

APPENDICES

APPENDIX A- STRUCTURE OF THE TOGAF® V9.1 METHOD FOR EA IMPLEMENTATION

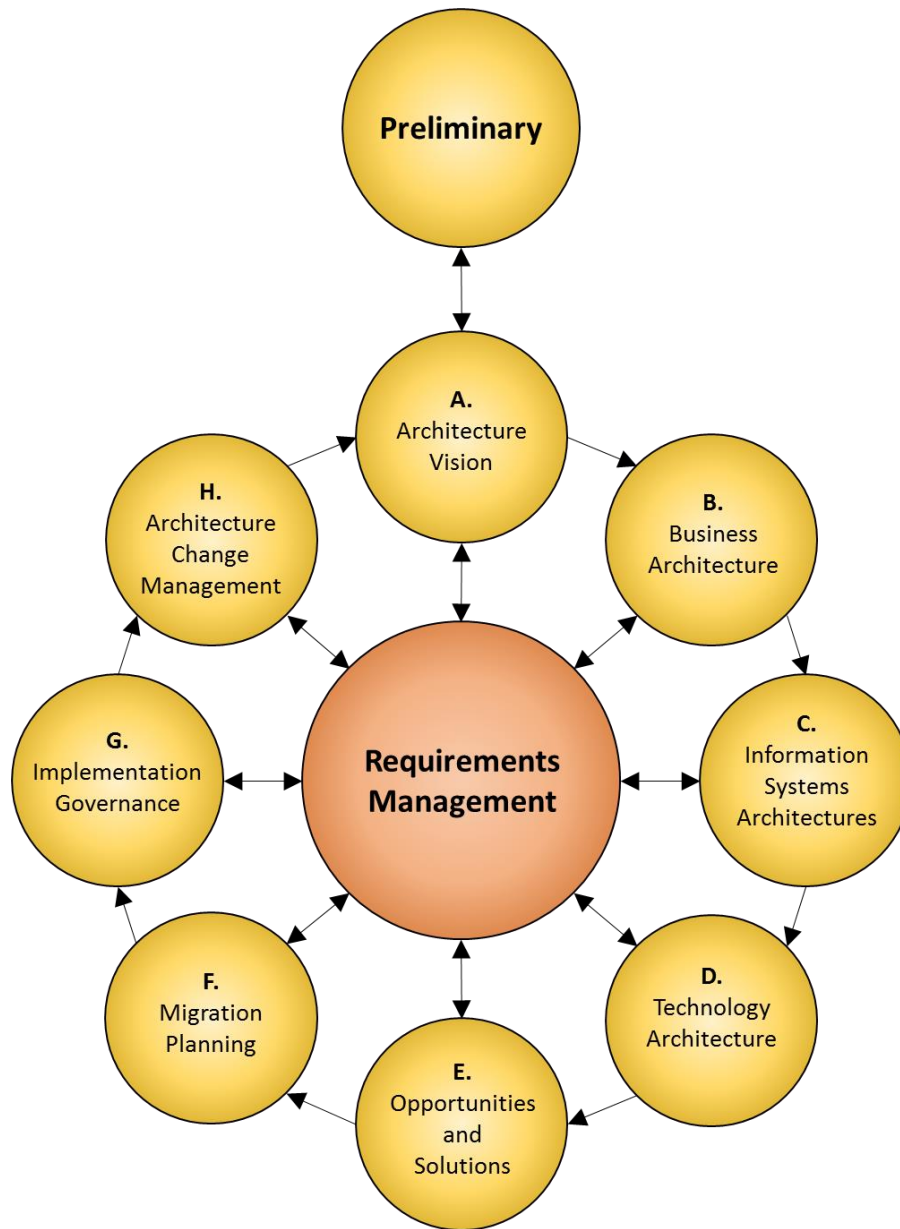


Figure A1 - Structure of the TOGAF® V9.1 Method for EA Implementation
Source: (The Open Group, 2011)

