

APPENDIX E: INPUT DATA FOR EVALUATION

The following scenario descriptions detail the behavior perceived in four systems used in the literature as baseline or referential specification to evaluate the accuracy of defect detection approaches in use cases or scenarios: Online Broker System [36], ATM use cases [11], Dlibra CRM [8] and Mobile News [8].

The highlighted words or phrases within internal scenario elements (Title, Goal, Context, Resource, Actor, Episodes, Alternatives), are defect indicators detected by the experts and the authors (manually and with the help of the C&L) from the documents, which act as the baseline for the evaluation of our automated analysis approach.

A defect within scenario element is detailed in a new line after the scenario element using the following format: (<Property> - (TP | FP | FN): <Detail>), where “Property” is the quality negatively impacted by the defect, “TP | FP | FN” is the classification of the defect, and “Detail” gives a description of the defect for fixing.

A defect is:

- *True Positive (TP)*: A defect identified by the approach that is consistent with expert decision (Defect occurs).
- *False Positive (FP)*: A defect identified by the approach that is inconsistent with expert decision (Defect does not occur).
- *False Negative (FN)*: A defect not identified by the approach that is inconsistent with expert decision (Defect occurs).

A. The Online Broker System

Table 23, 24 and 25 show the Unambiguity, Completeness and Consistency analysis results in scenarios (Title, Goal, Episodes, Exceptions) from Online Broker System.

TABLE 23
UNAMBIGUITY ANALYSIS OF ONLINE BROKE SYSTEM

Scenario	Vagueness			Subjectiveness			Optionalilty			Weakness			Multiplicity			Implicitly			Quantifiability		
	TP	FP	FN	TP	FP	FN	TP	FP	FN	TP	FP	FN	TP	FP	FN	TP	FP	FN	TP	FP	FN
1	1			1																	
2																					
3																					
4																					
5													1			1					
6													2			1					
Total	1	0	0	1	0	0	0	0	0	0	0	0	3	0	0	2	0	0	0	0	0

TABLE 24
COMPLETENESS ANALYSIS OF ONLINE BROKE SYSTEM

[illegible]

TABLE 25
CONSISTENCY ANALYSIS OF ONLINE BROKE SYSTEM

[illegible]

TITLE: **Submit Order**

(*Soundness - TP: Title does not describe the Goal*)

GOAL: Allow customers to **find** the **best** supplier for a given order.

(*Subjective - TP: ambiguous indicator*)

CONTEXT:

PRE-CONDITION: The Broker System is online AND the Broker System welcome page is being displayed

ACTOR: Customer, Broker System

RESOURCE:

EPISODES:

(*Usefulness - TP: Too long scenario - Num. episodes > 10*)

1. The Customer loads the login page
2. The Broker System asks for the Customer's login information
3. The Customer enters her login information
4. The Broker System checks the **provided** login information
- (*Vagueness - TP: ambiguous indicator*)
5. The Broker System displays an order page
6. The Customer creates a new Order
7. REPEAT the Customer adds an item to the Order WHILE the Customer has more items to add to the order
8. The Customer submits the Order
9. The Broker System **broadcast** the Order to the Suppliers
- (*Simplicity - TP: Missing Action-Verb in Present Tense form*)
10. # **LOCAL SUPPLIER** BID FOR ORDER
- (*Usefulness - TP: Actor mentioned in episode is not included in the Actor/Resource section*)
11. **INTERNATIONAL SUPPLIER** BID FOR ORDER #
- (*Usefulness - TP: Actor mentioned in episode is not included in the Actor/Resource section*)
- (*Non-interferential - FN: Simultaneous enabled operations in Local Supplier and International Supplier*)
12. PROCESS BIDS

ALTERNATE/EXCEPTION:

- 1a IF Customer is not registered THEN REGISTER CUSTOMER
- 2a. after 60 seconds
 - 2a1. The Broker System displays a login timeout page
- 4a. The Customer login information is not accurate
 - 4a1. GOTO Step 2.
- 8a. The Order is empty
 - 8a1. The Broker System displays an error page

TITLE: **Register Customer**

GOAL: Register Customer

CONTEXT: login page loaded

PRE-CONDITION:

POST-CONDITION:

ACTOR: Customer, Broker System

RESOURCE:

EPISODES:

1. Customer selects registration operation
2. Broker System asks for Customer name, date of birth and address
3. Customer enters registration information
4. Broker System validates Customer information
5. Broker System **generate** login information for Customer
- (*Simplicity - TP: Missing Action-Verb in Present Tense form*)

ALTERNATE/EXCEPTION:

- 4.a. Customer registration information is not valid
 - 4.a.1. Broker System displays registration failure page

TITLE: **Process Bids**

GOAL: Process a bid

CONTEXT: Process a Bid for an Order

PRE-CONDITION: Local Supplier has submitted a bid OR International Supplier has submitted a bid

POST-CONDITION:

ACTOR: Customer, **Broker System**

(Usefulness - TP: never participates in episodes)

RESOURCE:

EPISODES:

1. Customer examines the bid
 2. Customer signals the system to proceed with bid
 3. HANDLE PAYMENT
 4. System **put** an order with the selected bidder
- (Simplicity - TP: Missing Action-Verb in Present Tense form)*

TITLE: **Handle Payment**

GOAL: Handle Payment

CONTEXT: Handle payment for a Bid

PRE-CONDITION:

POST-CONDITION:

ACTOR: Customer, Broker System, Payment System

RESOURCE:

EPISODES:

1. The Broker System asks the Customer for Credit Card information
2. The Customer provides her Credit Card information
3. The Broker System asks a Payment System to process the Customer's Payment
4. The Broker System displays an acknowledgement message to the Customer

ALTERNATE/EXCEPTION:

- 3.a. The Customer Payment is denied
- 3.a.1. The Broker System displays a payment denied page

TITLE: **International Supplier bid for order**

(Soundness - TP: Title does not describe the Goal)

GOAL: Submit a bid

CONTEXT: Create a Bid for an Order

PRE-CONDITION: An Order has been broadcasted

POST-CONDITION: International Supplier has submitted a bid

(Non-interferential - TP: Simultaneous enabled operations in Local Supplier and International Supplier)

(Uniqueness - TP: Local Supplier bid for order and International Supplier bid for order are potentially duplicated)

ACTOR: International Supplier, Broker System

RESOURCE:

EPISODES:

1. International Supplier **receives** the Order **and examines it**
- (Implicit - TP: ambiguous indicator)*
- (Multiple - TP: ambiguous indicator)*
- (Simplicity - TP: Contains more than one Action-Verb)*
2. International Supplier submits a Bid for the Order
 3. The Broker System sends the Bid to the **Customer**
- (Usefulness - TP: Actor/Resource mentioned in episode is not included in the Actor/Resource element)*

ALTERNATE/EXCEPTION:

- 1.a. The Order includes items restricted for exportation
- 1.a.1. International Supplier passes on the Order
- 1.b. The International Supplier cannot satisfy the order
- 1.b.1. International Supplier passes on the Order

TITLE: **Local Supplier** bid for order

(Soundness - TP: Title does not describe the Goal)

GOAL: Submit a bid

CONTEXT: Create a Bid for an Order

PRE-CONDITION: An Order has been broadcasted

POST-CONDITION: Local Supplier has submitted a bid

(Non-interferential - TP: Simultaneous enabled operations in Local Supplier and International Supplier)

(Uniqueness - TP: Local Supplier bid for order and International Supplier bid for order are potentially duplicated)

ACTOR: Local Supplier, Broker System

RESOURCES:

EPISODES:

1. Local Supplier **receives** the Order **and** **examines it**

(Implicit - TP: ambiguous indicator)

(Multiple - TP: ambiguous indicator)

(Simplicity - TP: Contains more than one Action-Verb)

2. Local Supplier **determines** the applicable taxes to the order **and** **creates** a bid

(Multiple - TP: ambiguous indicator)

(Simplicity - TP: Contains more than one Action-Verb)

3. Local Supplier submits a Bid for the Order

4. The Broker System sends the Bid to the **Customer**

(Usefulness - TP: Actor/Resource mentioned in episode is not included in the Actor/Resource element)

ALTERNATE/EXCEPTION:

2.a. Local Supplier can not satisfy the Order

2.a.1. Local Supplier passes on the Order

B. ATM System

Table 26, 27 and 28 show the Unambiguity, Completeness and Consistency analysis results in scenarios (Title, Goal, Episodes, Exceptions) from ATM use cases.

TABLE 26
UNAMBIGUITY ANALYSIS OF ATM SYSTEM

Scenario	Vagueness			Subjectiveness			Optionalilty			Weakness			Multiplicity			Implicitly			Quantifiability		
	TP	FP	FN	TP	FP	FN	TP	FP	FN	TP	FP	FN	TP	FP	FN	TP	FP	FN	TP	FP	FN
1													1								
2																					
3																					
4																2					
5																					
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0

TABLE 27
COMPLETENESS ANALYSIS OF ATM SYSTEM

ID Scenario	Atomicity			Simplicity			Uniformity			Usefulness			Conceptually Soundness			Integrity			Coherency			Uniqueness		
	T	F	F	T	F	F	T	F	F	T	F	F	T	F	F	T	F	F	T	F	F	T	F	F
1				1			1			1														
2				2			1			1			1											
3				2																				
4																								
5				1									1											
Total	0	0	0	6	0	0	2	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0

TABLE 28

CONSISTENCY ANALYSIS OF ATM SYSTEM

ID Scenario	Non-interferential			Boundedness			Liveness			Reversibility		
	TP	FP	FN	TP	FP	FN	TP	FP	FN	TP	FP	FN
1							1					
2							1					
3	1											
4	1											
5												
Total	2	0	0	0	0	0	2	0	0	0	0	0

TITLE: **ACCESS ATM**

GOAL: User access the ATM.

CONTEXT: User wants to use the ATM.

