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Five Decades of Modern Project Management: Where It Came From – Where It's Going

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The Origins of Modern Project Management:

Modern project management began to emerge five decades ago in 1959 when the US Navy Special Projects Office launched its Program Evaluation and Review Technique (PERT) on a broad scale as a planning, scheduling and reporting requirement for over 100 contractors for the POLARIS Weapon System (submarine-launched solid rocket ICBMs.) At the same time – actually a year or two before, the Critical Path Method (CPM) emerged from the chemical process (DuPont) and construction industries. Both of these project planning and scheduling methodologies began to capitalize on the advances in main-frame electronic data processing hardware and software systems during the 1960s.

Four decades ago this month, project management began to be recognized as a distinct management discipline or 'profession' in the USA when on Oct. 9-10 1969 the Project Management Institute (PMI) held its formation meeting at the Georgia Institute of Technology in the USA. Prior to that event, similar large, international congresses had been held by the European based International Project Management Association (IPMA) (then called INTERNET) in 1967 in Vienna, Austria, and in 1969 in Amsterdam, The Netherlands.

A Brief Chronology:

Over these past five decades a few of us have witnessed some remarkable changes, advances, and growth in the practice and application of modern project management concepts, principles, methods, and supporting information systems. A few indicative highlights include:

1959-69 From bar charts to network-based schedules (PERT/CPM)
1959: First Kelly & Walker paper on CPM[1] was presented
1959: US Navy required PERT from all POLARIS contractors[2]
1960: First ever PERT network was processed on main-frame computer at Aerojet-General Corp.[3]
1962: *DOD & NASA PERT/COST Systems Design* was issued[4]
1965: IBM's PMS -360 dominates PMIS field; punched card input, large stacks of output
1965: *CPM in Construction Management: Scheduling by the Critical Path Method* was published[5]

1967: *Network-Based Management Systems (PERT/CPM)* was published[6]
PDM started to take over from CPM
PM was applied beyond Defense/Aerospace and Construction
1969: July 20: Neil Armstrong steps on the moon's surface
1969: Oct. 9-10: PMI's first meeting drew 80 people ; the first paper presented there was titled "Planning, S cheduling, and Controlling the Efforts of Knowledge Workers."[7]

1970-79
First want-ads for Project Managers appeared
1972: IPMA (INTERNET) Stockholm drew 800 people
Apple II, Commodore PET, TRS-80, Atari 800 computers
CSCSC attempts to integrate time, cost, quality in defense programs and projects
1976: *Managing High-Technology Programs and Projects*, was published[8]
1979: PMI membership: 20,000 (est)

1980-89
1981: First IBM PCs appeared; PM applications proliferated
Distributed data processing emerged
Apple Macintosh was launched: graphics on screen, the mouse
Computer generated network plans produced
Real-time project planning, scheduling and control
1988: PM certification was launched
1989: PMI membership: 50,000 (est)

1990-99
Internet and the World Wide Web were created
1992: 2nd edition of *Managing High-Technology Programs and Projects* was published[9]
1994: PMI membership 140,000
1995: Netscape Navigator was released
Advanced degrees in PM became available in many countries[10]
PM was applied to almost all sectors & project categories
IT projects and people dominate PMI membership
1998: Google was incorporated, named in top 100 web sites

2000-09
Virtual project teams and teamwork became common
PMIS became integrated with all major information systems
PM education, training, & certification became a huge worldwide business
Many PM certifications: PMI, IPMA, governmental and private
Project/Program Portfolio Management emerged
2003: 3rd edition of *Managing High-Technology Programs and Projects* was published[11]
2003: U. S. CIA adopted an agency-wide Professional Project Manager Certification (PPMC)[12]

2007: U. S. Federal Government announced its 3 level Federal Acquisition Certification Program for Program and Project Managers (PAC-P/PM)[13]

2008: Oracle acquired Primavera Systems
2009: Four level IPMA certifications were made available in the USA by the American Society for the Advancement of Project Management/asapm[14] 2009: IPMA: National associations in 45 countries - Over 100,000 IPMA certificates have been issued in nearly 50 countries.
2009: PMI membership: 306,111 plus in 70 plus countries,
Active PMI PMPs: 360,662 plus[15]

Where We Are Today:

During the past two decades we have seen the astounding (to some!) recognition that projects and programs are important within essentially *all* forms of human endeavor. We now realize that there are two distinct classes of activity within any human organization:

1) On-going, sustaining operations, and

2) Temporary efforts -- *projects and programs* -- to create and deliver new services, products, organizations or facilities, or to achieve new strategic or operational objectives, to change the existing organizations in some significant way, or to launch new human endeavors.

