

WHAT IS A PROGRAM:

AN EXAMINATION OF TERMINOLOGY IN PRACTITIONER REFERENCE DOCUMENTS

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PROGRAM MANAGEMENT, PROGRAMME
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Abstract: Previously published work has identified confusion in the definition of the term program. This paper examines program terminology across a range of project management practitioner reference documents to determine if there is any definitional confusion within or between them and whether the boundaries with project and portfolio levels are clear. The examination finds that there are indeed inconsistencies in program terminology between the documents analyzed making it difficult to know where the boundaries with the project and portfolio lie. A set of mutually consistent definitions of terms including all three words is then developed using an established method.

1. INTRODUCTION

Confusion within the practitioner community over the meaning of the term program has been documented by Reiss (2007). As yet unpublished interviews conducted by the authors as part of this research have also found practitioner difficulties and contention regarding the definition of a program and whether it must include transformation or not. MSP focuses on transformational change with Section 1.1 claiming "MSP represents proven good practice in programme management in successfully delivering transformational change" (Office of Government Commerce (OGC), 2011). However the Project Management Institute (2013c) does not mention transformation. Choice of a label can also affect the choice of methodology used to manage an undertaking. It is therefore imperative that the labels are clear so that inappropriate choices are not made, with adverse consequences for progress, cost and reputation.

The objective of this paper is to examine a range of commonly used practitioner reference documents to see whether confusion is evident between them or not.

This paper reviews the academic literature to see if the issue has been recognized and studied before. Research questions are then posed, and the research design determined. The documents to be examined are selected and the method of review and assessment determined. The practitioner documents are then examined to determine whether confusion exists about what a program is, whether these documents require it be transformational, as Office of Government Commerce (OGC) (2011) suggests and whether the boundaries with the terms portfolio and project are clear. The investigation of each of the selected terms is then presented in tabular form, allowing ready comparison and an analysis of each term then follows. The boundaries of what is a program, together with the allied terms of project and portfolio are then considered to determine whether a set of mutually consistent non-overlapping terms can be developed.

2. LITERATURE REVIEW

Various searches of all aggregator EBSCO databases were conducted on 19/10/2017 for a range of terms with results as follows:

- "definition of program" in titles – 26 found, none relevant
- program term in titles – 8 found, none relevant
- review program terminology in all fields – 6 found, none relevant
- review program definition in all fields – 157 found of which 81 were non-duplicates and none were relevant.

Searching for 'program' returned results for 'programme' as well. Abstracts were examined to determine relevance when this was not evident from the title. These searches identified particular programs in a wide variety of fields, but all were concerned with their content rather than with usage of the term itself. As the issue has been identified within the field of project management, we then looked for more broadly titled reviews in that field.

The term 'program' is defined in various project management standards and reference documents and so a search of all EBSCO databases was conducted on 1/10/2017 for both 'review of standards' in the title and 'project management' in the text found no relevant reviews. A similar search for 'comparison' in place of 'review' found no relevant reviews and a similar search for 'examination' found one relevant review, namely Crawford, Pollack, and England (2007) which is considered below. Similar searches of Taylor and Francis and Emerald databases on 2/10/2017 also found no relevant reviews. A Google Scholar search of 'project management standard' with at least one of comparison, examination or review in the title returned one result, Sadeanu, Candea, and Bodea (2013). This was concerned with comparing the then recently developed ISO 21500 with the Project Management Institute (PMI) PMBOK (Project Management Body of Knowledge) (2013), PRINCE2 (2009) and ICB V. 3.0:2006 (IPMA (International Project Management Academy) Competence Baseline Version 3.0) and was not concerned with questioning their content. It reported but did not reconcile alternative definitions of a project (Sadeanu et al., 2013, p. 43). We were not concerned with ICB V. 3.0:2006 as it is not our purpose here to comment on competency.

Other subsequent investigation located two further reviews. One was Zandhius and Stellingwerf (2013). This also provided a basic comparison of PMBOK (2013), PRINCE2 (2009) and ICB Version 3 as well as Agile, Lean Six Sigma and others. Again, it was concerned with comparing these documents rather than with questioning their content. The other was by Xue, Baron, Esteban, and Zheng (2015). This provided a basic comparison of ISO 21500 with PMBOK and ISO/IEC TR 29110 (on Software engineering – Lifecycle profiles for very small entities). Again, this comparison did not question the content of any of these documents.

The reviews mentioned so far came after a long period of consensus making in developing ISO21500 between 2007 and 2012 (Sadeanu et al., 2013). The impression we gained from these reviews was that they were more concerned with finding general alignment between various documents and with achieving consensus and so did not examine or question any fundamental assumption behind any particular document or definition.

Crawford et al. (2007) was the closest to our interest and was concerned with the "relationship between project management performance-based standards through an analysis of differences in language use between the standards of different nations". They noted "It is easy to assume that within a field such as project management, where profession-specific terminology is common, that different people attach the same meaning to a particular word. However, this is not necessarily the case". (Crawford et al., 2007, p. 6). They were concerned with "the threat of fragmentation of project management due to competition, not cooperation, in the development of standards and qualifications" (Crawford et al., 2007, p. 6). Their analysis sought to identify cultural factors across the full range of language usage, and so even though "The original intention of this study was to compare the various countries' project management standards directly" (Crawford et al., 2007, p. 10), a more broad-scale technique was found to be necessary and they used computational corpus linguistics techniques to conduct keyword analysis. However, our purpose is to analyze the definition of a single word and its associated terms and so direct comparison of documents is possible and appropriate for this task, using the documents' own declared definitions.

Program management was one of the 48 topics Crawford et al. (2007) identified but that paper does not discuss definitions of the term program. Analysis of its reference list indicated no references to other comparisons of practitioner documents.

We then examined the Wideman project management definitional website. It says, "this Glossary now lists more than thirty definitions of the word 'Project'. True, many of them are similar, but by no means identical" (Wideman, 2017). The three terms project, program and portfolio do not appear on the site index, but the definitions are actually included in the glossary itself. Apart from the project definitions, there are several definitions of program but only one definition of portfolio. No comparative analysis or reconciliation of definitions is attempted. We will therefore proceed independently and review against these definitions at the end. The website also states "We use US spelling - e.g. 'program' = 'programme' " (Wideman, 2017). We accept that proposition and use the term 'program' to mean the same as 'programme'.

