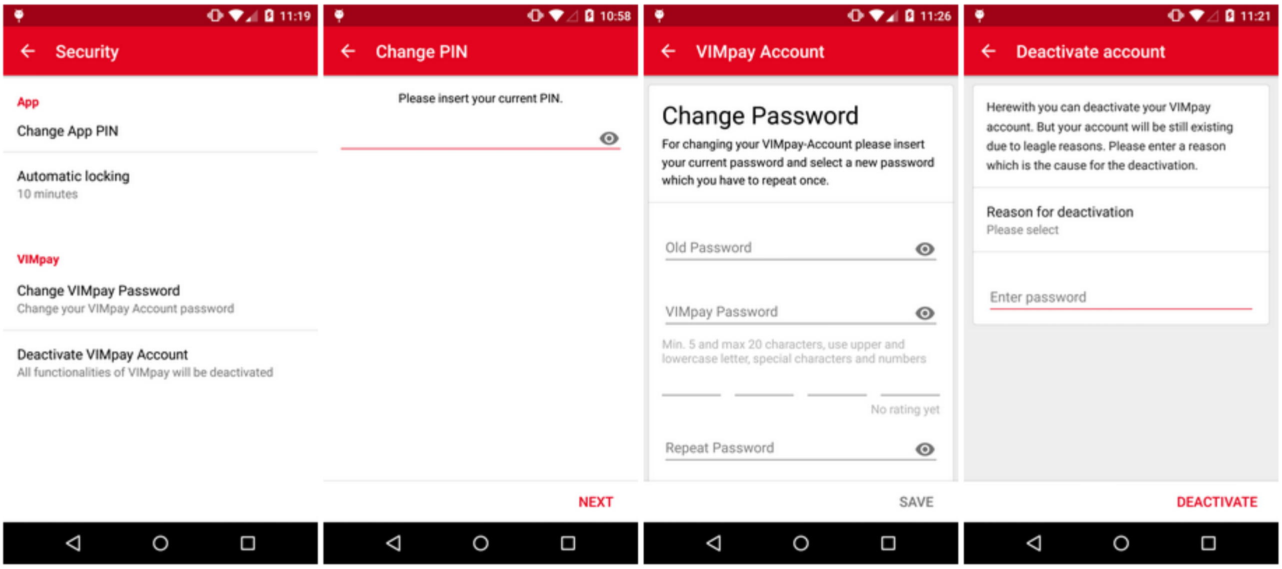
STANDARD PLUS PREMIUM

VIMpay Premium
Soon we will give more information about our VIMpay Premium Upgrade.

VIMpay Premium will be available with the next update.

6.7.2 Security

On this page you can navigate to the Change App PIN, Change VIMpay Password or Deactivate VIMpay Account section.



Security

App

Change App PIN

Automatic locking
10 minutes

VIMpay

Change VIMpay Password
Change your VIMpay Account password

Deactivate VIMpay Account
All functionalities of VIMpay will be deactivated

Change PIN

Please insert your current PIN.

NEXT

VIMpay Account

Change Password

For changing your VIMpay-Account please insert your current password and select a new password which you have to repeat once.

Old Password

VIMpay Password

Min. 5 and max 20 characters, use upper and lowercase letter, special characters and numbers

No rating yet

Repeat Password

SAVE

Deactivate account

Herewith you can deactivate your VIMpay account. But your account will be still existing due to leagle reasons. Please enter a reason which is the cause for the deactivation.

