Tutorial for Web Engineering

Solution Assignment 4

Koblenz, Winter Term 2015/16

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Task 1:

a) Are there any differences between the web application development process and the classical software development processes? Please explain.

Although all the famous software development models i.e. water fall, V, spiral, incremental, iterative, prototyping, agile, RAD, etc. can be used for both the web application and classical applications, but some are prior over others.

The major differences of a web application development process compared to the classical desktop based software development processes are as following:

- Infrastructure
- User experience
- Platform dependency

Infrastructure:

Web application development process requires special consideration on the client server infrastructure typically over HTTP protocol i.e. the request response model. Such an infrastructure will make the application development totally different from the development of classical software. In such an architecture a web application is made in several languages and technologies i.e. HTML, CSS, Javascript, PHP, MySQL, etc and runs at client side in a web browser and at server side in a web server. In contrast to that a classical web application usually is made in one language or few languages and is often an executable file which is installed on the client machine(s) and might be connected to a server. The development measures of these two software types are totally different as they run on two different type of infrastructures.

User Experience:

A web application user experience is much different from a classical desktop based application i.e. users of web application use a web browser while users of a classical desktop application use an installed executable of the application. Hence web application development process involves several measures in order to consider cross browser compatibility and user experience over different screen sizes. In a classical software development process user experience is not as such a big development concern.

Platform Dependency:

A web application is platform independent from the client perspective and some web technologies are platform dependent from server perspective. Platform dependency refer to relaiance of the technology on certain underlying software i.e. the operating system, the framework and much more. A web application requires only a web browser and can be access literally from any operating system. But a classical software requires a pre-installed executable file and some technologies and languages are dependent to limited number of platforms and frameworks. Hence web applications are scalable and easily updateable compared to classical software applications and therefore the development process differs.

b) Please explain the V-Model development process (2 points).

The V-Model is one of the software development life cycle models which is an enhancement of traditional classical water fall software development model. In this model the execution of process occur in a sequential manner in a V shape, therefore it is called a V-model, it is also known as verification or validation model. In this model each phase has its corresponding verification or testing phase. In this model the development time is spent over planning the requirements and verifying them at one side and testing them and validating them on the other side. It is quite a switching process and can go back and forth from one state to another but in a sequential manner.

The phases of the V-Model are pretty much project dependent, the software engineer can break down the phases based on the project requirements, but can be generalized as showed in figure 1.

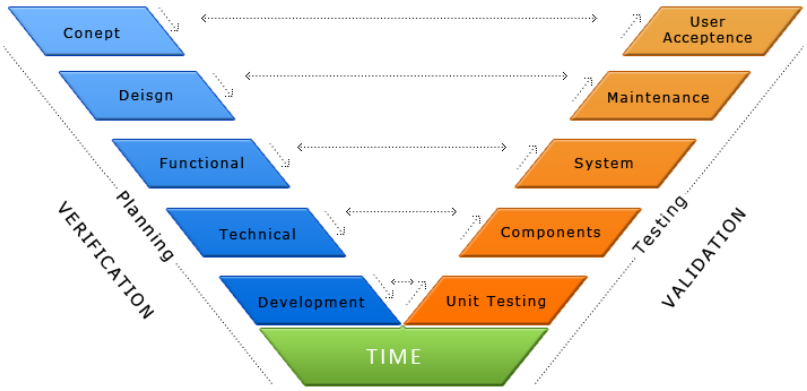

Fig. 1: Source: `http://softobiz.com/wp-content/uploads/2012/03/v-model.png`.

Concept – User Acceptance: Like the water fall, at first concept planning is done and all the requirements are gathered. But meanwhile it is also validated from the users.

Design – Maintenance: In this phase the software design is planned and the plan is validated and maintained over the course of its time.

Functional – System: In the functional planning phase all the functionality of the software is planned and is tested against the system.

Technical – Components: In this phase all the technologies that will be used are planned and interface and component testing is validated against it.

Development – Unit Testing: In the development phase the actual coding and its unit testing takes places.

Task 2:

Figure 2 shows the class diagram which models the domain of the case study **StorePub**. An other view onto the case study is given by figure 3 which shows the functional requirements using an UML use case diagram. The third and final view onto the system is given by 4 which is an UML state chart and it describes the lifecycle of a shopping cart.

