



seaQuest

Marine Project Management Ltd

- Plan Approval -

# OBJECTIVES

## What is Plan Approval?

- The most effective way to communicate with Shipyard and Designers
- A technical tool which allows the verification and clarification of each and every detail of the design of a vessel
- The only moment during which any improvements or upgrading of the design may be implemented with the lowest cost impact or sometimes free of charge
- The final official agreement between Owner and Shipyard which is reflected onto the production drawings and later followed during construction



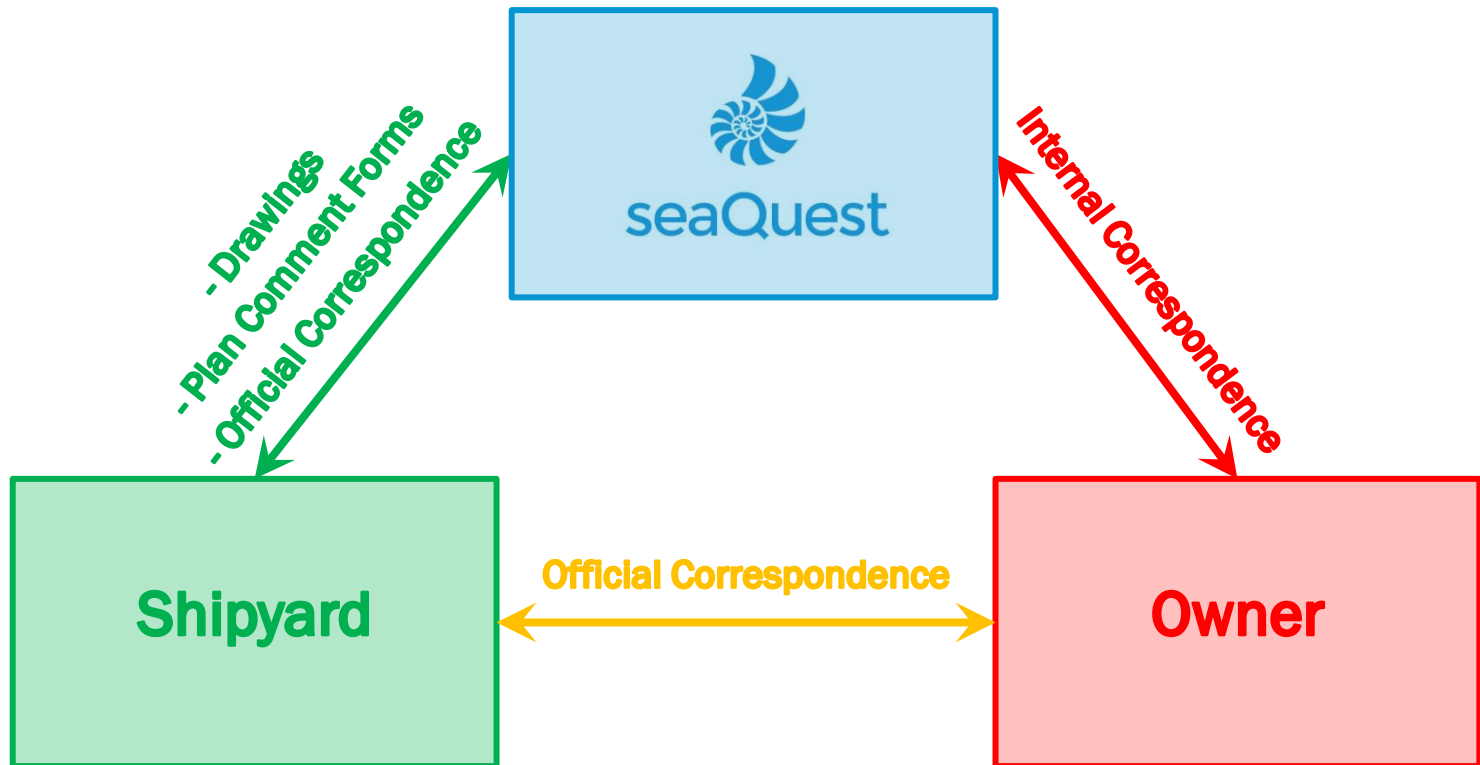
# OBJECTIVES

## Why is Plan Approval essential?

- Allows to verify the actual implementation of Owner's and Charterer's requirements, Rules and Regulations
- A good and efficient design may allow enormous cost savings during ship operation (e.g. less maintenance, less spare parts, less man-hours, etc.)
- A well assessed design will sensibly reduce risk of breakdowns and minimize possibility of miss-operation which are direct causes of accidents, fire hazards, fatalities, vessel off-hire, etc., affecting Company's reputation
- An eco-friendly design allows trading in all "environmentally sensitive" areas around the world and reduces risk of pollution
- A high-efficiency designed vessel will reduce fuel consumption and running costs

