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From:	Raluca Baciu
Subject:	FinTPc-AT Software Requirements Specifications

SRS - Software Requirements Specification

Project: TOSS – Automating Testing Tool Release FinTPc-AT

Version: 2
Date: 15.11.2017

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• Introduction

1.1 Purpose

<Identify the product whose software requirements are specified in this document, including the revision or release number. Describe the scope of the product that is covered by this SRS, particularly if this SRS describes only part of the system or a single subsystem.>

This document is the results of analysis of functional and technical requirements for a tool that helps automate the testing of **FinTPc** product. The product consists of several modules grouped under the name **FinTPc-AT.**

FinTPc product is an application for treasury department of corporation that allows:

- The integration of all payments initiated by the corporation (from different sources: internal ERP, human resources, manual creation in FinTPc) (for all entities defined at corporation level)
- Batch and send payments to banks that are in business relation in the format required by each bank
- The reconciliation of payments with statements received from each bank
- Load of sent and received invoices
- The reconciliation of invoices with statements received from each bank

FinTPc product offers the following functionalities:

- Manual creation of payments
- Initiation of accounting records for manually created payments
- Templates for creating multiple or repetitive payments
- Manual correction of the payments
- Payment validation with defined criteria
- Duplicate detection
- Payment enrichment with data used for monitoring, reconciliation and reporting
- Check debtor accounts against „black" lists
- Check of IBAN format
- Predefined reports
- Possibility to customize pre-defined reports to meet customer's needs
- Definition and management of profiles (groups) of users that defines the access of payments, statements, invoices based on entities and payment types that the user is authorized

While it is agreed that it is impossible to test everything when testing a product (due to limited time and resources), exhaustive testing is a must for every software to ensure that the software does according to specifications and customer's needs.

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Testing is necessary to:

- ensure user requirements are met
- find faults and anomalies in the software
- check that the product is fit for its purpose
- measure the quality of the software

FinTPc-AT is:

- Functional extension of **FinTPc** designed to make the testing process more objective
- An open source application published on GitHub (source code) and fintp.org (executable code)
- A tool to assist and help people involved in testing and validation process
- A collection of modules that can be used by their own to test certain business or technical functionalities
- A tool to help in fast and complete checks of FinTPc product after initial installation in customer's environment
- A tool to help in fast and complete checks of FinTPc product after installation of major releases or patches in customer's environment, also known as regression testing
- A tool to help in fast and complete checks of FinTPc product after extending the product with new features
- A tool for automatic testing
  - in different deployment architectures
  - different versions of prerequisites
  - different technical interfaces with other applications
  - custom configurations

FinTPc-AT:

- helps reducing the number of defects contained in **FinTPc** releases
- helps improve the quality of **FinTPc** software as **FinTPc** releases will have fewer faults and there will be a better chance that the software meets its expectation
- increase reliability in **FinTPc** releases – software with fewer defects is more reliable
- can be used to provide a measure of the current quality of the software
- assures the correct implementation of:
  - financial instruments supported in FinTPc (different payments including salaries, statements received from banks, invoices etc.)
  - operation flows
  - flows and format of data
  - reports

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- secure access in application as configured (based on profiles or groups)

- monitors and controls the testing execution
- reports and records testing results
- archives the history of testing results and the context in which the testing was run (configuration, software version, data sets etc.)
- helps reduce the time for regression testing
- ensures that changes in the configuration , enhancements or patches does not introduce new bugs on existing features and modules
- has an administration module to configure testing environment and data flows
- has a data generation module relevant for regression testing for every flow
- logs errors encountered and helps in diagnosis activity and in determining the root cause of a problem
- is easy to install
- is easy to use
- different modules can be configured and used separated

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1.2 Document Conventions

<Describe any standards or typographical conventions that were followed when writing this SRS, such as fonts or highlighting that have special significance. For example, state whether priorities for higher-level requirements are assumed to be inherited by detailed requirements, or whether every requirement statement is to have its own priority.>

In chapter 2.2.9 Summary of product Features, all features are listed with a short description and priority associated

- Priority 1 – mandatory feature
- Priority 2 – nice to be feature

In chapter 3 System Features, scenarios and functionalities will have names like

- SXX – scenario number xx
- FXX – functionality number xx

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1.3 Intended Audience and Reading Suggestions

<Describe the different types of reader that the document is intended for, such as developers, project managers, marketing staff, users, testers, and documentation writers. Describe what the rest of this SRS contains and how it is organized. Suggest a sequence for reading the document, beginning with the overview sections and proceeding through the sections that are most pertinent to each reader type.>

This document is designed for the different types of persons involved in **FinTPc-AT** development, documentation, testing and implementation:

- Business analyst
- Solution architect
- Developer
- Tester
- Implementer
- Project manager

Reviews and contributions are expected from all these categories, as this document is an artefact used in designing, developing, testing and documenting **FinTPc-AT.**

Also, this document is also useful for the persons that responsible for documenting the product for the final users and for publishing the documentation on FINkers United portal.

Based on the profile of the person who read/review this document, it can be read by some chapters only. Still, the recommendation is to read the general description paragraph before System Features chapter.
System Features chapter is divided in scenarios and functional requirements. A scenario can have more functional requirements.

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1.4 Project Scope

<Provide a short description of the software being specified and its purpose, including relevant benefits, objectives, and goals. Relate the software to corporate goals or business strategies. If a separate vision and scope document is available, refer to it rather than duplicating its contents here. An SRS that specifies the next release of an evolving product should contain its own scope statement as a subset of the long-term strategic product vision.>

Allevo launches its application for processing financial transactions (FinTP) into open source at the beginning of 2014. The open source version is a rework of the commercial version of the application (qPI), with added support for open source 3rd party software prerequisites for internal database, message oriented middleware and application server, enhanced documentation for code and design, integration with open source developer tools and other changes required for an application published into open source.

FinTP provides building blocks for processing financial transaction, helping banks, corporations, public administrations, and micro-financing institutions to:

- consolidate business work flows
- Create flexible interfaces for various market infrastructures
- Process various kinds of funds transfers (such as credit transfer, direct debit, debit instruments, treasury flows) while providing safe operations and duplicate detection
- Gain several operation functionalities (such as liquidity reporting, accounting reconciliation, AML financial transactions filtering, remittances management, and competitive reports)

Some of the most important technical requirements for such an application are its reliable messages delivery (with persistent End To End financial transactions, assurance that messages are delivered and not duplicated) and its processing capacity (number of messages processed over a period of time, eliminating the waiting times).

In 2017 Allevo starts the TOSS project, aimed to develop FinTPc, an innovative software solution for the processing of financial transactions for corporations, distributed in open source. FinTPc can be seen an extension of FinTP, following the same high-level architecture, but will feature a new user interface and reworked functionalities and workflows, addressing specific corporate flows.

FinTPc is an application suite that provides corporate treasuries with the following functionality:

- Integration of all payments initiated by ERP systems, human resources, etc. of the corporation - representing supplier invoices; taxes, duties and excise duties; salaries etc. .;
- Creating automatic / manual payment transactions;

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- Organization of payments by type or by paying company (according to the internal nomenclature);
- Defining layouts and layout lists for repetitive or multiple payments;
- Manual payment correction;
- Enrichment of payment transactions with useful information for registration, monitoring, reconciliation and reporting;
- Report by supplier, appropriate account in the accounting plan, location, reporting codes;
- Validation of payment transactions (created manually or imported from ERP);
- Detecting possible duplicate financial transactions based on configurable criteria;
- Checking supplier accounts with 'black' lists;
- Validating the IBAN format;
- Investigating, correcting, canceling and / or authorizing payment transactions;
- Generating Swift standard payment messages (MT101, ISO20022 pain.001);
- Initiating the accounting for manual payment transactions;
- Importing statements of account;
- Routing incoming financial transactions (receipts or confirmations) to internal applications (ERP, accounting, human resources, etc.);
- Reconciliation of payments with supplier invoices;
- Reconciliation of receipts with invoices issued;
- Reconciliation of accounting records with account statements;
- Pre-defined reports and client-specific customization (supplier reports, bank reports, possible duplicates, canceled transactions, search for payment transactions according to various criteria);
- Defining and managing user groups by their role profile;
- Auditing user activity;
- Archiving financial transactions and reporting archived data;
- Comprehensive product documentation - source and rewrite code, operation and administration of FinTPc executable code.

