

PROCESS FLOWCHARTING

A POWERFUL TOOL FOR CONTINUOUS IMPROVEMENT



OFFICE OF
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A Powerful Tool for Continuous Improvement

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Introduction

In higher education, almost everything we do is part of a process. If a process is a series of steps aimed at accomplishing something, it is clear that processes abound in teaching, research and service.

Our ability to do our work depends on how well these many processes are designed and carried out. We can often function surprisingly well with clunky, inefficient processes. But what could we accomplish with processes that worked quickly, smoothly and in which errors were a rare exception? An ocean liner could sail from New York to South Hampton dragging her anchor behind. However, the trip would be a ponderous experience compared to a journey in which the anchor is properly stowed.

No one purposely designs dysfunctional processes. Processes get that way through lack of understanding of the larger system during the design phase. Additionally, over time, processes in large organizations tend to become more complex and less efficient as expedient adaptations are made without a view to the purpose or big picture. Processes degrade all by themselves if they are not tended to.

A powerful tool for improving our processes is the flowchart.

Definition

Literally a picture of the steps in a process, a flowchart represents the order and interaction of activities and decisions. The sequence, or flow, of the process is shown with arrows, while a variety of shapes or symbols can be used to depict the steps and decisions. Commonly-used flowchart symbols are shown in Figure 1.



Figure 1. Common flowcharting symbols

How Flowcharts Can Help

A flowchart provides excellent documentation of a process and can be a useful tool to analyze how various steps in a process are related to each other, revealing redundancies, delays, dead ends, and “black holes”. Flowcharting is also helpful in designing or revising a process, providing a common language for envisioning how the process could ideally function that makes it easier to discuss options from multiple perspectives.

A flowchart can be used to:

- Document an existing process
- Design an “ideal” process
- Determine whether the steps in a process are logical
- Identify bottlenecks and unnecessary complexity
- Uncover duplication of effort
- Identify opportunities to improve the process

Creating a Flowchart

Flowcharting software options abound¹, but here’s a simple approach that works well when a group is flowcharting a process together.

1. Gather the people who are involved in the process you want to flowchart.
2. Put large sheets of paper on the wall.
3. Agree on the purpose of the flowchart and which format is most appropriate (see “Flowchart Types” below).
4. Identify the beginning and end points of the process (What are the inputs that signal the beginning of the process? What is the product or outcome produced by the process?).
5. Use square or rectangular self stick notes to label the various steps in the process. Use square self stick notes placed on the diagonal to label decisions.

Note: You will quickly discover why it is helpful to use self stick notes, as you remember steps and have to go back and insert them!

6. Begin by writing one step or decision at a time and placing it on the wall. Keep going until you have completed the steps in the process.
7. Use a marker or arrow flags to indicate the direction the process flows.
8. Discuss the process:
 - Has the process of flowcharting helped us clarify steps and roles?

- Are there steps/roles we would like to change?
 - Are there bottlenecks or problem points we would like to consider improving?
 - Are there other processes we want to flowchart?
9. Validate the completed flowchart with the user(s).
 10. Draw a final, polished version of your flowchart, either by hand or using available software drawing tools. Here are some hints:
 - Keep symbols the same distance from each other.
 - Make notations simple, concise and clear.
 - Avoid crossing flow lines whenever possible.
 - Have two flow lines coming out of decision symbols (one for yes, one for no).

Flowchart Types

Sequential Flowchart

The most commonly-used type of flowchart identifies steps or activities and decision points along with the important inputs and outputs of the process, and arranges them in the order in which they are completed. A sequential flowchart is particularly helpful in highlighting process complexity and identifying problem areas and opportunities for improving efficiency. A sample sequential flowchart is shown in Figure 2.

