

MARITIME

## It takes two to tango!

**Benjamin Dineshkar**  
26 September 2016

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## Perception



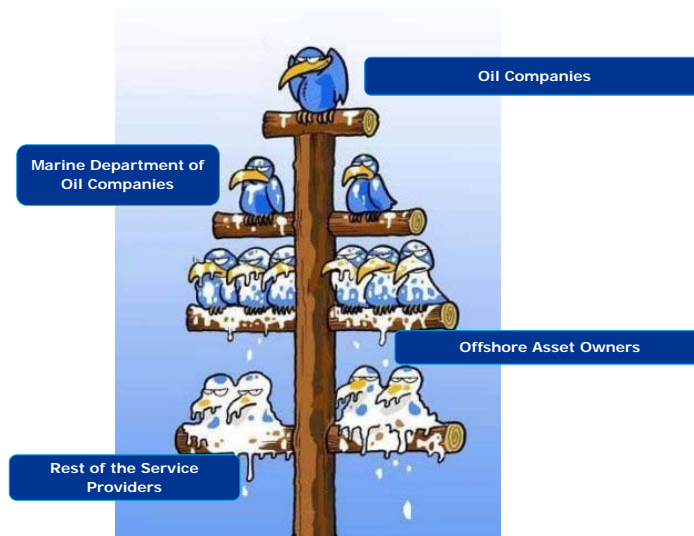
- **MASTER** (sleep deprivation, lack of attention span)
- **Company** (always available, never any downtime)



- **End-User** (drilling , production) in the oil company (**I want my critical equipment NOW**)
- **Logistics Coordinator** (**I can put anything anywhere any weather anytime**)
- **Cargo's Recipient** (**why cant we have it now**)

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## Bird's perspective of what the Offshore Industry ?



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## Middle East Perception from the outside region

1. It is **competitive**
2. **No Innovation** origin
  - Import it or Buy it ( brain power)
3. **Cost oriented** ( and not Total Cost of Operation)
  - Everyone cutting cost in their value chain
4. **No Eternity View**
  - Retire & Go Away
5. **“I can buy it”** attitude (vs) **“Lets Create it”**

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## Charterer wish list?

1. **Younger and technological advanced vessel**
2. **24/7 availability**
  - ✓ Well planned maintenance schedule for vessels (year look ahead) rather than breakdown maintenance
3. **Deliver any cargo to any location**
  - ✓ Regionally due to shallow water, shallower draft vessels with larger capacity (towing, tanks, deck space etc.)
4. **Vessel flexibility** (multi-purpose)
5. **Prefer DP 2** for uninterrupted operations in any weather
6. **Qualified Crew familiar with the specific field** (Prefer the contractors to retain the crew ) – increase in safety of operations



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## Next Generation GCC Specification OSV?

- **Simplicity & Maintainability**
  - *Vs Complexity needing more competence*
- **Design intended for shallow water**
- **Sea temperature & salinity** is unique in the Gulf
- Unique conditions as **sand storm**
- **Humidity & temperature** inside for crew is another important element.



- ✓ **How do you achieve this?**
  - Industry collaboration through Offshore Associations
  - Open dialogue with oil majors
- ✓ **What it takes to make it reality?**
  - Is it a WIN – WIN?

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## Today's Market

### Focus areas on Regional – Offshore Vessel Owners

#### Focus Areas

#### Leading to...

- 1 **Reduced Earnings as charterers reduce day rates**

- Lack of sustainable income, therefore cost saving focus internally
- Uncertainty with regard to growth (NB/scraping)

