

# BUSINESS PROCESS MANAGEMENT

HIGHLOAD MICROSERVICE BPM AND PROCESS MINING  
FOR FAST AND EFFICIENT AUTOMATION

**DQ BPM**

# OUR EXPERTISE



## VAST EXPERTISE IN THE FINANCIAL INDUSTRY

Long-term experience in automation of business processes for the financial services industry



## END-TO-END APPROACH FROM A CONCEPT TO GO-LIVE

We understand specific features of every step of the process automation – from process design to go-live

## OUR OFFERING – MODERN HIGHLOAD MICROSERVICE BPM PLATFORM FOR AUTOMATION OF FINANCIAL BUSINESS PROCESSES

- ✓ Combines global Best Practices and advanced technologies
- ✓ Provides unique tools for each step of automation of business processes: from process design to go-live and post-production support
- ✓ Combines advantages of the orchestration and event-driven architecture for effective process implementation
- ✓ Leverages all advantages of the microservice architecture for automation of complex business processes

# KEY FUNCTIONS

## BUSINESS PROCESS DESIGNER

Low-code tools to design business processes, set up their logic and rules, publish them in microservices, generate the register of business processes and group processes by the line of business

## BUSINESS PROCESS ENGINE

Distributed execution of business processes in microservices. Use of the BPMN 2.0 notation for business processes, DMN for business and decision-making rules and popular scripting languages.

## BUSINESS PROCESS MONITORING

Tools for visual tracking of execution of business processes. Even though all business processes are executed in separate microservices, the platform provides a common interface for their monitoring and analysis. The collected statistical data help to identify bottlenecks in business processes and take measures to fix them.

## MANAGEMENT OF USER TASKS

All user operations are regulated via assignment of user tasks, with the ability to track their execution time, escalation, delegation.

All employees or company clients work in a single user interface, without having to use several separate systems.

# KEY TASKS

IDENTIFY, AUTOMATE AND ENSURE  
HIGH QUALITY OF BUSINESS  
PROCESSES

- ✓ Identify and describe existing business processes
- ✓ Provide tools for the end-to-end automation of business processes from process design to go-live
- ✓ Facilitate approval of functions and establish mutual understanding between business and IT
- ✓ Support execution of business processes in large companies and high-load systems
- ✓ Ensure quick delivery of changes and new functions into the production environment
- ✓ Enable flexible integration into any IT landscape

# VERSION MANAGEMENT

- ✓ Maintaining the history of process versions
- ✓ Visual comparison of diagram versions
- ✓ Tracing who and when made a specific change
- ✓ Tracking changes both in the process scheme and in separate properties and parameters of process nodes
- ✓ Different statuses of process versions (both at the process design state and after go-live)

Control all changes in process versions.  
No designed processes will be lost

The screenshot displays a software interface for process management. A 'Version history' window is open, showing a table of process versions. Below the table, two process diagrams are shown side-by-side for comparison. The diagrams feature an 'ExclusiveGateway' with 'Conditional Sequence-Flows'.

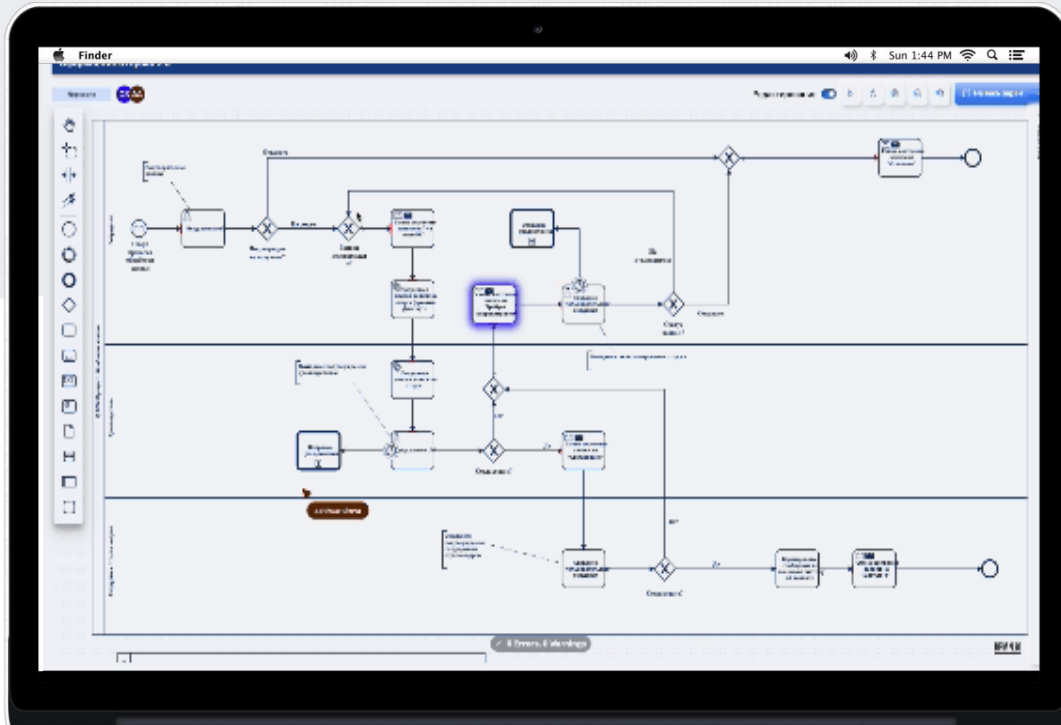
Version	Timestamp	Author	Action
Draft	11.03.2024 18:27:41	(ttigranyan)	Compare
Version 14	20.02.2024 14:55:28	(omordasova)	Compare
Version 13	20.02.2024 14:47:45	(omordasova)	Compare
Version 12	20.02.2024 14:40:47	(omordasova)	Compare
Version 11	20.02.2024 14:22:19	(omordasova)	Compare
Version 10	20.02.2024 14:04:15	(omordasova)	Compare

**ExclusiveGateway**  
**Conditional Sequence-Flows**  
Да: \${resultCode == "Отлично"}  
Нет: \${resultCode != "Отлично"}

**ExclusiveGateway**  
**Conditional Sequence-Flows**  
Да: #{avgScopeDoMore >= 700}  
Нет: #{avgScopeDoMore < 700}

# JOINT DEVELOPMENT

**Challenge:** In large companies, business processes are designed by large teams rather than dedicated experts, which requires management of the teamwork



## COMMON BPM SYSTEMS CAN MAKE THE TEAMWORK CHALLENGING:

- Increase the development time
- Can cause unauthorized corrections
- Can cause usage of external instruments (e.g., communications via email, etc.)

