



Kebabangan Northern Hub Development A Candidate For Integrated Operations

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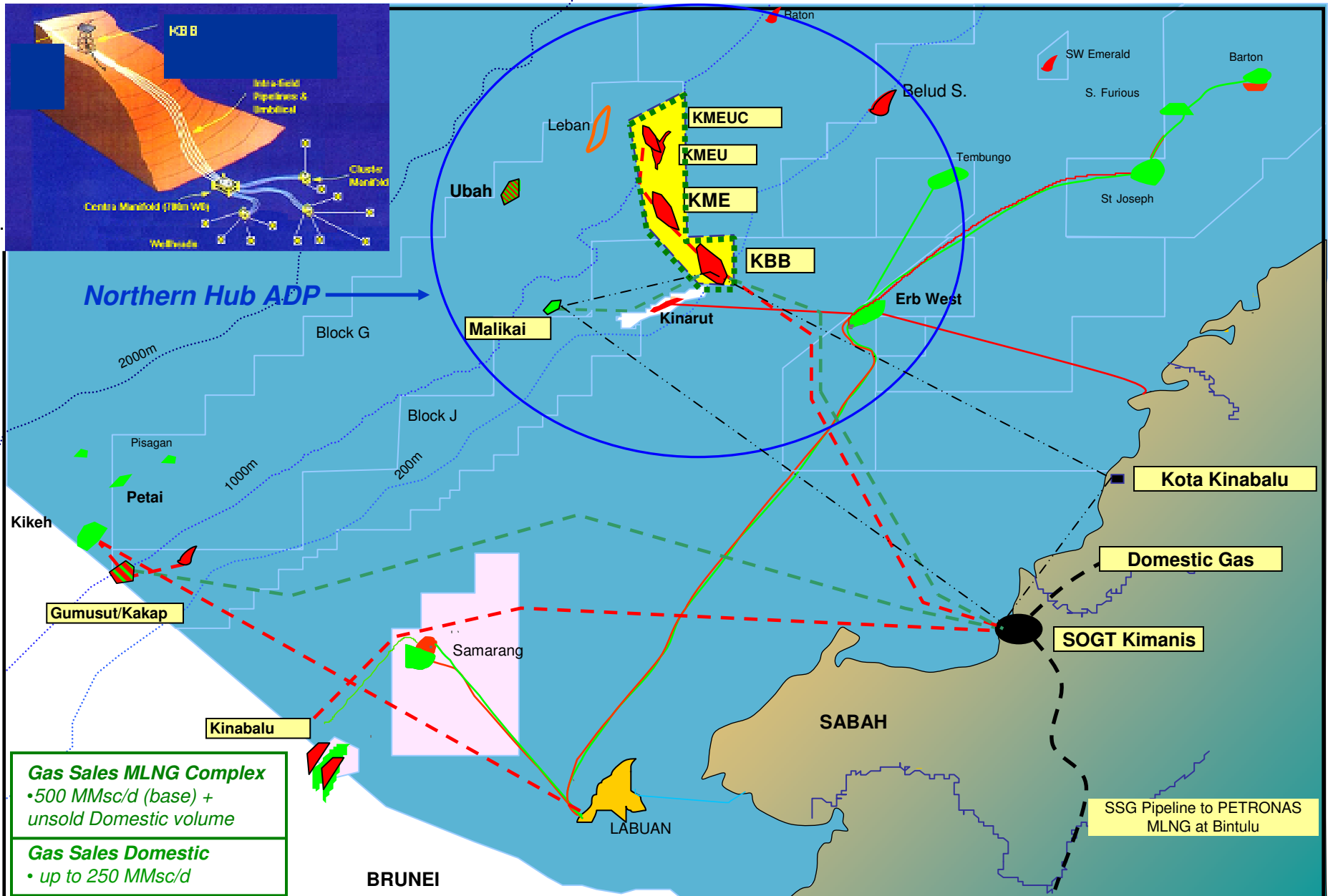


