

# The Difference between Different Types of Projects<sup>1</sup>

By Robert Youker

## 1. Summary

As the Project Management profession moves into working on many different types of projects we are going to have to move to a new level in the project management body of knowledge and develop extensions that define the differences in requirements and approach for different kinds of projects such as construction, new product development, and information systems. This paper attempts start to define the unique characteristics of different types of projects as well as establish a typology or taxonomy of different kinds of projects. The classification is based on the product or deliverable of a project. A list (Exhibit 1) is developed of characteristics that define the difference between projects such as:

- Degree of uncertainty and risk (construction vs new product development)
- Level of sophistication of workers (construction, vs information systems )
- Level of detail in plans (days or hours for maintenance vs months for research)
- Degree of new technology involved (research vs administrative projects)
- Degree of time pressure (maintenance or big event vs construction)

Type Projects by Product	Type of Worker	Degree of Uncertainty	Time Pressure	Stability of Scope	Level of Technology	Importance of cost
1. Administrative	White	Low	Low	High	Low	Low
2. Construction	Blue	Low	Low	High	Low	High
3. Software	High Tech	High	Medium	Low	High	Low
4. Design	White	Medium	Medium	Medium	High	Medium
5. Maintenance	Blue	High	High	Low	Low	Low
6. Event	White	Low	Medium	High	Medium	Medium
7. Equipment	Blue	Low	Low	High	Low	Low
8. New Product	White	High	High	Low	High	Low
9. Research	High Tech	High	Low	Low	High	Low
10. Others??						

Exhibit 1 – Project Types and Characteristics

<sup>1</sup> *Second Editions are previously published papers that have continued relevance in today's project management world, or which were originally published in conference proceedings or in a language other than English. This paper was originally presented at the IPMA world congress in Florence, Italy in 1992; an updated version was presented at the PMI'99 conference in Philadelphia, USA in 1999. It was also edited and posted on [www.maxwideman.com](http://www.maxwideman.com) in 2002. This current version was again updated in 2012. It is republished here with the author's permission.*

The paper then defines the essential characteristics of the basic differences between types of projects and outlines how the project management approach must vary for each different type of project. This will serve as a start toward developing one dimension of the needed extensions for the body of knowledge (BOK). A project management professional must know something about different types of projects and how the project management approach must differ for different types of projects. Filling out this taxonomy must be a high priority for the profession. Hopefully the profession can work together to share knowledge and come up with an agreed typology.

## **Introduction**

How should we categorize different types of projects? The dictionary defines **typology** as the study of types as in systematic classification. It defines **taxonomy** as the science, laws, or principles of classification. It defines **classification** as the systematic grouping into categories by shared characteristics or traits. The project management profession needs a classification system for different types of projects so that we may communicate effectively across the entire world. There are many different potential purposes for a system of classification. One useful objective for a list of different types of projects is to segment the market for marketing purposes. Another is to define the different management approaches needed for different projects. The system of classification might change based on the purpose. Another purpose would be to select the right project manager based on the requirements of a specific project.

## **2. Other research**

Shenhar and Wideman in several papers have proposed a system of classification based on three variables of (1) Degree of uncertainty at initiation; (2) Complexity based on degree of interconnectedness and (3) Pace based on the need for speed in the available time frame for the project. In a second paper they added the dimension of an intellectual product (white collar) versus a craft product (blue collar). These papers present several very useful analyses but they do not give us a complete list of different types of projects nor do they define all the differences between the different type projects. Archibald has carried this much further in several papers as listed in the References.

## **3. Alternative parameters for categorizing projects**

There are a four basic ways in which we can set up a classification system of projects as follows: (1) geographical location, (2) industrial sector (Standard Industrial Classification System see Exhibit 2), (3) stage of the project life cycle (See Exhibit 2) and (4) product of the project (construction of a building or development of a new product). The most important and the most useful breakdown is by type of product or deliverable that the project is producing such as building a building, developing a new product, developing new computer software program or performing a maintenance turnaround or outage on a chemical plant or electric generating station. Each of these types of projects has more in common with other similar projects producing the same type of product than with other types of projects. Conversely there is much less commonality between different types of projects in the same industrial sector or company. For example there is much more commonality between projects for developing a new software system in a construction company and a bank than there is between three projects

in the same bank for constructing a new building, developing a new product and developing a new computer software system.

Exhibit 2 is a list of products of projects with a slightly different result based on Russ Archibald’s approach. Please note in Exhibit 2 that a phase of the project life cycle like Feasibility Study is a project in its self and very different from a later phase like construction. Please also note on Exhibit 2 that projects have to also be related many times to the business function in the organization.

