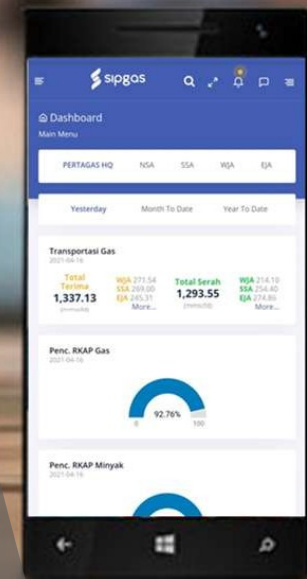


Pertagas Digital Transformation as Milestone for Gas Transmission Integration

Melihat progress milestone hari ini dan menyiapkan peran Pertagas ke depan menuju integrasi operasional jaringan pipa transmisi gas bumi nasional.

PT. Pertamina Gas
Bandung, 17 Juni 2025

CONFIDENTIAL AND PROPRIETARY. Any use of this material without specific permission of PT Pertamina is strictly prohibited. Should not be reproduced or redistributed to any other person.





Keterangan:

- 1 Proyek pipa Cirebon-Semarang, 20 inch, 300 km dari Semarang hingga Kandang Haur Timur, kapasitas 235 MMSCFD, target selesai di Desember 2025.
- 2 Proyek pipa Dumai-Sei Mangkei, 24 inch, 428,6 km, update rencana SKG di Belawan, ditargetkan selesai di 2028.

- **Opportunity Trans-Jawa:** kapasitas penyaluran hingga 180 MMSCFD.
- **Challenge bagi operasional Trans-Jawa:**
 1. **Kapasitas:**
 - a. *Bottleneck* interkoneksi Cisem 2 di Cilamaya
 - b. Penyaluran non-JTB (HCML: 60-120 MMSCFD).
 2. **Operasional:**
 - a. *Repetitive unplanned shutdown Supply/Demand*
 - b. Fluktuasi serapan gas *anchor buyer* di Trans-Jawa (PLN, Pupuk, Kilang dan Industri)
 3. **Komersial:**
 - a. *Willingness to pay* pelanggan gas pipa di JBB.
 - b. Optimasi gas saat *unplanned/planned shutdown* lintas pabrik (PLN, Pupuk, Kilang dan Industri)

Kapasitas?

