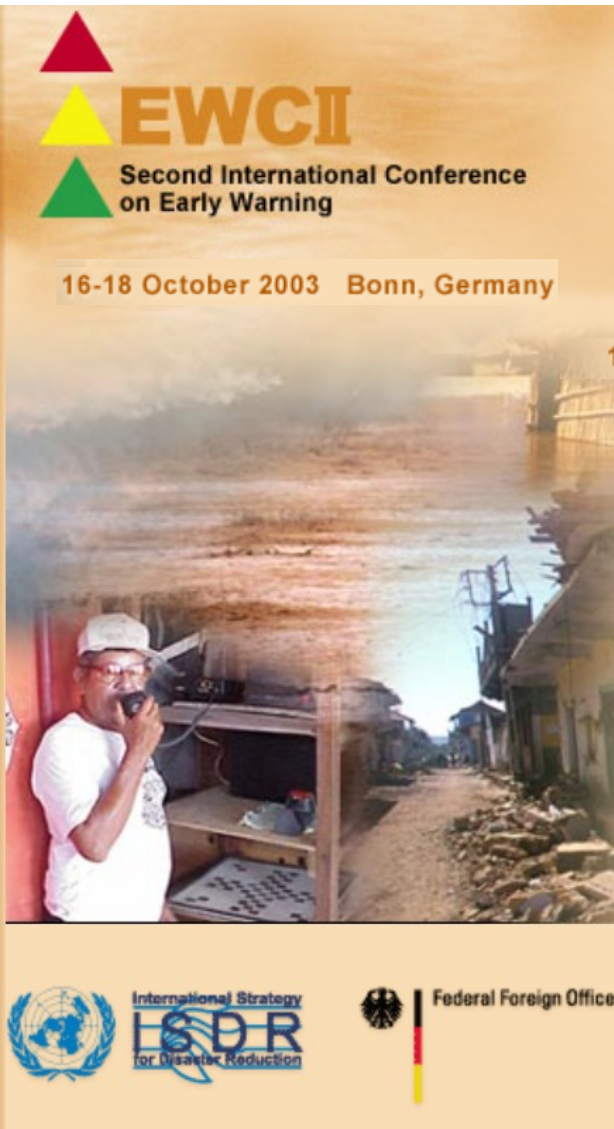




Invention of a Smart-phone based Two-way Pinpoint Alert System to implement the Sendai Global Target G and achieve “No one left behind”

Yuichi Ono
Deputy Director and Professor
International Research Institute of Disaster Science
Tohoku University
Sendai, Japan

Three International Conference on Early Warning supported by the Government of Germany



