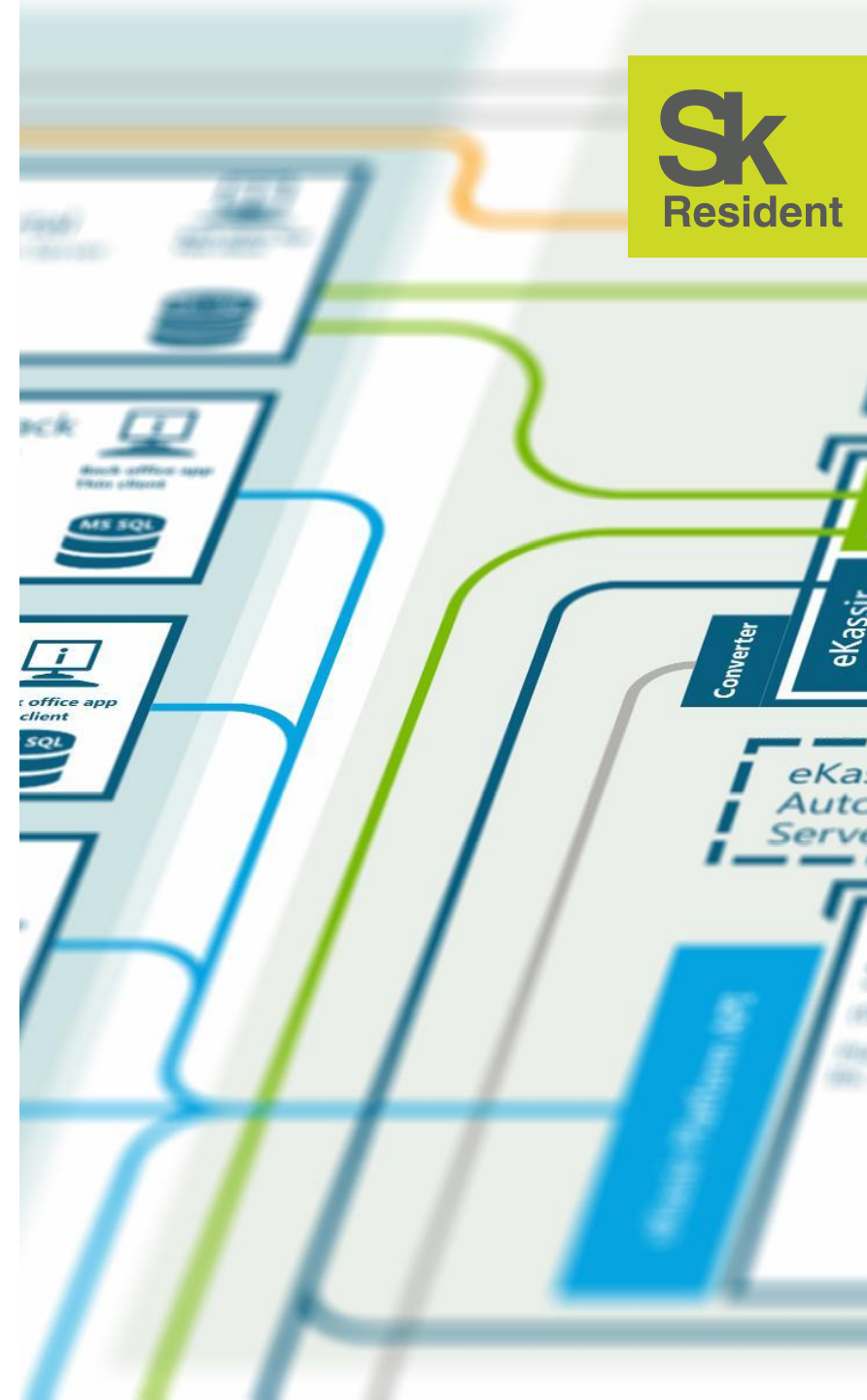


eKassir

ATM Terminal

more than just multivendor ATM software



«**eKassir ATM Terminal**» – a software solution, which provides full digitalization of the ATM channel and other self-service devices of the Bank. The solution includes:

- ATM Software, which is installed on a self-service device (SSD)
- Server components to support integration with Bank systems and provide business functions on self-service devices

The most important advantages and key differences:

- **Multivendor solution.** For ATMs, self-service kiosks, ADMs and other devices
- **OS- and device-type-independent.** Unified software for every OS (XP, Win7, Win10, Linux (with some limitations)) and self-service device model
- **No more outdated protocols** and technologies, such as NDC/DDC, obsolete browsers, etc.
- **Attractive user interface, fast and responsive** to fit any screen size. API and SDK for UI self-designing
- **Omni-channel solution out-of-the-box.** Supports all cases for «no-cash desks» Bank's offices
- **Maximal business functions for self-service devices** out-of-the-box
- **Fully functional set of server modules for optimal managing of Bank's SSD network:**
 - Monitoring server (devices tracking and managing)
 - «Cloud AdNet» – managing content and personal offers on self-service devices
 - Remote keys loading (RKL)
 - Cash management – cash collection managing, planning of currencies/denominations loading (under development)

eKassir ATM TERMINAL. WHEN THE BANK IS READY TO IMPLEMENT THE SOLUTION?



- Bank has **fully or partly renewed** their SSD park
- **Bank's devices network is mixed** (various vendors and models, different OS, there are self-service kiosks, etc.) Unified software for all OS and device models
- The task is to design an **attractive and speedy user interface**
- **Maximum functions on the device** are to be provided, not limited to cash withdraw and funds depositing
- Bank has a goal **to replace bank cash-desks with ATMs** (common case while branch transformation)
- **Multi-language interface** is required (three and more languages)
- **Network functioning needs to be optimized** and benefits from using SSDs are to be improved

Additional advantage:

- Costs reduction as a result of cutting a part of host functions (**ATM controller**)

eKassir ATM TERMINAL. IMPLEMENTATION EXPERIENCE



«eKassir ATM Terminal» software is developed on the base of eKassir programs for self-service kiosks. 10-year experience of the commercial operation. More than 50 customers in 15 countries worldwide. More than 20 000 installations on the devices. Maximum network capacity – 4500 devices.

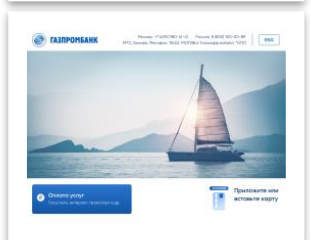
Projects (ATM and kiosks)



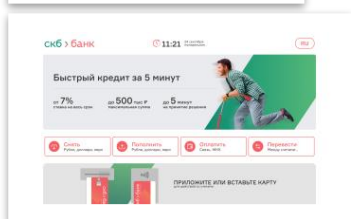
Projects with self-service kiosks – Svyaznoy, PSKB bank, Bank Primorye, Renaissance credit, SKB-bank, TBS bank, Quipu and other.



Project in Tinkoff Bank. Was launched in June 2017. Now works on more than 1500 devices (OKI, Wincor, GRG, kiosks). Different screen types up to 32-inch.



Project in Gazprombank. Was launched in spring 2020. Network of more than 6000 devices (OKI, Wincor, NCR (various models), kiosks). The solution is being spread over the network.

