

► Constraints to Avoid Negative Outcomes (2nd Edition)

A New Useful Category of Project Management Constraints
You Can Apply to Your Projects

By: **Kenneth Kozy, PMP, MBA, Green Belt – Lean Six Sigma**

Contact: KenKozy@KenKozy.com | 847-659-1897 www.KenKozy.com
12481 Rock Island Trail, Huntley, IL 60142, USA

Summary of this Paper

In this Paper, a new Project Management (PM) Category of Constraints for Projects is defined: “*Constraints to Avoid Negative Outcomes*.” Examples, tools, and a template with guidelines are included to demonstrate how to identify these PM Constraints and their value to help making Projects successful.

The first example of this Category of Constraints is from a commercial construction site where large signs are always posted at entrances warning that hard hats must be worn by everyone on that site. The Negative Outcome of serious head injury is avoided by enforcement of the Constraint explicit in that sign.

Also, a service project completed 2,000 years ago is analyzed as an example of how Constraints can be identified and displayed in Project documentation and demonstrates the use of this Category of Constraints. The analysis presents a methodology for mapping such ancient projects to models and guidelines contained in *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*. The PMBOK® Guide is published by the Project Management Institute, Inc. © (PMI) and is an internationally-recognized standards guide for Project Managers.

The Project is mapped to a Project Process Flowchart and to six Input/Output documents. This methodology demonstrates the timeless value of the Project Management principles, tools and techniques as defined in the PMBOK® Guide. The methodology demonstrated in this Paper could be used in studies of projects described in other classical literature that may provide new insights into principles of Project Management.

Constraints have generally been viewed as obstacles and restrictions hindering the Project Manager and Project Team. However, the findings in this Paper are that Constraints can be identified and implemented and can enhance the successful outcomes of projects.

By invitation, the author presented the original Paper “Constraints to Avoid Negative Outcomes – A Proposal for a New Useful Category of PM Constraints That Was Discovered While Analyzing a Project Completed 20 Centuries Ago” at the North America 2007 PMI Global Congress (held in Atlanta Georgia, USA), and the Asia-Pacific 2008 PMI Global Congress (held in Sydney Australia). This is the 2nd Edition of that Paper, containing clarifications to harmonize with advanced concepts described in the author’s Paper presented at the 2010 PMI Asia-Pacific Global Congress held in Melbourne, Australia: “Project Management Constraint Theory – a new Category of Constraints to Ensure Positive Outcomes.” For example, “identifying Constraints before approval of Project changes” is now included.

See additional examples, tools, templates, figures, pictures, and slides at www.KenKozy.com.

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Objectives and Introduction

Objectives of this Paper are:

- 1) To define a newly discovered Project Management (PM) Category of Constraints, “Constraints to Avoid Negative Outcomes,” and discuss examples and tools that can be used to create such useful Constraints in new Projects.
- 2) To demonstrate how a Project, described in classical texts almost 2,000 years ago when these Constraints were utilized, can be mapped to modern PM formats described in *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)* published by the Project Management Institute (PMI®).
- 3) To analyze three biblical texts describing this service Project from an objective secular and PM viewpoint that respects the diversity of readers’ beliefs.

A Sample Project is provided by the author: “Sending of 12 Apostles to Neighboring Towns to Heal the Sick.” The Project was executed circa 30 CE. Utilizing modern PM documentation formats, a Project analysis was made based on the descriptions found in three books of the Bible. This analysis has identified Jesus of Nazareth as the Project Manager who chose 12 followers to be on his Project Team. He called them “Apostles” (meaning “those sent

out”), and gave them the power and authority to heal the sick and to perform other astounding tasks.

Project’s Constraints: While analyzing the Bible texts that describe this Project, several unusual constraints were discovered. Even before the Project commenced, Jesus of Nazareth instructed these Apostles –

- What *not* to take with them: money, bag, food, and second tunic were not to be brought.
- What *not* to accept for healing sick townspeople and other works: money and gifts were not to be accepted.
- What to accept from townspeople: only food and lodging were to be accepted freely from their town’s host.

Discovery: These constraints appear to be very restrictive compared to the resources supplied to current-day Team Members who travel to perform their Project tasks. By seeking the root causes (PMI, 2008, p. 287, p. 208-209) of the unusual constraints, it was discovered that these Project Constraints helped to avoid negative outcomes for the Project. In this Paper, a new Category of PM Constraints is named: “Constraints to Avoid Negative Outcomes.”

