Radiation Protection in Research Reactors

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Motivations for this paper

Radiation protection

- Justification of diverse applications
- Optimisation of multiple and difficult to compare benefits and risks
- Limitation of doses to particular exposed individuals

Research reactors

- Everchanging applications
- Straightforward access to radioactive sources
- Wide range of users
- Increasing demand of radioisotopes

Fundamental radiation protection principles

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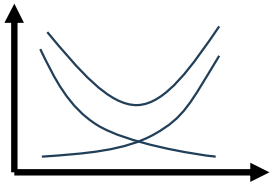
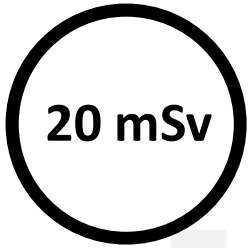
ICRP 103

- Any decision that alters the radiation exposure situation should **do more good than harm**.
- The likelihood of incurring exposure, the number of people exposed, and the magnitude of their individual **doses should all be kept as low as reasonably achievable**, taking into account economic and societal factors.
- The total dose to any individual from regulated sources in planned exposure situations (other than medical exposures) **should not exceed the appropriate limits** specified by the Commission.

The principle of justification

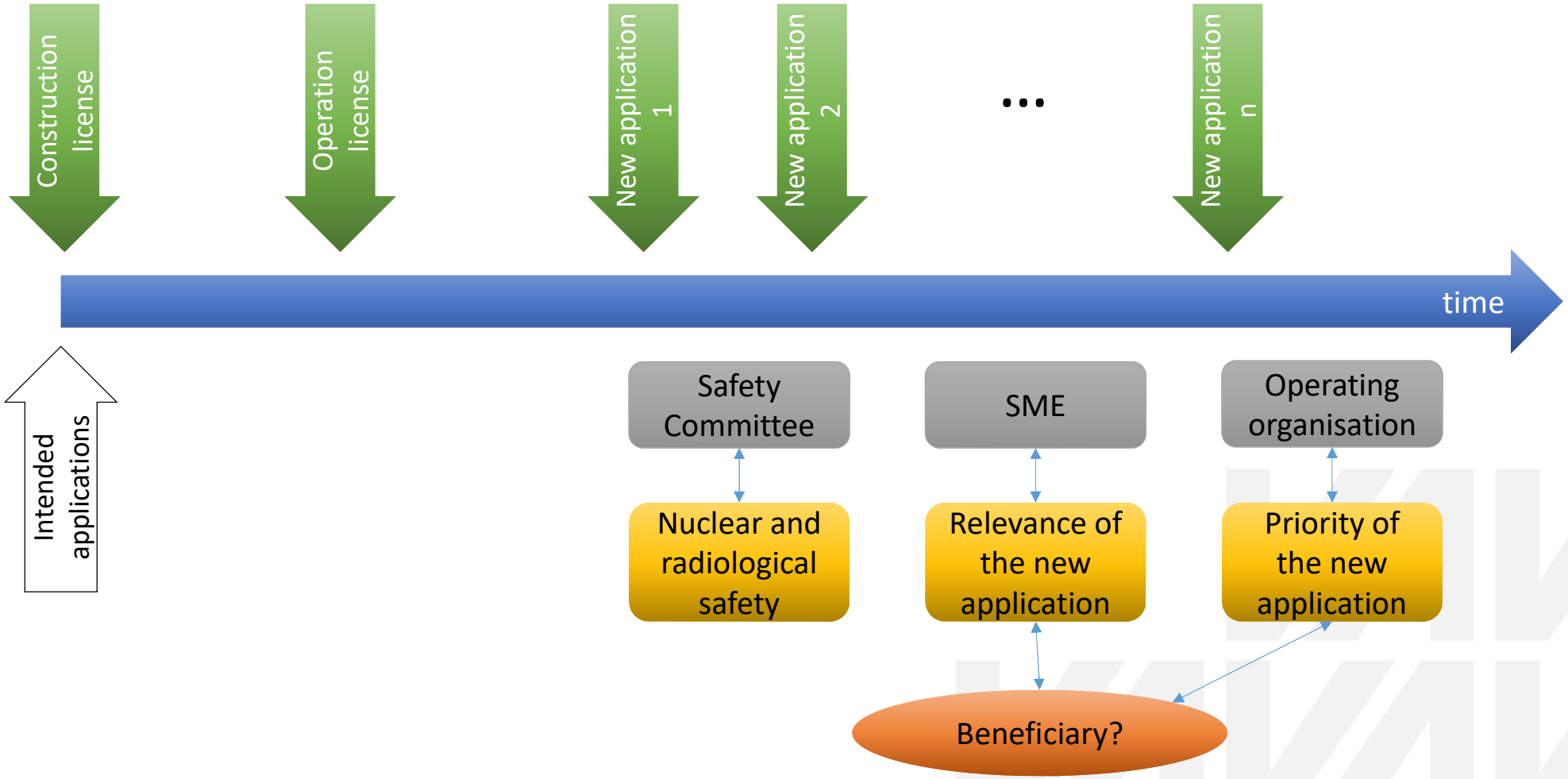


The principle of optimisation of protection

