

# Esri Indonesia Petroleum User Group

# **PENGEMBANGAN DAN PEMANFAATAN GEOPORTAL DALAM KEGIATAN OPERASI MIGAS PT PERTAMINA EP**

Hadi Purwana  
PT Pertamina EP

# LATAR BELAKANG

## Revolusi Industri 4.0

- Kemunculan superkomputer, robot pintar, kendaraan tanpa pengemudi, editing genetik dan perkembangan neuroteknologi yang memungkinkan manusia untuk lebih mengoptimalkan fungsi otak.
- Kelincahan suatu organisasi / perusahaan lebih menjadi kunci keberhasilan dibandingkan ukuran / besar suatu organisasi / perusahaan.
- *Disruptive technology* hadir begitu cepat dan mengancam keberadaan perusahaan dan profesi existing.
- Teknologi GIS ditandai antara lain dengan:
  - Industri yang berwujud virtual dan berbentuk konektivitas antar manusia.
  - Mesin dan data dapat diakses dimanapun.

# Accuracy and Usefulness



We don't have to have millions of postcodes to be useful. We don't need to know where trees are to the millimeter to create a map that is 99% useful.  
(*Steve Coast, OpenStreetMap Founder*)

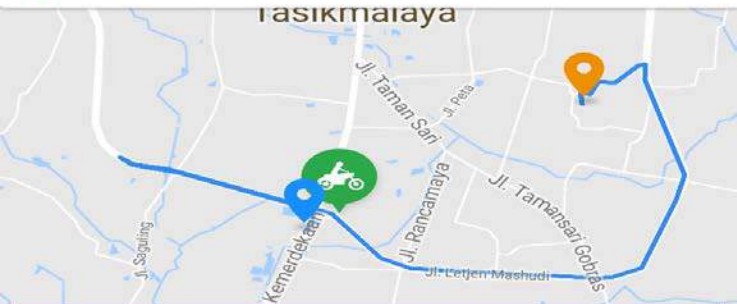
Ask a crowd rather than a pair, and the average is quite close to the truth.  
(*SEASC 2011 - FIG Commission*).



📍 **Baso Tahu & Simak Spesial Mang Awan**

⋮ Jl. Perintis Kemerdekaan, Karsamenak, Kaw

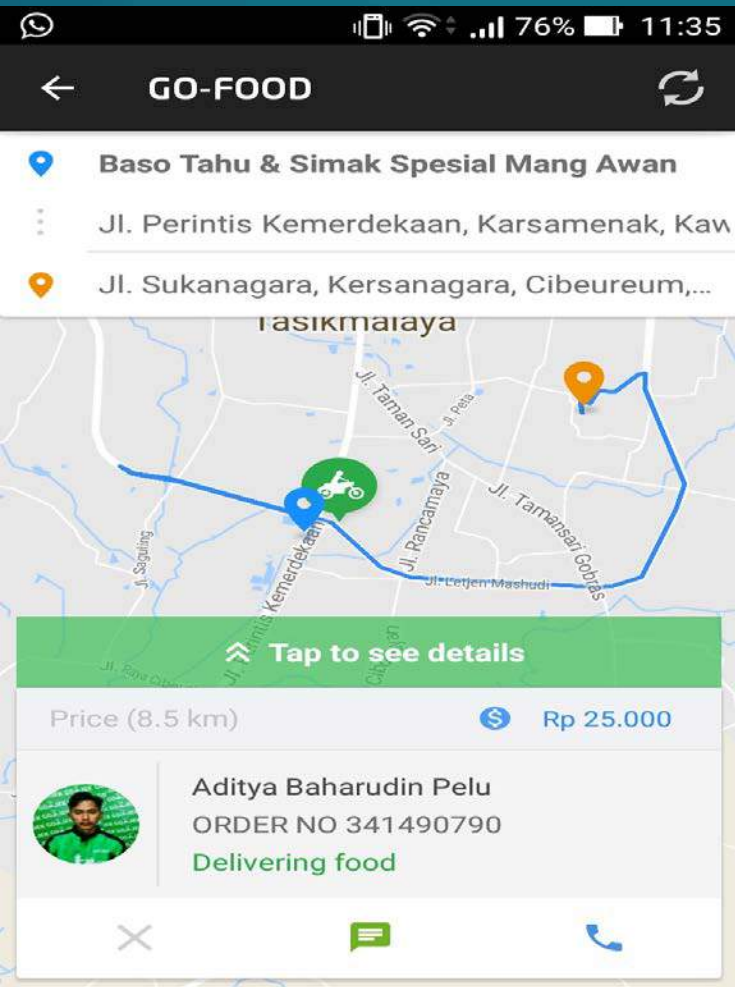
📍 Jl. Sukanagara, Kersanagara, Cibeureum,...



