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Joint Concept for

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Operating in the Information Environment (JCOIE)

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This document contains information

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EXEMPT FROM MANDATORY DISCLOSURE

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under FOIA. Exemption (b) 5 applies.

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16   **FOREWORD [Proposed draft]**

17   The Joint Force has long under-appreciated the significance of the role of
18 information and its impact on joint activities in warfare. However, in
19 recognition of the increasing impact of activities in the information
20 environment, the Chairman felt the role of information was so critical that he
21 issued an out-of-cycle change to Joint Publication 1, *Doctrine of the Armed*
22 *Forces of the United States* introducing "Information" as the 7th Joint Function.
23 Independent of the form of warfare, the Joint Concept for Operating in the
24 Information Environment (JCOIE) addresses the role of information and
25 focuses on how information can change or maintain the perceptions, attitudes,
26 and other elements that drive behaviors.

27 JCOIE recognizes that individuals and groups today have access to more
28 information than entire governments once possessed. They can swiftly organize
29 and act on what they learn, sometimes leading to violent change. When
30 applied to military systems, this diffusion of technology challenges competitive
31 advantages long held by the United States. Our competitors and adversaries
32 are using technology to offset or diminish the physical overmatch of the broad
33 range of US lethal capabilities.

34   To achieve enduring strategic success, our Joint Force must develop the
35 necessary mindset individually and as a whole, to leverage the inherent
36 informational aspects of all military activities. This will be achieved through a
37 greater understanding of the environment, relevant actors, resulting from the
38 institutionalization and operationalization of applying physical and
39 informational power in an integrated manner.

40   Information has and is changing the character of modern warfare and
41 must be foremost in our thinking and application. The Joint Force must fully
42 implement this concept, written by stakeholders and service representatives, to
43 achieve success in the security environment during times of cooperation,
44 competition, and armed conflict.
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50   Paul J. Selva
51   General, United States Air Force
52   Vice Chairman, Joint Chiefs of Staff
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> *If these obstacles, along with others suggested by a historical analysis of the implementation of a new form of warfare, are indeed alive and well today, then there may be a good chance that the substantive issues of information warfare will not be addressed until the United States is actually engaged in an information war.*
>
> *Richard Jensen*
>
> *1997*

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73 **Joint Concept for Operating in the Information Environment (JCOIE)**

74 *Executive Summary*

75 The *Joint Concept for Operating in the Information Environment* (JCOIE)
76 describes how the Joint Force[1] will build information into operational art to
77 design operations that deliberately leverage the informational aspects of
78 military activities to achieve enduring strategic outcomes. The changing role of
79 information has allowed state and non-state actors to influence global
80 audiences, rapidly gain momentum, and advance their objectives. Adaptive
81 state and non-state actors are proficient at using information to gain an
82 advantage over the Joint Force. In order to compete in the information
83 environment (IE), JCOIE aims to institutionalize and operationalize the Joint
84 Force's approach to information. This requires an understanding of
85 information, the informational aspects of military activities, and informational
86 power.

87 **Security Environment.** The security environment is the set of global
88 conditions, circumstances, and influences that will affect the employment of
89 the U.S. military and includes the sum of all operational environments (OE).
90 The Joint Force will face two interrelated challenges in the future security
91 environment. The first is contested norms in which powerful actors, dissatisfied
92 with the status quo, will capitalize on changes in communication and changes
93 in socio-cultural contexts to contest norms governing international behavior.
94 The second challenge is persistent disorder, in which weak states are incapable
95 of maintaining domestic order in the face of crisis. Pervasive throughout the
96 security environment is information that enables people to see more, share
97 more, create more, and organize faster than ever before.[2] Information
98 technology has significantly enhanced human interaction around the globe and
99 elevated the importance of information as an instrument of power wielded by
100 individuals and societies in politics, economics, and warfare. Advances in
101 information technology have significantly changed the generation of,
102 transmission of, reception of, and reaction to information. These advances have

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[1] JCOIE uses "the Joint force" to refer to a formal combination of the Joint Staff, combatant commands, subordinate joint forces, and supporting joint organizations.
[2] Joint Chiefs of Staff. National Military Strategy of the United States 2015. Jun. 2015. Web.
http://www.acqnotes.com/wp-content/uploads/2014/09/2015-National-Military-Strategy.pdf

103 increased the speed and range of information, diffused power[3] over
104 information, and shifted socio-cultural norms. The interplay between these
105 three impacts provides our competitors and adversaries additional
106 opportunities to offset the diminishing physical overmatch of the world's
107 preeminent warfighting force.

108   **The Military Challenge.** How will the Joint Force integrate physical and
109 informational power to change or maintain the perceptions, attitudes, and
110 other elements that drive desired behaviors of relevant actors in an increasingly
111 pervasive and connected IE to produce enduring strategic outcomes?

112   **The Central Idea.** To address this challenge and achieve enduring strategic
113 outcomes, the Joint Force must build information into operational art to design
114 operations that deliberately leverage the inherent informational aspects of
115 military activities.

116   To integrate physical and informational power through the deliberate
117 leveraging of military activities, the Joint Force must:

118   **1.   Understand information, the informational aspects of military**
119 **activities, and informational power.** This concept postulates that the Joint
120 Force must understand how to manipulate and leverage the inherent
121 informational aspects of military activities to send a deliberate message. Every
122 Joint Force action, written or spoken word, and displayed or relayed image, has
123 informational aspects that communicate a message or intent. Informational
124 aspects are the features and details of activities that an observer interprets and
125 uses to assign meaning. JCOIE describes informational power as the ability to
126 leverage information to shapeperceptions, attitudes, and other elements that
127 drive desired behavior and the course of events. The Joint Force applies
128 informational power to achieve three ends:
129   • Change or maintain the observations, perceptions, attitudes, and
130   other elements that drive desired behaviors of relevant actors.
131   • Protect and ensure the observations, perceptions, attitudes,
132   decisions, and behaviors of the Joint Force, its allies, and its partners.

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[3] Nye, Joseph S. 2014. The Information Revolution and Soft Power. Current History 113(759): 19-22. Web.
http://www.currenthistory.com/Article.php?

133   •   Acquire, process, distribute, and employ data to enhance combat
134   power.

135   **2.**   **Institutionalize the integration of physical and informational**
136 **power**

137   To achieve success in the future security environment, the Joint Force must
138 shift how it thinks about information from an afterthought and the sole
139 purview of information professionals to a foundational consideration for all
140 military activities. All activities and operations must be designed from the
141 outset to account for the use and impact of information on relevant actors.
142 Instead of relying primarily on physical power as a form of destructive or
143 disruptive force, the Joint Force must normalize the integration of physical and
144 informational power to also capitalize on the constructive and informational
145 aspects of military power.

146   Institutionalizing a mindset that considers information from the outset
147 requires a common understanding. This common understanding begins with
148 shared situational awareness, a common lexicon, standardization of processes,
149 and establishment of relationships that reduce or eliminate barriers to the
150 integration of physical power and informational power. Defining the Joint
151 Force's objectives in terms of perceptions, attitudes, and other elements that
152 drive desired behaviors as well as in terms of destroying an adversary's
153 capability or order of battle, will increase the opportunity to establish a
154 common vision, goals, and objectives to achieve mission success.

155   **3.**   **Operationalize the integration of physical and informational**
156 **Power**

157   To produce enduring strategic outcomes that hinge on perceptions,
158 attitudes, and other elements that drive desired behaviors, the Joint Force
159 must operationalize its application of informational power. A better
160 characterization of the informational, physical, and human aspects of the
161 security environment is required to expose and leverage the interdependencies
162 between them. Because perceptions and attitudes inform behavior, the Joint
163 Force must treat them as "key terrain." Employing various analytical
164 methodologies will provide context to changes in the security environment and
165 insight into worldviews that frame the perceptions, attitudes, and other
166 elements that drive desired behaviors of relevant actors. This understanding is
167 necessary to leverage integrated activities that capitalize on opportunities or

168   overcome obstacles using a whole of government approach to achieve enduring
169   strategic outcomes.

170   A transregional, multi-domain, and multi-functional approach is necessary
171   to analyze relevant environmental factors that provide opportunities or
172   challenges to achieving desired outcomes. Innovation and the consistent
173   integration of actions and words for each operational situation assisted by
174   subject matter experts (SME), technology, and multi-functional models will
175   provide commanders a broader range of options to maximize military power.
176   Effectively leveraging the inherent informational aspects of military activities
177   will enable the joint forces to drive desired behaviors of relevant actors as well
178   as assist in the destruction of adversary capacity and capabilities.

179   **Required Capabilities**. This concept identifies 17 required capabilities to
180   enable the Joint Force to leverage the inherent informational aspects of military
181   activities and integrate physical and informational power as envisioned.
182   Adoption of this concept will inform supporting joint and service concepts, and
183   guide doctrine, organization, training, materiel, leadership and education,
184   personnel, facilities, and policy (DOTMLPF-P) solutions. The required
185   capabilities align with many of those identified in Joint Concept for Integrated
186   Campaigning (JCIC), Joint Concept for Human Aspects of Military Operations
187   (JC-HAMO), Joint Concept for Cyberspace (JCC), and Joint Concept for
188   Electromagnetic Spectrum Operations (JCEMSO).

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PROBLEM SPACE	REQUIRED CAPABILITIES
Historic Challenges • Adversaries operating in the changing environment to create political, cultural, social, and military advantages. • Joint Force is challenged to recognize and capitalize on the informational aspects of military activities. **Emerging Challenges** Future competitors and adversaries will: • Combine new communication strategies and technologies to support their efforts and disrupt U.S. and coalition operations. • Capitalize on changes in communication and changes in socio-cultural contexts to contest norms. **The Military Challenge** How will the Joint Force change or maintain perceptions, attitudes, and other elementsthat drive desired behaviors of relevant actors in an increasingly pervasive and connected IE to produce enduring strategic outcomes? **SOLUTION SPACE** **Central Idea** The Joint Force must build information into operational art to design operations that deliberately leverage the informational aspects of military activities. **Supporting Ideas** In order to affect the perceptions, attitudes, and other elements that drive desired behaviors of relevant actors through the integration of physical and informational power, the Joint Force must: • Understand information, the informational aspects of military activities, and informational power • Institutionalize the integration of physical and informational power • Operationalize the integration of physical and informational Power	**A. Required Capabilities to Characterize and Assess the Informational, Physical, and Human Aspects of the Security Environment. The Joint Force requires the ability to:** **A.1** determine impact of relevant informational, physical, and human aspects of the security environment on Joint Force objectives. **A.2** understand the perceptions, attitudes, and other elements that drive behaviors that affect JFC's objectives. **A.3** understand how relevant actors are successful in adapting their use of information technology. **A.4** share contextual understanding of the security environment. **A.5** characterize, assess, synthesize, and understand trends of relevant actor activities and their impacts on the IE throughout cooperation, competition, and conflict. **A.6** analyze and estimate relevant change within the IE. **A.7** identify, access, and manage IE subject matter expertise. **A.8** understand internal and other relevant actor bias within the IE. **B. Required Capabilities to Formulate Options that Integrate Physical and Informational Power. The Joint Force requires the ability to:** **B.1** identify, optimize and assess the effectiveness of the full range of options that integrate physical and informational power to produce desired psychological effects. **B.2** employ required forces and capabilities from across the Joint Force to sustain or change perceptions, attitudes, and other elements that drive desired behaviors of relevant actors. **B.3** assess relevant actors' capability and capacity to receive, understand, and respond to Joint Force physical and informational activities. **C. Required Capabilities to Execute and Modify Options. The Joint Force requires the ability to:** **C.1** execute integrated physical and informational activities designed to achieve psychological effects. **C.2** assess and modify informational power with the same level of competency as physical power. **D. Required Capabilities to Institutionalize the Integration of Physical and Informational Power. The Joint Force requires the ability to:** **D.1** change how its individuals, organizations, and units think about and treat information. **D.2** organize, train, equip, and maintain organizations that deliberately leverage the informational aspects of military activities. **D.3** integrate operations with interorganizational partners. **D.4** leverage physical and informational power at its discretion to achieve objectives.

190   ***Table 1: Joint Concept for Operating in the Information Environment Logic Flow***

191   Table of Contents

215

216   *I. Introduction*

217   The *Joint Concept for Operating in the Information Environment* (JCOIE)
218   describes how the *Joint Force will build information into operational art to design*
219   *operations that deliberately leverage the inherent informational aspects of*
220   *military activities to achieve enduring strategic outcomes.* The changing role of
221   information has allowed state and non-state actors to influence global
222   audiences, rapidly gain momentum, and advance their objectives. Adaptive
223   state and non-state actors are proficient at using information to gain an
224   advantage over the Joint Force.[4] In order to compete in the information
225   environment (IE), JCOIE aims to institutionalize and operationalize the Joint
226   Force's approach to information. This requires an understanding of
227   information, the informational aspects of military activities, and informational
228   power.

229   The United States Government (USG) wields military power, as an
230   instrument of National Power, to achieve political ends. Military operations
231   traditionally focus on compelling adversaries through the threat or application
232   of physical power in the form of destructive or disruptive force (combat power)[5]
233   to achieve victory. However, joint forces can also conduct military activities to
234   apply physical power in a constructive or persuasive manner. JCOIE suggests
235   in order to maximize the efficiency and effectiveness of military power, the Joint
236   Force must move beyond an integrating strategy of individual capabilities to
237   one that deliberately leverages the inherent informational aspects of military
238   activities through the integration of physical and informational power.

239   The JCOIE is part of a family of joint concepts developed to support
240   globally integrated operations.[6] It works in concert with the ideas contained in
241   the Joint Concept for Integrated Campaigning (JCIC) and the Joint Concept for
242   Human Aspects of Military Operations (JC-HAMO). JCIC acknowledges that the
243   Joint Force is in a constant state of competition and that competition requires
244   the future Joint Force to design campaigns that account for cooperation,
245   competition, and conflict. JC-HAMO focuses on identifying and understanding

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[4] Nye, Joseph S. 2014. The Information Revolution and Soft Power. Current History 113(759): 19-22. Web.
http://www.currenthistory.com/Article.php?
[5] Dinesman, Michael D. Generation of Combat Power by Insurgents: An Historical Analysis. Thesis. School of Advanced
Military Studies, 2013. Accessed through Defense Technical Information Center. Web. 11 May 2016. Dinesman's
representation of combat power illustrates the utility of information to impact the operating environment. His linkage
to a center of gravity analytical model coupled with an expanded approach to Target Audience Analysis are likely sound
steps in adapting JIPOE to more effectively describe the shared space between the Infomration Environment and
Operational Environment.
[6] Globally integrated operations is the fundemantal idea in the Capstone Concept for Joint Operations: Joint Force
2020. 10 Sep. 2012. Washington, D.C.

