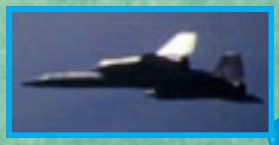
INDUSTRY SNAPSHOT

SUMMARY OF PARTNER RESPONSES TO THE FY2015-2019 IC S&T INVESTMENT LANDSCAPE

Intelligence Reform And Terrorism Prevention Act of 2004

Executive Order 12333 (1981)

Industrial R&D Funding Begins Exceeding Government R&D Funding in the US (Circa 1980)



National Security Act of 1947

Office of Strategic Services Disbanded (1945)

About the Cover:

The cover uses a red and blue double helix to represent multiple concepts relating to the Intelligence Community's (IC's) science and technology (S&T) efforts. For example, starting at the bottom and moving up the image on the cover one observes—in chronological order—a number of key "red" challenges and "blue" technological achievements in the history of the IC. The use of this construct was not chosen randomly, however. Akin to how the base pairs in strands of deoxyribonucleic acid (DNA) correspond to one another, researchers and technologists within the IC S&T enterprise aspire to create capabilities that link to the threat environment of today—and in the future. Lastly, and perhaps most importantly, the choice of a DNA strand is meant to convey the critical importance of basic research to the IC's mission.

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The Intelligence Science and Technology Partnership

In-STeP

For more information, please contact **S&TInvestment@dni.gov**

Translate Intelligence Challenges into Anticipated Technical Needs

Survey Partners' Funded Efforts to Inform Decisions

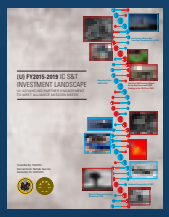
Ensure Intelligence Advantage

Key In-STeP documents include:

February 2014

FY2015-2019 IC S&T Investment Landscape — TS/SCI version

- Projects the science and technology (S&T) Needs of disparate stakeholders — including the National Intelligence Managers, the combatant commands, and other IC customers and specialty groups, and
- Provides an auditable, rational structure within which both industry and IC elements link S&T investments to customer needs



April 2015

FY2015-2019 IC S&T Investment Landscape — SECRET//REL TO USA, FVEY version

- Further facilitates the sharing of the *Landscape* Needs with the combatant commands and foreign partners, and
- Provides a basis for leveraging allied capabilities and resources

February 2015

Partner Response to the FY2015-2019 IC S&T Investment Landscape — TS/SCI version

- Provides a high-level matching of public- and private-sector partners' existing, funded programs to the IC-wide Needs captured in the *Landscape*,
- Enables IC developers to achieve unprecedented insight into the commercial solution marketplace, and
- Extensive database of proprietary efforts available to US Government personnel

March 2015

Industry Snapshot – Summary of Partner Responses to the FY2015-2019 IC S&T Investment Landscape — UNCLASSIFIED version

- Provides a preliminary, non-proprietary market analysis of partner-proposed solutions to the *Landscape* Needs, and
- Offers a resource for industry and US Government-wide S&T planning as well as procurement and acquisition decision-making

May 2015

FY2016-2020 IC S&T Strategic Plan — TS/SCI and UNCLASSIFIED versions

- Acts as the charter document guiding the IC's S&T activities,
- Advances the IC's ability to manage risk across the National Intelligence Program,
- Incorporates insights from *Landscape* Needs-driven, industry-led S&T roadmap activities, and
- Informs IC elements' acquisition investment decisions

Foreword

FROM THE ASSISTANT DIRECTOR OF NATIONAL INTELLIGENCE FOR ACQUISITION, TECHNOLOGY, AND FACILITIES:

Strong partnerships between the US private- and public-sectors remain the cornerstone of new science and technology (S&T) developments that will deliver an overwhelming intelligence advantage for our nation. To leverage outside technical advances and further our mission capabilities, we must continue to strengthen the level of partnership, communication, and engagement between the Intelligence Community (IC) and the private sector.

This last year, the Director of National Intelligence (DNI) and the IC Director of Science and Technology (DS&T) released the *FY2015-2019 IC S&T Investment Landscape* and asked our industry partners to respond. The response that we received greatly exceeded our expectations, giving us unprecedented visibility into our partners' research efforts relevant to the needs of the IC. To those who responded, you have my sincerest appreciation. With your continuing support, I am confident that we will cement a strong and enduring partnership with which to ensure our intelligence advantage.

Mr. Kevin P. Meiners
Assistant Director of National Intelligence for Acquisition, Technology, and Facilities
Office of the Director of National Intelligence

FROM THE DIRECTOR OF SCIENCE AND TECHNOLOGY:

My office and I are using the comments, approaches, and concepts that our partners provided to drive the direction of the *FY2016-2020 IC S&T Strategic Plan*, which we will make available to industry after its completion. As an additional opportunity to contribute to the development of the *Strategic Plan*, my staff and I are participating in a series of workshops to solicit the views of industry on future directions in intelligence S&T challenge areas. These workshops are intended to produce industry-led roadmaps to inform the IC in the preparation of its S&T plans for the development of our next-generation capabilities.

