

Re: The state of study of the Moonshot Research and Development Program

May, 2019

Minister of State for Science and Technology Policy



The state of study towards target setting

- To promote ambitious research and development based on bold thinking, **the government has set up ambitious targets (Moonshot targets)** and solicited various research ideas in and outside of Japan for achieving the targets.
- The government has **set up Visionary Council** consisting of experts, which is currently working on targets.

Visionary Council members

	Hiroaki Kitano	President and CEO, Sony Computer Science Laboratory
	Yoichi Ochiai	Media artist
	Marissa Ozaki (Sputniko!)	Artist Project Associate Professor, University of Tokyo
Chair	Yoshimitsu Kobayashi	Chairman of Keizai Doyukai Chairman, Mitsubishi Chemical Holdings Corporation
	Naohiro Nishiguchi	Executive Officer, Japan Innovation Network
	Taiyo Fujii	SF Writer
	Makiko Eda	Chief Representative Officer, World Economic Forum Japan

State of study/Future plan

The 1st meeting on March 29

- Deliberation on viewpoints to be taken into account when considering the Moonshot targets

The 2nd meeting on April 22

- Obtaining requests from academia and industry
- Deliberation on approach and criteria for setting the Moonshot targets

The 3rd meeting on May 23 (schedule)

- Development and selection of candidate Moonshot targets

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CSTI plenary meeting around summer

- **Deciding the Moonshot targets**

Discussion at Visionary Council

- Analyzing challenges facing the world and Japan's "strengths" based on the vision of a future society, **identifying challenges Japan should take on strategically**, and then **translating them into targets (missions)** to be achieved

Points of discussion

- ✓ Can they be expressed plainly and concisely?
- ✓ Will they have a **huge impact on industry and society**? (Spinouts created one after another)
- ✓ Can they **attract players from other countries**?
- ✓ Aren't they **mere slogans**?
- ✓ Are they supposed to be led by the government? (Change of regulations)
- ✓ Can't they be managed by each ministry or agency?
- ✓ Do they reflect **perspectives of women and young people**?



Viewpoints for setting targets

Inspiring

- **Values can be shared** with the public and other countries
- **Huge impact on future industry and society**
- **Wisdom of scientists can be brought together** to secure national interest and industrial competitiveness