246 relevant actors [understanding who is in the fight]. JCOIE focuses on
247 leveraging the inherent informational aspects of military activities to affect the
248 perceptions, attitudes, and other elements that drive desired behaviors through
249 the integration of physical and information power [understanding the fight we
250 face and understanding the impact of our actions on the fight].

251 ***II. Informational Aspects and the Future Security Environment***

252   *Globally integrated operations* is the concept for how the Joint Force
253 should prepare for the future security environment.[7] The security environment
254 is the set of global conditions, circumstances, and influences that guide the
255 employment of the U.S. military to meet national security challenges.[8]
256 Pervasive throughout the security environment is information that enables
257 people to see more, share more, create more, and organize faster than ever
258 before. People and populations will continue to be decisive features of the
259 security environment[9] that impact how the Joint Force thinks about
260 campaigning and maneuver.

261   Globally integrated operations require a Joint Force that is postured to
262 quickly combine capabilities with itself and mission partners across domains,
263 echelons, geographic boundaries, and organizational affiliations. Globally
264 integrated operations take place within a global IE. To operate effectively in this
265 global IE, the Joint Force requires a better model to characterize the shared
266 space between the OE and the IE.

267   The current model of the IE (Figure 1) focuses on how information is
268 transmitted, processed, and stored within three interrelated but distinct
269 dimensions.[10] This transmission-centric model of the IE was originally
270 developed to help the Joint Force visualize how to share information internally,

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[7] Capstone Concept for Joint Operations: Joint Force 2020. 10 Sep. 2012. Washington, D.C.
[8] U.S. Army Training and Doctrine Command. "*UPDATED* TRADOC G-2 Call for Papers: Strategic Security Environment 2050." Small Wars Journal, 2 June 2016.
[9] The USA, USMC, USSOCOM White Paper, dated 2013 named "Strategic Landpower: Winning the Clash of Wills" stated "This nation takes action in the international arena aimed at influencing human activity and the environments in which that activity occurs. It could not be otherwise, as all institutions – states, corporations, NGOs, etc. – are populated, controlled, and directed by people. Influencing these people – be they heads of state, tribal elders, militaries and their leaders, or even an entire population – remains essential to securing U.S. interests. All elements of national power have an important role in these interactions with other nations and peoples."
[10] Joint Publication 3-13, Information Operations. Defense Technical Informational Center, 27 Nov 2012, Incorporating Change 1, 20 Nov. 2014. Information environment is defined as "The aggregate of individuals, organizations, and systems that collect, process, disseminate, or act on information."

271 ensure command and control, and disrupt enemy information flow.[11] It was not
272 designed to address how audiences with differing worldviews interpret and
273 contextualize information.[12] The current model assumes that any advantage or
274 disadvantage in the IE is the result of effective or ineffective transmission of
275 information. Effective transmission does not always equal effective
276 communication. R.W. Griffin states, "Communication is the process of
277 transmitting information from one person to another. Effective communication
278 is the process of sending a message in such a way that the message received is
279 as close in meaning as possible to the message intended."[13] The future Joint
280 Force will need to transition to a model that helps it visualize how audiences
281 interpret information to facilitate effective and meaningful communication.

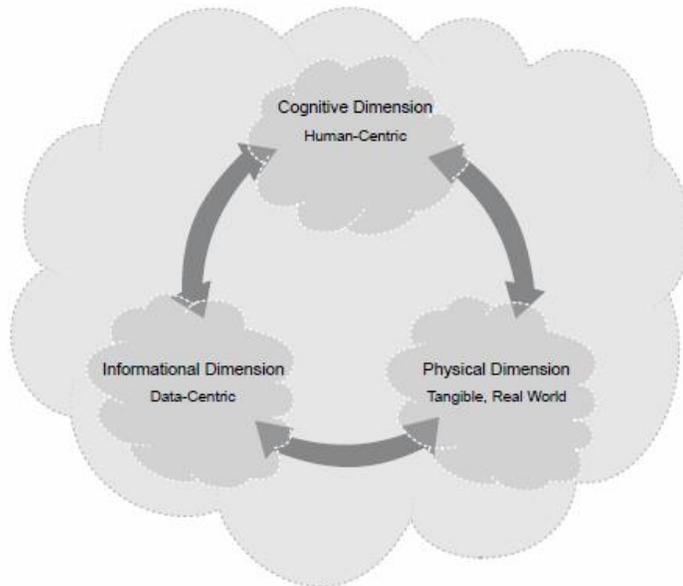282   The transmission-centric model deconstructs the IE into three separate

Figure 1: The Information Environment

283 dimensions through which data flows. The description of the *informational*
284 *dimension* is also part of the description of the other two dimensions so it
285 becomes difficult to distinguish. The *informational dimension* is described as
286 where information is collected, processed, stored, disseminated, and protected.

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[11] Measureing the Effects of Net-Centric Warfare, DoD, Office of the Secretary of Defense Net Assesstment, 28 Apr 1999.
[12] Context is the cirumstances that form the setting for an event, statement, or idea in terms of which it can be fully understood and assessed.
[13] Griffin, R. W. Fundamentals of management. Third ed. Mason, OH: South-Western Cengage Learning, 2012. Cengage Learning. Web. 10 July 2017.

287 However, these five functions are also performed in the *physical dimension* by
288 humans, computer systems, etc. and in the *cognitive dimension* within the
289 minds of those that receive and respond to information. This construct works
290 well in analyzing how data flows through information systems and networks to
291 reach a receiver, but becomes problematic when trying to understand the
292 meaning activities communicate in a pervasive and dynamic IE. Because this
293 model is focused on the flow of information, it separates the mind (cognitive)
294 from the body (physical), and the thoughts (informational) from the mind
295 (cognitive).

296　　　To understand how to leverage the informational aspects of military
297 activities, the Joint Force must transition to a model that emphasizes how
298 information is assigned meaning by relevant actors. The use of dimensions in
299 the current model categorizes elements according to where the data sits in the
300 communication process. Characterization of the IE should provide a
301 description of its different characteristics or aspects[14] and explain how they
302 affect meaning by providing context that then leads to understanding.

303　　　The current model of the IE should be refined to account for the human,
304 physical, and informational aspects that are common to both the OE and the
305 IE. The human, physical, and informational aspects help describe the
306 interactions that take place in an environment of cooperation, competition, and
307 conflict. Human aspects can frame why relevant actors perceive a situation in a
308 particular way. Physical aspects are critical elements of group identity and
309 frame how tribes and communities form. Finally, informational aspects can
310 reflect how populations communicate with each other and amongst themselves.
311 Understanding the interplay between the informational, physical, and human
312 aspects provides a unified view of the IE and the OE that does not currently
313 exist in doctrine. JCOIE focuses on how these three aspects relate to the IE.[15]

314　　**Informational aspects** reflect the way that individuals, information
315 systems, and groups communicate and exchange information. Informational
316 aspects are the features and details of activities that an observer interprets and
317 uses to assign meaning. Informational aspects include, but are not limited to:
318 timing, platforms, location, and duration. They are the sensory inputs used by
319 individuals, systems, or groups to assign meaning and gain understanding
320 about the world. Informational aspects derived from sensory inputs that are

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[14] An aspect is a specific way in which something can be considered.
[15] Further study is required to provide an analytic framework for visualization of this unified view.

321 physical in nature are generally more impactful. In other words, actions speak
322 louder than words.

323   **Physical Aspects** are the material characteristics, both natural and
324 man-made, of the environment that create constraints and freedoms on the
325 people and information systems that operate in it Physical aspects are critical
326 elements of group identity and frame how tribes and communities form.
327 Additionally, physical aspects enhance or inhibit how people exchange
328 information.

329   **Human aspects** reflect the foundation from which humans interact with
330 other humans and their environment. This foundation is formed and impacted
331 by the linguistic, social, cultural, psychological, and physical elements that
332 shape human behavior. The character, tradition, and nature of relevant actors
333 are all human aspects that suggest how they might behave under particular
334 circumstances in the future.[16]

335   Describing a system using the informational, physical, and human
336 aspects, whether it is a communication network or social system, enables the
337 analysis of the interaction among those aspects. An improved ability to analyze
338 these inextricably linked aspects will provide insight into a population's
339 worldview that frames the perceptions, attitudes, and other elements that drive
340 their behaviors.

341   Information technology has significantly enhanced human interaction
342 around the globe and elevated the importance of information as an instrument
343 of power wielded by individuals and societies in politics, economics, and
344 warfare. Advances in information technology have significantly changed the
345 generation of, transmission of, reception of, and reaction to information. These
346 advances have increased the speed and range of information, diffused power[17]
347 over information, and shifted socio-cultural norms. The interplay between
348 these advances provides our competitors and adversaries additional ways to
349 offset the diminishing physical overmatch of the world's preeminent warfighting
350 force.

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[16] Discussion of the human aspects from Joint Concept for Human Aspects of Military Operations. 19 Oct. 2016. Web. http://nsiteam.com/joint-concept-for-human-aspects-of-military-operations-jc-hamo/ and from Land Warfare Development Centre. Land Operations. Army Doctrine Publication AC 71940. Wiltshire, BA: Warfare Branch Editor, HQ Field Army. N.d.
[17] Nye, Joseph S. 2014. The Information Revolution and Soft Power. Current History 113(759): 19-22. Web. http://www.currenthistory.com/Article.php?

351   ***Technological advances have increased the speed and range at***
352 ***which humans acquire, develop, and transfer information.*** These
353 advances have provided competitors and adversaries the ways and means to
354 use information to affect decision-making. Additionally, they have used
355 information to undermine the legitimacy of joint forces with relevant audiences.
356 Effective use of information by competitors and adversaries has often caught
357 joint forces unprepared and unable to respond to the high-volume of multi-
358 channel propaganda sent via text, video, audio, and still imagery propagated
359 via the internet, social media, satellite television, and traditional radio and
360 television broadcasting.[18] Additionally, advanced information technologies have
361 made operational areas more lethal, more complex, and more dispersed.
362 Technological advancements have decreased the observation-orientation-
363 decision-action cycle time by making it possible for information from a sensor
364 to be directly transmitted to the shooter thus enhancing physical power.[19] This
365 decrease applies not just to the traditional sensor-shooter relationship, but
366 also to groups and individuals where the diffusion of technology has lowered
367 the barriers to entry to transform them from a sensor into a shooter.
368 Individuals now have the ability to sense, create, transform, and disseminate
369 information globally to achieve strategic effects.

370   ***The diffusion of power over information and information***
371 ***technology has allowed individuals and groups to enter into and affect***
372 ***the global forum.*** The power to act as agents of social and political change
373 was once the purview of nation states. However, information has become
374 distributed and difficult to control therefore shifting the power to influence
375 perceptions and behavior. Individuals are now fully capable of sensing,
376 creating, transforming, and disseminating information globally to mobilize
377 others to action. Now populations, formal organizations, informal
378 organizations, and individuals are able to spread ideas, to gain momentum,
379 and to motivate others to action. This diffusion of power of information has

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[18] Paul, Christopher and Miriam Matthews, The Russian "Firehose of Falsehood" Propaganda Model: Why It Might Work and Options to Counter It, Santa Monica, Calif.: RAND Corporation, PE-198-OSD, 2016. As of March 30, 2017: https://www.rand.org/pubs/perspectives/PE198.html
[19] Chapman, William G. Organizational concepts for the sensor-to-shooter world: the impact of real-time information on airpower targeting. Thesis. School of Advanced Airpower Studies, 1997. Montgomery: Air U Press, 1197. Defense Technical Information Center. Web. 11 Oct. 2016. http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA349387.

380   enabled individuals and populations to become active facilitators of change
381   both inside and outside their country of origin.[20]

382   ***A shift in the socio-cultural context of rules, norms, and accepted***
383   ***behavior has changed how the Joint Force conducts military activities.***
384   The ability of the Joint Force to inform public perception of military activities
385   will directly affect its freedom of action. Access to near real-time information
386   provides the public a forum to contest the legitimacy of military activities. The
387   impacts of these public forums are shifting socio-cultural norms regarding
388   acceptable practices and have heightened sensitivity to collateral damage (to
389   both population centers and culturally significant sites). This heightened
390   sensitivity can impede the design and execution of military operations. While
391   the Joint Force is sensitive to conduct operations within socio-cultural rules,
392   norms, and accepted behavior, our adversaries may not and they will not
393   hesitate to leverage them against us.[21]

394   **A. Recent Challenges**

395   ***The Joint Force has often been ineffective at integrating the full***
396   ***range of capabilities to maintain freedom of action in and through the***
397   ***IE.[22]*** The Joint Force, hampered by its policies, conventions, cultural
398   mindsets, and approaches to information, has built barriers fostering a
399   disconnected approach to conducting activities in and through a pervasive IE.
400   As a result, joint forces have not capitalized on the full extent of psychological
401   and socio-cultural effects generated by military activities, both physical and
402   informational. While the Joint Force was slow to change its approach, its
403   adversaries were not; they have adapted rapidly to develop considerable skill in
404   using new means of communication to create an operational advantage.[23]

405   Today, competitors and adversaries, unfettered by restrictive policies or
406   the need for truth, understand the impact of information and are adept at

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[20] Butale expands on the impact of refugee flows. See Butale, Cheludo. "The socio-cultural impact of cross-border refugee flows ..." International Association for Political Science Students. 16 Apr. 2015. Web. http://www.iapss.org/wp/2015/04/16/the-socio-cultural-impact-of-cross-border-refugee-flows-and-the-possible-spread-of-conflicts-in-host-countries-in-africa/#sthash.hhkX68b1.dpuf.