➤ Tap to see details

Price (8.5 km) 💰 Rp 25.000

 **Aditya Baharudin Pelu**  
ORDER NO 341490790  
Delivering food



WhatsApp icon | Signal, Wi-Fi, 76% battery, 11:35

**GO-FOOD**

**Baso Tahu & Simak Spesial Mang Awan**

Jl. Perintis Kemerdekaan, Karsamenak, Kaw...

Jl. Sukanagara, Kersanagara, Cibeureum, ...

**Tasikmalaya**

Tap to see details

Price (8.5 km) **Rp 25.000**

**Aditya Baharudin Pelu**  
 ORDER NO 341490790  
 Delivering food

Close, Chat, Call icons

09:06

Traffic Update | 2012-08-12 09:02 WIB : aku kalo mud...

To **Semanggi, Jakarta Capital Regi...**  
 16 mins - 8.4 km - Via Jalan Jenderal Sud...  
 Avg: 0 Km/h - Delay: N/A - ETA: 09:21

Fast Short All List Recalc

Follow Me Refresh Camera Satellite Mode

Directions Clear Maps About

9:08 AM

Tali Raya Suta Sya... aden Saleh

Muti 4 km

Gang C Setiab... Taman Rasuna Apartment

Jakarta

Jalan Villa ITC Ambassador

Guru Mughni The East Denpasar 3

Komplek AURI Kantor Taman A9

SPBU Pertamina Ubud HR Menara

# POKÉMON

# GO





- Computers being used differently
  - Low cost (consumer electronic) hardware.
  - Accessible (social) software.
  - New publishing model.
- 'Mass Amateurism'
  - Professional and amateur mapping similar.
  - Amateur maps appear professional.
  - Professional maps appear amateur. (*Crawford, 2006*)



# Data Collection : Crowdsourced



Crowdsourcing is a new computing paradigm where humans actively participate in the procedure of computing, especially for tasks that are intrinsically easier for humans than for computers.

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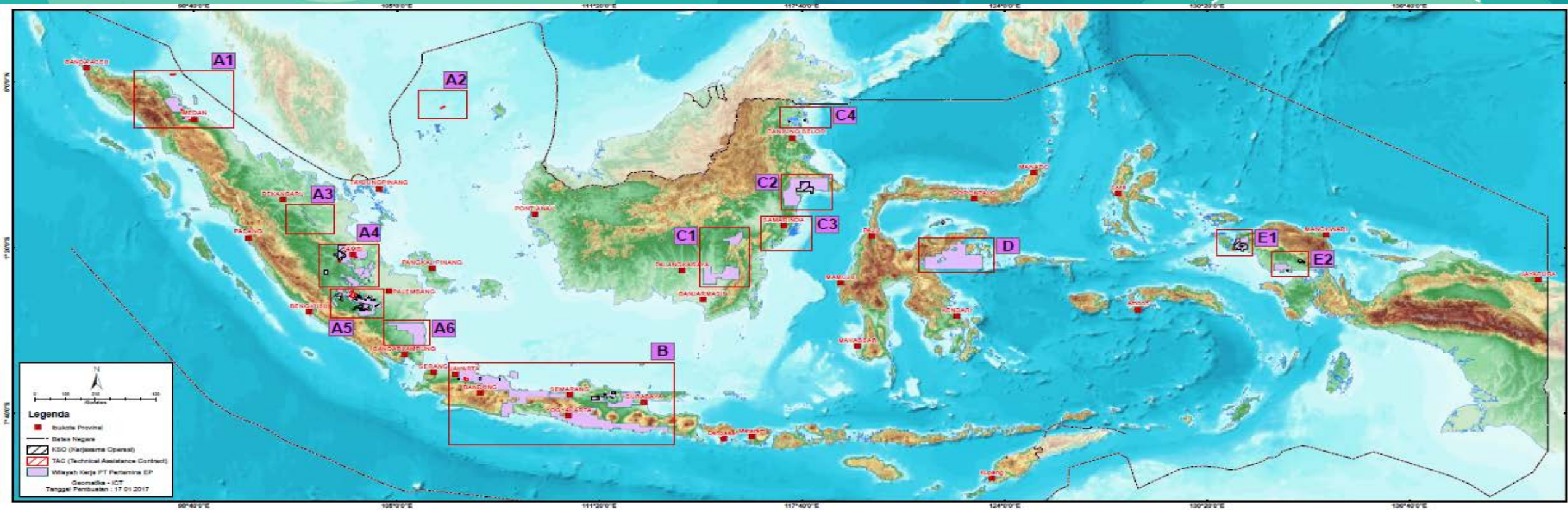