## JOINT DEVELOPMENT & TEAM COLLABORATION

- ✓ Several users work together on the same business process diagram using a shared online whiteboard
- ✓ Each user can see actions of other team members, while the system immediately implements all changes made by each user (not only the last one)
- ✓ Users can add comments to separate process nodes or to the whole process and reply to comments left by other users
- ✓ The system maintains the history of all communications
- ✓ All discussions are conducted in the same communication channel

# PROCESS TEMPLATES & CUSTOMIZABLE APPROVAL PROCESS



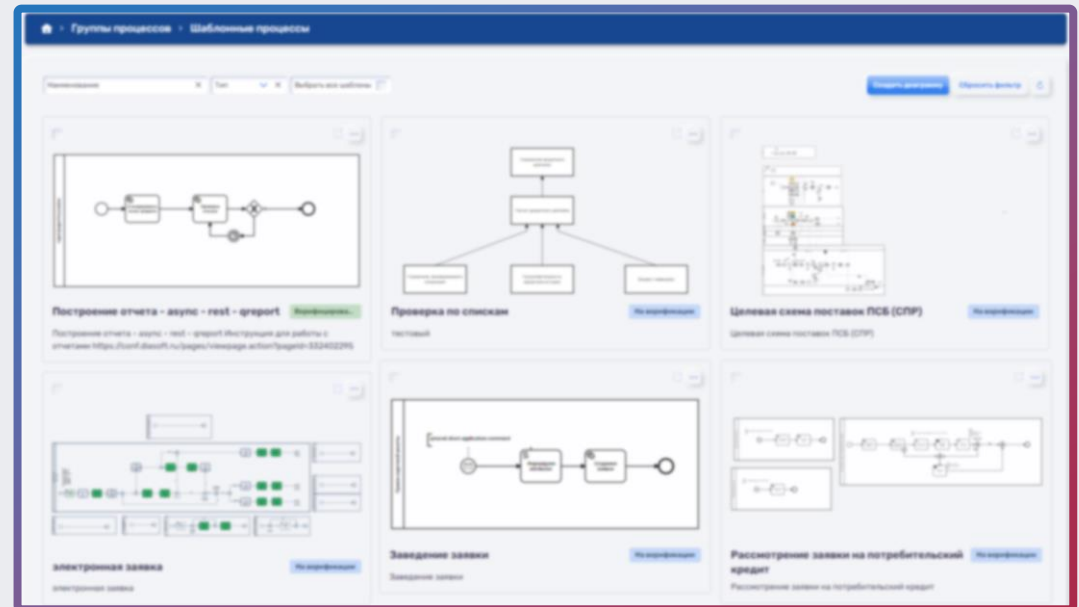
The platform allows saving new diagrams as templates



Templates are stored in the centralized register and facilitate development of new business functions

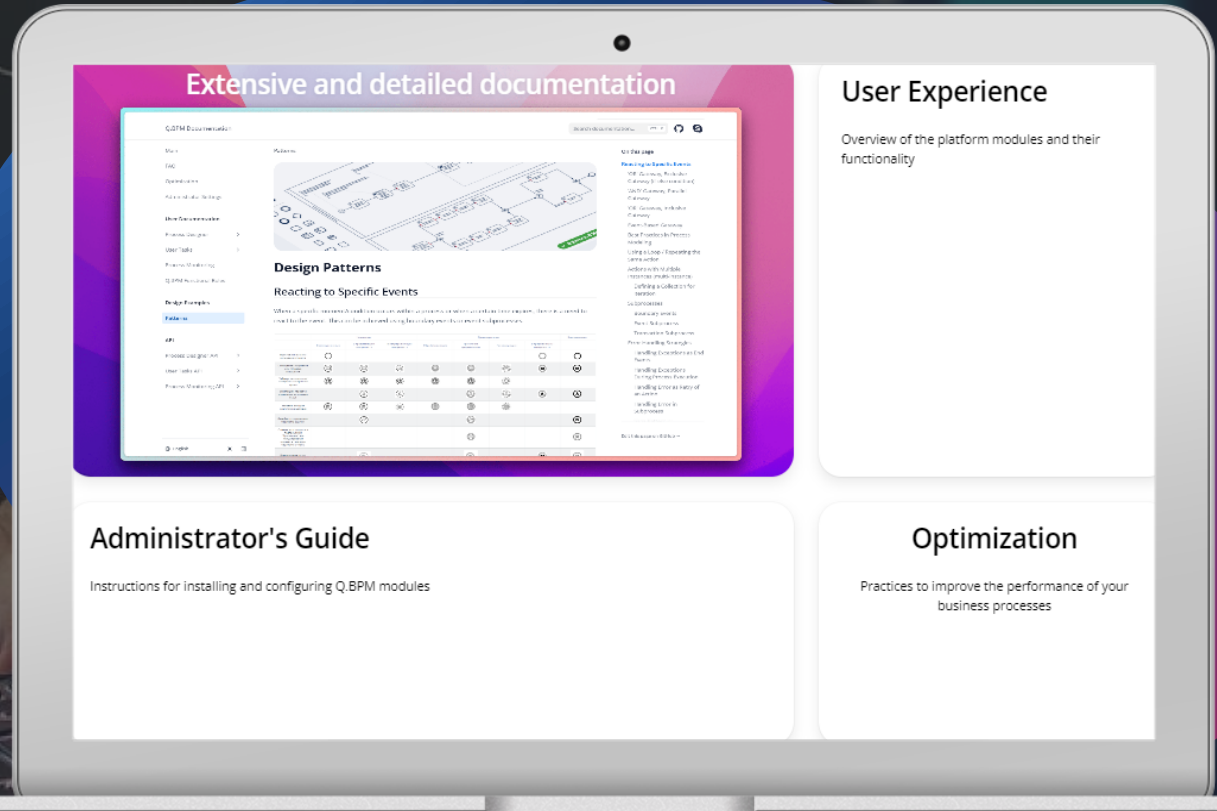
## FLEXIBLE APPROVAL PROCESS

- The BPM provides a special functional capability for approval of diagrams during their design
- The approval process can be customized to specific customer needs
- To support the approval process the platform provides tools for assigning of user tasks and sending user notifications to responsible persons

