

Active Utilization of Advanced Civilian Technology at the Acquisition, Technology and Logistics Agency (ATLA)

December 17th , 2021

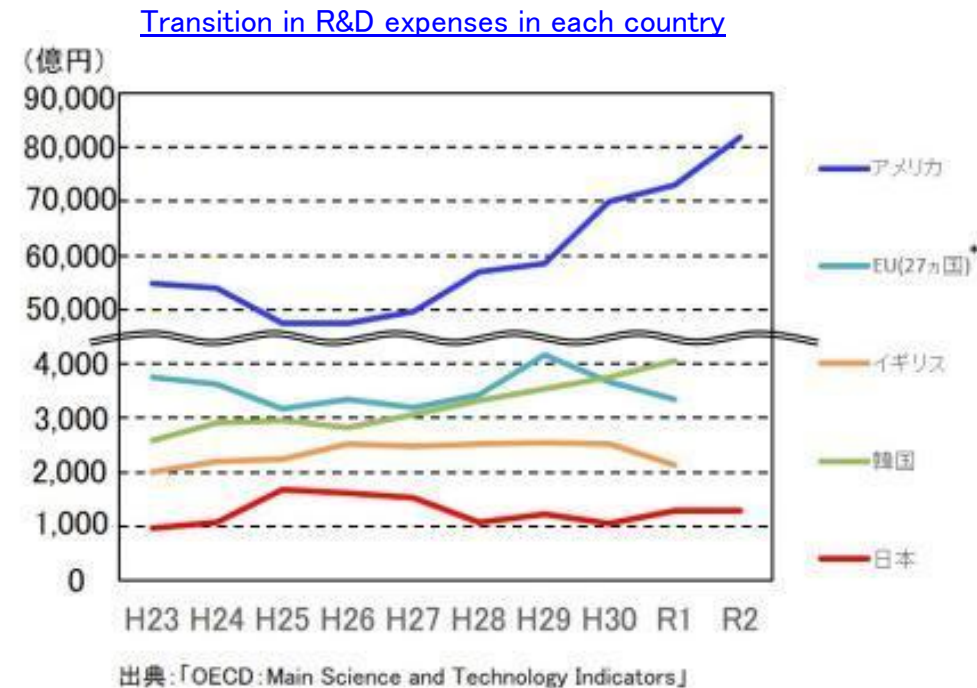
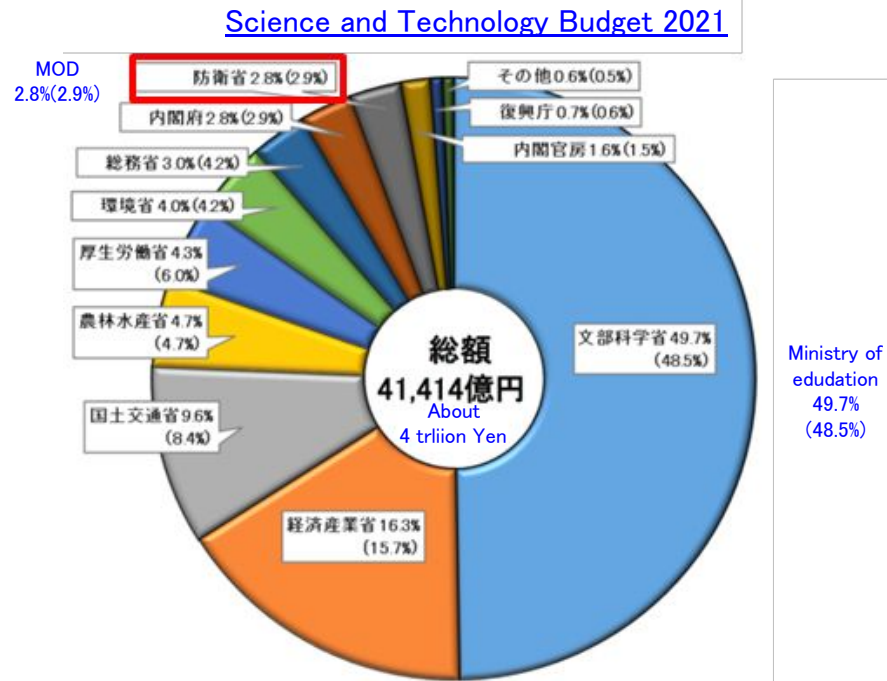
ATLA, Chief Defense Scientist

