

# Organizational Information Systems

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## *Assignment 1b*

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# 1 Choose a project

Web development company – WebABC

WebABC was founded in 1997 in a region of Russian Federation. The company started its work with initial staff of 4 students.

Since 1997, the company has implemented more than 200 internet-projects of different difficulty and specificity. There are about 20 professionals working in web development in the company now.

Today WebABC is the leading web developer in its region and it is focused on creating effective e-business solutions for small and medium enterprises in different regions of the Russian Federation and the nearest countries. It provides a full cycle of Internet services: from creating online marketing strategy, creating a website design, programming and installation of CMS to website promotion in search engines, Internet advertising and the development of Internet projects.

The main advantage of company – resources to develop an internet solution from scratch or on any development stage, from analysis, promotion and positioning to the stage of project launch. When working with WebABC customers are guaranteed to get unique internet solution designed for their application.

## 2 Row 1: Describe the organization in natural language

I have used the Zachman framework to determine what to model.

### 2.1 (Why) Goal list

- Customer:
  - to get a product in time
  - to get a quality product
  - to get unique product
  - to keep costs low
- Project manager:
  - correctly understand what customer wants
  - complete a product in time
  - correctly distribute tasks
  - coordinate web development
- Web developer:
  - develop client side code
  - complete coding in time
  - develop tests
  - remove bugs
- Web designer:
  - define the goals and objectives of the site visitors
  - design and planning of the structure of the site
  - interface development
  - concern about user interaction with the system
  - training content and its quality control

- Developer:
  - develop server side code
  - complete coding in time
  - develop tests
  - remove bugs
  
- QA specialist:
  - detect faults
  - detect faults in time
  - work on test scripts prepared by other staff members
  - analyze results obtained during the test
  - classify the bugs and stores them in a database
  - controls of the process of check bug fixes
  
- Usability engineer:
  - clearly organize web pages
  - organize site navigation
  - ensure convenience, efficiency of use
  
- SEO-specialist:
  - achieve desired site ranking
  - comply with the requirements of search algorithms, crawlers and catalogues
  - create recommendations for changes to the site in order to improve
  
- Copywriter:
  - create texts for the resource
  - analysis of the uniqueness of texts
  - writing press releases and promotional texts
  
- Content manager:
  - develops and supports the underlying concept of the site
  - update site content
  - monitoring of competitors' sites, tracking changes in the market
  - development of new services, functional sites
  - communication with the hosting provider and developers of the site
  
- Sales manager:
  - increase sales volume
  - organize pre-contractual work with customer and follow the sale till completion
  - create, prepare and distribute proposals and presentations
  
- Organization for registration domain name:
  - domain name registration
  - providing a domain name address on the Internet
  
- Hosting provider:
  - website hosting
  - storage and protection of data contained on it
  - ensuring the access of visitors to the site
  
- System administrator:
  - monitoring the health and condition of the equipment
  - monitoring the health of the software
  - backing up and restoring data and software
  - monitoring the availability of free space on the hard disk drive partitions equipment

- management of user accounts that are connected to the management of the site
- CMS partners:
  - providing tools for content creation
  - collaborate on content
  - content management: storage, version control, adherence to access, control the flow of documents
  - content publishing

## 2.2 (How) Process list

- acquisition of a new customer
- start a new project
- prepare map of new website
- cooperation with customers
- plan for the project
- complete cost-benefit analyses
- review and approve map of new website
- client reviews and provides final approval for design concept
- collection and analysis of requirements
- development of specifications
- develop acceptance criteria
- develop procedure for quality assurance
- design website
- interface design
- development of creative website concept
- programming (developing functional tools) or integration into content management system (CMS)
- create a design concept of a site
- page layout
- add necessary plugins
- creating multimedia
- HTML templates and pages
- review design and update functional
- optimization and placement of material
- testing and making adjustments
- test website for bugs across all major browsers
- check website with other computers
- prepare website log in credentials for client access
- transfer website to client domain
- opening of the project on the public site
- service operating site or its policy framework
- check site statistics
- add new content
- old website restyling

## 2.3 (What) Material list

- for design:
  - Books on HTML 5
  - Books on CSS
  - Adobe Creative Suite
  - Templates and layouts
  - Books on Responsive Web design
  - Java Animation
  - Development Environments Document HTML (FrontPage Express)
  - Vector graphics editor (CorelDraw)
  - Raster graphics editor (Adobe Photoshop)
  - Browser Microsoft Internet Explorer
  - Browser Opera
  - Transcoder (ConvHTML and SNKDECode)
  - Optimizer HTML (UtilMind HTML Compressor)
  - Optimizer bitmap GIF (Gif-Clean 32)
  - Optimizer bitmap JPEG (JPEGCleaner)
  - Editor GIF-animation (Ulead GifAnimator)
  - Fragmentator graphics (PictureDiser)
  - FTP-client (CuteFTP)
  
- for Web platform:
  - hosting platform
  - JavaScript Libraries and Tools
  - web-server Apache
  - tools for layout
  - XML
  - XSLT
  - Perl
  - Server: MS Web platform (Hardware + Software)
  - Client: Open standards
  - program to test the site in different browsers
  
- for cloud-ready:
  - Windows Azure
  - Web role
  
- for security:
  - Single sign-on provider
  - Web and domain ID
  
- for deployment:
  - Azure data center client software
  - FTP, SFTP, SCP client software
  - Remote Desktop software

## 2.4 (Who) Organizational unit and role list

I will consider a small web development company where about 20 people are working. The project manager is the main person in this company and this person performs CEO functions. Absolutely everyone in the company cooperate with the project manager.

Suppose the company consist of the following organizational units and specialists:

- Development:
  - web developers, including a senior web developer
  - developers, including a senior developer
- Design:
  - web designers, including a senior web designer
- QA unit:
  - QA specialists
- Usability engineer
- Copywriter
- SEO-specialist
- Sales manager
- Project manager
- Content manager

## 2.5 (Where) Geographical locations list

- web company office
- design unit
- QA unit
- web development unit
- development unit
- customer office
- website
- hosting data center

## 2.6 (When) Event list

- Cooperation with customers and planning:
  - interviews with clients
  - mails and supporting docs by the client
  - discussions notes
  - online chat
  - sample sites and applications
  - reports from the analysis team
- **Results:**
  - ✓ work plan
  - ✓ cost involved
  - ✓ team requirements
  - ✓ hardware-software requirements
  - ✓ supporting documents

- ✓ complete requirement specifications
- Design and development:
  - requirement specification
  - wireframe and design elements planning
  - mock-ups based on requirements analysis
  - review and approval cycle
  - slice and code valid XHTML/CSS
  - code templates for each page type
  - build development framework
  - develop and test special features and interactivity
  - fill with content
  - test and verify links and functionality
  - Results:**
    - ✓ site design with templates
    - ✓ images and prototype
    - ✓ site with formatted content
- Launch:
  - final cross-browser check
  - polishing
  - transfer to live server
  - testing
  - Results:**
    - ✓ completed application and site
    - ✓ testing reports
    - ✓ error logs
    - ✓ frequent interaction with the developers and designers
    - ✓ site submission with necessary meta tag preparation
- Post-launch:
  - deliver to the client
  - provide documentation and source files
  - close the project, finalize documentation
  - Results:**
    - ✓ updated application
    - ✓ supporting documents for other life cycle steps and teams