APPENDIX B - THE PREQUALIFICATION PROCESS FOR IT PROJECTS

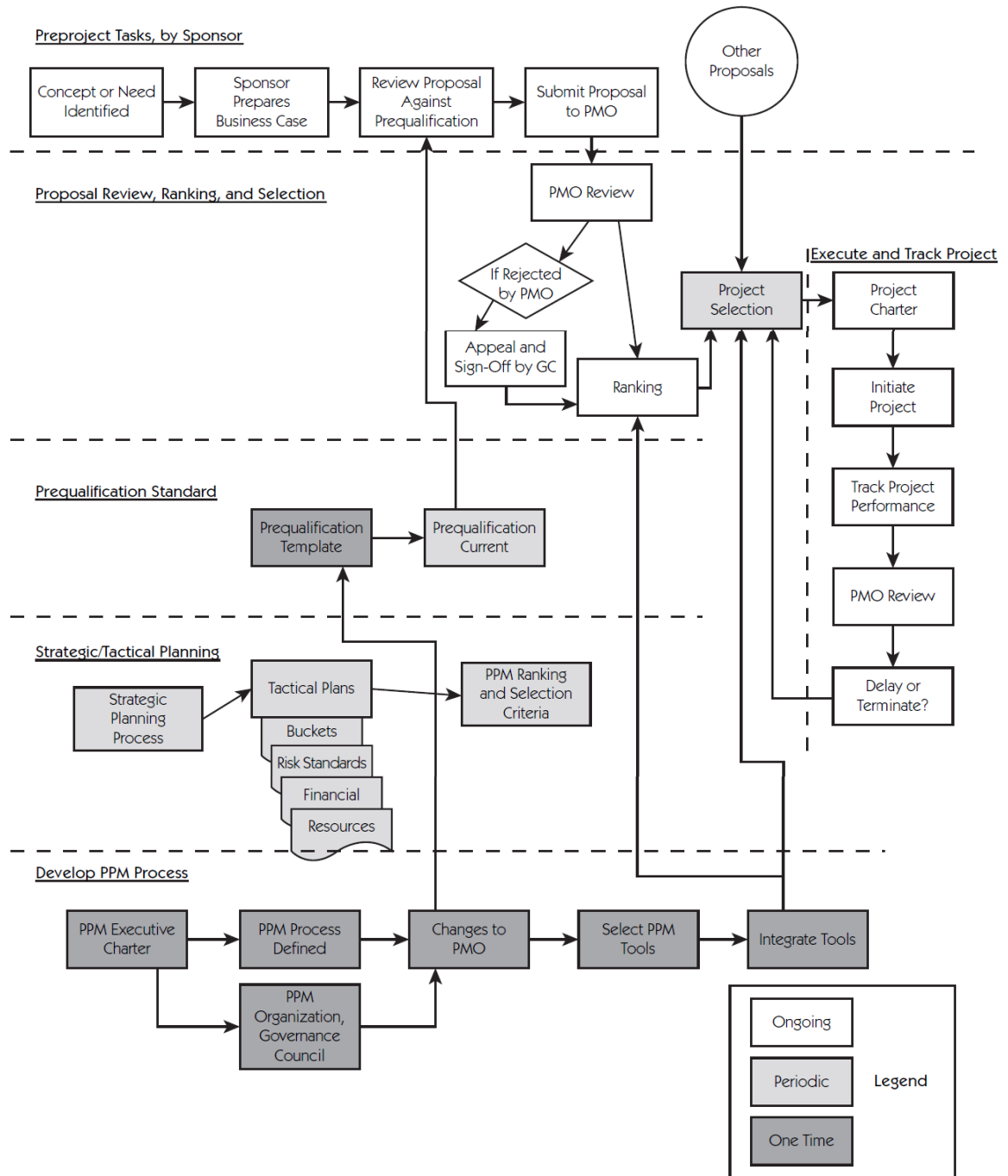


Figure B1 - The Prequalification Process
Source: (Levine, 2005)