PRE-CONDITION: ATM in ready state for new User

POST-CONDITION: User access granted; PIN and card validated.

ACTOR: User, ATM

RESOURCE:

EPISODES:

1. User inserts card into ATM.
2. ATM asks for a PIN.
3. User **types** in the numbers of his PIN **and presses** the Enter button
(Multiple - TP: ambiguous indicator)
(Simplicity - TP: Contains more than one Action-Verb)
4. ATM asks for account type.
5. **Customer** selects account.
(Usefulness - TP: Actor mentioned in episode is not included in the Actor/Resource section)
6. ATM displays User options.

ALTERNATE/EXCEPTION:

- 4a. ATM rejects unidentifiable car
(Uniformity - TP: Incomplete Cause)
(Liveness - TP: Never enabled operation)

TITLE: **WITHDRAW CASH***(Soundness - FP: Title does not describe the Goal)*

GOAL: User wants to withdraw money.

CONTEXT: User wants to withdraw money.

PRE-CONDITION: User has already logged onto the ATM.

POST-CONDITION: ATM ready for next User.

ACTOR: User, Bank, ATM

RESOURCES:

EPISODES:

(Usefulness - TP: Too long scenario - Num. episodes > 10)

1. User selects WITHDRAW CASH.
2. ATM prompts for amount.
3. User enters amount.
4. ATM verifies with the Bank that the User has enough money in account.
- 4.1 If insufficient funds in her account,
(Simplicity - TP: Nested Episode Sentence must be treated by a scenario)
- 4.2 ATM returns card to User.
- 4.3 User takes card.
5. ATM releases cash.
6. User takes cash.
7. ATM releases card.

8. User takes card.

(Simplicity - TP: Episode Sentence coincidence with episode "4.3")

ALTERNATE/EXCEPTION:

7a. ATM eats card.

(Uniformity - TP: Incomplete Cause)

(Liveness - TP: Never enabled operation)

TITLE: **CHANGE PIN**

GOAL: User wants to change their PIN.

CONTEXT: User wants to change their PIN.

PRE-CONDITION: User already logged onto the ATM

POST-CONDITION: New PIN read to card and Bank account

ACTOR: User, ATM

RESOURCE:

EPISODES:

1. User selects CHANGE PIN.

2. ATM prompts **her** to enter new PIN.

(Implicit - TP: ambiguous indicator)

3. **It** enters new PIN.

(Implicit - TP: ambiguous indicator)

(Simplicity/Usefulness - TP: Missing Subject/Undeclared Actor)

4. ATM prompts User to re-enter new PIN.

5. User re-enters new PIN.

6. ATM displays New PIN Successful message.

7. ATM displays list of options.

ALTERNATE/EXCEPTION:

4e ATM refuses new PIN.

4.1e User **asked** to re-enter new PIN

(Simplicity - TP: Missing Action-Verb in Present Tense form)

TITLE: **CHECK BALANCE**

GOAL: The User wants to check their account balance before withdrawing money.

CONTEXT: The User wants to check their account balance before withdrawing money.

PRE-CONDITION: User already logged onto the ATM

POST-CONDITION: Balance no longer displayed; ATM ready for a transaction.

ACTOR: User, Bank, ATM

RESOURCES:

EPISODES:

1. User selects balance of account.

2. User selects On Screen option.

3. ATM displays current balance on screen.

4. Bank retrieves User's current balance from their account.

5. ATM prompts for new option.

ALTERNATE/EXCEPTION:

2a. User selects On Paper option.

2.1a ATM prints balance on receipt

2.2a User takes receipt

TITLE: **MAKE DEPOSIT**

(Soundness - FP: Title does not describe the Goal)

GOAL: The User wants to deposit cash into the ATM

CONTEXT: The User wants to deposit cash into the ATM

PRE-CONDITION: The User has logged onto the ATM

3.1e ATM signals User of rejection.

[illegible]

TABLE 31
CONSISTENCY ANALYSIS OF DLIBRA

ID Scenario	Non-interferential			Boundedness			Liveness			Reversibility		
	TP	FP	FN	TP	FP	FN	TP	FP	FN	TP	FP	FN
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
Total	0	0	0	0	0	0	0	0	0	0	0	0

TITLE: Log in to the system

GOAL: Log in to the system

CONTEXT: User LOG IN TO THE SYSTEM

PRE-CONDITION:

POST-CONDITION:

ACTOR: User, System

RESOURCE:

EPISODES:

1. User selects login option.
2. User provides **all** required data.
(Quantifiable - TP: ambiguous indicator)
3. System verifies correctness of data.
4. System displays a main page.

ALTERNATE/EXCEPTION:

- 3.a. Data is incomplete or incorrect:
 - 3.a.1 System asks for data again.
 - 3.a.2 Back to step 2.