On his site introduction page, Wideman (2017) notes similarly to Crawford et al. (2007):

It would be nice if everyone agreed and understood the same meaning for a given label. But language is a living lexicon leading to changes by general consensus over time and, in any case, authors are entitled to define terms in their own way to suit their particular purpose. Language serves us much better this way. Unfortunately, the inappropriate application of copyright can also lead authors into attempting to say the same thing but in different words (Wideman, 2017).

While this acknowledges the language problem, it also attempts to justify loose usage, excusing it for convenience of authors and ignoring confusion for their audiences. There may have been a pragmatic need to garner sufficient consensus to produce the ISO standard to avoid the fragmentation referred to by Crawford et al. (2007, p. 6), but we can now stand on the shoulders of that achievement and address any definitional issues that may have contributed to the difficulty of that task.

WHAT IS A PROGRAM:

Further searching located Rehacek (2014) who mentioned difficulty with the ISO 21500 definition of a project requiring unique processes but itself defining a standard set of 40 standard processes. Rehacek (2017) conducted a review of various project management standards and their differing project definitions but did not attempt to reconcile them.

An unrelated search of all EBSCO aggregator databases on 3/11/2017 for “management term” and ‘confusion’ in any field found one item by (Kang, 2015) concerning change management which, in discussing human performance technology (HPT), commented “People use the same terms and concepts and unconsciously think that other people’s understanding of the term or concept is the same as theirs... Actually, there is no universally accepted definition of change management” (Kang, 2015, p. 26). He proposes “new terms- macro change management and micro change management - for the two uses of the term change management” (Kang, 2015, p. 26). This adds a qualifier to gain precision in the same way as the categorisation of stakeholders as “invested, contributor, observer and end-user” in McGrath and Whitty (2017, p. 741). Having established as far as can reasonably be determined that there has been no previous work aimed at reconciling program terminology differences, we then proceed to generate our research question.

3. RESEARCH QUESTIONS (RQs)

The following research questions (RQs) were therefore developed based on the review of the literature, broadly addressing whether the problem of defining a program actually exists and if so, what can be done about it:

RQ1: “Does confusion exist within or between project management practitioner reference documents about the meaning of the term program and associated terms (project and portfolio)?”

RQ2: “Do all of the documents require that a program must involve transformational organizational change?”

RQ3: “If confusion is found, can generic definitions be developed giving clear boundaries between project, program and portfolio levels?”

4. RESEARCH DESIGN

These research questions all call for a qualitative approach and for critical evaluation of definitions. The practitioner reference documents will be selected and the evaluation method determined. To ensure boundary conditions are accommodated, the definitions of associated potentially overlapping terms, namely portfolio and program will also be examined.

4.1. Practitioner reference document selection

Wideman (2017) lists 46 sources from various books, standards, organizations, associations, consultants, articles and private sources from all over the world. The most recent of them with a date given is PRINCE2 of 2002. We are seeking definitions in current versions of reference documents influencing practitioners now. We therefore decided not to use Wideman (2017) but, as mentioned already, cross-check against it at the end. Given we framed our research questions deductively, we only needed to examine to the point of finding contention. We therefore considered only the major sources that have influenced a wide range of international practice and selected sources from England and the United States to cover the main English language influences. This also accommodates our location in Australia which is subject to influence by both without being constrained to follow one in favour of the other, but where any inconsistencies between them are potentially problematic. We also selected documents used in engineering infrastructure as well those used in ICT and considered only documents dealing with “whole of project”, thus excluding any dealing only with a particular knowledge area such as risk or environment.

Consequently, a total of eight documents were selected as follows for the reasons given below:

- three documents giving an American project management perspective, some of which are commonly used in engineering infrastructure:
 - the PMBOK (Project Management Body of Knowledge) Guide (Project Management Institute, 2017),
 - the Standard for Program Management (Project Management Institute, 2013c) and
 - the Standard for Portfolio Management (Project Management Institute, 2013b)
- four documents giving a British project management perspective, some of which are commonly used in ICT:
 - PRINCE2 (AXELOS, 2017),
 - MSP (Managing Successful Programmes) (Office of Government Commerce (OGC), 2011),
 - APM BOK (Association of Project Management Body of Knowledge) (Association for Project Management, 2012) and
 - BS6079 covering British project management terminology (British Standards International, 2002)
- ISO 21500:2012 = AS ISO 21500:2016 (Australian Standards, 2016) to give international perspective.

4.2. Methods of analysis and evaluation

Definitions for the terms portfolio and project as well as program will be analyzed, to ensure the boundaries between ‘program’ and the hierarchical levels on either side of it are clear.

A set of reference definitions will first be developed for use as a comparator using an independent method developed by McGrath and Whitty (2015). Their method is particularly suited to cross-field investigations such as we are conducting here and will serve to inoculate against the mistake of introspectively developing an apparently generic definition of a term that is actually field-specific. The practitioner reference documents will then be analyzed by examining and comparing their definitions, as McGrath and Whitty (2013, 2015) did in examining the academic literature on governance related terms. To facilitate direct comparison of all documents examined, the analysis of each of the three terms will be presented in a separate table listing the documents and the definitions they contain. Each document’s definition

will be evaluated according to assessment criteria based on McGrath and Whitty (2015) who “seek to define objective content or Aristotelian essence... stripping it of any limiting field, concept or framework-specific extensions” (McGrath & Whitty, 2015, p. 760). They also paid close attention to any inclusions or extensions of meaning. These two factors, essence (or intention) and inclusions (or extensions), will be used as the assessment criteria and columns for these will be included in the Tables. Each table will then be analyzed. If confusion is found, the merits of competing definitions will be evaluated, issues determined and a definition accommodating them all will be proposed.

The answers to the RQs will then be determined. A deductive rather than an inductive approach is appropriate for evaluating RQ1 and RQ2 as this requires only one opposite view to confirm RQ1 or to negate RQ2. The response to RQ3 will be assisted by the reference definitions, and prospective definitions will be developed and assessed in relation to any potential difficulties that the analysis to date may have found.

5. DEVELOPMENT OF REFERENCE DEFINITIONS

The actual method used here is an abbreviated form of the full McGrath and Whitty (2015) process, adopted because the terms considered here have not been regarded as ‘essentially contested’ in the terminology of Gallie (1956). The process starts with a definition from a single recognized lexical source, the Oxford Dictionary, then criticizes it from any conceivable angle, covering all the headings of their full method, until its essence is fully distilled, and no contradictions remain.

