



Digital Transformation Towards A Smarter, More Resilient & Progressive City

MBPP's Digital Transformation Journey

Smart City Blueprint

2019 - 2020

- Comprehensive research and layout of foundational Smart City framework.
- Focus on strategies for sustainable urban growth and technological integration till 2025.



Digital Transformation

2021 - 2023

- Establishment of foundational infrastructure to support digital initiatives.
- Including upgrading connectivity, IoT deployment, and smart systems integration.
- Implementation of digital solutions to enhance city services and operations.
- Emphasis on automation, data-driven decision-making, and improving citizen engagement



Digital Twin

2023--2030

- Development of a digital twin to simulate, analyze, and optimize inner-city infrastructure.
- Real-time data integration for better urban planning and management.



Intelligent City

2025 -

- Transition to an AI-powered city framework.
- Leveraging artificial intelligence for autonomous systems, predictive analytics, and enhanced urban living.



MAJLIS BANDARAYA PULAU PINANG

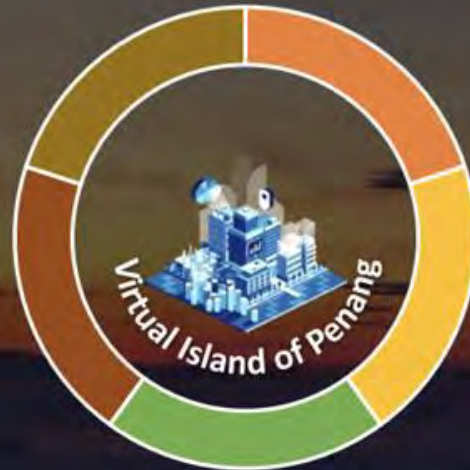
Virtual Island of Penang High Level Concept

Smart City Management Platform

Initiatives

Automated jurisdiction-separation
Upgrading E-Tempahan for public
Project Monitoring Status
Real-Time Monitoring
Integration with internal dept
i-Sekat Initiatives
Landskap Monitoring Warning System
Health & environmental control system
Tree Inventory Data Collection
Solid Waste System
Workflow Management System
Jurisdiction boundary analysis
Tree Preservation Order
Geo-enabled Smart Parking System
System Integration with WhatsApp
COB System
Automated enforcement reporting
Drone & CCTV Setup
Integration with external dept
Heritage System
GeoAI Object Detection
Single Integrated Payment System

Platform



Applications

Analysis
Monitor
Predict
Track
Enforce

Benefits

Enhanced Efficiency:

Streamlines city operations by integrating various services and departments, leading to improved resource management.

Data-Driven Decision Making: Utilizes real-time data analytics to inform policy decisions and optimize city services.

Sustainability: Promotes environmentally friendly practices through better resource management and reduced energy consumption.

Public Safety: Enhances safety through smart surveillance, emergency response systems, and better urban planning.

Transportation Management: Improves traffic flow and public transport efficiency with real-time monitoring and smart routing.

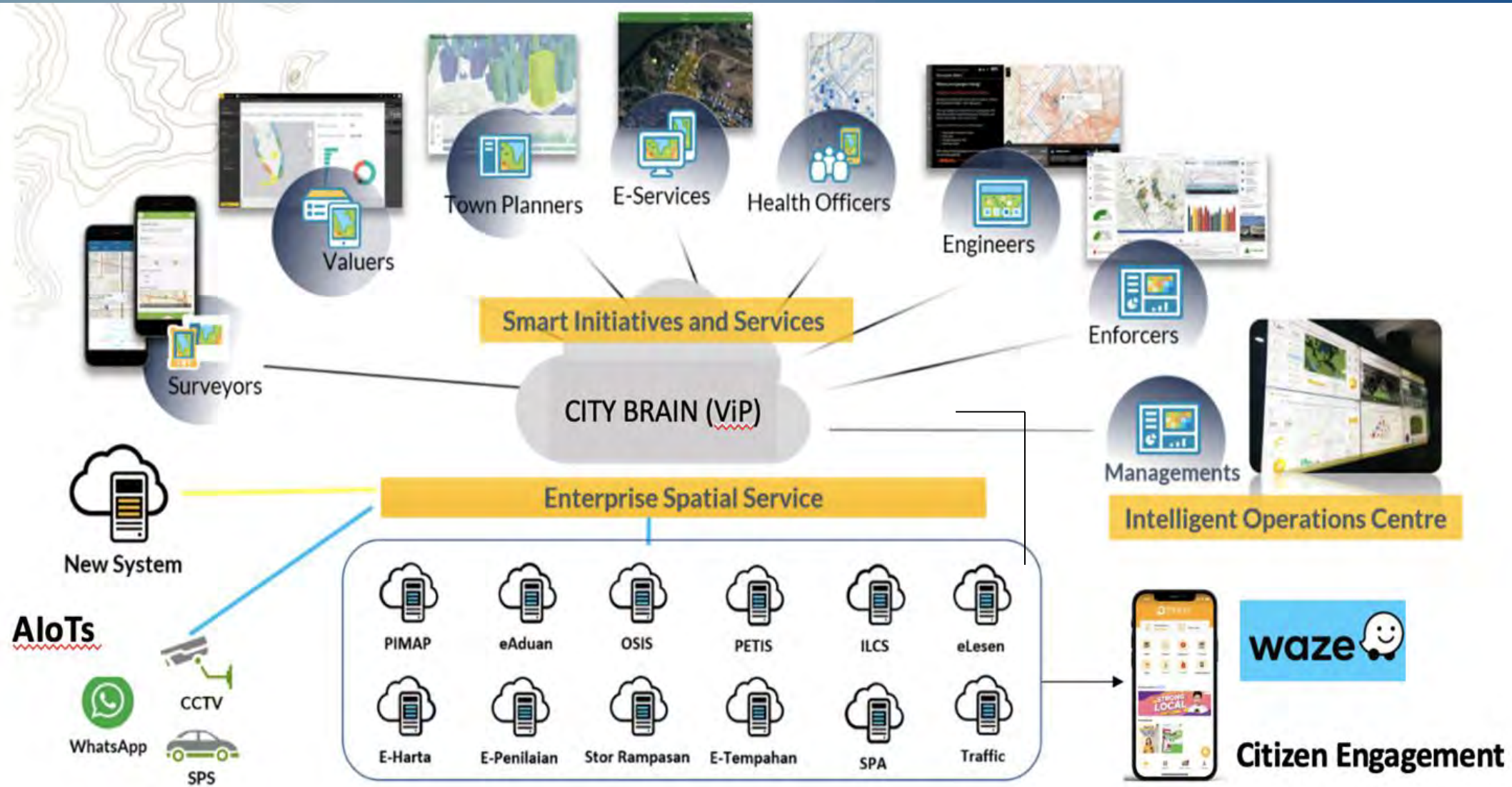
Cost Savings: Reduces operational costs by automating processes and optimizing resource allocation.

Economic Growth: Attracts businesses by creating a more efficient and livable urban environment.

Enhanced Quality of Life: Provides citizens with better services, such as waste management, healthcare, and education, improving overall well-being.

Resilience: Improves the city's ability to respond to challenges, such as natural disasters or pandemics, through better planning and resource allocation.

Improved Citizen Engagement: Offers platforms for citizen feedback and participation, fostering community involvement in governance.

