

INTERNET & MOBILE BANK



eKassir



ekassir.com



+7 (812) 600-4000

Contents

02 About the solution

03 Features

03 Implementation results

Functional and service extension

Tools for quick customization

Efficiency and scalability

Ensuring payments security

Omni-channel scenarios

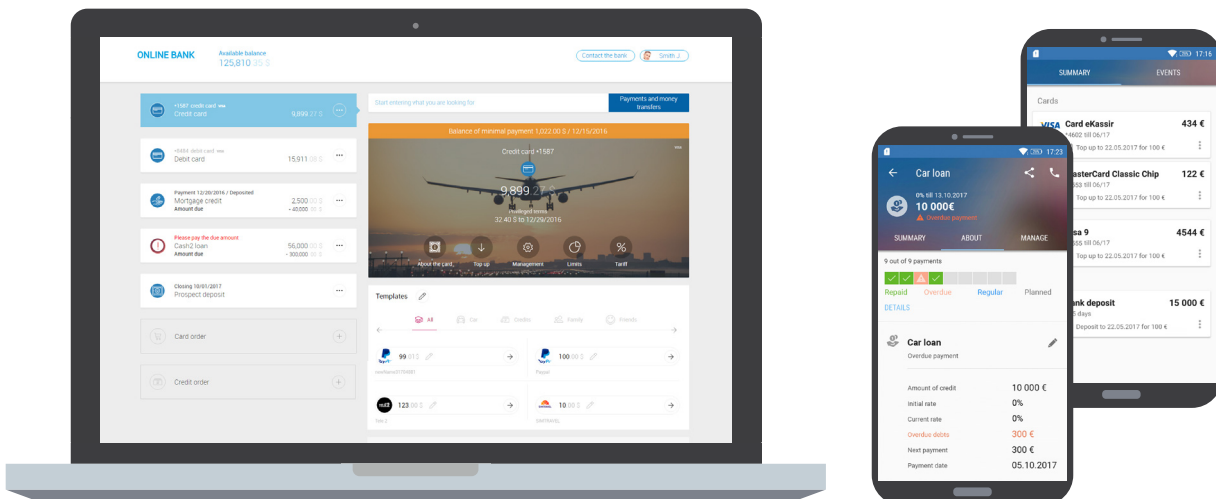
07 Architecture

Internet & Mobile Bank (hereinafter eKassir DBP) are the components of Digital Bank Platform. The basic functionality of eKassir DBP covers all requirements for building modern remote banking system.

Basic services available as a part of “out-of-the-box” solution:

- Registration and authorization service
- Banking products service. Allows you to display information and manage your banking products:
 - Accounts
 - Cards
 - Loans
 - Deposits
 - Special bank products
- Payments and transfers, recurrent payments
- Non-financial transactions (request for implementing a new product, ordering a card, application for a loan, etc)
- Post service
- Bank statement service
- Timeline service
- Currency service (transactions, conversions, currency rate)
- Notifications (SMS, Push, e-mail)
- Geo-services
- Promo services and targeted offers
- PFM service (Personal Financial Management)

Modern architecture, and innovative technological approaches differentiate eKassir’s solution from other vendors. eKassir DBP is built with micro-service architecture approach which allows the bank to add any new functionality as micro-service without replacing the existing services or conducting its regression testing.



Examples of interfaces of internet and mobile banking



Payments and transfers

Full-featured system for payments and transfers



Multilanguage apps

Easy translation of front-end apps to any language



Omnichannel solution

Support of omnichannel services scenarios for all remote channels including ATM and self-services kiosk



Micro-service architecture

Fast and easy addition of new functionality



Modern interfaces

Front-end applications do not contain any business logic and responds only for data visualization. It allows the bank to develop them independently or in cooperation.

Implementation results

Functional and service extension

When choosing a remote banking system, Bank is often interested what system functionality is available in out-of-the-box version.

