

RESILIENT SOCIETY – NOVEL IT SERVICES FOR CROWD TASKING AND MANAGEMENT IN CRISES AND DISASTER SCENARIOS

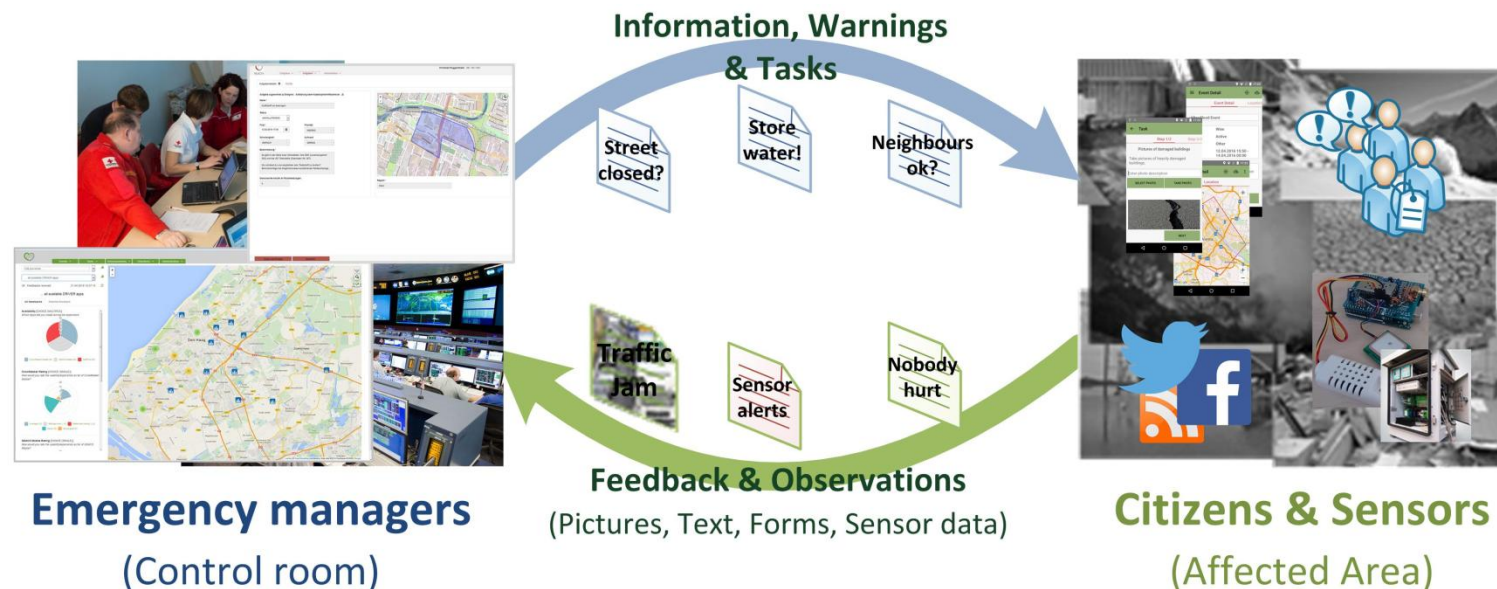
Andrea Nowak, Christoph Ruggenthaler, Daniel Auferbauer