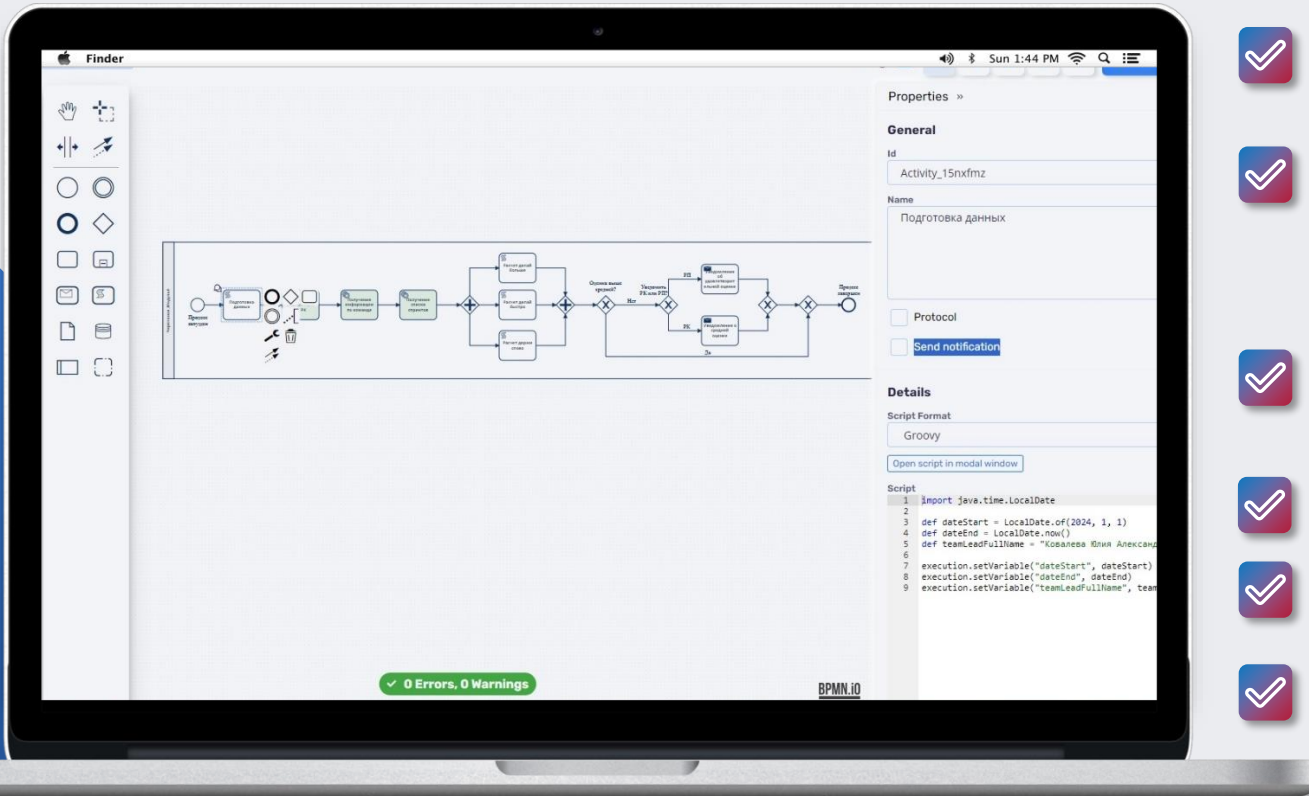


# INTERACTIVE PRODUCT DOCUMENTATION

- ✓ Describes all stages of process design and management
- ✓ Provides information on all products for both platform users and administrators
- ✓ Comprises description of best practices, use cases and business process design patterns
- ✓ Intuitive and easily understandable by both experts and inexperienced users



# PLATFORM ADVANTAGES FOR DEVELOPERS



- ✓ Mini map helps users to better navigate in a long process and quickly move to the specific part, find required objects and switch between objects
- ✓ Global search in diagrams reduces time for the search for specific process parameters, helps to find all variables matching the search criteria. This feature facilitates search in large diagrams, events or integration flow requests, where the manual search is especially complicated and takes a lot of time
- ✓ External Token Simulation provides visual representation of process execution and allows users to visually identify potential issues in complex processes
- ✓ Automatic Check for design errors and matching to the process notation
- ✓ Support of several interpreted programming languages and pre-integrated editor with syntax highlighting
- ✓ Setup of user notifications for any process step

# PLATFORM ADVANTAGES FOR DEVELOPERS: INTEGRATION

Modern systems use synchronous and asynchronous communication approaches: synchronous interactions of IT systems are supported through the REST APIs, and asynchronous interactions use the message broker

The choice of the approach depends on system requirements and parameters, its response time, reliability and performance

## EVENT-DRIVEN INTEGRATION

Opposed to many BPM systems, DQ Solutions offers the BPM platform that supports event-driven integration with external systems, which provides more opportunities for high-quality automation of business processes

