

**BY ORDER OF THE COMMANDER
AIR FORCE SPACE COMMAND**

**AIR FORCE SPACE COMMAND
INSTRUCTION 10-102**



13 MARCH 2013

Operations

CONCEPT DEVELOPMENT

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

ACCESSIBILITY: Publications and forms are available on the e-Publishing website at www.e-Publishing.af.mil for downloading or ordering

RELEASABILITY: There are no releasability restrictions on this publication

OPR: HQ AFSPC/A3XC

Certified by: HQ AFSPC/A3X
(Mr. Stebbins)

Supersedes: AFSPCI10-102, 22 July 2011

Pages: 27

This instruction implements Air Force (AF) Policy Directive (AFPD) 10-28, *Air Force Concept Development and Experimentation*. It provides specific Air Force Space Command (AFSPC) implementation guidance regarding the format, content and organizational responsibilities for preparing, coordinating and disseminating concept documents that guide development, acquisition and operation of AFSPC capabilities. This instruction applies to HQ AFSPC, its Numbered Air Forces (NAF) and assigned wings, the Space and Missile Systems Center (SMC), the Air Force Network Integration Center (AFNIC), and the Air Force Spectrum Management Office (AFSMO). It also applies to Air Force Reserve Command (AFRC) and Air National Guard (ANG) units directly supporting AFSPC units and missions. Air Force Life Cycle Management Center (AFLCMC) is mentioned for information only, as they interface with AFSPC for program management. Adherence is mandatory, except when statutory requirements, Department of Defense (DoD) or Joint Staff directives override. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Form 847s from the field to the appropriate HQ AFSPC functional staff. Ensure all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with the Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). For references and supporting information, see [Attachment 1](#).

SUMMARY OF CHANGES

This revision updates references to AFPD 10-28, which was republished in April 2012. It also updates and clarifies concept development responsibilities resulting from the 2012 AFSPC Headquarters reorganization, which eliminated Capability Teams and created AFSPC/A3X, Operational Concepts and Resources Division, as the Headquarters OPR for operational concept development in support of AFSPC organize, train, and equip efforts.

1.	Concept Definitions and Uses.	2
Figure 1.	Concepts in the AFSPC Capability Development Process	6
2.	Concept Content and Format.	7
3.	Concept Development/Approval Process.	12
4.	Responsibilities.	14
5.	Concept Release Policy.	16
6.	AFSPC Portal Page.	16
Attachment 1—GLOSSARY OF REFERNCES AND SUPPORTING INFORMATION		17
Attachment 2—CONCEPT TYPES		22
Attachment 3—CONCEPT FORMAT		23
Attachment 4—EXAMPLE CAPABILITY DESCRIPTIONS		24
Attachment 5—CAPABILITY TRACEABILITY MATRIX EXAMPLE		26

1. Concept Definitions and Uses. Air Force concepts describe the *ways* (sequenced actions) in which we employ military *means* (capabilities) to accomplish desired *ends* (effects). They guide how the AF organizes, trains and equips forces and describe how capabilities might be used to meet emerging and future Joint/Interagency challenges. They can also shape plans for achieving national security and military objectives. A concept is not a purely technical or procedural description, but rather a broader *operational description* of an actual or projected challenge to be addressed, the desired effects to solve that problem, and the needed capabilities to create those effects. For AFSPC, concepts *provide the operational context* to inform the planning, requirements and acquisition processes that define, produce and deliver materiel and non-materiel solutions to satisfy identified warfighter capability gaps and/or shortfalls. More specifically, a concept can, among other things, support requirements development, systems development, test planning, Analysis of Alternatives (AoA) development, provide guidance to operators, and/or provide a mechanism for stimulating thought and common understanding. The term “concept” as used herein is not to be confused with the term “concept” as used in acquisition circles. Product center (e.g., AFLCMC and SMC) “concepts” are potential solutions that may ultimately have military utility, and are being developed in response to gaps and/or shortfalls identified during the AFSPC Integrated Planning Process (IPP). See the list of terms in

Attachment 1 for a quick reference of concept definitions, and see Attachment 2 for concept types and examples.

1.1. Concepts of Operations (CONOPS). Joint Publication (JP) 5-0, *Joint Operation Planning*, defines a CONOPS as a clear and concise expression of “*what the [Joint Force Commander] intends to accomplish and how it will be done using available resources. It describes how the actions of the joint force components and supporting organizations will be integrated, synchronized, and phased to accomplish the mission, including potential branches and sequels.*” Note: At the time of this writing, there are seven Air Force “CONOPS.” Contrasted with the JP definition of CONOPS above, these documents are “*the highest Service-level concept(s) comprising a commander’s assumptions and intent to achieve desired effects through the guided integration of capabilities and tasks that solve a problem in an expected mission area.*” For brevity, the remainder of the document will refer to both current AF CONOPS and any future AF Operations Concept(s) as “AF-level concepts.” In summary, a CONOPS, as defined in JP 5-0 describes how the warfighter will accomplish missions in the near-term, while the AF-level concepts describe the operational capabilities the Air Force will contribute to the joint force to meet warfighter needs *in the future.*

1.2. Functional Concepts. Air Force Space Command functional concepts describe broad capabilities needed to perform functions to, in turn, accomplish missions that support AF- and higher-level concepts. By doing this, AFSPC functional concepts support AFSPC strategic planning activities as they establish the scope of warfighter-required capabilities that can be met within the command’s space and cyberspace mission areas. See [Figure A2.1](#) at [Attachment 2](#) for the current set of functional concepts.

1.3. Enabling and Operating Concepts. Air Force Space Command uses enabling and operating concepts to describe the use of capabilities to accomplish a broader military function or sub-function. They are strongly linked as both describe “ways,” “means,” and “ends,” to perform a function; however, they differ in their emphasis and detail based on the maturity of any acquisition program that may result.

1.3.1. Enabling Concepts.

1.3.1.1. The Command uses enabling concepts to *lead the requirements and acquisition processes* by articulating in operational terms the *necessary and supporting capabilities* to produce desired *effects* that support warfighter and national objectives. They *communicate an operational idea* without specifying system requirements. To do this, they describe, in as much detail as possible, the military challenge (problem) to be solved, the risks to successfully achieving the concept, assumptions that maintain concept validity, the required timeframe, and how the concept will integrate with joint systems, architectures, and organizations in existence or likely during the timeframe of operation. An initial concept should draw extensively from higher-level concepts and the work done by the AFSPC Integrated Planning Process and the product centers, but avoid being cost-constrained. Ultimately, an enabling concept serves as the operational basis for requirements and acquisition activities to include test planning and execution—for one or more systems.

1.3.1.2. Enabling concepts evolve to reflect current thinking about the subject. A concept may start with an initial, low-fidelity description about how the command envisions capabilities and operations to meet a particular need; however, it will mature along with an associated program (or programs) designed to bring about the capabilities listed in the concept. As our ideas for meeting capability needs mature into program requirements and funded programs, enabling concepts will likewise mature in detail. As a program coalesces to an intended system or systems, the enabling concept should mature into an operating concept that describes the system(s).

