

**GLOBAL RISK FORUM
GRF DAVOS**

Integrated Disaster Risk Management and Disaster Resilience Capacity Building

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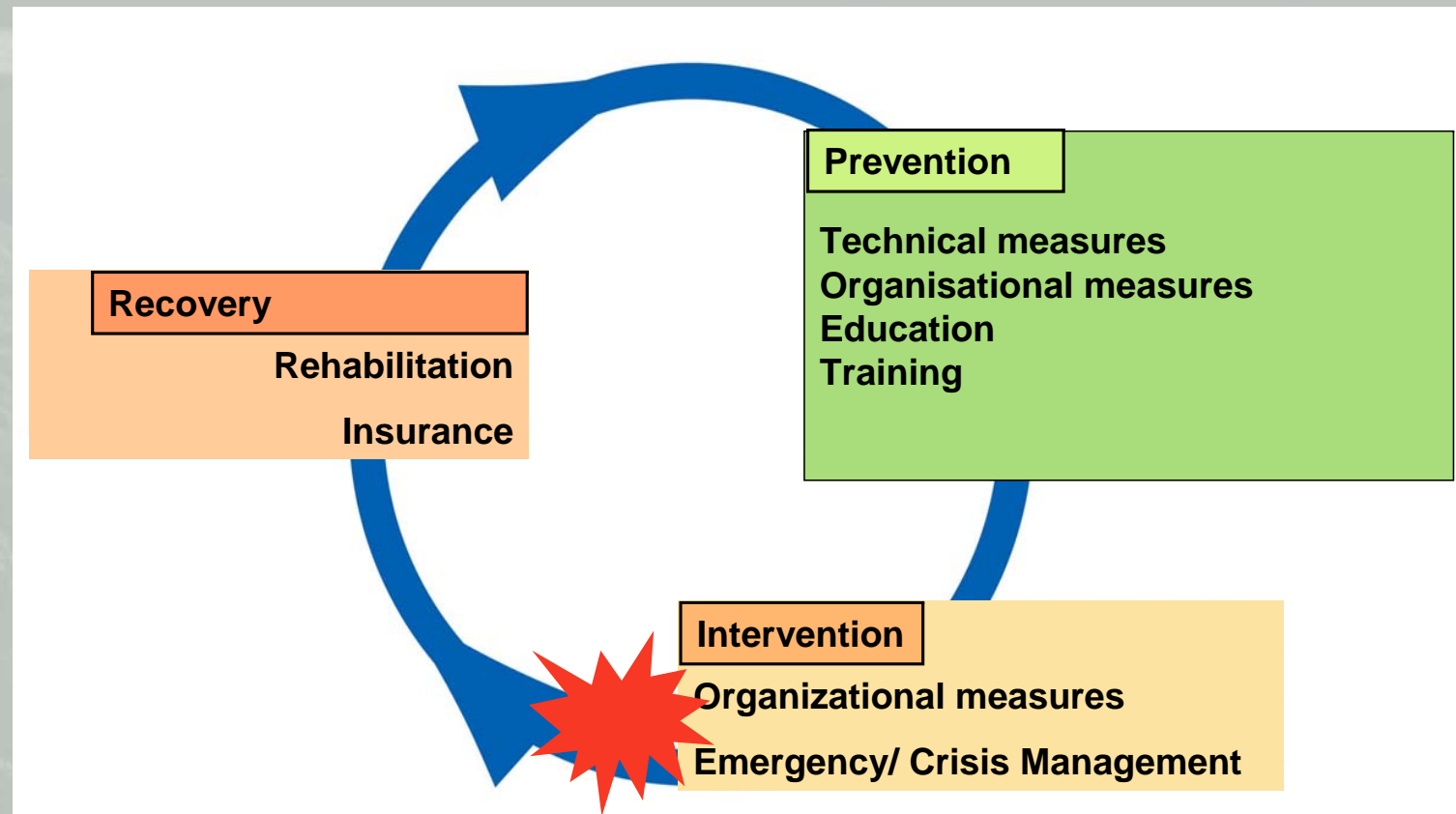