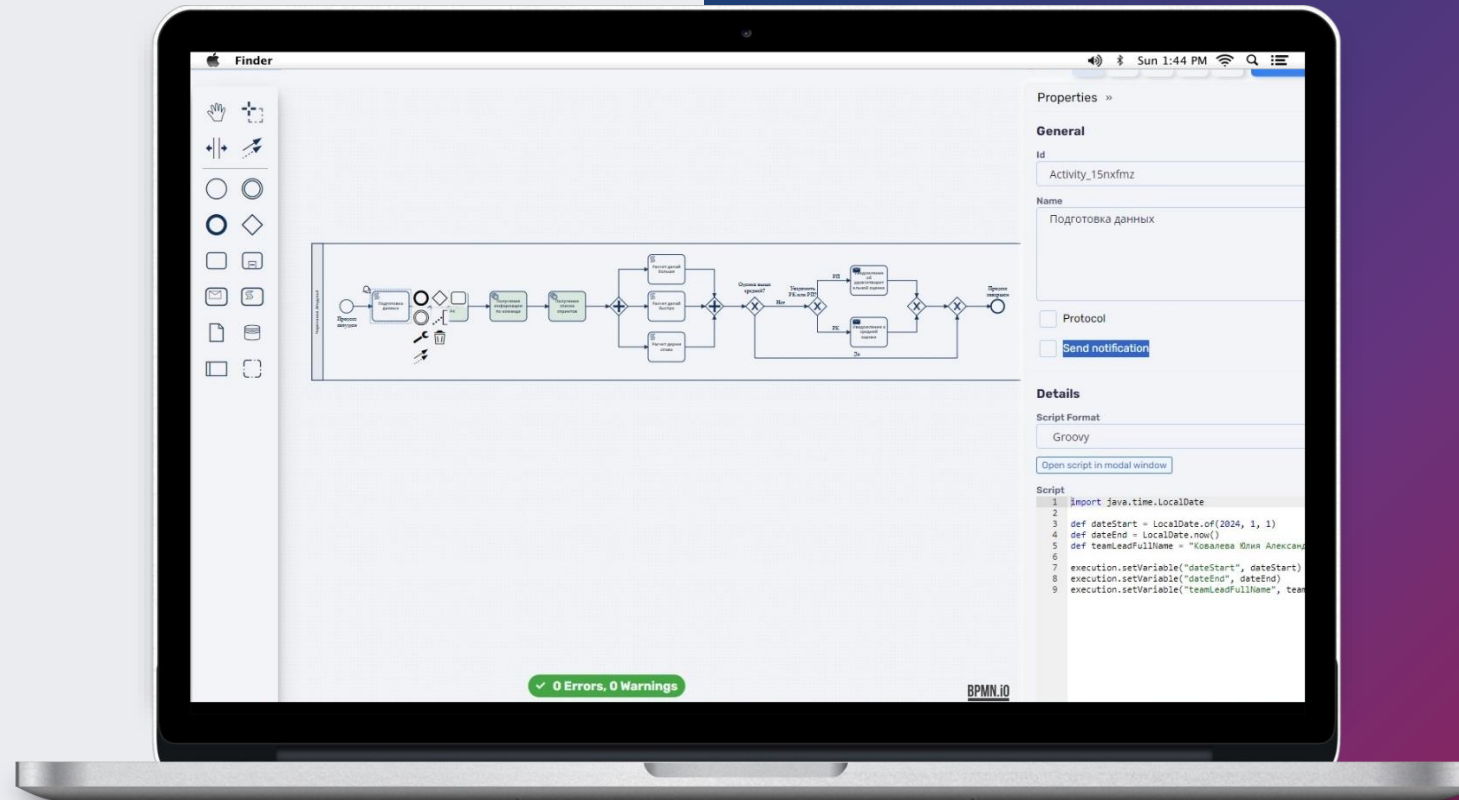
## SWAGGER CONTRACTS AND APIS

- The BPM platform offered by DQ Solutions automatically creates Swagger contracts used to start, stop and change the context of a business process
- Each API refers to a specific process and runs format and logical control at the start of the process

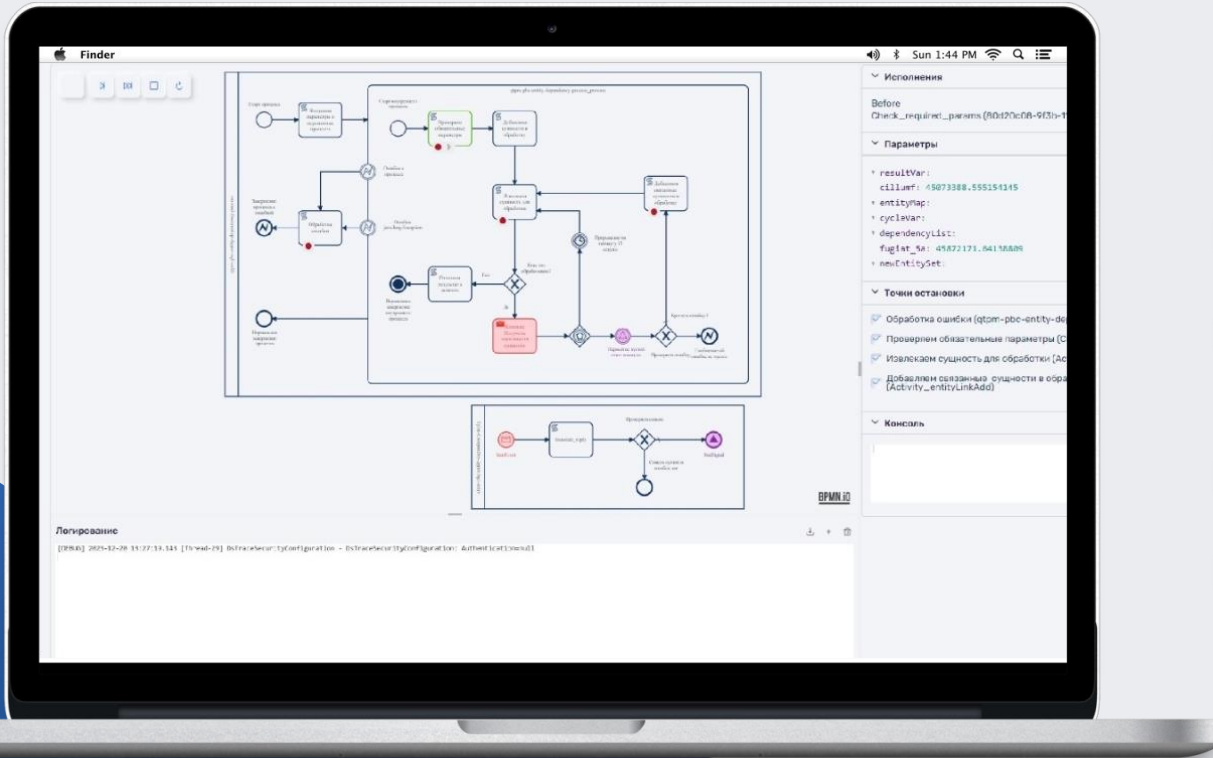
# PLATFORM ADVANTAGES: DEBUGGING AND TESTING

## ADVANCED DEBUGGING TOOLS

- ✓ Ability to start processes immediately in the process designer
- ✓ The platform automatically defines available parameters for the start of each business process
- ✓ During debugging, the user can set up values of parameters and save the required number of test data for repeated start of the processes to check how they run in edited versions