1.3.1.3. When conducting pre-Milestone A activities, an enabling concept should support the product center's concept exploration and refinement process and feed development of the architecture products and Analysis of Alternatives (AoA) reports required to successfully validate needs through the Joint Capabilities Integration and Development System (JCIDS). It is the source for the Operational View-1 (OV-1) and provides operational context to develop additional architecture products required in requirements documents. The enabling concept clearly shows the linkage from operator/warfighter needs to proposed solutions. Concepts support the AoA in terms of capability (military utility), schedule, cost (to include savings/return on investment, cost avoidance, etc.) and risk. For each alternative, a concept will describe the details of the employment of the alternative as it will function within the envisioned operating environment. Following the approval of a proposed materiel solution at Milestone A, the concept document should be updated to reflect more specific details of the capability. This is where the concept begins to evolve into a solution-centric description, and begins to approximate requirements for the system (or non-materiel solution) that will ultimately result. The concept will form the basis for developing each succeeding requirements document (e.g., a Capability Development Document (CDD)), and provide the operator's influence through each of the acquisition phases to support the related development activities and milestone decisions.

1.3.2. Operating Concepts.

1.3.2.1. As the natural evolution of an enabling concept, AFSPC operating concepts describe specific capabilities that will be fielded. As a program completes critical design review (CDR) and begins production, the concept author must provide top-level guidance to the eventual operators on what will be included in the delivery and how the capabilities can be employed to achieve desired effects. A complete operating concept provides sufficient information to allow the shaping of manning and personnel planning, and develop or update tactics, techniques and procedures (TTPs), technical orders, and/or warfighter CONOPS. At this point in development, many (if not all) of the specifics of the new capability "system" are final. The concept author must now expand on the content, showing in concrete terms what specific capabilities are being brought to the fight, and how they will integrate with existing infrastructures/systems. The author also must precisely define specific mission contributions and command relationships. Additionally, the concept must refine the potential future threats/risks to the capabilities (if applicable) and identify specific means to mitigate these threats/risks.

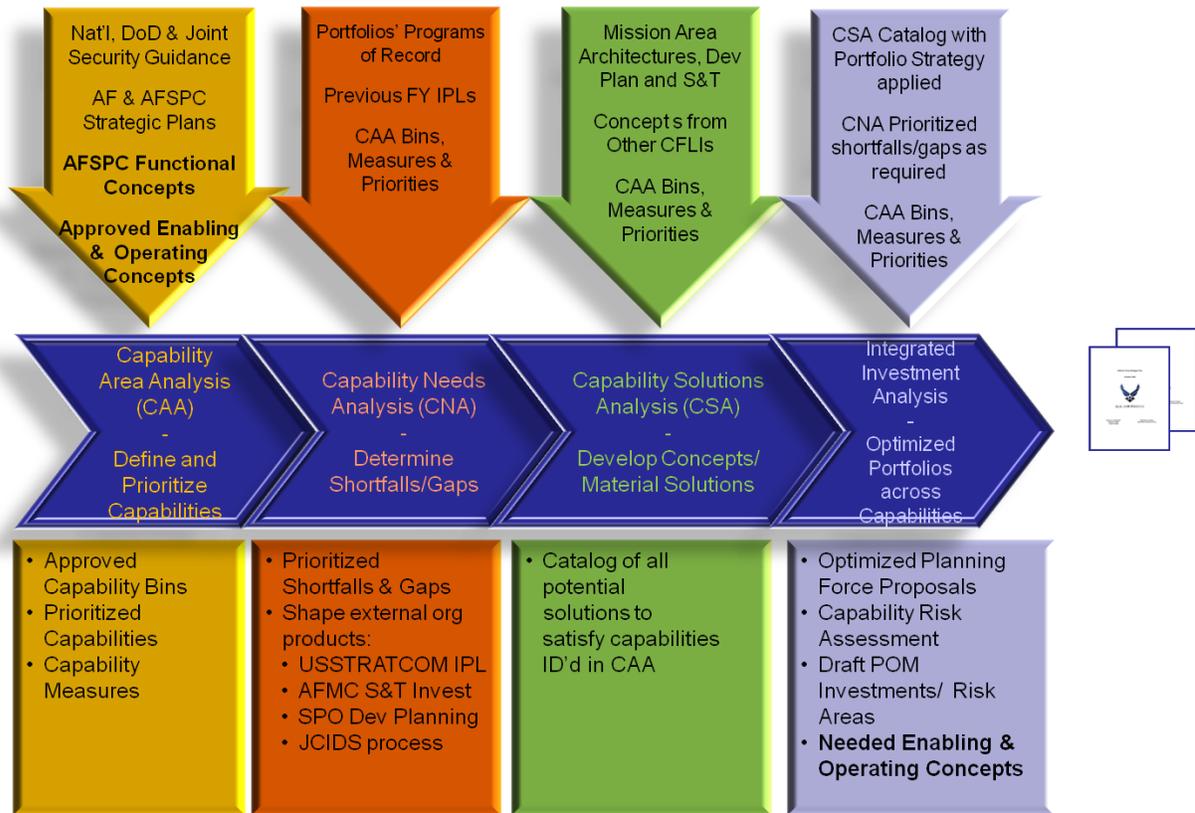
1.3.2.2. Operating concepts serve as a source document for commanders in developing their respective CONOPS (Note: for documents developed below MAJCOM level, CONOPS and Operating Concept are synonymous) They also serve, along with validated requirements documentation, as the foundational documents for testing and evaluation planning, and subsequent system modification or upgrade efforts. While conducting testing and evaluation, a Component Numbered Air Force (C-NAF) or AF unit level CONOPS/Operating Concept is required, unless an existing MAJCOM-level operating concept is deemed sufficient by the testing organization.

1.4. Concept Drivers. Several things can drive the need to produce a concept document. National guidance, warfighter lessons learned, AF Concept Development and Experimentation (AF CD&E), new partnerships, AFSPC IPP-identified gaps/shortfalls, entering a Requirements Strategy Review, research and development, acquisition community experience, and even new TTPs for using existing systems can all drive a need to write a concept. In short, if the command expends time and resources towards developing a system or capability, there should be a concept underpinning those efforts.

1.4.1. Guidance. National level guidance is contained in documents such as the National Security Strategy, while DoD guidance is contained in documents such as the National Defense Strategy, National Military Strategy and Strategic Planning Guidance. Air Force Space Command derives additional direction from the Quadrennial Defense Review (QDR), the Guidance for the Development of the Force, the Guidance for the Employment of the Force, the Unified Command Plan, Theater Security Cooperation Plans, Combatant Commander Integrated Priority Lists, the family of Joint Operations Concepts (JOpsC), Joint Doctrine, and the United States Air Force (USAF) Strategic Planning Directive, AF Core Function Master Plans (CFMP), Annual Planning and Programming Guidance, Chief of Staff of the Air Force (CSAF) Vision Statements, AF-level concepts, AFSPC plans and others.

1.4.2. AF Capability Based Planning (CBP). The overall AF CBP process drives the creation of most AFSPC-developed concepts. The Air Force identifies key capabilities in the overarching AF-level concepts. The Air Staff then vets these capabilities through the CBP process, which results in a list of needed capabilities (“needs”) and identified deficiencies (known as “gaps” and “shortfalls” respectively). The combination of CBP-required capabilities and deficiencies, and needs identified by partner agencies (intelligence community, civil agencies, etc.), and the AFSPC functional concepts, form the key inputs to the AFSPC strategic planning process: the IPP. Existing enabling and operating concepts provide information on projected capabilities into this process. Teams then begin to identify the most cost-effective combination of programs, systems, technologically feasible future concepts and acquisition schedules to satisfy the needs over the planning horizon, within a realistic funding profile. The output of the IPP is documented in the Space Superiority and Cyberspace Superiority CFMPs, which identify the capability gaps and shortfalls that must be filled through modernization. Figure 1 depicts where the various AFSPC concepts fit with respect to the IPP cycle. Note: enabling and operating concepts serve as both inputs to the IPP (in that approved concepts help define what capabilities we are currently working on), and as needed documents driven by IPP products (in response to an identified shortfall or gap).

