Series on Categorizing Projects and Programs[1]

Categorizing programs

By Alan Stretton

ABSTRACT

This is the second of a series of four working/discussion papers on categorizing projects and programs. The context of these papers is overall categorizations as they have appeared in the literature. These currently vary widely, and this series is concerned with exploring possibilities for bringing them closer together.

The first paper (Stretton 2014f) focused on project categorizations, most of which were found to be a mixture of industrial/ social sectors (Application Sectors) in which projects are undertaken (e.g. aerospace, defence), and types of projects (Project Types) which are undertaken in many, if not most, of these Application Sectors (e.g. IT projects, R&D projects). This second paper focuses on program categorizations, where it finds a similar mixture. The components of two prominent program categorizations are re-allocated into Application Sectors and Program Types, and presented as a matrix which illustrates the intersections between Program Types and the various Application Sectors in which they are undertaken.

This paper also identifies five Program Types which are virtually identical to the five key Project Types that emerged from the first paper. This leads to amalgamating these common elements, which are described as key Program/Project Types.

INTRODUCTION

There have been comparatively few categorizations in the literature specific to programs. I attempted one in Stretton 2009b, which was broadly based on listings in Japan's P2M (PMAJ 2008), which are the most complete I have come across. P2M has two major listings, namely Types of Programs, and P2M Application Areas. As will be seen, both contain a mixture of Program Types and Application Sectors.

P2M defines a program as "an undertaking in which a group of projects for achieving a project mission are organically combined". This is much the same as Maylor et al 2006, who say that programs "involve the coordinated management of a series of interconnected projects and other non-project work, for the delivery of a specific package of benefits". The slightly more precise latter definition is adopted here.

[1] This series of articles on the categorization of projects and programs is by Alan Stretton, PhD (Hon), Life Fellow of AIPM (Australia), a pioneer in the field of professional project management and one of the most widely recognized voices in the practice of program and project management. Long retired, Alan is still accepting some of the most challenging research and writing assignments; he is a frequent contributor to the ***PM World Journal***. See his author profile at the end of the article.

P2M's PROGRAM AND PROGRAM/PROJECT CATEGORIZATIONS

Program/project application areas, and types of programs, in Japan's P2M

The following two tables are partial, but nearly complete, reproductions from P2M (PMAJ 2008). The P2M application areas on the left evidently apply to both projects and programs. The types of programs and case examples are specific to programs.

P2M Figure 1-6-1:
P2M Application areas

1. SOCIAL INFRASTRUCTURE PROJECTS
National traffic & transportation systems
Lifeline (electricity, water, gas, info, telecommunications) systems,
National security & defence facilities,
Urban development, Regional development
Private sector buildings
Environmental preservation systems
2. RESOURCE DEVELOPMENT
Development of petroleum, natural gas & power resources
Oil refining, petrochemical, chemical, metal refining
Power plants and storage and delivery systems
Energy conservation
3. PRODUCTION FACILITIES
Various production plants and facilities; Logistics systems
Innovation of production systems (automation, AI, virtual factories)
4. PRODUCT DEVELOPMENT & manufacture reform
Development of new products
Production quickly switched by open modular production systems
Development of pharmaceuticals
5. COMPREHENSIVE ENGINEERING
Social development, resource development
Planning, construction, O&M of production facilities
6. IT, INFORMATION AND TELECOMMUNICATIONS
Systems development, Systems integration,
Creating of IT based solutions
Business process outsourcing (BPO)
Various financial systems
7. INTERNATIONAL COOPERATION PROJECTS
Official development aid (ODA) planning and management
Technology transfer; Fostering of human resources
Enhancement of organizations
Economic & social development through international consortium
8. BUSINESS AND ORGANIZATIONAL REFORM
Management reform; Restructuring; Reengineering;
Mergers and acquisitions of enterprises
Creation of new business models
Private finance initiative, venture incubation
Strategic partnership development
9. ADMINISTRATIVE INITIATIVES
Government agencies and municipalities -
Policy, development strategies and industrial strategies
10. EDUCATION AND MEDICAL
University reform; education reform
Medical and hospital systems; hospital reform
11. COMMUNITY
Various events; Life support projects
Operation of volunteer bodies
Regional development; Security systems

P2M Figure 3-1-1:
Types of programs & case examples

1. ORGANIZATION CHANGE
Corporate M&A; corporate alliance; restructuring;
spin-off of a division; shutdown of factories/branches;
reorganization / privatization of government ministries

2. RESOURCE BUSINESS
Resource exploration, oil well drilling, LNG chain, pipeline
construction, mine development/operation

3. CONSTRUCTION
Social infrastructure construction (airport & railway etc);
large-scale commercial facilities; urban area redevelop't