APPENDIX C – IT PPM SWIM LANE

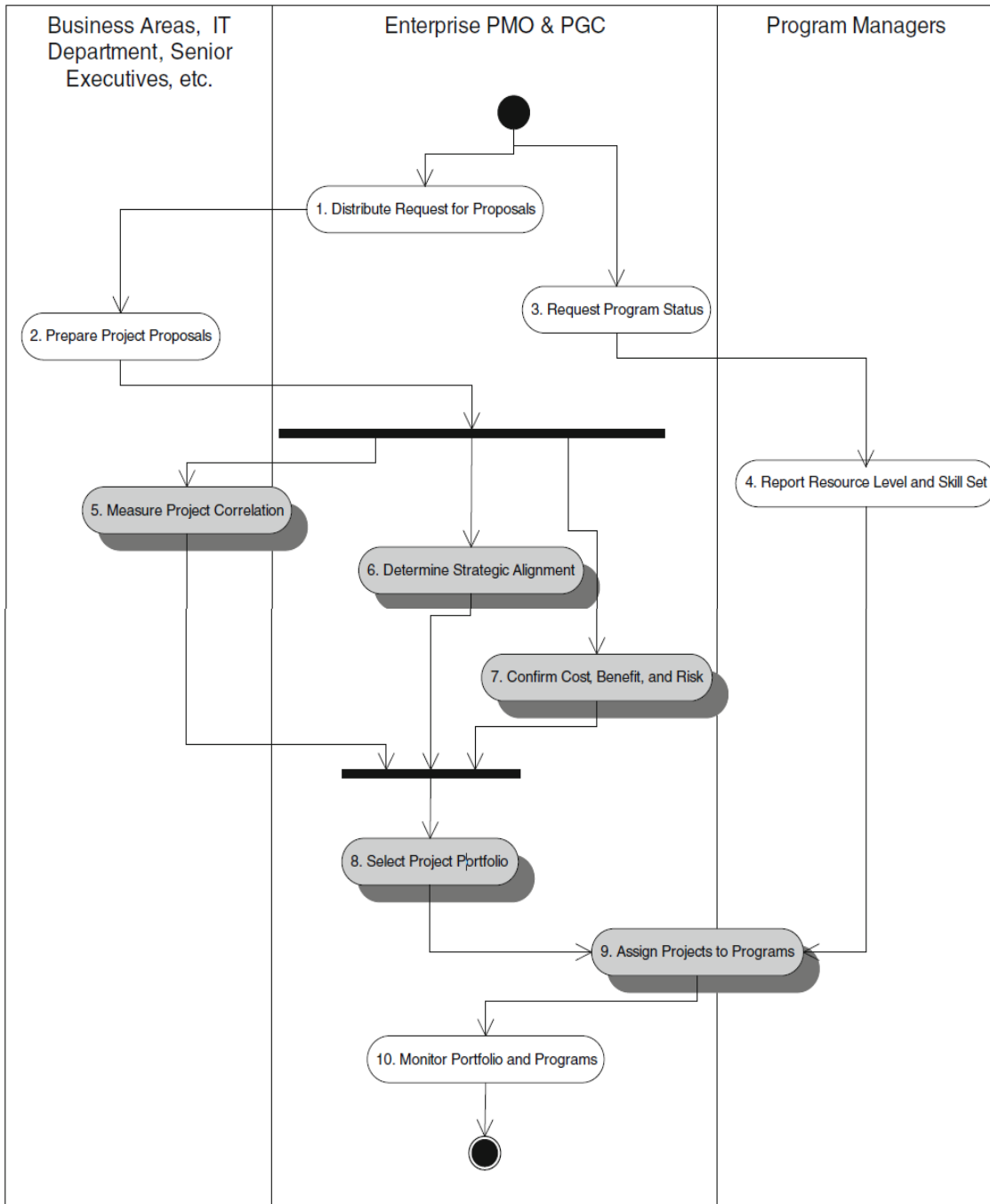


Figure C1 - IT PPM swim lane
 Source: (Chiang & Nuñez, 2013)

APPENDIX D - THE THEORY OF CONSTRAINTS (TOC) FIVE FOCUSING STEPS

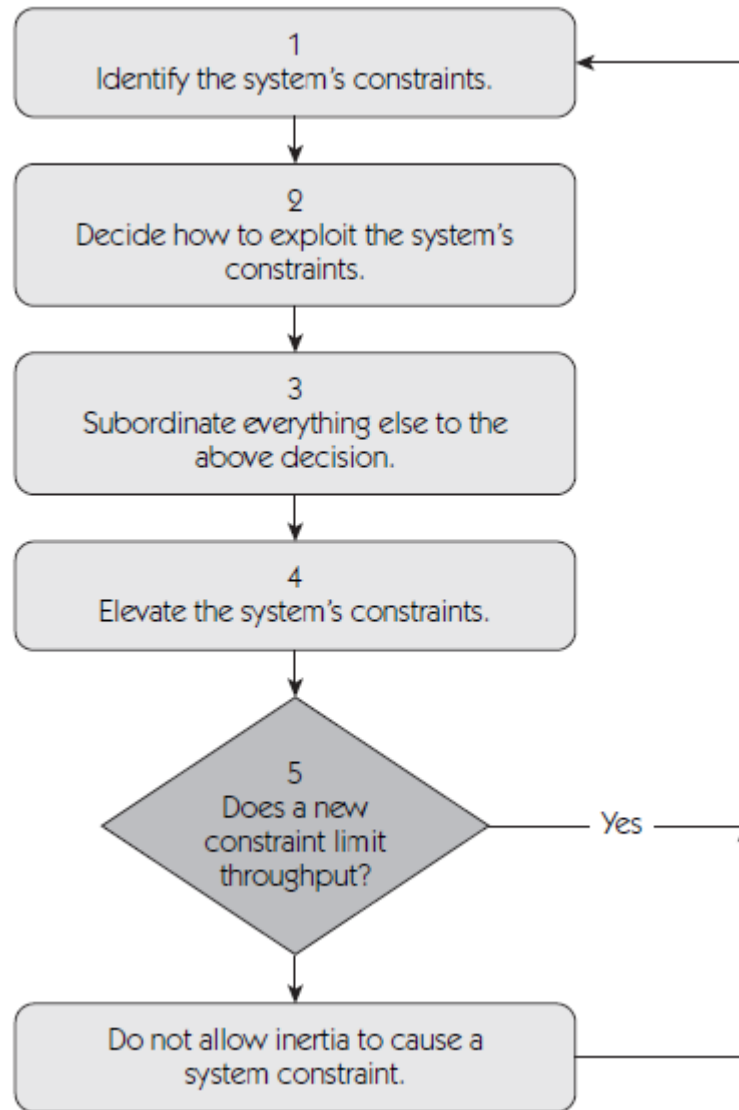


Figure D1 - The TOC Five Focusing Steps
Source: (Levine, 2005)