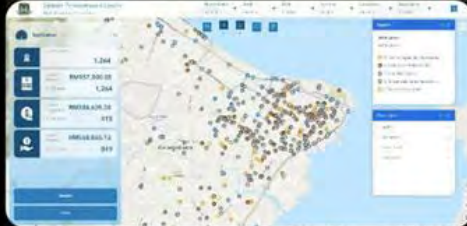


CITY MANAGEMENT TOOL DASHBOARD

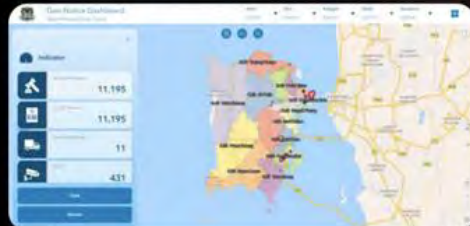
Submission System



Licensing Dashboard



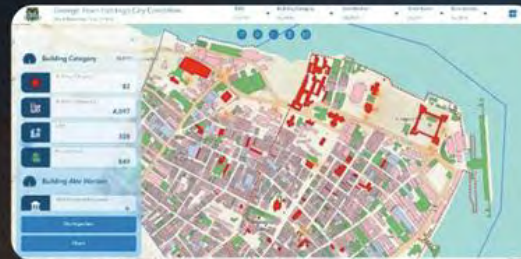
Geo-Notice Dashboard



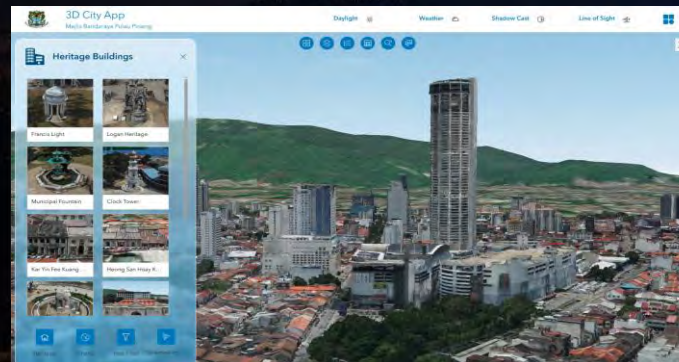
Penang Tree Inventory System



Georgetown Heritage City Condition



VIP GeoHub 3D City Map



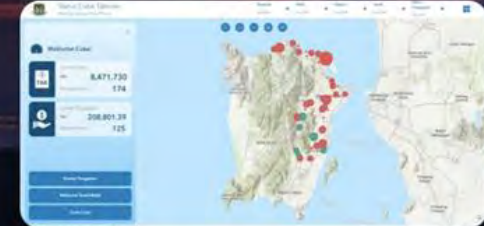
Weather Monitoring



Disaster Monitoring



Tax Collection Dashboard



Landslide Information System





3D CITY MAP

A DATA DRIVEN, EVOLVING VIRTUAL REPRESENTATION OF THE REALITY



Heritage Buildings



1/33



Charts



Tree Filter



Fly

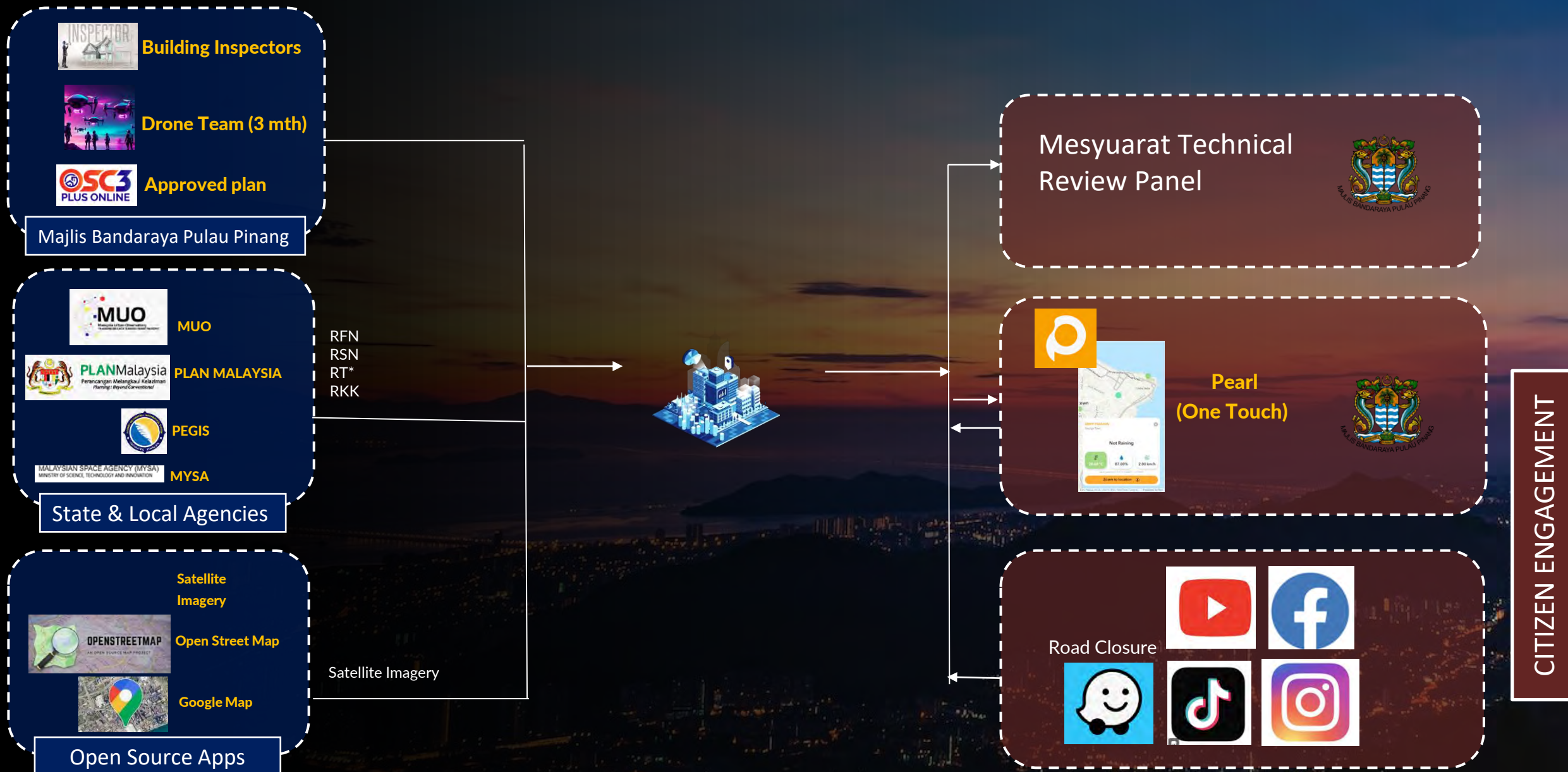


Chung Ling High
School
Sekolah Rendah Chinis
Kebangsaan (Cina) Shih
Chung Pusat



George Town City Condition Module

Work flow





George Town Heritage City Condition

Majlis Bandaraya Pulau Pinang

DUN

Building Category

Akta Warisan

Street Name

Zone Activity



Building Usage



Residential

4,203



Commercial Building

396



Utilitarian Building

91



Institutional

52



Places of Worship or Culture

90



Others

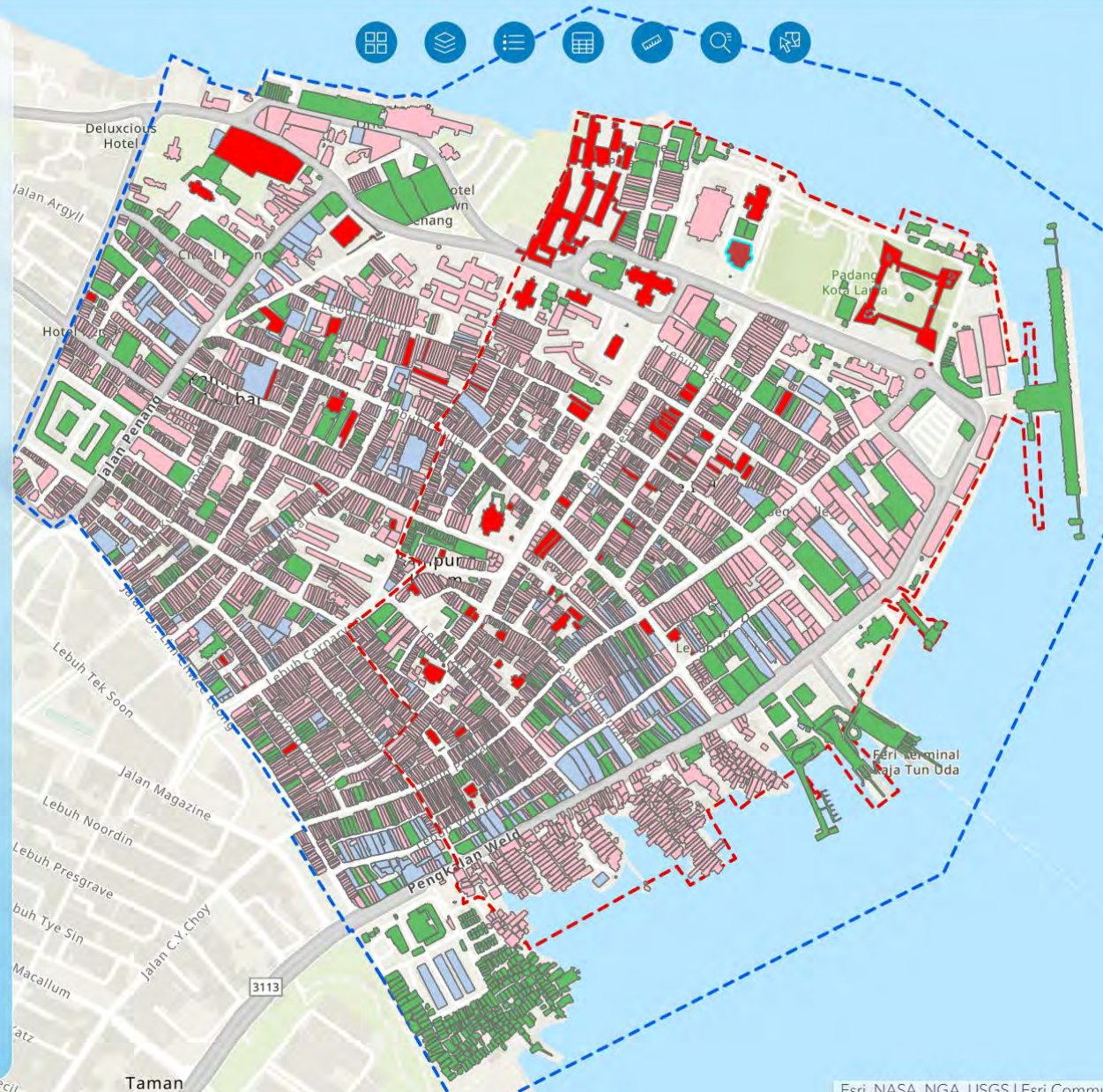
531

Building Condition

Excellent

Site Inspection

Charts



Bangunan Warisan

General Images Site Inspections

Building ID
JPKLL070D

Building Name
Bangunan Dewan Bandaran
(Town Hall)

Building Category
Category I

Building Condition
Fair

Lot Number
70

House Number
70D

Street Name
Jalan Padang Kota Lama

Locality

Building Information



George Town Heritage City Condition

Majlis Bandaraya Pulau Pinang

DUN

Building Category

Akta Warisan

Street Name

Zone Activity



Building Usage



Residential

4,203

Show Residential Only



Utilitarian Building

0



Institutional

0



Places of Worship or Culture

0



Others

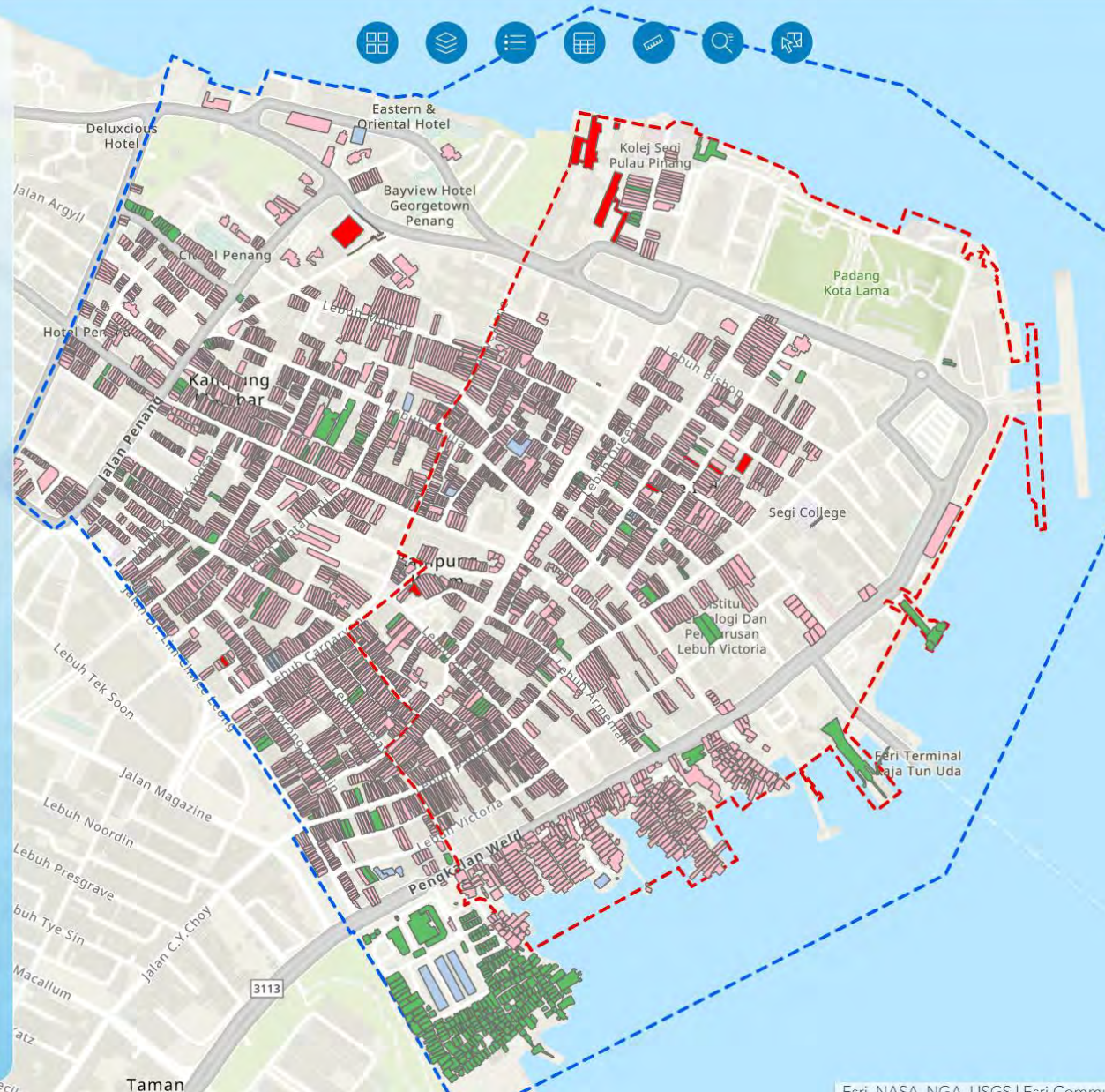
0

Building Condition

Excellent

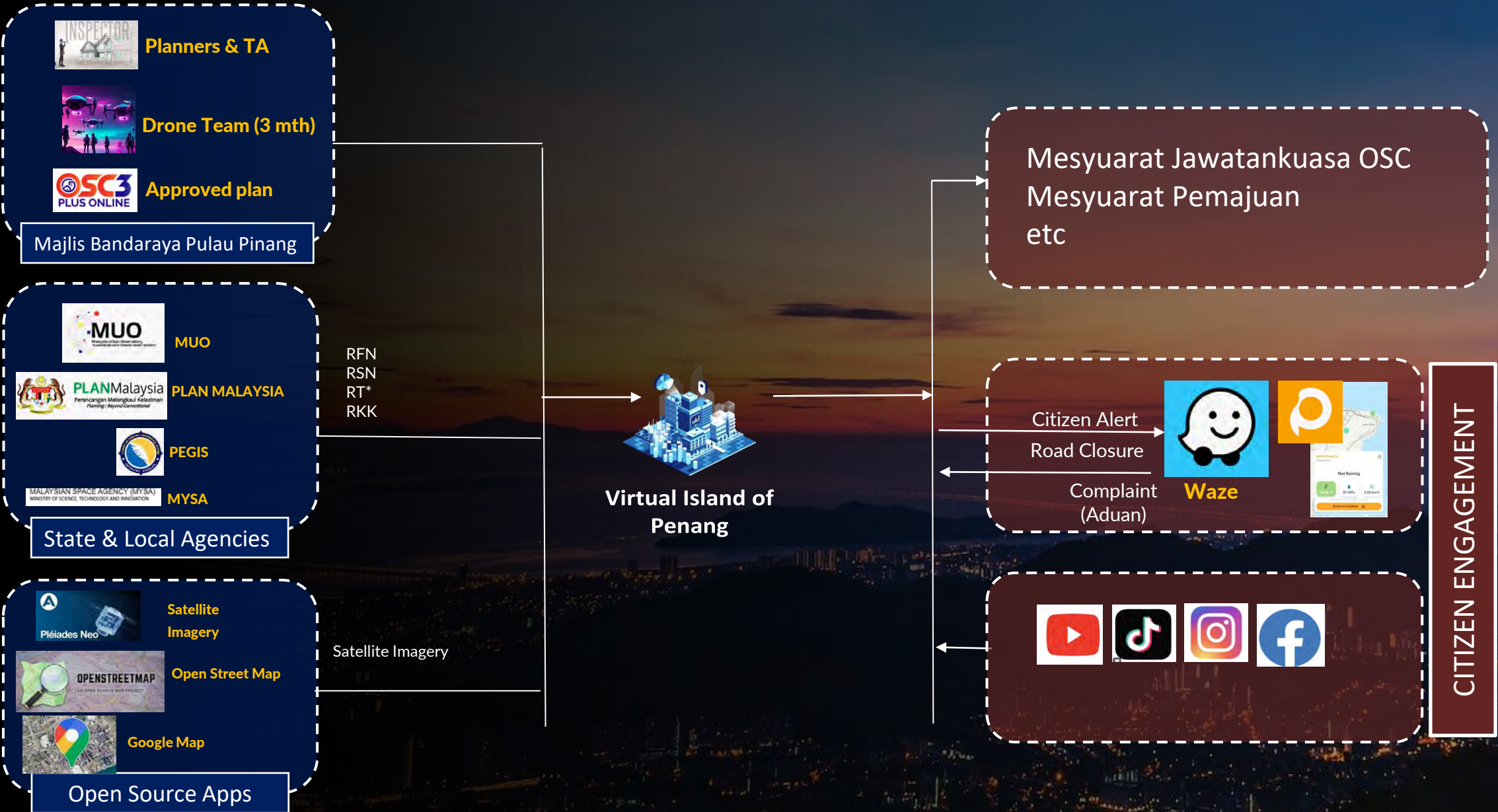
Site Inspection

Charts



E-Submission Module

Work flow



E-Submission Module

Keputusan Pra Semakan Kebenaran Merancang: MBPP.OSC-PM001/2025



XY 100.343167°, 5.421454°

Pemeriksaan Pematuhan

2D 3D X

Jenis Bangunan

Komersial - Kedai/Pejabat/Kios dll

- Maklumat Pelan
- Garis Bangunan
- ROW
- Zoning
- Kontur 76 Meter
- TLK (K) - Kereta: 11
- TLK (K) - Motosikal: 6
- TLK (K) - Kereta Pelawat: 1
- TLK (K) - Motosikal Pelawat: 2
- TLK (K) - Koc: N/A
- TLK (K) - Basikal: 3
- Nisbah Plot: Min 2.5:1, Max 5:1

