PM WORLD TODAY – FEATURED INTERVIEW – SEPTEMBER 2008

Interview with Russ Archibald

Part 1 – The Early Years

***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, He has consulted to a wide variety of large and small organizations in many industries and in 12 countries on 4 continents. 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/IPMA) in the UK, and is listed in Who's Who in the World. Russ is the author of 3 editions of the best-selling book, "Managing High-Technology Programs and Projects" (1976, 1992, and 2003, also published in Japanese, Italian, Italian, Russian and Chinese) and the co-author of "Network Based Management Information Systems (PERT/CPM)" (1967). Russ has presented many 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*

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in Mexico, Russ Archibald's personal website can be found at www.russarchibald.com, and he can be contacted at Russell_archibald@yahoo.com.

***Editor's Note**: Russ Archibald is a founding member of PMI and one of the pioneers in the field of professional project management. He has been an active supporter of PMForum and PM World Today for many years. A recognized supporter and mentor for many professional leaders around the world of project management, Russ is well known throughout North and South America, Europe, Russia and elsewhere for his global knowledge, research, professionalism and personal warmth. This is part one of a three-part interview with Dr. Archibald. Part one deals with the first half of Russ' career, as he witnessed and participated in the beginnings of professional project management. Part 2 will focus on Russ' participation in and knowledge about the formation and early years of the Project Management Institute. Part 3 will conclude with Russ' recent research, his observations about the state of the world of project management, and his predictions for the future of this field.*

PM World Today (PMWT): What was your first project? When were you first introduced to project management?

Russ Archibald (Archibald): My first contact with a Project Manager and first assignment as a project team member was in 1949 in western Venezuela at the Esso/Creole Petroleum Amuay Bay Refinery. I had received my B. S. in mechanical engineering the year before, had finished a 12 month engineering training program at various Esso plants in New Jersey (the first such program after World War II ended), and on arrival in Venezuela as a new member of the refinery's 4 person Equipment Inspection Department I was assigned as the owner's inspector on a new 60,000 barrel per day vacuum pipe still unit, including a furnace, banks of heat exchangers and pumps, storage tanks, and whose main component was a 60 foot diameter steel vacuum tower. The Project Manager was with Foster Wheeler, who designed and built the unit, and I remember observing him in awe, even though my relationship with him and his crew foremen was at times rather adversarial – they sometimes were upset when this 25 year old whippersnapper found a few loose rivets that had to be replaced, or a blind flange installed in place of an o-ring that had been damaged, with no spare available. Climbing all over that 3 or 4 story tower kept me in shape. When the unit was ready for its vacuum test we pulled it down in record time, surprising the old-timer from Esso who came in from a similar unit in England to "help us out." That made me feel pretty good.

My first relationship with defense/aerospace project management was when I finished my MS in mechanical engineering. That was in 1956, I was 34, had been a graduate student on active duty with flying pay in the USAF, captain, senior pilot, at the U. of Texas, Austin. I had volunteered for recall to active duty in 1951 during the Korean War with the USAF in Panama from my job with Creole in Venezuela. While in Panama with Marion and our first 2 kids, both daughters, I then volunteered for combat duty in Korea a year or so later, spent several months training up with my other 2 crew members in Douglas B-26 bombers for night intruder mission, but they signed the truce before we finished our escape and evasion training so I never got to Korea (even later as a consultant!.) So I applied for graduate school and on finishing that I was assigned as Project Officer in charge of pressure and temperature control systems for all USAF bomber aircraft and missiles (except ICBMs) at the Equipment Laboratory, Air Research and Development Command, Wright Patterson Air Force Base, Dayton, Ohio. Each major aircraft

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and missile system had an assigned Project Officer from the various labs, and we jointly actively reviewed, questioned, and positively influenced the design, operation and integration of all systems at full scale mock-ups, DEIs (development engineering inspections), other inspections at the primary contractors designing and building the B-52, B-47 (still flying then), and all the other bombers and non-ICBM missiles. We were an effective project team, although I don't recall that we had a formal Project Manager assigned on the USAF side for each aircraft or missile. But maybe we did. That was exactly 50 years ago, and my memory isn't perfect!