APPENDIX E – Multidimensional System: The Organizational Purposes Mind Map

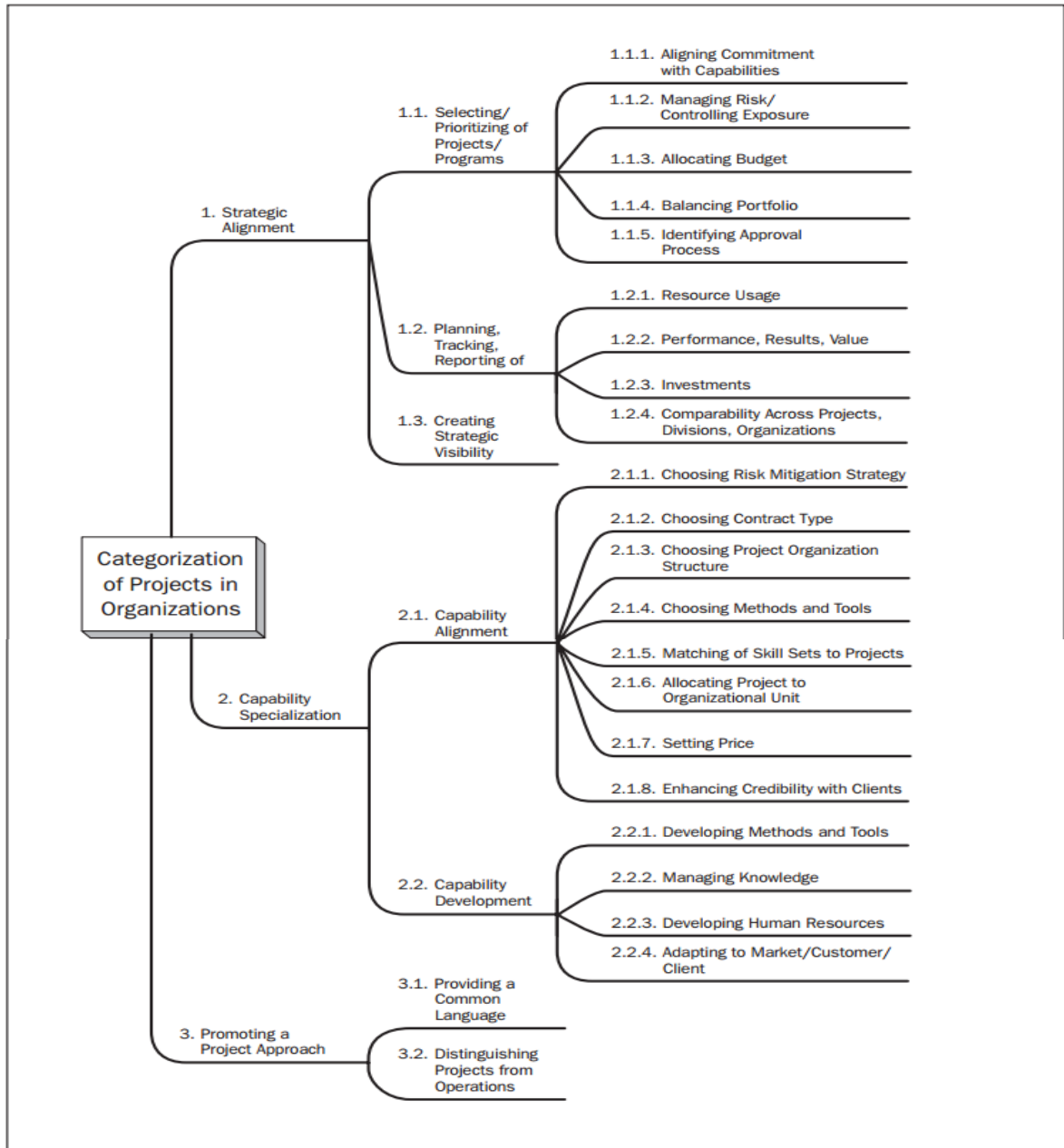


Figure E1- The Organizational Purposes Mind Map
 Source: (Crawford, et al., 2006)

APPENDIX F - Multidimensional System: The Map Of Attributes For Building Project Categorization Systems