4. Plant and factory construction
Plant construction (petrochemical, steel, semi-conductor
atomic power plant; thermal electric power plant

5. ICT SYSTEM
Bank account system; production control system; earth
simulator; communications / broadcasting system

6. PRODUCT DEVELOPMENT
High-tech industrial products; drug development;
new variety of seeds, package software

7. COMMERCIALIZATION OF NEW BUSINESS MODEL
Door-to-door delivery service; online sale of books;
Internet search service; various online free services

8. MARKETING/SERVICE (including networking)
Affiliated dealership for luxury cars; franchise networks;
broadband; theme park

9. EVENT
Olympic games; soccer world cup; national sports
festival; world exposition

10. LARGE SCALE RESEARCH & DEVELOPMENT
Space development; nuclear fusion research; human
genome research; high-tech military equipment
development; global environmental research

11. CAPABILITY DEVELOPMENT
International partnership; founding of college;
in-house education system

12. CREATIVE ACTIVITIES
Film making; TV drama

Figure 2-1: P2M's Application areas and Types of programs

Amending the P2M figures to separate Application Sectors and Program Types, and to modify some categorizations and titles

As I did in the first paper in relation to Project Types, I acknowledge that the description of Program Types as being those that can be undertaken in a variety of Application Sectors is imprecise. I would like to have had a better definition/ descriptor, but that currently eludes me. In similar vein, it is not always easy to distinguish between Program Types and Application Sectors in a precise fashion.

The primary aim of the following is to re-allocate some of the sections in the two P2M figures above. The Applications Areas list becomes what I will call an Application Sectors listing, whilst the Types of Programs listing will be renamed Program Types. Some relatively minor modifications will also be made to some titles and contents. I have described these re-allocations in some detail, so that interested readers can tell me where they disagree, and/or suggest better approaches.

Application areas > Application Sectors

- *Application area 1: Social infrastructure* (now without the *projects* part of the descriptor) is a major Application Sector, with many substantial sub-sectors, and is unchanged.

- *Application area 2: Resource development* remains unchanged in the Application Sector listing.

- *Application area 3: Production facilities* is essentially unchanged, except for the addition of "O&M [Operations & Maintenance] of production facilities" from Application area 5, to be discussed in a moment.

- *Application area 4: Product development and manufacture reform* is clearly a Program Type, as its component activities can be undertaken in many different Application areas. This item is therefore eliminated from the Applications listing, and is covered by *6: Product/service development*, in the Program Types listing.

- *Application area 5: Comprehensive engineering* is already covered elsewhere in the Application areas listing. Its *Social development* component is covered by a combination of Application Sector 1 above, and 11 below. The *Resource development* component is already covered in Application Sector 2, and *Planning, construction, O&M of production facilities* in Application sector 3. It is therefore removed from this listing.

- *Application area 6: IT, Information and telecommunications* is clearly as Program Type, as its component activities can be undertaken in many different Application Sectors. It is therefore eliminated from this list, and is covered in the Program Type listing under *5: ICT systems.*

- *Application area 7: International cooperation projects* essentially comprises several types of major international Application Sectors, and remains unchanged.

- *Application area 8: Business and organizational reform* is primarily concerned with organization change, which is undertaken in many Application Sectors, and is therefore a Program Type. It will be covered by Program Type 1 *Organization/ business change.*

- *Application area 9: Administrative initiatives* evidently covers various government and allied Application Sectors, and remains unchanged.

- *Application area 10: Education and medical* has components which clearly indicate that they qualify in an Application Sector listing. However, these two appear to me to be very different types, so I have made them separate categories in the modified version.

- *Application area 11: Community* has a wide range of components, which can be collectively be categorized as an Application Sector.

Types of programs > Program Types

- Starting with Type 1, I have transferred *Type 7: Commercialization of new business model*, and *Type 11: Capability development*, to be under the overall umbrella of *Type 1: Organizational change,* whose title has been amended to *1: Organization/business change,* to reflect the broader range of Program Types now being covered.

- *Type 2: Resource business* is an Application Sector, which is covered in that listing by *2. Resource development.* It has therefore been removed from the Program Types listing.

- *Type 4: Plant and factory construction* is now under the overall umbrella of *Type 3: Construction,* whose title I have augmented to *3: Engineering/construction* to reflect the broader aspects of this Program Type.

- *Type 5* remains as a Program Type, now pluralized to *ICT systems.*

- *Type 6* also remains, but with the amended title *Product/service development*, to reflect a broader scope of this Program Type.

