Ministry of Communications and Mass Media of the Russian Federation

Investigation of ICTs for disaster management
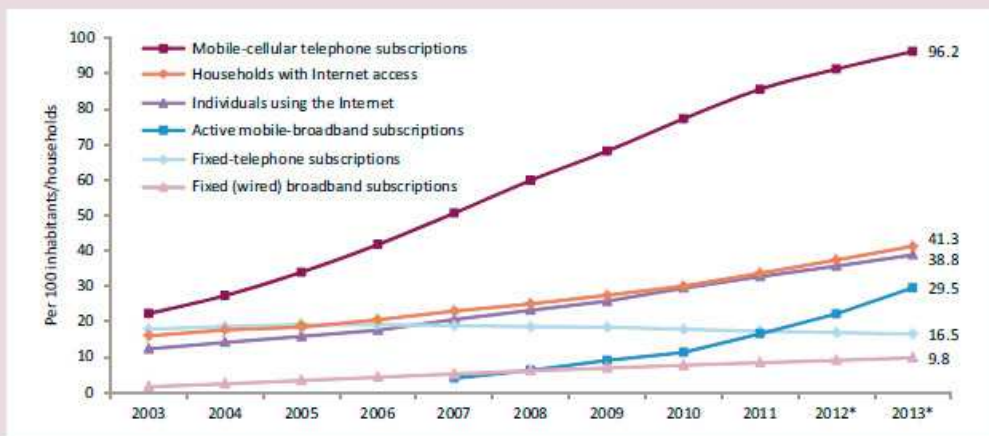
Prof. Dr. Viliam Sarian
FSUE NIIR
Russia

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ICT development and damage from disasters

Chart 1.1: Global ICT developments, 2003-2013*

- Mobile-cellular telephone subscriptions — 96.2
- Households with Internet access — 41.3
- Individuals using the Internet — 38.8
- Active mobile-broadband subscriptions — 29.5
- Fixed-telephone subscriptions — 16.5
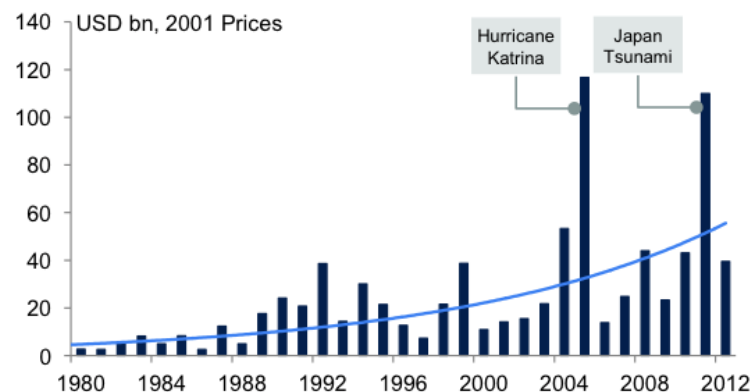- Fixed (wired) broadband subscriptions — 9.8

Note: * Estimate.
Source: ITU World Telecommunication/ICT Indicators database.

Natural Disasters

Insured real losses from natural disasters: losses are on the rise although can fluctuate wildly from year-to-year

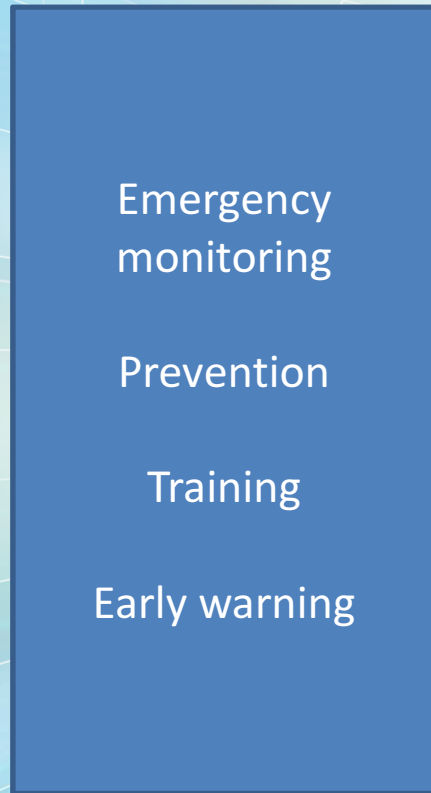USD bn, 2001 Prices

Hurricane Katrina   Japan Tsunami

Source: Swiss Re, Munich Re, Deutsche Bank Research

Despite significant advances in ICT, damage level from disasters is very high and is growing **even in the most developed countries**