FinTPc-AT will be developed as a feature of **FinTPc**, providing developers, testers and implementation teams the possibility to quickly check the product after an initial installation or after a major release or patch for regression testing. This might be a decision-driver for a potential **FinTPc** adopter (developers or other categories).

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1.5 References

<List any other documents or Web addresses to which this SRS refers. These may include user interface style guides, contracts, standards, system requirements specifications, use case documents, or a vision and scope document. Provide enough information so that the reader could access a copy of each reference, including title, author, version number, date, and source or location.>

TOSS project documentation

- Approved business plan of the project
- FinTPc SRS
- FinTPc Architecture and Design document
- Documentation on automatic testing process for computing and software

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2. Overall Description

2.1 Product Perspective

<Describe the context and origin of the product being specified in this SRS. For example, state whether this product is a follow-on member of a product family, a replacement for certain existing systems, or a new, self-contained product. If the SRS defines a component of a larger system, relate the requirements of the larger system to the functionality of this software and identify interfaces between the two. A simple diagram that shows the major components of the overall system, subsystem interconnections, and external interfaces can be helpful.>

FinTPc-AT is a functional extension of **FinTPc** product, designed to make the testing process more objective and it is a tool to execute quick and complete verifications of product functionalities after **FinTPc** installations and configurations and after major releases and patches.
FinTPc-AT is related to FinTPc requirements, and its modules are designed to automatically test each a subgroup of **FinTPc** scenarios or functionalities.
Where applicable, the link between a **FinTPc-AT** module and **FinTPc** scenarios and functionalities is specified and details are provided.

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2.2 Product Features

<Summarize the major features the product contains or the significant functions that it performs or lets the user perform. Details will be provided in Section 3, so only a high level summary is needed here. Organize the functions to make them understandable to any reader of the SRS. A picture of the major groups of related requirements and how they relate, such as a top level data flow diagram or a class diagram, is often effective.>

The following automatic tests and testing tools are implemented in **FinTPc-AT:**

2.2.1 Initialization of the testing bed

In practice, initialization of testing environment is a separate activity when testing functionalities or system features, which ensures the relevance of the tests to be done.

It is an activity that occurs before most of the functional and acceptance tests, and so it has a great repeatability and is suitable for automation, especially when several configuration for multiple clients has to be tested.

FinTPc-AT has a module for initialization of test beds.

Initializing test beds means that the environment is checked and that data from previous tests that can affect future tests are cleared.

Initialization testing environment can be integrated in another complex automated tests, such as functional or acceptance test.

2.2.2 Data generation

Data generation is an integrated task for testing and validation teams, sometimes a challenge as it can be a recurrent task and requires some technical skills, such as writing scripts. Also, business analysts may be involved in this stage to help in validate the relevance and consistence of testing data.

Automatic data generation help considerably speed up the process of data generation and help reach higher volume of data.

Data generation refers to a module that can be used stand-alone or as part of other modules of **FinTPc-AT** and its scope is to help in generating data that can be used for further automatic or manual testing.

It can be used for data generation for all business flows and should include different interfaces that are supported in a custom configuration.

Data generated must cover the following interfaces:

- Files
- Database (PostgreSQL)

Data generation has to be configurable, using user input (in a small interface or as variables in scripts). For example, for payments sent from corporation backoffice, the user has to configure the data that must vary in generated data, such as amount and debtor name, or for statements received

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from banks, the data that must vary can be reference, creditor name and IBAN etc.

Data generation must cover all the business flows of FinTPc product.

Data generation must to easily adapt to new business flows or features that may be added to **FinTPc.**

2.2.3 Unit tests

The objective in unit testing is to isolate a unit of software and to validate its correctness. Defects can be found early in the development cycle because unit tests are run by each developer.

The cost of fixing a defect detected during unit testing is less in comparison to that of defects detected at higher levels. Compare the cost (time, effort, destruction, humiliation) of a defect detected during acceptance testing or when the software is live.

The purpose is to validate that each **unit** of the software performs as designed. A **unit** is the smallest testable part of software.

By testing the parts of a program first and then testing the sum of its parts, integration testing becomes much easier and can lower that rate of defects in the integration phase.

Unit testing finds problems early in the development cycle and can be used for very small piece of software that is testable or for modules that implement a certain functionality.

Unit testing is performed by using the “white box” testing method.

Unit testing is normally performed by software developers themselves or their peers, and it is also for **FinTPc-AT** product.

Unit tests should be performed continuously and frequently.

Unit tests can be run at any moment in the development lifecycle and are run together with data sets that can be generated manually or using data generation module of **FinTPc-AT.**

Unit tests must cover most of **FinTPc** components, for example the database component, the user interface component or the engine component.

It is the responsibility of each developer to create and use unit tests for pieces that are important and have great impact, unit tests that are covering all paths through the unit.

FinTPc-AT has a module for unit test.

The module for unit tests is a collection or library of unit tests that can be easily added, as new features or functionalities are added to **FinTPc**.

2.2.4 Integration tests

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Integration tests are run in a completely installed and configured **FinTPc,** after all components are installed and configured: database, interface, ActiveMQ, **FinTPc** engine, FinTPc connectors. Integration tests check the integration of various components and the interaction between them:

- Interaction between database and user interface
- Interaction between database and **FinTPc** engine
- Interaction between **FinTPc** and ActiveMQ
- Interaction between **FinTPc connectors** and ActiveMQ
- Interaction between **FinTPc connectors** and external environment (backoffice, banks internet banking systems) that can be files, database, ActiveMQ queue

All these integration tests are run implicitly when running functional tests, as these use all FinTPc components. Running different functional scenarios implies that different modules and interfaces work together.

2.2.5 Functional tests

Functional tests are a type of “black-box” tests that are based on **FinTPc** specifications, as described in its software requirement specification document.

Functional testing ensures that the product tested conforms to all its requirements.

Running functional tests, usually consists of the following:

- Use test data to identify inputs
- Determine what the expected outcome should be based on those inputs
- Run the test cases with the proper inputs
- Compare the expected results to the actual results

FinTPc-AT has a module for functional tests.

The module for functional tests is a collection or library of functional tests that can be easily added, as new features or functionalities are added to **FinTPc**.

FinTPc-AT module for functional tests offers the possibility to define, import and edit (if necessary) tests corresponding to functionalities of **FinTPc**.

FinTPc-AT module for functional tests monitors and controls the testing execution.

FinTPc-AT functional testing implies running integration tests as well, as testing a functionality involves all the components of **FinTPc** (interface, database, engine, middleware)

Parts of scenarios and functionalities are tested using functional tests – usually one functionality means one test, but functionalities may be also grouped in one scenario.

FinTPc-AT covers testing of the following functionalities:

- Technical lists administration in user interface
- Business lists administration in user interface
- Get of payments from internal systems of corporation

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- Processing of payments (generation of SWIFT standard payments)
- Manual creation of payments in FinTPc interface
- Statement processing
- Invoice processing
- Manual creation of invoices in FinTPc interface
- Reconciliation – with separate sub-modules for every type of reconciliation
- Running predefined reports with different criteria
- implementation of user rights/roles

Not all functionalities of **FinTPc** are subject to automatic testing, some functionalities are more suitable for manual testing, as they have actions that depends on user interpretation and decision for example.

2.2.6 Acceptance tests

Acceptance tests, also known as user acceptance testing (UAT) or end-user testing, are derived by the collaboration of business analyst with business customers and testers. Acceptance tests allow the final customer to validate the implementation of their needs.

The objective is to provide confidence that the developed product meets both the functional and non-functional requirements

An acceptance test is a subset of functional tests, grouped so that it covers an entire business flow.

An acceptance test is run using predefined acceptance test procedures that describe which data to use, the step-by-step processes to follow and the expected result following execution.

FinTPc-AT contains a collection of acceptance tests, grouped by business flows or scenarios in **FinTPc.**

FinTPc-AT module for acceptance tests offers the possibility to define, import and edit (if necessary) tests corresponding to scenarios of FinTPc.

FinTPc-AT module for acceptance tests monitors and controls the testing execution.

Acceptance tests:

- use predetermined data
- use expected results
- functional tests are executed
- actual results are recorded
- actual and expected results are compared
- test results are determined and recorded

2.2.7 Performance tests

Limited performance tests with a predefined set of data for every business flow should be available for run.