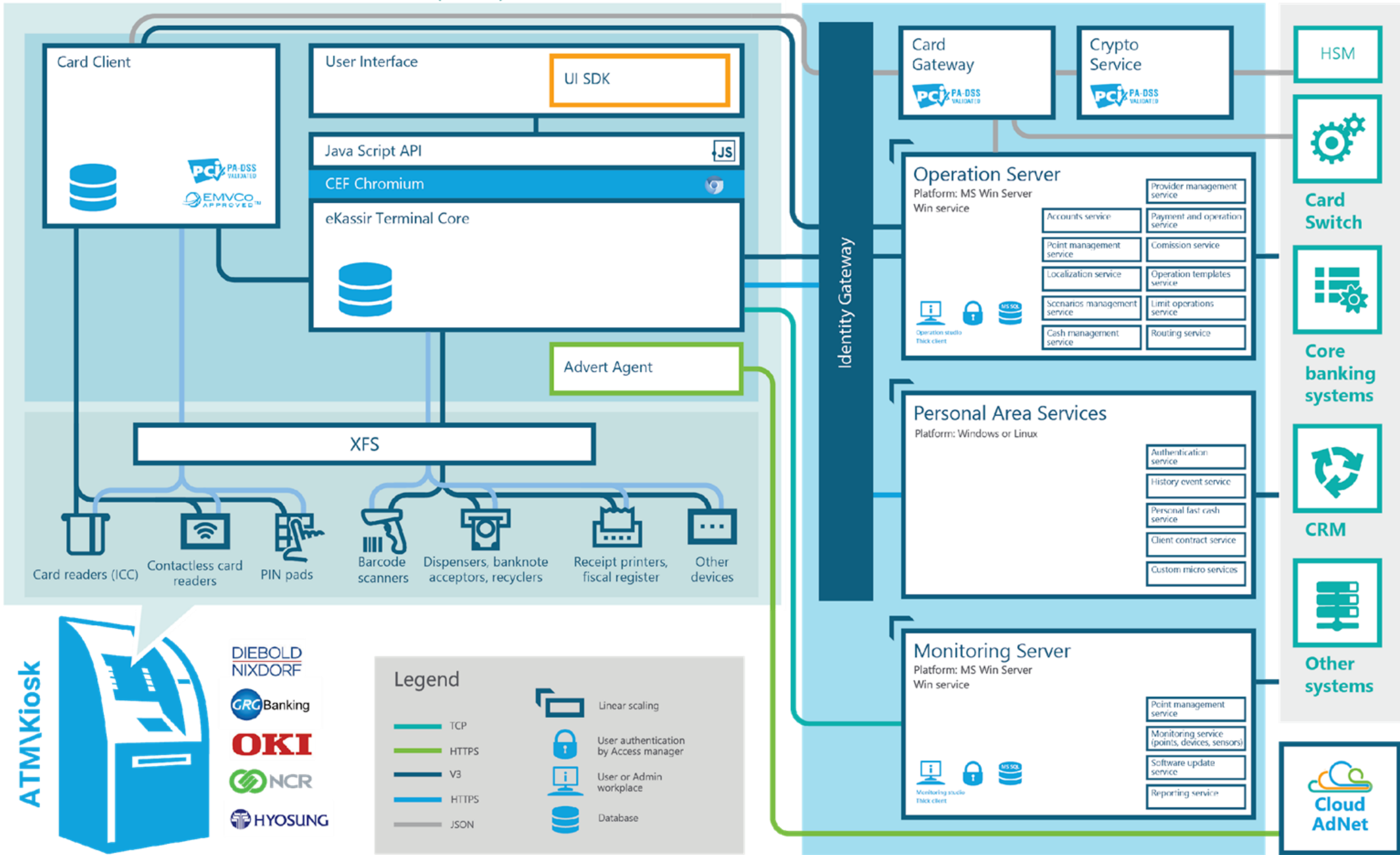


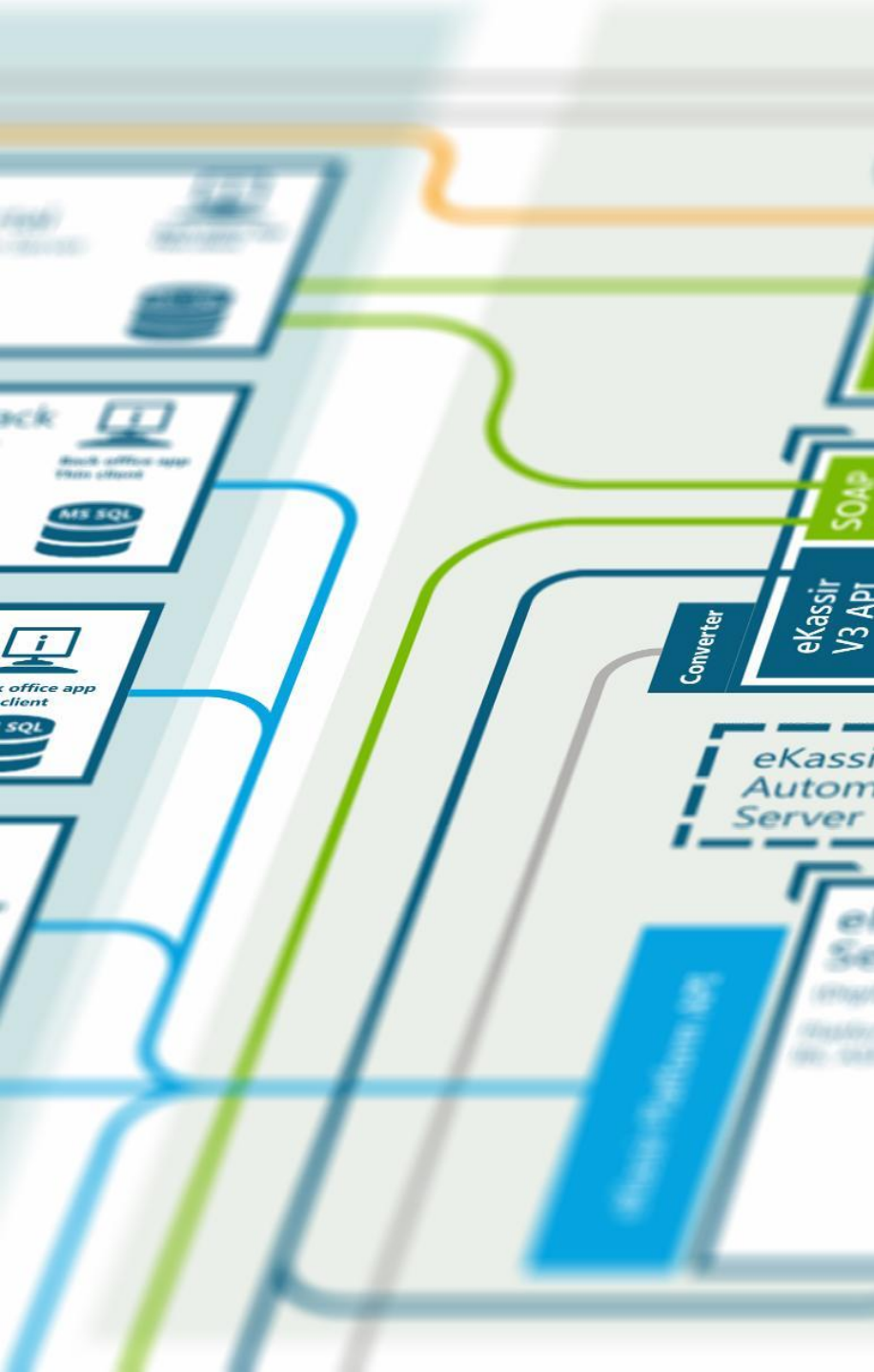
Project in SKB-bank. Launch on ATM in autumn 2020 года. Network of more than 700 devices (Nautilus Hyosung, kiosks).

ATM Terminal (front)

Middleware

Back





ATM Terminal

Software for self-service devices

Working with SSD (complete list of the supported equipment is provided by request):

- **Direct drivers** (if available). Bill acceptors, dispensers, coin acceptors, cheque and other printers, cardreaders, changegivers, PIN pads, other devices
- **XFS**



H68N(L)
P5800L
and other

**WINCOR
NIXDORF**

The range
Cineo

OKI

RG7
RG8



The range
Self Serv 66*



8600, 8600S



Kiosks

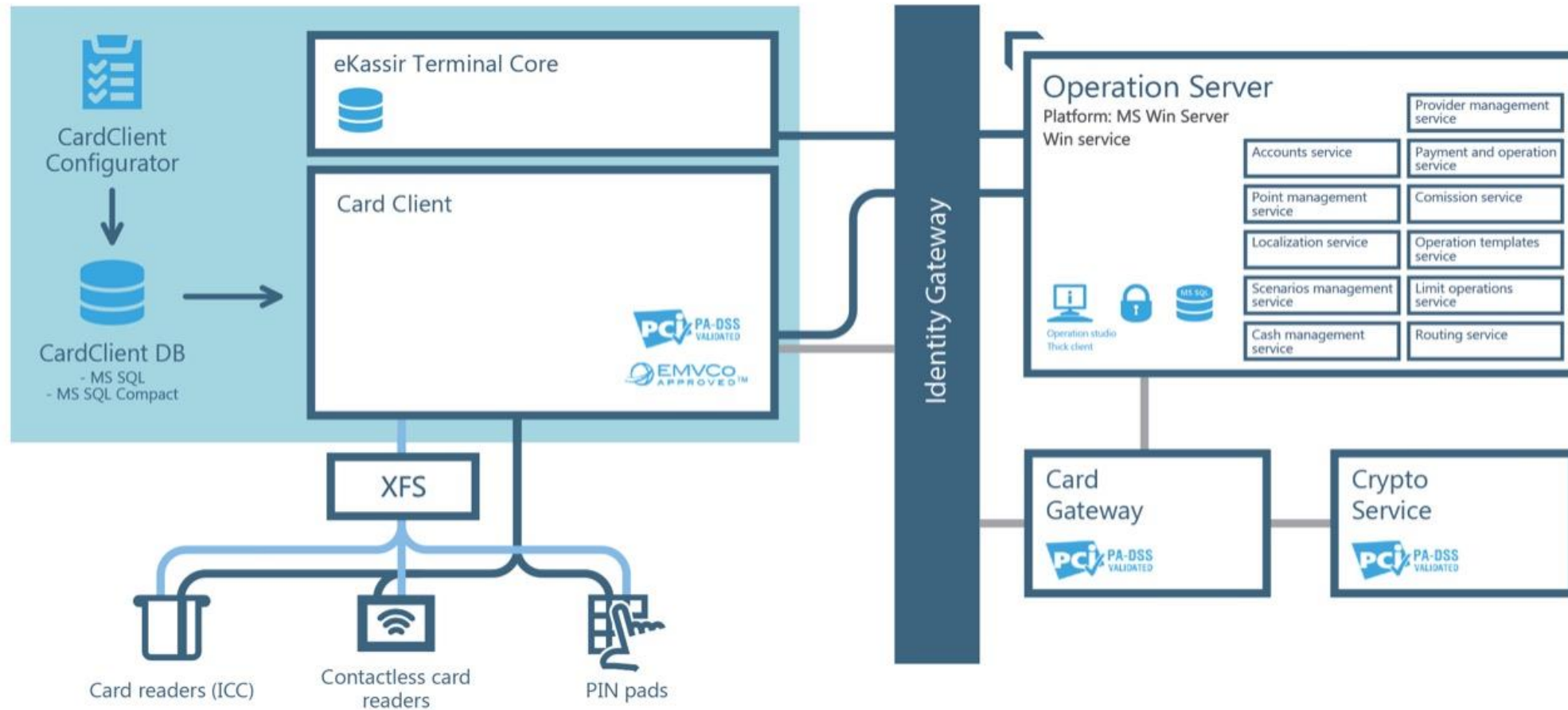
Additional equipment for SSD (examples):

- **Video surveillance** – integration with CCTV devices, managing cameras, turning in/out, the best face shot, titration
- **Anti-skimming monitoring**
- **UPS monitoring for the device**, managing power supply and turn-off notification
- **Contactless readers** VIVO Pay Kiosk III/IV, OTI
- **Special electronics** – temperature, tilt angle, acceleration, door sensors, etc.
- **Managing equipment backlighting**
- **Integration with router** (if required)

eKassir CARD CLIENT

«**eKassir Card Client**» – a component of the ATM software

- Intended for working with the cards data, separated from the software core. Includes built-in EMV kernel.
- Interacts with Card Gateway by own JSON protocol and with Operation Server by eKassir V3 protocol.



Technologies:

- **SSD UI** – web application for built-in CEF Chromium
- **Web technologies for development:** HTML5, ES6, React JS, Type script, web pack etc.












Customization:

- **Out-of-the-box UI.** Customization is performed with CSS styles
- **Out-of-the-box UI.** Additional scenarios and custom behavior by the Bank's request are implemented with customized HTML pages
- **Unique UI.** UI level in «eKassir ATM Terminal» is completely separated from the ATM software core (interaction is performed via Java Script API). This provides the ability to implement a unique customer UI on the base of a single-page (SPA) web application.