# PLATFORM ADVANTAGES: DEBUGGING AND TESTING



## STEP-BY-STEP DEBUGGING

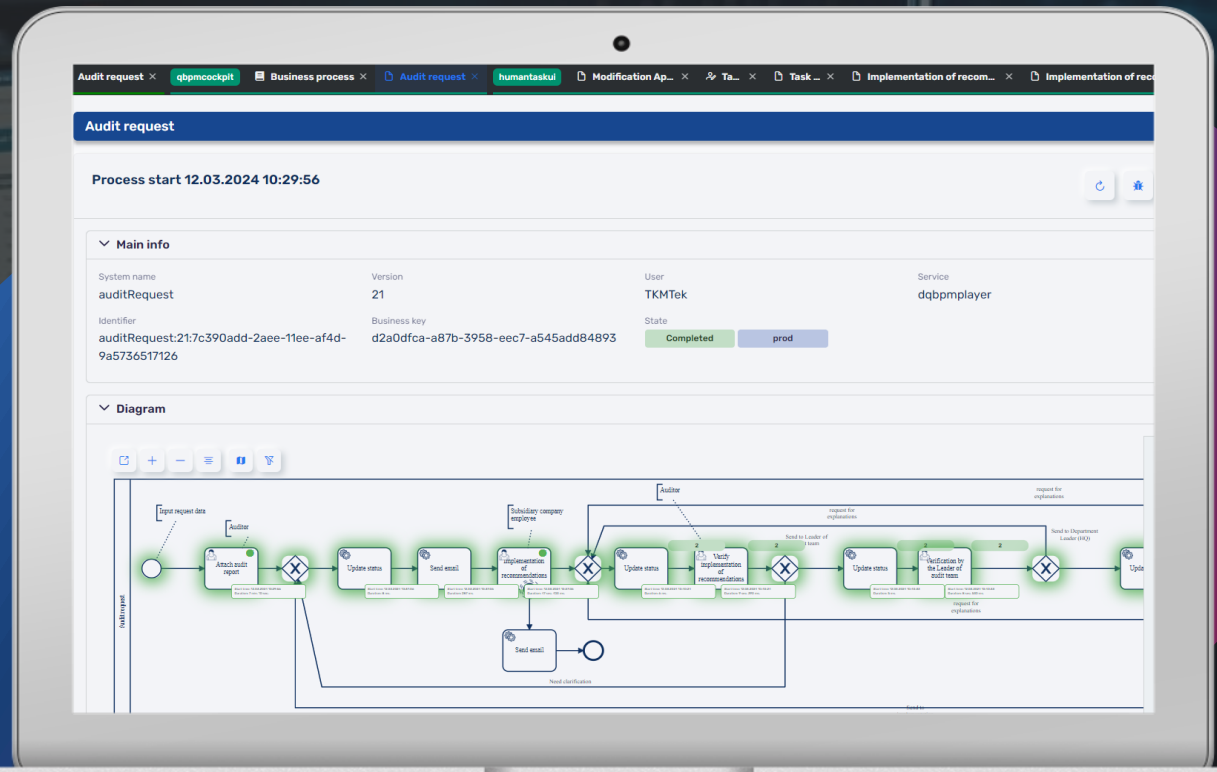
- ✓ Defining nodes where the processes should be stopped
- ✓ Checking node execution parameters
- ✓ Ensuring step-by-step execution of the business process logic, including starting and testing of script expressions
- ✓ Maintaining the process execution log
- ✓ Providing all information about execution of a business process in the single-screen debug window

# PLATFORM ADVANTAGES: DEBUGGING AND TESTING

## ANALYTICAL TOOLS

ALLOW THE USER TO EASILY CHECK IF THE PROCESS FOLLOWS THE PLANNED LOGIC AND FIND OUT THE REASONS IN CASE OF DEVIATIONS

- ✔ Visual process execution map
- ✔ Speed of the entire process and its separate nodes
- ✔ Process variables and their values, subprocesses, completed user tasks
- ✔ Process incidents



# GO-LIVE STAGE

## CONVENIENT PROCESS DEPLOYMENT

To track process versions and deploy the functionality in the production environment, BPM platform offered by DQ Solutions provides two options:

- Export and import of diagrams, with their further publication with the help of the platform tools
- The use of DevOps pipeline, which ensures secure versioning and automatic delivery of edited processes to required environments

## COMMON CHALLENGES DURING MIGRATION TO THE NEW PROCESS VERSION IN POPULAR BPMS

- When a new process version is deployed in the production environment, it is often challenging to migrate earlier launched processes to the newly published version
- Even in technologically advanced BPM platforms, the migration cannot be done without involvement of business process developers who took part in the design of the process



## MIGRATION OF NEW PROCESS VERSIONS IN BPM PLATFORM OFFERED BY DQ SOLUTIONS

- The BPM platform provides a special interface for process migration
- The BPM platform automatically creates the migration plan and defines the list of process instances to be migrated to the new version
- With this approach, the involvement of the business process developer is needed only in about 5% cases

# ACCEPTANCE TESTING

WITHOUT SPECIAL ANALYTICAL TOOLS IN THE BPM PLATFORM, THE ANALYSIS OF THE BUSINESS PROCESS MAY BE COMPLICATED AND RESOURCE-INTENSIVE.

The standard debugging process requires the user to complete several steps:

1. Publish the business process in the process execution service
2. Start and execute the process (which can run to the end or stop at some stage)
3. Understand process steps and their sequence, parameter values



BPM platform offered by DQ Solutions provides a powerful Monitoring System for the overall analysis of business processes



The use of these tools during testing and acceptance of the functionality, allows easily checking if the process follows the planned logic and find out the reasons in case of deviations

# MONITORING OF BUSINESS PROCESSES

**CHALLENGE:** When the system runs multiple processes, it needs special tools to monitor correct and incorrect operation of services

## LACK OF MONITORING TOOLS IN COMMON BPMS

- Common BPM platforms either do not comprise any monitoring tools or support tools that do not cope with the analysis of specific incidents during the use of the system
- This makes it challenging to detect and respond to issues in real time and takes a lot of time to analyze an incident



## PRE-INTEGRATED MONITORING IN THE BPM PLATFORM OFFERED BY DQ SOLUTIONS

- The BPM platform offered by DQ Solutions provides modern tools for monitoring and management of business processes – out-of-the-box
- Centralized interface for the monitoring
- Execution of each business process and business rule is presented visually – exactly in the same form as the diagram was designed

## MONITORING FUNCTIONS

- 🔍 Search for processes by specific parameters (e.g., by application or contract number)
- 📊 Consolidated information on all running business processes
- 📋 List of all published business processes and rules
- ⌚ Violation of time limits during execution of business processes and their specific steps
- 🔍 Viewing consolidated information on incidents that occur during execution of a business process and details of such incidents
- 📊 Detailed information on execution of a business process
- 🔄 Repeated test start of a business process with input parameters of the specific process instance that needs analyzing
- 📊 Detailed information on executed business rules (the decision-making model)
- 🔄 Migration of business processes

# MONITORING TOOLS



## BUSINESS PROCESSES

Ability to view consolidated information about published business processes. Sorting and filtering business processes by name, execution service



## BUSINESS RULES

Ability to view consolidated information about published and executed business rules. Sorting and filtering. Support of the Decision Tree



## STATISTICS

Statistical information on the quality and speed of execution of business processes



## PROCESS INSTANCES

Ability to view the list of registered, executed or running business processes and search for a specific process



