THE ADAPTATION OF GEOSPATIAL KNOWLEDGE INFRASTRUCTURE CONCEPT IN DISASTER MANAGEMENT

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GEOSPATIAL KNOWLEDGE INFRASTRUCTURE

Geospatial Knowledge Infrastructure provides a blueprint, is imperative to integrate geospatial data and technology into the wider digital ecosystem, and to place geospatial at the heart of knowledge co-creation

MALAYSIA DEFENCE GEOSPATIAL INFORMATION MANAGEMENT (DGIM) ARCHITECTURE

SERVICES

- Public Safety Monitoring
- Mission Analytic
- Taskforce Management
- Image Management
- Print-On-Demand
- Mission Monitoring
- Situational Awareness
- Intelligence Analytic

PARTNERSHIP (DGC & AGO) | NDCC | NRC | AGENCIES | NAVY | ARMY | AIRFORCE | SPECIAL FORCES | PEOPLE

API | Documents/Physical | SOA (Web Services)

Government Network | MAF Mission Network

INFRASTRCUTURE

- GeoHub (Future Defense Open Data)
- Map Catalogue
- Imagery Catalogue
- Modelling

- IT Infrastructure
- Data Fusion & Synchronization
- Apps Across Platform

- ***Knowledge as a Service (KaaS)***
- ***Data as a Service (DaaS)***
- ***Software as a Service (SaaS)***
- ***Platform as a Service (PaaS)***
- ***Infrastructure as a Service (IaaS)***

DATA SOURCES

- GIS Files/ databases
- Reporting
- Real-time
- Sensor
- Imagery
- Web Services
- 3D / BIM
- Documents
- Video
- IoT

GEOSPATIAL KNOWLEDGE INFRASTRUCTURE IN DISASTER MANAGEMENT

1

- Access to basic connectivity infrastructure (broadband, telecommunication services).
- A range of efficient data collection, storage and analysis services (sensors, modelling, digital platforms, cloud-based storage and processing, software systems for managing and processing data to yield actionable insights)
- An effective regulatory environment (interoperability rules, data quality standards, norms or regulations on data ownership and data privacy)

2

- Greater analytical support for precision farming
- Better understanding of risk factors (climate change, disasters etc.)
- Higher revenue generation and cost recovery through enhanced agricultural productivity.
- Better resource management through predictive analytics related to future yields, thereby reducing wastage and improving profits.
- Evaluation of economic impact on agricultural land and crops.

6

- Provides opportunity to adopt time-saving and cost reducing technologies

5

- More accurate support for decision –making and efficient farm management.
- Greater access to geospatial agricultural services and data provided by government agencies.
- Facilitates the re-use of administrative data to support services to farmers.