Center for Digital Safety & Security
AIT Austrian Institute of Technology



VISION OF AUSTRIAN RED CROSS & AIT

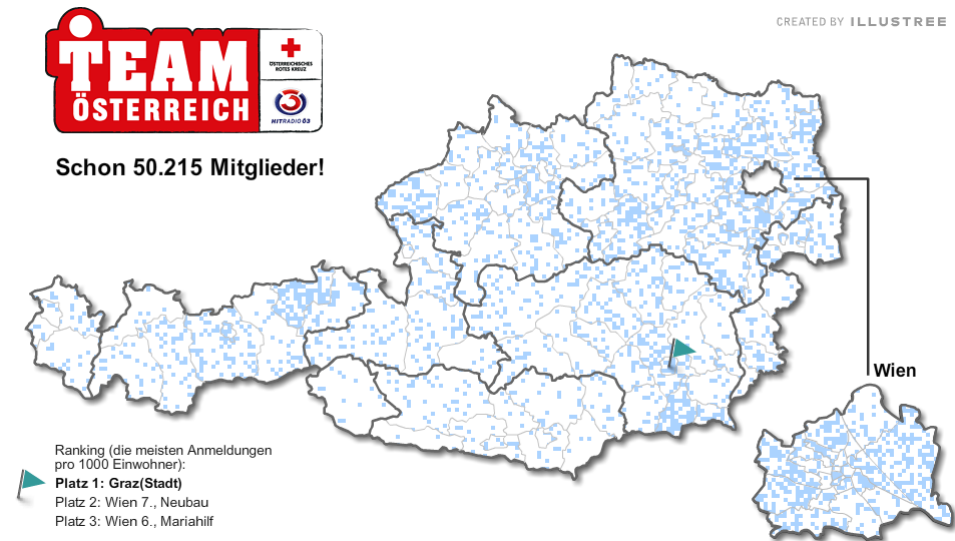
- State-of-the-Art **Technologies to enhance Emergency Management** by
 - **using** the untapped potential of **social and new media** information
 - **approaching local citizen** crowds directly with mobile technologies
 - ensuring **resilient society** by providing **reliable real-time information**
 - utilizing **sensor data and observations** to enhance **operational pictures**



TEAM ÖSTERREICH

About

- Volunteer management effort, conceived in 2007
- Cooperation of Red Cross and nationwide media
- Help in various relief efforts: cleaning up, filling sandbags, re-building, ...
- 50k members as of 2017



Screenshot of Team Österreich homepage, showing distribution of members
<http://application.oe3.fm/teamoesterreich/karte.html>

REGISTERED VOLUNTEERS EMPLOYED IN GUIDED GROUPS

Registered, but not specifically trained



Volunteers support the distribution of relief goods to refugees in Austria at the Hungarian border (Sept. 2015)

Pictures: Austrian Red Cross

THE 1ST APPLICATION

CrowdTasker

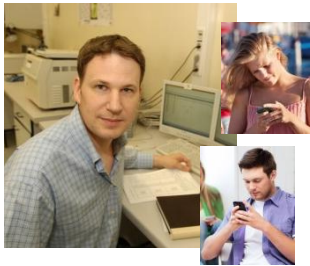
Research Project: RE-ACTA Resilience Enhancement by Advanced Communication for Team Austria

RE-ACTA has been funded by the Austrian security research programme KIRAS of the Federal Ministry for Transport, Innovation and Technology (bmvit).

MOTIVATION AND OBJECTIVES

- **Leverage volunteer manpower** in crisis & disaster management phases
 - Integrate pre-registered volunteer crowd in the entire CDM process for
 - **Information sourcing** (collect information from the field, ...)
 - **Temporary job execution** (text translation, local alerting, ...)
 - **Efficient information sharing** from professionals to population
 - **Select** best suitable **volunteer crowd** for tasks based on
 - **Pre-defined skills** and **knowledge**
 - **Residence** and **GPS** location
- Creation of **Crowdtasking process** and **Proof-of-Concept application**
 - Legal, privacy and liability aspects are examined upfront
 - Specification & design of whole Crowd-Tasking process
 - Unified, efficient communication channel and workflow
 - Able to cope with large amount of volunteer communities

THE IDEA



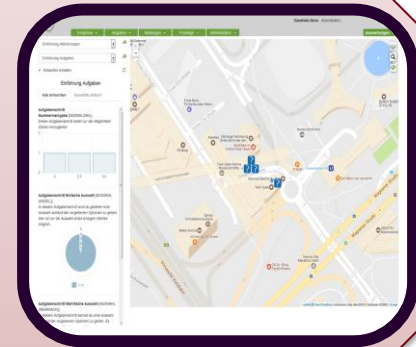
Addressing local volunteers at their current position



Execution of appropriate tasks



Submit feedback and information
Like pictures, multiple choice, free text ...



