Your Company Name

Concept of Operations

(CONOPS)

Date

Revision History

Date	Version	Author	Change

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Note: Text displayed in blue italics is included to provide guidance to the author and should be deleted before publishing the document.   In any table, select and delete any blue line text; then click Home→Styles and select "Table Text" to restore the cells to the default value.

1   Purpose

The Concept of Operations, or CONOPS, is a *Capabilities Needs Assessment* investigation to gain a Users' and Stakeholders' perspective on a major change initiative. As such, it is both an analysis and a formal document that describes high-level capabilities requirements that have been identified as necessary to achieve the mission of the IT organization, and its subordinate organizations, in terms of one or more of the following criteria:

- **Doctrine**: the way IT provides mission critical systems

- **Facilities**: real property; installations and industrial facilities that support the work of the organization.

- **IT Systems: systems** that are required to support the work of the IT organization.

- **Leadership and education**: how IT prepares their managers and executives to lead in the provisioning of solutions; i.e. professional development.

- **Legislation**: the making of rules (as laws) that have the force of authority to compel IT to change services they are providing, and/ or what they are reporting

- **Materiel**: all the "stuff" that is necessary to equip the staff to operate efficiently

- **Organization**: how IT is organized to provide exceptional support to their customers.

- **Personnel**: availability of qualified IT people to execute the Mission

- **Policy**: Basic principles and stated goals that guide IT in its mission to provide automated solutions

- **Training**: how IT prepares, at a tactical level, to provide customer solutions.

The CONOPS is primarily used as a communications document by the internal business customers. The CONOPS may also be used to help coordinate development of business cases as inputs to a Request for New Applications and Business Requirements Documents (BRD).

The purpose of the CONOPS is to help internal customer's better express their business needs, in terms of capabilities required, and should therefore be process focused and system agnostic. If IT Systems needs are identified, the CONOPS can serve as a business needs assessment document. In that scenario, the CONOPS is a useful component within the project planning activities associated with the Concept Phase of the Systems Development Life Cycle (SDLC).

Note: The CONOPS is neither a formal functional requirements document nor technical specification. Rather, it is used as a source of information for the development of such documents and for project planning and decision making. It is written in common-user language, without requiring the provision of quantified, testable specifications.

1.1 Scope

Ultimately, the CONOPS is a user-oriented framework within which users and acquirers can identify potential solutions that can be evaluated and traded-off, before the technical details of implementation are worked out.

CONOPS can take different forms, depending on the type and areas of investigation. Although there is only one CONOPS template, the final product can vary significantly depending on the scope of the investigation. For example:

- Strategic
- Operational
- Tactical.

1.2 Vision

The CONOPS expresses the employment and support vision of the users, business stakeholders, during the development of the application. The CONOPS process is used to gain consensus among stakeholders on the uses, operating and support concepts, employment, capabilities, and benefits of an asset, capability, or system.

To achieve consensus, stakeholders must collaboratively balance the desires of mission success against the realities of technology, budget, schedule and risk. The CONOPS focuses on the performance of solutions in their intended operational setting.

The CONOPS uses business mission and operational scenarios to describe, in non-technical terms, a "Day in the Life" of the asset, system or capability. These scenarios are fictional/notional but realistic depictions of the asset or system in operation or being supported in order to achieve mission readiness.

They are written or validated by the hands-on users who must perform operational tasks and functions. From these scenarios, needed capabilities can be derived and validated.

Development of the CONOPS should include careful consideration of the full range of factors that together are required to fulfill the mission. The goal is to realistically depict how the asset or system solution would work in a real world scenario, and these factors should be described in the CONOPS.

1.3 Output

The CONOPS culminates in two matrices of prioritized functional capabilities which provide project teams a starting point as well as a traceability tool on which to base their efforts. The CONOPS conveys the operational and support concept of the asset or system to future stakeholders so that they may better understand the intended employment and support.

The CONOPS initiates the thought process of verifying suitability and effectiveness of the proposed/alternative system, capability or asset by providing a reference for determining "fitness for purpose and effectiveness in use."

The CONOPS development process can enable operational, maintenance, support, acquisition, and supplier personnel to improve their understanding of the user needs and expectations.

1.4   Identification

This sub-section contains the identifying number, title, and abbreviation (if applicable) of the system or subsystem to which this CONOPS applies. If related CONOPS documents for an overall system have been developed in a hierarchical or network manner, the position of this document relative to other CONOPS documents should be described.

1.5   Document Overview

The intended audience for the document should also be mentioned. In addition, this sub-section describes any security or privacy considerations associated with use of the CONOPS. This sub-section also summarizes and expands on the purposes of motivations for the CONOPS document.

The purposes of a CONOPS document will, in most cases, be:

- *To communicate the user's needs for and expectations of the proposed system to the buyer and/or developer;*

or

- *To communicate the buyer's or developer's understanding of the users' need and how the system shall operate to fulfill those needs.*

However, a CONOPS document might also serve other purposes, such as building consensus among several user groups, among several buyer organizations, and/or among several developers.

The audience of a CONOPS document can be a variety of people.

