Tentamen SAO maandag 14 april 2004. 9:00 – 12:00 uur ZG 15.

OPEN BOEK.

Algemeen:

- Schrijf duidelijk en netjes, vul op elk blad je naam en studentennummer in en vermeld op het eerste blad het totaal aantal ingeleverde blaadjes.
- Lees de bijgevoegde casus eerst rustig in zijn geheel door en beantwoord dan de volgende vragen.
- Beantwoord onderstaande vragen voor de zg. changed situation in de casus, dus in de situatie waarin zoveel mogelijk is geautomatiseerd.

Opgaven:

Analyse

1. [3] Maak een zo volledig mogelijk domeinmodel van bijgaande casus. Benoem hierin alle classes, associaties en attributen. Beperk je tot een zo simpel mogelijke representatie die de changed situation (waarin het proces zoveel mogelijk is geautomatiseerd) kan beschrijven.
2. [2] Geef een SSD[1] voor de volgende activiteiten:

- het voor de eerste keer aanleveren van een paper door een auteur
- het verzamelen en opsturen van een zg. package naar een reviewer
- het voor de eerste keer berichten aan een auteur van beoordelen van zijn paper.

Ontwerp

3. [3] Geef een volledig *ontwerp* middels Sequence diagrammen en/of Collaboration diagrammen[2] van de in vraag 2 genoemde usecases. Gebruik de GRASP-regels van Larman en meld bij elk diagram welke regels gebruikt zijn.

OCL

4. [1] Schrijf in OCL-notatie uit aan welke eisen een reviewer voor een paper moet voldoen.

Patterns

5. [1] Ga na welke ontwerppatronen u verder in uw domeinmodel heeft gebruikt, dan wel zou kunnen gebruiken.

Geef bij de uitwerking *voldoende argumentatie* zodat het duidelijk is waarom bepaalde beslissingen zijn gemaakt. Zonder argumentatie is een antwoord per definitie foutief.

Tussen [] staat het maximaal per onderdeel toe te kennen aantal punten vermeld.
U krijgt *geen* punten cadeau.

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[1] Let op: dit is analyse!

[2] Let op: dit is ontwerp, een SSD is hier niet meer voldoende!

Journal review process

1. CURRENT SITUATION

There are three areas of work here:

- Authors are writing their papers
- Reviewers are making reviews for the papers
- Editorial people are managing the paper flow

To clarify the boundaries of the system:

- We are not considering the writing of a new paper as an activity within the considered system. The new paper is entering the system at the moment when it is received at the editorial office.
- However, re-writing a paper by the author, in order to meet the reviewer's comments IS an activity ***within*** the considered system.
- The accepted papers are sent to the journal's publishing office. What is happening there is NOT a part of our system

The organisation in charge with the management of the papers, reviews and decision-making is the EDITORIAL OFFICE.

There are three types of people working in the editorial office:

- Decision makers, that is, people allowed to take the decision to accept (reject) a paper for publication, with or without the support of reviews for her/his decision. We call these people "editors". One of them is "editor-in-chief"
- Managers, the people who are monitoring the papers flow and keeping the documents in an ordered manner, preparing meetings, signing letters, etc. We call these people "managers"
- Manager assistants (secretaries), who are opening the incoming letters, registering them, writing and sending letters, etc. We call these people "assistants".

We have two different ***manners*** of work:

a) ***Fully "manual"***. All the documents are in hard-copy format, all the correspondence is carried by normal mail, and all the information is kept in files, sitting in drawers. The editorial office is keeping a list of all reviewers, with their addresses and fields of interest. Also, a list of all authors who sent papers until the current date is kept.

Observations:
*An author can be a reviewer and vice-versa.
*A reviewer cannot review his own paper.
*A list with the names of all domains of interest is kept. Each domain has a sub list, containing all the names of the reviewers competent in that specific domain.

b) ***Semi-automated.*** Papers and reviews are in hard-copy format, but there is a data-base containing:

- A file with all the reviewers and their domains of interest. There is logic to interrogate the database to list all the reviewers in certain fields and visualise how many papers for review a reviewer has at the current moment ("current load/reviewer"). Also, we can see the reviewer's history. This is necessary when reviewers are assigned to papers. We should not assign more than 2 papers at a time to a reviewer, and should also not give them more than 6 papers per year.
- A file with all the papers. There is software logic to assign reviewers from the reviewers file, and to visualise their name, and eventual review results. For each paper, there is a log of dates: when the paper was received, how many times it was reviewed, when it was sent to the reviewers and which have been the decisions up to the current date.
- A file with all the authors, and their history (papers that they sent).

There is also an extension of the database system logic, after the decisions and reviewer assignments are done; the letters to authors and reviewers are automatically generated in a .txt file. This file must be translated to Word (special headers have to be added). Also, if the reviewers or authors due to sent re-written papers are late, each 6 weeks, the system is automatically inserting remainder letters in this .txt file. After printed, the letters must be signed by one of the manager's manager.