A New Category of PM Constraints

Differences between Constraints and Risks

Constraints are different from Risks because Constraints usually have 100% probability of occurrence. Examples given in the *PMBOK® Guide* of common Constraints include a budget limit or other known resource limitations, *pre-determined* by the organization management *before* the Project begins. (PMI, 2008, p. 115)

Risks, on the other hand, have some probability of occurrence that is less than 100%. The Project Team should develop a Risk Avoidance or Mitigation process for the possibility that the identified negative Risks may actually occur. Risks can be categorized, and some may be discovered after the Project starts. (PMI, 2008, p. 279-281)

Definition for the New Category: Constraints to Avoid Negative Outcomes

Constraints to Avoid Negative Outcomes

(C-TANO) is a special Category of Constraints where *before* Project execution and *prior* to approval of Project changes, the Project Team identifies, defines, communicates, and implements the Constraints in order to avoid negative Project outcomes.

- These Constraints have the state, quality, sense or instruction of being restricted to a given course of action, or inaction, in order to avoid negative outcomes to the Project. These Constraints may be caused by external, organizational, or project sources.
- This Category of Constraints focuses on avoiding these types of Negative Outcomes: Project delays; safety hazards; injuries; violation of laws, regulations, contracts, or rules; increased costs; interference with tasks; argumentation; resistance to change; rejection; slippage in quality or meeting requirements; and Project failure.

Example: A modern Project example of “Constraints to Avoid Negative Outcomes” that is commonly seen is the sign: “Hard Hats Must Be Worn on This Construction Site.” This Constraint, or rule, is enforced to avoid the tragic negative outcome of a head injury from falling objects or related accidents at a Construction Project.

When to develop: Identify Constraints before Project execution and prior to approving Project Changes.

The following picture is of a sign typically found at a commercial construction site in the USA, and is a good common example of Project Management "Constraints to Avoid Negative Outcomes."



The process: First, the Project Manager and Team determine the Positive Outcomes desired, the considerations to achieve them, and their consequences. Next, internal and external sources of Negative Outcomes for the Project are analyzed. Once the causes for negative outcomes are determined, Constraints (a set of rules) are formulated in order to obviate these problems, or negative events, before execution of related Project tasks.

However, once the Project tasks begin to be executed:

- In Progressive Elaboration (PMI, 2008, p. 7, p.442), as more details of the PM Plan being executed are discovered, a review of these details and how they affect the Project results are an opportunity to analyze if any additional Constraints or Risks need to be identified. This activity occurs before any changes to the Project Plan are approved and put into execution via the Change Control System (PMI, 2008, p. 428, p. 338, p. 98-99).
- Activation of responses to Project Risk events occurring during the Project execution may initiate tasks that result in the need to identify additional Constraints and Risks, or changes to existing ones.

Tools to Help with Identification of Constraints to Avoid Negative Outcomes

To develop this new Category of Constraints for your Project, you and your Project Team will need to think of what events will definitely occur that would cause negative outcomes to your Project. You can use such tools as Brainstorming (PMI, 2008, p. 286, p. 428), Cause/Effect Tables, and Ishikawa's Fishbone Diagram (PMI, 2008, p. 287, p. 208-209) to make these determinations.

Therefore, the Project Team needs to work together to understand the Project and its scope in order to develop such Constraints. (A by-product of this process is that the Project Team can improve their level of understanding and buy-in, thus increasing the chances of success of your Project.)

To Discover These Constraints – Use Brainstorming and a Template

If you use the tool of Brainstorming, you can more easily understand and define such Constraints by first developing a list of the positive outcomes desired, then determining the corresponding negative outcomes that will occur. See the Template (Table 1) and an Example from the Project analyzed in this Paper (Table 2). As shown in Table 1 the Columns and their Guidelines depict the logical sequence to use with the Brainstorming technique, starting from the left column and working to the right columns:

- 1) Positive Outcomes Desired
- 2) Considerations and Consequences
- 3) Negative Outcomes to Avoid
- 4) Resulting Constraints to Avoid Negative Outcomes.

Use the Guidelines of the Table Template to determine Constraints for your own Project. Use Root Cause Analysis (PMI, 2008, p. 204, p. 447) of the entries in the column, "Negative Outcomes to Avoid," to help determine the underlying reasons and what the "Resulting Constraints" should be.