Reason for deactivation
Please select

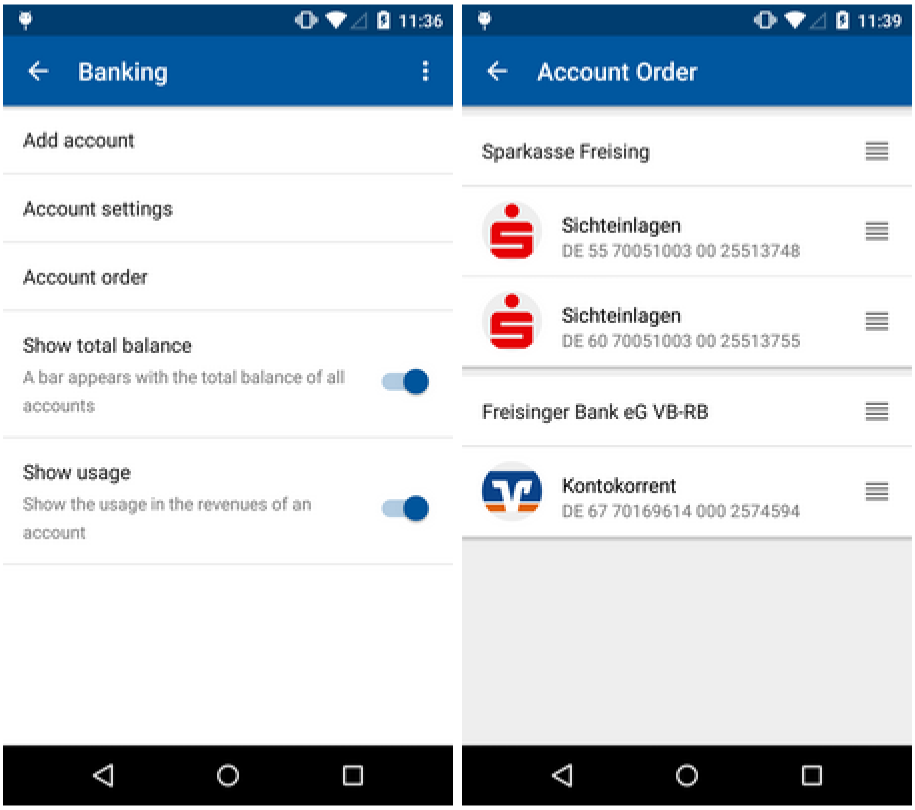
Enter password

DEACTIVATE

6.7.3 Banking

On this page you can navigate to the Bank Account settings and Account order section. You are able to add a new banking account with Add account. It is also possible to hide the total balance or the usages of revenues in the list.

In the account order page you can manage the order of your accounts shown in the Banking overview page.



Banking

Add account

Account settings

Account order

Show total balance
A bar appears with the total balance of all accounts

Show usage
Show the usage in the revenues of an account

Account Order

Sparkasse Freising

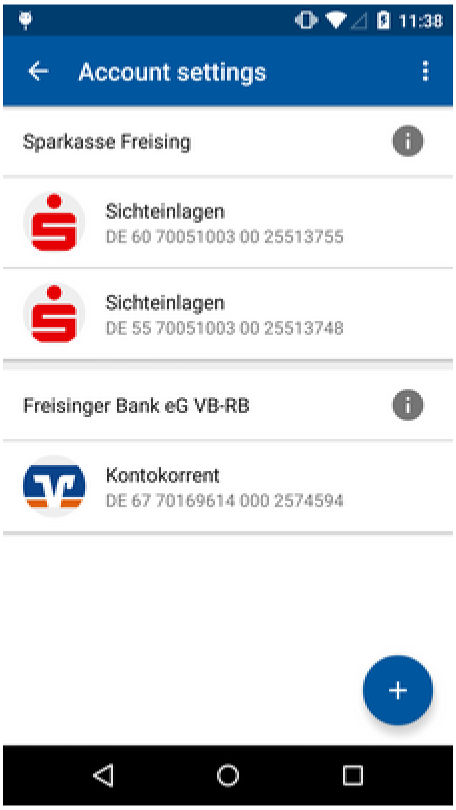
Sichteinlagen
DE 55 70051003 00 25513748

Sichteinlagen
DE 60 70051003 00 25513755

Freisinger Bank eG VB-RB

Kontokorrent
DE 67 70169614 000 2574594

In the account settings a list of your bank accounts is shown. By selecting one the bank account details and other options, like hide account, are shown.