TITLE: Add a new client

GOAL: Add a new client

CONTEXT: user ADD A NEW CLIENT

PRE-CONDITION:

POST-CONDITION:

ACTOR: User, System

RESOURCE:

EPISODES:

1. User **select** option for adding new clients.
(Simplicity - TP: Missing Action-Verb in Present Tense form)
2. User fills **all** required personal client data forms.
(Quantifiable - TP: ambiguous indicator)
3. System verifies correctness of data.
4. System **adds** a new client to the database **and informs** user about **it**.
(Simplicity - TP: contains more than one Action-Verb)
(Multiple - TP: ambiguous indicator)

ALTERNATE/EXCEPTION:

- 3.a. Data is incomplete or incorrect:
 - 3.a.1 System informs user about problems.

- 3.a.2 User makes a correction to the data.
- 3.a.3 Back to step 3.
- 3.b. Client with same personal data already exists:
 - 3.b.1 System informs user about that fact.
 - 3.b.2 Back to step 1.
- 4.a. Client can't be added:
 - 4.a.1 System informs user about reason why client can't be added.

TITLE: Edit client data

GOAL: Edit client data

CONTEXT: EDIT CLIENT DATA

PRE-CONDITION:

POST-CONDITION:

ACTOR: user, System

RESOURCE:

EPISODES:

1. User select option for editing clients.
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
2. User modifies personal client data.
3. System verifies correctness of data.
4. System **saves** a new client data to the database **and informs** user about **it**.
(*Simplicity - TP: contains more than one Action-Verb*)
(*Multiple - TP: ambiguous indicator*)

ALTERNATE/EXCEPTION:

- 3.a. Data is incomplete or incorrect:
 - 3.a.1 System informs user about problems.
 - 3.a.2 User makes a correction to the data.
 - 3.a.3 Back to step 3.
- 3.b. Client with same personal data already exists:
 - 3.b.1 System informs user about that fact.
 - 3.b.2 Back to step 1.
- 4.a. Client data changes can't be saved:
 - 4.a.1 System informs user about reason why client can't be modified.

TITLE: Delete client

GOAL: Delete client

CONTEXT: DELETE CLIENT

PRE-CONDITION:

POST-CONDITION:

ACTOR: User , System

RESOURCE:

EPISODES:

1. User **select** option for deleting clients.
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
2. User **delete** chosen client.
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
3. System verifies possibility to perform deleting.
4. System **saves** changes to the database **and informs** user about **it**.
(*Simplicity - TP: contains more than one Action-Verb*)
(*Multiple - TP: ambiguous indicator*)

ALTERNATE/EXCEPTION:

- 3.a. Client can not be deleted:

- 3.a.1 System informs user about the conditions.
- 3.a.2 Use case ends.
- 3.a.3 Back to step 3.

TITLE: **Browse clients**

GOAL: Browse clients

CONTEXT: BROWSE CLIENTS

PRE-CONDITION:

POST-CONDITION:

ACTOR: user, System

RESOURCE:

EPISODES:

1. User **select** option for browsing clients.
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
2. System displays the list of clients.
3. User **may filter** clients with specified criteria.
(*Weak - TP: ambiguous indicator*)
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
4. User **may sort** clients.
(*Weak - TP: ambiguous indicator*)
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
5. User **may view** details about selected client.
(*Weak - TP: ambiguous indicator*)
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
6. Use case ends when user logs out or selects different option.

ALTERNATE/EXCEPTION:

- 2.a. There are no clients to display:
 - 2.a.1 System displays blank list.
 - 2.a.2 Use case ends.

TITLE: **Search**

(*Atomicity - TP: Missing Object*)

GOAL: **Search**

CONTEXT: SEARCH

PRE-CONDITION:

POST-CONDITION:

ACTOR: User, System

RESOURCE:

EPISODES:

1. User **select** option for searching.
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
2. User selects subject of search (clients, contracts, installations).
3. System displays list of possible criteria.
4. User creates filter for searching.
5. System **search** the database **and displays** the results.
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
(*Simplicity - TP: contains more than one Action-Verb*)
(*Multiple - TP: ambiguous indicator*)

ALTERNATE/EXCEPTION:

- 4.a. Chosen criteria are invalid:
 - 4.a.1 System warns user.
 - 4.a.2 Back to step 3.
- 5.a. No records found:
 - 5.a.1 System displays blank list.

5.a.2 Use case ends.

TITLE: Add a new contract

GOAL: Add a new contract

CONTEXT: ADD A NEW CONTRACT

PRE-CONDITION:

POST-CONDITION:

ACTOR: User, System

RESOURCE:

EPISODES:

1. User **select** a client for **whom** new contract **will** be added.

(Simplicity - TP: Missing Action-Verb in Present Tense form)

(Implicit - FP: ambiguous indicator)

(Weak - TP: ambiguous indicator)

2. User chooses option for adding new contract.

3. System displays transaction form.

4. User fills **all** required data.

(Quantifiable - TP: ambiguous indicator)

5. System verifies information.

6. System **saves** contract **and** **bounds** **it** to the selected client.

(Simplicity - TP: contains more than one Action-Verb)

(Implicit - TP: ambiguous indicator)

(Multiple - TP: ambiguous indicator)

ALTERNATE/EXCEPTION:

5.a. Data is incomplete or incorrect:

5.a.1 System informs user about problems.

