



ORLEN
UPSTREAM
NORWAY

Know what you are asking for

- implications of not communicating the lowest level of functional requirements across disciplines in tie-back projects

Background, expectations and framing

- **Myself:**

- 52 of 94 currently producing field on NCS
- Mainly in early phase SURF projects in multi-discipline roles related to overall functionality

- **My expectation to you:**

- Blue sky mindset
- Focus on “basic logic” or “way of thinking”, not the specific examples presented
- Extrapolate the conceptual logic from SURF related examples into your own domain
- Distinguish between
 - “*specific solution*” vs. “*functional requirement*”
 - “*investment in a sanctioned project*” vs. “*pre-investment for a future project*”

- **I will:**

- Present examples where stakeholders may have initiated an unnecessary cost/scope creep

- **I will not:**

- Promote new technology, but focus on current knowledge, common sense and known tools
- Challenge HSE requirements

The scene

- **O&G is not particular LEAN, COST EFFECTIVE nor BARE BONE**
 - *“insanity is doing the same thing over and over again, and expecting different results“*
 - *Something must change to reduce the cost... but there is both human and organisational “resistance” to changes*
 - *Understanding of low-level functionality to reduce cost*
- **Accept that the cost challenge is everyone’s ownership**
 - *This is not only on everyone else's plate*
 - *Avoid being defensive when someone proposes a different/new solution*
 - *Sharing "effort" between disciplines, preventing costly “hand-overs/interfaces”*
- **Early project phases build value, later phases prevent value erosion**
 - *Focus on factors we can control, i.e. amount or type of steel, but not the steel price*
 - *Involve the end user / “operations”*

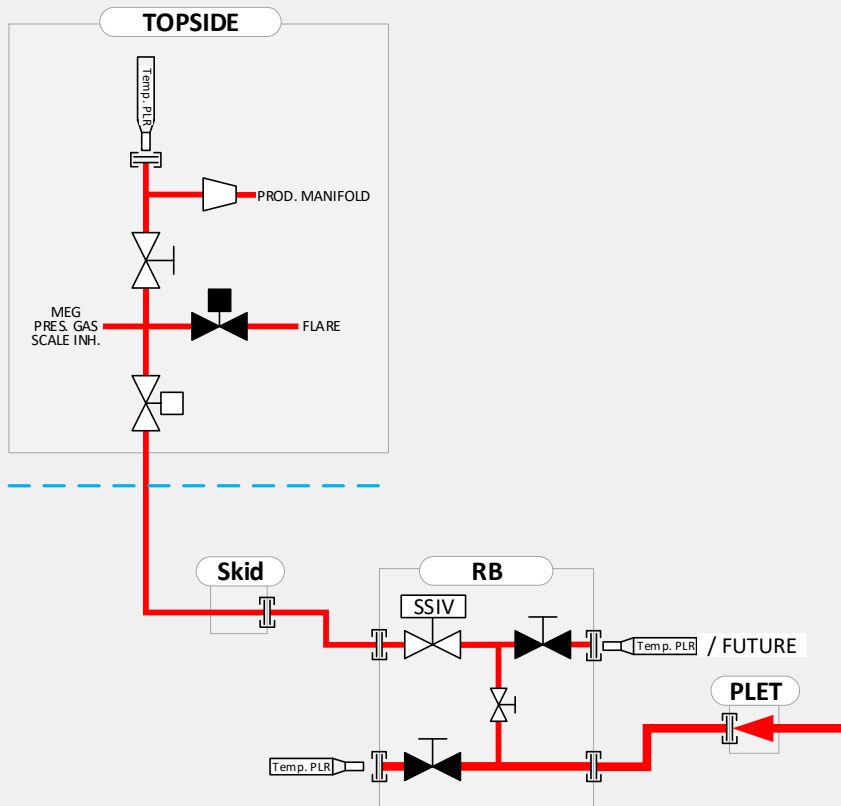
Example 1: “A luxury, once enjoyed, becomes a necessity”

- Yuval Noah Harari, Coco Chanel, von Mises and Parkinson

- **Extremely insulated PiP – the new standard?**
- **Example:**
 - U-value of 2.5 was initially required
 - Cost effective wet insulated pipeline could be used
 - A PiP with a U-value of 1.0 was “offered”
 - 1.0 became a requirement
 - This drove the carrier pipe size to 16” ...growing...
 - Project considered 10”/14” PiP not technical feasible
 - More vessels capable of installing the pipeline
 - Less steel used
 - Maybe fewer vessel trips
 - But maybe more rock