Features of ready-to-use services of Internet & Mobile Banking:

- **Payments and transfers, recurrent payments.** Internet & Mobile bank come in integration with the Payments Hub solution. It allows the bank to implement maximum possible functionality with out of the box solution including a recurring payments service.
- **Ordering a card, applying for a new product, opening a deposit.** The solution supports any scenarios for ordering a new product or opening a deposit. It may require input of a significant amount of client's data, and in this case,

some data can be auto-loaded from the system directories. The scenarios are configured in eKassir Operation Studio and then processed in Payments Hub as payments or transfers. This approach allows bank to easily create the scenarios of any complexity and implement nice UI for these scenarios in front-end applications using various screen input methods (calculators, sliders, point selection on the map and so on).

- **Advertising, marketing and personal offers.** Internet and Mobile bank are used as a platform for advertising and selling other services. In the standard version, it just displays the advertisements and may collect customer leads. However, Internet marketing today requires more sophisticated approaches. It is necessary to take into account the end-user's reaction to adverts, analyze ad views and construct a purchase funnel. This type of advertising may considerably increase sales. At the same time, the obsessive display of

the same badly targeted advert with no attention to user's reaction can be annoying. eKassir DBP is integrated with CloudAdNet service, which allows you to place and manage the advertising content such as regular banners, mini-websites with complex scripts and collection of leads, targeted offers based on client's ID or profile. Service allows you to adjust the start/end time of the advertising company, perform the content rotation, collect customer feedback, analyze lead time and purchase funnels. This functionality of eKassir DBP allows bank to promote its services efficiently.

Tools for quick customization

Mobile and Internet bank are the main front-line services constantly used by customers. There is a competition between banks for the convenience of using remote banking system, application functionality and new features. UI applications are regularly update. Client's choice often depends on convenience and functionality of front-end applications. Therefore, it is critical to have opportunity to make quick changes in remote banking system, update interfaces and add new functionality.

Based on these considerations, it is better for the Bank not to be depend on the solutions vendor. The Bank's specialists should be able to carry out modifications themselves. At the same time, it is important not to lose compatibility with the main version of the system and receive regular updates from the solutions vendor. Otherwise, the system may become obsolete after a while and the Bank will have to change it.

There are possibilities for self-customization while maintaining the compatibility with the out of the box version of eKassir DBP.

Customization:

- **Interfaces of front-end applications.** They are completely separated and interact with the server components via a standardized eKassir Platform API in eKassir DBP. Front-end applications do not contain any business logic. It allows the Bank to develop them independently or in cooperation.
- **New services.** Internet & Mobile bank are built based on micro-service architecture. Almost any new functionality can be implemented as a separate micro-service. Micro-services have no limitations on the used technologies, also they are quite simple to develop and not require regression testing on the entire system before updating. This approach allows you to speed up the development and implementation of new functionality.
- **A new payment or transfer recipient.** Changing scenarios of existing payment services. All payments and transfers are executed in Payments Hub that is a component of DBP. You can configure any new payment or transfer in the eKassir Operation Studio by using it and run it quickly on clients. The complexity of setting up new payment or transfer and outputting it to a DBP is usually takes no more than eight man hours.
- **Card order, an application for a new product, a deposit.** Configuring of non-financial operation scenarios is performed from the eKassir Operation Studio interface. The script can contain various input methods, such as calculators, sliders, geo-targeting (selecting from the address list, selecting a point on the map), which look nice and modern in the interface of the client application.
- **Integration with back-office systems.** A significant part of the implementation of remote banking system is to integrate it with existing banking system. Generally, these works are per-

formed by the vendor and there is no possibility of self-implementation. There is such possibility in eKassir DBP. The platform integration layer has a fully documented SOAP interface. The Bank can independently integrate and launch eKassir DBP if wished and has specialists. You will require only support and consultation from the vendor.