[21] Gray, Colin S. Recognizing and understanding revolutionary change in warfare the sovereignty of context. Carlisle, PA: Strategic Studies Institute, U.S. Army War College, 1 Feb. 2006. Web. https://ssi.armywarcollege.edu/pubs/display.cfm?pubID=640.

[22] Decade of War, p11. Suffolk, VA: Joint and Coalition Operational Analysis, 2012. Web. http://ndupress.ndu.edu/Portals/68/Documents/Books/lessons-encountered/lessons-encountered.pdf

[23] Ibid

407 integrating physical and informational power to achieve operational and
408 strategic ends. Violent extremist organizations (VEO) use various capabilities to
409 exploit, disrupt, and disable command and control systems; to disseminate
410 propaganda and disinformation; to foster internal dissent; to recruit and solicit
411 financing; and to promote legitimacy for their actions while discrediting the
412 legitimacy of others. Russian operations in the Ukraine demonstrated their
413 commitment to a mode of conflict that includes operations to affect perceptions
414 that drive desired behaviors as well as to destroy or disrupt targets. Similarly,
415 China's "Three Warfares"[24] is a warfighting strategy that includes legal, media,
416 and psychological warfare to achieve desired effects.

417   The increased speed and momentum of human interaction allows
418 adversaries to operate beyond physical battlegrounds to foster their narrative
419 and spread disinformation. Adversaries design operations to support indirect
420 strategies focused on the use of information. Some adversaries conduct long
421 campaigns below our threat threshold (i.e., competition short of armed conflict)
422 that erode U.S. cooperative commitments and are placing greater emphasis on
423 unconventional tactics such as propaganda, cyberattacks, economic coercion,
424 and political warfare.[25]

425   ***The Joint Force has lacked emphasis, policy, resources, training,***
426 ***and education to address the full power of information.*** The Joint Force
427 has failed to maximize the potential of informational power. Recent studies
428 have identified the following areas that contributed to this failure:

429   • Inadequate understanding of the operational environment:
430   o "...traditional intelligence effort tended to focus on enemy groups
431   and actions, it often neglected "white" information about the
432   population."[26]

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[24] Walton, Timothy. A. China's Three Warfares. Herndon: Delex Consulting, Studies, and Analysis, 18 Jan. 2012. Web. http://www.delex.com/data/files/Three%20Warfares.pdf.   For further appreciation on this topic read Unrestricted Warfare by Qiao Liang and Wang Xiangsui where they disucss non-military methods of warfare.

[25] Brands, Hal. "Paradoxes of the Gray Zone." Foreign Policy Research Institute. 5 Feb. 2016. Web. http://www.fpri.org/article/2016/02/paradoxes-gray-zone/

[26] Decade of War. Suffolk, VA: Joint and Coalition Operational Analysis, 2012. Web. http://ndupress.ndu.edu/Portals/68/Documents/Books/lessons-encountered/lessons-encountered.pdf

433	• Lack of effective interorganizational[27] coordination[28]
434	• Ineffective organization of Joint Force information capabilities[29]
435	• Ambiguity of doctrine and terminology[30]
436	• Incomplete assessment of the effectiveness of military activities[31]
437	• Limited ability to recognize and understand narratives:
438	○ "The US was slow to recognize the importance of information and
439	the battle for the narrative in achieving objectives at all levels; it
440	was often ineffective in applying and aligning the narrative to goals
441	and desired end states.[32]"
442	• Insufficient authorities to execute at the appropriate level[33]
443	• Reluctance to acknowledge that physical capabilities create
444	information effects[34]

445   In contrast, the Joint Force's adversaries are bolder and accept more risk
446 at operating in this changing IE. As a result, they create political, social, and
447 military advantages that exceed their traditional combat power. The ability of
448 our adversaries to leverage the power of information to frustrate the most
449 technologically advanced militaries in the world, demonstrates the importance
450 of understanding informational power, and highlights the need to master
451 operating in the IE.

452   Fundamentally, war will remain a contest of wills. Armed conflict and
453 competition will continue to occur and present a complex challenge for the
454 Joint Force, in part because adversaries[35] are increasingly capable and elusive.

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[27] JP5-0 describes interorganizational as elements of DOD; engaged USG departments and agencies; state, territorial, local, and tribal agencies; foreign military forces and government agencies; IGOs; nongovernmental organizations (NGOs); and the private sector for the purpose of accomplishing an objective. Joint Publication 5-0, Joint Operation Planning. Defense Technical Informational Center, 11 Aug 2011.

[28] Decade of War. Suffolk, VA: Joint and Coalition Operational Analysis, 2012. Web. http://ndupress.ndu.edu/Portals/68/Documents/Books/lessons-encountered/lessons-encountered.pdf

[29] Munoz, Arturo, and Erin Dick. Information Operations: The Imperative of Doctrine Harmonization and Measures of Effectiveness. Publication no. PE-128-OSD: Rand Corporation, 2015. Web. https://www.rand.org/pubs/perspectives/PE128.readonline.html

[30] Munoz, Arturo, and Erin Dick. Information Operations: The Imperative of Doctrine Harmonization and Measures of Effectiveness. Publication no. PE-128-OSD: Rand Corporation, 2015. Web. https://www.rand.org/pubs/perspectives/PE128.readonline.html

[31] United States Joint Forces Command. Joint Information Operations Force Optimization Study: How to Best Organize, Integrate, Assess, and Train Information Operations. 31 Aug 2010.

[32] Decade of War, p2. Suffolk, VA: Joint and Coalition Operational Analysis, 2012. Web.

[33] *Ibid*, p9.

[34] Paul, Christopher (2011). Strategic communication: Origins, concepts, and current debates. Santa Barbara: Praeger Publishers.

[35] The use of the word adversary here and in the following paragraphs is not intended to exclude the idea of competitors, but is used for simplicity.

455 These adversaries are successfully leveraging physical and informational power
456 to contest international norms and create persistent disorder.[36]

457 **B. Emerging Challenges**

458 The Joint Force will face two interrelated challenges in the future
459 security environment. The first challenge is contested norms in which powerful
460 actors, dissatisfied with the status quo, will capitalize on changes in
461 communication and changes in socio-cultural contexts to contest norms
462 governing international behavior. Furthermore, they will strive to compel
463 change at the expense of the United States, its allies, partners, and global
464 interests.

465 The second challenge is persistent disorder, in which weak states are
466 incapable of maintaining domestic order in the face of crisis.[37] The inter-play
467 among technological advances, relevant actor(s), and the socio-cultural
468 contexts of accepted rules, norms, and behaviors continually redefine these
469 challenges in a rapidly evolving IE.[38] Future competitors and adversaries will
470 not constrain themselves to how people communicate today. Instead, they will
471 combine new strategies and new technologies (artificial intelligence, big data,
472 neuro-technological, etc....) with traditional techniques such as violence,
473 propaganda, and deception, to support their efforts and disrupt U.S. and
474 coalition operations.

475 **C. Implications for the Future Joint Force**

476 ***The increasing importance of information requires that the Joint***
477 ***Force move beyond the current paradigm focused primarily on physical***
478 ***power.*** The American way of war has been one of attrition warfare using
479 physical power to impose its will by wearing down the enemy to the point of
480 collapse through continuous losses in personnel and materiel. This way of war
481 does not account for the change in how state and non-state actors express
482 their will by leveraging information to mobilize groups to support their efforts
483 and frustrate USG objectives. Military power can and should aim to alter
484 behavior of relevant actors to support the achievement of enduring strategic

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[36] Joint Operating Environment 2035. Defense Technical Information Center, 14 Jul. 2016.
[37] Ibid.
[38] The term socio-cultural context is borrowed from Colin Gray while the idea itself as represented in this concept is informed by Gray and Neil Postman. See Gray, Colin S. Recognizing and Understanding Revolutionary Change In Warfare The Sovereignty of Context. Carlisle, PA: Strategic Studies Institute, U.S. Army War College, 1 Feb. 2006. Web. https://ssi.armywarcollege.edu/pubs /display.cfm?pubID=640. Postman, Neil. "The Information Environment." *ETC: A Review of General Semantics* 36.3 (Fall 1979): 234-45. JSTOR. Web..

485   outcomes. All military actions generate observable or discoverable information
486   that produces effects on perceptions and attitudes and ultimately behavior.

487   The Joint Force must adapt to changing conditions in the future security
488   environment through understanding the linkage between ongoing operations
489   against adversary networks, the discrete application of lethal strikes, and
490   efforts to understand the informational impacts on its own operations.

491   **The Joint Force must understand, blunt, and counter adversary use**
492   **of ideas, images, and violence designed to manipulate the United States,**
493   **its allies, and its partners.** The Joint Force blunt adversary tactics by
494   reinforcing compelling narratives through deliberate informational and physical
495   actions designed to promote cooperation and to reassure allies and partners.
496   The Joint Force and interorganizational efforts must understand how and when
497   to lead with information in order to shape the future security environment.
498   Joint forces must apply emerging technical capabilities, including persistent
499   intelligence and data collection, to access and make sense of dynamic,
500   encrypted systems and networks. Joint forces must blend these emerging
501   technical capabilities with socio-cultural analysis to inform the integration of
502   physical and informational activities, in a sustained approach, to enable the
503   freedom of action.

Paradigm Shift

[Information] must be built into Joint Force thinking from the ground up.

General Dunford, CJCS
Joint Force Quarterly 84
1st Quarter 2017

504

505   ***III. The Military Challenge for the Joint Force***

506   How will the Joint Force integrate physical and informational power to
507   change or maintain perceptions, attitudes, and other elements that drive
508   desired behaviors of relevant actors in an increasingly pervasive and connected
509   IE to produce enduring strategic outcomes?

510 *IV. Central Idea*

511   **The Joint Force must build information into operational art to**
512 **design operations that deliberately leverage the informational aspects of**
513 **military activities.**

514   To achieve enduring strategic outcomes, the Joint Force will integrate
515 physical and informational power to affect the perceptions, attitudes, and other
516 elements that drive desired behaviors of relevant actors. This ability to
517 deliberately leverage the inherent informational aspects of military activities
518 requires the Joint Force to:

519   1. Understand information, the informational aspects of military activities,
520   and informational power
521   2. Institutionalize the integration of physical and informational power
522   3. Operationalize the integration of physical and informational Power

523   **A. Understand Information, the Informational Aspects of Military**
524   **Activities, and Informational Power.**

525   Information has always played a significant role in military endeavors.
526 However, the Joint Force often treats information as an enabler to physical
527 power vice an instrument of military power in its own right. Information
528 technology has enabled the Joint Force to increase its combat power (disruptive
529 and destructive force) in the operational area to achieve greater speed of
530 command, lethality, survivability, and responsiveness.[39] Joint forces must
531 design operations that expand how they use information to maximize the
532 efficiency and effectiveness of military power by capitalizing on constructive as
533 well as destructive activities to achieve durable political outcomes.

534   On top of collecting, processing, and disseminating information, joint
535 forces must use information to change or maintain the perceptions, attitudes,
536 and other elements that drive desired behaviors of relevant actors. The Joint
537 Force will maximize the full range of military power, from constructive to
538 destructive, by leveraging the inherent informational aspects of physical power
539 and integrating them with informational power to form a functioning unified

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[39] Sen, Gautam. Conceptualizing Security for India in the 21st Century. New Delhi: Atlantic Publishers & Distributors, 2007.

540   whole.[40] To do this, the Joint Force must first understand information,
541   informational aspects of military activities, and informational power.

542   **Information**

543   Fundamentally, information is organized data presented within a context
544   that gives it meaning and relevance, and can lead to an increase in
545   understanding and a decrease in uncertainty.[41] Data and information from the
546   physical world form the basis of knowledge and shared understanding. The
547   cognitive hierarchy model represented in doctrine (Figure 2), provides an
548   approach to building a shared understanding from data and information.[42]

549   Individuals, groups, communities, and nations share or compete for
550   information, ideas, perceptions, and thoughts. Relevant actors use information
551   to inform or influence other individuals, groups, communities, and nations.
552   Relevant actors can acquire, process, distribute, and act on information in
553   ways that can affect the conditions, circumstances, and influences that affect
554   the employment of capabilities and bear on the decisions of the commander.[43]
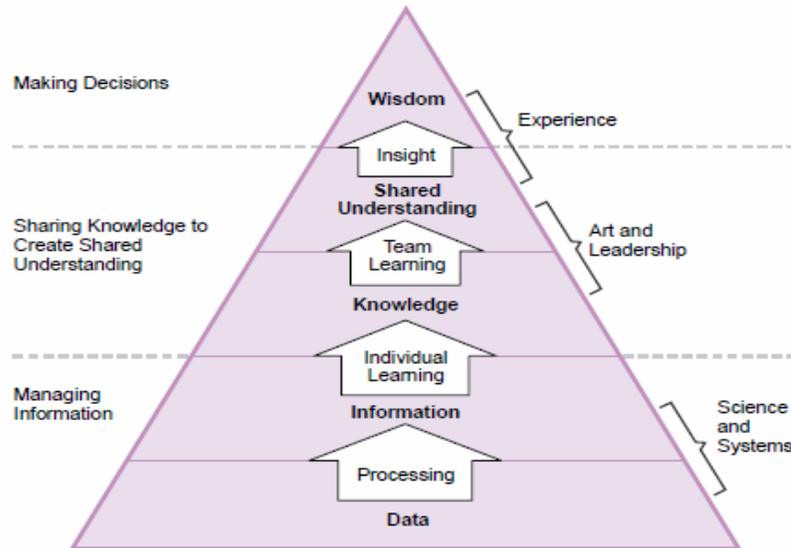
555   Figure 2: Cognitive Hierarchy Mode

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[40] Army Capabilities Integration Center (2014, Jan 23). Army Vision – Force 2025 White Paper. 23 Jan. 2014. Web. http://www.arcic.army.mil/app_Documents /USArmy_ WhitePaper_Army-Vision-Force-2025_23JAN2014.pdf
[41] Kuzemskii, A. L. Statistical mechanics and the physics of many-particle model systems. Singapore: World Scientific Co. Pte. Ltd., 2017.
[42] Joint Publication 3-0, Joint Operations. Defense Technical Informational Center, 17 Jan. 2017.
[43] Definition of the Operational Environment from Joint Publication 3-0, Joint Operations. Defense Technical Informational Center, 17 Jan. 2017.

