Waste Management Symposia 2017
Session 34

Introduction of Technical Challenge on Decommissioning of Fukushima Daiichi

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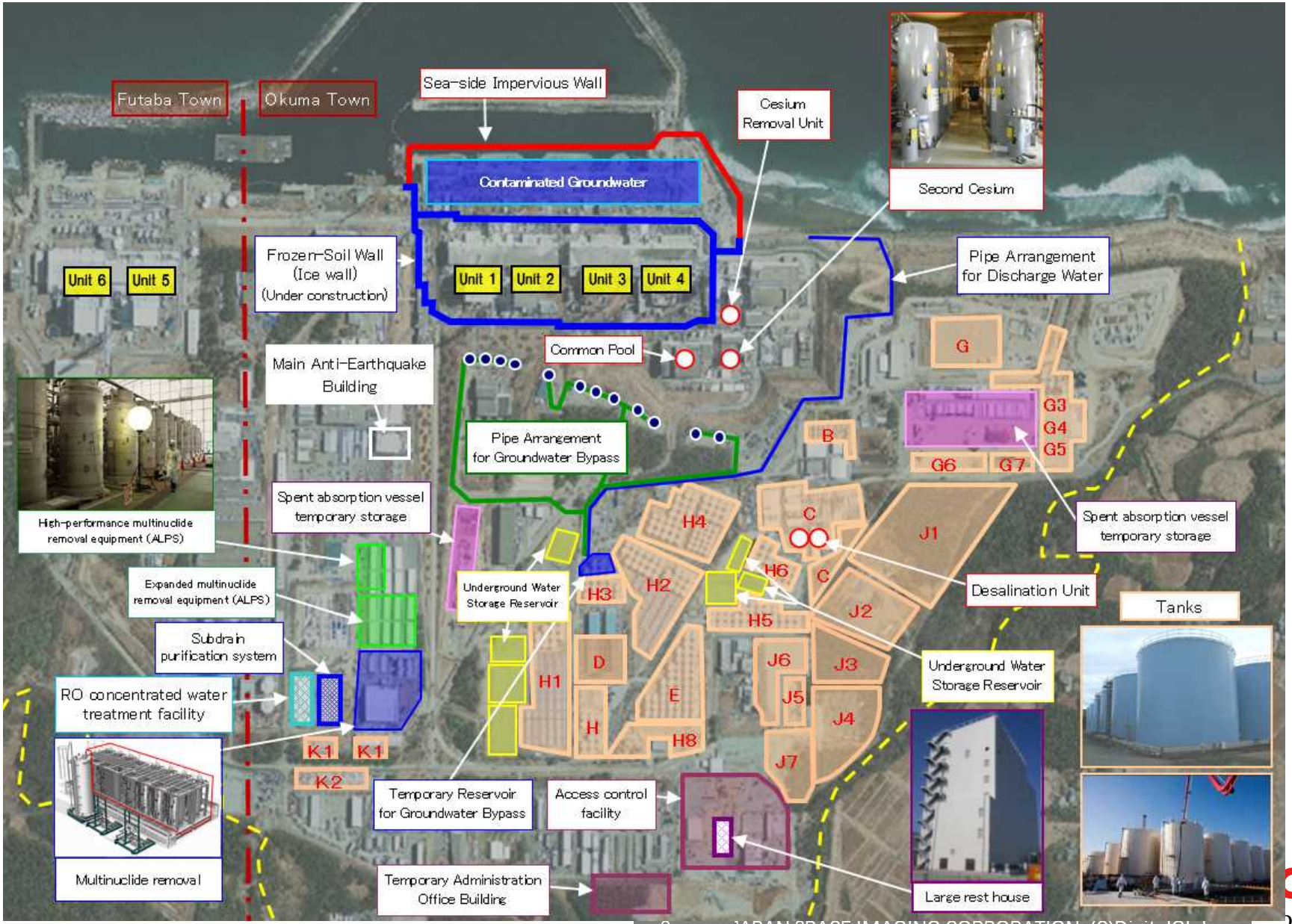
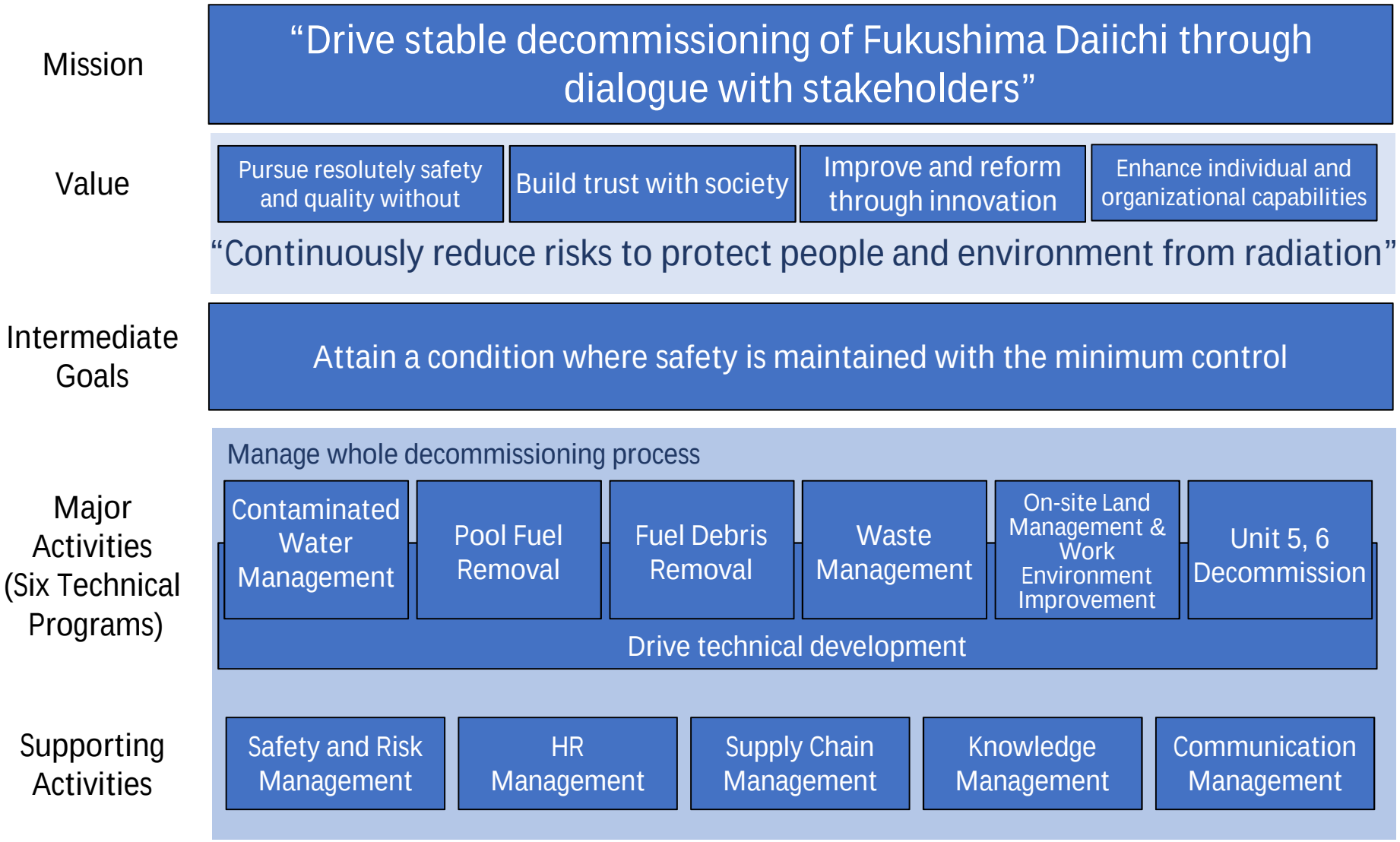
1. Current Overview of Fukushima Daiichi

