

How to succeed with Design-to-Cost. A challenging Norwegian case.

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What is Design-to-Cost?

«Stone age approach»

- A deterministic cost estimate, more often than not incomplete with partly inconsistent data and no risk analysis
- + 10% allowance for contingencies

Modern, main stream

- A deterministic cost estimate that is complete and consistent
- A risk analysis, from which you can compute P50 (the expected cost, normally considered equivalent to should cost) and contingencies according to a preset standard (in Norway P85)
- A list of possible scope *reductions* to be considered if the contingencies are deemed to be insufficient

Design-to-Cost

- Cost estimation and risk analysis as in the main stream case
- A stripping down of scope to the most essential, i.e. more than mere «nice-to-haves» are cut.
- A list of possible scope *amendments* to be considered if cost developments allow

Our Case: The terror attack on the Government headquarters and political camp at Utøya - July 22, 2011



77 mortal casualties: 8 at Government headquarters and 69 on Utøya



The police response squad



Followed by an investigation and a number of papers pertaining to the police's capabilities

The users



Emergency Squad («Delta»)



Hostage Negotiation Unit

Education
Centre for other
police forces

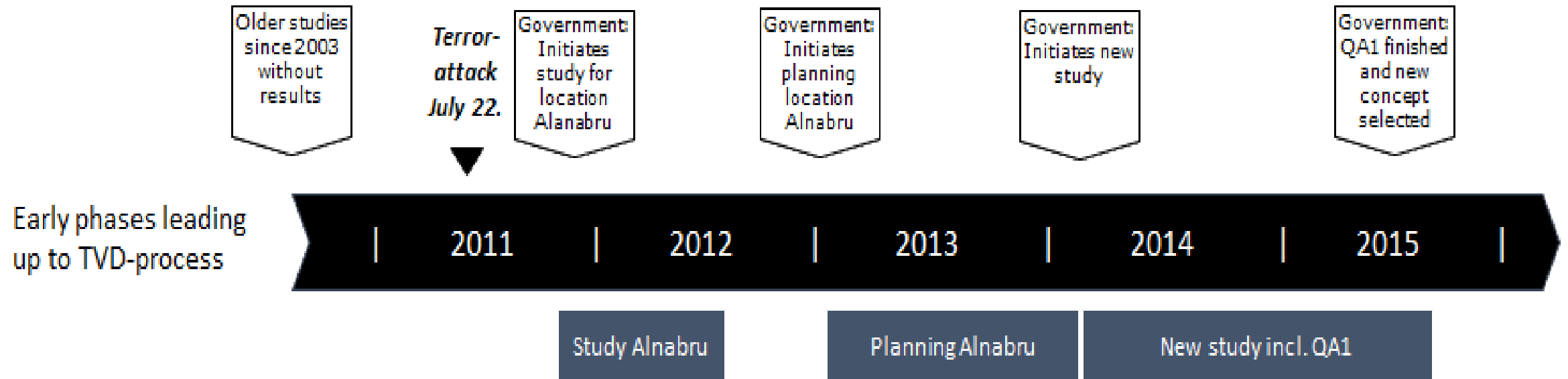


Bomb Squad



Police Helicopters

Timeline until start up of revised project on new location



- A single purpose organisation, independent of the Directorate for Public Construction and Property
- The Ministry of Justice was the Project Owner
- Project Board under the leadership of a ministerial director (level 2, reporting to the Permanent Secretary). In the board there were top national experts on project appraisal and management as well as top echelon officers from the Police.
- The project management was entrusted to the company Metier AS where Paul Torgersen worked at the time. Paul was hired as Project Director
- A partnering contract with one contractor only.

Project Targets from Project Owner's Mandate, June 2016

Priority 1 – Cost:

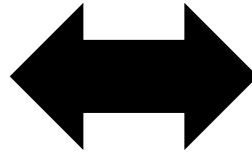
The Maximum Allowable cost: 2.5 billion NOK (2015) (\approx 200 million £)

Priority 2 – Scope and Quality:

Maximum Police Preparedness (optimized scope) within cost frame.