556 To achieve strategic outcomes that hinge on the perceptions, attitudes,
557 and other elements that drive behaviors, it is necessary to understand how
558 relevant actors perceive and ultimately understand information. The cognitive
559 hierarchy model provides a bottom-up view of this process. However, a top-
560 down approach as depicted in the Sentient Information Model (see Figure 3)
561 places the relevant actor's understanding in the center as the primary focus.
562 This focus provides better insight into how meaning leads to understanding
563 within a context of sensory inputs from the physical world. New data and
564 information can create and generate new knowledge. It can also challenge old
565 knowledge or be rejected, reinterpreted or strongly conditioned by old
566 knowledge. An individual's experience and background (social, cultural,
567 physical, informational, and psychological elements) combine with knowledge
568 and understanding to form perceptions, attitudes, and other elements that
569 ultimately drive behaviors.
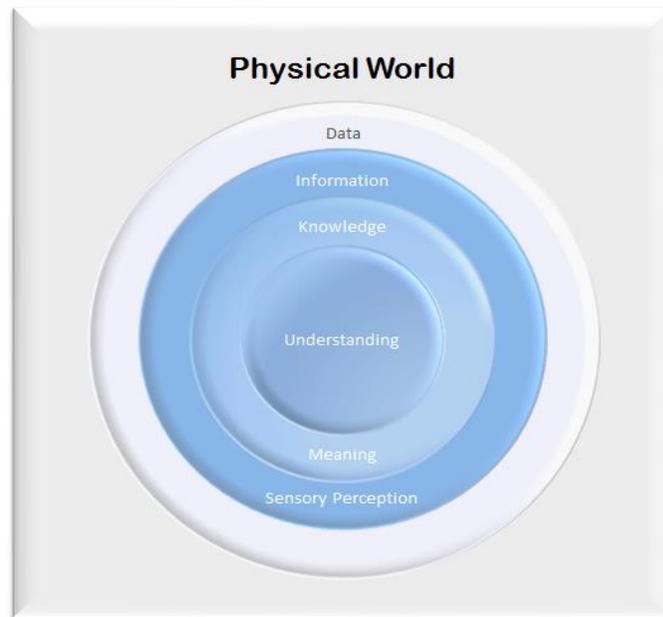
570

Figure 3: The Sentient Information Model[44]

571 Decision makers, either human or machine-based, determine the utility
572 of information by its ability to provide a deeper level of understanding and its
573 potential implications for future military operations.[45] Much of the observed
574 information, while potentially meaningful, may not be relevant to formulate

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[44] Sparling, Bryan. N. Information Theory as a Foundation for Military Operations in the 21st Century, 24 May 2002. Web. Defense Technical Information Center: www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA403845
[45] Ibid.

575 decisions. While judgment remains a uniquely human quality, machines will
576 increasingly assist in evaluating information with the intent of improving the
577 speed and quality of human decision-making.

> *Lying offshore, ready to act, the presence of ships and Marines sometimes means much more than just having air power or ship's fire, when it comes to deterring a crisis. The ships and Marines may not have to do anything but lie offshore.*
>
> *General Colin Powell*

578 **Informational aspects of military activities**

579   Military activities are the full range of deeds, actions, and functions
580 conducted by the military. Every joint force action, written or spoken word, and
581 displayed or relayed image has informational aspects that communicate a
582 message or intent.[46] Informational aspects are the features and details of
583 activities that an observer interprets and uses to assign meaning. Whether a
584 specific message is intended or not, the observer will interpret the military
585 activity through their personal worldview. For example, military activities such
586 as punitive action (e.g. the missile launch in response to the U.S. Embassy
587 bombing in Kenya and Tanzania), coalition and joint exercises, and freedom of
588 navigation in the global commons are all physical actions that have
589 informational aspects.

590   The informational aspects of military activities are where physical power
591 and informational power blends. The Joint Force uses physical means such as
592 the massive ordance air burst (MOAB), also known as the mother of all bombs,
593 mentioned below to purposefully send a specific message and create a desired
594 effect. The Joint Force also purposefully uses certain information-related
595 capabilities to affect relevant actors. However, it is impossible to conduct
596 military activities without communicating a message. The Joint Force must
597 understand how to manipulate and leverage the inherent informational aspects
598 of military activities to ensure the message sent is the message intended and to
599 mitigate the unintended interpretations of military activities.

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[46] Joint Publication 1, Doctrine for the Armed Forces of the United States. Defense Technical Informational Center, 25 Mar. 2013.

The Mother of All Bombs (MOAB)

This time, the MOAB served its best strategic purpose—though that may extend beyond the actual impact. Dropping the mother of all bombs also sends a message "to the Taliban that there's a new sheriff in town," says the national security official. Presumably also to ISIS, North Korea, and Iran. And the fact that it's such a big blast doesn't hurt for courting media attention that helps deliver that warning.

"Most generally, use of a bomb of this size now is probably a broad warning to others to avoid brinksmanship with the United States," says Rebecca Zimmerman, a policy researcher at Rand.

"You … wouldn't cover the story if this was 10 JDAMs. Same mission, different bombs," Singer says. The MOAB, though, makes an impact.

> Excerpts from "That 'Mother of All Bombs' Was Just Waiting for the Right…"[47]

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600   Interpretations and perceptions of military activities depend on the frame
601   through which relevant actors view the world around them, which is often
602   called a worldview.[48] A worldview is a mental model of reality -- a framework of
603   ideas and attitudes. The beliefs, values, narratives, and behaviors of a culture
604   are derived from, and inform, the worldview of a relevant actor. That worldview
605   then frames the informational aspects of military activities to assign meaning.
606   That assigned meaning can reinforce an actor's perceptions and attitudes or
607   alter them. Perceptions and attitudes determine responses to observed actions,
608   words, or images.[49]

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[47] Dreyfuss , Emily. "That 'Mother of All Bombs' Was Just Waiting For the Right ..." Wired.com. N.p., 13 Apr. 2017. Web. https://www.wired.com/2017/04/mother-bombs-just-waiting-right-target/.

[48] World Bank. World Development Report 2015: Mind, Society, and Behavior (Ch 3, pg 64). Washington, DC: Publishing and Knowledge Division, 2015.

[49] Individuals do not respond to objective experience but to their mental representations of experience. In constructing their mental representations, people use interpretive frames provided by mental models. People may have access to multiple and conflicting mental models. Context can activate a particular mental model. Using a different mental model can change the individual's mental representation of the world around him. See World Development Report 2015: Mind, Society, and Behavior Published: December 2014 Pages: 62 – 75. Web. http://dx.doi.org/10.1596/978-1-4648-0342-0_ch3

609 **Informational Power**

610   Power is the ability to cause relevant actors to act in accordance with our
611 interests.[50] Information is recognized as both a resource and instrument of
612 power at the National-level, but it is also an instrument of power for the
613 military. This concept uses informational power to convey the military's use of
614 information to shape the perceptions, attitudes, and other elements that drive
615 desired behaviors and shape the course of events.

616   The Joint Force applies informational power to achieve three ends:

617 • To change or maintain the observations, perceptions, attitudes, and other
618   elements that drive desired behaviors of relevant actors.

619 • To protect and ensure the observations, perceptions, attitudes, decisions,
620   and behaviors of the Joint Force, its allies, and its partners.

621 • To acquire, process, distribute, and employ data to enhance combat power.

> *We conduct all operations in order to influence people and events, to bring about change, whether by 155mm artillery shells or hosting visits: these are all influence operations. We sought to make use of every lever we had to influence events.*
>
> *Major General Graham Binns*
> *General Officer Commanding*
> *1st (UK) Armoured Division*

622   To date, joint forces have primarily targeted the capabilities or decision-
623 making nodes of their adversaries. This has resulted in battlefield victories, but
624 has not consistently produced enduring strategic outcomes. Joint forces should
625 understand the nature of the problem and set the conditions to produce
626 favorable decisions over time. Commanders must leverage the *nature and*
627 *relevance* of information into the design of all operations to maximize military
628 power with the same acumen and skill with which they leverage physical
629 power.

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[50] Power is the capacity or ability to direct or influence the behavior of others or the course of events (produce an effect). English Oxford Living Dictionaries. Web. https://en.oxforddictionaries.com/definition/power

> *For the changing character of war in the information age will require military forces that recognize seizing or controlling terrain is:*
>
> - *secondary to protecting innocent lives, and that*
> - *capturing perceptions is the new "high Ground" in today's conflicts, as the moral is to the materiel as three is to one...*
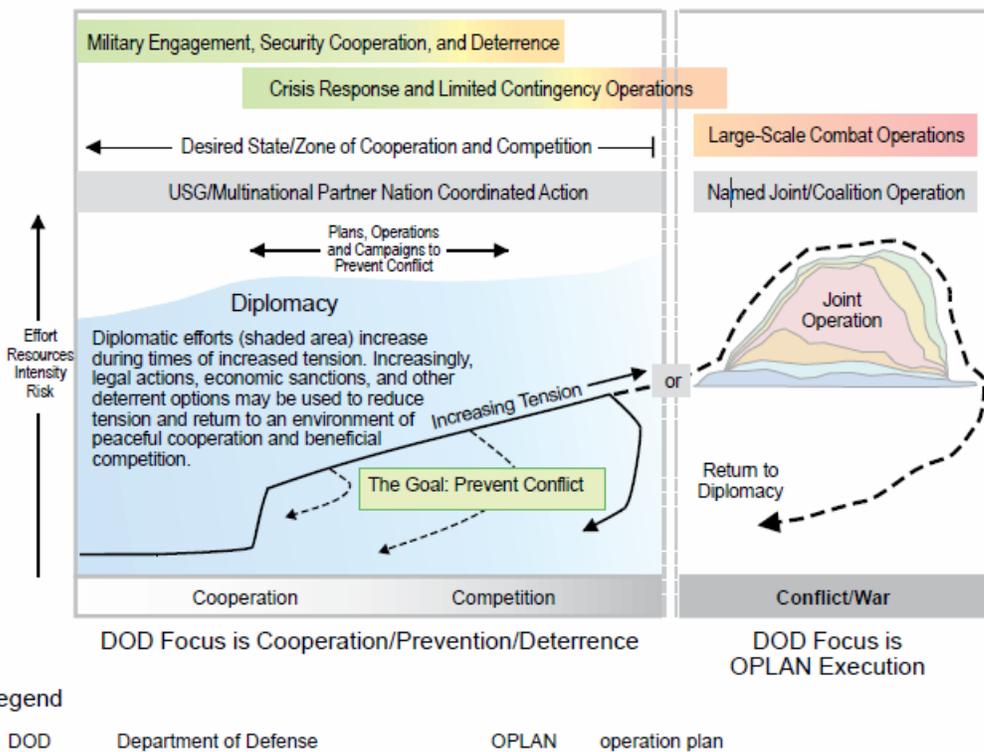>
> *General Mattis*
>
> *Supreme Allied Commander Transformation*
>
> *7 July 2009*

630 Joint forces must treat the IE as terrain and shape conditions by
631 deliberately leveraging informational aspects to integrate physical and
632 informational power. Shaping the IE is relevant in all military operations and
633 activities across the conflict continuum, (Figure 4).

634

635 **Figure 4: The Conflict Continuum[51]**

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[51] Joint Publication 3-0, Joint Operations. Defense Technical Informational Center, 17 Jan. 2017.

636   Competitors and adversaries will attempt to gain an advantage in the IE
637   by manipulating information, particularly information regarding their activities
638   as well as activities of the Joint Force, its allies, and its partners. Commanders
639   apply initiative to anticipate, proactively counter, and defend against these
640   tactics and mitigate their effects. The Joint Force must blunt such competitor
641   and adversary use of ideas, images, and violence designed to manipulate the
642   United States and its allies.[52]

Adversary Use of Ideas, Images, and Violence

    During Operation Valhalla in Iraq in March 2006, a battalion of U.S. Special Forces Soldiers engaged a Jaish al-Mahdi death squad, killing 16 or 17, capturing 17, destroying a weapons cache, and rescuing a badly beaten hostage.

    In the time it took the soldiers to get back to their base—less than one hour—Jaish al-Mahdi soldiers had returned to the scene and rearranged the bodies of their fallen comrades to make it look as if they had been murdered while in the middle of prayer. They then put out pictures and press releases in Arabic and English showing the alleged atrocity.

    The U.S. unit had filmed its entire action and could prove this is not what happened. Yet it took almost three days before the U.S. military attempted to tell its side of the story in the media. The Army was forced to launch an investigation that lasted 30 days, during which time the battalion was out of commission.

    The Jaish al-Mahdi operation is an excellent example of how adversaries leverage information without using physical force to affect perceptions, attitudes, and other elements that drive desired behaviors. This incident was one of the first clear demonstrations of how adversaries can now openly monitor American audience reactions to their messaging, in real time, from thousands of miles away and fine tune their actions accordingly. With unlimited global access and the ability to leverage information, adversaries were able to mitigate the physical overmatch of the joint force, paralyze the USG with policy and legal issues, and gain freedom of action.[53]

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643   Information is integral to planning and operations, it provides the fuel to
644   make decisions, and provides commanders the ability to generate and apply
645   informational power. The Joint Force must be adept at leveraging information

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[52] Joint Operating Environment 2035. Defense Technical Information Center, 14 Jul. 2016.
[53] The Weaponization of Information, The Need for Cognitive Security; (testimony of Waltzman). Print

646 to expand access, deny access, or manipulate access of an adversary to their
647 mission-essential information. The Joint Concept for Electromagnetic
648 Spectrum Operations and the Joint Concept for Cyberspace Operations
649 address many of the capabilities required to protect the Joint Force's ability to
650 acquire, process, distribute and act on information to enhance combat power.[54]
651 The Joint Force must preserve friendly mission-essential information, affect
652 rival mission-essential information, and attack rival forces.[55]

653 **B. Institutionalize the Integration of Physical and Informational Power**

654   The Joint Force must normalize the integration of physical and
655 informational power in its organization and culture.[56] To institutionalize this
656 concept, the Joint Force must elevate information in strategy and operational
657 art, design operationally coherent joint formations, promote unity of effort,
658 provide best military advice, and enable a whole of government approach.