Developing tools:

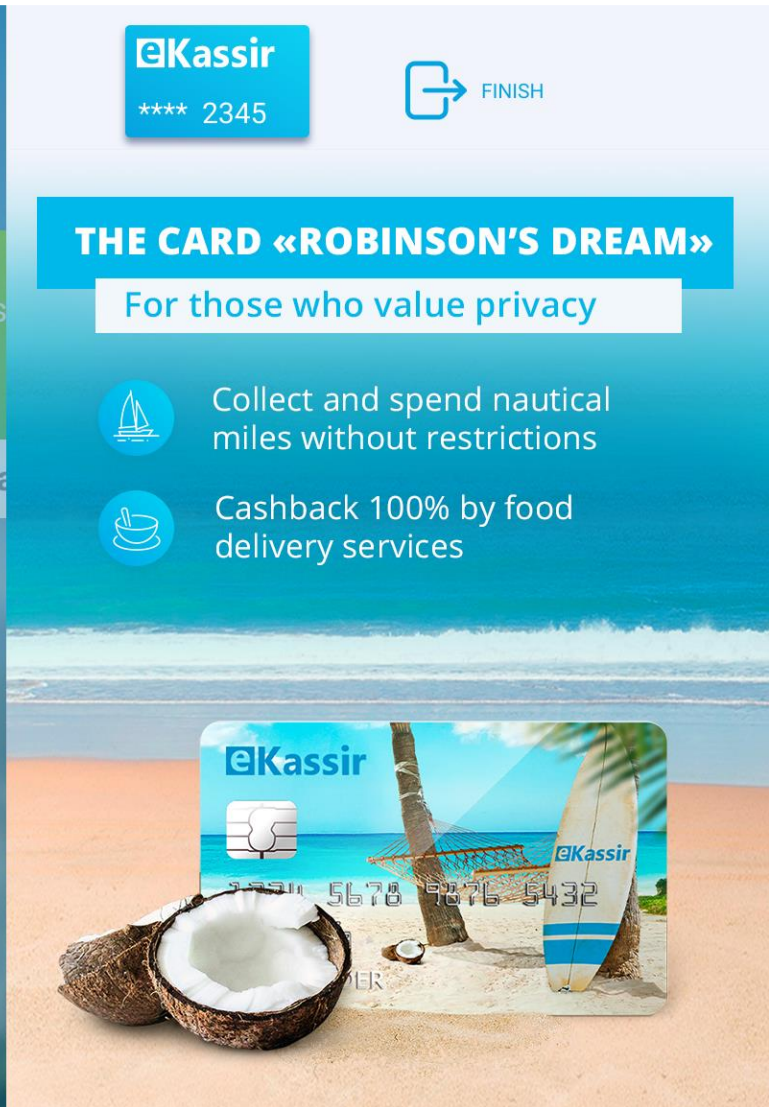
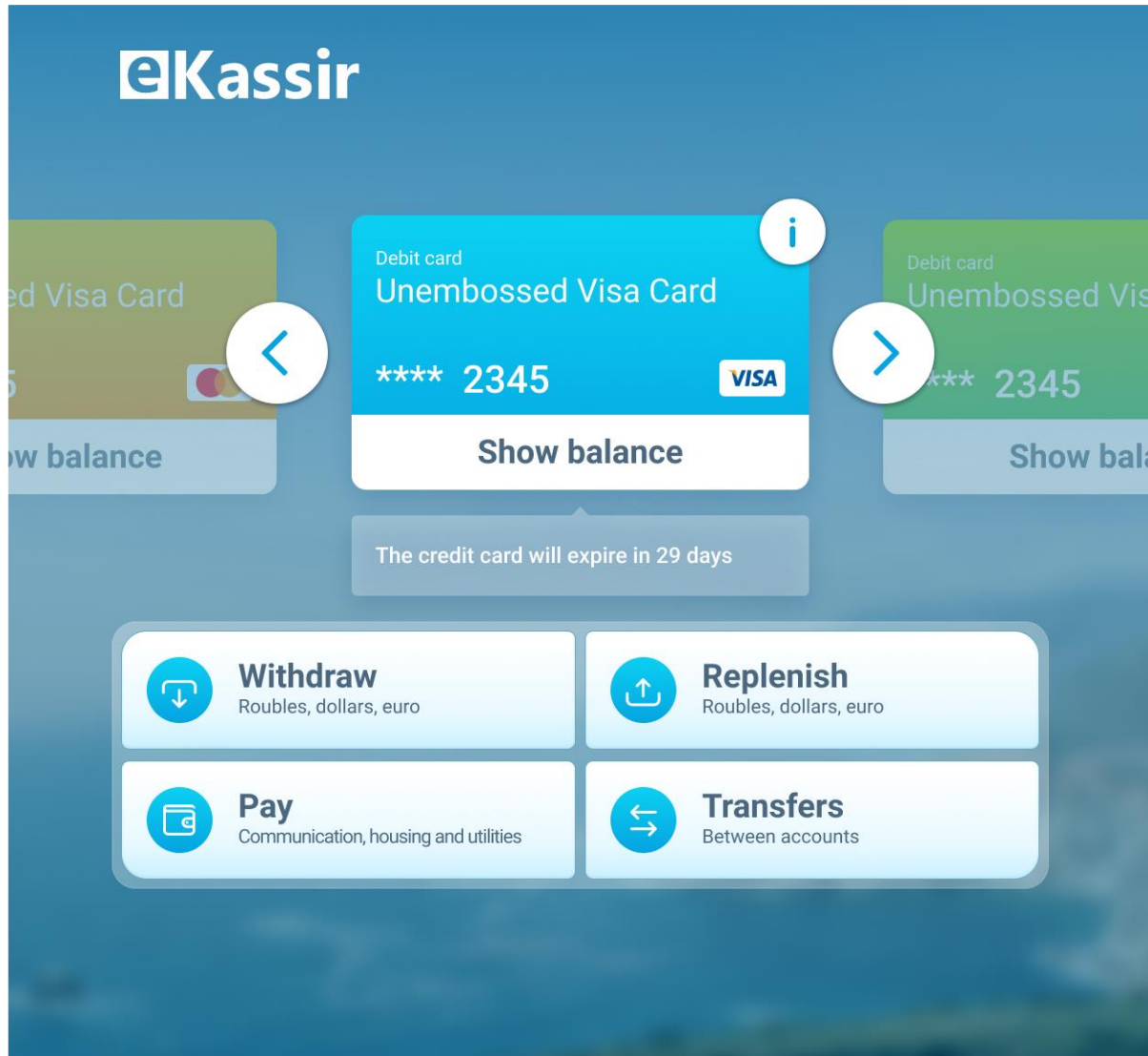
- **UI debugging in Chrome web browser** without restarting the ATM software. UI SDK (the set of documented tools for self-development) is provided
- **Devices emulators** for developing with no need to connect a real ATM or SSD

API UI SDK METHODS. WHAT IS AVAILABLE TO A DEVELOPER?

-  Navigation and managing user scenario context
-  Managing card sessions
-  Dynamic layout of the main ATM menu
-  Managing customer sessions
-  Managing receipt printing jobs
-  Getting the events on funds depositing and cash withdraw
-  Getting the events on results of the financial operations completion
-  Managing bar code scanners
-  Managing and customizing replenishment scenarios
-  Information about device states
-  Services directory, required details and their metadata

- **Delivered with the product, can be adapted to customer requests (without changing the original UX)**
- UI support for SSD with **touch screen as well as with FDK**, also for wall devices (2 screens)
- **Out-of-the-box screens and scenarios for SSD functioning:** depositing, withdrawal, personal area, payments and transfers, choosing denominations, working with NFC reader and more
- **Slots for advertisements and personal offers are already reserved** in UI design
- **Animated screens** for waiting the ATM reply, bank notes choosing and dispensing, etc
- **Responsive screen layout** is designed to fit any screen resolution
- **UX project in Axure.** Makes easier to settle the required UI customizations with the Bank
- **UI layouts in Figma** for all screen types

eKassir ATM TERMINAL. «OUT-OF-THE-BOX» UI





Maximum deposited amount is 150,000 ₺

Place bills to receiver one at a time

No

Yes

Print a receipt



Deposit funds and finish



Deposit funds and continue

**** 2345

Amount to be credited:

5 000.00 ₺

Deposited

5 000.00 ₺

Fee

0.00 ₺

About the fee

Bank details

Accepted bills:



HOW «OUT-OF-THE-BOX» UI CAN BE ADAPTED. EXAMPLES

скб > банк

**** 2345 FINISH

Card with cashback

Card for profitable purchases

Credit limit up to 300 000 ₺ Interest-free period up to 62 days

Issue a card

Withdraw Roubles, dollars, euro

Replenish Roubles, dollars, euro

Pay Communication, housing and utilities

Transfers Between accounts

The credit card will expire in 29 days

скб > банк

**** 2345

Change will be used to pay for services. Payment amount minimum 10 ₺ maximum 15,000 ₺