As we move further into FY2015, my staff and I will facilitate face-to-face meetings between RFI respondents and IC stakeholders to discuss these roadmaps and potential solutions to the broader list of *Landscape* Needs. This is an open invitation for IC partners to share ideas and technology solutions directly with senior IC S&T decision makers, contracting and acquisition officers, and resource managers. I look forward to hearing from you as we continue to build-out this effort.

Dr. David A. Honey
Director of Science and Technology
Office of the Director of National Intelligence

FROM THE LEAD FOR INTELLIGENCE SCIENCE AND TECHNOLOGY PARTNERSHIPS:

The *Industry Snapshot—Summary of Partner Responses to the FY2015-2019 IC S&T Investment Landscape*, along with the *Landscape* and related outreach efforts comprising the broader Intelligence Science and Technology Partnership (In-STeP), will be key to ensuring greater collaboration and transparency between the IC S&T enterprise and our partners. Feedback on this document as well as In-STeP can be provided to S&TInvestment@dni.gov. My team and I look forward to working with you.

Dr. David M. Isaacson
Lead for Intelligence Science and Technology Partnerships
Office of the Director of National Intelligence

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EXECUTIVE SUMMARY

The *Industry Snapshot—Summary of Partner Responses to the FY2015-2019 IC S&T Investment Landscape* outlines and documents the partner response to the Intelligence Community (IC) needs included in the *Landscape*. The *Industry Snapshot* details a new mechanism for IC partner engagement and provides a preliminary market analysis of current and future opportunities to aid research and development (R&D) investment decisions.

Maximizing the utility of available resources is critical to maintaining IC mission success. Marketplace realities and the shrinking share of government laboratory R&D require the IC to closely examine where it must continue to lead, where it must influence, and where it should adapt or adopt commercially-available technology. The Office of the Director of National Intelligence (ODNI) Director of Science and Technology (DS&T) has developed the Intelligence Science and Technology Partnership (In-STeP) as the foundational mechanism and process structure to assist the Community's investment decisions.

The In-STeP goal is to communicate IC Needs to our public- and private-sector partners early in the process to improve planning and to provide insight into IC partners' S&T investments. Industry engagement and collaboration are essential to the success of In-STeP. To facilitate this interaction and provide data for making investment decisions, DS&T released the *Landscape* through ODNI RFI 14-02 (Appendix A) asking for industry efforts supporting the *Landscape* Needs. The partner responses were aggregated—with proprietary information removed—to form this document. In-STeP engagement outreach activities include periodic meetings where IC partners have the opportunity to engage the DS&T, the Director of National Intelligence Science and Technology Committee (NISTC),[1] and the IC acquisition community how their efforts may be incorporated into IC-wide capability roadmaps, technology developments and acquisitions.

As shown in Figure 0.1, In-STeP uses the *Landscape* and the *Partner Response* to communicate IC needs and their potential solutions.

[1] The NISTC is the DS&T-chaired standing body for the coordination and communication of S&T priorities and R&D investments across the IC.

Figure 0.1 — The Intelligence Science and Technology Partnership (In-STeP)

The *Industry Snapshot* was created from the *Landscape* RFI responses. 84 respondents provided 2172 potential solutions to the *Landscape* Needs. The *Industry Snapshot* contains non-proprietary summary data of the responses and will be posted on the R-Space Website.[2] Proprietary RFI response information was included in the *Partner Response* and disseminated on R-Space[3] to a restricted US Government-only membership—principally NISTC members and their designees.

Using the insights gained from the *Partner Response* and the *Industry Snapshot*, the IC S&T enterprise will work with the acquisition community to ensure that the capabilities required to solve the Needs are ultimately put into the user's hands. These ongoing analyses will provide IC leadership with a better understanding of where the IC should bolster, leverage, or reallocate its S&T resources.

Finally, as first-of-their-kind IC-wide publications, there were many lessons learned in producing In-STeP—including direct industry feedback. To ensure transparency with stakeholders, a summary of these lessons learned is included in this document.

[2] https://rspace.dodiis.ic.gov/rspace/groups/private-sector-engagement-in-support-of-ic-st-needs (JWICS)
[3] https://rspace.dodiis.ic.gov/rspace/groups/industry-responses-to-fy2015-2019-ic-st-investment-landscape-needs (JWICS)

CHAPTER 1
Introduction

Motivation for the Work

DS&T created the *Industry Snapshot—Summary of Partner Responses to the FY2015-2019 IC S&T Investment Landscape* to shape IC S&T investment decisions and to inform industry's R&D investments. The *Industry Snapshot* was created to reach out to IC partners, by aggregating non-proprietary summary data of private- and public-sector efforts that can potentially meet the Needs listed in the *Landscape*.

As the foundation of the *Industry Snapshot*, the *Landscape* will remain the principal tool to aggregate, relay, and champion Needs that do not map directly to individual IC elements' functional responsibilities. The *Partner Response to the FY2015-2019 IC S&T Investment Landscape*—a proprietary version of this document—will also be used to relay partners' efforts to the IC S&T enterprise.

> *"The* Industry Snapshot *was created to reach out to IC partners, by aggregating non-proprietary summary data of private- and public-sector efforts that can potentially meet the Needs listed in the* Landscape*."*

Fully engaging IC resources is critical to maintaining our mission success. Marketplace realities and the reduced share of government laboratory R&D require that the IC closely examine the areas in which it must continue to lead, where it must influence, and where it should adapt or adopt commercially-available technology. DS&T developed the Intelligence Science and Technology Partnership (In-STeP) to structure and to stress the importance of these activities.