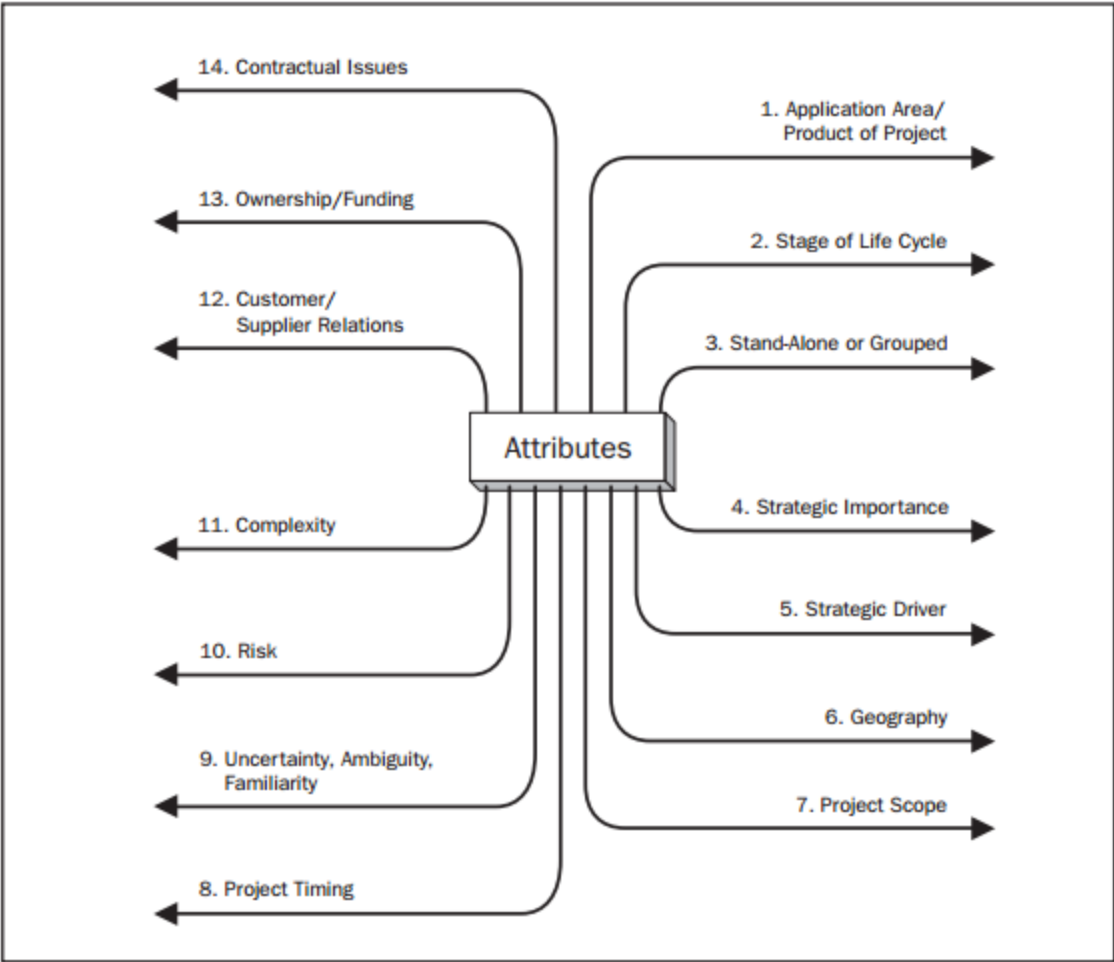


Figure F1 - The Map of Attributes For Building Project Categorization Systems
Source: (Crawford, et al., 2006)

APPENDIX G - Multidimensional System: Map Composite Categorization System

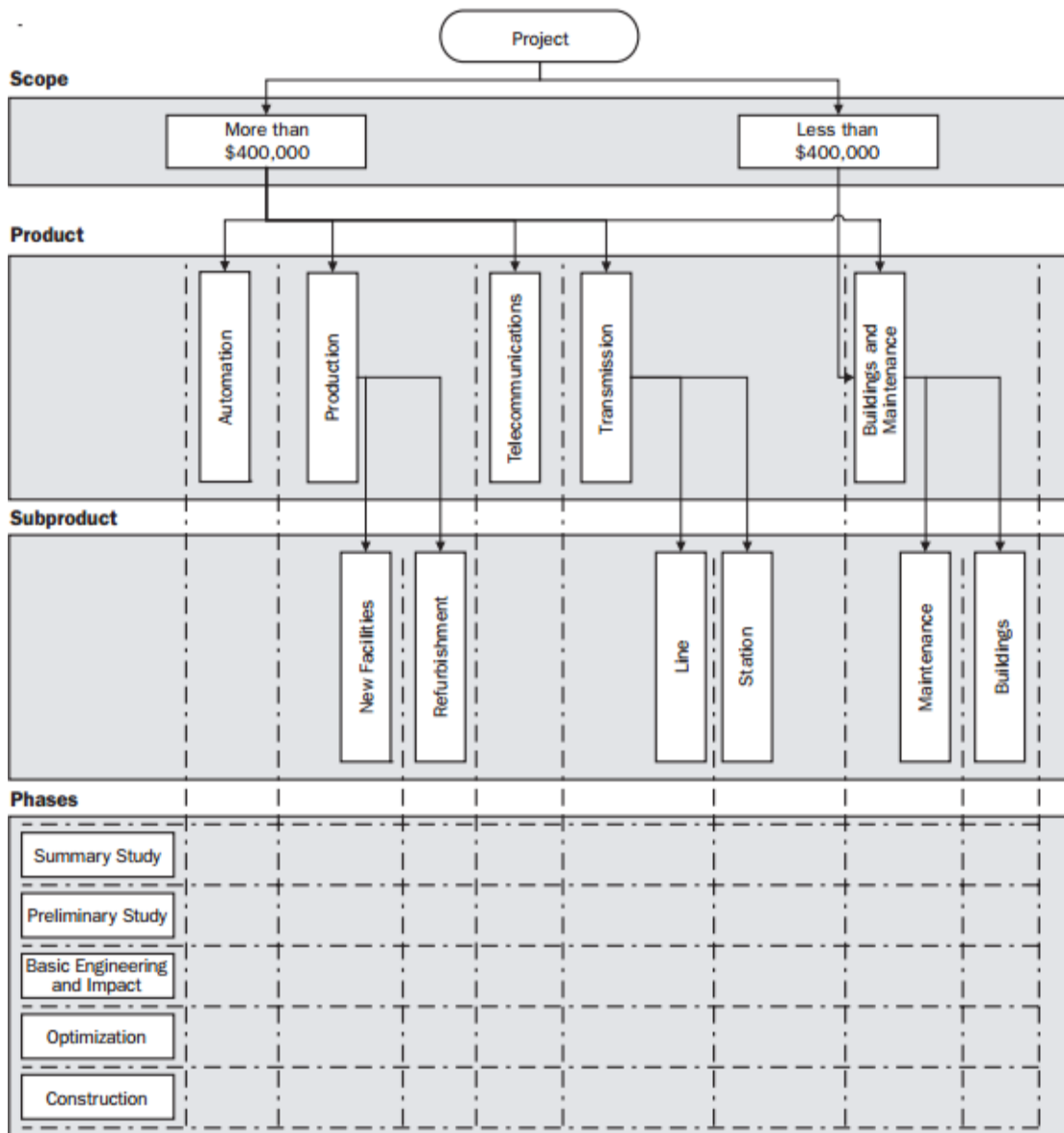


Figure G1 - Map Composite Categorization System

Source: (Crawford, et al., 2006)

APPENDIX H - Strategic Portfolio Classification

Table H1 – Classification of projects framework (Criteria Analysis)

	Operational	Strategic
External	✓ Product improvement	✓ New product development
	✓ Maintenance	✓ Utility and infrastructure
Internal	✓ Improvement	✓ Research
	✓ Problem solving	

Note: Retrieved from Shenhar & Dvir (2007).