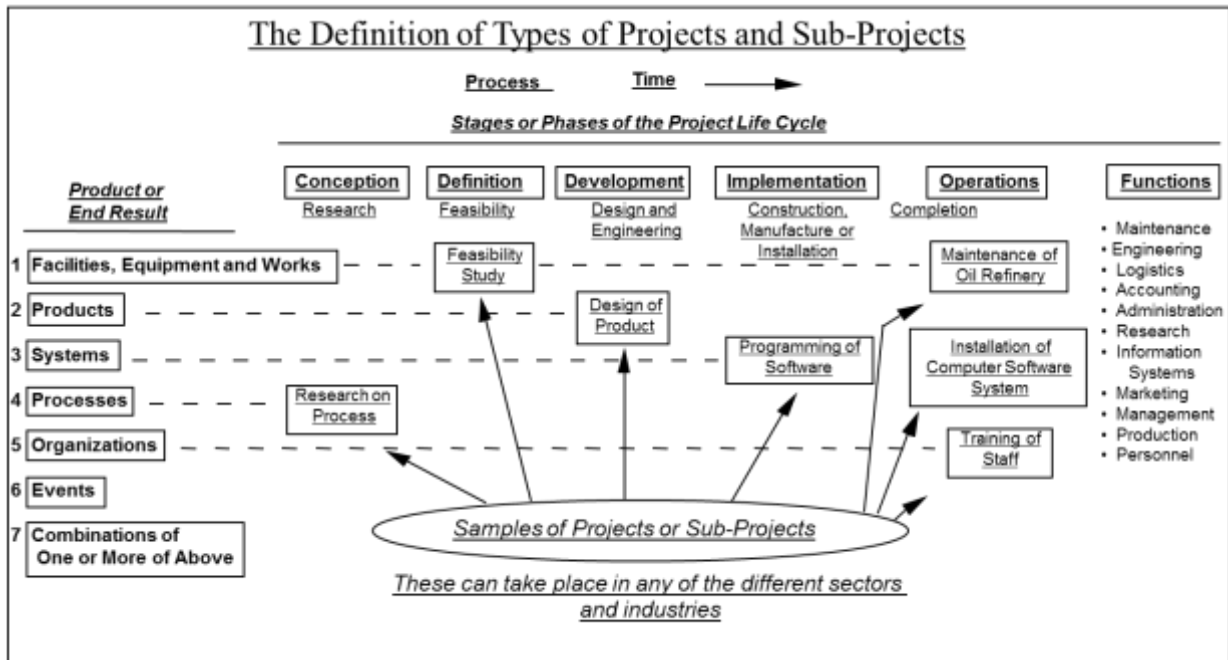


Exhibit 2 – Types of Projects and Sub-Projects

### Major Types of Projects Based on Product of Project

Here is a list of nine different types of projects based on the product they produce. The profession should think of other products of projects not listed here and come up with an agreed list. I have combined some like Defense/Aerospace within New Product. They could be separated.

4. Type of Project	Product of Project (Examples)
1. Administrative	-installing a new accounting system
2. Construction	-a building or a road
3. Computer Software Development	-a new computer program
4. Design of Plans	-architectural or engineering plans
5. Equipment or System Installation	-a telephone system or an IT system
6. Event or Relocation	-Olympiads or a move into a new building
7. Maintenance of Process Industries	-petro-chemical plant or electric generating station
8. New Product Development	-a new drug or aerospace/defense product
9. Research	-a feasibility study or investigating a chemical

10. Other (International Development Projects) -?

### **Major variables or parameters or attributes**

The following is a list of different characteristics that relate to different projects. It was developed by analyzing the nature of the nine different types of projects. It also draws on previous work as listed in the references. (High H, Medium M, Low L) See Exhibit 1

1. Stability of scope (H M L)
2. Degree of uncertainty or risk (H M L)
3. Type of worker {Craft (blue collar) vs. Intellectual (white collar)}
4. Importance of time (Pace) (H M L)
5. Importance of cost (H M L)
6. Level of new technology (H M L)
7. Series of projects or one of a kind (H M L)
8. External contract or internal work
9. Level of detail in plans (H M L)

### **Common characteristics of the major types of projects**

Let's now look at the attributes or characteristics that are common to each of the nine basic types of projects.

1. **Administrative:** Administrative projects involve intellectual workers. The scope may change as the project proceeds.
2. **Construction:** Construction is a contract business where the scope is laid out in detail before the project starts and the level of risk is small. The workers are all most entirely craft or blue collar. In most cases time pressures are moderate and cost is a very important variable. The processes of construction are well known and the foremen very experienced.
3. **Computer Software Development:** Software projects are notorious for having the scope change radically during the project. Often they are pushing the state of the art which introduces high risk. Programmers are famous for individualistic behavior.
4. **Design of Plans:** The design of any kind of plan is an intellectual endeavor. By the nature of the exploratory nature of design the scope may not be well defined at the beginning because the client may not have yet decided just what they want. Quality is of a higher priority than either time or cost.
5. **Equipment or System Installation:** Scope is well defined and speed is essential. Risk should be low if the project was well planned.
6. **Event:** This is a one of a kind project where scope may change during the project and uncertainty is high. Time is critical to meet a specific date. It is probably a complex project. The Olympics or a relocation to a new building are examples.