Priority 3 – Time:

Centre operationally ready by 2020



Prioritized List of scope-cuts/plus

Beskrivelse av tiltak	Kostnadsestimat Entreprensekostnad inkl. mva (MNOK 2017-kroner)	Uavhengighet til annet omfang (kan realiseres senere?)	Beslutningstidspunkt
Skytehus	90	NEI	Fase 1 - 2017-Q4
Innendørs skytebane	90	NEI	Fase 2 - 2018-Q2
Utendørs 50 m skytebane	15	NEI	Fase 2 - 2018-Q2
Innendørs pistolbane	25	NEI	Fase 2 - 2018-Q2
Treningsbygg ekskl. basseng	90	NEI	Fase 1 - 2017-Q4
SIBO		JA	Fase 2 - 2018-Q4
Utendørs 200 m skytebane		NEI	Fase 2 - 2018-Q2
Klatretårn		JA	Fase 2 - 2018-Q4
Svømmebasseng		NEI	Fase 1 - 2017-Q4
Multifunksjonshall		JA	Fase 2 - 2018-Q4
Hinderløype		JA	Fase 2 - 2018-Q4
Redusert areal Hovedbygg, kontordel (15 % / 1000 m2)	25	NEI	Fase 1 - 2017-Q4
Carport	30	JA	Fase 2 - 2018-Q4
Vaskehall biler	1	JA	Fase 2 - 2018-Q4
Redusere kvalitet og/eller omfang på veier og plasser (15 %)	20	NEI	Fase 1 - 2017-Q4
Infrastruktur til CBRN	2	NEI	Fase 1 - 2017-Q4
Søylefri portfasade i hangar	6	NEI	Fase 2 - 2018-Q2
Roger range (innendørs skytebane) ¹	-	JA	Fase 2 - 2018-Q4
Økt areal multifunksjonshall (+500 m2)	8	JA	Fase 2 - 2018-Q2
Økt lengde innendørs pistolbane (fra 10 m til 15 m)		NEI	Fase 2 - 2018-Q2
Større gymsal (250 m2 økning)		NEI	Fase 2 - 2018-Q2
Vekt for helikopter		NEI	Fase 2 - 2018-Q2
Økt kapasitet/bredde innendørs skytebane (100 til 120 m)		NEI	Fase 2 - 2018-Q2
Bølgefunksjon i basseng ¹		JA	Fase 2 - 2018-Q4
Hydraulisk entringsvegg i basseng ¹	-	JA	Fase 2 - 2018-Q2
Overvåkning av luftrom (identifisere droner) ¹	-	JA	Fase 2 - 2018-Q4
Deteksjon utenfor perimeter ¹	-	JA	Fase 2 - 2018-Q4

List of scope-cuts =
550 mill NOK

List of scope-plus =
100 mill NOK

Project Targets vs Results

Priority 1 – Cost:

The Maximum Allowable cost: 2.5 billion NOK (2015) (\approx 200 million £)

Result: 2.4 billion NOK (2015)