- *Users might read it to determine whether their needs and desires have been correctly specified by their representative or to verify the developer's understanding of their needs.*

- *Buyers might read it to acquire knowledge of the user's needs and/or the developer's understanding of those needs.*

- *Developers will typically use the CONOPS document as a basis for system development activities, and to familiarize new team members with the problem domain and the system to which the CONOPS applies.*

1.6   Purpose of the Proposed System

This sub-section briefly states the purpose of the proposed system or subsystem to which the CONOPS applies. It describes the general nature of the system, and identifies the project sponsors, user agencies, development organizations, support agencies, certifiers or certifying bodies, and the operating centers or sites that will run the system. It also identifies other documents relevant to the present or proposed system.

A graphical overview of the system is strongly recommended. This can be in the form of a context diagram, a top-level object diagram, or some other type of diagram that depicts the system and its environment.

Documents that might be cited include, but are not limited to: the project authorization, relevant technical documentation, significant correspondence, documents concerning related projects, risk analysis reports, and feasibility studies.

1.7   Reference Documents

This sub-section lists the document number, title, revision, and date of all documents referenced in the CONOPS document. This section should also identify the source for all documents not available through normal channels.

Document Number	Title	Source (if applicable)	Revision	Date

1.8   Revision Summary

This sub-section provides a bulleted, high-level description of changes made to the previous version and why. For each revision discussed, provide the date that the revision was made. If the current version in production is the first version of the CONOPS, this page should be left blank below the title.

2   Capabilities Needed

This section is a synopsis of the Business Needs Statement (and can in fact be used to develop a Business Needs Statement). It should be a short explanation of the need/gap. The principle source for the capability needed for the business is the business needs statement.

The following sections of the business needs statement should be summarized or referenced to identify the capabilities needed for the business:

2.1   Business Needs

- *Identify the required Business Need(s) in functional terms.*

- *If appropriate, discuss the strategic driver for this business need*

- *Describe capabilities required by IT and its' stakeholders/partners to accomplish the mission. Describe the capabilities independently of whether or not the organization currently possesses them.*

- *Do not specify capabilities in terms of assets, equipment or other means that might satisfy the need; i.e., state the capability (need), not the solution (equipment). The next part of this section also builds upon and references the Business Needs Capability Gap section cited below. More detail than in the Business Needs Statement may be provided.*

2.2   Business Need Capability Gap

- *Describe the capability gaps. These are capabilities that IT and/or its stakeholders/partners require to perform the mission but do not currently possess and are not planned to be provided by existing programs.*

- *Very briefly describe at a high level the capabilities and gaps in the context of how IT and its' stakeholders (e.g., States) currently perform these functions.*

- *Discuss what other existing and planned systems (IT or non-IT) are conducting the same or similar programs that are performing the same or similar functions.*

- *Discuss efforts made to determine whether these existing systems and planned programs could be used or leveraged to provide the required capability.*

- *Assess why it is not possible to perform this business function with existing capabilities and resources by showing that existing systems cannot provide the required capability.*

- *For needs/gaps that have potential IT solutions, describe the difference between the current capability and the future needs by describing the functions that lack systems with the required capabilities.*

- *Discuss how the potential investment fits into the IT Strategic Plan.*

2.3   Current System or Situation

If appropriate, provide a brief description of the current operational situation, and address the gap in relation to this context. Future capabilities with superior technology will be "fit" into this operational context to determine if and how well they solve the gap/need.

As part of an IT Change requirement, this section describes the system or situation (either automated or manual) as it currently exists.

If there is no current system on which to base changes, this sub-section describes the situation that motivates development of the proposed system. In this case, the following sub-section will be tailored as appropriate to describe the motivating situation.

This section also provides readers with an introduction to the problem domain. This enables readers to better understand the reasons for the desired changes and improvements.

3   Operations and Support Description

This section is used to identify and explain the business needs, user groups, organizations, environment, systems, interdependencies and other circumstances in which the solution must operate.

3.1   Background, Objectives, and Scope

This section provides an overview of the current system or situation, including as applicable, background, mission, objectives, and scope. In addition to providing the background for the current system, this sub-section should provide a brief summary of the motivation for the current system.

Examples of motivations for a system might include automation of certain tasks or countering of certain threat situations. The goals for the current system should also be defined, together with the strategies, solutions, tactics, methods, and techniques used to accomplish them.

The modes of operation, classes of users, and interfaces to the operational environment define the scope of the proposed system, which are summarized in this sub-section and defined in greater detail in subsequent clauses.

3.2   Missions (Primary / Secondary)

List, in priority order (if possible), each of the statutory component and/or business capability in which the CONOPS will contribute. Indicate if the business need is primary or secondary. This sub-section provides linkage to the appropriate User/Stakeholders.

3.3   Users and Other Stakeholders

List and briefly describe the various groups of people/user classes who will interact with the asset or system. Factors that distinguish a user class include common responsibilities, skill levels, work activities, and modes of interaction with the asset, capability or system.

In this context, a user is anyone who interacts with the existing or future system, including operational users, data entry personnel, system operators, operational support personnel, system maintainers, and trainers.