In-STeP uses the *Landscape*, *Partner Response*, and this *Industry Snapshot* to collect and convey IC Needs and the potential solutions proposed by our partners. Outreach activities will be held with IC partners as well as colleagues from the S&T, acquisition, and partner engagement communities. Planned outreach activities include meetings where IC partners will be afforded the opportunity to discuss their solutions with the DS&T, the NISTC, and the IC acquisition community.

Goals of the *Industry Snapshot—Summary of Partner Responses to the FY2015-2019 IC S&T Investment Landscape*

The *Industry Snapshot* is a summary compilation of self-reported private- and public-sector efforts to address existing IC Needs. It is one of the sources of information needed to focus and align resources and manage risk across the IC S&T portfolio. The *Industry Snapshot*:

- Provides IC partners with non-proprietary technological solutions that are relevant to solving IC Needs to assist with investment decisions;
- Communicates how the responses will be used by DS&T to improve future iterations of the *Landscape*; and
- Conveys to the IC S&T enterprise and its partners how the *Landscape* and *Industry Snapsho*t fit into a larger framework for aggregating and solving IC challenges, principally through In-STeP.

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CHAPTER 2

Discerning Partners' Level of Effort against the *Landscape* Needs

Motivation for the Work

To meet the IC's future challenges the IC S&T enterprise must address strategic priorities, support and leverage external partners' efforts, and ensure that prospective technical advances and newly-developed capabilities are shared with the appropriate stakeholders. The IC also requires a thorough understanding of the threats that our nation and its allies are likely to face and an improved means of addressing them.

Surveying and Assigning IC-Wide S&T Needs to Performers

The *Landscape* identified and aggregated Needs from a variety of disparate sources with differing perspectives. Sources included the National Intelligence Managers' Unifying Intelligence Strategies, the Department of Defense Combatant Commands' Integrated Priorities Lists, the Department of State's Bureau of Arms Control, Verification, and Compliance Verification Technology R&D Needs and IC element S&T strategies.

Once the IC-wide Needs were aggregated, they were filtered into categories that aligned with either IC Functional Managers (FMs) or other entities deemed best positioned to champion solutions to the Need. This method of assigning Needs based on performers was selected to avoid the "binning" that often occurs when Needs are subdivided into topical areas. The process of collecting and filtering these Needs is shown in Figure 2.1.

Ensuring the direct traceability of IC-wide Needs to their respective source documents was a key consideration during the development of the *Landscape*. Appropriately-cleared individuals can access the Needs and directly trace them back to an aggregated list as well as to their respective source documents via a SharePoint portal hosted on a TS/SCI Intelink site (http://intelshare.intelink.ic.gov/sites/atfcoi/needs/default.aspx).

Figure 2.1 — Selection process for assigning Needs to Performers. Note that from Category Zero to Category Three Needs, the role of ODNI/DS&T increases commensurately, moving from advising to ultimately championing S&T-related activities within the IC.

Why Categorize By Functional Managers Instead of Program Managers?

The assignment of Needs to those with clearly defined, end-to-end intelligence mission alignment is critical to solving the Needs of the *FY2015-2019 IC S&T Investment Landscape*. Although there is some merit to assigning Needs to National Intelligence Program (NIP) program managers (PMs), their roles are primarily resource oriented—i.e., defined by budgets and personnel—and some PMs are not aligned to a single mission. The National Reconnaissance Program PM, for example, builds and operates platforms for multiple missions. FMs, in contrast, are aligned along particular intelligence mission lines (Geo-spatial Intelligence [GEOINT], Signals Intelligence [SIGINT], etc.) and are directly responsible for accomplishing all aspects of their respective functions.

Soliciting Partners' Feedback and Solutions to IC-Wide Needs

To survey and aggregate private- and public-sector efforts to address IC Needs and guide IC S&T investment opportunities, DS&T released the *IC S&T Investment Request for Information (RFI), ODNI-14-02* (Appendix A). This RFI allowed for flexibility to capture partners' views and efforts in three ways:

1. Descriptions of technologies and projects applicable to the Needs listed in the *Landscape*;
2. Descriptions of technologies and projects that are applicable to the IC S&T mission, but are outside the scope of the Needs listed in the *Landscape*;
3. General comments and feedback on the *Landscape* and its approach to aggregating IC-wide Needs.

In an attempt to obtain the broadest possible range of cleared partner responses, the RFI was posted on the National Reconnaissance Office Acquisition Research Center (ARC) and the National Security Agency Acquisition Resource Center (ARC), making the RFI and the *Landscape* accessible to more than 10,000 cleared companies. DS&T continues to work with IC leadership and partners to craft policies to facilitate industry's ability to view and respond to the *Landscape* and its Needs.

Partner respondents' comments, approaches, and concepts were reviewed, compiled, and made available to representatives of the Director of National Intelligence Science and Technology Committee—the DS&T-chaired standing body for the coordination and communication of S&T priorities and R&D investments across the IC.

