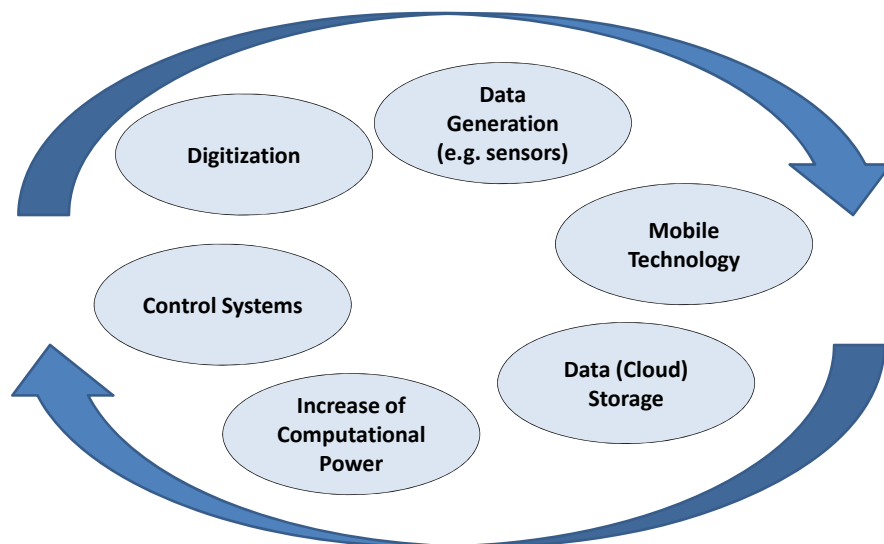




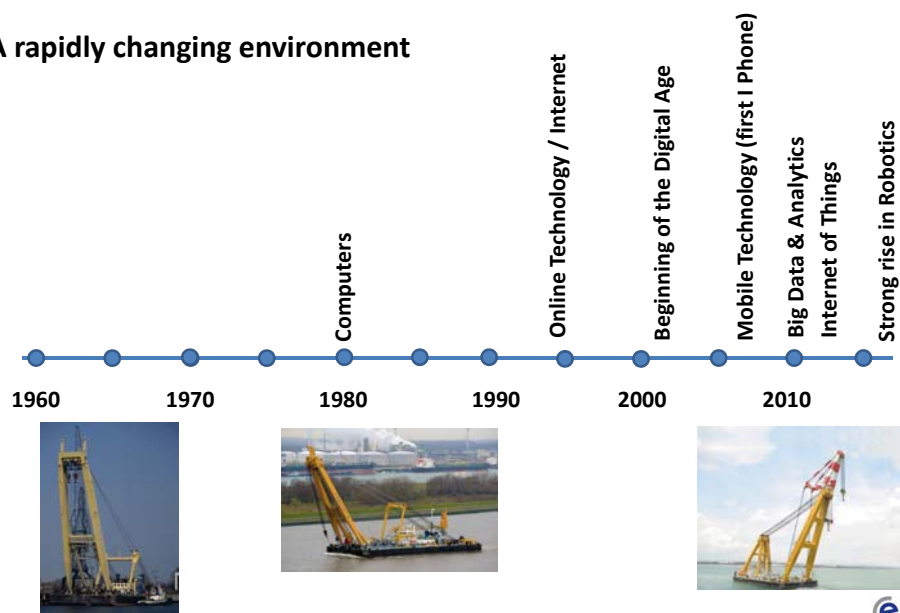
Digitization & Mobile IT in the Marine & Offshore Industry



Tremendous changes in capabilities in  
Communication – Automation – Analytics - Control



### A rapidly changing environment



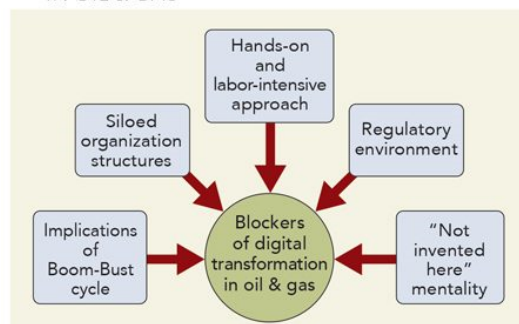
**McKinsey – March 2016**  
**“A billion dollar digital opportunity for oil companies”**

Adoption by the oil & gas industry has been slow. Partly a result of the recent crash in oil prices but competing internal IT projects and organizational reluctance to put in the effort are also factors.

