

# IN2013: Object-Oriented Analysis and Design

## Tutorial 1: Introduction and Context

### ***Exercise 1: Case study (BAPERS)***

In the coming weeks we will be building different models for a case study (see the Appendix) – the information system, BAPERS, used by a photographic lab. I strongly encourage you to read the description before the next tutorial, so you can already start to familiarize yourself with it. This will save reading time on the next tutorial and allow you to practice more on modelling.

Work either individually or in groups of 2-3, which may require some extra effort this year since the Tutorial classes are run online, and answer the following questions related to the scenario:

- Define the systems boundary of BAPERS (e.g. by stating the bespoke and third-party software components that together will make up BAPERS).
- What are the external systems, if any, which BAPERS is expected to interact with?
- Who are the users of BAPERS?
- What are the main services offered by BAPERS to the users (list the main functions that different users will be able to use)?
- Using the Volere Template provided in the lecture (and available on Moodle) capture 2-3 functional requirements and 2 non-functional requirements.

### ***Exercise 2: Visual Paradigm installation***

In this module we will use Visual Paradigm (VP)<sup>1</sup>, a commercial software tool, build to support UML and the entire software development lifecycle. With this exercise you will make a start with the VP tool:

- Download the tool following the link on Moodle to the VP portal setup by the vendors for City St George's, University of London.
- Install Visual Paradigm on your personal computer/laptop.
- Activate the academic licence by following the installation guidelines.
- Explore the tool's functionality by skimming through the help files and/or looking at the various online tutorials offered by the vendors.

I do not expect you to complete both exercises during the Tutorial. Use the time at the tutorial in the best possible way and complete both exercises at home.

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<sup>1</sup> The software will be handy in the module "Team Project" in Term 2 of Y2 and also may be useful in your work on the Final Year project in Y3.

## Appendix

### Bloomsbury's Automated Process Execution Recording System (BAPERS)

The case study describes the requirements for automating the processes at the photographic laboratory 'The Lab' operated by Bloomsbury's Image Processing Laboratory (**BIPL**). **BIPL** handles the work of professional photographers and carries out *jobs* on behalf of customers, but the customers do not use the system. The access to the system is limited to the laboratory staff only.

Each job is given a *unique identifier* and assigned *urgency* (a job may be urgent or normal which affects the turnaround time) when the job is placed. Urgent jobs must be completed within 6 hours while the normal jobs – within 24 hours. A job may consist of any number of the *standard tasks* offered by BIPL.

Currently there are around 30 standard tasks. Each task has an identifier (e.g., a number), is carried out at a particular location within the laboratory, has a quoted price, and an (estimated) duration. Some of the tasks are shown in Table 1 below. The case study *does not require* that the list of tasks be maintained (i.e., BAPERS does NOT offer functionality for adding new tasks, removing, or updating existing tasks).

Table 1

Task ID	Task Description	Location	Price (£)	Duration (min)
1.	Use of large copy camera	Copy Room	19.00	120
2.	Black and white film processing	Development Area	49.50	60
3.	Bag up	Packing Department	6.00	30
4.	Colour film processing	Development Area	80.00	90
5.	Colour Transparency processing	Development Area	110.30	180
6.	Use of small copy camera	Copy Room	8.30	75
7.	Mount Transparencies	Finishing Room	55.50	45
...	Etc.	Etc.	Etc.	Etc.

At any given time, hundreds of jobs will be in progress or pending within the laboratory. Every accepted job must be chargeable to a valid *customer account*, either an existing account, or a newly created account (e.g. a photographer may walk in, leave a film to be developed, and pay cash on collecting the finished job).

**BIPL** want to enable the employee on the reception desk to enter the job on a computer terminal. The material will be labelled with the job number and taken down to the laboratory.

The laboratory staff will interrogate **BAPERS** to ascertain the tasks required. As the job is transferred from one location to another in the laboratory, the staff responsible for each task will record its completion on a computer terminal in their location before passing it on. A terminal will be required in each of the following locations: Copy Room, Dark Room, Development Area, Printing Room, Finishing Room, and Packing Department.

Many jobs will be going through the laboratory at any given time, and confusion between them must be avoided. At all costs, loss or mistreatment of the customer's material must not occur. Queues of work may build up at the processing stations, but flexible scheduling is required to

allow priority to be given to *urgent* jobs over the *regular/normal* jobs. The system should provide functionality for inspecting the list of active/pending jobs as well as already completed ones, including the inspection of the progress of individual tasks (active/pending tasks vs. completed ones).

**BAPERS** must therefore provide the following main facilities:

**BAP-ACCT** *Accept job at reception*: Identify existing (or create new) customer account (name, phone). Assign job number. Record the deadline for completion of the job. This functionality will be mainly used by the receptionists but will also be made accessible by either Office manager or Shift manager in case receptionist(s) are absent.

**BAP-PROC** *Process a job through laboratory*: Respond to enquiries from any computer terminal about status of any jobs in progress, or of all jobs (including the completed ones). Update status of any given job by recording completion of current task and commencement of next (possibly with transfer of material to a new location). This functionality is available to Technicians, Shift and Office Manager.

In addition, alert Shift and/or Office manager (by, for example, displaying a visual cue with appropriate text) if the expected time to complete outstanding tasks for any job is likely to exceed the set time period, i.e. if the deadline for the job is not likely to be met; the alerts should be performed only for these two user roles.

**BAP-PAYM** *Payment processing*. The customers are supposed to pay once the jobs they had placed have been completed. Customers can pay by cash or credit/debit card only. The system is connected to an external payment processor to move funds between the customers' credit/debit cards and the BIPL bank account. In case of a card payment BAPERS is expected to connect to the external payment processor and on successful completion of the card payment the payment is recorded with the following details: card payment, type of card, and the last 4 digits of the card used. Cash payments are recorded, too. Several jobs can be paid at once. Only payment in full is accepted (i.e. no partial payments are allowed). This functionality is available to Receptionist, Shift and Office Manager.

**BAP-ADMN** *Administering the system*. This includes creating a user account for BAPERS and setting up access privileges. The following user roles are essential to be implemented: Office manager, Shift manager, Receptionist and Technician. This functionality will be available to Office Manager only.

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Peter Popov