

Kernkraftwerk  **Gösgen**



RP for emergency – an industry view

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Content

- International requirements
- Implementation – a specific example
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- Conclusions



International requirements

Requirement 43:

The government shall ensure that an integrated and coordinated emergency management system is established and maintained.

- Development and exercising of emergency plans and emergency procedures
- Allocation of responsibilities
- Education and training

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IAEA Safety Standards

for protecting people and the environment

Radiation Protection and
Safety of Radiation Sources:
International Basic
Safety Standards

INTERIM EDITION

General Safety Requirements Part 3
No. GSR Part 3 (Interim)

International requirements

Requirement 44:

The government shall ensure that protection strategies are developed, justified and optimized at the planning stage, and that emergency response is undertaken through their timely implementation.

- Avoid deterministic effects and reduce the likelihood of stochastic effects due to public exposure
- Take into consideration that emergencies are dynamic, that decisions taken early in the response may have an impact on subsequent actions

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IAEA Safety

for protection



and
Sources:

Basic
Safety standards

INTERIM EDITION

General Safety Requirements Part 3

**Reference level
20-100 mSv**

International requirements

Requirement 45:

The government shall establish a programme for managing, controlling and recording the doses received in an emergency by emergency workers.

- Response organizations and employers shall ensure that no emergency worker is subject to an exposure in an emergency in excess of 50 mSv other than
- Response organizations and employers shall ensure that emergency workers who undertake actions in which the doses received might exceed 50 mSv do so voluntarily

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IAEA Safety

for protection

and
Sources:
Basic
standards
INTERIM EDITION

More specific
Protection of
emergency worker

Dose limit 50 mSv,
unless...
Volunteers >50 mSv



International requirements

Requirement 46:

The government shall ensure that arrangements are in place and are implemented as appropriate for the transition from an emergency exposure situation to an existing exposure situation.



Normal dose limit for workers
Elevated dose limits for the public

International requirements

IAEA Safety Standards
for protecting people and the environment

Severe Accident
Management
Programmes for
Nuclear Power Plants

Safety Guide
No. NS-G-2.15



IAEA Safety Standards
for protecting people and the environment

Arrangements for
Preparedness for a
Nuclear or Radiological
Emergency



Safety Guide
No. GS-G-2.1



IAEA Safety Standards

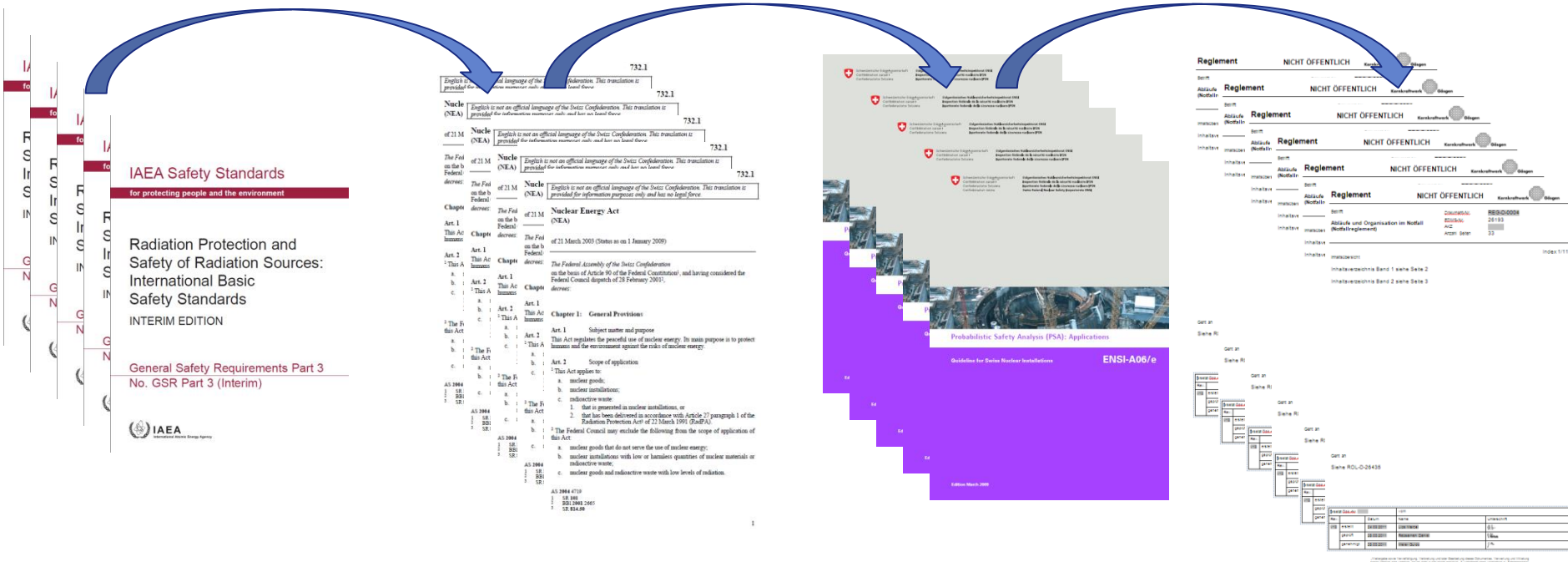
for protecting people and the environment