- ✓ *Operational projects* deal with existing businesses. They involve improvements in products, line extension, and cash cow projects, to gain more revenue from existing businesses.
- ✓ *Strategic projects* relate to new business. These are prime efforts that are made to create or sustain strategic positions in markets and businesses. Typically, strategic projects are initiated with a long-term perspective in mind.
- ✓ *External projects* are made for external customers, contracted or non-contracted.
- ✓ *Internal customers* are done within the organization, for internal departments or units.

Information Extracted from (Shenhar & Dvir, 2007).

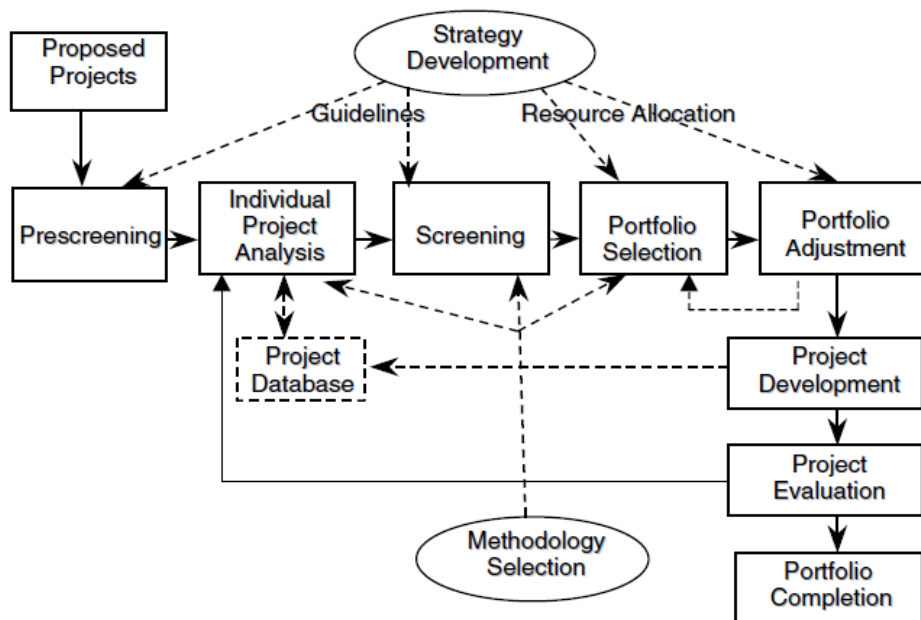


Figure H1 - Strategic Portfolio Classification Workflow

Source: (Pinto & Morris, 2007)

APPENDIX I - The NCTP Model: Product novelty

Table I1 - Product novelty levels and their major impact on project management.

Product Novelty	Derivative	Platform	Breakthrough
Definition	An extension or improvement of an existing product	A new generation in an existing product family.	A new-to-the-world product.
Data on Market	Accurate market data exists	Need extensive market research. Careful analysis of previous generations, cocmpetitors, and markets	Nonreliable market data. Market needs not clear. No experience with similar products
Product Definition	Clear understanding of required cost, functionality, features, etc. Early freeze of product requirements	Invest extensively in product definition. Involve potential customers in process. Freeze requirements later, usually at mid-project.	Product definition based on intuition and trial and error. Fast prototyping is necessary to obtain market feedback. Very late freeze of requirements
Marketing	Emphasize product advantage in comparison to previous model. Focus on existing as well as gaining new customers based on added product features and varieties.	Create product image. Emphasize product advantages. Differentiate from competitors.	Creating customer attention. Educating customers about potential of product. Articulate hidden customer needs. Extensive effort to create the standards.

Note: Retrieved from Shenhar & Dvir (2007)

APPENDIX J - The NCTP Model: Technological Uncertainty.

Table J1 - project characteristics and technological uncertainty levels

Variable	Low-tech A	Medium-tech B	High-tech C	Super High-tech D
Technology	No new technology.	Some new technology.	New, but existing technologies.	Key technologies do not exist at project's initiation.
Typical industries	Construction, production, utilities, public works.	Mechanical, electrical, chemical, some electronics.	High-tech and technology-based industries; computers, aerospace, electronics.	Advanced high-tech and leading industries; electronics, aerospace, computers, biotechnology.
Type of products	Buildings, bridges, telephone installation, build-to-print.	Non-revolutionary models, derivatives or improvement.	New, first of its kind family of products, new military systems (within state of the art).	New, nonproven concept beyond existing state of the art.
Development and testing	No development, no testing.	Limited development, some testing.	Considerable development and testing. Prototypes usually used during development.	Develop of key technologies needed. Small-scale prototype is used to test concepts and new technologies.
Design cycles and design freeze	Only one cycle. Design freeze before start of project execution.	One of two cycles. Early design freeze, in first quarter.	At least two to three cycles. Design freeze usually during second quarter.	Three to five cycles. Late design freeze, usually during third or even fourth quarter.
Communication and interaction	Mostly formal communication during scheduled meetings.	More frequent communication, some informal interaction.	Frequent communication through multiple channels; informal interaction.	Many communication channels; informal interaction encouraged by management.
Project manager and project team	Administrative skills. Mostly semiskilled workers, few academicians.	Some technical skills. Considerable proportion of academicians.	Manager with good technical skills. Many professionals and academicians on project team.	Project manager with exceptional technical skills. Highly skilled professionals and many academicians.
Management style and attitude	Firm style. Sticking to the initial plan.	Less firm style. Readiness to accept some changes.	More flexible style. Many changes are expected.	Highly flexible style. Living with continuous change, "looking for trouble."