## BUSINESS PROCESS ANALYTICS

Visual representation of execution of business tasks and performance of separate business units/employees. KPI monitoring



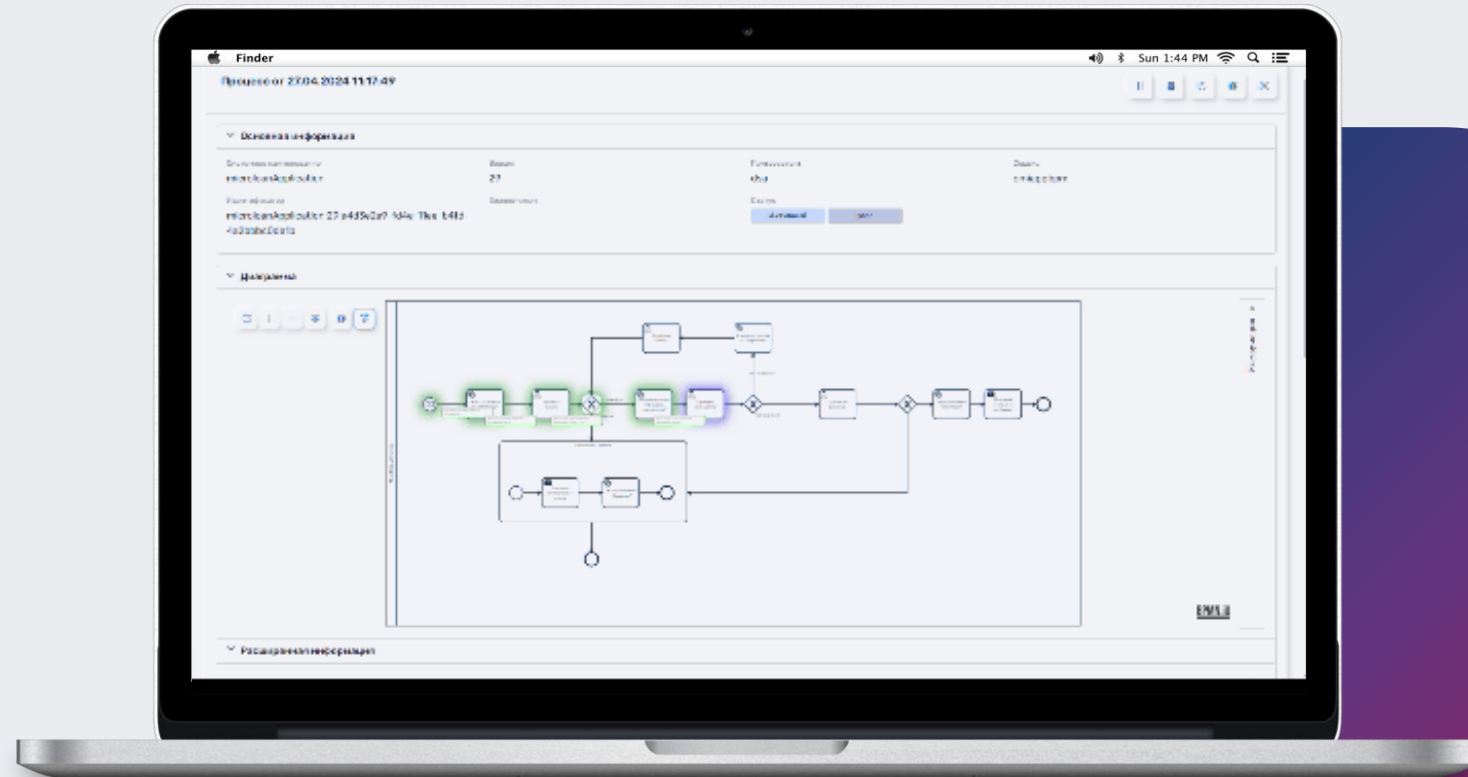
# PLATFORM ADVANTAGES: RUNNING AUTOMATED PROCESSES

## HEAT MAP

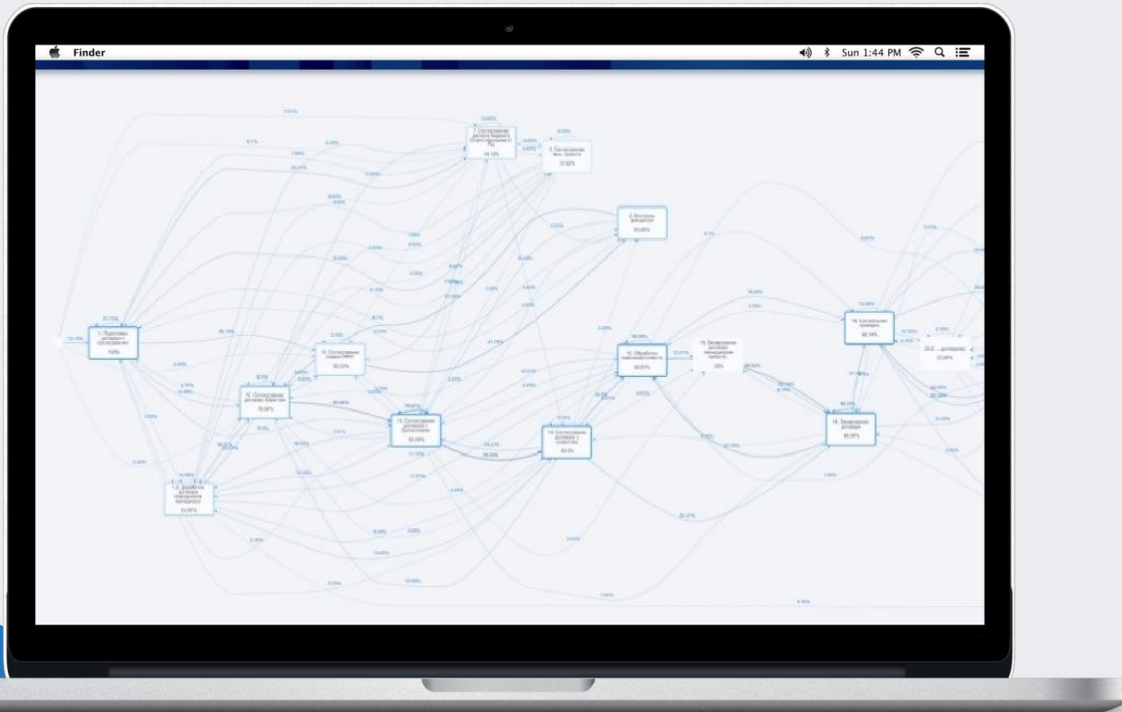
### PROCESS ANALYSIS IN DIFFERENT ANALYTICAL DIMENSIONS

Easy detection of process bottlenecks

- ✓ by execution time
- ✓ by frequency of execution of process blocks
- ✓ by the amount of data used at different stages