Mohon Pembetulan Lulus

E-Submission Module



Keputusan Pra Semakan Kebenaran Merancang: MBPP.OSC-PM001/2025

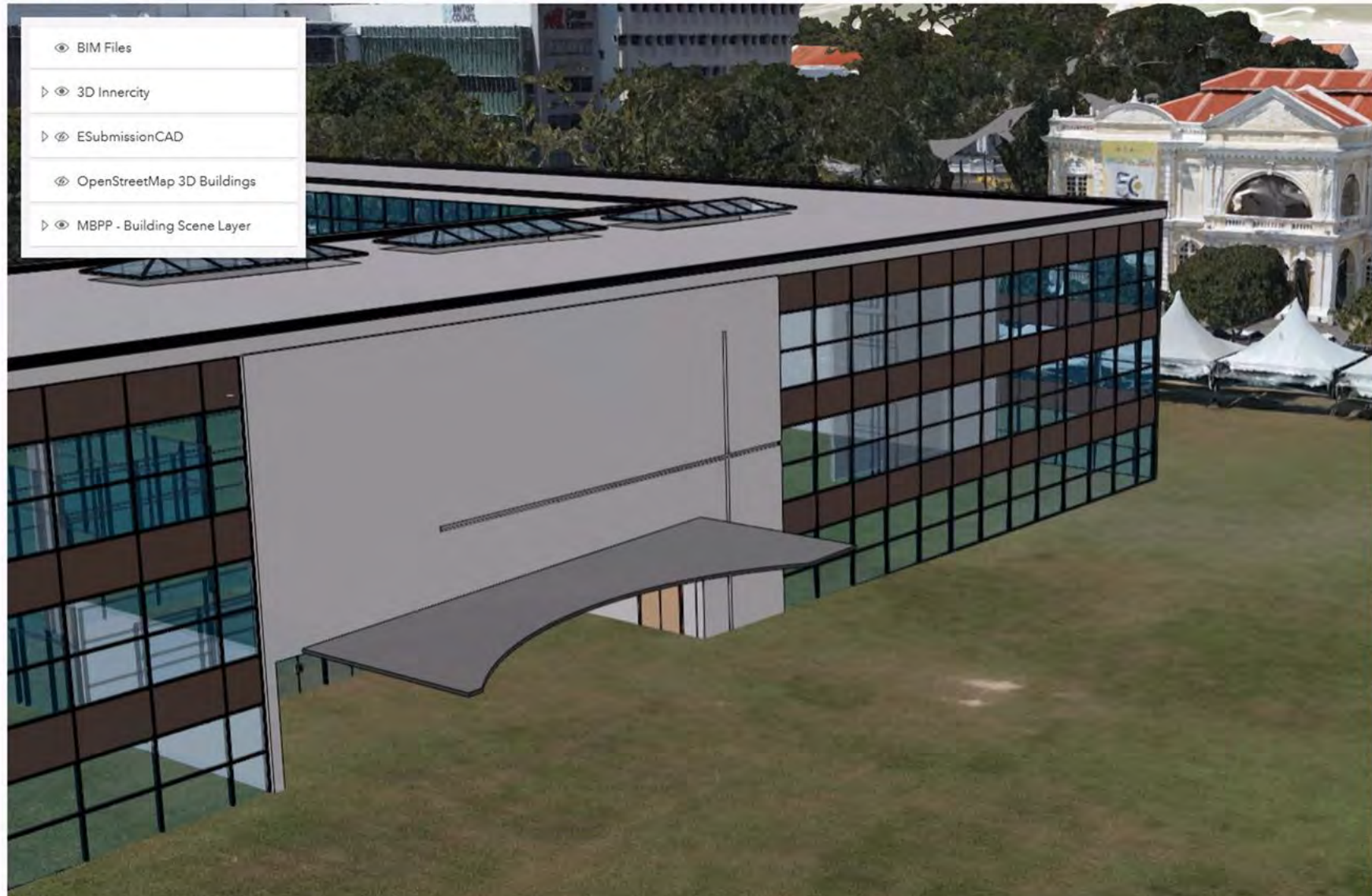
 BIM Files

 3D Innercity

 ESubmissionCAD

 OpenStreetMap 3D Buildings

 MBPP - Building Scene Layer



Pemeriksaan Pematuhan

2D

3D

Jenis Bangunan

Komersial - Kedai/Pejabat/Kios dll

Maklumat Pelan

 Garis Bangunan

 ROW

 Zoning

 Kontur 76 Meter

 TLK (K) - Kereta: 11

 TLK (K) - Motosikal: 6

 TLK (K) - Kereta Pelawat: 1

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Mohon Pembetulan

Lulus

E-Submission Module



Keputusan Pra Semakan Kebenaran Merancang: MBPP.OSC-PM001/2025

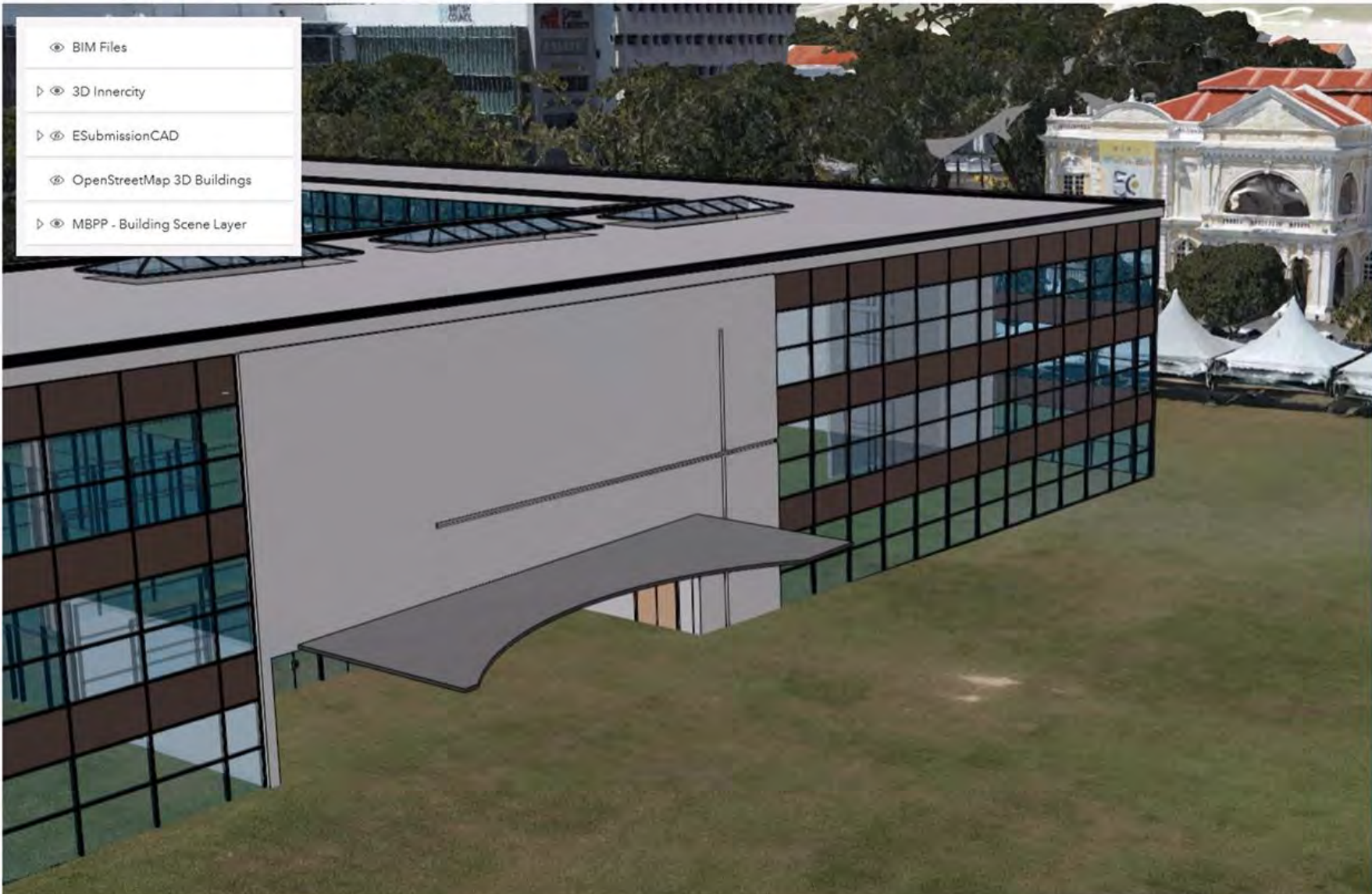
 BIM Files

 3D Inncity

 ESubmissionCAD

 OpenStreetMap 3D Buildings

 MBPP - Building Scene Layer



Pemeriksaan Pematuhan

2D 3D

Maklumat Permohonan

Jenis Permohonan:
PM1 - Permohonan Kebenaran Merancang bagi Mendiri / Meroboh Bangunan

No Permohonan Kebenaran Merancang:
MBPP.OSC-PM001/2025

Tarikh Kemuka OSC:
02-04-2025

Tajuk:
PERMOHONAN KEBENARAN MERANCANG UNTUK MEMBINA BANGUNAN KOMERSIL 3 TINGKAT (6 UNIT KEDAI DAN 6 UNIT PEJABAT) PEMAJUAN STRATA DI ATAS LOT 29, JALAN PADANG KOTA LAMA, SEKSYEN 19, BANDAR GEORGE TOWN, DAERAH TIMUR LAUT, PULAU PINANG UNTUK TETUAN ABC DEVELOPMENT SDN. BHD.

Nama Syarikat:
ABC ARCHITECT SDN. BHD.

