

Outline of the Moonshot R&D Program and Purpose of the Symposium

Dec. 17, 2019

KOBAYASHI Yoshimitsu

Executive Member of the Council for Science, Technology and Innovation(CSTI),
and Chair of the Visionary Council of the Moonshot R&D Program



What is CSTI?

- ◆ The Council for Science, Technology and Innovation (CSTI) is;
 - ✓ One of the policy councils on key policies of Cabinet Office.
 - ✓ Headquarters for the promotion of Science and Technology and Innovation.

Chairperson



ABE Shinzo
Prime Minister

Cabinet Members



TAKEMOTO Naokazu
Minister of State for Science
and Technology Policy

SUGA Yoshihide

Chief Cabinet Secretary

ASO Taro

Minister of Finance

TAKAICHI Sanae

Minister for Internal Affairs
and Communications

HAGIUDA Koichi

Minister of Education, Culture,
Sports, Science and Technology

KAJIYAMA Hiroshi

Minister of Economy,
Trade and Industry

Executive Members



UEYAMA Takahiro
Former Vice President,
National Graduate Institute for Policy Studies



KAJIWARA Yumiko
Corporate Executive Officer,
Fujitsu Ltd.



KOTANI Motoko
Director, Professor,
Graduate School of Science Tohoku Univ.



KOBAYASHI Yoshimitsu
Chairman, Member of the Board,
Mitsubishi Chemical Holdings Corp.



SHINOHARA Hiromichi
Chairman of the Board of NTT Corporation
Vice Chairs of Keidanren



HASHIMOTO Kazuhito
President, National Institute for
Materials Science



MATSUO Seiichi
President, Nagoya University



YAMAGIWA Junichi
President, Science Council of Japan
Head of an Affiliated Organization

- ◆ Create knowledge and develop sustainable innovation by promoting multiple R&D with different purpose.

Basic Research

Creates diverse and outstanding knowledge that is the source of innovation.

Promote internal motives such as personal curiosity and sense of mission.

Strategic Research

Solves important issues and promotes private investments for R&D



Promotes overall efforts from basic to the exit

PRISM

Aims at expanding public and private R&D investment

Moonshot Type Research

Leads the creation of disruptive innovation



SIP: Cross-ministerial Strategic Innovation Promotion Program

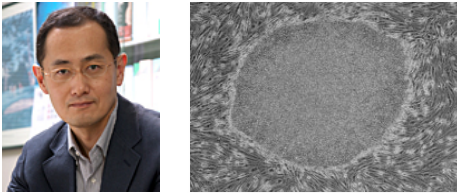
PRISM: Public/Private R&D Investment Strategic Expansion Program

Why we need “Moonshot”?

- ◆ STI in Japan and overseas
 - ✓ Numerous basic researches in Japan
 - ✓ Rapidly-Evolving Trends Overseas
- ◆ **R&D for disruptive innovation based on basic researches is required** to solve difficult societal issues

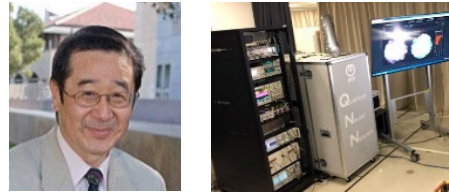
Basic Researches

iPS Cells



Dr. YAMANAKA Shinya

Quantum Neural Network



Dr. YAMAMOTO Yoshihisa

Disruptive Innovations

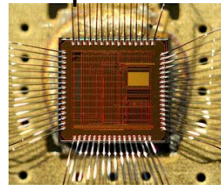
US

Understanding the Rules of Life



EU

Neuromorphic Computing



China

Quantum Experiments at Space Scale



Virtuous Cycle of Basic Research and Innovation

Societal Issues

Global warming, natural disasters, declining birthrate, aging population, etc.



Moonshot(MS) R&D Program

Challenging R&D aiming to solve Difficult Issues

- Ambitious goals set by CSTI
- Gathering wisdom from the world
- Achieve goals with allowing for failures



Basic Research

- ✓ Aims to create disruptive innovations.
- ✓ Develops radical solutions for difficult societal challenges

<Key Points of the Program>

1. Creation of innovations in a global environment!

- ✓ CSTI will decide **ambitious goals** for international societal **issues** and we will **collaborate with other countries** to achieve goals.