659   To achieve success in the future security environment, the Joint Force
660 must shift how it thinks about information from an afterthought and the sole
661 purview of information professionals to a foundational consideration for all
662 military activities. The Joint Force is engaged in persistent competition and
663 conflict within the IE and must man, train, and equip itself to achieve and
664 maintain strategic outcomes that may hinge on the perceptions, attitudes, and
665 other elements that drive desired behaviors of relevant actors.

666   Joint forces must be as capable of using information to change or
667 maintain the perceptions, attitudes, and other elements that drive desired
668 behaviors of relevant actors (to include its own) as it is at dominating in battle.
669 Additionally, it must be capable of acquiring, processing, and sharing
670 information to develop the common understanding needed for commanders to
671 make timely and effective decisions. Institutionalizing the role of information
672 throughout doctrine, organization, training, materiel, leadership and
673 education, personnel, facilities, and policy development will enable the Joint
674 Force to effectively leverage informational aspects of military activities and
675 realize the full potential of military power.

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[54] Joint Concept for Electromagnetic Spectrum Operations (p. 17). 18 Mar. 2015. Print.
[55] Joint Concept for Cyberspace, Version 2.0 (p. 14, 23-28). 23 Dec. 2015. Print.
[56] Institutionalize is defined as to establish (something, typically a practice or activity) as a convention or norm in an organization or culture. English Oxford Living Dictionaries. Web. https://en.oxforddictionaries.com/definition/institutionalize

676   **1. Elevate Information in Strategy and Operational Art**

677   Fundamentally, U.S. strategies aim to cause relevant actors (militaries,
678   non-state actors, governments, organizations, and populations) to act in ways
679   that support our national interests. Commanders employ operational art to
680   connect tactical actions to strategic objectives. Future leader development and
681   education must inculcate information and informational power into strategy
682   and operational art.[57]

683   The full integration of physical and informational power requires a
684   paradigm shift in how the Joint Force thinks about the application of power.
685   This shift must begin with a foundational knowledge of informational aspects of
686   military activities and informational power established through professional
687   military education. The Joint Force must change how it views, plans, and
688   executes operations, particularly with respect to various audiences' perceptions
689   of a joint force's military activities. Instead of relying primarily on physical
690   power, the Joint Force must transition to an approach that builds information
691   into operations that deliberately leverage the informational aspects of military
692   activities to affect the perceptions, attitudes, and other elements that drive
693   desired behaviors.

694   Commanders' intent must describe the desired conditions in terms of the
695   perceptions, attitudes, and other elements that drive desired behaviors needed
696   to support enduring strategic outcomes. Maximizing the effectiveness of
697   military power by leveraging the inherent informational aspects of military
698   activities will expand the range of options available to the JFC. The integration
699   and sequencing of military activities must be informed by an understanding of
700   how military activities affect perceptions, attitudes, and other elements that
701   drive desired behaviors. Leveraging the informational aspects, including, but
702   not limited to: timing, platforms, location, and duration can be a force
703   multiplier to enable the effective allocation of resources. Finally, commanders
704   must think in terms of what they can accomplish with the application of

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[57] Joint Concept for Rapid Aggregation. Defense Technical Information Center, 22 May 2015.
www.dtic.mil/doctrine/concepts/jointconcepts/joint_concept_rapid_aggregation.pdf
[57] Joint Publication 5-0, Joint Operation Planning. Defense Technical Informational Center, 11 Aug 2011.

705   military power through a global cross-domain[58] perspective unhampered by
706   Service parochialism.

707   **2. Design Operationally Coherent Joint Formations**

708   Operationally coherent joint formations are complete, well connected,
709   and work closely and efficiently together internally and externally with
710   interorganizational partners.[59] To apply informational power as effectively as it
711   applies physical power, the Joint Force must draw required capabilities and
712   expertise from across domains, echelons, geographic boundaries, and
713   organizational affiliations to support operationally coherent joint formations.
714   These coherent joint formations must work together both internally and with
715   interorganizational partners to align tactical and operational activities to
716   change or maintain the perceptions, attitudes, and other elements that drive
717   desired behaviors that lead to strategic outcomes.

718   Coherent joint formations require a common understanding and
719   approach to integrating physical and informational power to change or
720   maintain perceptions, attitudes, and other elements that drive desired
721   behaviors. This common understanding begins with shared situational
722   awareness, a common lexicon, standardization of processes, and establishment
723   of relationships that reduce or eliminate barriers to integration of physical
724   power and informational power.

725   The Joint Force must experiment with organizational structures to
726   maximize its ability to gain relative advantage in the IE. Additionally, the Joint
727   Force must experiment with tactics, techniques, and procedures designed to
728   sustain or change the perceptions, attitudes, and other elements that drive
729   desired behaviors of relevant actors. It is through education and training that
730   the Joint Force must normalize the processes and thinking necessary to
731   leverage the inherent informational aspects of military activities. The Joint
732   Force must leverage the latest scientific advances to enhance its capabilities to
733   operate in the IE. Adopting advances in technology and in social and behavioral
734   sciences will enable joint forces to seize the initiative in the IE.

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[58] Note: Taken from Global Integrated Operations, but related to Service ideas of Single battle (USMC), Multi-domain battle (Army), Single Multi-domain battle (Army), and Multi-domain (Air Force).
[59] Joint Concept for Rapid Aggregation. Defense Technical Information Center, 22 May 2015. www.dtic.mil/doctrine/concepts/jointconcepts/joint_concept_rapid_aggregation.pdf

3. Promote Unity of Effort

"Achieving unity of effort to meet national security and national defense goals has always been problematic due to challenges in information sharing, competing priorities, geographic mismatches, differences in lexicon, and uncoordinated activities."[60] A common understanding is key to establishing the unified logic required between all participants when working towards a common goal. It is also fundamental to planning and executing operations designed to affect the perceptions, attitudes, and other elements that drive desired behaviors of relevant actors.

Joint forces seek to achieve unity of effort through unified action, a fundamental joint construct that refers to the synchronization, coordination, and integration of activities of governmental and non-governmental entities. Interagency coordination more specifically refers to interaction among USG agencies toward common goals. Consistent integration of words and actions with interorganizational partners can facilitate and support a narrative that achieves unity of effort. By defining a joint force's objectives appropriately and clearly, in terms of the desired behaviors of relevant actors as well as in terms of destroying an adversary's capability or order of battle, a joint force commander will increase the opportunity to establish a common vision, goals, and objectives to achieve unity of effort toward mission success.

4. Provide Best Military Advice

The Joint Force must be educated and trained to provide the best military advice to both military and civilian leaders regarding the advantages and risks of applying informational power. The Decade of War identified insufficient authorities to execute at the appropriate level as an impediment to informational power thereby limiting the full potential of military power. Others have argued that the military has all the authorities it needs, but lacks permission to act.[61] The ability to articulate clearly the advantages and risks associated with informational power is necessary to attaining the needed approvals, authorizations, or permissions. Informational activities to contest the IE are typically overly restrictive due to policy guidance in fear of unintended effects.

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[60] Joint Staff J7. Unity of Effort Framework Solution Guide. Defense Technical Information Center: Washington D.C. 31 Aug. 2013. Web. https://www.dtic.mil/doctrine/jwfc/uef_solution_guide.pdf
[61] Note: This observation was stated by various members stakeholders at each JCOIE writing workshop and captured in comments to earlier versions.

767   The Joint Force must identify, mitigate, and where appropriate, adjust or
768   remove the policy, geographical, and interorganizational barriers that create
769   conflicting priorities and inhibit integration of physical and informational
770   power. Clearly articulated policies, and flexible authorities and permissions
771   should facilitate the commander's ability to conduct agile and timely operations
772   in the IE. With a thorough understanding and management of risk of
773   employing informational power, joint forces will be able to release a video as
774   timely as they are able to release a bomb. The Joint Force must be proactive in
775   its approach and can no longer allow its adversaries to make the first
776   impression, an impression that could be difficult or impossible to overcome,
777   even when false.[62]

778   **5. Enable a Whole of Government Approach**

779   Operating in and through the IE in a whole-of-government approach
780   requires capabilities that exist beyond the Department. Facilitating a whole-of-
781   government approach focuses on two levels. The first is interaction between the
782   Joint Force and other US departments and agencies to facilitate a common
783   picture, understanding, and agreement on unified action with respect to a
784   specific operation. The second level is interaction between combatant command
785   commanders and joint force commanders and staffs with US agency
786   representatives, such as ambassadors in the area where operations will occur.
787   Additionally, the Joint Force must engage interorganizational partners to assist
788   in policy formation and operational methods to support both ongoing and
789   planned operations as well as a long-term National Security Strategy. Future
790   policy should allow for authorities that enable the joint forces to operate at the
791   speed of information.

792   Resolution of trans-regional problems will increasingly require the
793   integration of physical and informational power by the Joint Force and its allies
794   and interorganizational partners. The Joint Force must assist in the
795   development of, and contribute to, those mechanisms that facilitate
796   interorganizational engagement to achieve unity of effort. The Joint Force must
797   learn how interorganizational partners leverage information, recognize the
798   inherent informational aspects of their activities, and enhance their impact to
799   achieve unity of effort.

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[62] Joint Operating Environment 2035. Defense Technical Information Center, 14 Jul. 2016.

800   **C. Operationalize the Integration of Physical and Informational Power**

801   To produce enduring strategic outcomes that hinge on perceptions,
802 attitudes and behaviors, the Joint Force must operationalize its application of
803 informational power. This requires that the Joint Force:

804 **1. Develop a better understanding of the informational, physical, and**
805 **human aspects of the security environment**

806   A shared understanding of the security environment creates a unifying
807 start point for strategy and operational design. The Joint Force must expand its
808 analysis of the informational, physical, and human aspects to understand how
809 they influence the interactions between and amongst relevant actors.

810   Informational aspects reflect the way that individuals, systems, and
811 groups communicate and exchange information. This communication can be
812 non-verbal, verbal through media such as print, radio, television, etc., or face-
813 to-face that can consist of verbal and non-verbal communication. Informational
814 aspects are the sensory inputs used by individuals, systems, or groups to
815 assign meaning and gain understanding about the world. Informational aspects
816 derived from sensory inputs that are physical in nature are generally more
817 impactful. In other words, actions speak louder than words. Human interaction
818 is expanding and accelerating as the information infrastructure expands
819 globally. Information systems are physical in nature, but have informational
820 aspects. Any digitally connected person has the ability to shape public
821 understanding of, and consensus for (or against), a conflict or to be influenced
822 by other actors who exploit these means.[63]

823   Physical aspects reflect geography, the natural and man-made terrain,
824 which creates constraints and freedoms on the people and equipment that
825 operate in it. Geography is associated with group identity, access to resources,
826 and is often rooted in deep cultural and historical factors. Geography can block
827 or enable communication, provide cover from detection or attack, and obstruct
828 or enable movement.[64] Physical aspects also reflect territorial boundaries that
829 are associated with governments' obligations to provide security for their
830 people.

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[63] Land Warfare Development Centre. Land Operations. Army Doctrine Publication AC 71940. Wiltshire, BA: Warfare Branch Editor, HQ Field Army. 31 Mar. 2017.
[64] Land Warfare Development Centre. Land Operations. Army Doctrine Publication AC 71940. Wiltshire, BA: Warfare Branch Editor, HQ Field Army. 31 Mar. 2017.

831   Human aspects are the foundation from which humans interact with
832 other humans and their environment. Linguistic, social, cultural, physical, and
833 psychological elements that shape human behavior form and impact these
834 interactions. Most people live in towns, cities and villages, and increasingly in
835 coastal regions. People exist in linguistic, cultural, social, and political groups
836 with specific identities, usually associated with particular territories.
837 Competition for territory and resources, and issues such as injustice and lack
838 of representation are often at the root of conflict. A region's history can provide
839 insight into an actor's character, traditions, and nature—and suggest how
840 people might behave under particular circumstances in the future.[65]

The following is a simplified example that will illustrate some of the changes in thinking proposed by JCOIE. It does not capture all the changes and variables represented in this concept. Additionally, the example is presented in a linear fashion when in reality there should be feedback loops for each idea. This example will be continued throughout this section to illustrate the operationalization of JCOIE.

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1. A Better Understanding

Situation: A Combatant Command is monitoring a region within their AOR.

Understanding: The staff analyzes those informational, physical, and human aspects to gain an understanding of the region. Then it must identify the perceptions, attitudes, and other elements that drive desired behaviors that support or challenge the Theater Campaign Plan objectives. The staff identifies and evaluates relevant actors.[66] This baseline provides an enhanced contextual understanding of what is likely to sustain or change those perceptions, attitudes, and other elements that drive desired behaviors. This baseline understanding is shared with, and enhanced, by allies and partners.

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841   Commanders employ operational art to connect tactical actions to
842 develop strategic objectives that account for the perceptions, attitudes, and

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[65] Discussion of the human aspects from Joint Concept for Human Aspects of Military Operations. 19 Oct. 2016. Web. http://nsiteam.com/joint-concept-for-human-aspects-of-military-operations-jc-hamo/ and from Land Warfare Development Centre. Land Operations. Army Doctrine Publication AC 71940. Wiltshire, BA: Warfare Branch Editor, HQ Field Army. N.d.
[66] Joint Concept of Human Aspects of Military Operations, Joint Concept for Human Aspects of Military Operations. 19 Oct. 2016. Web. http://nsiteam.com/joint-concept-for-human-aspects-of-military-operations-jc-hamo/

843 other elements that drive desired behaviors. Characterization of the
844 environment based on a better understanding of its informational, physical,
845 and human aspects will inform strategy and operational design that underpin a
846 campaign or major operation plan and its subsequent execution. The Joint
847 Force must characterize the informational, physical, and human aspects to
848 expose and leverage the interdependencies between them to maintain or
849 change the relevant actors' perceptions and attitudes to drive desired
850 behaviors.

851 The informational, physical, and human aspects of military operations
852 impact the perceptions, attitudes, and other elements that drive desired
853 behaviors. Joint Forces must treat the perceptions, attitudes, and other
854 elements that drive desired behaviors as "key terrain." Characterization must
855 include an assessment of the perceptions and attitudes of relevant actors. The
856 Joint Force must integrate information collection efforts with its allies and
857 interorganizational partners to develop contextual understanding of
858 cooperation, competition, and armed conflict through the characterization of
859 relevant actors. The Joint Force must understand how its competitors and
860 adversaries are likely to view friendly activities in order to anticipate potential
861 responses.