Nombor PSP:
BD/A24

Dicipta pada:
24-04-2025 06:44 PM

Dikemaskini pada:
26-04-2025 05:56 PM

Lot 29 AutoCAD 5 Layer Georef.dwg
2D Fail

28KB

Muat Turun

Lot 29 Revit Georef Model.rvt.zip

15.384KB

Muat Turun

Mohon Pembedulan

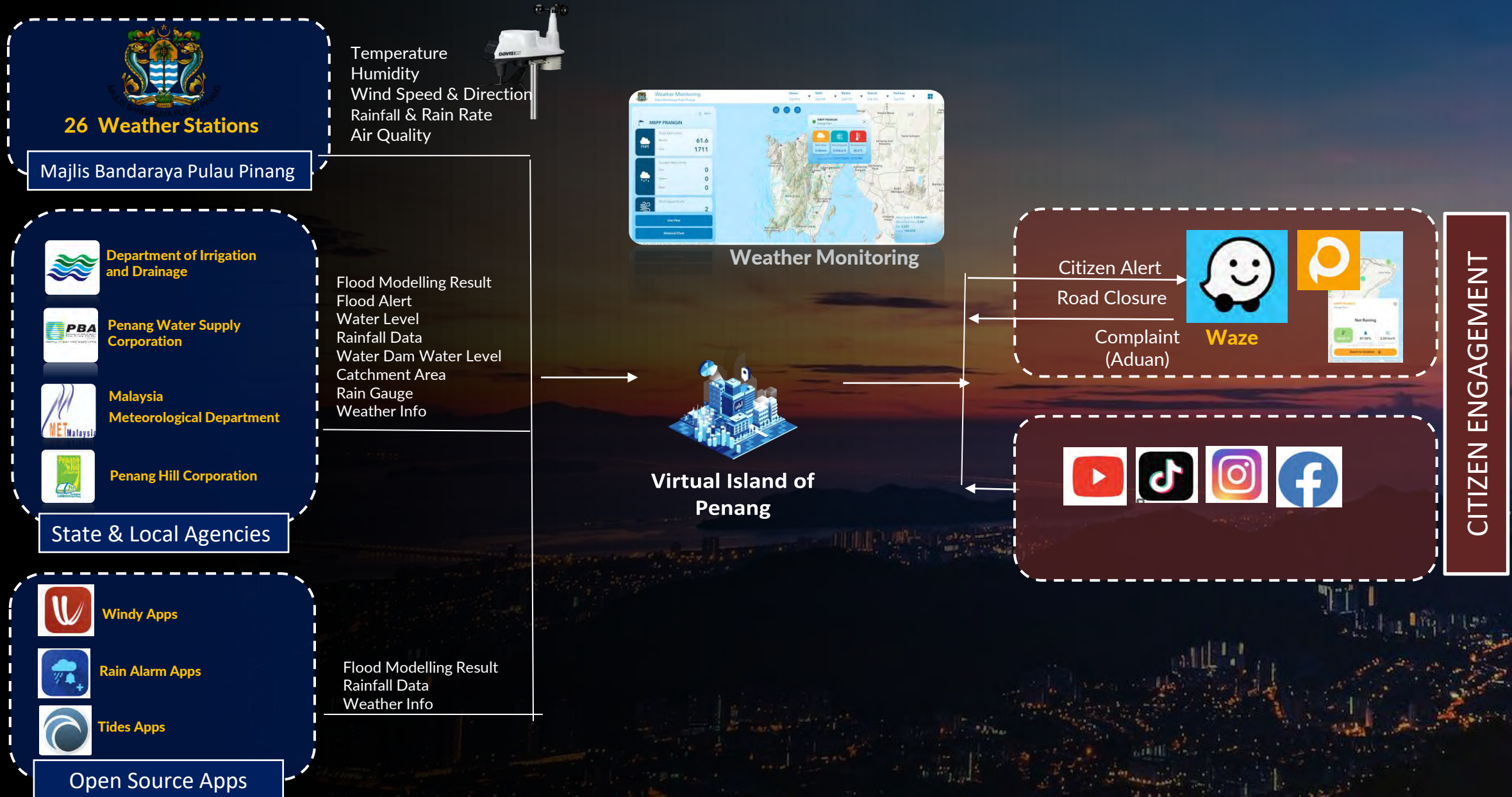
Lulus

Eari, NASA, NGA, USGS | Eari Community Maps Contributors, Eari, TomTom, Garmin, METI/NASA, USGS | Sources: Maxar, Airbus DS, USGS, NGA, NASA, CGIAR, GEBCO, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen and the GIS User Community