Performance tests are subjects of a separate module of **FinTPc**, FinTP Tracker.

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2.2.8 Resilience tests

Resilience testing is a “non-functional testing” and tests how an application behaves under stress. Resilience testing, is a crucial step in ensuring applications perform well in real-life conditions, where parts of software components or parts of infrastructure may fail, and this should not result in business data loss. The impact depends of the failed part or component, and when recovering from this condition, the application should have not lost data and must be able to resume the business flow.

Resilience tests are not subject to automatic tests in FinTPc-AT application.

2.2.9 Summary of product features

#	**Requirements - functional**	**Priority**	**Observations**
1.	Initialization of test bed	1	This module initialize the testing environment (check that all components are started and clears old data)
2.	Data generation module	1	This module should generate data for all business flows (all financial instruments) and for all interfaces that are supported in a custom configuration (files, database) – it allows to define, import and edit (if necessary) test data This module should generate data corresponding to external communication channels and back-office / ERP systems Data should be meaningful from business point of view and should be diverse enough to cover different scenarios
3.	Unit tests module	1	A collection or library of unit tests that can be easily added, as new features or functionalities are added to **FinTPc** Unit tests for all FinTPc components are needed (user interface, internal database, engine)
4.	Functional tests module	1	Suitable functionalities of **FinTPc** have module for automatic testing
5.	Acceptance tests module	1	Acceptance tests are easy to configure to comprise a subset of initialization of test bed, data generation, functional tests and any other required tests, grouped so that it covers an entire business flow

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			This module cover scenarios for all business flows (all financial instruments) and for all interfaces that are supported in a custom configuration (files, database) Acceptance tests module should: • Monitor and control the tests execution • Record test results • record and report measurement results • support for investigating components that leads to failed tests • Archive the test results together with configuration that was tested (configuration, software version, data sets used etc.) • can be used to validate a new installation or for confidence tests on a running environment
6.	Provides support for defining test data and testing scenarios by guiding user through procedures and templates	2	• Depending on the complexity - defining, importing and editing testing scenarios • Depending on complexity - defining, importing and editing test data sets

#	**Requirements – non-functional**	**Priority**	**Observations**
1.	**FinTPc** upgrades don't affect **FinTPc-AT** (past or future)	1	Must be periodically updated for compliance with the new regulations and the new applicable financial standards
2.	**FinTPc-AT** has to be able to run on all types of environments (all platforms supported by **FinTPc**) (test, pre-live, backup)	1	Depending on the architecture of each corporation, must allow easy installation and configuration on any FinTPc platform - backup, pre-production or testing
3.	Source code is published on GitHub with the same license as FinTPc	1	**FinTPc-AT** is an open source application published on GitHub (source code and executable code fintp.org respectively) under the GPL V3 license

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2.3 User Classes and Characteristics

<Identify the various user classes that you anticipate will use this product. User classes may be differentiated based on frequency of use, subset of product functions used, technical expertise, security or privilege levels, educational level, or experience. Describe the pertinent characteristics of each user class. Certain requirements may pertain only to certain user classes. Distinguish the favored user classes from those who are less important to satisfy.>

FinTPc-AT will be used mostly by the following user categories:

- Developers that are adopters of **FinTPc**
  Developers involved in developing different **FinTPc** area can use unit tests and data generation module to test their specific piece of software
- Testers and quality assurance personnel
  Testers make the main category of users for **FinTPc-AT.**
  They may use automatic tests along with manual testing to ensure that **FinTPc** product performs as expected. They may use unit tests, data generation, functional tests and acceptance tests.
  These modules of **FinTPc-AT** may be used in any software development model that tester teams act (waterfall or more or less agile project organization)
- Experienced business analysis with a technical background
  Experienced business analysis with a technical background may use acceptance tests or functional tests to verify that product performs as potential customers expects.
  They may also help in building acceptance tests, working together with testers to elaborate meaningful and extensive acceptance tests to be run by **FinTPc-AT.**

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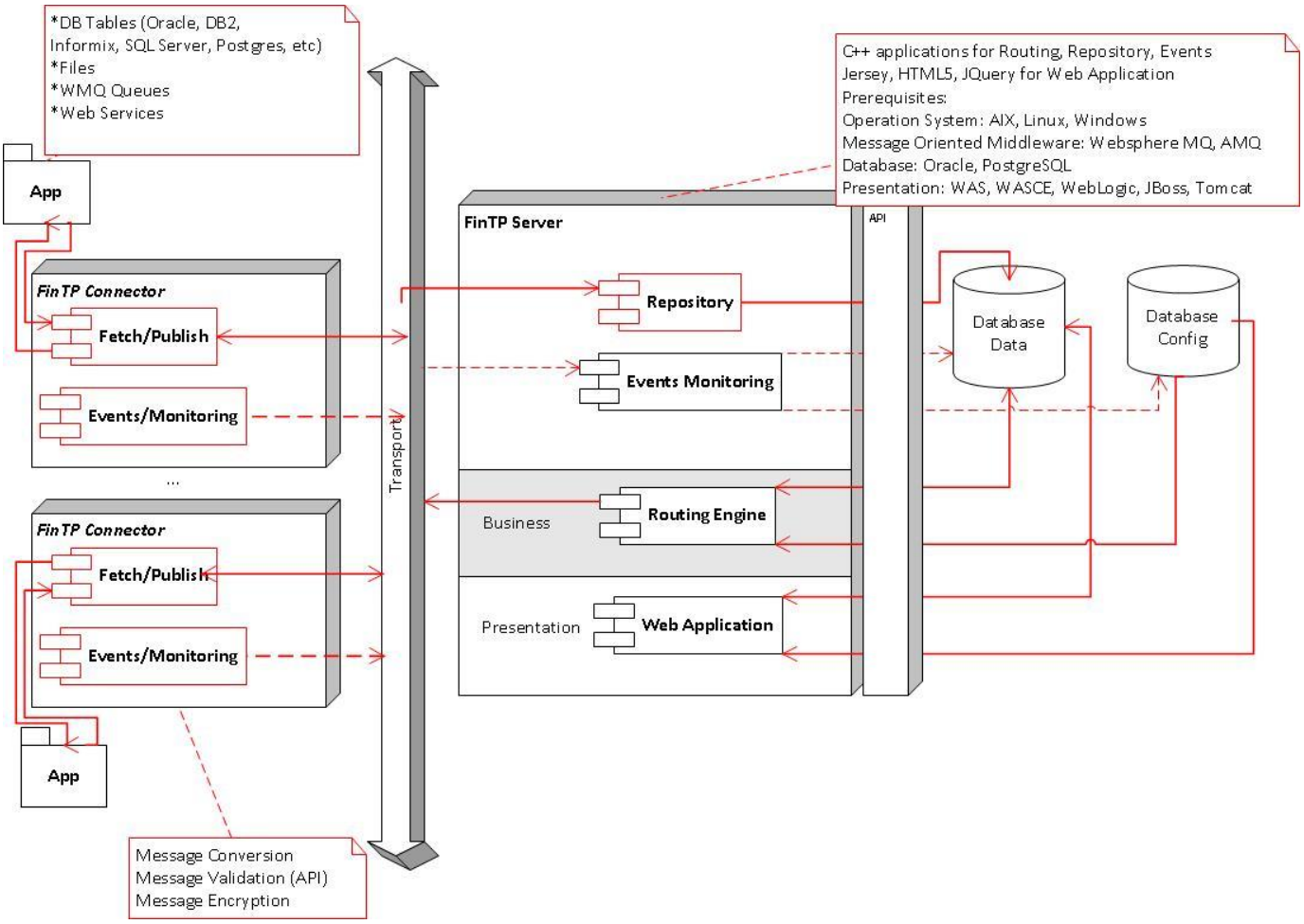
2.4 Operating Environment

<Describe the environment in which the software will operate, including the hardware platform, operating system and versions, and any other software components or applications with which it must peacefully coexist.>

FinTPc-AT has to be able to run on all architectures supported by FinTPc.
FinTPc has the following logical architecture:



The above architecture illustrates FinTPc connectivity to other applications, as well as the main layers of the application and data flows. Further on, the logical and physical architecture characteristics are described.

Logical architecture:

1. Presentation layer: the user interface (UI) is web based. It
   a. uses direct access to data for business/operations reports
   b. translates user's action into jobs for the business components (e.g. authorize, reject etc.) and publishes them in the job queues.

