(ATM) Handout 2

Step-By-Step Outlines

Introduction

This is an example of what a step-by-step outline and a list of alternative flows can look like. These step-by-step outlines are the first draft of the flow of events in each use case.

For these examples, we have shown how they might appear when they are first written. There are many mistakes in the outlines, which we point out in our comments.

This kind of information is usually not in a nice fancy document. The normal format is handwritten. Later they will be used to begin the use-case reports.

Withdraw Cash

Step-by-step outline

1 Insert Card
2 validate card
3 enter pin
4 select withdraw
5 select account
6 select amount
7 send transaction
8 receive ok
9 dispense money
10 print receipt
11 eject card

List of Alternative flows

A1 wrong PIN
A2 no money
A3 Attempt to withdraw more than daily amount
A4 no contact
A5 link goes down - hmm, if the link goes down before the transaction reaches the actual account? - No big fuss - but if the transaction reaches the account and then the link is down? The money are withdrawn but never dispensed! - do we need some kind of two-phase-commit?
A6 stolen card
A7 out of money

Deposit Funds

Step-by-step outline

1 insert card
2 enter PIN
3 select deposit
4 select amount
5 put money in envelope
6 receive envelope - print transaction id on envelope
7 send deposit transaction
8 send notification to cashier
9 print receipt
10 eject card

Is the counting and committing within our system? Is this a part of some other system at the bank? Where is the boundary?

For now, we'll assume that in this use case the cashier is notified and the transaction is committed but there is a hold on the deposited funds. Later, while executing a Verify Deposit use case in the ordinary banking system (not the ATM system) the cashier counts the money, verifies the deposit, and removes the hold on the deposited funds.

List of Alternative flows

A1	Wrong PIN
A2	Invalid "to account"
A3	No envelope inserted
A4	Two envelopes inserted (or more)

A5 Link to consortium is down
A6 Link to cashier is down

[This is mostly the US and Canadian way to deposit - other countries have other ways to deposit with an ATM]

Transfer Funds

Step-by-step outline

1 Insert card
2 Enter PIN
3 Select transfer
4 Select amount
5 Select from account
6 Select to account
7 Send transaction
8 Receive confirmation
9 Print receipt
10 Eject card

List of Alternative flows

A1	Wrong PIN
A2	No money
A3	From account does not exists
A4	To account does not exists
A5	No confirmation
A6	Card stuck
A7	Out of paper

Refill money and Receipt Paper

Step-by-step outline

1 Open the ATM
2 Put more paper in the printer
3 Remove empty money cassettes (there will be a way to determine if a cassette is full of empty)
4 New cassettes inserted
5 Register replacements on log
6 Close the ATM

[Some of these steps are done manually and outside the system. They should not be in the use case, which shows only the interactions with the system. But you may no realize that the steps are outside the system when you write the draft of the step-by-step outline].

List of Alternative flows

A1	Cassette with money removed
A2	Door not closed
A3	Cassette with no money inserted
A4	Half full cassette inserted
A5	No cassettes inserted.
A6	Paper not refilled
A7	Paper jam

Check the Logs and Balance the Machine

Step-by-step outline

Is this a Use Case by itself or is it always done with Refill money and Receipt Paper?

1 Open the ATM
2 Press key Eject log
3 The system writes a end of log record containing:

- amount of bills dispensed
- amount of bills in the trash box
- amount of bills still in the money cassettes

4 Insert a new log tape
5 Close the ATM
6 Bring the tape back to the bank
7 Run the verification - This tape is compared with the tape of the Bank Consortium

Transactions that are:

- the same on both tapes - are normal - no action
- withdraw but not dispensed - money back in account
- withdraw, dispensed but not fetched - can we handle this a deposit? The money is in the trash box! - money back in account
- Are there any other things that go wrong?

[The end of this Use Case is outside the ATM system! You have to understand this part of the business too, but does it belong in the use case for the ATM system, and does it belong in the flow of events? Perhaps it belongs is a Use Case in the Business Model.]

List of Alternative flows

A1 No new tape inserted
A2 ATM not closed
A3 Maintenance crew is trying to do something they should not do (fiddle with the machine)
A4 Full tape inserted
A5 End of tape during operation
A6 Tape fails during operation
A7 Amount of money in the "trash" box does not match the log ((a bank customer must have removed some money just as the ATM machine was taking it back.)

Break into an ATM

Step-by-step outline

1 One or several sensors for external protection are alerted
2 The machine contacts Police alarm central
3 Internal sensors are activated
4 All money in the ATM is destroyed (colored violet)

List of Alternative flows

A1 Maintenance crew activates a sensor by mistake.
A2 No connection to Police alarm central (has the Burglar cut the line?)

[This is probably not going to be a use case in the final Use-Case Model of the ATM. Why isn't a use case? Where would it be described?]