- 2 **Maintain vessel availability to charterer**

- Sustained investment on maintenance/upgrades to meet contract requirements



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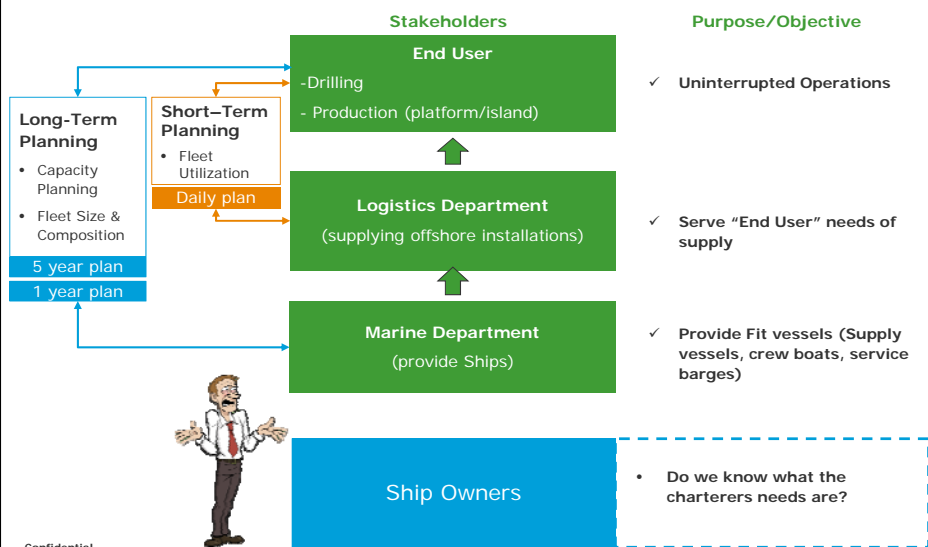
## Today's Market

### Focus areas on Regional - National Oil Majors

Focus Areas	Leading to...
1 Maintain or Increase oil production levels	<ul style="list-style-type: none"> <li>Sustained or increase offshore activity (well stimulation, EOR), however all at reduced rates in line with oil price</li> </ul>
2 Improve Offshore Logistics	<ul style="list-style-type: none"> <li>Cost reduction</li> </ul>
3 Improve marine capability	<ul style="list-style-type: none"> <li>Improve Safety                             <ul style="list-style-type: none"> <li>Safety Benchmarking</li> <li>Organisation Capability Building</li> <li>Competence Assessment</li> </ul> </li> </ul>
4 Sustainable Fleet	<ul style="list-style-type: none"> <li><b>NB/Fleet Renewal</b> (not on agenda with present oil price)</li> <li><b>(Or)</b></li> <li><b>Asset Integrity</b> (maintain ageing assets)</li> </ul>

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### How does a typical offshore stakeholders mapping look like?



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## How are we going to address the Challenges?

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## Fleet Capacity Planning - Match the available fleet with end-user's requirements

### QUESTION

**Has the field operator's fleet of offshore vessels have sufficient capacity to handle end-user's activities?**

- Can the fleet accommodate additional activities?
- Fleet size and composition
  - Do we have the right number of vessels?
  - Which type of vessels should we charter?
  - Support development of business case for additional vessels
- Long- and medium term fleet planning: 1-5 years



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## Day-to-Day Operations Planning - Ensure supply and uptime for the end-user to avoid shutdowns

### QUESTION

Can the fleet be used more effectively and efficiently in day-to-day operations?

- Handling of peak demand
  - Reduced capacity during bad weather and rig moves
  - Can the cost of supply operations be reduced?
  - Can the area/volume/tonnage utilization of the fleet be increased?
- Short-term planning: 1-7 days



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## Experience-based planning may not suffice to cope with complexity of situation

- Complexity of operations increases with increase in new rigs and offshore requirements.
- Experience based planning may not suffice to keep above the demand curve
- The Solution is to take an **Analytic, Data centric and Mathematical modelling approach**



$$\begin{aligned}
 & \min \sum_{v \in V} C_v^{TC} x_v + \sum_{v \in V} \sum_{r \in R_v} \sum_{t \in T} C_{vr}^S x_{vr,t} \\
 & \text{subject to} \\
 & \sum_{v \in V} \sum_{r \in R_v} \sum_{t \in T} A_{vr,t} x_{vr,t} \geq S_t \quad t \in T \\
 & \sum_{v \in V} \sum_{r \in R_v} D_{vr,t} x_{vr,t} - P_{vr,t} \leq 0 \quad v \in V \\
 & \sum_{v \in V} \sum_{r \in R_v} x_{vr,t} \leq B_t \quad t \in T \\
 & \sum_{v \in V} x_{vr,t} + \sum_{r \in R_v} \sum_{t=0}^{t-1} x_{vr,t} \bmod |T| \leq P_k \quad k \in N_b, t \in T, i \in G \\
 & P_k \leq \sum_{v \in V} \sum_{r \in R_v} \sum_{t=0}^{t-1} A_{vr,t} x_{vr,t} \bmod |T| \leq P_k \quad k \in N_b, t \in T \\
 & x_{vr,t} \in \{0,1\} \quad v \in V \\
 & x_{vr,t} \in \{0,1\} \quad v \in V, r \in R_v, t \in T
 \end{aligned}$$