Note: Retrieved from Shenhar & Dvir (2007)

APPENDIX K – The NCTP Model: Project Complexity.

Table K1 - Project Characteristics and System Scope Levels.

	Assembly 1	System 2	Array 3
Definition	A collection of components and modules in one unit, performing a single function.	A complex collection of assemblies that is performing multiple functions.	A widespread collection of systems functioning together to achieve a common mission.
Examples	A system's power supply; a VCR, a single functional service.	A complete building; a radar; an aircraft; a business unit.	A city's highway system; an air fleet, a national communication network; a global corporation.
Customers	Consumers or a subcontractor of a larger project.	Consumers, industry, public, government or military agencies.	Public organizations, government or military agencies.
Form of purchase and delivery	Direct purchase or a simple contract; contract ends after delivery of product.	Complex contract; payments by milestones; Delivery accompanied by logistic support.	Multiple contracts; sequential and evolutionary delivery as various components are completed.
Project organization	Performed within one organization, usually under a single functional group; almost no administrative staff in project organization.	A main contractor, usually organized in a matrix or pure project form many internal and external subcontractors; technical and administrative staff.	An umbrella organization—usually a program office to coordinate subprojects; many staff experts: technical, administrative, finance, legal, etc.
Planning	Simple tools, often manual; rarely more than 100 activities in the network.	Complex planning; advanced computerized tools and software packages; hundreds or thousands activities.	A central master plan with separate plans for subprojects; advanced computerized tools; up to ten thousand activities.
Control and reporting	Simple, in-house control; reporting to management or main contractor.	Tight and formal control on technical, financial and schedule issues; reviews with customers and management.	Master or central control by program office; separate additional control for subprojects; many reports and meetings with contractors.
Documentation	Simple, mostly technical documents.	Many technical and managerial formal documents.	Mostly managerial documents at program office level; technical and managerial documents at lower level.
Management style, attitude, and concern	Mostly informal style; familylike atmosphere.	Formal and bureaucratic style; some informal relationship with subcontractors and customers; often political and interorganizational issues.	Formal, tight bureaucracy; high awareness to political, environmental, and social issues.

Note: Retrieved from Shenhar & Dvir (2007)

APPENDIX L - The NCTP Model: Pace Level.

Table L1 - Characteristics of different project pace levels.

Pace Level	Regular	Fast-Competitive	Blitz-Critical
Definition	Time not critical to organizational success.	Time-to-market is a competitive advantage and has an impact on business success.	Time is critical for project success. Delays mean project failure.
Examples	Public works, government initiative, internal projects.	Business related projects, new product introduction.	Crisis situations, war, fast response to natural disasters, fast response to business related surprises.
Organization	Matrix or functional.	Matrix, teams, subcontractors.	Pure project, special task force.
Personnel Focus	No particular focus.	Qualified to the job. Strategically focused on time to market.	Specifically picked. Swift solution of the crisis.
Procedures	No specific attention.	Structured procedures.	Shortened, simple, nonbureaucratic.
Top management involvement	Management by exception.	Go ahead at stages.	Highly involved and constantly supportive.

Note: Retrieved from Shenhar & Dvir (2007)

APPENDIX M– Methods for project selection and prioritization of projects

A. ECV Method as a Decision Tree (Cooper, et al., 1997)

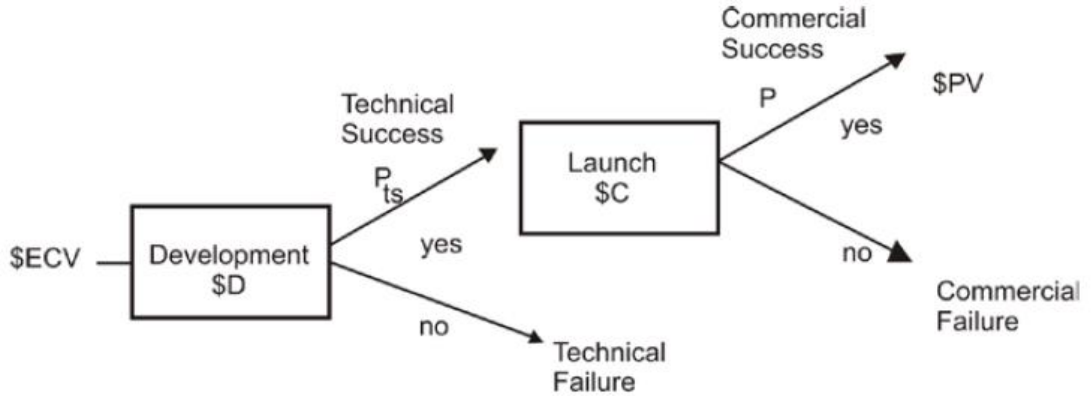


Figure M1 – Expected Commercial Value (ECV) Method

Source: (Cooper, et al., 1997)