Account settings

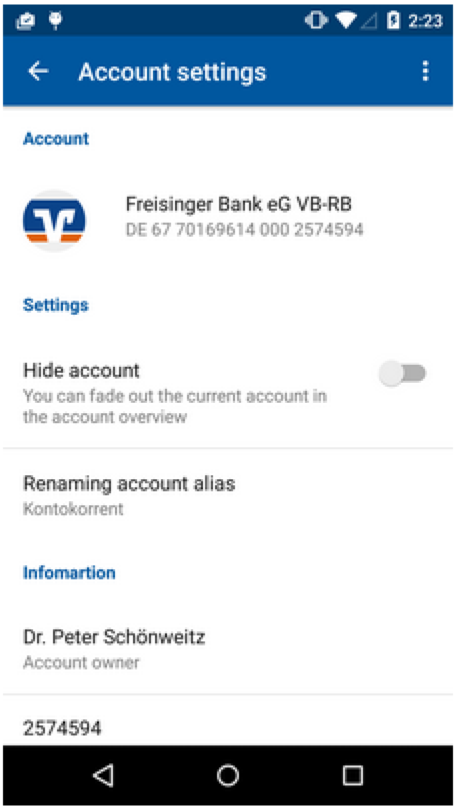
Sparkasse Freising

Sichteinlagen
DE 60 70051003 00 25513755

Sichteinlagen
DE 55 70051003 00 25513748

Freisinger Bank eG VB-RB

Kontokorrent
DE 67 70169614 000 2574594



Account settings

Account

Freisinger Bank eG VB-RB
DE 67 70169614 000 2574594

Settings

Hide account
You can fade out the current account in the account overview

Renaming account alias
Kontokorrent

Infomartion

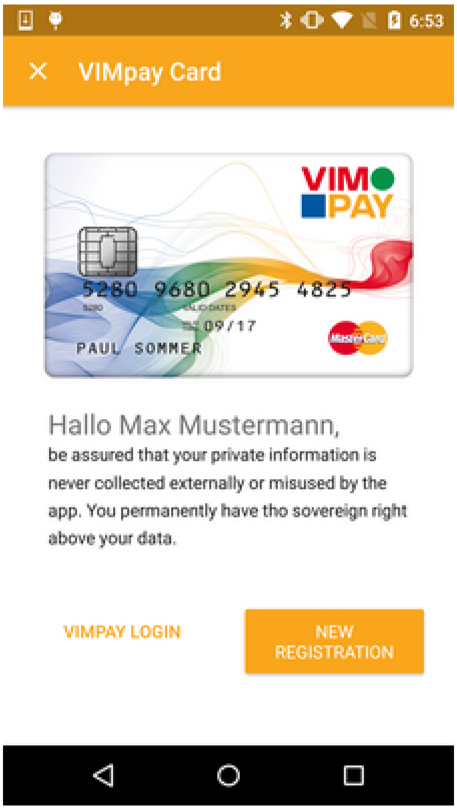
Dr. Peter Schönweitz
Account owner

2574594

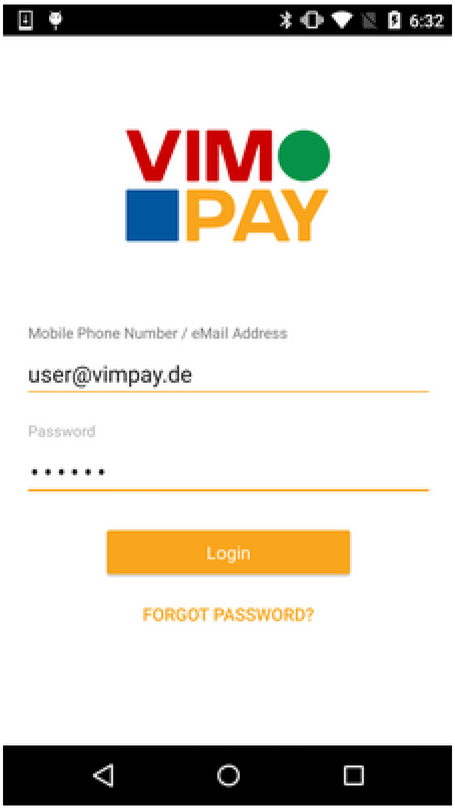
6.8 VIMpay Card Registration

When you enter INTERNET or Show Card and no account is setup you see the VIMpay Card page, where you can either login or register a new VIMpay Card.

Login page is exactly the same as shown in first launch.



Hallo Max Mustermann,
be assured that your private information is never collected externally or misused by the app. You permanently have tho sovereign right above your data.