5.a.2 User makes a correction to the data.

6.a. contract can't be saved:

6.a.1 System informs user about that fact.

TITLE: Edit contract

GOAL: Edit contract

CONTEXT: EDIT CONTRACT

PRE-CONDITION:

POST-CONDITION:

ACTOR: User, System

RESOURCE:

EPISODES:

1. User **select** a client.

(Simplicity - TP: Missing Action-Verb in Present Tense form)

2. User chooses option for editing an existing contract.

3. System displays transaction form.

4. User changes desired data.

5. System verifies information.

6. System saves changed contract.

ALTERNATE/EXCEPTION:

5.a. Data is incomplete or incorrect:

5.a.1 System informs user about problems.

5.a.2 User makes a correction to the data.

6.a. contract can't be saved:

6.a.1 System informs user about that fact.

TITLE: Delete contract

GOAL: Delete contract

CONTEXT: DELETE CONTRACT

PRE-CONDITION:

POST-CONDITION:

ACTOR: User, System

RESOURCE:

EPISODES:

1. User **select** option for deleting contract.
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
2. User **delete** chosen contract.
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
3. System verifies possibility to perform deleting.
4. System **saves** changes to the database **and informs** user about **it**.
(*Simplicity - TP: contains more than one Action-Verb*)
(*Multiple - TP: ambiguous indicator*)

ALTERNATE/EXCEPTION:

- 3.a. Contract can not be deleted:
 - 3.a.1 System informs user about problems.
 - 3.a.2 User check possibility to perform deleting.
 - 3.a.3 Back to step 3.

TITLE: **Add a new installation**

GOAL: Add a new installation

CONTEXT: ADD A NEW INSTALLATION

PRE-CONDITION:

POST-CONDITION:

ACTOR: User, System

RESOURCE:

EPISODES:

1. User **select** a client for **whom** new installation **will** be added.
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
(*Implicit - FP: ambiguous indicator*)
(*Weak - TP: ambiguous indicator*)
2. User chooses option for adding new installation.
3. System displays installation form.
4. User fills required data.
5. System verifies information.
6. System **saves** installation **and bounds** **it** to the selected client.
(*Simplicity - TP: contains more than one Action-Verb*)
(*Multiple - TP: ambiguous indicator*)

ALTERNATE/EXCEPTION:

- 5.a. Data is incomplete or incorrect:
 - 5.a.1 System informs user about problems.
 - 5.a.2 User makes a correction to the data.
- 6.a. Installation can't be saved:
 - 6.a.1 System informs user about that fact.

TITLE: **Edit installation**

GOAL: Edit installation

CONTEXT: EDIT INSTALLATION

PRE-CONDITION:

POST-CONDITION:

ACTOR: User, System

RESOURCE:

EPISODES:

1. User **select** a client.
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
2. User chooses option for editing an existing installation.
3. System displays installation form.
4. User changes desired data.
5. System verifies information.
6. System saves changed installation.

ALTERNATE/EXCEPTION:

- 5.a. Data is incomplete or incorrect:
 - 5.a.1 System informs user about problems.
 - 5.a.2 User makes a correction to the data.
- 6.a. Installation can't be saved:
 - 6.a.1 System informs user about that fact.

TITLE: **Delete installation**

GOAL: Delete installation

CONTEXT: DELETE INSTALLATION

PRE-CONDITION:

POST-CONDITION:

ACTOR: User, System

RESOURCE:

EPISODES:

1. User **select** option for deleting installation.
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
2. User **delete** chosen installation.
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
3. System verifies possibility to perform deleting.
4. System **saves** changes to the database **and informs** user about **it**.
(*Simplicity - TP: contains more than one Action-Verb*)
(*Multiple - TP: ambiguous indicator*)

ALTERNATE/EXCEPTION:

- 3.a. Installation can not be deleted:
 - 3.a.1 System informs user about problems.
 - 3.a.2 User check possibility to perform deleting.
 - 3.a.3 Back to step 3.

TITLE: **Prepare a report**

GOAL: Prepare a report

CONTEXT: PREPARE A REPORT

PRE-CONDITION:

POST-CONDITION:

ACTOR: User, System

RESOURCE:

EPISODES:

1. User **select** option for creating reports.
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
2. System displays a list of possible fields in the report.
3. User selects fields to be included in the report and rules to filter values from database.
4. User **order** report generation.
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
5. System asks for type and localisation of the output file with report.
6. User selects the type and localisation of the output file with report.
7. System generates a report.

ALTERNATE/EXCEPTION:

- 7.a. Report can't be saved in given location:
 - 7.a.1 System displays information.
 - 7.a.2 Back to step 5.

TITLE: **Browse information**

GOAL: Browse information

CONTEXT: BROWSE INFORMATION

PRE-CONDITION:

POST-CONDITION:

ACTOR: User, System

RESOURCE:

EPISODES:

1. User **select** option for browsing data.
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
2. System displays the list of licences, keys, contracts and installations (grouping by type).
3. User **may filter** data with specified criteria.
(*Weak - TP: ambiguous indicator*)
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
4. User **may sort** data.
(*Weak - TP: ambiguous indicator*)
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
5. User **may view** details about selected element.
(*Weak - TP: ambiguous indicator*)
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
6. Use case ends when users logs out or select different option.