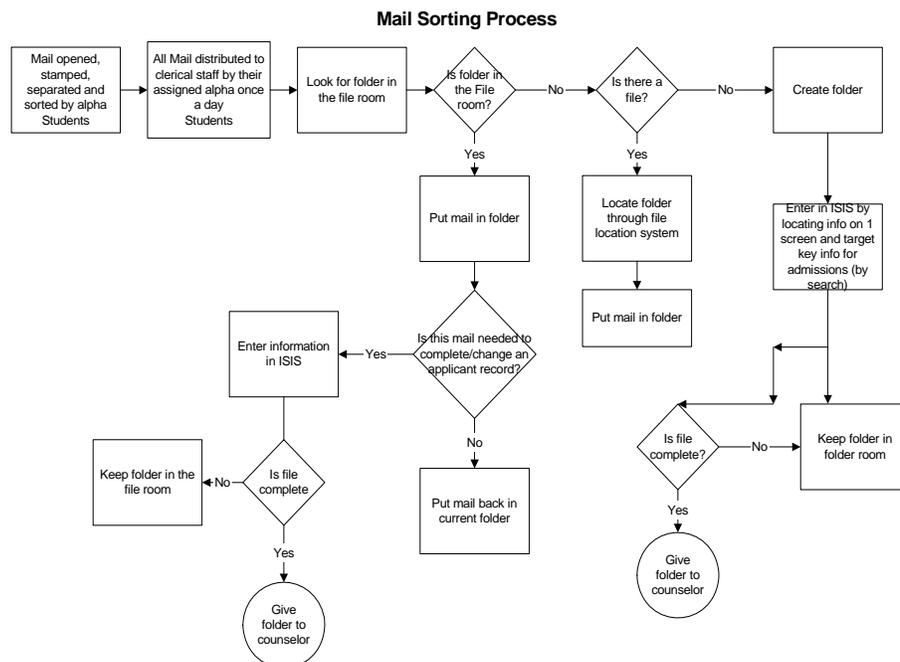


Figure 2. Sequential flowchart

Top-Down Flowchart

In a top-down flowchart, the major steps in a process are arranged sequentially across the top and the detailed steps are listed under each major step. So, for instance if the process is to get a new course approved in the major, the first step might be a proposal to the departmental curriculum committee. The last major step in the approval process might be, "Inform

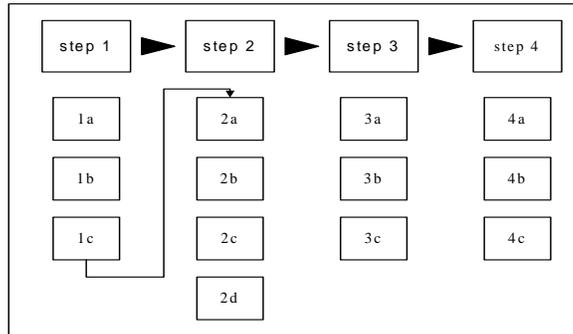


Figure 3. Template for top-down flowcharts

all faculty and staff of new course approval." Detailed steps and decisions can be added as necessary to understand the process and achieve the group's goals. In some cases it will be helpful to develop a separate sequential flowchart for each major step, and the top-down flowchart can be used as a cover page to show how all the parts of the process fit together. Figure 3 is a template for a top-down flowchart.

Deployment Flowchart

A deployment flowchart helps identify how a process moves across people and units and also helps clarify roles and responsibilities. It also indicates dependencies in the process. The deployment design shown in Figure 4 shows the key players across the top as column headers (A-E). Key players can be functional units or individuals. Example: business services, dean's office, executive committee, chair, department administrator, student. In the column underneath each key player are shown the steps the person/unit carries out or is responsible for. The process flows from left to right.

To create a deployment flowchart such as the one shown in Figure 4, use self stick notes to label columns across the top for the various people/units involved in the process. Begin by writing one step at a time and placing it in the column for who does it. Keep going until you have completed all the steps in the process.