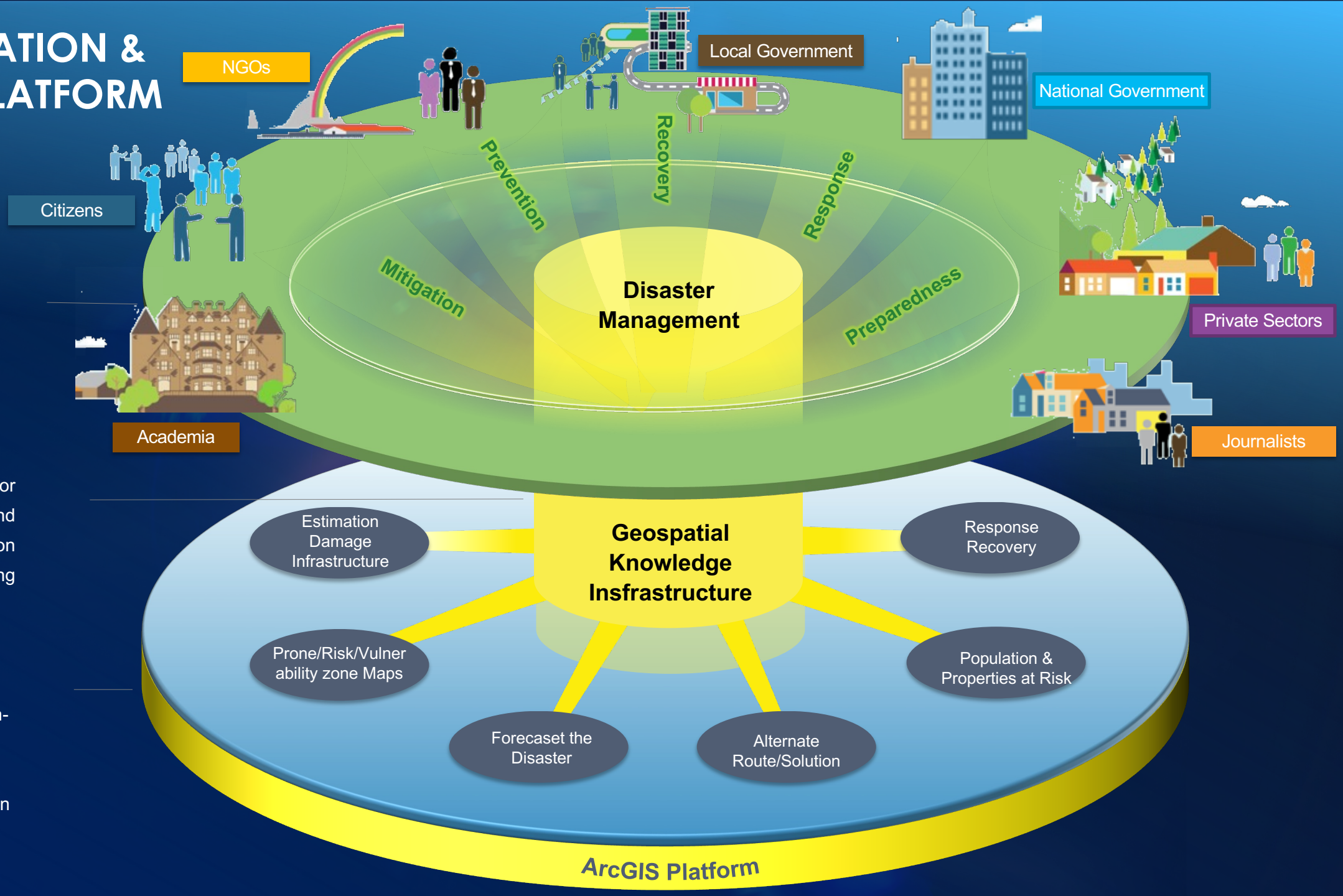
4

- Increased interaction between government agencies, private companies, data providers and data users to explore ways to pool data.
- Enhanced framework governing agricultural data creation and data access.
- Enable private sector investments.

3

- Bring more innovation and technology in the sector at much a faster rate.
- Greater efficiency through task automation.
- Development of appropriate skills in the sector