2. Achievement of a virtuous cycle to attract further investment in basic research!

- ✓ We will promote innovative R&D that **maximizes basic research capabilities without being afraid of making mistakes.**

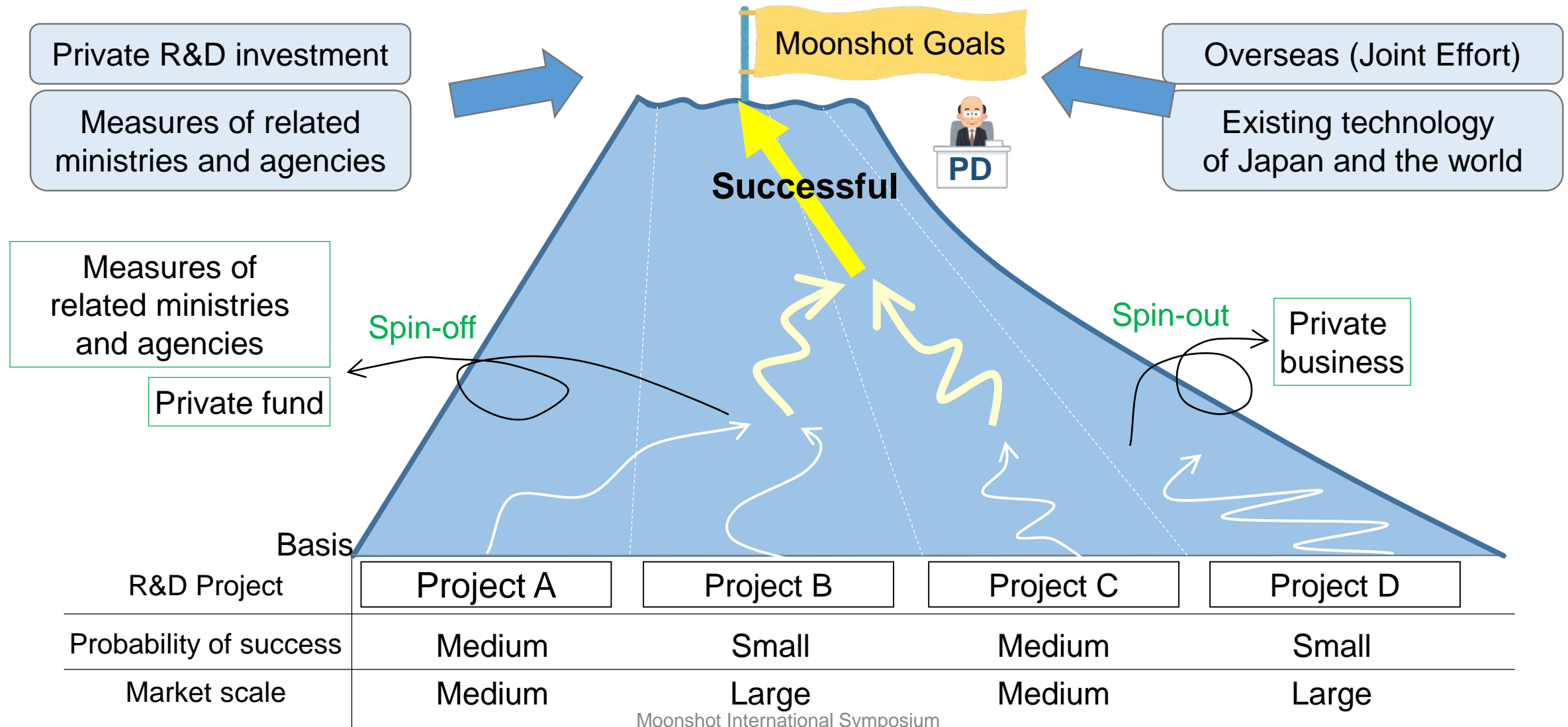
3. Establishment of speedy and progressive research management!

- ✓ We will develop **the most advanced research support system**, implements **reliable open and close strategies**, and so on.



Towards Achieving MS Goals

- ✓ Portfolio Management - Multiple projects will be running for one MS Goal
- ✓ Moonshot R&D program and other related R&D and measures will collaborate to achieve MS goals.