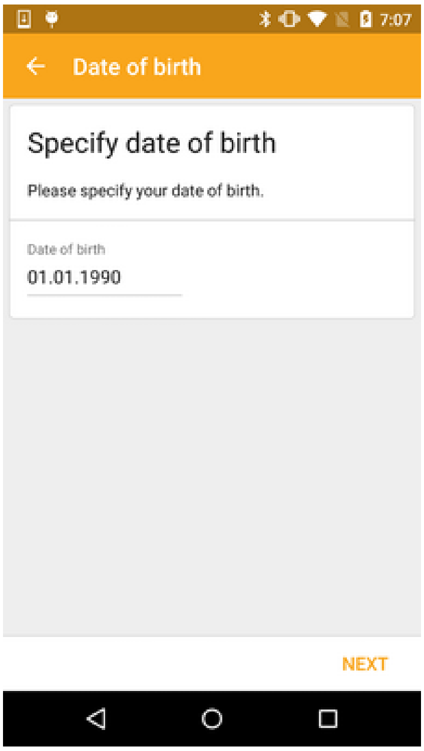


Mobile Phone Number / eMail Address
user@vimpay.de

Password
••••••

The following screens shows the registration of a new VIMpay Card. The registration is wizard based, the first step asks for your date of birth, followed by setting your VIMpay account password.

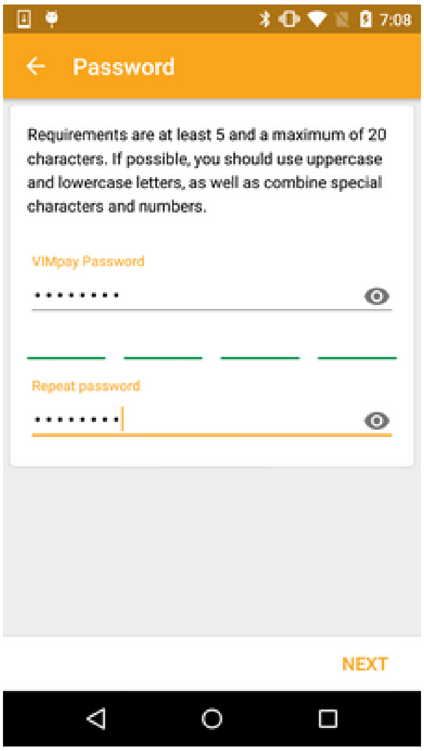
In the next screen the terms and conditions of the PayCenter GmbH for the card agreement are shown and the user have to accept them to proceed.



Specify date of birth

Please specify your date of birth.

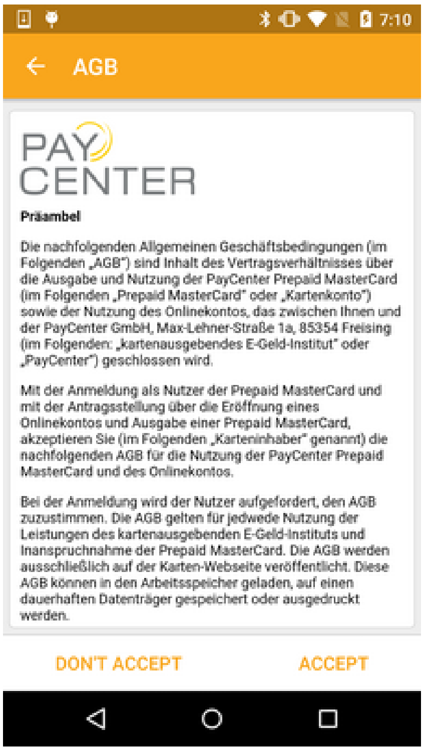
Date of birth
01.01.1990



Requirements are at least 5 and a maximum of 20 characters. If possible, you should use uppercase and lowercase letters, as well as combine special characters and numbers.