862 To understand the perceptions, attitudes, and other elements that drive
863 desired behaviors of competitors and adversaries, the Joint Force must first
864 understand how its own biases influence its characterization of the security
865 environment.[67]

866 **2. Detect changes in the security environment that may enable or impede**
867 **success.**
868 An understanding of the OE is critical to identifying those changes that
869 affect the joint forces' ability to achieve the objectives of the plan. While
870 changes within the OE may be significant, they are not all relevant to joint
871 forces. Joint forces must identify those changes that provide opportunities to
872 alter or maintain the perceptions, attitudes, and other elements that drive
873 desired behaviors.

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2. Detect Relevant Change

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[67] JCOIE presents the central and supporting ideas from a strategic view expressed as the "security environment."
However, the Joint Force should also apply these ideas at operational and tactical levels.

> **Observed Change:** After developing a common understanding of the environment, intelligence reveals that a violent extremist organization is claiming to transport a weapon of mass destruction into a specific region.
>
> **Is the Change Relevant?:** If the claim is true, transportation of a WMD will affect the combatant command's objectives. Whether or not it is true, the claim will likely have an impact on the perceptions of relevant actors in the region and is therefore relevant.

874   The future Joint Force must identify and understand the significance of
875 the informational aspects of relevant actors' activities. These activities are
876 normally indicators of change to provide insight if the Joint Force is influencing
877 perceptions, attitudes, and other elements that drive desired behaviors. A
878 transregional, multi-domain, and multi-functional approach is necessary to
879 analyze relevant environmental factors such as economics, politics,
880 transportation, and demographics that provide opportunities or challenges to
881 achieving desired outcomes. The Joint Force must employ analysis techniques
882 using a multi-modal, cross-disciplined approach that broaden current
883 descriptive approaches beyond the limits of political, military, economic, social,
884 infrastructure, information – physical environment and time (PMESII-PT)
885 framework to identify relevant change in the security environment.

886   The Joint Force must employ various analytical methodologies to provide
887 context and identify changes in the security environment. The deliberate
888 application of multi-layered, cross-disciplined, iterative analytical
889 methodologies should enable the Joint Force to better characterize the
890 informational, physical, and human aspects relevant to setting the desired
891 conditions and achieving objectives. These methodologies will provide insight
892 to the Joint Force on worldviews that frame the perceptions, attitudes, and
893 other elements that drive desired behaviors.

894   The deliberate application of multi-layered, cross-disciplined, iterative
895 analytical approaches will provide context for observations relevant to the JFC
896 and Staff. The Joint Force must capture any insights gained from these
897 analytical approaches to improve its baseline understanding of the security
898 environment.

899 **3. Determine the impact of detected changes on the perceptions and**
900 **behaviors of relevant actors.**

901   Once the Joint Force has identified changes in the security environment,
902   it must understand and anticipate the effect of those changes on the
903   perceptions, attitudes, and other elements that drive desired behaviors. The
904   Joint Force must orient on those changes that provide opportunities or
905   obstacles to setting the conditions for desired outcomes. Experienced judgment
906   combined with the results of multiple analytical methods can provide insight to
907   the impact relevant changes will have towards achieving the commander's
908   objectives.

---

3. Determine Impact of the Change

Once the combatant command has determined that the WMD claim is relevant, its top priority will be to find and secure it. However, it must also determine the impact on perceptions, attitudes, and other elements that drive desired behaviors of relevant actors (in this case the local population).

The population could perceive the claim as a threat and be motivated to counter VEO activities. Alternatively, the population could perceive the claim to be in their best interest (increased power) and be likely to facilitate and support VEO activities. Understanding the relevant actor's likely response will inform the combatant commander's options.

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909   A variety of analytic methodologies, competitive analytic viewpoints, and
910   multi-disciplined subject matter experts (SME) can help joint forces
911   understand the effect relevant changes will have on relevant actors. This
912   understanding is necessary to leverage activities that capitalize on
913   opportunities or overcome obstacles to achieve enduring strategic outcomes.
914   Applying an extensive interdisciplinary approach includes but is not limited to:

915   • Examining the problem set through a broad range of lenses (social,
916   economic, legal, political)
917   • Understanding how competitors and adversaries are shaping the
918   environment through propaganda, disinformation, or active measures
919   • Orienting on the variety of established and unfolding circumstances that
920   provide opportunities or present obstacles
921   • Seeking inputs from other partners to refine the view of the opportunities
922   or obstacles
923   • Evaluating the physical and informational aspects of the security
924   environment

925　　　Any insights gained from these must feedback into the baseline
926　understanding of the security environment and inform *the development of*
927　*options.*

**4. Develop options for the commander that deliberately leverage, and
integrate, the informational aspects of military power.**

930　　　　Joint forces must integrate physical and informational power regardless
931　of operational phase. Commanders and staff must deliberately design physical
932　and informational activities to increase or decrease ambiguity perceived by
933　competitors and adversaries. The Joint Force must leverage SMEs,
934　technologies, and exercises to assess the potential impact those activities have
935　on the perceptions, attitudes, and other elements that drive behaviors
936　necessary to achieve enduring strategic outcomes.

937　　　　Operations must strive for the optimal mix of physical and informational
938　activities to drive desired behaviors. Joint forces must enhance lethality by
939　leveraging the informational aspects of military activities to assist in the
940　destruction of the will and capability of the adversary.

Sample of Informational Aspects

Timing:
- Will the activity take place on a significant date that affects how it is interpreted?
- Are there other activities before, during, or after that could affect how the activity is perceived?

Platforms:
- How do relevant actors perceive the platform or capability (B-52 versus NATO exercise versus SECDEF speech) being used?
- Who is identified with the platforms being used (U.S., host nation, etc.)?

Location:
- Is there cultural, political, or social significance to the location of the activity (USS CARL VINSON patrol of South China Sea)?

Duration:
- What is the likely period needed to maintain physical and informational activities to gain and maintain the desired conditions?

Informational aspects will influence how an activity is perceived by relevant actors and should be leveraged to create the maximum effect.

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941   Information related capabilities can emphasize, diminish, obfuscate, or
942   mitigate the effect of physical military activities on the perceptions and
943   attitudes of relevant actors. Likewise, physical military activities can
944   emphasize, diminish, or mitigate the effect of informational activities on the
945   perceptions and attitudes of relevant actors.

946   Commanders should use the proper legal framework, authorities, and
947   permissions to aggressively seek and vigorously exploit physical and
948   informational advantages while managing risk appropriately. The Joint
949   Targeting Process must be flexible across all phases and throughout
950   cooperation, competition, and conflict to enable commanders and staff to target
951   critical perceptions and attitudes.

952   Leaders must encourage innovation and the consistent integration of
953   actions and words to reinforce the USG narrative for each operational
954   situation. The innovative use of physical and informational power will provide
955   commanders a broader range of options to achieve objectives. Commanders
956   must encourage this innovation through the consistent use of information to
957   affect the observations, perceptions, decisions, and behaviors of relevant actors
958   while protecting and ensuring the observations, perceptions, decisions of the
959   Joint Force. Additionally, innovation will assure the ability to acquire, process,
960   distribute, and employ data to manage understanding and the operational
961   tempo.

962   Proposed options should:

963   • Provide a thorough analysis of forces, readiness, and capabilities
964   required to implement options
965   • Identify potential undesired effects early so that they can be modified,
966   mitigated, or substituted with alternative options
967   • Identify when to capitalize on the message of physical force to
968   maximize its effect
969   • Recognize opportunities to leverage information to preserve fighting
970   strength and make the Joint Force more lethal
971   • Determine the weight of effort between physical and informational
972   activities appropriate to gain and maintain desired conditions.

---

4. Develop Options for the Commander

For this example, the combant command identified that the population perceives the
WMD claim to be in their best interest (increased power) and are now likely to facilitate

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> and support VEO activities. Through modeling, simulation, and virtual experimentation, the combatant command identifies courses of action that have a high probability of being effective in dissuading the local population from supporting VEO activities.
>
> The combatant command's response to dissuade the local population from supporting VEO activities will take an approach that identifies physical and informational activities that complement each other.

973 **5. Execute, assess, and modify military activities.**

974   Maximizing the effectiveness of military power by leveraging the inherent
975 informational aspects of military activities will expand the range of options
976 available to the JFC. The timing, platforms, location and duration of activities
977 are informational aspects that affect the perceptions, attitudes, and other
978 elements that drive desired behaviors and must be considered for the effective
979 and efficient allocation of resources. Finally, commanders must think in terms
980 of what they can accomplish with the holistic application of military power
981 through a global cross-domain[68] perspective rather than limiting it to
982 integration of Service capabilities.

983   Joint forces should execute integrated informational and physical
984 activities during cooperation and competition below the threshold of conflict to
985 support broad USG narratives. Additionally, joint forces must execute and
986 evaluate the effects of military activities on the perceptions, attitudes, and
987 other elements that drive desired behaviors of relevant actors. Evaluating
988 desired behaviors and modifying military activities to target perceptions and
989 attitudes are critical to achieving the psychological effect required for success.

990   Joint forces must execute proactive information efforts before, during,
991 and after the conduct of military activities to reinforce deliberate psychological
992 effects. While executing operations that integrate physical and informational
993 activities joint forces should establish a series of indicators to assess the effects
994 on relevant actors.

995   Allies and partners are essential enablers for operations. The Joint Force
996 should actively seek to understand their objectives, limitations, and constraints
997 during the early stages of an emerging competition or crisis. The Joint Force

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[68] Note: Taken from Global Integrated Operations, but related to Service ideas of Single battle (USMC), Multi-domain battle (Army), Single Multi-domain battle (Army), and Multi-domain (Air Force).

998   must work with partners to develop and strengthen beneficial narratives and
999   provide alternatives to counter detrimental ones.

1000   Execute, assess, and modify will inform the formal feedback cycle to
1001   refine how joint forces *determine impact and develop options* by:

1002   • Supporting trans-regional, multi-domain, multi-functional requirements
1003   • Identifying the informational aspects of military activities that will change
1004   or maintain perceptions, attitudes, and other elements that drive desired
1005   behaviors
1006   • Assessing the change in perceptions, attitudes, and behaviors in
1007   response to Joint Force activities.
1008   • Refining the commander's description of desired conditions
1009   • Modify joint force activities based on updated assessment and
1010   commander's desired outcomes

1011 ***V. Capabilities Required by this Concept***

1012   After conducting analysis of the inputs received from across JCOIE
1013   stakeholders, the following capabilities emerged as essential to implementing
1014   this concept. They constitute the concept-required capabilities (CRCs) that will
1015   enable the Joint Force to leverage the inherent informational aspects of military
1016   activities to change perceptions, attitudes, and other elements that drive
1017   desired behaviors of relevant actors and direct the course of events. The CRCs
1018   support the JCOIE central and three supporting ideas. The CRCs identified
1019   below are organized to operationalize (CRCs section A-C) and ins Force is able
1020   to produce titutionalize JCOIE (CRC section D). Following concept approval,
1021   subsequent analysis of these initial proposed capabilities via Department
1022   capabilities development systems will generate materiel and non-materiel force
1023   development implications. This analysis will provide the basis for developing
1024   and potentially expanding capability solutions to close operational gaps.

1025   **A. Required Capabilities to Characterize and Assess the Informational,**
1026   **Physical, and Human Aspects of the Environment.**

1027   **Required Capability A.1: The Joint Force requires the ability to determine**
1028   **the impact of relevant informational, physical, and human aspects of the**
1029   **security environment on Joint Force objectives.**

1030   Description. The Joint Force will examine the security environment through
1031   a broad range of lenses applying an extensive interdisciplinary approach

1032   through the application of multiple multi-modal (interdisciplinary) models. The
1033   Joint Force will evaluate the interplay between the human, physical, and
1034   informational aspect of the IE. The Joint Force will analyze and understand the
1035   landscape of relevant narratives. The Joint Force leverages partnerships,
1036   SMEs, and technology to evaluate and describe the capabilities, intent, will,
1037   and understanding of relevant actors. This understanding includes identifying
1038   ideological-based networks and classifying their motivations, structure, and
1039   relationships. It includes understanding relevant actors' tendency to challenge
1040   or support Joint Force objectives. The Joint Force will understand the social
1041   system in the security environment and describe behavioral trends and drivers
1042   of relevant actors.[69 & 70]

1043   Desired Effect. The Joint Force is able to provide and maintain enhanced
1044   contextual understanding of the interplay between the human, physical, and
1045   informational aspect of the IE. The Joint Force will shape opportunities to
1046   change the security environment, describe relevant changes within the security
1047   environment, and determine their likely impact on Joint Force objectives. The
1048   Joint Force is more fully aware of the societal impacts of relevant actors on
1049   Joint Force objectives. Joint Force commanders gain freedom of action by more
1050   quickly discerning opportunity from distraction and more quickly deciding
1051   when to act at a time and place of their choosing.

1052   **Required Capability A.2: The Joint Force requires the ability to**
1053   **understand the perceptions, attitudes, and other elements that drive**
1054   **behaviors that affect the JFC's objectives.**

1055   Description. The Joint Force understands perceptions, attitudes, and other
1056   elements that drive behaviors likely to affect relevant actor decision-making.
1057   The Joint Force will engage SMEs and leverage technology to employ advanced
1058   automated social and technical systems to identify relevant actors, including,
1059   but not limited to: key influencers, centers of influence, power brokers; and
1060   their patterns of behavior, enduring motivations, collective strengths and
1061   weaknesses. Additionally, the Joint Force will leverage technology and
1062   partnerships to characterize and recognize how and why relevant actor
1063   relationships and motivations change over time by examining underlying
1064   conditions and their impact on USG objectives. This will include recognizing
1065   changes in how relevant actors receive and interpret information and why

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[69] Footnote to Developing a Behavioral Science Approach to Stabilization, COL Stephen G. Ruth, USA & LTC Scott K. Thomson, USAR, Harvard University, John F. Kennedy School of Government National Security Program, 2016
[70] Theoretical Implications for Inform and Influence Activities, S.K. Thomson. SAMS-FLKS 2013, pgs 36-41

1066   relevant actors respond to environmental change(s) to understand influence
1067   levers. The Joint Force develops an ever-refined understanding to derive
1068   meaning of the ever-changing security environment.