Kebabangan Petroleum Operating Company

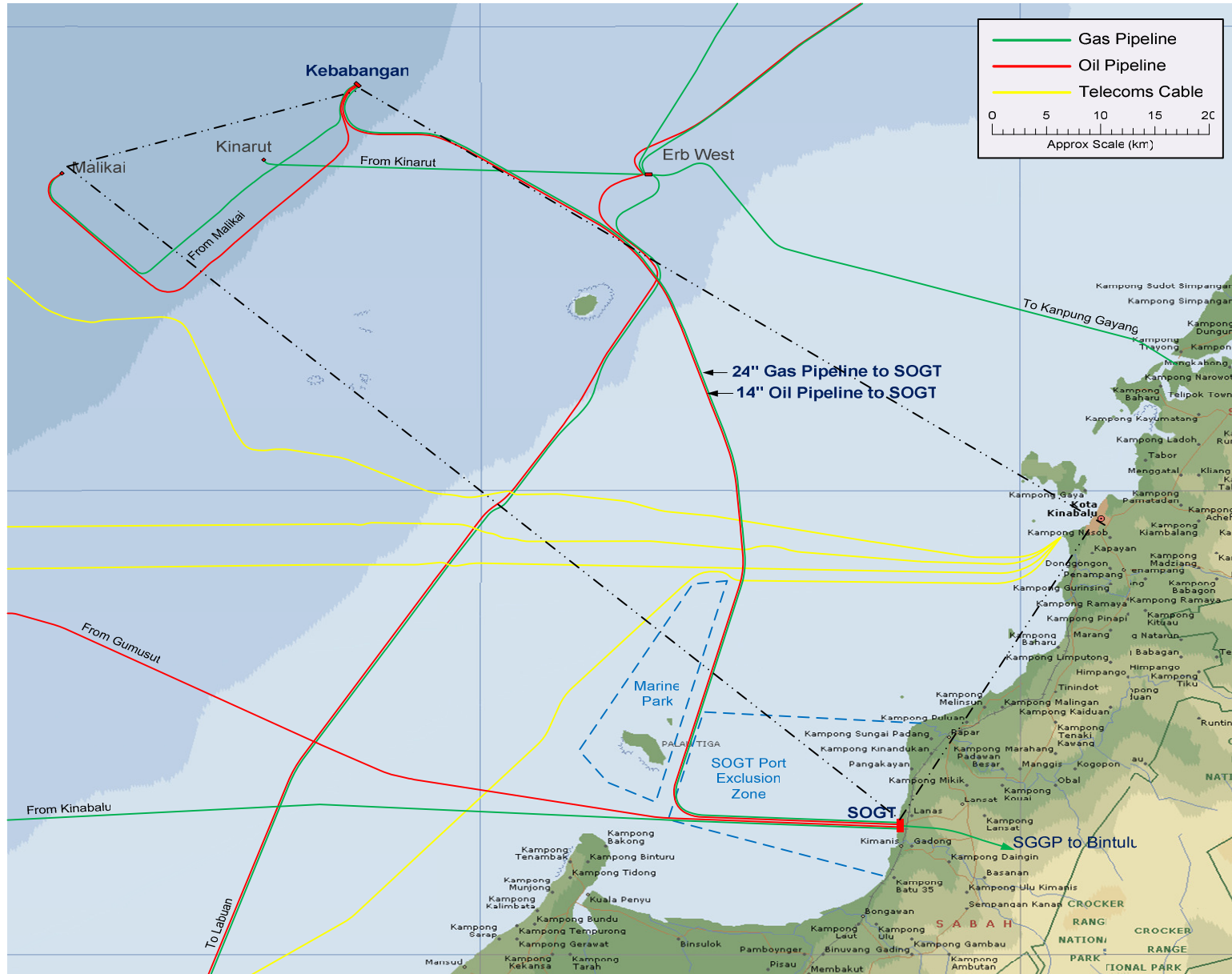
- **KPOC Joint Venture between**
- **PETRONAS Carigali, 40%**
- **Shell, 30%**
- **ConocoPhillips, 30%**
 - Production Sharing Contract Duration – 25 yrs from 1st Commercial Production (Gas)
 - KBB as anchor field for integrated oil & gas Northern Hub development
 - KBB designed for 825 mmscf/d gas and 80 kbpd of oil evacuation to SOGT.

KPOC is the OPERATOR of the Kebabangan Cluster Development and KBB Northern Hub

KBB Northern Hub – Project Overview



Kebabangan Layout



KBB Hub Engineering Update



KBB Platform look-alike

Single concept selected

- Single integrated platform with float over topsides installation
 - ~12,300 MT steel jacket in 140M water depth
 - ~18,000 MT (dry) integrated deck
 - 825 MMSCFD 2 phase gas export with max 20 kbpd condensate
 - 80kbpd Oil production with 45MMSCFD associated gas
 - Tender Assist pre and post start-up Drilling (TAD) for 12 wells
 - Manned Platform
 - Support from regional KPOC Operations Office
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- Conceptual engineering @ Aker started in Aug 08 and completed at end Dec 08
 - FEED started January 2009
 - Detail design started February 2010
 - Strong Operations presence within the project team
 - Integrated Operations is considered in the Operations Philosophy



KBB – Why Integrated Operations?

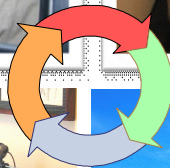
"The right information to the right people at the right time to make the right decisions"

Integrated Operations is a systematic approach to improve operational performance through the effective use of technology and collaboration across disciplines and geographies.

Operator in Field



Business Centers



Engineer at Desk



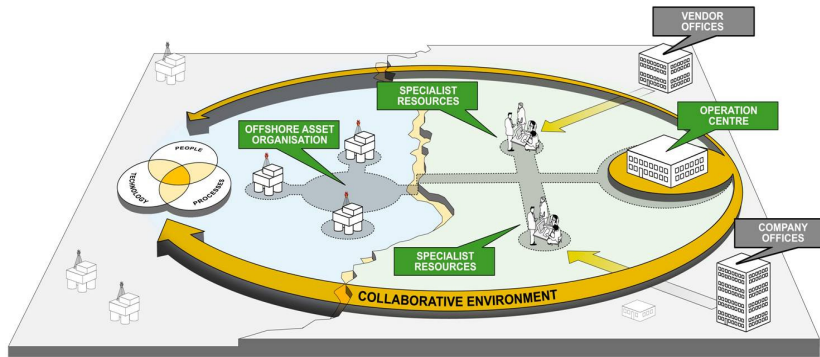
Decision Support Center

IO Foundations:

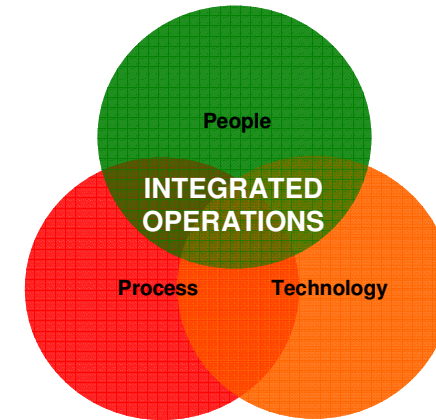
- Accessible, accurate, timely data
- Practical, integrated work processes, information management, and technologies
- Engagement of stakeholders and subject matter experts regardless of location
- Performance visibility and continuous improvement



Benefits of Becoming an Integrated Operation



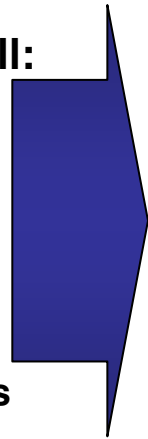
Integration of Field with Office
Collaboration across Disciplines



Balanced Approach

If done well, Integrated Operations will:

- Reduce Decision Cycle Time
- Improve Personal Productivity
- Improve Organizational Effectiveness
- Improve Decision Quality
- Reduce Variability in Decision Outcomes
- Support New Operations staff offshore
- Support Partner Engagement in Hub Concept



Which leads to:

- Improved safety performance
- Improved environmental stewardship
- Increased production
- Improved Operating Efficiencies
- Improved Partner and user alignment
- Capital efficiency

IO Challenges . . . "Getting all the Ducks in a Row"



People:

- Initiative Overload
- Technical Skill Level Lacking
- Changing Behavior - Change Management Lacking
- Short-Term "Safety and Production" Focus
- Resistance "we don't do it that way here"

Process:

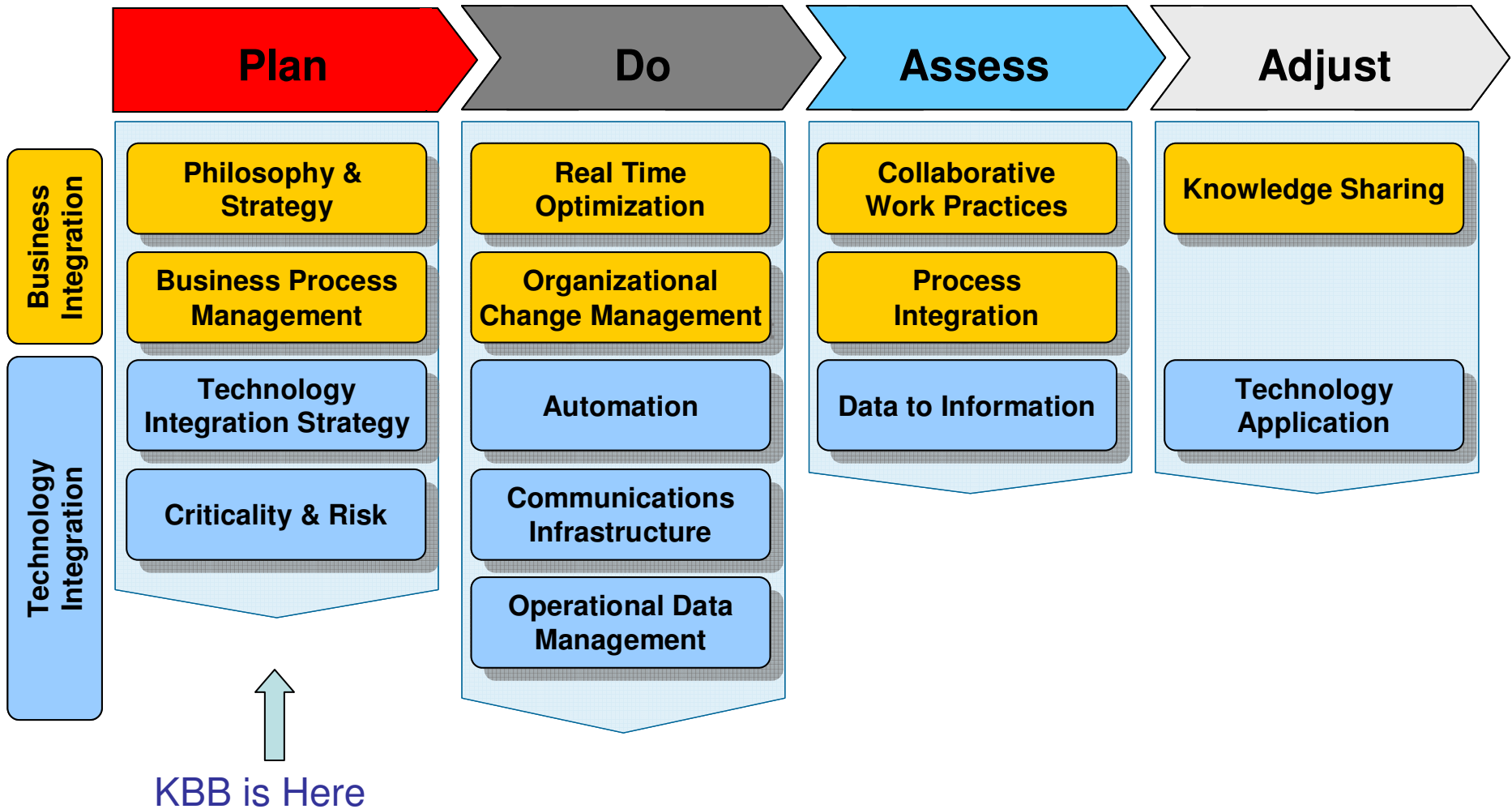
- Competing Processes
- Narrow view of Automation and Historian capability
- No Clear Vision or Strategy
- Inability to Turn Data into Information into Action

Technology:

- Limited Bandwidth / Communication Pathways
- Multiple Systems requiring Integration & Support
- "Build-As-You-Go" Infrastructure – No Master Plan



Systematic Approach – IO Framework





Path forward

- Hopefully gain a significant amount of supportive information from this conference
- Continue to develop Integrated Operations “Master Plan” for KBB Northern Hub
- Evaluate and develop systems and processes in alignment with the Integrated Operations Master Plan



Where are we now?