Spatial crowdsourcing (mobile crowdsourcing) platforms :

- (i) each crowd worker is considered as a mobile computing unit to complete tasks using their mobile devices
- (ii) spatial information such as location, mobility and the associated contexts plays a crucial role.



# Wilayah Kerja Pertamina EP



Luas : **± 113,500 km<sup>2</sup>**

Terdiri atas 5 wilayah asset :

- Asset 1 : Sumatera bagian utara dan tengah
- Asset 2 : Sumatera bagian selatan
- Asset 3 : Jawa bagian barat
- Asset 4 : Jawa bagian timur, Sulawesi, Papua
- Asset 5 : Kalimantan



# MAPS

Manajemen Asset Pertamina EP berbasis Spasial



LOGIN

User Name

PASSWORD

Credentials

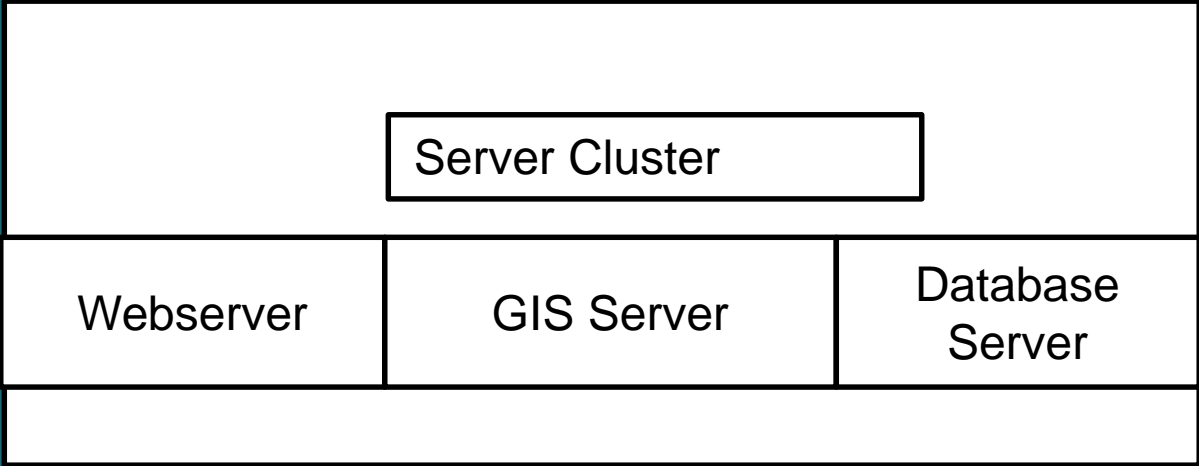
Log in

GEOMATIKA @ 2017

MAPS merupakan **single source of spatial data** untuk pengembangan aplikasi berbasis spasial di Pertamina EP

# Konfigurasi MAPS

Kantor Pusat



PEP Network



KP



Asset 1



Asset 2



Asset 3



Asset 4



Asset 5



# MILESTONE PENGEMBANGAN APLIKASI

**Data Eksisting**

- Data infrastruktur telekomunikasi
- Well
- Seismik
- Jalur pipa

**Penambahan Data**

- Well
- Seismik
- Jalur pipa
- Sub surface (lead, Prospect)

**Fokus**

- Well
- Seismik
- Maintenance data eksisting

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- Well
- Seismik
- Maintenance data eksisting

**Fokus**

- Update data model PPDM

**Kick Off (2012)**

**Roll Out System I (2013)**

**Perubahan Organisasi PEP (2014)**

**Roll Out System II (2015)**

**Roll Out Database PPDM 3.9 (2016)**

**Roll Out System III (2017)**

- Mapping PPDM
- Gather kebutuhan informasi spasial
- Kalkulasi kebutuhan infrastruktur
- Application Development
- System Test (Stress Test,

- PEPMAP
- PEP Maps WebGIS
- Workshop
- Sosialisasi

- Data Remapping
- Migrasi OS
- Reengineering aplikasi

• MAPS v.2

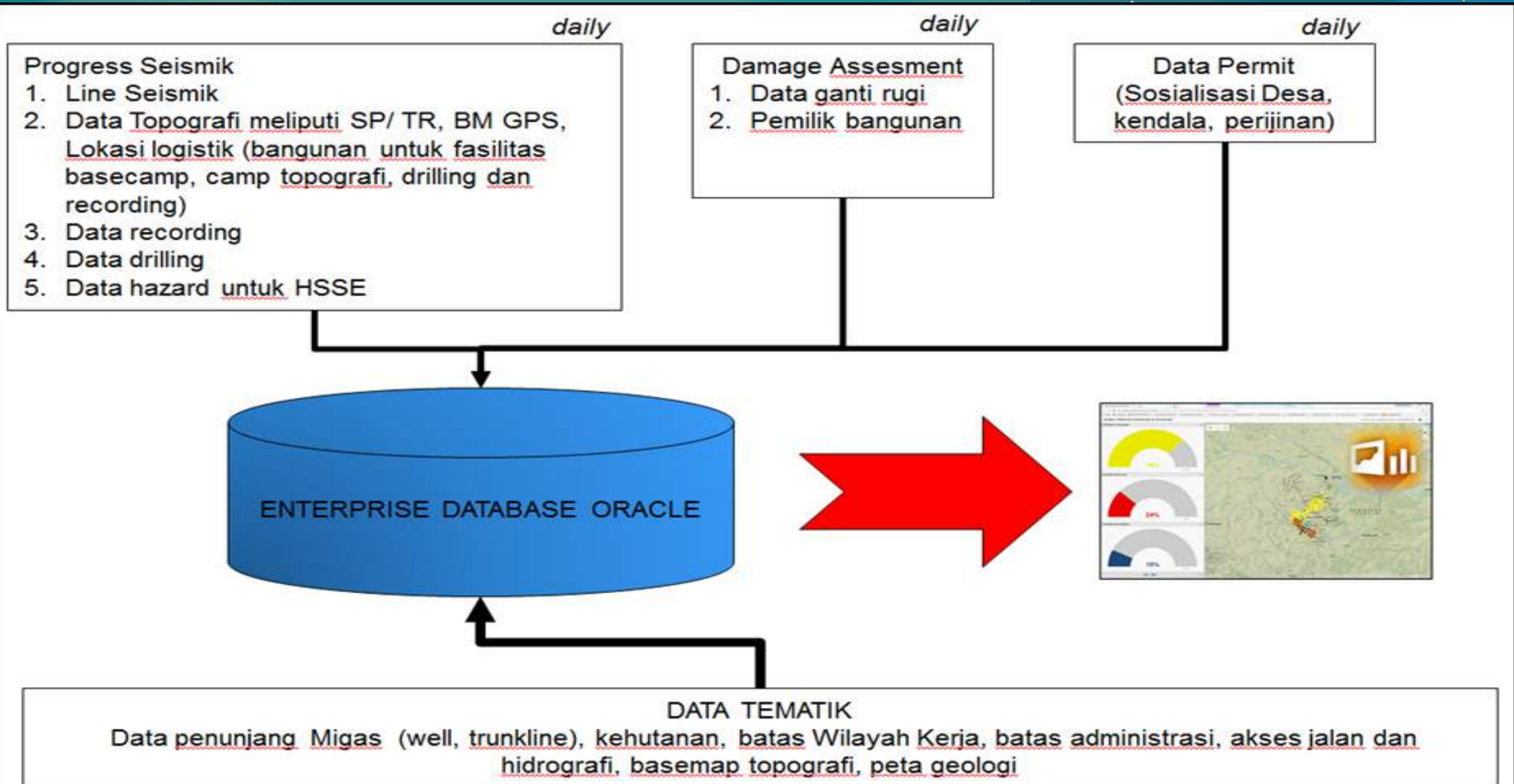
- MAPS v.2
- MAPS (Manajemen Asset Pertamina EP Berbasis Spasial)
- System Test (Stress Test, UAT)
- Akses dari Portal PEP

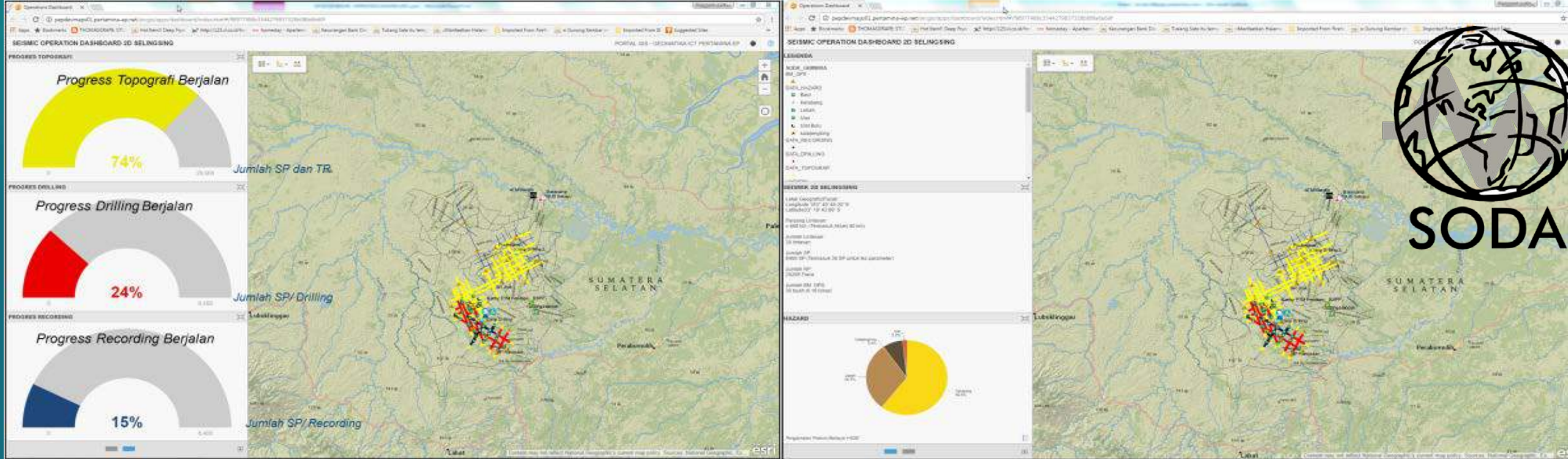
- MAPS v.3
- User Interface update
- Interkoneksi dengan third party application

# Pengembangan MAPS : Beberapa Inisiatif

- ✓ Operasi Seismik
- ✓ Pipeline Monitoring
- ✓ Health, Safety, Security, Environment (HSSE)

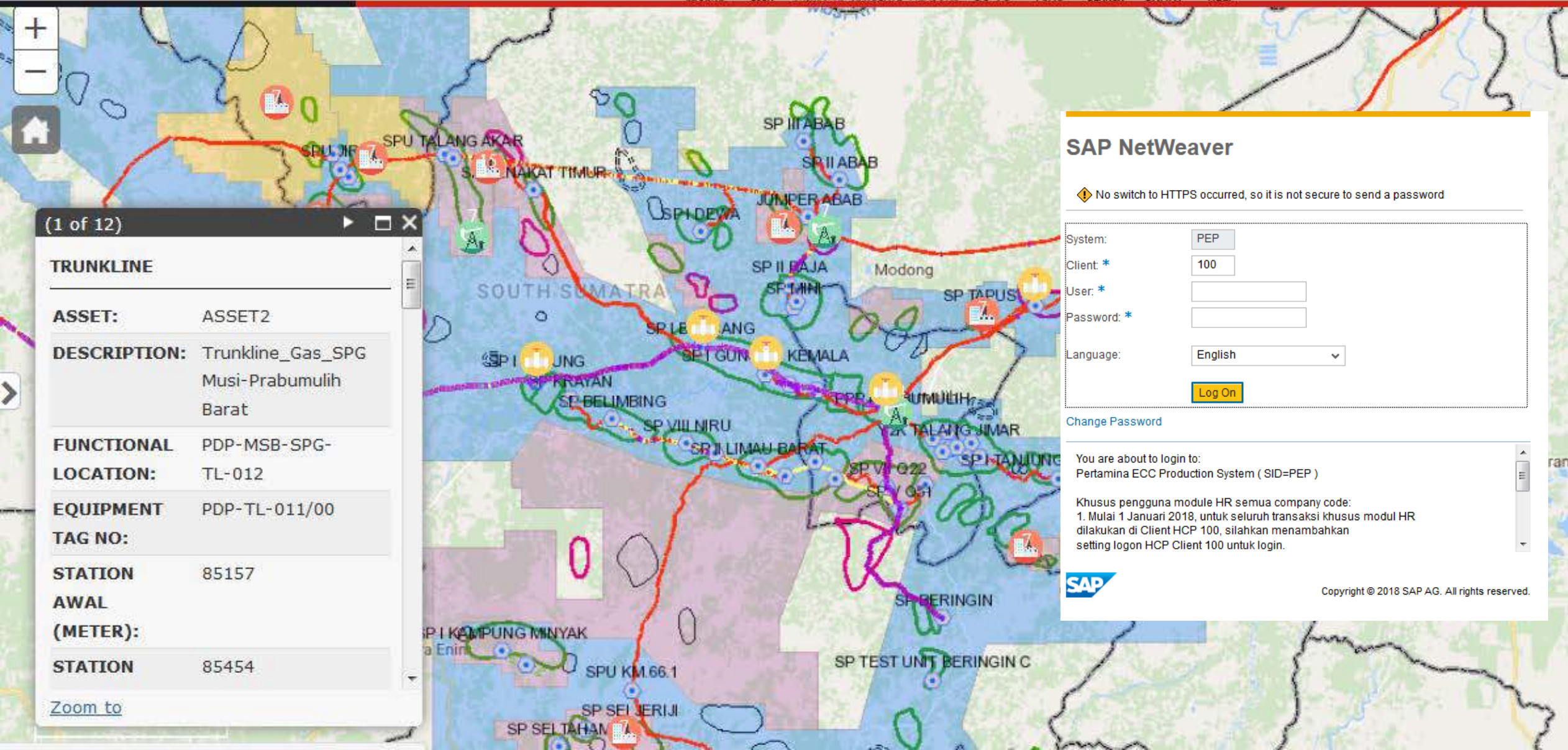
# OPERASI SEISMIK





1. Monitoring *progress* seismik dapat dilakukan secara real time. mempersingkat tahapan dan mempersingkat waktu pekerjaan.
2. Mengintegrasikan data-data yang diperlukan untuk memonitoring *progress* pekerjaan survei seismik.
3. Pengembangan aplikasi dan database dilakukan secara "*inhouse*".
4. Dapat meminimalisir potensi kebocoran informasi data spasial karena seluruh data yang tersimpan dalam database server, bukan di lembar manual hardcopy ataupun email.
5. *User role management* menganut sistem dua layer otentifikasi, yaitu melalui jaringan VPN dan LDAP untuk memperkuat faktor kerahasiaan data dengan membatasi hak akses.
6. Meningkatkan *level of confident* dan pengetahuan user terhadap data yang dihasilkan dalam pekerjaan Survei Seismik.

# PIPELINE MONITORING



(1 of 12)

**TRUNKLINE**

<b>ASSET:</b>	ASSET2
<b>DESCRIPTION:</b>	Trunkline_Gas_SPG Musi-Prabumulih Barat
<b>FUNCTIONAL LOCATION:</b>	PDP-MSB-SPG- TL-012
<b>EQUIPMENT TAG NO:</b>	PDP-TL-011/00
<b>STATION AWAL (METER):</b>	85157
<b>STATION AKHIR (METER):</b>	85454

[Zoom to](#)

## SAP NetWeaver

No switch to HTTPS occurred, so it is not secure to send a password

System:	PEP
Client *:	100
User *:	<input type="text"/>
Password *:	<input type="password"/>
Language:	English
<input type="button" value="Log On"/>	

[Change Password](#)

You are about to login to:  
Pertamina ECC Production System (SID=PEP)

Khusus pengguna module HR semua company code:  
1. Mulai 1 Januari 2018, untuk seluruh transaksi khusus modul HR dilakukan di Client HCP 100, silahkan menambahkan setting logon HCP Client 100 untuk login.

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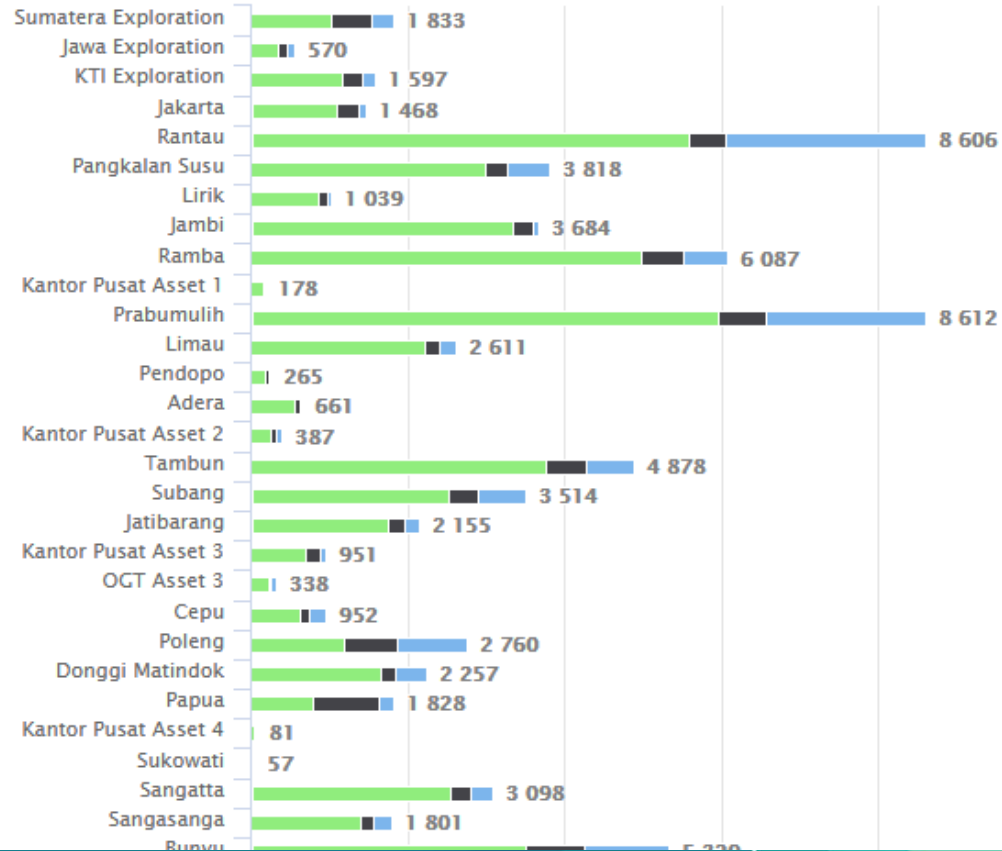
Jumlah Laporan Per Klasifikasi