- **Content management and personal offers.** You can manage advertising content in eKassir DBP from the CloudAdNet service interface. It provides a mechanism for displaying targeted offers and collecting feedback. It does not require any modifications, only the settings. Places for content and targeted offers are initially provided in standard front-end applications. The service is fully functional as out of the box solution.

Efficiency and scalability

The most important metric of RBS is efficiency. The system should withstand overloading and be scalable. At the same time, RBS should be able to smartly cache the data from the bank's back office systems, which may become unstable while working with peak loads. However, such problems cannot be solved by simple expanding the server capacities. The common problem for banks (especially those with large payroll projects) is the slow work or even collapse of bank's RBS because of massive influx of customers on the payday. First, this concerns the Mobile bank because the clients use it more active and actually organize a sort of DDOS-attack by running the application under high load conditions.

There is a set of mechanisms for providing high load capacity and system efficiency in eKassir DBP. There are a linear scaling of components, multi-level data cache, and all requests optimization. In addition, Cash Control mechanism is implemented in eKassir DBP, which allows the system to work with no requests

for each client's data to ABS and other back-office systems. In any case of data changes, the back-office systems automatically apply to Cash Control API. All updates are saved in the DBP cache, so extra data requests are not required. This type of system architecture minimizes the number of requests and reduces back-office systems loading while the operation speed of client's applications increases.

The efficiency issue may seem technical, but it has a direct impact on business rates and clients satisfaction with the bank's services. The availability and operation speed depend on efficiency. It is sensitive characteristic; a lagging bank's application will never get the high rating from the customers.

Moreover, the competent use of caching mechanisms in eKassir DBP allows bank to save their server capacities, which directly affects the service production costs.

Ensuring payments security

Security is a matter of primary importance in any remote banking system.

We tried to deal with security problems in a comprehensive manner. There are some important aspects related to security that are worth paying attention to:

- Access Manager is the component specially designed for users authorization in the system. It is responsible for running the authentication and user login scenarios, sending confirmation codes, issuing security tokens and so on. This is the regular system component, which has been tested in large projects and checked by third-parties auditors. eKassir Access Manager allows bank to configure various user login scripts, use multifactor authentication, request online confirmation of an operation, and so on. These operations do not affect eKassir Access Manager's core, only plug-

ins and integration modules are changed. Out-of-the-box eKassir Access Manager supports modern security protocols: Open ID Connect, OAuth 2/0 and other. eKassir Access Manager is also used for the back-office employees authentication while their logging into the system.

- Identity Gateway is a regular system component, which allows to correctly configure DMZ and LAN bank networks, so that any data and service requests were treated as outgoing, from the internal network to the outside, and not vice versa.
- There is the fraud prevention subsystem in eKassir DBP. It is integrated with Operation/Payments Hub and covers a significant part of the fraud prevention scenarios specific for the remote banking systems. It also can be easily integrated with any already existing bank's anti-fraud system.
- All system components (including integration modules) are digitally signed. If the bank make changes in signed modules, they will not start. This provides control over the code swap of the executable system modules.

nels turn available in all other service channels adjusted to the channel peculiarities.

