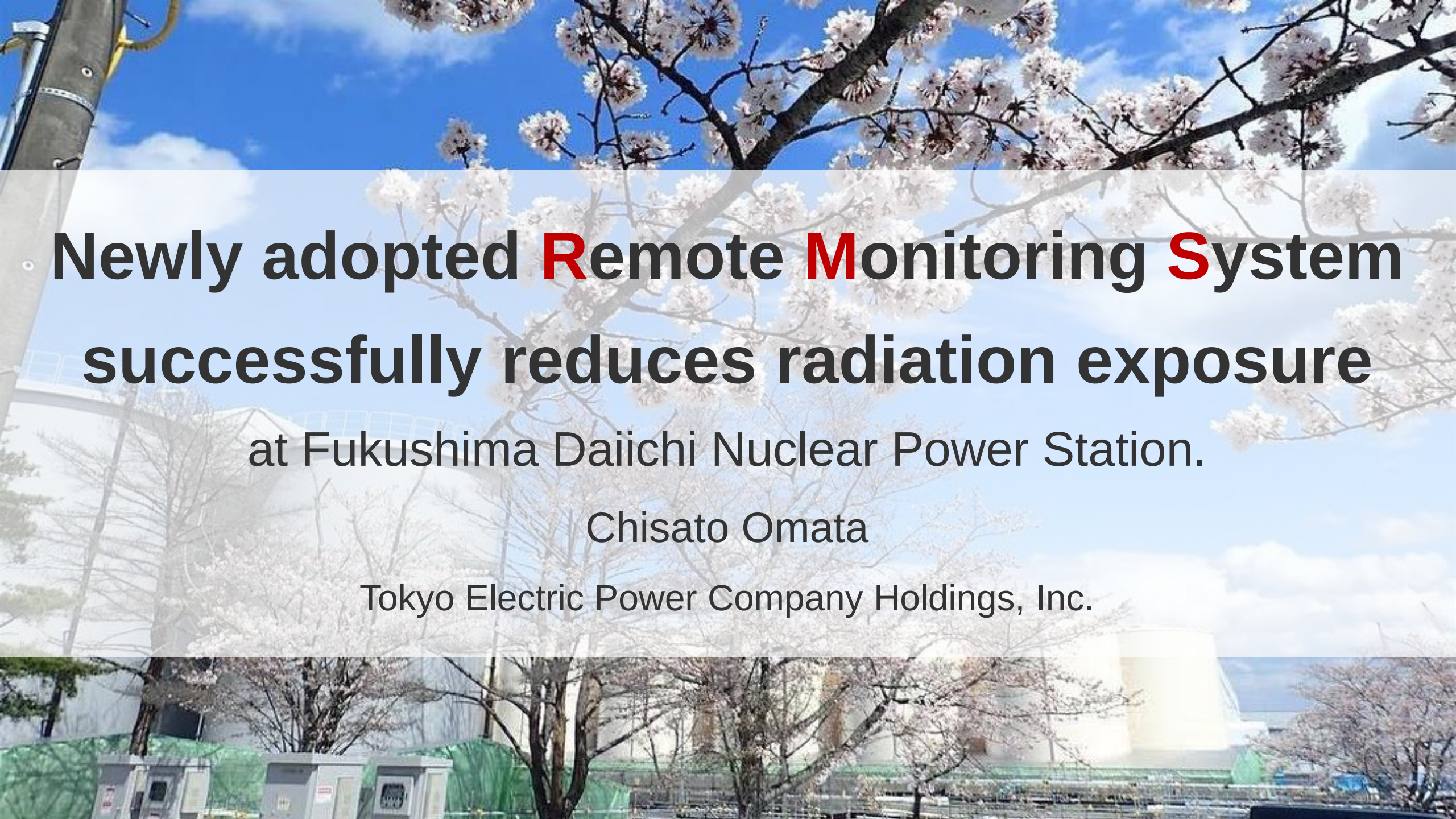




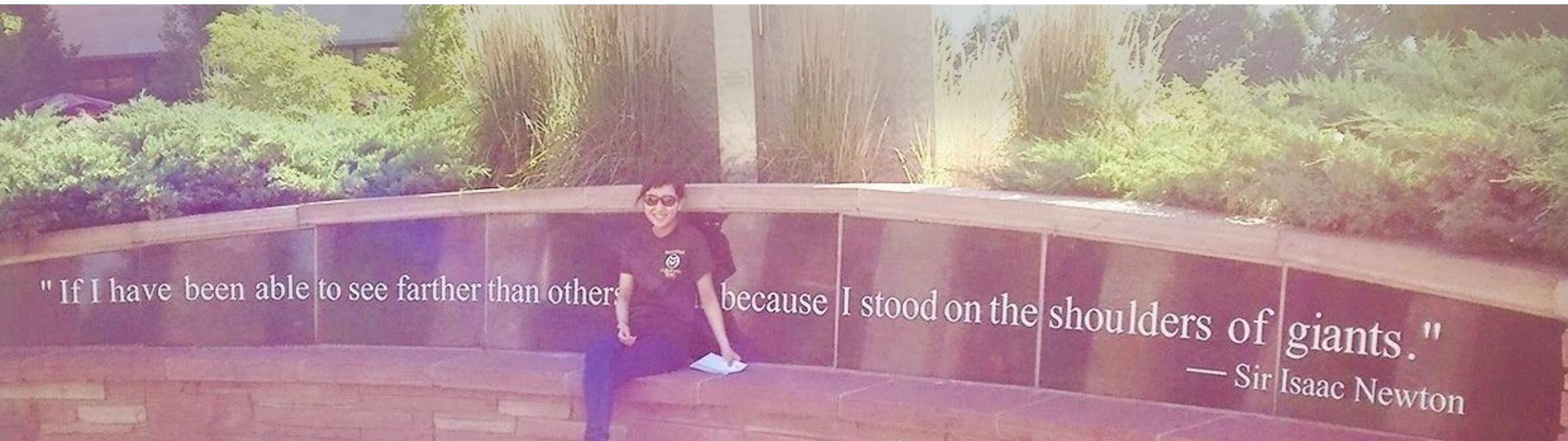
Newly adopted **R**emote **M**onitoring **S**ystem
successfully reduces radiation exposure