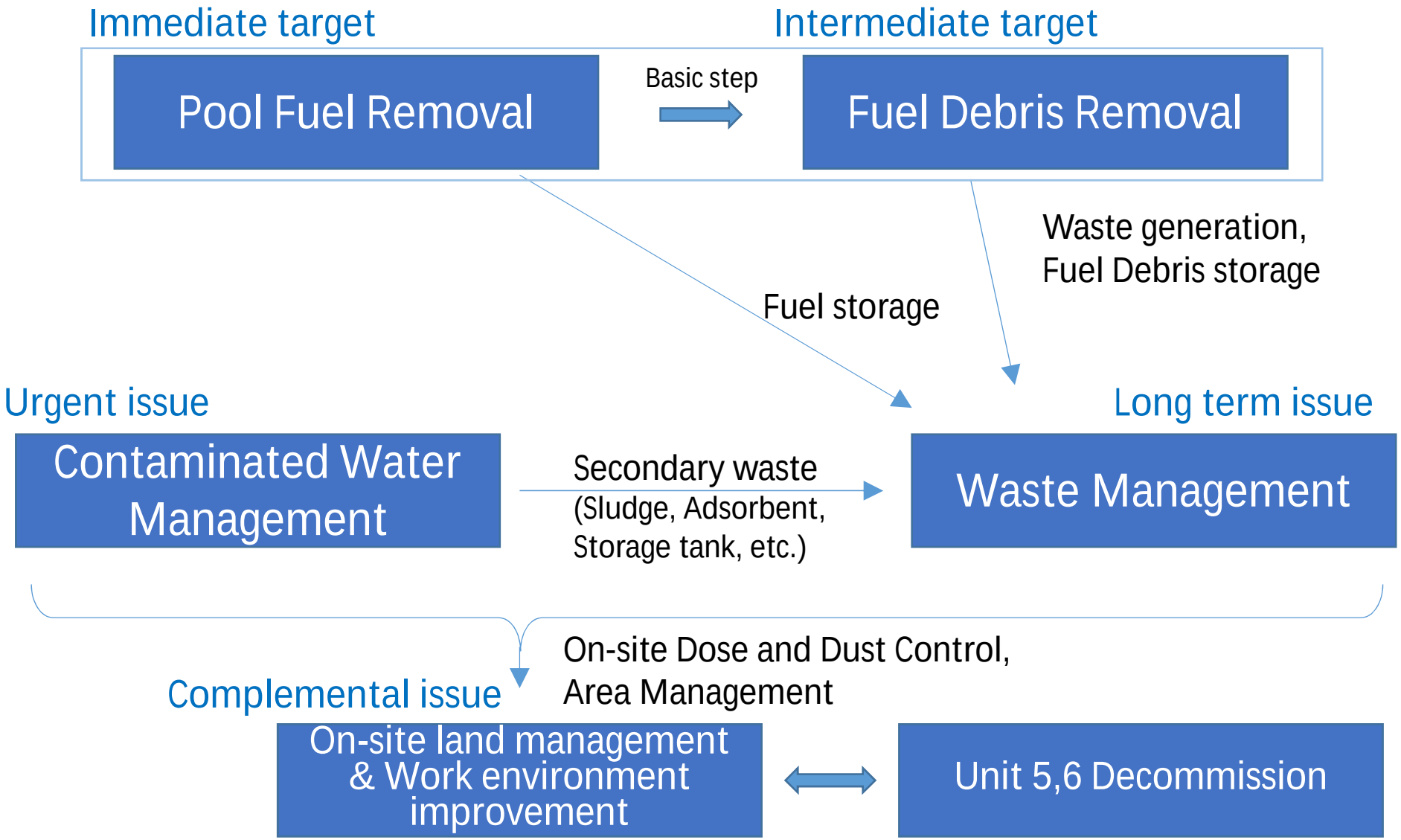


Source: JAPAN SPACE IMAGING CORPORATION, (C)DigitalGlobe

2. Basic Strategy of Fukushima Daiichi D&D

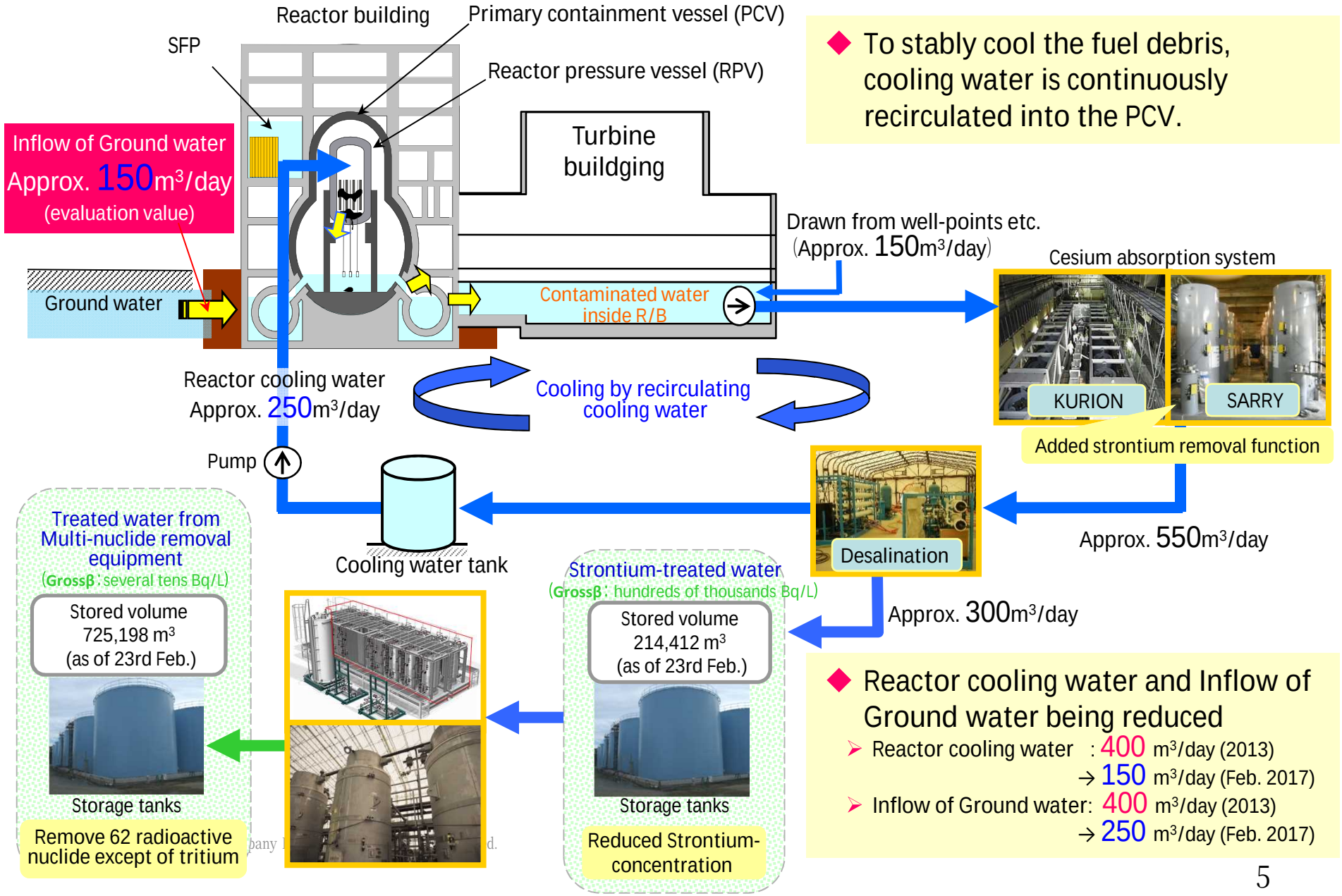


3. Six Technical Programs



3-1. Contaminated Water Management

Urgent issue



- To stably cool the fuel debris, cooling water is continuously recirculated into the PCV.

- Reactor cooling water and Inflow of Ground water being reduced
  - Reactor cooling water : 400 m³/day (2013) → 150 m³/day (Feb. 2017)
  - Inflow of Ground water: 400 m³/day (2013) → 250 m³/day (Feb. 2017)

3-1. Contaminated Water Management

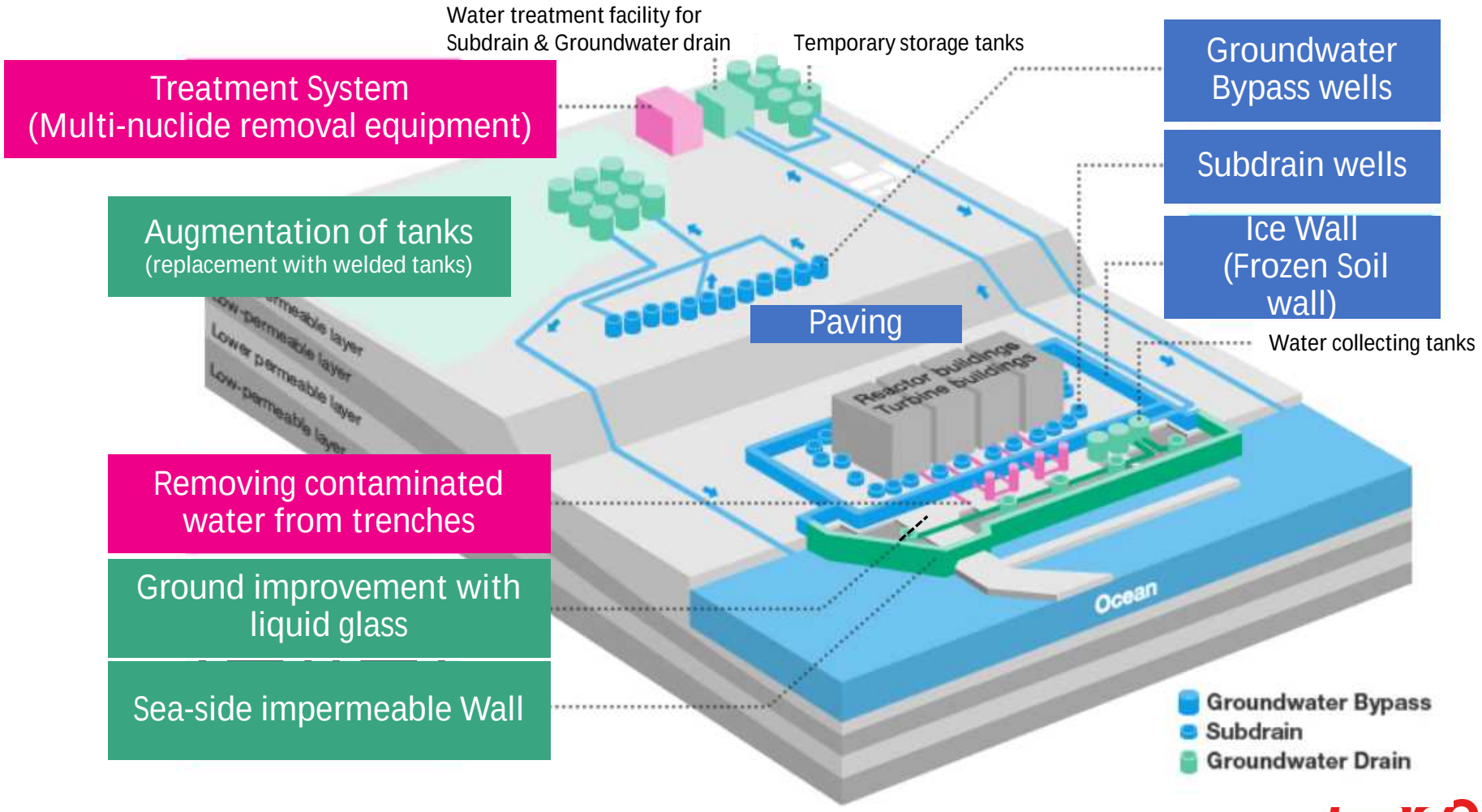