Figure 1. Concepts in the AFSPC Capability Development Process



1.4.3. Development Planning. Product centers conduct a pre-acquisition, systems-engineering process to generate ideas, explore concepts (i.e., potential materiel solutions) and transition promising candidates into development efforts that address validated capability gaps and shortfalls. Once an idea is matched to an identified gap/shortfall, initial concept exploration determines whether the idea has merit for further study (technical maturity, military utility, etc.). If not understood, the product center may seek an initial enabling concept to provide the operational context for the needed capability to help evaluate military utility. Note: any concept work in support of pre-Milestone A activities does not indicate a command preference of a particular solution (i.e., a “preferred materiel solution,” or “preferred system concept”). Based upon resources and priorities, promising ideas are further developed (through detailed modeling, simulation, analysis, demonstration, etc.), and may lead to initial system development. If not previously completed, enabling concept development must support anticipated Pre-Milestone A activities (Concept Characterization and Technical Description, Capabilities-Based Assessment, AoA, Joint Capability Technology Demonstrations, etc.). The potential solution may describe a new system, or modifications to an existing system, along with enabling technologies and available science and technology (S&T) resources that could meet the need(s). Following successful development planning and vetting in an AoA, whereby the idea evolves into a solution, the product center will either integrate development activities into an existing program management office (typical for follow-on systems, such as GPS III), or establish a new one.

2. Concept Content and Format. This section provides guidance for AFSPC concept document development. The basic format remains the same as the document matures, however, as the concept evolves, so does the level of detail.

2.1. General. Concepts should be succinct and to the point. Concepts simply state an idea in operational terms. They are not, by themselves, advocacy documents, nor are they specifications—so more length does not necessarily make them better. The format listed below is designed to guide authors in creating concepts that are complete and compliant with AF direction. Do not deviate from the format unless absolutely necessary, but always confer with AFSPC/A3X prior to any deviation. Place very detailed or lengthy information in an appendix, but only if necessary and pertinent to the purpose of the document. Uniform, high-quality, substance and style across the entire library of AFSPC concept documents will help the command effectively and consistently communicate to all concept readers.

2.2. Document Markings. In addition to following applicable security classification guides, follow DOD Manual 5200.01, *DOD Information Security Program*, when classifying and marking concept documents. Consider all relevant Critical Information Lists when assessing your document. Note: “For Official Use Only” (FOUO) documents must be portion-marked to indicate “*material which may be withheld from the public because disclosure would cause a foreseeable harm to an interest protected by one or more FOIA exemptions...*,” as listed in the regulation.

2.3. Document Content. Refer to the AFSPC CONOPS/Concepts website on the AF Portal to see format templates, guidelines, examples, and the approved concept library (full URL is listed in paragraph 6.). Note: You will need to login initially to the AF Portal to access the above page. Table A3.1. at Attachment 3 lists the main content section headings described below.

2.3.1. Purpose. The Purpose section is simply a short description of what the *document* is intended to do. It is *not* a description of what the envisioned capabilities will do (that comes later). This section also mentions the specific *process need*, or “*driver*,” the document fulfills (e.g., support to a Milestone Decision Authority Decision, Commander direction, etc.). Consider what the intended recipient(s) will do with the document and/or what activities the concept will inform. Initially, it may be to stimulate thought and common understanding of how the command might satisfy a warfighter need. Later, it may support the development of specific operational requirements, inform test planning, or it may describe the operation of a soon-to-be fielded system. A concept may have more than one purpose. Revise the purpose(s) as the concept matures through implementation.

2.3.2. Background. (Heading only)

2.3.2.1. General. This subsection contains the minimal amount of additional information to allow the reader to understand any context not specifically addressed elsewhere. This may include why the idea expressed in the concept exists (e.g., emerging military problems/threats, advances in technology, new ways to deal with existing military problems, etc.), “how we got here,” etc. Provide any information that bounds the scope of the topic if needed. Limit the general background discussion to no more than two pages, excluding diagrams.

2.3.2.2. Description of the Military Challenge(s). This section encapsulates the *operational “why”* of the concept. Use this section to specify the *fundamental problem to be solved* (i.e., warfare, not technical, aspects). Example: a concept may describe a challenge in providing continuous surveillance coverage on a great number of hard-to-detect items-of-interest over a vast area. This subsection should also describe projected threats/enemy capabilities that contribute to the challenges to be overcome (e.g., adversary’s offensive space control or cyberspace capabilities, orbital debris, environmental conditions). In coordination with the A2 staff, determine any applicable threat documents and reference them in this section. Finally, having listed the fundamental challenge(s), if applicable, briefly describe limitations in our ability to meet those fundamental challenge(s) using existing approaches and solutions.

2.3.2.3. Desired Effects. List the desired operational effects for achieving military objectives. Explain the Commander’s intent. In many cases, a concept may strive to create interim or supporting effects that lead to the ultimately desired effects. Review specific desired effects contained in the next-higher-level concept(s), CONOPS, Combatant Commander (CCDR) operational plans, or Joint Urgent Operational Needs, for ideas.

2.3.2.4. Relationship(s) to Other Concepts. All AFSPC concept documents must identify effects and capabilities that address those described in at least one of the higher-level concepts. Example: An enabling concept will “link” to at least one functional concept which, in turn, provides the linkage to the overarching AF-level concepts. Likewise, the AF-level concepts have direct linkage to the JOpsC family. This linkage ensures all concepts *seek to solve warfighter capability needs*, which are ultimately validated by the Joint Requirements Oversight Council. In short, this is one way the command tangibly shows how its efforts ultimately support the warfighter. Consider using a tailored version of the diagram at Attachment 2 to illustrate.

2.3.3. Situation. (Heading Only) As general guidance, keep the discussion focused. For example, one could imagine hundreds of constraints, assumptions, and risks, but the intent is to highlight only those that have a direct and substantial bearing on the concept.

2.3.3.1. Time Horizon. This *short* “section” simply states when the envisioned capabilities are expected to be used for operations. This is the “*when*” of the concept, and useful for synchronizing and planning capability efforts. It is *not* the timeframe, or plan, for developing the capability. This section can be as short as one or two sentences.

2.3.3.2. Constraints. Constraints are restrictions on potential solutions for, or implementations of, the concept. These limitations may be due to factors external or internal to AFSPC, such as legacy solutions/systems & infrastructure, policy, doctrine, organizational roles and responsibilities (current and projected), regulatory requirements, etc. Focus the constraints listed in enabling concepts on those factors that will limit possible solutions. Focus those listed in operating concepts on factors that limit the use of identified or to-be-delivered solutions.

2.3.3.3. Assumptions. Appropriate assumptions meet all of the following criteria: 1) likely but not certain future conditions; 2) factors outside the Command’s areas of

responsibility; and 3) necessary to keep the concept valid. Assumptions are not “facts,” nor are they program decisions. Example: a concept might assume (require) a change in policy in order to implement the concept. “Funding,” however, is a common mistaken assumption. (While a program cannot exist without funding, an underlying concept is valid or invalid irrespective of funding. In other words “adequate funding” is a decision (that is, officials decide whether or not to fund a program), but not an assumption upon which the *concept* relies.) Briefly explain any assumptions that are required for bounding and successfully implementing the concept.