Objectives of risk and disaster management

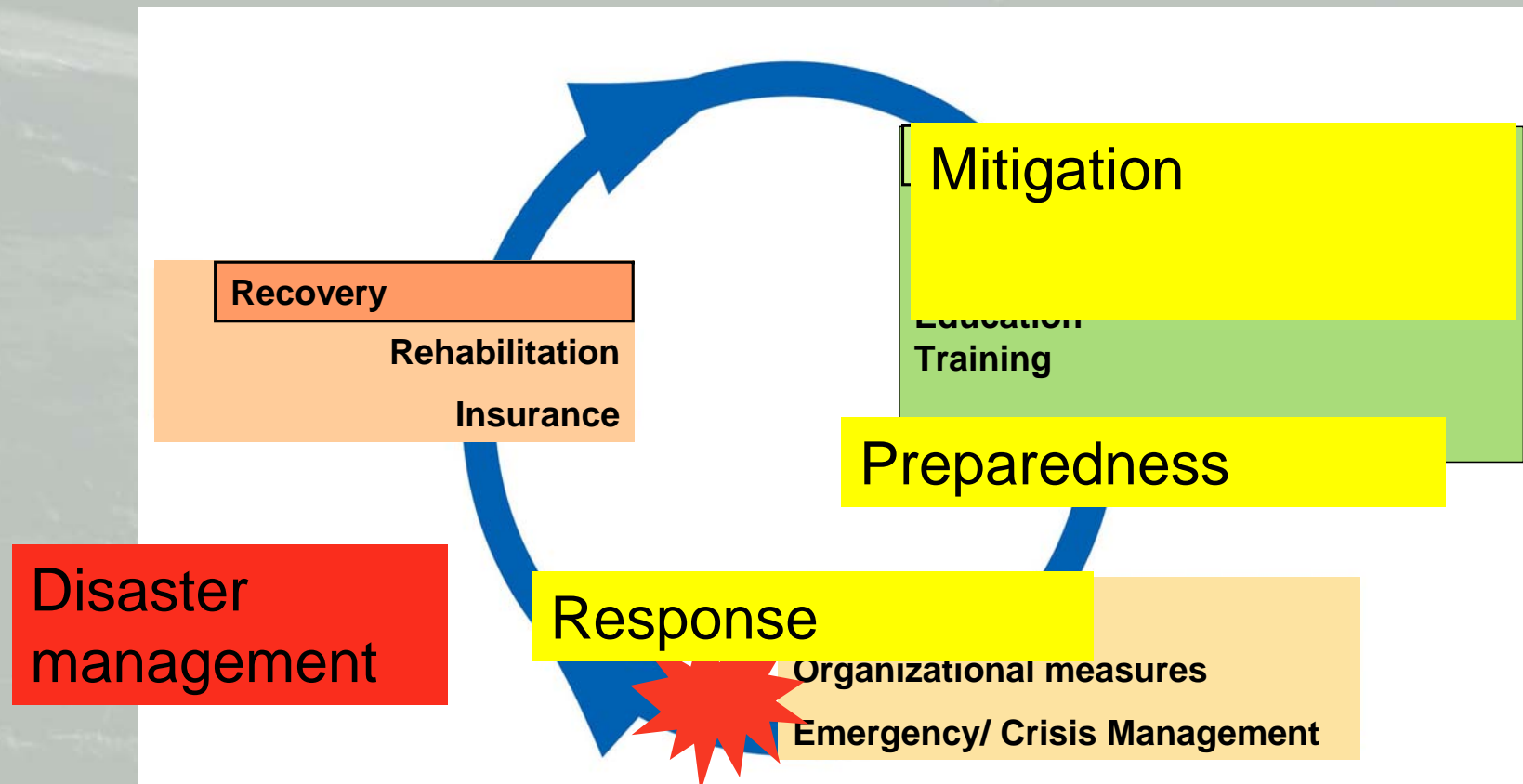
- To reduce – or even better – to eliminate risks
- To reduce number, intensity and impact of disasters

By means of

Integral risk management – an approach which concentrates equally on all phases of **the risk cycle**: intervention, recovery and prevention



Integral risk management: risk cycle other wordings



By means of...

Integral risk management, including

- Disaster management
- **Vulnerability reduction** (social, political, structural, economic, ecological, etc.)
- **Resilience building** (capacity building, etc.)

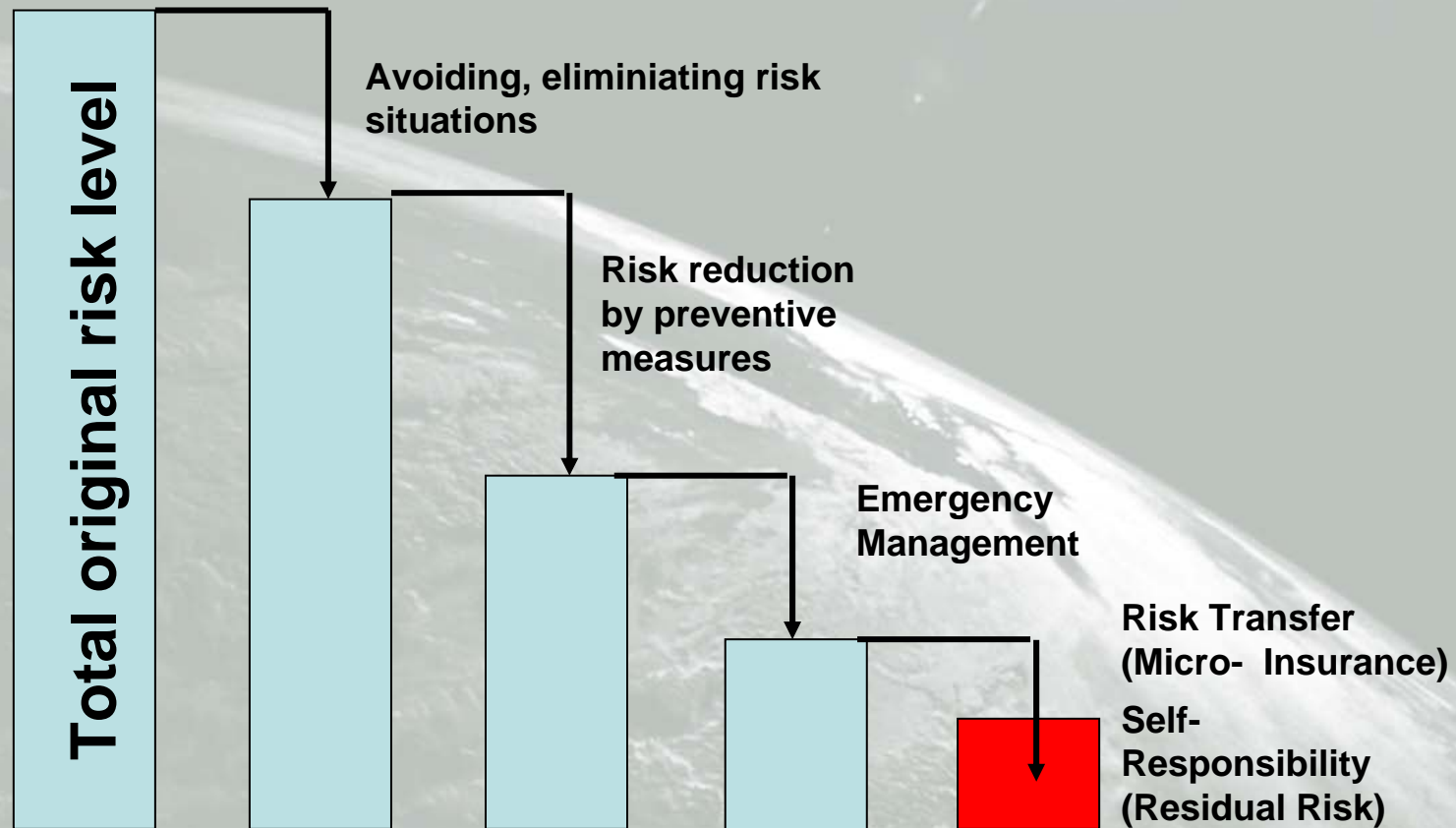
Integral risk and disaster management involves all sectors/ stakeholders

- Politics
- Governments, Administration
- Business world
- Science, education
- Technology
- Practitioners
- People, Society as a whole.