PMWT: How did you get involved in project management, when and under what circumstances?

Archibald: After those earlier experiences, in 1959 I left the USAF after a total of 9 years on active duty (including 3 years with the U.S. Army Air Corps during WW II and 6 with the USAF during and after the Korean conflict) and took a job as an advanced design engineer (we called it "advanced disease engineer") on the thrust vector control system of the POLARIS solid rocket component at Aerojet-General Corp. in Sacramento, CA. During my first 6 or 8 months in that work I car-pooled to the plant with several guys including Charlie Simon, who had been given the initial PERT system responsibility at Aerojet-General. Charlie kept talking about PERT driving to and from the job, and I got interested and drew up a network plan of about 50 or 60 events and activities for developing and testing a thrust vector control device that I was designing and testing. Aerojet-General beat the U.S. Naval at developing a mainframe computer program for processing PERT networks, and my network was the first PERT network to be processed by computer anywhere in captivity. I got really hooked on project planning and scheduling, volunteered to take on the PERT thing, which did not really interest Charlie Simon, and I was placed in charge of the new POLARIS Project Control Department at Aerojet-General.

PMWT: How did you happen to write a book on network analysis in 1967? What was that book's title and how can someone find it today?

Archibald: The book's title is ***Network-Based Management Systems (PERT/CPM)*;** it was published by Wiley, and used copies can be bought today for $10 to $30 from Amazon.com. You can see the table of contents on my web site at www.russarchibald.com plus the exact Amazon.com link to order it. It sold very well and was in the core library at Harvard Business School for many years, and I think it stands the test of time today pretty well. It came into being after I left Aerojet-General in 1961, consulted individually to the USAF Air Research and Development Command Headquarters for 6 months, and then joined Hughes Aircraft Company in their Corporate Industrial Dynamics Dept. where I headed up the development and application of the Hughes-PERT System, which is described in our 1967 book.

In 1962 I started teaching an extension course at UCLA in project planning, scheduling and control, and after 4 iterations of that – scribbling and revising my lecture notes on weekends, having my secretary type them up on Mondays, teaching Tuesday nights – I had a pretty solid manuscript to start with. A friend who had recently published an information science book with Wiley saw my notes, sent them to his editor, and they offered to do the book. Richard L. Villoria -- who was in the same department as I was at Hughes Aircraft – and I teamed up as co-

authors, and four years later the book finally hit the street. Word processing was not widely available and typing a 508 page manuscript on a small portable is a laborious process. For researchers into the history of project management and PM systems the book has a 4½ page bibliography. It's publication led to my joining the Project Management and Control Division of Booz, Allen & Hamilton in 1970 and setting up the first nation-wide project management seminar program with them that year, using the book as a text together with an additional 3-ring binder covering the broader project management aspects of the subject.

PMWT: What was it like working for a big defense contractor in the 1960s and 70s? What were some of your most memorable experiences?

Archibald: It was exciting (most of the time), especially during the Cold War, to be working on big, cutting edge weapon systems like POLARIS and being deeply involved in developing and using new management tools like PERT and CPM (which we used to say really means "Cannot Possibly Make It"). At Hughes Aircraft, being involved with helping to plan the first satellite systems was also very exciting. It also had its frustrations, of course. As I have said elsewhere, the U. S. Navy missed the boat on POLARIS because they failed to insist that Lockheed, as the prime integrating contractor for the missile system, integrate all of the PERT network plans from each of the main contractors for the main missile components.

It was always a memorable experience to be invited to make a presentation, for example, at the annual management conference of the company, and face a possible grilling if what you have to say didn't sit too well with the chairman, president or CEO. And the nicest psychic payoff came when you had a sense that you've contributed something useful to an important project or an important step forward in methods for managing projects.

PMWT: What were some of the common "success factors" for project managers in those days?