Shigenori Mishima

Current status of Japan's defense R & D expenses

- The battle aspect has changed significantly by the advances in military technology. Each country invests in new fields such as space, cyber, and electromagnetic, and technologies that can be game changers.
- **In advanced technology fields** such as AI, robots, quantum and 5G, private companies are investing on a large scale, and the speed of **technological progress is fast**.

- Japan's defense related R&D expenses **are at a low level compared to other countries**
- The MOD accounts is **only about 3%** of the government's total S&T budget (about 4 trillion yen).



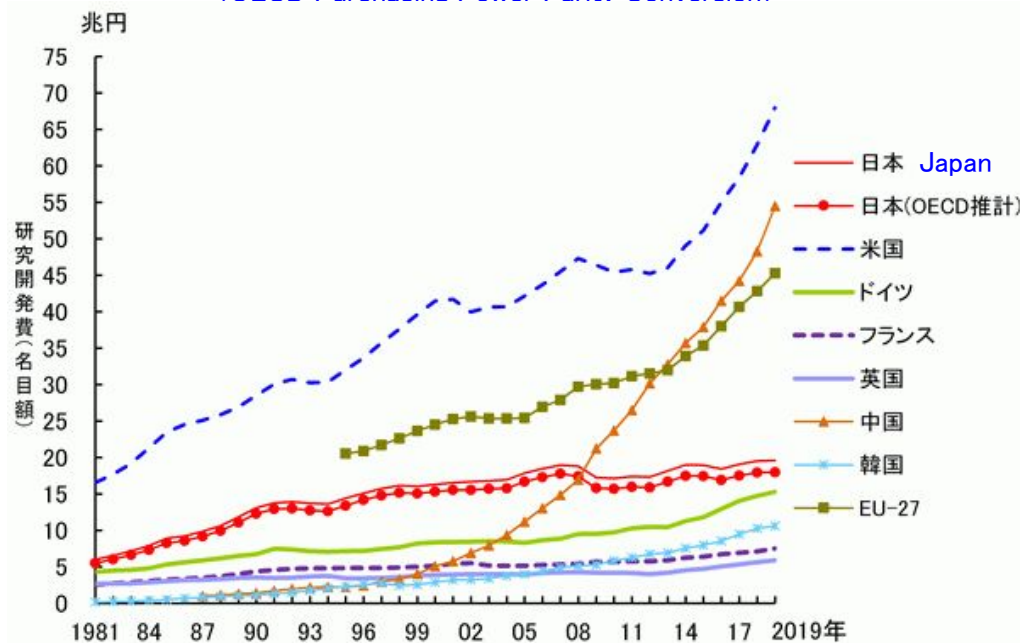
()は令和2年度当初予算
出典:内閣府科学技術政策ホームページ
<http://www8.cao.go.jp/cstp/budget/r3yosan.pdf>