Example 2: When asking for a specific solution, not a function

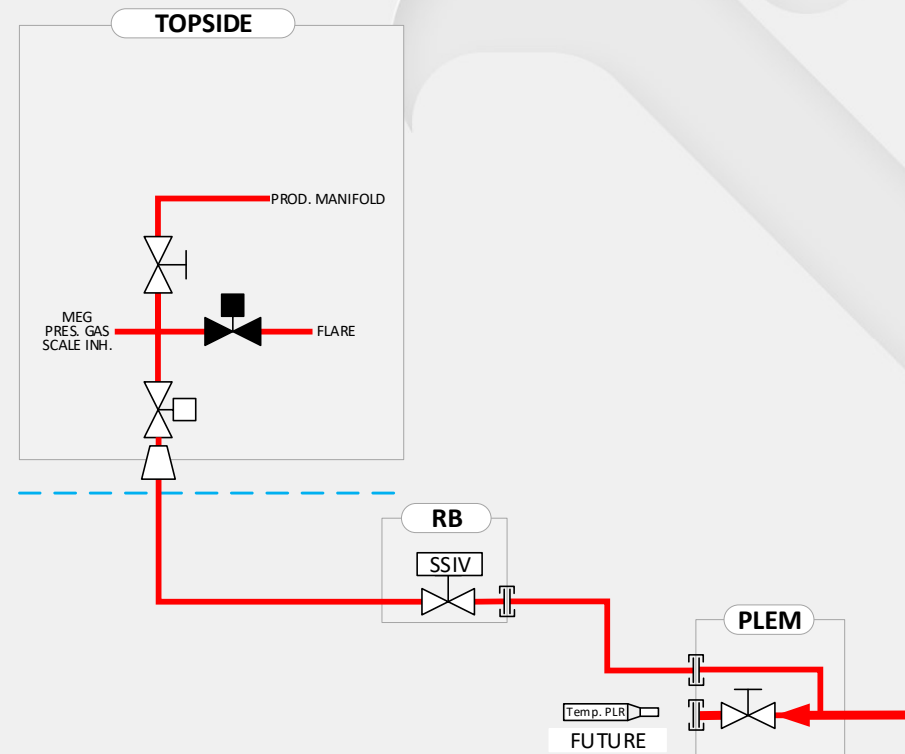


- What is the function required?
 - a) Pigging (Flooding, Gauging and Cleaning)
 - b) Verification of ovality of the riser after pull-in
- “Concept sweetening” - by “added value”
 - “selling in” a future tie-in point, adding value to the concept
 - Camouflaging a pre-investment for a future tie-back
 - Found what we are looking for, a feasible concept, therefore stop looking for leaner concepts?