We seek to develop reference definitions for the terms program, portfolio and project. We also note that the potential for overlap with the word schedule and will therefore develop a reference definition for it as well. As these are not terms that cause difficulty in colloquial use, the Oxford Dictionary definitions of these words will be accepted and analyzed to determine generic definitions in terms of their essential characteristics. The Oxford Dictionary defines these nouns as follows:

WHAT IS A PROGRAM:

Project -

An individual or collaborative enterprise that is carefully planned to achieve a particular aim. The essential elements of this definition can be expressed as an enterprise planned to achieve an aim. However, omission of the qualifiers has the sense of its essence being corporate rather than generic and so we will use endeavour instead. We therefore take the essential definition to be an endeavour planned to achieve an aim. This is not satisfactory as it could include going on a picnic for the aim of enjoyment, which would not normally be referred to as a project. The draft definition contains no reference to producing an output or outcome, so we will substitute the word outcome for aim. The definition then becomes an endeavour planned to produce an output or achieve an outcome. However, this is clumsy and could still include a picnic, so there is some aspect of creation missing. We will therefore replace planned and achieved with create. The definition then becomes an endeavour to create an output or outcome. This is still clumsy and would be better reduced to an endeavour to create something. 'Something' is generic and does not have to be restricted to a physical thing. This is a suitably succinct essential definition that does not require delving into the extensions of outputs and outcomes. Also, creation implies it is unique or has not existed before and so use of 'unique' would be redundant.

Schedule -

1. A plan for carrying out a process or procedure, giving lists of intended events and times

- 1) One's day to day plans or timetable
- 2) A timetable

2. An appendix to a formal document or statute, especially as a list, table, or inventory.

3. Any of the forms issued for completion and relating to the various classes into which taxable income is divided. The essential elements of these definitions can be expressed as a list of things, which may be items or planned activities. Note: There is no requirement for any relationship between listed items or activities or any overall purpose, even though those things may be present. A personal to-do list of completely unrelated activities can be described as a schedule, whereas one would not normally refer to it as one's programme for the day, unless one had annotated it with times.

Programme -

1. A planned series of future events or performances

- 1) A set of related measures or activities with a particular long-term aim.
2. A sheet or booklet giving details of items or performers at an event or performance.
3. An item broadcast between stated times on radio or television.
4. A series of coded software instructions to control the operation of a computer.

The essential elements of these definitions can be expressed as a planned series of related things. This implies there is some internally cohesive purpose. The word planned implies the future, making use of that word redundant. Note: There is no transformational requirement listed here, just something that deals in some way with the future. It is not generally used in a personal sense; reference to one's own personal itinerary or schedule for the day is more usual.

Program -

The US spelling of programme (also widely used in computing contexts). This implies, as Wideman (2017) does, that program means in the US exactly what programme means in England.

Portfolio -

1. A large thin flat case for loose sheets of paper such as drawings or maps

- 1) A set of pieces of creative work intended to demonstrate a person's ability to a potential employer
- 2) A varied set of photographs of a model or actor intended to be shown to a potential employer
2. A range of investments held by a person or organization
- 1) A range of products or services offered by an organization
3. The position and duties of a Minister or Secretary of State.

The duties of a Minister can be described as a particular type of portfolio, namely parliamentary or political, with the descriptors or qualifying words usually omitted. The term implies being a portmanteau, in other words containing disparate things that may not be related to each other but enabling a collection of things to be handled as one. The essential feature these definitions have in common is the establishment of a collection of things, a varied set or range of items or duties or work or activities, unifying disparate items for the purpose of making a manageable collection. So, the essence of these definitions can be expressed as a diverse collection of things - items or activities serving some external purpose without requiring internal cohesion. A collection doesn't have to be diverse, but the term portfolio has a sense of having a broad range.

So, the derived essential definitions derived from the Oxford dictionary are:

- **Project** = an endeavour to create something.
- **Schedule** = a list of things - items or planned activities.
- **Program(me)** = a planned series of related things.
- **Portfolio** = a diverse collection of things.

Some particular undertakings may satisfy all of these definitions and others may satisfy only one. So, while these definitions do not overlap, their application to a particular undertaking may well do so. This is an important distinction to bear in mind - just because common usage of any term may be divergent or appear confused does not mean that essential definition of the singular term is confused. The essential or most generic difference between program and portfolio, in both project management and general terms, is their purpose, with the former having a focus on some form of internal cohesion (which does not exclude having the effect of being useful for external purpose or presentation) and the latter collecting things that might have little or no internal cohesion but have some wider or external purpose. This essence of the term portfolio covers administrative convenience, presenting a collection of one's photographs, describing a group of shares in diverse and unrelated companies or collecting a range of activities together for allocation to a government minister or for the purposes of ensuring responsibility for everything conceivable is allocated. We will now proceed to examine the practitioner documents selected.

OXFORD DICTIONARY
DEFINITIONS

WHAT IS A PROGRAM:

6. EXAMINATION AND ANALYSIS OF PRACTITIONER DOCUMENTS

These are presented first for the term program followed by the two terms having a boundary with it, namely portfolio and project. For each of these, a table is presented showing the examination in a form that allows ready comparison of the definitions in the various documents, followed by an analysis of the results in comparison with each other and with the reference definition, enabling a resolution of discrepancies identified to be proposed.

While it may be usual for an organizational structure to exist to deliver a program, regarding that structure as being what the program is would seem to be a very self-absorbed, introspective organizational view. The structure, which may dominate the thinking of those immersed in it, is just a means to an end, whereas the program is about what is to be achieved. That structure may be the focus of delivery efforts, but it is not the actual purpose of the program.