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2. Business: the main components are the Routing Engine and the Events Monitor. It
    a. fetches jobs from the job queues and executes them in parallel
    b. automates financial transaction tasks, such as technological reconciliation, batching and de-batching
    c. synchronizes and publishes events related to performance/count of transactions from all components.
3. Data: Connectors:
    a. Using a transactional transport layer, the connectors fetch/publish data to the partner applications (back-office / ERP, SWIFT, treasury etc.)
    b. Ensure for message batching / de-batching
    c. Embed business data in an envelope that allows non-invasive tracking and audit to be performed
    d. Send events related to performance/count of transactions
    e. Perform various data validations against lists and algorithms

The native internal data format is ISO20022.

Physical architecture:

1. Scenario 1: Single server installation (recommended for a low number of transactions[1] - i.e. several thousand a day)
    a. All components are installed on a single machine.
    b. The connectors will access remote or local data.
2. Scenario 2: Single server with distributed data (preferred installation type for a medium number of transactions - i.e. several tens of thousands a day)
    a. All components except connectors are installed on a single machine.
    b. The connectors are deployed as close to the business data source as possible and will use a transactional transport layer to send data back and forth to the server.
3. Scenario 3: Multi server installation (optimized for scalability - i.e. several hundred thousand transactions a day)
    a. Routing Engine can be deployed to a dedicated server. It will use the available number of processors to run parallel jobs.
    b. Events Monitor can be deployed to a dedicated server.
    c. Data server can be deployed to a dedicated server or multiple servers.
    d. Web application server and application can be deployed to a dedicated server.
    e. The connectors are deployed as close to the business data source as possible and will use a transactional transport layer to send data back and forth to the server.

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[1] End to end transactions (including all acknowledgments, confirmations and so on)

2.5 Design and Implementation Constraints

<Describe any items or issues that will limit the options available to the developers. These might include: corporate or regulatory policies; hardware limitations (timing requirements, memory requirements); interfaces to other applications; specific technologies, tools, and databases to be used; parallel operations; language requirements; communications protocols; security considerations; design conventions or programming standards (for example, if the customer's organization will be responsible for maintaining the delivered software).>

FinTPc-TA is an open source application and any choice of technology, database or tools should be done accordingly.
Also, **FinTPc-TA** should be compatible with all technologies, components, interfaces, architectures supported in **FinTPc**.

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2.6 User Documentation

<List the user documentation components (such as user manuals, on-line help, and tutorials) that will be delivered along with the software. Identify any known user documentation delivery formats or standards.>

The application will be delivered with a document that will contain all the information necessary for the product's users:

- For developers the document will contain information that usually accompanies open source products, such as documented code and comments
- For testers and quality assistance personnel, the document will contain information about the modules, how to configure and use them etc.

2.7 Assumptions and Dependencies

<List any assumed factors (as opposed to known facts) that could affect the requirements stated in the SRS. These could include third-party or commercial components that you plan to use, issues around the development or operating environment, or constraints. The project could be affected if these assumptions are incorrect, are not shared, or change. Also identify any dependencies the project has on external factors, such as software components that you intend to reuse from another project, unless they are already documented elsewhere (for example, in the vision and scope document or the project plan).>

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3. System Features

<This template illustrates organizing the functional requirements for the product by system features, the major services provided by the product. You may prefer to organize this section by use case, mode of operation, user class, object class, functional hierarchy, or combinations of these, whatever makes the most logical sense for your product.>
<Don't really say "System Feature 1." State the feature name in just a few words.>
<Provide a short description of the feature and indicate whether it is of High, Medium, or Low priority. You could also include specific priority component ratings, such as benefit, penalty, cost, and risk (each rated on a relative scale from a low of 1 to a high of 9).>
<List the sequences of user actions and system responses that stimulate the behavior defined for this feature. These will correspond to the dialog elements associated with use cases.>
<Itemize the detailed functional requirements associated with this feature. These are the software capabilities that must be present in order for the user to carry out the services provided by the feature, or to execute the use case. Include how the product should respond to anticipated error conditions or invalid inputs. Requirements should be concise, complete, unambiguous, verifiable, and necessary. Use "TBD" as a placeholder to indicate when necessary information is not yet available.>

<Each requirement should be uniquely identified with a sequence number or a meaningful tag of some kind.>

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3.1 SENV01 – Saving testing environment configuration

Nr.crt.	Scenario	Priority	Result
1	The user (tester) has the possibility to configure the testing environment that is saved for later use. The user can easily add, edit or delete configuration items (or business flows) to keep up with changes that may appear in FinTPc configuration.	1	Configuration is saved and can be easily changed

The saved configuration is used for other testing activities such as initialing test bed, data generation or other functional and acceptance automated tests.
Preconditions:

Triggers:
User action.

Corresponding functional requirements:
[FENV01 – Saving testing environment configuration

3.2 FENV01 - Saving testing environment configuration

The following configuration details has to be saved for a configuration

- Details for FinTPc database
  - Database identification (as it is specified in the client configuration file and specify IP address, SID)
  - Schemas/passwords
  - Optional - The script used to start database
- Details for user interface
  - IP address
  - UI link + user/password to access the link
  - Optional - The script used to start application server
- Details for Middleware
  - IP address/link to ActiveMQ console
  - (QM name for WebSphere MQ server)
  - (QM port for for WebSphere MQ server)
  - Queues that have to be cleared for initializing the tests
  - Optional - The script used to start the middleware

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- Details for FinTPc server
  - IP address
  - The folder where FinTPc is installed
  - The location of application logs
  - The script used to restart the application

- The business flows implemented for that configuration
  The user can select one or multiple predefined business flows:
  - Payments
  - Invoices
  - Statements
  - any other business flow that may be latter added (can be easily updated with new business flows that may be implemented in **FinTPc** application)
- **For each business flow**, the following configuration details:
  - Source (BackOffice, External system)
  - Details about the source interface
    - Database
      - Database identification (as it is specified in the client configuration file and specify IP address, SID)
      - Schemas/passwords
      - Table name

      OR

    - file locations (location and file naming mask)
  - Destination (BackOffice, External systems, FinTPc database)
  - Details about destination location
    - Database
      - Database identification (as it is specified in the client configuration file and specify IP address, SID)
      - Schemas/passwords
      - Table name

      OR

    - file locations (location and file naming mask)

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3.3 SENVINIT02 – Initializing test beds

Nr.crt.	Scenario	Prriority	Result
1	The user (tester) selects the option to initialize an testing environment (a business flow or all business flows). Initializing a test bed means that the environment is checked and that data from previous tests that can affect future tests are cleared. Also, the logs of the FinTPc server are cleared.	1	The testing environment (for a business flow or for all business flows) is initialized

Preconditions:
Testing environment configuration is saved with details about business flows implemented.

Triggers:
User action.

Corresponding functional requirements:
[FENVINIT01 – Initializing test beds]

3.4 FENVINIT01 - Initializing test beds

When initializing the testing environments, the following should happen:

- Backoffice data from previous tests that can affect future tests are cleared (Source or Destination for the business flow)
  (nice to be: if backoffice database is not started, it is started automatically)
- External system data from previous tests that can affect future tests are cleared (Source or Destination for the business flow)
- User interface is checked to be up and running
  (nice to be: if application server is not started, it is started automatically)
- FinTPc application is restarted and old logs are cleared
- FinTPc application is checked to be up and running
- FinTPc internal database data is cleared
  (nice to be: if FinTPc database is not started, it is started automatically)
- Middleware queues are cleared
  (nice to be: if middleware is not started, it is started automatically)

After each initialization operation, a log is produced with the following details:

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- timestamp when initialization occurred
- details about the business flow being initialized
- every activity occurred during the initialization and the result (OK, NOT OK)
- for every activity that did not finished OK, the error received by the program (example: could not connect to database, could not connect to Middleware Server, etc.).
  The error should be explicit enough to help in investigating and diagnosing the error.

Initialization testing environment can be integrated in another complex automated tests, such as functional or acceptance test.

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3.5 SDATA01 – Data generation for payments

This module makes use of the testing environment configuration module.
This module should generate data for payment business flow and for all interfaces that are supported in a custom configuration (files, database).
It allows to define, import and edit (if necessary) test data for payment flow.
Data should be meaningful from business point of view and should be diverse enough to cover different scenarios.
Data generated with this module can be used in by FinTP Tracker module - the benchmarking tool that performs relevant performance analysis for FinTPc.