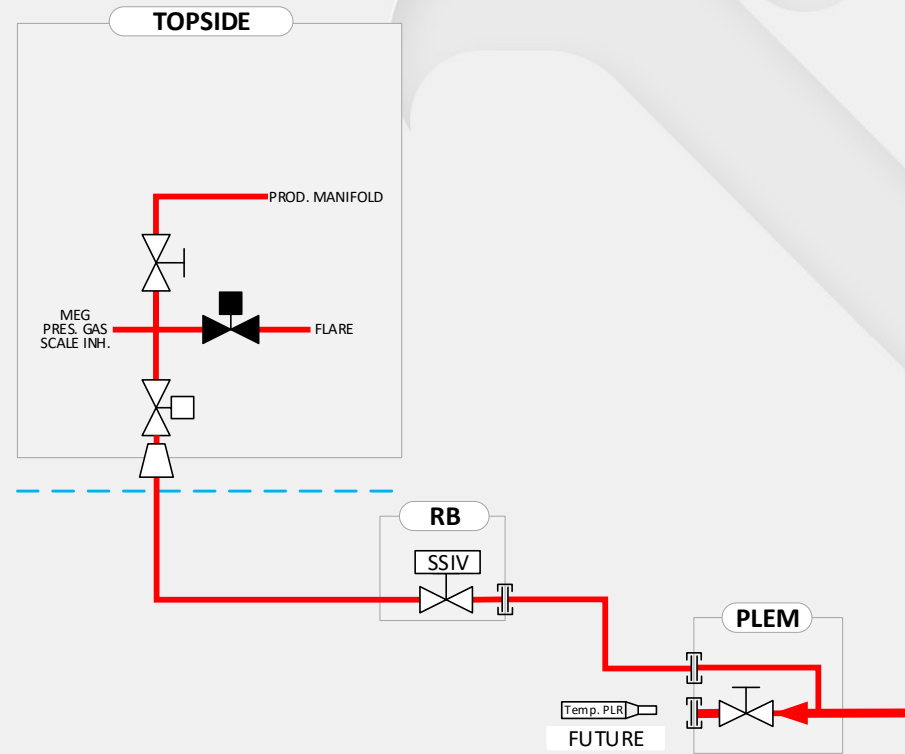
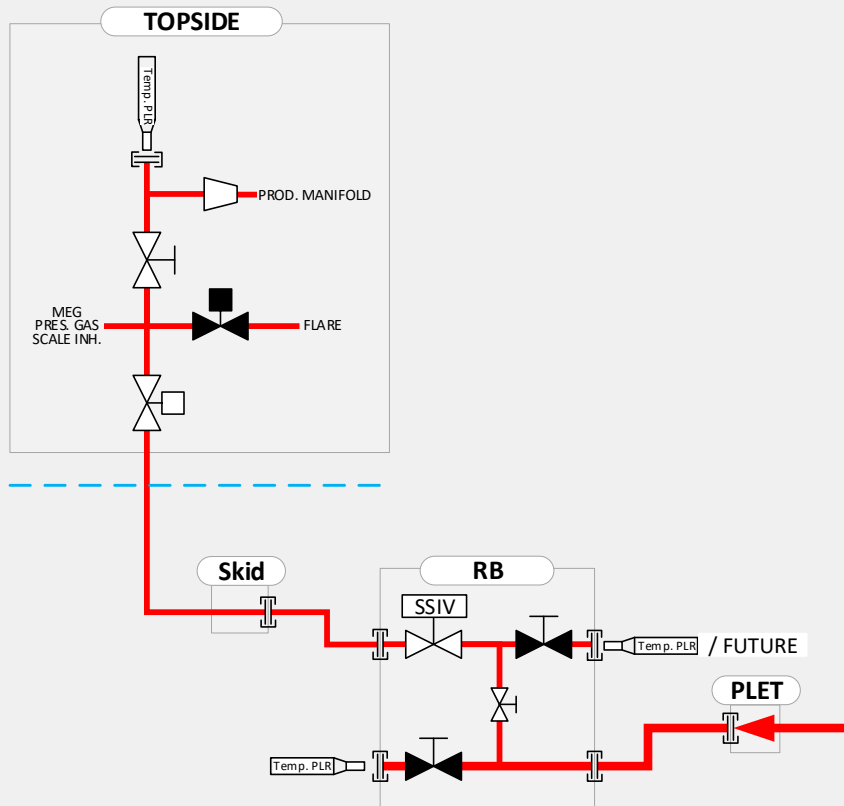
“the search for concepts is different than the search for lost keys...different mechanism for when to stop looking”