COLLABORATION & SHARING PLATFORM

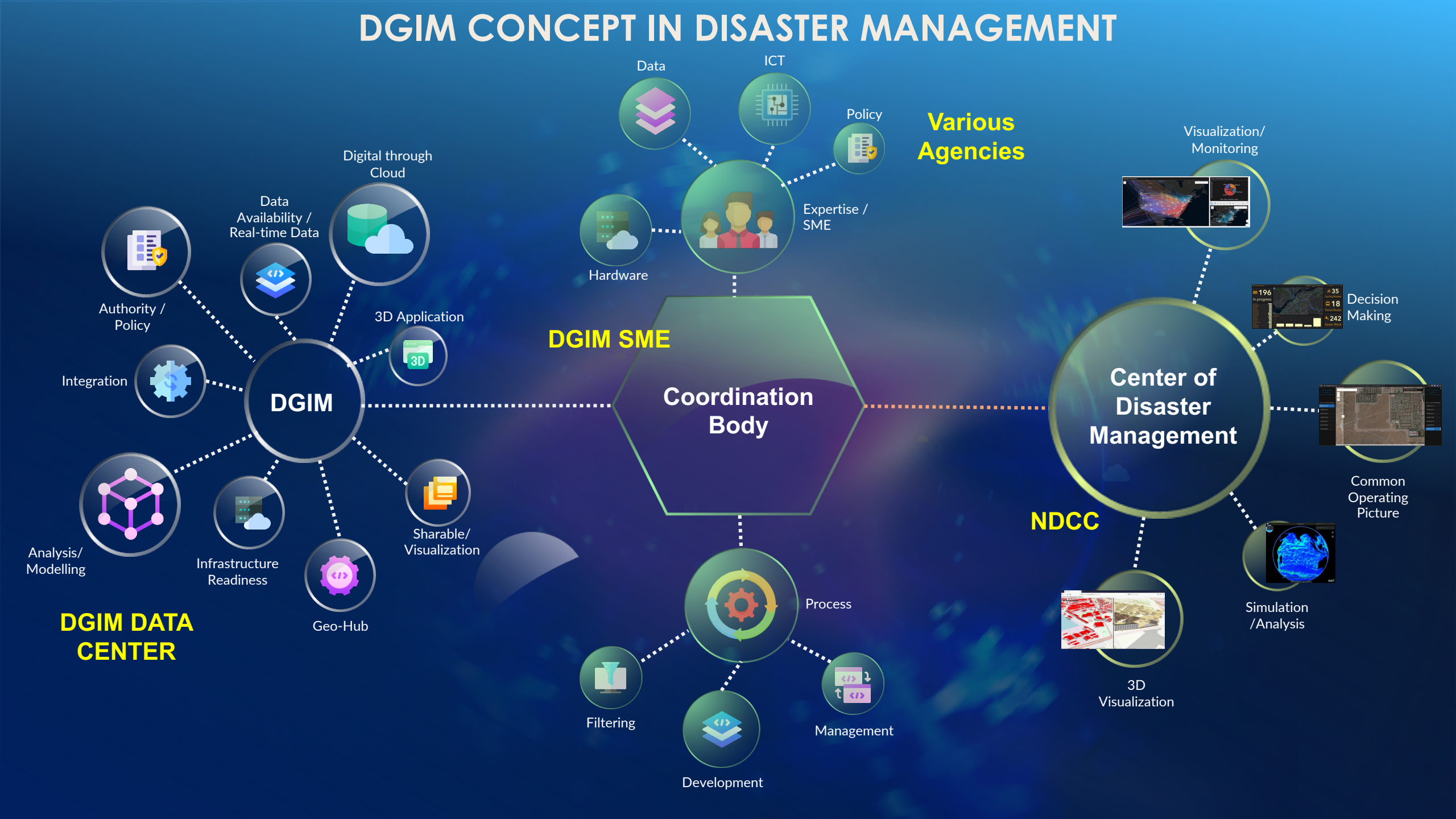


Public engagement platform, powered by services and open data

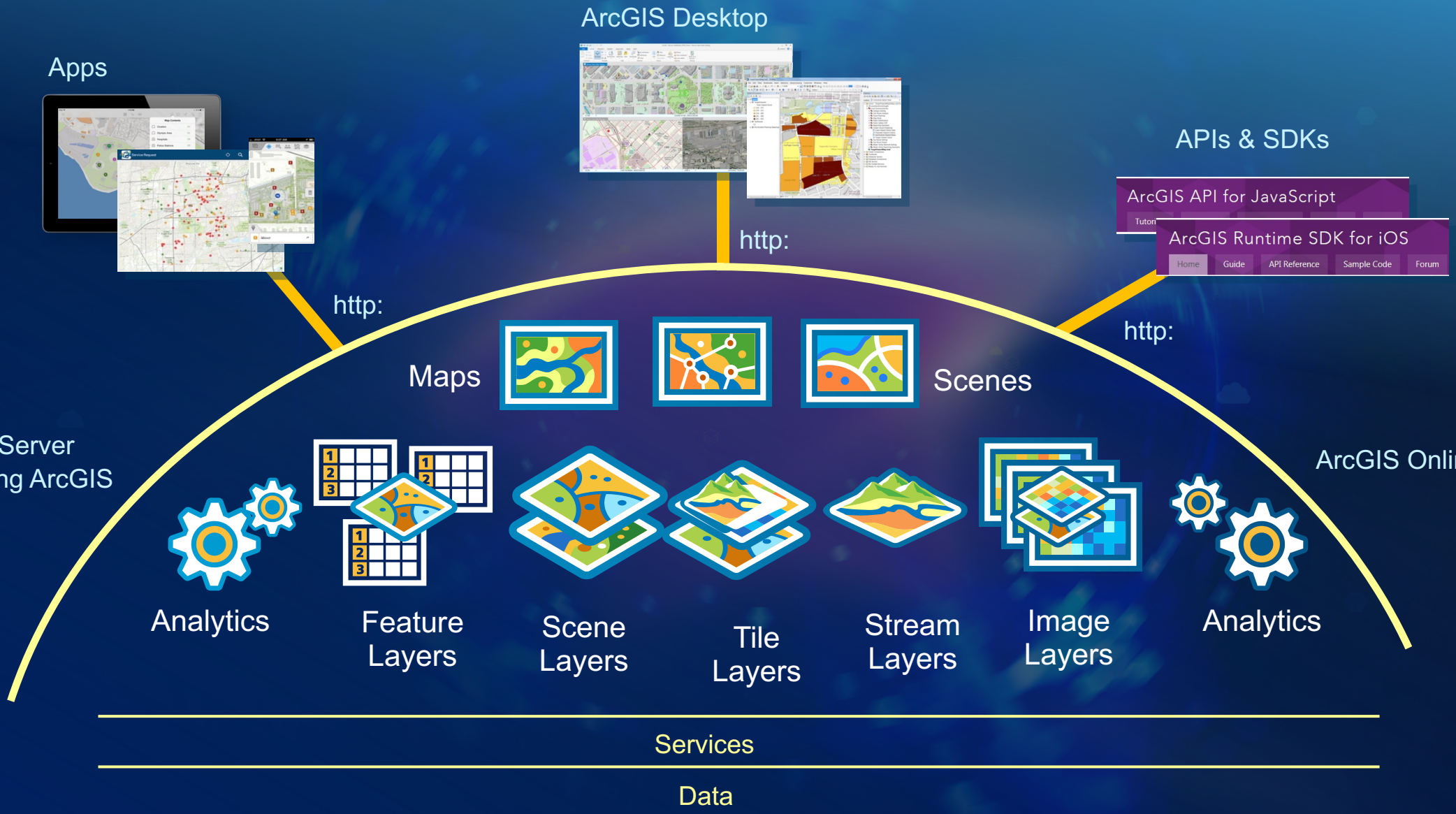
Administrative tools for making data, services, and apps available for decision making process during disaster/emergency