Powered by Esri

Weather Monitoring Module

Work flow





Weather Monitoring Module



Station

DUN

Mukim

Daerah

Parlimen



Indicator



Rain Rate Warning

0



Wind Speed Warning

0



Temperature Warning

0



Active Stations

23



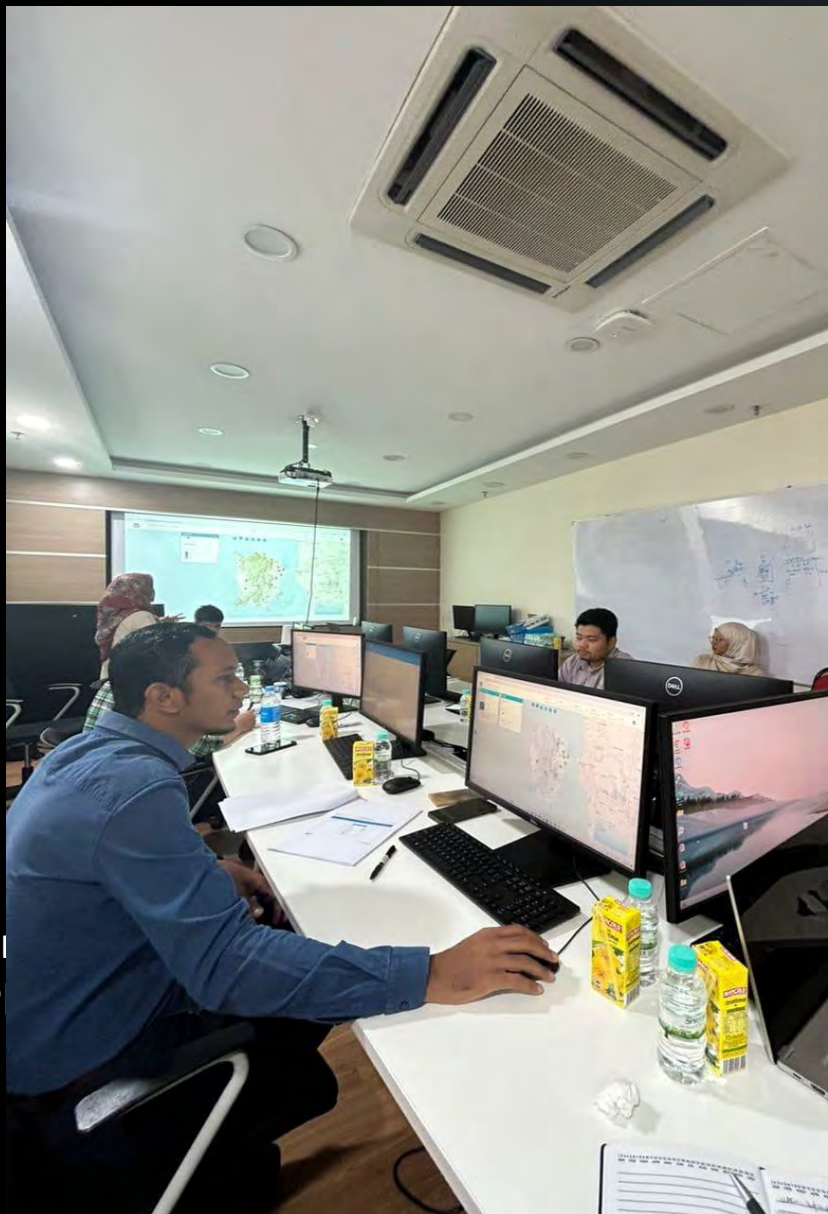
Inactive Stations

5

Live View

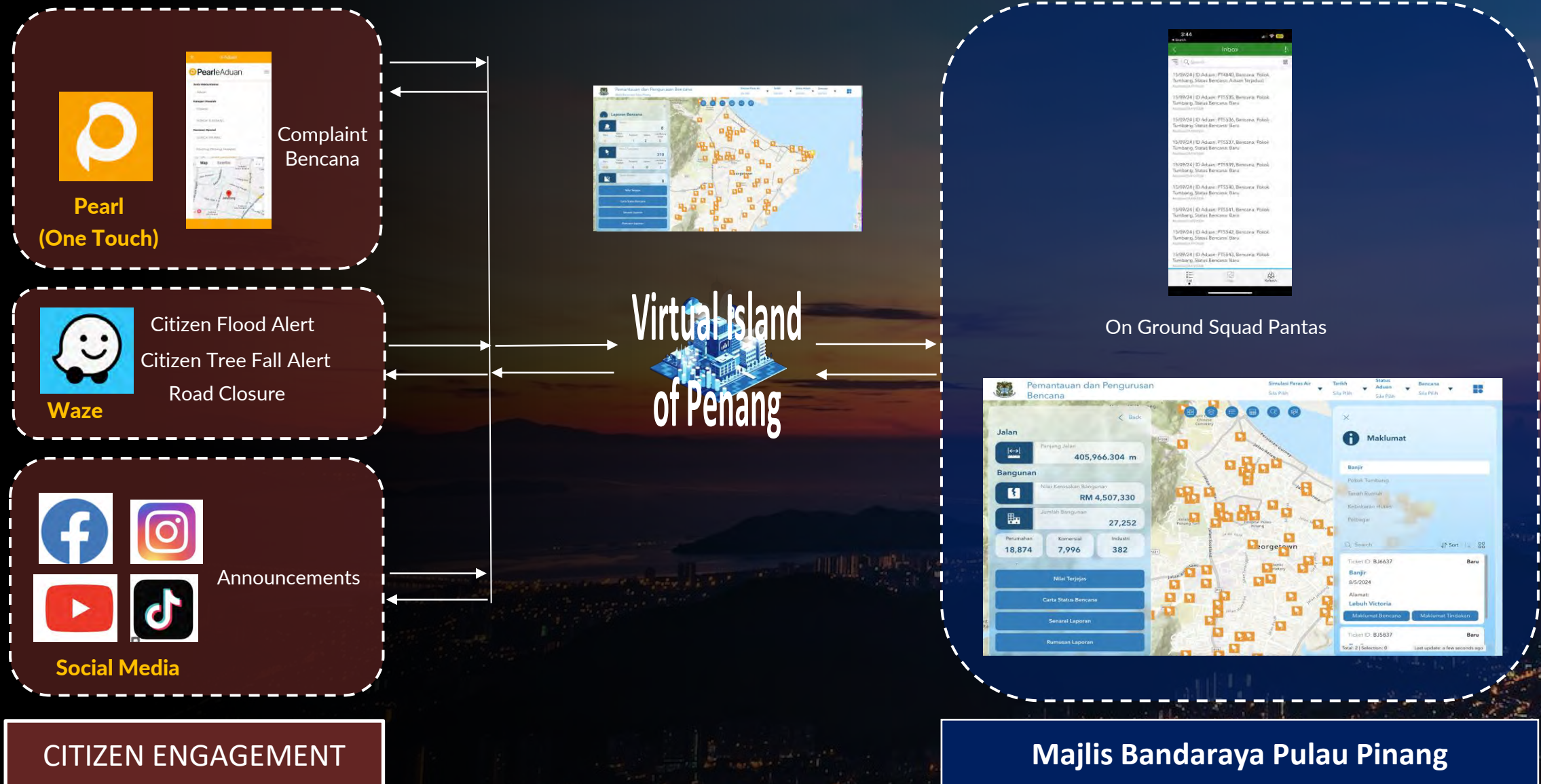
Charts and Data Tables





Disaster Management Module

Work flow



Disaster Monitoring Module

Dashboard



Pemantauan dan Pengurusan Bencana

Majlis Bandaraya Pulau Pinang

Simulasi Paras Air

Tarikh

Status Aduan

Bencana



Indicator



Banjir

5

Baru

4

Dalam Tindakan

1

Terjadual

0

Selesai

1

Luar Bidang Kuasa

0



Pokok Tumbang

140

Baru

138

Dalam Tindakan

1

Terjadual

1

Selesai

1

Luar Bidang Kuasa

0



Tanah Runtuh

4

Baru

0

Dalam Tindakan

0

Terjadual

0

Selesai

0

Luar Bidang Kuasa

0

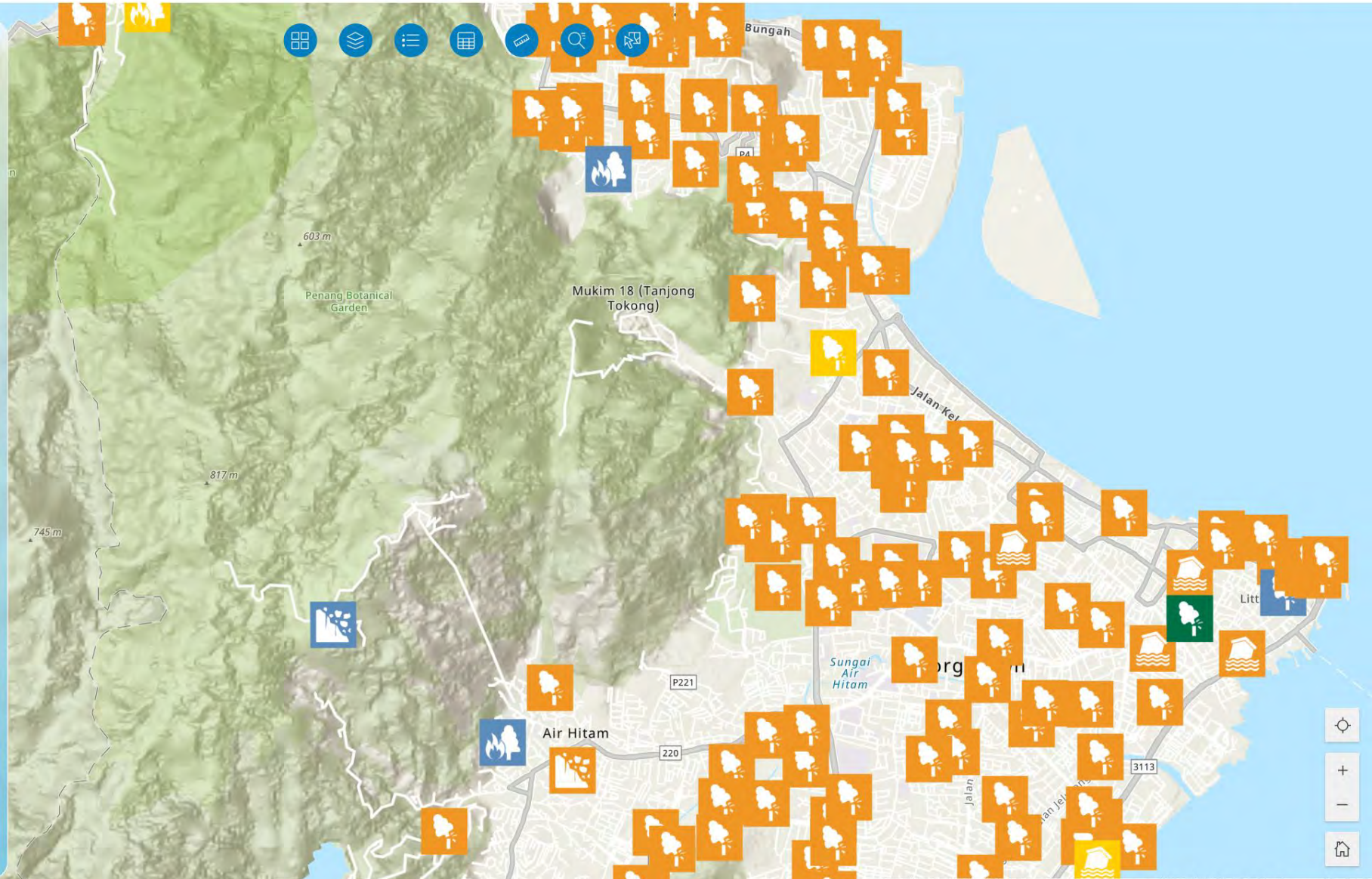
Nilai Terjejas

Carta Status Bencana

Senarai Laporan

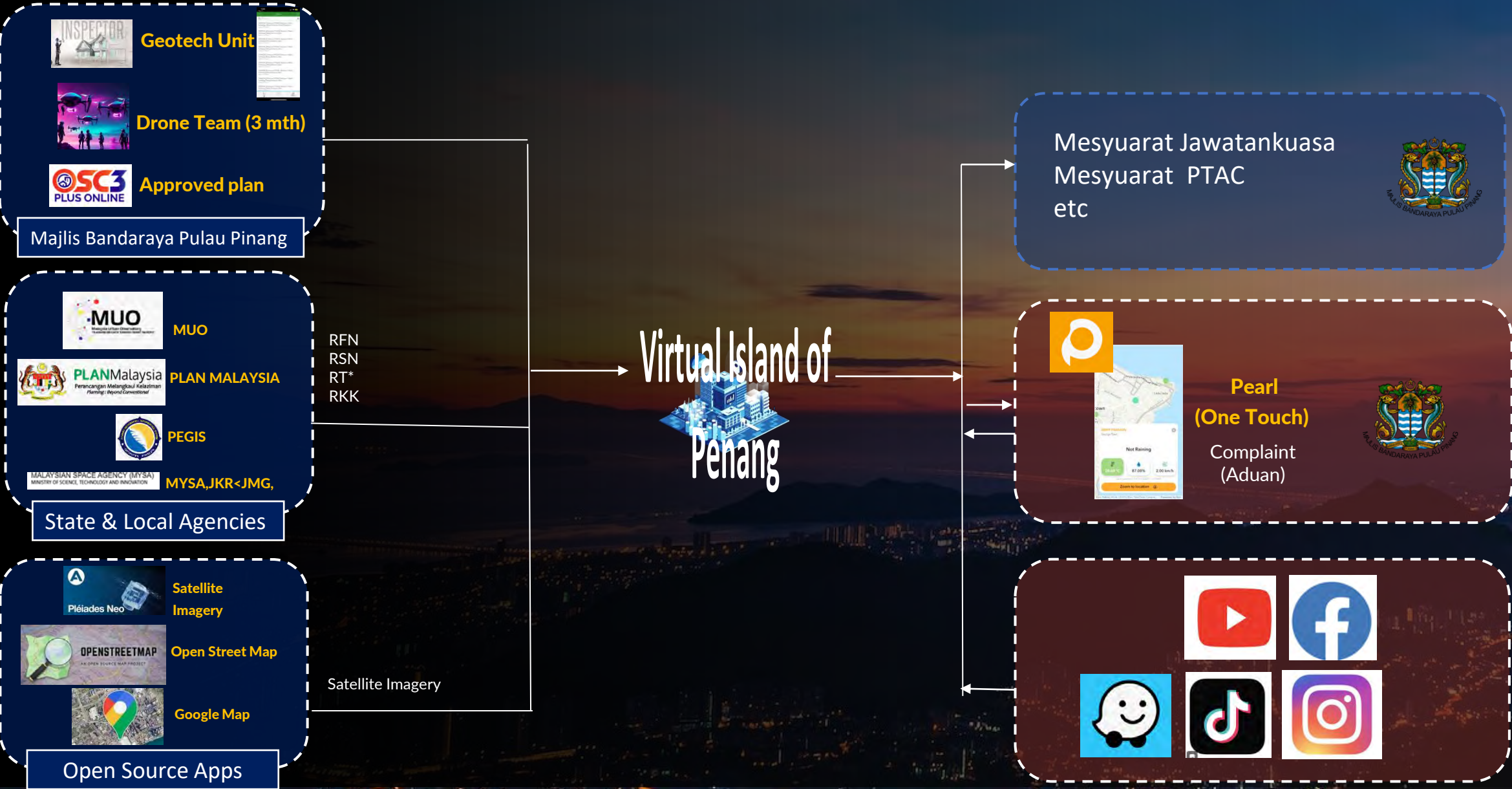
Rumusan Laporan

Maklumat Archive



Landslides Information System Module

Smart Government
Work flow





Failure Type



Cut Slope

2

Fill Slope

2

Natural Slope

8

Boulder/Rock Fall

2

Retaining Wall

1

Hybrid

2

Others

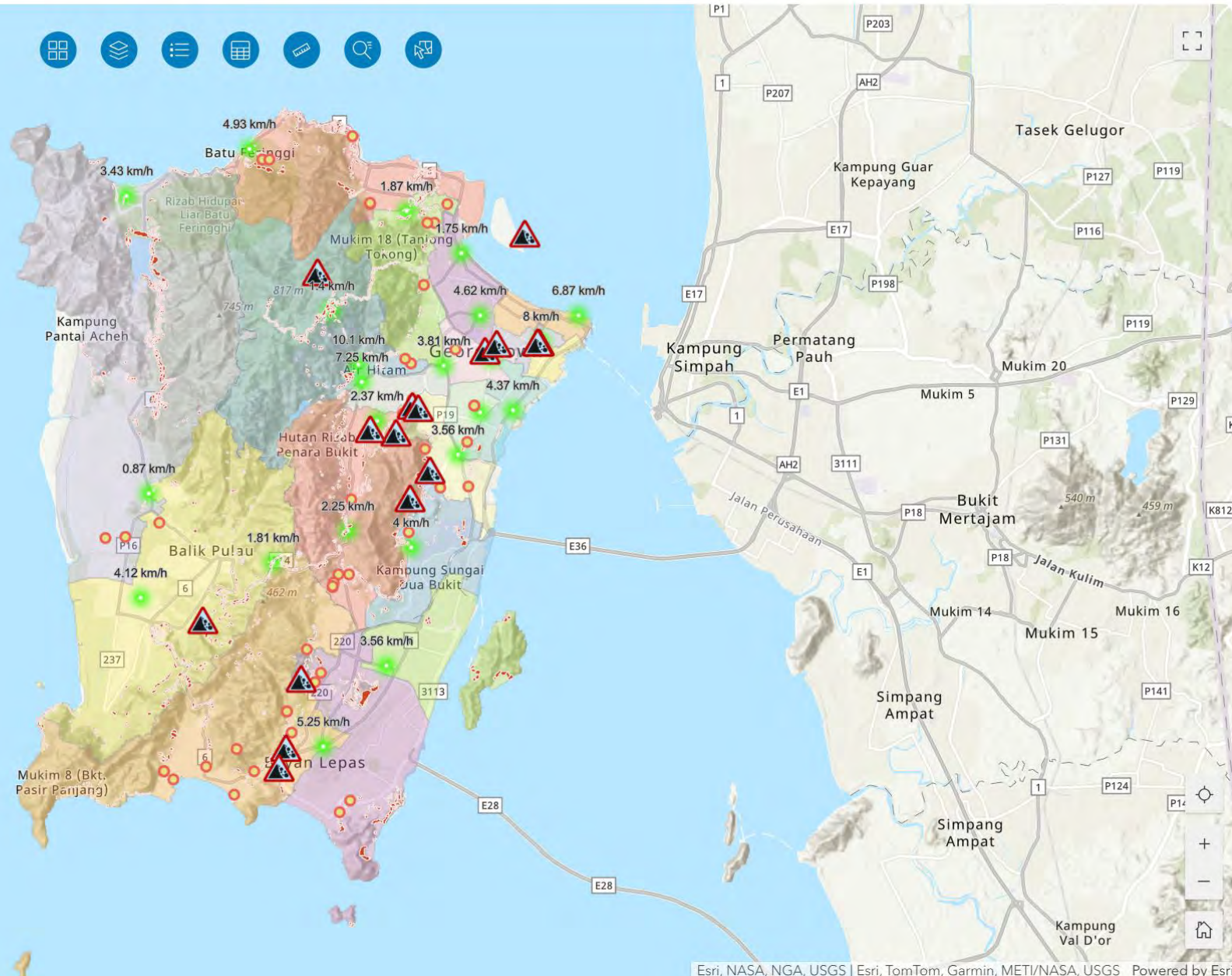
1

Charts

Reports

Change Detection

Ground Profile





List

Landslide Incidents

Consequence: **Agricultural Loss**
Slope Surface Cover: **Chunam**

28/12/2024 11:55 DTL-S11/C.2(3)

Failure Type: **Fill Slope**
Consequence Class: **Significant**
Consequence: **Traffic Disruption, Road Closure**
Slope Surface Cover: **Gunited**

20/12/2024 18:00 DTL-S11/R.11(5)

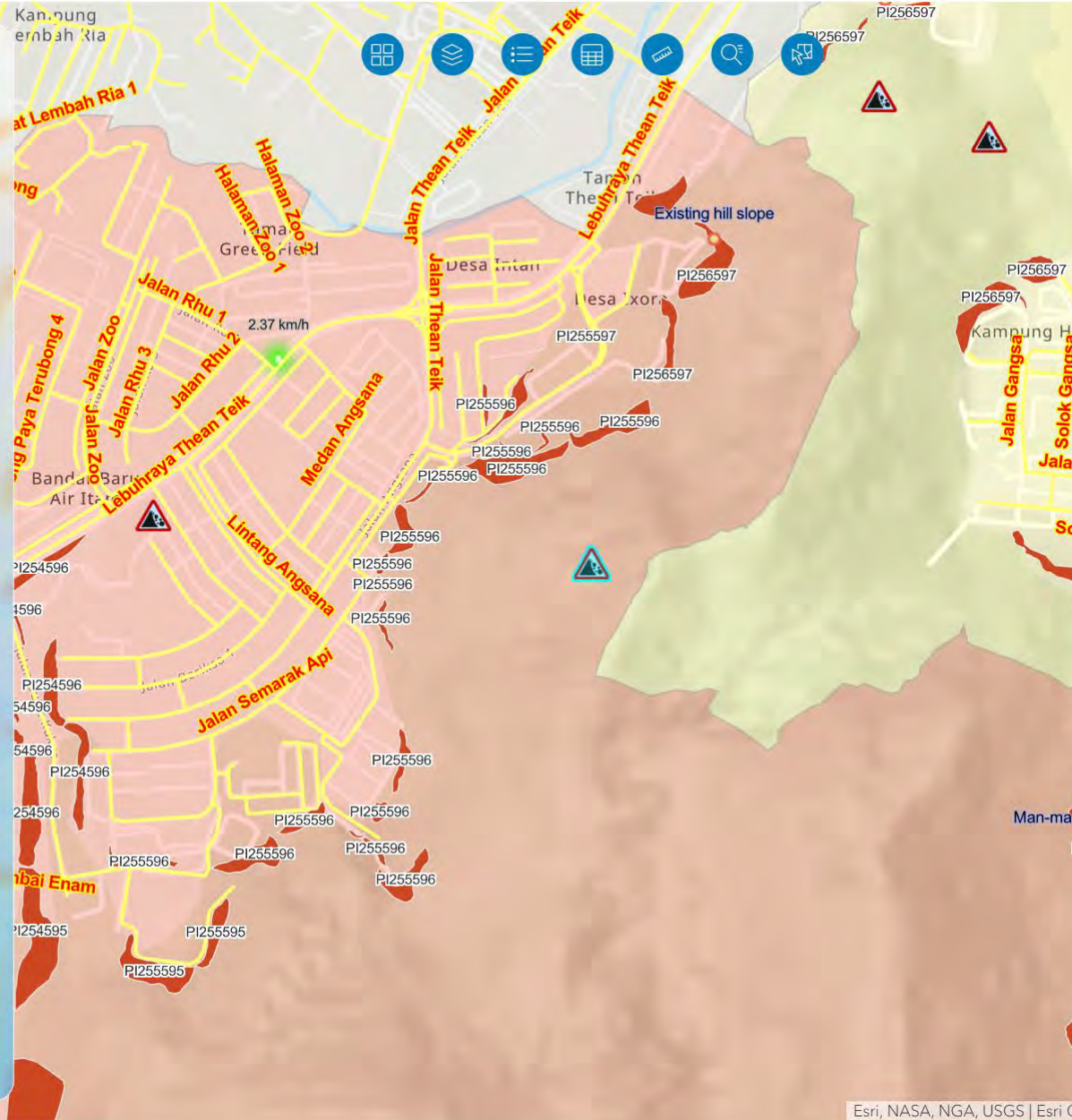
Failure Type: **Cut Slope**
Consequence Class: **Minor**
Consequence: **Damage to Property**
Slope Surface Cover: **Bare**