(Hint: if you become stuck on an item, ask "Why?")

five times for it and the surrounding items and the reasons should become clearer.)

Project Mapped to PM Documents Described in the PMBOK Guide

Bible Project used as an Example

Next, this Paper discusses how the Project, "Sending of 12 Apostles to Neighboring Towns to Heal the Sick," (NIV, 2005, Matthew, Chap. 9, 10, 13, and 14; Mark, Chap. 3, 6, and 9; and Luke, Chap. 6, 9, and 10.) can be mapped to the *PMBOK® Guide* and the Constraints to Avoid Negative Outcomes.

The relevant Bible texts are mapped to the five PM Process Groups modeled in the *PMBOK® Guide*. (PMI, 2008, p. 5, p. 41-43):

- Initiating
- Planning
- Executing
- Controlling
- Closing

Then they are mapped to related PM documentation of two process flowcharts:

- Project Process Flowchart
- Project Tasks and Resources Flowchart

And to five Input/Output documents:

- Project Charter
- Project Scope
- Project Management Plan
- Project Controls
- Project Close

Document 1) Project Process Groups Flowchart

First, the Project was analyzed to confirm that it contained the five Project Management Process Groups that the *PMBOK® Guide* requires for any Project.

See Figure 1, Project Process Groups Flowchart, which displays the five Process Groups, key external influences, and outlines of all developed PM documents.

Document 2) Project Charter

Background: In the First Century CE, many people suffered from various diseases and disabilities. In Israel those with certain skin disorders (then labeled leprosy), and mental illnesses (believed in that era to be caused by demons) were considered outcasts. They were separated from their community according to the rules of their society and religion, and were barred from gainful employment, regular community and social contacts, and attendance at religious activities with their families and neighbors. (Fosdick, 1949, pp. 55-62)

The referenced Bible texts relate that Jesus of Nazareth (in the northern Galilee region of Israel then called Palestine) went to the people in those towns curing every disease and illness as he proclaimed his spiritual message. He found more people needing his healing powers and message than he could visit. In order to reach more people, he chose 12 followers, gave them his same power and authority to heal the sick and proclaim his spiritual message, and issued them Constraints before sending them out to the neighboring towns.

Benefits: Being cured of diseases and illnesses freed up those afflicted so that they could return to be wage-earners and productive members in society and to live better, fuller lives in good health. Being cured without charge meant that the time and money saved on health care could be re-channeled into the local economy for other goods and services. The people cured of diseases and illnesses could return to normal religious services after presenting themselves to their religious leaders to verify that they were cured.

Authorization: The biblical texts report that Jesus of Nazareth and the Apostles gave credit for their power and authority to heal the sick to their God;

therefore their God was responsible for authorizing these activities. Moreover, the townspeople and their leaders could freely accept or reject these Apostles and their healing powers; therefore they could authorize the Project to be executed in their town or turn away the Apostles.

Project Manager: Essentially, Jesus of Nazareth was the leader and Project Manager. (The titles of Project Manager and Project Team were not used in the Bible.) The texts report that he grew up in the town of Nazareth of the region of Galilee, was a carpenter until he was about 30 years of age, and afterwards began preaching his spiritual message and performing these astounding healing tasks. (NIV, Mark, Chap. 6)

Document 3) Project Scope

Scope of the Project: Jesus of Nazareth gave his power and authority to 12 Apostles, and sent them in pairs to neighboring towns to heal the sick of diseases and illnesses, to expel demons and raise the dead, to communicate his spiritual message, and to return to report the results of their tasks. (NIV, Matthew, Chap. 10)

Measurement: The exact number of people healed or affected was not recorded in the Bible books, nor was the resulting positive economic effect quantified. However, it was reported that soon after the 12 Apostles returned from their tasks to share their success stories, over 5,000 people traveled to Jesus of Nazareth to listen and some to be healed by him. (NIV, Mark, Chap. 6)

Time Frame: The Project appears to have lasted a maximum of 6 days, including round-trip travel. This time frame is derived from the fact that there was no mention of the weekly religious Sabbath observance having occurred before their return. Such healings on the Sabbath were not allowed by custom and the Apostles would have been the source of considerable condemnation by the religious authorities in the towns. (NIV, Luke, Chap. 6)

Constraints to Avoid Negative Outcomes:

Constraints reported in the relevant Bible texts are:

- What *not* to take with them: money, bag, food, and second tunic were not to be brought.
- What *not* to accept for healing sick townspeople and other works: money and gifts were not to be accepted.
- What to accept from townspeople: only food and lodging were to be accepted freely from their town's host.