- \$ECV = Expected Commercial Value of the project
- P_{ts} = Probability of technical Success
- P_{cs} = Probability of technical Success (Given Technical Success)
- \$D = Development Cost remaining in the project
- \$C = Commercialization (Launch) Costs
- \$PV = Net Present Value of project’s future Earnings(Discouted to today)

B. Benefit / Cost ration and profitability Index

This Method analyzes the weighting benefits of an option against its costs.

$$B/C = \frac{\text{Estimated Benefits} \times \text{Estimated Profit Rate} \times \text{Probability of Success}}{\text{Estimated Costs}}$$

The strategic factor (e.g. profit rate) and risk factor (e.g. success probability) are taken into consideration in this formula of financial analysis. The B/C ratio is a quantitative tool which is very useful for ranking or prioritizing projects. When the ratio is greater than 1.0 a project is profitable and accepted; when it is less than 1.0, the project is unprofitable and rejected; and when it is equal to 0, the project is accepted or rejected depending on Consideration of other strategic factors as benefits offset costs.

C. Bubble diagrams for project Mapping.

Table M1- Popularity of diagrams for project mapping

TYPE OF CHART	DIMENSIONS	
	AXIS 1	AXIS 2
Risk vs. Reward	Reward: NPV, IRR, benefits after years of launch; market value	Probability of Success (technical, commercial)
Newness	Newness	Market Newness
Ease Vs. Attractiveness	Technical Feasibility	Market Attractiveness (growth potential, consumer appeal, overall attractiveness, life cycle potential)
Our Strengths Vs. Project Attractiveness	Competitive Position (our relative strengths)	Project Attractiveness (market growth, technical maturity, years to implementation)
Cost Vs. Timing	Cost to Implement	Time to Impact
Strategic Vs. Benefit	Strategic Focus or Fit	Business intent, NPV, financial fit, attractiveness
Cost Vs. Benefit	Cumulative Reward (\$)	Cumulative Development Costs (\$)

Note: Retrieved from Basso, Mann, & Smulders (2014)

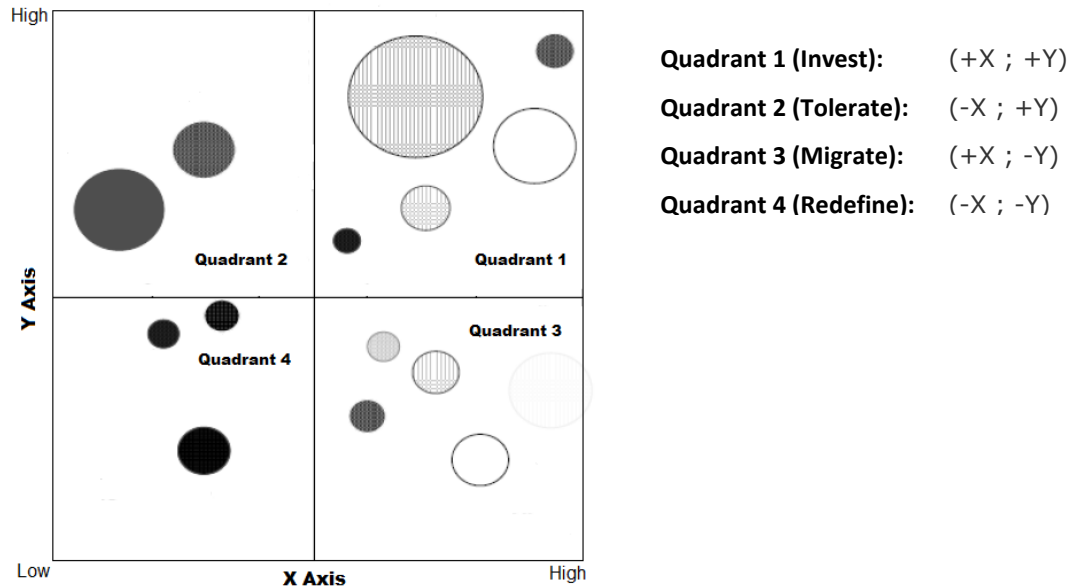


Figure M2 - Bubble diagrams

Source (Le & Nguyen, (2007), Edited from Cooper, et al. (2001))

APPENDIX N– Roles Description For The ITDM

Table N1 – Roles description for the ITDM Process of the Pharmaceutical Company

ROLE	DESCRIPTION
Key User	Dedicated user for demand creation and specification
Cost Center Manager	Commercial approval
Local IT Demand Manager	Demand qualification and dispatching
Central IT Demand Manager	Coordination, dispatching and monitoring of demand
Demand Owner	<ul style="list-style-type: none"> ✓ Drive the demand to its successful completion ✓ Alignment with different stakeholders and suppliers
Head of Project Management Department	Final approval of IT demand, ensuring IT demands fit to IT strategy
Local BPO (Business Process Owner)	Approves demand and offer on local level
BPA (Business Process Architect)	Specification, coordination, dispatching and monitoring of demand
Enterprise Architect	Ensure demand conformity with company's Architecture Principles & Guidelines
Business Process Expert	Drives demand to its successful completion and aligns topic with stakeholders
Business Process Owner	Approves demand and offer on central level
Center of Excellence Leadership Team	Approves demand and offer finally and decides on implementation

Note: Retrieved from Pharmaceutical Company Internal Database