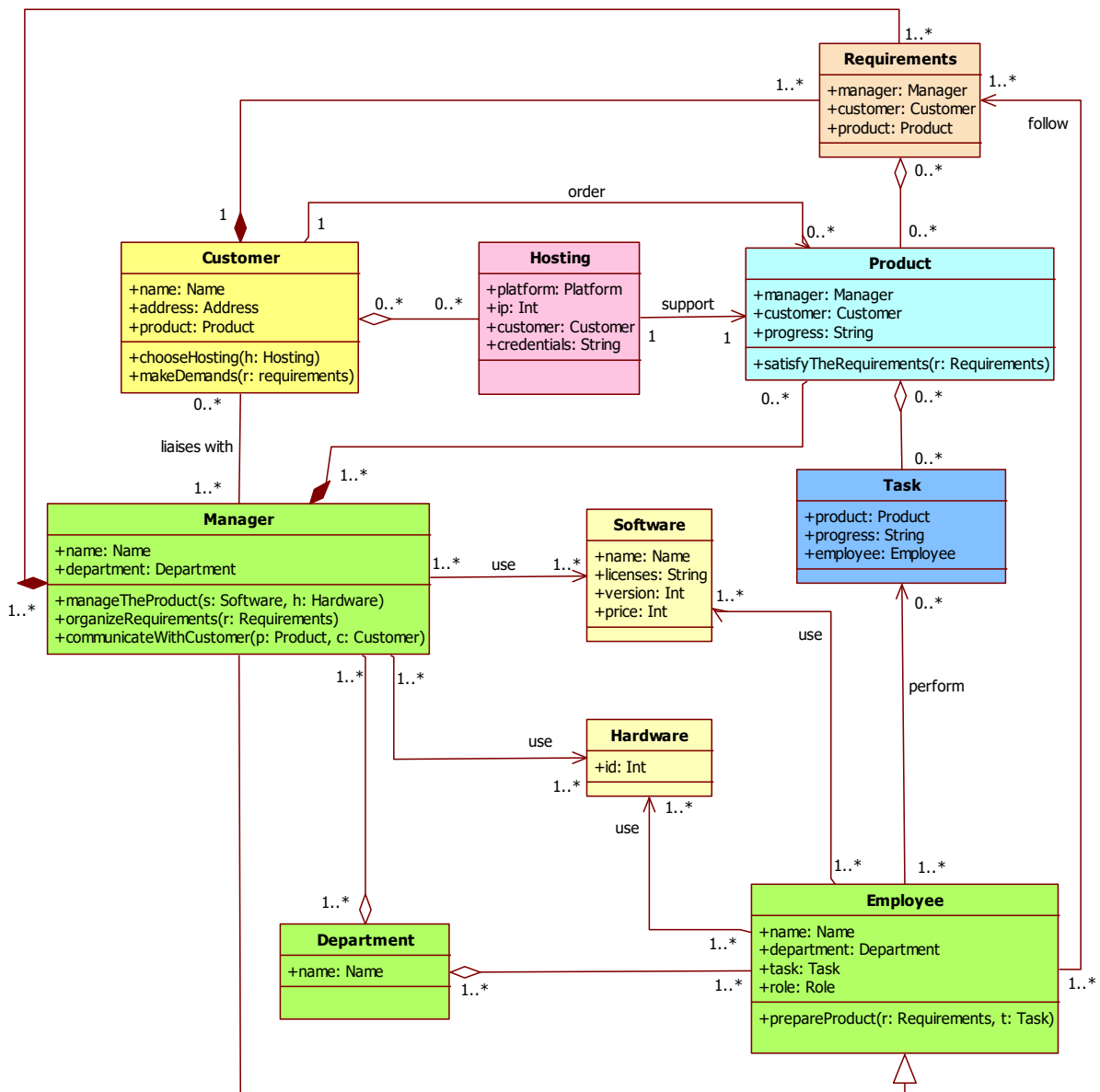
## 3 Row 2: Identify objects

### 3.1 (What) Class diagram for web development company WebABC

Analyzing the web development company, I defined ten main entities that have a fundamental role in the web development. These are the classes of my class diagram: Product, Task, Department, Manager, Employee, Customer, Hosting, Requirements, Hardware and Software.

Links between classes can be explained in the following way:

- Inheritance: “is a” relationship: some classes are like genus and species. For example, Manager is an Employee.
- Aggregation: kind of association between a whole and its parts. It means that the lifetime of the contained classes does not depend on the lifetime of the containing class. So, for example, if the Customer or Requirement class is destroyed, the Hosting class or Product class continue their normal life; for the same reason, the Task class can also exist without Product.
- Composition: a stronger version of aggregation, which means a strict dependence between the instances of the container and those of the contained classes. I have used this composition between Manager – Product, Manager – Requirement and between Customer – Requirement. So, if the Manager’s container is deleted, then the Product and Requirement classes do not exist anymore, because of their strong dependence on it. And the same situation between Customer – Requirement.



Model 1 class diagram



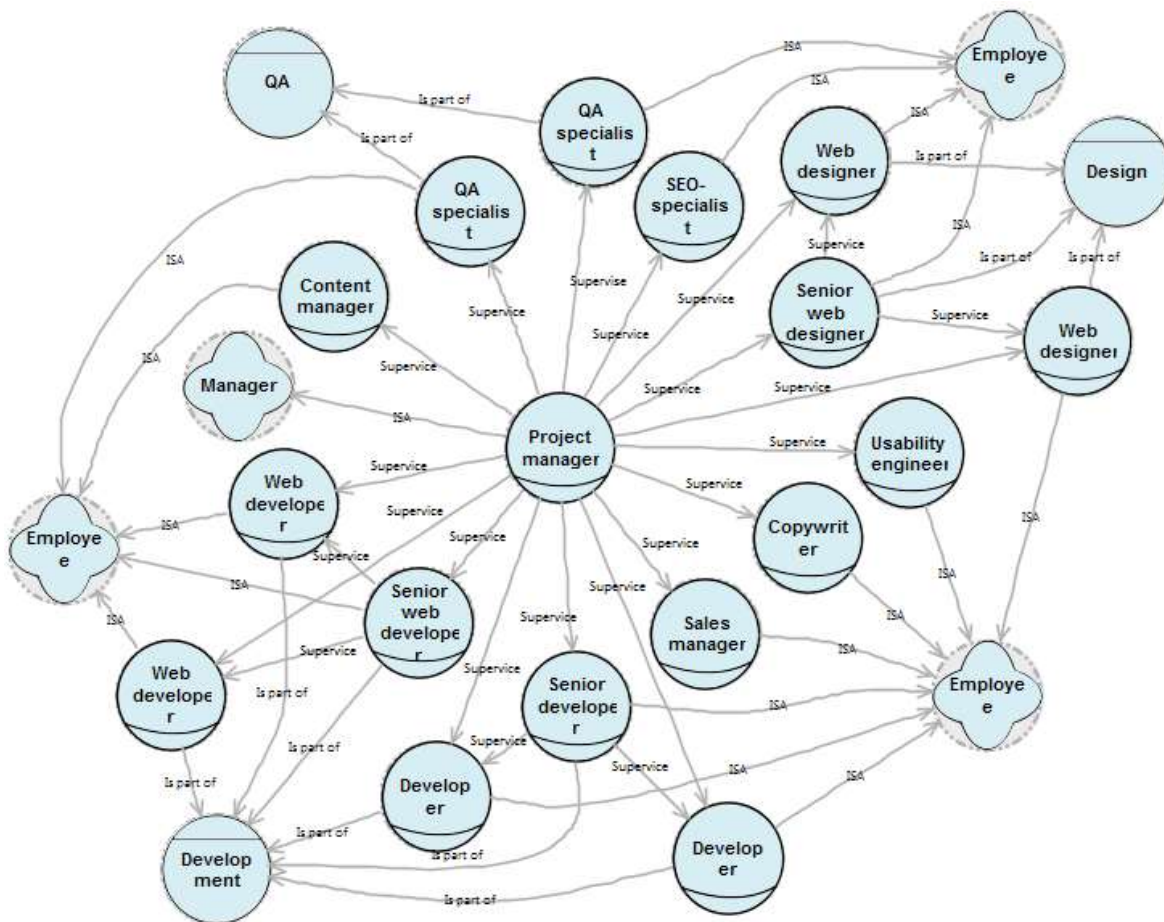
### 3.2 (Who) Identify actors (agents, positions, roles) and their roles, partOf and authority hierarchies

- Project manager
  - **is a** manager
  - **supervise** Web developers
  - **supervise** Developers
  - **supervise** Web designers
  - **supervise** QA specialist
  - **supervise** Usability engineer
  - **supervise** Copywriter
  - **supervise** SEO-specialist
  - **supervise** Sales manager
  - **supervise** Content manager
  
- Senior web developer
  - **is an** employee
  - **part of** Development
  - **supervise** Web developers
  
- Web developer
  - **is an** employee
  - **part of** Development
  - **report to** Senior web developer
  - **report to** Project manager
  
- Senior developer
  - **is an** employee
  - **part of** Development
  - **supervise** Developers
  
- Developer
  - **is an** Employee
  - **part of** Development
  - **report to** Senior developer
  - **report to** Project manager
  
- Senior web designer
  - **is an** employee
  - **part of** Design
  - **supervise** Web designers
  
- Web designer
  - **is an** employee
  - **part of** Design
  - **report to** Senior web designer
  - **report to** Project manager
  
- QA specialist
  - **is an** employee
  - **part of** QA unit
  - **report to** Project manager
  
- Usability engineer

- **is an** employee
- **report to** Project manager
- Copywriter
  - **is an** employee
  - **report to** Project manager
- SEO-specialist
  - **is an** employee
  - **report to** Project manager
- Sales manager
  - **is an** employee
  - **report to** Project manager
- Content manager
  - **is an** employee
  - **report to** Project manager

### 3.2.1 Organizational chart

In this model I would like to represent important actors in the organization. I have described their kinds and relations among actors. For example, the project manager **supervises** employees in the company. Senior web developer **supervises** web developers and each of them **is part of** Development and they are **employees**