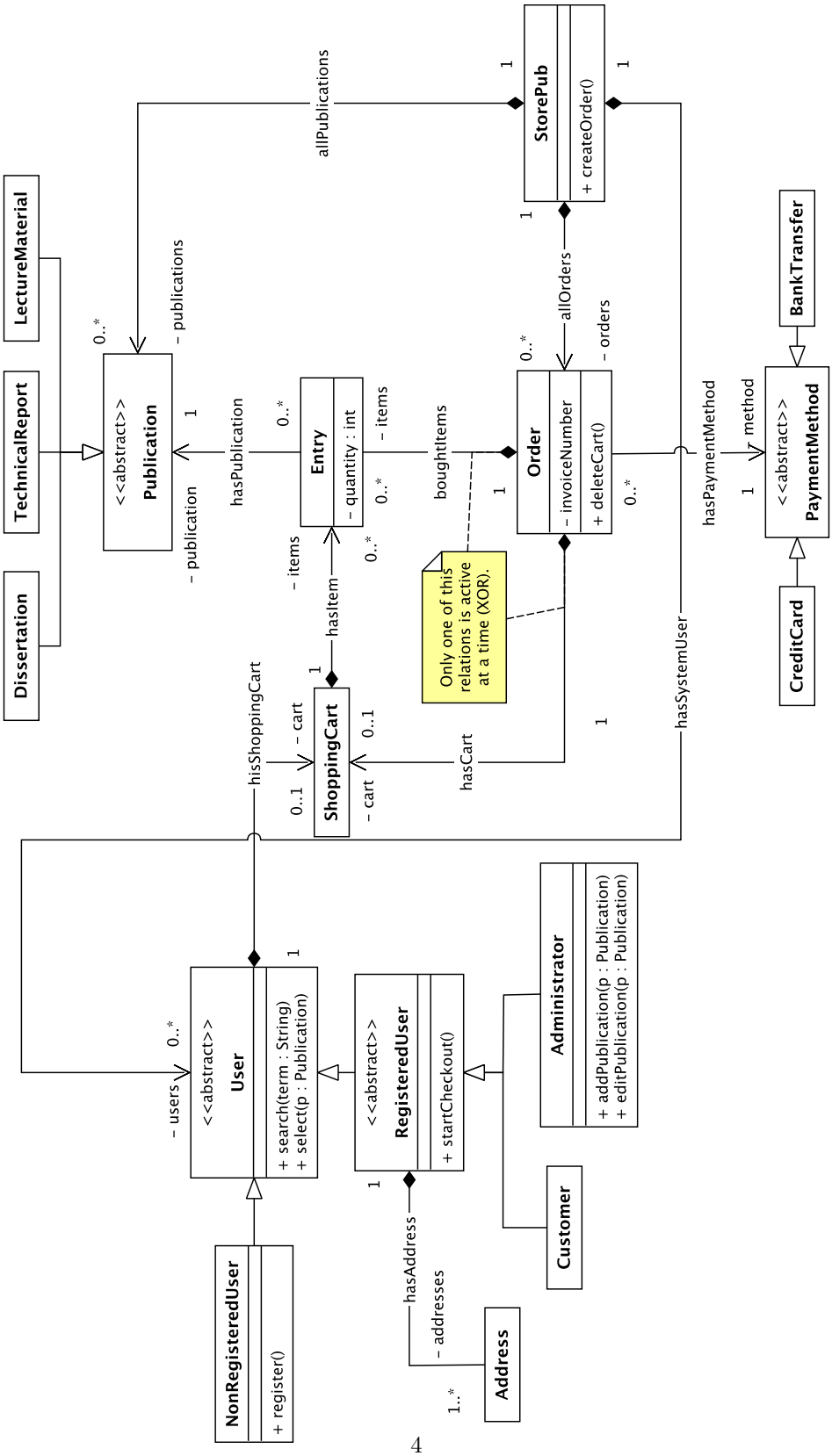

Fig. 2: UML class diagram to model the domain of the case study **StorePub**, required by task 2a.