Platform for sharing all kinds of data (spatial, non-spatial, sensor/IoT, 3D, BIM) and for cross-departmental collaboration

DGIM CONCEPT IN DISASTER MANAGEMENT



GEOSPATIAL KNOWLEDGE INFRASTRUCTURE IN DISASTER MANAGEMENT FRAMEWORK

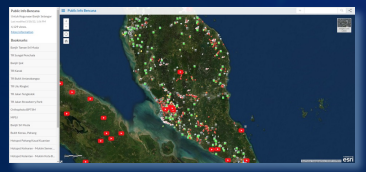


DGIM SERVICES IN DISASTER PHASES

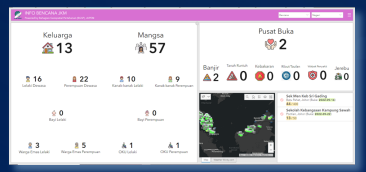
BEFORE

Joint Common Operating Picture (J-COP)

Shared Situational Awareness – Agencies / *Social Media / Open Source*



System integration from other agencies related



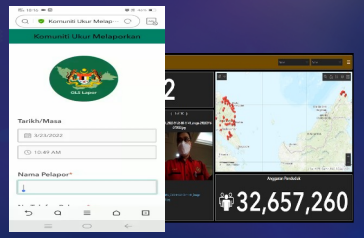
Monitoring by Drone Fleet Commander System

DURING

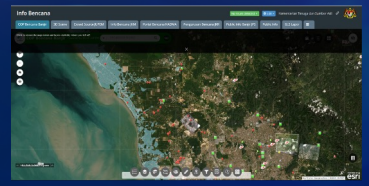
Collecting data using other social media