Model 2 organizational chart

### 3.2.2 Identify for important actors their goals and interdependencies

#### 1) actor: Project manager

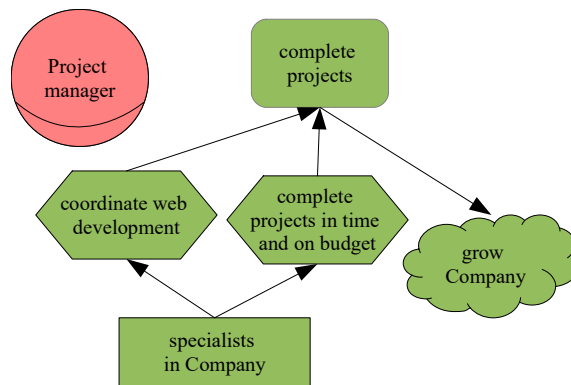
**goal:** complete projects

**soft goals:** grow Company

**tasks:** coordinate web development, complete projects in time and on budget

**resources:** specialists in Company

**interdependencies:** usability engineer, senior web developer, senior developer, senior web designer



Model 3 actor – project manager

#### 2) actor: Usability engineer

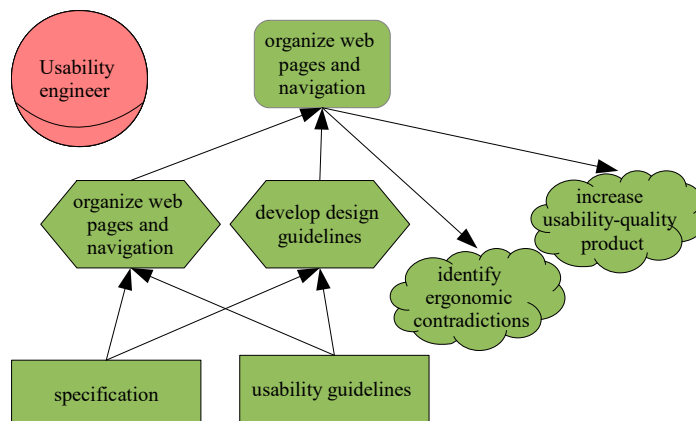
**goal:** organize web pages and navigation

**soft goals:** identify ergonomic contradictions and increase usability-quality product

**tasks:** organize web pages and navigation, develop design guidelines

**resources:** specification, usability guidelines

**interdependencies:** project manager, web designer



Model 4 actor – usability engineer

3) actor: Senior web designer

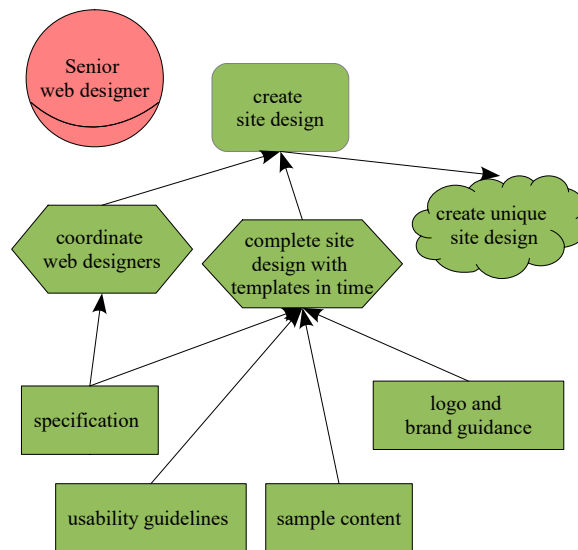
**goal:** create site design

**soft goals:** create unique site design

**tasks:** coordinate web designers, complete site design with templates in time

**resources:** specification, design guidelines, sample content, logo and brand guidance

**interdependencies:** project manager, usability engineer



Model 5 actor – senior web designer

4) actor: Web designer

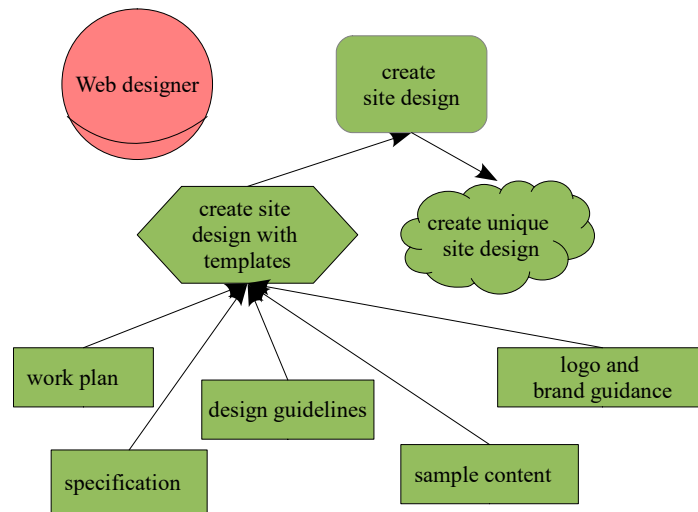
**goal:** create site design

**soft goals:** create unique site design

**tasks:** create site design with templates

**resources:** work plan, specification, design guidelines, sample content, logo and brand guidance

**interdependencies:** project manager, usability engineer, senior web designer



Model 6 actor – web designer

5) actor: Senior web developer

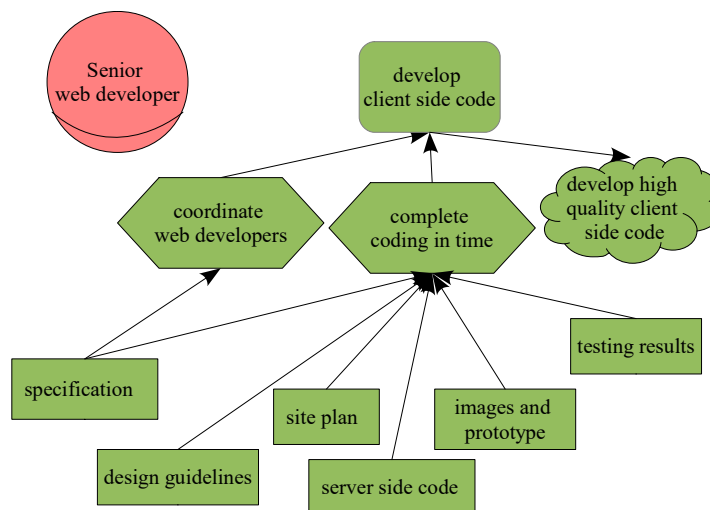
goal: develop client side code

soft goals: develop high quality client side code

tasks: coordinate web developers, complete coding in time

resources: specification, design guidelines, server side code, site plan, images and prototype, testing results

interdependencies: project manager, usability engineer, developer, designer, QA specialist



Model 7 actor – senior web developer

6) actor: Web developer

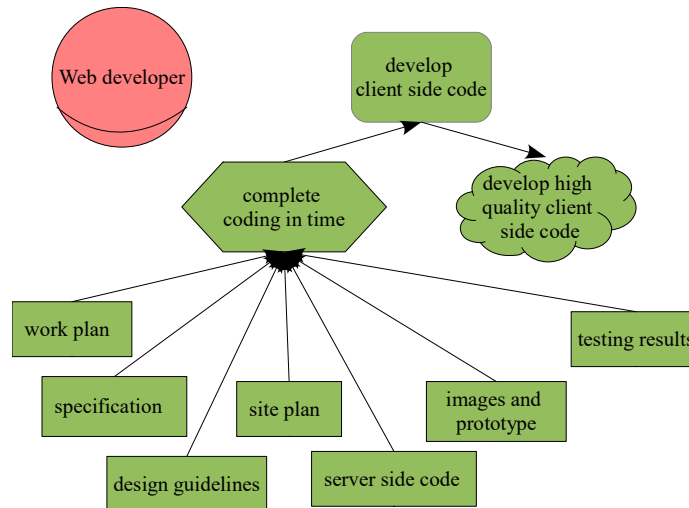
goal: develop client side code

**soft goals:** develop high quality client side code

**tasks:** complete coding in time

**resources:** work plan, specification, design guidelines, server side code, site plan, images and prototype, testing results