at Fukushima Daiichi Nuclear Power Station.

Chisato Omata

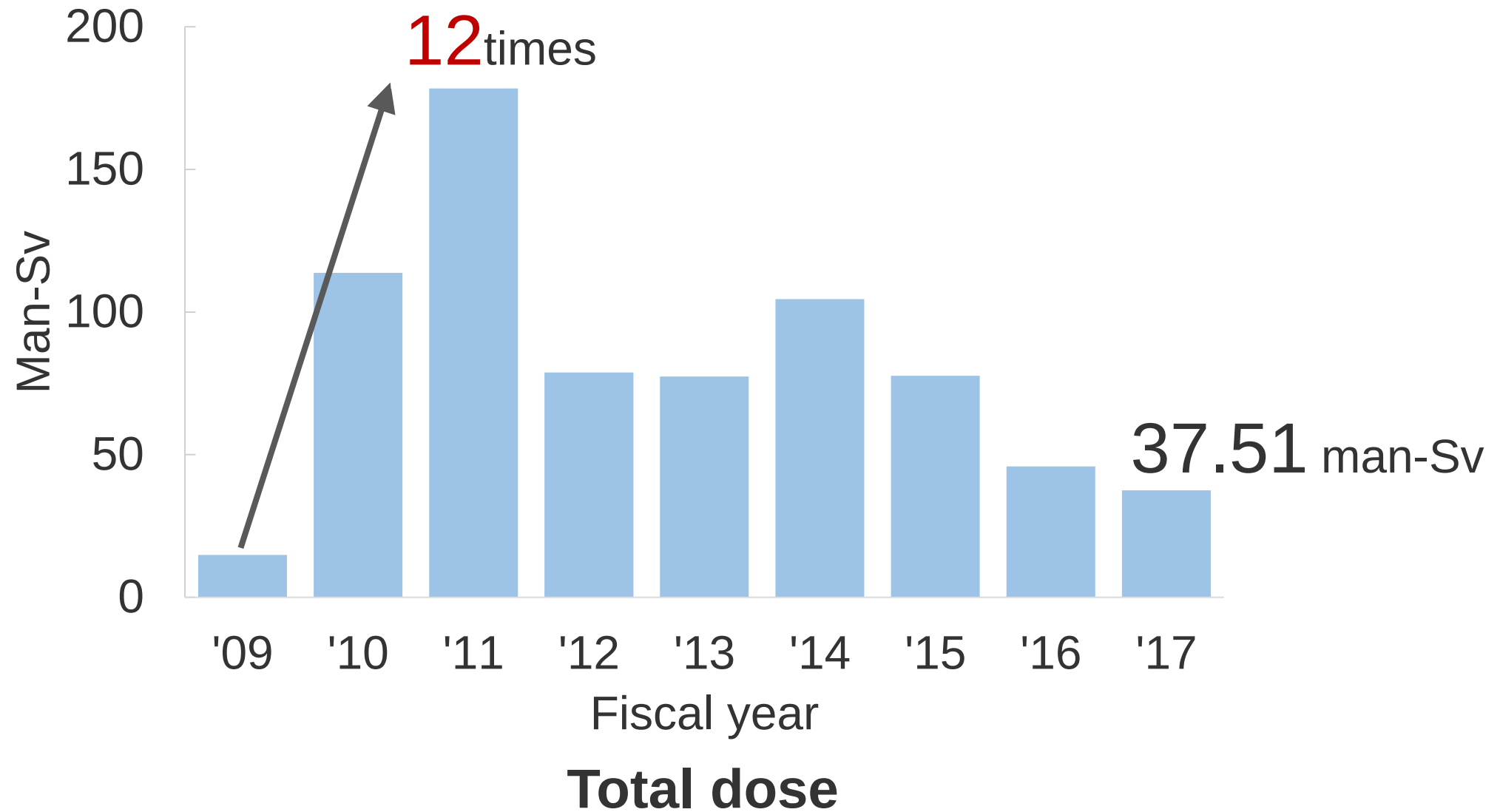
Tokyo Electric Power Company Holdings, Inc.

