A Case Study:
The International Film Video Store

This store was founded by a couple of friends who like international cinema. The store has been located near one of Toronto’s repertoire theatres and has been in operation for four years.

Unfortunately, the store is barely scraping a living because of insufficient rentals, especially during the summer when the neighbouring repertoire theatre is closed.

Problem: “Increase video rentals”
Where Do We Start?

How do video rentals happen? Could they happen differently? (**tactical analysis**)

Where Do We Start?

Where Do We Start?

Strategic Analysis

Increase Video Rentals

Low Price

+ +

Broaden Collection

+ +

Web-Based Rentals (Electr)

+ +

Web-Based Rentals (Electr-Courier)

+ +

Competitive Price

Operational Cost

Development Cost

Cost

Profitable

Market Niche

Competitive Advantage

Enrich Collection

Open Many Stores (Phys)

Bring Store Closer to More Customers

Cost

Cost
What Are the Leading Alternatives?

- Electronic solution, no physical store -- higher development costs, lower operational costs;
- Electronic solution, courier service -- OK for users who rent in bulk;
- Broaden collection to include more foreign languages -- need selectors, suppliers;
- Deliver videos to N (e.g., 10) locations around Toronto; customers can pick up/drop off videos there.

Choose an Alternative

- Suppose we decide to recommend the last alternative.
- This means that a customer chooses videos from a web-based system, these videos are delivered to the location closest to her, she returns the videos to that location, and they are sent back to the video store warehouse.
**RSD: Describe Functional and Non-Functional Requirements**

- Describe each functional requirements in English.
- Describe each non-functional requirement in English.
- Describe data to be managed by the system.
- Organize and number both functional and non-functional requirements so that they can be referred to later on.
- Trace each functional requirement.
- Indicate the strength of each requirement e.g., very strong --> must have, weak --> could skip if things fall behind.

**RSD: NFRs**

- Security and privacy.
- Reliability
- Performance -- throughput, response time
- ...
- Relate each of these to the UML diagrams you include in appendices
**RSD: System Interfaces, Data, I/O**

- Specify in the RSD:
  - Interface with courier DB: data exchanged;
  - Interface with credit card co DB: data exchanged;
  - Data to be managed by the system (customers, rental items, rentals,…)

**Modeling in UML: Business Processes**

- We start with the business processes to be supported by the system; use state diagrams or activity diagrams to model them:
  - Rent-Deliver-Pickup-Return-ReturnToStore-Remind;
  - Rent in detail (includes payment authorization with credit card company);
  - Deliver once a day in detail (includes communication with courier database)
  - Return to repository in detail (includes communication with courier database)
  - Remind customer about overdue videos.
**Use Cases**

Use cases correspond roughly to the functional requirements of the system.

- **Customer use cases**: browse, select, choose, pay;
- **Employee use cases**:
  - list of videos for each location (each day);
  - list of videos from each location each day;
  - remind customer electronically;
  - charge delinquent customer.
- **Manager use cases**:
  - Report at the end of each week;
  - Report on dormant customers (once every 6 months);
- **Systems person use cases**: start system; get report on failure,…

**Documenting Use Cases**

- Describe each use case in English, including the steps required, I/O,…
- Model each use case in terms of one or more sequence diagrams (normal case, exceptional cases.)
What Kinds of Objects Are We Talking About?

Use CL to model constraints, pre/post-conditions to specify Business rules, pre/post-conditions for operations.