Nr.crt.	Scenario	Priority	Result
1	In a testing environment, the user selects payment business flow, transaction type and choose to create a template for payment data generation (back-office system)	1	The template for payment data generation for the selected environment is created
2	The user selects the template for payment data generation and choose to generate payment data (back-office system)	1	The data is generated (scripts that need to be run on database or files that need to be copied in the source location in the back-office system)

Preconditions:
Lists used for generating valid data are populated in FinTPc database or in files.
Testing environment configuration is saved with details about business flows implemented.

Triggers:
User action.

Corresponding functional requirements:
[FDATA01 – Data generation template for payment]
[FDATA02 – Data generation for payment using templates]

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3.6 FDATA01 – Data generation template for payment

The user configures/selects the following when he wants to create a template for payment generation:

- Payment business flow
- the name of the data generation template
- the payment types that are to be generated (tax, salaries, providers etc.)
- the structure of data generated
  - columns, column type and size for database
  - field and field delimiters for text files (comma separated or fixed width)
- the rules for generating data for each payment type. For every column the following may be configured:
  - the rules for generating valid data: columns can have entries from lists defined in FinTPc or in a file or other generating rules like masks and incremental values using counters
  - the rules for generating invalid data – in the form of masks or fixed values

The following operations are supported for data generation templates:

- Add
- Edit
- Delete

3.7 FDATA02 – Data generation for payment using templates

The user configures/selects the following when he wants to generate payment data using a template for payment generation:

- The environment – Payment business flow
- The name of the data generation template
- The number of transactions to be generated
  - Valid data
  - Invalid data

- As a result of this operation, the data is generated (scripts that need to be run on backoffice database or files that need to be copied in the source location)
- The generated log contains information about data generated (environment, number of transactions – valid and invalid).

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3.8 SDATA02 – Data generation for statements

This module makes use of the testing environment configuration module.
This module should generate data for statement business flow and for all interfaces that are supported in a custom configuration (in this case, only files).
It allows to define, import and edit (if necessary) test data for payment flow.
Data should be meaningful from business point of view and should be diverse enough to cover different scenarios.
Data generated with this module can be used in by FinTP Tracker module - the benchmarking tool that performs relevant performance analysis for FinTPc.

Nr.crt.	Scenario	Priority	Result
1	In a testing environment, the user selects statement business flow and choose to create a template for statement data generation (external communication system)	1	The template for statement data generation for the selected environment is created
2	The user selects the template for statement data generation and choose to generate statements (external communication system)	1	The statement(s) is generated (files that need to be copied in the source location for external communication system)

Preconditions:
Lists used for generating valid data are populated in FinTPc database.
Testing environment configuration is saved with details about business flows implemented.

Triggers:
User action.

Corresponding functional requirements:
[FDATA03 – Data generation template for statement]
[FDATA04 – Data generation for statement using templates]

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3.9 FDATA03 – Data generation template for statement

The user configures/selects the following when he wants to create a template for statement generation:

- Statement business flow
- The name of the data generation template
- The rules for creating statement file
  The user has the possibility to select to generate statement file, and in particular, statement transactions, using rules:
  - Rules for debit transactions
    - Valid data: fields can have entries from lists defined in FinTPc or in a file or other generating rules like masks and incremental values using counters
    - Invalid data: fields are in the form of masks or fixed values or incremental values
  - Rules for credit transactions
    - Valid data: fields can have entries from lists defined in FinTPc or in a file or other generating rules like masks and incremental values using counters
    - Invalid data: fields are in the form of masks or fixed values or incremental values

  Also, optional, alternative rules for valid statement transactions generation can be configured/selected:
  - Debit transactions – based on the payments loaded in FinTPc application at the moment of the generation
  - Credit transaction - based on the issued invoices loaded in FinTPc application at the moment of the generation

  The user can configure/select one or both transaction types (debit transactions, credit transactions) in a template.

The following operations are supported for data generation templates:

- Add
- Edit
- Delete

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3.10 FDATA04 – Data generation for statement using templates

The user configures/selects the following when he wants to generate statement data using a template for statement generation:

- The environment – Statement business flow
- The name of the data generation template
- The number of transactions to be generated
  - Debit transactions
    - Valid data
    - Invalid data
  - Credit transactions
    - Valid data
    - Invalid data

As a result of this operation, the data is generated (a statement file that need to be copied in the source location with debit/credit transactions corresponding to payments and issued invoices loaded in FinTPc application)
The generated log contains information about data generated (environment, number of transactions – valid and invalid).

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3.11 SDATA03 – Data generation for invoices

This module makes use of the testing environment configuration module.
This module should generate data for invoices business flow and for all interfaces that are supported in a custom configuration (files, database).
It allows to define, import and edit (if necessary) test data for payment flow.
Data should be meaningful from business point of view and should be diverse enough to cover different scenarios.
Data generated with this module can be used in by FinTP Tracker module - the benchmarking tool that performs relevant performance analysis for FinTPc.

Nr.crt.	Scenario	Priority	Result
1	In a testing environment, the user selects invoices business flow and choose to create a template for invoices data generation (back-office system)	1	The template for invoices data generation for the selected environment is created
2	The user selects the template for invoices data generation and choose to generate invoices (back-office system)	1	The data is generated (scripts that need to be run on database or files that need to be copied in the source location in the back-office system)

Preconditions:
Lists used for generating valid data are populated in FinTPc database.
Testing environment configuration is saved with details about business flows implemented.

Preconditions:

Triggers:
User action.

Corresponding functional requirements:
[FDATA05 – Data generation template for invoices]
[FDATA06 – Data generation for invoices using templates]

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3.12 FDATA05 – Data generation template for invoices

The user configures/select the following when he wants to create a template for invoices generation:

- Invoices business flow
- The name of the data generation template
- the invoices types that are to be generated
  - issued invoices
    Or
  - supplier received invoices
- the structure of data generated
  - columns, column type and size for database
  - field and field delimiters for text files (comma separated or fixed width)
- The rules for generating data for each invoice type. For every column the following may be configured:
  - The rules for generating valid data: columns can have entries from lists defined in FinTPc or in a file or other generating rules like masks and incremental values using counters
  - The rules for generating invalid data – in the form of masks or fixed values

  Also, alternative rules for invoice data generation can be configured/selected:
  - issued invoices – based on the credit statement transaction loaded in FinTPc application at the moment of the generation
  - supplier received invoices - based on the payments loaded in FinTPc application at the moment of the generation

The following operations are supported for data generation templates:

- Add
- Edit
- Delete

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3.13 FDATA06 – Data generation for invoices using templates

The user configures/selects the following when he wants to generate invoice data using a template for invoice generation:

- The environment – invoice business flow
- The name of the data generation template
- The number of transactions to be generated
  - issued invoices
    Or
  - supplier received invoices

As a result of this operation, the data is generated (scripts that need to be run on backoffice database or files that need to be copied in the source location)
The generated log contains information about data generated (environment, number of transactions – valid and invalid).

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3.14 SDATA04 – Data generation for reconciliation

Data generation for reconciliation functionality is done as part of data generation for statement and data generation for invoices, as these offer an alternate way to generate statements and invoices based on transactions already found in FinTPc.

3 reconciliation types are included in **FinTPc**, and data generation for each is as follows:

- payments (any type) with supplier (received) invoices
  Data generation for invoices has an alternate way to generate supplier received invoices based on existing payments in **FinTPc** application

- collections (credit statement transactions) with issued invoices
  Data generation for invoices has an alternate way to generate issued invoices based on the credit statement transaction loaded in FinTPc application at the moment of the generation

- payments with debit statement transactions
  Data generation for statements has an alternate way to generate debit statement transaction based on payments loaded in FinTPc application at the moment of the generation

Preconditions:

Triggers:
User action.

Corresponding functional requirements:
[FDATA03 – Data generation template for statement]
[FDATA05 – Data generation template for invoices]

3.15 FUNIT – Unit tests

A unit is the smallest software item that can be tested in isolation. It can also be defined as minimal software item for which separate specification is available.
Unit tests use white-box testing technique, in which the internal structure/ design/ implementation of the item being tested is known.
Unit Testing is the first level of testing and is performed prior all other tests, and usually by programmers themselves, as the unit test must start from coding lines and internal design implementation.