2.3.3.4. Risks. Describe significant risks that may influence successful materiel solution development or successful operation of capability. Example: “failure to achieve a needed technological advance may prevent the successful development of the capability” is a valid risk. Also include potential or known ways of mitigating each risk. Focus this discussion on noteworthy risks, as it is unnecessary to describe anything and everything that could conceivably go wrong.

2.3.4. Synopsis. Provide a high-level description of the fundamental concept, including major capabilities to be employed, and how they will be used to accomplish the desired effects. This section encapsulates the “central idea” of the concept. It captures the essence of the “*what*” and the “*how*” of the concept in the most fundamental terms possible that retain practical meaning. Describe key elements and how they interface. Use a graphic representation, OV-1, per the current *DoD Architecture Framework*, to complement the description (see paragraph 6. for link to examples on AF Portal). Identify the conditions under which the mission(s) will be achieved. Make clear the focus of the mission(s): Is it global in nature? Is it strategic or tactical? Is it operational or supporting?

2.3.5. Necessary and Enabling Capabilities. (Heading only.)

2.3.5.1. Necessary Capabilities. Necessary capabilities describe the means by which one may accomplish a task. For this section, provide a separate subparagraph for each capability, beginning with a concise, bold-font heading. Each description should include what comprises the capability and what it does to achieve the desired effects. Some capabilities consist of sub-capabilities and should be written in an organized hierarchy. If a capability pertains only to a certain type of operation within the range of military operations (as described in JP 3-0, *Joint Operations*), state it. See example capability descriptions in [Table A4.1](#) in [Attachment 4](#).

2.3.5.1.1. Functional concepts should contain broad capabilities or capability areas without defining specific systems or organizations to operate them. Write each necessary capability in such a manner that it can be evaluated in the IPP (i.e., each capability can be assigned attributes and measures consistent with value-based decision analysis).

2.3.5.1.2. Enabling concepts describe capabilities with a bit more detail than those listed in the functional concepts, but also without preemptively defining a specific system/solution. Of course some concepts may involve already-fielded capabilities, so it is appropriate to mention specific solutions in this regard. Include an overarching discussion of any special supportability, survivability, and

protection measures or features that the set of capabilities will have to mitigate the threat(s) listed earlier in the document.

2.3.5.1.3. Operating concepts describe necessary capabilities that will be delivered. Think of necessary capabilities as the main “feature set.” Describe them in terms of what they can do, and in what conditions, without defining specific procedures. The goal is to provide enough detail in the descriptions to enable the development of tactics, techniques, procedures, and CONOPS at the warfighter level.

2.3.5.1.4. Finally, list the main capabilities in this section with associated capabilities called out in the next-higher-level concept(s) (at a minimum) using a Capability Traceability Matrix as an Appendix (see format in [Table A5.1](#) at [Attachment 5](#)). In other words, enabling and operating concept capabilities trace to functional concept capabilities; functional concept capabilities trace to AF-level concepts. A higher-level-concept capability may appear multiple times.

2.3.5.2. Enabling Capabilities. This section contains capability descriptions for those that are *essential* for the successful execution of the concept, but are *not directly* related to the objectives. In other words, these fall outside the scope of this concept, but perhaps in the scope of another. Example: “spacelift” is an enabling capability for a space-based concept, and “wideband communications” might be an enabling capability for an Intelligence, Surveillance, and Reconnaissance (ISR) concept. Follow the same content guidelines given above for necessary capabilities. Use brief, separate subparagraphs for each capability, providing enough information to convey the extent to which this concept relies on it. Example: for a net-centric, data-sharing enabling capability, describe how envisioned necessary capabilities will connect to the net-centric enterprise and what will be offered to, and taken from, that enterprise.

2.3.5.2.1. If known, concept authors will identify resources such as facilities, command and control, infrastructure, installation support services, force protection, and others as enabling capabilities. Just about all concepts require a trained workforce as an enabler, not only in the operating unit, but possibly in associated organizations as well (e.g., Operations Support Squadron, standardization and evaluation, the Joint Space Operations Center, 624 Operations Center). As concepts mature, identify needed infrastructure/personnel (e.g., facilities, Total Force staffing needs, required skill sets, etc.) to ensure proper insertion in planning and programming processes. Remember that a concept that calls for an increase in facilities and infrastructure may generate an increase in manpower/workload. Be as specific as possible when writing or updating these areas.

2.3.6. Sequenced Actions. This section describes *how* the capabilities will be used in a logical flow of high-level events, usually from start to finish (i.e., summarize a “day in the life” of the concept). Use operational scenarios or use cases to organize this discussion, unless impractical. Be as specific as possible, using the present tense, and illustrate as needed. The goal is to help clearly communicate operator expectations. If you lack specifics, use relative and qualitative descriptions instead. Example: “unit X

then verifies and publishes “capability/process Y” data within 24 hours of “task Z” completion.”

2.3.6.1. When preparing this section, map-out who the main participants are (by organization and/or by position, as appropriate to the maturity of the concept), what they will do or provide, and what they will need or depend upon (e.g., products, actions) from the other participants. *It is essential to understand these relationships before completing this section in order to make sure the concept “works.”* The operational scenarios should reflect this analysis. Specify if the use of a capability varies based on the type of operation (e.g., military engagement, security cooperation, deterrence activities, crisis response, limited contingency operations, and major operations).

2.3.6.2. Include supporting actions. These may include, but are not limited to, the following (i.e., omit those that do not apply and add those that are not represented): mission planning; training; mission readiness and reporting; security; intelligence support; and redeployment/end-of-life activities. Again, these are illustrative, and may not be inclusive of all the supporting actions involved in using the capabilities listed in the concept.

2.3.6.3. Other considerations for describing sequenced actions include planned interactions with existing, developing, or planned operational systems. Describe how this capability will integrate, interface, or work with other systems. Again, provide details commensurate with the maturity of the document. For example, an initial enabling concept may merely identify the other systems and broad types of data exchanged, whereas an operating concept should include more specific descriptions of the interfaces to be employed.

2.3.7. Command Relationships. Identify the organizations, if known, or the type of organizations that will employ the envisioned capabilities and their roles. Commensurate with the maturity of the concept, first describe envisioned command authorities in the “operational branch” of the chain of command (combatant command (COCOM), operational control (OPCON), and tactical control (TACON)), and then describe organizations, authorities and relationships in the “administrative branch” of the chain of command. While many capabilities fall under a common command-and-control (C2) arrangement, this section should focus on the specific command authorities applicable to the concept. If known, define the C2 elements involved and interfaces between the organizations necessary to employ the capability. If applicable, include the role of AFRC and/or ANG units. If applicable, also explain who produces and executes Rules of Engagement, and by what authority. This section should also explain envisioned, key supporting and supported relationships.

2.3.8. Appendices. Include the following:

2.3.8.1. Appendix A. List of references. Generally limit this to titles and dates of material actually referenced in, or used to create, the concept. Do not “pad” this list with every document conceivably associated with the subject.

2.3.8.2. Appendix B. Glossary of terms, abbreviations and acronyms. Limit to specialized terms, subject-related abbreviations, and acronyms (omitting common ones).

2.3.8.3. Appendix C. Capability Traceability Matrix (per paragraph 2.3.5.1.4.)

2.3.8.4. Additional information. Use subsequent appendices for detailed and/or supporting information related to portions in the main body.

2.3.9. Annexes. Use an annex for material that can be separated from the main document yet retain practical meaning (i.e., stands alone). An annex should follow the concept format.

