Web Engineering: Communication

The University of Aizu
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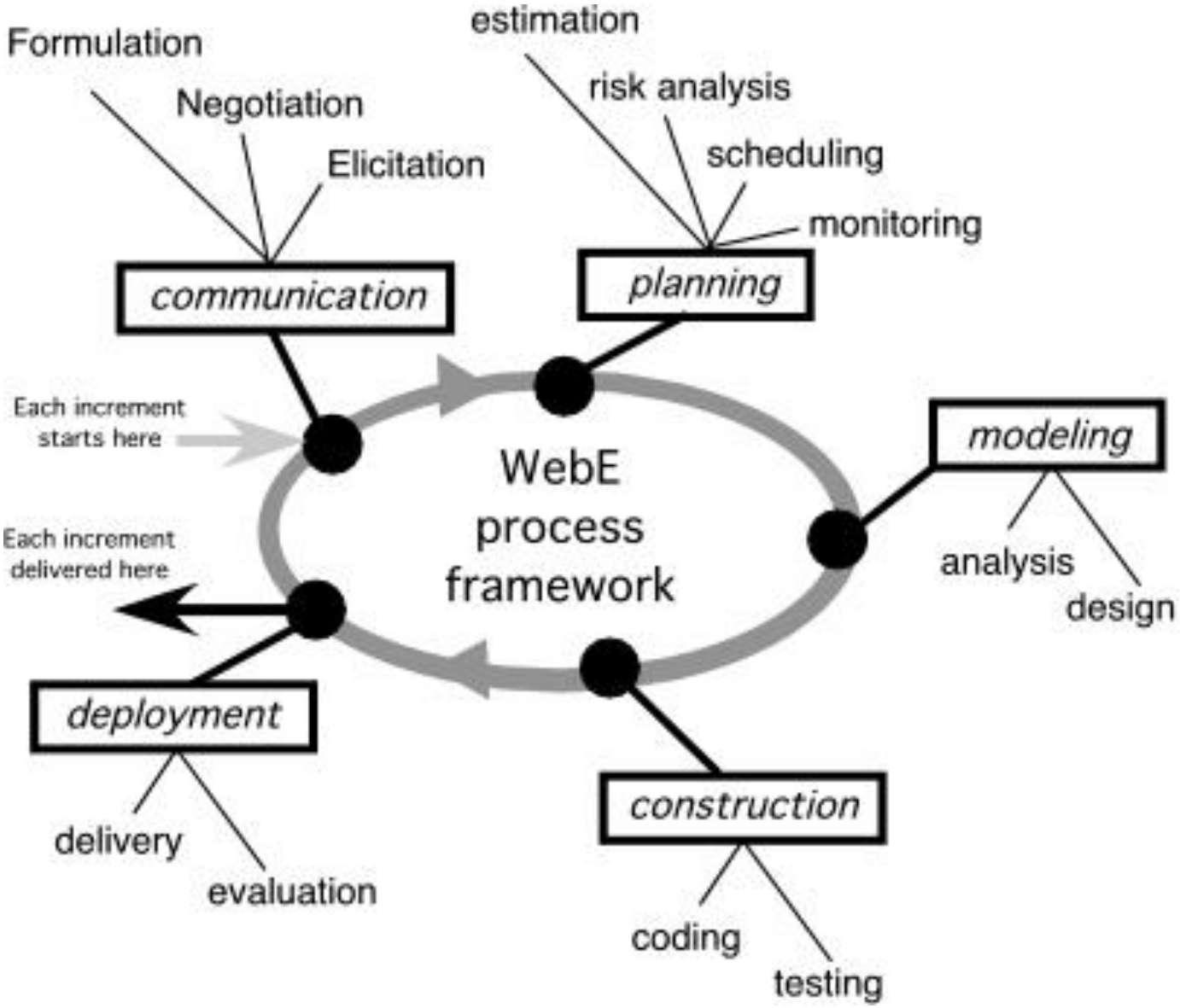
Outline

- Fundamental Principle of WebE
- Formulation
- Elicitation
- Negotiation

Fundamental Principle of WebE

- *Understand the problem before you begin to solve it, and be sure that the solution you conceive is one that people really want*
- To do this, you'll need to:
  - *Formulate*
  - *Elicitate (requirements gathering)*
  - *Negotiate*
- *These actions build the communication activity*