Jumlah Laporan Per Status

Persentase Status Tindak Lanjut

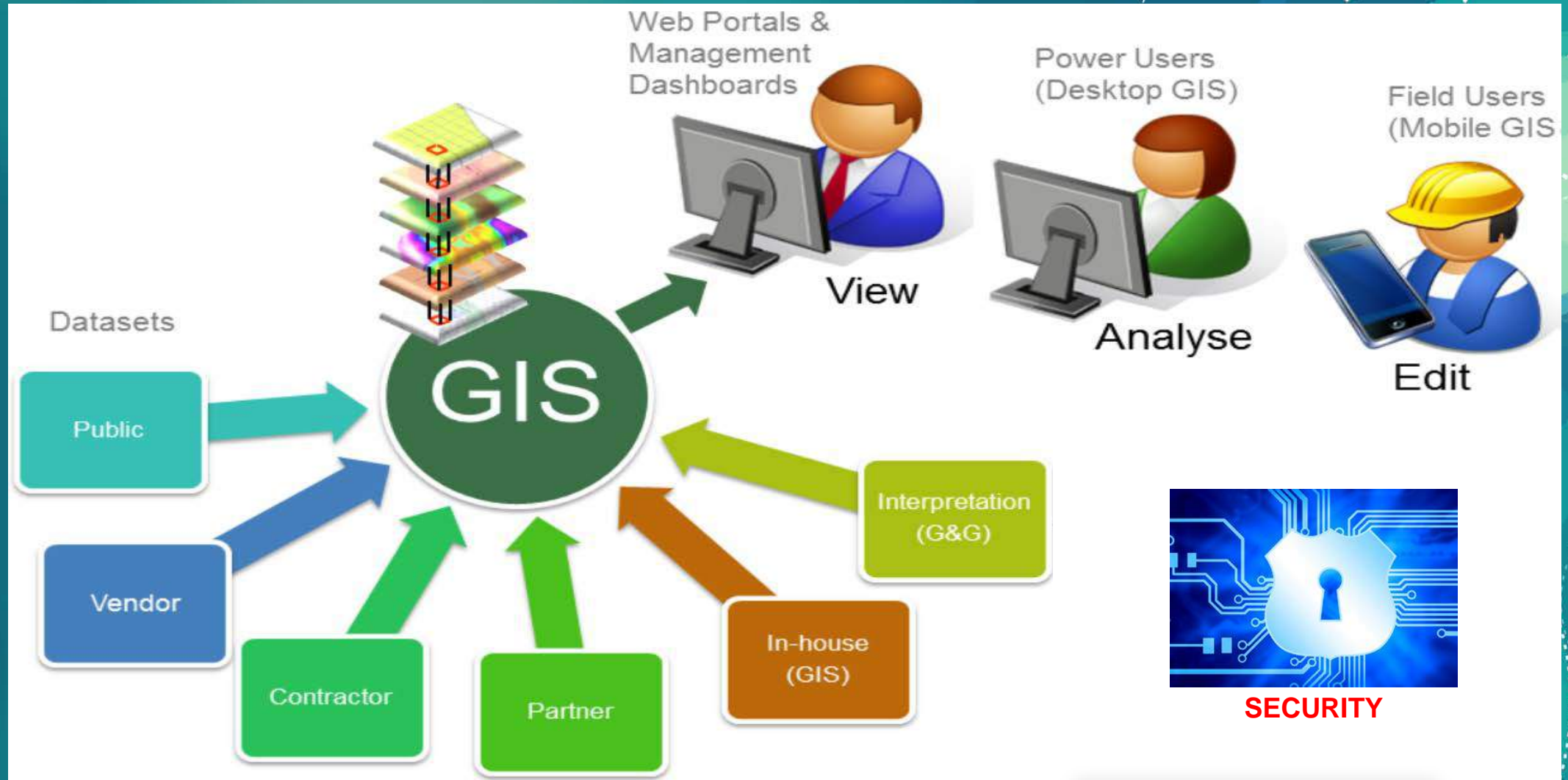
Persentase Tingkat Resiko

### Jumlah Laporan Peka per Lokasi per Klasifikasi



# Inisiatif Pengembangan

- ✓ Mengintegrasikan laporan pengamatan ke dalam basis data spasial.
- ✓ Mengembangkan aliran data dari operator di lapangan sebagai masukan (input) ke dalam sistem GIS



# Tantangan Pengelolaan Data Migas

- ✓ Perlunya kesepakatan data model yang menjadi acuan.
- ✓ Informasi disajikan harus dapat dipastikan berasal dari data dengan data quality yang sedikitnya meliputi *accuracy, completeness, consistency, timeliness, uniqueness dan, validity*.
- ✓ GIS sebagai bagian dari *decision making tool* ditopang oleh aliran data yang memenuhi aspek data quality yang sedikitnya meliputi *accuracy, completeness, consistency, timeliness, uniqueness dan, validity*.
- ✓ Konsep spatial crowdsourcing dalam industri migas membutuhkan dukungan kebijakan dan infrastruktur untuk menjamin keamanan data untuk mengelola risiko dari sisi *data security*.



Thank you

A close-up photograph of a fountain pen writing the words "Thank you" in a cursive script on a white sheet of paper. The pen is positioned on the right side of the frame, with its nib just finishing the word "you". The background is a solid, deep blue color. The lighting is soft, highlighting the texture of the paper and the metallic sheen of the pen.