My background

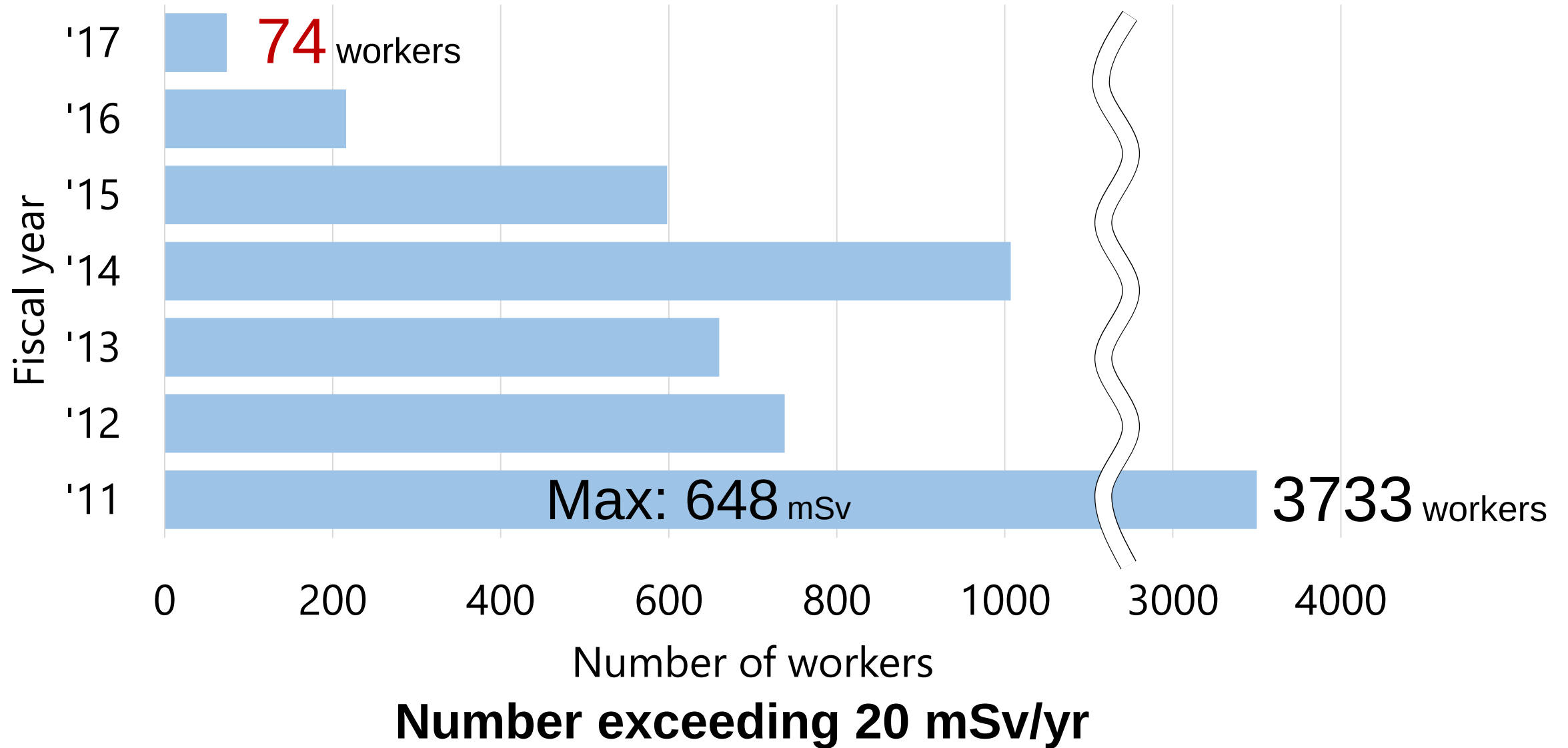
- Chisato Omata (23)
- 2013.4~2017.3: Fukushima Univ. & Colorado state Univ.
Interested in how radiation effects to my body.
- 2017.4 ~ now: Radiation management group on 1F