Archibald: I don't see any major changes in their success then and now: getting the job done, creating really effective teamwork, planning the work and working the plan, using the right tools and methods for the specific project, knowing and understanding the business at hand.

PMWT: That was just when earned value was getting started. Did you have any experience using earned value or with the DoD's CSCSC?

Archibald: In 1959-61 on POLARIS at Aerojet-General we were applying a basic form of earned value based on General Electric's approach, which was introduced to us by a senior staff member at Aerojet who had been with GE. Regarding CSCSC, I was at Hughes Aircraft when Harvard University Prof. Dr. Ronald Fox, then with a Boston-based consulting firm whose name I unfortunately don't recall, visited Hughes and I believe all the other major defense contractors. Fox's assignment produced the ***DOD & NASA Guide PERT/COST Systems Design,*** published in 1962, and that document incorporated several characteristics that we had earlier incorporated into the Hughes PERT System that is described in my 1967 book, pp. 137-157. The most important of these is the "indentured level" Work (or Project) Breakdown Structure approach to systematic project definition. To answer your question, we attempted to comply with the DOD & NASA PERT/COST Guide and later the CSCS Criteria at Hughes

Aircraft, and experienced pretty much the same frustrations as the other contractors. Simply put: too much detail.

PMWT: How did you happen to launch your first project management consulting business? What year was that? Who were some of your customers and what kind of services did you provide? It must have been one of the first PM consultancies in North America.

Archibald: In 1963 the Hughes Tool Company Board formed a computer services and consulting company in Los Angeles called Hughes Dynamics, Inc., and acquired the IBM 360 computing facilities of CEIR, located on the Miracle Mile of Wilshire Boulevard in Beverly Hills. I left Hughes Aircraft with two associates and we formed the CPM Systems Department of Hughes Dynamics. We grew to a total of seven people and specialized in scheduling projects in both construction and defense/aerospace on a consulting and service bureau basis. A year later Howard Hughes and his Hughes Tool Company Board were fighting with the TWA Airlines Board for control of TWA, needed cash, and decided over a weekend to close down Hughes Dynamics and sell its assets.

Since we had some signed consulting contracts with major companies we convinced the Tool Comany that they were vulnerable to breach of contract lawsuits, and they agreed to finance our receivables, let us use their office furniture, and generally helped us form our independent consulting firm which we called CPM Systems, Inc., with seven of us as worker/owners and me as president. We developed our own proprietary software that combined features from both PERT and CPM, and we also used the IBM 360 Project Management System/PMS, and IBM's 1620 small mainframe and its 1320 mini-computer computer. (I hope I am remembering the right numbers for those last two.) Within Hughes Dynamics we had started scheduling swimming pool construction (we were in Southern California, after all) and then also moved into scheduling large home-building construction projects for the large developers of 200 to 300 home tracts.

Our 1967 book has three case study chapters (pp. 233 to 329) describing defense/aerospace applications of network planning, commercial and industrial application, and multiple-unit construction applications, many of which case examples were projects that we scheduled. New product applications included food products for Van Camp Sea Food, Long Beach, CA. In addition to producing tract schedules for about 10 of the biggest home developers in California and the Chicago area, we processed detailed network plans in Los Angeles for Eric Jenett, then Vice President/Chemical Engineering for Brown and Root, Inc., including a Champion Paper Mill in Wisconsin. We shipped the schedules to Eric in Houston. That connection with Eric led to my involvement with him and the others in our founding of the Project Management Institute in 1969.

PMWT: When did you sell that company, and how did that come about? What did you do next?