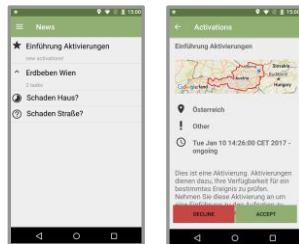
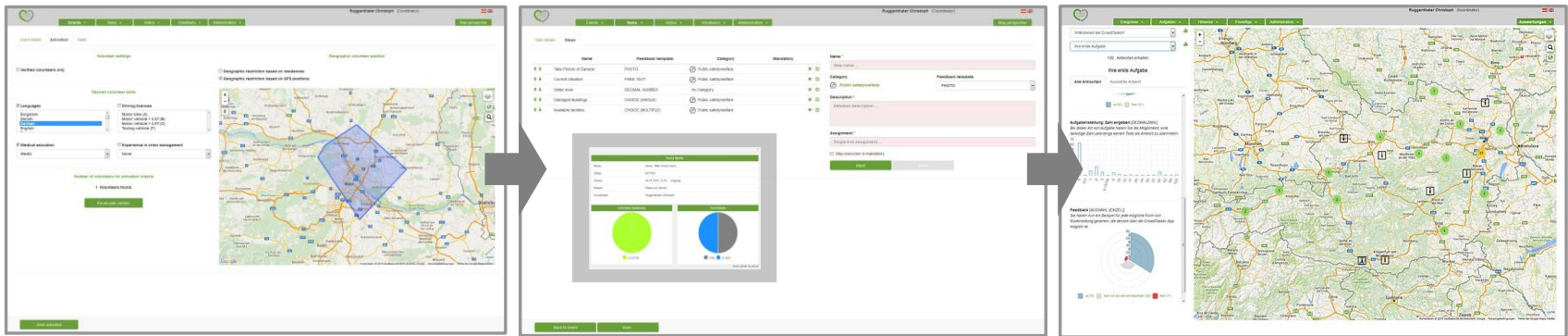
Visualization and assessment of received information from the field

CROWDTASKER IN ACTION

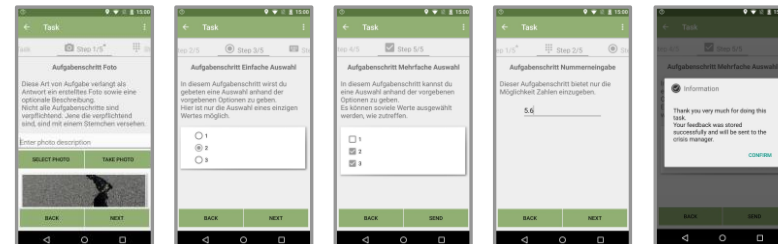
Select preregistered citizens / volunteers

Create and assign specific tasks

Visualize & evaluate received feedback



Receive relevant events and manage requests



Execute received tasks and report back information



NATIONAL & EUROPEAN DEMONSTRATIONS + TRIALS

- **Earthquake Relief Help**

- Report local damages
- Verify power supply

- Vienna, Austria (2015)

Damage Assessment



- **Chemical Accident Trial**

- Warn people in hazard zones
- Capture personal health state

- Tel Aviv, Israel (2016)

Warning and Guidelines



- **Refugee Supply Demand**

- Acquire & distribute donations
- Capture volunteer availability

- Vienna, Austria (2016)

Resource Gathering



- **Imminent Flood Scenario**

- Assess local water levels
- Report infrastructure damages

- The Hague, Netherlands (2016)

Situation Awareness



- **Student & Teacher Awareness**

- Survey emergency plan procedures
- Check equipment (hose, first aid ...)

- Middle Schools, Austria (2017)