It also includes non-operators who are using the output of the asset or system. Graphical diagrams, such as use case diagrams, are very helpful when describing users and stakeholders and their level of involvement with the system.

3.4   Operational Policies and Constraints

This section is used to identify and explain the business needs, user groups, organizations, environment, interdependencies and other circumstances in which the solution must operate.

List any policies, assumptions, or constraints that apply to the current or proposed asset or system.

From an IT perspective, it may describe any operational policies and constraints that apply to the current system or situation. Operational policies are predetermined management decisions regarding the operations of the current system, normally in the form of general statements or understandings that guide decision making activities.

Policies limit decision-making freedom but do allow for some discretion. Operational constraints are limitations placed on the operations of the current system.

Examples of operational constraints include the following:

- *A constraint on the hours of operation of the system, perhaps limited by access to secure terminals*

- *A constraint on the number of personnel available to operate the system*

- *A constraint on the computer hardware (for example, must operate).*

3.4.1   Policy

Provide guidance that is directive or instructive, and includes tactics, techniques, and procedures. Policies normally govern business processes and the operations of current assets or systems, normally in the form of general statements or understandings that guide or limit decision-making activities, but do allow for some discretion.

Policies also include laws and regulations that inform or limit project decision-making. For example, compliance with safety regulations and environmental protection laws may limit or preclude certain capabilities or activities.

Restraints are internally imposed but removable.

3.4.2 Assumption

An assumption, in this case, is an assertion about some characteristic of the future that underlies the current operations or plans of the organization. An assumption is treated as if it is true until proven otherwise.

Assumptions are self-imposed but needed to permit planning/ops to continue. Assumptions must be firmly based, however, and not made arbitrarily.

Also, it is important to list all of the assumptions made, in order to ensure continuity.

Example:

An assumption may be that a Component's mission scope will be increased in the near term necessitating additional capabilities.

3.4.3 Constraint

A requirement placed on the organization by a higher authority that dictates an action, thus restricting freedom of action. See also operational limitation; restraint. Operational constraints are limitations placed on the operations of the current asset or system (e.g., available hours of system operation, available number of personnel to operate the system, computer hardware and operational facilities constraints).

Constraints are externally imposed and not easily removable.

3.5 Operational Description

Briefly describe – from a user-oriented perspective – the proposed solution (process, asset, or system), its general employment/operation, and its organizational setting. The operational description includes:

3.5.1 Operating Concept (OpCon)

An OpCon is a description, usually graphical, showing the major, interactive participants/ players/systems and subsystems and their interrelationships.

3.5.2 Employment Modes

Describes the general asset configurations and methods of operation in various situations or environments. As an example, for an IT system, they may include: routine use, maximum user

loading, emergency use (e.g., when normal power sources are down), downloading data; uploading data; real-time operations.

3.5.3   Scheduling and Operations Planning

This sub-section can be used to describe what is envisioned in terms of availability, readiness, frequency of use or employment, home-porting, and basing.

3.5.4   Operating Environment

This sub-section is used to describe the conditions and environment, both natural and artificial, in which the system will operate.

3.5.5   Geographic Areas

Provide a bulleted list of the geographic region or regions, and/or sites, where the asset or system will normally operate. Specific descriptions of regions in some cases may be found elsewhere in other policy or regulatory documents. In this case, they do not need to be reiterated here, provided the reader is directed to the source document.

3.5.6   Environmental Conditions

Define the environment in which the asset or system will be operated and maintained.

3.5.7   Interoperability with Other Elements

Describe how the asset or system will be integrated into both the component and overall system that is forecast to exist at the time the asset or system is fielded. Identify the interfaces with other component and systems as well as the general public.

Describe how the asset or system will be integrated into existing, developing, or planned systems and operational procedures. This section should also identify all other system and assets which the new asset must interface with both internal to the component and external to the component.

3.6   Product Support Description

Success depends upon two equally important components: operations and support. While operations are initially described in Business Needs Statement, support of the asset or system is first described in the CONOPS.

Support is integral to the CONOPS because it is interlaced with operations. Support questions are addressed in a CONOPS.

Since support plays such an important role in this document, the CONOPS working group must include members from the support organizations during the CONOPS draft phase.

3.7 As-Is Business Process

As-is process analysis is conducted as part of a larger process to determine how effective and efficient a business process is relative to the needs of the organization in terms of meeting its mission and satisfying customer needs .

As an example, a business process analysis can focus on one or more of the following:

- *customer satisfaction*
- *worker frustration*
- *time*
- *cost*
- *quality.*

Each process assessment reveals elements of the process that are either working or not. Additionally each process assessment is typically connected to a specific improvement methodology such as "lean" operations, activity based costing, six sigma, process re-engineering and/or continuous process improvements.

3.7.1 Business Process Modeling Notation (BPMN)

CONOPS will include business process models using The Business Process Management Initiative (BPMI) standard - Business Process Modeling Notation (BPMN).