Providing Insights to Inform Partners' Investment Decisions

To make informed decisions regarding the focus and direction of the IC's research portfolio, the DNI and other senior IC leaders must have sufficient insight into the entire US national security enterprise's portfolio of S&T investments. Similarly, IC partners across the US Government and in the private sector benefit from additional, non-proprietary insights into others' activities. To facilitate direction, DS&T created In-STeP.

In-STeP unifies and codifies recent DS&T efforts and empowers the IC S&T enterprise to inform investment decisions. In-STeP facilitates this by ensuring that sufficient information is available to support greater synergy in the intelligence-related research efforts of the IC S&T enterprise, the broader US Government, foreign allies, and partners in industry, federally funded research and development centers, and academia. In-STeP empowers IC leadership in formulating the research and technology elements of the National Intelligence Program and aligns these efforts with future intelligence and national security needs.

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CHAPTER 3

Summary of Partner-Reported Efforts against the *Landscape* Needs

Summaries of partner-reported efforts against the IC-wide Needs captured in the *Landscape* are presented in Tables 3.1 through 3.7. A high number of potential solutions reported against a given Need will instill a greater sense of confidence that it is adequately being addressed by partners. However, the individual efforts have not been evaluated for effectiveness or completeness. Additionally, Needs with few or no known efforts against them may in fact be covered by IC elements, the broader US Government, or partner efforts not captured by the RFI. Future versions of the *Landscape*, the *Partner Response*, and IC portfolio reviews[4] will build upon one another to create a more accurate representation of the IC's Needs and the US national security enterprise portfolio of S&T investments for addressing them.

Caveat Lector: A Note of Caution Regarding the Partner Responses

The intent of this document is informational only. DS&T staff did not attempt to evaluate the partner efforts against their respective Needs, opting instead to summarize and report partners' responses. The full PROPIN submissions are available to US Government stakeholders and experts across the Community with the following caveats:

- **Applicability**—The responses are self-assessments provided by industry and the Need may or may not have been assessed correctly and the proposed solutions may or may not address the actual Need.
- **Maturity**—Many of the responses have low technology readiness levels; i.e., they are at a low level of development or may still be in the research stage. Accordingly, the existence of a reported effort does not guarantee that the project will ultimately be technically successful or that sufficient resources will exist to carry the effort forward.
- **Coverage**—Many of the proposed efforts are partial solutions or only answer a single aspect of the Need.
- **Priority**—The Needs are not prioritized and no risk management has been applied. Needs that have no coverage may be uncovered because they are low priority. Conversely, Needs that are answered may be low priority.

[4] DS&T and the NISTC conduct an annual program review of NIP R&T activities to assess progress against IC S&T planning objectives and critical intelligence problems to assist the DNI in formulating a long-term strategy for scientific advances in the field of intelligence and on the S&T elements of the budget.

Partner efforts against the Category Zero Needs are presented in Table 3.1, and showed a wide variance in the number of responses to each Need. In particular, a number of Category Zero Needs appear quite crowded, with many partner efforts reported. Preliminary analysis of several of these Needs suggests that they may be too broad as written, and should possibly be broken into a number of more specific Needs in the next iteration of the *Landscape*. These and other considerations are presented in Chapter 4—Conclusions and Next Steps.

Table 3.1 — Summary of Partner Efforts against Needs Requiring Improved Fusion of Collected Intelligence Data

Need #	Number of Partner Responses	Category Zero					
16	18	**167**	12	**223**	8	**305**	3
30	1	**169**	10	**238**	5	**306**	3
53	11	**172**	9	**240**	13	**307**	2
54	19	**173**	8	**250**	6	**310**	11
95	3	**174**	18	**253**	3	**345**	11
110	7	**175**	17	**281**	28	**346**	13
111	7	**176**	18	**282**	16	**347**	8
138	1	**177**	3	**288**	10	**352**	15
156	27	**178**	17	**297**	4	**356**	13
162	33	**179**	7	**298**	2	**359**	10
163	7	**180**	10	**299**	8	**371**	9
165	25	**219**	2	**302**	14	**375**	3
166	17	**220**	5				

Partner efforts against the Category One—GEOINT FM Needs are presented in Table 3.2. Although there were no GEOINT-specific Need coverage "gaps", it should again be stressed that these efforts have not yet been fully evaluated by technical experts.

Table 3.2 — Summary of Partner Efforts against GEOINT Functional Manager Needs

Need #	Number of Partner Responses	Category One-GEOINT					
36	7	**159**	5	**194**	7	**311**	5
37	2	**170**	9	**195**	3	**353**	2
38	10	**186**	5	**207**	3	**354**	13
56	8	**187**	3	**209**	5	**361**	4
125	16	**188**	3	**247**	6	**363**	8
127	13	**189**	7	**285**	6	**365**	10
128	7	**190**	10	**301**	1	**367**	3
133	4	**193**	5	**303**	2	**374**	9
144	5						

# of Efforts

Partner efforts against the Category One—HUMINT FM Needs are presented in Table 3.3.