Place bills to receiver one at a time

No Yes Print a receipt

Deposit funds and finish

Deposit funds and continue

RETURN MONEY ADD MORE

Amount to be credited: 5 000.00 ₺

Deposited 5 000.00 ₺ Fee 0.00 ₺

About the fee Bank details

Accepted bills: 10, 50, 100, 500, 1000, 5000

скб > банк

**** 2345 FINISH

Maximum withdrawal amount is 15 000 ₺

Enter the withdrawal amount using the keyboard

₺ 1250.00

Prompt for input field

BACK Dispense 1250.00 ₺

Available denominations for dispensing: 10, 500, 1000, 5000

скб > банк

11:21 September 24th, Monday EN

Quick loan for 5 minutes

Rate for the entire term from 7%

Maximum amount up to 500,000 ₺

Up to 5 minutes to make a decision about loan

Withdraw Roubles, dollars, euro

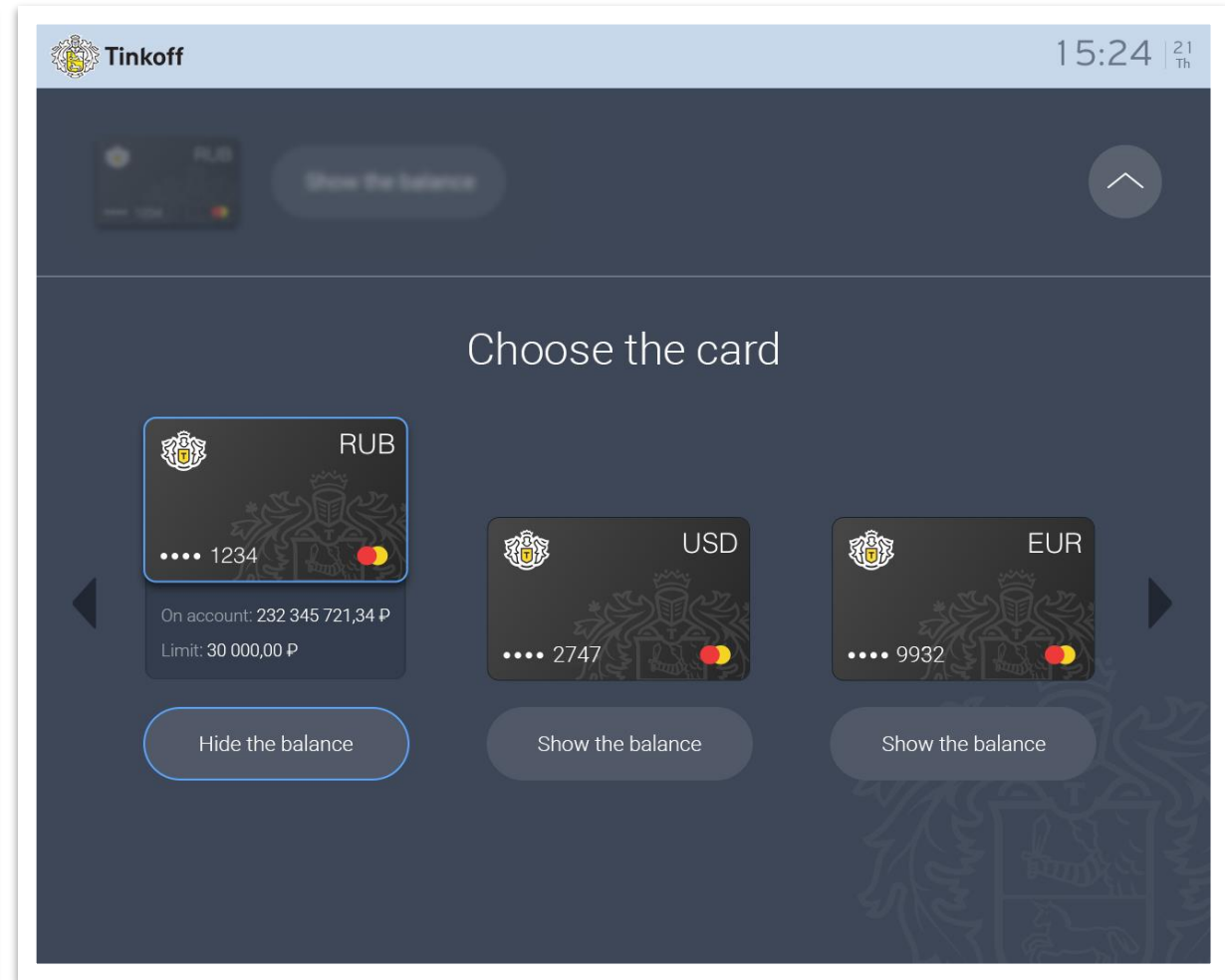
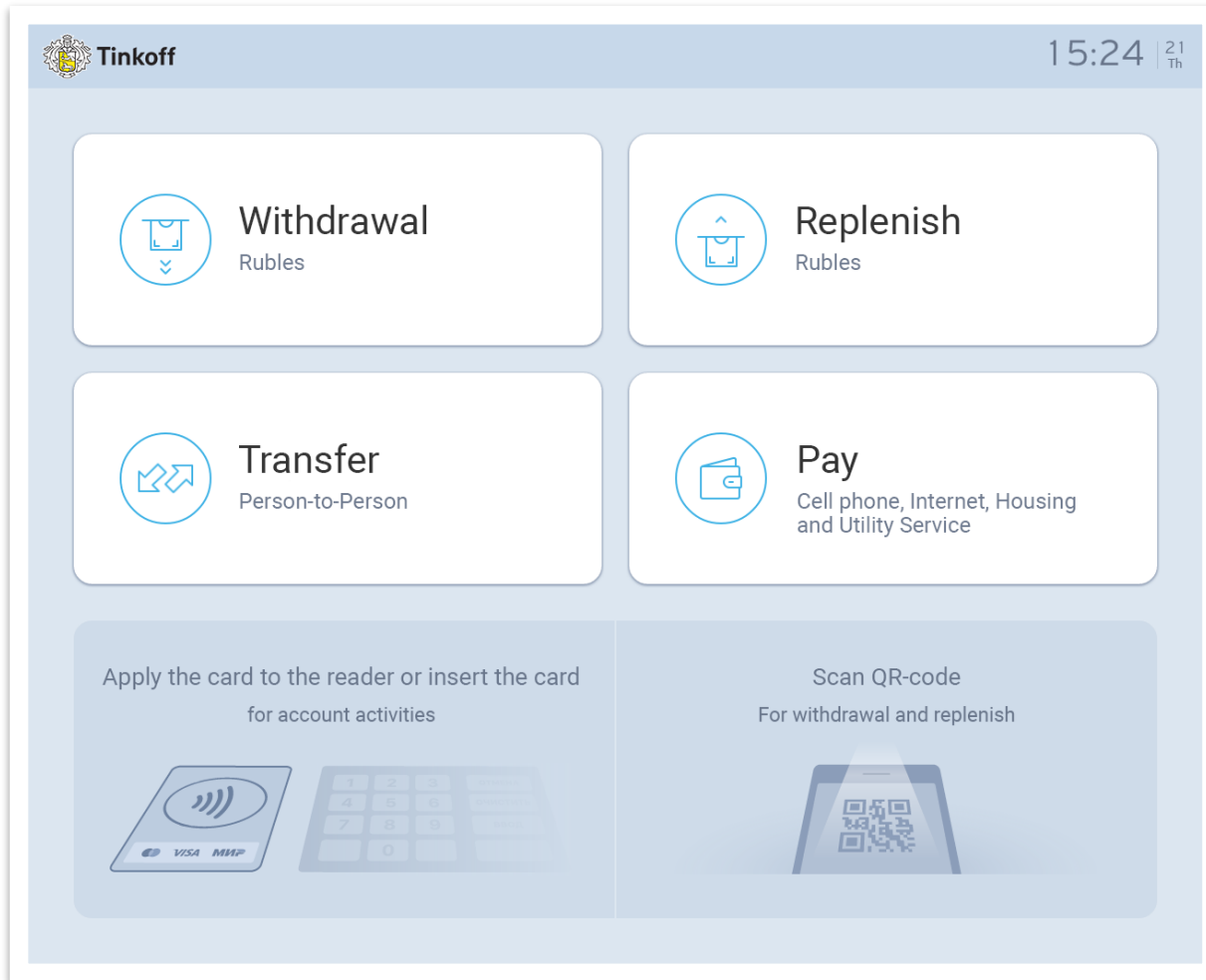
Replenish Roubles, dollars, euro

Pay Communication, housing and utilities

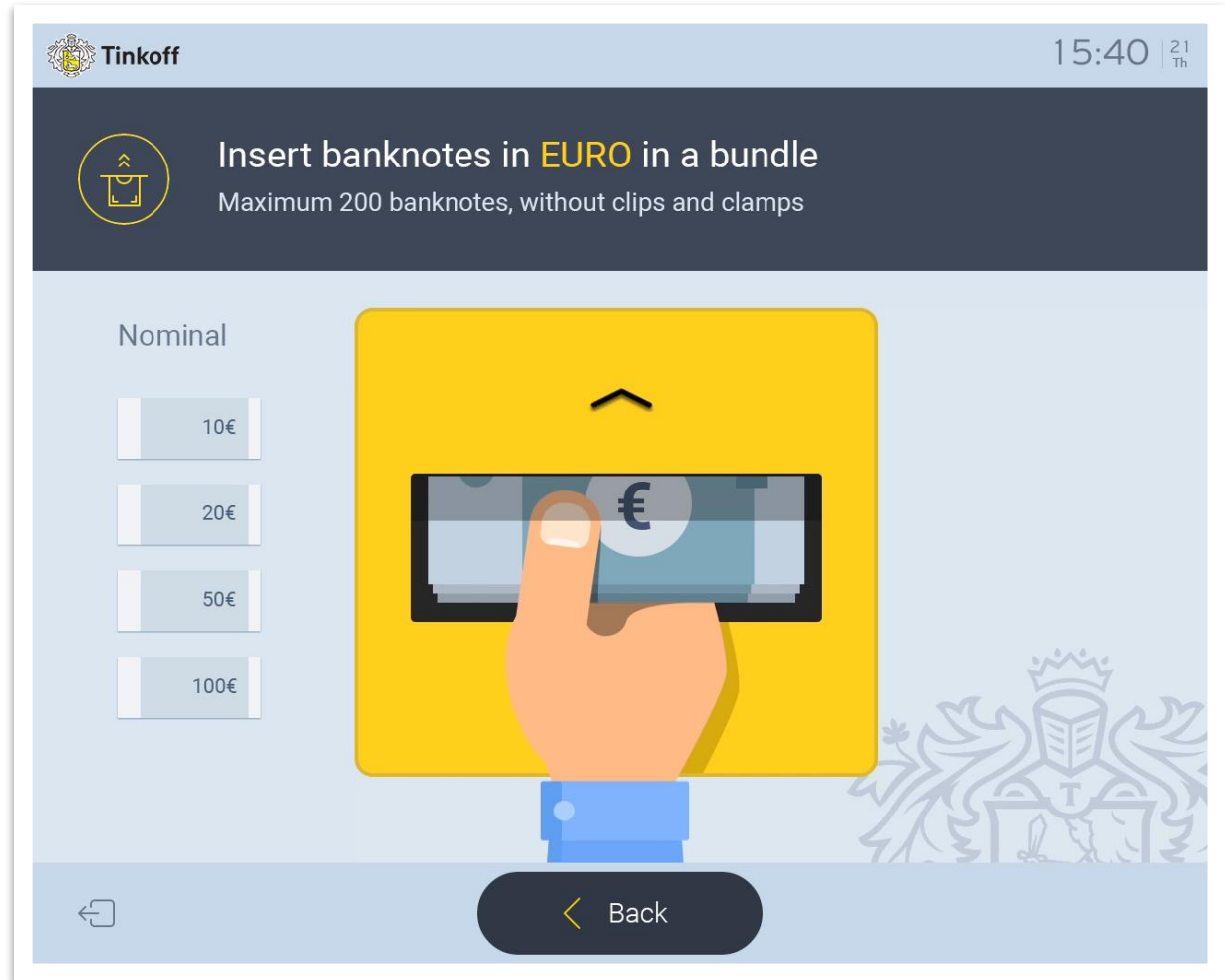
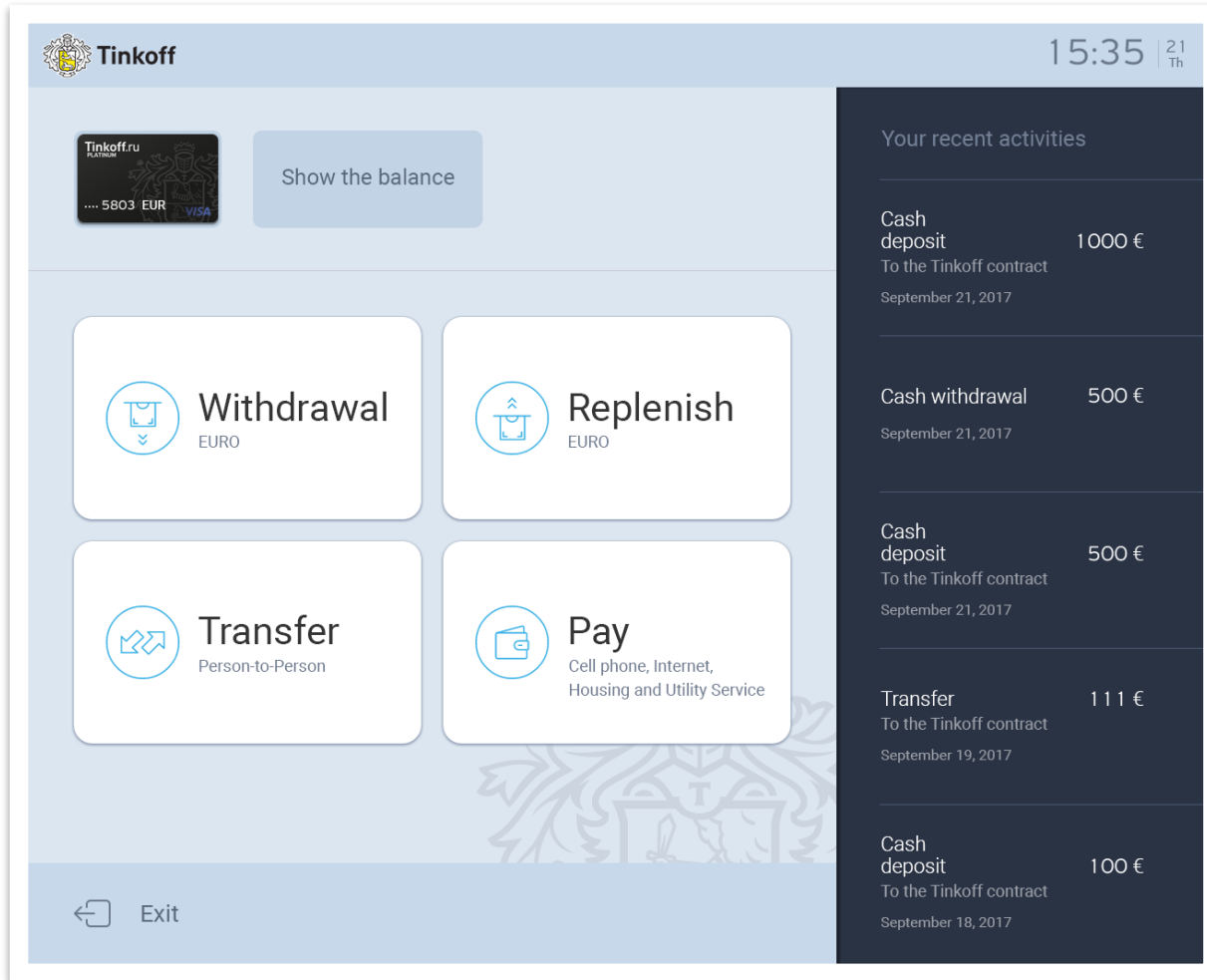
Transfers Between accounts