Urgent issue

Three Principles

1.Removing source of contamination

2.Isolating fresh water from contaminated areas

3.Preventing leakage of contaminated water



3-2. Pool Fuel Removal

Immediate target

Unit 4

- Pool Fuel Removal was completed on December 22, 2014

September, 2011

July, 2012

November, 2013

Completion of building steel framework for Removal

Process of removing fuels at SFP

3-2. Pool Fuel Removal

Immediate target

Unit 3

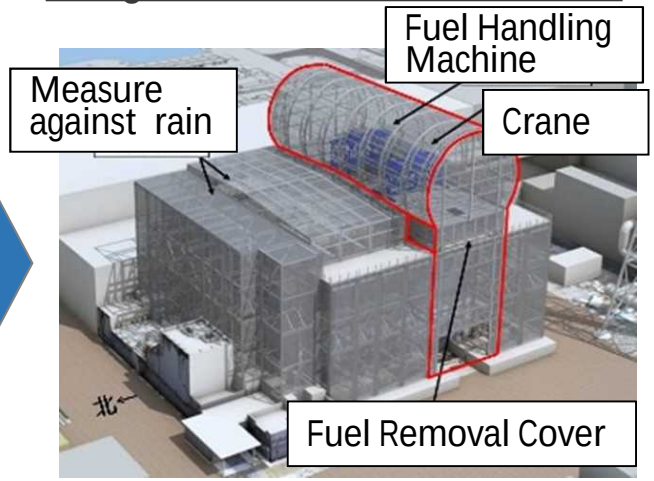
- Removal of rubbles and installation of shielding on Refueling Floor were completed
- Installation of Fuel Removal Cover and Fuel Handling Machine are in progress

