

3. MANAGEMENT

Project management in Deltamarin includes:

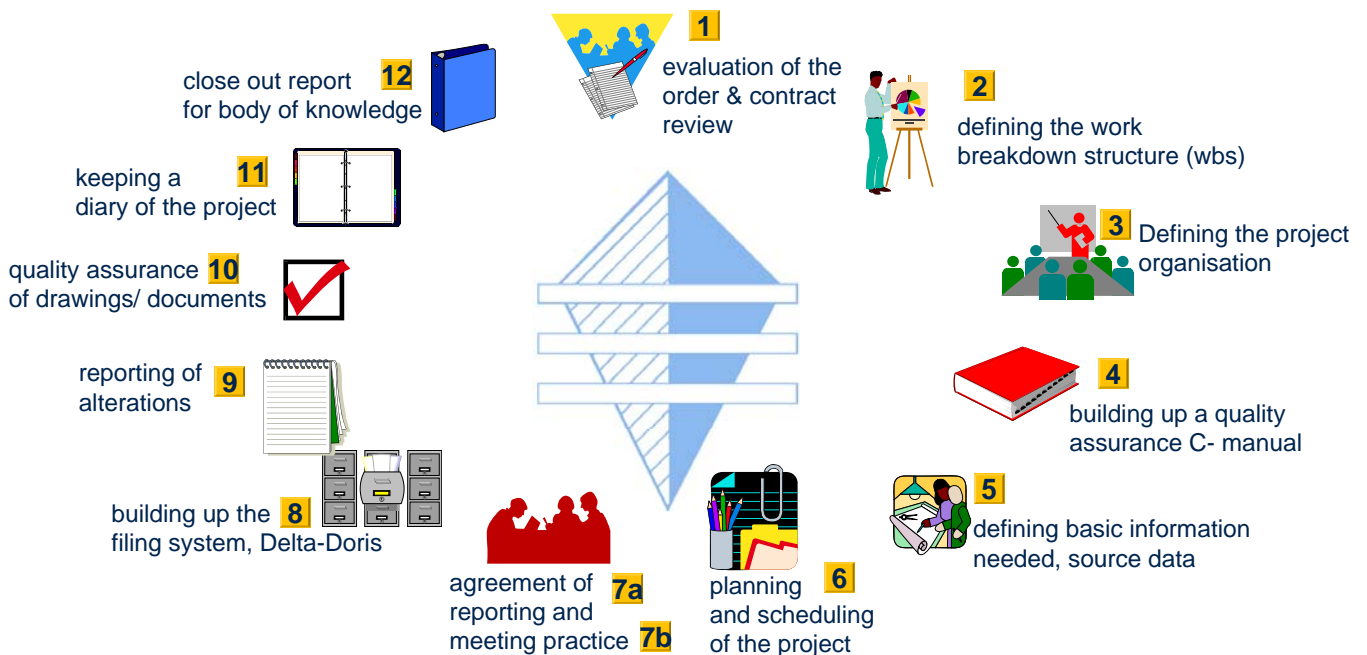
- Contacts to client's organisation
- Project planning and scheduling
- Project follow-up and reporting
- Technical and interface co-ordination
- Leadership of the project team
- Analysing the results of the project

Quality assurance system of Deltamarin is the basis for project management.

Deltamarin's control procedure includes following items:

- Project planning, contract and planning reviews
- Work Breakdown Structure (WBS) and cost control
- Project organisation
- Project QA plan
- Project source data follow-up
- Project scheduling and resource control
- Reporting
- Project meetings
- Project documentation, recording and filing
- Project change control
- Project design document validation control
- Final report

Summary of Project Managers Tasks and Tools



The QA-C manual plays an important role for the project manager, describing work procedures and instructions how he can build-up his project management system.

One of the most important tasks - if not even the most important - of the project manager at the start-up stage is preparing the project plan/quality plan. The following table gives a list of contents for a typical quality plan.

List of contents for a typical quality plan / project plan	
1.	Scope of work
2.	Organization and communication
3.	Schedule and drawing list
4.	Work breakdown structure and hour report
5.	Project reviews - contract review - design review
6.	Project meetings
7.	Checking of drawings
8.	Filing
9.	Reports, source and progress
10.	Document info, mailing and copying
11.	Modification procedure
12.	Quality control
13.	Cad and data transfer
14.	Confidentiality

The first step is to agree upon the project plan with the customer. After that it is the project manager's tool to supervise his project and to ensure that the customer's requirements are fulfilled according to the contract.

Planning

Contract review and project evaluation is the first thing to start with the project team.