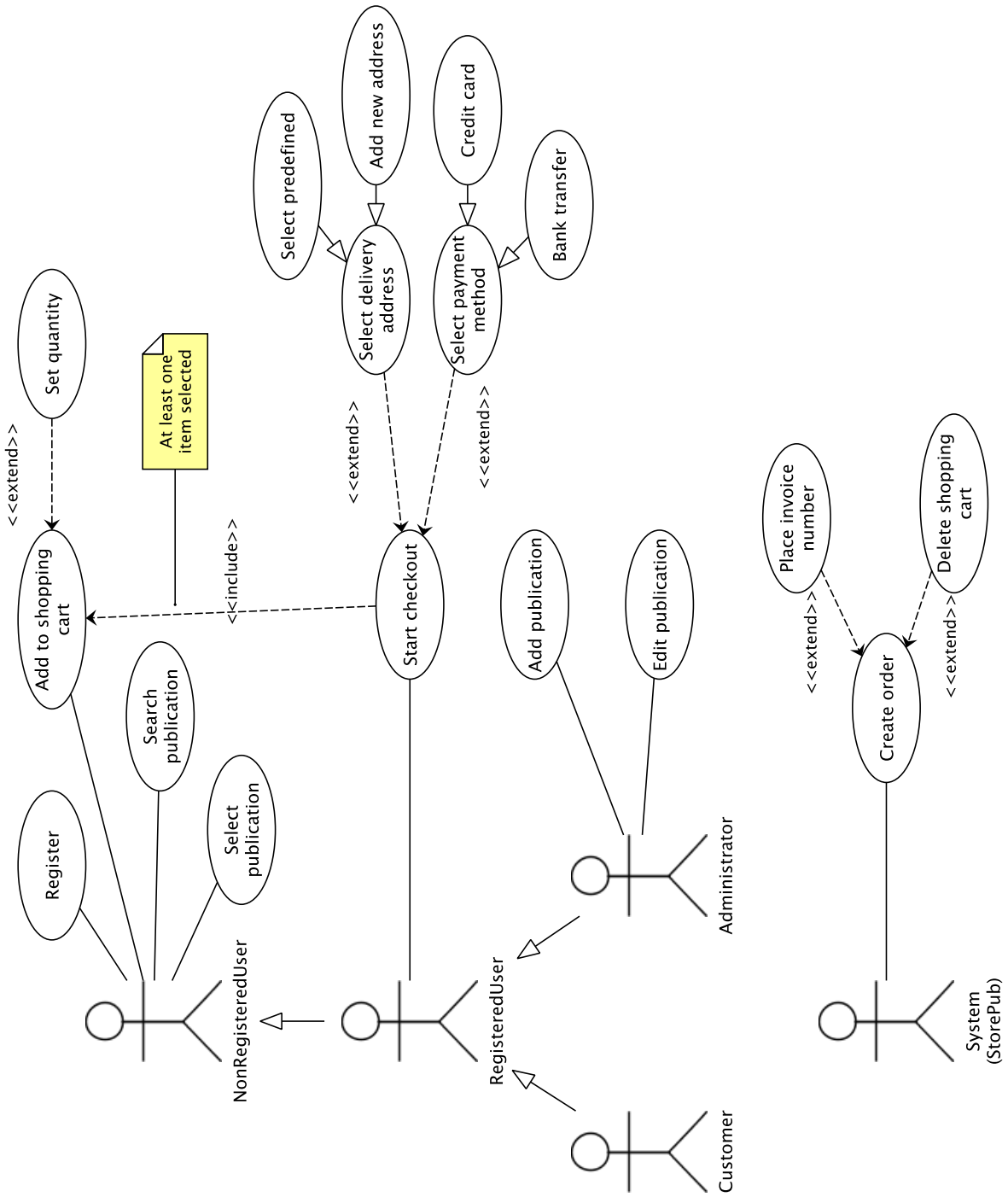

Fig. 3: UML use case diagram to describe the functional requirements of **StorePub**, required by task 2b.