WebE Process Activities & Actions



Formulation

- Formulation focuses on defining the project needs and scope
  - begins with the identification of a business need
  - moves into a description of WebApp objectives
  - defines major WebApp features, and
  - establishes a basis for the elicitation action that follows.
  - allows stakeholders and the WebE team to establish a common set of goals and objectives for the creation of each WebApp increment
  - identifies the scope of the development effort and provides a means for determining a successful outcome

Where does Formulation stop and Elicitation Begin?

- Formulation focuses on the big picture:
  - Business needs and and objectives and related information
- When the level of abstraction moves from big picture business issues to more specific WebApp-oriented requirements, the transition from formulation to elicitation has occurred.

Who should you Communicate with?

- First you must identify who the target of the questions will be.
- You need identify stakeholders!
  - A stakeholder is anyone who benefits in a direct or indirect way from the system which is being developed.
- Usually one person will be the focus of your questions.
- This individual will have
  - business experience, technical knowledge, and the authority to negotiate needs in terms of delivery time and resources.

Who should you Communicate with?

- More likely, you will deal with a number of different stakeholders.
- Types of stakeholders
  - Business managers
  - Product managers
  - Marketing people
  - Internal and external customers
  - End users
  - Consultants
  - Product engineers
  - Web engineers
  - Support and maintain staff

Techniques for Communication

- Traditional focus group
  - Experienced moderator meets with a group (less than 10 people) to discuss the WebApp to be developed and to understand better the requirements for the system.
- Iterative survey
  - Series of brief surveys addressed to representative users and requesting answers to specific questions about the WebApp. They usually conducted via a Web site or e-mails.

Techniques for Communication

- Exploratory survey
  - A Web-based survey is tied to one or more WebApps that have users. Users usually receive some rewards for participation.
- Scenario building
  - Selected end users are asked to create usage scenarios that describe specific interactions with the WebApp.

What Questions should We Ask?

- What is the main motivation (business need) for the WebApp?
- What are the objectives that the WebApp must fulfill?
- Who will use the WebApp?

What Questions should We Ask?

- Note that:
  - Every stakeholder has a different view of the WebApp, achieves different benefits when the WebApp is successfully deployed, and is open to different risks if the development effort should fail.
  - As information from multiple viewpoints is collected, emerging requirements may be inconsistent or may conflict with one another.
  - Your job during formulation and elicitation is to categorize all stakeholder information (including inconsistent and conflicting requirements) in a way that will set the stage for the last WebE action, *negotiation.*

Elicitation

- The intent is to gather detailed requirement collaboratively with all stakeholders
- To do this:
  - A meeting (either physical or virtual) is conducted and attended by all stakeholders.
  - Rules for preparation and participation are established.
  - An agenda is suggested that is formal enough to cover all important points but informal enough to encourage the free flow of ideas.
  - A facilitator (can be a customer, a Web engineer, or an outsider) controls the meeting.
  - A definition mechanism (can be work sheets, flip charts, or wall stickers or an electronic bulletin board, chat room, or virtual forum) is used.

What Happens before an Elicitation Session?

- You may write a one-page WebApp description that will serve as the basis for requirements gathering.
- This description is assembled using the information already derived from the formulation meetings and discussions.

Elicitation Tasks

- Define user categories, and develop descriptions for each category.
- Define content and functionality using the lists each person prepared.
- Consider specific constraints and performance issues.
- Write user scenarios for each user class.

User Descriptions

- What is the user's overall objective when using the WebApp?
- What is the user's background and sophistication level relative to the content and functionality of the WebApp?
- How will the user arrive at the WebApp?
- What generic WebApp characteristics does the user like and dislike?
- **Using the answers to there questions the smallest set of users classes should be defined.**

Content and Functionality

- Each stakeholder has begun this work by preparing lists of content objects and WebApp functions.
- Once the meeting begins these lists can be:
  - displayed on large sheets of paper pinned to the walls of the room
  - displayed on adhesive-backed sheets stuck to the walls, or
  - written on a whiteboard.
  - posted on an electronic bulletin board, at an internal website, or posted in a chat room environment for review prior to the meeting.