Basic characteristics of the project are defined including main information of the vessel, scope of the work and main items of the contract. All related documents are listed and distributed as necessary.

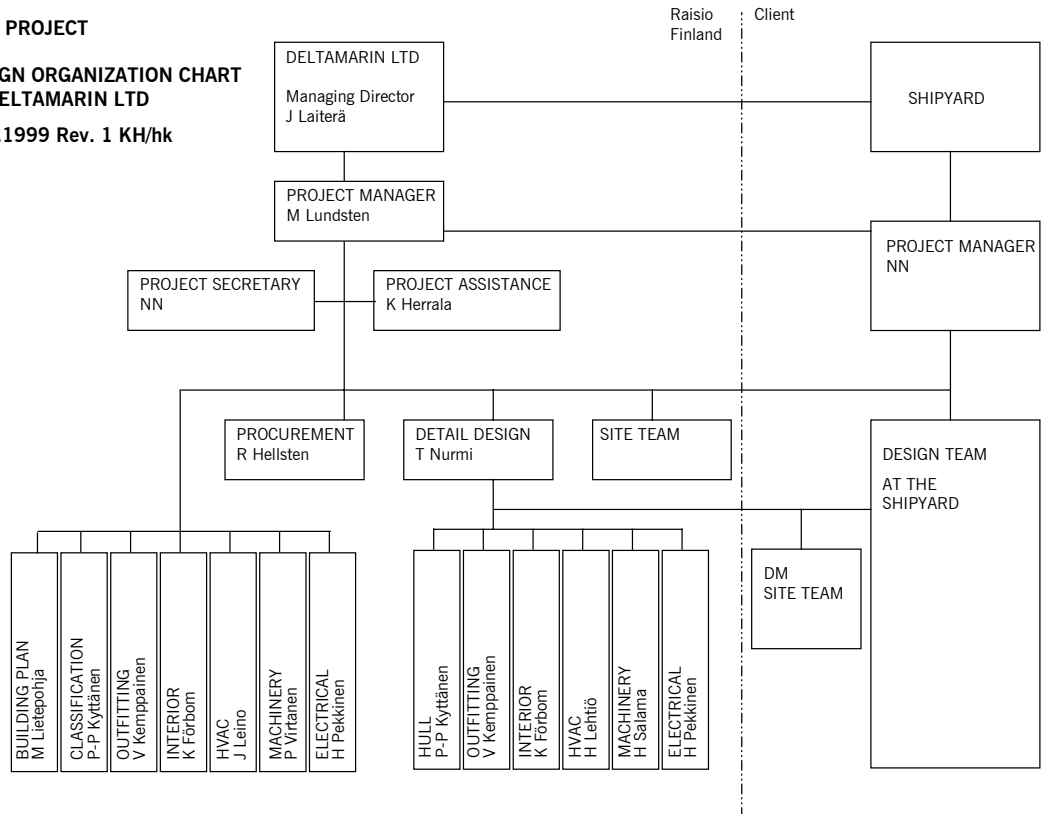
The project manager is responsible for the project supervisor or for the management group of the company. The project manager with his project group is taking care of accomplishing the project. The discipline managers and project secretary are further key people.

Customer contact persons as well as other important partners are to be shown in the organisation chart as well as contact levels.