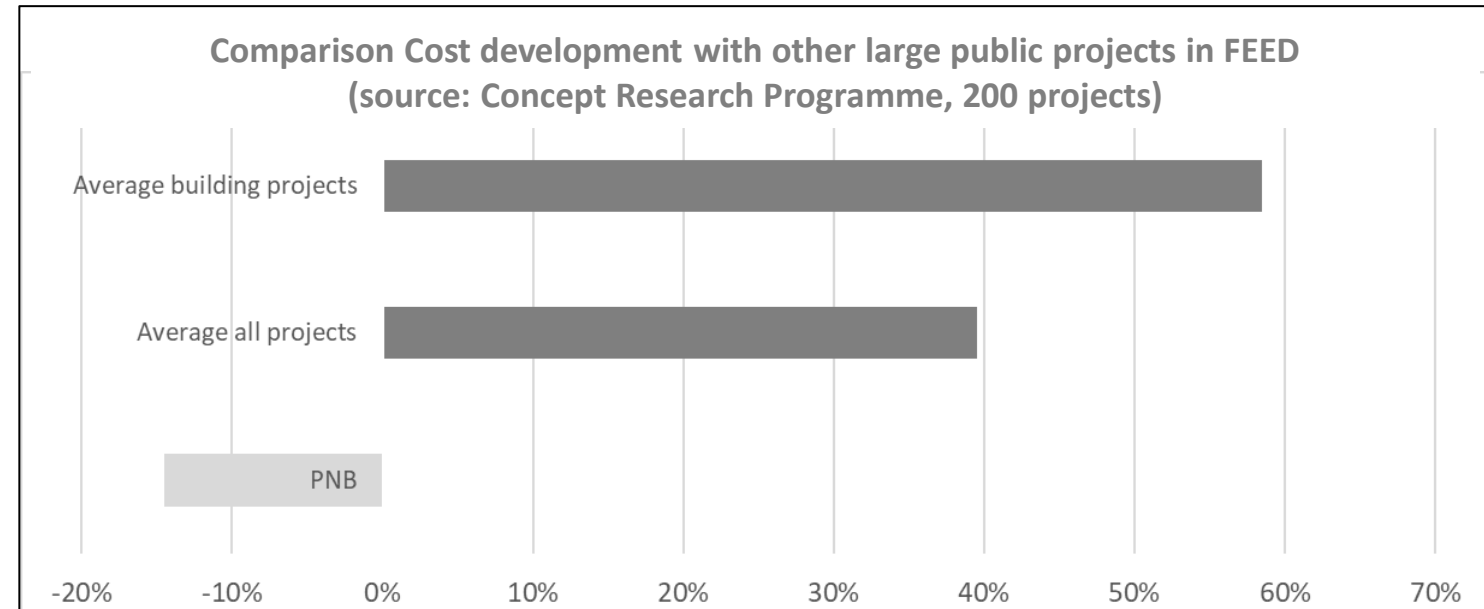
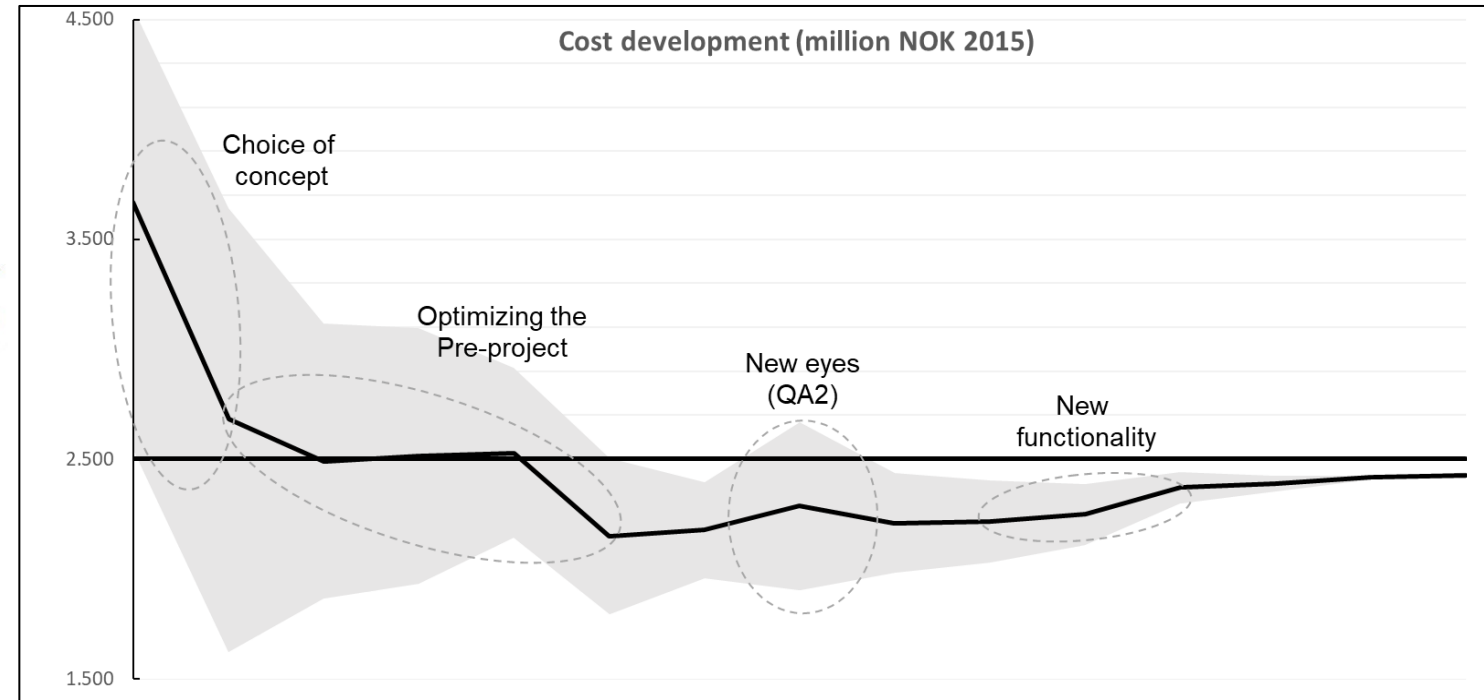


Priority 2 – Scope and Quality:

Maximum Police Preparedness (optimized scope) within cost frame.