Archibald: We unwisely became heavily dependent on homebuilding, and in 1968 that volatile industry took a serious downturn, so we sold CPM Systems, Inc., to Informatics, Inc.,

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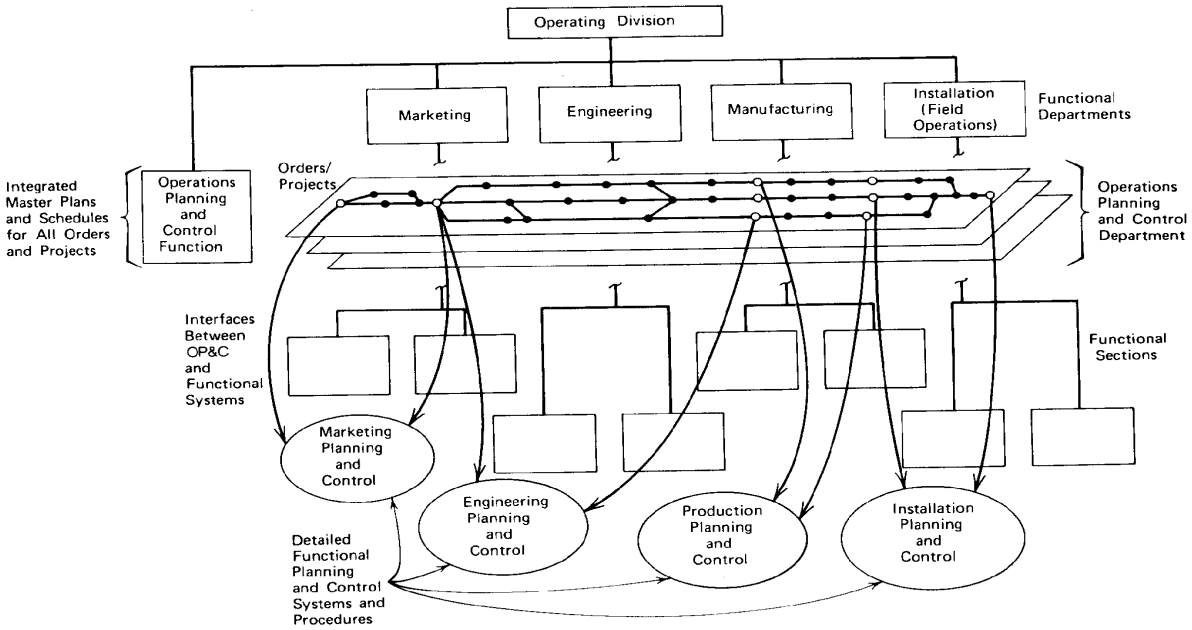
and continued as a successful division of that computer-based consulting company. In 1970 Booz, Allen and Hamilton acquired my employment contract from Informatics and I started a different phase of my consulting career.

PMWT: What was your most memorable project or project management related experience from that period of your life?

Archibald: My boss at Booz, Allen & Hamilton, Marvin Flaks (a VP of that worldwide consulting firm) left that firm a year after I joined it to became a corporate VP of ITT Corp. in the Office of the President, Harold Geneen. In another year Marvin recruited me to ITT as well, in 1972. My title was Assistant Director, Operations Staff, Office of the President, and I had assignments in Great Britain, France, Belgium, Spain, Portugal, Argentina, Brazil, Chile, Mexico and the U.S., all related to implementing project and program management planning and control systems and creating and sometimes presenting project management training programs, mostly in the telephone subsidiary companies of ITT. For me one of the most innovative PM improvements I implemented in several ITT telephone companies in Europe and South America was establishing what I called Operations Planning and Control Departments. The simplest way to illustrate this concept is with this figure:



See Section 8.7 of my 2003 edition of **Managing High-Technology Programs and Projects**, pp. 192-197, for a discussion of this concept.

The most memorable project I managed for a year in 1974 was a $5 million job to upgrade the telephone switching equipment across the country of Mexico that European ITT companies had manufactured and installed over the previous 20 or 30 years. My wife Marion, our 14 year old son Mark, and I moved to Mexico City and I was Project Manager, with an Italian Chief Engineer, an engineering staff of 30 engineers from 5 European and 3 South American countries speaking 7 different languages, and 300 technicians out in the field. I commuted to

Europe and the U.S. (Our two older daughters, Danielle and Barbara, and one older son Robert were all on their own or still in college at that time.)