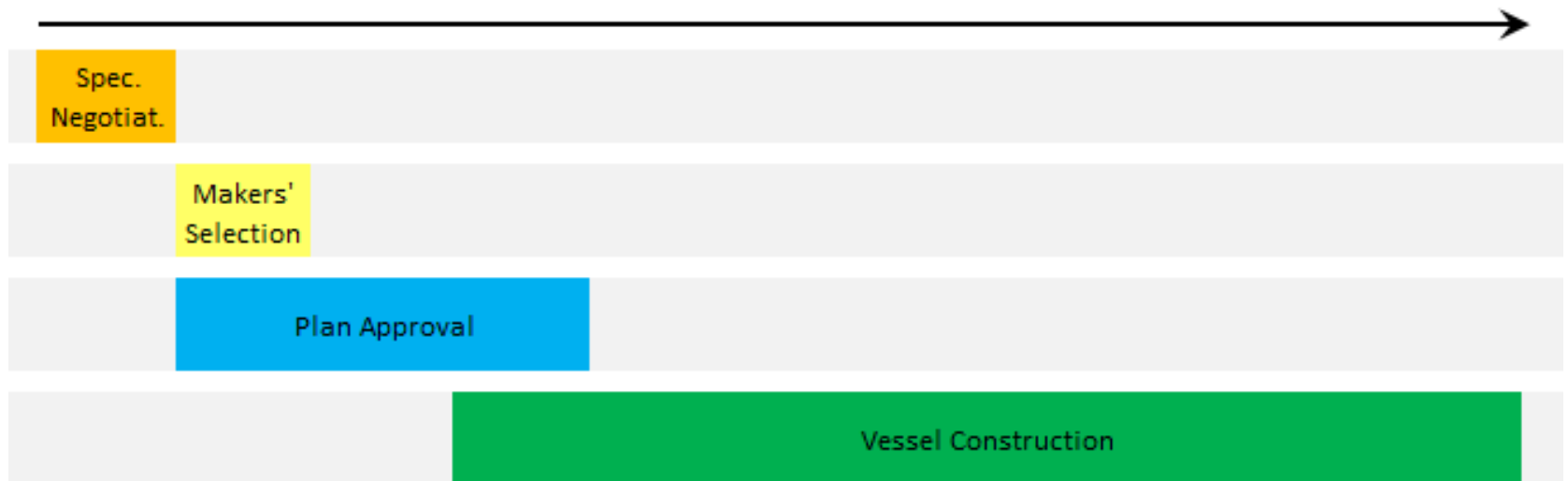


# PLAN APPROVAL FLOW CHART



# PROCESS

- Plan Approval normally starts 5-8 months before the steel cutting of the vessel (depending on the complexity of the project) and lasts for about 6-10 months (this may increase significantly for special ships or military vessels)



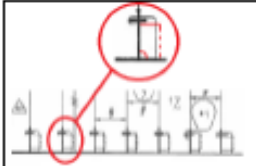

# PROCESS DETAILS

- The number of drawings sent by the shipyard for review is mostly related to the type of vessel:
  - Bulk Carrier/Container/Oil Tanker/Gen.Cargo: 350 ~ 450
  - LPG Carrier/Ferry/Ro-Pax/Passenger: 450 ~ 900
  - Military: 800 ~ 1000
- The review time allowed for each drawing is normally 14-21 days
- The comments are issued officially on a form (PCF – Plan Comment Form) on which the reply from the Builder is recorded. The PCF is sent back and forth to the involved parties until a final agreement on each of the comments is reached
- The final agreements are then reflected on the latest revision of the drawings
- Approximately 4000 ~ 4500 comments are issued normally by SQ Team for a commercial ship while a much higher number is expected for special ships or military vessels, based on vessel complexity