Photo over the Refueling Floor

March, 2013

December, 2016

Image of Fuel Removal Cover

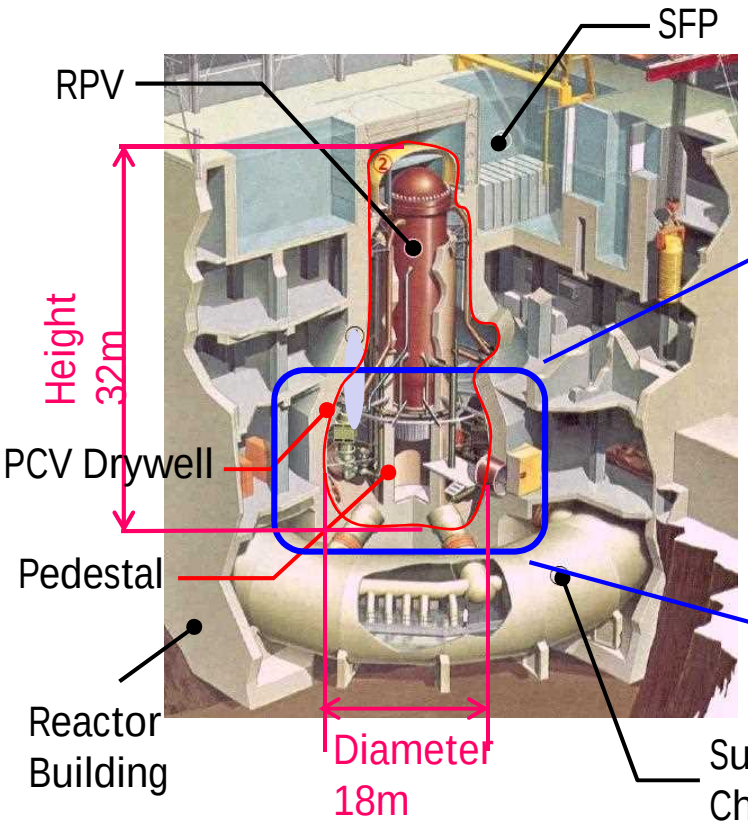


3-3. Fuel Debris Removal

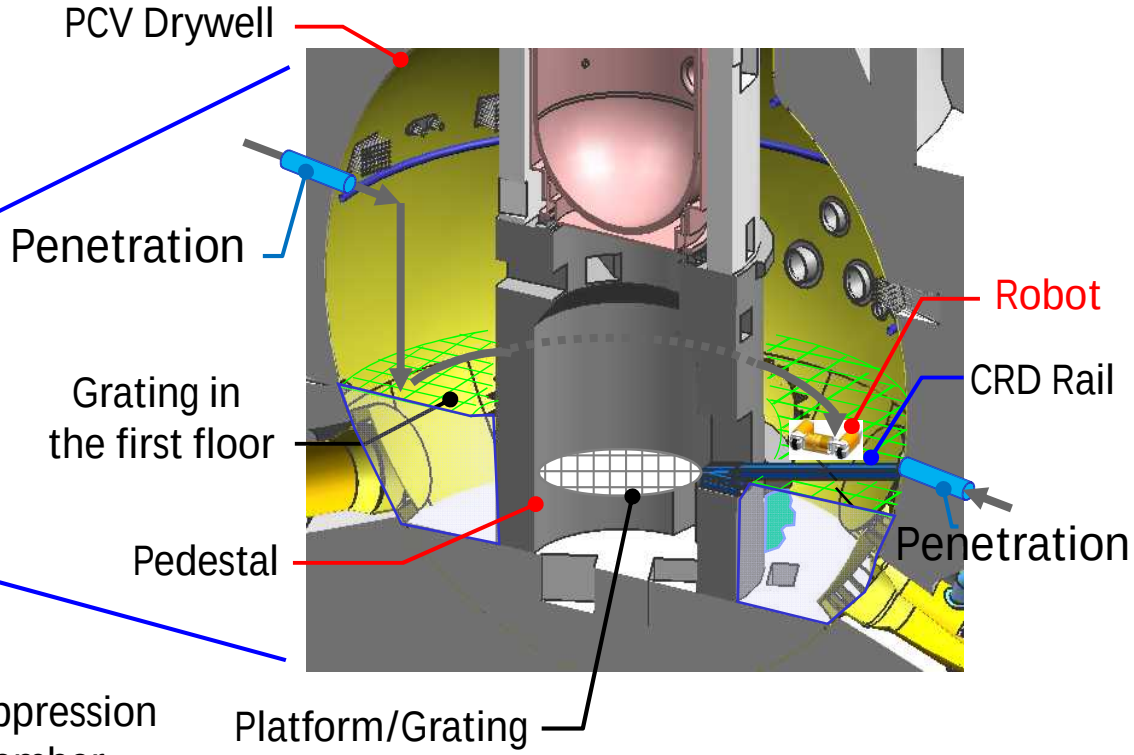
Intermediate target

Investigation inside the Primary Containment Vessel (PCV)