March - July, 2019

The Visionary Council

- ✓ Discussion in Collecting idea from various fields
- ✓ Proposal of future visions and mission goals

Expert interviews

- ✓ Preparation for international symposium



17-18 Dec, 2019
(Today)

International symposium



Early in 2020

CSTI general meeting

- ✓ Decision on MS Goals



Funding Agencies

- ✓ Call for proposals

◆ The Visionary Council was established to discuss ambitious MS goals.

- ✓ Consisted of 7 experts from various fields
- ✓ Received proposals from the general public (about 1,800)

Visionary Council Members

EDA Makiko	Chief Representative Officer, The World Economic Forum Japan
OCHIAI Yoichi	Media Artist, Assoc. Professor, University of Tsukuba
OZAKI Marissa	Artist (“Sputniko!”), Project Associate Professor, The University of Tokyo
KITANO Hiroaki	President and CEO, Sony Computer Science Laboratory
KOBAYASHI Yoshimitsu (Chair of the council)	Mitsubishi Chemical Holdings Corporation
NISHIGUCHI Naohiro	Chief Executive Officer, Japan Innovation Network
FUJII Taiyo	SF Writer

Discussion Points

1st Meeting (Mar. 29)

- Important points for deciding MS goals

2nd Meeting (Apr. 22)

- **Requests from the academia and industry**
- **The elements of MS goals**

3rd Meeting (May 23)

- **Proposals from general public(about 1,800) and relevant ministries**

4th Meeting (Jul. 31)

- **The future vision and MS goals**

- ✓ Identifies future visions based on societal issues facing the world.
- ✓ Translates future visions into missions as MS goals.

Elements of MS Goals

Inspiring

- ✓ Clarity of MS objectives and its necessity
- ✓ Strong impact on our future society and the industries
- ✓ Intellects brought together from all over the world

Imaginative

- ✓ Innovative and radical change of our future societal system
- ✓ Clear image of our future direction

Credible

- ✓ Not only ambitious but also scientifically feasible
- ✓ Validity of progress towards MS goals
- ✓ Consistency with relevant strategies and policies