# PROCESS MINING



## MINING AND IN-DEPTH ANALYSIS OF BUSINESS PROCESSES

- ✓ Pre-integrated process mining tools help to detect real processes that are not linked into a single workflow. Such tools allow analyzing digital traces that demonstrate how these processes run and where they can be improved
- ✓ Process mining tools are integrated with the process design functionality, which significantly reduces the time of process description and approval for their further automation

# SYSTEM PERFORMANCE AND SCALING

## RESTRICTIONS OF THE MONOLITHIC ARCHITECTURE OF COMMON BPMS

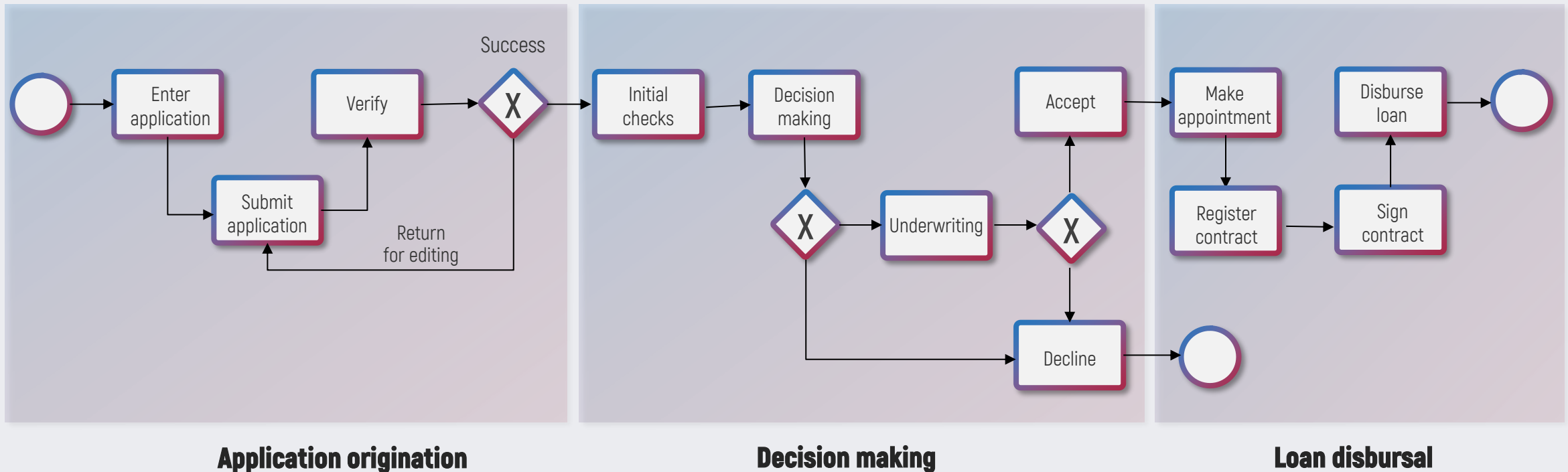
- Most BPM platforms with the monolithic architecture use centralized execution of all business processes
- This approach significantly slows down the system in case of a large number of business processes and can cause limitations in fault tolerance, when a failure of one component can stop the entire system



# BUSINESS PROCESSES IN THE MICROSERVICE ARCHITECTURE

## EXAMPLE: LOAN ORIGATION PROCESS

End-to-end business processes may cause difficulties in scaling, fault-tolerance and quick time-to-market

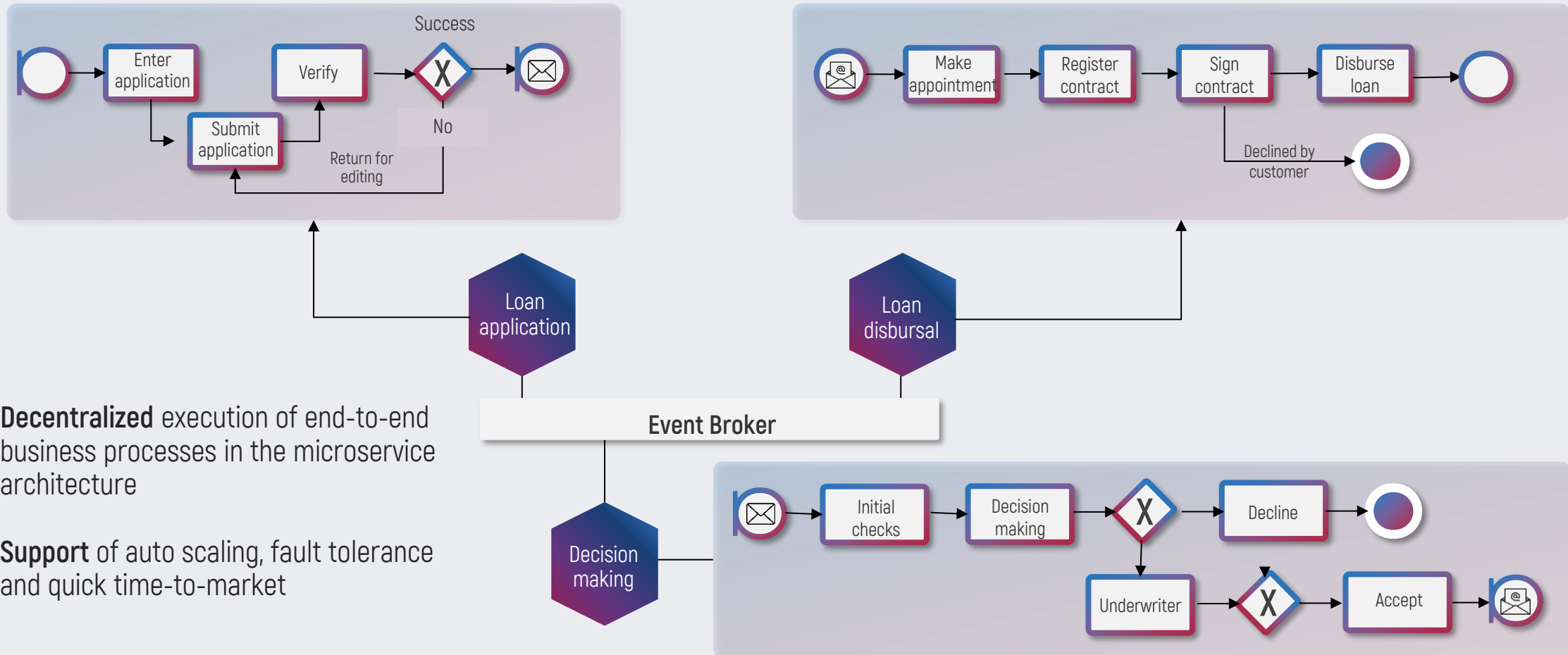


# DECENTRALIZED PROCESS EXECUTION IN SEPARATE MICROSERVICES

- ✓ Ensures system reliability and fault tolerance, since the failure of one microservice does not stop other processes in the platform
- ✓ Enables flexible horizontal and vertical scaling of execution of business processes
- ✓ Business processes have their own independent release cycles, which significantly reduces the time-to-market
- ✓ The microservice architecture guarantees high flexibility, reliability, and efficient business processes management and monitoring