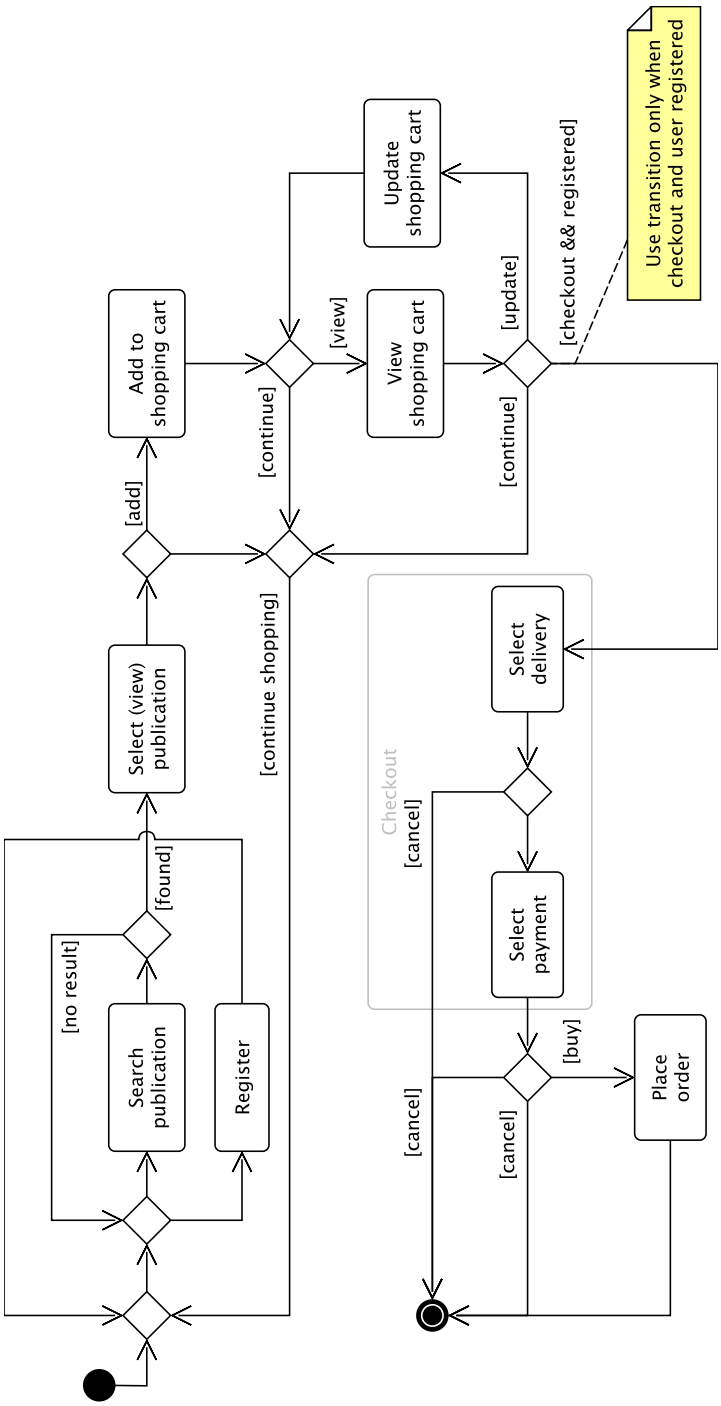

Fig. 4: UML state chart diagram which describes the lifecycle of a shopping cart, required by task 2c.

Task 3:

In table 1 (next page) amazon.com is analyzed for funcational and non-functional requirements.

Tabelle 1: Requested table with nine different functional and non-functional requirements.

ID	**Requirement**	**Functional/Non-Functional**	**Non-Functional Category**
1	The site should display user their famous local brand products rather than internationals. The prices should be displayed in local currency and product can be described in local language or English based on user selection	Non-functional	Internationalization
2	The content should be divided with correct heading tags and all images must have `alt` text so that screen reader users can know what content they are listening.	Non-functional	Accessibility
3	All the transactions must be made on a secured layer with encryption and user data must always be protected.	Non-functional	Security
4	All standards should be followed with respect to users country locationa and all intellectual property rights and any standards with which the system must comply. All the user must be aware of this and this information should be available to every user.	Non-functional	Legal
5	The look and feel of website should be more personalized than generalized. Determining the profile of user products, promotions and advertisments should be shown to them accordingly. However layout should be kept constant throughout the site.	Non-functional	Look & Feel
6	Navigation should be easy and every type of product category should be somehow available on all pages of website so user can switch between these categories regardless of what page he or she is on.	Non-functional	Usability
7	A customer should be able to purchase product with his credit/debit card, PayPal, Bank account etc. Further local payment methods for regional sites should also be implemented.	Functional	-
8	Seller Section: There should be a seperate section for seller where he can maintain/view his products on sale, generate reports, add more items etc. He or she should also be able to use the same account for purchases.	Functional	-
9	Buyer Section: Buyer should be allowed to purchase item as a gift and send to different shipment address than billing one.	Functional	-