Note: Human centric is the basic concept of MS goals

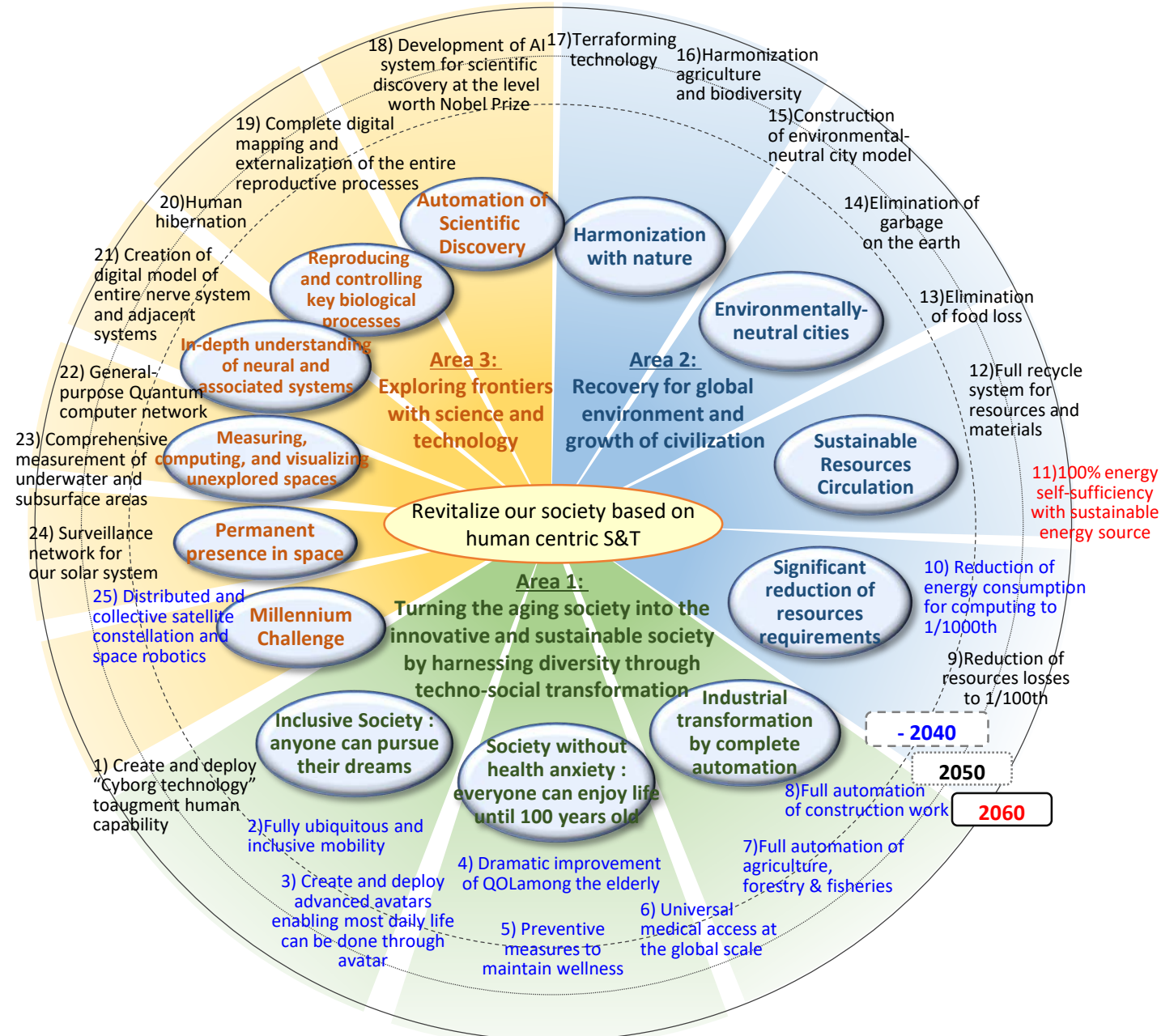
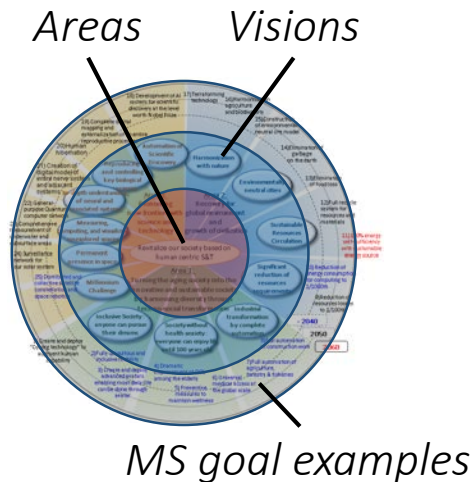
Areas, Future Visions and MS goal Examples

The Visionary Council recommended

3 Target Areas of

- aging society,
 - global environment, and
 - exploring frontiers,
- and 13 Visions.

The council also proposed 25 examples of Moonshot Goals.



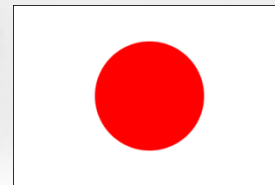
Purpose

- ◆ Convene the knowledge and ideas of top-class researchers, entrepreneurs and government officials from all over the world.
 - ✓ for setting out ambitious and scientifically feasible goals.
 - ✓ for leading the creation of disruptive innovations.

Day 1: Keynotes and Plenary Sessions

Discussions and collaborations about future visions and technologies.

- ◆ A.M. : Keynotes and Special Sessions
 - ✓ Expectation from overseas government and research institutes: US, EU
 - ✓ Keynotes: Mr. SON Masayoshi
 - ✓ Special Session: Dr. Eric Astro Teller, Dr. SHIRAISHI Takashi, Dr. KYUMA Kazuo
- ◆ P.M. : Plenary Sessions
 - ✓ Innovative Management of Moonshot Research
 - ✓ Areas and Visions for Setting Moonshot Goals



Day 2: Working Group Discussions

Proposal and discussion about specific MS goal candidates and scenarios for achieving them.

WG1: Expanding human potential for a society where everyone can pursue their dreams

WG4: Sustainable resources circulation for global environment

WG2: Realizing a human life that “continues to improve both physically and psychologically” through complete understanding of biological functions

WG5: Innovation for future agriculture – satisfying both food production and environmental conservation

WG3: Expanding frontiers through co-evolution of AI and robots

WG6: Creating innovative non-traditional sciences and technologies based on quantum and related phenomena

WG7: Cross sectional issue

We choose to go to the Moon.

John F. Kennedy

Moonshot for Human Well-being