Table 1: Definitions of program(me) in practitioner reference documents

Document	Relevant Definitions	Essence/ Intension	Inclusions/ Extensions
Project Management Institute (PMI) PMBOK (2017)	Program: Related projects, subsidiary programs, and program activities that are managed in a coordinated manner to obtain benefits not available from managing them individually (In Definitions).	Related things	Projects, subsidiary programs, program activities, coordinated, benefits
PMI Standard for Program Management (2013)	Program: A group of related projects, subprograms, and program activities that are managed in a coordinated way to obtain benefits not available from managing them individually. Program Management. The application of knowledge, skills, tools, and techniques to a program to meet the program requirements and to obtain benefits and control not available by managing projects individually (in Glossary Definitions).	Group of related things	Projects, subprograms, program activities, coordinated, benefits
PMI Standard for Portfolio Management (2013)	"	"	"
PRINCE2 (2017)	Programme: A temporary, flexible organization structure created to coordinate, direct and oversee the implementation of a set of related projects and activities in order to deliver outcomes and benefits related to the organization's strategic objectives. A programme is likely to have a life that spans several years (P380).	Organisation structure	Temporary, flexible, related, projects, activities, outcomes, benefits, strategic objectives
MSP (2011)	Programme: A temporary flexible organization structure created to coordinate, direct and oversee the implementation of a set of related projects and activities in order to deliver outcomes and benefits related to an organization's strategic objectives. A programme is likely to have a life that spans several years. Programme Management: The coordinated organization, direction and implementation of a dossier of projects and transformation activities (i.e. the programme) to achieve outcomes and realize benefits of strategic importance (In Glossary).	"	" Transformation
APM BOK (2012)	Programme: A group of related projects and change management activities that together achieve beneficial change for an organisation (P241). Programme management: The coordinated management of projects and change management activities to achieve beneficial change (P241).	Group of related things	Projects, change management activities
BS6079 (2000)	Programme: A group of related projects. NOTE: A group of unrelated projects is sometimes known as a portfolio (P10).	Group of related projects	Projects
AS ISO 21500:2016 = ISO 21500:2012	Section 2 on terms and definitions does not define either of the terms program or programme. However, Section 3.5.3.3 says "A programme is generally a group of related projects and other activities aligned with strategic goals. Programme management consists of centralized and coordinated activities to achieve the goals".	Group of related things	Projects, other activities, strategic goals

6.1. Program definition

The examination of program definitions in the various practitioner documents appears in **Table 1**. Note that the essential features of each definition are shown shaded in grey in this and following tables to facilitate comparison. The 2013 AIPM documents give the same definition of a program as a group of related things, as do the APM and the British and ISO standards. The 2017 PMBOK seems to retain the same intent but omits 'a group of' and changes subprogram to subsidiary program. However, the two OGC/ AXELOS definitions define it as an organization structure. This indicates confusion in definition, requiring detailed analysis to determine issues and to enable development of suitable terminology.

The organizational structure is a 'how' rather than a 'what'. Furthermore, existence of an organizational structure is not generic to all programs, as anyone who has single-handedly managed a program would attest. Consequently, defining it as an organization structure is not generic and is logically incorrect.

Of course, there is value in analyzing projects and programs from an organizational perspective, which is "one of nine schools of thought in project management research... which was triggered by applying organization theory to research on projects (Lundin & Söderholm, 1995)" (Muller & Shao, 2013, p. 149). But here we are simply attempting to define 'what' a program and a project is from the practitioner reference documents so that we can understand what it is they are actually talking about.

There is a further logical difficulty if this definition of program as an organizational structure; any word must describe the essence of whatever thing or group it labels, otherwise there would have been no need for a separate word. While a single word may have different usages stemming from silent or assumed qualifiers, no single word stripped of qualifiers can have more than one essence, so only one of them can be valid. Furthermore, definition of a conceptual term already in use cannot be determined arbitrarily, let alone by a vote of a small sample or the view of one field, ICT in this case. As John Stewart Mill said:

It would, however, be a complete misunderstanding ... to think that because a name has not at present an ascertained connotation, it is competent to anyone to give it such a connotation at his own choice. The meaning of a term actually in use is not an arbitrary quantity to be fixed, but an unknown quantity to be sought. ... To fix the connotation of a concrete name, or the denotation of the corresponding abstract, is to define the name. When this can be done without rendering any received assertions inadmissible, the name can be defined in accordance with its received use (Mill, 1874, pp. 469,470).

The OGC/ AXELOS definition clearly fails this test. Comparison with our reference definition derived from the Oxford dictionary as a planned series of related things, indicates that all but the OGC/ AXELOS definitions align with it, having the same essence, albeit using the term group rather than series and with some variation in 'things' included. Defining a program(me) as an organization structure does not make sense in relation to the essence of the original term and can therefore be rejected. This has potentially serious implications for the project management field. If the OGC/ AXELOS definition is integral to MSP, this difference in definition could obviously result in it being applied to inappropriate circumstances. Furthermore, this usage attempts to take a term in a direction that does not have the sense of conforming with its original essence. This would seem to require both correction of definition as well as re-working of the MSP document, to ensure the change is reflected throughout and not just made cosmetically to the definition. The 2017 PMI definition omits the key part of the essence of the concept. It defines something as 'something else's' - all these other related things, rather than being a group of them. This is not a proper definition and can also be rejected. The remaining definitions use the term 'a group of related projects', which is consistent with the term 'series' and so cannot be rejected. Having dealt with essence, we can then consider the inclusions. All non-OGC/ AXELOS definitions include projects. BS6079 stops there, with no other inclusions, other than adding a note drawing the distinction with portfolio in which it states the projects do not have to be related. The other definitions include other things that will be considered after we first deal with the question of whether stating the purpose to be achieved should be part of the definition or not. PMI mentions benefits that can't be achieved by managing things individually. While it is true that projects can be collected by similarity of work type, usage of common resources, or by geographic area, this is not a generic requirement.

WHAT IS A PROGRAM:

A new program may be developed politically, and government bureaucracy required to deliver it, whether there are community benefits to be achieved by collecting them together or not, and so this addition cannot be accepted. APM BOK says it is to achieve beneficial change for an organization. This also cannot be accepted as it is not generic, limiting the definition to organizational development/ ICT projects. ISO says the inclusions must align with strategic goals. OGC/ AXELOS say it is to deliver outcomes and benefits related to the organization's strategic objectives. Some programs don't contribute to strategic goals but just have to be delivered – such as some programs introduced for political reasons, or to fulfil community service obligations, which may actually conflict with overall organizational direction. Aligning with strategy is obviously highly desirable but it is not an essential feature of a program(me). In all these documents, consideration of genericity leads to exclusion of all their statements of purposes to be achieved. This is unsurprising as specifying any single purpose risks excluding other legitimate purposes. Furthermore, they each provide a 'why' rather than the 'what' that we are seeking in a definition. We will now consider the remaining extensions. Not all programs are about transforming an organization and so this OGC/ AXELOS extension is not generic and so cannot be accepted. The only extensions remaining are sub-programs and 'program activities'. While these cannot be excluded and are not excluded by the reference definition, whether it is necessary or useful to include them is another matter. They are not necessary from the perspective of specifying essence. Including sub-programs is useful in avoiding contest for labelling exclusivity, allowing categories or 'degrees' of labelling for programs from a management perspective. However, including this in the definition would make it recursive and must therefore be rejected.

