

## Exhibit 1: Quality Tools

### Manage Quality tools

<b>Tool</b>	<b>Purpose</b>
Cause and Effect	Troubleshooting
Flowchart	Analysis
Affinity Diagram	Brainstorming
Histogram	Analysis
Matrix Diagrams	Analysis
Scatter Diagram	Analysis

### Control Quality tools

<b>Tool</b>	<b>Purpose</b>
Checklists	Audit
Root cause analysis	Analysis
Cause and effect	Analysis
Histogram	Analysis
Prioritization matrices	Decision-making
Scatter diagram	Analysis
Control chart	Process control

Source: PMBOK (2017) and ASQ.org

Exhibit 2: nVivo Word Frequency Analysis

<b>Word</b>	<b>Count</b>	<b>Similar Words</b>
project	532	project, projects
quality	406	qualities, quality
managing	307	manage, manageable, managed, management, manager, managers, manages, managing
process	240	process, processes, processing
tools	190	tool, tooling, tools
completely	189	complete, completed, completely, completion
works	184	work, worked, working, works
control	182	control, controlled, controlling, controls
design	181	design, designated, designed, designer, designers, designing, designs
requires	169	require, required, requirement, requirements, requires

Exhibit 3: nVivo Coding Categories with the Pearson's correlation

Codes	Sources	References	Score
Aviation projects	13	33	429
People - Project team	10	38	380
SPC-Statistical Process Control	12	24	288
Charts and tools	9	20	180
Quality as requirements management	7	13	91

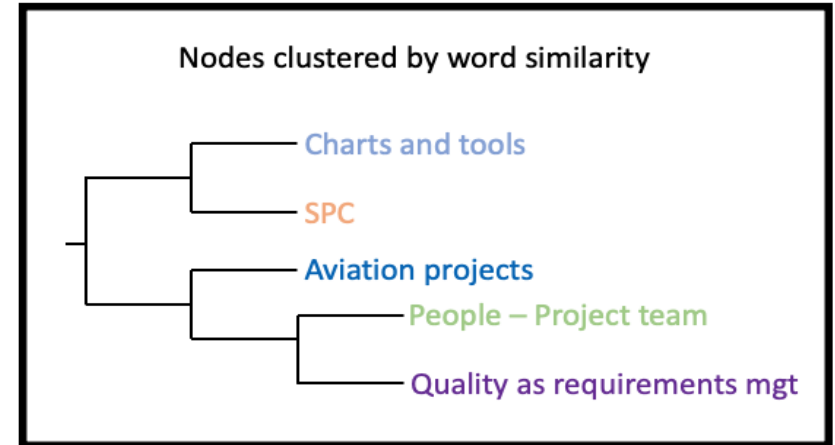


Exhibit 4: Aviation Project Sub-coding with Pearson's correlation

Codes	Sources	References	Score
Aviation projects	13	33	429
Component development	5	6	30
Customization projects	4	4	16
Outsource projects	2	5	10
Portfolio management	1	3	3
Product development	1	3	3
Project lifecycle	1	1	1
Supply chain	1	1	1