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Attn.: Allevo

From: Raluca Baciu

Subject: FinTPc-AT Software Requirements Specifications

allevo THINKING EVOLUTION

Nr.crt.	Scenario	Priority	Result
1	**FinTPc-AT** has a module to organize unit tests (add, edit, remove) Unit tests that can be easily added, as new features or functionalities are added to **FinTPc**.	2	Unit tests are available in **FinTPc-AT**
2	The user (tester or developer) has the possibility to select multiple unit tests and to run them at any time	2	A log is produced with the unit tests, the version of the software tested and testing result for each unit test

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3.16 SFUNCUI01 – Lists administration

Nr.crt.	Scenario	Priority	Result
1	The user (tester) configures the test designed to check **lists administration** in FinTPc: ▪ Testing environment OR ▪ Link to the user interface ▪ User to connect to user interface ▪ UI version	1	The test is saved
2	The user (tester) runs the test designed to check **lists administration**	1	A log is produced with the testing result

Preconditions:

Triggers:
User action.

Input: User interface
Output: User interface

Corresponding functional requirements:
[FFUNCUI01 – Application Administration Lists]
[FFUNCUI02 – Business Administration Lists]

3.17 FFUNCUI01 – Application Administration Lists

The following lists will be tested from management point of view:
- Parameters
- Alerts

The following operations for lists managements are tested:
- Add
- Edit/modify
- Delete/remove

The log created contains the following information:
- the testing environment
- the UI version tested
- the link to the user interface
- the user used to connect to user interface

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- the lists tested
- the result of each operation for each list

The log can be used in support investigating errors occurred or in diagnosis activity.

3.18 FFUNCUI02 – Business Administration Lists

The following lists will be tested from management point of view:

- BICs
- Entities
- Transactions types list
- Entity Accounts
- Internal account
- Black-list IBANs

The following operations for lists managements are tested:

- Add
- Edit/modify
- Delete/remove

The log created contains the following information:

- the testing environment
- the UI version tested
- the link to the user interface
- the user used to connect to user interface
- the lists tested
- the result of each operation for each list

The log can be used in support investigating errors occurred or in diagnosis activity.

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3.19 SFUNCUI02 – Payment templates administration

Nr.crt.	Scenario	Priority	Result
1	The user (tester) configure the test designed to check **payment templates administration** in FinTPc: ▪ Testing environment OR ▪ link to the user interface ▪ User to connect to user interface ▪ UI version	1	The test is saved
2	The user (tester) runs the test designed to check **payment templates administration**	1	A log is produced with the testing result

Preconditions:

Triggers:
User action.

Input: User interface
Output: User interface

Corresponding functional requirements:
[FFUNCUI03 – Payment templates administration]

3.20 FFUNCUI03 – Payment templates administration

The following type of payment templates will be tested from management point of view:

- Simple
- Multiple payments
- Repetitive payments

The following operations for payment templates managements are tested:

- Add
- Edit/modify
- Delete/remove

The log created contains the following information:

- the testing environment
- the UI version tested
- the link to the user interface
- the user used to connect to user interface
- the payment template tested

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- the result of each operation for each template type

The log can be used in support investigating errors occurred or in diagnosis activity.

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3.21 SFUNCUI03 – Reports – General Transactions Report

Nr.crt.	Scenario	Priority	Result
1	The user (tester) configure the test designed to check **Transactions Report** in FinTPc: ▪ Testing environment OR ▪ Link to the user interface ▪ User to connect to user interface ▪ UI version OR The testing environment	1	A log is produced with the testing result

Preconditions:
FinTPc database contains all types of transactions (payments, invoices, statements) that correspond to different search criteria

Triggers:
User action.

Input: User interface
Output: User interface

Corresponding functional requirements:
[FFUNCUI04 – Reports - Transactions Report]

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3.22 FFUNCUI04 – Reports – General Transactions Report

The searching criteria for General Transactions Report defined in FinTPc SRS will be tested for:

- payments
- invoices
- statements

The following operations for running a report are tested:

- Column sorting
- Export
- Create/modify/delete report template

The log created contains the following information:

- the UI version tested
- the link to the user interface
- the user used to connect to user interface
- the criteria and operations tested
- the result of each search criteria and operation
- the result of each report template operation

The log can be used in support investigating errors occurred or in diagnosis activity.

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3.23 SFUNCUI04 – Reports – Events Report

Nr.crt.	Scenario	Priority	Result
1	The user (tester) configure the test designed to check **Events Report** in FinTPc: ▪ Testing environment OR ▪ Link to the user interface ▪ User to connect to user interface ▪ UI version	1	A log is produced with the testing result

Preconditions:
FinTPc database contains all types of events that correspond to different search criteria

Triggers:
User action.

Input: User interface
Output: User interface

Corresponding functional requirements:
[FFUNCUI05 – Events Report]

3.24 FFUNCUI05 – Reports - Events Report

The following searching search criteria will be tested:

- Period, statements date

The following operations for running a report are tested:

- Column sorting
- Export

The log created contains the following information:

- the testing environment
- the UI version tested
- the link to the user interface
- the user used to connect to user interface
- the criteria and operations tested
- the result of each search criteria and operation

The log can be used in support investigating errors occurred or in diagnosis activity.

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3.25 SFUNCUI05 – User rights

Nr.crt.	Scenario	Priority	Result
2	The user (tester) configure the test designed to check **User rights** in FinTPc: ▪ Testing environment OR ▪ Link to the user interface ▪ User to connect to user interface ▪ UI version	1	A log is produced with the testing result

Preconditions:
FinTPc database contains all types of events that correspond to different search criteria

Triggers:
User action.

Input: User interface
Output: User interface

Corresponding functional requirements:
[FFUNCUI06 – User rights]

3.26 FFUNCUI06 – User rights

The log created contains the following information:

- the UI version tested
- the link to the user interface
- the user used to connect to user interface
- the user right tested
- the results

The log can be used in support investigating errors occurred or in diagnosis activity.

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3.27 SFUNCFLOW01 – Payments from BO in FinTPc

Nr.crt.	Scenario	Priority	Result
1	The user (tester) configures the test designed to check the flow **Payments from BO in FinTPc** on a specific testing environment	1	The functional test is saved in the specified environment
2	The user (tester) runs the test designed to check the flow **Payments from BO in FinTPc** in the testing environment	1	A log is produced with the testing result

Preconditions:

Testing environment configuration saved.
Initialization of test beds configured and saved.
Data generation for payment configured and saved.

Triggers:
User action.

Input: Backoffice interface (database or file)
Output: Authorization queue in FinTPc (FinTPc database)

Corresponding functional requirements:
[FFUNCFLOW01– Payments from BO in FinTPc]

3.28 FFUNCFLOW01 – Payments from BO in FinTPc

The user configures:

- The testing environment
- The activities performed for the functional test:
  - Initializing test bed
  - Payment data generation
  - Expected result - FinTPc queues for valid and invalid backoffice payment data

The following sequence of activities occurs:

- Using initializing test bed module, the environment is initialized (old business data cleared, application restarted, new logs created etc.)
- Using data generation for payment module, payments are generated in backoffice (valid and invalid data)

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- FinTPc loads backoffice data
- FinTPc-AT module checks that valid data is routed in FinTPc in the corresponding authorization queue (expected result)
- FinTPc-AT module checks that invalid data is routed in FinTPc in the corresponding investigation queue (expected result)

The log created contains the following information:

- Details about the environment tested (the context in which the testing was run) – nice to
- Details about FinTPc version tested
- Details about the test itself (what was tested, the result of each stage)

The log can be used in support investigating errors occurred or in diagnosis activity.

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3.29 SFUNCFLOW02 – Generation of payment files

Nr.crt.	Scenario	Priority	Result
1	The user (tester) configures the test designed to check the flow **generation of payment files** on a specific testing environment	1	The functional test is saved in the specified environment
2	The user (tester) runs the test designed to check the flow **generation of payment files** in the testing environment	1	A log is produced with the testing result

Preconditions:

Testing environment configuration saved.
Initialization of test beds configured and saved.
Data generation for payment configured and saved.
Functional test **Payments from BO in FinTPc** is saved and run.

Triggers:
User action.