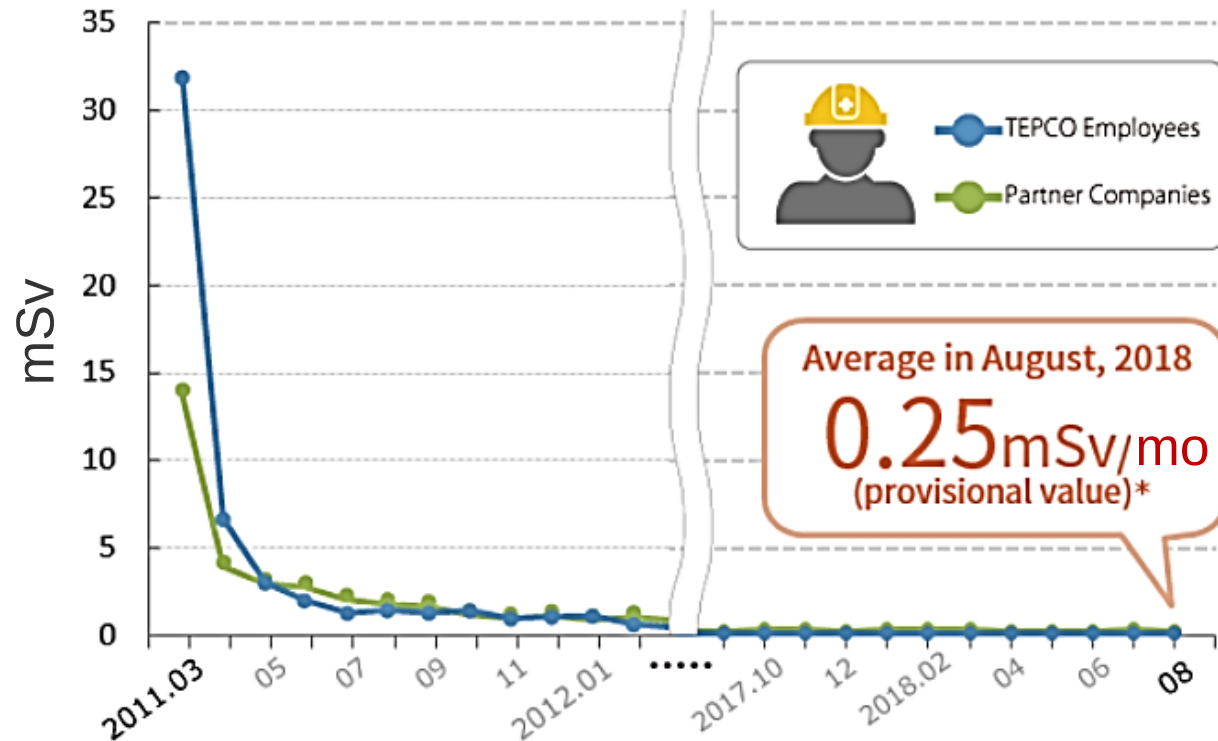
Status of Radiation Exposure at 1F



Individual dose



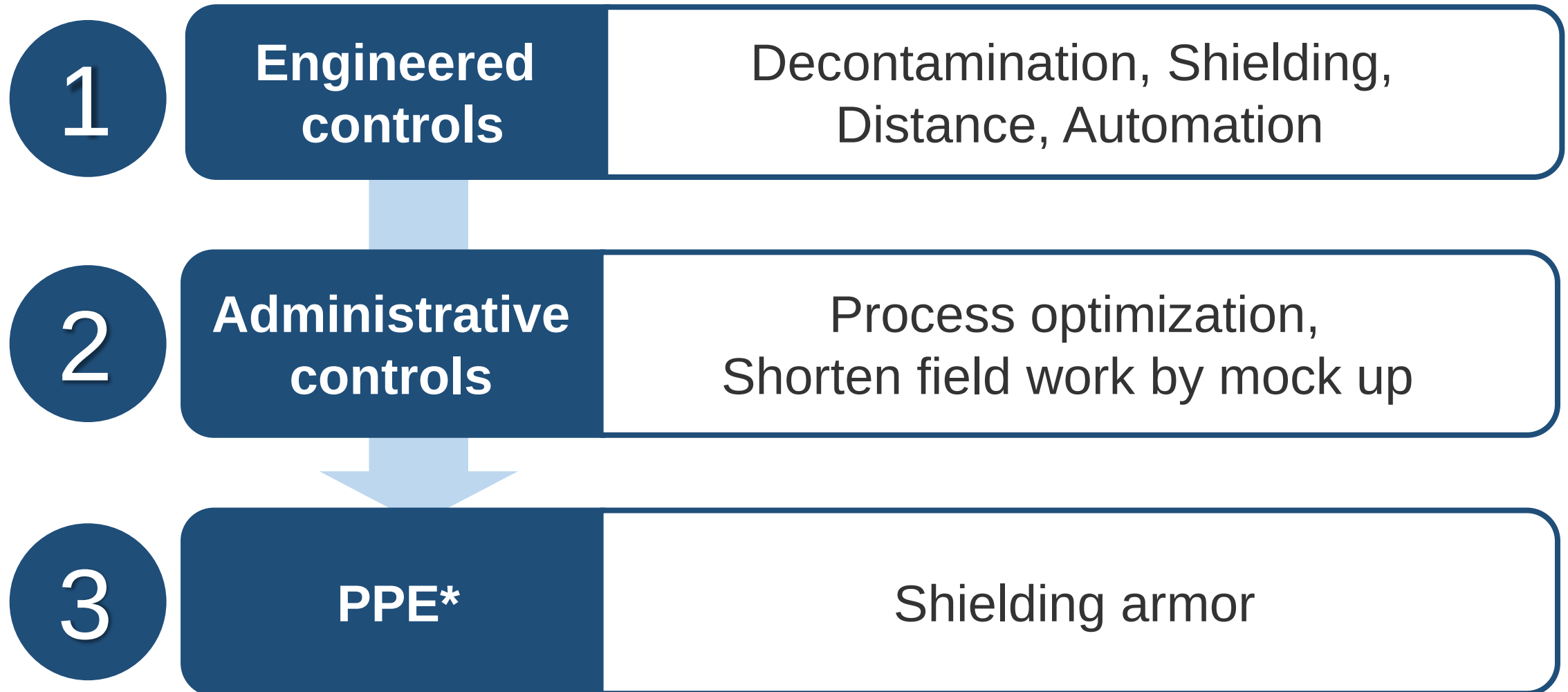
Our Mission



Monthly Dose to Individual Workers

Necessary to develop and implement **effective** radiation reduction systems.