# PLAN COMMENT FORM

Plan Comment Form				HYUNDAI 2932-2935 – 157K DWT CLASS PRODUCT CARRIER			
Plan Title		MIDSHIP SECTION		Plan History			
Plan No.		1H-7000-201		Rev No.		0	
Drawing Status by Buyer		Plan Comment Status by Buyer		Buyer Ref. No.		Date	
No comments.		Revised Complete Drawing Required		SQ/JA/005		a) Jun. 08, 2016	
Comments.		Revised Partial Drawing Required				b) 8 <sup>th</sup> July 2016	
		Number of Open Comments		0		c) 19 <sup>th</sup> Jul. 2016	
						d) 20 <sup>th</sup> Sep. 2016	
						AMP-EC870-0014	
						AMP-EC870-0024	
						AMP-EC870-0106	
						Jun. 30, 2016	
						14 <sup>th</sup> July 2016	
						8 <sup>th</sup> Sep. 2016	

No	BUYER'S COMMENTS		BUILDER'S REPLY		STATUS
1.	a)	Please change the collar plate type for all double bottom longitudinals to grant stronger connection with side shell (ref. below sketch). 	a)	Please understand that current design has been applied in order to have better drainage, and the connection also satisfies CSR requirement. Hence it will be kept as it is.	Closed
	b)	Kindly provide the collar plate as per our proposal, as applied on ships of similar type/size.	b)	It will be reflected as shown below for bottom longitudinals only. 	
	c)	Noted with thanks.	c)		
2.	a)	FEM fine mesh analysis corresponding to 25 years fatigue requirements for hopper cruciform joint to be submitted to Owner as per Spec. Toe grinding in way of web frames to be considered as measure to meet fatigue life requirements.	a)	A relevant analysis has been performed and the analysis report will be submitted in due course. And please understand toe grinding is not required according to the analysis result. Hence it will be kept as it is.	Closed
	b)	The case will be judged on the base of the FEM analysis results.	b)	Noted.	
	c)	Awaiting FEM analysis results.	c)	Please refer to the "FATIGUE ANALYSIS FOR LOWER HOPPER KNUCKLE(DWG No. ; 8H-7000-208)" which was submitted on September 8, 2016.	
	d)	Noted.	d)		



# ISSUES

## What can go wrong?

- Communication itself is a difficult task, in general. An expert approach guided by a solid technical background may considerably reduce problems caused by misunderstandings and language barriers
- Misinterpretation of Specifications and technical requirements may easily lead to wrong or incorrect design with relevant consequences
- Most of the design problems are detected/corrected during Plan Approval.
- Most of the design problems may be solved during Plan Approval with much less efforts in terms of amount of modifications and cost
- Many design mistakes not tackled during Plan Approval are often decided to be left unresolved due to feasibility problems during construction or extreme cost impact