SHIP PROJECT

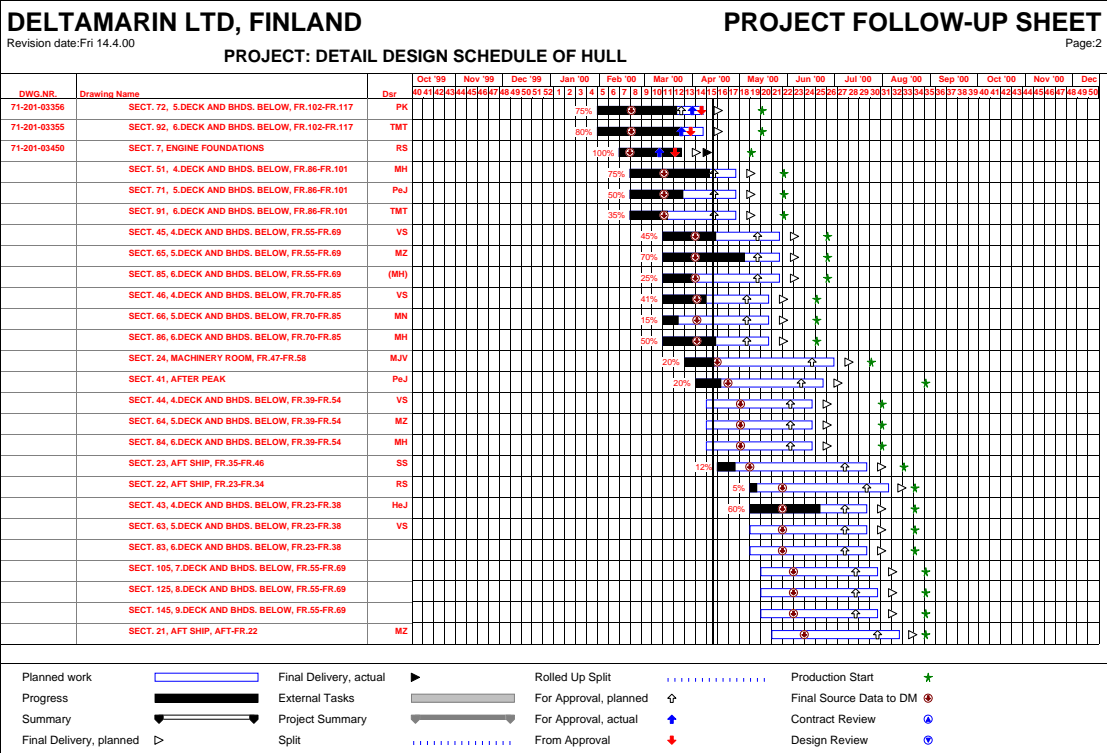
DESIGN ORGANIZATION CHART OF DELTAMARIN LTD

29.4.1999 Rev. 1 KH/hk



An example of a project organisation with key-people and main responsibilities. It is a project based organisation not a line based.

The project schedule is presented as bar charts, with information of the total design time, start and end dates, of the time for each discipline and each document or group of documents, and responsible designer for each document, dates for main events (milestones) as delivery date, feedback and scheduled meetings.



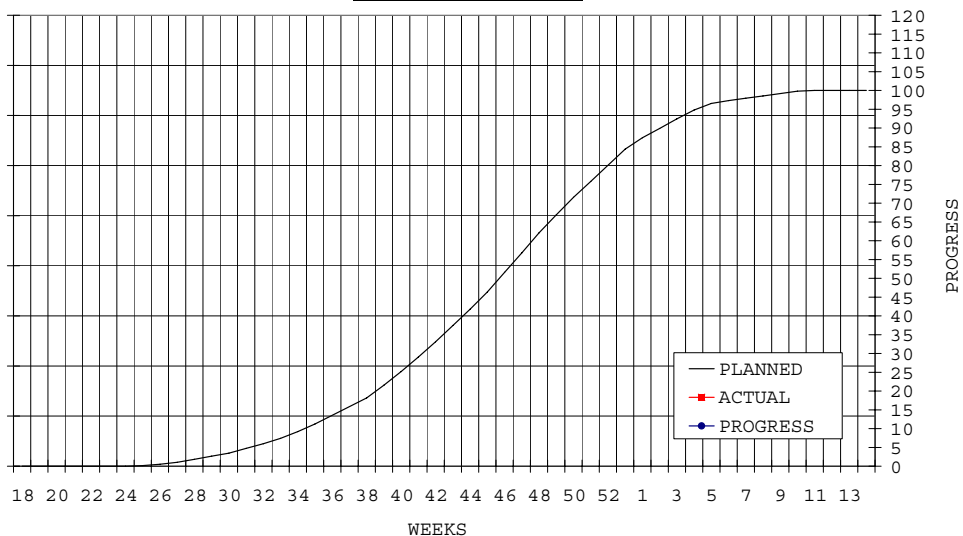
Typical project main schedule.

S-curve with planned progress and man-hours in a very important tool for the project manager to follow up the general progress of the work. The manning plan is made to show the required capacity for each discipline as a function of time.