*EUについては以下の27カ国の合計
アイルランド イタリア エストニア オーストリア オランダ キプロス ギリシャ クロアチア スウェーデン スペイン スロバキア
スロベニア チェコ デンマーク ドイツ ハンガリー フィンランド フランス ブルガリア ベルギー ポーランド ポルトガル マルタ
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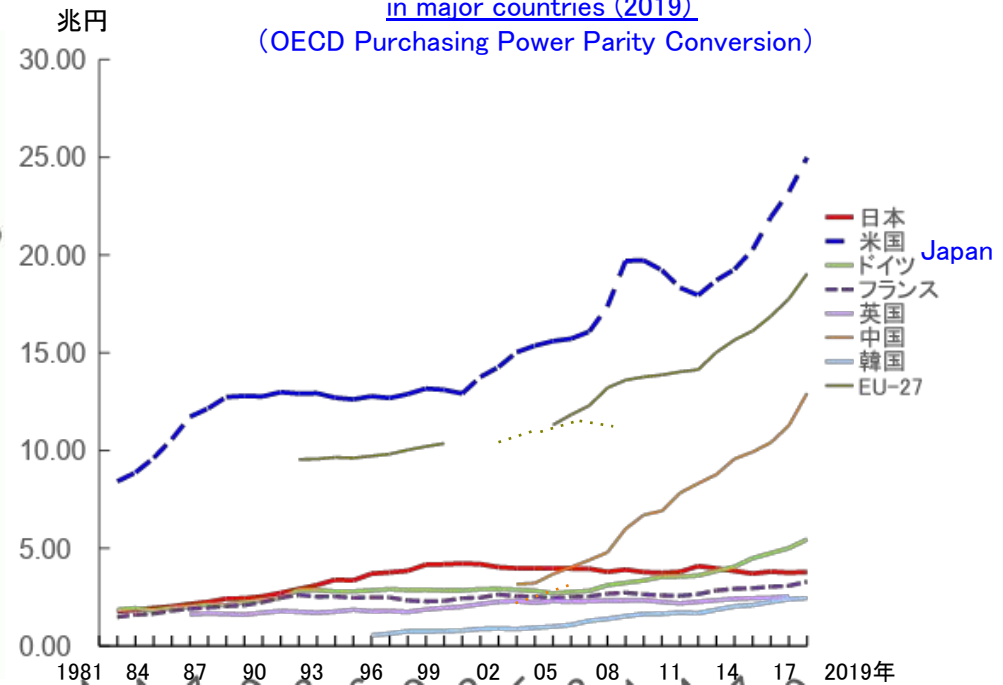
Transition in R&D expenses in each country

- The total R&D expenses **for whole country** are in the order of the United States, China, the EU, and Japan. The gap with China which ranks second, is widening.
- The **government's** R & D expenses are in the order of the United States, EU, China, Germany, and Japan.

Transition in total R&D expenses in major countries (2019)
(OECD Purchasing Power Parity Conversion)