1. Aturan Regime Tekanan & Investasi Jumperline Cilamaya

2. Optimalisasi Kompresor Semarang

Operasional

3. SPO Nusantara & Reaktivasi SCADA

4. Optimasi kapasitas secara transient

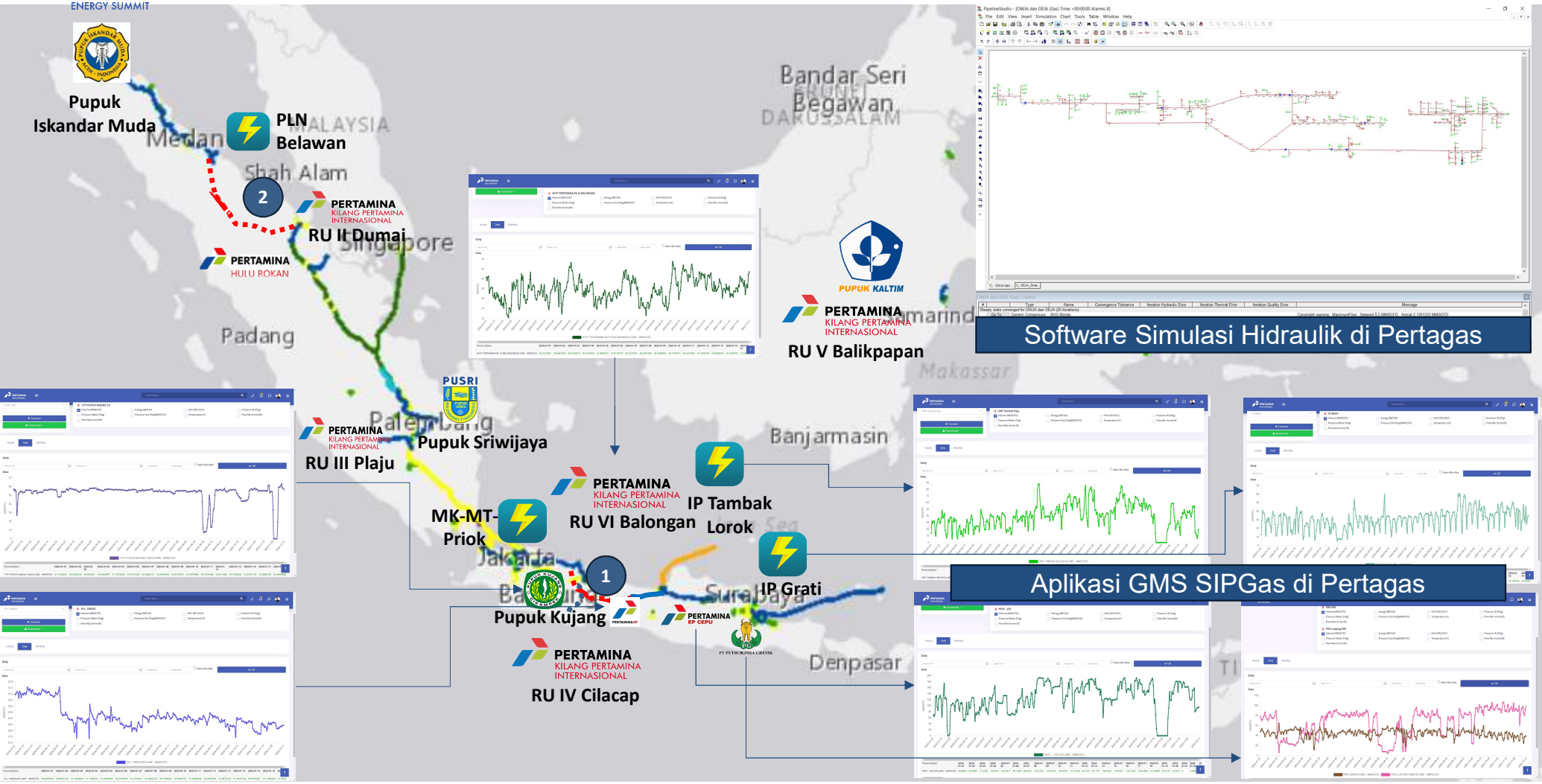
Komersial

5. Kajian & Simulasi Opsi Skema Tarif

6. Integrasi AA dan Skema GSA Mul-des & GTA Multi Transporter

*Ref. Integrasi Transmisi APA Group Australia & ENTSGO Eropa

Profil Supply-Demand di Rencana Integrasi Sistem Pipa Transmisi Trans-Jawa



Referensi Integrasi Transmisi di *Eastern Australia Pipeline*

Latar Belakang

: Akuisisi Epic Energy oleh APA di Eastern Australia Pipeline untuk mengatasi shortage gas di Sydney & Melbourne dengan sumber gas dari Brisbane.

Goal

: mengidentifikasi *cost & benefit* dari integrasi dua asset pipa transmisi.

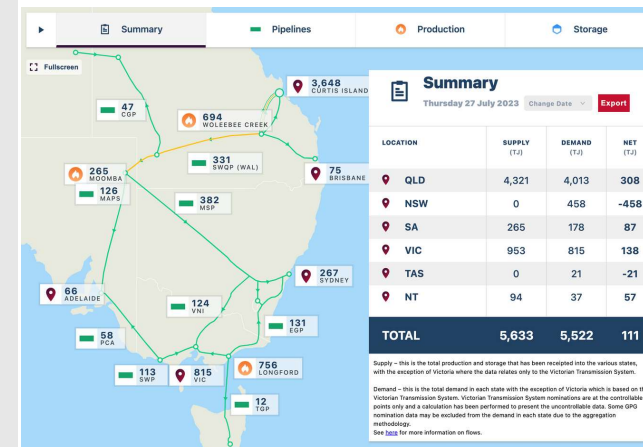
Enabler

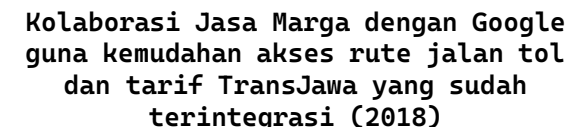
: Visi manajemen APA untuk mengoperasikan jaringan pipa transmisi nya di *Eastern Australia as an integrated grid*. Dari kondisi sebelumnya shipper harus berkontrak dengan minimal 2 transporter