Example 2: When asking for a specific solution, not a function

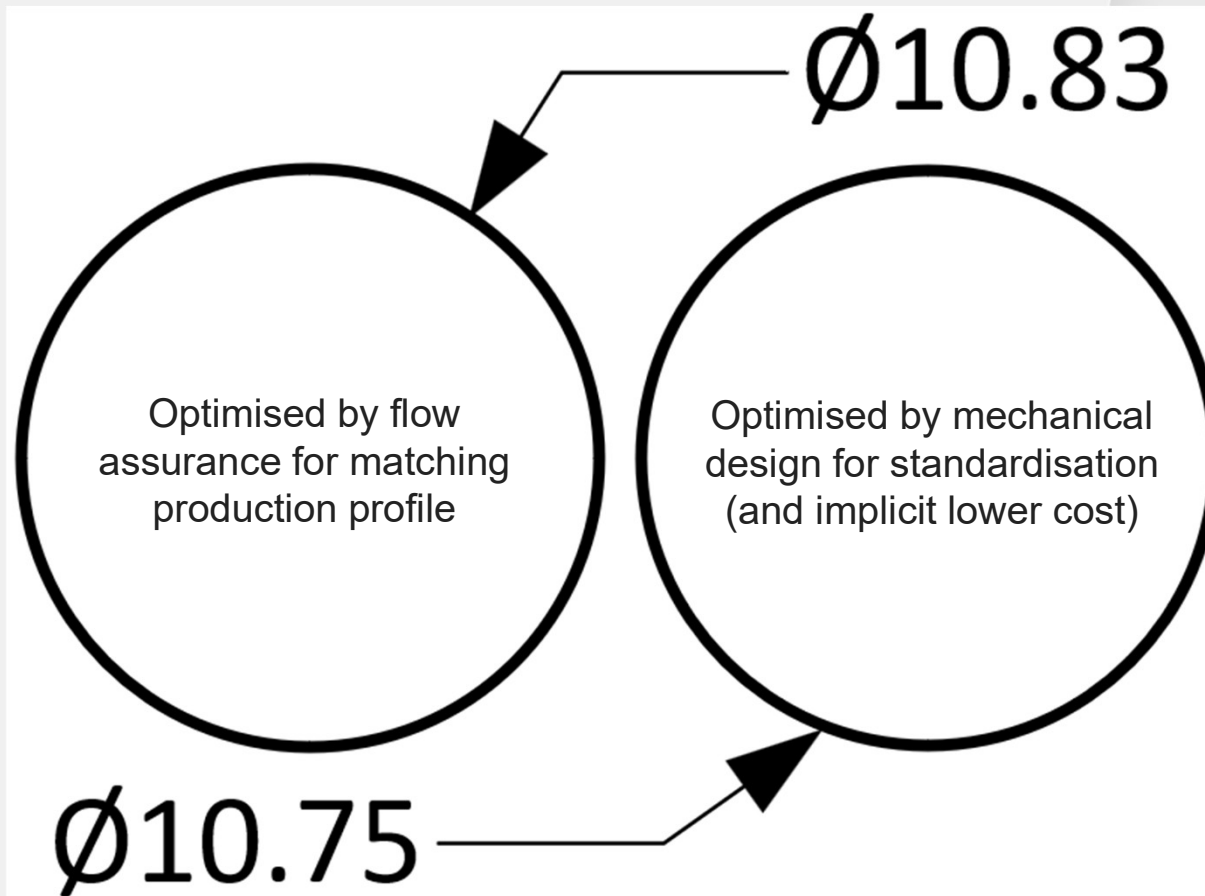
- Topside savings:
 - 5D bends, barred Tees, full bore pipework, PLR
 - Less scope i.e. less POB/beds
- Subsea savings:
 - spool, structure, installation
- “Cost”:
 - Reduced isolation between pipelines, heavier in-line end structures and the need of a drop-in SSIV actuator
- Disclaimer: *More or less the same overall function, many permutations exist*



Example 2: When asking for a specific solution, not a function

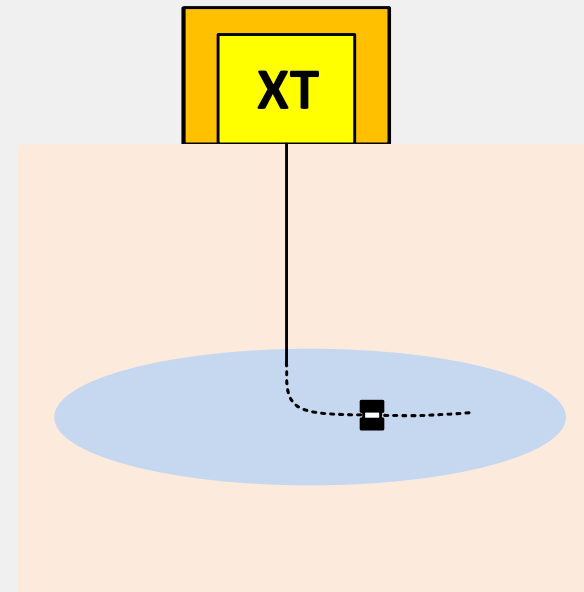
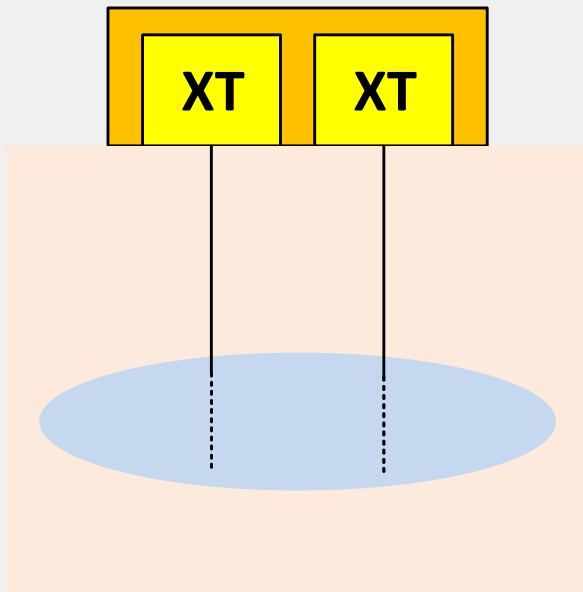