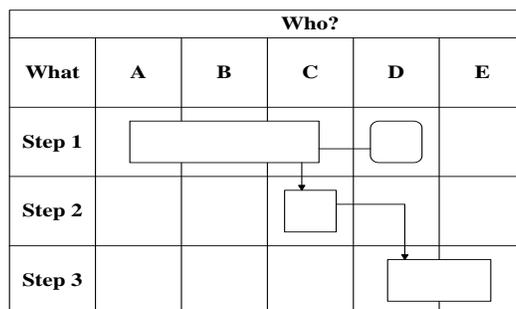


Figure 4. A deployment flowchart template

“Hybrid” Flowchart

An alternative has emerged in practice which is a combination of the classic top-down and deployment models. This hybrid includes all the steps plus people’s names. So a “box” in this kind of flowchart might read, “Department chair forwards request...” These flowcharts tend to be arrayed from the top of the page to the bottom rather than left to right. Figure 5 is a sample of this kind of flowchart.

Capturing New Employee E-mail Addresses

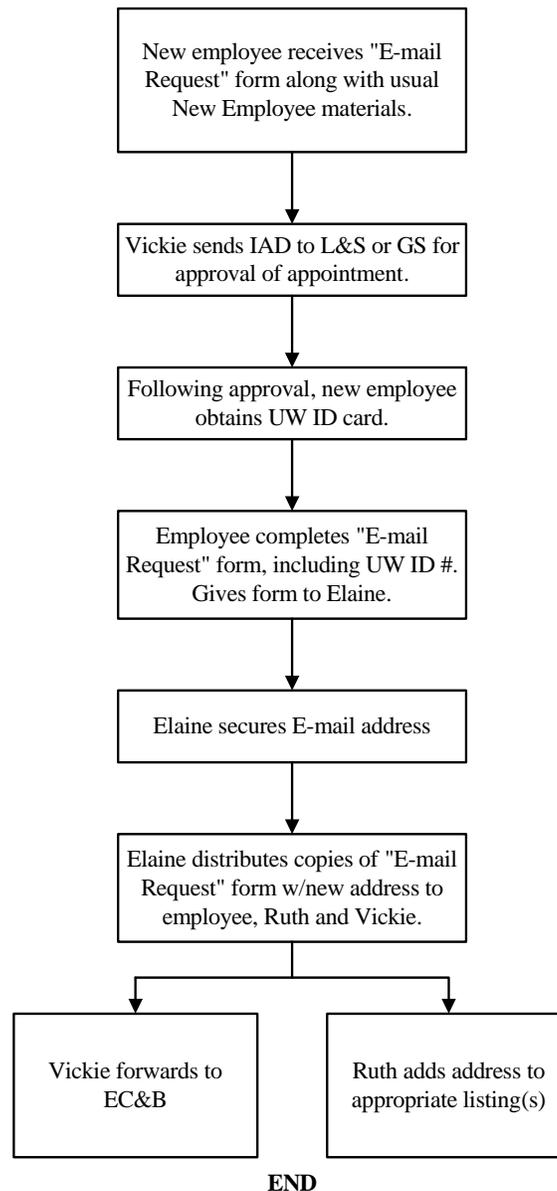


Figure 5. A “hybrid” of top-down and deployment flowcharts designed by the School of Social Work to ensure that new employees obtain e-mail addresses and are quickly added to communication lists.

Sample Flowcharts

Figures 6 through 8 are UW-Madison examples of flowcharts created to understand and improve key processes. Regardless of the design, the flowchart helps people understand how a given process works now or might ideally work in the future. This understanding is the first step to improving a process.

The Hiring Process

The flowchart in Figure 6 identifies the different processes involved in hiring classified staff and academic staff at UW-Madison. It demonstrates the flow of information and paperwork necessary to complete a hire by delineating each of the two personnel system processes in one diagram. Any questions regarding this flowchart can be directed to Don Schutt, Office of Human Resource Development.