The primary goal of BPMN is to provide a notation that is readily understandable by all business users, from the business analysts that create the initial drafts of the processes, to the technical developers responsible for implementing the technology that will perform those processes, and finally, to the business people who will manage and monitor those processes.

Thus, BPMN creates a standardized bridge for the gap between the business process design and process implementation.

3.8 Description of the Current System or Situation

If IT is a component of the CONOPS investigation, this section will contain the major portion of the description of the current system or method of operations.

It provides a description of the current system or situation, including the following, as appropriate:

- *The operational environment and its characteristics;*
- *Major system components and the interconnection among those components;*
- *Interfaces to external systems or procedures;*

- *Capabilities, functions, and features of the current system;*

- *Charts and accompanying descriptions depicting inputs, outputs, data flows, control flows, and manual and automated processes sufficient to understand the current system or situation from the user's point of view;*

- *Cost of system operations;*

- *Operational risk factors;*

- *Performance characteristics, such as speed, throughput, volume, frequency;*

- *Quality attributes, such as: availability, correctness, efficiency, expandability, flexibility, interoperability, maintain-ability, portability, reliability, reusability, supportability, survivability, and usability; and*

- *Provisions for safety, security, privacy, integrity, and continuity of operations in emergencies.*

Since the purpose of this section is to describe the current business process and enabling systems, and how they operate, it is appropriate to use any tools and/or techniques that serve this purpose. It is important that the description of the system be simple enough and clear enough that all intended readers of the document can fully understand it.

It is also important to keep in mind that the CONOPS document shall be written using the users' terminology. In most cases, this means avoidance of terminology specific to computers (i.e., "computer jargon").

Graphical tools should be used wherever possible, especially since CONOPS documents should be understandable by several different types of readers. Useful graphical tools include, but are not limited to:

- *BPMN Process Models*

- *work breakdown structures (WBS)*

- *N2 charts*

- *sequence or activity charts*

- *functional flow block diagrams*

- *structure charts*

- *allocation charts*

- *data flow diagrams (DFD)*

- *object diagrams*

- *context diagrams*

- *storyboards*

- *entity-relationship diagrams.*

The description of the operational environment should identify, as applicable, the facilities, equipment, computing hardware, software, personnel, and operational procedures used to operate the existing system.

This description should be as detailed as necessary to give the readers an understanding of the numbers, versions, capacity, etc., of the operational equipment being used.

For example, if the current system contains a database, the capacity of the storage unit(s) should be specified, provided the information exerts an influence on the users' operational capabilities.

Likewise, if the system uses communication links, the capacities of those links should be specified if they exert influence on factors such as user capabilities, response time, or throughput.

Those aspects of safety, security, and privacy that exert influence on the operation or operational environment of the current system should be described.

The author(s) of a CONOPS document should organize the information in this sub-section as appropriate to the system or situation, as long as a clear description of the existing system is achieved.

If parts of the descriptions are voluminous, they can be included in an appendix or incorporated by reference.

An example of material that might be included in an appendix would be a data dictionary. An example of material to be included by reference might be a detailed manual of operational policies and procedures for the current system.

3.9   Modes of Operation for the Current System or Situation

If IT is a component of the CONOPS investigation, this sub-section describes the various modes of operation for the current system or situation (e.g., operational, degraded, maintenance, training, emergency, alternate-site, peacetime, wartime, ground-based, flight, active, and idle modes).

All of the modes that apply to all classes of users should be included. Important modes to include are degraded, backup, and emergency modes, if such exist.

This is especially true if these modes involve different geographical sites and equipment that have significant impacts on the operational aspects of the system.

This sub-section can be further divided into lower-level sub-section, one for each mode described. System processes, procedures, and capabilities or functions should be related to each mode, as appropriate, perhaps using a cross reference matrix.

3.10 Support Environment

This sub-section describes the support concepts and support environment for the current system, including the support agency or agencies; facilities; equipment; support software; repair or replacement criteria; maintenance levels and cycles; and storage, distribution, and supply methods.

4   Justification for and Nature of Changes

This section within the CONOPS document describes the shortcomings of the current system or situation that motivate development of a new system or modification of an existing system.

This clause provides a transition from Clause 3 of the CONOPS, which describes the current system or situation, to Clause 5 of the CONOPS, which describes the proposed system.

If there is no current system on which to base changes, this sub-section should so indicate and provide justification for the features of the new system.

4.1.1 Justification of Changes

This sub-section should:

A. *Briefly summarize new or modified aspects of the user needs, missions, objectives, environments, interfaces, personnel, or other factors that require a new or modified system;*

B. *Summarize the deficiencies or limitations of the current system or situation that make it unable to respond to new or changed factors; and*

C. *Provide justification for a new or modified system.*

   1. *If the proposed system is to meet a new opportunity, describe the reasons why a new system should be developed to meet this opportunity.*

   2. *If the proposed system improves a current operation, describe the rationale behind the decision to modify the existing system (e.g., to reduce life cycle costs or improve personnel efficiency).*

   3. *If the proposed system implements a new functional capability, explain why this function is necessary.*

4.2   Description of Desired Changes

This sub-section summarizes new or modified capabilities, functions, processes, interfaces, and other changes needed to respond to the factors identified in 4.1. Changes should be based on the current system described in Clause 3 of the CONOPS document.