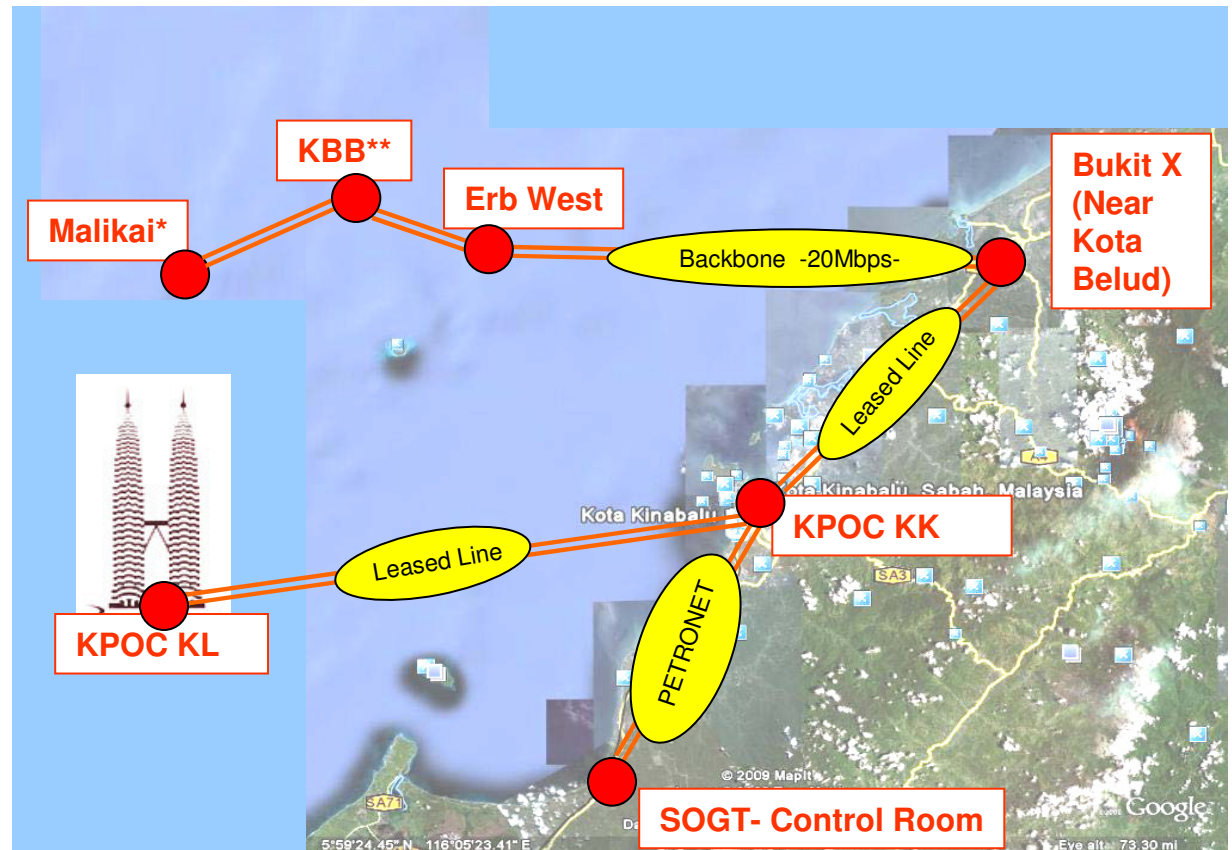
Telecommunication Philosophy

□ Inter-platform telecommunications

- Main Backbone in Microwave 20 Mbps for KBB, Malikai Backup, and Future Tie-in.
- Backup is VSAT.
- Connectivity to KPOC Operation Office (KK and KL) and SOGT.
- Other inter-site connectivity is:
 - Labuan ASB (LAN, Phone, Fax)
 - KK Airport (Phone, Fax)

□ Intra-platform telecommunications

- PAGA, VHF-FM/AM, HF-SSB, NDB, AIS
- Satellite Phone, TEMPSC Comms
- Private Deck Radio, PABX, LAN
- Weather System, Entertainment



(*) Allocation only. Require KPOC Management Approval

(**) KBB Facility is inclusive of Future KME/KMEUC Subsea Tieback

Where we are in IO

- Integrated Operations is a method of working – not technology
 - IO is not a huge incremental cost – Generally we have already brought the end devices – just need to link them together.
 - KPOC / KBB has the technology – need to work on the business processes
 - IT is an enabler – not the solution
 - Estimate the bandwidth required then double it – and double it again (digital microwave can get up to 800mb/s – we currently plan to install only 24mb/s!)
 - Operations Office in KK needs to be designed around IO – not the other way round
 - People shouldn't think they are “going to the collaboration room” the whole design of the office should consider collaborative working and work group interactions.
 - HUC and offshore commissioning can be helped significantly by IO (Establish KK Office Earlier?)
 - Don't use “bleeding edge technology” use proven off the shelf equipment
 - Use High Definition cameras and screens – consider LED screens for low heat radiation
 - USE SAP for everything – even those things we are uncomfortable with
 - Embed Emergency Response in the IO thinking / office design – no dedicated ER Room
 - Need to get the IO Lead onboard ASAP (needs to have considerable experience in setting up IO)
 - IT Need to have a person dedicated to IO
 - Use the computer age people to drive IO implementation
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- IO is dynamic – don't lock down a model – plan for change



Questions?



Layered Approach