Lack of ICT support during the disaster

Before the disaster | During the disaster | After the disaster

Before the disaster:
- Emergency monitoring
- Prevention
- Training
- Early warning

During the disaster:
- Alarm

After the disaster:
- Mitigation
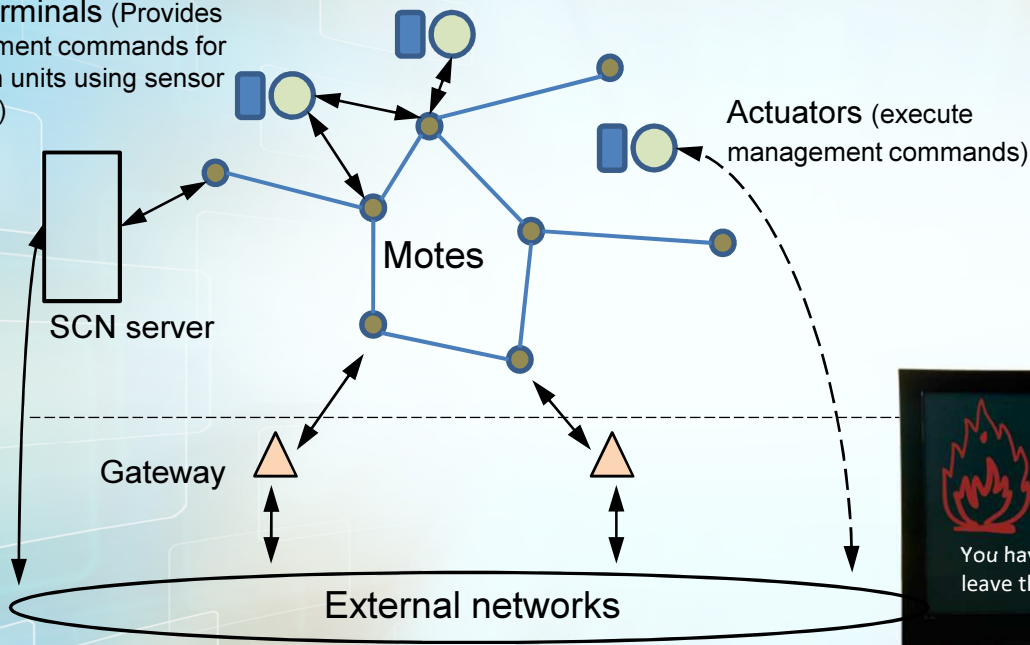- Recovery
- Reabilitation

Rationale for customized emergency management during the disaster

- Disasters are inevitable (despite monitoring and prevention there is still non-zero probability of emergency occurrence)
- There is no two identical disasters (every disaster has its own peculiarities)
- Optimal rescue strategy is not the same for everybody and every case but depends on emergency peculiarities, person's location, physical and psychical abilities, etc.
- Alarm without customized management has small or even negative effect (e.g. the sinking of the ship *Sewol* in Korea)
- People with disabilities are most vulnerable during the disaster without customized emergency management

Customized disaster management system

Sensor Control Network (SCN)

SCN terminals (Provides management commands for actuation units using sensor readings)

Actuators (execute management commands)

SCN server

Motes

Gateway

External networks

Attention,
The fire has occurred In
13-th flat on 7-th *floor*

You have only 10 minutes to
leave the location!

— Arranging of people Individual self evacuation

— Panic prevention

— Assistance in rescue operation arranging

— Rescuing up to 90% of the people before an emergency catastrophic phase has occurred

Mote is a miniature computing device equipped with sensors (gages for temperature, pressure, illumination, vibration level, location and so on) and signal transceivers operating in a given radio band and used for transmitting sensor readings.

Customized disaster management system

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Development of FSUE NII Radio

ITU-T Recommendation Y.2222

10 patents for implementation

The project was supported at the 49th meetings of the Working Group of the APEC Telecommunications and Information Technology in Yangzhou

Attention,
The fire has occurred In 13-th flat on 7-th floor

You have only 10 minutes to leave the location!

lisaster management, e-Health, disabled further development in the APEC region

roposed:

ting developments in the APEC region to reduce and
ects of disasters, the use of the concept of e-Health and
on of people with disabilities; assumed to involve specialists
nies working in these areas

aved up experience, to reveal the best practices applied by
and to create a uniform platform of interaction of all
ent systems of the region of APEC

of approaches to creation of systems of the individualized
eople at accidents which represents a new paradigm of
nts qualitatively new approach to safety

ative indices (indicators) which will reflect effect from ICT
duction of number of accidents