If there is no existing system on which to base changes, this sub-section should summarize the capabilities to be provided by a new system.

This description should include the following, as appropriate:

A. *Capability changes. Description of the functions and features to be added, deleted, and modified in order for the new or modified system to meet its objectives and requirements.*

B. *System processing changes. Description of the changes in the process or processes of transforming data that will result in new output with the same data, the same output with new data, or both.*

C. *Interface changes. Description of changes in the system that will cause changes in the interfaces and changes in the interfaces that will cause changes in the system.*

D. *Personnel changes. Description of changes in personnel caused by new requirements, changes in user classes, or both.*

E. *Environment changes. Description of changes in the operational environment that will cause changes in the system functions, processes, interfaces, or personnel and/or changes that should be made in the environment because of changes in the system functions, processes, interfaces, or personnel.*

F. *Operational changes. Description of changes to the user's operational policies, procedures, methods, or daily work routines caused by the above changes.*

G. *Support changes. Description of changes in the support requirements caused by changes in the system functions, processes, interfaces, or personnel and/or changes in the system functions, processes, interfaces, or personnel caused by changes in the support environment.*

H. *Other changes. Description of other changes that will impact the users, but that do not fit under any of the above categories.*

4.3   Priorities Among Changes

This sub-section identifies priorities among the desired changes and new features. Each change should be classified as essential, desirable, or optional. Desirable and optional changes should be prioritized within their classes.

If there is no existing system on which to base changes, this sub-section should classify and prioritize the features of the proposed system.

A. *Essential features. Features that shall be provided by the new or modified system. The impacts that would result if the features were not implemented should be explained for each essential feature.*

B. *Desirable features. Features that should be provided by the new or modified system. Desirable features should be prioritized. Reasons why the features are desirable should be explained for each desirable feature.*

C. *Optional features. Features that might be provided by the new or modified system. Optional features should be prioritized. Reasons why the features are optional should be explained for each optional feature.*

Classifying the desired changes and new features into essential, desirable, and optional categories is important to guide the decision making process during development of the proposed system. This information is also helpful in cases of budget or schedule cuts or overruns,

4.4   Changes Considered but not Included

This sub-section identifies changes and new features considered but not included in 4.2 of the CONOPS document, and the rationale for not including them. By describing changes and features considered but not included in the proposed system, the authors document the results of their analysis activities.

This information can be useful to other personnel involved with system development, whether it be users, buyers, or developers should they want to know if a certain change or feature was considered, and if so, why it was not included.

In software especially, there are few, if any, outward signs of what has been changed, improved or is still unsafe or unsecure (e.g., in certain scenarios or workarounds).

4.5   Assumptions and Constraints (refer to paragraph 3.5)

This sub-section describes any assumptions or constraints applicable to the changes and new features identified in this clause. This should include all assumptions and constraints that will affect users during development and operation of the new or modified system.

An assumption is a condition that is taken to be true. An example of an assumption is that the system workload will double over the next two years, thus a new system with higher performance is required.

A constraint is an externally imposed limitation placed on the new or modified system or the processes used to develop or modify the system. Examples of constraints include external interface requirements, and limits on schedule and budget.

5   Potential Impacts

Describe anticipated operational, support and other organizational impacts the proposed asset, capability or system will have on the user, acquirer, developer, and support and maintenance organizations.

These impacts may include:

- *changes in interactions and interfaces with existing systems*

- *change in procedures*

- *use of new data sources*

- *changes in quantity, type, and timing of data to be input to the system*

- *changes in data retention requirements*

- *new modes of operation based on peacetime, alert, wartime, or emergency conditions, modification of responsibilities*

- *addition or elimination of responsibilities or positions*

- *need for training or retraining*

- *changes in infrastructure, including facilities and services; and changes in number, skill levels, position identifiers, or location of personnel in various modes of operation.*

This information allows all affected organizations to prepare for the changes that will be brought about by the new system and to plan for the impacts during development and transition to the new system.

6 Concepts for the Proposed System

This clause describes the proposed system that results from the desired changes specified in Clause 4 of the CONOPS document. This clause describes the proposed system in a high-level manner, indicating the operational features that are to be provided without specifying design details.

Methods of description to be used and the level of detail in the description will depend on the situation. The level of detail should be sufficient to fully explain how the proposed system is envisioned to operate in fulfilling users' needs and buyer's requirements.

In some cases, it may be necessary to provide some level of design detail in the CONOPS. The CONOPS should not contain design specifications, but it may contain some examples of typical design strategies, for the purpose of clarifying operational details of the proposed system.

In the event that actual design constraints need to be included in the description of the proposed system, they shall be explicitly identified as required to avoid possible misunderstandings.

NOTE - If some of the features of the proposed system are the same as the features of the original system, then the comment "no change" should appear after the sub-section number and name.

6.1 Background, Objectives and Scope

This sub-section provides an overview of the new or modified system, including, as applicable, background, mission, objectives, and scope. In addition to providing the background for the proposed system, this sub-section should provide a brief summary of the motivation for the system.