Collecting data from the people - *crowdsource*

Field Reporting Data – MAF / Agencies



Visual J-COP Disaster Apps + Drone Fleet Commander System



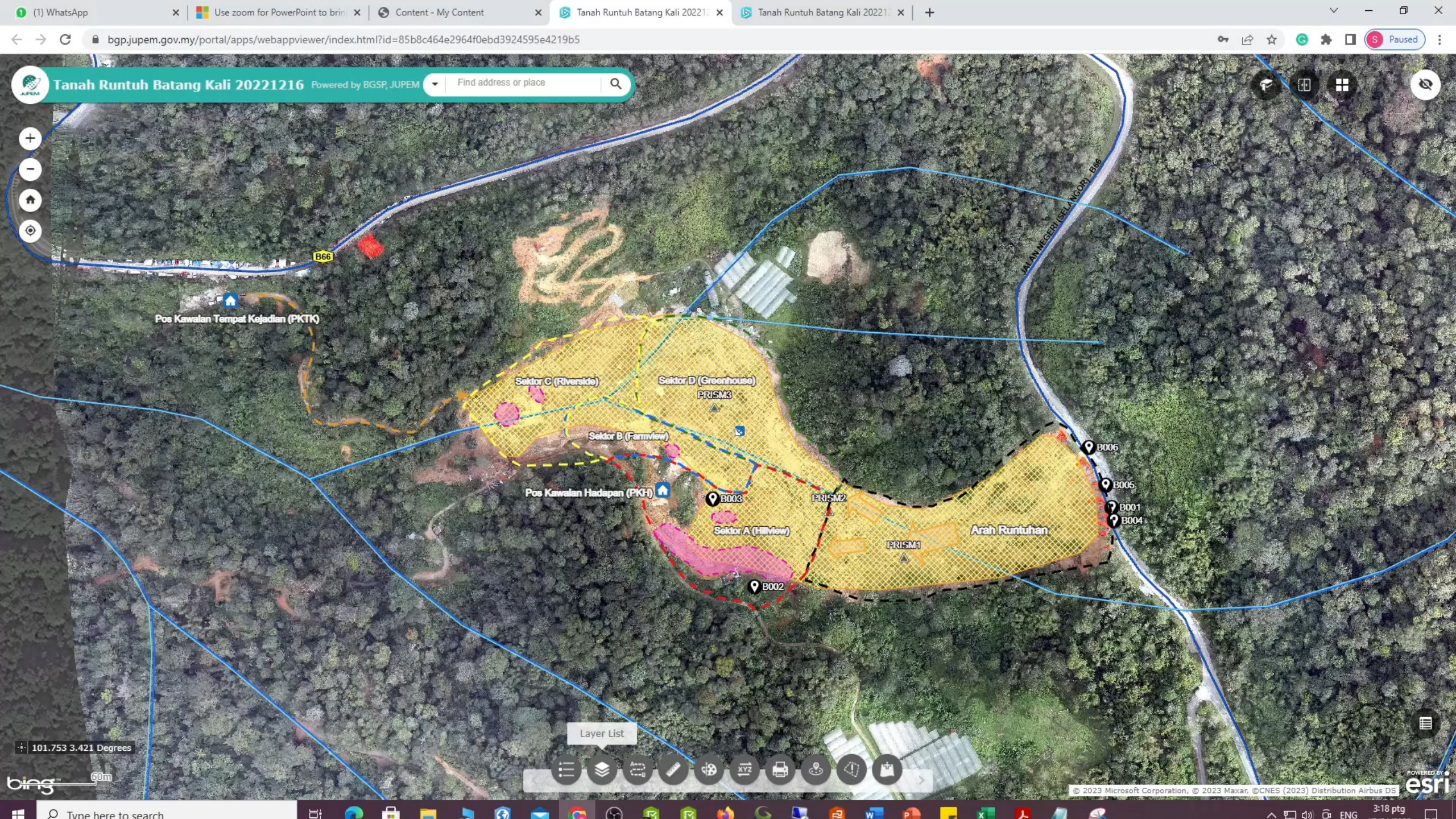
AFTER

GIS Apps – Profile / Dashboard

Damage Assessment – ML / AI / Full Motion Video

Mapping Product - UAV & Satellite Imagery

Public Social Support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Powered by BGSP, JUPEM
Find address or place
B66
Pos Kawalan Tempat Kejadian (PKTK)
Sektor C (Riverside)
Sektor D (Greenhouse)
PRISM3
Sektor B (Farmview)
Pos Kawalan Hadapan (PKH)
B003
PRISM2
Sektor A (HillView)
PRISM1
Arah Runtuhan
B006
B005
B001
B004
B002
Layer List
101.753 3.421 Degrees
60m
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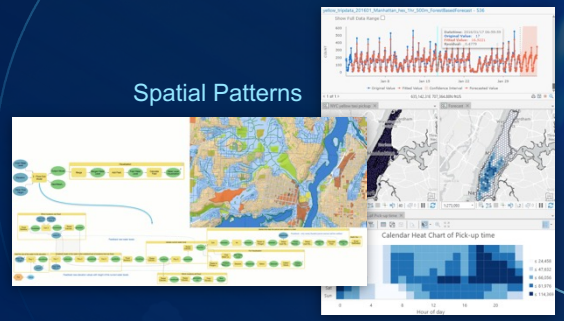
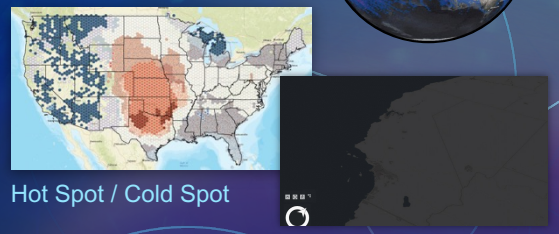
FUTURE TECHNOLOGY DEVELOPMENT FOR DISASTER MANAGEMENT