Table 3.3 — Summary of Partner Efforts against HUMINT Functional Manager Needs

Need #	Number of Partner Responses	Category One-HUMINT					
25	7	**252**	10	**324**	None	**336**	3
74	None	**269**	7	**327**	15	**337**	13
84	4	**276**	6	**328**	2	**338**	4
147	7	**277**	7	**332**	7	**339**	8
198	19	**278**	3	**333**	8	**340**	12
221	2	**321**	3	**334**	6	**349**	4
225	5	**322**	5	**335**	2	**350**	2
228	23						

# of Efforts

Partner efforts against the Category One—MASINT FM Needs are presented in Table 3.4.

Table 3.4 — Summary of Partner Efforts against MASINT Functional Manager Needs

Need #	Number of Partner Responses	Category One-MASINT					
272	2	**320**	4	**394**	5	**395**	7
280	5	**393**	2				

# of Efforts

Partner efforts against the Category One—SIGINT FM Needs are presented in Table 3.5. Although the SIGINT-specific Needs had the greatest number of single FM Needs without any partner-reported efforts against them, the SIGINT FM also had the greatest number of Category One Needs.

Table 3.5 — Summary of Partner Efforts against SIGINT Functional Manager Needs

Need #	Number of Partner Responses	Category One-SIGINT					
7	None	203	12	239	2	313	3
8	1	204	None	241	8	316	2
11	24	205	1	242	13	341	2
12	17	208	3	244	5	342	5
13	None	227	9	245	15	348	4
14	26	231	1	273	5	357	11
15	21	232	None	300	4	382	4
96	9	235	9	308	None	383	12
152	4	236	11	312	15	390	4
171	3	237	9				

# of Efforts

Partner efforts against the Category Two Needs are presented in Table 3.6. To meet Category Two Needs and evaluate partner-reported efforts, DS&T and the NISTC will look to institutionalize new mechanisms to coordinate pre-operational R&D efforts related to these cross-community challenges. This will free up FM resources to confront additional challenges within their functional areas.

Table 3.6 — Summary of Partner Efforts against Multiple Functional Manager Needs

Need #	Number of Partner Responses	Category Two					
2	6	93	9	164	7	318	11
4	1	94	12	168	3	319	8
23	6	108	6	181	5	329	2
52	4	116	2	192	9	331	6
55	4	123	9	199	3	344	4
63	2	124	5	206	3	351	None
65	1	126	7	229	3	355	5
66	8	136	6	234	11	358	7
68	3	137	4	251	None	360	8
78	7	142	3	257	3	364	11
79	4	143	None	265	1	366	10
80	8	148	11	267	5	370	6
81	11	149	9	270	4	373	5
82	10	150	12	274	8	376	3
83	4	151	8	275	7	377	10
85	3	154	6	279	2	381	7
88	10	155	None	309	3	384	18
89	6	157	14	314	4	386	21
90	14	158	6	315	8	399	1
92	2	160	None	317	12		

Partner efforts against the Category Three Needs are presented in Table 3.7. As expected, these "new science" Needs generated relatively few partner responses, with many Needs having less than five efforts against them. DS&T-led initiatives will seek to stimulate work in these areas and leverage the work of additional external partners.

Table 3.7 — Summary of Partner Efforts against IC "New Science" Needs

Need #	Number of Partner Responses	Category Three					
1	3	61	3	153	3	304	None
3	None	62	None	161	12	323	None
17	1	69	2	182	5	325	1
18	None	70	None	183	5	326	1
19	7	71	4	184	6	330	6
20	1	72	8	185	7	362	4
22	2	73	4	191	6	368	8
27	3	86	3	200	1	369	5
28	9	87	2	202	2	372	2
29	1	91	9	224	5	379	5
31	13	114	3	226	11	385	12
39	9	115	5	243	10	389	None
40	3	130	6	248	3	391	2
57	5	131	4	249	7	392	3
58	7	132	2	258	3	396	1
59	10	135	6	266	3	397	7
60	12	146	13	283	4		

CHAPTER 4

Conclusions and Next Steps

This *Industry Snapshot* provides a means to inform IC partners' S&T investment decisions. It also helps senior IC leadership and private-sector executives manage risk by identifying those areas in which the current research efforts of the IC S&T enterprise, the US Government, our allies and industry partners may be inadequate. It is also a critical mechanism for early involvement and engagement in IC efforts to develop new opportunities and capabilities, consistent with the IC S&T enterprise's Lead-Influence-Adapt-Adopt investment framework.

Lessons Learned

As first-of-their-kind IC-wide publications, there were many lessons learned in producing the *Landscape, Partner Response*, and the *Industry Snapshot*. DS&T will incorporate a number of these lessons when producing subsequent versions of these documents. In addition to feedback from across the IC and individual partner comments, the Intelligence and National Security Alliance (INSA) Council on Technology and Innovation compiled non-proprietary responses and feedback to the *Landscape* from its members.[5] Preliminary considerations for improvement to the *Landscape* captured by INSA and the DS&T staff include:

- It would be useful to "normalize" the Needs in terms of breadth and scope; e.g., some needs are extremely broad, while others are very specific.
- It is not clear what the existing "state-of-the-art" capability is for a given Need. Prior to internal investment by industry, it would be useful to know whether even more advanced capabilities are already in use by the IC.
- It would be useful to the academic community to identify enabling areas of science that are prerequisites to developing solutions to the specified Needs.
- Ideally, the Needs would be generated as a single, compiled RFI which is maintained online and updated as Needs are met, added, or modified.
- Other useful information which should be considered in the *Landscape* is the IC priority for each Need. This will help companies determine what Needs they should address first. An understanding of the IC priorities will guide industry's decision process when creating parallel IRAD and capital equipment investments for defense programs.
- Given the broad nature of most of the Need descriptions it is very difficult for industry to provide a formal response with a cost estimate unless an existing proposal for another activity existed. Any attempt to filter on cost "guesses" in order to reduce the number of responses to a manageable number risks missing the concepts with the most significant value to the government. More meaningful cost estimates could be attained after interactions and technical collaboration with the respective government counterparts.
- One addition that would significantly increase the utility of the RFI to industry would be to include a specific technical government point of contact for each need. This would substantially increase the quality of formal feedback and allow industry to focus on specific Needs where a proposed solution closely matched the expectations of the government sponsor.

DS&T will consider all of the feedback received to improve subsequent iterations of the *Landscape*, the *Partner Response*, and the *Industry Snapshot*. Several initiatives have already begun that address elements of the feedback received.

[5] https://rspace.dodiis.ic.gov/rspace/docs/DOC-2086 (JWICS)

One initiative that will have broad implications for improving the process is the migration of the Needs aggregation and collaboration process to the R-Space Website.[6] Once this migration is complete, IC partners will have the opportunity to nominate, refine, consolidate, modify and evaluate the S&T Needs. Hosting the Needs on R-Space allows the IC and its partners to drive the discussion of the Needs and allows technical experts, users with Needs, and other interested parties to connect, collaborate, and communicate to improve the quality, specificity, and value of the Needs. In this way, the *Landscape* becomes a dynamic interaction while allowing for snapshots to be periodically captured.

The Path Forward

The *Landscape*, the *Partner Response*, the *Industry Snapshot* and In-STeP empower the IC S&T enterprise and its partners to inform investment decisions by ensuring additional synergy in intelligence-related research. Through these efforts, DS&T seeks to ensure that future FM annual assessment report data and IC element S&T investment portfolios combine to form a comprehensive, integrated IC R&D investment portfolio. A primary goal of future element program reviews will be to use these documents to inform and influence IC enterprise-level program planning. This may include direction to the IC's budget process, identifying and resolving cross-program dependencies, and evaluating execution ability and performance in accordance with the *Landscape* Needs.

To codify the path forward, ODNI is developing an IC S&T strategic plan to renew the vision, mission, and guiding principles for the IC S&T enterprise. The plan will take its direction from both the National Security Strategy and the 2014 National Intelligence Strategy (NIS), to provide national security- and intelligence-related S&T objectives that are relevant to the IC S&T enterprise. The strategic plan aligns with NIS Enterprise Objectives—such as optimizing capabilities and activities across the IC to achieve unity of effort and effect; developing, implementing, and managing IC-oriented approaches to improve integration and interoperability of IC enabling capabilities; finding and deploying new scientific discoveries and technologies; and strengthening partnerships—to generate technical solutions to IC-wide challenges.

The strategic plan represents a leadership commitment to enduring research critical to the IC mission. Next steps will focus on using the *Landscape* and *Partner Response* to discern key technologies and identify basic research areas for the US Government to expand on. Using the *Landscape* to identify key challenge areas for the strategic plan enhances IC engagement—on a rational, traceable, and defensible basis—with external partners such as the National Science Foundation, the National Academy of Science, the Department of Defense, and the National Institutes for Health.

[6] https://rspace.dodiis.ic.gov/rspace/groups/st-needs (JWICS)

To establish and institutionalize an enduring process for industry engagement, the DS&T will participate in a series of workshops led by the Advanced Technical Intelligence Association (ATIA) to solicit the views of industry and government laboratories on future directions in intelligence S&T. These workshops are intended to produce partner-led roadmaps—capturing needed capabilities, technologies, and basic research challenges—to inform the IC in the preparation of its plans for the development of our next-generation capabilities in specific IC challenge areas. The structure for these roadmaps is shown in Figure 4.1.