- *Type 8: Marketing/service* remains unchanged, as does *Type 10*, but the latter now has the shorter title of *Research and development.*

- *Type 9: Event* and *Type 11: Creative activities* are both Application Sectors, and are transferred there. I have changed *Event* to *Events,* and the *Creative activities* title to *Entertainment.*

The above changes are reflected in the modified listings of P2M's original two categorizations presented below.

Amended P2M Application Sectors and Program Types

The above amendments result in the following listings of what are now described as Application Sectors on the left hand side, and Program Types on the right.

Amended P2M application areas
APPLICATION SECTORS

1. SOCIAL INFRASTRUCTURE
National traffic & transportation systems
Lifeline (electricity, water, gas, info, telecommunications) systems,
National security & defence facilities,
Urban development, Regional development
Private sector buildings
Environmental preservation systems
2. RESOURCE DEVELOPMENT
Development of petroleum, natural gas & power resources
Oil refining, petrochemical, chemical, metal refining
Power plants and storage and delivery systems
Energy conservation
3. PRODUCTION FACILITIES
Various production plants and facilities; Logistics systems; O&M;
Innovation of production systems (automation, AI, virtual factories);
7. INTERNATIONAL COOPERATION PROJECTS
Official development aid (ODA) planning and management
Technology transfer; Fostering of human resources
Enhancement of organizations
Economic & social development through international consortium
9. ADMINISTRATIVE INITIATIVES
Government agencies and municipalities -
Policy, development strategies and industrial strategies
10a. EDUCATION
University reform; education reform
10b. MEDICAL
Medical and hospital systems; hospital reform
11. COMMUNITY
Various events, Life support projects,
Operation of volunteer bodies; Regional development
Security systems
EVENTS
Olympic games; soccer world cup;
national sports festival; world exposition
ENTERTAINMENT
Film making; TV drama

Amended P2M types of programs
PROGRAM TYPES

1. ORGANIZATION/BUSINESS CHANGE
Corporate M&A; corporate alliance; restructuring;
spin-off of a division; shutdown of factories/branches;
reorganization / privatization of government ministries
7. Commercialization of new business model
Door-to-door delivery service; online sale of books;
Internet search service; various online free services
11. Capability development
International partnership; founding of college;
in-house education system

3. ENGINEERING/CONSTRUCTION
Social infrastructure construction (airport & railway etc);
large-scale commercial facilities; urban area redevelop't
4. Plant and factory construction
Plant construction (petrochemical, steel, semi-conductor
atomic power plant; thermal electric power plant

5. ICT SYSTEMS
Bank account system; production control system; earth
simulator; communications / broadcasting system

6. PRODUCT/SERVICE DEVELOPMENT
High-tech industrial products; drug development;
new variety of seeds, package software

8. MARKETING/SERVICE (including networking)
Affiliated dealership for luxury cars; franchise networks;
broadband; theme park

10. RESEARCH & DEVELOPMENT
Space development; nuclear fusion research; human
genome research; high-tech military equipment
development; global environmental research

Figure 2-2: Amended P2M Program/project Application Sectors and Program Types

I was tempted to further rationalize the Program Types listing, but will leave it as shown, to facilitate making comparisons with the original Types of Programs listing.

AN APPLICATION SECTORS / PROGRAM TYPES MATRIX FROM P2M

Now, in Figure 2-3 below, we transpose these two amended sets of P2M Program Types and Application Sectors into a matrix, and show how each member of each group intersects with the other (using only P2M's modified categorization headings).

APPLICATION SECTORS	PROGRAM TYPES					
	Organization/business change	Engineering/construction	ICT systems	Product/service development	Research & development	Marketing/service
Social infrastructure						
Resource development						
Production facilities						
International cooperation						
Administrative initiatives						
Education						
Medical						
Community						
Events						
Entertainment						

Figure 2-3. Matrix showing intersections between modified P2M Application Sectors and Program Types

As was the case with an equivalent matrix for projects in the first paper (Figure 1-2), it is evident that some of the Program Types are much more immediately relevant to some Application Sectors than they are to others.

As was also the case with the project-based matrix, it would appear to be potentially useful to establish the nature and importance of such relevancies in the program context, which hopefully might help in developing a better understanding of how individual Program Types can benefit through sharing inter-Application-Sector data. It is also evident that both the Application Sectors and the Program Types listed are not totally comprehensive. Both will now be looked at more closely.

KEY PROGRAM/PROJECT TYPES

This series of papers is predominantly concerned with what we have called Program/Project Types – i.e. those that are typically undertaken within many, if not most, Application Sectors. We now have two lists – one of Program Types from this paper, and one of what I described as Key Project Types from the first paper of the series. These are arrayed side by side in Figure 2-4, below, together with amalgamated descriptors of the five key Program/Project Types.