Table 2 utilizes the sample Template and Guidelines to illustrate how they may have been derived.

Document 4) Project Management Plan

Milestones and Deliverables: for Process Tollgates in this Project's Life Cycle (PMI, 2008, p. 157-159);

- **Initiating Process**
Milestone – Jesus of Nazareth chose his 12 Apostles for the Project.
Deliverables: Verbal Project Charter, Project Scope, and training of the Team.
- **Planning Process**
Milestone – Jesus of Nazareth called together his chosen Apostles to instruct them about the plan, tasks, and Constraints to Avoid Negative Outcomes of this service Project.
Deliverable: Verbal Project Management Plan.
- **Execution Process**
Milestone – Jesus of Nazareth sent out six pairs of Apostles to neighboring towns in Galilee to heal the sick and to proclaim his spiritual message.
Deliverable: Apostles execute the verbal list of tasks and steps within 6 days at no Project cost.
- **Controlling Process**
Milestone – If accepted by the townspeople, each pair of Apostles blessed the home of

their town's host with their peace and was dependent upon their host for food, and shelter.

Milestone – If rejected by the townspeople, the Apostle team left peacefully and traveled to the next town.

Deliverables: Food and lodging for the Apostles and management of risks and rejection

- **Closing Process**

Milestone – The Apostles returned and shared their experiences.

Deliverables: Verbal Lessons Learned and Project Closure.

Configuration Management: Jesus of Nazareth gave his 12 Apostles a number of instructions and Constraints that they were to adhere to closely. They had seen him perform the same healing tasks; therefore, their training and methodologies had been defined.

Project Team: The 12 Apostles were named in the Bible texts already cited. No role differentiation was reported within the six pairs of Apostles. They were to perform their tasks without charge. The town hosts supplied all their food, and lodging. Therefore, these Apostles were totally dedicated to their tasks with no other jobs or responsibilities.

Project Sponsor: The texts report that before the Project, Jesus of Nazareth asked his Apostles to pray to their God for additional workers to heal the sick and proclaim his message. Since they took no money, food or extra clothing with them, they were dependent upon their God to supply their needs through the townspeople. Therefore, the Project Sponsor who originally gave such power and authority and who provided for their resources was their spiritual God.

Project Stakeholders: Jesus of Nazareth, his 12 Apostles, their God, the townspeople and their leaders are Stakeholders.

Document 5) Project Tasks and Resources Flowchart

Figure 2 shows the Project Tasks and Resources Flowchart for the Executing Process Group.

The Bible texts report enough information to develop the Work Breakdown Structure from which this flowchart was constructed showing tasks performed in logical order of execution, and with action steps and their resources displayed side-by-side.

Document 6) Project Controls

Communications: Once Jesus of Nazareth instructed and sent the 12 Apostles in pairs on foot to neighboring towns, the distances of the separation did not allow him to see them or to communicate with them again until they all returned at the end of this Project.

Quality Control: The Bible text (NIV, Matthew, Chap. 11) reports that Jesus of Nazareth later visited and taught near the towns where the Apostles went. Therefore, he would have received feedback on the quality of his Apostles' work and any concerns of the townspeople.

Risks: If the townspeople and/or town leaders rejected them or their activities, the Apostles were instructed how to mitigate this risk: to leave peacefully, with no argument or condemnation, and to shake the dust from their feet as a sign of their rejection. Townspeople were not forced to accept the Apostles or their healing tasks.

Document 7) Project Close

Lessons Learned (PMI, 2008, p. 214, p. 261): When the 12 Apostles (six sub-teams) returned to Jesus of Nazareth, the texts report they shared what they had learned to be applied to the next healing Project. (NIV, Luke, Chap. 10)

Close (PMI, 2008, p. 101-102): The return of the 12 Apostles to Jesus of Nazareth signaled the end of this Project. However, so many heard about the Apostles and Jesus of Nazareth that they traveled to see him. As a result, the Team immediately became involved in a new Project called "The Feeding of the 5,000." (NIV, Luke, Chap. 9)

Useful Lessons Learned

Conclusion: This paper demonstrates how a Project in ancient literature, executed in a different social and economic culture from our modern times, can be mapped to the PM principles and documentation in today's PMBOK® Guide.