VIMpay Password
••••••••

Repeat password
••••••••



Präambel

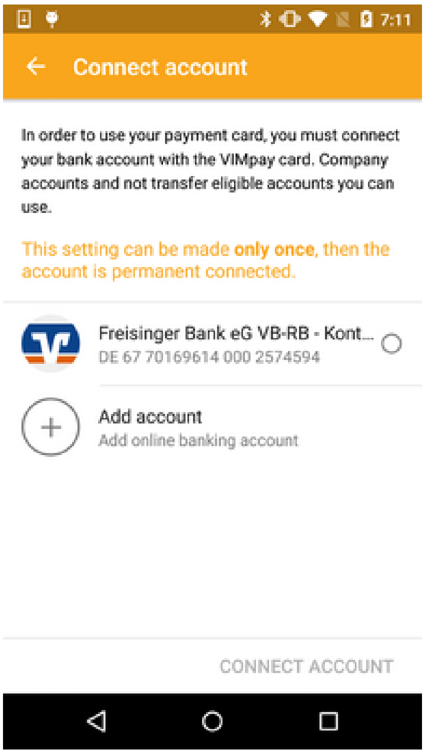
Die nachfolgenden Allgemeinen Geschäftsbedingungen (im Folgenden „AGB“) sind Inhalt des Vertragsverhältnisses über die Ausgabe und Nutzung der PayCenter Prepaid MasterCard (im Folgenden „Prepaid MasterCard“ oder „Kartenkonto“) sowie der Nutzung des Onlinekontos, das zwischen Ihnen und der PayCenter GmbH, Max-Lehner-Straße 1a, 85354 Freising (im Folgenden: „kartenausgebendes E-Geld-Institut“ oder „PayCenter“) geschlossen wird.

Mit der Anmeldung als Nutzer der Prepaid MasterCard und mit der Antragsstellung über die Eröffnung eines Onlinekontos und Ausgabe einer Prepaid MasterCard, akzeptieren Sie (im Folgenden „Karteninhaber“ genannt) die nachfolgenden AGB für die Nutzung der PayCenter Prepaid MasterCard und des Onlinekontos.

Bei der Anmeldung wird der Nutzer aufgefordert, den AGB zuzustimmen. Die AGB gelten für jedwede Nutzung der Leistungen des kartenausgebenden E-Geld-Instituts und Inanspruchnahme der Prepaid MasterCard. Die AGB werden ausschließlich auf der Karten-Webseite veröffentlicht. Diese AGB können in den Arbeitsspeicher geladen, auf einen dauerhaften Datenträger gespeichert oder ausgedruckt werden.

The following screen shows all your configured bank accounts and provides a way to add a new one if the user wants to use other accounts for the registration

For the registration of a new VIMpay card the user needs a bank account where FinTS / HBCI is available. The next step is entering your eMail address for non-cellular devices or mobile phone number for cellular devices.

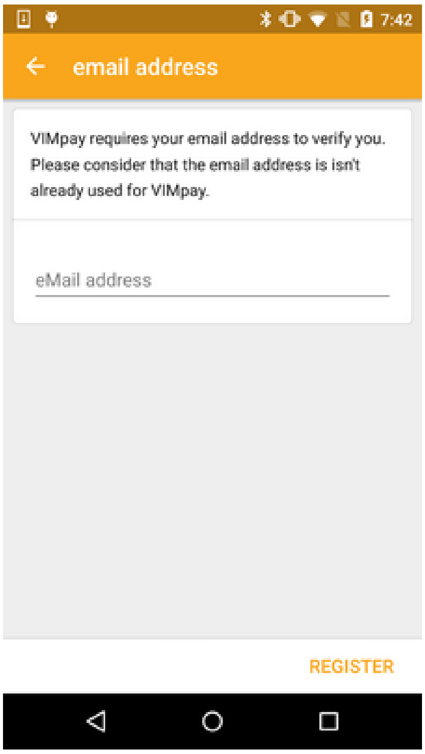


In order to use your payment card, you must connect your bank account with the VIMpay card. Company accounts and not transfer eligible accounts you can use.

This setting can be made **only once**, then the account is permanent connected.