Swipe or insert the card to work with your accounts

EXAMPLES OF CUSTOM UI ATM



EXAMPLES OF CUSTOM UI ATM



Service mode:

- Loading/removing keys and printing keys data
- Device states indication with the ability to test the devices
- Possibility of launching vendor utilities on the device

Replenishment (special features):

- Through scenario to perform replenishment with prompts and navigation. Simplifies the work of cash collectors, minimizes the risk of faults in the process.
- Functions for checking parameters of loaded cassettes. The parameters should match the expected host parameters. Eliminates any faults when loading the cassettes.
- Possibility to perform offline replenishment.

Load new cassettes into slots

Red color indicates the inserted cassettes that do not match the configuration. It is necessary to remove the cassettes and insert the correct ones.

RECYCLING

RUB 100

Cassette #1

RECYCLING

RUB 500

Cassette #2

RECYCLING

RUB 1 000

Cassette #3

RECYCLING

RUB 5 000

Remove the cassette

Reject

Cassette #5

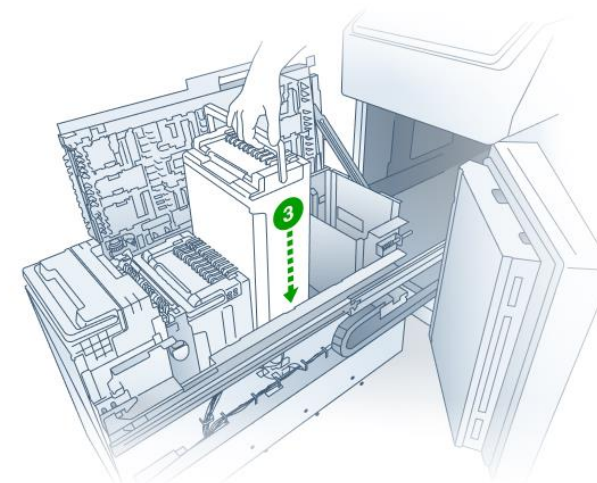
Deposit

Cassette #6

Continue



Load the cassettes as shown below



got it



eKassir Service mode

Loading the TPMK wizard

Enter the first key component

0/32

**** * 0/32

Erase

Use the ABC key to enter letters

1	2	3	A
4	5	6	B
7	8	9	C
E	0	F	D

Back Apply

eKassir Service mode

Select the desired menu item

Lock list

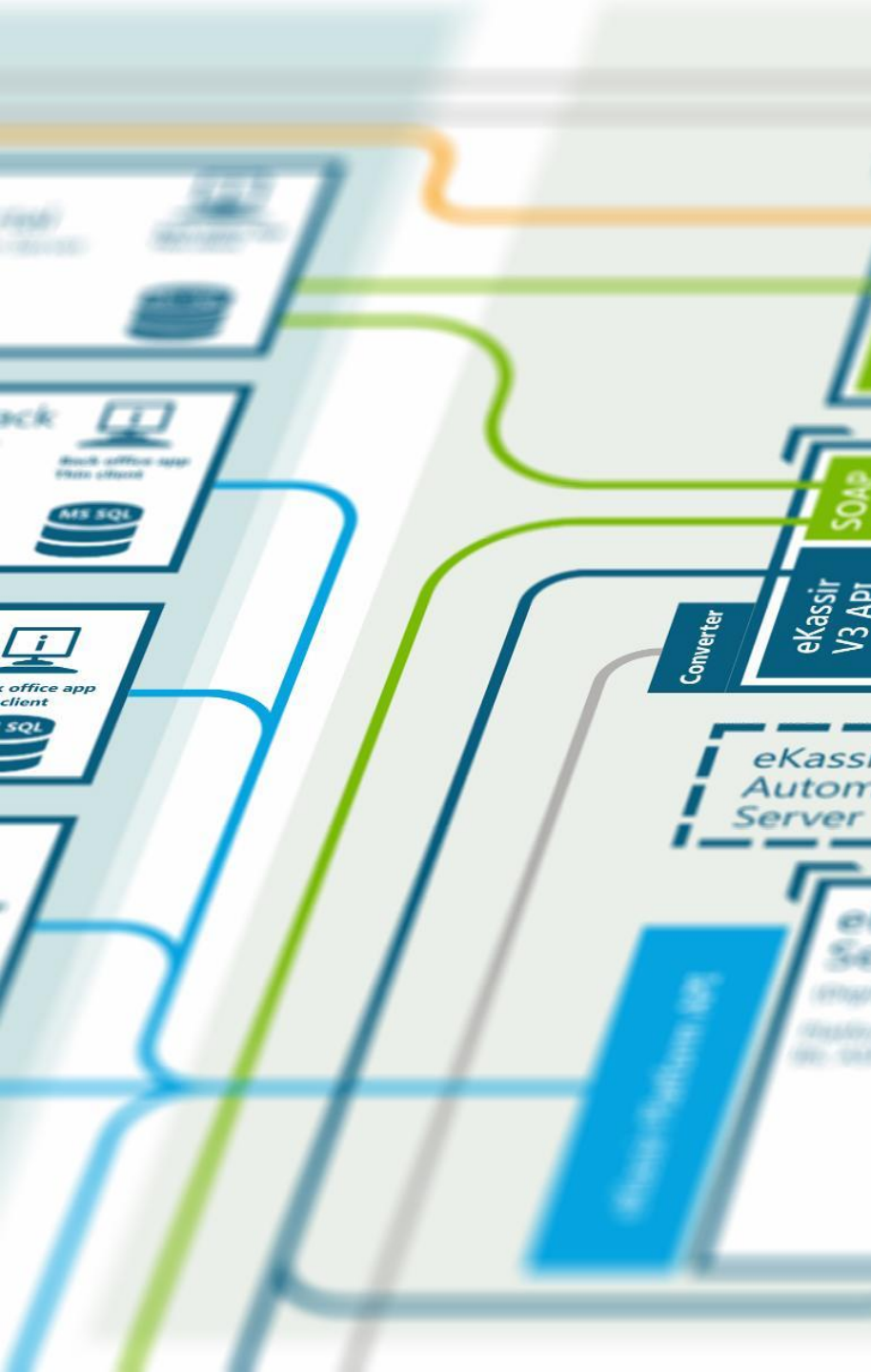
Device information Up

Utilities from ATM vendor Down

Equipment setup and diagnostics

System functions

Exit 1/32 Continue

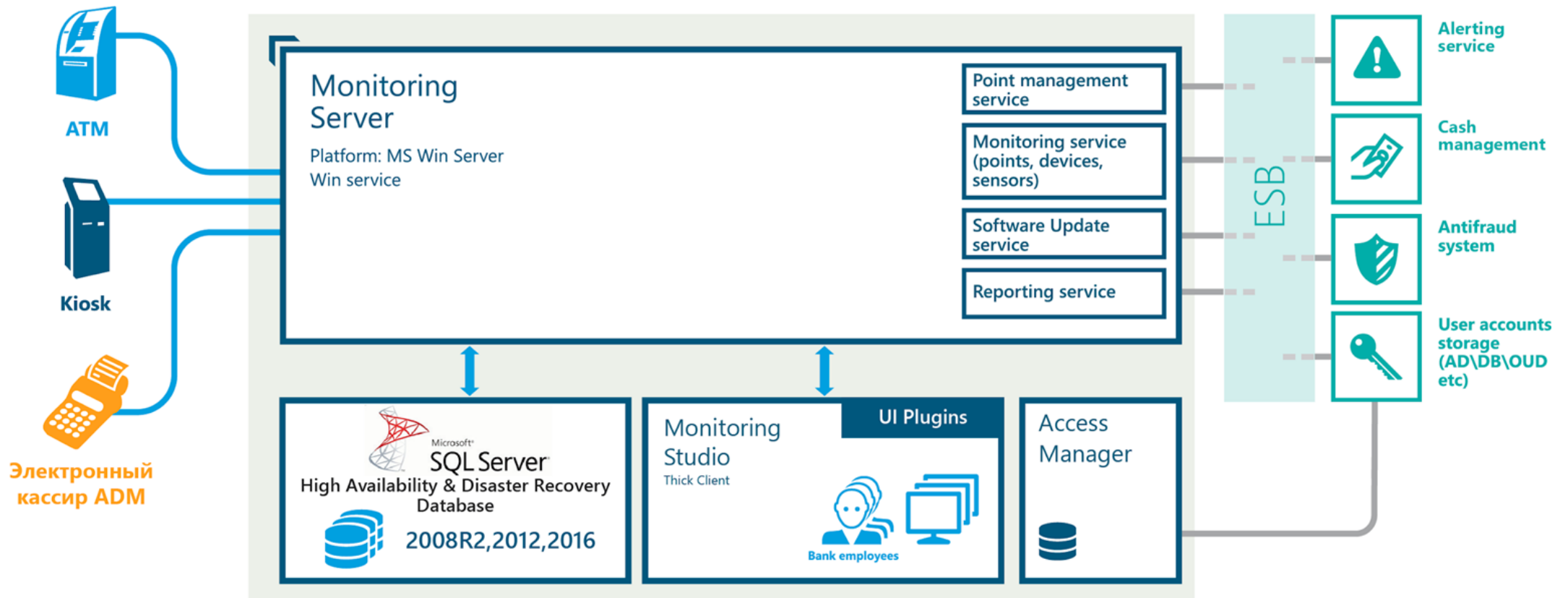


ATM Terminal Server components

eKassir ATM TERMINAL. MONITORING SERVER

Monitoring Server as a part of «eKassir ATM Terminal» solution is intended for fully functional remote devices tracking and managing Bank's SSD network.

- Platform – MS Win Server. Developing tool – C#. DBMS – MS SQL 2012 and higher
- Data exchange protocol between the Server and SSD – is the proprietary TCP protocol. Optimized for traffic. Connection to the Server can be established only from SSD side.
- Can work in cluster, horizontal and vertical scaling is supported



Main out-of-the box functions:

- **General information about SSD state** and its workability
- **Current state of the peripherals** with the unified error codes (and XFS error code with comments for the device)
- **Information about OS image** and managing software, which is deployed on SSD
- **Information about replenishments** (time, amounts, detailed information for each cassette)
- **Information about captured cards**
- **Information about the last transaction** performed on SSD
- **State of the cassette counters** on SSD
- **Current mode** of managing software (service, replenishment, maintenance works)
- **Complete update history** for managing software and devices state. Logging idle time reasons due to software and peripheral errors
- **Integrity control** for software versions on SSD with the information about discrepancies with the original build
- **Managing users** of Monitoring studio and user roles. Integration with Active Directory
- **Managing service mode users** on ATM
- **User actions audit** for Monitoring Studio users with the ability to load the event records to an external system

Main functions:

- **Loading/downloading files** to SSD (with automatic re-downloading if connection gets broken)
- **Update in background** for software versions with minimal idle time (SSD reset when no user activities)
- **Sending and running jobs** on SSD:
 - Run bat file
 - Block/unblock SSD
 - Update software configuration files