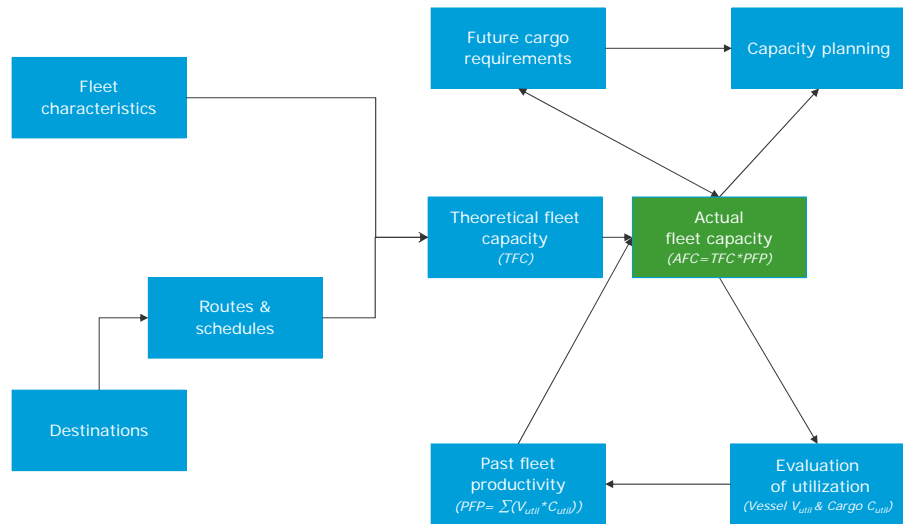
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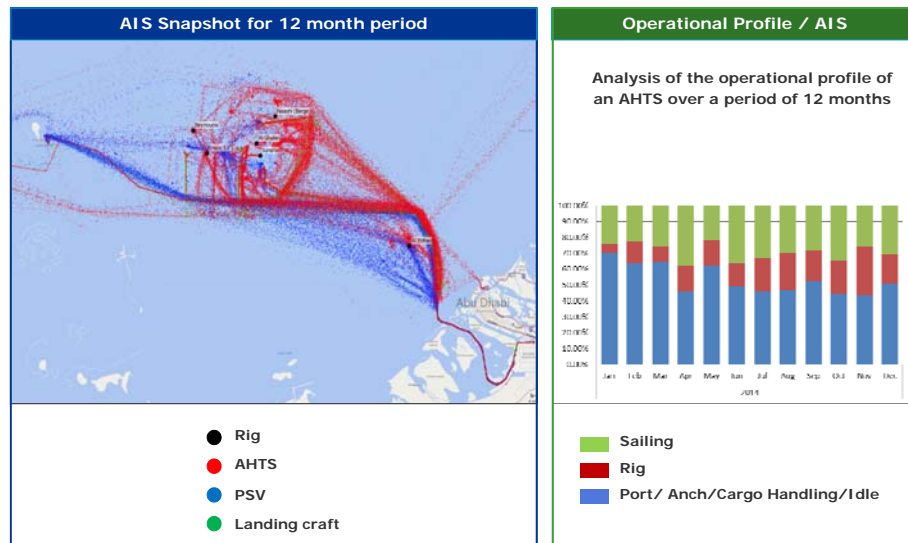
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## Optimizing Offshore Supply Operations - Long-Term Fleet Capacity Planning



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## AIS based analysis of the Supply Fleet



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## Master – Slave



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