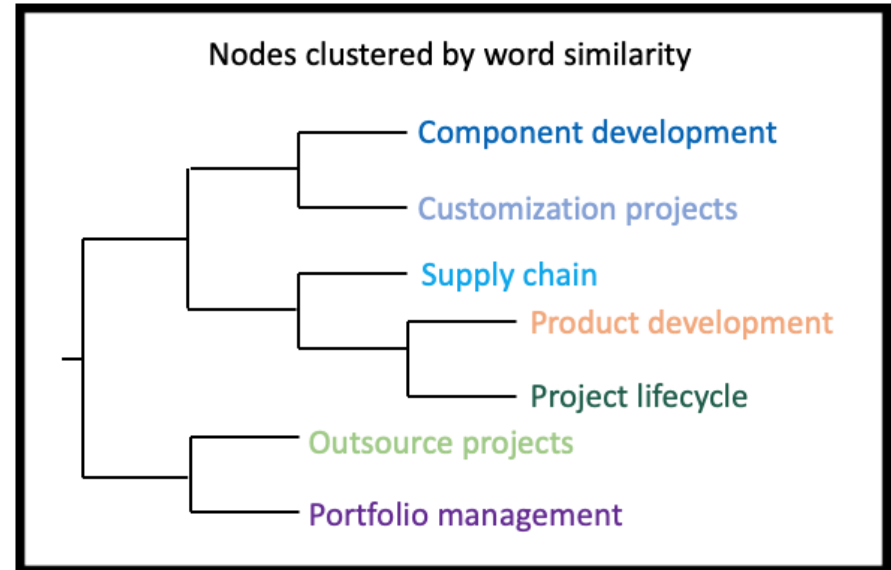


Exhibit 5: People-Project Team Sub-coding with Pearson's correlation

Codes	Sources	References	Score
People - Project team	10	38	380
Communication	5	9	45
Training	2	6	12
Team acquisition	2	2	4
Team management difficulties	2	3	6
Metrics	2	2	4
Project team member rank	2	2	4
After action review	1	1	1
Resource cost	1	1	1
Schedule	1	1	1
Team assignments	1	1	1
Team member responsibilities	1	1	1

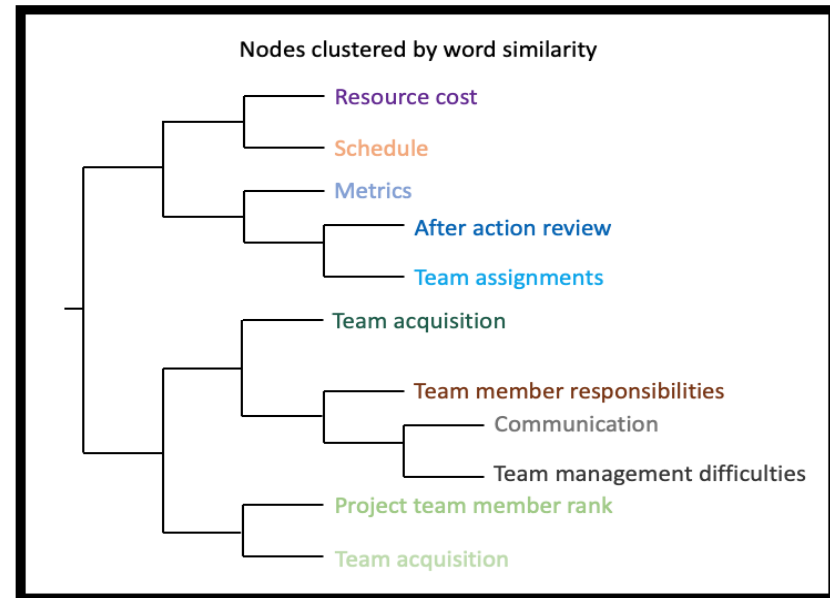


Exhibit 6: Statistical Process Control Sub-coding with Pearson’s correlation

Codes	Sources	References	Score
SPC-Statistical Process Control	12	24	288
Unique project quality environment	6	6	36
Tools not used	5	6	30
Lifecycle management tool	4	4	16
Fishbone	3	3	9
Check sheet	2	2	4
Incorrect application	1	2	2
Measurement	1	1	1
Six Sigma	1	1	1
SPC De-emphasis	1	1	1
Tolerance	1	1	1

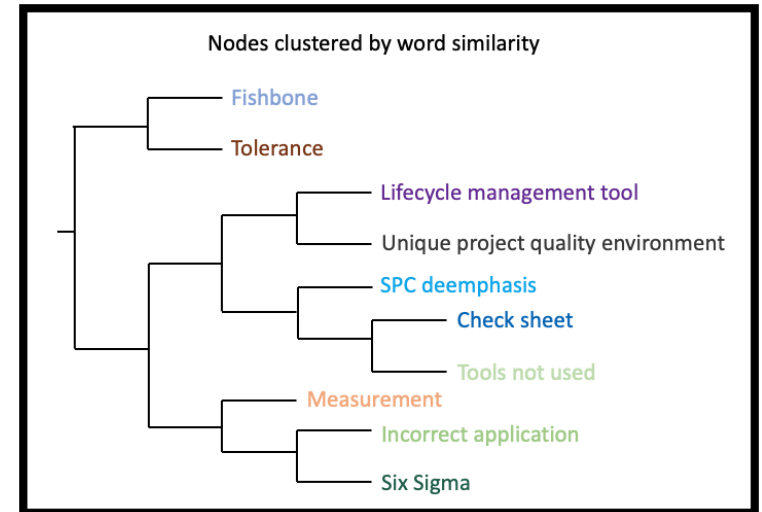


Exhibit 7: Charts and Tools Sub-coding with Pearson's correlation

Codes	Sources	References	Score
Charts and tools	9	20	180
Cause and Effect	5	5	25
Flowchart	3	3	9
Tree diagram	2	2	4
Root cause	1	1	1
Pareto	1	1	1