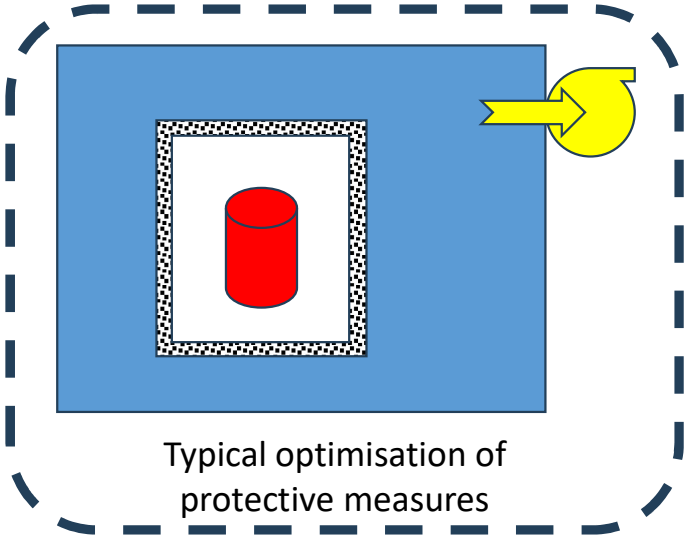


The principle of application of dose limits

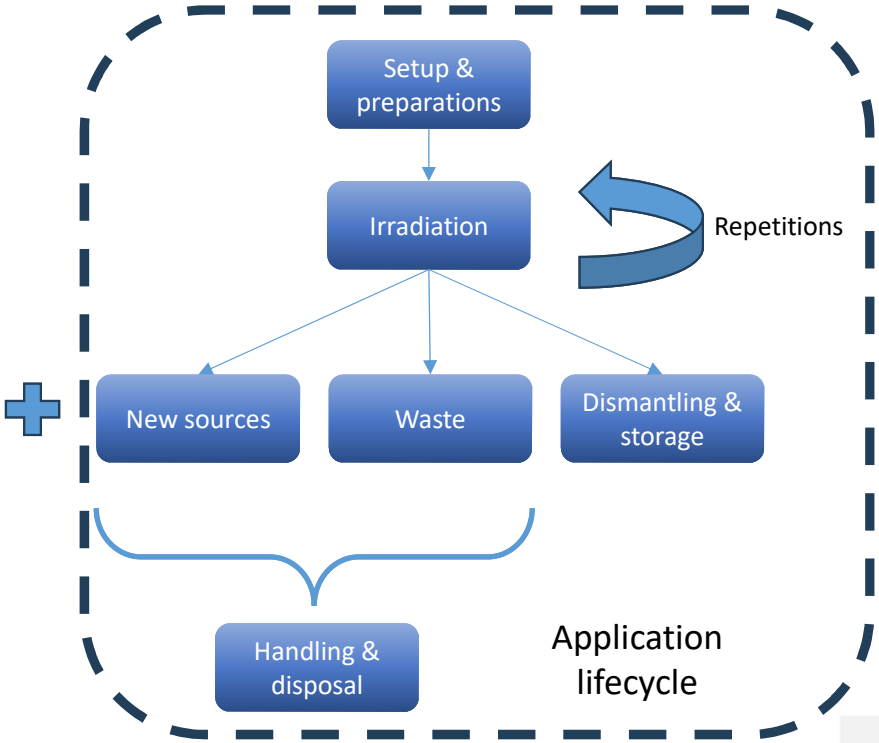
Justification

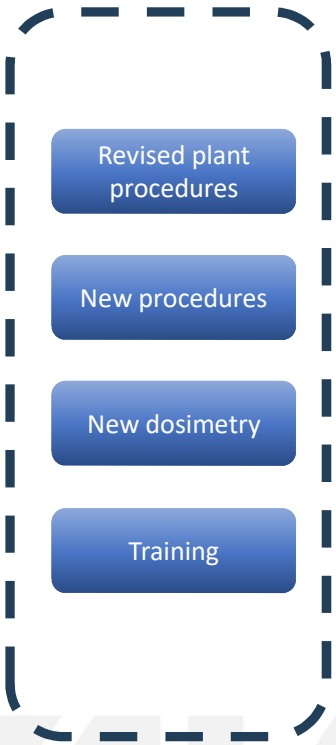


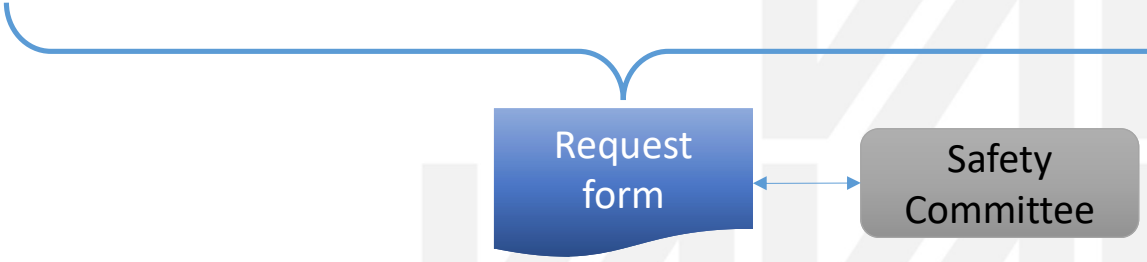
Optimisation



Typical optimisation of protective measures







Dose Limits

Staff

Public

+

Professors

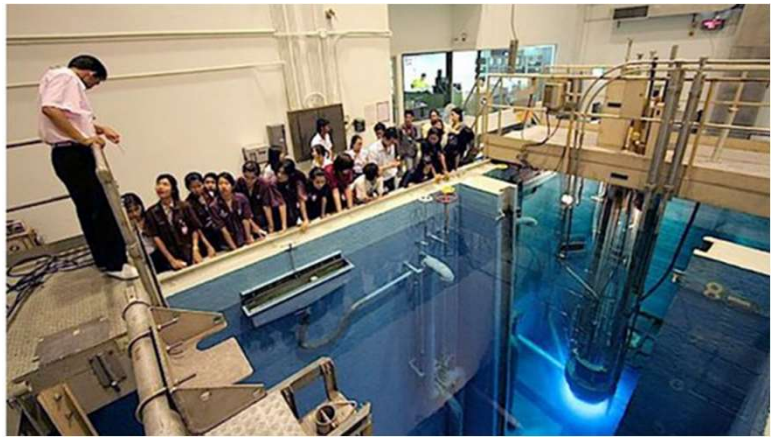
Students

Patients

Comforters and carers

Visitors

Dose restrictions



Operational and production challenges

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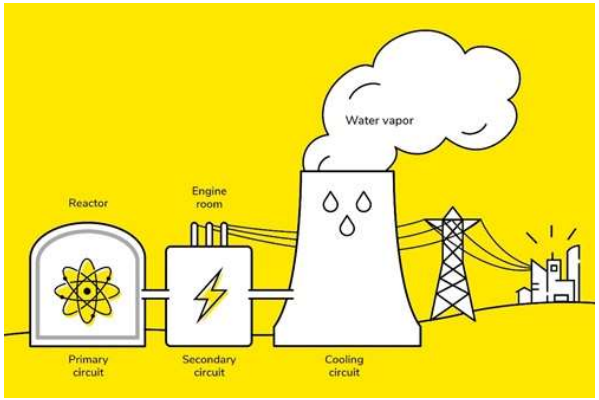
Operational challenges