PMWT: I understand that you worked for **Harold Geneen**, the enigmatic and powerful head of IT&T, one of the world's largest and most aggressive technology firms. What was that like? Were you managing projects at that time, or involved in organizational management work?

Archibald: Well, there were two bosses between me and Harold Geneen, whom I consider a business genius, although he did have his blind spots, and ITT is a very different company today than it was when he was its Chairman and President. Except for the Mexican project I was an internal consultant with assignments to implement improvements in project management and train project managers and PM specialists in the countries listed earlier. It was a really challenging and fascinating period in my career. In 1973 I also took on the task of developing a corporate ***ITT Project Management Guide*** to document the most effective PM principles in use within the high-technology subsidiaries of ITT. I personally surveyed a large number of these and consulted within many of them, then sent out 200 copies of the first draft of that Guide. Using the feedback received on that draft I wrote the final version and sent that around the world. Then I obtained corporate permission to turn that version into a book, which was published by John Wiley & Sons as ***Managing High-Technology Programs and Projects*** in 1976 (and translated into Italian and Japanese) after I had left ITT. The 2nd edition was published in 1992 (also in Italian and Russian) and the 3rd edition was published in 2003 and is still selling, (also translated into Italian, Russian, and Chinese.) Your readers can check out the 3rd edition and read two reviews of it on my web site.

PMWT: Have you any good Harold Geneen stories that you can share?

Archibald: His method of personally giving direction to the large number of major companies that he put together in ITT as one of the largest and most successful conglomerates in their heyday is still impressive to me. He created two very large conference rooms, one in the ITT Park Avenue headquarters building in New York City and one in the ITT European headquarters building in Brussels, Belgium, each with large, oval tables seating about 35 people on each side. Geneen called for a Monthly Management Meeting in each city, and he sat in the middle on one side with his 2 Executive VPs on each side of him and his New York Hq. staff alongside them, including my boss, whom I sat behind. There were 4 screens on each wall, and 4 overhead projectors (pre-PC days.) On the other side of the table sat all the Presidents and CEOs of the U.S. and Asian/Pacific subsidiaries at the New York meeting and the European/Middle Eastern/African subsidiaries at the Brussels meeting.

The Headquarters staff flew to Brussels monthly in a chartered Pan American 707 (first class service for all). Every President or CEO had to present a standard set of slides showing the current financial results and explain in detail any important variation from the approved plans. It was always amazing to me – and the rest of the staff, I believe – how Geneen could remember and keep tract of the history of so many subsidiaries in so many different types of industries. Over and over we watched him start pulling on a specific detail in one company and unravel a major problem that needed to receive urgent action, which would then receive the full attention of the appropriate corporate staff.

PMWT: What did you do after working for IT&T in New York? Where did you live and work?

Archibald: After the Mexican telephone system project was closing down in 1974 I was transferred to the ITT Brussels Headquarters Staff. Conglomerates and Harold Geneen were fading out of favor, and the New York staff was being down-sized. At the same time my former ITT boss, Marvin Flaks, left ITT and joined the Bendix Corporation in Detroit (not washing machines but automobile brakes and components, aircraft brakes and aerospace electronics.) He soon became *President Director General* of Bendix's European subsidiary, Ducilier/Bendix/Aerequipment (DBA) in Paris, France. I met in Paris a few times with Marvin and then his boss on my trips to Europe for the Mexican project, and then accepted their offer in 1975 to become Project Manager (reporting to Marvin) of a major project to close down a foundry and major machining plant in Nuenkirchen, Germany. We had to move the entire machining plant, with 4 large Mauser dial-index machining tools and other equipment to a new plant in Angers, south of Paris in the Loire Valley, without disrupting the Daimler-Benz production lines for their Mercedes Benz automobile, for whom we supplied high quality disc brakes.