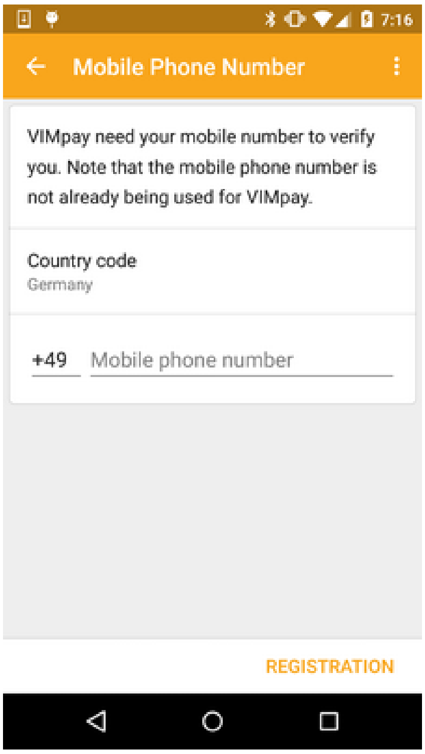
Freisinger Bank eG VB-RB - Kont... ○
DE 67 70169614 000 2574594

Add account
Add online banking account



VIMpay requires your email address to verify you. Please consider that the email address is isn't already used for VIMpay.

eMail address

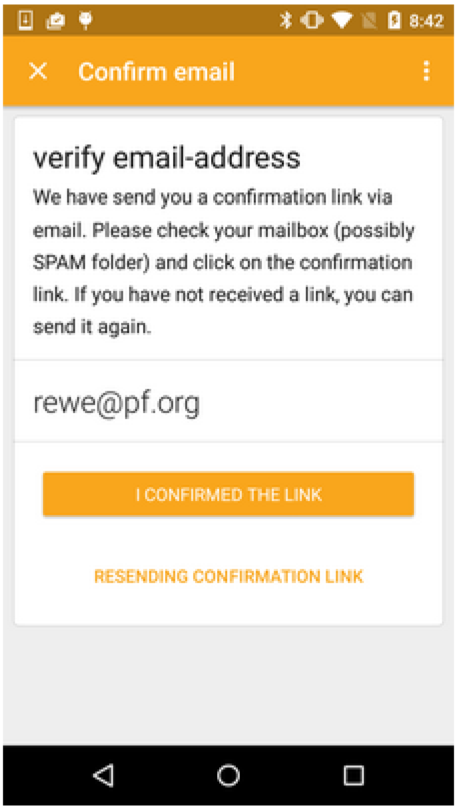


VIMpay need your mobile number to verify you. Note that the mobile phone number is not already being used for VIMpay.

Country code
Germany

+49 Mobile phone number

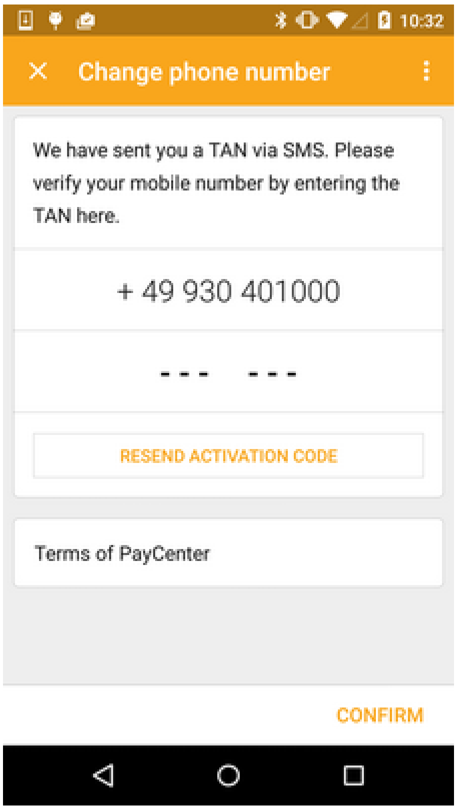
When the registration was successful you have to confirm either the link in the eMail or enter the activation code sent to the user by SMS. It is possible to resend both the activation link and the code.



verify email-address

We have send you a confirmation link via email. Please check your mailbox (possibly SPAM folder) and click on the confirmation link. If you have not received a link, you can send it again.

rewe@pf.org



We have sent you a TAN via SMS. Please verify your mobile number by entering the TAN here.