Importance of interdisciplinary, inter-sectorial gatherings/ conferences/ workshops like IDRC Chengdu 2009

Risk reduction - What possibilities exist?

Risk reduction cascade



Holistic risk concept: Key Questions

How safe is safe enough?

What can happen?

Hazard analysis (hazard intensity and exposure analysis, vulnerability assessment, Scenarios important)



What is acceptable to happen?

What is an accepted safety level? (Protection goals, acceptable risk levels)

Risk Analysis

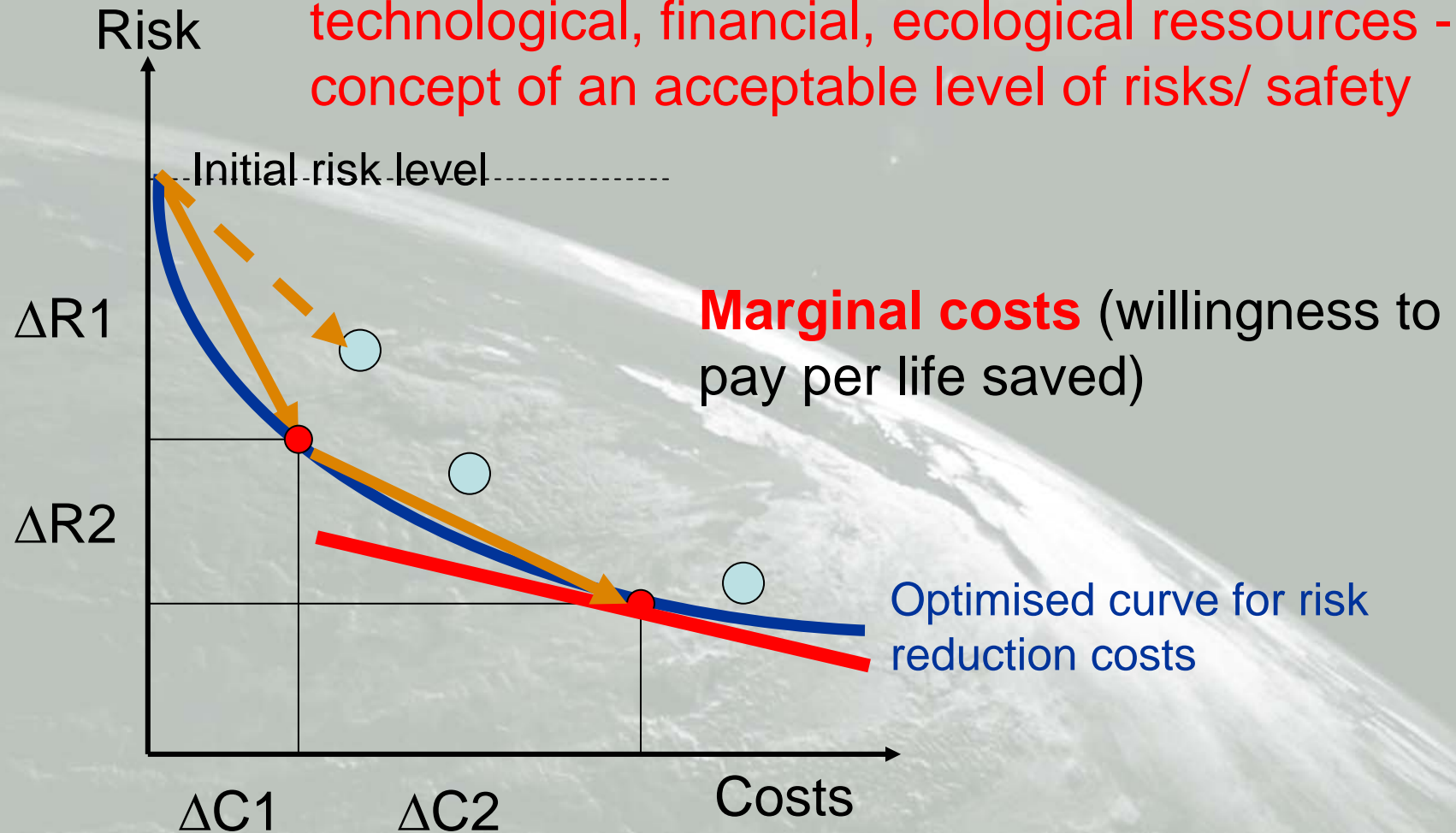
What has to be done?