Priority 3 – Time:

Centre operationally ready by 2020



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Result: All police requirements were met.

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The Maximum Allowable cost: 2.5 billion NOK (2015) (≈ 200 million £)



Result: 2.4 billion NOK (2015)

Priority 2 – Scope and Quality:

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Result: All police requirements were met.

Priority 3 – Time:

Centre operationally ready by 2020

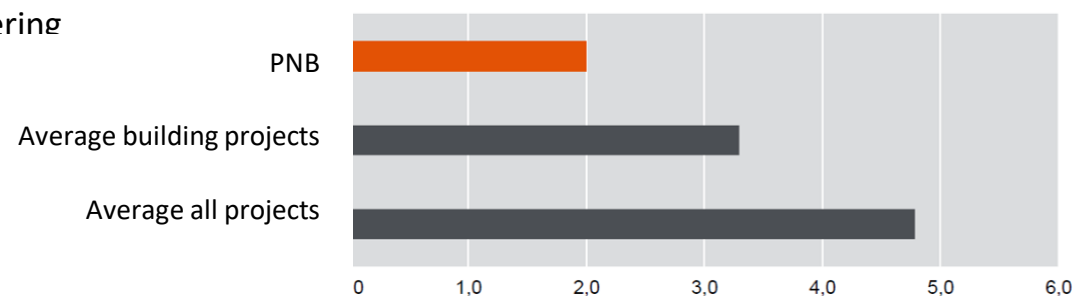


Result: December 15th, 2020

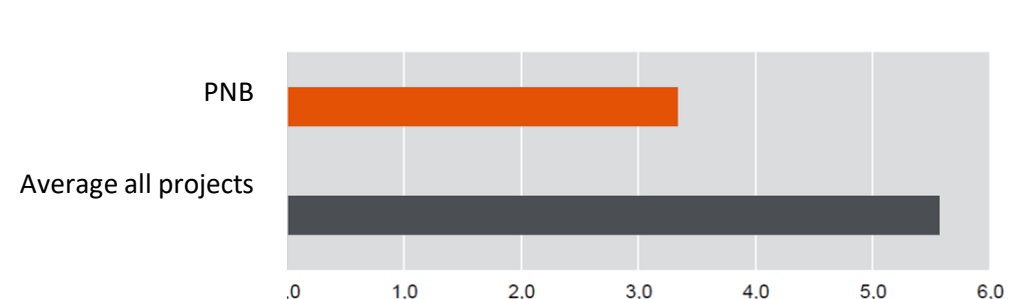
Comparison progress with other large public projects

(source: Concept Research Programme)

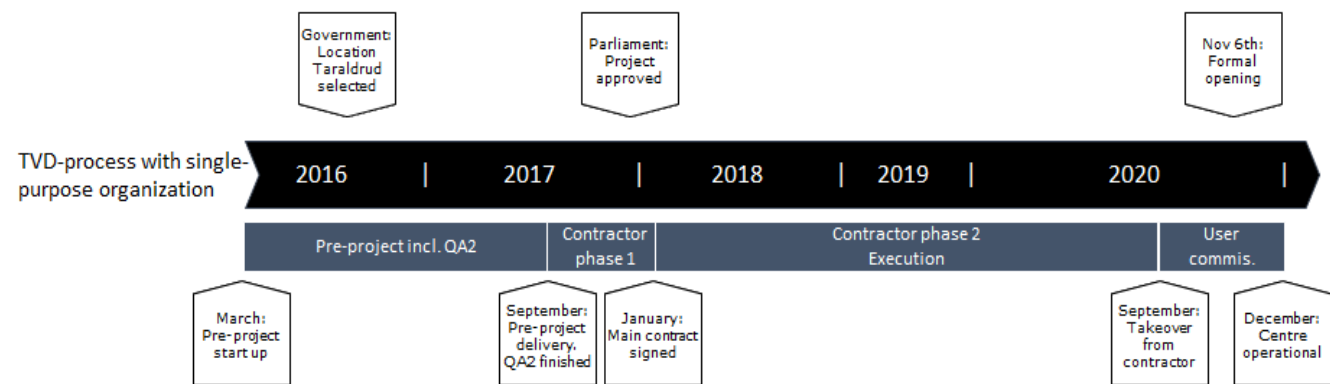
Basic engineering (incl. mobilisation)