However, there exists the possibility to receive papers and reviews via e-mail. The Manager has to print these. Also, the manager can send remainders and acknowledgements of document receiving via e-mail. This is more an exception than the rule.

Description of the activities (a general view that can be applied to manner **a** and partially **b**)

Authors are sending ***new papers*** to the Editorial Office.

A manager assistant is opening the letter and registers the paper. The paper is given an unique ID number (a natural number, in increasing order). In exceptional cases, we admit papers submitted by email.

Twice a month, there is a meeting of one of the editorial managers with one or more decision makers - editors. In this meeting, all the new papers are assigned each to three reviewers. The assignment is based on the matching of knowledge in the scientific area of the paper and the scientific expertise of the reviewers. That is, the papers are classified according with the list of existent areas of competence. The classification has to be done before the meeting by the editorial manager.

After the meeting, a manager assistant is preparing packages for the reviewers. A package is containing a copy of the paper and a review form, along with a cover letter signed by the editorial manager. The letters are either written one-by-one, using a standard template by a manager assistant, or in most cases generated automatically by the supporting software (which recorded the arrival of the new papers and the assignment of reviewers) and printed by the manager. The papers' copies are made at the copier, by the manager assistant. The packages are put in envelopes, and the addresses are written on the envelopes and the envelopes sent to the post office (all these tasks executed by a manager assistant). The computer-supported version allows that the envelope address stickers are generated automatically from the .txt file (task executed by the editorial

manager). The original papers are put separately in files, and these files are stored in a drawer, ordered by their reference ID. This drawer is called pipeline. Another letter is generated to the author of each new paper, giving him a document showing that his paper was submitted and it is under review.

Another input flow of letters is represented by *reviews*. Such a letter must contain the completed review form, and eventually the commented copy of the paper sent to the reviewer. These letters are opened and registered by an editorial assistant. These reviews are put in a pile, ordered by the reference ID of the reviewed paper.

If all three reviewers assigned to a paper responded, in the bi-monthly meeting, the manager has to prepare this paper for a decision. He has detect that in the pile there are all the three reviewer packages, and has to take out the corresponding file from the drawer, and put all these together.

During the meeting, after the processing of the new papers (or before, it doesn't matter), the decision makers are taking decisions about each fully reviewed paper prepared by the editorial manager. There exists the possibility that a *new* paper can be rejected because it is totally out of scope of the journal (for example the journal is about moon exploration, and the new paper is about leather processing). Such a paper is not going to the reviewers and the author is receiving a special letter of rejection (rejection out-of-scope). Also, the reviewers can suggest a rejection because of the scope of the journal. Basically, there can be the following decisions taken by the decision maker, based on the reviews:

- Reject (brutal – the paper is completely nonsense)
- Reject (nicely, the paper is bad, but the authors are doing interesting research, and the editors want to have papers from them in the future)
- Reject out of scope (the paper is perhaps very good, but not for this journal)
- Reconsider without commitment (the paper is not bad, but has to be very seriously re-written, according with the reviewers' comments). The editors are not promising that the paper will be published. It could be still rejected, if the authors are not able to put it into a decent form.
- Reconsider with commitment (the paper is good, but has to be re-written). The editors are promising that if the modifications asked by the reviewers are made, the paper will be published.
- Reconsider and forthcoming. The paper is almost accepted, but there are still some minor deficiencies. The authors have to correct them
- Accepted. The paper is perfect. The authors are asked to send a diskette with the e-format of the paper (according with certain rules), together with their bio's and their photos.

Each decision is implying a different form of the letter of decision notification that will be sent to the authors. These letters have to be accompanied by copies of the reviewers' packages (excepting the case of reject out of scope made directly by the decision makers and the case of accept). The copies and the letters are made by a manager assistant, together with the making and posting of the envelopes. The letters must be signed by the editorial manager. The original review packages are put together with the original paper in the corresponding file, and put back in the drawer by an editorial manager. There is a separation here, the papers which are rejected or accepted will have their files moved to a separated drawer, called archive. The rest remain in the pipeline. A variation of this process is when the letters and address stickers are generated automatically.

Another input flow of letters is by ***revised papers***. These letters from the authors are opened and registered by a manager assistant. These are prepared for the bi-monthly meeting by a manager, together with the corresponding file from the pipeline drawer. In the meeting, the decision makers are comparing the latest version with the previous one, and how the authors met the requirements.
Outcomes:

- If the paper was previously "reconsidered and forthcoming" and it is "perfect" in terms of the minor modifications, it can be accepted. The authors are asked for the disk+bio+photo package.
- If the authors have not modified the paper to met the reviewers' requirements, and this is obvious for the decision maker, the paper is sent back to the authors, with a special letter, which contains the message "hey guys, do your homework" (in a more polite form, of course).
- If the authors improved considerably their paper, it is sent back to the reviewers, together with copies of their last reviews (form and commented paper), with a letter asking again the reviewer to see if the paper is now good for publishing. There is registered that a re-start of the review process occurred for this paper. The number of re-starts can be limited to 3.

The originals of the revised forms are put in their corresponding files in the pipeline.