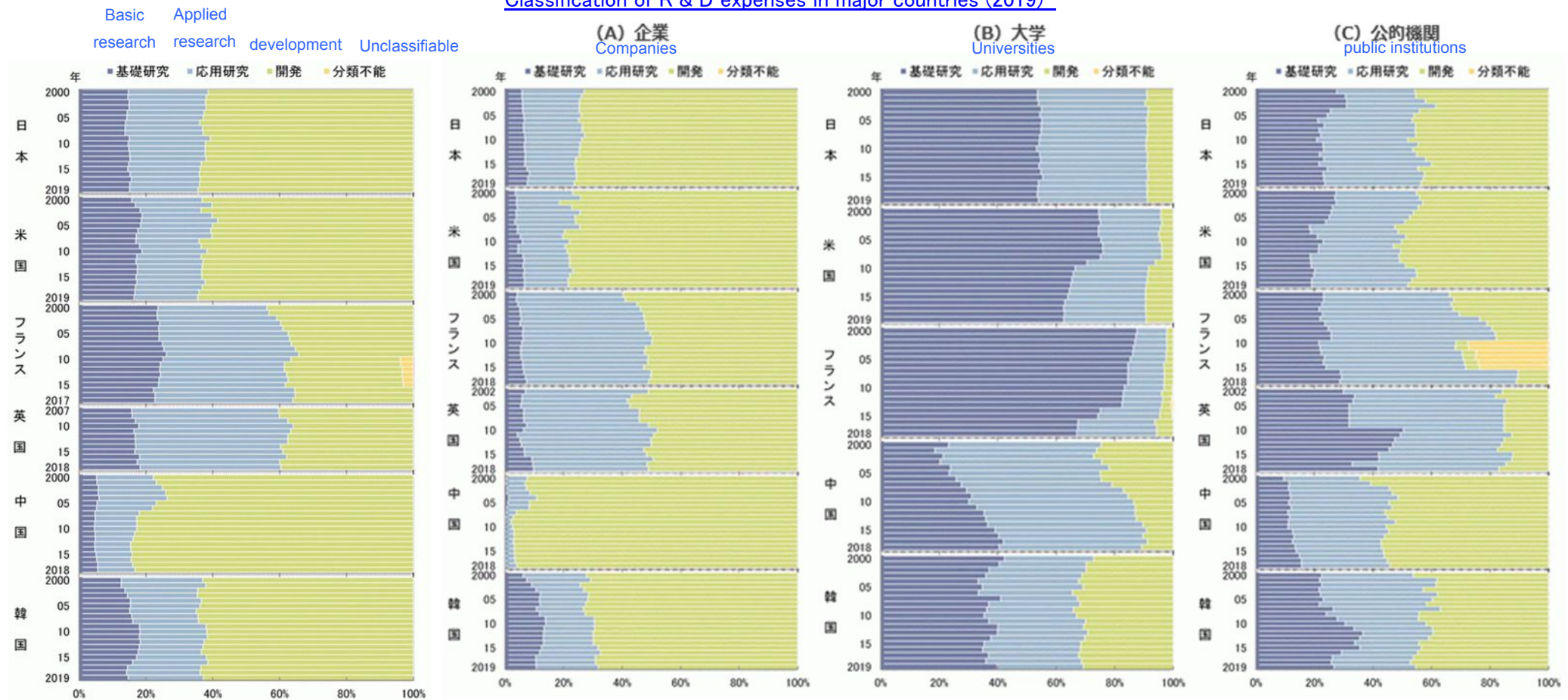
Transition in government burden of R & D expenses in major countries (2019)
(OECD Purchasing Power Parity Conversion)



Classification of R&D expenses in each country

- **Japan's** R & D expenses: "basic research" accounts for about 15%, "applied research" accounts for about 20%, and "development" accounts for about 65%. "Applied research" is on the decline.
- R&D expenses **of companies** are the largest in any country. R&D expenses at universities are almost flat in Japan. R&D expenses of public institutions have a large proportion of development in many countries

Classification of R & D expenses in major countries (2019)



Science and Technology for security

5th Science and Technology Basic Plan (2016–2020)

- “Response to National Security Issues” is described in the 5th term

Science and Technology / Innovation Basic Plan (2021–2025)

- “sustainable and resilient society that ensures the safety and security of the people” as one of the policies for the realization of Society 5.0
 - Efforts to “know,” “nurture,” “use,” and “protect” to ensure safety and security is described.

Integrated Innovation Strategy

(established in June 2021)

- Embodying science and technology / innovation policies that will be tackled in the next year
- **Reform to a sustainable and resilient society** as one of the measures that should be focused on
 - Building a “safe and secure” society is described

National Defense Program Outline (December 2018)

- Build “multidimensional integrated defense” as a truly effective defense
 - Promote strengthening of technology base and efficient acquisition of equipment
- (1) Strengthening the technological base
 - (2) Optimization of equipment procurement

(3) Strengthening the industrial base

Defense Technology Strategy (August 2016)

- **Set goals** to strengthen the technological capabilities that form the basis of Japan’s defense capabilities
- (1) Ensuring technical superiority
 - (2) Effective and efficient creation of excellent defense equipment

The following three measures have been formulated to achieve the above goals. By turning the cycle, we will further strengthen our technological capabilities.

- (1) Understanding technical information
- (2) Technology development

Integrated Innovation Strategy Initiatives

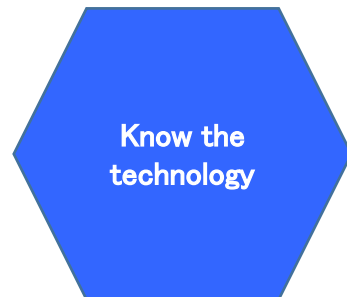
Focused resource allocation to key technical fields

- Create a new project that provides strong support for practical use while utilizing the Cabinet Office think tank function
- Efficiently promote by allocating budget, human resources, etc. to important technologies for ensuring safety and security.