Content and Functionality

- Ideally, each listed entry should be capable of being manipulated separately so that lists can be combined, entries can be deleted, and additions can be made.
- At this stage, critique and debate are strictly prohibited.

Constraints and Performance

- *Internal constraints* are best understood by thinking about the technical environment in which the WebApp will reside and the project environment in which the WebApp will be built.
  - *technical environment*—specialized database protocols, the vagaries of different Web browsers, operating system characteristics, and client-server issues
  - *project environment*—available WebE tools, development hardware, software standards, and staff skill levels with various WebE technologies.

Constraints and Performance

- *External constraints* can be enumerated by considering the business and usage environment for the WebApp.
  - Business rules, end-user idiosyncrasies, security demands, privacy issues, run-time performance, interoperability requirements, legal restrictions, and government regulations are but a few of possible external constraints

Capturing Interaction: Use Cases

- Use cases describe how a specific user category (called an *actor*) will interact with the WebApp to accomplish a specific action.
- Use cases are developed iteratively. Only those use cases necessary for the increment to be built are developed during the communication activity for the increment.

Capturing Interaction: Use Cases

- Use cases enable you to:
  - provide the detail necessary for effective planning and modeling activities.
  - help you to understand how users perceive their interaction with the WebApp.
  - help to compartmentalize Web engineering work because they can be organized into WebApp increments.
  - provide important guidance for those who must test the WebApp.

How is a Use Case Created?

- To begin developing a set of use cases, the functions or activities performed by a specificactor are listed
- They may be obtained from a list developed by a stakeholders or through conversations with customers or end users.

How is a Use Case Created?

- Each step in the primary scenario is evaluated by asking the following questions:
  - Can the actor take some other actions at this point?
  - Is it possible that the actor will encounter some error condition at this point? If so, what might it be?
  - Is it possible that the actor will encounter some other behavior at this point?
    - behavior that is invoked by some event outside the actor's control

From Use Cases to Increments

- A stack of "cards" that contains one usage scenario or use case per card
  - Each card contains the name of the use case, a brief description, and an *effort indicator*—usually a number between 1 and 4
- The cards are:
  - shuffled into random order
  - distributed to selected stakeholders who are asked to arrange the cards into groupings that reflect how they would like content and functionality (implied by the usage scenarios) to be delivered

From Use Cases to Increments

- The manner in which cards are grouped is constrained by an *effort maximum M*.
  - No grouping of cards can have a cumulative effort indicator value that is greater than *M*, where *M* is defined by the WebE team and is a function of available resources and the desired delivery time for each increment.

Negotiation

- Ideally, requirements are defined in sufficient detail to proceed
- BUT, in reality, requirements are often contradictory or unfeasible (within the context of real-world constraints, such as cost or time).
- Negotiation involves working with the stakeholders to balance functionality, performance, and other product or system characteristics against cost and delivery time.
- The best negotiators strive for a win-win result.
  - it's a good idea to determine each of the stakeholders' "win conditions".

Negotiation

- *Recognize that it's not a competition.* To be successful, both parties have to feel they've won or achieved something. Both will have to compromise.
- *Map out a strategy.* Decide what you'd like to achieve, what the other party wants to achieve, and how you'll go about making both happen.
- *Listen actively.* Don't work on formulating your response while the other party is talking. Listen. It's likely you'll gain knowledge that will help you to better negotiate your position.
- *Focus on the other party's interests.* Don't take hard positions if you want to avoid conflict.

Negotiation

- *Don't let it get personal.* Focus on the problem that needs to be solved.
- *Be creative.* Don't be afraid to think outside of the box if you're at an impasse.
- *Be ready to commit.* Once an agreement has been reached, don't waffle; commit to it and move on.

Conclusion

- The intent of communication is to establish a set of requirements for the Web increment to be built.
- Communication occurs iteratively.
- During the first pass, all requirements are defined broadly, and from these requirements, a set of deployable increments is defined.
- Communication encompasses three WebE actions: formulation, elicitation, and negotiation.