The usefulness of the 'sub' classification can be accommodated by providing guidance on achieving non-overlapping use when attaching the term as a label. Using the term 'program activities' would also produce recursion and cannot be accepted. Using the term 'related activities' would avoid this problem but would seem tautological - defining the 'whatever it is' then adding 'anything related to it'. We therefore reject this extension as well. Note that if we wish to convert our understanding of what we attach a label to into a proper definition, we need to add some form of qualifier. We have chosen the qualifier 'organizational' to minimize any potential confusion between project and general management. We therefore define the phrase 'organizational program' as a group of related projects. We have chosen the word 'group' rather than 'planned series' as the qualified term does not have to include items such as a theatre concert program and so a subset of that term can be selected, in the same way that 'project' can be regarded as a sub-set of 'things'. This enables the general tenor of the non-OGC/ AXELOS definitions to remain, albeit with many somewhat shortened. It does require the 2017 PMI definition and the OGC/ AXELOS definitions to be revised. Within the general management and project management fields, this 'organizational program' could be abbreviated to the single word 'program' provided glossaries of terms make this clear.

6.2. Portfolio definition

The examination of portfolio definitions in the various practitioner documents appears in **Table 2**. The PMI definition of portfolio specifies all the extensions of meaning or things that could be included and says it can be managed as a group. For the purposes of identifying essence, we will take their definition as actually intending to mean that it is a group of somethings, which is what the APM definition says. The ISO definition is similar, using the word collection as well as group. However, the OGC/ AXELOS definition departs substantially from this theme, defining it as an investment. This indicates confusion in definition, requiring detailed analysis to determine issues and to enable development of suitable terminology.

Document	Relevant Definitions	Essence/ Intension	Inclusions/ Extensions
PMI PMBOK (2017)	Portfolio: Projects, programs, subsidiary portfolios, and operations managed as a group to achieve strategic objectives. Portfolio Management. The centralized management of one or more portfolios to achieve strategic objectives (Definitions).	Group	Projects, programs, subsidiary portfolios, operations, strategic objectives
PMI Standard for Program Management (2013)	Portfolio: Projects, programs, subportfolios, and operations managed as a group to achieve strategic objectives. Portfolio Management. The centralized management of one or more portfolios to achieve strategic objectives (Glossary Definitions).	"	Projects, programs, subportfolios, operations, strategic objectives
PMI Standard for Portfolio Management (2013)	"	"	"
PRINCE2 (2017)	Portfolio: The totality of an organization's investment (or segment thereof) in the changes required to achieve its strategic objectives (P378).	Investment	Strategic objectives
MSP (2011)	Portfolio: The totality of an organization's investment (or segment thereof) in the changes required to achieve its strategic objectives (Glossary).	"	"
APM BOK (2012)	Portfolio: A grouping of an organisation's projects and programmes. Portfolios can be managed at an organisational or functional level (P240). Portfolio management: The selection, prioritisation and control of an organisation's projects and programmes in line with its strategic objectives and capacity to deliver (P240).	Group	Projects, programmes
BS6079 (2000)	No definition given		
AS ISO 21500:2016 = ISO 21500:2012	Section 2 on terms and definitions does not define the term portfolio. However, Section 3.5.3.2 says "A project portfolio is generally a collection of projects and programmes and other work that are grouped together to facilitate the effective management of that work to meet strategic goals. Project portfolio management is generally the centralized management of one or more project portfolios, which includes identifying, prioritizing, authorizing, directing and controlling projects, programmes and other work to achieve specific strategic goals. It may be appropriate to conduct the opportunity identification and selection, as well as the approval and management of projects, through a project portfolio management system" (3.5.3.2).	Collection/ Group	Projects, programmes, other work, strategic goals

Table 2: Definitions of portfolio in practitioner reference documents

While most portfolios require funding, and securing this is a very big deal, regarding the investment required as being what the portfolio actually is constitutes a misdirection that appears to be somewhat self-absorbed, introspective and accounting based. The investment, which may dominate the thinking of those immersed in it, is nevertheless just a means to an end. It is a 'how' rather than a 'what'. Furthermore, existence of an investment is not necessarily generic to all portfolios, as anyone who has managed a portfolio of activities for a small volunteer organization would attest. So, defining a portfolio as a financial investment is not generic and can be logically incorrect. Also, as mentioned earlier, no single word stripped of qualifiers can have more than one essence, so only one of the two used in **Table 2** can be valid. Furthermore, as mentioned earlier, the definition of a conceptual term already in use cannot be determined arbitrarily, let alone by a vote of a small sample, or the view of one field, ICT in this case. The OGC/ AXELOS definition clearly fails the John Stewart Mill test mentioned above.

WHAT IS A PROGRAM:

Comparison with our reference definition derived from the Oxford dictionary as a diverse collection of things also indicates a problem with the OGC/ AXELOS definition. Defining a portfolio as an investment does not make sense in relation to the essence of the original term and must therefore be rejected.

Having dealt with essence, we can then consider the inclusions.

All non-OGC/ AXELOS definitions include projects and programs. These and other inclusions will be considered after we first deal with the question of whether stating the purpose to be achieved should be part of the definition or not.

PMI says its purpose is to achieve strategic objectives, as do OGC/ AXELOS. ISO says it is to meet strategic goals. APM does not include this in its definition and it does mention alignment with strategic objectives in its separate definition of portfolio management. Achieving strategic objectives is not a generic requirement as for example, a new portfolio may be developed for political reasons and the government bureaucracy required to deliver it whether it actually aligns with any strategic objectives or not. It may just meet a short-term political imperative. Of course, one could argue that there will be a political strategy behind any such means of solving a short-term problem and so the use is valid as we are seeking genericity, not specifying whose strategy it is or whether it actually benefits the organization or community involved or not. However, this gets to some degree of unproductive hair-splitting, opening the possibility of inclusions having unintended consequences. All this can be avoided if particular purposes are not unnecessarily included in definition. Specifying any particular purpose can lead to exclusion of other possible purposes and so we prefer to specify 'what' rather than 'why' in definition wherever possible. We will now consider the remaining extensions, which are sub-portfolios, operations and other work. While these cannot be excluded from our definition and are not excluded by the reference definition, we

need to consider whether it is necessary or useful to mention these. They are not necessary from the perspective of specifying essence. However, they may provide additional specification that is useful in addressing the issue of categories or 'degrees' of portfolios within the fields of general and project management. In fact, including them in the definition would assist with our aim of clearly differentiating boundaries between terms. This can be done provided we add an explicit qualifier to the base term. We therefore define the phrase 'organizational portfolio' as a collection of an organization's activities that may include ongoing organizational operations, programs of projects, individual projects not part of any program, and other works. Note that we do not include sub-portfolios as this creates recursion and the inclusion of 'other works' provides a catch-all that avoids the exclusion problem of definition by extension.