We have witnessed over these decades the struggle to achieve the proper balance between these two classes of human activity, characterized by 1) the relatively stable, hierarchical bureaucratic organization structures, methods, and information and direction systems that support the on- going operations on one hand, and 2) overlaying that fairly stable structure with temporary project and program teams coupled with integrated project and program scope-time-cost- resource-quality-product-risk-procurement planning, scheduling, authorizing, communicating, reporting, and controlling information and direction methods and systems on the other hand.

I do not intend to try to describe or even summarize what constitutes project and program management in this short commentary. This is now very well documented in the various PM bodies of knowledge, books, papers, proceedings, and on-line newsletters and e-zines that are well known to the subscribers to the PM World Today newsletter. We are continuing to learn how to make the operations/project management dichotomy work better and more effectively, and to document this experience in the large and ever growing literature on this subject.

Where We Are Headed In the Next Ten Years

Where will this obviously very important movement, with its continued development and broader application of PM concepts, methods, systems and tools, be taking us during the coming decade?

More of the same, only bigger and better? Application of better and better PM practices and systems – including project/portfolio management methods and systems -- to still more and more new segments of industry, business, health care, and government? I would answer "yes" to both of these questions. Also I venture to predict that:

- The discipline of project/program management will continue to gain recognition and stature within most organizations and take its proper, permanent, functional place at the top levels of those organizations.

- PM information systems will continue to be more fully integrated with all other organizational information systems.

- PM oriented career paths will become more widely recognized as leading to senior manager positions in many types of organizations.

- Organizational maturity in project/program management will properly become more focused on measuring that maturity as it pertains to specific categories of projects, rather than attempting to measure PPM maturity across the many diverse categories of programs and projects that exist within large organizations.[16]

Beyond that, I believe that we need to recognize and understand more clearly the vital role of project/program management – as well as its limitations -- in the ***strategic management*** of any human enterprise, including the management of project/program portfolios.

Strategic Management of Human Enterprises

Building on strategic/long-range planning, and related management processes developed over the past 50 years, well-managed enterprises today utilize ***integrated strategic growth management processes*** to define, approve and control their current and future growth plans and the actions – principally through the execution of portfolios of programs and projects -- needed to achieve their agreed strategic objectives. "Strategic management is the art and science of formulating, implementing and evaluating cross-functional decisions that will enable an organization to achieve its objectives."[17]

Fig. 1 illustrates a typical and widely used five-step strategic growth management process that has been developed and applied across a number of industries, business sectors, and governmental and non-governmental agencies in many countries. The integrated processes summarized in Fig. 1 incorporate and use the fundamentals of several strategic planning approaches, including *competitive strategies, business environment assessment, industry structure analysis*[18]; *portfolio analysis* and analysis using the *Boston Consulting Group's Box*[19]; plus a number of other approaches to strategic management of an enterprise.