ALTERNATE/EXCEPTION:

- 2.a. There are no data to display:
 - 2.a.1 System displays blank list.
 - 2.a.2 Use case ends.

TITLE: **Request for licence**

GOAL: Request for licence

CONTEXT: REQUEST FOR LICENCE

PRE-CONDITION:

POST-CONDITION:

ACTOR: User, System, PCSS Team Participant

RESOURCE:

EPISODES:

1. User select option for requesting a new licence.
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
2. System displays the list of user's contracts.
3. User selects one contract for licence request.
4. System **contact** with dLibra server to obtain **all necessary** data.
(*Vague - TP: ambiguous indicator*)
(*Quantifiable - TP: ambiguous indicator*)
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
5. System **validate** given data.
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
6. System **store** a request new licence **and informs** user about **it**.
(*Simplicity - TP: contains more than one Action-Verb*)
(*Simplicity - TP: Missing Action-Verb in Present Tense form*)
(*Multiple - TP: ambiguous indicator*)
7. PCSS Team Participant **approve** request for a new licence.

TABLE 34
CONSISTENCY ANALYSIS OF MOBILE NEWS

ID Scenario	Non-interferential			Boundedness			Liveness			Reversibility		
	TP	FP	FN	TP	FP	FN	TP	FP	FN	TP	FP	FN
1												
2							1					
3												
4							1					
5												
6												
7							1					
8												
9												
10												
11												
12												
13												
14												
15												
Total	0	0	0	0	0	0	3	0	0	0	0	0

TITLE: Post a group message

GOAL: Post a group message

CONTEXT: POST A GROUP MESSAGE

PRE-CONDITION:

POST-CONDITION:

ACTOR: Administrator, User

RESOURCE:

EPISODES:

1. Administrator logs on to the administration panel.
2. Administrator selects the Post group message option.
3. Administrator **types** the message **and posts it**.
(Simplicity - TP: contains more than one Action-Verb)
(Multiple - TP: ambiguous indicator)
(Implicit - TP: ambiguous indicator)
4. User receives the message when downloading new data.

ALTERNATE/EXCEPTION:

TITLE: Configure the server

GOAL: Configure the server

CONTEXT: CONFIGURE THE SERVER

PRE-CONDITION:

POST-CONDITION:

ACTOR: Administrator

RESOURCE:

EPISODES:

1. Administrator logs on to the administration panel.
2. Administrator selects the Configure option.
3. Administrator **chooses and changes** the desired settings.
(Simplicity - TP: contains more than one Action-Verb)
(Multiple - TP: ambiguous indicator)
4. Administrator saves configuration settings.

ALTERNATE/EXCEPTION:

- 4.a. Administrator cancels configuration changes.
(Uniformity - TP: Incomplete Cause)
(Liveness - TP: Never enabled operation)

TITLE: Add a new channel group

GOAL: Add a new channel group

CONTEXT: ADD A NEW CHANNEL GROUP

PRE-CONDITION:

POST-CONDITION:

ACTOR: Administrator, System

RESOURCE:

EPISODES:

1. Administrator logs on to the administration panel.
2. System displays administration options.
3. Administrator selects the Group and channel management option.
4. System displays a list of defined channel groups and an add/delete group menu.
5. Administrator **types** the name of a new group **and selects** Add group.
(Simplicity - TP: contains more than one Action-Verb)
(Multiple - TP: ambiguous indicator)
6. System **checks if** a group with the given name has not been already defined and if so, **inserts** the name of a new group into a database.
(Simplicity - TP: involves a validation action and it is hard to understand and follow (contain structures like checks if / see whether))
7. **See** step 4.
(Simplicity - TP: Missing Subject)

ALTERNATE/EXCEPTION:

TITLE: Add a new channel

GOAL: Add a new channel

CONTEXT: ADD A NEW CHANNEL

PRE-CONDITION:

POST-CONDITION:

ACTOR: Administrator, System

RESOURCE:

EPISODES:

(Usefulness - TP: Too long scenario - Num. episodes > 10)

1. Administrator logs on to the administration panel.
 2. System displays administration options.
 3. Administrator selects the Group and channel management option.
 4. System displays a list of defined channel groups and an add/delete group menu.
 5. Administrator **chooses** a group to which **he wants** to **ADD** A NEW CHANNEL.
(Implicit - TP: ambiguous indicator)
 6. System displays a list of channels in the selected group and an add/delete menu.
 7. Administrator **types** the name of the channel and the URL of the news service and **selects** Add channel.
(Simplicity - TP: contains more than one Action-Verb)
(Multiple - TP: ambiguous indicator)
 8. System **checks if** a channel with the given name or URL has not been already defined and if so, **inserts** the channel information into a database.
(Simplicity - TP: involves a validation action and it is hard to understand and follow (contain structures like checks if / see whether))
 9. System adds an information about the new channel to a group message.
 10. See step 6.
(Simplicity - TP: Missing Subject)
 11. Administrator selects the Finish option.
 12. System posts a group message containing information about all new channels in the selected channel group.
- ALTERNATE/EXCEPTION:**
- 5.a. Administrator **adds more** channels. **Proceed** to step 7.
(Simplicity - TP: contains more than one Sentence)