 - Load/download any files to SSD. Download software, OS and XFS logs, etc.
 - Get the screenshot
 - Time synchronization between SSD and Monitoring Server by the server time
 - Software reset, computer reset
- **Automatic inventory.** Collection the data about peripherals and firmware versions over SSD network
- **Managing currencies and denominations** for funds depositing and withdrawal
- **Managing cassettes** (block/unblock)
- **General events log** on SSD (stored in Monitoring Server database) to solve problems faster
- **Assigning tasks to SSD group** with using the dynamic filters. For example, download ATM NCR 6683 logs
- **Running scheduled tasks** (downloading SSD logs etc.)
- **Managing rights for service mode users** (engineers, security officers) with flexible role parameters (for different functions, device groups, etc.)

eKassir ATM TERMINAL. OPERATION SERVER



Operation server. Transaction core and main server component. Provides processing and guaranteed delivery of all transactions types.

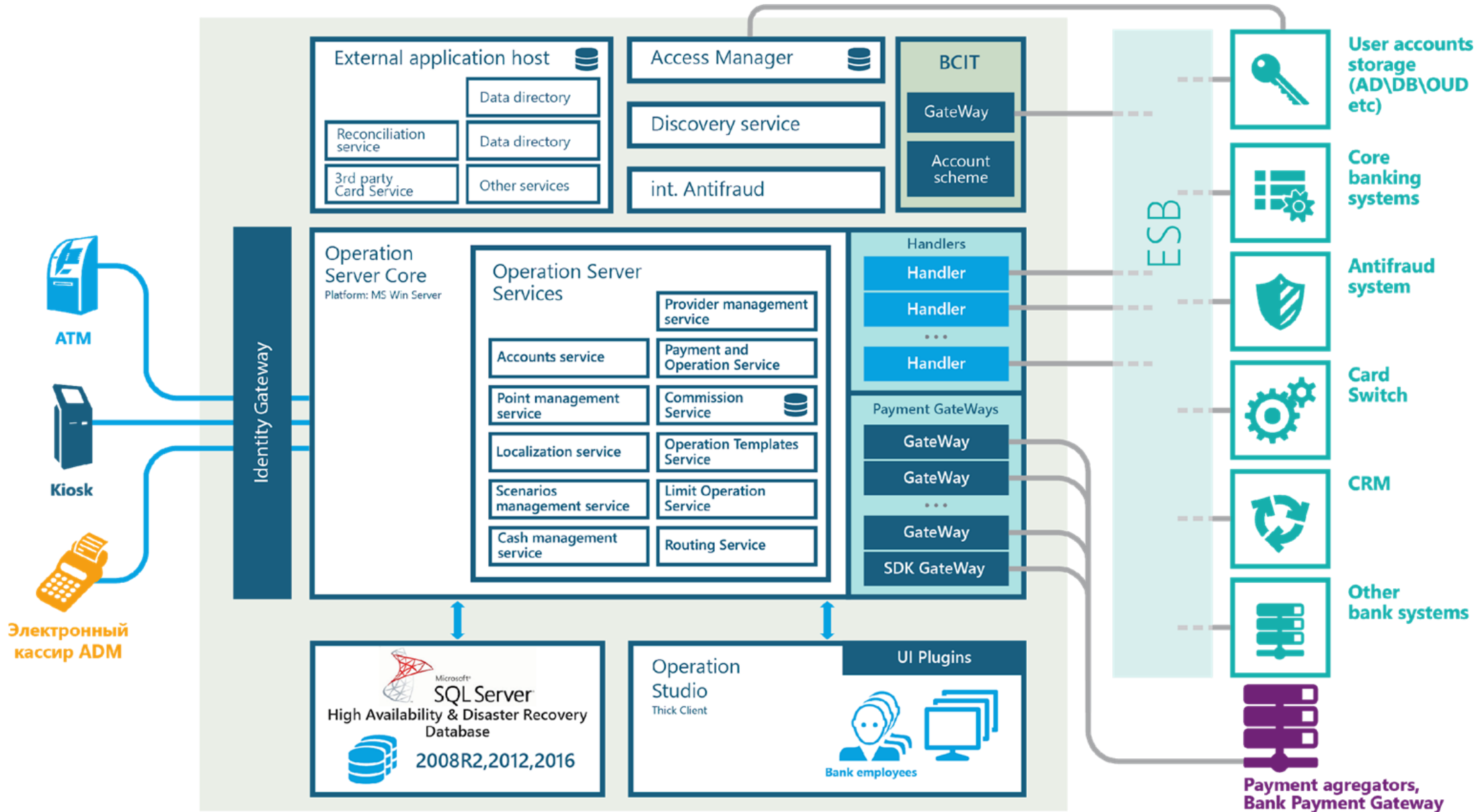
Applied technologies:

- DBMS MS SQL2008R2 and higher, C# Framework 4.6. WinServer 2012 and higher
- Data exchange protocol between the server and SSD – eKassir V3 (<https>). Specification by request
- Can work in cluster, horizontal and vertical scaling is supported

Additional components of the Operation Server:

- **Access Manager** – provides Bank users authentication (standard integration with AD)
- **External Application Host** – hosting for additional services for Operation Server
- **Discovery Service** – service to store data about Operation Server services and their connection parameters
- **Int. Antifraud** – built-in system to prevent fraud
- **BCIT** – integration module for configuring and uploading the accounting entries in compliance with Bank's chart of accounts
- **Operation Studio** – user interface for Operation Server
- **Payment Gateways** – payment gateways for data exchange with the service providers or with the Bank's payment gateway
- **Handlers** – configurable chain of the transaction handlers

OPERATION SERVER. ARCHITECTURE



Main functions:

- **Specifying logic and scenarios for transactions** on SSD. Configuring services and service directories
- **Managing cash withdrawal** with the logic of available denominations. Choosing desired denominations for dispensing
- **Cash withdrawal by QR-code**
- **Configuring services availability** depending on payment tool, geo-location and other parameters
- **Commissions service** (on the server or integration with the Bank's service)
- **Transactions limitations service** by operations min/max, by currencies, payment tools etc.
- **Payments and transfers** on SSD. Integration with providers or Bank's payment gateway
- **Transactions routing** depending on business logic. Payments and transfers
- **Payment and transfer templates** (under development)
- **Localization support** (unlimited number of languages)
- **Fast Cash**
- **Non-financial transactions.** Configuring scenarios (bank products order, requests etc.)
- **Currency exchange** (under development)

More functions:

- View all operations by the Bank employees in Operation Studio
- User actions audit for Operation Studio
- Managing Operation Studio users. Integration with the Bank's AD
- Integration with the Bank's anti-fraud system (in addition to internal anti-fraud of Operation Server)

PAYMENTS, TRANSFERS AND NON-FINANCIAL OPERATIONS

Operation Server supports easy delivering the ability to use payment, transfer, products order and other services on SSD. All settings are configured from Operation Studio interface.