Cross Sectional view of Reactor Building



Close up view

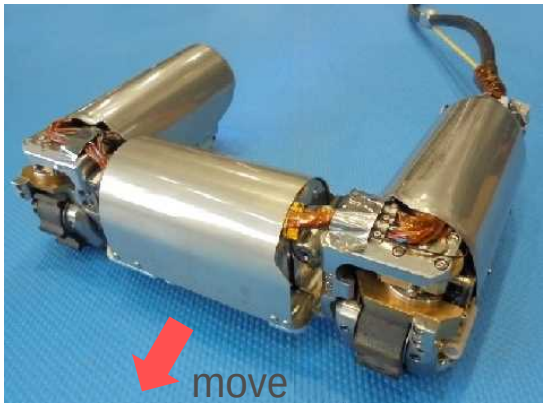


3-3. Fuel Debris Removal

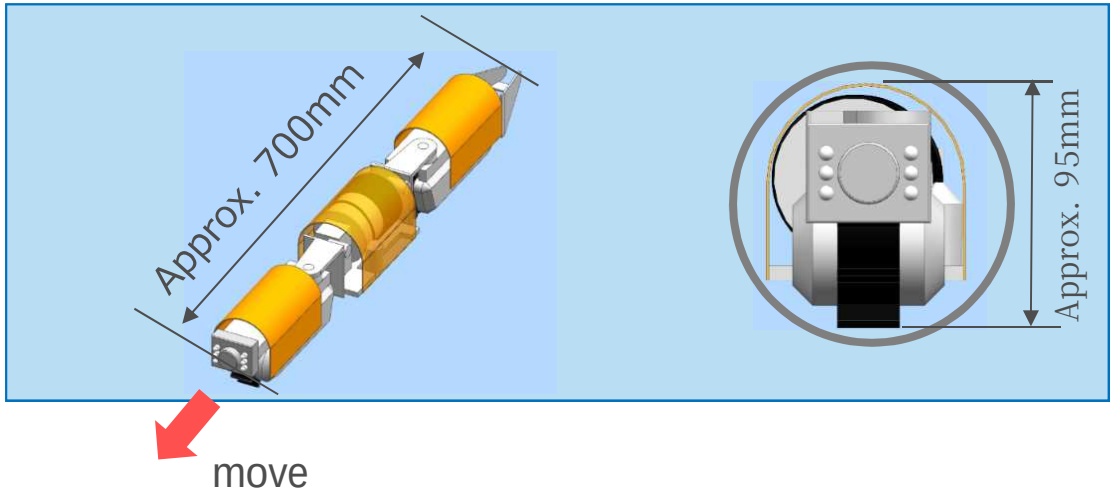
Intermediate target

Investigation inside the Primary Containment Vessel (PCV)

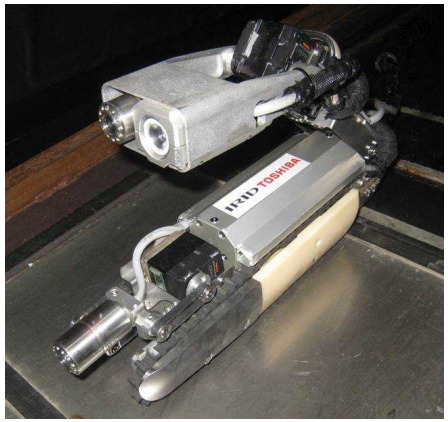
Unit 1 Robot

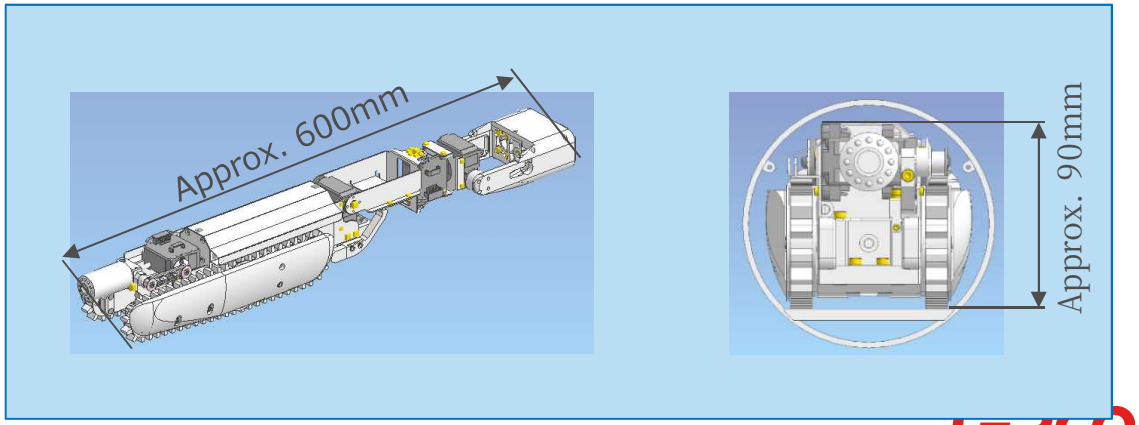


Transformation for penetration



Unit 2 Robot

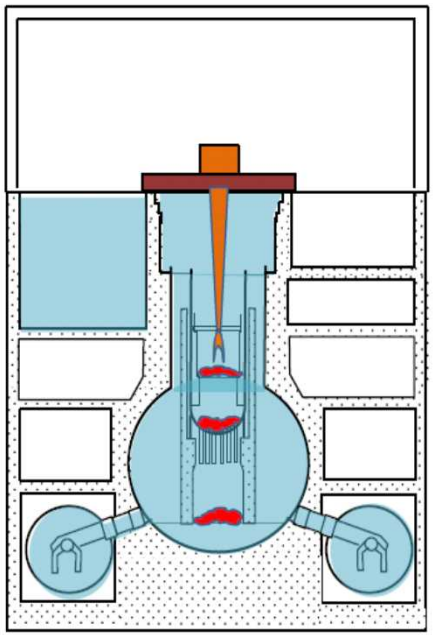
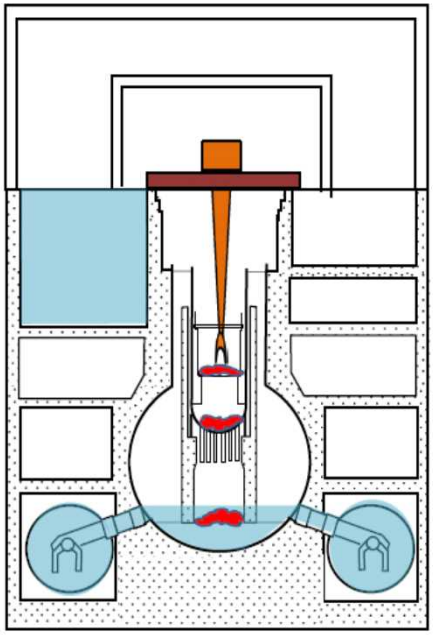
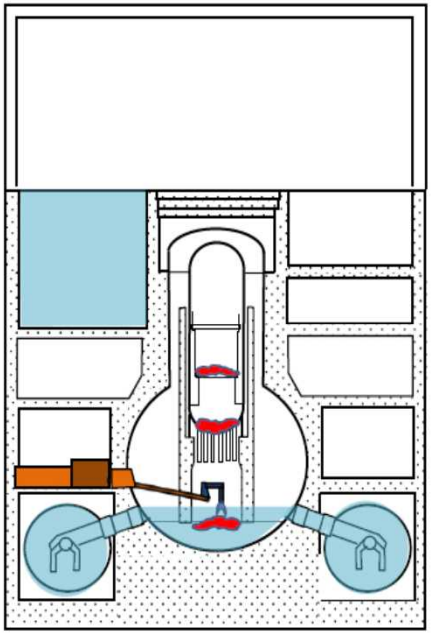