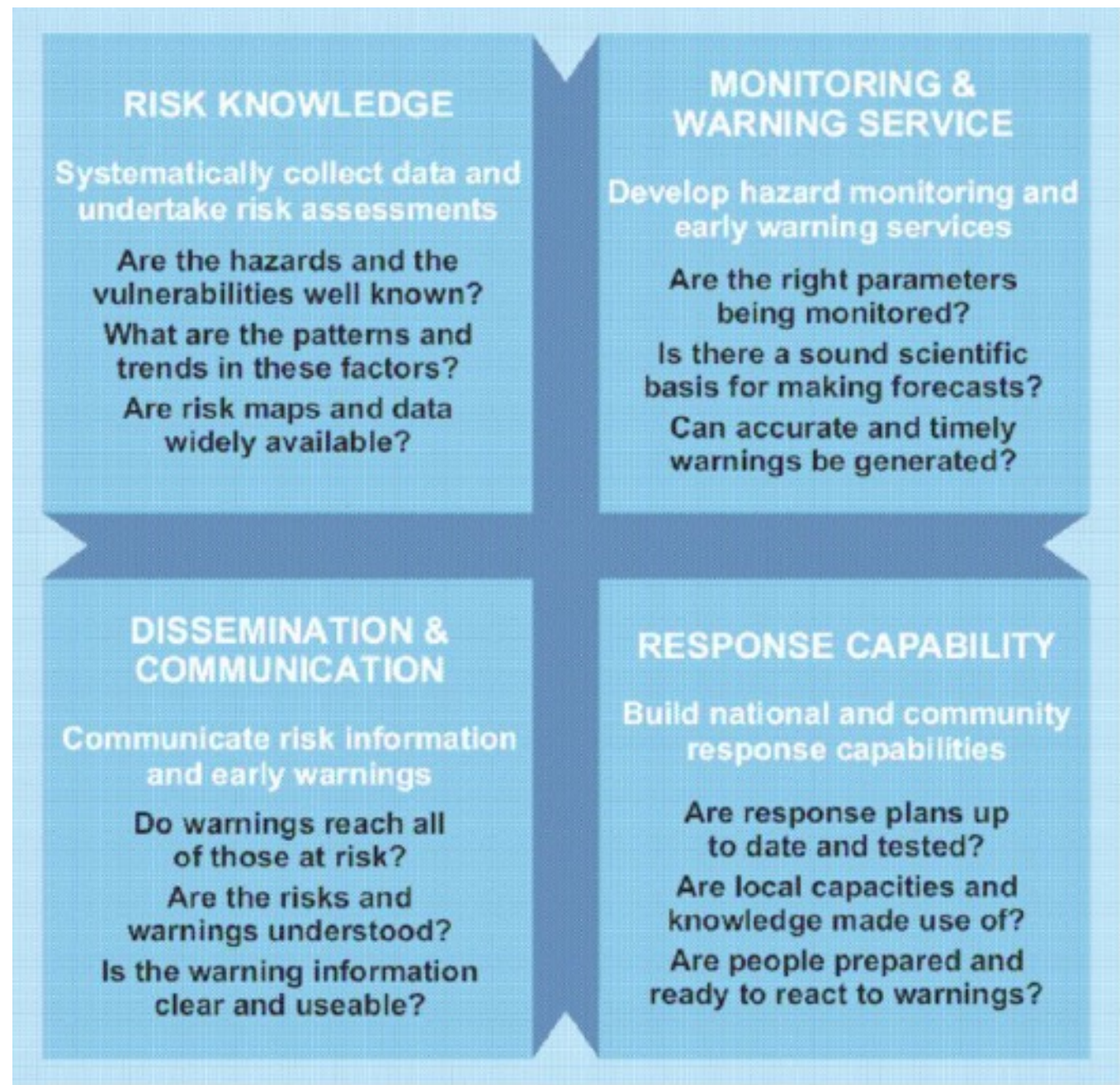
First International Conference on Early Warning (EWC '98) in Potsdam produced a round-up of existing systems and structures in the fields of early warning and disaster reduction with a focus on research and science

EWC II in Bonn: integration of early warning into policy and decision making and demonstrated the importance of regular and intensive exchange between science and policy for effective early warning



Conference delegates were presented with key recommendations from the **Global Survey of Early Warning Systems**, a report requested by the United Nations Secretary-General at the time, Kofi Annan.

This Survey stressed the importance of filling gaps and improving early warning capabilities worldwide, with a focus on **people-centred systems**.



Elements of a people centred early warning system (ISDR 2006)



International Network for Multi-Hazard Early Warning Systems (IN-MHEWS) established during the WCDRR in Sendai, March 2015.

Support the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030, especially the achievement of its global target G on multi-hazard early warning systems

- **Developing Early Warning System is one of the important DRR measures**
- **Early warning services in conjunction with evacuation to safer places save lives**
- **What cannot be saved though is property damage – Losing livelihood is as nearly equal as losing lives**
- **While it is not very difficult to generate and disseminate EW, whether people respond to it correctly and timely or not is a different matter**
- **EW without designating safer places does not save lives**
- **EW and evacuation orders might be ignored/unreached**
- **Some people cannot receive EW**
- **Some people cannot evacuate by themselves despite their wills**



A case study from Sendai

Mass evacuation should be avoided if possible

In the fall of 2019, more than 600,000 Sendai citizens (total population is 1 million) were under evacuation order due to an approaching strong typhoon.