3. Concept Development/Approval Process. This section provides more guidance on AFSPC concept development from tasking (initiation phase) through final approval. As stated above, as the concept matures, it may change significantly. Write/update, coordinate and get the concept approved to support each milestone decision as described in the DoD 5000 series documents.

3.1. Concept Driver. It is critical that concept developers identify the need or driver for developing a concept, along with the need date. Suffice to say, if the headquarters is developing capabilities for a given area, there should be an *approved concept* generally an AFSPC concept underpinning that work. Generally, AFSPC-identified shortfalls and gaps drive a need to have a concept. Concepts may also originate from any HQ AFSPC, NAF, Wing, Air Staff, or unified commander organization.

3.2. Drafting.

3.2.1. Preparation. With limited exception, AFSPC/A3X is responsible for developing concepts on behalf of HQ capability development OPRs. The action officer (AO) conducts research to determine the purpose and content for the elements discussed in paragraph 2.3. of this AFSPCI. Outlining is strongly recommended. Good sources of information include: Joint, AF, and functional concepts, related enabling and operating concepts, doctrine, and the CFMPs. Note: *Before starting work on a concept, any HQ AO from outside A3X must meet with the concepts process staff in the AFSPC/A3 Operational Concepts and Resources Division, Concepts and Processes Branch (A3XC) for a concept development strategy session.* The requesting office will summarize the results of that session in a concept request memo to A3X. As the command clearinghouse for AFSPC concepts, A3XC can provide guidance on how to best approach specific concepts. They also track the status of concepts in development on behalf of the A3, so it is necessary to advise them of future concept needs and concept status.

3.2.2. Initial Draft. The AO should then organize members of their team to develop the concept strawman into a first draft. Conducting short (one-to-two day) writing conferences with only a few participants is an effective technique. Select team members based on area of expertise, and invite representation from the NAFs, product center(s), Wings, other Major Commands (MAJCOMs), unified commands, sister Services, etc., as needed. Work with the team architect to develop an OV-1, if necessary. Keep the applicable product center (e.g., SMC, AFLCMC) informed during drafting and coordination. Once a workable draft is completed, AFSPC/A3XC must review prior to initial coordination. Note: While the document is in draft form, use margin line numbers

and mark the top and bottom of all pages “DRAFT – NOT FOR IMPLEMENTATION OR COMPLIANCE”.

3.3. Staffing & Coordination. Staff the document widely among those offices having possible interest or responsibility, now or in the future.

3.3.1. Three-letter coordination. Coordinate widely, but not unnecessarily. Staffing must include AFSPC/A1M, A3X, A4C and A7S. Also include 3-letter (O-6 level) organizations responsible for potential Key Performance Parameters (mandatory list includes force protection, survivability net-ready, sustainment, energy and training). The applicable product center is also required on the coordination sheet “for coordination” or “for information,” as applicable. Coordinate with AFSPC/JA to identify the potential for legal impediments in the concept timeframe. Component-NAFs will typically coordinate with subordinate wings. Note: AFSPC concepts that envision the use of ARC and/or ANG forces require 3-letter coordination with AFSPC/CG, HQ AFRC and/or National Guard Bureau (NGB) (as applicable) prior to concept approval and publication. (See paragraph 4.9. for specific guidance.) If, as a result of 3-letter coordination, the document changes substantially, 3-letter coordination must be re-accomplished so all offices can see the resulting, substantially changed document. All substantive/critical comments should be reconciled with the submitting office prior to performing 2-letter coordination. This will minimize surprises and excessive comments during 2-letter coordination.

3.3.2. Two-letter coordination. The draft concept offered for 2-letter (General Officer level) coordination should be error-free and fully compliant with the content and format guidance listed in paragraph 2. If developed outside A3, ensure AFSPC/A3XC reviews the concept before your Director sends it out for 2-letter coordination. Indicate on the AF Form 1768, *Staff Summary Sheet*, “Views of Others” paragraph that “A3X has coordinated on this draft.”

3.4. Approval. The OPR prepares the document for final review/signatures by the approving authorities. At this point, all critical and substantive comments should have been resolved. List two signatures on the signature page: Submitted by (OPR); and Approved by, AFSPC/A3. (See concept template on portal page.) If the OPR is not A3X, include HQ AFSPC/A3X for coordination on the Staff Summary Sheet transmitting the document for signature, which will initiate a final, post-2-letter, A3X review prior to approval.

3.5. Distribution. The OPR is responsible for distributing the signed document. The OPR must also forward a copy of the master file to AFSPC/A3XC for inclusion in the command concepts repository. The repository is intended to be a readily available reference for accessing all current CONOPS/concept documents and guidance for development of additional concept documents. AFSPC/A3XC ensures included documents are updated as required via recurring data calls/database updates. Unclassified concepts will be posted to the AFSPC CONOPS/Concepts web page (see hyperlink included in paragraph 6. and URL listed in Attachment 1). Classified concepts will be posted on the Concepts Branch SIPRNET web page. For concepts that envision the use of ARC forces, the OPR for the concept will contact the AFSPC/A3 Reserve and/or Air National Guard Advisor(s) to determine the appropriate distribution. The OPR will maintain the electronic staff package, staff summary sheet (SSS) or official memorandums used to coordinate and obtain approval

with the master document. For concepts developed to support AF CD&E activities, inform AF/A3/5 and AF/A8 on MAJCOM approved concepts.

3.6. Reviews and Updates. The OPR reviews concept documents biennially, or at each new acquisition milestone. If, in the judgment of the OPR, only minor or administrative changes are required, the AO may incorporate those changes and have the OPR forward the document to A3 for approval. The responsible OPR signs a Memorandum for Record (MFR) to document the concept was reviewed and any significant findings. The MFR should be filed with the basic document working file. If the document requires significant changes, the AO must accomplish the coordination as described in paragraph 3.3. It is strongly recommended to have the A3XC concepts team review the 3-letter draft prior to forwarding it for 3-letter coordination. The OPR must ensure widest dissemination of the document to applicable offices/agencies. In either case, a new cover sheet for the concept must be generated to reflect the revised date.

3.7. Guidance Changes. Existing concepts need not be rewritten solely to comply with updates to this policy guidance; but as they come up for periodic review through their normal life cycle, they should be brought into compliance with this guidance.

4. Responsibilities.

4.1. Director of Air, Space and Cyberspace Operations (HQ AFSPC/A3). AFSPC/A3 is responsible for AFSPC functional, enabling and operating concept document development, policy, guidance and management. AFSPC/A3X, as the A3 OPR for concepts, will support all aspects of AFSPC capability development by reviewing IPP products for capabilities, shortfalls, gaps and deficiencies requiring concept development, and by collaborating with capability development OPRs throughout the staff to ensure functional, enabling and operating concepts are available to meet HQ OT&E responsibilities.

4.2. Director of Requirements (HQ AFSPC/A5). AFSPC/A5-assigned staff will contribute to concept development and staffing. A5 capability development OPRs will have an approved enabling or operating concept before requesting (thru AFSPC/A5X) a Requirements Strategy Review (RSR) with AF/A5R. The A5 may waive this policy on a case-by-case basis.

4.3. Director of Plans, Programs, and Analyses (HQ AFSPC/A8/9). AFSPC/A8/9 has overall responsibility for the IPP and CFMPs. These identify potential deficiencies and needed future AFSPC capabilities, which drive the need to develop associated concepts. The A8/9 staff also reviews concepts for linkage to various planning and programming activities and products.