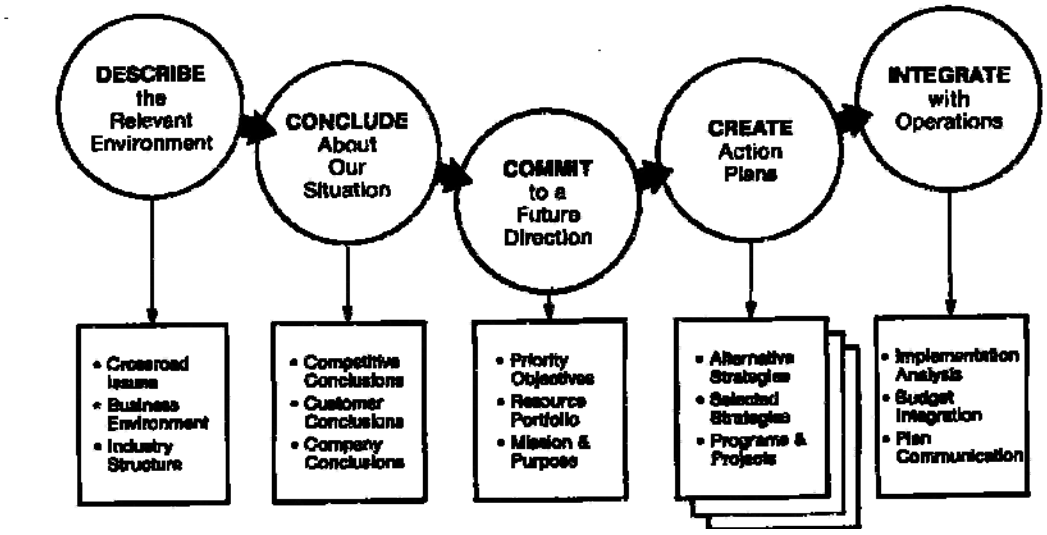

Fig. 1. The Growth Management Process for Strategic Management™ (Source: GMC 1985)[20]

Responsibilities for Strategic Management Plans, Decisions and Processes

In the 1970s and 1980s it was common practice for a senior staff person, typically with a title like Vice President -- Planning, to hold responsibility for preparing a company's long range or strategic plan for the coming 3 to 5 years. In those years such plans were then usually elaborate projections to which the key senior executives of the company were not necessarily fully committed, and the plans were rarely fully implemented.

Today in well-managed companies the same senior executives who are responsible for execution of strategic management decisions at the corporate and at major operating division levels of an organization are also held responsible for creating the integrated strategic growth plans that incorporate these strategic decisions. These persons include the chief executive officer/CEO and other senior corporate level executives, managers of subsidiary business units, functional area managers within a subsidiary business unit, and directors or managers of major operating departments and product line and geographic units. In addition, the strategic roles of a typical board of directors are to:

- See that strategic management tasks and processes in Fig. 1 are performed adequately.
- Review important strategic moves and officially approve strategic plans,
- Ensure that strategic proposals are adequately analyzed and superior to alternatives, and
- Evaluate the caliber of top management's strategy-making and implementing skills (Thompson & Strickland 1995.)[21]

The former CEO of Royal Dutch Shell Plc, Jeroen van der Veer, who retired in June 2009, emphasized the importance of effective strategic management of that large, global enterprise, when he stated: "Our behaviors need to change," Mr. Voser said in a widely quoted message to employees. "That will mean that **fewer people will make strategic decisions.** More people will

implement them, and improving performance will be our guide and goal. We will become a simpler place to work. These are key changes, aiming to make our company fitter for the future."[22] (Emphasis added.)

Strategic Versus Operational Project Management

It is useful in this context to differentiate between strategic project/program management and operational project/program management. Strategic project management includes these seven important processes and related responsibilities, which actually comprise the essence of project/program portfolio management:

1. **Select and authorize** new projects and programs to be added to the appropriate, currently active project portfolios within the organization.

2. **Validate** that each selected and authorized project and program properly supports the currently approved strategic objectives of the organization.

3. **Prioritize** all validated projects and programs within each established project portfolio to facilitate proper allocation of money and other key resources between these "portfolio components."

4. **Allocate key resources** (money, skilled people, equipment, facilities, other) to each portfolio and each project and program therein.

5. **Establish the master schedule for each project portfolio** reflecting the strategically approved priorities and allocation of money and other key resources to each project and program.

6. **Monitor, evaluate, report, and control progress** on each program and project within each portfolio, as specified in the organization' s PM policies and procedures.

7. **Cancel or change** the scope, schedule, end result, and cost of approved projects and programs when such actions are required or justified.

Of these seven, only Items 5 and 6 are properly within the usual domain of the project management discipline. The other five are strategic management responsibilities, and are not normally within the responsibility of a typical Project Management Office, with some exceptions.[23]

Operational Project Management

Operational project management includes application of all the knowledge areas and processes described in the PMI PMBOK[24], including the specific practices, systems and methods to be used for authorizing, planning, and controlling projects and multi-project programs. These

operational PM responsibilities include, for each project and program within each portfolio and for each defined project category:

- **Select and assign** project and program managers.
- **Design/select/apply** the best project life-cycle models for each project category.
- **Select and implement** the specific project planning, scheduling, executing, and controlling processes, methods, and software tools to be used.