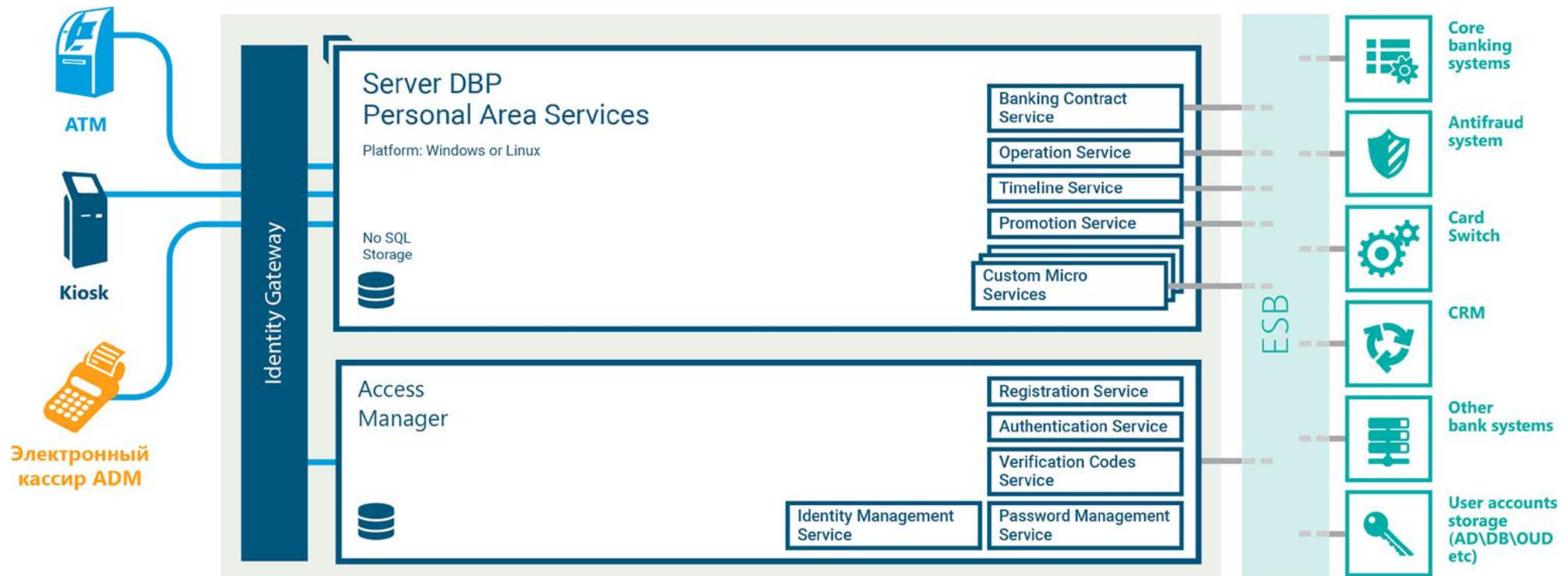
- **Payments and transfers service** on SSD
- **Multi-stage payment scenarios** and SDK
- **Fast adding new** services and service providers
- **Commission calculation service.** Flexible configuration depending on POS, service or payment tool
- **Routing** for payments and transfers
- **Full text search** by name and search tags
- **Non-financial services** (configuring scenarios, opening a deposit or product, card request)



DBP SERVER. PERSONAL AREA SERVICES

DBP Server supports personal area services on SSD. The certain services set is defined by the project scope. A customer can log into their personal area just after inserting the card and entering PIN code (main scenario).

DBP Server performs «smart caching» of the customers data to speed up delivering the information on the screens and to reduce loading of CBS and other Bank systems.

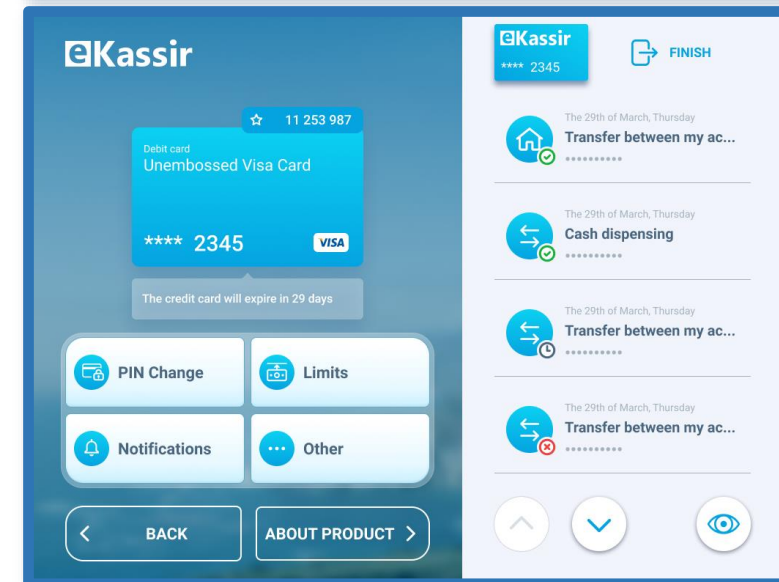
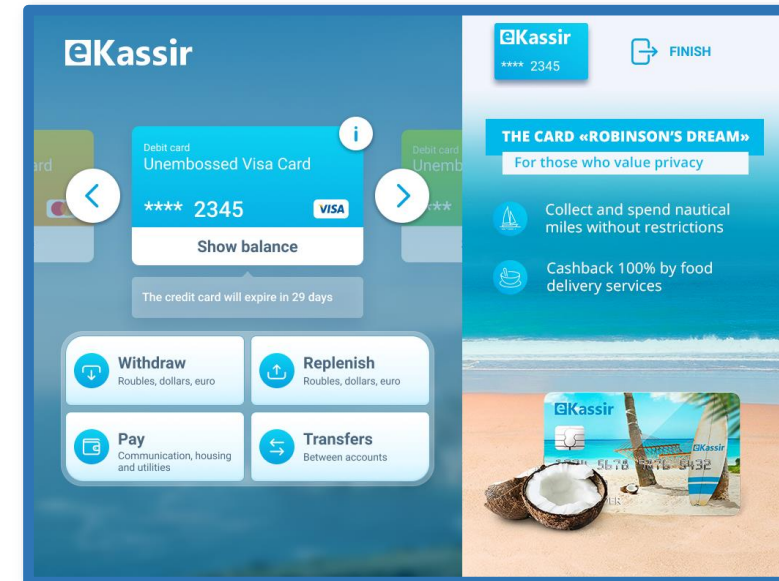


DBP SERVER. PERSONAL AREA SERVICES



Personal area base services:

- **Logging into personal area.** Authorization and authentication (card and PIN code, telephone number and password, QR-code)
- **Bank products** of the customer (accounts, cards, loans, deposits and other). Information and ability to manage including:
 - Service of early repayment for Bank loans
 - Opening the deposit
- **Timeline** for the customer with the breakdown by categories
- **Replenishing and withdrawal** from the customer's products
- **Fast Cash** with various calculation logic
- **Templates for payments** and transfers
- **Personalized marketing policy** (personal offers for customers)
- **Personalized requests** for Bank's products
- Any other personal bank services



CLOUD ADNET

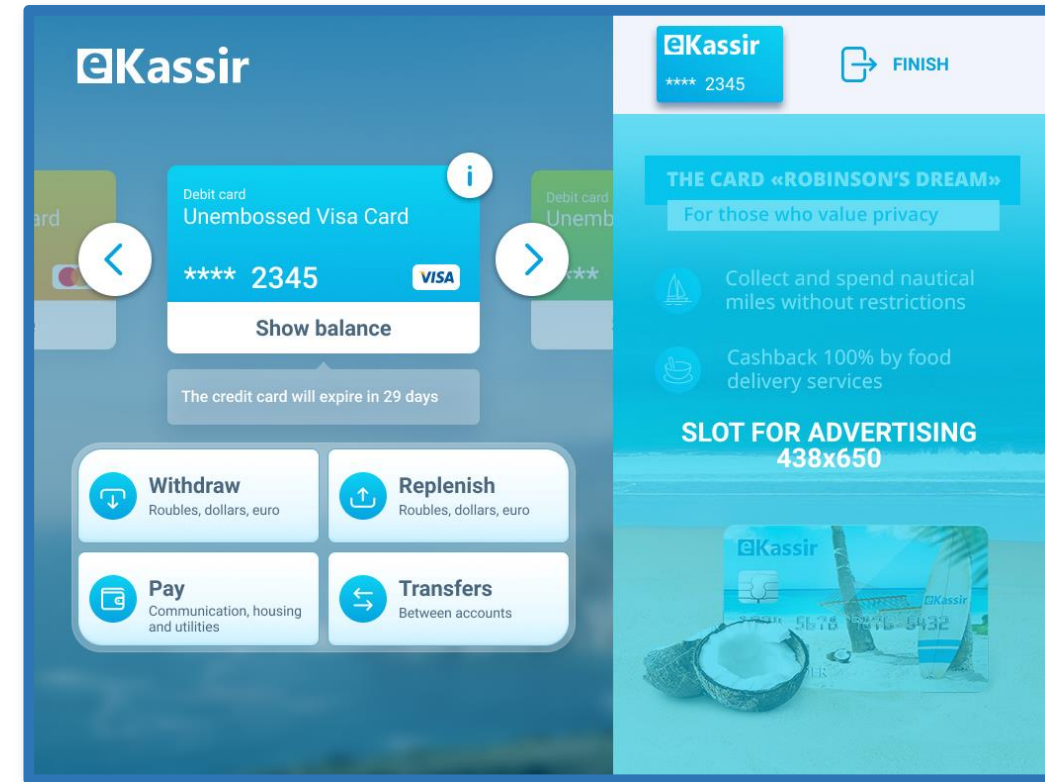
«**Cloud AdNet**» – server component for managing content in SSD user interfaces and displaying personal offers.

Server «Cloud AdNet» can be installed in the Bank or delivered as a cloud service.

UI should be designed with the predefined slots for advertising content (the slots are already reserved in out-of-the-box product).

