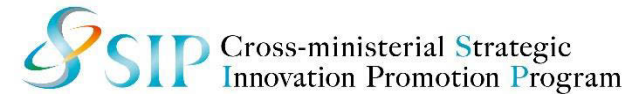


- R&D Topics : Robotics Technologies
- R&D Theme : Establish an unification system of robotics information for civil infrastructure
- Principal Investigator : Hirokuni Morikawa (National Institute for Land and Infrastructure Management)
(Supported by Advanced Construction Technology Center and Nomura Research Institute)

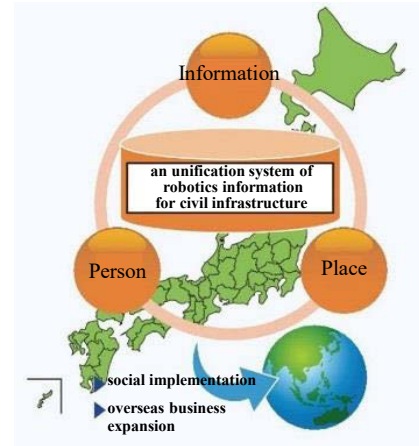


R&D Objectives and Subjects



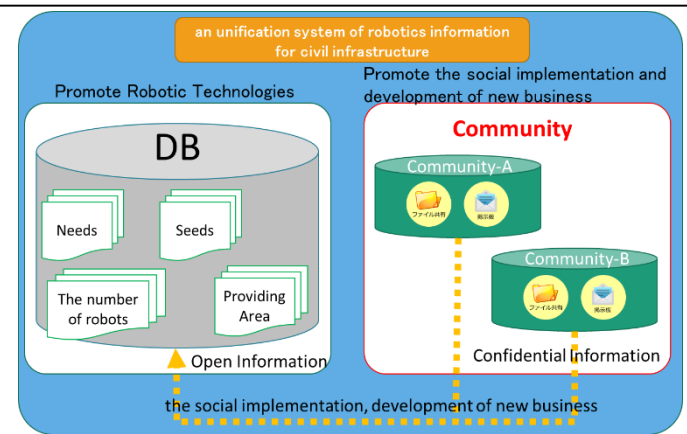
Objectives

- It is important to assume a robotic technology at the maintenance of civil infrastructure and a disaster effectively.
- This research contributes to developing robotic technology through the matching between needs and seeds.
- And more, this research supports the social implementation, Development of new business and the evolution of the global market.



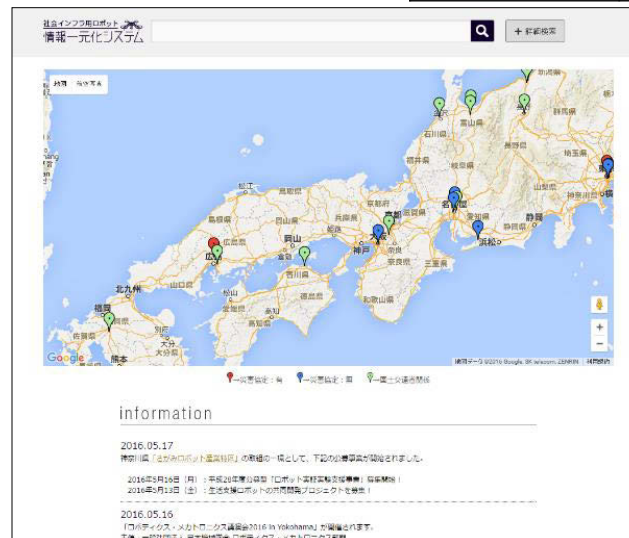
Subjects

- Unification about robotic technologies for the maintenance of infrastructure and the disaster.
- Establishment of an unification system of robotics information related to civil infrastructure for robotic developers and users.
- Administration of the community for an implementation and an industrialization of robotic technologies.
- Provision of information and procurement will support Ministry of Land, Infrastructure, Transport and Tourism and local governments in time of the disaster.



- Running on Simple Data-Base for Infrastructure Maintenance and Disaster
- We have pigeonholed robotic technology and added search function to the system based on the evaluation results of the field demonstration which is for maintenance of bridge, tunnel, underwater structure and for disaster response including disaster investigation, disaster recovery. The field demonstration is held by the Ministry of Land, Infrastructure and Transport project “Development and Implementation of the future generation civil engineering robotic technology”

Section	Needs	The number of Seeds
Bridges	Support/alternative of crossed-eyes	28
	Support/alternative of HAMMERING TEST	5
	Move/Approach of inspector	0
Tunnels	Support/alternative of crossed-eyes	6
	Support/alternative of HAMMERING TEST	6
Underwater	Support/alternative of crossed-eyes of Dam	11
	Evaluating bottom sediment and water of Dam	2
	Support/alternative of crossed-eyes of river	2
Disaster Investigation	Picture/topographic data of mass failure /volcanic hazard	12
	Physical property investigation/measurement of mass failure/volcanic hazard	4
	Information acquisition of tunnel collapse gas	0
	Image capture of tunnel collapse	6
Disaster Recovery	Emergency rehabilitation of excavation, dozing and banking	4
	Emergency rehabilitation of drainage	1
	Circulation of information of mechanical excavation	4