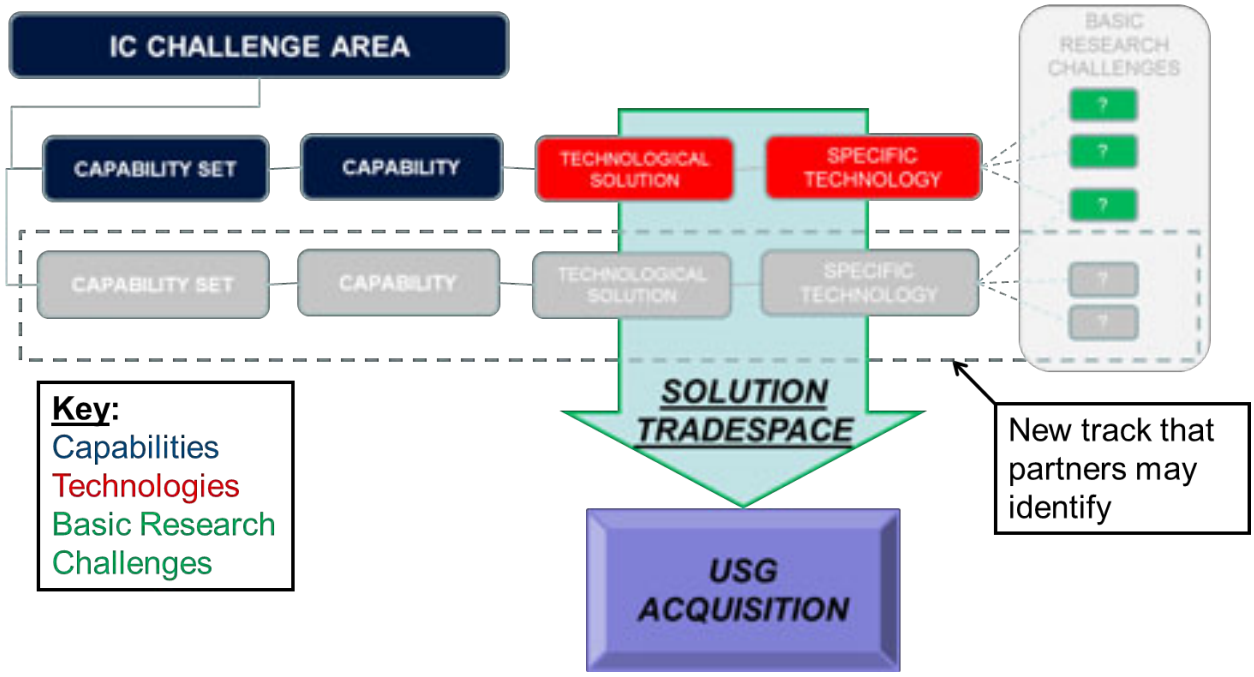

Figure 4.1 — Schematic structure of the partner-led roadmap activity

These industry-led technical roadmaps will outline potential pathways to solve documented IC mission needs *up to the limits of proprietary information and approaches.* As we move further into FY2015, DS&T plans to facilitate face-to-face meetings between RFI respondents and IC stakeholders to discuss their thoughts on these roadmaps and their potential solutions to the broader list of *Landscape* Needs. This is an invitation to industry share ideas and technology solutions directly with senior IC S&T decision makers, contracting and acquisition officers, and resource managers.

Using these roadmaps and other inputs, the IC S&T enterprise will work with industry and the IC acquisition community to ensure that the capabilities required are put into the users' hands. These analyses will provide IC leadership with a better understanding of where the IC should bolster, leverage, or reallocate its S&T resources, building upon and advancing the *Landscape's* goal of "enhancing the IC's utility with policymakers and warfighters using the current or reduced resources."

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APPENDIX A

IC S&T Investment Request for Information ODNI 14-02

Solicitation Number:

ODNI-RFI-14-02

Notice Type: Special Notice

Synopsis:

Added: February 20, 2014

Abstract

The Office of the Director of National Intelligence (ODNI), Director of Science and Technology (ODNI/DS&T) is committed to ensuring that promising science and technology (S&T) development opportunities and investment portfolios align with intelligence community (IC) capability needs. To support this goal, ODNI has published the *FY2015-2019 IC S&T Investment Landscape*—a document which projects future IC-wide needs and outlines an initial approach to meet these needs. In this RFI, the ODNI requests ideas on emerging technologies and novel approaches to meet these needs. Additionally, comments on the *Landscape* as well as descriptions of approaches and investment strategies for meeting IC needs beyond those listed in the *Landscape* will be considered. These comments, approaches, and concepts will be reviewed, compiled, and made available to the Director of National Intelligence Science and Technology Committee (NISTC)—the ODNI/DS&T-chaired standing body for the coordination and communication of S&T priorities and research and development (R&D) investments across the IC. NISTC members include the principal science advisors of the IC elements.

Background

A critical consideration in crafting the *FY2015-2019 IC S&T Investment Landscape* was to identify and aggregate as many intelligence needs from across the IC as possible. To accomplish this objective, ODNI/DS&T staff sought to identify intelligence needs from a variety of sources with differing perspectives including Subject Matter Experts (SMEs), Program Management, Specialized Customers, and Field End-Users.

Pursuing the technologies needed to achieve success in the IC's mission is a key responsibility of the IC S&T enterprise. Future operators, analysts, and decision makers will face a complex and interconnected web of challenges for which today's technical capabilities may prove inadequate. Accordingly, ODNI/DS&T is particularly interested in obtaining US industry SMEs' views on technologies and approaches that could meet the IC needs outlined in the *FY2015-2019 IC S&T Investment Landscape*.

Scope

This RFI is intended to obtain US industry's views on those technologies and approaches that may address IC needs to guide IC S&T investment opportunities through FY19 and beyond. This RFI allows for sufficient flexibility to capture industry's views in three ways:

1. Descriptions of technologies and projects applicable to the needs listed in the *Landscape* document;
2. Descriptions of technologies and projects that are applicable to the IC S&T mission, but are outside the scope of the needs listed in the *Landscape*;
3. General comments and feedback on the *Landscape* document and its approach to aggregating IC-wide needs.