**interdependencies:** project manager, usability engineer, senior web developer, developer, designer, QA specialist



Model 8 actor – web developer

7) **actor:** Senior developer

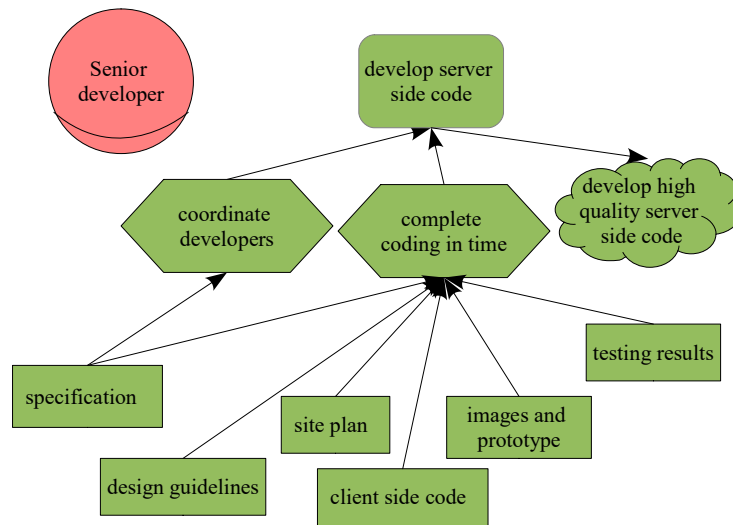
**goal:** develop server side code

**soft goals:** develop high quality server side code

**tasks:** coordinate developers, complete coding in time

**resources:** specification, design guidelines, client side code, site plan, images and prototype, testing results

**interdependencies:** project manager, usability engineer, web developer, designer, QA specialist



Model 9 actor – senior developer

**8) actor: Developer**

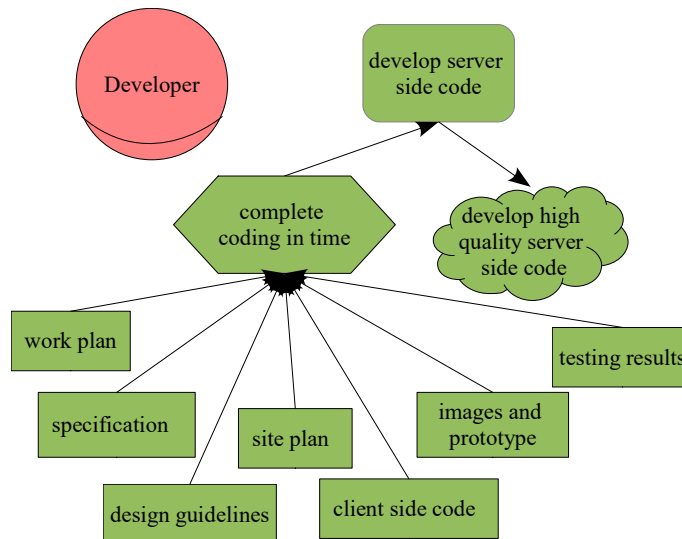
**goal:** develop server side code

**soft goals:** develop high quality server side code

**tasks:** complete coding

**resources:** work plan, specification, design guidelines, client side code, site plan, images and prototype, testing results

**interdependencies:** project manager, usability engineer, senior developer, web developer, designer, QA specialist



Model 10 actor – developer

**9) actor: QA specialist**

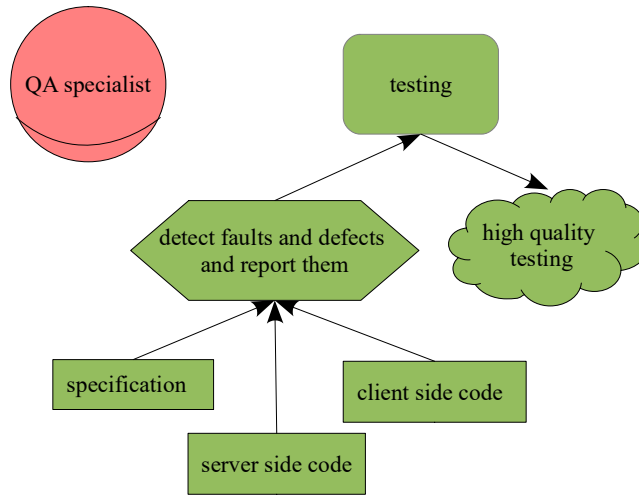
**goal:** testing

**soft goals:** high quality testing

**tasks:** detect faults and defects and report them

**resources:** specification, client side code, server side code

**interdependencies:** project manager, web developer, developer



Model 11 actor – QA specialist

**10) actor:** Copywriter

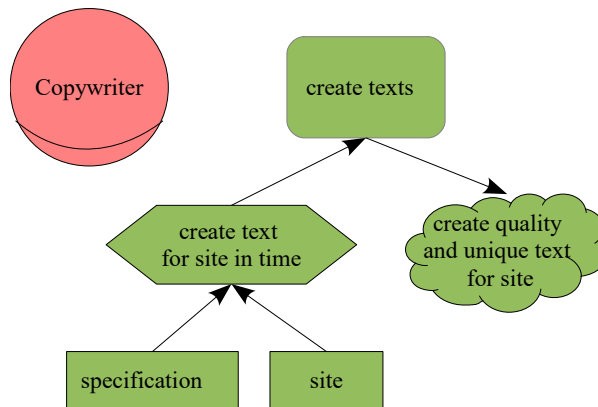
**goal:** create texts

**soft goals:** create quality and unique text for site

**tasks:** create text for site in time

**resources:** specification, site

**interdependencies:** project manager, SEO-specialist, content manager



Model 12 actor – copywriter

**11) actor:** SEO-specialist



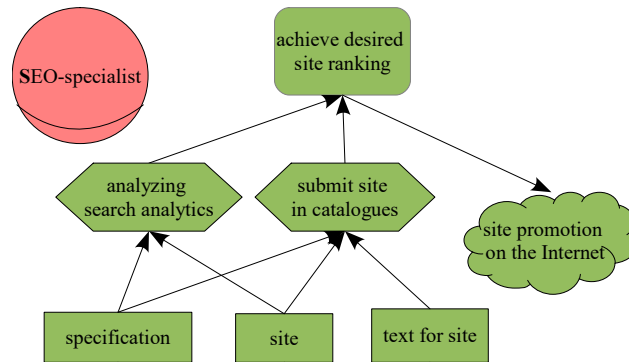
**goal:** achieve desired site ranking

**soft goals:** site promotion on the Internet

**tasks:** analyzing search analytics, submit site in catalogues

**resources:** specification, site, text for site

**interdependencies:** project manager, copywriter, content manager



Model 13 actor – SEO specialist

**12) actor:** Content manager

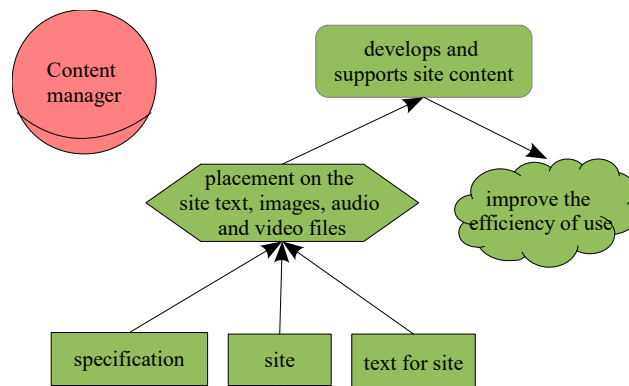
**goal:** develops and supports site content