Recognizing the Limits of Project Management in Enterprise Strategic Management

In PMI's *The Standard for Portfolio Management*,[25] three short paragraphs describe the responsibilities of "Executive Managers," a "Port folio Review Board" ("when used"), and "Portfolio Managers," but the relationships between an organiz ation's strategic managers, project management office(s), and program and project managers are not defined. We need better understanding and documentation of the interfaces between the strategic management of enterprises and both strategic and operational project/program project management within enterprises. I expect and hope that this topic will receive the attention that it deserves within the coming years.

(As an aside, I would like to point out that omission of the words "project" and " program" from the title of this PMI standard is indicative of the less-than-broad perspective that seems to pervade PMI today. If you hand this PMI standard to financial portfolio managers on Wall Street, for example, it will no doubt produce some interesting reactions. Or Google the term "portfolio management" and you will find a wide variety of uses of that term, most of which are in the financial management field.)

As an initial contribution to gaining this needed understanding I offer a paper that I presented at the 2008 IPMA World Congress in Rome, Italy, titled "The Interfaces between Strategic Management of an Enterprise and Project Portfolio Management within the Enterprise." To download this paper and my presentation slides see endnote 23 below.

I look forward to having PM World Today readers' reactions, rebuttals, and continuing exchanges on these topics with all who have an interest in the future direction of modern program/project management.

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[9] Archibald, Russell D., *Managing High Technology Programs and Projects*, 2nd ed., 1992, 384 pages. NY: Wiley. Also published in Italian and Russian.
[10] See for example http://www.pmi.org/CareerDevelopment/Pages/Degree-Directory.aspx
[11] Archibald, Russell D., *Managing High Technology Programs and Projects*, 3rd ed., 2003, 396 pages. NY: Wiley. Also published in Italian, Russian and Chinese.
[12] For an excellent description of how this program was developed and implemented see " Project Management Certification Now Underway at the CIA," by Michael O'Brochta, PMP, PMI Global Congress Proceedings, October 21-28, 2004, Anaheim, California, USA. Copies of this paper can be purchased from: http://www.pmi.org/Marketplace/Pages/ProductDetail.aspx?GMProduct=00100820700&iss=1
[13] http://www.fai.gov/certification/management.asp
[14] http://www.pmcert.org/Prog_Overview.asp
[15] *PMI Today*, September 2009, p. 6.
[16] See for example www.maturityresearch.com
[17] http://en.wikipedia.org/wiki/Strategic_management
[18] http://en.wikipedia.org/wiki/Michael_Porter
[19] http://tutor2u.net/business/strategy/bcg_box.htm
[20] GMC, Inc. 1985. Growth Management Center, Inc. P.O. Box 11109, 1800 Donner Pass Rd., Ste. 300, Truckee, CA 96162 USA http://www.agendas.net/
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Russell Archibald, PhD (Hon), PMP, PMI Fellow, is a globally-recognized author, consultant and lecturer on project management. With a career spanning more than 50 years, Russ has broad international experience in engineering, operations, program and project management. He has experienced three project management related careers: *Management Consultant*, *Corporate Executive*, and *Military/Aerospace*. In recent years, Russ has consulted to a wide variety of large and small organizations in many industries worldwide. Russ Archibald is a Fellow and Certified Project Management Professional (PMP) of the Project Management Institute (PMI®) (member No. 6, one of the five original trustees), an Honorary Fellow of the Association of Project Management (APM) in the UK, and is listed in Who's Who in the World.

Russ is the author of the best selling book, *Managing High Technology Programs and Projects* (3rd edition 2003) and the co-author of *Network Based Management Information* Systems *(PERT/CPM)* (1967). Russ has presented many articles and papers over the years at PMI and International Project Management Association (IPMA) conferences in North America, South America, and Europe, and is widely published in periodicals on professional project management. He holds Bachelor of Science (University of Missouri) and Master of Science (University of Texas, Austin) degrees in Mechanical Engineering. As a pioneer in the field, Russ received an honorary Ph.D. in strategy, program, and project management from the *Ecole Superieure de Commerce de Lille* (ESC-Lille) in Lille, France in August 2005. Currently residing in Mexico, Russ Archibald's personal website can be found at www.russarchibald.com, and he can be contacted at Russell_archibald@yahoo.com.

For more information about Russ Archibald, see http://www.pmforum.org/blogs/news/2006/09/russ-archibald-joins-pmf-global.html