The *FY2015-2019 IC S&T Investment Landscape* will be made available for review and comment from February 20, 2014 through April 18, 2014 at the following JWICS addresses:

- NRO IC Acquisition Resource Center (ARC) - http://arc.nro.ic.gov/
- NSA IC ARC - https://www.nsaarc.con.nsa/arc/Login

Preparation Instructions to Respondents

ODNI/DS&T solicits respondents to submit ideas related to this topic for use by the Government. ODNI/DS&T requests that submittals briefly and clearly describe the potential approach or concept and its benefits, outline critical technical issues/obstacles, describe how the approach may address those issues/obstacles, and comment on the expected performance and robustness of the proposed approach. If appropriate, respondents may also choose to provide a non-proprietary rough order of magnitude regarding what such approaches might require in terms of funding and other resources for one or more years. This announcement contains all of the information required to submit a response. No additional forms, kits, or other materials are needed.

ODNI/DS&T appreciates responses from all capable and qualified sources from within the US. **Responses from teams with complementary areas of expertise are encouraged.** The required submission method for responding to the needs listed in the *Landscape* document is to identify in an editable Excel table (no macros) the needs (as numbered in the document) that will be most impacted by an existing technology or state-of-the-art-project in your organization. Columns in the table shall be:

1. Need #
2. Company Name
3. Respondent's point(s) of contact (POC(s)) e-mail
4. Technology / Project Name
5. (Portion Mark) Up to 400 word description of the technology/project
6. (Portion Mark) Up to 75 word description of how the technology/project relates to the need
7. Current technology readiness level (TRL) estimate
8. Current sponsor (internal IRAD or external)
9. Estimated rough order of magnitude cost per year for implementation

Supplemental content within this table beyond the information requested above will not be reviewed. Additionally, comments and feedback on the *Landscape* document as well as descriptions of R&D efforts outside of the scope of the needs that are broadly applicable to the IC S&T mission that participating entities would like to highlight will be accepted. These submissions shall have the following formatting requirements:

1. A one-page cover sheet that clearly identifies the title, organization(s), respondent's technical and administrative POCs—including names, addresses, phone and fax numbers, and email addresses of all co-authors—and clearly indicates its association with ODNI-RFI-14-02;
2. A substantive, focused, executive summary (limited to one-half page in minimum 12-point Times New Roman font, appropriate for single-sided, single-spaced 8.5 by 11 inch paper, with 1-inch margins);
3. A description (limited to 1 page in minimum 12-point Times New Roman font, appropriate for single-sided, single-spaced 8.5 by 11 inch paper, with 1-inch margins) of the technical challenges, suggested approach(es), and a statement of how the IC would benefit;
4. A list of citations (any significant claims or reports of success must be accompanied by citations, and reference material MUST be attached);
5. Optionally, a single overview briefing chart graphically depicting the key ideas.

Submission Instructions to Respondents

Responses to this RFI are due no later than 4:00 pm Eastern Daylight Time on April 18, 2014. All submissions must be electronically submitted to *S&TInvestment@dnits.ic.gov* as an Excel-compatible spreadsheet or PDF document. No telephone inquiries will be accepted.

Submissions may include proprietary content, but such content must be clearly marked. Proprietary content is not required.

DISCLAIMERS AND IMPORTANT NOTES

This RFI is issued solely for information and potential planning purposes and does not constitute a solicitation. Respondents are advised that the ODNI is under no obligation to acknowledge receipt of the information received or provide feedback to respondents with respect to any information submitted under this RFI.

Responses to this notice are not offers and cannot be accepted by the Government to form a binding contract. Respondents are solely responsible for all expenses associated with responding to this RFI. It is the respondents' responsibility to ensure that the submitted material has been approved for public release by the organization that funded whatever research is referred to in their response.

The Government does not intend to award a contract on the basis of this RFI or to otherwise pay for the information solicited, nor is the Government obligated to issue a solicitation based on responses received. Proprietary concepts and information—should they be included in the submittal—will be protected appropriately. Input on technical aspects of the responses may be solicited by ODNI from non-Government consultants/experts who are bound by appropriate non-disclosure requirements.

Contracting Office Address:

Office of the Director of National Intelligence
Assistant Director for Acquisition, Technology and Facilities
Washington, District of Columbia 20511, United States

Primary Point of Contact:

Dr. David M. Isaacson, S&TInvestment@dnits.ic.gov

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APPENDIX B

Acronyms

ARC	Acquisition Research Center (NRO) / Acquisition Resource Center (NSA)
ATIA	Advanced Technical Intelligence Association (Industry association)
DNI	Director of National Intelligence
DS&T	Director of Science and Technology
FM	Functional Manager
GEOINT	Geo-spatial Intelligence
HUMINT	Human Intelligence
IC	Intelligence Community
INSA	Intelligence and National Security Alliance
In-STeP	Intelligence Science and Technology Partnership (Industry association)
IRAD	Independent Research and Development
JWICS	Joint Worldwide Intelligence Communications System
MASINT	Measures and Signatures Intelligence
NIP	National Intelligence Program
NIS	National Intelligence Strategy
NISTC	Director of National Intelligence Science and Technology Committee
NRO	National Reconnaissance Office
NSA	National Security Agency
ODNI	Office of the Director of National Intelligence
PM	Program Manager
RFI	Request for Information
R&D	Research and Development
S&T	Science and Technology
SIGINT	Signals Intelligence
SME	Subject Matter Expert
TRL	Technology Readiness Level

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