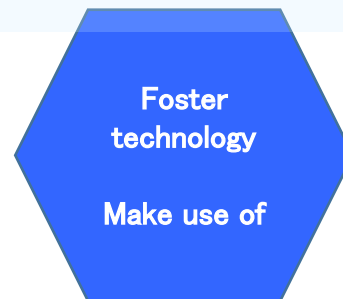
Economic security important technology development program
: 2021 year supplementary budget amount 250 billion yen

Clarification of important technologies

Launch the Cabinet Office think tank function in 2021. Make recommendations on important technologies that should be developed with priority. The organization will be established by 2023.



- AI Strategy (June 2019)
- Bio-strategy (June 2019)
- Quantum Technology Innovation Strategy (January 2020)
- Strategy for strengthening material innovation (April 2021)

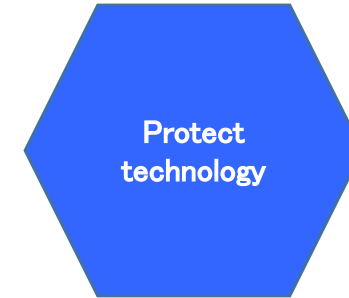


Appropriate technology outflow prevention

Established a system for sharing and utilizing important information while preserving it.

Promote consideration to take necessary measures regarding patent application and patent publication.

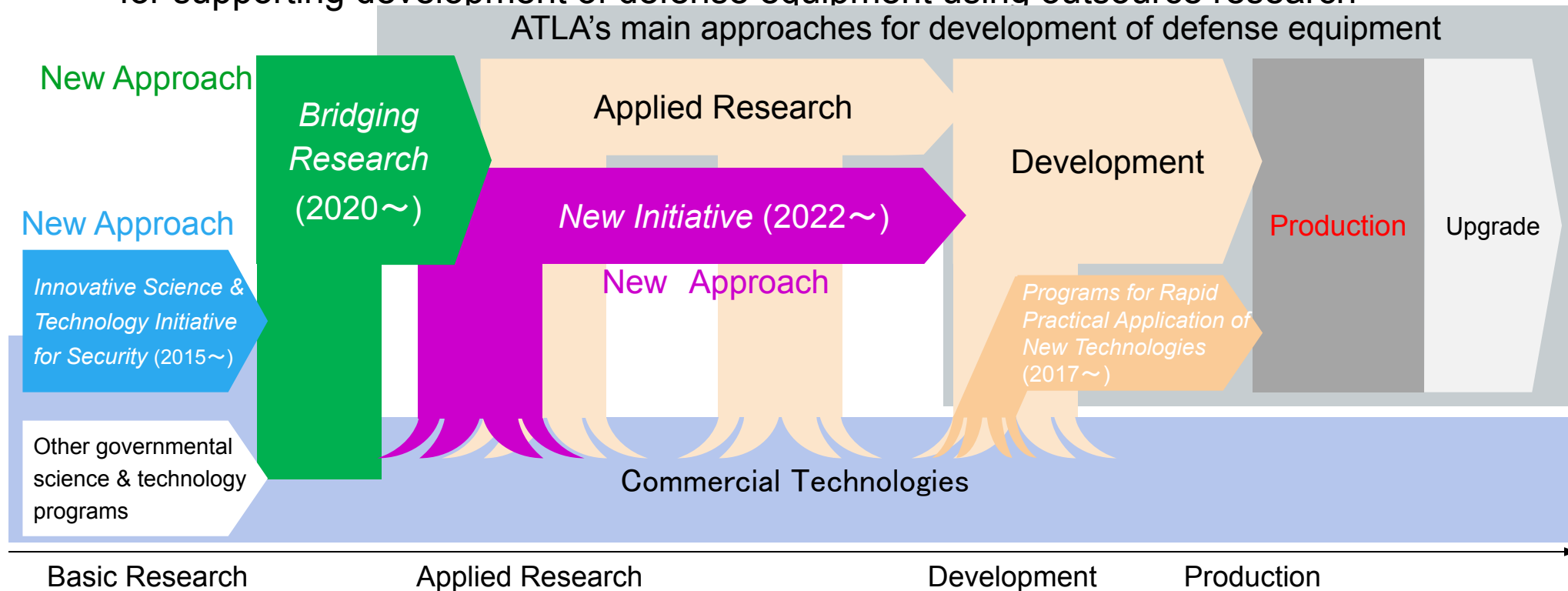
Strengthen the screening for acceptance of international students, including how to issue visas. Aim to realize an agile export control framework at an early stage by complementing the international export control regime.