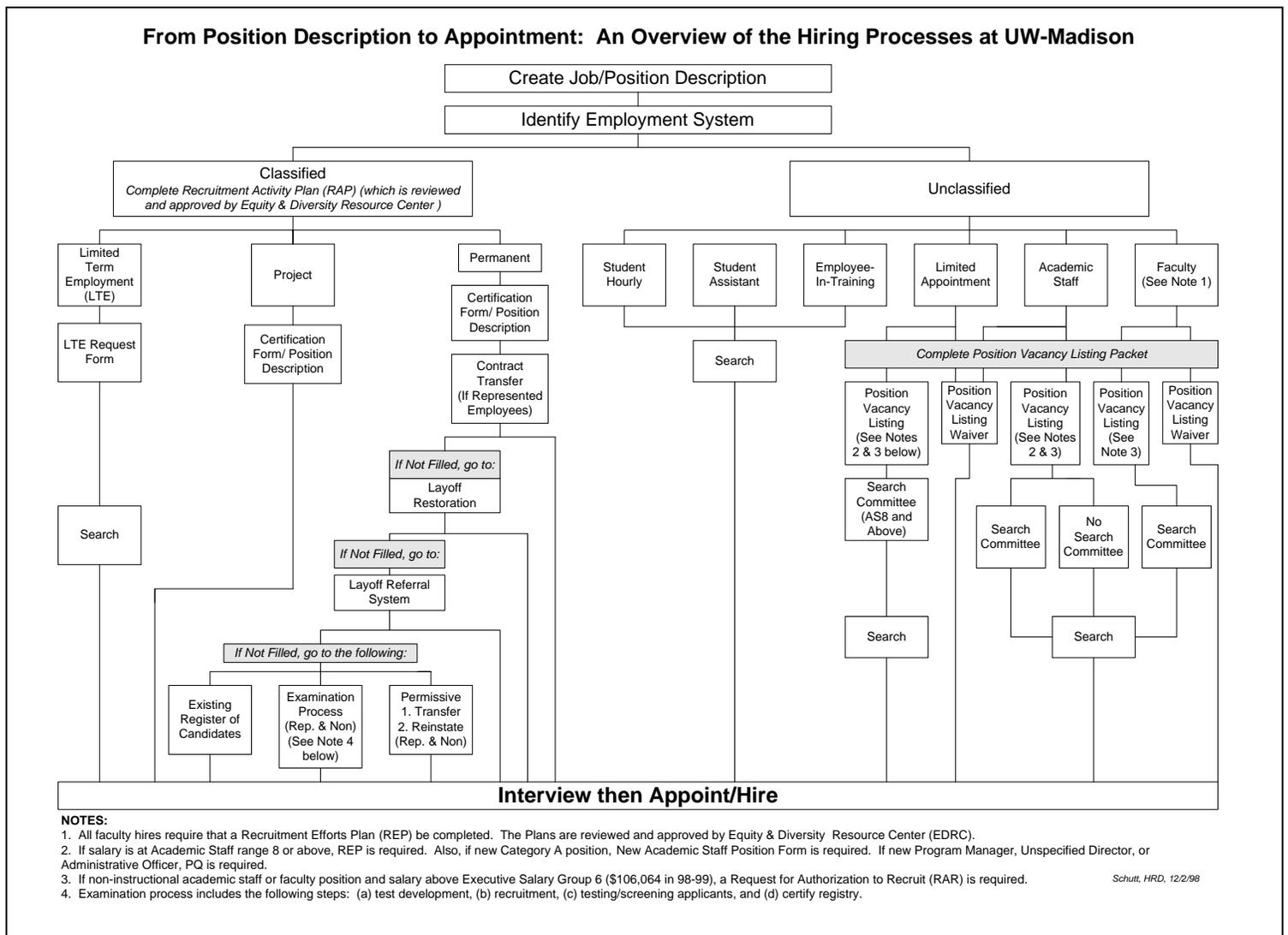


Figure 6. An overview of UW-Madison’s hiring process

Office of Admissions Mail Processing Process

The Office of Undergraduate Admissions used the flowchart in Figure 7 to document the ideal process for the flow of applicant-related mail in their office. This flowchart was then used to help identify solutions to improving the mail process in the office.