Charts

Reports

Change Detection

Ground Profile



Report Information

Minor

Construction Site:

No

Remarks:

No

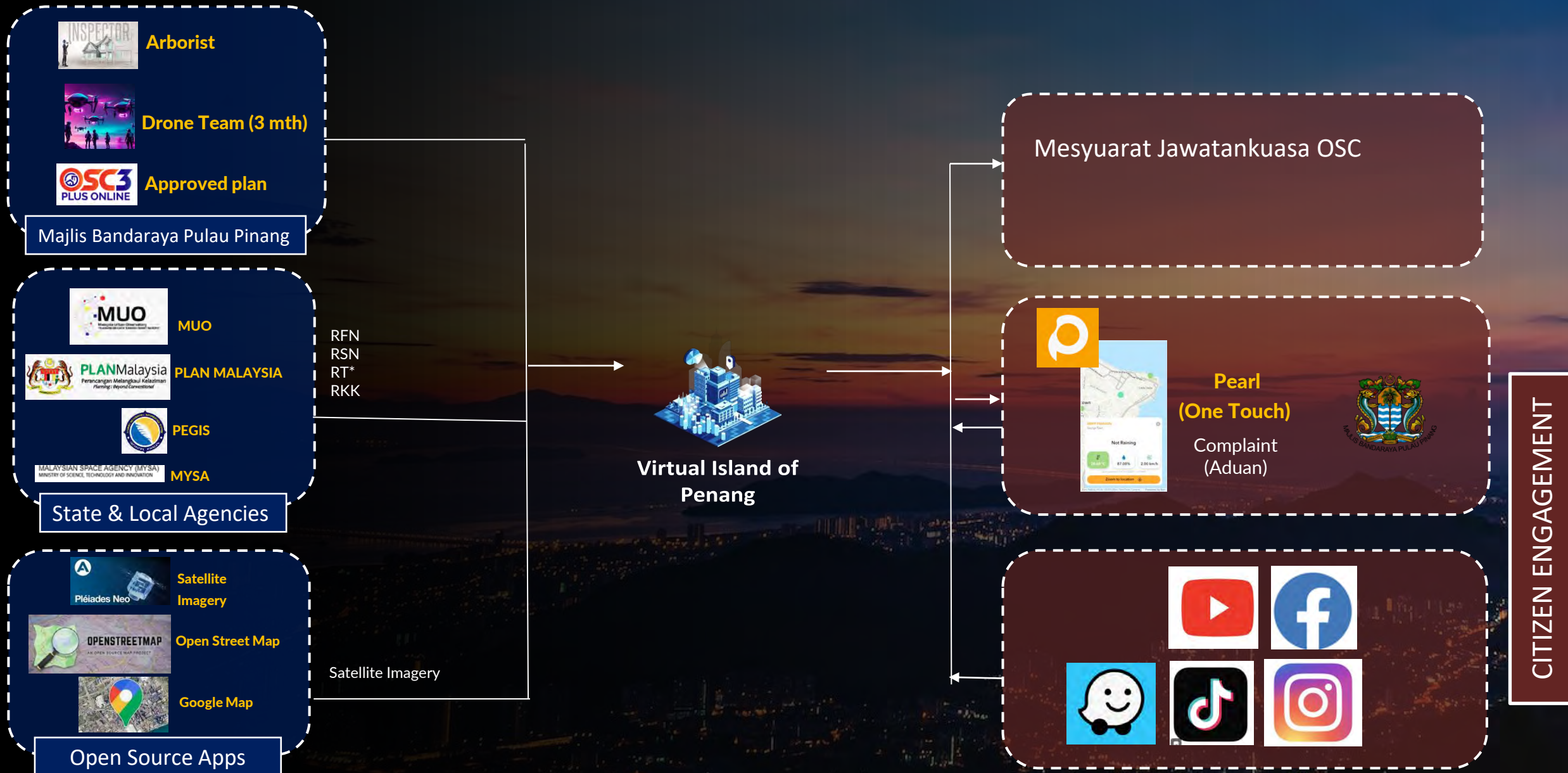
Images:



Generate

PENANG TREE INVENTORY SYSTEM (PLK) Module

Smart Government
Work flow



PENANG TREE INVENTORY SYSTEM

Dashboard



Penang Tree Inventory System (PeTIS)

Majlis Bandaraya Pulau Pinang

Dashboard

Inventory List

Maintenance

Fallen Tree

Reports

Analysis



Parlimen

DUN

Tree ID



Indicator



Total Tree

14,167



Species Type

202



Transplanted Tree

3



Removed Tree

3

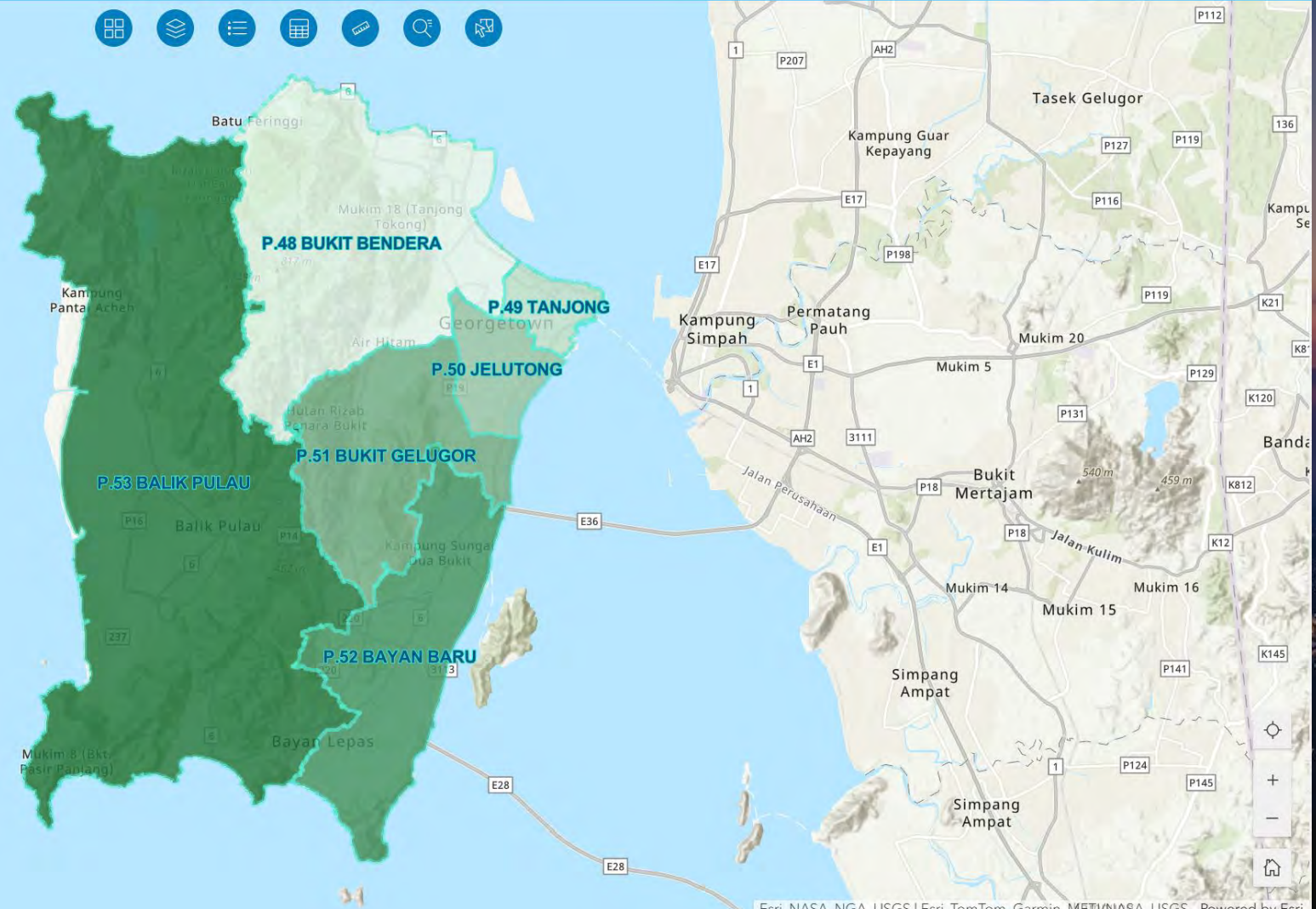


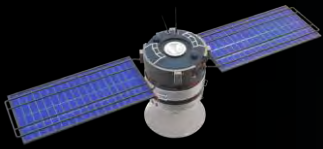
Number of Tree Eligible for TPO

50

Tree Details List

Species Chart





Eyes In The Sky For Urban Tree Manager

Work flow

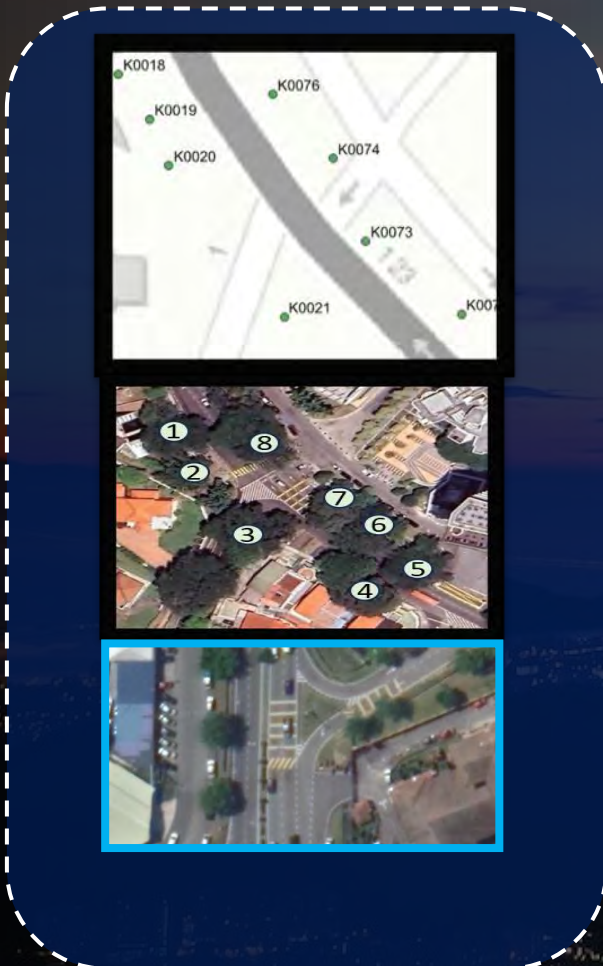
Extract spectral information from satellite imagery.

Multidate satellite images with AI and Big Data analysis

Tree Health **Early Warning Indicators**
*Narrowing critical trees that required attention



Data
Extraction
→



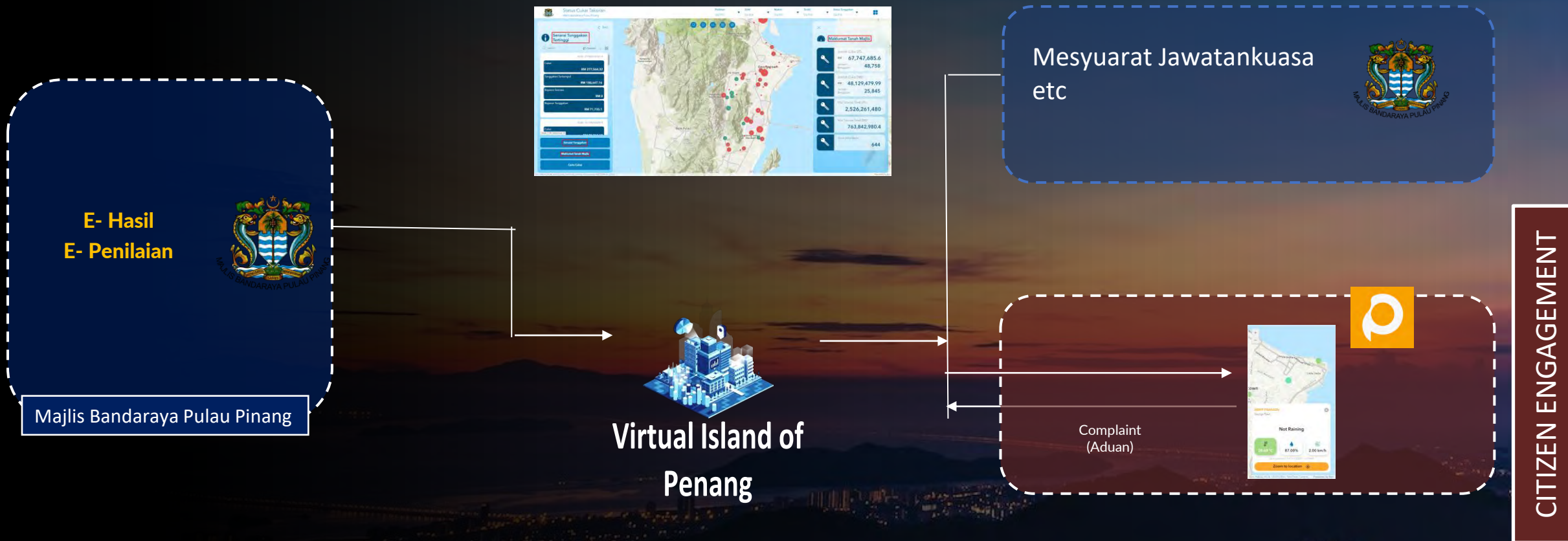
Data
Analysis
→



*The tree health information of every tree will be automatically extracted from satellite imagery using an intelligent algorithm.

Tax Collection Analytics Module

Work flow





Status Cukai Taksiran

Majlis Bandaraya Pulau Pinang

Parlimen

DUN

Mukim

Tarikh

Status Tunggakan



Indicator



Jumlah Cukai DTL

RM **67,745,046.5**

Bilangan Akaun **48,779**



Jumlah Cukai DBD

RM **48,132,119.09**

Bilangan Akaun **25,824**



Jumlah Tunggakan DTL

RM **16,094,026.52**

Bilangan Akaun **12,309**



Jumlah Tunggakan DBD

RM **8,820,360.91**

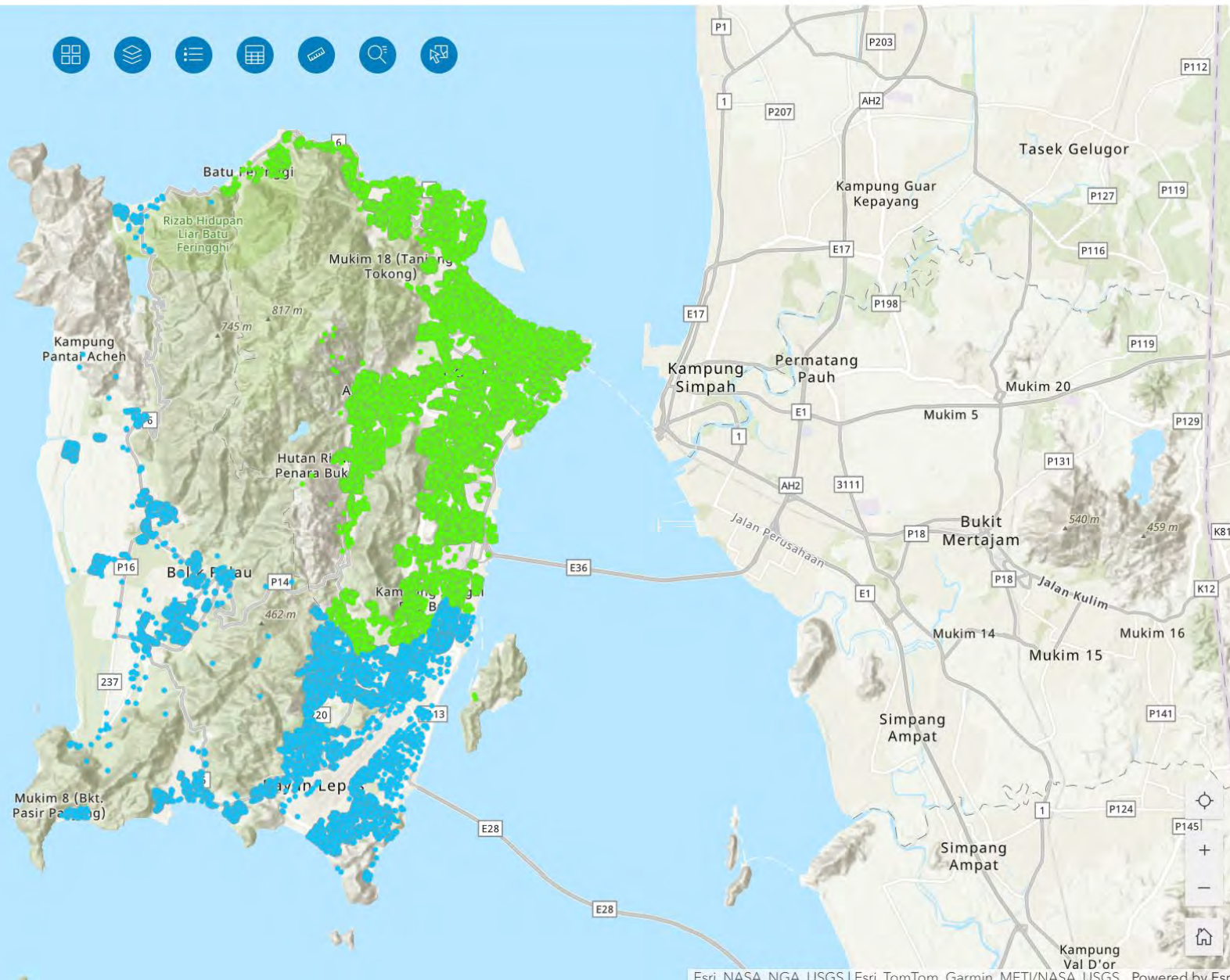
Bilangan Akaun **8,647**



Nilai Tahunan Bangunan DTL

Senarai Tunggakan

Carta Cukai





Status Cukai Taksiran

Majlis Bandaraya Pulau Pinang

Parlimen

DUN

Mukim

Tarikh

Status Tunggalan



Indicator



Jumlah Cukai DTL

RM **67,745,046.5**

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Jumlah Tunggalan DTL

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Jumlah Tunggalan DBD

RM **8,820,360.91**

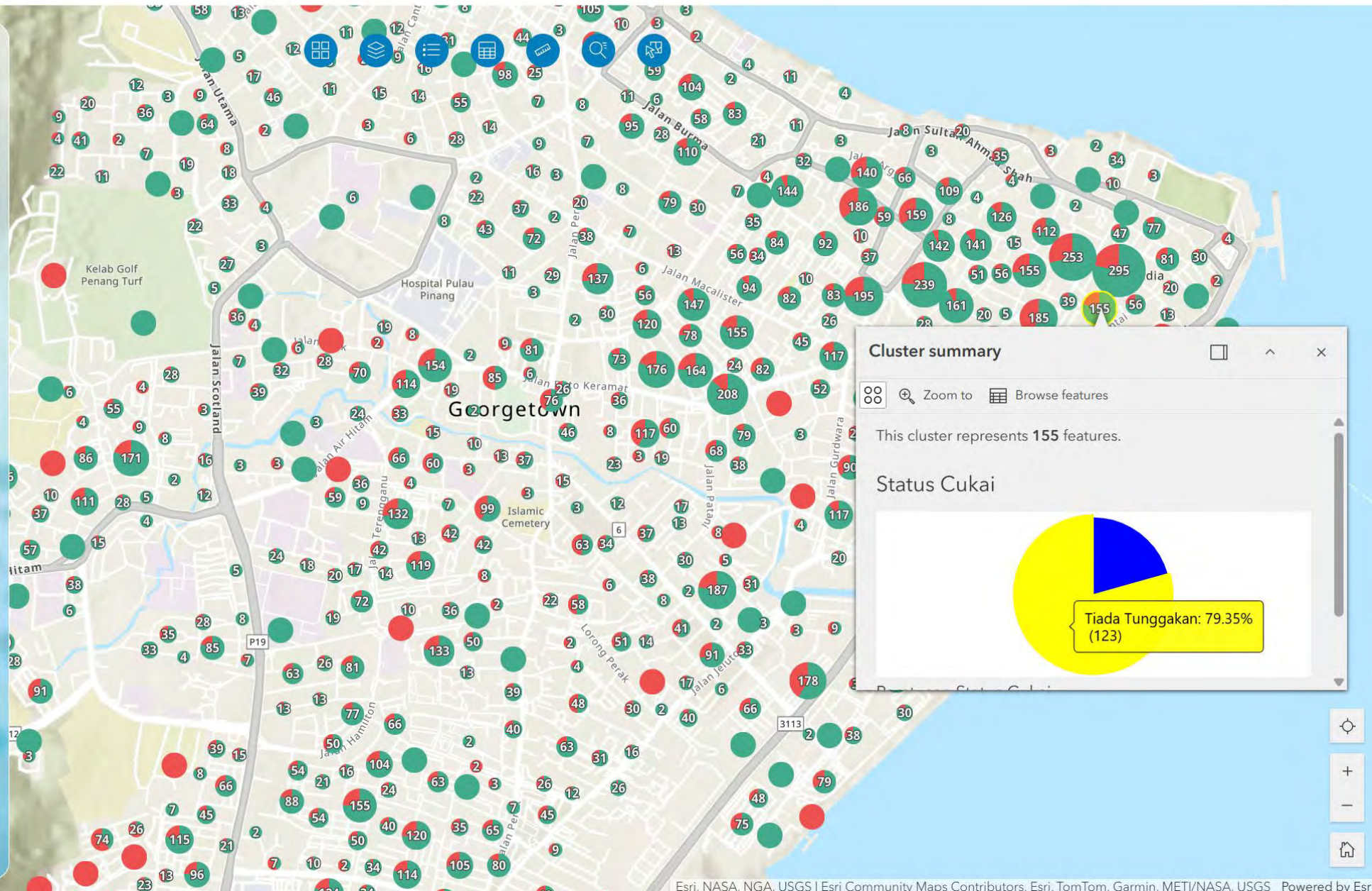
Bilangan Akaun **8,647**



Nilai Tahunan Bangunan DTL

Senarai Tunggalan

Carta Cukai

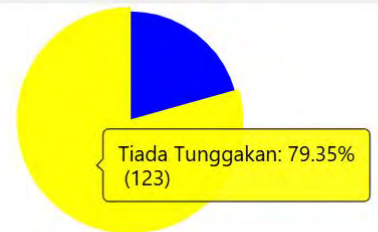


Cluster summary

Zoom to Browse features

This cluster represents 155 features.

Status Cukai



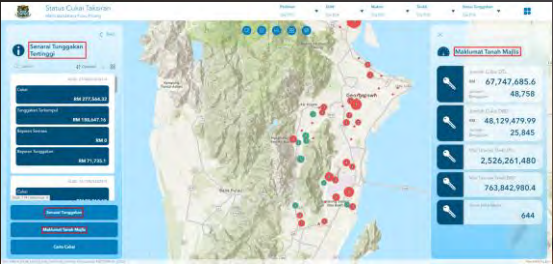
Geo- Notice Analytics Module

Smart Environment
Work flow



Smart Parking System

Majlis Bandaraya Pulau Pinang

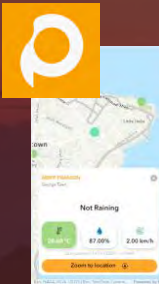


Virtual Island of
Penang

Mesyuarat Jawatankuasa
Mesyuarat
etc



Complaint
(Aduan)