We have used the word collection as it aligns with the essential definition. It also gives the sense of the things in it not necessarily being related a little better than the word group does. We have ordered the extensions in order of importance from a general management perspective, considering the ongoing operations of the organization. We have referred to 'ongoing organizational operations' rather than just 'operations' for a particular reason. Within the project management field, 'operations' is colloquially taken to mean anything that's not a project, but the term is not defined in any of the three current PMI publications which use the term. It has the sense of producing products or services which are routine in the project management sense i.e. nothing new required as the process and the circumstances the process acts upon are already established, even though the operation of that process still requires many decisions that are the province of general management. So, the wording we have chosen reflects its general management importance rather than dismissing it with the single word 'operations' as anything that's not a project and therefore inconsequential.

The definition does not mention organizational improvement or change as this is a characteristic generic only to ICT projects. Some organizations exist to deliver projects, and this is their normal 'operations'. Such projects are not organizational improvement/ change projects; they

are community improvement/ change projects. In such organizations, the general and project management roles are combined. This highlights a need for a definition of operations. Rather than define it negatively by exclusion, in line with 'everything that's not a project' we propose a positive definition that expresses the essence of what it really is as the ongoing activity enabled by completion of a project. This ongoing activity can include production, such as occurs at a car manufacturing plant, where the production of many cars is the purpose of constructing the assembly line and the items produced are generally referred to as products rather than projects.

A further question within the project management field is that 'operations' and 'other works' could be considered to overlap, making inclusion of one of these terms unnecessary. However, our proposed definition is by extension, so it is preferable to include both to avoid the hair-splitting argument of whether operations cover every conceivable category of other works or not. Project support, for example, might not be categorized as ongoing organizational operations but would be included as 'other activities'.

This definition of a phrase makes it quite clear that a management portfolio is not the same as a share portfolio or a photographic portfolio, for example. It does not generate unnecessary and time-wasting contest for exclusive use of the term 'portfolio'; it simply specifies what the particular somethings are for the qualified use of the term.

Within the context of general management and project management publications, 'organizational portfolio' can be abbreviated for convenience to the single word 'portfolio' provided glossaries of terms make this clear.

6.3. Project definition

The examination of project definitions in the various practitioner documents appears in **Table 3**.

Table 3: Definitions of project in practitioner reference documents

Document	Relevant Definitions	Essence/ Intension	Inclusions/ Extensions
PMI PMBOK (2017)	Project: A temporary endeavour undertaken to create a unique product, service, or result. Project Management: The application of knowledge, skills, tools, and techniques to project activities to meet the project requirements (Glossary Definitions).	Endeavour	Temporary, unique, product, service, result
PMI Standard for Program Management (2013)	"	"	"
PMI Standard for Portfolio Management (2013)	"	"	"
PRINCE2 (2017)	Project: A temporary organization that is created for the purpose of delivering one or more business products according to an agreed business case (P380) Project Management: The planning, delegating, monitoring and control of all aspects of the project and the motivation of all those involved in it to achieve the project objectives within the expected performance targets for time, cost, quality, scope, benefits and risk.	Organisation	Business products, business case
MSP (2011)	Project: A temporary organization that is created for the purpose of delivering one or more business outputs according to a specified business case (Glossary).	"	"
APM BOK (2012)	Project: A unique, transient endeavour undertaken to achieve planned objectives (P241). Project Management: The application of processes, methods, knowledge, skills and experience to achieve the project objectives.	Endeavour	Unique, transient, planned objectives
BS6079 (2000)	Project: A unique process, consisting of a set of co-ordinated and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements, including constraints of time, cost and resources Project Management: Planning, monitoring and control of all aspects of a project and the motivation of all those involved in it to achieve the project objectives on time and to the specified cost, quality and performance. (P10).	Process	co-ordinated, controlled, activities, start date, finish date, achieve an objective, specific requirements, time, cost, resources
AS ISO 21500:2016 = ISO 21500:2012	Section 2 on terms and definitions does not define the term project. However, Section 3.2 says: "A project consists of a unique set of processes consisting of coordinated and controlled activities with start and end dates, performed to achieve project objectives. Achievement of the project objectives requires the provision of deliverables conforming to specific requirements. A project may be subject to multiple constraints... Although many projects may be similar, each project is unique... Every project has a definite start and end and is usually divided into phases...".	Set of processes	coordinated, controlled, activities, start date, end date, achieve project objectives

WHAT IS A PROGRAM:

PMI defines a project as a temporary endeavour, APM varies this to a unique, transient endeavour, and the remainder depart from calling it an endeavour at all. The closest departure occurs in BS6079 which says it is a unique process, and ISO which says it's a unique set of processes. The furthest departure is again by OGC/ AXELOS, calling it a temporary organization. This indicates confusion in definition, requiring detailed analysis to determine issues and to enable development of suitable terminology. Of the three terms considered here, this one is the most confused.

Here again, the one word cannot have three different essences, so two of these usages are invalid. Endeavour, process and organization are not the same things. If a project is defined as a process, then the content that the process is being applied to is, by definition, not part of the project. This renders the process definitions invalid. Small projects may require some organization of things but do not necessarily have to have a formal organization and so the organization definition is also invalid. This leaves only the 'endeavour' definition standing. It also aligns with the reference definition.