Radiation Protection and
Safety of Radiation Sources:
International Basic
Safety Standards
INTERIM EDITION

General Safety Requirements Part 3
No. GSR Part 3 (Interim)



Implementation – a specific example



Agency

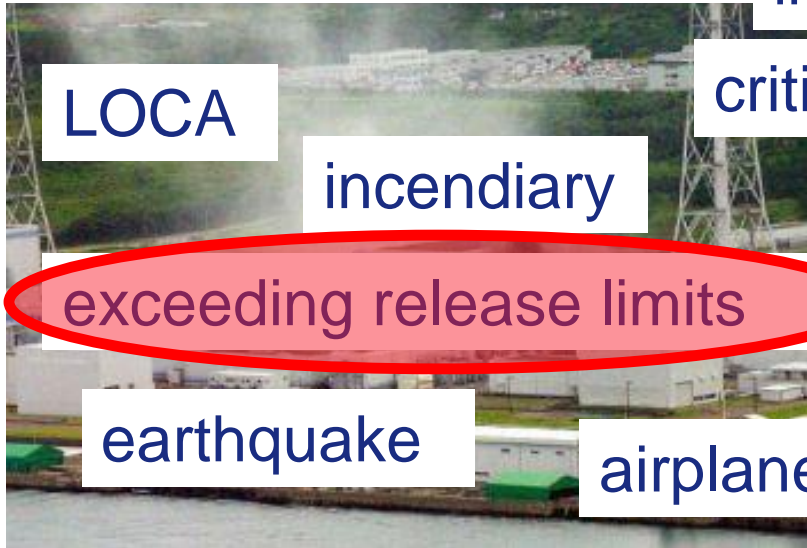
Government

Authority

Operator

Implementation – a specific example

hostage-taking blackmail intrusion sabotage bomb threat



LOCA

incendiary