Execution (incl mobilisation & commissioning)



Timeline from start up pre-project to finish



Selected Success Factors for Design-to-Cost

- Concept Selection
- Clear Targets
- Structured Approach
- Time = Cost and Backward planning
- People, Culture and Partnering



Concept Selection - Discarded project Alnabru vs Selected Concept



Discarded Project Alnabru

- Cost estimate: 4-4.5 billion NOK
- Benefit: Significantly reduced functionality

Selected Concept (Taraldrud)

- Cost: 2.4 billion NOK
- Benefit: All police requirements were met

TARALDRUD



ALNABRU

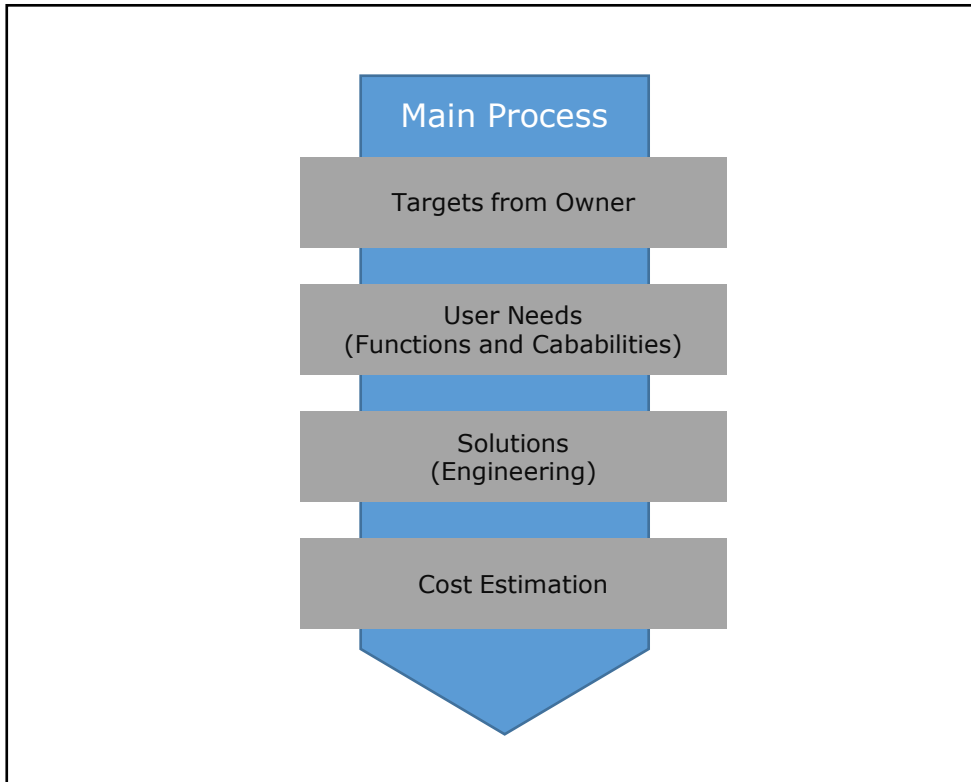


(same map scale)