Marion and I, again with our son Mark, moved to Paris for 2 years. The project went off very well, and I managed a few other interesting projects there in France. We would have liked to stay there longer, but my headquarters boss in Bendix insisted I move to Southfield, Michigan (suburb of Detroit), where I became VP-Planning for Bendix International. In 1982 I took advantage of the opportunity to retire early, and went on my own as an independent consultant in project management, the position I have retained ever since that year.

PMWT: During your first 25 years of project oriented work, what was your most memorable or unique project?

Archibald: It was not during my first 25 years in project management, but after I became VP-Planning for Bendix International I became the de facto Project Manager of a project to establish a joint venture in India to manufacture air brakes for trucks and hydraulic brakes for passenger cars. This took quite a long time – about 10 years – starting in 1976, after we moved to Michigan, but of course I was working on a number of other projects and assignments at the same time. I continued to work on this project for a while as a consultant to Bendix after I took my early retirement. I made 2 or 3 trips to India each year. I selected and obtained approval for the company of Bharat Forge Ltd. in Pune as the joint venture partner of Bendix. The project involved transfer and licensing of the technology from a Bendix subsidiary in the United Kingdom and another affiliate in Japan. India is a fascinating country, the people are wonderful and extremely capable, and I made many good friends there. You can see the master schedule for this project on page 260 of my 2003 book.

PMWT: Looking back, did your military experience or college degree in engineering prepare you for a career in project management? Is yes, how so?

Archibald: Yes, in both cases: the military when the projects were military/aerospace, since that provided knowledge of the industry, the hardware (at least some of it), and the personalities within the military who were our customers. An engineering education and experience provide knowledge of a logical "engineering approach" to problems.

PMWT: We now know that you were one of the founders of the Project Management Institute (PMI) in 1969, which we will explore in more detail in Part 2 of this interview. But can you briefly describe some of the conditions in US industry that were favorable to the startup of a project management related professional society? What was the general industrial environment like in those days that brought you and other project managers in such diverse industries together in such a congenial way?

Archibald: The phenomena of PERT, CPM, PDM and related, versions – actually 'network planning and scheduling systems' in general – became the first widely used management systems beyond accounting that required computers for practical application to reasonably large projects or other complex efforts. Some people tried to use punched card sorters in the early days, but they quickly faded away. IBM, RCA and maybe one or two others were the only mainframes in town before minis and PCs came along, that I remember anyway. And there were very few widely used PERT/CPM/PDM software packages in use, so people who were using these computers and packages fairly easily got to know each other. The larger DOD and NASA contractors were among those, plus the larger design/construction contractors.

So the word got around, and a few trade magazines started publishing articles on this subject, plus a few universities started promoting extension courses like mine at UCLA in the early 1960s. There was not a big IT industry in those days, only a few programmers, mainly developing accounting data processing packages. Actually it took quite a few years for PMI to grow much beyond a hundred members. I think our first formation meeting had less than 200 people in attendance. The second PMI Seminar/Symposium (which we started calling our annual meetings) was held in St. Louis (my home town) plus McDonnell Aircraft – my Dad happened to be one of that company's first 20 employees – and I was Program Chair of that 1970 meeting at the Park Plaza Hotel on the edge of Forest Park, which also drew less than 200 participants.

See historic photo of Russ Archibald on next page!

Russ Archibald

Photo of Russ Archibald, Circa 1951 (at age 27) when he thought he was headed for South (and at times North) Korea. That is a Douglas B-26 light bomber, built originally for the North Africa invasion in WW II, used in Korea for night intruder missions mainly to destroy train and road traffic.

***Editor's note**: We want to thank Russ Archibald for the time he took to answer these questions, answers that reflect developments worldwide during the exciting early days of the project management field and globalization of industries in the 1960s and 70s. In Part 2, Russ answers questions related to the founding and early days of the Project Management Institute (PMI) in the USA and the International Project Management Association (IPMA) in Europe. Russ was there and actively involved when the PM profession began. This interview was conducted in person in Washington, DC and via email.*

Don't miss Part 2 of the Interview with Russ Archibald

in the October 2008 edition of

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