Introducing ISCRM: Bridging research and public safety

EENA Webinar, 22 Feb 2022
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Webinar Outline

1. What is ISCRAM?

2. What does ISCRAM do?
   i. Conferences, summer schools, webinars, publications

3. Research showcase
   i. Ophelie Morand, Paris Telecom, France
   ii. Marion Tan, Massey University, New Zealand
   iii. Chris Zobel & Duygu Pamukcu, Virginia Tech University, USA

4. How can EENA members access ISCRAM research?

5. How can EENA members collaborate with ISCRAM researchers?
What is ISCRAM?

**ISCRAM** stands for **I**nformation **S**ystems for **C**risis **R**esponse and **M**anagement
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Design, use, and evaluation of information and communication technologies
What is ISCRAM?

**ISCRAM** stands for **I**nformation **S**ystems for **C**risis **R**esponse and **M**anagement

Emergency and disaster preparedness, mitigation, response, and recovery
What is ISCRAM?

ISCRAM is an active community of researchers, academics, practitioners, policy makers working in the field of Information Systems for Crisis Response and Management.

**Goal:** Foster exchanges of knowledge and expertise in the field.
Objectives

ISCGRAM is dedicated to fostering a community to promote
 Research and development,
 Exchange of knowledge and
 Design, deployment, and management of information systems for crisis management

ISCGRAM community aims to facilitate international cooperation between
 Scientific/research institutes and universities, government agencies, and industry partners
 Researchers and practitioners in academia, industry, and public safety/crisis management
Origins

Began in 2004 as a research workshop in Brussels

3 co-founders:
  Bartel Van de Walle (Tilberg University)
  Benny Carlé (The SCK-CEN Nuclear Research Center in Belgium)
  Murray Turoff (New Jersey Institute of Technology)

In 2009 the ISCRAM Association was founded as an international non-profit organization
What does ISCRAM do?

Introducing ISCRAM: Bridging research and public safety
What does ISCRAM do?

ISCRAM Annual Conferences
ISCRAM-X events
The Summer School
Webinars
Publications
Annual Conference

Last Sunday of May
 Approx. 200 researchers and practitioners
 Workshops
 Demos
 Discussion panels
 Paper sessions
 Practitioner sessions
 Awards
 ...Sunday’s “Beer event”

ISCRAM 2004 & 2005 : Brussels, Belgium
ISCRAM 2006: Newark, USA
ISCRAM 2007: Delft, The Netherlands
ISCRAM 2008: Washington DC, USA
ISCRAM 2009: Gothenburg, Sweden
ISCRAM 2011: Lisbon, Portugal
ISCRAM 2012: Vancouver, Canada
ISCRAM 2013: Baden-Baden, Germany
ISCRAM 2014: State College, USA
ISCRAM 2015: Kristiansand, Norway
ISCRAM 2016: Rio de Janeiro, Brazil
ISCRAM 2017: Albi, France
ISCRAM 2018: Rochester, USA
ISCRAM 2019: Valencia, Spain
ISCRAM 2020: Cancelled
ISCRAM 2021: [Virtual] Blacksburg, USA
ISCRAM 2022: Tarbes, France
ISCRAM-X Events

ISCRAM Med
- ISCRAM Med 2014, Toulouse, France
- ISCRAM Med 2015, Tunis, Tunisia
- ISCRAM Med 2016, Madrid, Spain
- ISCRAM Med 2017, Xanthi, Greece

ISCRAM Asia
- ISCRAM Vietnam 2013
- ISCRAM Sri Lanka 2014

ISCRAM Asia Pacific
- ISCRAM Asia Pacific 2018, New Zealand
- ISCRAM Asia Pacific (2020, Postponed) 2022, Australia
ISCRAM Summer School

Tilburg University, the Netherlands, 2006-2014

- Serious Gaming for Disaster Resilience
- Disaster in My Backyard Game
- The Haiti Case
- New Technologies for Citizen Participation in Crisis Preparedness and Response
- Information Systems for Global Disaster Risks and Humanitarian Assistance

Telecom ParisTech, 2017

- Online social networks and crisis Management: the case of the 2016 Paris flooding
Webinars (2020-1)

**Physics Of Decision: Application to COVID-19 and future Pandemics:** Frederick Benaben & Nafe Moradkhani, IMT Mines Albi, France

**Inside the Dutch Corona Operational Team:** Kenny Meesters, Tilburg University, The Netherlands & Saak Seen, Safety Region Rotterdam-Rijnmond, The Netherlands

**Systemic Pandemic Risk Assessment and Management:** Jose Julio Gonzalez, Stepchange AS, University of Agder, Norway & Colin Eden, Univ. of Strathclyde, UK

**Supporting the COVID-19 international response of Red Cross and Red Crescent National Societies with data and digital:** Marc van den Homberg & Joachim Ramakers, 510, The Netherlands Red Cross