**soft goals:** improve the efficiency of use

**tasks:** placement on the site text, images, audio and video files

**resources:** specification, site, text for site

**interdependencies:** project manager, copywriter, SEO-specialist



Model 14 actor – content manager

**13)actor:** Sales manager

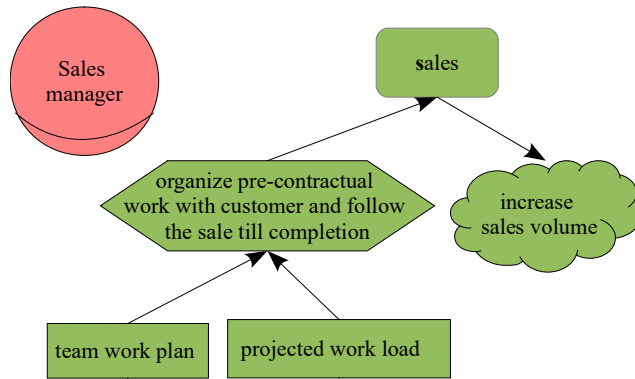
goal: sales

**soft goals:** increase sales volume

**tasks:** organize pre-contractual work with customer and follow the sale till completion

**resources:** team work plan and projected work load

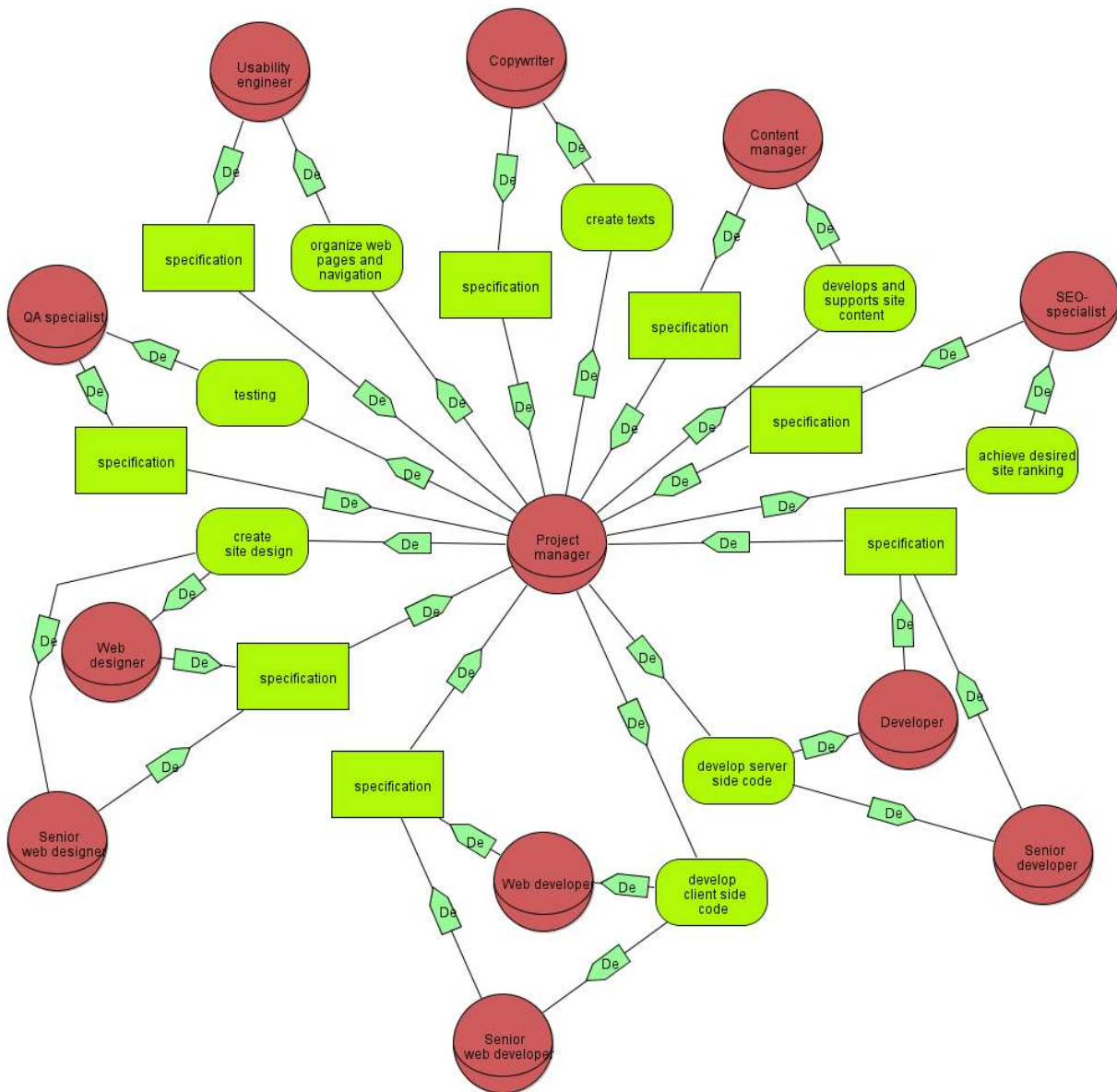
interdependencies: project manager



Model 15 actor – sales manager

### 3.3 (Why) Dependency diagram

In this diagram I would like to show dependencies among main actors in the web development company. I have defined the following actors: copywriter, content manager, usability engineer, QA specialist, SEO-specialist, senior web designer and web designer, senior web developer and web developer, senior developer and developer. Each of them depend on a project manager, because the project manager is the main person in this company and this person performs the function of CEO. The project manager should prepare specification for everyone in the company. On the other hand the project manager depends on each specialist in the company. For the project manager it is very important to get the product in time, so the project manager needs to get each task from each employee in time.



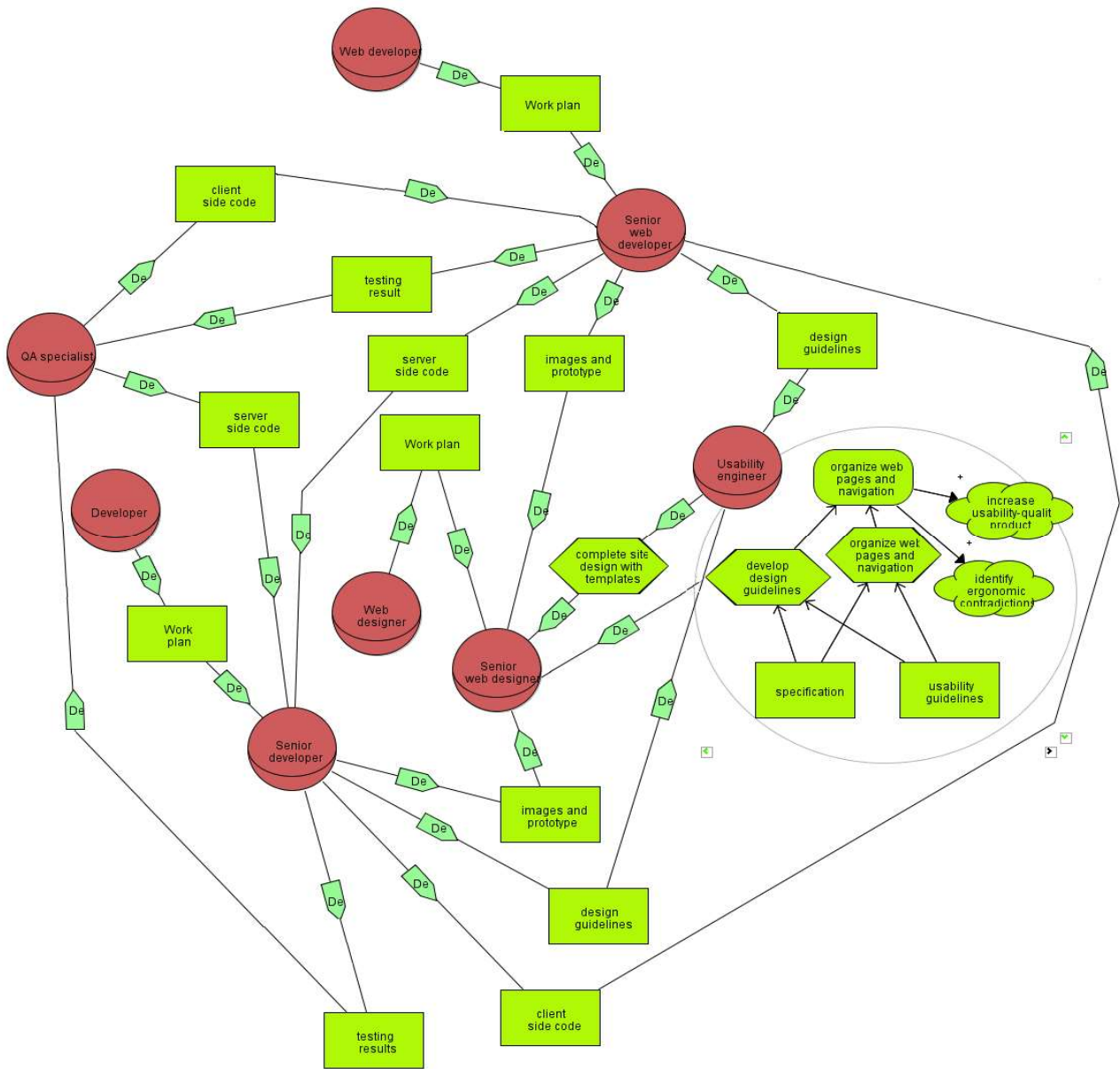
Model 16 dependency diagram

### 3.4 (Why) Rationale diagrams

In this part I would like to represent rationale diagrams for the following actors: usability engineer, QA specialist, project manager, senior web developer, senior developer and for SEO-specialist, copywriter and content manager.

#### 3.4.1 Rationale diagram for usability engineer

Usability engineers are employees and their goal in web development is to organize web pages and navigation. The usability engineer should organize web pages and navigation and also develop design guidelines. In this rationale diagram I have represented actors who communicate with the usability engineer during web development. For the usability engineer it is important to communicate with a senior web designer to develop a design guideline. On the other hand a senior web developer and a senior developer need to get complete design guidelines from the usability engineer for their next develop. The usability engineer uses the following resources: specification and usability guidelines.