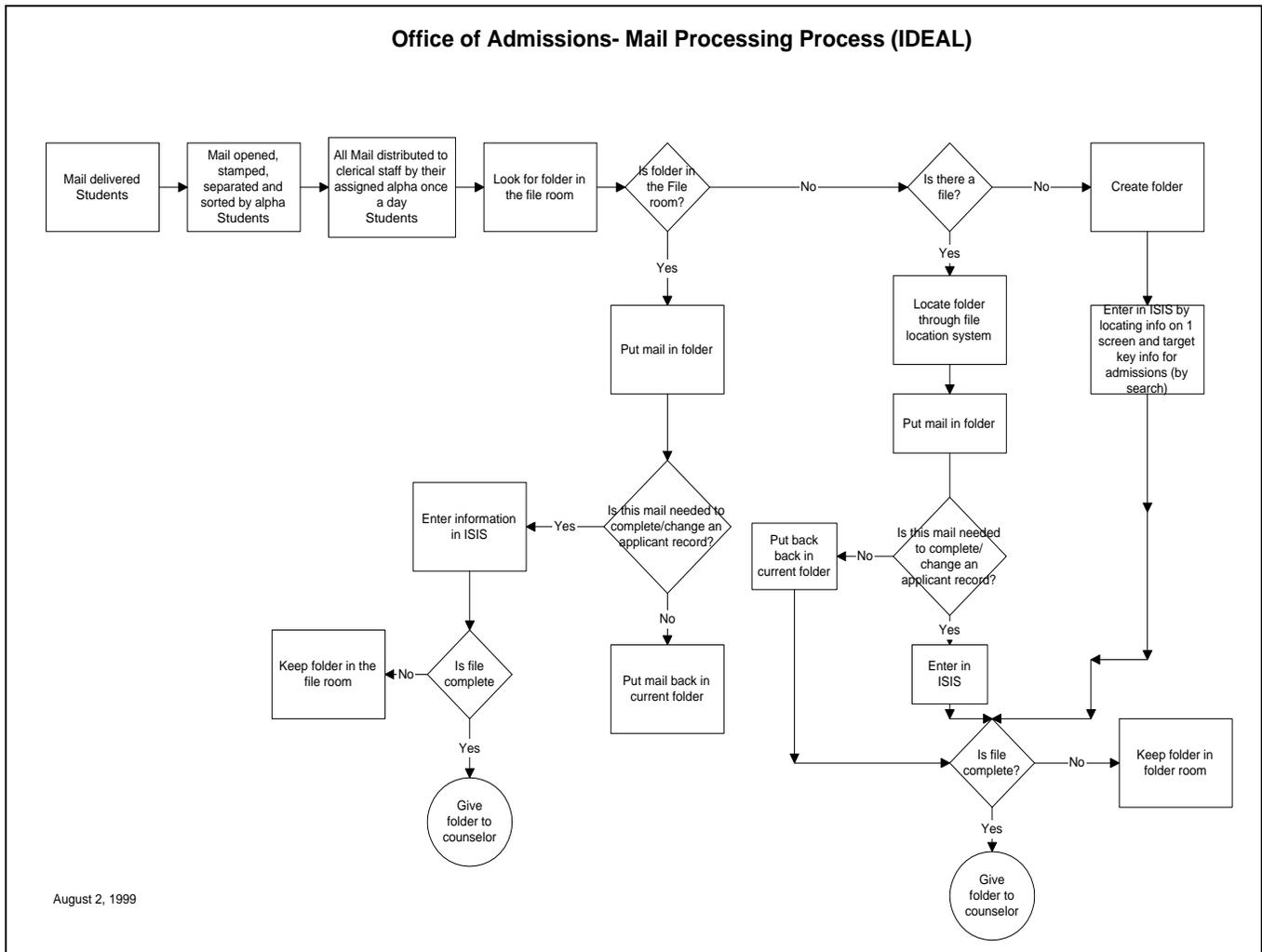


Figure 7. Office of Admissions mail processing flowchart

Research Grant Proposal Flowchart Process

The Department of Civil & Environmental Engineering used the flowchart in Figure 8 to document the roles, responsibilities and decision points of the faculty, Dean’s Office and the Department in the research grant proposal process. This flowchart helped the department and the faculty understand their roles in the process and when and by whom decisions are made.

