

DEFINING THE RIGHT PROJECT

THE MOST IMPORTANT question to ask when developing a system is not a methodological question. It is not a technical question. It is a seemingly simple, yet remarkably difficult question: "Is this the right system to make?" Unfortunately, this question is often never asked nor answered. Although misguided methodology or technically tough problems can cause projects to fail, sufficient resources and heroic effort by talented people often can save them. But nothing can save a system that is not needed or that automates the wrong thing.

Before starting a project, there must be an idea for it. The process of coming up with an idea for a system along with a general idea of its requirements and form occurs during the Inception Phase. It finishes the statement: "The system we want does . . ." During this phase of development, a vision for the idea is established, and many assumptions are either validated or rejected. Activities that occur involve the solicitation of ideas, the preliminary identification of risks, the identification of external interfaces, the identification of the major functionality that must be provided by the system, and possibly some "proof of concept" prototypes. Ideas come from many sources: customers, domain experts, other developers, industry experts, feasibility studies, and review of existing systems. It is important to note that any prototyping done during this phase should be considered throw-away code since the code generated is merely to support a list of assumptions and has not been fully analyzed or designed.

The process used during this phase of development can be done formally or informally, but it always involves considering the business needs, the available resources, the possible technology, and the user-community desires along with several ideas for new systems. Brainstorming, research, trade studies, cost-benefit analysis, use case analysis, and prototyping can then be performed to produce the target system's concept along with defined purposes, priorities, and context. Usually, a first-pass cut at resource and schedule planning is also done during this phase. For some projects, the product vision can be sketched on the back of a napkin. For others, the

product vision may be a formal phase that is iteratively performed until enough level of detail of the target system has been specified.

An adequate Inception Phase establishes the high-level requirements for a desirable and feasible system, both technologically and sociologically. An inadequate Inception Phase leads to systems so unwanted, expensive, impossible, and ill-defined that they are typically never finished or used.

EASTERN STATE UNIVERSITY (ESU) BACKGROUND

THE ESU COURSE registration problem will be used as an example throughout this book.

The process of assigning professors to courses and the registration of students is a frustrating and time-consuming experience.

After the professors of ESU have decided which courses they are going to teach for the semester, the Registrar's office enters the information into the computer system. A batch report is printed for the professors indicating which courses they will teach. A course catalog is printed and distributed to the students.

The students currently fill out (multipart, multicolor) registration forms that indicate their choice in courses, and return the completed forms to the Registrar's office. The typical student load is four courses. The staff of the Registrar's office then enters the students' forms into the mainframe computer system. Once the students' curriculum for the semester has been entered, a batch job is run overnight to assign students to courses. Most of the time the students get their first choice; however, in those cases where there is a conflict, the Registrar's office talks with each student to get additional choices. Once all the students have been successfully assigned to courses, a hard copy of the students' schedule is sent to the students for their verification. Most student registrations are processed within a week, but some exceptional cases take up to two weeks to solve.

Once the initial registration period is completed, professors receive a student roster for each course they are scheduled to teach.

RISKS FOR THE COURSE REGISTRATION PROBLEM

THE DEVELOPMENT TEAM identified that the major risk to the system involved the ability to store and access the curriculum information efficiently. They developed several prototypes that evaluated data storage and access mechanisms for each database management system under consideration. The results of the prototypes led to the decision that the database risk could be mitigated. Additional prototypes were also developed to study the hardware needs for the university as a result of moving to an online registration system.

ESU COURSE REGISTRATION PROBLEM STATEMENT

AT THE BEGINNING of each semester, students may request a course catalog containing a list of course offerings for the semester. Information about each course, such as professor, department, and prerequisites will be included to help students make informed decisions.

The new system will allow students to select four course offerings for the coming semester. In addition, each student will indicate two alternative choices in case a course offering becomes filled or canceled. No course offering will have more than ten students or fewer than three students. A course offering with fewer than three students will be canceled. Once the registration process is completed for a student, the registration system sends information to the billing system so the student can be billed for the semester.

Professors must be able to access the online system to indicate which courses they will be teaching, and to see which students signed up for their course offerings.

For each semester, there is a period of time that students can change their schedule. Students must be able to access the system during this time to add or drop courses.