A new PM Category of Constraints was defined and a template, tools, and examples were given that can be applied to current Projects by readers of this Paper to enhance their probability for Project success.

References

Fosdick, H. (1949). The man from Nazareth: As his contemporaries saw him. New York: Harper & Brothers.

NIV archaeological study bible (New International Version ed.). (2005). Grand Rapids, MI: Zondervan.

NIV bible (New International Version ed.). (1997). Retrieved on December 15, 2006 from Gospel Communications International web site: <http://www.biblegateway.com/versions>

PMI. (2004). A guide to the project management body of knowledge (PMBOK® Guide) – (Third ed.) Newtown Square, PA: Project Management Institute.

PMI. (2008). A guide to the project management body of knowledge (PMBOK® Guide) – (Fourth ed.) Newtown Square, PA: Project Management Institute.

Table 1: TEMPLATE and GUIDELINES to Develop “Constraints to Avoid Negative Outcomes”

1) Positive Outcomes Desired	2) Considerations and Consequences	3) Negative Outcomes to Avoid	4) Constraints to Avoid Negative Outcomes
<p>GUIDELINES: -Before Project execution (as well as prior to approved Project changes), gather together the Project Team to prepare entries in this Table. -Use this Table Template, Fishbone Diagrams, and Brainstorming to determine key Positive Outcomes desired for your Project. -Start with the Project Charter and Scope to determine objectives. -Tag each objective, e.g. A), B), C) etc., to correlate entries in other columns with each objective. -Follow the logical sequence of columns: 1, then 2, then 3, and then 4. Do not jump ahead.</p>	<p>GUIDELINES: -What are some of the considerations that could affect the Positive Outcomes desired? -What are the perceptions and expectations of the Stakeholders regarding these Positive Outcomes? -What resources do you plan to use? What are their training, attitude, funding and availability? -What alternate behaviors could be displayed by the resources? -Use categories in Fishbone Diagrams, and 5-Why-Questions tools to help understand and brainstorm these Considerations and Consequences regarding Positive Outcomes Desired.</p>	<p>GUIDELINES: -State the opposite of each Positive Outcome in column 1, i.e. the corresponding Negative Outcome. Determine if any of the causes and considerations of the Positive Outcomes definitely will not be available to the Project. -What would the reactions now be of the Stakeholders? -What resources would be affected when a Negative Outcome occurs? -Use the Root Cause Analysis & 5-Why-Questions tools for each of the Negative Outcomes to Avoid.</p>	<p>GUIDELINES: -Review the C-TANO definition. -Take the results of the Root Cause Analysis and determine what Constraint you can identify to be 100% sure to avoid each Negative Outcome. -List all 100% sure Constraints (even if anyone objects). -After listing all potential Constraints, discuss the effect of each on the Project and on the Project Sponsor and Stakeholders. Remove Risks and unnecessary Constraints from this list. -Through the process of Consensus, arrive at the final list of Constraints and list the reasons for each.</p>

Table 2: Example using TEMPLATE for Project’s “Constraints to Avoid Negative Outcomes”

1) Positive Outcomes Desired	2) Considerations and Consequences	3) Negative Outcomes to Avoid	4) Constraints to Avoid Negative Outcomes
<p>A) The townspeople and their leaders trust the honesty and integrity of the Apostles so that they can believe God is providing their cures, healings, and spiritual message.</p> <p>B) Apostles learn to depend wholly upon their God working through the townspeople to supply their needs - even material things such as food and a place to sleep.</p>	<p>If the Apostles did bring money with them for the journey: A1)-some townspeople may think the money came from payments for healings instead of being free. A2)-town beggars could request money instead of healing and hearing the spiritual message.</p> <p>B)-the Apostles could pay for their food and lodging instead of being dependent upon their God.</p>	<p>A1) Any reason for townspeople and leaders not to trust the honesty and integrity of the Apostles. A2) Doubt about their cures or the spiritual message of Jesus of Nazareth because of perceived negative actions of the Apostles.</p> <p>B) Less than total dependence by the Apostles on their God to provide for their needs in this Project.</p>	<p>A1) Apostles were not to take with them: - money - bag (or sack for the journey) - food - second tunic A2) Apostles were not to accept money or gifts for healings.</p> <p>B) Apostle pairs were only to stay with their Town’s Host for food and shelter, and to heal and cure everyone without remuneration.</p>

Figure I - Project Process Groups Flowchart (Document I) is a high level summary of the five Process Groups, key external influences, outlines of the other six PM documents, and the Project's results.