Having dealt with essence, we next consider the inclusions. The word 'temporary' used in conjunction with 'create' is redundant. Once it's created, it's finished. However organizationally there is generally a need for maintenance of the asset created and there is a tendency for projects to transmute into ongoing maintenance organizations. At some point there must be a transition, which can be blurred during maintenance/ defects/ warranty periods. However, while use of the word temporary is unnecessary in the essential definition, its use in defining an 'organizational project' could be useful to highlight the fact that there has to be a transition. Including 'a unique product, service, or result' would simply specify what the 'something' in the essential definition is for one qualification of the term. This does not conflict with the essential definition and is also generic. However, it produces a definition that is not pithy and seeks to obtain genericity by

extension, tempting exclusion by omission. It also includes the term 'unique' which Rehacek (2014) indicated had difficulties, as mentioned in the literature review above. If there was another way of expressing the intention without requiring multiple extensions, that would be preferable. Such a definition could be framed as anything that changes what currently exists or sustained effort to change a situation. Such definitions capture the essence of an organizational project changing things, creating something that wasn't there before and being different to ongoing operations. The latter proposal is more direct and gives some indication of effort, differentiating it from say a child's project to create a drawing. We will therefore select this as our definition. It is compatible with the essential definition, introducing only a little more specificity while nevertheless remaining quite generic. It renders unnecessary use of the words temporary, unique, product, service, and result, while not precluding any of them. Of course, the same applies to the reference definition of the term, which could equally well be used unqualified - which is not the case for program and portfolio.

7. EVALUATION

The analysis above indicates that the answer to RQ1 is affirmative as confusion has been found to exist in the practitioner reference documents regarding the meaning of the term program. It is also evident that the answer to RQ2 is negative as not all documents require or even mention that a program must involve transformational organizational change. We will now consider RQ3.

While it may be quite clear from the essential definitions whether a particular activity can be described as a project, a program or a portfolio, the same activity may legitimately be described as more than one, and possibly all of these three terms. This provides fertile ground for confusion, especially if there is competition for exclusive use.

To address this, it was necessary to make the silent qualifier explicit for each base term by defining a phrase containing it. This appears to make the distinction quite clear - until one considers that overlap can still occur depending upon whether the terms are used as macro labels assigned to particular organizational units, or as micro labels that can be used to describe the various functions these units perform.

To overcome this problem, we will go one level deeper and define what it really means to manage at each of these levels. We will therefore define phrases comprising three words that result when the term management is added to each of these three phrases already defined. We will do this by further examination of the management definitions in the Tables above and by considering other parts of the examined documents. We will develop these definitions in a common format.

7.1. Consequent management definitions

We consider all definitions of management in Tables 1 to 3 as a group so that mutually consistent definitions can be developed. Any statements regarding purpose or why it is needed or what it should achieve or bring alignment with, are ignored as being irrelevant to what the activity actually is.

Some definitions are of the type 'management of and do not define what that management is. The remainder say it is "planning delegating, monitoring and control... and motivation" (PRINCE2 - Project management), the "application of" things (APM BOK and ISO 21500 - project management), "planning, monitoring and control... and motivation" (BS6079 - project management), "the application of knowledge, skills, tools and techniques" (PMI - project and program management), "coordinated organization, direction and implementation of... projects" (MSP - programme management), "selection, prioritization & control of an organizations programmes" (APM BOK - portfolio management) and "identifying, prioritizing, authorizing, directing and controlling projects, programs and other works... selection... approval..." (ISO 21500 - portfolio management). We can extract from this that what these documents collectively say is done in managing each of the three levels is as follows:

- Project - planning delegating, monitoring and control
- Program - coordinated organization, direction
- Portfolio - selecting/ identifying, prioritising, authorizing, directing and controlling

Note that we have excluded motivation as a project can be managed without this; it is really a leadership technique rather than something essential to project management itself, important though it may be in many circumstances. We have also excluded the term 'application' because of its vagueness, and management isn't really an 'app' that can be downloaded into someone's head, even though that may be a valid training analogy.

The items mentioned can all be described as decision making activities. This list is obviously incomplete and does not really accommodate the delegation of selected parts of these activities to lower levels. While we prefer definition by intension, in this case it produces vagueness, such as in the 'application' definitions and so we will define by extension and further specify the list as comprehensively as possible to minimize the risk of omission. In the absence of guidance from the documents examined and lack of previous attempts to resolve this conflicting terminology, we fill in the obvious gaps from our own experience and rely upon the peer review process and subsequent publication to test their veracity. We adopt a top down approach, so that each level is constrained by and consistent with the level above. We also attempt to ensure the intent extracted above from the documents examined is fully expressed in the extensions. Accordingly, we propose that the decision-making activities involved in managing each of these levels are as follows:

- Portfolio - decides objectives, strategy, funding, rules and selection criteria for activities including programs and projects.
- Program - decides whether prospective projects meet the rules and selection criteria, can be sequenced for prospective inclusion in the program and have an appropriate method of delivery (where this has not already been dictated above Portfolio level such as occurs with PPPs (Public Private Partnerships)).
- Project - decides delivery methods and may propose projects for inclusion in a program.

WHAT IS A PROGRAM:

All three levels are subject to any higher-level approvals that may be required and all three must ensure implementation occurs for anything to happen. We define implementation by selecting the key decision-making elements of the PMI process groups as set out in PMBOK Chapter 3 process groups (Project Management Institute, 2013a). We omit anything specific to any of the three levels, paraphrasing and adding any words necessary to achieve specificity and logical flow. This produces the following definition of implementation as initiating establishment if necessary (i.e. if not already existing), controlling through directing and setting timelines, giving approvals, monitoring, initiating corrective action where necessary, reviewing to determine future action and closing where necessary, all subject to any higher-level approvals that may be required. This definition enables use of exactly the same words to describe how each level implements what it decides. This supports the application of project management principles to all three levels and highlights the usefulness of considering content separate to process.

We consequently propose the following definitions which further develop the definitions coming out of the documents examined:

- Organizational portfolio management = the activity of deciding and implementing parameters including setting objectives, strategy, funding, rules and selection criteria.
- Organizational portfolio management of projects = the activity of deciding and implementing program and project parameters including objectives, strategy, funding, rules and selection criteria.
- Organizational program management = the activity of selecting and implementing projects including evaluating project inclusion and determining sequencing and delivery methods.
- Organizational project management = the activity of deciding and implementing work methods.

We were initially inclined to use the word process but decided upon the term activity as it includes both process and content. Note also that 'Organizational portfolio management' is defined as a complete whole, not just the processes involved that we may wish to focus on from a project management perspective.

These definitions clearly distinguish the boundaries between project, program and portfolio management, define the management of the various levels in terms of activities rather than an application and are consistent with project management techniques being applied to higher management levels independent of the subject matter (content). This is actually the principle on which project management relies for its existence as a separate field. Any activity can then be judged as to which level it falls within. Note that the above four definitions are based on classifying activity rather than organizational unit labels. A particular organizational unit may have one of the three organizational labels appropriate to the organizational hierarchy or level of activity it is established to deal with, but within that, may actually undertake activities at all three levels.