Accessibility
vs
Isolation

Control on the radioactive material

Samples to other labs

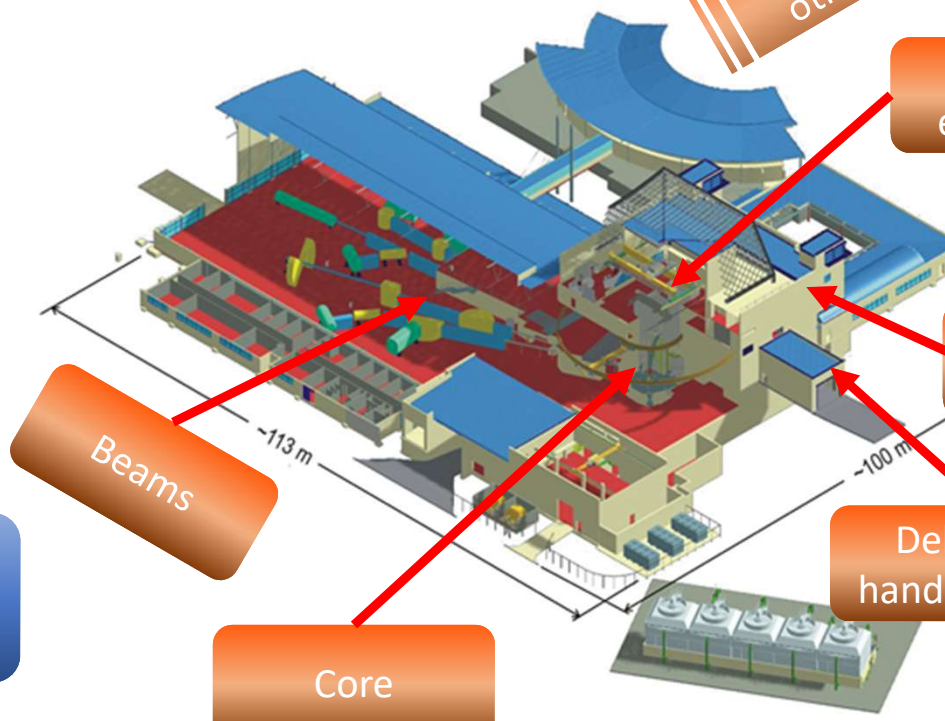
Pool-top experiments

Labs

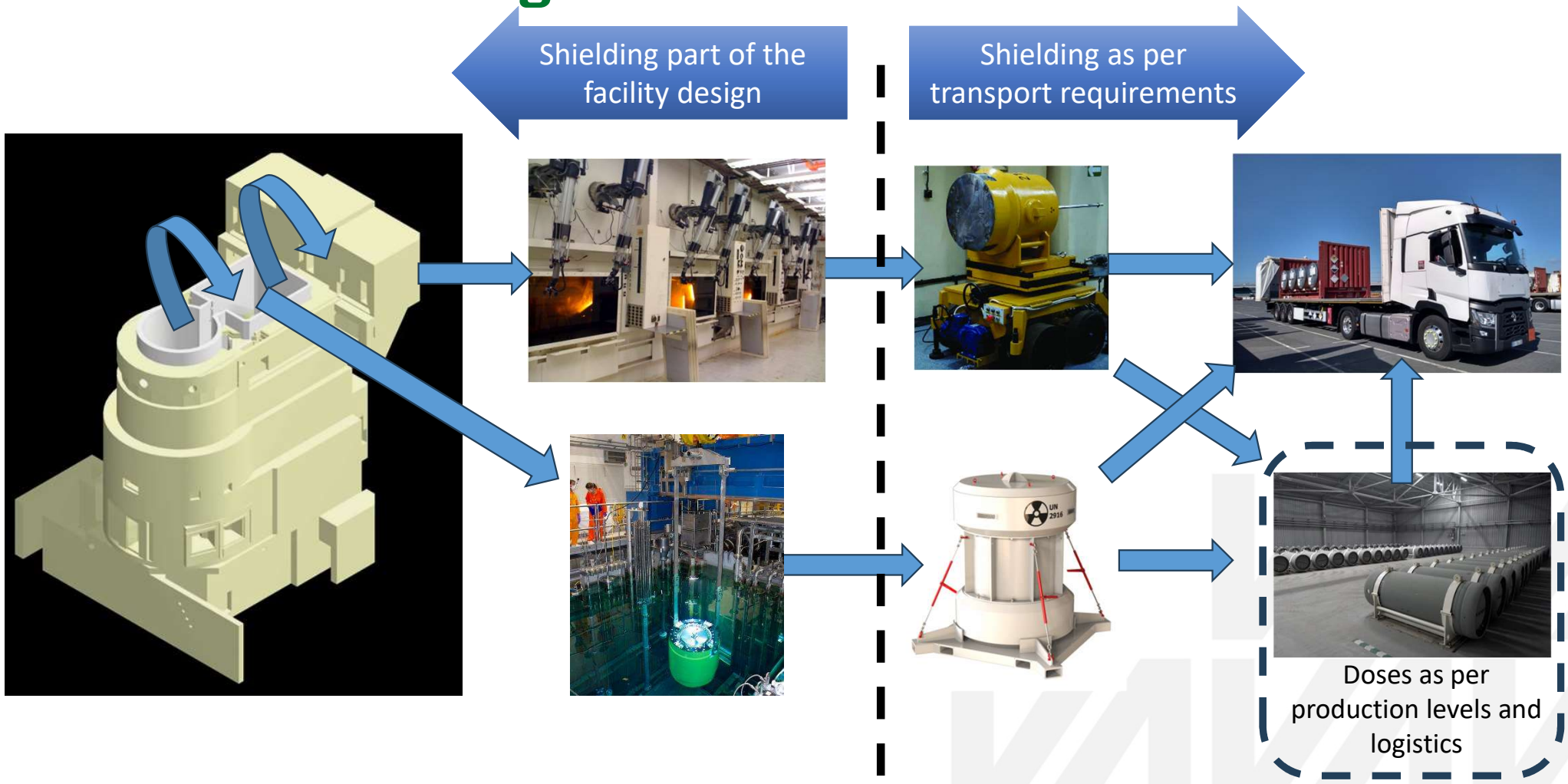
Delivery & handling of RIs

Beams

Core



Utilisation challenges



Thank you for your attention!

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Q&A

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