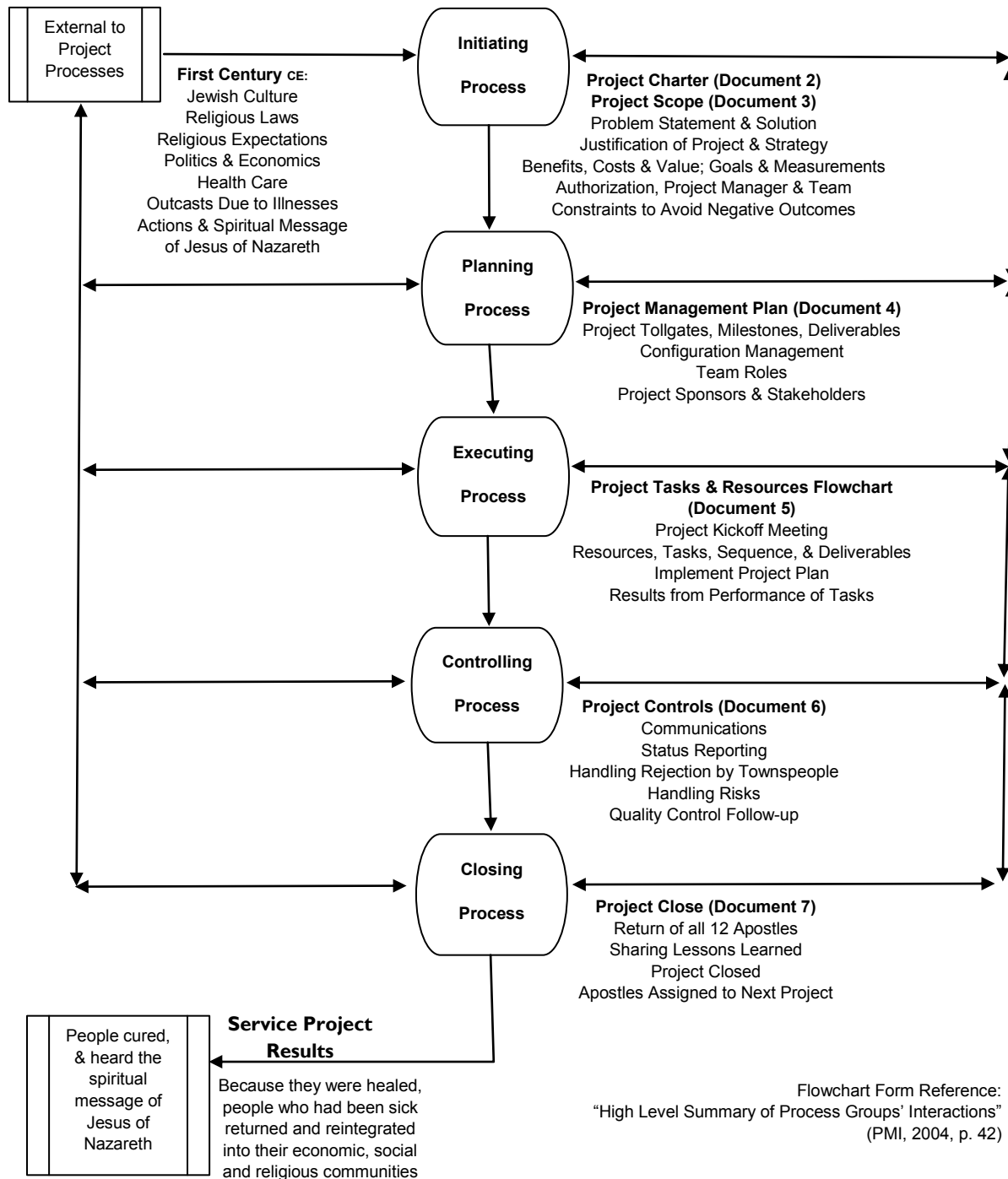


Figure 2 - Project Tasks and Resources Flowchart (Document 5) for the Executing Process Group in logical order of execution and with associated resources.