# BUSINESS PROCESSES IN THE MICROSERVICE ARCHITECTURE



**Decentralized** execution of end-to-end business processes in the microservice architecture

**Support** of auto scaling, fault tolerance and quick time-to-market

# SYSTEM PERFORMANCE AND SCALING

## PERFORMANCE BOTTLENECKS OF COMMON BPMS

A significant bottleneck of platforms with centralized execution of processes is the storage of the process history in the database of the process execution service, which significantly slows down the entire system

## DEDICATED STORAGE IN THE BPM PLATFORM OFFERED BY DQ SOLUTIONS

- ✓ BPM platform offered by DQ Solutions stores the history in the dedicated central data storage that does not influence execution of the business process
- ✓ This improves the performance by **30-40 %** in average

## CENTRALIZED MANAGEMENT OF MICROSERVICES IN THE BPM PLATFORM OFFERED BY DQ SOLUTIONS

Despite the decentralized execution of business processes in separate microservices, the platform provides a single information environment for the management of all existing processes

# PROVEN PERFORMANCE

**5 000** TPS

proven performance based on  
Kubernetes

**100** MLN

active business users

**100 000**

concurrent users

**100**+

ready-to-use business  
processes for financial  
organizations

# ADVANTAGES

The BPM platform offered by DQ Solutions provides comprehensive capabilities that allow creating applications for the low-code automation of business processes of mid-sized businesses and large corporations, starting from the design to the go-live

- ✓ Rich benefits of the modern microservice architecture
- ✓ Efficient communications between IT and Business
- ✓ Unified interfaces for all users
- ✓ Digitalization of processes of any complexity
- ✓ Low-code tools at all stages of automation
- ✓ Process mining tools for the search for digital traces and analysis of processes
- ✓ No specific technologies, proprietary languages or approaches



# UNIQUE CAPABILITIES



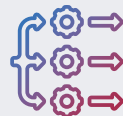
## MICROSERVICE-BASED BPM PLATFORM

The microservice architecture and decentralized execution of business processes allow reaching a completely new level of performance, fault tolerance and flexible scalability. These architectural principles reduce the time-to-market for implementation of new processes by several times



## JOINT DEVELOPMENT

- The BPM platform offered by DQ Solutions uses popular notations for the design of business processes and decision-making rules: BPMN 2.0 and DMN.
- Several technologists can work on a process diagram simultaneously, using the shared online board. Each user can see actions of other team members, while the system immediately implements and records all changes made by each user. The pre-integrated messenger allows exchanging comments while designing a process.
- Pre-integrated business process approval functions ensure the required quality of automation



## DIGITAL BUSINESS PROCESSES

The platform allows companies to digitalize business processes, analyze, control and streamline their execution, get rid of bottlenecks, measure the performance in the real time and using a centralized control panel

# UNIQUE CAPABILITIES



## PROCESS MINING AND IN-DEPTH ANALYSIS

- Pre-integrated process mining tools help to detect real processes that are not linked into a single workflow. Such tools allow analyzing digital traces that demonstrate how these processes run and where they can be improved
- Process mining tools are integrated with the process design functionality, which significantly reduces the time of process description and approval for their further automation



## ATTRACT TALENTS

The BPM platform offered by DQ Solutions uses popular languages, technologies and notations for the design of business processes and decision-making rules (BPMN 2.0 and DMN), which facilitates hiring and onboarding of new specialists



# HIGH BUSINESS EFFICIENCY



Due to the seamless integration with the **visual analytics** system, the BPM platform offered by DQ Solutions ensures efficiency of the company's business processes and improves its **business performance** thanks to:

- ✓ Predictable business results and controllable business growth
- ✓ Creation of the centralized management system
- ✓ End-to-end automation of entire business processes, not just separate operations
- ✓ Operations without downtime

# BUSINESS CASES & SUCCESS STORIES

## PERSONAL AREA FOR CLIENTS

Implementation of digital channels to enable remote interactions with clients

Accelerated application processing due to automation of decision-making processes and user actions

Integration of all customer service systems

## LOAN ORIGINATION

Implementation of complex multi-user processes involving several business units and organizations

End-to-end automation of operations of bank partners that sell bank credit products immediately to customers

Implementation of the end-to-end process for processing of loan applications by all involved bank employees and business units

## STOCK-EXCHANGE MARKETPLACE

Integration of various systems into a single business process with the minimal involvement of users

The user only makes the initial setup of the process for publishing of bank products in the marketplace and manages the list of products to be published

All the rest (publishing products in the marketplace, registration and processing of applications) is done automatically

# SOLVE ANY BUSINESS TASKS WITHOUT CODING

**SPEED UP AUTOMATION OF BUSINESS PROCESSES  
WITH THE PROCESS DESIGNER AND PRE-INTEGRATED  
OUT-OF-THE-BOX PLATFORM COMPONENTS**

- Leverage the event-driven integration with external systems
- Control and manage your applications using comprehensive security tools and role-based access
- Generate powerful reports and analytics to identify issues and streamline processes
- Create applications that can be scaled to fit the size of your entire organization



# OUR EXPERTISE

SYSTEM INTEGRATION & DELIVERY OF THE LEADING GLOBAL SOLUTIONS IN ASIA PACIFIC

GLOBAL BEST PRACTICES, SOLUTIONS & TECHNOLOGY FOR THE FINANCIAL SERVICES INDUSTRY

VAST EXPERIENCE IN RETAIL, CORPORATE AND BUSINESS BANKING

COMPLEX DIGITAL TRANSFORMATION PROJECTS

CUTTING-EDGE FINANCIAL TECHNOLOGY

# THANK YOU

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More about our [BPM Platform](#)