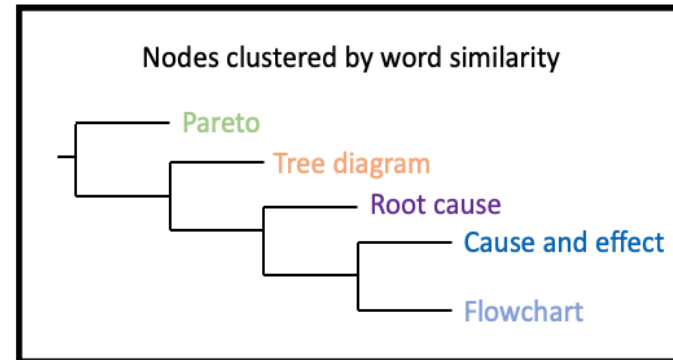


Exhibit 8: Quality as Requirements Management Sub-coding with Pearson's correlation

Codes	Sources	References	Score
Quality as requirements mgt	7	13	91
Quality as input to change control	12	28	336
Quality to regulation (FAA others)	9	21	189
Quality to specifications (drawings)	8	24	192
Quality as org standards	6	7	42

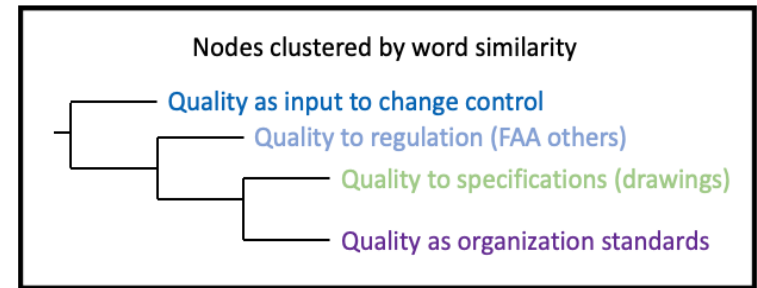




Exhibit 9: nVivo Qualitative Analysis Conceptual Framework

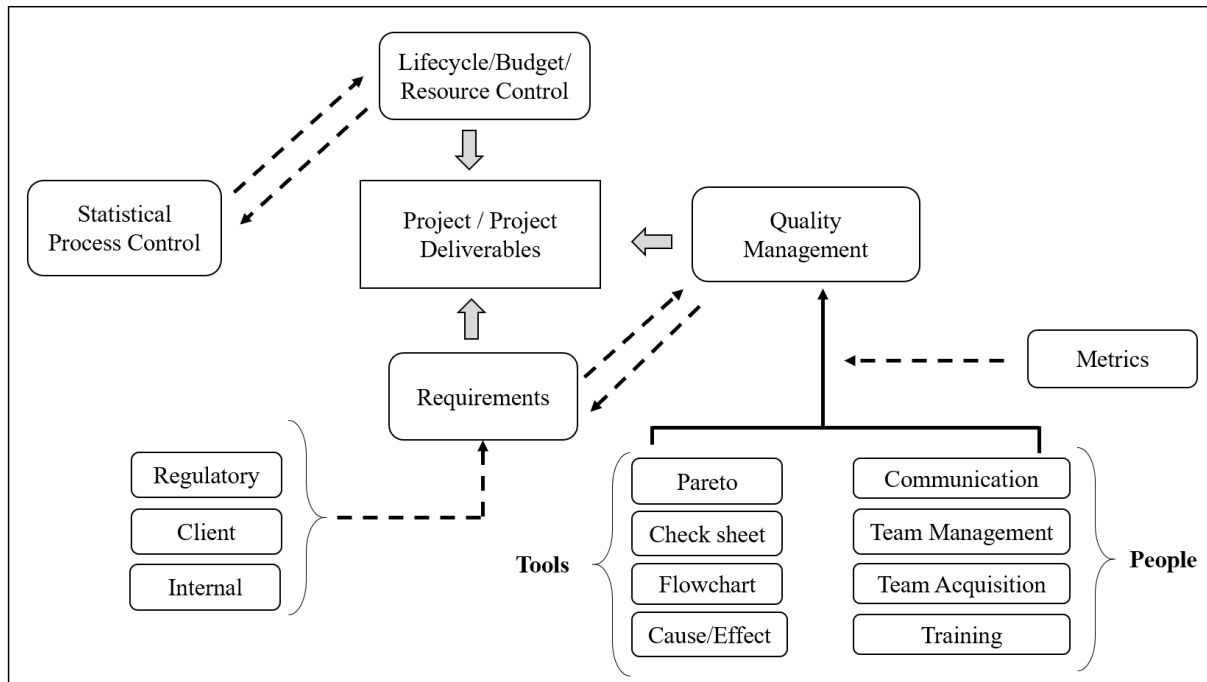


Exhibit 10: Sources of Requirements

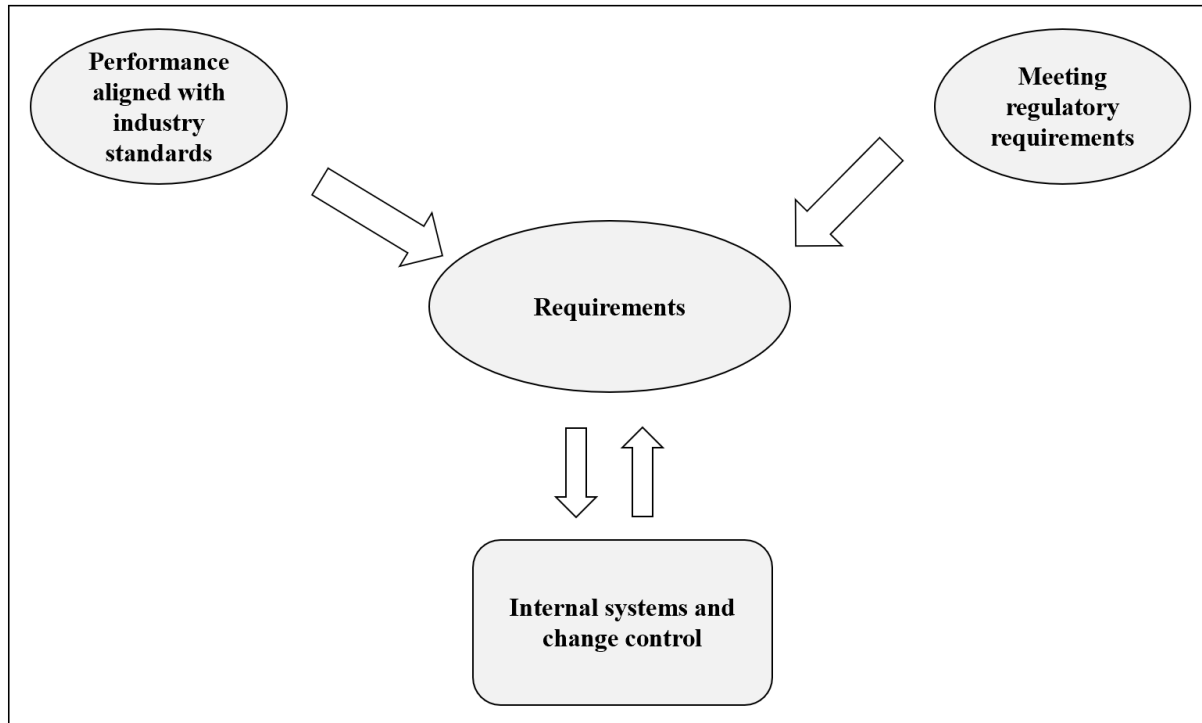


Exhibit 11: Combined Conceptual Framework

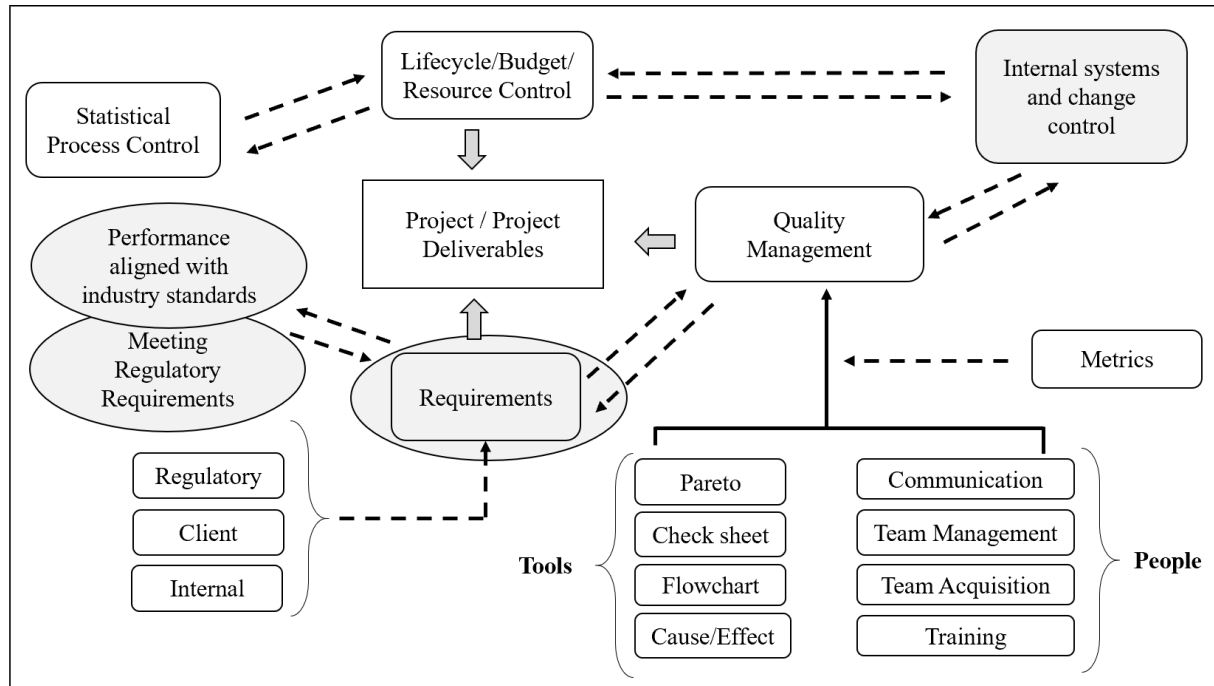


Exhibit 12: Project Manager Tools Used

No.	Statement	Agree/Strongly Agree
1	Managing quality in project management primarily involves confirming that project deliverables meet the requirements of the client.	78.00%
2	I use check sheets in projects I manage.	75.00%