Risk Assessment

Measures to be taken

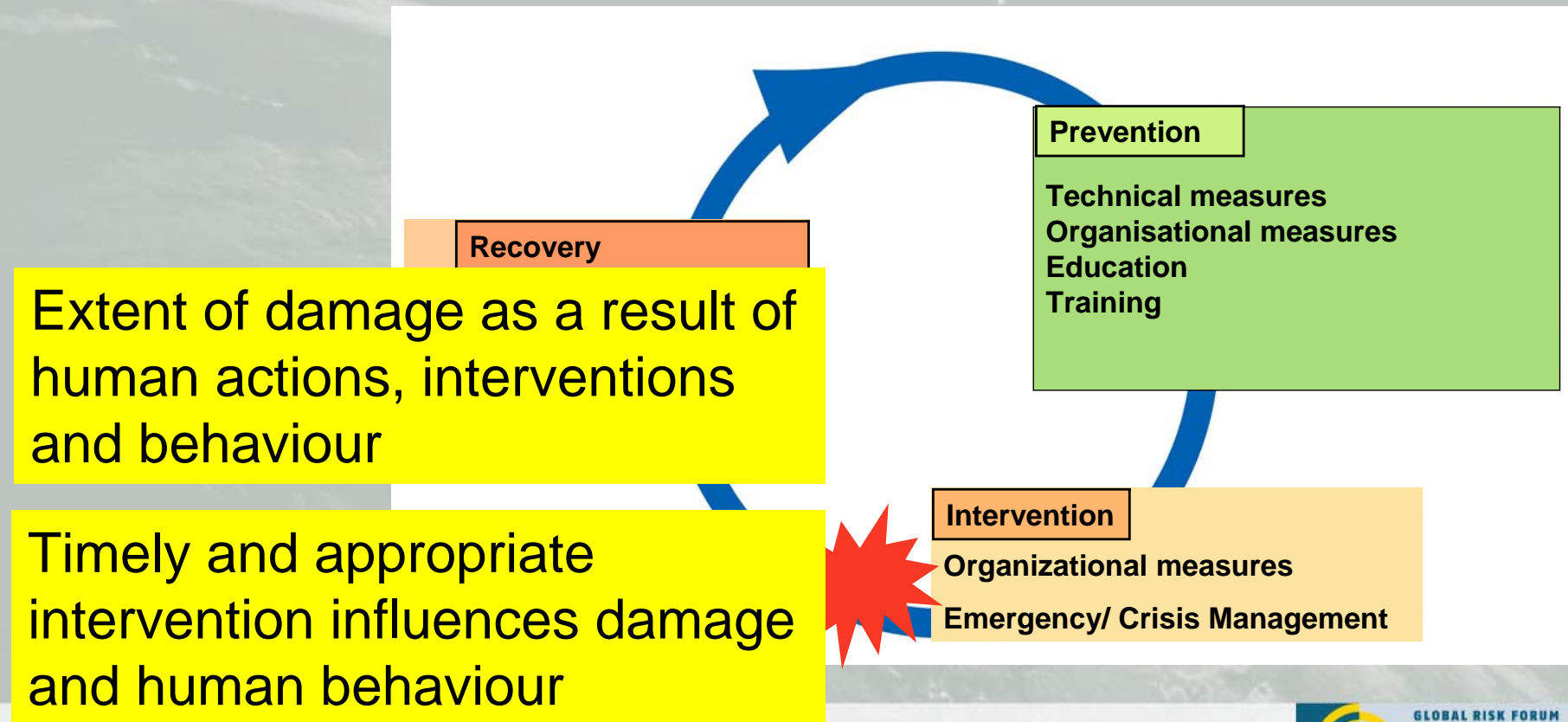
Limits of integral risk management

Practical limits to safety (restrictions to human, technological, financial, ecological resources - concept of an acceptable level of risks/ safety)