The hierarchy of control measures



*Personal Protective Equipment

Decontamination status of Unit-3

Install shield remotely

Unit-3 R/B 1st Floor



20-100 mSv/h

↓
6-25 mSv/h

Still high

Unit-3 R/B 5th Floor



500 mSv/h or more

↓
1 mSv/h or less



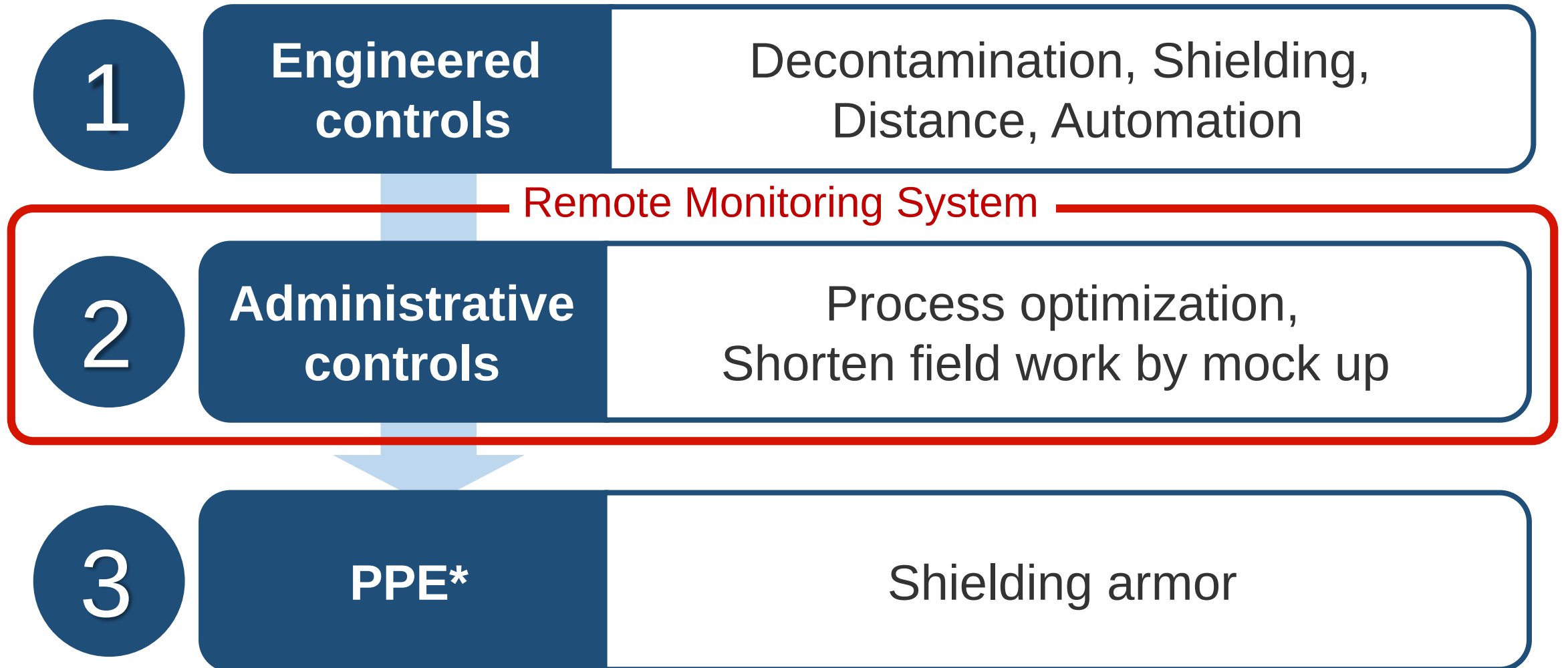
Why did we introduced RMS?

Occasionally need humans for precision work due to limited accessibility for remote robots.