Resilience and Preparedness





THE 2ND APPLICATION

Young Crowd

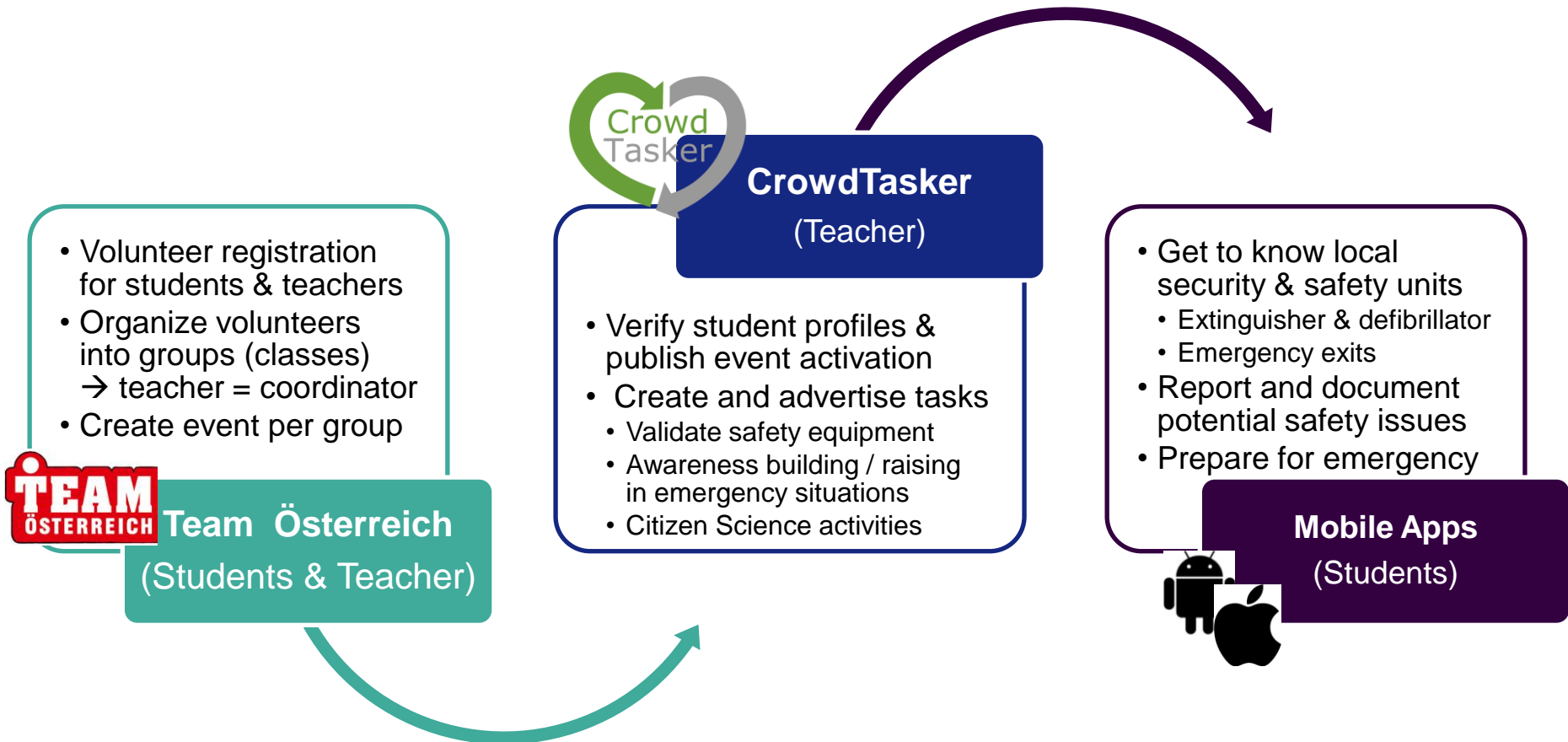
Assessment and Evaluation of Austrian
Classroom Resilience and Preparedness



MOTIVATION AND OBJECTIVES

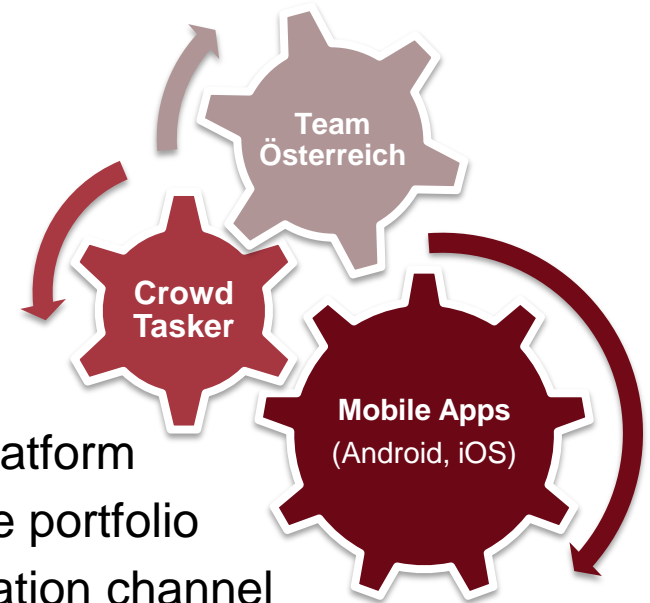
- Enhance Resilience and Awareness in Austrian Schools
 - Establish citizen science activities
 - Increase awareness for existing security and safety equipment
 - Teach the handling and importance of functioning devices
 - Status and location of defibrillators
 - Guidelines and emergency exits in case of fires
 - Introduce and execute the crowdtasking approach in schools
 - Evaluate and evaluate the usability and acceptance
 - Capture additional requirements and use cases for this target group
- Promotion and Enhancement of Team Österreich
 - System integration of Team Österreich and CrowdTasker
 - Adapt processes and test the overall system

THE SOLUTION



PLANNED PRODUCTIVE ROLLOUT IN 2017

- Go Live after successful system integration
 - Interworking systems and applications
 - Aligned processes and workflows
 - Permission Mapping and Association
 - Federal organizational hierarchy
- Enhancement of Team Österreich volunteer platform
 - Adding mobile apps and crowdtasking to the portfolio
 - Establish central communication & collaboration channel
 - Increase the acceptance and attraction for loosely coupled volunteers
- Cooperation with national radio station and media
 - National coverage for advertisement to interested citizens
 - Promotion of volunteer engagement and Team Österreich platform



THE 3RD APPLICATION

RECheck

Collection of resilience values within the population
through simple surveys



MOTIVATION

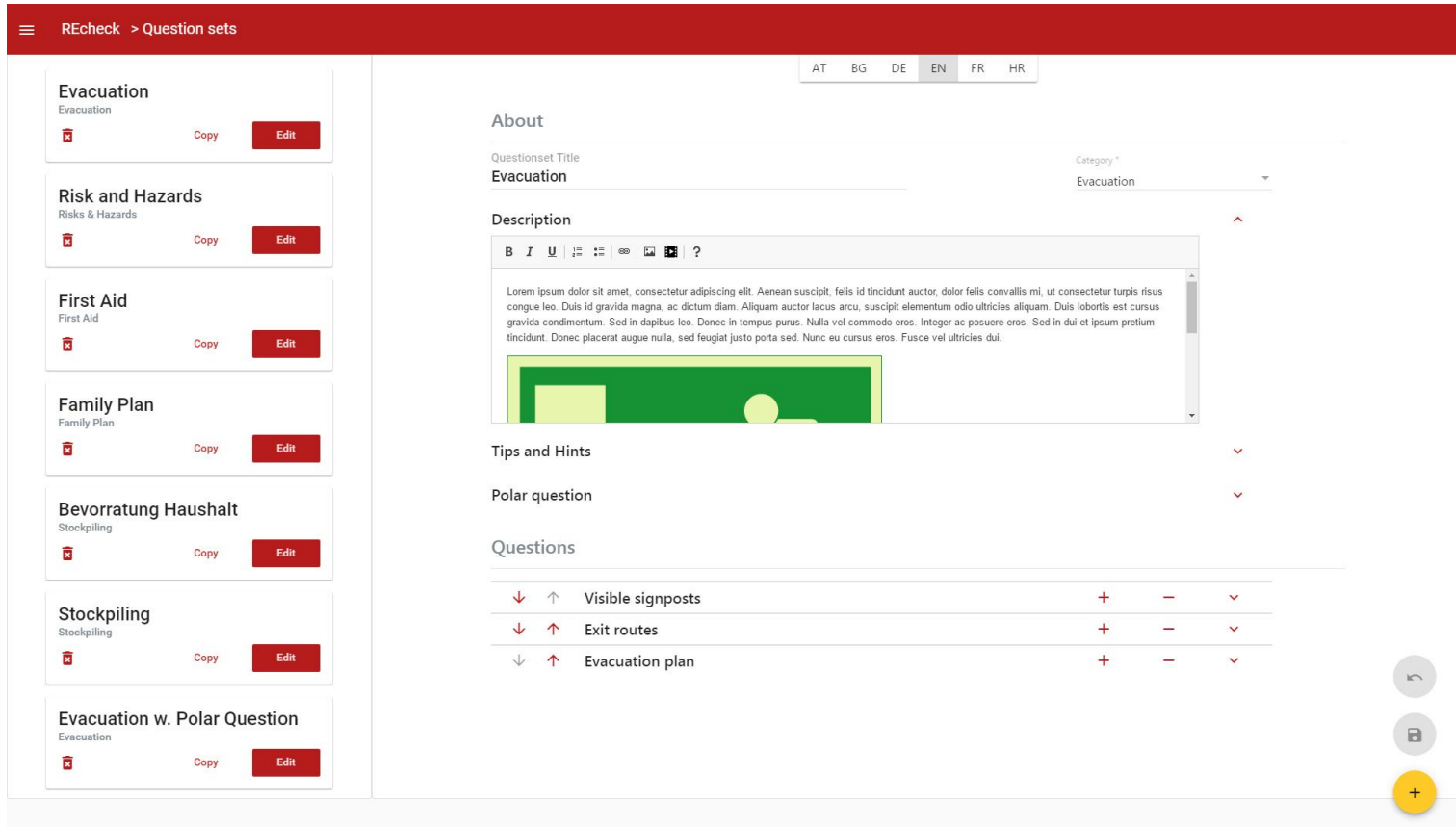
- Social cohesion in the population is constantly declining
- The knowledge of the social environment is of great importance for the resilience
- Households and neighborhoods are currently not recognized as target groups and mostly neglected (focus on individuals & communities)

THE IDEA

- Intuitive, easy-to-use web application for creating modular questionnaires
- Pre-defined modules based on resilience aspects can be quickly combined as needed for local needs
- Enables benchmarking per country and resilience aspect (e.g. “flood preparedness in Austria”)
- Visualization of data on an interactive heat map

RECHECK - WEB APPLICATION (1 / 5)

Creating a question set (questionnaire building block)



The screenshot shows the REcheck web application interface for creating a question set. The interface is divided into a left sidebar and a main content area.

Left Sidebar (Question Sets):

- Evacuation (Evacuation) - Copy Edit
- Risk and Hazards (Risks & Hazards) - Copy Edit
- First Aid (First Aid) - Copy Edit
- Family Plan (Family Plan) - Copy Edit
- Bevorratung Haushalt (Stockpiling) - Copy Edit
- Stockpiling (Stockpiling) - Copy Edit
- Evacuation w. Polar Question (Evacuation) - Copy Edit

Main Content Area (Evacuation Question Set):

Language selection: AT BG DE EN FR HR

About

Questionset Title: **Evacuation** Category: Evacuation

Description

Rich text editor with text: Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean suscipit, fells id tincidunt auctor, dolor fells convallis mi. ut consectetur turpis risus congue leo. Duis id gravida magna, ac dictum diam. Aliquam auctor lacus arcu, suscipit elementum odio ultricies aliquam. Duis lobortis est cursus gravida condimentum. Sed in dapibus leo. Donec in tempus purus. Nulla vel commodo eros. Integer ac posuere eros. Sed in dul et ipsum pretium tincidunt. Donec placerat augue nulla, sed feugiat justo porta sed. Nunc eu cursus eros. Fusce vel ultricies dui.

Tips and Hints

Polar question

Questions

↓ ↑	Visible signposts	+	-	↓
↓ ↑	Exit routes	+	-	↓
↓ ↑	Evacuation plan	+	-	↓

Navigation icons: Back, Home, Add (+)

RECHECK - WEB APPLICATION (2 / 5)

Composing a questionnaire

☰ REcheck > Questionnaires

My Questionnaires	New Questionnaire	Available Questionsets
<p>You have not yet created any questionnaires. To do so, please click the yellow button in the bottom right corner.</p>	<div style="border: 1px solid #ccc; padding: 5px;"> <p>Questionnaire Title * REcheck at AIT Private <input type="checkbox"/></p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"> <p>B I U </p> </div> <p>This questionnaire is intended to be conducted as a REcheck session at the AIT premises in Vienna, bot TechGate and TechBase. It contains questions regarding fire hazards and safety measures, first aid on site as well as evacuation in case of danger.</p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p>Assigned questionsets</p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"> <p>Risk and Hazards Risks & Hazards</p> <p style="text-align: center;">↓ REMOVE</p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"> <p>First Aid First Aid</p> <p style="text-align: center;">↓ ↑ REMOVE</p> </div> <div style="border: 1px solid #ccc; padding: 5px;"> <p>Evacuation Evacuation</p> <p style="text-align: center;">↑ REMOVE</p> </div> </div>	<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <p>Family Plan Family Plan</p> <p style="text-align: right;">ASSIGN</p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <p>Bevorratung Haushalt Stockpiling</p> <p style="text-align: right;">ASSIGN</p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <p>Stockpiling Stockpiling</p> <p style="text-align: right;">ASSIGN</p> </div> <div style="border: 1px solid #ccc; padding: 5px;"> <p>Evacuation w. Polar Question Evacuation</p> <p style="text-align: right;">ASSIGN</p> </div> <div style="text-align: right; margin-top: 10px;"> </div>

RECHECK - WEB APPLICATION (3 / 5)

Executing questionnaires (optimized for mobile devices)

☰ REcheck > Run questionnaire

REcheck at AIT

This questionnaire is intended to be conducted as a REcheck session at the AIT premises in Vienna, bot TechGate and TechBase. It contains questions regarding fire hazards and safety measures, first aid on site as well as evacuation in case of danger.

👤 Participant ▾

📍 Location ▾

📄 Risk and Hazards ▸

📄 First Aid ▸


📄 Evacuation ▸

START

Evacuation

3 Questions

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean suscipit, felis id tincidunt auctor, dolor felis convallis mi, ut consectetur turpis risus congue leo. Duis id gravida magna, ac dictum diam. Aliquam auctor lacus arcu, suscipit elementum odio ultricies aliquam. Duis lobortis est cursus gravida condimentum. Sed in dapibus leo. Donec in tempus purus. Nulla vel commodo eros. Integer ac posuere eros. Sed in dui et ipsum pretium tincidunt. Donec placerat augue nulla, sed feugiat justo porta sed. Nunc eu cursus eros. Fusce vel ultricies dui.



Vestibulum diam libero, auctor at enim quis, facilisis accumsan felis. Praesent nibh est, efficitur ac tempor sit amet, iaculis et felis. Etiam hendrerit, tellus vulputate blandit malesuada, nisi augue suscipit sapien, sed lobortis ex sapien eget ante. Mauris facilisis quam non enim convallis, sit amet mattis nibh malesuada.

Evacuation

Question 2 of 3

Exit Routes

Ut efficitur pellentesque magna eget rhoncus. Vivamus feugiat purus id tincidunt ultricies. Nunc aliquam ut purus eu placerat. Sed lobortis elit tellus, non luctus nibh porta vitae. In odio nulla, placerat non augue in, porta imperdiet erat. Nullam vel ex sit amet neque dapibus hendrerit pellentesque nec quam. Donec sed ligula interdum, aliquam mi ac, tincidunt lacus?

Daniel Christoph

I know nothing about any exit routes	0
I known about one exit route, but don't know if it is the best one	3
I know about all possible exit routes in this building and can describe the nearest one	5


ADD CUSTOM ANSWER

← ⌘ →

RECHECK - WEB APPLICATION (4 / 5)