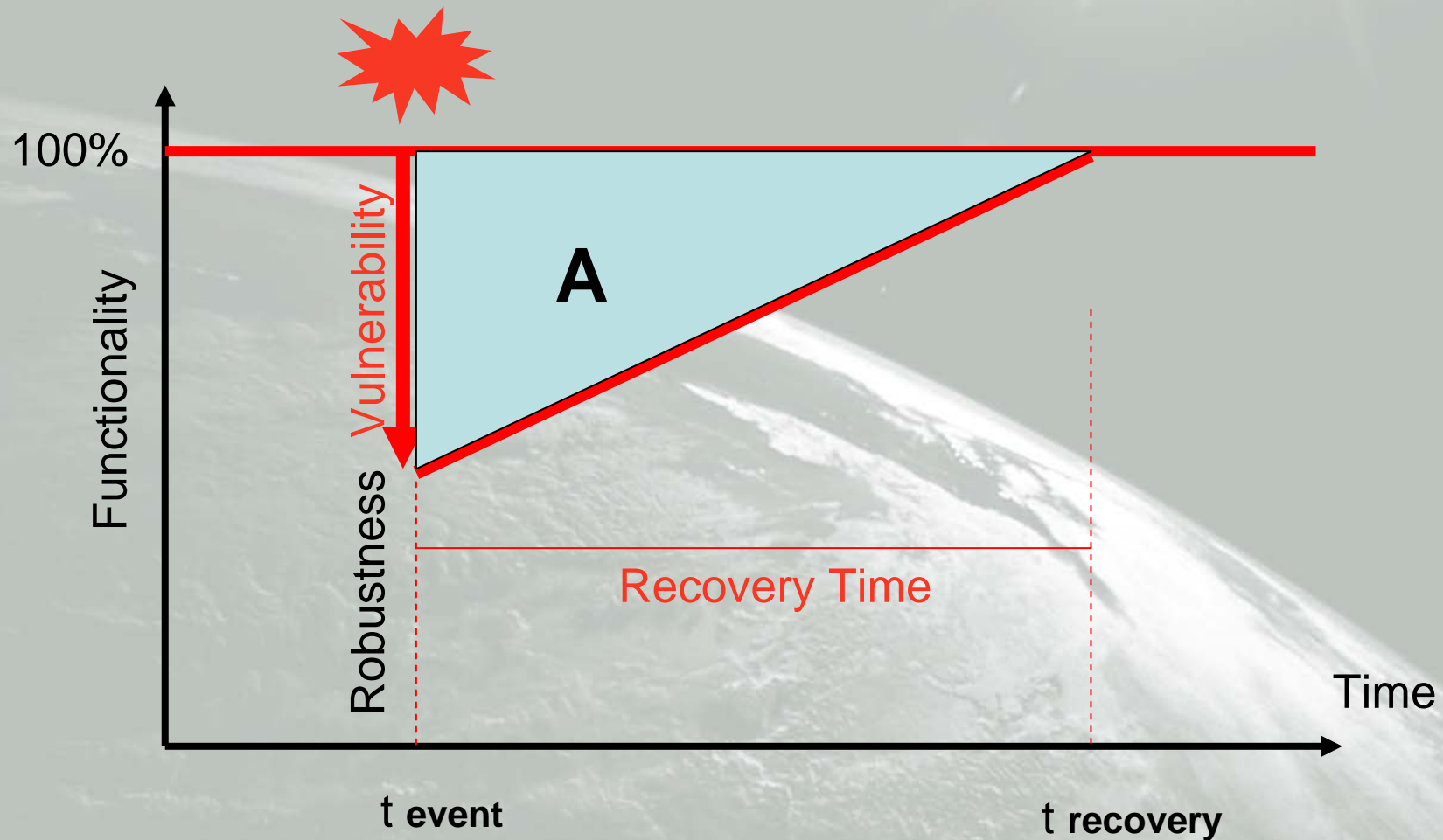


Integral risk management: risk cycle

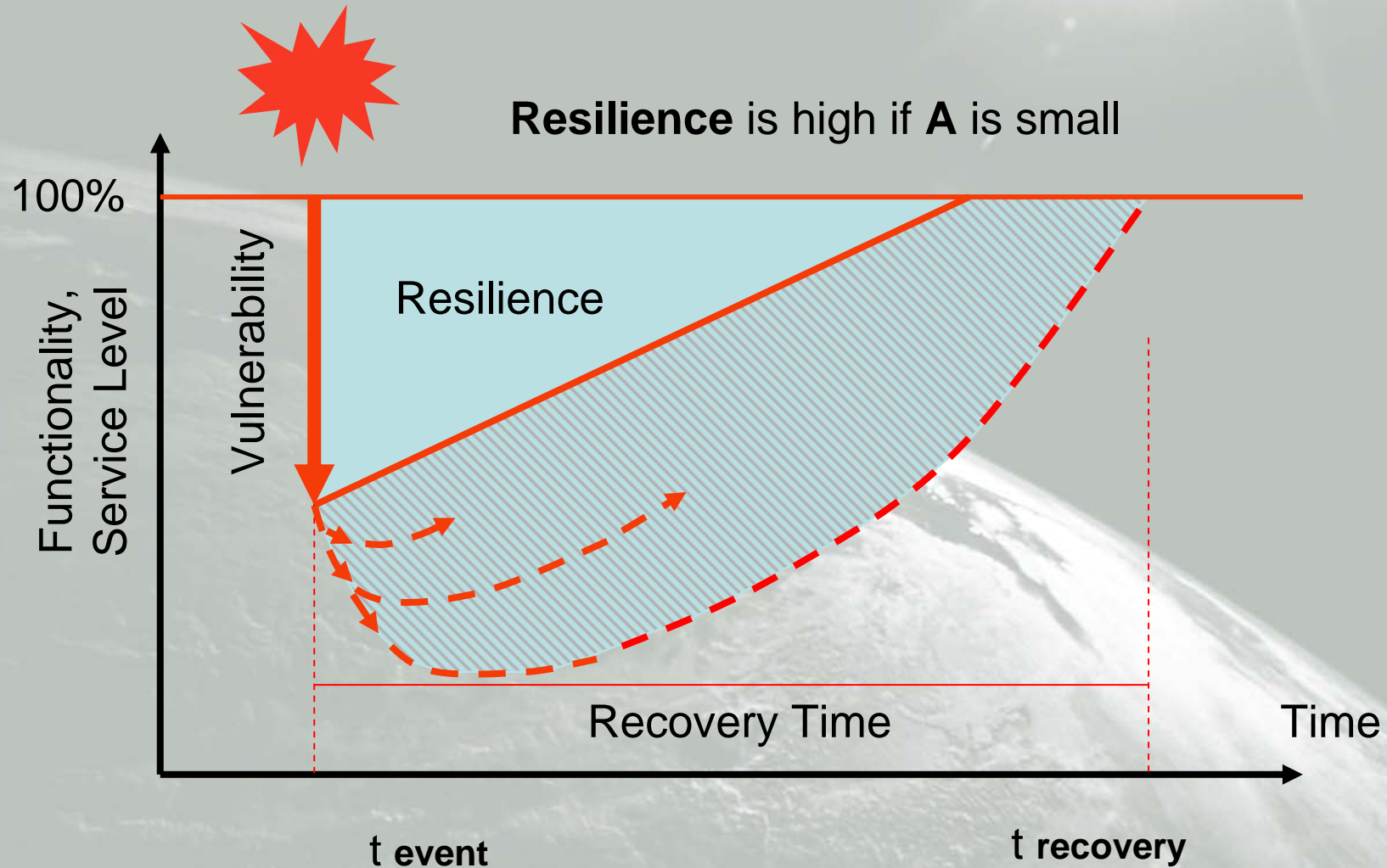
Approach equally concentrates on all sectors of the risk cycle, on prevention, preparedness, intervention and recovery



Schematic of Resilience



Resilience



Definitions of Resilience

Ecological - ..‘ecological resilience is a characteristic of ecosystems to maintain themselves in the face of disturbance... relates to the functioning of the system.’

Engineering – ..‘the reduced probability of system failure, reduced consequences due to failure, and reduced time to system restoration.’

Economic - ..‘the inherent and adaptive responses to hazards that enable individuals and communities to avoid some potential losses. This is in contrast to the pre-event characteristic of mitigation.’