(Uniformity - TP: Incomplete Cause)

(Vagueness - TP: ambiguous indicator)

(Liveness - TP: Never enabled operation)

TITLE: Delete a channel

GOAL: Delete a channel

CONTEXT: DELETE A CHANNEL

PRE-CONDITION:

POST-CONDITION:

ACTOR: Administrator, System

RESOURCE:

EPISODES:

(Usefulness - TP: Too long scenario - Num. episodes > 10)

1. Administrator logs on to the administration panel.
2. System displays administration options.
3. Administrator selects the Group and channel management option.
4. System displays a list of defined channel groups and an add/delete group menu.
5. Administrator chooses a group containing the channel he wants to delete.

(Implicit - TP: ambiguous indicator)

6. System displays a list of channels in the selected group and an add/delete menu.
7. Administrator selects the channel(s) he wants to delete and chooses the Delete option.

(Simplicity - TP: contains more than one Action-Verb)

(Implicit - TP: ambiguous indicator)

8. System deletes the selected channels from the database.
9. System posts a group message containing information about the deleted channels in the selected channel group to all users involved (subscribing the deleted channels).
10. System deletes all subscription information concerning the deleted channels.

ALTERNATE/EXCEPTION:

TITLE: Delete a channel group

GOAL: Delete a channel group

CONTEXT: DELETE A CHANNEL GROUP

PRE-CONDITION:

POST-CONDITION:

ACTOR: Administrator, System

RESOURCE:

EPISODES:

1. Administrator logs on to the administration panel.
2. System displays administration options.
3. Administrator selects the Group and channel management option.
4. System displays a list of defined channel groups and an add/delete group menu.
5. Administrator selects the group(s) he wants to delete and chooses the Delete option.

(Simplicity - TP: contains more than one Action-Verb)

(Implicit - TP: ambiguous indicator)

6. System asks for confirmation.
7. System deletes all channels from the selected groups (see: UC5, steps 8 to 10).

ALTERNATE/EXCEPTION:

TITLE: Delete a user group

GOAL: Delete a user group

CONTEXT: DELETE A USER GROUP

PRE-CONDITION:

POST-CONDITION:

ACTOR: Administrator, System

RESOURCE:

EPISODES:

1. Administrator logs on to the administration panel.
2. System displays administration options.
3. Administrator selects the Delete users option.
4. System displays the users deletion menu.
5. Administrator selects deletion options (i.e. date of users' last login).
6. Administrator confirms deletion request.
7. System **finds** all users matching deletion criteria **and** **deletes** found user accounts.

(Simplicity - TP: contains more than one Action-Verb)

(Multiple - TP: ambiguous indicator)

ALTERNATE/EXCEPTION:

- 6.a. Administrator cancels user deletion

(Uniformity - TP: Incomplete Cause)

(Liveness - TP: Never enabled operation)

TITLE: **Update news**

GOAL: Update news

CONTEXT: UPDATE NEWS

PRE-CONDITION:

POST-CONDITION:

ACTOR: Daemon, System

RESOURCE:

Episódios

1. Daemon sends a HTTP request to a defined news service.
2. System receives a RSS-like formatted news file.
3. System parses the received news file.
4. System assigns an expiry date and time to each incoming message.
5. System inserts **appropriate** parts of the news file into a news database.

(Vague - TP: ambiguous indicator)

ALTERNATE/EXCEPTION:

TITLE: **Delete news**

GOAL: Delete news

CONTEXT: DELETE NEWS

PRE-CONDITION:

POST-CONDITION:

ACTOR: System

RESOURCE:

EPISODES:

(Usefulness - TP: Too short scenario - Num. episodes < 3)

1. System queries the database for news messages, whose expiry date and time have passed.
2. System deletes all returned messages from the database.

ALTERNATE/EXCEPTION:

TITLE: **Register a new user**

GOAL: Register a new user

CONTEXT: REGISTER A NEW USER

PRE-CONDITION:

POST-CONDITION:

ACTOR: User, System

RESOURCE:

EPISODES:

1. System asks the user if **he/she** wants to register.
(Implicit - TP: ambiguous indicator)
2. User confirms **he/she** wants to register.
(Implicit - TP: ambiguous indicator)
3. System sends a registration request to the server.
4. **Server** **creates** a new user account **and** **sends back** a user ID.
(Usefulness - TP: undeclared actor)
(Simplicity - TP: contains more than one Action-Verb)
(Multiple - TP: ambiguous indicator)
5. System **stores** the user ID and **instructs** the user how to subscribe news channels **or** **configure** **his/her** preferences.
(Simplicity - TP: contains more than one Action-Verb)
(Multiple - TP: ambiguous indicator)

ALTERNATE/EXCEPTION:

- 2.a. User refuses to register.
- 2.a.1 System displays an information that **it** cannot be used without prior registration.
(Implicit - TP: ambiguous indicator)
- 2.a.2 User confirms the message.
- 2.a.3 System terminates.