CITIZEN ENGAGEMENT



Geo-Notice Dashboard

Majlis Bandaraya Pulau Pinang

Jalan

DUN

Kategori

Tarikh

Kesalahan



Indicator



Jumlah Kompaun

11,195



Kaput

0

Teloh Dituntut

Dilupuskan

0

0



Tunda

0

Teloh Dituntut

Dilupuskan

0

0



Jumlah Saman

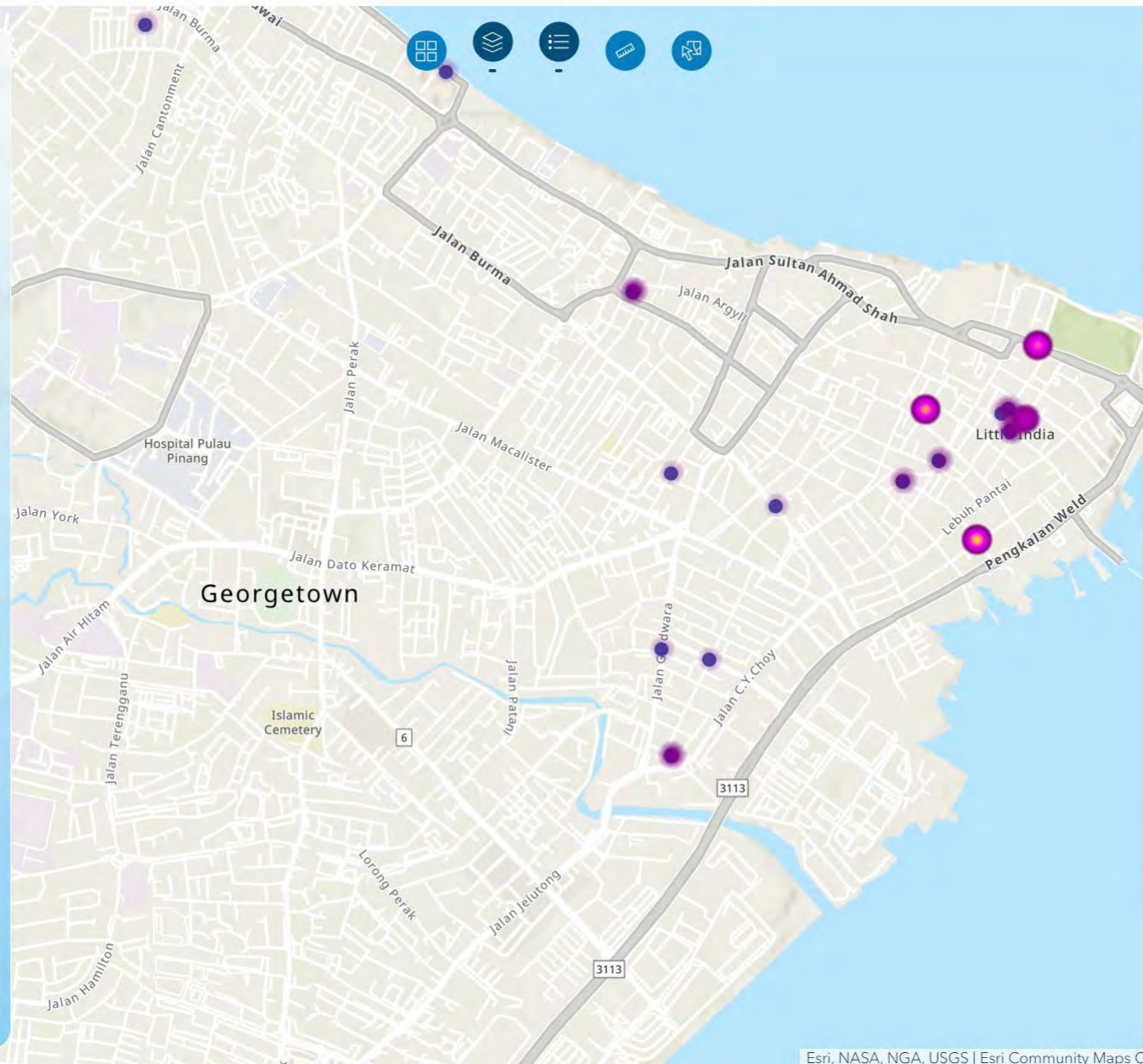
11,195



Kereta Buruk

Laporan Tindakan Penguatkuasaan

Terperinci



Map Layers



☒ Hotspot Kompaun

☒ Kompaun_PSP

☒ Kereta Buruk

☐ CCTV

☐ Jalan

☐ Sempadan Daerah

Legend

Hotspot Kompaun

High

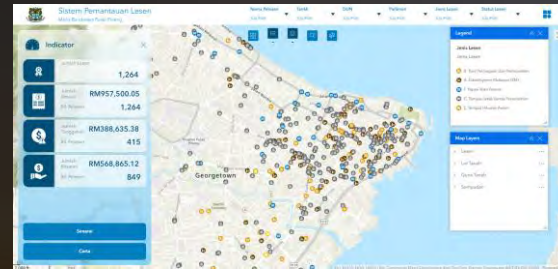


Kompaun_PSP



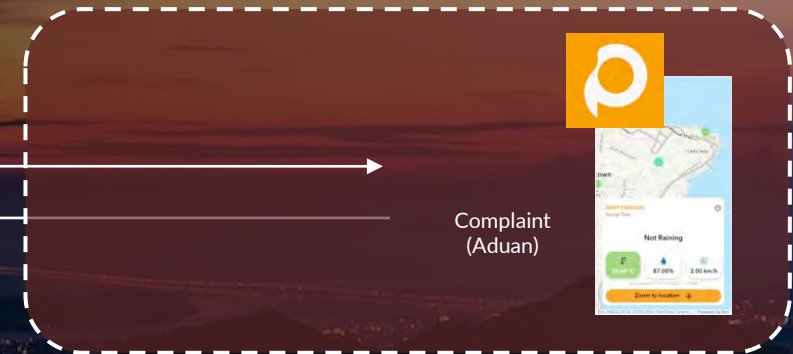
Licensing Analytics Module

Smart Economy
Work flow



Virtual Island of
Penang

Mesyuarat Jawatankuasa
Mesyuarat
etc



CITIZEN ENGAGEMENT



License Monitoring System

Majlis Bandaraya Pulau Pinang

Sub-Activities

Applicant Name

Date

DUN

Parliament

License Type

License Status



Indicator



Total Number of License

Komposit

2,185

Hiburan

87

Tagging

49



Number of Renewed License

2,272



Number of Expired License

0

List

Chart



Map Layers



☒ U-Lesen

☒ Boundary

☐ Rancangan Struktur Negeri 2030

☐ Gunatanah 2023

Legend



U-Lesen

License Details

Komposit

Hiburan

Tagging

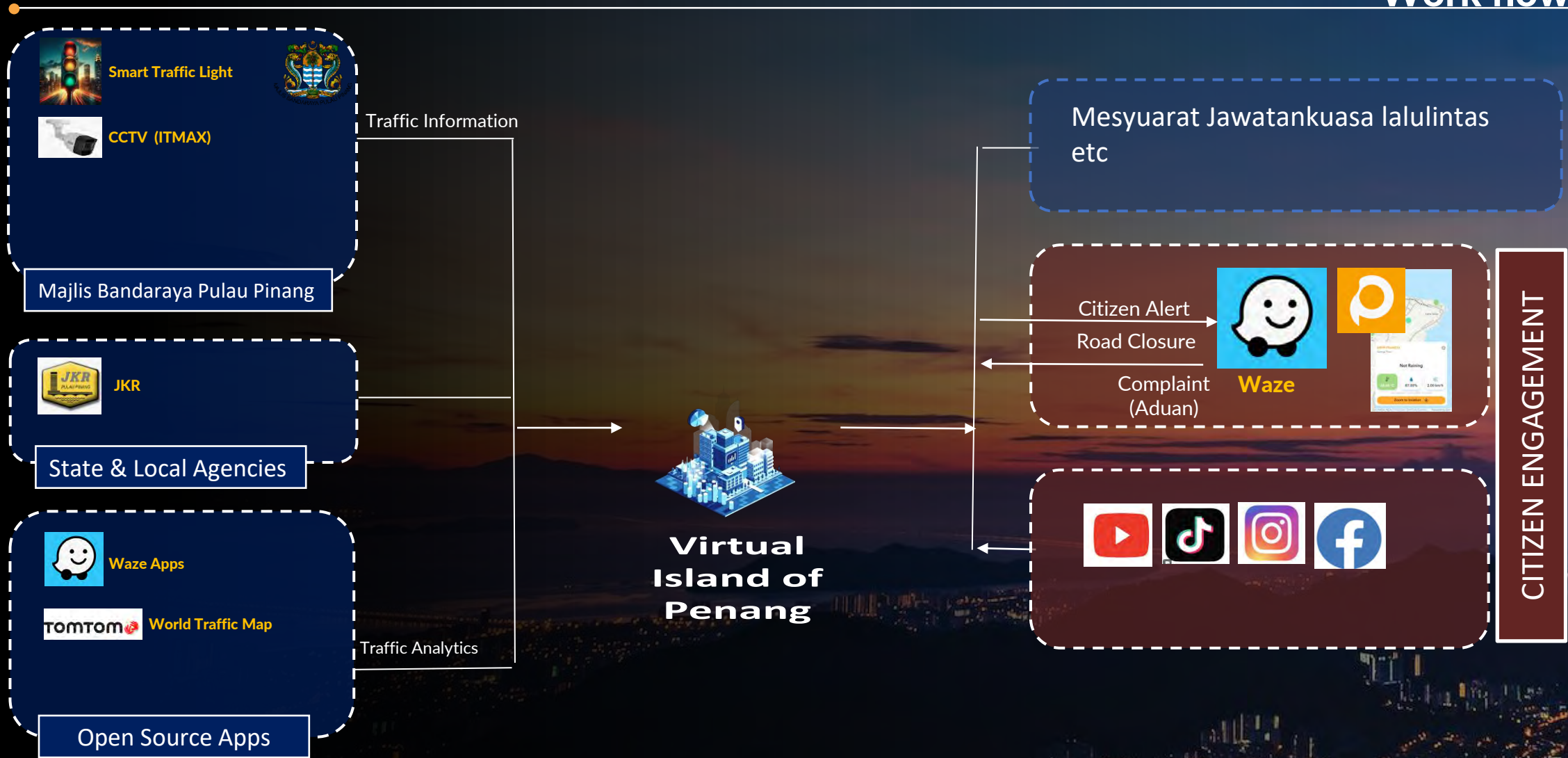
Tagging



500 ft

Road Capacity Analytics Module

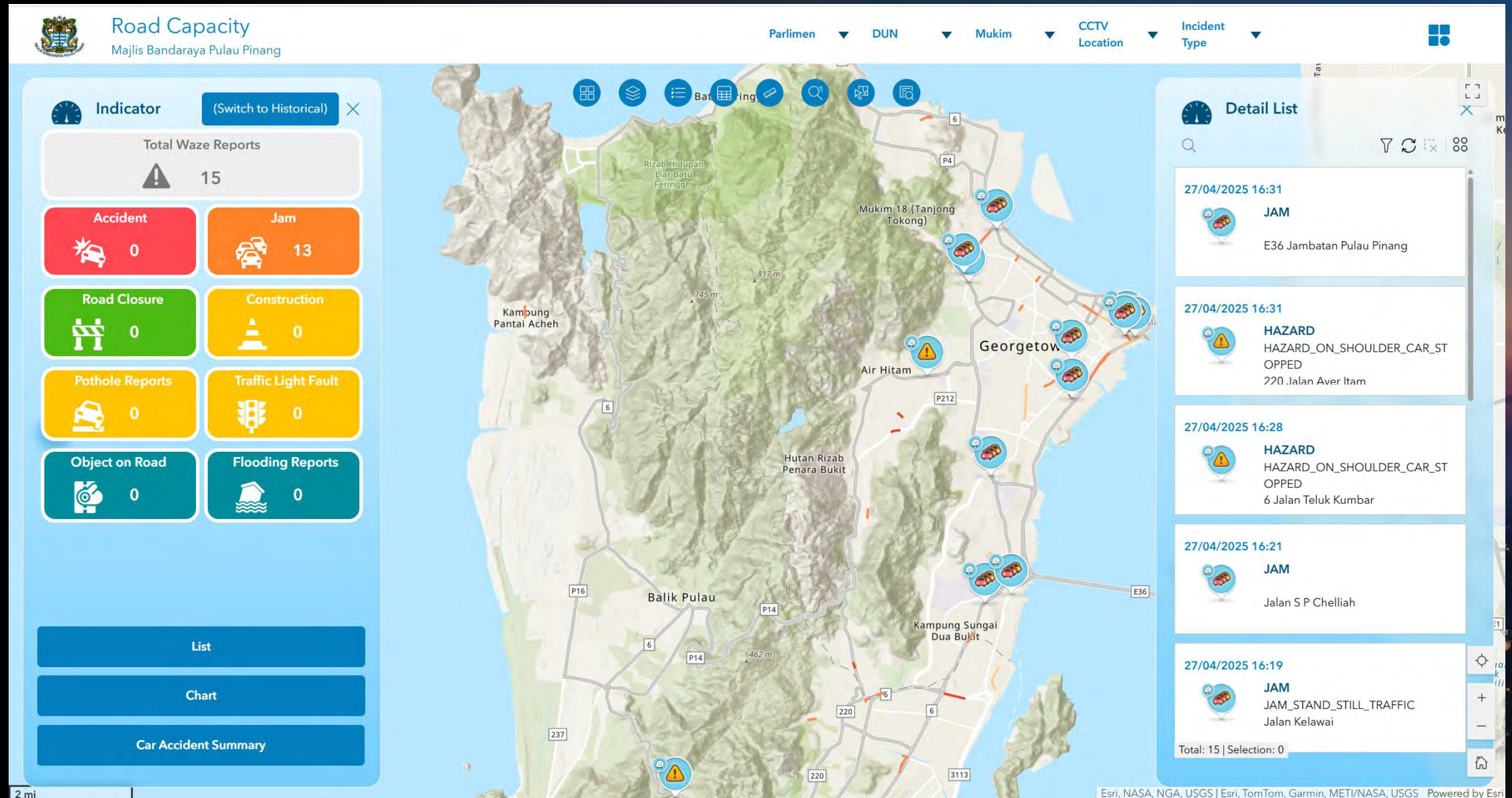
Work flow





Road Capacity Analytics Module

Dashboard



AI City Project



MDEC™

Digital Nasional
Future Connected

MY5G

 **esri** Malaysia

aws

ITMAX



Thank You

Digital Transformation Towards A Smarter, More
Resilient & Progressive City