1069   <u>Desired Effect.</u> The Joint Force is able to produce a distributed view of
1070   changes to relevant actors' perceptions, behaviors, inter-relationships, and
1071   communications methods. Provide enhanced contextual understanding by
1072   characterizing impact of relevant actors on the security environment.
1073   Understand changes to relevant actor behaviors through applying multiple
1074   interdisciplinary models describing relevant actor behavior options. Provide
1075   insight to levers associated with relevant actors' relationships to develop
1076   actions to influence their behaviors. The JFC's decision-making generates an
1077   operational advantage through understanding the security environment.

1078   **Required Capability A.3: The Joint Force requires the ability to**
1079   **understand how relevant actors are successful in adapting their use of**
1080   **information technology.**

1081   <u>Description.</u> The Joint Force will understand characteristics, dependencies,
1082   and vulnerabilities of common technologies and understand their impact on
1083   the security environment. The Joint Force gains assistance from embedded
1084   technology SMEs, interorganizational and partner efforts to understand
1085   emerging methods and known vulnerabilities of relevant actors. The Joint
1086   Force uses a common method of depicting how relevant actors adapt their use
1087   of technological advancements to impact USG objectives. Additionally, the Joint
1088   Force will understand the impact of change in the technological aspects of the
1089   security environment and their potential for exploitation.

1090   <u>Desired Effect.</u> The Joint Force is able to develop concepts for exploiting
1091   technical opportunities in the IE. The Joint Force develops an understanding of
1092   technology used to monitor, interrupt, and challenge Joint Force objectives.
1093   The Joint Force will gain insights to vulnerabilities of its own systems and will
1094   take actions to protect its technology and systems.

1095   **Required Capability A.4: The Joint Force requires the ability to share**
1096   **contextual understanding of the security environment.**

1097   <u>Description.</u> The Joint Force will distribute an updated characterization
1098   of relevant actor perceptions, attitudes, and other elements that drive
1099   behaviors linked to Joint Force activities. The Joint Force will continue to
1100   enhance its understanding of relevant actor motivations and relationships to

1101 either support or counter USG interests. The effort to understand relevant
1102 actor behavior will gain insight through collaboration with SMEs, partners,
1103 allies, and interorganizational analysis. The Joint Force will distribute user-
1104 defined visual display formats to foster situational understanding with
1105 interorganizational efforts, partners, and allies. To the fullest extent,
1106 distributed information will be unclassified for the maximum number of users
1107 to distribute. This effort will apply continuous updates to make sense of
1108 relevant actors' changing methods and techniques as they adapt their use of
1109 new and old technology.

1110   Desired Effect. Joint Force maintains an enhanced understanding of the
1111 security environment and relevant actor perceptions, attitudes, and other
1112 elements that drive behaviors. The Joint Force is able to make decisions and
1113 assessments to anticipate relevant actor behaviors with enhanced clarity and
1114 speed.

1115 **Required Capability A.5: The Joint Force requires the ability to**
1116 **characterize, assess, synthesize, and understand trends of relevant actor**
1117 **activities and their impacts on the IE throughout cooperation,**
1118 **competition, and conflict.**

1119   Description. The Joint Force will assess and explain relevant actor's
1120 activities, ability to influence others, and the strength or vulnerability of
1121 relationships and their likely courses of action. The Joint Force leverages allies,
1122 partners, SMEs, and intelligence systems to evaluate how competitors and
1123 adversaries use propaganda, disinformation, or active measures. Additionally,
1124 the Joint Force will use scientific methods to estimate the most likely
1125 motivation for relevant actor courses of action and the likely intent or goal of
1126 some actions. The Joint Force is able to estimate and evaluate the impact and
1127 magnitude of friendly and relevant actor actions in the IE on the Joint Force
1128 mission.

1129   Desired Effect. The Joint Force will use estimates of future activities by
1130 relevant actors to inform concepts of action and response. The Joint Force
1131 understands the trans-regional, multi-domain, multi-functional impacts of
1132 friendly and relevant actor actions in the environment. The Joint Force is able
1133 to produce a detailed characterization of the IE that identifies and leverages
1134 opportunities in order to change or maintain the current conditions of
1135 cooperation, competition, and conflict.

1136 **Required Capability A.6: The Joint Force requires the ability to analyze**
1137 **and estimate relevant change within the IE.**

1138   Description.. The Joint Force understands relevant actor behavior,
1139 relationships, and use of technical networks in the IE. Develop estimating
1140 approach evaluating decision-making models to understand indicators of
1141 relevant actor processes and likely results. Multiple dynamic-learning models
1142 and approaches will contribute to a combined estimate of relevant actor's
1143 behavior, relationships, and use of technical networks. The combined estimate
1144 will identify some dependencies to indicate interests, intent, capability, and
1145 capacity to support or counter USG interests. The estimating efforts will gain
1146 inputs from SMEs, partners, allies, and interorganizational analysis. The Joint
1147 Force is able to synthesize real-time data inputs to adapt estimating approach.
1148 Additionally the Joint Force is able to understand the indicators between
1149 cooperation, competition, and armed conflict associated with relevant actors as
1150 well as understand the range of behaviors among relevant actors associated
1151 with adversarial or competitive transitions. The Joint Force will provide a
1152 consistent approach to adapt analytic models to the changing environment.

1153   Desired Effect. Estimating effort depicts those likely and dangerous
1154 transitions of adversarial or competitive behavior that challenge U.S. objectives.
1155 Analytical models are adapted to the changing circumstances of the
1156 environment to enable more nuanced depiction of the region or locale. The
1157 Joint Force is able to estimate the interests, intent, capability, and capacity of
1158 relevant actors to support or counter USG interests.

1159 **Required Capability A.7: The Joint Force requires the ability to identify,**
1160 **access, and manage IE subject matter expertise.**

1161   Description. The Joint Force will integrate a range of expertise to address
1162 challenges and opportunities within the IE. The Joint Force will apply SME's to
1163 accurately characterize and understand trends in the environment using SME
1164 competencies to assist, complement, and enhance use of automated analysis of
1165 the environment to develop potential approaches to known and developing
1166 situations.

1167   Desired Effect. The Joint Force recognizes regional and local relevant actors,
1168 those who are emerging, and those who are changing their allegiances and
1169 behaviors. The Joint Force gains insight to the changing terrain of relevant
1170 actor's relationships, capacity, and capability to challenge or support Joint
1171 Force objectives. The Joint Force gains access to and develops the appropriate

1172   SMEs in military and academia to accurately characterize and forecast the
1173   environment and provide potential approaches to known and developing
1174   situations.

1175   **<u>Required Capability A.8</u>: The Joint Force requires the ability to**
1176   **understand internal and other relevant actor bias within the IE.**

1177   <u>Description.</u> The Joint Force assesses and challenges internal individual
1178   decision biases and cognitive biases that produce errors in judgment or
1179   decision-making. These may include assumptions, prejudices, approaches to
1180   information acquisition, learning, and cultural assumptions, which shape
1181   perceptions and motivations of the U.S., allies, partners, and other relevant
1182   actors. The Joint Force should identify how it sees itself and how it sees others.
1183   Additionally, the Joint Force should identify how others see the Joint Force.

1184   <u>Desired Effect.</u> The Joint Force is able to control for internal bias in
1185   understanding the IE and operational environment; and develops situation-
1186   based criteria for self-assessment and approaches to mitigate/ reduce internal
1187   analytical bias. The Joint Force matures a valid understanding of regional and
1188   local perceptions, attitudes, and other elements that drive desired behaviors.
1189   The Force is able to understand and evaluate relevant actors' interests,
1190   capabilities, and capacity to challenge or support Joint Force operations.

1191   **B. Required Capabilities to Formulate Options that Integrate Physical**
1192   **and Informational Power**

1193   **<u>Required Capability B.1</u>: The Joint Force requires the ability to identify,**
1194   **optimize, and assess the effectiveness of the full range of options that**
1195   **integrate physical and informational power to produce desired**
1196   **psychological effects.**

1197   <u>Description.</u> The Joint Force will deliberately design and integrate physical
1198   and informational activities to affect perceptions, behaviors, or otherwise
1199   achieve desired conditions in the environment. The Joint Force will identify
1200   those informational aspects necessary to enhance the psychological effects of
1201   physical power. Mission analysis will incorporate human and system specific
1202   vulnerabilities and exploitation approaches that shape human behavior. The
1203   Joint Force will define objectives in terms of the desired and undesired
1204   perceptions, attitudes, and other elements that drive behaviors of relevant
1205   actors to establish the common vision, goals, and objectives to achieve unity of
1206   effort. The Joint Force will understand and account for constraints, limitations,

1207 and restraints based on known political, cultural, and moral factors of the
1208 environment. The Joint Force uses the relevant actor narrative to inform
1209 operational design. The commander may choose to amplify or mute narrative
1210 elements to support his intent to influence individuals and groups for a
1211 purpose supporting Joint Force objectives.

1212   Desired Effect. The Joint Force is able to develop methods of changing or
1213 sustaining , attitudes, and other elements that drive desired behaviors. The
1214 Joint Force identifies combinations of physical and informational actions that
1215 favorably affect environment conditions to mitigate challenges to Joint Force
1216 objectives. The Joint Force applies informational power on par with physical
1217 power to influence. The Joint Force has more adaptable and responsive COA to
1218 shape factors of the IE that impact the commander's operation.

1219 **Required Capability B.2: The Joint Force requires the ability to employ**
1220 **required forces and capabilities from across the Joint Force to sustain or**
1221 **change perceptions, attitudes, and other elements that drive desired**
1222 **behaviors of relevant actors.**

1223   Description. The Joint Force recognizes opportunities to affect perceptions,
1224 attitudes, and other elements that drive behaviors of relevant actors to create
1225 conditions necessary in the environment. The Joint Force effectively matches
1226 capabilities to change or reinforce perceptions, attitudes, and other elements
1227 that drive behaviors to create conditions for success. Partners integrate to
1228 conduct activities that take advantage of their abilities and authorities to create
1229 opportunities that the Joint Force can exploit. The Joint Force identifies,
1230 mitigates, and where appropriate, adjusts or removes policy, geographical, and
1231 interorganizational barriers that inhibit the integration of physical and
1232 informational power. The Joint Force designs an assessment approach to
1233 understand the actual effect of its capabilities on the relevant actor.

1234   Desired Effect. The Joint Force develops the full range of options to integrate
1235 physical and informational power. The impact of Joint Force lethality is
1236 purposefully enhanced using information to target relevant actor behavior
1237 before, during, and after strike operations. The right capability is available at
1238 the right time for a suitable period to ensure freedom of action.

1239 **Required Capability B.3: The Joint Force requires the ability to assess**
1240 **relevant actors' capability and capacity to receive, understand, and**
1241 **respond to Joint Force physical and informational activities.**

1242   Description. The Joint Force assesses the likely impact of planned physical
1243 and informational activities on relevant actors. The Joint Force uses technology
1244 and SMEs to test developed courses of action and matures its understanding of
1245 how and why relevant actors respond to Joint Force physical and informational
1246 activities. The Force evaluates, contrasts, and estimates likely costs and
1247 benefits of the proposed options. The JFC develops collection and assessment
1248 models to support future assessment activities.

1249   Desired Effect. The Joint Force understands appropriate options to
1250 influence the behavior of relevant actors and the course of events. The JFC
1251 develops collection and assessment models to determine effectiveness of its
1252 military (both informational and physical) activities.

1253   **C. Required Capabilities to Execute and Modify Options**

1254   **Required Capability C.1: The Joint Force requires the ability to execute**
1255 **integrated physical and informational activities designed to achieve**
1256 **psychological effects.**

1257   Description. The Joint Force will seize and maintain the initiative over USG
1258 competitors and adversaries through the execution of military (both
1259 informational and physical) activities to maintain a relative advantage. The
1260 Joint Force leverages its knowledge of the environment, technology and partner
1261 capability to apply military power throughout the range of cooperation,
1262 competition, and armed conflict to set conditions that lead to enduring,
1263 acceptable political outcomes. The Joint Force, in conjunction with the
1264 interagency, allies, and partners, will develop and communicate a consistent,
1265 credible, and compelling narrative to relevant actors. The Joint Force must use
1266 integrated effects terminology with interagency, allies, and partners to
1267 strengthen beneficial narratives and provide alternatives to detrimental
1268 narratives; e.g. the combined force must have a unified view of effects terms
1269 such as isolate and neutralize. The Joint Force is capable of collecting
1270 information on relevant actor perceptions, attitudes, and other elements that
1271 drive behaviors to gain an assessment of the level of impact Joint Force
1272 activities are having on relevant actors. The Joint Force evaluates its
1273 assessment approach by stimulating the environment to gather responses from
1274 relevant actors to gain understanding of the relative influence of individuals
1275 and groups.

1276   Desired Effect. Commanders apply informational power at a tempo that
1277 equals, and at times exceeds, the application of physical power. The Joint

1278 Force is effective in designing effects that shape conditions to achieve strategic
1279 and theater campaign objectives. The Joint Force communicates a compelling
1280 narrative that influences the behavior of relevant actors. The Joint Force is able
1281 to maintain freedom of action in the environment by maximizing time, space,
1282 and force to maintain a relative advantage over competitors and adversaries.

1283 **Required Capability C.2: The Joint Force requires the ability to assess and**
1284 **modify informational power with the same level of competency as**
1285 **physical power.**

1286 Description. The Joint Force will measure behavioral changes with reliable,
1287 consistent indicators and associated measures of effectiveness to understand
1288 assessment trends toward mission success or failure. In addition, the Joint
1289 Force will be able to determine critical factors and potential causation of
1290 trends, and apply that information to modify options for physical and
1291 informational activities. This includes the ability to creatively adapt capabilities
1292 and integrate partner capabilities during execution to support USG strategic
1293 and theater objectives. The Joint Force will modify its activities based on
1294 operational assessment feedback and apply intelligence analyses to create
1295 rapid proto-typed response options to meet Joint Force objectives.

1296 Desired Effect. The Joint Force has the capability and capacity to collect on
1297 indicators within the environment, assess progress toward objectives, and
1298 interactively share information concerning the environment. The Joint Force
1299 modifies how it operates to maintain a relative advantage. The operational
1300 assessment effort integrates allies and partners.