Creating new Insight and Understanding

Predictive Modeling

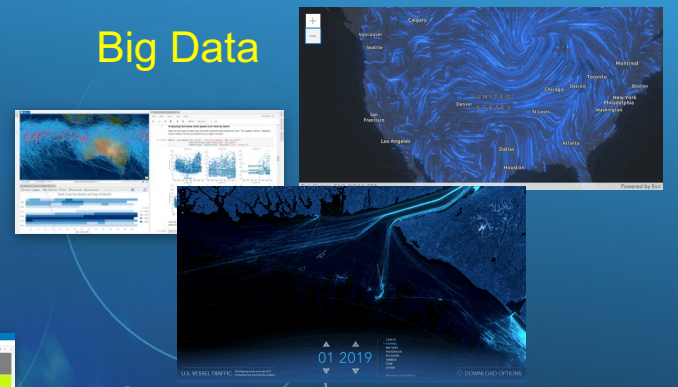


Spatiotemporal

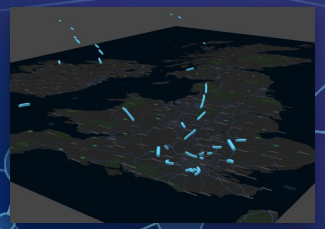


Interactive Visual Analytics

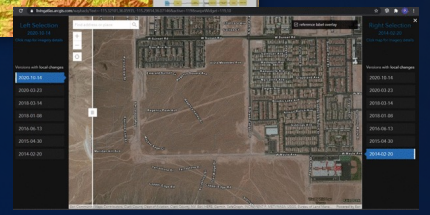
Big Data



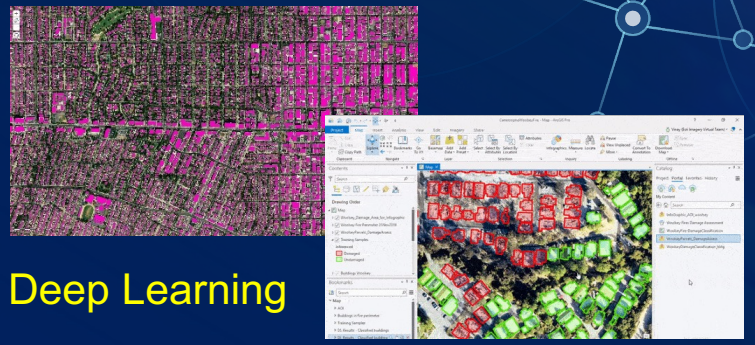
Real-Time



Imagery & Raster Analytics
(In the Cloud)



Deep Learning



GeoAI

Leveraging Many Technical and Scientific Innovations

CONCLUSION

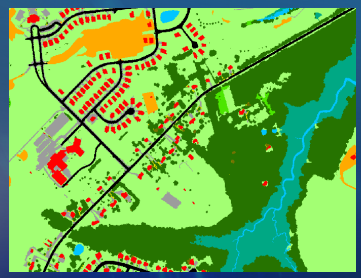
1 Common Operating Picture

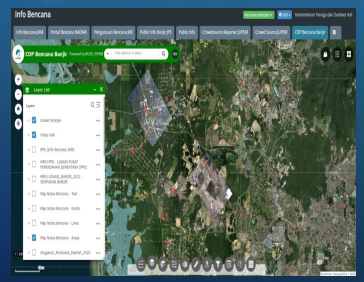
2 Interoperability

3 Data / Life data / Geo Bigdata

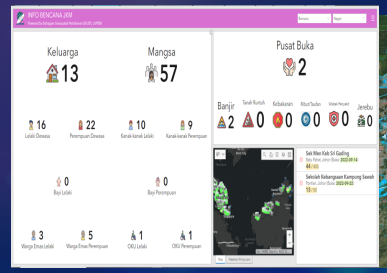
Damaged Structures

Land Cover





Dashboard



Flood Analysisi

Sinkholes

THANK YOU