7. **Maintenance of Process Industries:** Turnarounds and outages are short perhaps nine week projects in which down time can cost as much as a million dollars per day and speed is critical. Uncertainty is high because the scope is not fully known until the plant is disassembled. A large number of different craft workers are involved. They are often worked with three shifts per day and plans are detailed in hours.

8. **New Product Development:** Developing a new product is a risky business. By definition you are pushing the state of the art. Time to market is much more important than cost of the project. Quality is also critical and the scope may change up or down during the project.

9. **Research:** Research projects are usually long term where quality takes precedence over time. It is an intellectual process where scope may not be defined at all in the beginning.

## 5. Required Project Management Approach

Let's now look at the different approaches that are necessary to manage each of the nine basic types of projects.

6. **Administrative:** Teambuilding and refinement of objectives are important on administrative projects where some or all of the team may be part timers.

2. **Construction:** Construction projects generally run smoothly since the staff are all experienced and know their jobs. Control of labor hours and cost control is important for the contractor on lump sum type contracts.

3. **Computer Software Development:** Tight project control is necessary on software projects in which other factors may be quite loose. The Project Manger needs to be ready to adapt to changing requirements from the client.

4. **Design of Plans:** Because the scope and activities necessary for development of plans may be fuzzy it is all the more important to have a detailed Project Management System to adapt to changes as they occur.

5. **Equipment or System Installation:** This is a case of thinking through all contingencies ahead of time and being sure that all involved are heading in the right direction.

6. **Event:** Detailed planning and good teambuilding are important in these complex projects where timing is critical.

7. **Maintenance of Process Industries:** With hundreds of workers involved in three shifts per day where a reduction of one day can be worth a million dollars, detailed planning and control is essential.

8. **New Product Development:** The business of managing a diverse group of various technical specialists in a matrix organization to meet quality and time objectives on a complex project is demanding. Good project management is necessary.

9. **Research:** Project Management can be relaxed on long lead-time research projects but it is all the more essential to set goals and to measure progress against those goals.

### **7. Other variables common to all types of projects (secondary factors)**

The following factors are important in projects but are not specific to any one of our list of project types. They could relate to any of the types. These factors could be used in other classifications of projects.

1. Size
2. Duration (Length of time)
3. Industrial sector
4. Geographical location
5. Number of workers involved
6. Cost (large, medium or small)
7. Complexity
8. Urgency
9. Organizational design

### **8. Conclusions and Recommendations**

The most useful classification of types of projects is by the product of the project. This paper presented a list of nine different types, which should be expanded as more persons contribute ideas. The profession should adopt this breakdown as a basic segmentation of the Project Management business and use it in a number of different ways including organizing the breakout of tracks at annual conferences. The list of projects and their different attributes (Exhibit 1) needs to be worked on and agreed upon. The interest groups for each of these types of projects should expand the sketchy descriptions in this paper of the nature of their projects and required approaches. Another dimension of a taxonomy not mentioned in this paper is the list of subjects or topics of the practice of Project Management similar to the BOK.

## 9. References

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E-mail: [bobyouker@att.net](mailto:bobyouker@att.net)

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## About the Author



### **Bob Youker**

**Maryland, USA**



**Robert “Bob” Youker** is a prolific writer, speaker, and spokesperson for PM practice around the World. A co-founder of both Project Management Institute, and *asapm*, the American Society for the Advancement of Project Management, he is a long-time contributor to the practice of project management. In addition to the above founding feats, he was a Director of IPMA from 1977 through 1988, taking the seat formerly occupied by Russ Archibald. In addition to his years of service to PMI, he participated and presented in many IPMA Conferences from 1974 through the early 2000s. He presented keynotes at several of them, and organized panels and workshops in others. He introduced IPMA into a dozen government agencies and businesses all over the World, and in many cases, connected those agencies and businesses with IPMA leaders.

Bob introduced and popularized innovations to the practice of project management, from his work in Xerox in the 1960s, to his leadership in the first manual project management planning and tracking tools (Planalog President, 1968-1974). He published an early book on the Critical Path Method, Analysis Bar Charting, by John Mulvaney. As of today, that book has sold more than 30,000 copies.

In his work for World Bank, Bob developed training that has benefited thousands of project and program managers, and government officials, mostly in developing countries. He performed that training in over a dozen developing countries around the World over a 30 year period, and continues today, to help developing and developed nations. He was the author and developer of the World Bank’s CD-ROM based project management training kit titled “Managing the Implementation of Development Projects”, still available and widely used today.

In the 1970s, to increase Executive visibility for the fledgling practice of project management, Bob engineered the publishing of a Harvard Business Review collection of articles on the subject. He suggested the collection, but was told there were not enough articles for a special collection. He bought copies of the articles, submitted them, and the Harvard Business Review published one of their most popular reprint series, with a number of classic articles on project management.

Bob Youker has contributed massively to the profession or practice of project management, to *asapm*, IPMA, PMI and society. He continues to teach several two-week project management courses each year for participants from developing countries at the International Law Institute in Georgetown, Washington, DC, USA. Bob can be contacted at [bobyouker@att.net](mailto:bobyouker@att.net).

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