The last types of letters are those containing the ***disk+bio+photo*** package, sent by the authors after they have been notified of the acceptance of their paper.

These letters are registered by an editorial assistant, and the manager are checking if they are ok, and sends everything to the journal office, together with a special letter prepared by her/him, signed by a him and a decision maker.

Special cases:

- The reviewer refuses the review (ill, no time, or out of his scope). In the meeting, the decision maker has to assign a new reviewer. The manager has to prepare the case, and the assistant has to register the refusal letter and eventually to delete this assignment from the records (a historical note will be retained). There can be an improvement here, when the reviewer is pointing to another one, whom he considers qualified better for the job. The manager can decide himself to send the package to this new reviewer.
- Authors are withdrawing a paper (it was accepted elsewhere, they got annoyed by repetitive "reconsider" decisions, one of the authors died, etc). The paper must be taken from the pipeline and put into the archive.

Time triggers:

If a reviewer or an author due with a revised paper is not responding in 6 weeks, a remainder letter is sent to him. If they are not responding after 3 letters, when the time for the fourth is due, the manager has to contact the person by phone. If the author/reviewer is not responding in the next 6 weeks, a new reviewer is assigned, or in the case of the expected revised paper, it is considered "obsolete" and its corresponding file is moved to the archive.

When an obsolete revised paper is arriving, the file is put back into the pipeline.

Assumptions:

- For a paper, ***only one author*** is relevant for the correspondence. Only data about this author is kept in the records.
- If a reviewer is not responding, and the time is coming to assign a new one, and if the other two assigned for that paper already responded and their opinions are very similar, it is possible ***to take the decision based only on two reviews***, in order to shorten the lead time for that paper. The package sent to the author will contain only two reviews.
- Usually, there is a lot of task ***chaining*** and batch processing (***piling***). For example, before the meeting, the manager is processing all the letters registered in the last two weeks. Also, the registering task can be done once; processing the pile of letters arrived at the editorial office. The letter preparation is not made piecemeal, but all packages are made and sent in one batch.

2 THE CHANGED SITUATION

We consider the possibility to have partially ***automated management*** (the ideal case when we have already a computerized and web-enabled system in use). In this case, the main requirement is that ***there is no piece of paper in the flow***. Everything is sent and received via the Internet.

This system offers a web-portal and the capacity to automatically send e-mails, triggered by decisions of the editors and time-outs. If somebody wants to be an author, he has to register first, via Internet, and he will receive a login name and a password. Authors can login, via an applet, and they can send papers by uploading them in a protected database. The papers are automatically registered, after they are successfully uploaded. This will trigger an e-mail to the editor, who has the role to assign reviewers.

Reviewers are the same people than in the previous situation. After their names are migrated in the database of the new system (the old system is abandoned gradually), they receive a letter via normal email with the login and password to access the sensitive data behind the web portal. They can access only those papers they are assigned to.

After the reviewers are assigned by the decision makers, they are notified by an e-mail message generated by the system, and they can login and access (download) their assigned papers via an ID for the paper and a pin number given in the email. They are be provided with a special applet to fulfil the review form, which is uploaded back in the central system. When all three reviewers responded, a generated email is sent to the editor to take a decision. After this, authors are notified by automatically generated e-mails about the taken decisions, and they can have access (via ID+pin, but read-only) to the existent reviews in order to re-write the paper. They can upload the new version, and this will trigger the whole process again.

Further complication:
Any journal has an Editorial Board, that is, a group of senior reviewers, or more broadly, a group in charge with defining the scope and goal of the journal. The reviewer assignment and decision-making could be made hierarchical. How?

When a paper is sent to the editorial office via the web-portal, it is classified automatically according with the a series of key words, and it is sent to a member of the editorial board, who is the leading expert in that group in the respective domain of the paper. (S)he is suggesting names for the reviewers, eventually giving an initial appraisal for the paper in a special applet. These information are visible to the editor-in-chief, who receives an automatically generated email. If this one agrees via the web-portal (he has to login and push a switch to trigger the reviewing process), the process is the same, the paper is made known to the reviewers.

Time out triggers are generating remainder e-mails to reviewers and authors (each week after the first four weeks). Also, each day, remainder emails about the list of papers waiting for review are sent to the editor. The same is for the papers waiting for a decision.

When a paper is accepted, an automatically generated email asks the authors to upload the last version of the paper, biographies and digitised photos. After this activity finishes, the system sends an automatically generated mail to the Publishing house, and the people there can download all the necessary information to publish this paper. (the paper will appear in electronic form, but also in a very limited paper form, for the big university libraries).

The big challenge in this assignment is to try to apply JIT techniques. Consider the situation when there are more papers than reviewers can review (not any reviewer can review any paper, remember that the key words of the paper have to be in the area of the reviewer). It is not allow to overload the reviewers (max 2 papers simultaneously, 6 per year). In this case, the editor is looking for new reviewers and inviting them to join the reviewers group. The papers that cannot be allocated, are on hold until a new

reviewer is found or another one is free. The system should insure that the waiting queue for the incoming papers is minimal.