ALTA's approach to utilize commercial advanced technologies

Introduction of new approaches to utilize commercial advanced technologies in addition to ATLA's conventional self-directed R&D approaches

- ▶ **Innovative Science & Technology Initiative for Security**
Identifying and developing innovative technologies
- ▶ **Bridging Research**
Utilizing research results of *Innovative Science & Technology Initiative for Security* and other governmental science & technology programs
- ▶ **New Initiative**
for supporting development of defense equipment using outsource research



Innovative Science & Technology Initiative for Security

In FY2015, the MOD launched a competitive research funding program to publicly seek and commission basic research on advanced civilian technologies which are expected to contribute to future R&D in defense areas.

- Focusing on basic research, NOT development of defense equipment itself.
- Outcomes from this program are expected to be utilized widely in civilian sector.

Points of consideration about this program

- ✓ MOD will not limit to publish research outcomes.
- ✓ MOD will not provide any confidential data to researchers.
- ✓ MOD will not designate research outcomes as confidential.
- ✓ Researchers are free to propose their research, as long as it's within the theme.

Themes of publicly seeking in FY2021

“Basic Research on Artificial Intelligence and its Application”

“Basic Research on Quantum Technology”

“Basic Research on Heat Resistance”

.....and 31 other themes

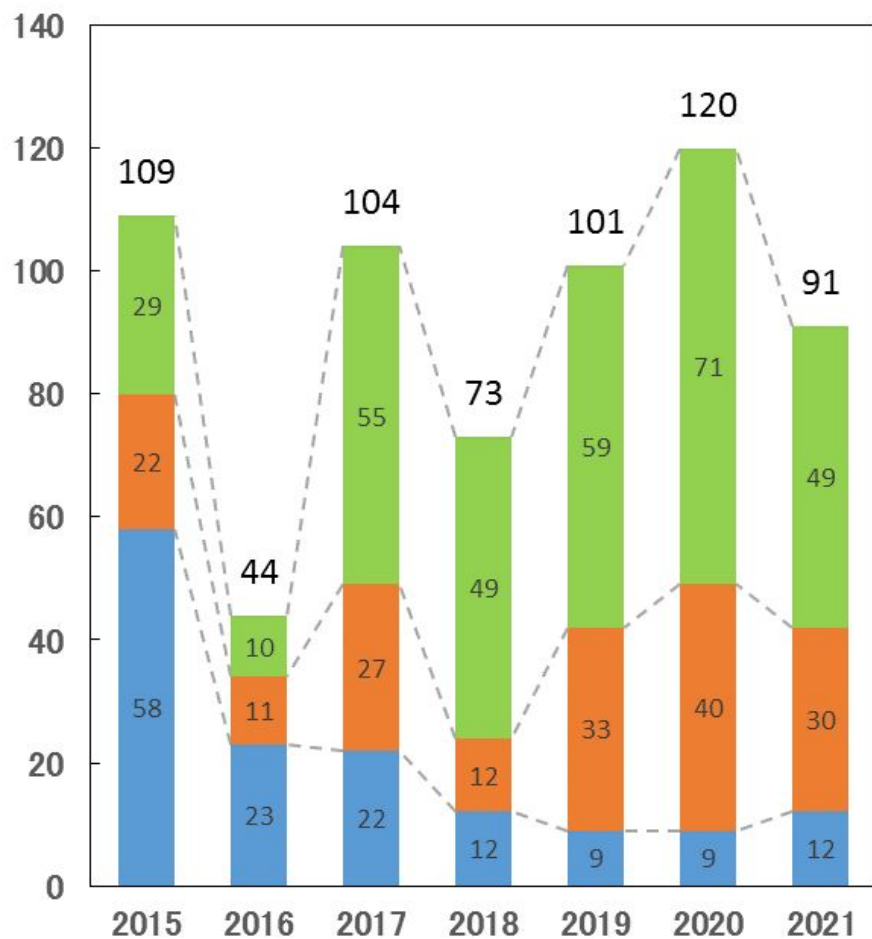
Budget	(JPY)
FY2015	\ 0.3 billion
FY2016	\ 0.6 billion
FY2017	\ 11.0 billion
FY2018	\ 10.1 billion
FY2019	\ 10.1 billion
FY2020	\ 9.5 billion
FY2021	\ 10.1 billion