4.4. Director of Manpower, Personnel & Services (HQ AFSPC/A1). AFSPC/A1 is responsible for validating the manpower requirement for AFSPC concepts via a Manpower Assessment (MA) to ensure accurate planning and programming of manpower resources. AFSPC/A1 will also develop a Manpower Estimate (ME) for major weapon systems during the appropriate acquisition milestones outlined in AF directives. However, A1 will only develop MA and ME submissions for capabilities/systems with an approved concept.

4.5. Director of Intelligence, Surveillance and Reconnaissance (HQ AFSPC/A2). AFSPC/A2 has overall responsibility for integration of intelligence requirements and

adversary capabilities consideration into all phases of AFSPC planning. As such, the appropriate A2 division must be involved in the concept development process. AFSPC/A2-assigned staff will contribute to concept development and staffing.

4.6. Director of Logistics, Installations and Mission Support (HQ AFSPC/A4/7). AFSPC/A4/7 has overall responsibility for installation support services, infrastructure operations and maintenance, force protection, security, emergency services and contract support. As such, the appropriate A4/7 division(s) must be involved in concept development early in the process to ensure logistics, security and civil engineering support activities are properly identified.

4.7. Director of Communication and Information (HQ AFSPC/A6). AFSPC/A6 is responsible for AFSPC Enterprise Architecture and Net-Centric Transformation. The A6 also serves as the Designated Accrediting Authority for AF space systems and for the AF-provisioned portion of the Global Information Grid. In addition, AFI 33-401, *Implementing Air Force Architectures*, directs the application architecture products in support of capability based planning and programming. The A6 also provides electromagnetic spectrum guidance concerning supportability of spectrum dependant systems and their utilization. As such, the appropriate A6 division will support concept development. The A6 roles and responsibilities also include providing guidance for the architectural views for the command's concepts and risk-based assessments on those concepts. AFSPC/A6-assigned staff will contribute to concept development and staffing.

4.8. Office of the Staff Judge Advocate (HQ AFSPC/JA). The Office of the Staff Judge Advocate for the drafting organization will consult with the concept developer during drafting, three- and two- letter coordination, as necessary, regarding possible legal issues that may impede concept execution.

4.9. HQ AFSPC/CG (Air National Guard). AFSPC/CG, in concert with AFSPC/A1, will serve as the conduit between AFSPC and the ANG headquarters. The CG will review AFSPC concepts (during all coordination phases) that envision the use of Air National Guard forces and will work with National Guard Bureau to ensure appropriate coordination and awareness.

4.10. Product Centers. The Air Force Life Cycle Management Center and Space and Missile Systems Centers participate in the Capability Solutions Analysis portion of the IPP. The SMC, with SMC/XR as the primary interface, will use the results of the Capability Needs Analysis and any accompanying enabling concepts, to propose potential solutions to identified capability needs in support of AF CFMP Development. Development Plans, which are vetted through concept assessment seminars, are provided as inputs to the IPP and MAJCOM Program Element Monitors. Other product centers may also propose potential solutions.

4.11. Air Force Network Integration Center (AFNIC).

4.11.1. Provides subject matter expertise for cyberspace concept development activities as needed. Supports the lead product center in integrating assigned programs and developing AFNet architecture products supporting development of JCIDS products. Supports HQ AFSPC and AFLCMC in developing cyberspace domain architectures.

4.11.2. AFSPC Cyberspace Support Squadron (CYSS) Requirement Leads will lead concept development efforts on behalf of the appropriate cyberspace capability OPRs for the programs/projects they are assigned.

4.11.3. 38 CYRS/SCC is the AF Defense Information Systems Network subject matter expert for long-haul communications. As such, 38 CYRS/SCC will ensure concept documents consider these critical links to ensure interoperability and sustainment of DoD systems.

4.12. Numbered Air Forces (NAF). AFSPC NAFs provide key insight into the command and control of space and cyberspace forces. Numbered Air Force Commanders may task their staff to develop concepts for activities to be accomplished within their command. They also provide consolidated unit-level reviews and coordination for other concepts in development or revision.

4.13. AFSPC Wings. AFSPC wings provide invaluable, current operations perspectives that are vital to well-constructed concepts. Bear in mind, however, concepts are forward-looking, so tradition and current practices should not unduly restrict concept authors. Wing Commanders may task their staff to develop concepts for activities to be accomplished within the Wing. Following Wing coordination, the concept will be coordinated with the appropriate NAF for approval. When coordinating on concept documents originating from higher headquarters, the Wing Commander will forward comments to the NAF for consolidation.

5. Concept Release Policy. Multi-command, multi-service, and Joint concept document initiatives require concurrence of all users before such documents may be released. Draft documents released prior to AFSPC approval must clearly state that they do not necessarily reflect AFSPC policy or approval and are subject to change.

6. AFSPC Portal Page. For more information, please review our AFSPC portal page at <https://www.my.af.mil/gcss-af/USAF/ep/globalTab.do?command=org&channelPageId=s6925EC1344B60FB5E044080020E329A9&pageId=0>.

JACK WEINSTEIN, Maj Gen, USAF
Director of Air, Space and Cyberspace Operations

Attachment 1

GLOSSARY OF REFERNCES AND SUPPORTING INFORMATION

References

AFSPC Portal Page: <https://www.my.af.mil/gcss-af/USAF/ep/globalTab.do?command=org&channelPageId=s6925EC1344B60FB5E044080020E329A9&pageId=0>

CJCSI 3170.01H, *Joint Capabilities Integration and Development System*, 10 January 2012

DoDD 5000.1, *The Defense Acquisition System*, 12 May 2003

DoDI 5000.2, *Operation of the Defense Acquisition System*, 2 December 2008

DODM 5200.01, *DOD Information Security Program*, 24 February 2012

DoD Architecture Framework, Version 2.0 Volumes 1 & 2, 28 May 2009

JP 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 12 April 2001 as amended through 4 March 2008

JP 3-0, *Joint Operations*, 17 September 2006, Incorporating Change 1, 13 February 2008

JP 5-0, *Joint Operation Planning*, 26 December 2006

AFPD 10-28, *Air Force Concept Development and Experimentation*, 17 April 2012

AFI 10-604, *Capabilities-Based Planning*, 10 May 2006

AFI 10-701, *Operations Security (OPSEC)*, 18 October 2007

AFI 10-2801, *Air Force Concept of Operations Development*, 24 October 2005

AFI 16-701, *Special Access Programs*, 1 November 1995

AFI 31-101, *The Air Force Installation Security Program (FOUO)*, 1 March 2003

AFI 31-401, *Information Security Program Management*, 1 November 2005

AFI 33-401, *Implementing Air Force Architectures*, 14 March 2007

AFI 61-204, *Disseminating Scientific and Technical Information*, 30 August 2002

AFMAN 14-304 (FOUO), *The Security, Use, and Dissemination of Sensitive Compartmented Information*, 1 May 1999

AFMAN 33-363, *Management of Records*, 1 March 2008

AFSPCI 10-604, *Space Operations Weapon System Management*, 1 October 2007

Defense Adaptive Red Team, *A Practical Guide for Developing and Writing Military Concepts*, Working Paper #02-4, December 2002

Adopted Forms

AF Form 847, Recommendation for Change of Publication

AF Form 1768, Staff Summary Sheet

Abbreviations and Acronyms

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFPD—Air Force Policy Directive