Example 3: The wagon or the horse?



Example 4: Not asking for what you need

- Production was dependent on water injection
 - Risk of near bore formation clogging of injector, causing risk of lost production
 - Project therefore requested two wells
- The risk reduction measure, two independent wells, was not precisely aimed towards the specific risk (aka. near bore clogging)
 - What if the project asked for two independent sections in the reservoir instead?



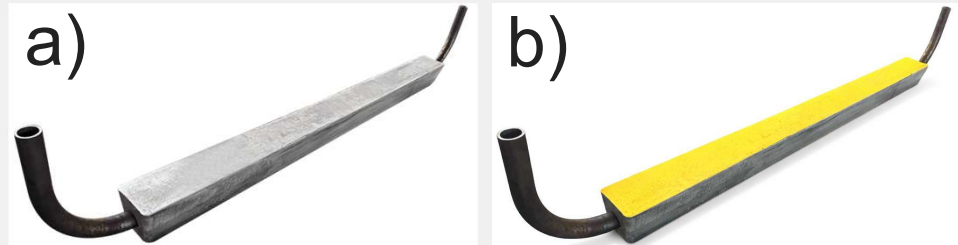
Example 5: Homework for the coming year

- 1 out of 10 NCS-operators requires anodes on subsea structures to be painted on the side facing the structure
- Proposed SMART goal:
 - a) **Standardise and simplify** such that no operator paint the anodes
 - b) **Standardise** such that all operators paint the anodes

My “Skin in the game”:

Øyvind will **donate 5% (gross)** of his potential yearly bonus to a good cause* if the industry agrees on either a) or b) within the next year’s seminar

*Red Cross, Doctors without Border...



You and your company are hereby challenged to join this “fund raising for standardisation”

Decision takers vs. risk exposure

“If only exposed the downside, and not the upside, of the outcome of a given decision, you are most likely not in the position to take the decision”

- Not accepting flexibles by default

- Internal technical requirements beyond industry practice
- Deviations lead to “risk saturation” of TAs, SMEs etc.
 - lack of a risk relief mechanism – particular in early phase
- Innretningsforskriften (2001) - HAVTIL

“For flexible pipeline systems and pipeline systems made of materials other than steel, utilization factors and any load and material factors shall be determined so that the safety level for such systems is not lower than for steel pipelines and steel risers”

- MEG dosing

- *“No one remembers the days you overdosed, but everyone remember the day you underdosed”*

- Best Available Technology - MDIR

- Is corrosion inhibitor a pollutant by default or only if released? What if the produced water is re-injected?
- Similar logic relates to Low Dosage Hydrate Inhibitors (LDHI)

Tools?

- **Toyota's 5 whys**
- **Do you really need it?**
 - Is it a pre-investment for a future project or a strict requirement the specific project?
- **Better collaboration between disciplines or “silos”**
 - Be openminded when looking for upsides
 - Be specific, low level, and ask for function, not solution
 - Be clear on the impacts for your discipline when in dialogue with other disciplines
- **Dare to be the kid in “The Emperor's New Clothes”**

How are the others doing?

Why does Øyvind, in his roles as taxpayer and future patient, have issues with the new hospital?