Where to accommodate such a large number of evacuees? Impossible!

Not everyone really needed to evacuate – only for those people whose house is at high disaster risk

Yet, government officials do not want to miss anyone just in case --- leading to issue evacuation order to wider community



One solution: A pinpoint system

1. Pinpoint-assessment = household level disaster risk assessment

Is your house safe?

+

2. A smart-phone based Pinpoint Alert System which should have a two-way communication function.

People who need help can ask help.

Fujitsu Research Institute and Tohoku University is jointly developing this project now



Government of Japan modified the law

Basic Act on Disaster Management (Act No. 223 of 1961) modified in May 2021

The solution was to encourage **municipalities to develop individual evacuation plans**

This was because more aged and disabled people became disaster victims in recent years

2019 Typhoon: 65%

2020 July Torrential Rain: 79%

Our Mission and Vision

Our Mission

Reduce deaths from disasters to zero

Our vision to ensure that no one is left behind

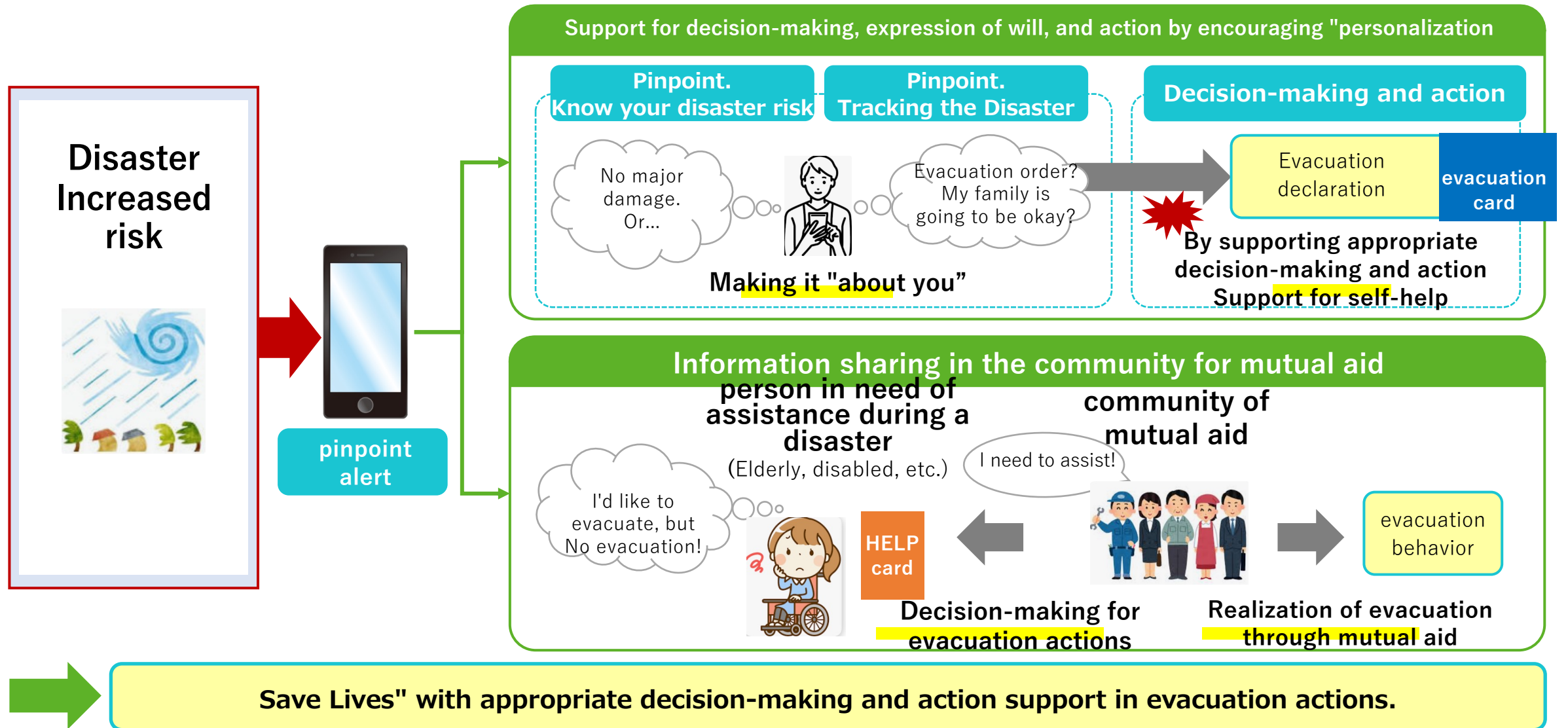
Empowerment of Self-Help through Digital Transformation