Cost

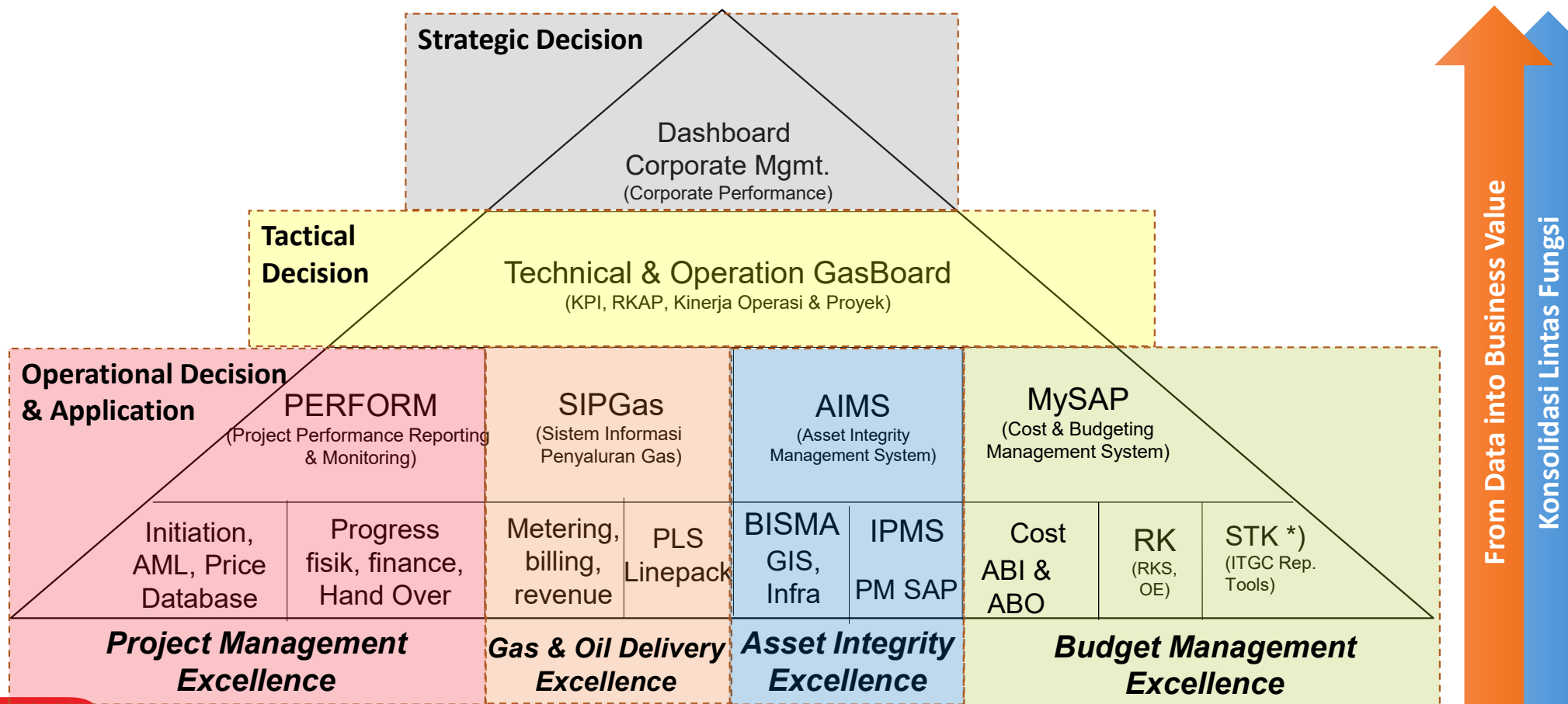
Benefit

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Akuisisi Epic Energy 2. Integrasi system digital, dan 3. Pembangunan <i>Integrated Operation Center</i>. | <ol style="list-style-type: none"> 1. Meningkatnya kualitas <i>service</i> transportasi lintas transmisi (GTA multi-asset). 2. Efisiensi <i>scheduling</i> (sinkronisasi jadwal TA/pemeliharaan antara pemasok, transporter dan end customer). 3. Efisiensi biaya <i>compressor</i> yang bisa diefisienkan untuk memenuhi kebutuhan konsumen, dari sebelumnya duplikasi. Sehingga menghasilkan <i>cost saving</i> >110M USD/tahun. Dan pada akhirnya ada jasa baru <i>compression fee</i> (<i>firm</i> atau <i>interruptible</i>) 4. Efisiensi operational tersentralisasi sekitar 7M USD/tahun (kontrak payung, dsj.) 5. Dengan terintegrasinya pipa yang lebih panjang, APA bisa memberikan <i>service</i> baru berupa <i>park-and-loan</i> (<i>firm</i> atau <i>interruptible</i>). Dengan benefit 7,5M hingga 25M USD/tahun. 6. <i>Service</i> baru: single standard-form transportation agreement di seluruh jaringan Eastern Australia pipeline (ketentuan nominasi, SOP, pembayaran, dll), sehingga mengurangi biaya dan waktu untuk mengakses beberapa transporter. 7. APA Central operation memberikan kecepatan respon dan efektifitas dalam memenuhi kebutuhan Shipper, dengan skema svstem <i>Park-and-Loan</i> dengan biaya yang separo-hnya dari |
|---|--|





Project Management & Operation Excellence Through Digital Transformation Hierarchy



Performing while Transforming...

1st Digital Transformation: 2020 - 2022

Automate

- 7 Area data collection to SIPGas
- SIPGas (OGMS)* development
- Meter to Cash automation,
- SSWJ – WJA gas delivery integration pilot project