Examples of motivations for a system might include automation of certain tasks or taking advantage of new opportunities.

The goals for the new or modified system should also be defined, together with the strategies, solutions, tactics, methods, and techniques proposed to achieve those goals. The modes of operation, classes of users, and interfaces to the operational environment define the scope of the proposed system, which are summarized in this sub-section and defined in greater detail in subsequent sub-section.

6.2 Operational Policies and Constraints

This sub-section describes operational policies and constraints that apply to the proposed system. Operational policies are predetermined management decisions regarding the operation of the new or modified system, normally in the form of general statements or understandings that guide decision-making activities.

Policies limit decision-making freedom, but do allow for some discretion. Operational constraints are limitations placed on the operations of the proposed system. Examples of operational constraints include the following:

- *A constraint on the hours of operations of the system, perhaps limited by access to secure terminals;*

- *A limiting constraint on the number of personnel available to operate the system;*

- *A limiting constraint on the computer hardware (e.g., must operate on computer X); and*

- *A limiting constraint on the operational facilities, such as office space.*

6.3 Modes of Operation

This sub-section describes the various modes of operation for the proposed system (for example, regular, degraded, maintenance, training, emergency, alternate-site, peacetime, wartime, ground-based, flight, active, and idle modes).

Include all of the modes that apply to all user classes. Important modes to include are degraded, backup, and emergency modes, if such exist. This is especially true if these modes involve different geographical sites and equipment that have significant impacts on the system.

This sub-section can be further divided into lower-level sub-section, one for each mode described. System processes, procedures, and capabilities or functions should be related to each mode.

6.4 User Classes and Other Involved Personnel

A user class is distinguished by the ways in which the users interact with the system. Factors that distinguish a user class include responsibilities, skill level, work activities, and mode of interaction with the system. Different user classes may have distinct operational scenarios for their interactions with the system.

In this context, a user is anyone who will interact with the proposed system, including operational users, data entry personnel, system operators, operational support personnel, software maintainers, and trainers.

This sub-section can be further divided into lower-level sub-section if it is helpful in communicating the content.

6.5 Organizational Structure

This sub-section describes the organizational structures of the various user groups and user classes that will be involved with the proposed system. Organizational charts are useful graphic tools for this purpose.

6.6   Profiles of User Classes

This sub-section provides a profile of each user class for the proposed system. If some users play several roles, each role should be identified as a separate user class.

Each user class for the proposed system, including operators and maintainers, should be described in a separate sub-section. Each sub-section should provide a description of the user class, including responsibilities, education, background, skill level, activities, and envisioned modes of interaction with the proposed system.

6.7   Interactions Among User Classes

This sub-section describes interactions among the various user classes that may be involved with the proposed system.

In particular, interaction among user groups, operators, and maintainers should be described. Interactions that will occur among the users of the proposed system, and between users and non-users, both within the organization and across interfacing organizations, if they are relevant to the operation of the proposed system, should be described.

Informal as well as formal interactions should be included.

6.8   Other Involved Personnel

This sub-section describes other personnel who will not directly interact with the system, but who have an influence on, and are influenced by, the present system. Examples include executive managers, policy makers, and the user's clients.

Although these individuals do not have hands-on interaction with the system, they may significantly influence and be influenced by, the new or modified system.

6.9   Support Environment

This sub-section describes the support concepts and support environment for the proposed system, including the support agency or agencies; facilities; equipment; support software; repair or replacement criteria; maintenance levels and cycles; and storage, distribution, and supply methods.

7   Scenarios

Scenarios are one way to gain insight into how a capability solution will perform and fit into the processes, activities, organizations, personnel, procedures, environment, threats, constraints, assumptions and support involved in responding to the mission(s).

In general, scenarios describe the role of the asset or system, how it will interact with external entities (both inside and outside its parent component) in various modes and how key internal interfaces or key internal capabilities are used.

In other words, HOW would the asset or system dynamically perform in action to deliver mission outputs or provide capability? Other ways to determine fit may include modeling and simulation, and prototyping and piloting.

Carefully selected and defined scenarios tie together all parts of the asset, capability or system, the users, and other entities by describing how they interact.

As such, scenarios perform a number of important roles in the development of the CONOPS:

- *Scenarios illustrate the more general needs expressed in other parts of the CONOPS, providing a simple justification for why a particular capability, operational, or support characteristic is needed.*

- *Scenarios bind together different capabilities, showing how the capabilities are related.*

- *In developing and 'working' a scenario (usually in a work group), additional needs are usually revealed.*

- *By focusing on a realistic situation, deficiencies, and omissions in the defined needs can be detected.*

- *Because scenarios describe operations and support in plain language, they assist all non-users to understand the operational and support domains, including the roles and needs of the users.*

- *Scenarios can also provide detailed and validated information which can be used for analysis and modeling tasks later in the project.*

- *Because scenarios represent realistic specific situations, they can contribute to the development of acceptance and operational testing.*

7.1   Operational Scenarios

In collaboration with the current or future hands-on users, develop one or more representative "stories" that depict the asset and its operational functional capabilities in action.