+ 49 930 401000

--- ---

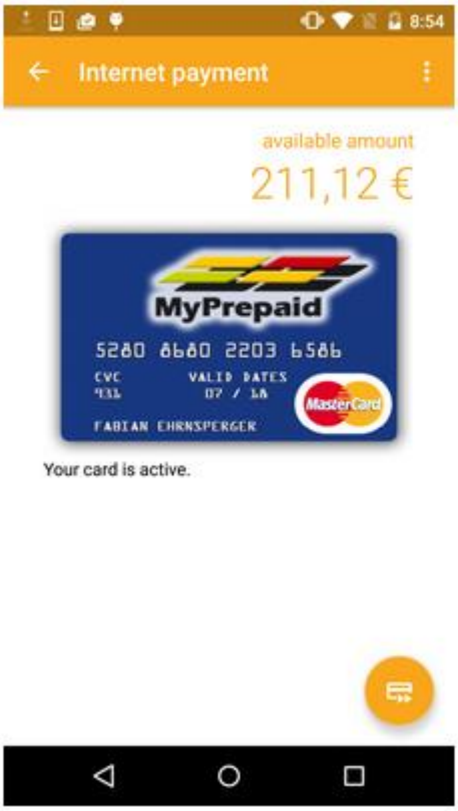
Terms of PayCenter

6.9 Internet / Show card

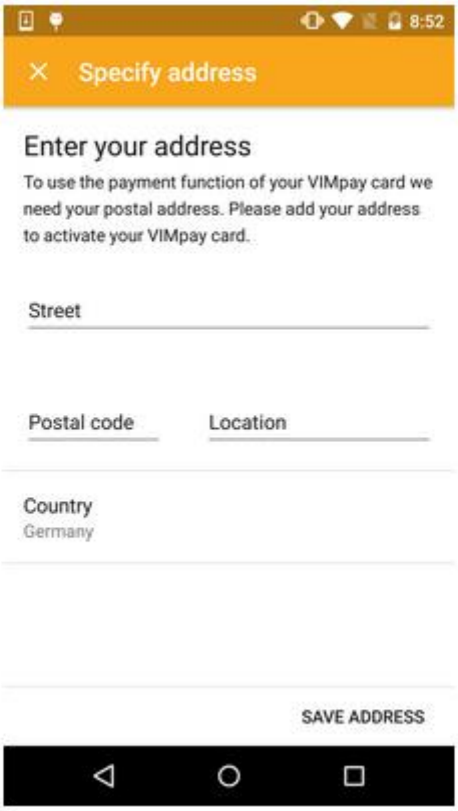
This page shows you a picture of your VIMpay Card. On the picture you see all the data of your credit card the user needs to pay in online shops.

The current balance of your card is also shown. The right bottom button navigates to the Replenish VIMpay Card page.

When first entering this page after a registration of a new card a where the user have to enter his address data, this is necessary to activate the card for payments.



Your card is active.



Enter your address

To use the payment function of your VIMpay card we need your postal address. Please add your address to activate your VIMpay card.

Street

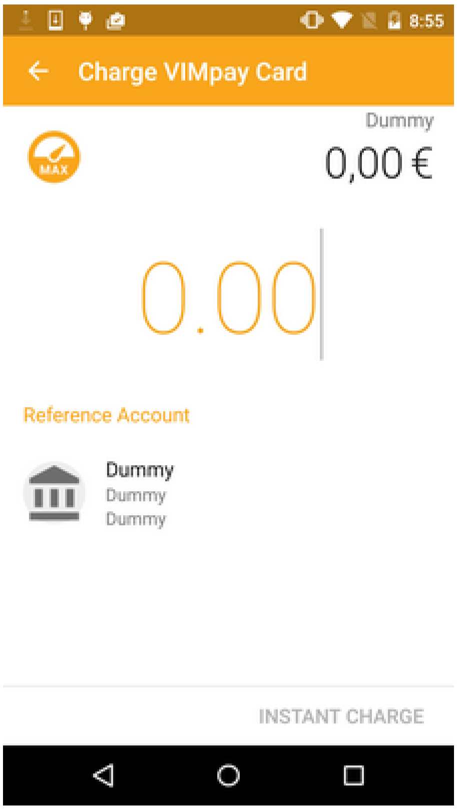
Postal code

Location

Country
Germany

6.10 Replenish VIMpay Card

On this page the user is able to replenish his VIMpay Card via a SEPA transfer of his reference account.