Input: FinTPc database
Output: Files (containing multiple payments)

Corresponding functional requirements:
[FFUNCFLOW02– Generation of payment files]

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3.30 FFUNCFLOW02 – Generation of payment files

The user configures:

- The testing environment
- The activities performed for the functional test:
  - Functional test **Payments from BO in FinTPc**
  - Authorize of payments in configured payment authorization queue
  - Expected result – location for payment files generation

The following sequence of activities occurs:

- The valid payments loaded in **FinTPc** from previous test is authorized
- **FinTPc** creates the payments files (authorize the payments from FinTPc authorization queue)
- **FinTPc-AT** checks that the payment files are created and they contain all the valid payments authorized from **FinTPc**

The log created contains the following information:

- Details about the environment tested (the context in which the testing was run) – nice to be
- Details about FinTPc version tested
- Details about the test itself (what was tested, the result of each stage)

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3.31 SFUNCFLOW03 – Invoices from BO in FinTPc

Nr.crt.	Scenario	Priority	Result
1	The user (tester) configures the test designed to check the flow **Invoices from BO in FinTPc** on a specific testing environment	1	The functional test is saved in the specified environment
2	The user (tester) runs the test designed to check the flow **Invoices from BO in FinTPc** the testing environment	1	A log is produced with the testing result

Preconditions:

Testing environment configuration saved.
Initialization of test beds configured and saved.
Data generation for invoices configured and saved.

Triggers:
User action.

Input: Backoffice interface (database or file)
Output: FinTPc database

Corresponding functional requirements:
[FFUNCFLOW03– Invoices from BO in FinTPc]

3.32 FFUNCFLOW03 – Invoices from BO in FinTPc

The user configures:

- The testing environment
- The activities performed for the functional test:
  - Initializing test bed
  - invoice data generation
  - Expected result - FinTPc queues for valid and invalid invoices

The following sequence of activities occurs:

- Using initializing test bed module, the environment is initialized (old business data cleared, application restarted, new logs created etc.)
- Using data generation for invoice module, invoices are generated in backoffice (valid and invalid data)

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- FinTPc loads backoffice data
- FinTPc-AT module checks that valid data is routed in FinTPc in the corresponding authorization queue
- FinTPc-AT module checks that invalid data is routed in FinTPc in the corresponding investigation queue

The log created contains the following information:

- Details about the environment tested (the context in which the testing was run) – nice to be
- Details about FinTPc version tested
- Details about the test itself (what was tested, the result of each stage)

The log can be used in support investigating errors occurred or in diagnosis activity.

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3.33 SFUNCFLOW04 – Statements from banks in FinTPc

Nr.crt.	Scenario	Priority	Result
1	The user (tester) configures the test designed to check the flow **Statements from banks in FinTPc** on a specific testing environment	1	The functional test is saved in the specified environment
2	The user (tester) runs the test designed to check the flow **Statements from BO in FinTPc** the testing environment	1	A log is produced with the testing result

Preconditions:

Testing environment configuration saved.
Initialization of test beds configured and saved.
Data generation for statement configured and saved.

Triggers:
User action.

Input: File (containing multiple credit and debit transactions)
Output: FinTPc database

Corresponding functional requirements:
[FFUNCFLOW04– Statements from banks in FinTPc]

3.34 FFUNCFLOW04 – Statements from banks in FinTPc

The user configures:

- The testing environment
- The activities performed for the functional test:
  - Initializing test bed
  - Statement data generation
  - Expected result - FinTPc queues for valid and invalid statement transactions

The following sequence of activities occurs:

- Using initializing test bed module, the environment is initialized (old business data cleared, application restarted, new logs created etc.)
- Using data generation for statement module, invoices are generated in the indicated location (valid and invalid data)
- FinTPc loads statement files

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- FinTPc-AT module checks that valid data is routed in FinTPc in the corresponding authorization queue
- FinTPc-AT module checks that invalid data is routed in FinTPc in the corresponding investigation queue

The log created contains the following information:

- Details about the environment tested (the context in which the testing was run) – nice to be
- Details about FinTPc version tested
- Details about the test itself (what was tested, the result of each stage)

The log can be used in support investigating errors occurred or in diagnosis activity.

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3.35 SFUNCFLOW05 – Statement transactions to BO

Nr.crt.	Scenario	Priority	Result
1	The user (tester) configures the test designed to check the flow **Statement transactions to BO** on a specific testing environment	1	The functional test is saved in the specified environment
2	The user (tester) runs the test designed to check the flow **Statements transactions to BO** in the testing environment	1	A log is produced with the testing result

Preconditions:

Testing environment configuration saved.
Initialization of test beds configured and saved.
Data generation for statement configured and saved.
Functional test **Statements from banks in FinTP** is saved and run.

Triggers:
User action.

Input: FinTPc database
Output: Backoffice interface (database or file)

Corresponding functional requirements:
[FFUNCFLOW05– Statement transactions to BO]

3.36 FFUNCFLOW05 – Statement transactions to BO

The user configures:

- The testing environment
- The activities performed for the functional test:
  - Functional test **Statements from banks in FinTP**
  - Authorize of statement transactions in configured statement authorization queue
  - Expected result – location for authorized statements (file or database)

The following sequence of activities occurs:

- The valid statement transactions loaded in **FinTPc** from previous test is authorized

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- **FinTPc** creates the statement transactions file
- **FinTPc-AT** checks that the created statement transactions file contains all the valid statement transactions authorized from **FinTPc**

The log created contains the following information:

- Details about the environment tested (the context in which the testing was run) – nice to be
- Details about FinTPc version tested
- Details about the test itself (what was tested, the result of each stage)

The log can be used in support investigating errors occurred or in diagnosis activity.

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3.37 SACCEPT01 – Payments flow

This acceptance test can be used to validate a new installation or for confidence tests on a running environment. This test checks also the mapping of the generated payment files.

Nr.crt.	Scenario	Priority	Result
1	The user (tester) configures the test designed to check the **Payments** flow on a specific testing environment ▪ a predefined set of data from backoffice (payment data generation with specific parameters) ▪ a predefined generated payment files for banks (in MT100 format or in pain format) (the expected result)	1	The acceptance test is saved in the specified environment
2	The user (tester) runs the test designed to check the **Payments** flow in the testing environment	1	A log is produced with the testing result

Preconditions:
Testing environment configuration saved.
Initialization of test beds configured and saved.
Data generation for payment configured and saved.
Functional test Payments from BO in FinTPc is saved.
Functional test Generation of payment files is saved.

Triggers:
User action.

Input: Backoffice interface (database or file)
Output: Files (containing multiple payments)

Corresponding functional requirements:
[FFUNCACCEPT01 – Payments flow]

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3.38 FFUNCACCEPT01 – Payments flow

The user configures:

- The activities performed for the functional test:
  - Functional test **Payments from BO in FinTPc** (with a predefined set of data from backoffice: **Data generation for payments** with specific parameters)
  - Functional test **Generation of payment files**
- a predefined generated payment files for banks (in MT100 format or in pain format) (the expected result)

When defining and saving the expected result (the file used for further compares), the user has the possibility to configure some output fields in the form of the mask (for example date type field).

The activities performed for the functional test:

- Functional test **Payments from BO in FinTPc**
- Functional test **Generation of payment files**
- FinTPc-AT compares the generated payment files with the predefined generated payment message for banks (in MT100 format or in pain format) (the expected result)

The log created contains the following information:

- Details about the environment tested (the context in which the testing was run) – nice to be
- The xslt revision number
- Details about the test itself (what was tested, the result of each stage)
- Fields that did not mapped as expected

The log can be used in support investigating errors occurred or in diagnosis activity.

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3.39 SACCEPT02 – Statements flow

This acceptance test can be used to validate a new installation or for confidence tests on a running environment. This test checks also the mapping of the received statement files.

Nr.crt.	Scenario	Priority	Result
1	The user (tester) configures the test designed to check the **Statements** flow on a specific testing environment ▪ a predefined set of data for received statements ▪ a predefined generated statement transaction (file or database for accounting application) (the expected result)	1	The acceptance test is saved in the specified environment
2	The user (tester) runs the test designed to check the **Statements** flow in the testing environment	1	A log is produced with the testing result

Preconditions:

Testing environment configuration saved.
Initialization of test beds configured and saved.
Data generation for payment configured and saved.
Functional test Statements from banks in FinTPc is saved.
Functional test Statement transactions to BO saved.