- **Pinpoint risk assessment**
- **Pinpoint alerts**



Realization of Inclusive Disaster Management

Image of Inclusive DRR through Community Alert



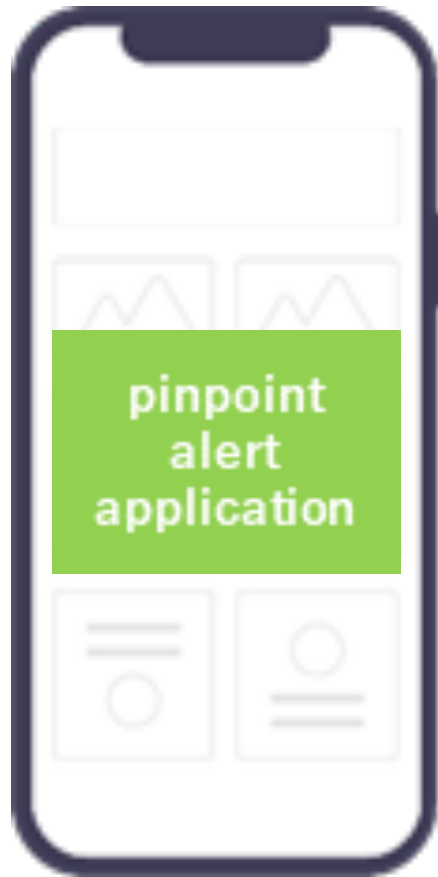
Community Alert App: User Expansion

myself

Your own family and
Acquaintances and
Neighbors.
Use to protect

Utilized in existing mutual aid
communities such as neighborhood
associations, NPOs, social welfare
corporations, fire dept. etc.





Normal time

Alert phase

Normal time

Know the Risk



You can find out the disaster risk level of your location according to your registered information such as your area information, the age of your house, the number of floors in your residence, and information on family members who need assistance in evacuation.

危険を知る

かおくとうかい おそ

家屋倒壊の恐れ

ちてんとうろく じょうほう はんてい

地点登録されている 情報 がなく 判定

ができません。

まん いち そな ひなんじょ けんどう じょうほうしゅうしゅう

万が一に備え、避難先の 検討 と 情報収集

をお願いします。

しんすい おそ

浸水の恐れ

お住まいのエリアは注意が必要です。

たてもの すいぼつ

建物が 水没のおそれ。

かなら しんすいまえ あんぜん ひなんさき

必ず 浸水前 に 安全 な避難先へ。

としやさいがい おそ

土砂災害の恐れ

ちてんとうろく じょうほう はんてい

地点登録されている 情報 がなく 判定

ができません。

まん いち ひなんさき けんどう てきせつ

万が一に備え、避難先の 検討 と 適切な

じょうほうしゅうしゅう ねが

情報収集 をお願いします。

ひなんけいろ

避難経路

ひなんけいろ じぜんかくにん

避難経路の事前確認ができています。

さいがいはっせいじ どうろくずみ ひなんばしょ ひなん

災害発生時は 登録済 の避難場所へ避難

するために 行動計画 を 確認 しましょう。

ホーム

危険を知る

行動計画

1 閲覧板

Action Plan

The registered information provides a disaster action plan (timeline) that shows how to act in the event of a disaster.