- Deliverable: Strategic offering, Top Digital Award, APQA Gold, Dharma Karya ESDM

2nd Digital Transformation: 2022 - 2024

Integrate

- System integration of Project (PERFORM, SIIP) & operation (SIPGas, AIMS, MySAP)
- Digital transformation sustainability** strategy
- Deliverable: PERTABoard DTO as management dashboard for decision support system

3rd Digital Transformation: 2025 & beyond

Optimize

- Asset optimization (in collaboration with Asset Commercialization)
- Gas & oil delivery optimization (in collaboration with Area) via SPO Nusantara
- Crossing management (3rd party and analysis support)
- Deliverable: Asset optimization offering, advanced strategic offering, crossing monitoring system

* **OGMS: Oil & Gas Management System**, a digital information system for planning, monitoring, check and evaluate Pertagas oil & gas delivery

** **Digital transformation sustainability**: Data governance, STK development, Operation Excellence Award, Operation Technology Support, Pertagas Executive Monitoring Center (23rd floor), Pertagas Corporate dashboard

Tahapan Integrasi Operasional Pipa Transmisi Gas Bumi Nasional di Sub Holding Gas

Step 1

Interconnection (2020-2027)

- Interkoneksi fisik antar-pipa transmisi
- Milestone:
 - SSWJ-WJA (Done 2020)
 - Cisem 1 (Done 2023)
 - Cisem 2 (2024-2025)
 - Dusem (2026-2027)



Step 2

Integration (2018-2027)

- Integrasi *Gas Management System (GMS)* SIPGas PGN:
 - SIPGas PGN SSWJ (2015)
 - SIPGas Pertagas (2021)
 - SIPGas TGI, KJG (In progress)
- Integrasi rute pipa transmisi:
 - GasTRANS (2024)
 - Analisa kapasitas & de-bottlenecking
- Integrasi skema komersial:
 - Universal Access Arrangement (TBD)
 - Skema Entry-exit/ Integrated tarif (TBD)

Step 3

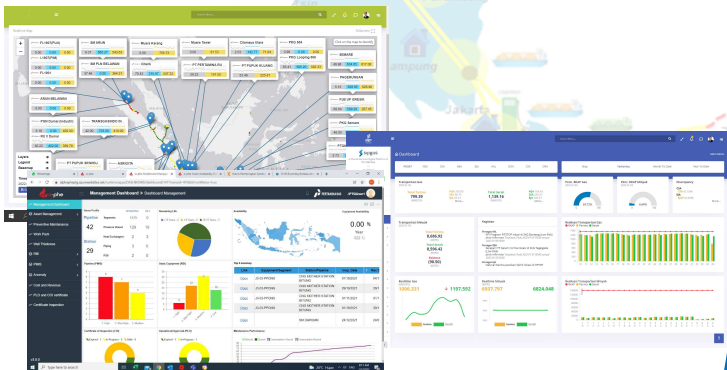
Interoperability (2027 and beyond)

- Skema GTA multi-transporter
- Skema GSA Multi Destination
- Operasional *Pertagas Integrated Command Center* sebagai SPO Nusantara



Why:

- 1. Positioning:** Seize the momentum for natural gas to its golden moment in Indonesia energy transition.
- 2. Role:** Optimizing Pertagas transmission pipeline (2.804 km), capacity & flexibility, integrated with Sub Holding Gas pipeline covering 96% Indonesia's gas pipeline.
- 3. Interconnection** to upstream gas supplier (PEP, PHE, Medco, HCML, JTB, PHR) to support strategic industry program, i.e. fertilizer unmet demand (PIM), refinery RDMP, electricity PLTU (coal) early retirement, etc.
- 4. Roadmap** Pertagas Digital Transformation 2022 & beyond and Milestone for Holding Migas Pertamina.



Enabler: real-time data monitoring, oil & gas transmission dashboard asset integrity management system

SPO Nusantara

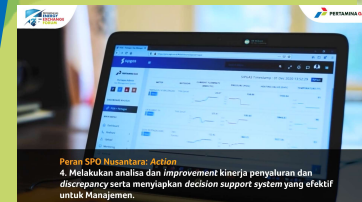


SPO Nusantara

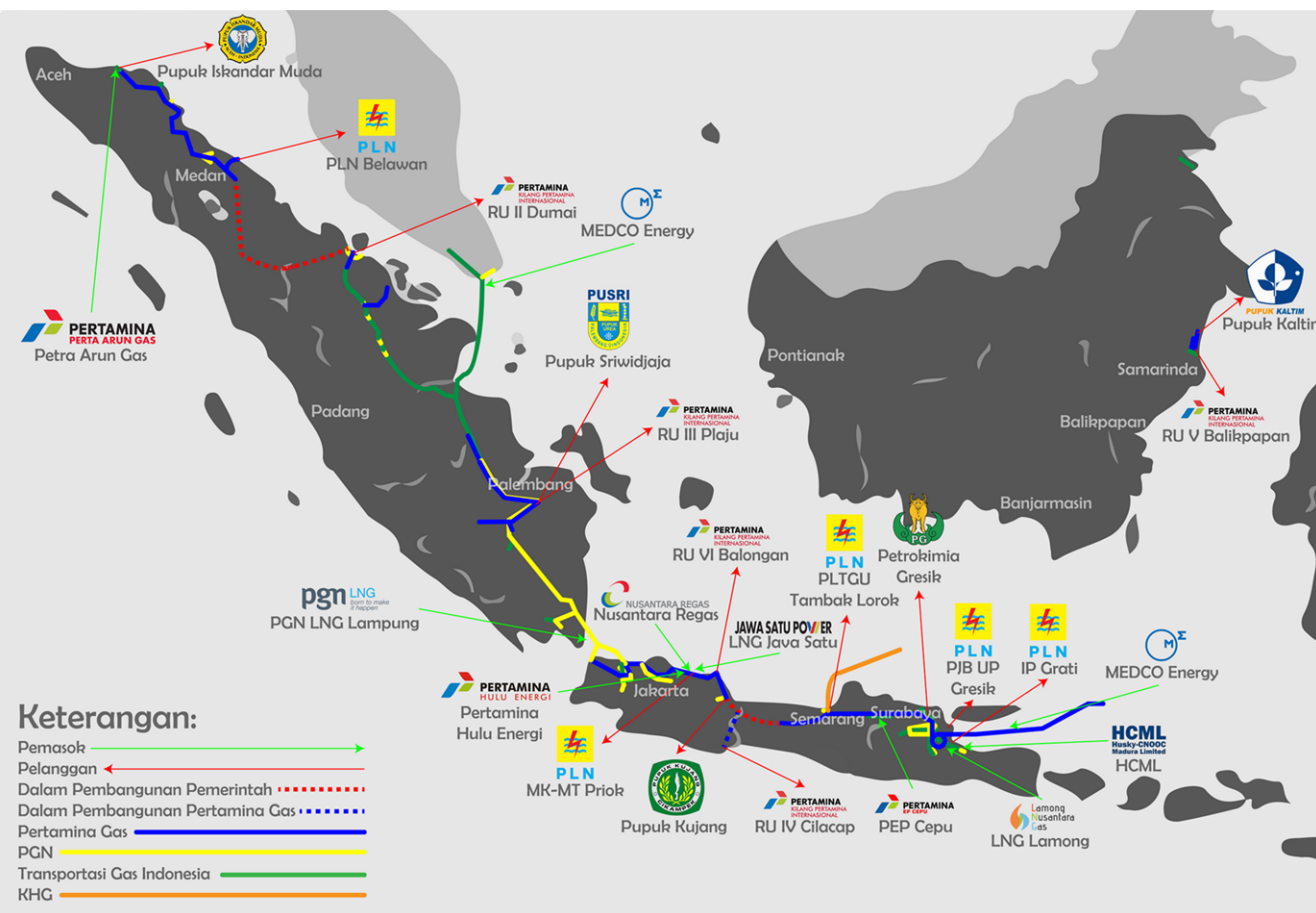
as Gas & Oil Transmission & Analytics Management (GOTAM)

How:

- a. Planning (P):** gas balance evaluation, Pertagas Gas & Oil Synergic Offering, gas delivery integration among Transporter in SHG (TGI, SSWJ, KJG) & external stakeholder (BPH, SKK).
- b. Do (D):** Real-time monitoring, national gas delivery command centre and fast response team for emergency.
- c. Check (C):** performance reporting, discrepancy management.
- d. Action (A):** analytics recommendation & management decision support system.



Illustrasi peran PDCA SPO Nusantara bersama tim Area, transporter lain & Stakeholder



1. Tahapan Integrasi Sistem Transmisi Gas Bumi Nasional

- Mewujudkan jaringan pipa gas bumi nasional yang terhubung dan efisien melalui tiga tahap: *Integration (2018–2027)*, *Interconnection (2020–2027)*, dan *Interoperability (2027+)*.
- Milestone: Cisem 1 & 2 (2026), proyek Dumai-Sei Mangkei, serta Operasional SPO Nusantara

2. Pembelajaran dari Lesson learn Internasional & Nasional

- Studi APA Group Australia: integrasi multi-asset GTA & efisiensi hingga >110 juta USD/tahun.
- Studi Jasa Marga: integrasi infrastruktur & digitalisasi sukses dorong volume transaksi.

3. Digitalisasi Sebagai Enabler Kunci:

- Implementasi sistem digital: SIPGas, SCADA, OPTIGas, AIMS, dan dashboard manajemen sebagai tools Pertagas Integrated Command Center di SPO Nusantara.
- Benefit: meningkatkan reliabilitas sistem, fleksibilitas operasional, efisiensi biaya, serta respons operasional secara lebih efektif.



TERIMA KASIH

“The best way to predict the future is to create it”

Abraham Lincoln

Proses Bisnis Operasional Sistem Pipa Transmisi Terintegrasi ke Depan

Tools: OPTIGas

- Nominasi (supply & demand)
- Simulasi & Skenario optimasi penyaluran

Tools: SCADA

- Eksekusi optimasi penyaluran reguler
- Response anomaly/emergenc



- Evaluasi penyaluran
- Perencanaan debottlenecking

- Validasi data penyaluran
- Monitoring Discrepancy

Tools: OPTIGas

Tools: SIPGas