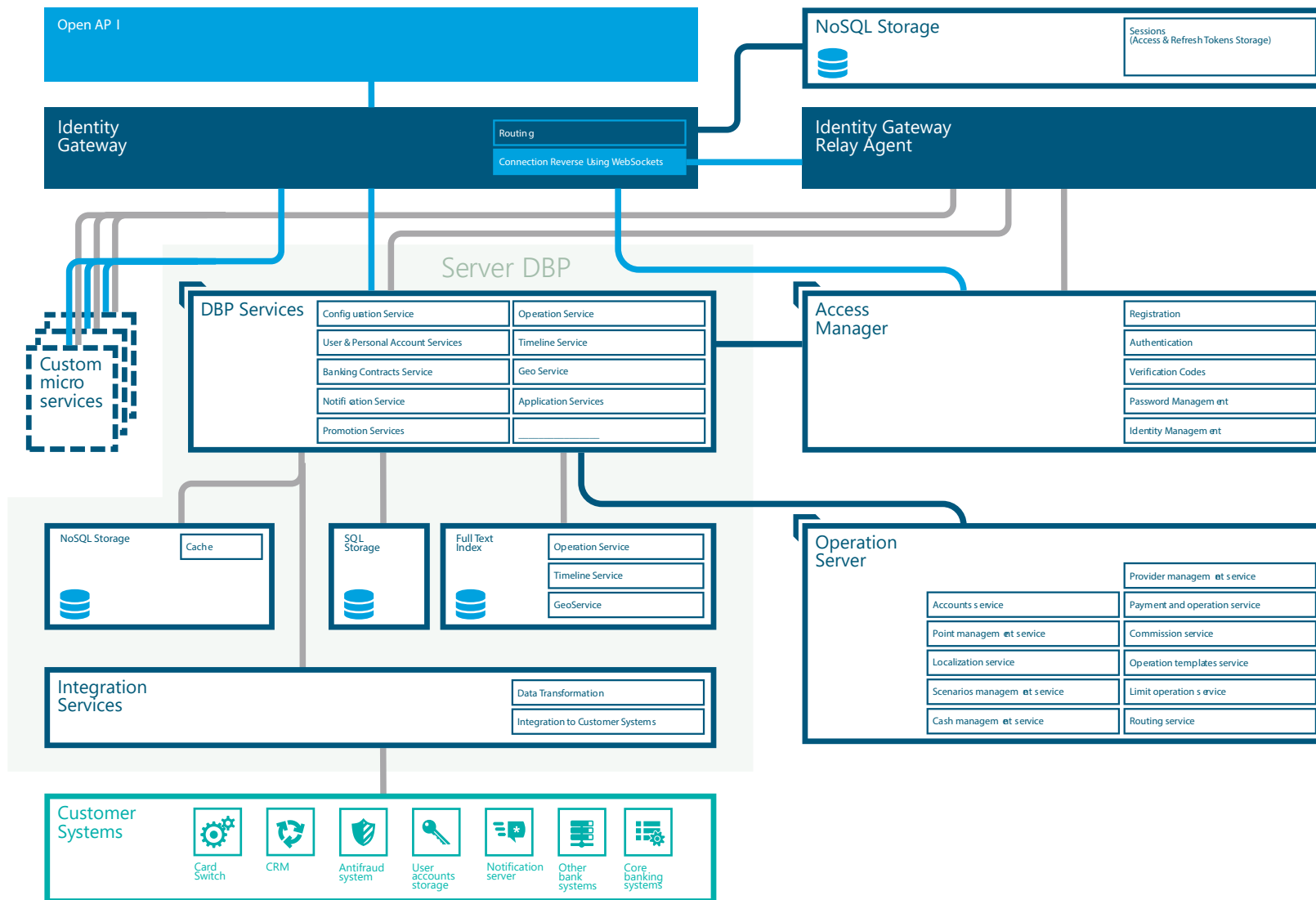
- Cash withdrawal via ATM by QR-code generated in the Mobile bank.
- Replenishment of the client's account via ATM by QR-code generated in the Mobile bank.

Omni-channel scenarios

The simplicity of supporting the omni-channel service scenarios is one of the main advantages of eKassir DBP. Internet and Mobile bank are an integrated part of the Digital Banking Platform. DBP is designed so that the same set of services is shared by all front-end applications. Omni-channel and multichannel capabilities are architectural conception of the system. That's why integration of eKassir DBP with other bank's service channels is always easy.

Examples of omni-channel scenarios:

- Unified payment templates for RBS and other front-end applications. Payment templates saved by the client in one of eKassir DBP service chan-



Access Manager provides user authentication service
Identity Gateway provides a single-point access to a system and managing sessions for eKassir systems and side service

Operation Server manages payments and transactions and connects components
DBP Services provides remote banking services for individuals via different channels