3-3. Fuel Debris Removal

Intermediate target

Concept of Fuel Debris Removal Methods

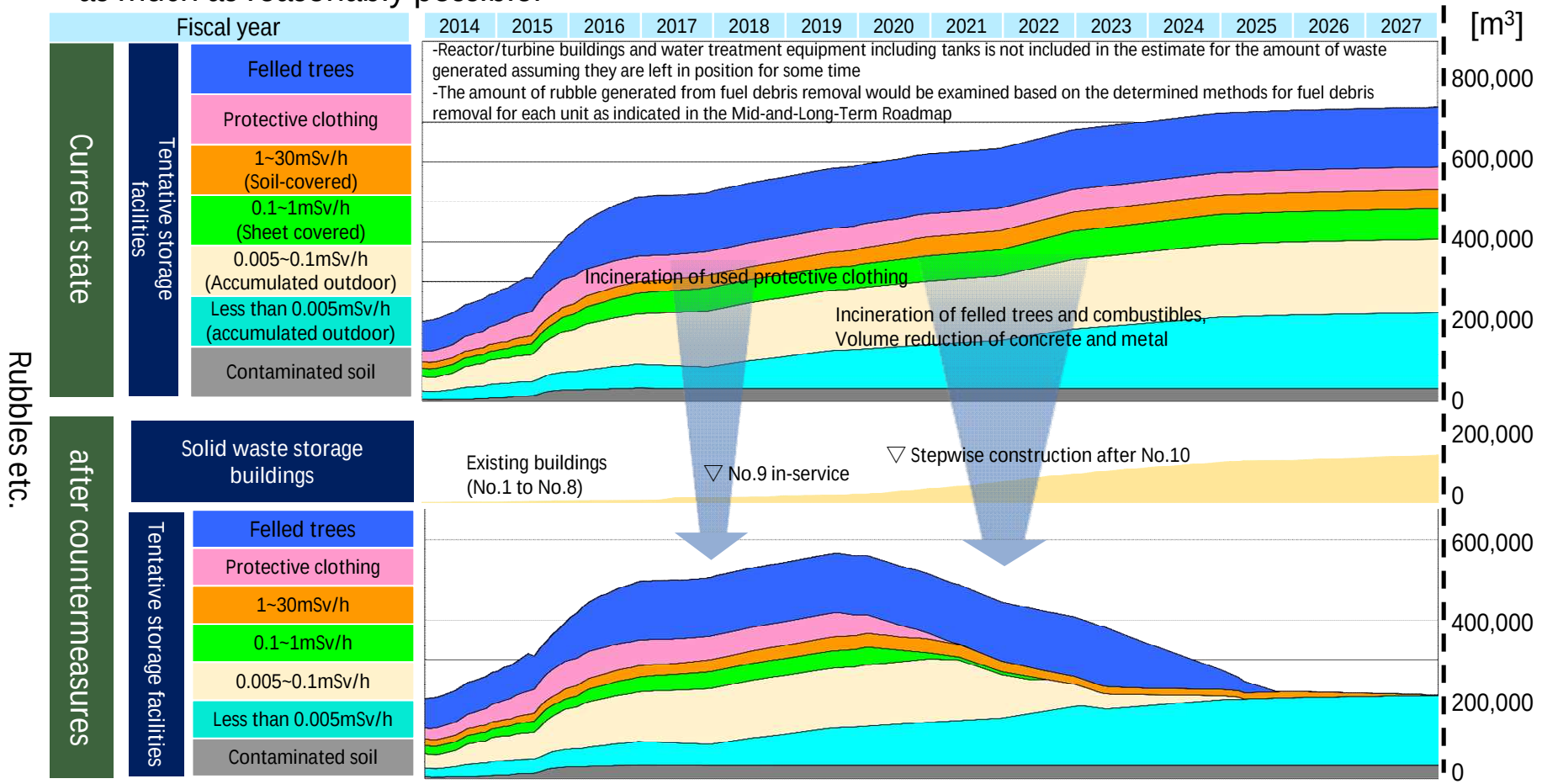
			
Fuel Debris	Submersion	Partial submersion	Partial submersion
Access	Top	Top	Side
Challenges	Water tightness, Seismic integrity	Radioactive dust dispersion, Radiation shielding	

3-4. Waste Management

Long term issue

Forecast of waste generation next 10 years

- Without additional volume reduction, solid waste storage volume will reach about 750,000m^3 in 2028.
- In order to store solid waste safely in storage buildings, the volume of rubbles need to be reduced as much as reasonably possible.



3-4. Waste Management

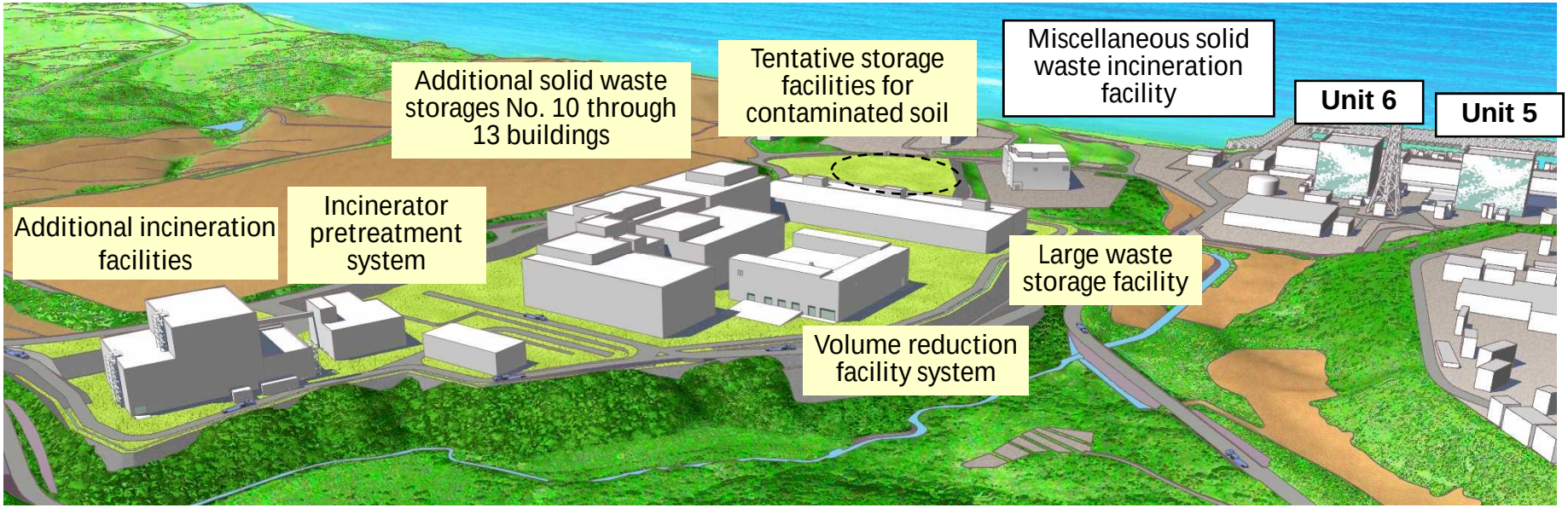
Long term issue

Construction of Solid waste storage buildings No.9

February, 2017

Image of the No.9

Image of the establishment of systems and facilities



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3-5. On-site Land Management & Work Environment Improvement