Social – ..‘the capacity of social groups and communities to recover from, or respond positively to, crises... to withstand and recover from stresses’

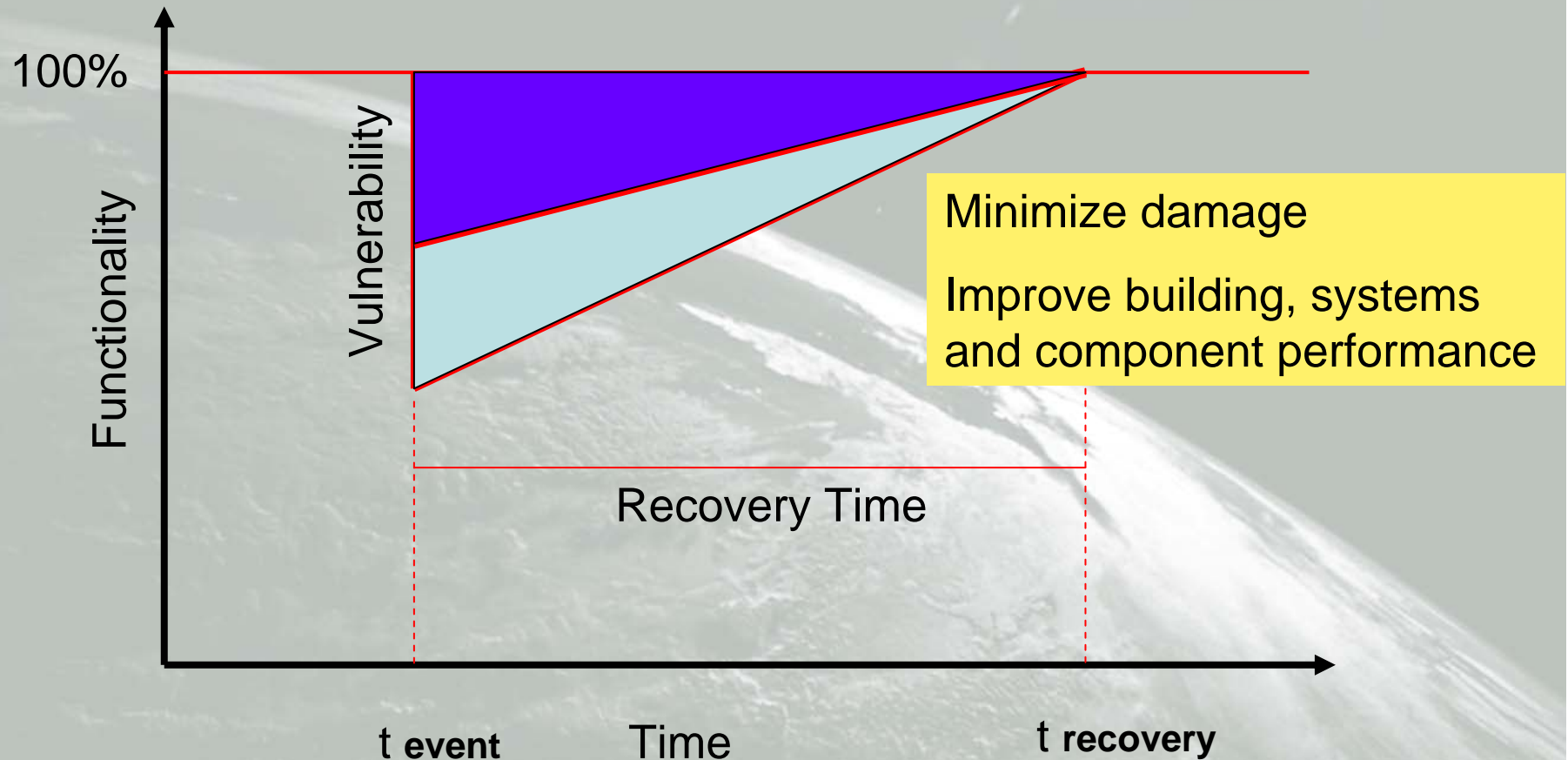
Business - ..‘important to rapidly adapt and respond to risks... this represents a shift from the old paradigm of ‘experience and react’ to a new one of ‘anticipate and adjust’... therefore aiming for **continuity of business operations.**’

Objectives for Resilience

- **To reduce the probabilities of failure**
- **To reduce the consequences from failures** (deaths, injuries, homeless, damage and negative economic and social impacts, etc.)
- **To reduce the time to recovery**, i.e. the time required to restore a specific system or set of systems to normal or pre-disaster level of functionality.