1301 **D. Required Capabilities to Institutionalize the Integration of Physical**
1302 **and Informational Power.**

1303 **Required Capability D.1: The Joint Force requires the ability to change**
1304 **how its individuals, organizations, and units think about and treat**
1305 **information.**

1306 Description: The Joint Force will establish a mindset through education and
1307 training that provides the foundational understanding to deliberately leverage
1308 the inherent informational aspects of military activities. To set the desired
1309 conditions and achieve objectives, military members at all levels must
1310 understand that military activities have informational aspects with strategic-
1311 operational-tactical impacts. The Joint Force must understand that relevant
1312 actors may perceive all activities by the USG and its partners as connected.

1313   The Joint Force must attempt to align its activities with its interorganizational
1314   partners and allies.

1315   Desired Effect: The integration of physical and informational power becomes
1316   an intentional forethought inherent to strategy and operational art. Joint
1317   leaders understand how perceptions and attitudes drive behaviors and affect
1318   enduring strategic outcomes. The Joint Force defines objectives in terms of the
1319   desired perceptions, attitudes, and other elements that drive behaviors of
1320   relevant actors to achieve mission success. The Joint Force frames the
1321   objectives to enable interaction among USG agencies toward common goals.

1322   **Required Capability D.2: The Joint Force requires the ability to organize,**
1323   **train, equip, and maintain organizations that deliberately leverage the**
1324   **informational aspects of military activities.**

1325   Description: The Joint Force recognizes and reduces institutional
1326   barriers that inhibit its ability to capitalize on the informational aspects of
1327   military activities. The Joint Force refines its structures and capabilities based
1328   on strategic requirements linked to resourcing. The Joint Force identifies and
1329   groups together related capabilities and activities to help Joint Force
1330   commanders integrate, synchronize, and direct informational power. The Joint
1331   Force cooperates with academia to include collaborative development of
1332   curriculum for military education and increased opportunities for advanced
1333   civil schooling. The Joint Force unifies its understanding of the distinctions
1334   between activities and the intended effects they generate.

1335   Desired Effect: The Joint Force is able to use the "information" joint
1336   function, on par with "C2" and "Fires" to enable the integration of physical and
1337   informational power. The Joint force commanders are able to integrate,
1338   synchronize, and direct the military aspects of informational power with
1339   interorganizational partners. The Joint Force is able to implement processes,
1340   techniques, and tactics that leverage the inherent informational aspects of
1341   military activities. Joint Force is able to draw upon required capabilities from
1342   across domains, echelons, geographic boundaries, and organizational
1343   affiliations to build operationally coherent joint formations.

1344   **Required Capability D.3: The Joint Force requires the ability to integrate**
1345   **operations with interorganizational partners.**

1346   Description: The Joint Force must be educated and trained to provide
1347   the best military advice regarding inherent informational aspects of military

1348 activities to both military and civilian leaders. Joint Force must be able to
1349 articulate the likely advantages and risks of an integrated approach such that
1350 leadership can make a more informed decision. The Joint Force must
1351 understand coalition and civilian resources for the latest technological
1352 advances and techniques of applying information to enhance its current
1353 capabilities.

1354   Desired Effect: The Joint Force has sufficient staff personnel available
1355 and clear linkages to coordinate with interorganizational partners and
1356 academic efforts by both U.S. and other nations. The Joint Force establishes
1357 the mechanisms that facilitate engagement and promote unity of effort with
1358 external partners.

1359 **Required Capability D.4: The Joint Force requires the ability to leverage**
1360 **physical and informational power at its discretion to achieve objectives.**

1361   Description: The Joint Force informs future policy, authorities, and
1362 permissions to enable integrated physical and informational power in pursuit
1363 of USG strategic outcomes. Commanders have the proper legal framework,
1364 authorities, and permissions to enable a wide range of both rapid and enduring
1365 response options. Commanders are enabled by all appropriate means to exploit
1366 opportunities to emphasize and deemphasize informational aspects of their
1367 activities to generate advantages while managing risk appropriately.

1368   Desired Effect: Policy, authorities, and permissions are modified to
1369 provide a greater range of options to act by a broad range of means at lower
1370 levels. The Joint Force is educated on informational aspects of military
1371 activities and rapidly executes activities and operations. Policy, authorities, and
1372 permissions enable the effective and timely integration of physical and
1373 informational power.

1374 *VI. Risks of Adopting this Concept*

1375   The following are risks associated with adopting JCOIE. The Central Idea
1376 states the Joint Force must: understand information, informational aspects of
1377 military activities, and informational power; institutionalize the integration of
1378 physical and informational power; and operationalize the integration of
1379 physical and informational power through the implementation of the
1380 capabilities required by this concept in Section IV.

1381   1. The concept's call for integrating physical and informational power across
1382   geographic boundaries and in multiple domains could lead to campaigns and
1383   operations with enormous complexity. The fog and friction of war punishes
1384   unnecessary complexity, but transregional, multi-domain, and multi-functional
1385   campaigns and operations are complex by nature.

1386   2. The JCOIE's focus on informational power could be misread by Congress
1387   and other resource allocators to suggest there is little need for a well-equipped
1388   and technologically-advanced Joint Force capable of traditional power
1389   projection and decisive action.

1390   3. The JCOIE's focus on informational power to achieve effects could be
1391   misapplied and overextended to the point it hinders rather than helps joint
1392   operations. Operationalization of JCOIE could result in overconfidence the
1393   Joint Force's ability to fully understand relevant actors, when in reality it will
1394   never have a perfect understanding.

1395   4. Integrating physical and informational power will likely challenge the
1396   boundaries of current national policy. The JCOIE's goal to dissuade conflict or
1397   prepare the environment to win decisively may not be attainable if operational
1398   commanders do not receive the necessary approval for timely and anticipatory
1399   actions from the Nation's civilian leaders. Without early and preemptive efforts,
1400   the Joint Force, along with its partners will be incapable of averting or
1401   diminishing conflict.

1402   5. Interorganizational partners and other USG agencies may be incentivized to
1403   remain reliant on the Department, despite responsibilities mandated by law
1404   and historical norms. Interorganizational partners and other government
1405   agencies may be unwilling or unable to align and integrate into global
1406   operations for various bureaucratic, organizational, legal, cultural, or financial
1407   reasons. Should alignment and integration not take place, the Department will
1408   have to attempt to fill those gaps.

1409   6. There is a risk of escalation and unintended consequences. The U.S. could
1410   miscalculate how an adversary will perceive and react to our actions in and
1411   through the IE leading to heightened tensions or even conflict.

1412   7. JCOIE implementation could lead to the establishment of programs that
1413   expend limited resources without attaining the desired levels of personnel
1414   knowledge and overall competency. JCOIE implementation will require fully
1415   coordinated and substantially improved and extensive research support on

1416   public opinion, media reaction, and cultural factors related to Joint Force
1417   information activities.

1418   8. Adoption of JCOIE will require an increase of resources to provide extensive
1419   and sophisticated IE training for Joint Force personnel, along with substantive
1420   and technical requirements for effective international and intercultural
1421   communication. A special effort will be necessary to develop appropriate career
1422   tracks and merging some career fields to become multi-functional information
1423   professionals to encourage full development of a professional corps. Failure to
1424   address Joint Force training will minimize effectiveness of JCOIE
1425   implementation.

1426   9. Inadequate resourcing and need for policy review and clarification will
1427   severely affect the Joint Force's ability to realize required capabilities.

1428   10. The JCOIE's focus on the Joint Force's application of informational power
1429   could lead to confusion regarding the roles and responsibilities of the military.

1430   11. The JCOIE may result in unauthorized employment of information related
1431   capabilities due to a lack of understanding governing authorities.
1432   Compartmented authorities may be less understood due to access restrictions.

1433

1434   *Annex A: Glossary of Terms*

1435   For the purpose of this concept, the following definitions are used:

1436   **Human Aspects.** Human aspects reflect the foundation from which humans
1437   interact with other humans and their environment. This foundation is formed
1438   and impacted by the linguistic, social, cultural, and physical elements that
1439   shape human behavior. Character, tradition, and nature are all human aspects
1440   that suggest how humans might behave under particular circumstances in the
1441   future.

1442   **Influence.** The power to change or affect someone or something.[71]

1443   **Information.** Information is what is conveyed or represented by a particular
1444   arrangement or sequence of things. Information is stimuli that have meaning in
1445   some context for its receiver.[72]

1446   **Information Environment (IE).** The IE is comprised of and aggregates
1447   numerous social, cultural, cognitive, technical, and physical attributes that act
1448   upon and impact knowledge, understanding, beliefs, world views and
1449   ultimately actions of an individual, group, system, community, or organization.
1450   The IE also includes technical systems and their use of data. The IE directly
1451   affects and transcends all operational environments.[73]
1452

1453   **Informational aspects**. The features and details of activities that an observer
1454   interprets and uses to assign meaning. Informational aspects include, but are
1455   not limited to: timing, platforms, location, and duration. They are received by
1456   the sensory inputs used by individuals, systems, or groups to assign meaning
1457   and gain understanding about the world. They reflect the way that individuals,
1458   systems, and groups communicate and exchange information.

1459   **Informational Power**. The ability to leverage information to shape the
1460   perceptions, attitudes, and other elements that drive desired behaviors and the
1461   course of events. This includes the ability to use information to affect the
1462   observations, perceptions, decisions, and behaviors of relevant actors; ability to
1463   protect and ensure the observations, perceptions, decisions, and behaviors of

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[71] The term influence is used in the popular meaning as defined by Mirriam-Webster. Merriam-Webster.com. Merriam-Webster, 2016. Web. 5 October 2016
[72] "information." English Oxford Living Dictionaries. Web. https://en.oxforddictionaries.com/definition/information
[73] This definition expands on the current definition of the IE found in Joint Publication 1-02, DOD Dictionary of Military and Associated Terms. Defense Technical Informational Center, As of Mar. 2017. The JCOIE Core Team Workshop held at Quantico, 18 – 19 April 2017 determined that additional wording would help clarify ideas in JCOIE.

1464 the Joint Force; and the ability to acquire, process, distribute, and employ data
1465 (information). This helps commanders and staffs incorporate the concept of the
1466 *preeminent nature* of information into the design of all operations to maximize
1467 military power.

1468 **Integration of Physical and Informational Power.** The deliberate leveraging
1469 of the inherent informational aspects of military activities to direct or influence
1470 the behaviors of relevant actors and the course of events.

1471 **Military Activities.** The full range of deeds, actions, and functions conducted
1472 by or on behalf of the military. This encompasses physical and informational
1473 activities such as joint combined and exchanges training, military information
1474 support operations, acquisition programs, civil-military operations, research
1475 and development, etc.[74]

1476 **Narrative.** A basis for unified communication and understanding that creates
1477 meaning through a system of story formats, which draws upon local history,
1478 culture, and religion to frame and affect the perceptions of specific actions.[75]
1479 Narratives display an individual's or group's worldview, goals of group
1480 leadership, sense of power or oppression, claims of legitimacy, description of
1481 enemies and other characterizations useful to understanding relevant actors
1482 and their actions.[76] Effective use of narratives can shape behaviors and even
1483 transform culture.[77]

1484 **Physical Aspects.** The natural and man-made characteristics of the
1485 environment that create constraints and freedoms on the people and systems
1486 that operate in it. Physical aspects are critical elements of group identity and

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[74] "activities". Derived from Dictionary.com. http://www.dictionary.com/browse/activities accessed on October 18, 2016.

[75] Note: This definition was derived from "Understanding and Communicating through Narratives - A Monograph" The proposed definition of narrative is a component of the monograph's thesis to provide for a common definition of narrative form and function, as applied to military operations. See Paruchabutr, Gittipong. Understanding and communicating through narratives. Thesis. School of Advanced Military Studies, 24 May 2012.

[76] Mark Laity describes narrative as "more than just a story. Rather, a narrative contains many stories, and—more importantly—it is an explanation of events in line with an ideology, theory, or belief, and one that points the way to future actions." He goes on to say "Narratives make sense of the world, put things in their place according to our experience, and then tell us what to do." Bishop, Donald M. Quotable: Mark Laity on Russia, Operationalized Use of Information, and Narrative. Washington DC: Public Diplomacy Council. 15 Oct. 2015. Web. http://www.publicdiplomacycouncil.org/commentaries/10-15-15/quotable-mark-laity-russia-operationalized-use-information-and-narrative

[77] Dr. Laura Steckman describes narratives as powerful stories that make sense of the past and project to the future. They contain the requisites for all stories, but are more than simple stories.

1487   frame how tribes and communities form. Additionally, physical aspects
1488   enhance or inhibit how information is exchanged.

1489   **Physical Power**. The means to use force to direct or influence the behaviors of
1490   others and the course of events.

1491   **Psychological Effect.** The impact on one or more of the four basic
1492   psychological processes of memory, perception, emotion, and decision-making.

1493   **Relevant Actors**. Those individuals, groups, populations, *automated processes*
1494   *and systems*, that through their behavior could substantially impact U.S.
1495   national strategy, policy, campaigns, operations, or tactical actions.[78] These
1496   relevant actors may include governments at the national and sub-national
1497   levels; state security forces, paramilitary groups, or militias; non-state armed
1498   groups; local political, religious, civil society, media, and business figures;
1499   diaspora communities; and global/regional intergovernmental and non-
1500   governmental organizations.

1501   **Security Environment.** A global composite of the conditions, circumstances,
1502   and influences (operational environments) that affect the employment of the
1503   U.S. military.[79]

1504   **Worldview** is a mental model of reality —a framework of ideas and attitudes.
1505   The beliefs, values, and behaviors of a culture stem directly from its worldview.
1506   An observer's worldview frames the informational aspects of physical and socio-
1507   cultural activities to assign meaning.

1508

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[78] Definition modified from definition provided in Joint Concept for Human Aspects of Military Operations Transition Plan to include automated processes and systems. Joint Concept for Human Aspects of Military Operations. 19 Oct. 2016. Web. http://nsiteam.com/joint-concept-for-human-aspects-of-military-operations-jc-hamo/

[79] Inferred this description from the security environment discussions found in JP1 "Doctrine for the Armed Forces of the United States".

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