Triggers:
User action.

Input: Files (containing multiple payments)
Output: Backoffice interface (database or file)

Corresponding functional requirements:
[FFUNCACCEPT02 – Statements flow]

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3.40 FFUNCACCEPT02 – Statements flow

The user configures:

- The activities performed for the functional test:
  - Functional test **Payments from BO in FinTPc** (with a predefined set of statement data: **Data generation for statements** with specific parameters)
  - Functional test **Generation of payment files**

- a predefined generated statement transaction (file or database) for accounting application (the expected result)

When defining and saving the expected result (the file or database content used for further compares), the user has the possibility to configure some output fields in the form of the mask (for example date type field).

The activities performed for the functional test:

- Functional test **Statements from banks in FinTPc**
- Functional test **Statement transactions to BO**
- FinTPc-AT compares the generated statement transactions file with the predefined statement transaction file for accounting application (the expected result)

The log created contains the following information:

- Details about the environment tested (the context in which the testing was run) – nice to be
- The xslt revision number
- Details about the test itself (what was tested, the result of each stage)
- Fields that did not mapped as expected

The log can be used in support investigating errors occurred or in diagnosis activity.

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3.41 SACCEPT03 – Invoices flow

This acceptance test can be used to validate a new installation or for confidence tests on a running environment.

Nr.crt.	Scenario	Priority	Result
1	The user (tester) configures the test designed to check the **Invoices** flow on a specific testing environment The user configures: ▪ a predefined set of data for invoices from BO ▪ a predefined data corresponding to invoices in FinTPc (the expected result)	1	The acceptance test is saved in the specified environment
2	The user (tester) runs the test designed to check the **Invoices** flow in the testing environment	1	A log is produced with the testing result

Preconditions:

Testing environment configuration saved.
Initialization of test beds configured and saved.
Data generation for invoices configured and saved.
Functional test Invoices from Bo in FinTPc is saved.

Triggers:
User action.

Input: Backoffice interface (database or file)
Output: FinTPc internal database

Corresponding functional requirements:
[FFUNCACCEPT03 – Invoices flow]

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3.42 FFUNCACCEPT03 – Invoices flow

The user configures:

- The activities performed for the functional test:
  - Functional test **Invoices from BO in FinTPc** (with a predefined set of data from backoffice: **Data generation for invoices** with specific parameters)
  - Functional test **Mapping of invoices**
- a predefined FinTPc database inserts corresponding to invoices (the expected result)

The following sequence of activities occurs:

- FinTPc-AT runs the functional test for Invoices from Bo in FinTPc
- FinTPc-AT runs the functional test for Mapping of invoices in FinTPc
- FinTPc-AT compares the invoices in FinTPc with the predefined invoices (the expected result)

The log created contains the following information:

- Details about the environment tested (the context in which the testing was run) – nice to be
- Details about FinTPc version tested
- The xslt revision number
- Details about the test itself (what was tested, the result of each stage)
- Fields that did not mapped as expected

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3.43 Non-functional requirements

	Requirement – non-functional	Priority	Notes
1	FinTPc upgrades don't affect automatic testing (past or future)	1	FinTPc-TA must be periodically updated for compliance with the new regulations and the new applicable financial standards
2	FinTPc-TA has to be able to run on all types of environments (test, pre-live, backup) without affecting the processing flows	1	Depending on the architecture of each corporation, must allow easy installation and configuration on any FinTPc platform (test, pre-live, backup
3	Source code is published on GitHub with the same license as FinTPc	1	FinTPc-TA is an open source application published on GitHub (source code and executable code fintp.org respectively) under the GPL V3 license as well as FinTPc

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4. External Interface Requirements

4.1 User Interfaces

<Describe the logical characteristics of each interface between the software product and the users. This may include sample screen images, any GUI standards or product family style guides that are to be followed, screen layout constraints, standard buttons and functions (e.g., help) that will appear on every screen, keyboard shortcuts, error message display standards, and so on. Define the software components for which a user interface is needed. Details of the user interface design should be documented in a separate user interface specification.>

4.2 Hardware Interfaces

<Describe the logical and physical characteristics of each interface between the software product and the hardware components of the system. This may include the supported device types, the nature of the data and control interactions between the software and the hardware, and communication protocols to be used.>

4.3 Software Interfaces

<Describe the connections between this product and other specific software components (name and version), including databases, operating systems, tools, libraries, and integrated commercial components. Identify the data items or messages coming into the system and going out and describe the purpose of each. Describe the services needed and the nature of communications. Refer to documents that describe detailed application programming interface protocols. Identify data that will be shared across software components. If the data sharing mechanism must be implemented in a specific way (for example, use of a global data area in a multitasking operating system), specify this as an implementation constraint.>

4.4 Communications Interfaces

<Describe the requirements associated with any communications functions required by this product, including e-mail, web browser, network server communications protocols, electronic forms, and so on. Define any pertinent message formatting. Identify any communication standards that will be used, such as FTP or HTTP. Specify any communication security or encryption issues, data transfer rates, and synchronization mechanisms.>

5. Other Nonfunctional Requirements

5.1 Performance Requirements

<If there are performance requirements for the product under various circumstances, state them here and explain their rationale, to help the developers understand the intent and make suitable design choices. Specify the timing relationships for real time systems. Make such requirements as specific as possible. You may need to state performance requirements for individual functional requirements or features.>

5.2 Safety Requirements

<Specify those requirements that are concerned with possible loss, damage, or harm that could result from the use of the product. Define any safeguards or actions that must be taken, as well as actions that must be prevented. Refer to any external policies

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RC: J40/2067/94
CIF: RO5258486
SWIFT PIC: PTSAROAA
DUNS: 55-244-8078
Certificat ISO 9001:2015
Certificat ISO/IEC 27001:2013

or regulations that state safety issues that affect the product's design or use. Define any safety certifications that must be satisfied.>

5.3 Security Requirements

<Specify any requirements regarding security or privacy issues surrounding use of the product or protection of the data used or created by the product. Define any user identity authentication requirements. Refer to any external policies or regulations containing security issues that affect the product. Define any security or privacy certifications that must be satisfied.>

5.4 Software Quality Attributes

<Specify any additional quality characteristics for the product that will be important to either the customers or the developers. Some to consider are: adaptability, availability, correctness, flexibility, interoperability, maintainability, portability, reliability, reusability, robustness, testability, and usability. Write these to be specific, quantitative, and verifiable when possible. At the least, clarify the relative preferences for various attributes, such as ease of use over ease of learning.>

6. Other Requirements

<Define any other requirements not covered elsewhere in the SRS. This might include database requirements, internationalization requirements, legal requirements, reuse objectives for the project, and so on. Add any new sections that are pertinent to the project.>

7. Appendix A: Glossary

<Define all the terms necessary to properly interpret the SRS, including acronyms and abbreviations. You may wish to build a separate glossary that spans multiple projects or the entire organization, and just include terms specific to a single project in each SRS.>

AIX	Advanced Interactive Executive
AML	Anti-money Laundering
API	Application Programming Interface
AMQ	Apache Message Queuing
CPU	Central Processing Unit
DB	Database
ERP	Enterprise Resource Planning
FinTPc	Financial Transaction Processing for Corporates
FinTP	Financial Transaction Processing
GPL V3	General Public License version 3

Business Information Systems (Allevo) SRL
Sediu social:
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HA	High Availability
HACMP	High-Availability Cluster Multi-Processing
HTTP	Hypertext Transfer Protocol
HTTPs	Hypertext Transfer Protocol Secure
I/O	Input/output
IBAN	International Bank Account Number
ISO	International Organization for Standardization
JMS	Java Message Service
LDAPS	Lightweight Directory Access Protocol over SSL
MQ	Message Queuing
MT	Message Type (SWIFT MTs)
RAID	Redundant Array of Independent Disks
RAM	Random-access Memory
RTGS	Real Time Gross Settlement
qPI	qPayIntegrator
OS	Operating System
SAN	Storage Area Network
SFTP	SSH File Transfer Protocol
SRS	Software Requirements Specification
SSL	Secure Sockets Layer
STP	Straight Through Processing
SWIFT	Society for Worldwide Interbank Financial Telecommunication
TOSS	Treasure on Open Source Software
UI	User Interface
URL	Uniform Resource Locator

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