

## **2.0 Selecting a Thesis Topic**

A topic that serves as the appropriate subject matter for an SE thesis can come from a variety of sources.

A student's thesis can be sponsored by a specific professor doing research in a particular field or by an outside command. Other sources for topics include seminars and lectures (especially those from DoD activities), problem areas observed in previous tours (i.e., problems in the fleet), or topics of current interest for the DoD.

Successful thesis management results from an early identification of the topic, a clear definition of the scope, and thorough consultation with advisors. Members of the Program Office, the Department Chair, and department faculty members are available throughout the process, should the student require additional help.

Several points should be considered in the process of selecting an area for research.

### **2.1 The research study should be interesting to the student**

The student should be motivated to pursue the project vigorously and with a level of dedication required to overcome the low periods that may be experienced when parts of the process become difficult. As this is perhaps the most significant research effort the student will complete for some time, it should have meaning and importance to the student.

### **2.2 There should be a clear need for the research**

A clear need for the research means that the effort will in some way further the solution to a problem or advance the state of knowledge in the field. The need for the thesis research can be explored by communicating with the Academic Associate, a potential advisor, potential sponsors, and authorities in the field.

For example, a thesis may:

1. Contribute to resolving a known problem
2. Put a problem in perspective.
3. Assess the impact of certain policies or procedures.
4. Evaluate policy or procedures.
5. Trace the history of management events and decisions or make observations concerning implications of these decisions.
6. Develop a model or assess an existing model.
7. Develop an implementation methodology.
8. Come up with a final product which might be a model, case analysis, computer program or process.
9. Participate in major experimental and analytical efforts sponsored by a key military or DoD organization.

A thesis written for an SE degree may take the form of a qualitative analysis, a quantitative analysis, or a mixture of both; it may be an expository analysis or examine case studies; it might also be design based, and generate new knowledge. The methodology used to shape the thesis and the research methods required to substantiate its claims are topics that should be discussed with the thesis advisor.

## **2.3 The topic should be researchable**

Materials should be available in open literature (e.g., in published articles, books, or reports) and data should be accessible. Difficulties may be encountered if the data sought are classified, proprietary, sensitive, highly controlled or if restrictions are placed on usage. Difficulties may also arise if points of contact (POCs) are not forthcoming with information. Corporation or company proprietary data may be a particular problem. The student may have to consider classifying the thesis, although it is recommended that this be avoided to permit broader application and use by others.

To gain some understanding of the literature available, use the [Dudley Knox Library](#) (DKL) to gain access to the periodicals, journals, proceedings of research symposia and other collections of research related to SE topics. The library provides access to article databases and electronic indexes of literature in the field, as well as the research tools necessary to search for the technical materials needed to support the paper.

### **2.3.1 Many sources should be consulted in selecting a topic**

Here is a list of suggestions for searching out a thesis topic.

1. Review any materials suggested by the Academic Associate, other professors, or from courses (such as textbooks, lecture notes, and slides) where problems or issues of interest have been identified.
2. Listen for topics to be announced in classes as current topics of interest to the Navy or the DoD or that are reported “word of mouth” by other students.
3. Discuss candidate ideas and resources with any of [the NPS reference librarians](#).
4. Use [Calhoun](#) or [Bosun](#) to find and read recent SE theses and other technical reports and review the “areas for further research” stated in the final chapters of these reports.
5. Consult with a librarian for assistance reviewing the periodicals and journals in the field of SE, using the [Systems Engineering LibGuide](#) webpage.
6. Review publications from major SE professional organizations such as [International Council on Systems Engineering](#) (INCOSE) or the [Institute of Electrical and Electronics Engineers](#) (IEEE).
7. Search the [NPS repository of curriculum vitae](#) (CVs) for an individual professor's CV, or consult faculty Web pages or other Internet compilations of topic ideas.
8. Examine the subject matter bibliographies created by organizations such as the [Defense Logistics Studies Information Exchange](#) (DLSIE), the [Defense Technical Information Center](#) (DTIC), and the [National Technical Information System](#) (NTIS).
9. Look for the lists of published reports from research groups such as the [RAND Corporation](#), the [Office of Naval Research](#) (ONR) and the [Logistics Management Institute](#) (LMI).

10. If a student knows his or her assignment following graduation, the student's new office could be consulted for issues of interest. Principle offices in the students' area of expertise could be contacted to see if there are areas in need of intensive research.
11. Consider experiences from previous tours of duty as areas for research.

(In addition to the suggestions presented here, resident students in SE 580 curriculum will have their spring quarter SE 3810 seminar devoted to thesis topic presentations by faculty present on the Monterey campus.)

With the help of a reference librarian or a thesis advisor, establish limits for the subject of the research and define as carefully as possible the boundaries or scope of the research. The key to good topic selection is choosing a subject limited enough to allow focused research, yet wide enough to provide room for the student to develop his/her own concepts, ideas, or propositions.

Once a topic area is selected, get as much exposure as possible to the materials published on the topic — major studies, journal articles, books and other NPS theses.

*Read exhaustively.* It is particularly important to become familiar with Masters theses as a particular type of writing. Read several NPS theses so as to understand what goes into a thesis, particularly with respect to the role of an Abstract and an Executive Summary, how introductory and concluding sections are crafted, and how a thesis flows together when chapter summaries are included, preparing a reader for how to move from one section of the thesis to the next.