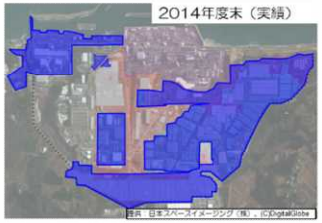
Complemental issue

Decreasing radiation dose

: Area confirmed below 5μSv/h

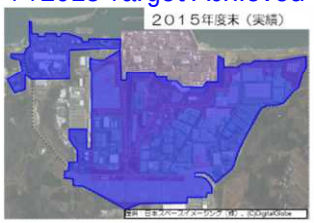
FY2013 40 %

FY2014 77 %



FY2015 100 %

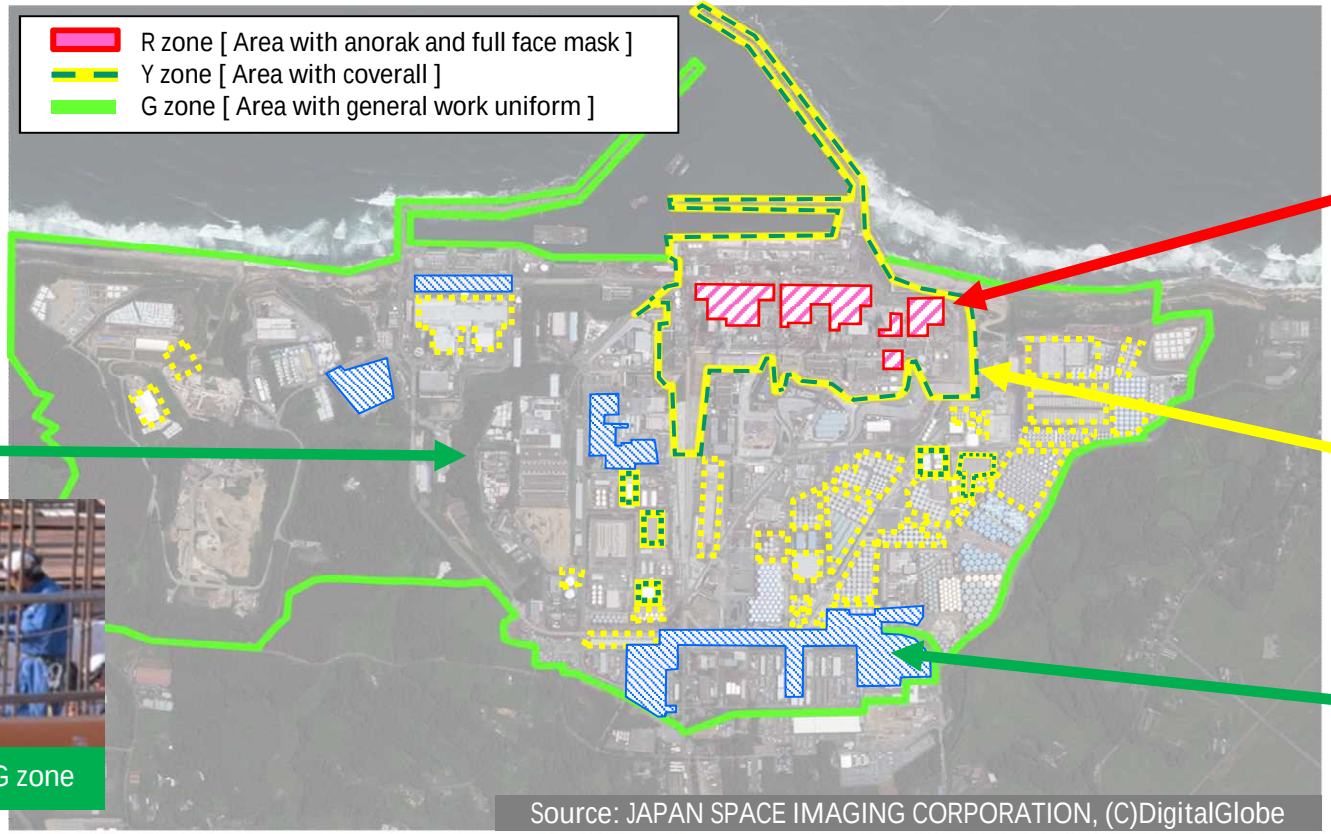
FY2015 Target Achieved



Zoning for protective equipment

Green zone equipment

Workers in the G zone



Full-face Respirator

Half-face Respirator

General Uniform

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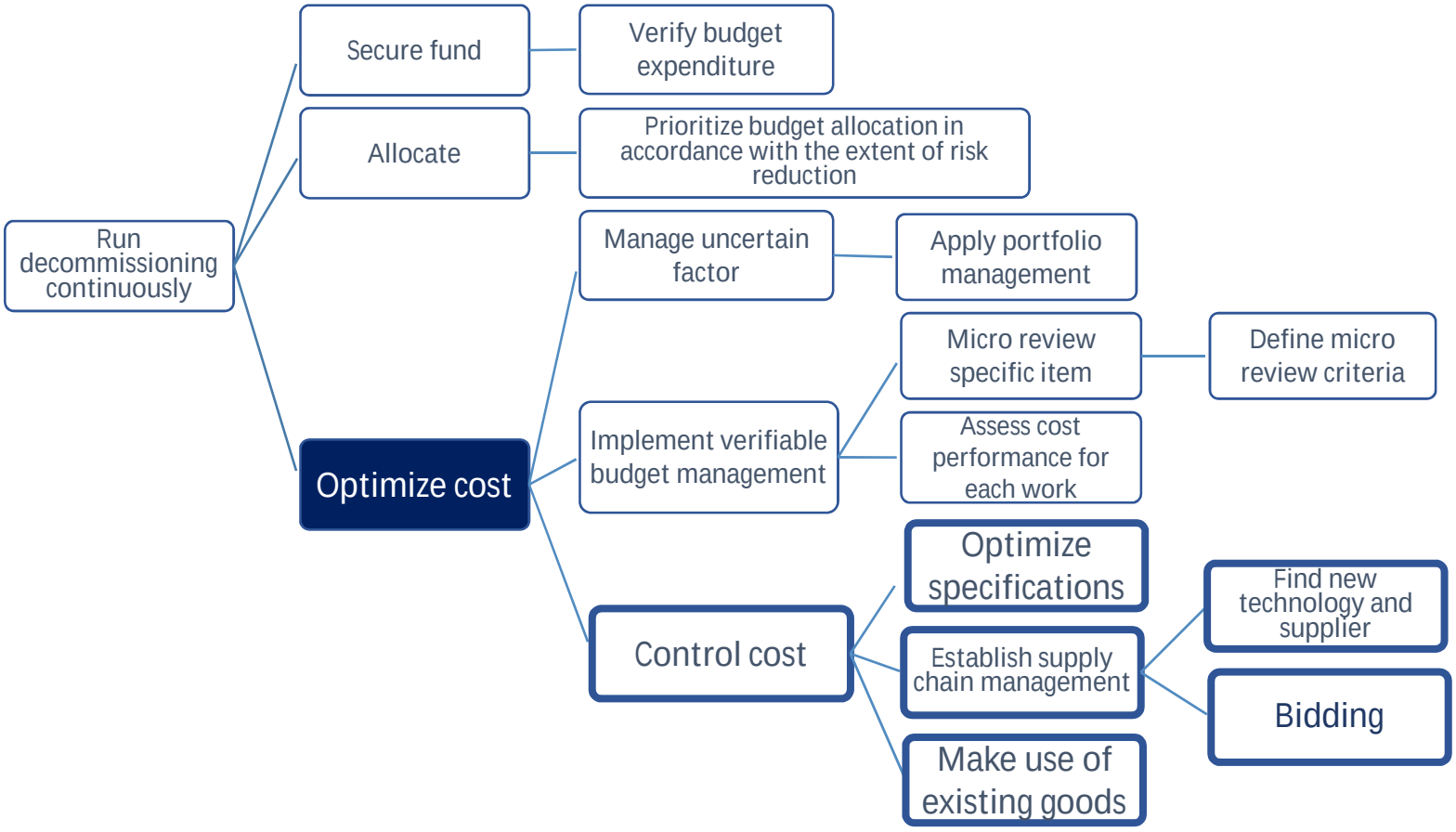
4. Supply Chain Management

