

MARITIME

It takes two to tango!

Benjamin Dineshkar
26 September 2016

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Perception



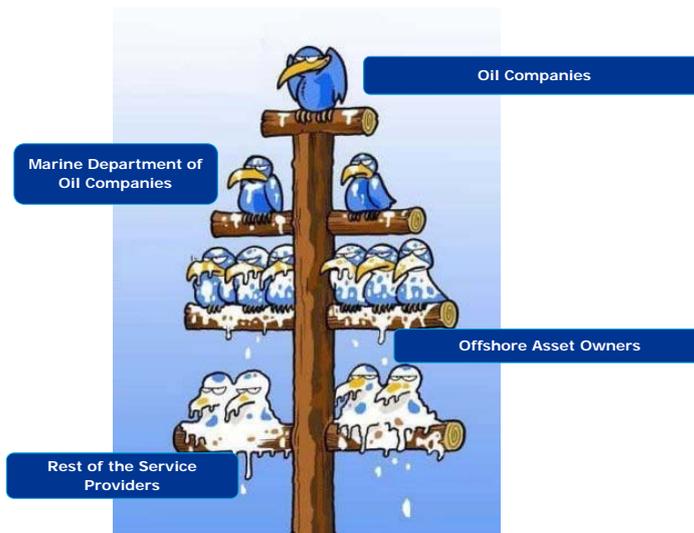
- **MASTER** (sleep deprivation, lack of attention span)
- **Company** (always available, never any downtime)



- **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



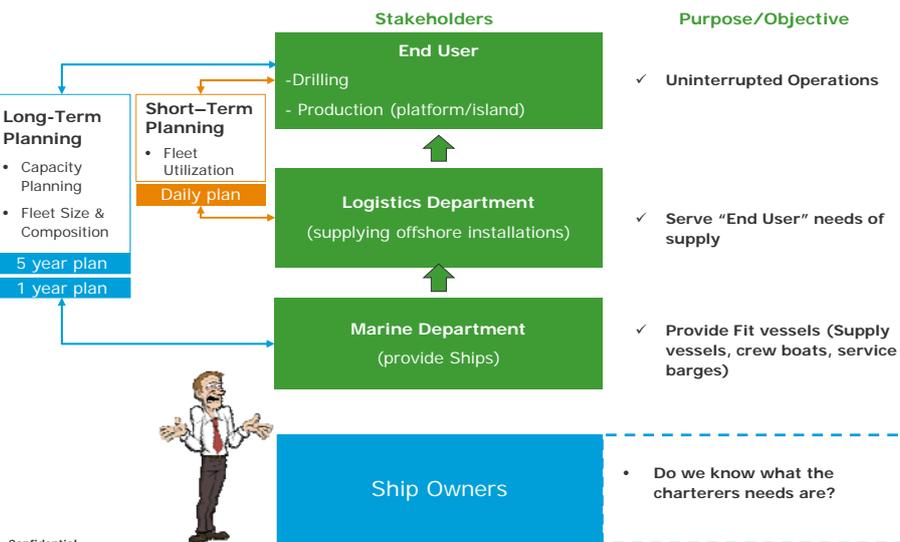
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Today's Market Focus areas on Regional - National Oil Majors

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

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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?

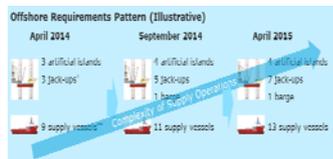
- Short-term planning: 1-7 days



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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**



$$\min \sum_{v \in V} C_v^{fix} x_v + \sum_{v \in V} \sum_{r \in R} \sum_{t \in T} C_v^{var} x_{vrt}$$

subject to

$$\sum_{v \in V} \sum_{r \in R} \sum_{t \in T} A_{vrt} x_{vrt} \geq S_t \quad t \in T$$

$$\sum_{v \in V} \sum_{r \in R} D_{vrt} x_{vrt} - P_{vrt} \leq 0 \quad v \in V$$

$$\sum_{v \in V} \sum_{r \in R} x_{vrt} \leq B_t \quad t \in T$$

$$\sum_{v \in V} x_{vrt} + \sum_{r \in R} \sum_{t' \in T} x_{vrt'} \leq P_k \quad k \in N_b, t \in T, v \in V$$

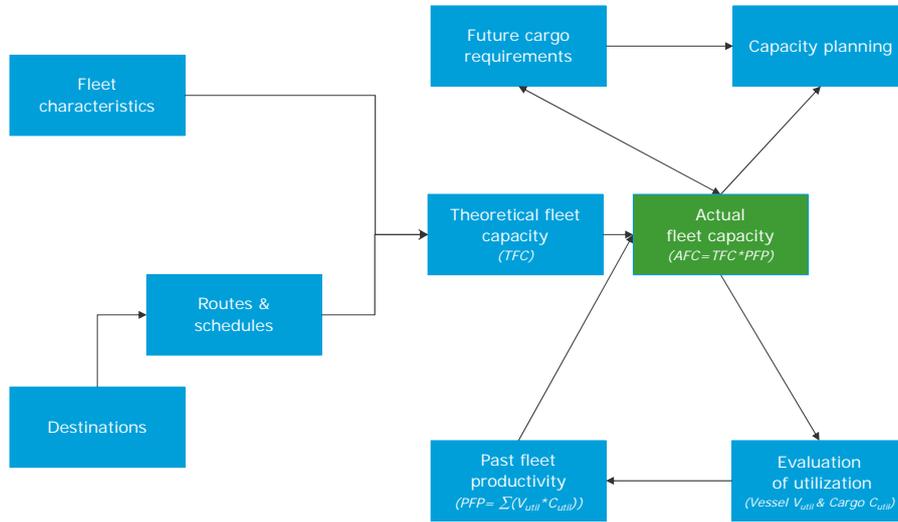
$$P_k \leq \sum_{v \in V} \sum_{r \in R} \sum_{t' \in T} A_{vrt'} x_{vrt'} \leq P_k \quad k \in N_b, t \in T$$

$$x_v \in \{0,1\} \quad v \in V$$

$$x_{vrt} \in \{0,1\} \quad v \in V, r \in R, t \in T$$

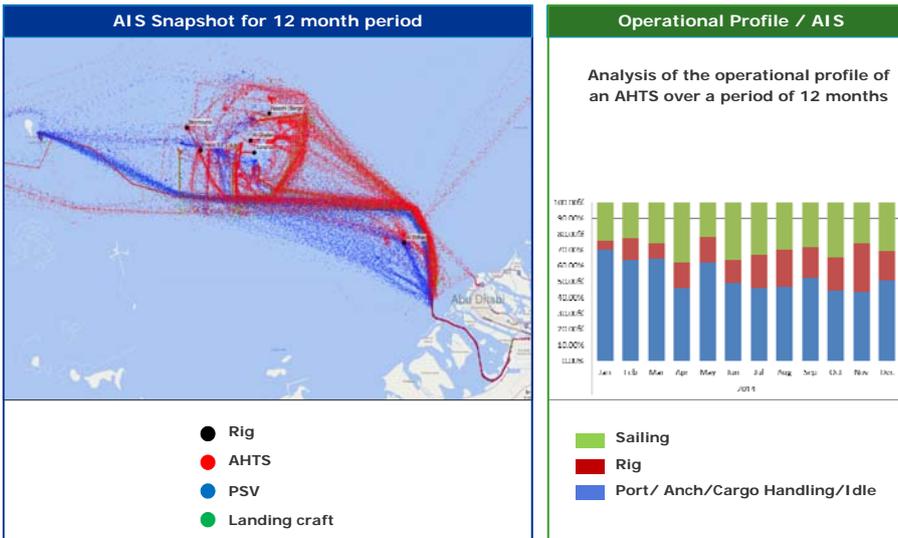
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Optimizing Offshore Supply Operations - Long-Term Fleet Capacity Planning



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AIS based analysis of the Supply Fleet



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Master – Slave



Charterer



Owners

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Benjamin Dineshkar, Senior Consultant
Benjamin.Dineshkar@dnvgl.com

www.dnvgl.com

SAFER, SMARTER, GREENER

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