行動計画

警戒レベル1 ?

安全

大雨や台風により、近くの河川の氾濫や土砂崩れ等の被害が予想されます。命を守るために、日頃から災害に備えることが大切です。

私と家族がとる行動

● テレビやインターネットで天気予報をチェック

● 家族の今後の予定や居場所を確認

● 家の周りに風雨で飛ばされるものがないか確認

● 非常持出品(備蓄品など)を確認

ホーム

危険を知る

行動計画

1 閲覧板

13

Copyright 2024 Tohoku University & Fujitsu Research Institute

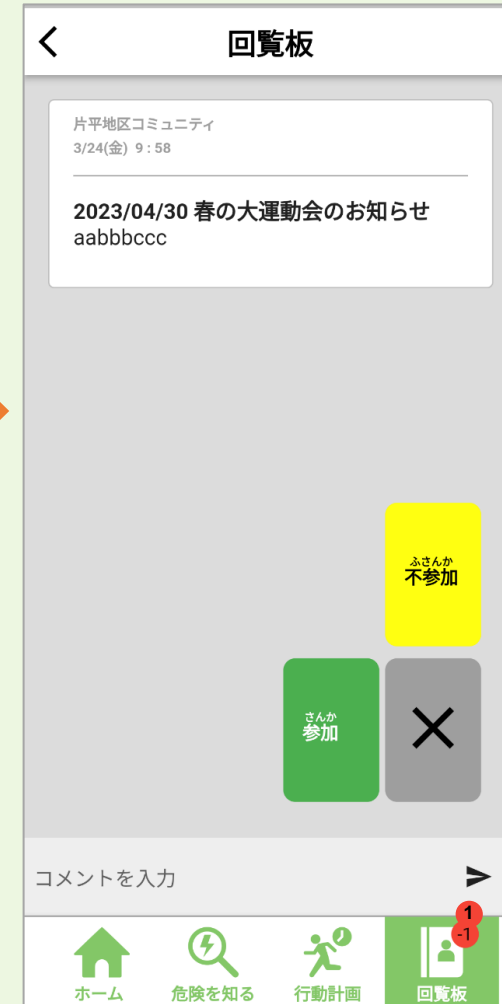
Normal time

Circulars and communication network in your local community

With the
community
Reinforces
contact
points

You can check circulars and communication network information such as announcements and surveys from the communities you belong to.

By responding to the circular/contact network from the circular/contact network card, you can familiarize yourself with the operation of the application on a regular basis.



Alert phase

In the event of a disaster, when an alert is issued, **your future action** plan will be displayed according to the disaster risk and information required at the registered location. You will also receive **alerts that encourage you to make evacuation decisions and take action.**



My Action Plan and Disaster Prevention Information

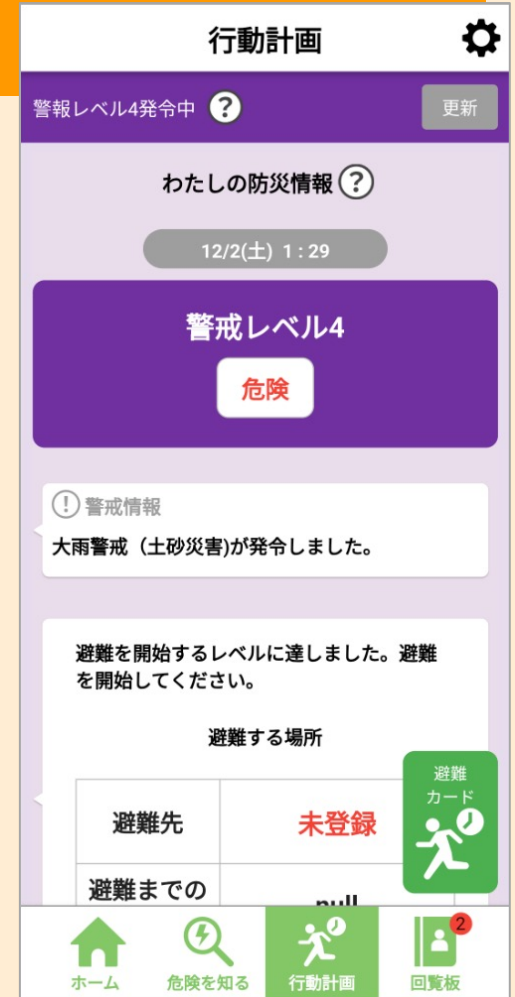
According to the disaster risk and need-to-know information of the registered location
Confirm Action Plan