exceeding release limits

earthquake

airplane crash

disaster outside the plant

critically injured person



overexposed person

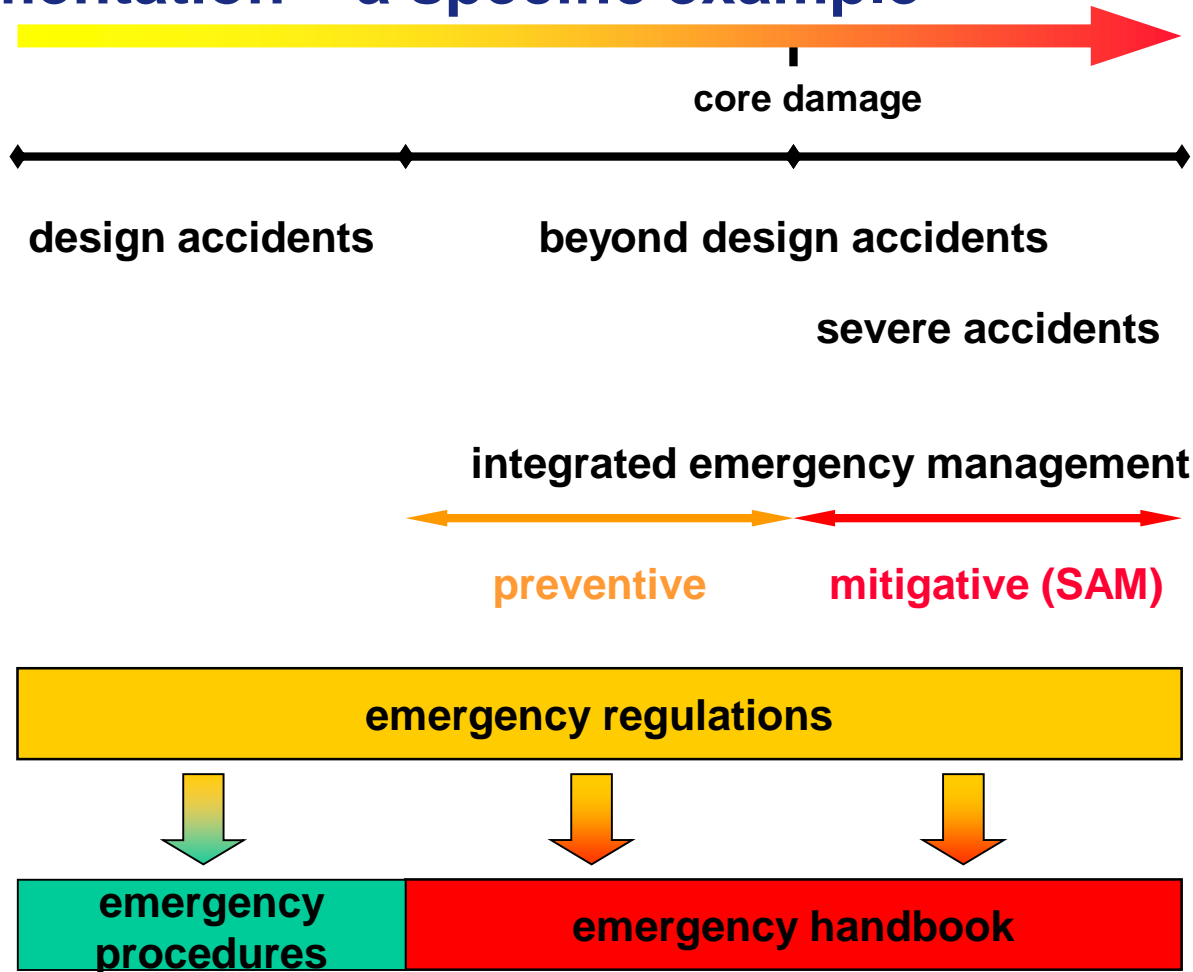
toxic events

war-like events

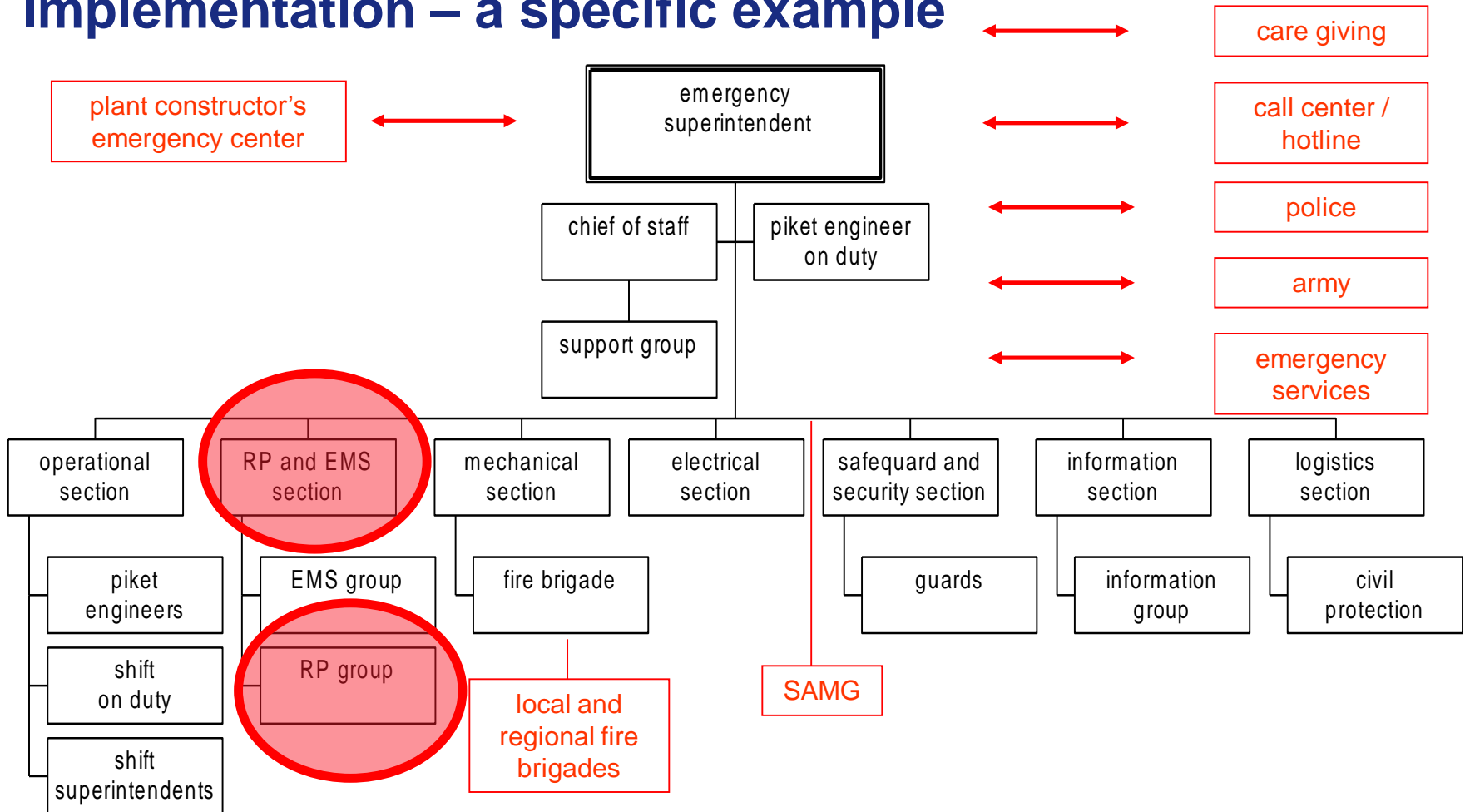
explosion

flood

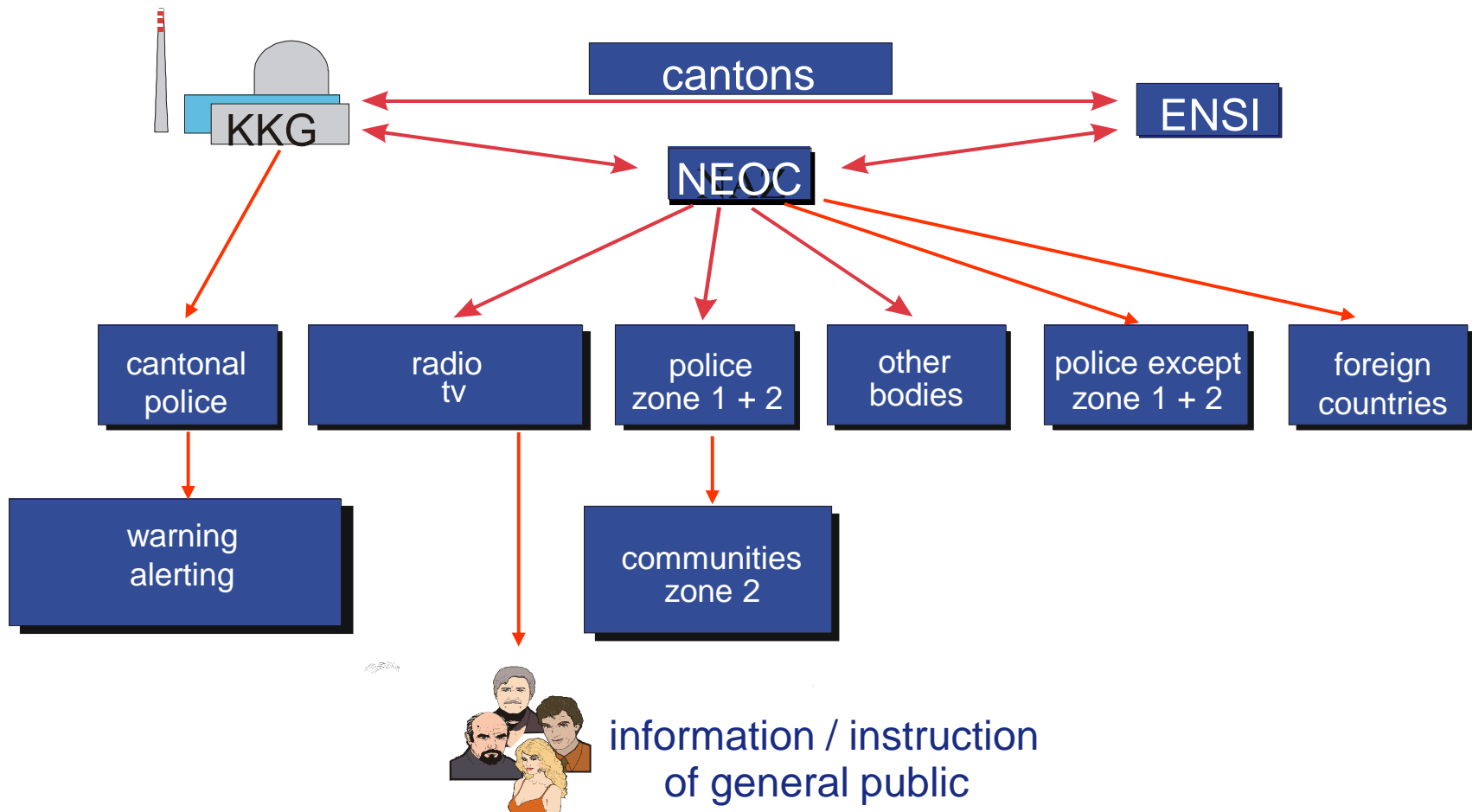
Implementation – a specific example



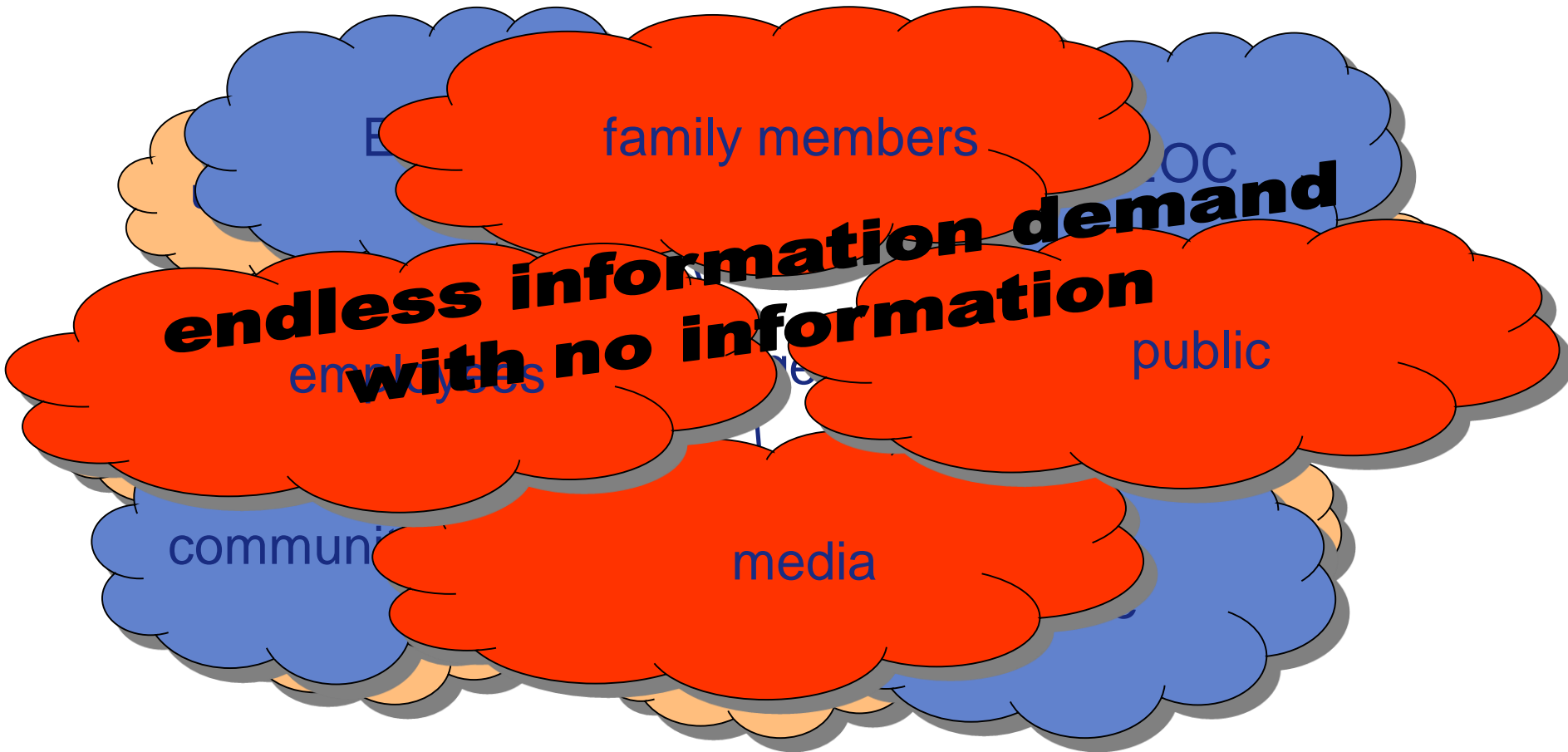
Implementation – a specific example



Implementation – a specific example



From theory to reality



From theory to reality

2.8. Only the exposure of many **tens of thousands of people to whole body doses in the range 100–200 mSv** [15] or of many tens of thousands of children of thyroid doses of the order of 50 mSv [19] (i.e. at least thousands of times higher than those due to natural background radiation) could result in a detectable incidence of cancer among those populations.

Were they acting voluntarily?

Arrangements for Preparedness for a Nuclear Radiological Emergency

Safety Guide No. GS-G-2.1



From theory to reality

< 1mSv



1-20mSv



Conclusions

Emergency preparedness is an important issue to be developed continuously

Emergency preparedness is a multi-dimensional issue. A narrow focus on RP can be misleading

Numbers in RP are inconsistent and unreasonably low and may obstruct a flexible and effective emergency management

The system of radiation protection covering artificial, natural and medical exposure under normal, emergency and existing situations rises discussions among experts and is therefore not understood by the general public

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Thanks for your attention.