Considering the amount of specificity and sub-classification necessary to propose this solution, it is perhaps unsurprising that confusion has occurred. An unintended consequence of this process has been to challenge the definition of project management itself.

7.2. A program as a large project

The remaining question is whether these definitions resolve the program = a big project issue, as identified by Reiss (2007). To determine this, we must first recognize that this adds a labelling issue to an already confused definitional issue. The essential definitions of the concepts given above are clearly different from each other, and further confusion occurs when these concepts are attached as labels to particular endeavours or to organizational units. Objective logic does not necessarily govern such assignments - which can be influenced by habit, prejudice, internal or external politics, individual self-promotional reasons or even lack of awareness. We therefore separate determining the meaning of a concept from attaching it to something as a label. We have also kept our definitional process objective and transparent to avoid any such normative issues

that may be involved.

Labels attached to an undertaking do not necessarily accurately label every activity that is carried out within it. For example, a big project will involve some elements of program management, whether it is regarded as a program with projects or as a project with sub or component projects.

We therefore approach this issue from the fundamental perspective of project management. We consider that whoever is carrying out the creation and deciding or approving delivery work methods or outputs, is working at the project level. We do not consider we should be running away from labelling our field exactly where it is by chasing names with puffed up importance that may advantage us. This seems to us to be an evolutionary trait, seeking individual advantage that does not benefit the wider community. This approach does not support labelling large projects as programs. We also reason that whatever the organizational unit is called that plans for or decides if, when and how the whole undertaking will proceed, it is performing a 'higher' level activity. To clearly distinguish between the three when assigned as labels, we propose the following rule of thumb: That activities and organizational units be assigned the label that describes the management activity they predominantly carry out. This is a straightforward rule that is easy to apply and can minimize confusion between the definition of the concepts and their assignment as labels.

Labelling can pose a problem if there is a separate methodology to be used for projects and program(me)s and the undertaking has been mis-labelled. This can be compounded if the organizational unit has itself been mis-labelled. Drawing this distinction between a concept and its use as a label also highlights a further difficulty with PRINCE2 and MSP defining a project and a program as an organization. This inadvertently tempts users into the mis-labelling trap, inviting circular argument as well as inappropriate application and confusion. In separate but related empirical work yet to be published, the authors found one organisation using the terms 'sub-project' as meaning part of a larger project that can

independently produce a required outcome and 'component project' as part of a larger project that cannot independently produce a required outcome. These definitions are potentially useful in relation to the large project issue and so are reported here.

7.3. Summing up

Having been able to provide a resolution to all difficulties mentioned above, we therefore now consider RQ3 has been answered affirmatively; Yes, it is possible to develop definitions giving clear boundaries between project, program and portfolio.

8. REVIEW AGAINST WIDEMAN DEFINITIONS

The Wideman (2017) glossary definitions of the three terms were all examined and were found to contain varying essences and inclusions that include stating purpose. For reasons already canvassed above, none were found suitable to supplant the definitions derived here.

9. SUMMARY OF DERIVED DEFINITIONS

The terms derived from the documents examined and from the Oxford dictionary are as follows:

- Schedule = a list of things - such as items or planned activities.
- Project = an endeavour to create something.
- Program(me) = a planned series of related things.
- Portfolio = a diverse collection of things - such as items or activities.
- Sub-project = part of a larger project that can independently produce a required outcome.
- Component project = part of a larger project that cannot independently produce a required outcome.
- Organizational project = a sustained effort to change a situation.
- Organizational program = a group of related projects.
- Organizational portfolio = a collection of an organization's activities that may include ongoing organizational operations, program(me)s of projects, individual projects not part of any program(me), and other works.
- Operations = ongoing activity enabled by completion of a project.
- Implementation = initiating establishment if necessary (i.e. if not already existing), controlling through directing and setting timelines, giving approvals, monitoring, initiating corrective action where necessary, reviewing to determine

WHAT IS A PROGRAM:

future action and closing where necessary, all subject to any higher-level approvals that may be required.

- Organizational portfolio management = the activity of deciding and implementing parameters including objectives, strategy, funding, rules and selection criteria = business management.
- Organizational portfolio management of projects = the activity of deciding and implementing program and project parameters including objectives, strategy, funding, rules and selection criteria.
- Organizational program management = the activity of selecting and implementing projects including evaluating project inclusion and determining sequencing and delivery methods.
- Organizational project management = the activity of deciding and implementing work methods.

10. OBSERVATIONS

The current differences in program, portfolio and project definitions do not support a broader goal of agreeing common terminology so that we can all know what it is that we are actually talking about. Achieving this would require some adjustment in all of the documents examined.

It is also evident that unfounded assumptions regarding the genericity of some ICT circumstances/practices have been inappropriately carried forward into supposedly generic project management documents and standards. This has been facilitated by such definitions being hidden behind training delivery paywalls.

This investigation has also drawn attention to the difference between defining a conceptual term and attaching it as a label to something and has proposed a 'rule of thumb' for such attachment.

This paper challenges past views and practices on the terminology problem and provides a framework for resolving it transparently.

11. LIMITATIONS AND FUTURE RESEARCH

This paper does not deal with examination of practitioner views to see whether the confusion found here in the commonly used practitioner documents has translated into practice.

The potential removal of competitive advantage from those inadvertently or otherwise invested in concepts remaining confused may inhibit acceptance of the generic definitions developed here. The real challenge to any such interests, or to any researcher for that matter, is to find any error in the reasoning and/or propose a better solution that satisfies all the issues considered here.

These findings raise the question of what detrimental impact this confusion may have had upon practitioners and organizations implementing program management and this is a possible area for future research.

12. CONCLUSION

This paper has documented an examination of program and related terminology in eight commonly used practitioner reference documents. It found that confusion does exist about the meaning of the word program and whether it must be transformational. A set of mutually consistent definitions of program and associated terms was developed by ensuring that silent or assumed qualifiers were articulated. Adoption of these definitions would provide consistent terminology and would also require changes to all the documents examined.

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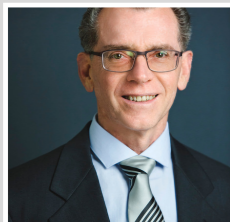
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