Usually, each story has a set of activities carried out by organizations working together to accomplish an objective(s), in a specified environment; with constraints.

Each scenario depicts "how" the asset, capability solution or system helps in this broad operational contest to deliver operational results. Several scenarios may be constructed to more fully represent the mission(s) and environments.

They should be distinct enough to cover the spectrum of factors affecting the mission. Normally, three to six scenarios are developed.

7.1.1 Support Name

In collaboration with appropriate user/operators develop a representative "story" that depicts the asset and either (a) its functional mission support capabilities in action or (b) the support the capability solution (e.g., asset) required to operate.

Each scenario should depict "how" the asset or system conducts mission support activities or is provided with support and sustainment to deliver mission support outputs. In each scenario, consider the facets or elements used in the mission support description in section.

7.1.2 Functional Capabilities Needed

First, identify the specific support activities taking place in the scenario. Then group the activities, if possible, by the functional capabilities required by the system to perform the activities. Using bullets, list in this section each functional capability identified in the scenario.

Later, similar functional capabilities from all of the support scenarios are combined and used as titles for the individual functional capabilities described in sub-section 4 and in the Functional Capabilities Matrix.

8 Functional Capabilities

This section describes the functional capabilities of the asset and how they achieve mission operations and mission support objectives. Each description should include those activities performed by the asset or system that produce capabilities and, in turn, affect mission outcomes. A short discussion on the physical components and interfaces to the environment should be included.

8.1 Operations

Provide an individual description for each capability listed in paragraphs 9.0. Number each sub-section.

8.2 Support

Provide an individual description for each capability listed in paragraphs 9.0. Number each sub-section.

8.3 Functional Capabilities Matrix

Insert two tables (see below example) that list the functional capabilities identified in the previous two sub-sections respectively.

8.3.1 Operations Matrix

Populate the left column with the title of each mission operations functional capability listed in sub-section 8.1 above. List the functional capabilities in order (descending) based on number of occurrences throughout the scenarios.

Populate the top row only with those missions identified in the Business Needs Statement. Within the matrix field, insert a "P" to indicate the functional capability is primary, or essential to mission success. Insert an "S" to indicate the functional capability supports the mission indicated yet is secondary, or not essential to mission success.

This sub-section provides linkage to the appropriate mission and lays the foundation for the development of the RSD, and assists the requirements team with prioritizing requirements.

Example:

Functional Capability	Missions						
	1	2	3	4	5	6	7
Operations	P	P	P	P	P	S	P
Communications	P	P	S	P	S	P	P

8.3.2 Support Matrix

Populate the left column with the title of each support functional capability listed in sub-section 7. assessment of support to the scenarios through a prioritization matrix or count of the number of occurrences throughout the scenarios. Populate the top row only with those support modes identified in the Capabilities sections.

Within the matrix field, insert a "P" to indicate the functional capability is primary, or essential to readiness. Insert an "S" to indicate the functional capability support the mission indicated yet is secondary, or not essential to readiness.

When determining "P" or "S", consider whether or not the asset needs to have the capability while in the specific support mode2 above. List the functional capabilities in priority order (descending).

9   Summary of Impacts

This section describes the operational impacts of the proposed system on the users, the developers, and the support and maintenance organizations. It also describes the temporary impacts on users, buyers, developers, and the support and maintenance organizations during the period of time when the new system is being developed, installed, or trained on.

This information is provided in order to allow all affected organizations to prepare for the changes that will be brought about by the new system and to allow for planning of the impacts on the buyer agency or agencies, user groups, and the support maintenance organizations during the development of, and transition to the new system.

9.1 Operational Impacts

This sub-section should be further divided into lower-level sub clauses to describe the anticipated operational impacts on the user, development, and support or maintenance agency or agencies during operation of the proposed system. These impacts may include the following:

- *Interfaces with primary or alternate computer operating centers*

- *Changes in procedure*

- *Use of new data sources*

- *Changes in quantity, type, and timing of data to be input into the system*

- *Changes in data retention requirements*

- *New modes of operation based on emergency, disaster, or accident conditions.*

9.2 Organizational Impacts

This sub-section should be further divided into lower-level sub clauses to describe the anticipated operational impacts on the user, development, and support or maintenance agency or agencies during operation of the proposed system. These impacts may include the following:

- *Modification of responsibilities; responsibilities*

- *Addition or elimination of job positions; positions*

- *Training or retraining users; users*

- *Changes in numbers, skill levels, position identifiers, or locations of personnel; personnel; and*

- *Numbers and skill levels of personnel needed for contingency operation at one or more alternate sites following an emergency, disaster, or accident.*

9.3 Impacts During Development

This sub-section should be further divided into lower-level sub-sections that describe the anticipated impacts on the user, development, and support or maintenance agency or agencies during the development project for the proposed system.