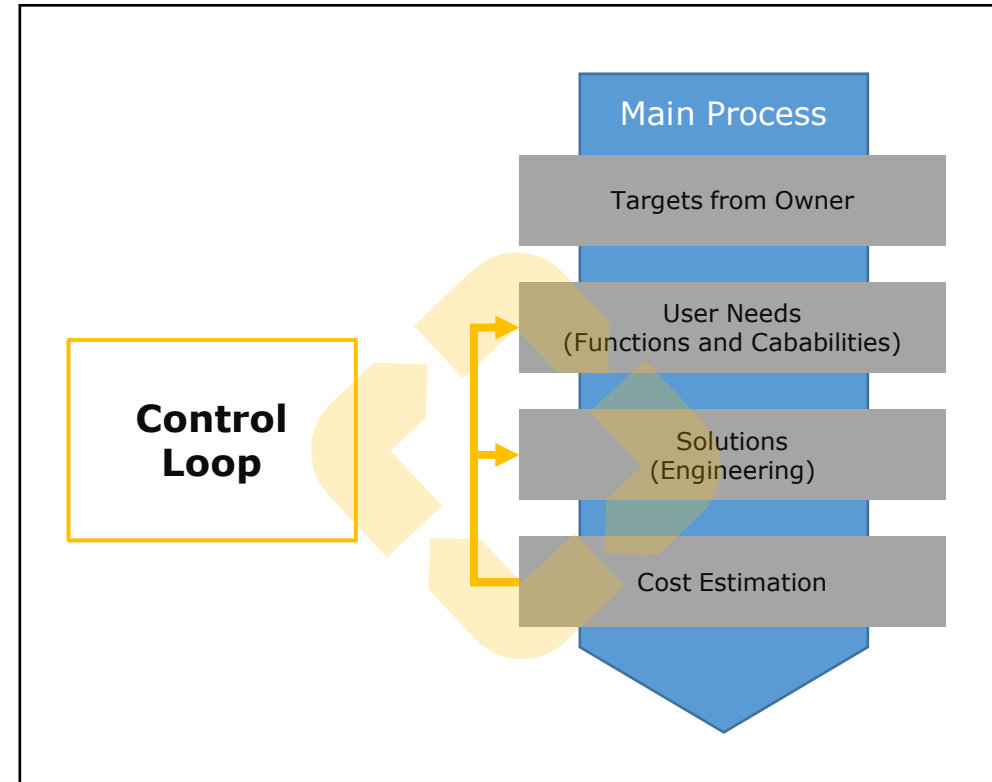


Structured Approach for Design-to-Cost

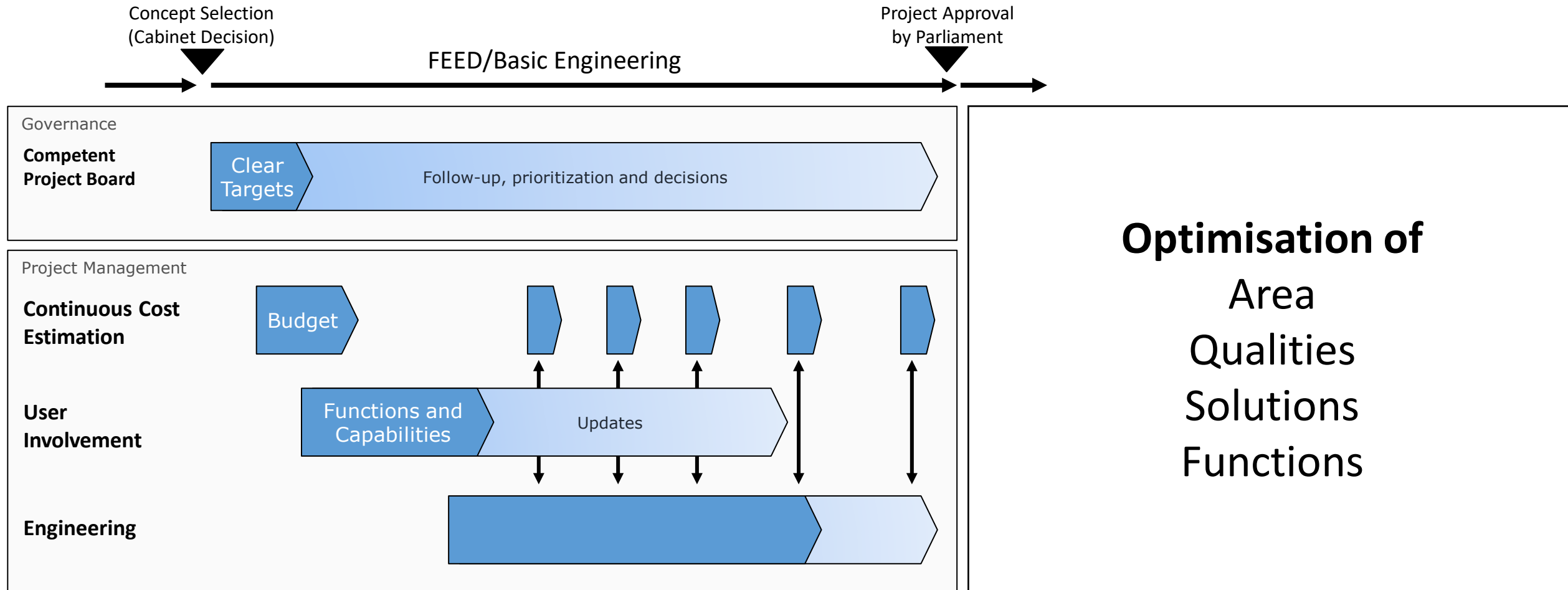
Traditional model



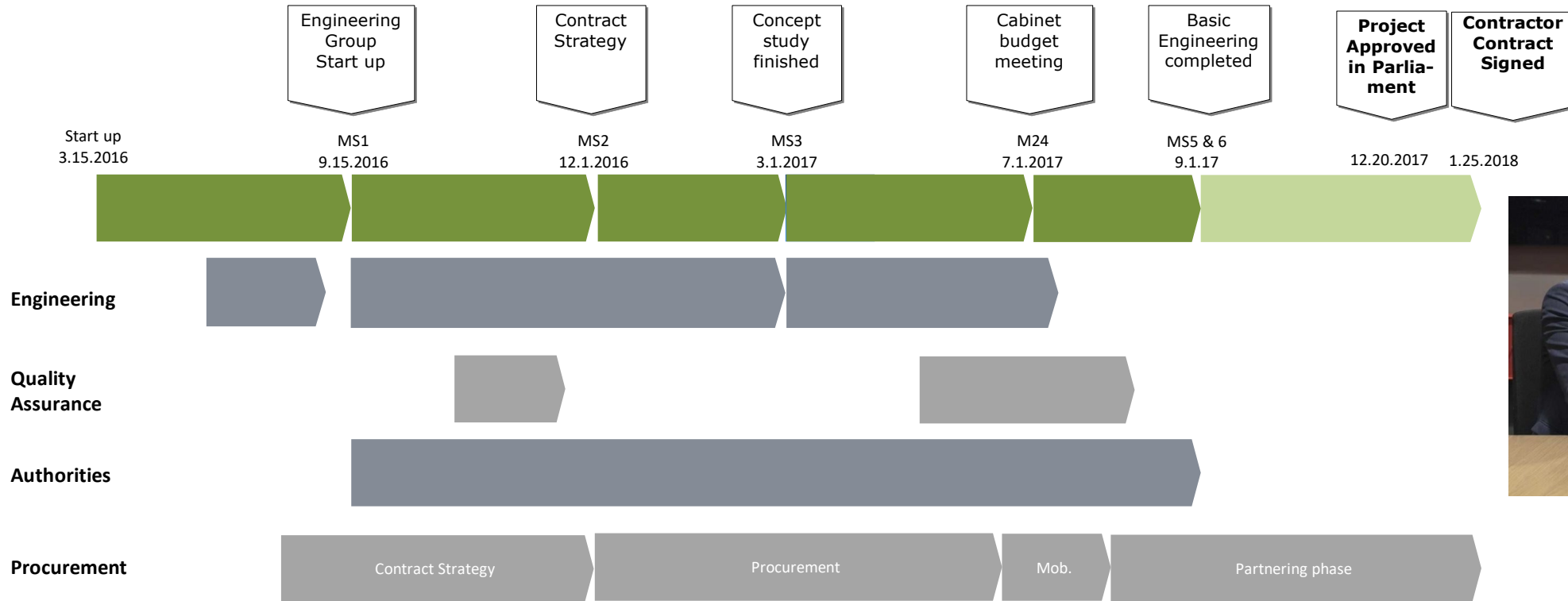
Design-to-Cost



Structured Approach for Design-to-Cost



Time = Cost and Schedule Planning



Contractor Contract signed

Backward planning!

Project Execution in 30 months

(ex. Mobilisation and Commissioning)

May 4th, 2018



May 7th, 2019





May 13th, 2020

From start up of Basic Engineering to Centre operational: 4,75 years
Average Project: 10 years
Additional 'calendar-cost' (management only) \approx 500 mill NOK



The only thing of real importance that leaders do is to create and manage culture. If you do not manage culture, it manages you, and you may not even be aware of the extent to which this is happening.

— Edgar Schein —

AZ QUOTES



Key takeaways

- A design-to-cost approach may be very rewarding, as in this case, but is challenging
- A key is a dedicated project owner presenting a clear and unambiguous mandate
- A governance structure with the owner accepting responsibility and taking the leading role.
- The owner puts emphasis on hiring the best people for the other key positions in the project
- Consistent leadership on all levels based on respect for project theory and good practice.
- Creation of incentives that enhance the development of a “we are together on this” culture
- The quality of the Basic Engineering is essential.
- Project execution is not only better but even faster than if you try to rush things up front.