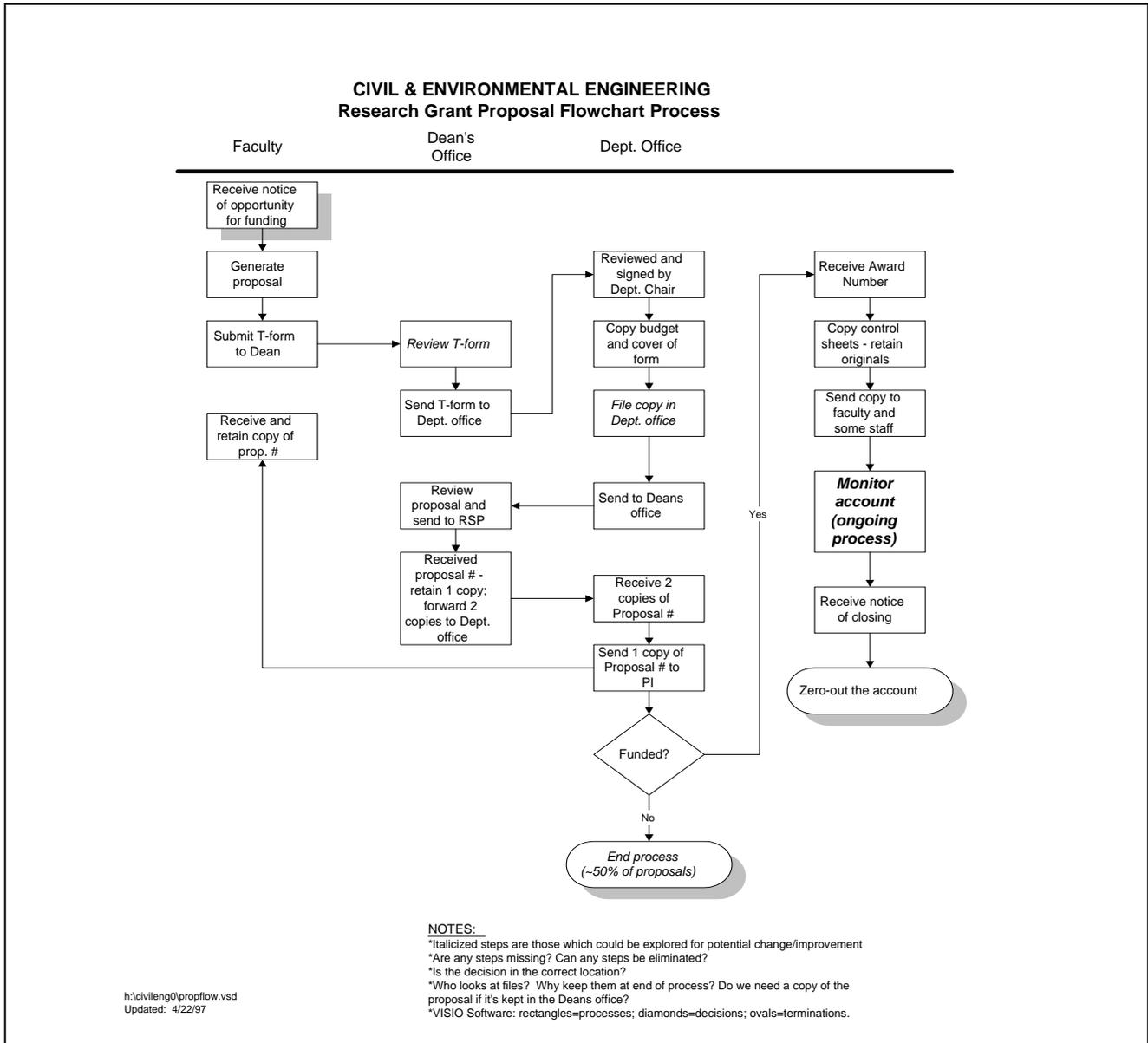


Figure 8. Research grant proposal flowchart

¹ Microsoft Office Visio is one popular flowcharting software that is supported on the UW-Madison campus. See: <http://office.microsoft.com/en-us/visio/default.aspx>. Other options can be found by doing a web search on "flowcharting software".