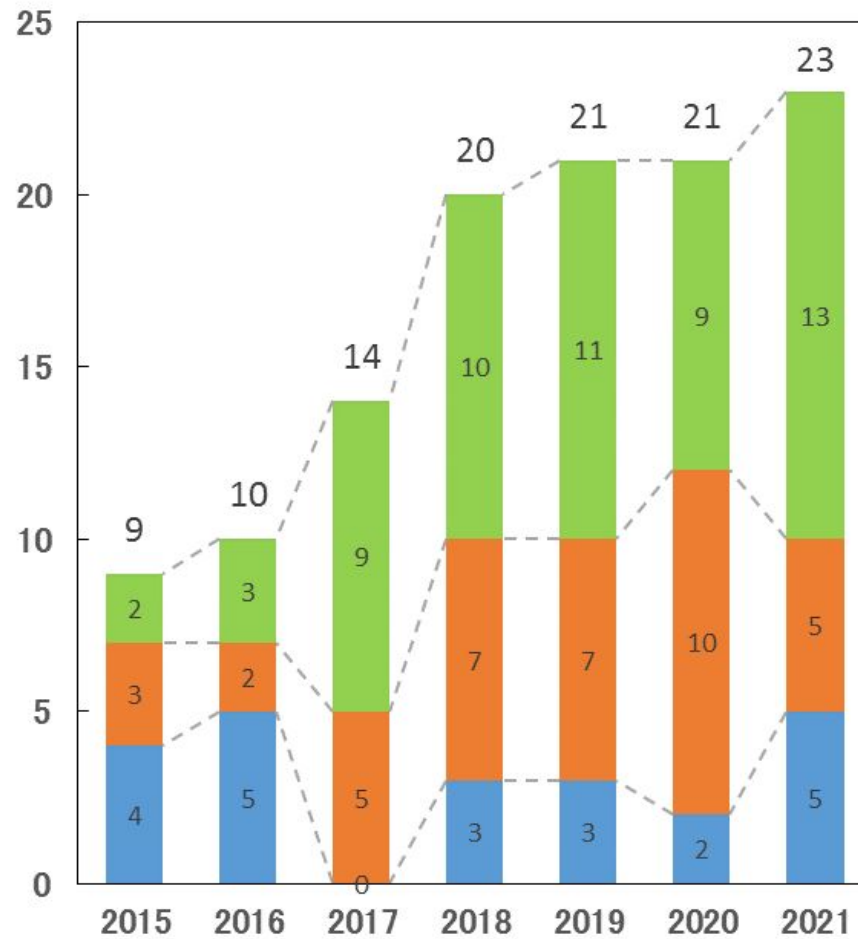
Budget Request	
FY2022	\ 11.2 billion

Innovative Science & Technology Initiative for Security

Number of Applied Research Projects



Number of Awarded Research Projects



■ Universities
 ■ Public Research Institutes
 ■ Companies