In the event of a disaster, you can check my DRR information when an alert is issued.

Evacuation decision-making based on information on disaster risk and assistance needs at registered locations.

Your own action plan for action (My Timeline) will be displayed.

In addition, depending on the warning information, you will receive alerts that encourage you to make evacuation decisions and take action.

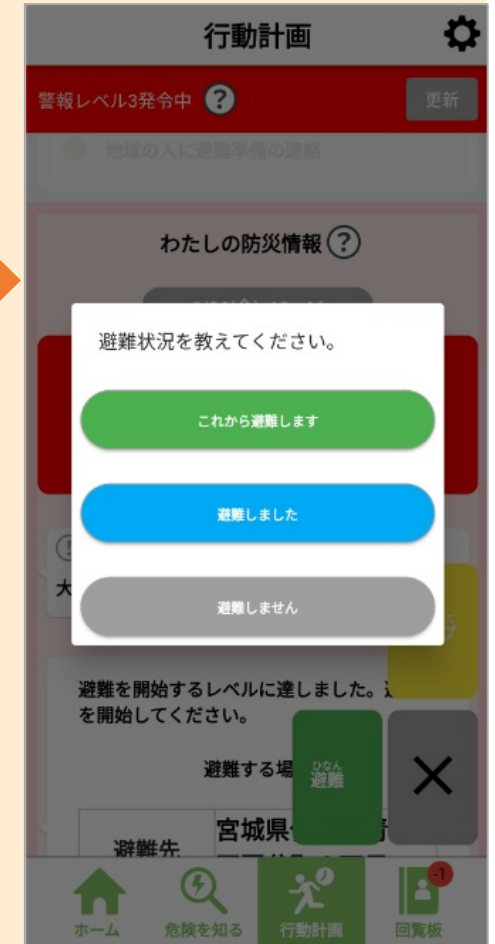


Alert Phase

Declaration of intent to evacuate: Evacuation and help cards

Evacuation and assistance required
declaring one's intention

Evacuation Cards” in the lower right corner of the screen. "I am going to evacuate," "I have evacuated," or "I need help to evacuate," to express their intention to evacuate or need assistance



Summary

- Pinpoint EWS is effective for a person/people to take appropriate actions during warning
- It will help narrow down warning areas as small as the household level
- It will allow a two-way communication – people need of help and helpers for evacuation during warning and after the disaster as well
- It requires: a smart phone, a software application to download, a broadband connectivity, electric power, hazard maps, warning and evacuation orders from authorities such as Met Office and Emergency Offices, training/drills, and community to help each other
- The Pinpoint Alert System Product jointly developed by the Fujitsu Research Institute and Tohoku University will be completed in Japan as soon as April 2025

World Bosai Forum 2023 was held in Sendai, March 10-12

5,412 participants from 40 countries

The Forum discussed tangible solutions for disaster risk reduction and disseminated information to the world through dialogue among international organizations, governments, academia, private sector, NGOs, and citizens

The forum came up with recommendations to the Mid-Term Review Process of the Sendai Framework for Disaster Risk Reduction

https://worldbosaiforum.com/media/files/_u/wbf2023/report/WBF%20Sendai%20Declaration%202023%20en.pdf





World Bosai Forum 2025 will be held in Sendai, March 7-9, 2025