Content types that can be displayed on SSD:

- **Banners.** Image or a few rotated images
- **Advertising scenarios by click** on a banner (a few images or web pages)
- **Advertising scenarios with data collection** (same, but with a data collection form)
- **Personal offers** (including the ability to collect data)
- **Printing an advertisement on receipts**



CLOUD ADNET. MANAGING CONTENT AND DEMONSTRATION STATISTICS

Managing can be performed by the Bank's marketing employee via web interface. Scenario sample:

- **Choosing the channel** (ATM). Entire network or SSD group
- **Choosing the date** to start and finish displaying the content
- **Choosing the slot** (from the reserved areas in interface). The slots should be pre-defined
- **Configuring localization** (if required)
- **Configuring targeting** (if applicable)
- **Sending to moderation** (content checking)
- **Moderation.** Separate role for a person who checks the context
- **Spreading over network.** The context is delivered over network

Summary: required time 10 – 15 min totally.

Statistics. What can be viewed?

- Number of banners/video demonstrations
- Number of clicks on the banner
- Number of conversions
- Content marketing funnel (mini-site type)
- Analytics and reports

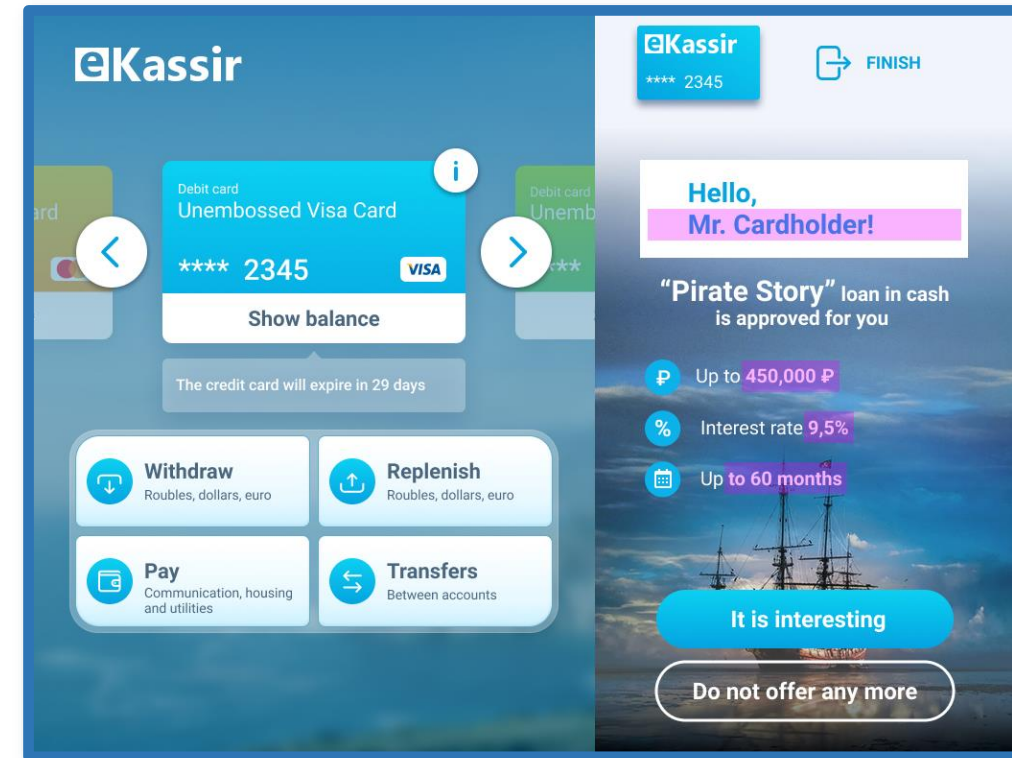


CLOUD ADNET. PERSONAL OFFERS



Personal offer includes template (base) and metadata, which are requested in online mode during scenario executing. Template is a banner that is deployed by «Cloud AdNet». Template is initially designed with the slots reserved for inserting metadata from personal offers.

- Personal offer can be shown on a customer click on the banner or on the condition (credit offer when the customer has insufficient funds to perform the transaction)
- Responses are collected and stored (for example, «do not show the current offer»)
- Personal offer can have a scenario (as mini-site with a few pages)
- Metadata are requested by the customer ID via the special microservice
- Data for personal offer can be requested from:
 - Previously uploaded file with the offers. Large files are cached in the service
 - From the Bank's CRM in online mode



Card Gateway is intended for:

- **Integration with the customer's processing** and with HSM via Crypto Service microservice
- **MAC calculation and encryption** messages with sensitive data between Card Gateway and processing (if the host allowed) and between Card Gateway and SSD
- **Integration with different processing centers by host2host** protocols. Protocol and its parameters is defined by configuration
- **Issuing keys for SSD PIN keyboards** in HSM and storage the encrypted keys in an internal database
- **Saving EPP key action history**, for instance:
 - Who and when has imported the TMK key into the system
 - Who and when has linked the key to certain SSD
 - When SSD has loaded the keys and what keys
 - Who and when has removed the SSD keys

Crypto Service:

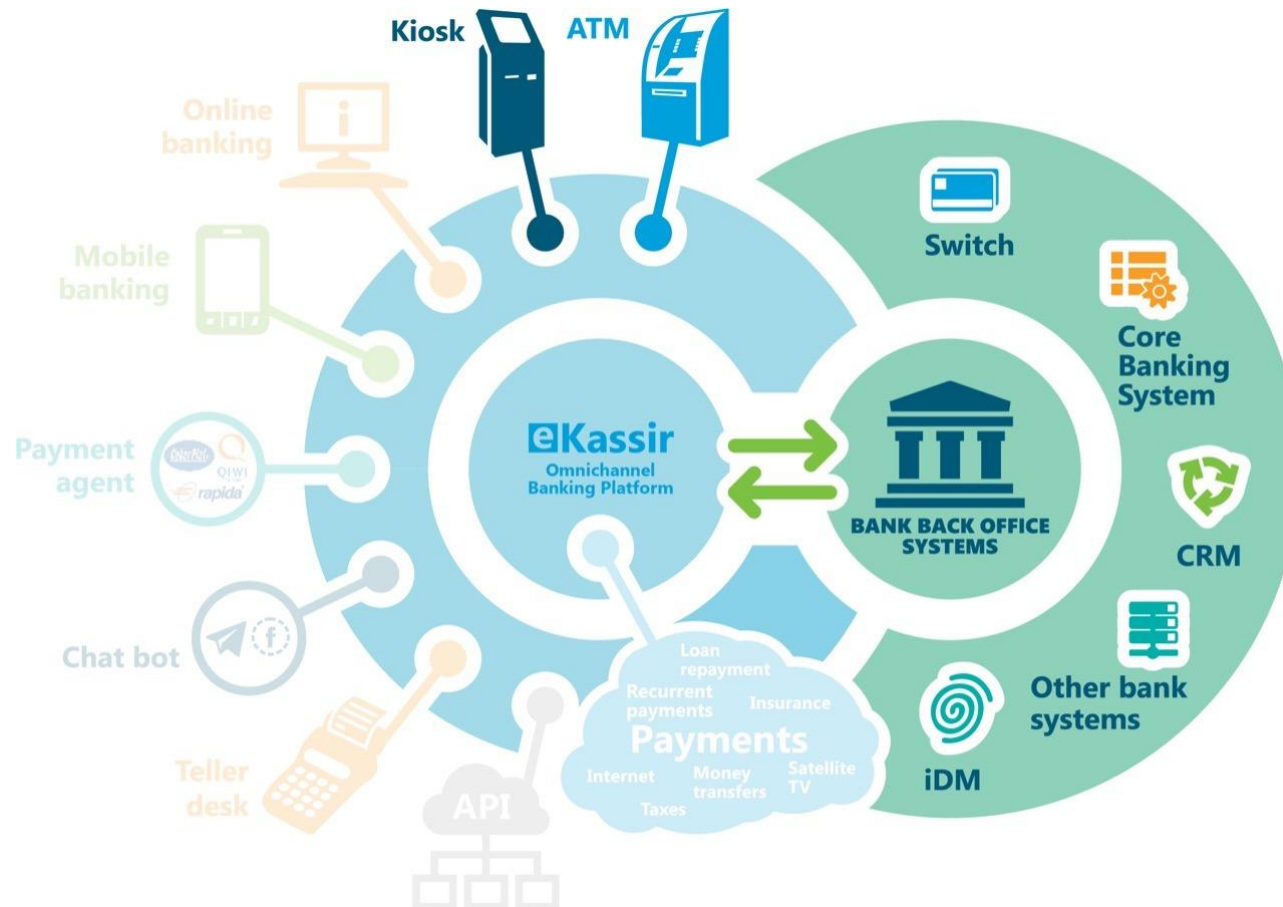
- **Service component.** Interacts with Card Gateway and support messages exchanging with HSM by protocol
- Supported HSM models:
 - Thales Pay Shield 9000
 - Thales Pay Shield 10000

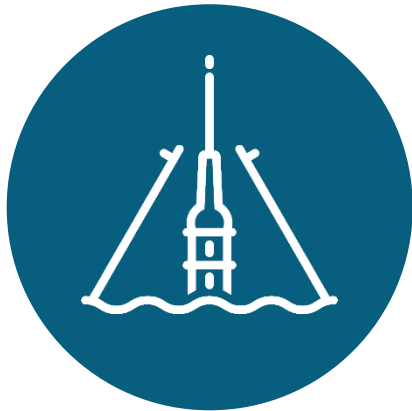
eKassir ATM TERMINAL. «and one more thing»



«**eKassir ATM Terminal**» – is a component of «**eKassir Digital Bank Platform 2.0**» - the platform, which includes Payments Hub, Internet & Mobile Bank, Adapter for IPS, Unified Front App, Recurring Payments, Open API Adapter solutions and more.

Platform approach provides multichannel and omnichannel service, supports the unified set of services in all Bank's channels and makes it possible to increase the solution's scope and functions.

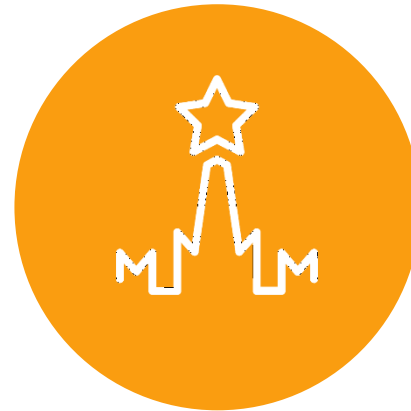




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