Imaginative

- The public can **envision future potential prosperity**

Credible

- Scientific **feasibility**
- Progress in achievement **verifiable**

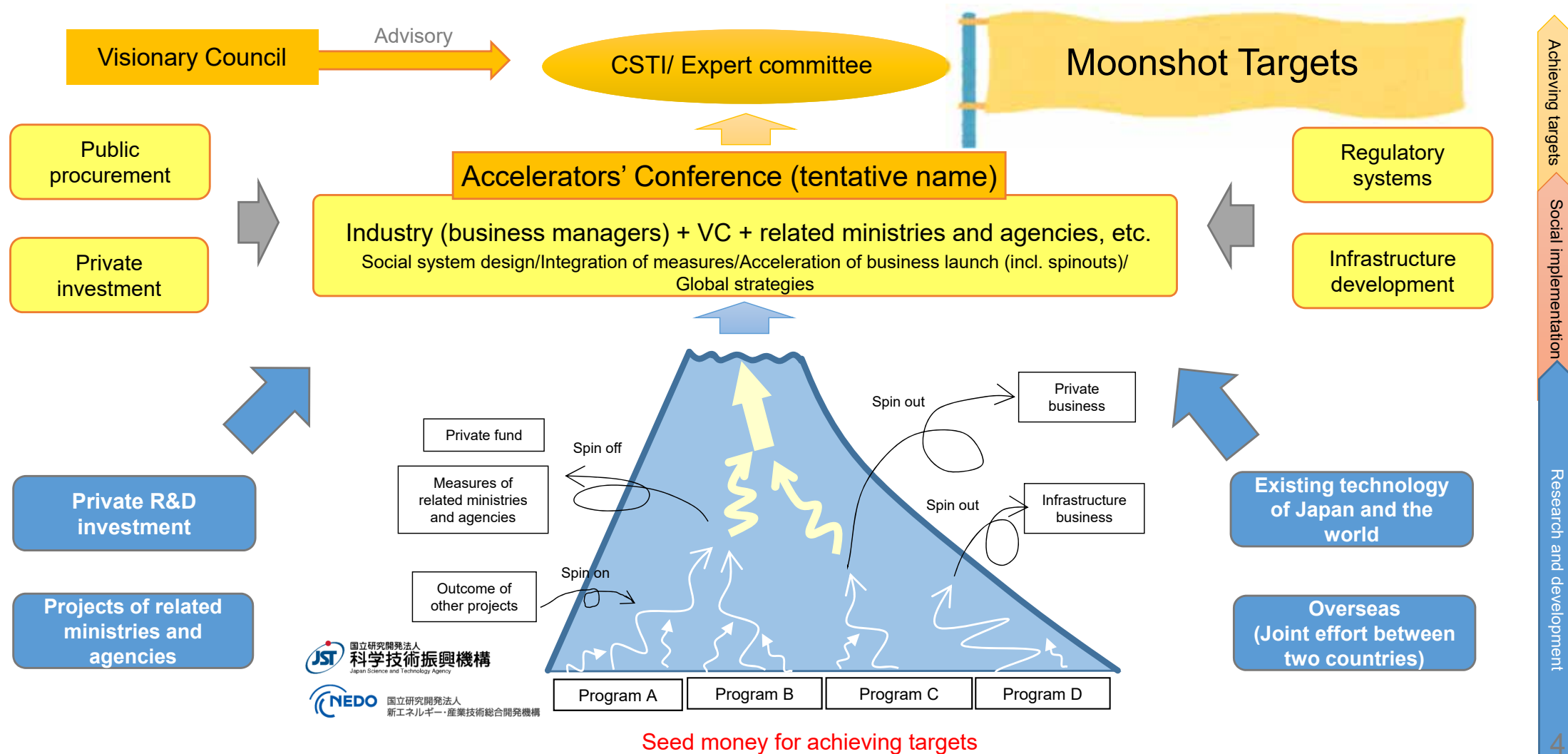
How to set targets

- Targets are broken down into three stages of **Challenges (Big Goals)**, **Missions (Moonshot Targets)**, and **Programs** in order to advance research through backcasting
- Optimizing examiners and management according to the stage

	Category (Priority area)	Challenges (Big Goals)	Missions (Moonshot Targets)	Programs
Case of EU	<ul style="list-style-type: none"> Resources and Environment 	<ul style="list-style-type: none"> No household garbage 	<ul style="list-style-type: none"> Completely recyclable packaging technology 	<div>Horizon Europe under planning (2021-2027, approx. 12 trillion yen)</div>
Case of US (DARPA)	<ul style="list-style-type: none"> Military affairs 	<ul style="list-style-type: none"> Maintain the technological predominance of U.S. Forces 	<ul style="list-style-type: none"> Accelerate soldiers' resilience 	<ul style="list-style-type: none"> Technology to provide users with near-natural control of prosthetic hands and arms via bi-directional peripheral nerve implants <div>DARPA FY2019 budget 400 billion yen</div>
Case of Japan (Moonshot)	<ul style="list-style-type: none"> Environment ⋮ 	<ul style="list-style-type: none"> Realize a carbon recycling society ⋮ 	<ul style="list-style-type: none"> Establish the recycle system of CO₂, and stem the rise of atmospheric concentration of carbon dioxide (artificial photosynthesis) ⋮ 	
	<ul style="list-style-type: none"> Backcasting from problems of the world/future "Strengths" of Japan's industry and technology 		<div>Inspiring, Imaginative, Credible</div>	<div>Ambitious research and development taking advantage of Japan's "strengths" in basic research</div>
		<div>Visionary Council</div>		
			<div>CSTI decision (schedule)</div>	
				<div>JST•NEDO</div>

How to proceed towards achieving targets

- Once targets are set, **the entire government will aim to achieve them by fully utilizing available measures and resources**, including the Moonshot Research and Development Program, related research and development, and **other related measures such as regulatory systems and public procurement**.
- **The government will accelerate ambitious research and development towards social implementation by attracting industry** with a seed fund of 100 billion yen (Establishment of Accelerators' Conference (tentative name))



- US, Europe and China are oriented towards research and development in which **innovation is promptly created from excellent research results that are obtained from expertise and ideas of basic research.**
- These countries promote advanced research into SDGs, security, quantum science, AI, bio, etc. especially by **backcasting from social issues.**



- Government R&D investment focused on **basic research**
- Increased investment in hightech and emerging fields of AI, quantum science, 5G, etc.
- Enormous investment by Department of Defense in **AI, semi-conductor devices, and quantum science**



- Enhanced cross-disciplinary missions aimed at **solving specific issues**
- Intends to **make radical/disruptive innovation** by newly establishing “European Innovation Council (EIC)”



- Focused on **AI/data, aging society, clean growth, mobility, and quantum science**



- Promotes a series of support from basic research to innovation, human resources development, and research center formation.
- Slated to invest around **one trillion yen in the National Laboratory for Quantum Information Science**



- Newly established “**Agency of Dynamic Innovation**” and “**Cybersecurity Agency**” and makes intensive investment in **AI, quantum science, and storage battery**



- Newly established a fund and “**Defense Innovation Agency**”

スライド 6

- A1 原文：「飛躍的イノベーション庁」
定訳（正式な英語表記）が確認できないため、暫定訳としています。ご確認ください。
A5, 2019/06/05
- A2 原文：「サイバーセキュリティ庁」
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A5, 2019/06/05