Certificate for participating in the questionnaire

Certificate Details



REcheck
Neighbourhood Resilience

Certificate of Participation

Daniel Auferbauer
23/03/2017

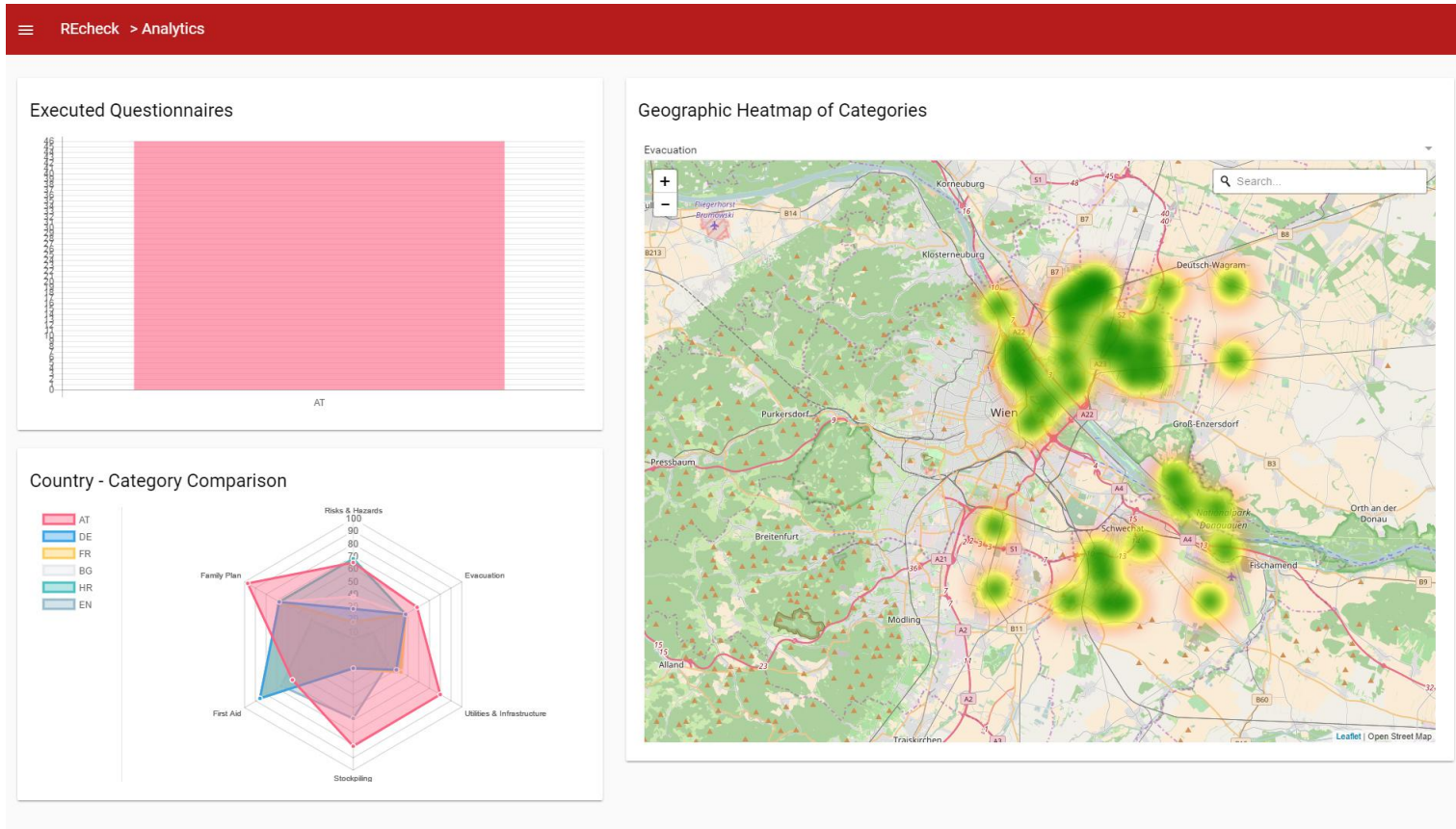
HAZARD	☺
AID	☺
EVAC	☺
<hr/>	
Total score	☺

[SHOW DETAILS](#)



RECHECK - WEB APPLICATION (5 / 5)

Analysis and visualization of feedback data



CONTACT

Andrea Nowak

Head of competence Unit Information Management
Center for Digital Safety & Security

AIT Austrian Institute of Technology GmbH

Donau-City-Straße 1 | 1220 Vienna | Austria

andrea.nowak@ait.ac.at | www.ait.ac.at