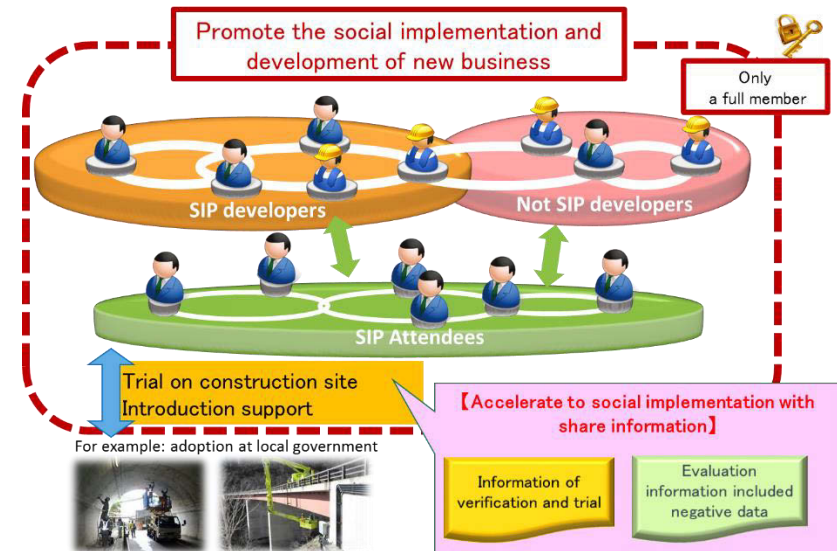


The Map Search dialog box

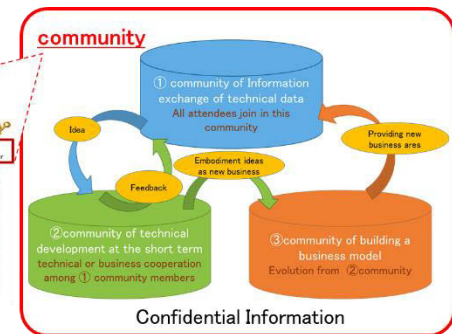


The Advanced Search dialog box

- Start the community for development of robotic & social implementation to construction site
- The interchange of robotic developers and users is started on this year.
- Now, 71 attendees communicate about how-to/know-how for robotic technologies on this community.
- There are especially themes for the summary of bridge inspection;
 - an application of UAV for inspection
 - a development of 3D modeling technology



An implementation and an industrialization



the field of infrastructure



Trial on construction site
(For example: trail as a theme of NETIS System)

the field of disaster



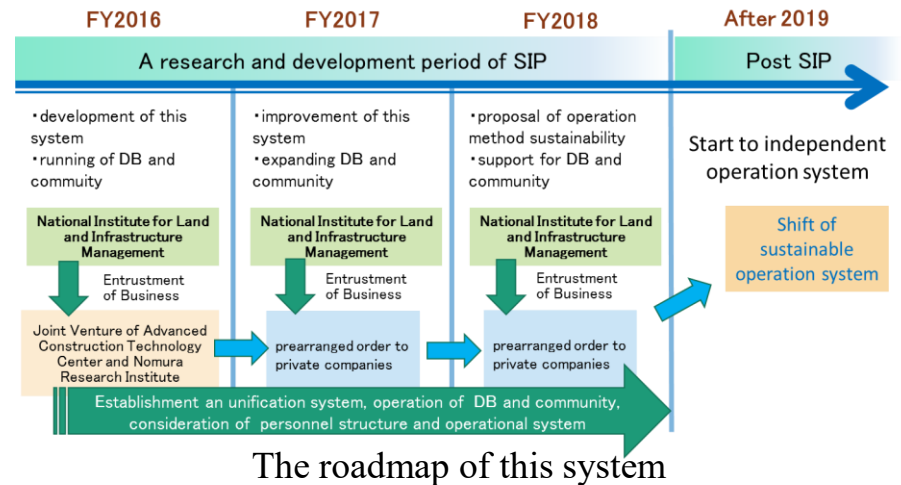
disaster relief agreements → register in DB.

→ register in DB

Overview of community

- Preparation for the sustainable administration of this system
 - Need more consideration of improvement, convenience, effectiveness and sustainability by using this system .
 - Study for the systems management after SIP.
 - Start an unification system of robotics information for civil infrastructure by the autonomous system from 2019.
 - This system will become as "an intellectual information hub" for all robotics users in Japan.

- Valued creation and cooperation with measure of MLIT
 - After full-scale operation in 2019 will cooperate with the integration disaster information system (DiMAPS)
 - Positioning as the part of the infrastructure maintenance national meeting
 - Positioning as the part of WG of the i-Construction promotion consortium



社会経済の壊滅的な被害を回避する 我が国の防災技術（ICT・ロボット）を結集した災害対応力向上 H29年度重点対策

概要（現状、課題）

- 防災に役立つ技術開発は日進月歩であるが、より効果的で迅速な災害対応を実現するため、防災機関が優れた防災技術（ICT・ロボット等）を活用できるよう、**所在情報、調達情報、技術情報、災害協定締結等の必要な情報を提供する社会インフラ用ロボット情報一元化システムの構築**を行う。
- 平常時より、災害用ロボット開発者（シーズ）と国土交通省や自治体等（ニーズ）との意見交換等を行い、**より災害ニーズにマッチした技術開発の促進**を行うとともに、**災害協定締結を促進**する。

社会インフラ用ロボット情報一元化システム

～災害情報をより早く、わかりやすく～

統合災害情報システム DiMAPS (Integrated Disaster Information Maping System)

「DiMAPS」との有機的な連携を図ることでより効果的かつ迅速な災害対応を支援する

国交省保有機械

排水ポンプ車 分帳積立型（遠隔操作式）パンプハウス 照明車

今後の取り組み

平成28年度中にシステムを試行。平成29年度より試行的な運用を開始し、それを踏まえた継続的な改良を行い、平成31年度より本格的な運用を実施。

The integration disaster information system (DiMAPS)

Source: <http://www.mlit.go.jp/river/bousai/bousai-gensai/bousai-gensai-4kai.html>