**Urban Public Safety Risks Management:** Shuanghua Yang, Southern University of Science and Technology, China
Publications

http://idl.iscram.org/
Research Showcase

Introducing ISCRAM: Bridging research and public safety
Research on Public Safety

Simulation and optimization of emergency response

Command and control systems/processes

Resilience of critical infrastructures and continuity of operations

Geographic Information Systems (GIS) in emergency response

Usability/human-centered design of workstations/common operational pictures (COP)

Early warning systems

Social media and alternative channels
Workshop simulation to test a CPR demonstration video with bystanders

Ophélie Morand, Caroline Rizza, Stéphane Safin, Robert Larribau, Romain Pages, Hortense Soichet
**Context**

**Out of Hospital Cardiac Arrests data**

- **OHCA**
  - 7-10% Survival rate\(^1\)
  - 13.6% Early CPR\(^2\)
  - 47% Early AED\(^2\)

- **Victims receive**
  - 10-40% bystander CPR\(^3\)
  - 1-18% bystander defibrillation\(^3\)

**How to improve the rate of bystander CPR and its quality?**

- **By developing digital applications for witnesses**
  - Allows to send videos of first aid actions
  - Enabling knowledge transfer
  - Building a shared discourse
  - Bringing out a collective framework
  - Increases CPRs performed: \(82.7\%\) video vs \(77.1\%\) with audio
  - Increases its quality:
    - Rhythm
    - Compressions
    - Interruptions
    - Hand position

- **By building trust within the survival chain**
  - Sharing common experience builds confidence\(^10\)

**Barriers to bystander intervention**

- Fear of hurting the victim\(^4\)
- Lack of CPR knowledge\(^5\)
- Mistrust from the health professionals\(^6\)
- Lack of previous collaboration leading to frustration and misunderstanding\(^7\)

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\(^1\) Gräsner et al., 2020; Rumsfeld et al., 2016; Berdowski et al., 2010
\(^2\) Souers et al., 2021
\(^3\) Valeriano et al., 2021; Virani et al., 2020
\(^4\) Bouland et al., 2017; Kanstad et al., 2011; Dam et al., 2010
\(^5\) Bird et al., 2020; Mc Lennan et al., 2016
\(^6\) Reuter et al., 2013
\(^7\) Reuter et al., 2016, Boin, 2009
\(^8\) Lee et al., 2020
\(^9\) Lin et al., 2018, Stipulante et al., 2016; Bobrow et al., 2011; Yang et al., 2008, 2009; Johnsen & Bolle, 2008
\(^10\) Fledderus, 2018
\(^11\) Gerhold et al., 2020; Munkvold, 2016
Methods

- **SARA application**
  - Allows any witness calling an emergency number to be connected to the regulation center
  - Provides first aid demonstration sent by the dispatcher

- **Protocol**
  - 5 simulations at HUG Hospital
    - **Population:** 6 citizens, 2 dispatchers, 5 first responders (Save a Life), 6 paramedics
    - **Scenario:** You have found in a park an unconscious man of 60 years old, you call 144 and follow the instructions given by the dispatcher.
    - **Course of action:**
      - Participant finds the victim and calls 144
      - The dispatcher completes the assessment and on recognition of the RCA transmits the SARA video "CPR".
      - The participants starts CPR following the video
      - Until Firsts responders Save a life (5 minutes) and paramedics (8minutes) arrive
  - Shared debriefing
Results

Video effect on cardiac massage

- 5/6 expressed that the video was "a help", "a good input", "a stimulation".
- Better hand position
- Keeping a good rhythm
- Reassures the bystander "it adds something comforting" and the dispatcher "the witness, watching the video, will do a rather effective massage and this is probably what will save the patient".

Effect of simulation on the relationship between stakeholders

- Confirmation that the witness is perceived as essential and as a resource instead of a burden.
- As a relay for massage: "It doesn't matter how good the massage is, there is a massage that is given. I have other skills and I will arrive and let the person do the massage" (first responder).
- As a liaison with 144: "To have someone in contact with the dispatch center until the paramedics arrive, it helps psychologically" (first responder).

Opportunity to explain processes to avoid confusion and frustration.

Results
Thank you!
A design-science-led investigation on the feasibility of a low-cost earthquake early warning (EEW) system for Aotearoa New Zealand

Dr Marion Lara Tan
CRISiSLab – Joint Centre for Disaster Research
Massey University, New Zealand

Project team: Dr Raj Prasanna, A/Prof Julia Becker, Prof Anna Brown, Dr Kristin Stock, Prof Cassie Kenney, Alicia Cui, Emily Lambie, and Prof David Johnston
Example based on USGS ShakeAlert System
EEW in Aotearoa NZ? A design science approach

**Environment**

**Application Domain**
- Community
  - Public
  - Domain experts
  - Sectoral and industrial partners
- Sensors
- Communication network

**Design Science Research**

**Relevance Cycle**
- Requirements
- Field Testing

**Build EEW system and process**
- Design Cycle

**Evaluate**

**Rigor Cycle**
- Adding to knowledge base
- Grounding

**Knowledge Base**

**Foundations**
- Algorithms and methods
- Physical sciences
- Technical underpinnings
- Understanding of human behaviour
- Data analytics
- Knowledge exchange with community-of-practice
What are we doing?

On the technical front

• Exploring and implementing an experimental EEW network of low-cost sensors in Wellington region and edge computing

On the social engagement side

• Established a community-of-practice for EEW in New Zealand
• Used an innovative participatory method “comfort board approach” for effective citizen engagement

Fig.1 Current experimental network

Fig.2 Comfort board approach
Overview of 311 non-emergency system

• Built to reduce the congestion in the 911 emergency system
• Many metropolitan areas in the U.S and Canada have their own independent 311 systems
• Mainly manages two types of requests:
  1. Requests for services to be performed (cleaning up trash, fixing a street light, removing a fallen tree)
  2. Requests for information (beginning date of a government program, the operating hours of a particular government agency)
• Multiple access options: phone, website, chat, app, etc.
• Highly structured and standardized data: Creation and closure time, category, geo-coordinates, resolution status
311 System’s Role in Disaster Management

- Provides relevant, timely, and up-to-date information for the community
- Provides a sense of stability and support from the government
- Acts as a multi-dimensional sensor for citizen-driven situational awareness
  - Supports citizen engagement / volunteerism
- Provides a comprehensive, historical data set capturing the complex reactions and responses to different disaster events
- Supports a variety of analytic techniques in disaster operations management
  - Forecasting, resilience quantification, resource allocation, staffing

Table 1. Orange County 311 calls – Top 6 categories of 2020
Thank you!

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References


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How can I access research?

Introducing ISCRAM: Bridging research and public safety
Accessing ISCRAM Research

ISCRAM maintains +1800 open-access publications in the ISCRAM Digital Library:

idl.iscram.org
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How can I get involved?

Introducing ISCRAM: Bridging research and public safety
Collaboration is essential.
Three Opportunities

1. Submit a Practitioner Paper to the ISCRAM Annual Conference

2. Attend EENA Corner at the ISCRAM Annual Conference

3. Attend the Research Corner at the EENA Annual Conference
Practitioner Papers & Posters

Papers (500-3000 words) and Posters (<500 words) that discuss real-world experiences, problems, and case studies related to public safety.
   Reviewed for relevance and ability to contribute to discussions
   Included in the conference proceedings/ISCRAM Digital Library

ISCRAM Annual Conference is in Tarbes, France on May 22-5, 2022.

Email us before 1 March if you are interested in submitting a practitioner paper!
19th International Conference on Information Systems for Crisis Response and Management
Tarbes, France
May 22- May 25, 2022

https://iscram2022.enit.fr/
Research Corner

Research Corner is a joint event hosted by ISCRAM/EENA at the EENA Annual Conference.

Researchers present ongoing projects related to public safety.

Objective is to introduce researchers and government and industry practitioners working on topics of mutual interest related to public safety.
Research Corner 2021

A simulation-based organisational diagnosis for Emergency Call Centres, Eva Petitdemange, IMT Mines Albi, France

Virtual Emergency Operations Centre (EOC): How to manage a crisis from an EOC when you need to work from home, Erik Borglund, Mid Sweden University, Sweden

Using Existing Data to Support Operational Emergency Response in Germany, Lennart Landsberg, Cologne University of Applied Sciences, Germany

Non-conveyance due to Patient-initiated Refusal in Emergency Medical Services, Hassan Moafa, Maastricht University, the Netherlands
EENA CONFERENCE & EXHIBITION 2022
IT’S TIME TO MEET AGAIN ON 27-29 APRIL IN MARSEILLE!

Next Generation 112 deployments
AED mapping
Industry session: Focus on solutions on the market
Public Warning - Moving beyond the technology mandate
Using data to anticipate, predict and respond to emergencies
Industry session: Focus on solutions on the market
Networking Cocktail: Public safety speed-dating & Free time to visit to the exhibition
Research Corner in partnership with ISCRAM
112 Awards Ceremony

Wednesday, 27 April 2022 @ 16:20-17:20
An artificial intelligence tool to classify emergency medical incidents in real time improves emergency medical dispatch, Pablo Ferri Borredà, Polytechnic University of Valencia, Spain

Predicting Volunteer Travel Time to Emergencies, David Fredman, Heart of Operations, Heartrunner, Sweden

Adapting Textual Alerting Messages to Context and Population needs: Feedbacks from France, Johnny Douvinet, Avignon University, France

Additional speakers TBD
Questions?

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