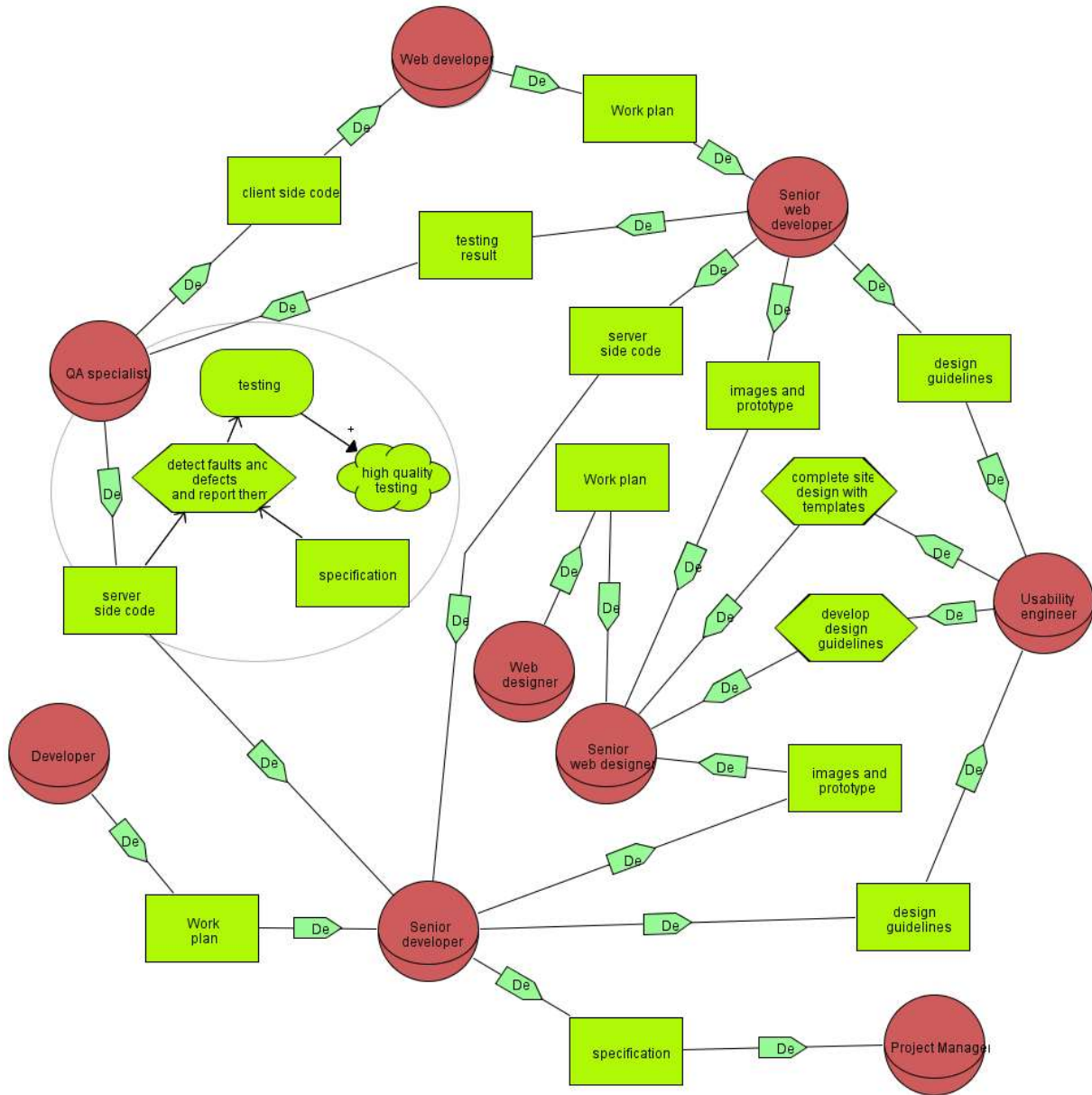


Model 17 rationale diagram for usability engineer



### 3.4.3 Rationale diagram for QA specialist

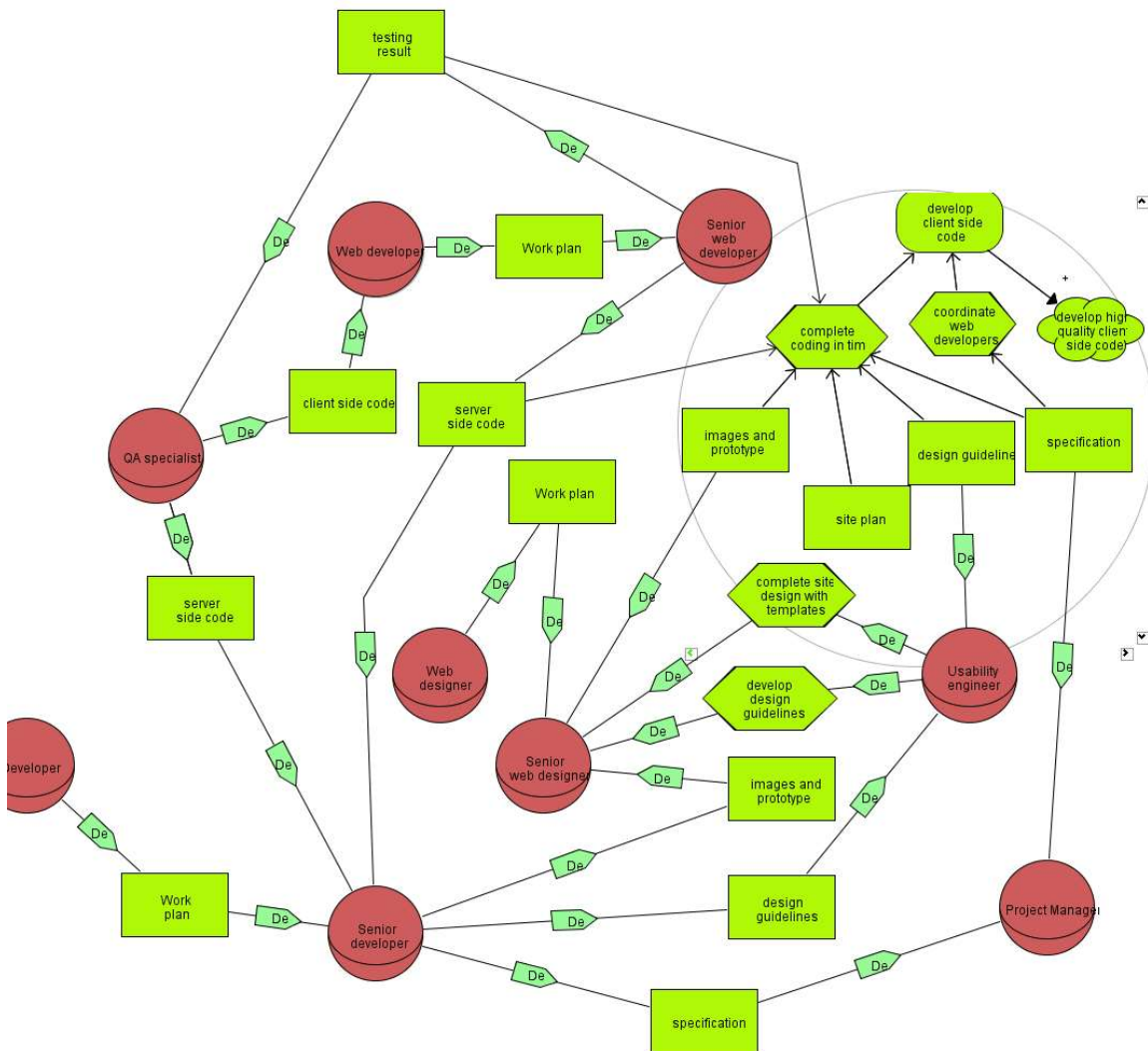
QA specialists are employees and their goal is high quality testing. The QA specialist should detect faults and defects and report them. In this rationale diagram I have represented actors who communicate with the QA specialist during the web development. For the QA specialist it is important to communicate with a senior web developer and a senior developer to detect faults. On the other hand the senior web developer and the senior developer are needed to get complete testing results for fix bugs. The QA specialist uses the following resources: specification, client side code and server side code.



Model 19 rationale diagram for QA specialist

### 3.4.4 Rationale diagram for senior web developer

Senior web developers are employees and their goal is to develop high quality client side code. The senior web developer should coordinate web developers and complete coding in time. In this rationale diagram I have represented actors who communicate with the senior web developer during the web development. For the senior web developer it is important to communicate with a senior developer and a QA specialist and to get testing results and server side code. On the other hand the web developer and the QA specialist are needed to complete client side code. Also, the senior web developer communicates with designer to get site plan, images and prototype. And the senior web developer communicates with the usability engineer to get design guidelines. The senior web developer uses the following resources: specification, design guidelines, server side code, site plan, images and prototype, and testing results.