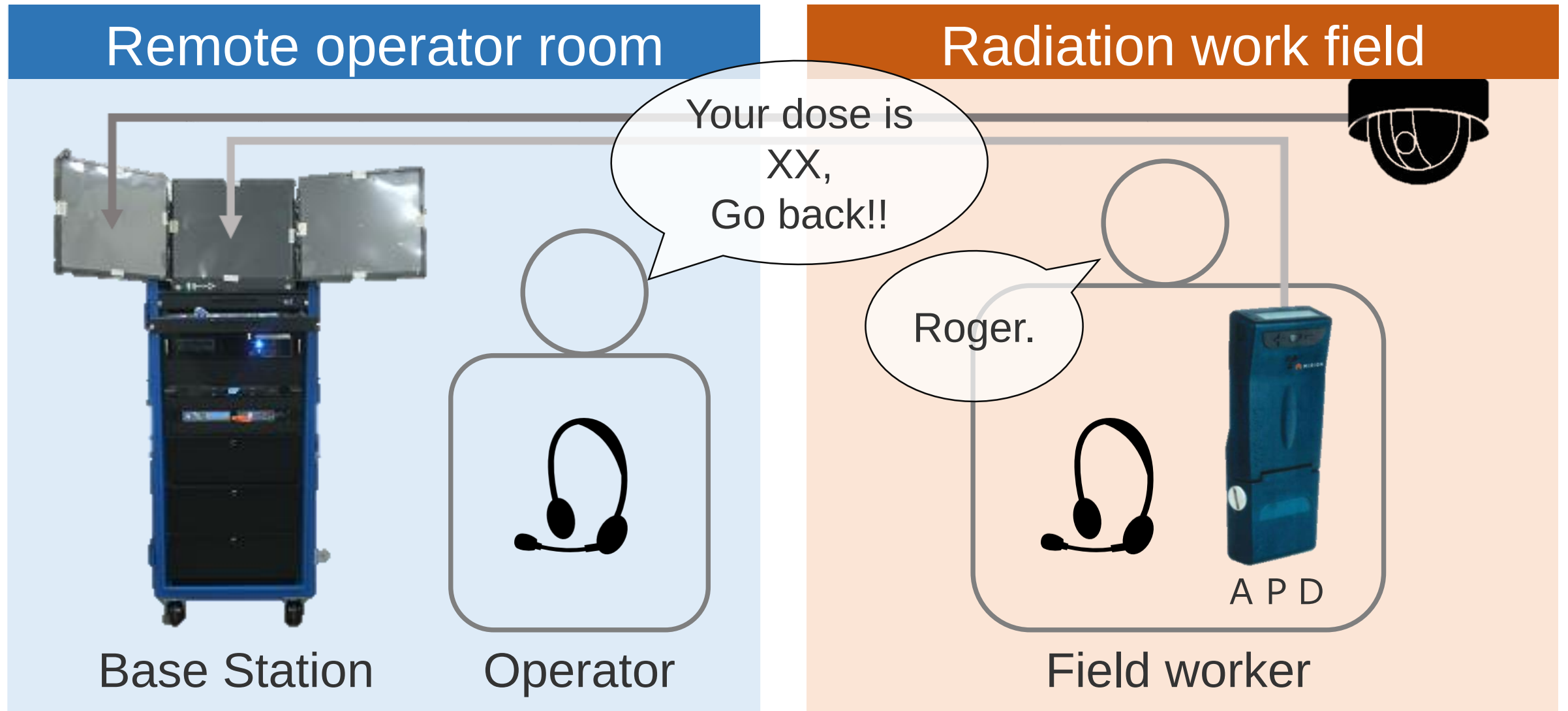
RMS is particularly effective for people working in high radiation areas.