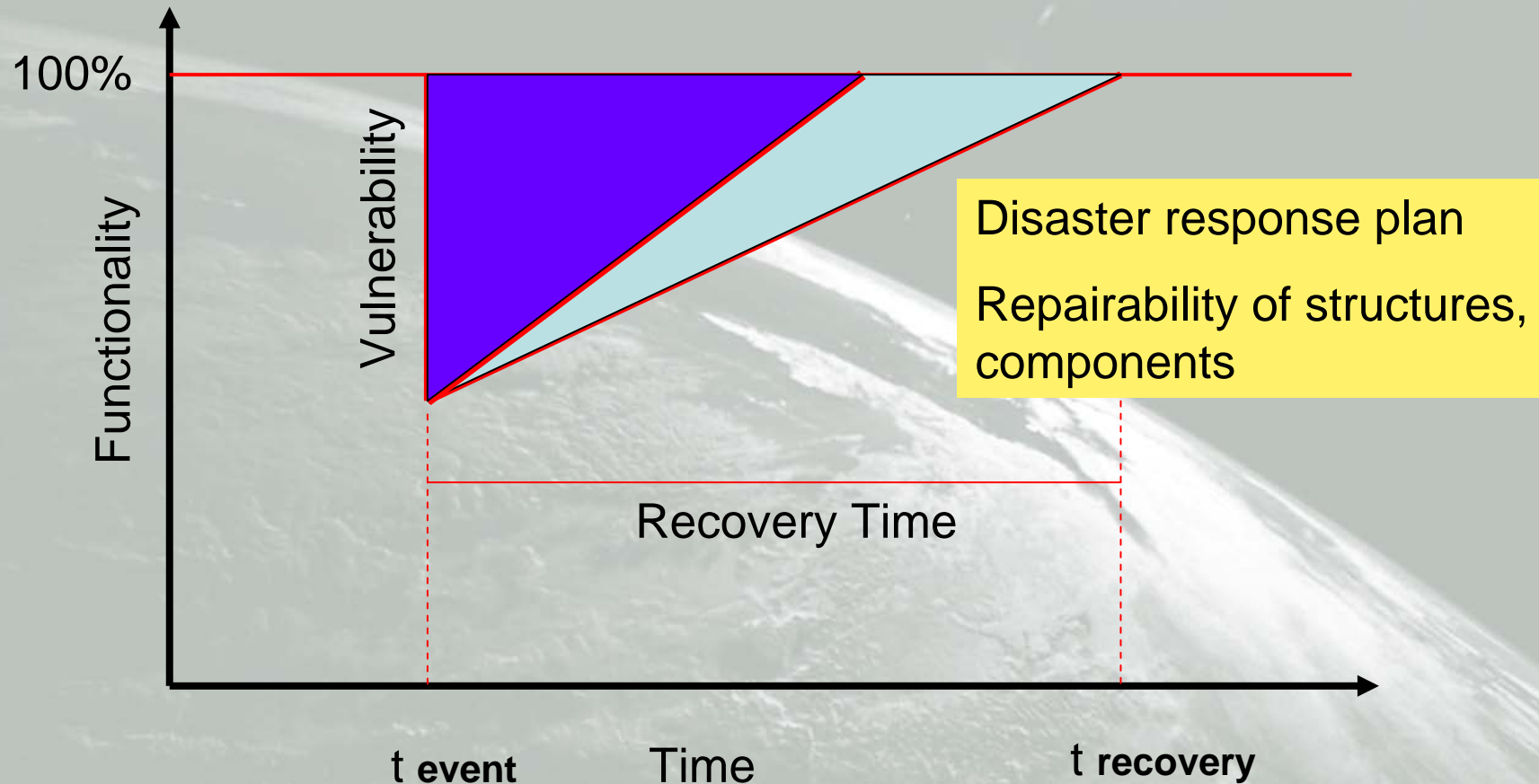
Resilience

Reduce the probability of and consequences at failure

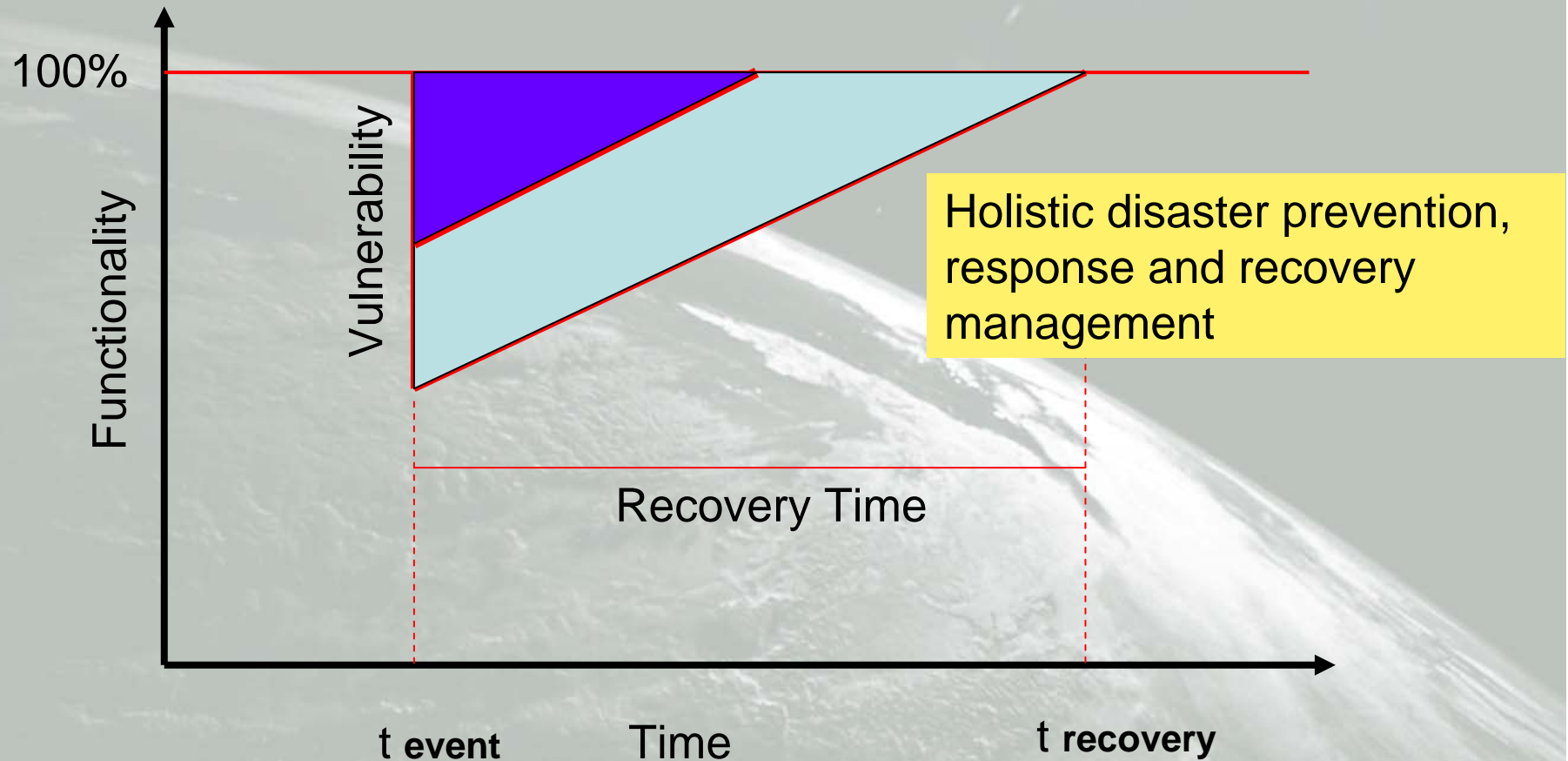


Resilience

Reduce the time to recovery



Resilience



Definitions of Resilience

- The **ability** of organizations, communities, companies to mitigate hazards, to contain the effects of disasters, to carry out response and recovery activities in ways to return to the original functionality, to minimize social and economic disruption
- The **concern** for improving the capacity of physical and human systems to respond to and to recover from extreme events
- The **ability** to recover readily from adversity

Domains of resilience

- **Technical:** refers to the ability to resist damage and loss of function.
- **Organizational:** relates to organizational capacity, planning, training, leadership, experience and information management that improve performance in emergency situations
- **Social:** refers to population and community characteristics that render social groups either less vulnerable or more adaptable to disasters.
- **Economic:** refers to the ability of firms to make timely adaptations for post disaster improvisation, innovation and resource substitution and in general to the capacity to reduce both direct and indirect economic losses resulting from disasters.