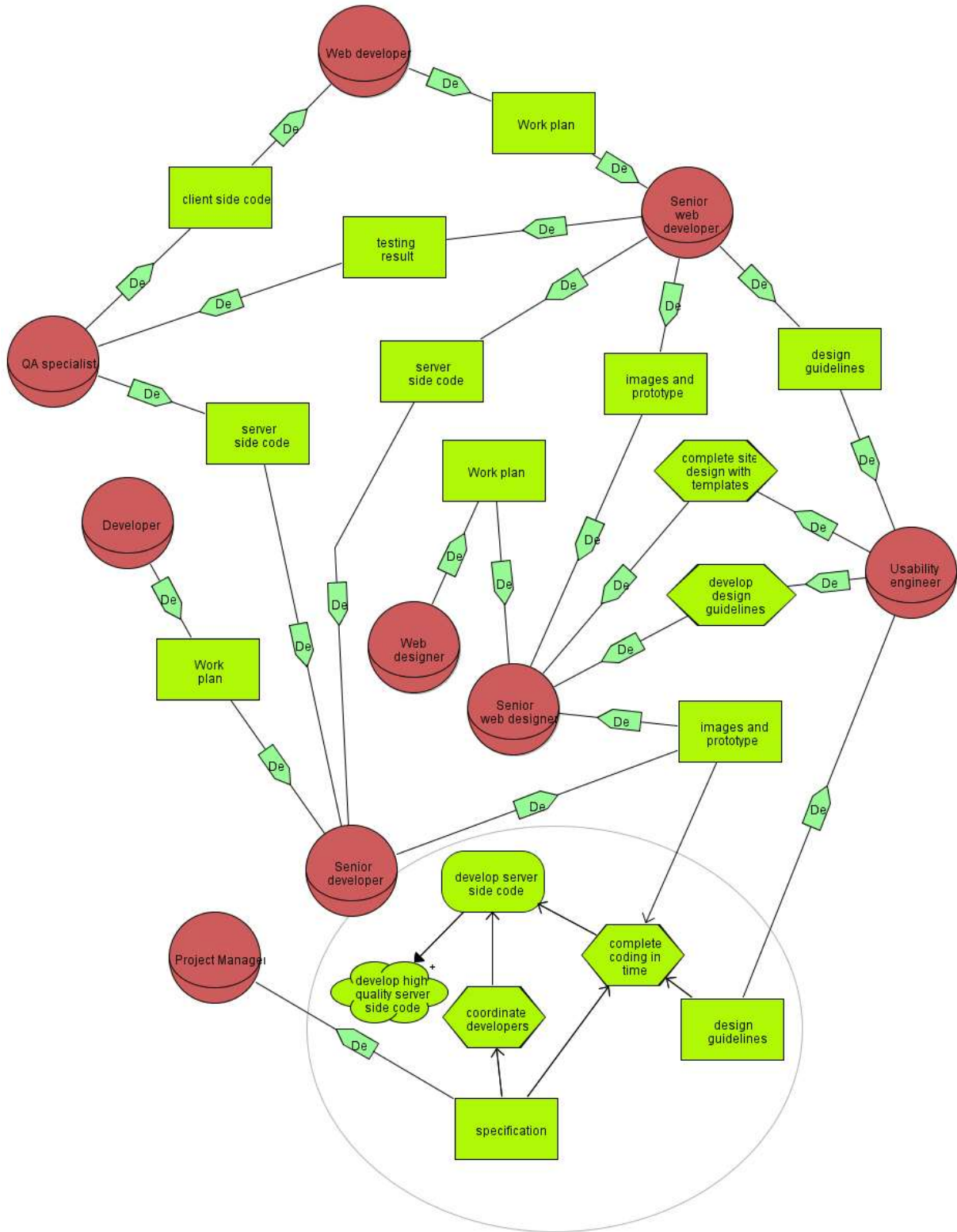


Model 20 rationale diagram for senior web developer

### 3.4.5 Rationale diagram for senior developer

Senior developers are employees and their goal is to develop high quality server side code. The senior developer should coordinate web developers and complete coding in time. In this rationale diagram I have represented actors who communicate with the senior developer during the web development. For the senior developer it is important to communicate with a usability engineer to get design guidelines. Also, the senior web developer communicates with designer to get site plan, images and prototype. The senior developer uses

the following resources: specification, design guidelines, client side code, site plan, images and prototype and test results.

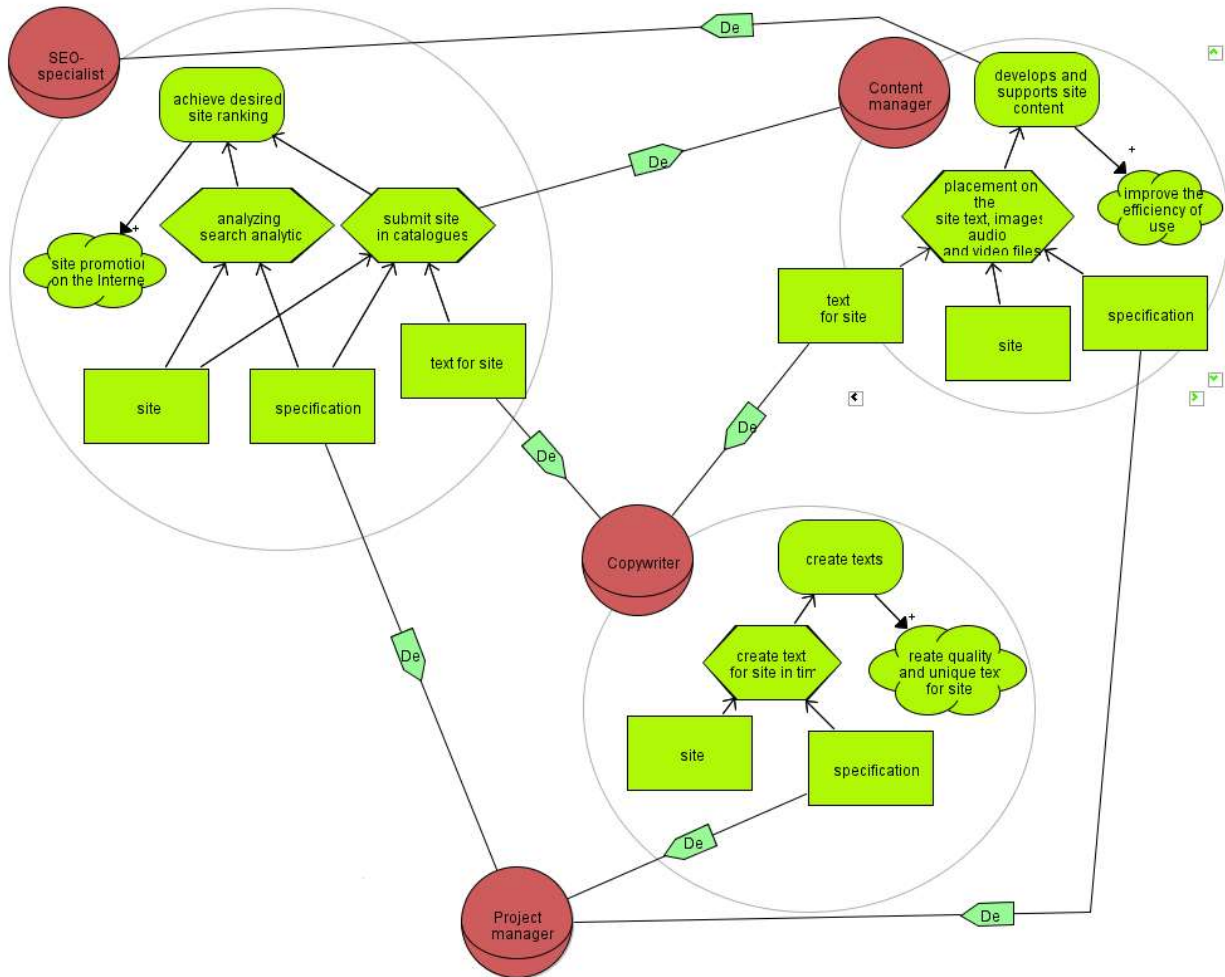


Model 21 : rationale diagram for senior developer



### 3.4.6 Rationale diagram for SEO-specialist, copywriter and content manager

SEO-specialist, copywriter and content manager are employees and their work is tightly coupled and I decided to represent single rationale diagram for these specialists. The SEO-specialist goal is to achieve desired site ranking. So, for this kind of work the specialist needs text for the site from the copywriter and to submit site in catalogues – from the content manager. On the other hand the content manager communicates with copywriter and SEO-specialist to complete their goal – develop and support site content.



Model 22 rationale diagram for SEO-specialist, copywriter and content manager

### 3.5 (When) Model time constraints as ECA rules

The classic model for the description of active rules is based on rules that contain three components: an event, condition and action and they are called ECA-rules (Event-Condition-Action). In this part I would like to analyse the following components:

- **Event** describes an event that is can occur.
- **Condition** checks the context in which event has occurred.
- **Action** describes the procedure to be performed rule if an event has occurred, and the condition was true.