The hierarchy of control measures



*Personal Protective Equipment

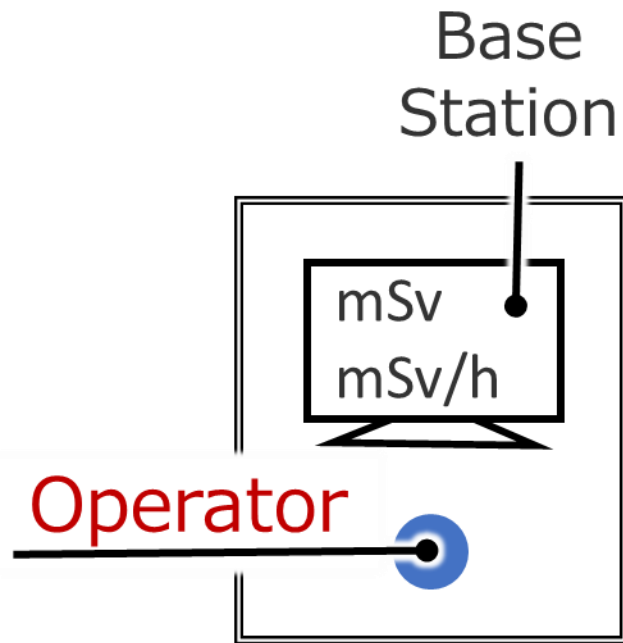
System Overview



Unit-3 PCV (Primary Containment Vessel) Survey

Outside R/B

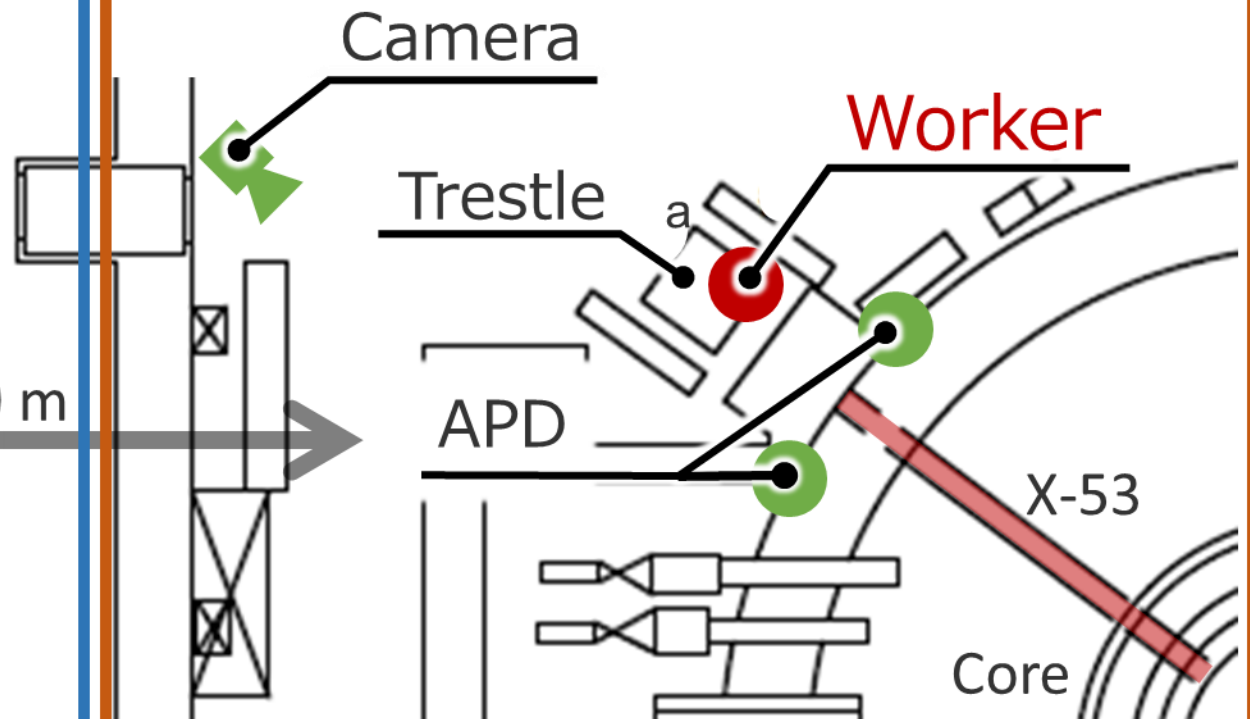
0.05 mSv/h or less



50 m

Unit-3 R/B 1st Floor

6-25 mSv/h



Base Station



Evaluation of radiation dose reduction with RMS.

Estimated Result
545.77 → 472.40 man-mSv

73.37 man-mSv
Reduction

- Reduce time to check own dose.
- Measure the radiation environment automatically.



A previous way to check dose manually.

Opinions by partners companies



- Operator:
 - direct and notify when workers close to hot spot.
 - monitor personal doses in real time.
- RP: record the field dose rate without human work.



- ✓ Want lighter and smaller device.
- ✓ Need APD batteries to last longer.
- ✓ Display needs to be in Japanese.

Conclusions and Future directions

Conclusions

- RMS **successfully** reduced workers dose for Unit-3 PCV Survey.
- Confirmed RMS is effective for reducing worker dose when there is limited robotic access.

Future directions

- Will install more RMS for other work.
- **Wearable display** will be developed to notify workers of their dose in real time.

If I have seen further than others,
it is because I stood on the shoulders
of giants.

— Sir Isaac Newton



The image is a vertical collage of three photographs. The top photo shows a close-up of cherry blossom branches with white and pink flowers against a bright blue sky with scattered white clouds. A grey utility pole is partially visible on the left. The middle photo is a semi-transparent white rectangular overlay containing the text 'Thank you' in a bold, black, sans-serif font. The bottom photo shows a large industrial facility, likely a power plant, with several tall, white, cylindrical cooling towers. In the foreground, there are several trees with pink cherry blossoms, and a green safety fence runs across the scene. The sky is blue with some clouds.

Thank you