These impacts may include the following:

- *Involvement in studies, meetings, and discussions prior to award of the contract;*

- *User and support involvement in reviews and demonstrations, evaluation of initial operating capabilities and evolving versions of the system, development or modification of databases, and required training;*

- *Parallel operation of the new and existing systems; and*

- *Operational impacts during system testing of the proposed system.*

10 Analysis of the Proposed System

This section provides an analysis of the benefits, limitations, advantages, disadvantages, and alternatives and trade-offs considered for the proposed system.

10.1 Summary of Improvements

This sub-section provides a qualitative (and to the extent possible, quantitative) summary of the benefits to be provided by the proposed system.

This summary should include the below items, as applicable. In each case, the benefits should be related to deficiencies identified in 4.1 of the CONOPS.

- *New capabilities. Additional new features or functionality.*

- *Enhanced capabilities. Upgrades to existing capabilities.*

- *Deleted capabilities. Unused, obsolete, confusing, or dangerous capabilities removed.*

- *Improved performance. Better response time, reduced storage requirements, improved quality, etc.*

10.2 Disadvantages and Limitations

This sub-section provides a qualitative (and to the extent possible, quantitative) summary of the disadvantages and/or limitations of the proposed system.

Disadvantages might include the need to retrain personnel, rearrange work spaces, or change to a new style of user interface; limitations might include features desired by users but not included, degradation of existing capabilities to gain new capabilities, or greater-than-desired response time for certain complex operations.

10.3 Alternatives and Trade-offs Considered

This sub-section should describe major alternatives considered, the trade-offs among them, and rationale for the decisions reached. In the context of a CONOPS document, alternatives are operational alternatives and not design alternatives, except to the extent that designs alternatives may be limited by the operational capabilities desired in the new system.

This information can be useful to determine, now and at later times, whether a given approach was analyzed and evaluated, or why a particular approach or solution was rejected. This information would probably be lost if not recorded.

11   CONOPS Development Team

List the names of personnel and organization that made meaningful contributions to the document. This provides the reader with points of contact to follow-up when questions arise.

Name	Organization	Email Address	Phone Number

12   Notes

This section should contain any additional information that will aid understanding of a particular CONOPS document. This clause should include an alphabetical listing of all acronyms and abbreviations, along with their meanings as used in this document, and a list of any terms and definitions needed to understand the document.

13   Appendices

To facilitate ease of use and maintenance of the CONOPS document, some information may be placed in appendices to the document. Charts and classified data are typical examples. Each appendix should be referenced in the main body of the document where that information would normally have been provided. Appendices may be bound as separate documents for easier handling.

Attach any additional information that supplements this plan.

13.1   Appendix A – Analysis Reports

Include each report of analysis conducted to include:

- *Human Resources Analysis*
- *Operational Analysis*
- *Support Analysis*
- *Budgetary Assessment*
- *Marketplace Assessment*

13.2 Appendix B – Glossary of Terms

Term	Meaning

13.3 Appendix C – Acronyms and Abbreviations

Acronym / Abbreviation	Meaning
CAR	Causal Analysis and Resolution
CCB	Change Control Board
CL	Capability Level
CM	Configuration Management
CMMI	Capability Maturity Model Integration
COTS	Commercial off the Shelf
IPM	Decision Analysis and Resolution
IPPD	Integrated Project Management
MA	Integrated Product & Processes Development
ML	Measurement Analysis
OID	Maturity Level
OPD	Organizational Innovation and Deployment
	Organizational Process Development
OPF	Organizational Process Focus
OPG	Organizational Process Group
OPP	Organizational Process Performance

Acronym / Abbreviation	Meaning
OT	Organizational Training
PAL	Process Asset Library
PI	Product Integration
PIID	Practice Implementation Indicator Document
PIP	Process Improvement Plan
PIT	Process Improvement Team
PM	Program / Project Manager
PMC	Project Monitoring & Control
PP	Project Planning
PPQA	Process and Product Quality Assurance
QA	Quality Assurance
QPM	Quantitative Project Management
RD	Requirements Development
REQM	Requirements Management
RSKM	Risk Management
SAM	Supplier Agreement Management
SCAMPI	Standard CMMI Appraisal Methodology for Process Improvement
SEI	Software Engineering Institute
SOW	Statement of Work
TS	Technical Solution
VAL	Validation
VER	Verification
WBS	Work Breakdown Structure

13.4 Appendix D – References

Provide a list of all documents used in the development of the CONOPS. Each document listing includes the number, title, revision, and date. This includes but is not limited to legislation, feasibility studies, cost benefit studies, system architectural studies, documents concerning related projects, relevant technical documentation, MNS and ORD, instructions, program

management directives, system handbooks, policy directives and OPLANS, etc. Include all documents referenced in this document. Identify the source for all documents that are not available through normal Government stocking activities.

Document Number	Title	Source (if applicable)	Revision	Date

13.5 Approval Signatures

This section is used to document the approval of the Concept of Operations during the Formal Review. The review should be conducted face to face where signatures can be obtained 'live' during the review. If unable to conduct a face-to-face meeting then it should be held via LiveMeeting and concurrence captured during the meeting. The Scribe should add "*/es/name"* by each position cited.

All members of the team are required to sign. Please annotate signature blocks accordingly.

Role	Name	Signature	Date