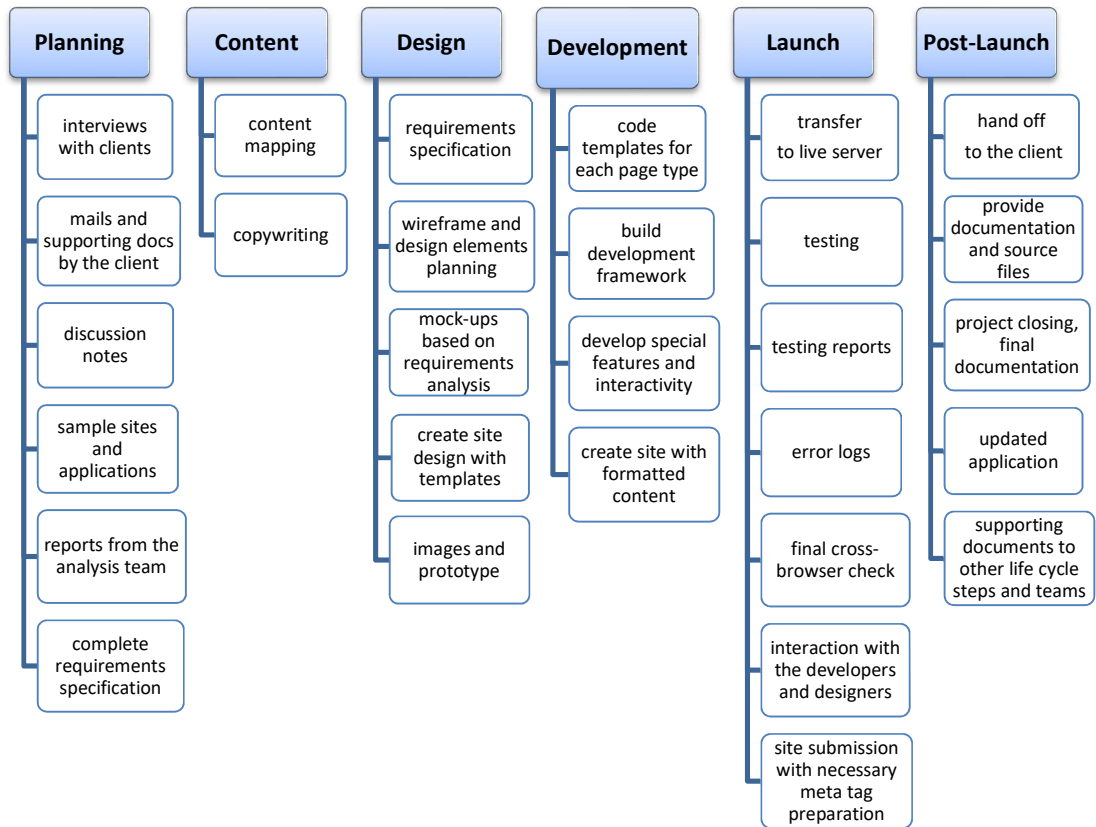
Event	Condition	Action
IF a new customer is found	AND a new project is started	THEN a preliminary analysis should be done
IF the preliminary analysis is done	AND a usability engineer is available	THEN a site model should be done
IF the preliminary analysis is done	AND a project manager is available	THEN a plan for the project should be done
IF the preliminary analysis is done	AND a sales manager is available	THEN a cost-benefit analysis should be done
IF the site model, plan for the project and the cost-benefit analysis are done	AND the project manager is available	THEN an interview with the client should be done
IF the client doesn't agree with the plans for the project	AND a usability engineer and project manager are available	THEN the preliminary analysis and the plans for the project should be updated
IF the client agrees with the plans for the project	AND a usability engineer is available	THEN a complete requirements specifications should be done
IF the requirements specification is done	AND the project manager and the customer are available	THEN the proposal should be sign by the project manager and the customer
IF the proposal is signed	AND the designers are available	THEN a site design with templates, images and prototype should be created
IF the client doesn't like this design	AND the designers are available	THEN the site design with templates, images and prototype should be changed
IF the client likes this design	AND the project manager and a QA-specialist are available	THEN an acceptance criteria and a procedures for quality assurance should be developed
IF the acceptance criteria and the procedures for quality assurance are developed	AND the designers are available	THEN a templates should be designed
IF the templates are designed	AND a copywriter and developers are available	THEN a code should added and a content for the site should be written
IF the code is added and the content for the site is done	AND the QA-specialist is available	THEN the code should be tested
IF the manual and automated testing are done	AND the developers are available	THEN bugs should be fixed
IF the errors are eliminated	AND a Content manager	THEN a meta tags should be

	and a SEO-specialist are available	prepared and the URL should be submitted
IF the errors are not eliminated	AND the QA-specialist and the developers are available	THEN the bugs fixing and the code testing should be refreshed
IF the project is done and the customer doesn't accept	AND the developers and the QA-specialist are available	THEN the templates and the code should be updated
IF the project is done and the customer accepts	AND the customer completes payment	THEN the project is finished

### 3.6 (How) Model: company map

A Web development process consists of the steps needed to be taken from start to finish to complete a typical Web development project. It divides and categorizes the work and then breaks these high-level sections into tasks and resources that can be used as a map for each project. I would like to represent the general steps:

- **Planning:** is the most important step, because what's decided and mapped here sets the stage for the entire project. This is also the stage with client interaction and the accompanying attention to detail.
- **Content:** this phase is necessary mainly for the web sites. Content writers while adding their text can utilize the design templates. The grammar and spelling checks should be over in this phase.
- **Design:** this step includes moving the information outlined in the planning stage to further steps. The main deliverables are a documented site structure and, more importantly, a visual representation.
- **Development:** involves programming work and continuous testing.
- **Launch:** the main purpose of this step is to prepare the website for public viewing. When the site is finally ready, it's time to release it to the public. An important early step in this phase is to move the website, if need be, to its permanent Web server. Testing in the production environment is important because different servers can have different features.
- **Post-Launch:** the purpose of this step to close the project. If a client is unable to maintain the site, the company can manage and perform maintenance tasks on a regular or as-needed basis.

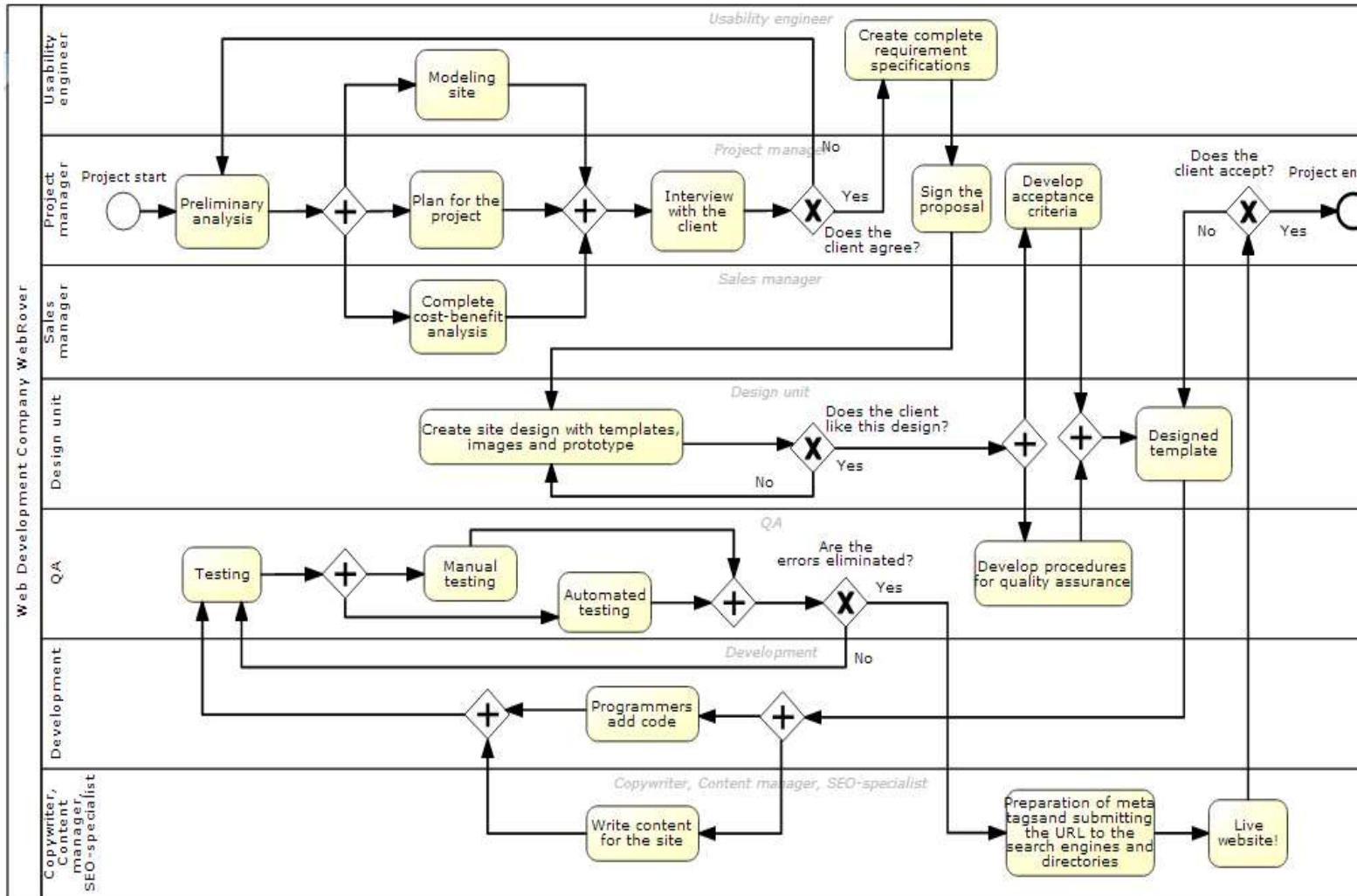


Model 23 web development company map

### 3.7 (How) Model: business processes

Finally, as a summary of the whole process, here there is a business process which shows how the web development company works.

The process starts when a customer is found. A project manager prepares preliminary analysis for the project. Usability engineers create site model and sales managers complete cost-benefit analysis, then the project manager prepares general plan for the project and communicates with the customer. In the case if the customer agrees with the plan and costs usability engineers create complete requirements specification, but if the customer doesn't agree with this plan or with the costs the project manager revises the preliminary analysis. The next step is signing the proposal. Then designers create site design with templates, images and prototype. If the client doesn't like this design the designers update it. When the client agrees with design the project manager develops acceptance criteria and QA specialists develop procedures for quality assurance. After these steps designers create template and then developers write the code. In parallel, copywriters write content for the site. Then QA specialists test this code. It should be manual and automated testing. Then developers fix bugs. Content managers and SEO specialists prepare metatags and submit the URL. So, if the project is done and the customer accepts the project can be complete.



Model 24 business processes in the web development company