**Oil & Gas Financial Journal**  
**“Optimization of Digital Assets is Critical for Maximizing Performance”**

Many might think that technological constraints present the biggest challenge ....,  
the adoption of the mindset and the shifting of culture to digital within the industry present the biggest impediment to digital adoption.

F1: BLOCKERS OF DIGITAL TRANSFORMATION IN OIL & GAS





How worried or interested should we be?

Can one ignore this technology trend?

- Probably at one's peril
- Few will face "disruption"
- Many will want to take the possibilities to sharpen the pencil to be competitive and profitable.



### **Typical Changes:**

- . Change in how we do things (procedural)
- . Client Interface Changes
- . Disruption

**Aim: quicker, better and at a lower cost**

### **An Example of a Change**

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Paper



Tablet

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Form No- M-24A

**INSPECTION CHECKLIST**

1. Job Completion Certificate (P-114) are to be completed during this (TIR) execution.
2. Vendor inspection and test completed.
3. Accessibility to equipment accessible.
4. Piping connections complete, leak proof testing completed and bolts secured.
5. Direction of rotation clearly indicated and equipment ready for hand.

**ALIGNMENT CHECKING UNIT**

6. Bolt coupling, remove spacer (P-114), bolts and gaskets. Check that coupling system, gaskets and bolts are in good condition, identified and stored in a good place.
7. Check flange / coupler alignment and check with test sheets.
8. Check hole concentricity of each half coupling - ref. Fig 1 (part D). Record check readings on sheet 3, section 1.
9. Check hole alignment as per Fig 3, part D. Record check readings on sheet 3, section 2.
10. Check radial alignment as per Fig 3, part D. Record check readings on sheet 3, section 3.
11. If placement has been measured, tighten and re-check items 8, 9, 10 and complete P-114.



Form No- M-24A

Project: T.E.N Development Project: FPSO Package

**SHEET-3 (ALIGNMENT DATASHEET) - PIPE WORK LOOSE**

Will be provided as Attachment

Method of Alignment Used  
Laser  
Looking in the direction of North  
Measuring units (mm/inch)  
Mm

1. Radial concentricity of each half coupling as its own shaft (use for faceperiphery and reverse alignment as in Figure 1).