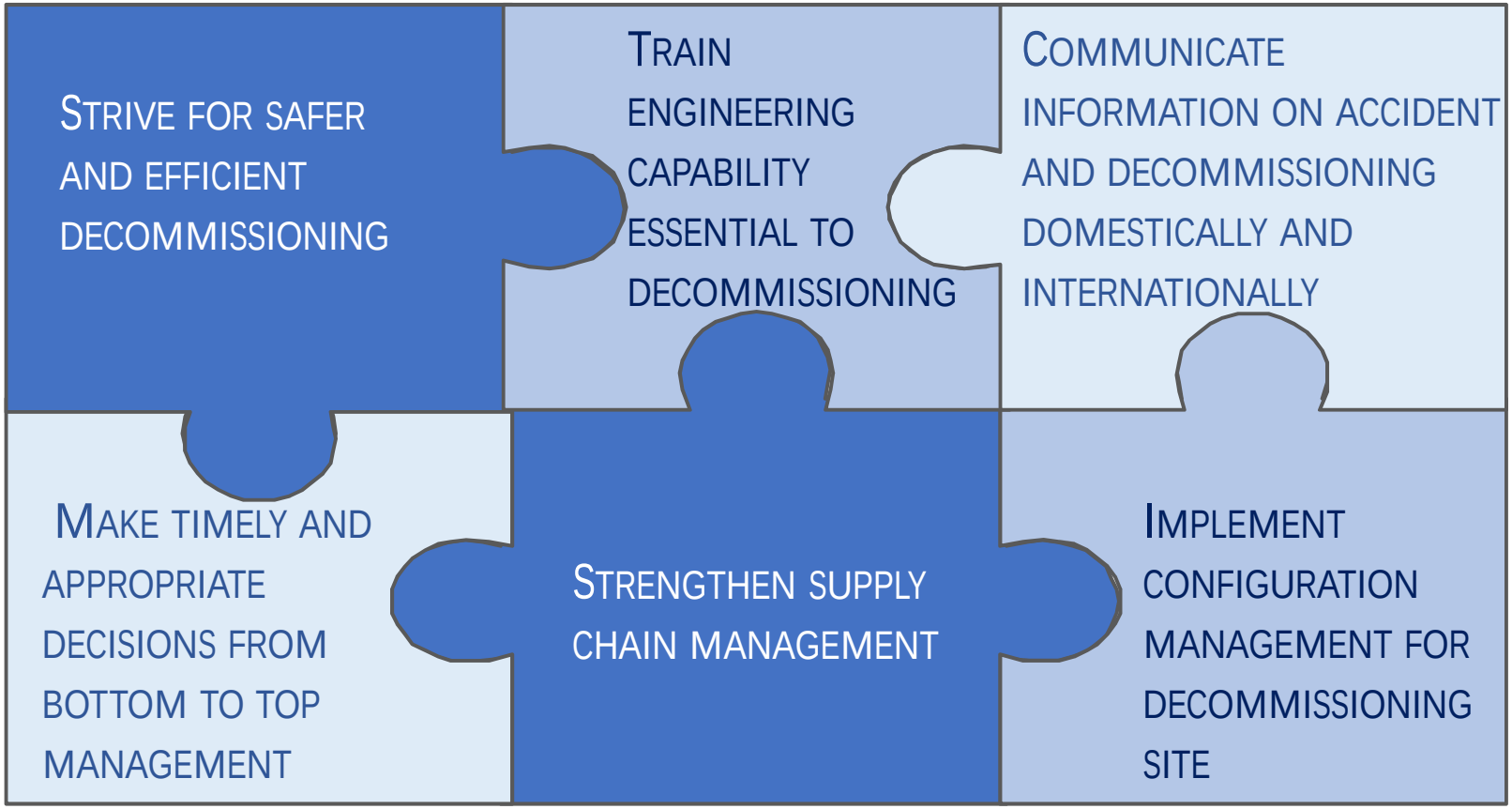
Pursuit of cost effectiveness is essential to accomplish long-term D&D activity.

Fukushima Daiichi cost management overview



5. Knowledge Management

6 factors with expected benefits in decommissioning through knowledge management



6. Open Innovation Platform “TEPCO CUUSOO”

TEPCO
CUUSOO

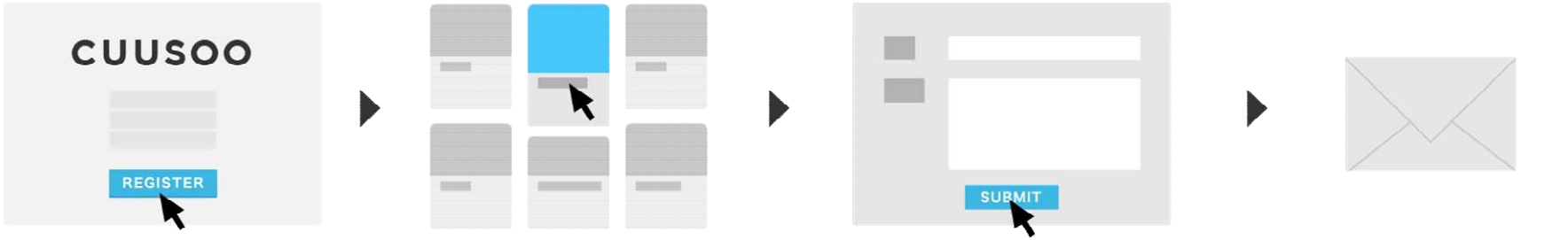
An open innovation platform for energy related technologies and ideas

In a pursuit to decommission Fukushima Daiichi, TEPCO group is seeking knowledge and expertise of research institutions and firms from across the world.

Example of keywords
- Contaminated water management
- Robotics
- Waste management

https://tepco.cuusoo.com

Proposal submission is done in four simple steps



Thank you for your attention.

For more information
http://www.tepco.co.jp/en/decommision/index-e.html