AFLCMC—Air Force Life Cycle Management Center

AFRC—Air Force Reserve Command

AFRL—Air Force Research Laboratory

AFSPC—Air Force Space Command

AFSPCI—Air Force Space Command Instruction

ANG—Air National Guard

AO—Action Officer

AoA—Analysis of Alternatives

ARC—Air Reserve Component

C2—Command and Control

CBP—Capabilities Based Planning

CCDR—Combatant Commander

CCJO—Capstone Concept for Joint Operations

CD&E—Concept Development and Experimentation

CDD—Capability Development Document

CDR—Critical Design Review

CFMP—Core Function Master Plan

CIO—Chief Information Officer

C-NAF—Component Numbered Air Force

COA—Course of Action

COCOM—Combatant Command (command authority)

CONOPS—Concepts of Operation (also called commander's concept)

CPD—Capability Production Document

CSAF—Chief of Staff of the Air Force

DAS—Defense Acquisition System

DOTMLPF—Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities

DP—Development Planning

FOIA—Freedom of Information Act

HHQ—Higher Headquarters

ICD—Initial Capabilities Document

IPL—Integrated Priority List

IPP—Integrated Planning Process

ISR—Intelligence, Surveillance and Reconnaissance

JCIDS—Joint Capabilities Integration and Development System

JFC—Joint Force Commander

JIC—Joint Integrating Concept

JLLIS—Joint Lessons Learned Information System

JOC—Joint Operating Concept

JOpsC—Joint Operations Concepts

JP—Joint Publication

JSpOC—Joint Space Operations Center

JUON—Joint Urgent Operational Need

MA—Manpower Assessment

MAJCOM—Major Command

ME—Manpower Estimate

MFR—Memorandum for Record

NAF—Numbered Air Force

NGB—National Guard Bureau

OPCON—Operational Control

OPR—Office of Primary Responsibility

OSD—Office of the Secretary of Defense

OSS—Operations Support Squadron

OV—Operational Viewpoint

PEM—Program Element Monitor

POM—Program Objective Memorandum

QDR—Quadrennial Defense Review

S&T—Science and Technology

SMC—Space and Missile Systems Center

SSS—Staff Summary Sheet

TACON—Tactical Control

TTPs—Tactics, Techniques and Procedures

UCP—Unified Command Plan

UJTL—Universal Joint Task List

USAF—United States Air Force

USSTRATCOM—United States Strategic Command

Terms

AF CONOPS (in process of supersession by “AF Operating Concepts”)— Delineates the highest Service-level concept comprising a commander’s assumptions and intent to achieve desired effects through the guided integration of capabilities and tasks that solve a problem in an expected mission area. Although titled CONOPS, AF-level CONOPS closely resemble strategic-level operating concepts – describe how to sequence air and space power operations (capabilities) to exploit and achieve strategic objectives (effects) at the operational level, through tactical successes. Reference AFI 10-2801.

Capability—The ability to achieve a desired effect under specified standards and conditions through combinations of means and ways to perform a set of tasks. It is defined by an operational user and expressed in broad operational terms in the format of a joint or initial capabilities document or a joint Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF) change recommendation. In the case of materiel proposals, the definition will progressively evolve to DOTMLPF performance attributes identified in the capability development document and the capability production document. Reference CJCSI 3170.01G, *Joint Capabilities Integration and Development System*.

Concept of Operations—A verbal or graphic statement that clearly and concisely expresses what the joint force commander intends to accomplish and how it will be done using available resources. The concept is designed to give an overall picture of the operation. Also called commander’s concept or CONOPS. Reference JP 1-02.

Concepts—A visualization of future operations; describes how a force, using military art and science, might employ capabilities necessary to meet future military challenges. Links strategic guidance, planning process and plans to the development and employment of future Air Force capabilities. Concepts serve as “engines for transformation” that may ultimately lead to doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) and policy changes. Reference AFD 10-28.

Effects—A full range of outcomes, events, or consequences of a particular action or set of actions. The action can derive from any element of power (economic, political, military, diplomatic, or informational), and may occur at any point across the continuum from peace to global conflict.

Enabling Concept—Describes how a particular task or procedure is performed, within the context of a broader functional area, using a particular capability, such as a specific technology, training or education program, organization, facility, etc. An enabling concept describes the accomplishment of a particular task that makes possible the performance of a broader military function or sub-function. The JOpsC defines an enabling concept as, “A description of how a set of related military capabilities facilitate the accomplishment of particular tasks within the context

of a broader military function or more specific operating concept.” A concept describing a surface moving target indicator would be an enabling concept supporting the Space Force **Enhancement Functional Concept**.- While still expressed in conceptual terms, enabling concepts are the most specific of all military concepts. They should contain a level of guidance sufficient to lead directly to the establishment of military requirements. Like the broader functional concepts, enabling concepts usually apply to multiple, higher-level operating concepts, but may, under certain circumstances, apply only to a specific operating concept.

Functional Concept—Describes the performance of individual Air Force functions as they support operating concepts. Strategic and operational operating concepts supply the authoritative guidance and context for functional concepts. Functional concepts generally cut broadly across multiple operating concepts, though they can be specific to a single operating concept. Agile logistics, command and control, force protection, and intelligence are examples of functional concepts. In developing functional concepts, it's important to understand the potentially complex linkages to other functional concepts (e.g., the linkages between a command and control concept and an intelligence concept).

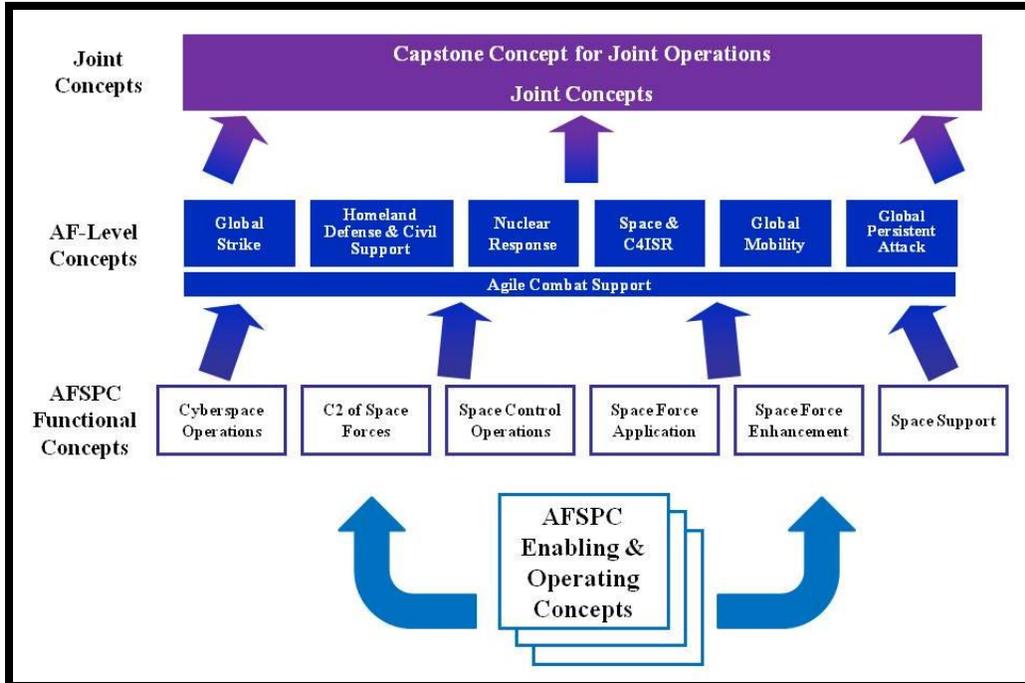
Institutional Concept—A description of the features and functioning of a military institution. Also referred to as Operational Concepts or Capstone Concepts, Institutional Concepts describe not only the operating policies of the institution, but also manpower, training, education, materiel, morale and welfare, and other policies. Institutional Concepts are the highest-order of all military concepts. They take guidance directly from the National Security Strategy and the National Military Strategy, and provide context and guidance for all other military concepts. Future institutional concepts are often promulgated as vision statements applying to some specified future time horizon, such as the Capstone Concept for Joint Operations.