TITLE: **Download news**

GOAL: Download news

CONTEXT: DOWNLOAD NEWS

PRE-CONDITION:

POST-CONDITION:

ACTOR: User, system, server

RESOURCE:

EPISODES:

1. User chooses to update locally stored news.
2. System sends a HTTP request to the Mobile News server.
3. **Server** sends all pending group messages.
4. **Server** sends separate news messages from all subscribed channels.
5. System **receives** news messages **and** **stores them** in a local database.
(Simplicity - TP: contains more than one Action-Verb)
(Multiple - TP: ambiguous indicator)
(Implicit - TP: ambiguous indicator)
6. System displays a list of groups with subscribed channels and the number of new messages in each of them.

ALTERNATE/EXCEPTION:

TITLE: **Run the application**

GOAL: Run the application

CONTEXT: RUN THE APPLICATION

PRE-CONDITION:

POST-CONDITION:

ACTOR: User, System

RESOURCE:

EPISODES:

1. User starts the application.
2. System checks for registration information.
3. If the user is already registered, the system automatically **updates** news messages from subscribed channels (refer to DOWNLOAD NEWS use case). If no, the system **attempts** to REGISTER A NEW USER (refer to Register a new user use case).
(Simplicity - TP: contains more than one Action-Verb)

ALTERNATE/EXCEPTION:

TITLE: Subscribe/unsubscribe news channels

GOAL: Subscribe/unsubscribe news channels

CONTEXT: SUBSCRIBE/UNSUBSCRIBE NEWS CHANNELS

PRE-CONDITION:

POST-CONDITION:

ACTOR: User, System

RESOURCE:

EPISODES:

1. User chooses the Channel subscription option.
2. System **requests** for **and downloads** a list of **available** groups and channels.
(Simplicity - TP: contains more than one Action-Verb)
(Multiple - TP: ambiguous indicator)
(Vague - TP: ambiguous indicator)
3. System **displays** a tree view of **available** groups and channels **and marks** **those** already subscribed by the user.
(Simplicity - TP: contains more than one Action-Verb)
(Multiple - TP: ambiguous indicator)
(Vague - TP: ambiguous indicator)
(Implicit - TP: ambiguous indicator)
4. User **selects** the channels **he/she** wants to **subscribe** and/or **deselects** already subscribed channels to unsubscribe **them** and **chooses** the Change subscription options.
(Simplicity - TP: contains more than one Action-Verb)
(Implicit - TP: ambiguous indicator)
5. System **sends** the subscription configuration to the Mobile News server and **waits** for confirmation.
(Simplicity - TP: contains more than one Action-Verb)
(Multiple - TP: ambiguous indicator)
6. **Server** **alters** the user's subscription configuration in a database and **sends** a change confirmation.
(Simplicity - TP: contains more than one Action-Verb)
(Multiple - TP: ambiguous indicator)
(Usefulness - TP: undeclared actor)
7. System **receives** the confirmation and **displays** **it**.
(Implicit - TP: ambiguous indicator)
(Simplicity - TP: contains more than one Action-Verb)

ALTERNATE/EXCEPTION:

TITLE: Configure user preferences

GOAL: Configure user preferences

CONTEXT: CONFIGURE USER PREFERENCES

PRE-CONDITION:

POST-CONDITION:

ACTOR: User, System

RESOURCE:

EPISODES:

1. User chooses the Preferences option.
2. System displays a list of **available** options (i.e. font and colour settings, local news caching, etc..)
(Vague - TP: ambiguous indicator)
3. User **configures** the option according to his/her preferences **and confirm** the changes.
(Simplicity - TP: contains more than one Action-Verb)
(Multiple - TP: ambiguous indicator)
4. System **saves** user preferences configuration **and displays** main application view.
(Simplicity - TP: contains more than one Action-Verb)
(Multiple - TP: ambiguous indicator)

ALTERNATE/EXCEPTION:

TITLE: **Read news**

GOAL: Read news

CONTEXT: READ NEWS

PRE-CONDITION:

POST-CONDITION:

ACTOR: User, System

RESOURCE:

EPISODES:

1. User chooses a news group from the Today menu.
2. System displays a list of topics of **available** messages in chosen group.
(Vague - TP: ambiguous indicator)
3. User chooses a topic.
4. System displays the message using user's appearance preferences.
5. User **reads** the message **and closes it** or **uses** a hyperlink to go to the full message.

(Multiple - TP: ambiguous indicator)

(Simplicity - TP: contains more than one Action-Verb)

(Implicit - TP: ambiguous indicator)

6. System marks the message as Read.

ALTERNATE/EXCEPTION: