

## NDIA Independent Research and Development Survey Summary

### Overview:

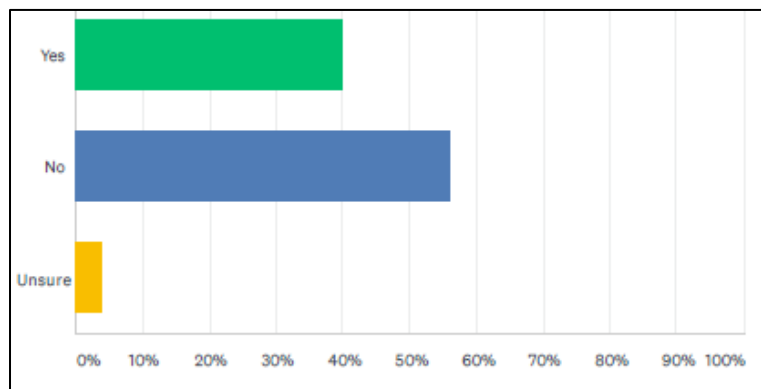
NDIA was approached by the Defense Technical Information Center (DTIC) to conduct a survey of its members' Independent Research and Development (IR&D) activities as a result of the recent "Defense Science and Technology: Opportunities to Better Integrate Industry Independent Research and Development into DOD Planning" [report](#) by GAO.

The survey was released on November 12<sup>th</sup>, 2020 and closed on December 5<sup>th</sup>, 2020. The survey was distributed via targeted emails to member companies and through the NDIA weekly Policy Digest.

### Demographics:

The survey gathered 25 responses in total and was targeted towards employees of larger NDIA member companies. At the request of DTIC, participants were asked whether their company spends more than \$11 million annually on Independent Research & Development (IR&D) and Bid and Proposal (B&P). Of the respondents, 40 percent indicated that their company did spend more than \$11m, 56 percent indicated that they did not, and 4 percent were unsure (Figure 1).

**Figure 1: Does your company spend more than \$11M annually on Independent Research and Development (IR&D) and Bid and Proposal (B&P)?**

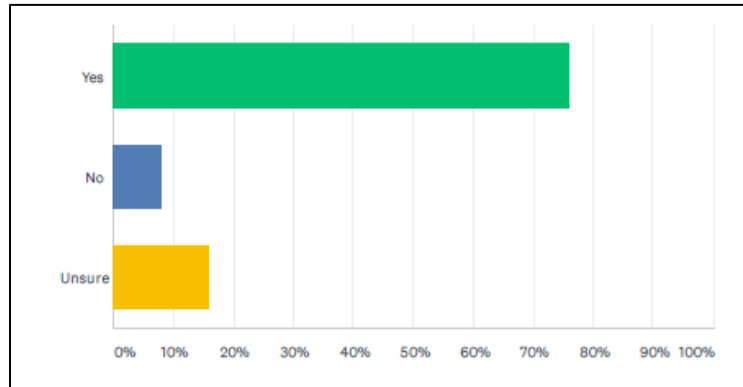


### Survey Results:

Respondents were asked whether their company would be able to directly link any of their company's IR&D efforts to any of the DOD [Modernization Priorities](#). Of the respondents, 76 percent responded yes (Figure 2).

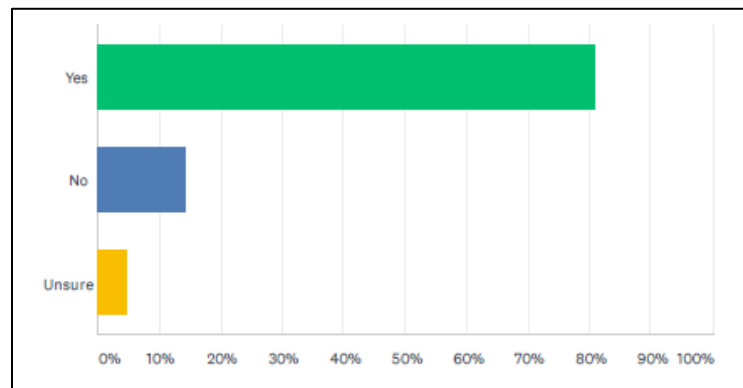
One of the key takeaways from the GAO report out of which this survey was developed is that the DOD is currently unaware of the full scope of its contractors' IR&D efforts, and yet, the responses indicate that many of them currently engage in IR&D projects that could have a direct impact on the DOD Modernization priorities. This indicates that DOD may be better positioned than the GAO report suggested.

**Figure 2: If your company engages in significant IR&D projects that may be of interest to DOD, would you be able to link any of them to any of DOD’s modernization priorities?**



Additionally, when asked whether grouping IR&D projects based on linkages to DOD priorities adds value to their organization, 80.95 percent of respondents answered yes (Figure 3). Coupled with the data from the previous question, this indicates an opportunity for both parties; providing linkages to IR&D efforts provides DOD with a more accurate overview of current developments in industry, while at the same time gives contractors an opportunity to more directly market their up-and-coming technologies to the segments of DOD who may be interested in them.

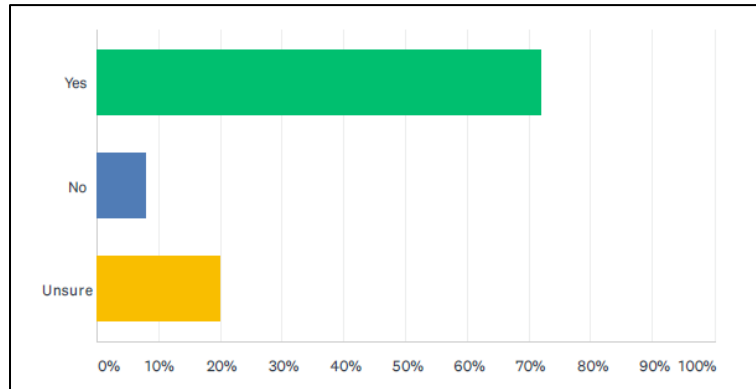
**Figure 3: If yes, does grouping your IR&D projects based on linkages to DOD priorities add value to your organization?**



Respondents were also asked whether there were any different frameworks that inform their target areas (Figure A9). The two most common responses were priorities and strategy documents released by services and agencies, and market opportunities and analysis. Full responses for this, and other open-ended questions, can be found in the Appendix.

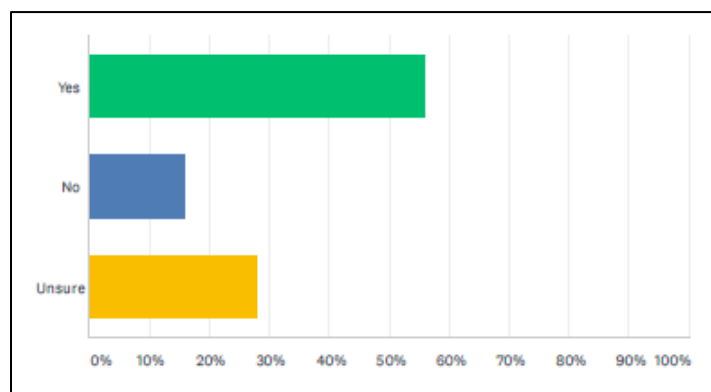
Respondents were asked whether grouping their projects by the DOD R&E levels would properly inform the maturity of the research project (Figure 4), and 72 percent of respondents answered yes. When asked whether there are any other methodologies that could better represent the maturity of the research project, Technology Readiness Levels (TRLs) were recommended by several respondents (Figure A10).

**Figure 4: Would grouping your projects by the DOD R&D levels (6.1 Basic Research, 6.2 Applied Research, 6.3 Advanced Technology Development, 6.4 Demonstration and Validation [Advanced Component Development and Prototypes], and up to 6.7 Operational System Development) properly inform the government of the maturity of the research project?**



Respondents were asked whether there is a clear distinction between disruptive and incremental technologies in their company's IR&D projects. Results were mixed, with 56 percent responding yes, 16 percent responding no, and 28 percent unsure. As highlighted in the GAO report, the DOD does not have a good grasp of whether IR&D projects are disruptive or incremental technologies. The mixed nature of the responses as well as some qualitative comments indicate a need for a clear definition of disruptive versus incremental technologies that can be adopted as a standard.

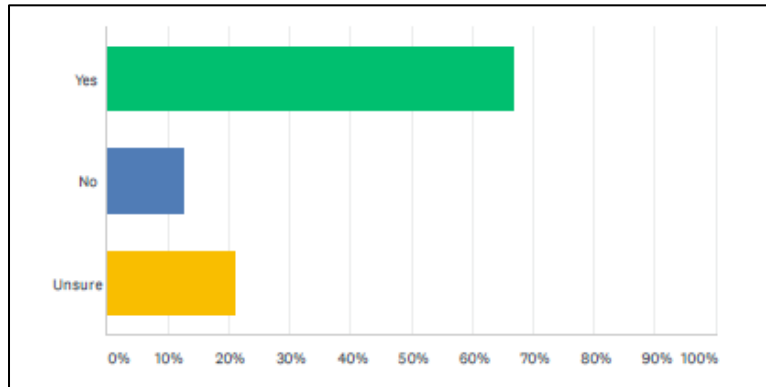
**Figure 5: In your company's IR&D projects, is there a clear distinction between disruptive and incremental technologies?**



Another key takeaway of the GAO report was the lack of information collected about IR&D project costs. Respondents were asked whether their company would be able to provide the project's total cost to DOD when completed, and 66.67 percent of respondents answered yes (Figure 6). 8 out of the 10 respondents whose companies spent more than \$11m in IR&D spending indicated that their company would be able to provide the project's total cost. When asked when there were any barriers to sharing project cost

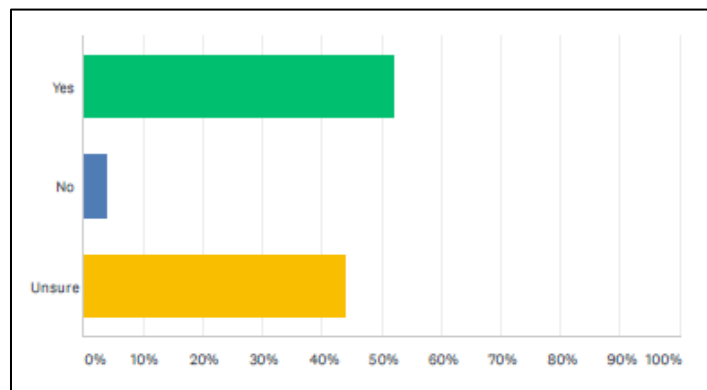
information with DOD, the top answer included risk of proprietary information being disclosed to competitors (Figure A12).

**Figure 6: Would your company be able to provide the project’s total cost, including IR&D costs, to DOD when the project is completed?**

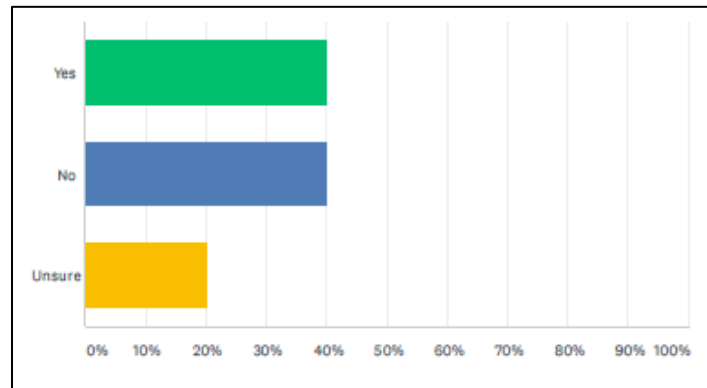


Respondents were also asked a series of questions regarding efficiency of the current system in adding documents to the company records (Figure 7) and using CAC to submit and manage content (Figure 8). The responses to both questions were mixed, indicating no clear support for the current system. There were no significant differences in responses to these questions when segmented by whether or not a company spends over \$11million in IR&D.

**Figure 7: The current system allows you to add documents to your record. Is that the best way for you to provide additional information?**



**Figure 8: The current system is submit only. Does your organization have the capacity for an employee with a Common Access Card (CAC) to submit and manage your content, replacing the current PIN system?**



## Conclusion

While these results of this survey were limited by the total number of participants, it does provide some recommendations to DOD on how better to communicate and coordinate with industry on independent research and development. It also contains some encouraging news on the level of harmonization between industry IR&D and DOD modernization priorities. Following the review of this analysis and the full detailed results, DOD should strive to continue to implement the recommendations of the “Defense Science and Technology: Opportunities to Better Integrate Industry Independent Research and Development into DOD Planning” GAO report and continue to engage in a dialogue with industry. Coordinating research and development efforts across industry and government create efficiencies and encourage developments that ultimately lead to better and quicker outcomes.

NDIA, as always, is grateful to serve as the bridge between the DOD and the defense industrial base and looks forward to continuing to convene conversations and dialogue around this important topic.

## Appendix: Qualitative Data Responses

**Figure A9: Is there a different framework that informs your target area?**

Service and Agency Priorities
Yes - the various technology challenges/strategy documents produced by each of the DoD services as well as the Intel Community. They inform but the technology priorities may not match across them.
market activity and emerging market analysis
yes- we use a matrix that maps our capabilities to DoD needs and market opportunity and technology type (incremental, advancing and breakthrough)
WSC's add to the framework
Data capture, transformation, and analysis
While linking to DOD priorities makes for good talking points the R&D investment needs to link to somewhat definable award/program opportunities. DOD priorities seem too broad in nature to warrant significant executive backing.
No
Unsure

**Figure A10: Is there a better methodology to indicate the maturity of the research project?**

Yes, we like to use TRL , MRL and SRL
Additionally, incorporation of Technical Readiness Level (TRL) could further enhance DoD's understanding of maturity.
Yes. Annotating as deployed as demonstrator - or is ready for insertion into IOC/FOC production system
Perhaps TRL
Tech Readiness Level (TRL 1-9)
Maybe, the TRL model is better defined, but abused by both government and industry.
TRL at the beginning and end of the project provide better insight. But many projects that are complex may have multiple levels of TRL
None but if focusing on the development side is going to gain popularity (Century Series), then better breakout is required.
No
Why not use TRLs?
TRL seems to be a fairly widely accepted measure. Though subjective it seems more defined then the DOD R&D Levels

**Figure A11: Is there a better way to highlight disruptive technologies?**

Disruptive = significantly better performance for Lower Size, Weight, Power, and cost. Disruptive displaces established tech.
Have NDIA and DoD RDT&E (and other government agencies) highlight areas they are looking for disruption and the timeline to ensure mission relevance
Different internal proprietary levels, similar to classification levels
Perhaps identify AI and Machine learning technologies
None
No

**Figure A12: Are there any barriers to sharing IR&D project costs with the DOD?**

Proprietary, plus DOD might want to pay us for the product based upon costs instead of VALUE/BENEFIT to warfighter
No apparent barriers, notwithstanding misinformed decisions executed on project cost alone.
That is a longer discussion not suited for a survey request/response
Not typically
Yes, not set up for cost accounting.
yes, risk of disclosure to competitors.
Yes. This is discretionary internal spending with competition sensitive information. Sharing total cost reduces the level of 'independence' in project selection.
Bias against small business
DoD does not share funding amounts for prototype projects.
time and level of effort?
Cash flow, competitive pricing for this SDVOSB
Can't seem to refrain from directing where IRAD's spent
None
No
No

**Figure A13: Which additional fields or resources would you wish to see in the IR&D submission forms to best highlight and convey information about your IR&D projects?**

No additional recommendations at this time beyond incorporation of alignment to modernization priorities discussed above.
Multipurpose mission uses across DoD, IC, and DHS/DoT.
less is more; need less bureaucracy, not more reports.
the IRAD submission forms are a profound "rear view mirror" exercise that is largely irrelevant to ongoing development. Government experts in relevant fields and PM's need to be engaged in real time.
Data transformation, enhanced by machine learning and AI technologies.
biotechnology and related.
None
None
N/A
No suggestions

**Figure A14: If there are any additional comments on this topic you wish to provide please do so here.**

1) In a perfect world it would be great if the technology strategies and hard problems were integrated where possible with a timeline of mission relevance and capability expectations. 2) The last 2 questions are open ended in spirit and really can't be answered by Yes/No.
if <11M, hopefully there are no reporting requirements

<p>the IRAD submission forms are a profound "rear view mirror" exercise that is largely irrelevant to ongoing development. Government experts in relevant fields and PM's need to be engaged in real time.</p> <p>Current system is effective in sharing IR&amp;D information at the appropriate level. Contact information is available should the DoD desire additional information on a case-by-case basis.</p>
<p>Smaller companies represent a rich environment for IR&amp;D discovery. The nature of small company equating to small IR&amp;D budget, especially as those investments have a more pronounced impact to rates, may mean the DoD is not fully leveraging the innovation within the small business community. What ways can the government further incentivize small companies to make larger investments without jeopardizing the companies' financial wellbeing? Could additional tax incentives/credits be one possible solution?</p>
<p>None</p>
<p>no</p>