Resilience. Do it even better! ?

Improve building codes
Reconstruction at other places

100%

Prevention

Building codes
Micro-Zonation

Vulnerability

Resilience

a

e

Recovery

Insurances
Reconstruction plans

Preparedness

Seismic retrofitting
Rapid damage assessment

Recovery Time

b

d

Intervention

Professional emergency management
... plans

d to minimize

Politically most sensible domain

High visibility – high media coverages

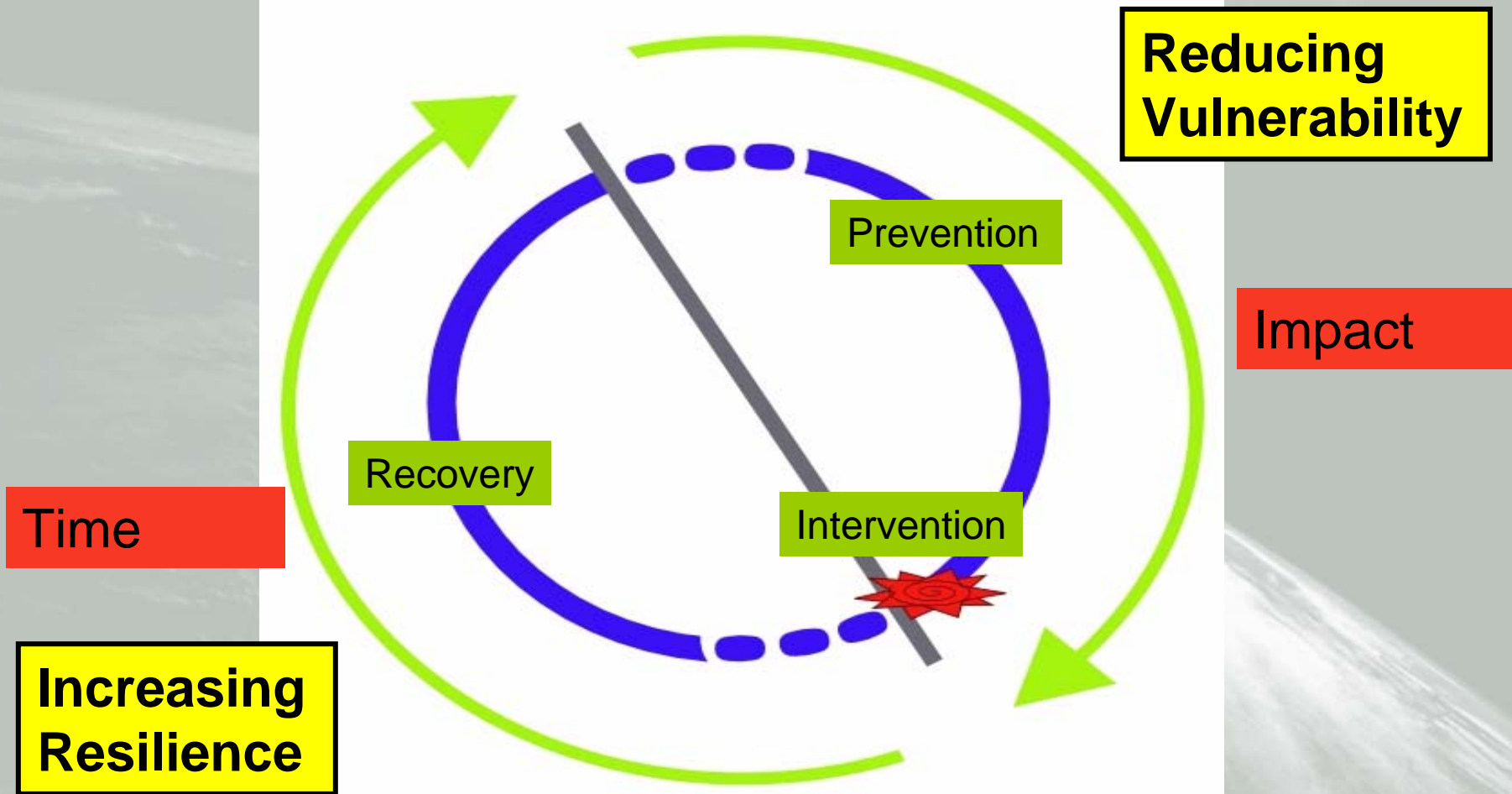
How to Measure Resilience

Resilience can be measured by the remaining **functionality** (remaining **service level**) of an infrastructure system and by the time it takes for the system to return to pre-disaster level of performance.

Properties of resilience to be measured

- **Robustness:** ability of “systems” to withstand disaster forces without significant degradation or loss of performance
- **Redundancy:** the extent to which “systems” are substitutable in case of loss or significant degradation of functionality
- **Resourcefulness:** defines the ability to diagnose and prioritize problems and to initiate measures by mobilizing material, monetary, informational, and technological and human resources.
- **Rapidity:** is the capacity to restore functionality in a timely way, containing losses and avoiding disruptions

Integral risk management



Conclusions

- **Integral disaster and risk reduction management is vulnerability reduction and resilience increase.**
- Organisational measures (emergency planning, training, leadership, experience and information management, etc.) are essential for resilience increase
- Resilience measures for population and communities render social groups more adaptable to disasters.
- **Resilience measures increase** the ability of firms to make timely adaptations for post disaster improvisation, innovation and resource substitution
- Resilience measures increase the capacity to reduce both direct and indirect economic losses resulting from disasters.

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„From Thoughts to Action“

**Thank you for
your attention!**

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