PROGRAM TYPES (Figure 2-3)	KEY PROJECT TYPES (From first paper)	KEY PROGRAM/ PROJECT TYPES
Organization/business change	Organizational change	Organization/business change
Engineering/construction	Engineering/construction	Engineering/construction
ICT systems	Information technology	ICT systems
Product/service development	New product development	Product/service development
Research & development	Research & development	Research & development
Marketing/service		

Figure 2-4: Comparing Program and Key Project Types, and amalgamated Program/Project Types

The most obvious observation is that both programs and projects share the same five “key” Types. I have amalgamated these under the heading Key Program/Project Types, with descriptors which are the more generalized of the two.

The other observation is that Program Types includes a Marketing/service Type, which did not appear in the Project Types identified in the first paper. This is an example of other Program/Project Types beyond the “key” Types already identified. This, and other such Types, will be discussed in the third paper of this series.

A NOTE ON PROGRAM/PROJECT APPLICATION SECTORS

First, it will be noted that I now extend the discussion on Application Sectors to both programs and projects – the latter meaning stand-alone projects, as discussed in the

first paper of this series. At this broad level of categorization there is no cause to distinguish between them, so I use the combined descriptor *program/project*.

Although this paper is not primarily concerned with further development of program/ project Application Sectors, the following observations may be relevent for those who may wish to develop more complete lists of Application Sectors.

First, it is noted that Pells 2011 did extensive work on industry classifications, from which he derived a project management industry classification system (his Figure 7). In particular, he added two major categories to those discussed above, namely *professional services*, with 12 sub-categories, and *emerging/future industries*, with 7 sub-categories. There are also some other sub-categories not generally covered in other industry classifications I have seen.

However, I should also note here that there are more program/project Application Sectors than industrial production and service ones – e.g. leisure, development aid and other economic/ social/ humanitarian projects/programs, disaster recovery, ecosystem restoration, and the like. I leave it to others to extend such listings.

SUMMARY/CONCLUSIONS

This paper has been primarily concerned with program categorizations. It has found strong similarities between these categorizations, and those of projects discussed in the first paper. Both have mixtures of Application Sectors and Program/ Project Types. In each case the categorizations have been re-arranged into these two groupings, and a matrix developed to illustrate how members of each group intersect with the other. In both cases there appears to be opportunities for investigators to look more closely at these intersections, and thence, hopefully, to develop a better understanding of how Program/Project Types can benefit through sharing inter-Application-Sector data.

Further, it was found that both programs and projects share some five key Program/ Project Types, namely

- Organization/business change
- Engineering/construction
- ICT systems
- Product/service development
- Research & development

Finally, it was noted that the listings of Application Sectors and Program/Project Types found so far are by no means comprehensive. This series is somewhat more concerned with categorizations of Program/Project Types, and the third paper of this series will extend the listing of these Types.

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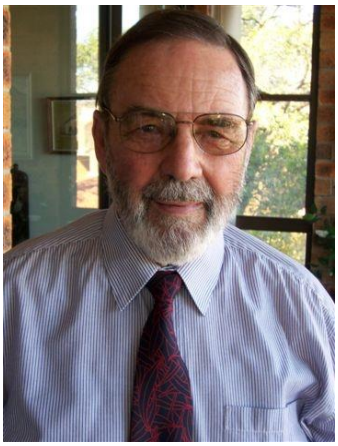
About the Author



Alan Stretton, PhD

Faculty Corps, University of Management and Technology, Arlington, VA (USA)

Life Fellow, AIPM (Australia)

Alan Stretton is one of the pioneers of modern project management. He is currently a member of the Faculty Corps for the University of Management & Technology (UMT), USA. In 2006 he retired from a position as Adjunct Professor of Project Management in the Faculty of Design, Architecture and Building at the University of Technology, Sydney (UTS), Australia, which he joined in 1988 to develop and deliver a Master of Project Management program. Prior to joining UTS, Mr. Stretton worked in the building and construction industries in Australia, New Zealand and the USA for some 38 years, which included the project management of construction, R&D, introduction of information and control systems, internal management education programs and organizational change projects. He has degrees in Civil Engineering (BE, Tasmania) and Mathematics (MA, Oxford), and an honorary PhD in strategy, programme and project management (ESC, Lille, France). Alan was Chairman of the Standards (PMBOK) Committee of the Project Management Institute (PMI®) from late 1989 to early 1992. He held a similar position with the Australian Institute of Project Management (AIPM), and was elected a Life Fellow of AIPM in 1996. He was a member of the Core Working Group in the development of the Australian National Competency Standards for Project Management. He has published over 140 professional articles and papers. Alan can be contacted at alanailene@bigpond.com.au.

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