Driver Gauge no. 1

0.00 0.01 0.01 0.01 0.01

2. Coupling gap: Face to Face (as per use only for faceperiphery method) as in figure 2.

Driver Gauge no. 2

0.01 0.01 0.02

3. Radial concentricity of coupling tube to each other (use for faceperiphery and reverse alignment) as in Figure 3.

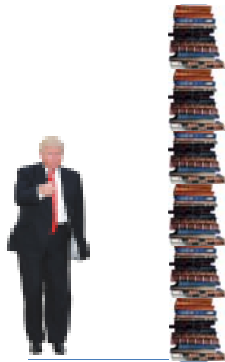
Driver Gauge no. 5

0.00 0.01 0.00 0.01

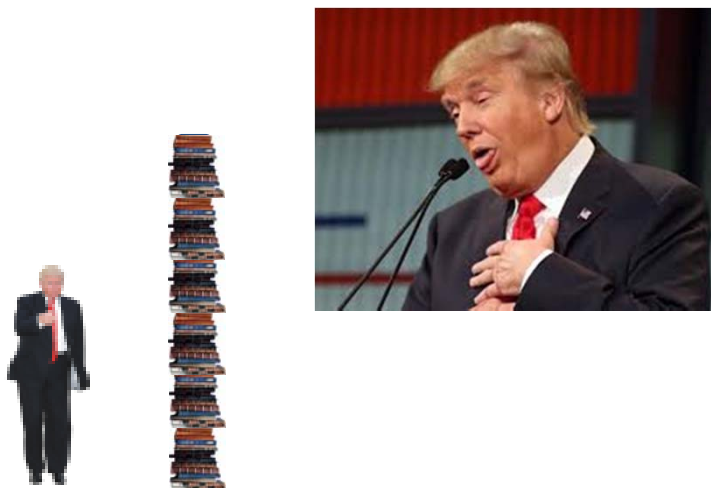
Driver Gauge no. 6

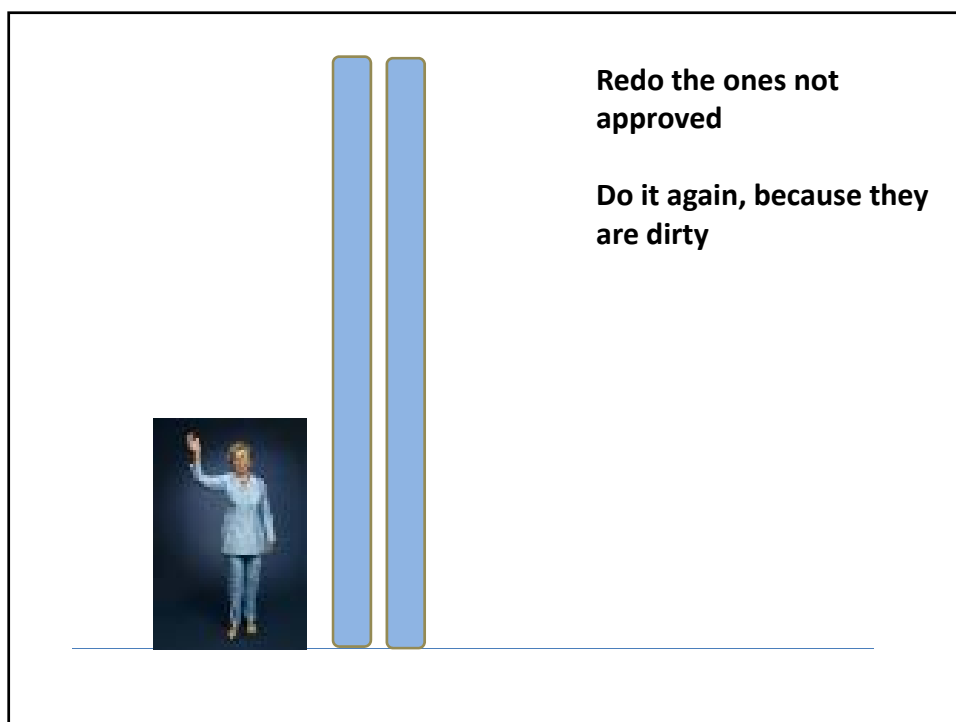
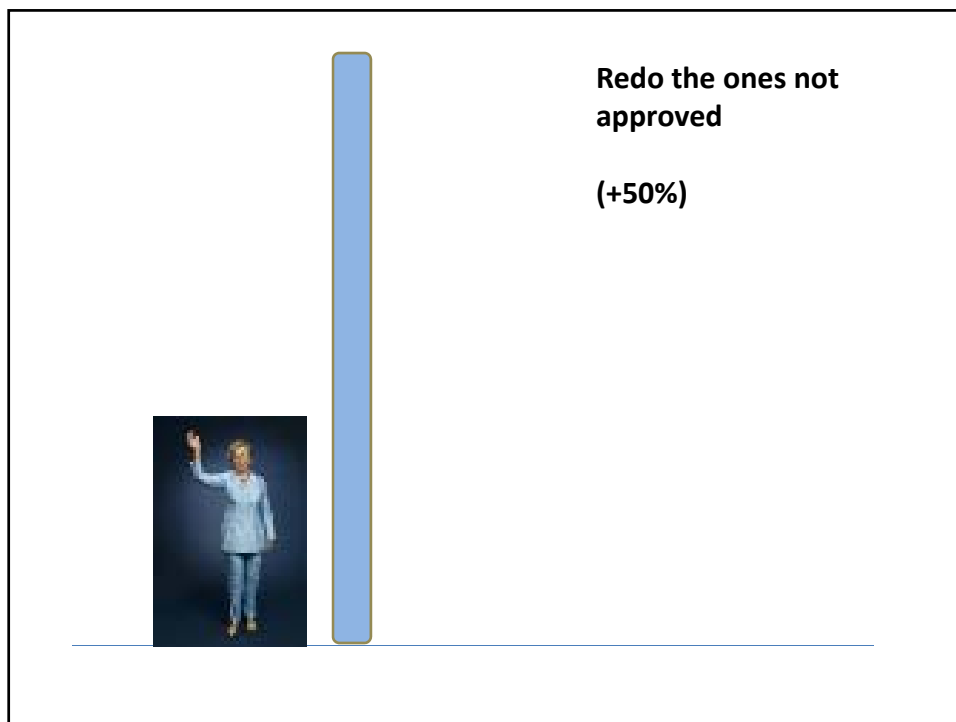
0.00 0.01 0.00 0.01

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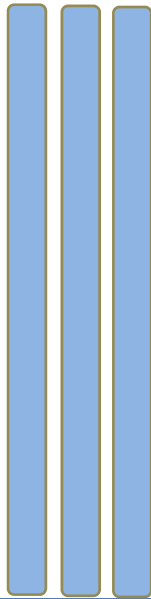


Check Sheets for the mechanical completion of an FPSO





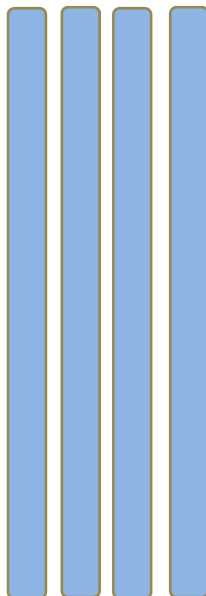




**Redo the ones not  
approved**

**Do it again, because they  
are dirty**

**Scan them in**

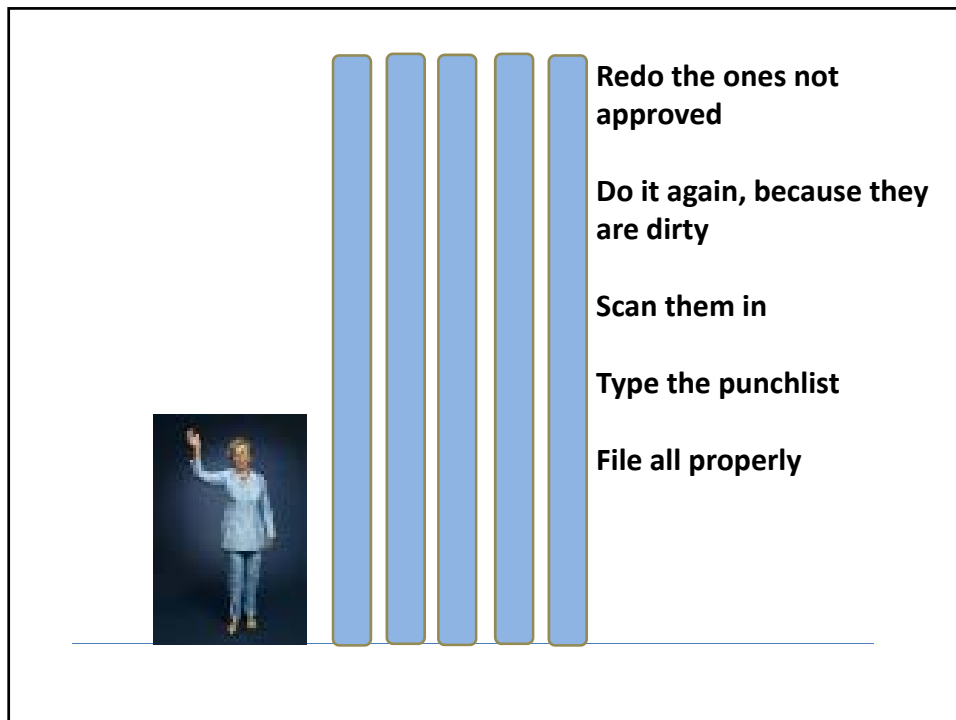


**Redo the ones not  
approved**

**Do it again, because they  
are dirty**

**Scan them in**

**Type the punchlist**



**Compass Digital Solutions Pte Ltd**

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**By the time we are done, every page of this book is handled physically 3,000 times**

**Only the costs of copies (\$ 0.037/copy)  
would be:**

**\$ 22,200.-**

**Unless someone presses “colour copy”, then  
the cost would be:**

**\$ 150,000.-**

## Large numbers of checksheets are obvious multipliers

### Paper Check Sheet

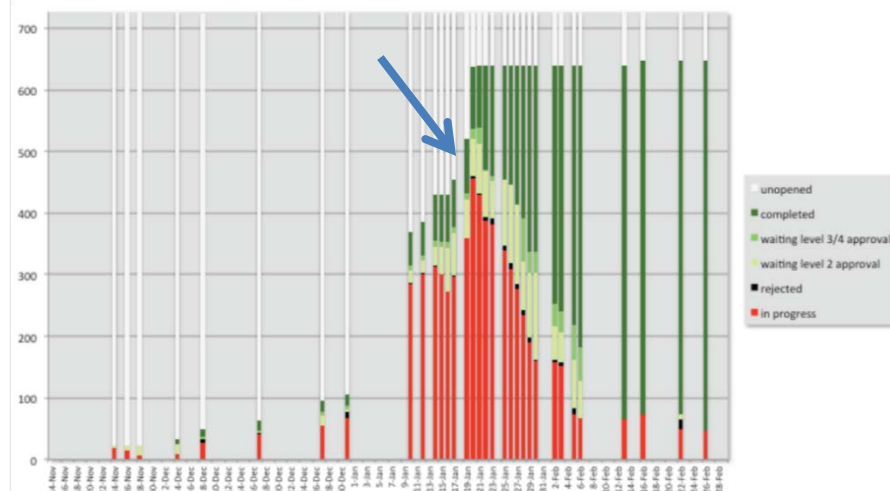


### CeMIC

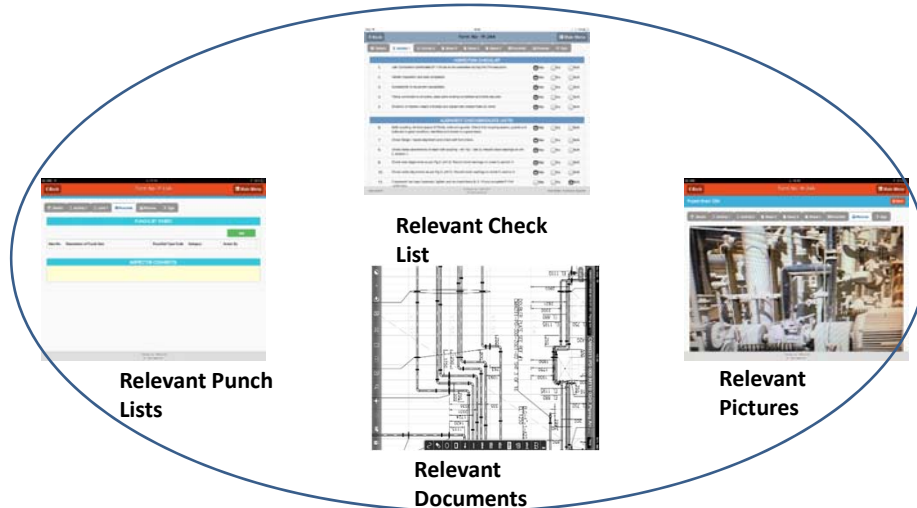


50,000 x average 45 min saved = 37,500 man hours saved

## Completion of pilot on a process module



At the time of the load out only 100 of 620 test sheets completed



**Digitally stored, all in the same place**

**On the other end of the spectrum:**



**The value of 1 maintenance check list**

### **Indicators of potential savings:**

- ✎ Large amount of documents to be handled.
- ✎ Supervisory personnel who spend significant amounts of time on administration & reporting.
- ✎ Lack of information, slow info or no easy access to information for site personnel, the management and the client.

### **Guidelines & Lessons Learnt**

- Any effort requires a champion
- More, smaller, efforts. Explore for “wins”
- No changes to existing (IT) systems
- Quick feedback loops
- Solutions that fit your business model (tailored)

**Thank You**

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