8:55

Charge VIMpay Card

Dummy

0,00 €

0.00

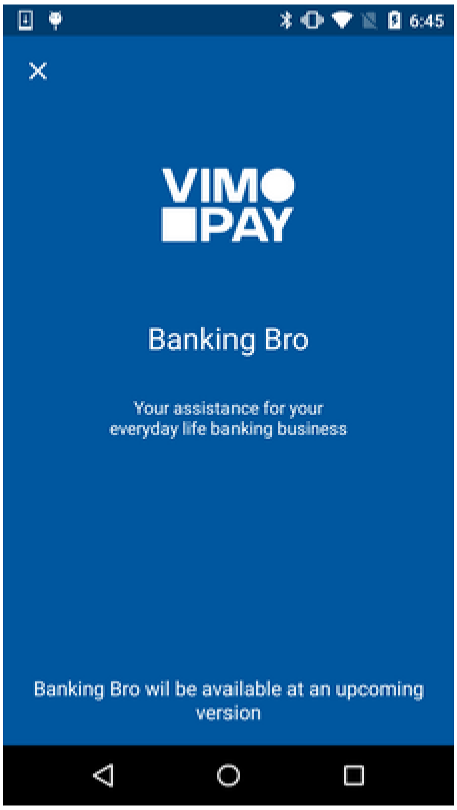
Reference Account

Dummy
Dummy
Dummy

INSTANT CHARGE

6.11 Placeholder

The placeholder pages comes with a description of the feature that will be added in an upcoming version of VIMpay.



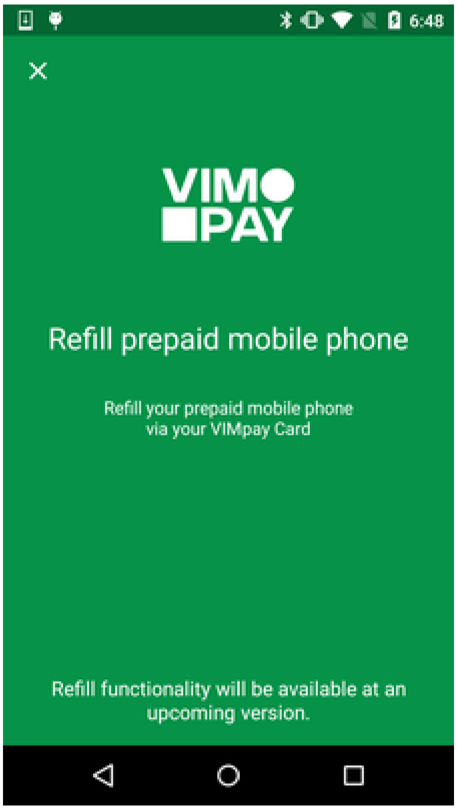
6:45

VIMO PAY

Banking Bro

Your assistance for your
everyday life banking business

Banking Bro wil be available at an upcoming version



6:48

VIMO PAY

Refill prepaid mobile phone

Refill your prepaid mobile phone
via your VIMpay Card

Refill functionality will be available at an upcoming version.

7 Availability

7.1 Android

On 05.10.2015 a closed beta program has been started for the VIMpay App on Google Play for the Android system. The closed beta program can only be joined by an invitation to the Google+ Group called 'VIMpay-BETA community'. After been added to the above mentioned Google+ Group the person is able to register as a tester which will grand him access to the VIMpay App on Google Play. The download and update will then be managed by the Google Play App as regular on Android powered devices.

Available on Google Play (Closed Beta)

https://play.google.com/store/apps/details?id=net.petafuel.mobile.vimpay&ah=trIxUns4btC3AqPV9UxyCbDyxcs&hl=de

7.2 iOS

The iOS version of V1 is still under development and beta access is available upon request.

8 References

[1] petaFuel GmbH, "VIMpay App on Android Playstore (closed beta)," [Online]. Available: https://play.google.com/store/apps/details?id=net.petafuel.mobile.vimpay&ah=trIxUns4btC3AqPV9UxyCbDyxcs&hl=de.

[2] petaFuel GmbH, "D 5.1. Business requirements for Version 1 of the VIMpay app," 2015.

[3] petaFuel GmbH, "D 3.1 Architecture of the VIMpay API," 2015.