3	I use flowcharts in projects I manage.	74.25%
4	The project lifecycle is the primary process that is controlled in a project quality management system.	74.00%
5	Quality tools used in ongoing operations are equally applicable project management.	74.00%
6	I use control charts in the projects I manage.	68.00%
7	I use statistical process control in projects that I manage.	60.00%
8	Managing quality in projects is no different from managing projects in ongoing operations.	54.00%
9	I use histograms in projects I manage.	49.50%
10	I use cause and effect (also “Fishbone” or “Ishikawa”) diagrams in projects I manage.	47.00%
11	I use scatter diagrams in projects I manage.	44.25%
12	I use Pareto charts in projects I manage.	35.25%

Exhibit 13: Qualitative Validation Survey Responses

<b>Ranking Statement</b>	<b>Highest Ranked Response</b>
Please rank in order of preference the quality tools that you use when managing quality in projects	Flowcharts
Please rank in order of preference the activities that you would most likely use to manage quality in projects	Project review
Please rank in order of importance the factors that determine quality levels and quality management practices in your projects	Client requirements
Please rank in order of importance the following quality definitions that best fit the project context	Conformance to requirements
Please rank in order of importance the processes that you consider to be most important to control for managing quality within a project	The project requirements process
Please rank the following quality management statements in order of preference:	Project quality management is primarily focused on meeting client requirements
Please rank the following quality management statements in order of preference:	Quality management practices in projects are the same as those performed in operations

Exhibit 14: Framework Validation