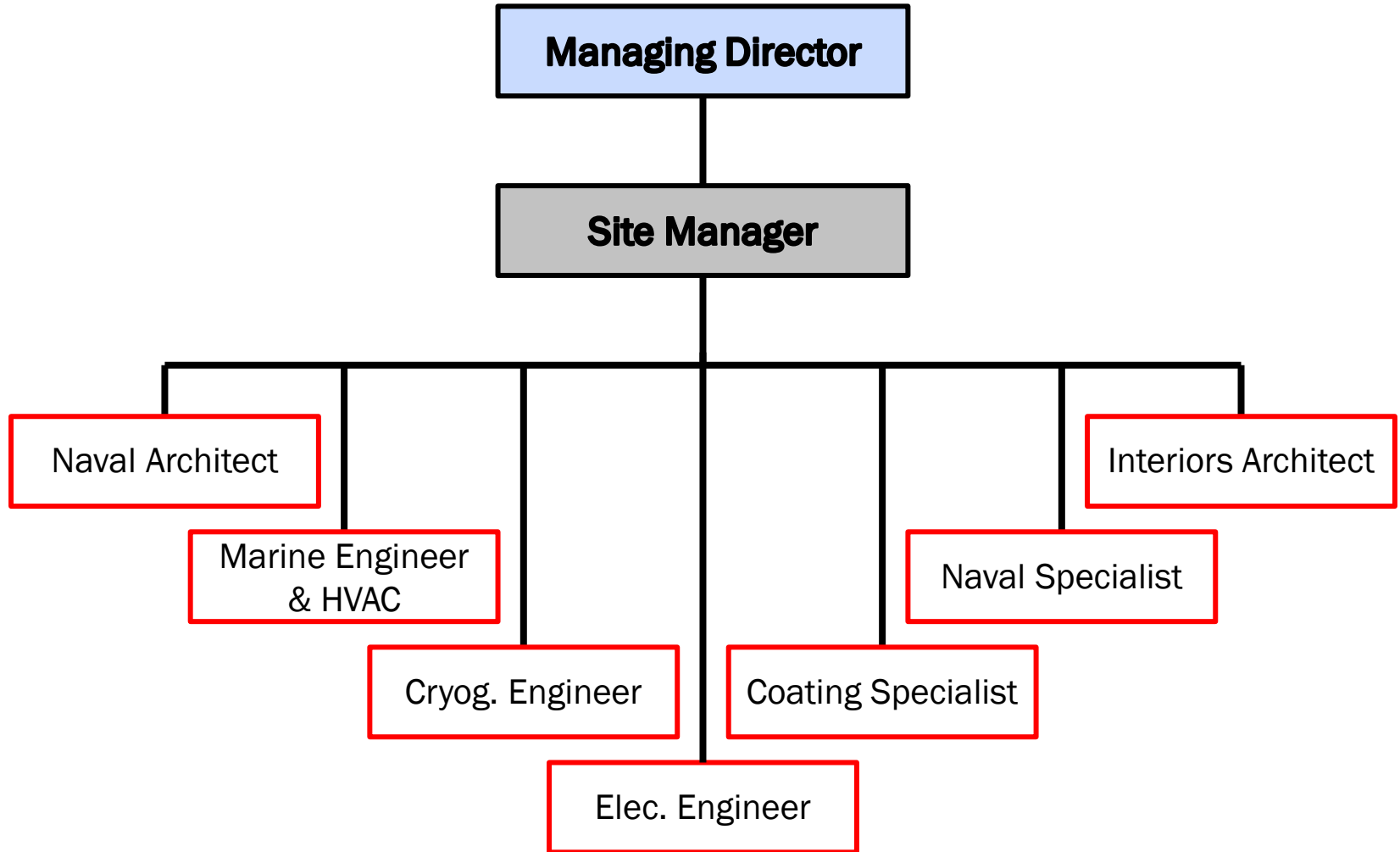
# OTHER TOOLS

## 3D Modeling & Critical Design Review (CDR)

- 3D Modeling is a powerful tool which allows a “virtual walking through the ship” to assess the design in 3 dimensional view, enhancing the chances to discover any design flaws
- 3D Modeling helps the space optimization process and is often advisable not only for the review of single compartments or layout but also for piping arrangement and cabling
- CDR meetings aim to refine a particular design detail or verify critical areas which need precise arrangement or specific attention for further development
- These tools are normally employed at an advanced design stage and the meetings are normally concluded within **1-2 weeks** time (depending on the ship complexity)



# ORGANIZATION CHART



# TEAM SET-UP

	Qualification	Discipline
1	Naval Architects	Model Test
		Structural dwgs
		Hull Outfitting dwgs
		NDT Plan
		Test Procedures (Hull & Outfitting))
2	Marine Engineers & HVAC	Machinery dwgs
		P&I Diagrams
		HVAC
		Makers' dwgs
		Test Procedures (Machinery)
3	Cryogenic Engineer	LPG Cargo handling System
		Test Procedures
4	Electrical Engineers	Wiring Diagrams
		Makers' dwgs
		Automation & Communication
		Integrated systems
		Test Procedures (Elec. & Autom.)
5	Coating Specialists	Paint Specification
		Cargo Tank Coating procedure
6	Naval Specialists	Integrated Logistic Support
		Defence and Redundancy systems
		Armament
7	Interiors Architect	Master Décor
		Furniture
		Hotel

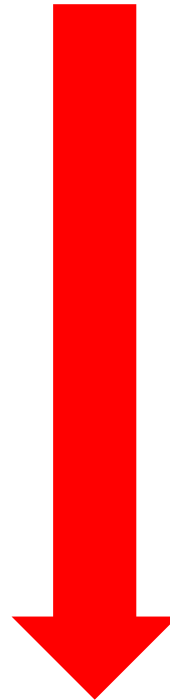


# CONCLUSIONS

Good Plan Approval means:

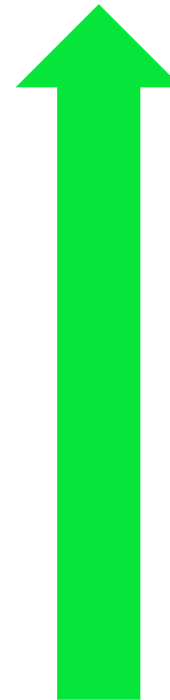
## REDUCED

- Off-hire time
- Maintenance
- Breakdowns
- Accidents
- Running costs
- Fuel consumption
- Pollution



## INCREASED

- Overall efficiency
- Reliability
- Cargo capacity
- Trading routes options
- Flexibility
- Safety
- Redundancy



# SERVICES

SeaQuest can assist Owners throughout:



# CONTACTS

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