Operating Concept—A description in broad terms of the application of military art and science within a defined set of parameters. In simplest terms, operating concepts articulate how a commander will plan, prepare, deploy, employ or sustain a joint force against potential adversaries within a specified set of conditions. Operating concepts encompass the full scope of military actions required to achieve a specific set of objectives. The JOpsC family provides further Joint Staff guidance on operating concepts. Operating concepts may be further stratified as strategic, operational or tactical, relating to the associated levels of warfare, though specific stratification is not as important as understanding the concepts' context and interrelationships.

Potential Solutions—Product Center-generated “concepts” to satisfy deficiencies, gaps and shortfalls identified by the IPP. These concepts use the IPP’s prioritized needs list as well as any accompanying enabling concepts generated by HQ AFSPC to identify existing or future capabilities/technologies that may solve warfighters’ capability shortfalls.

Attachment 2
CONCEPT TYPES

Figure A2.1. Concept Types



Attachment 3
CONCEPT FORMAT

Table A3.1. Concept Format

<ol style="list-style-type: none">1. Purpose2. Background<ol style="list-style-type: none">2.1 General2.2 Description of the Military Challenge2.3 Desired Effects2.4 Relationship to other Concept(s)3. Situation<ol style="list-style-type: none">3.1 Time Horizon3.2 Constraints3.3 Assumptions3.4 Risks4. Synopsis5. Necessary and Enabling Capabilities<ol style="list-style-type: none">5.1 Necessary Capabilities5.2 Enabling Capabilities6. Sequenced Actions7. Command Relationships <p>Appendix A: List of References Appendix B: Glossary of Terms, Abbreviations, and Acronyms Appendix C: Capability Traceability Matrix</p>
--

Attachment 4

EXAMPLE CAPABILITY DESCRIPTIONS

Table A4.1. Example Capability Descriptions

<p>Example Functional Concept Capability Description</p> <p>Monitor Space Environmental Conditions. Provides operational environment information on space environmental conditions, a term which includes the ionospheric and magnetospheric regions. The intent is to enable friendly forces to predict, respond to, mitigate and exploit space environmental effects on friendly and adversary operations. Capabilities include monitoring and characterizing solar and interplanetary conditions and activities as well as cataloging natural interplanetary space objects (i.e., those predicted to intersect Earth and Earth-orbiting satellite orbits).</p>
<p>Example Enabling Concept Capability Description</p> <p>Ability to develop/maintain situational awareness. This capability allows operators to maintain real-time and near-real-time visibility of the cyberspace domain used or impacted by military operations. It will allow 624 Operations Center personnel to gain situational awareness of the current AF Information Network, portions of the Internet, and networks used by adversaries. It includes configuration information including physical and logical network topology as well as software loads, version control, applied patches, logistical/maintenance access points, suppliers, and technical configuration of every physical piece of equipment and software connected to and running on the AF Information Network.</p>
<p>Example (abbreviated) Enabling Concept Capabilities (initial – solution agnostic)</p> <p>5.1 Placement of satellites into near-earth orbit.</p> <p>5.2 Short duration (one to three days) manned orbital research missions.</p> <p>5.3 Servicing and maintenance for near-earth orbiting satellites. Provide capability to enable inspection, replacement and/or repair of failed or degraded spacecraft subsystem components and replenishment of consumables (e.g., fuels, fluids, cryogenics, etc.).</p>
<p>Example (abbreviated) Enabling Concept Capabilities (linked to potential materiel solution)</p> <p>5.3 Servicing and maintenance for near-earth orbiting satellites.</p> <p>5.3.1 Conduct proximity, rendezvous and/or docking operations.</p> <p>5.3.1.1 Position Information. Provides position information in orbit and in atmospheric flight</p> <p>5.3.1.2 Monitor and Control Orbiter Rendezvous Systems. The crew uses these capabilities to control and monitor all rendezvous/docking subsystems</p>

5.3.1.3 Communications. Provides communications for the transmission and reception of voice, engineering and scientific data, and commands

5.3.2 Deliver propellant and other consumables to spacecraft.

5.3.3 Replace and/or repair spacecraft components.

Example Operating Concept Capabilities

5.3.1.1 Position Information. Provides position information in orbit and in atmospheric flight

- Inertial Measurement Units provide attitude and velocity state information with respect to a known inertial coordinate reference
- Star trackers search for, acquire and track selected navigation stars to enable attitude calculation

5.3.1.2 Monitor and Control Orbiter Systems. The crew is able to monitor and control all rendezvous /docking subsystems

- Four orbiter display units provide a display of flight computer information
- The caution and warning system alerts the flight crew of an out-of-tolerance system

5.3.1.3 Communications. Provides communications for the transmission and reception of voice, engineering and scientific data, and commands

- The S-band transmitter accepts real-time operational data at either of two rates: 96 or 192 Kbps
 - a. The low data rate consists of 64 Kbps of telemetry and one 32 Kbps digital voice channel
 - b. The high data rate consists of 128 Kbps of telemetry and two digital voice channels of 32 Kbps each

Attachment 5

CAPABILITY TRACEABILITY MATRIX EXAMPLE

Table A5.1. Capability Traceability Matrix Example

"System X" Enabling Concept	Functional Concept for Space Support
<p>5.1.2 Responsive Launch Operations accomplished by operational unit</p> <p>Process the launch vehicle(s), prepare infrastructure, process payload(s), mate/integrate to the launch vehicle</p>	<p>5.1.1.2 Conduct Responsive Launch</p> <ul style="list-style-type: none"> - Conduct rapid launch processing (days to weeks) <ul style="list-style-type: none"> ◦ Process the launch vehicle and prepare the associated infrastructure ◦ Process the requisite payload(s) ◦ Mate/integrate the payload to the launch vehicle without extensive preparation
<p>5.1.4 Responsive Satellites</p> <p>Rapid satellite initialization and checkout</p> <p>Automate bus management and Tracking, Telemetry & Commanding as much as possible</p> <p>Utilize automated operation/self-correction & status reporting</p>	<p>5.1.2 Conduct Integrated Satellite Operations</p> <ul style="list-style-type: none"> - Support rapid initialization procedures, system/subsystem checkout and operational testing for responsive payloads
	Functional Concept for C2 of Space Forces
<p>5.1.6 Responsive Space C2 accomplished by the Joint Space Operations Center</p> <p>Automated means to request space effects and apportionments to view and implement the mission schedule and Joint Space Tasking Order</p> <p>Manage and adjudicate multiple</p>	<p>5.1.2 Plan: Formulate the operational objectives, generate force lists, and force movement requirements and develop, evaluate, and select courses of action and plans for friendly forces.</p> <ul style="list-style-type: none"> - Provide rapid COA development for presentation to decision makers, using automated processes to the maximum extent possible

<p>space effects and satellite apportionment requests</p>	<ul style="list-style-type: none">- Provide tasking for integration into the Space Tasking Cycle, ensuring synchronization with theater Air Tasking Order/Integrated Tasking Order to optimize utilization of global space assets
---	---