DELTAMARIN
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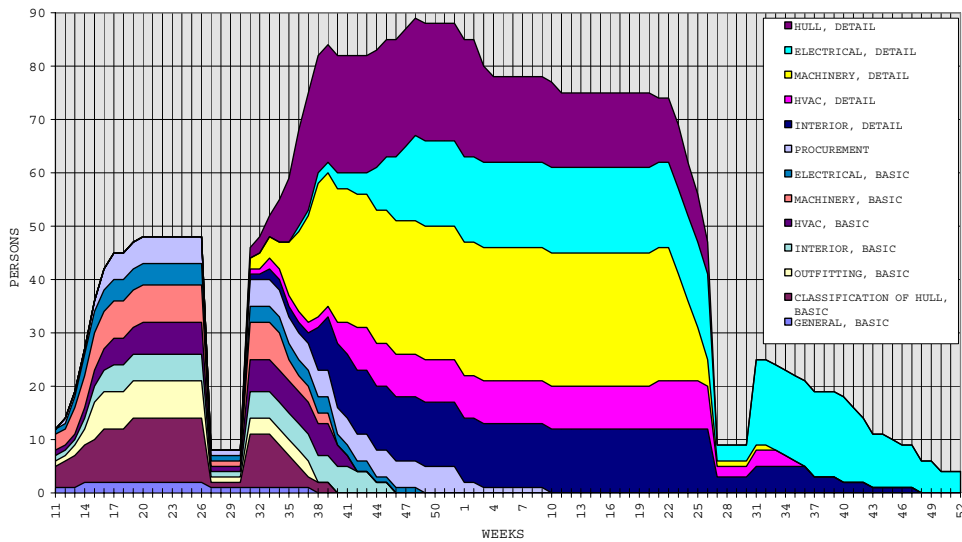
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DM SHIP PROJECT /
S-CURVE OF HULL



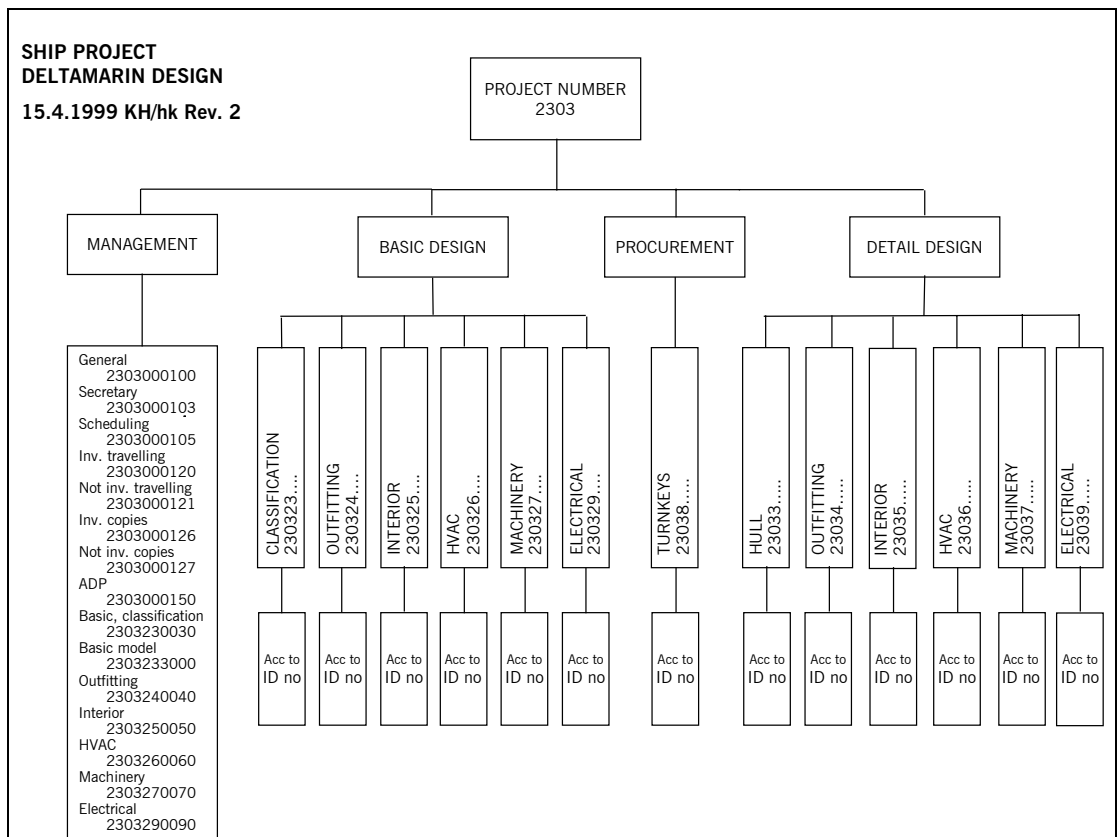
Example of S-curve of planned progress and man-hours prepared at the planning phase.

DM SHIP PROJECT / CAPACITY CURVE OF DM DESIGN



Example of project manning plan.

Work breakdown structure means dividing the project into parts according to discipline responsibilities, main groups of documents, document numbering system, and any specific project related requirements. Necessary codes for follow-up of design hours and other costs are considered as well.



Work breakdown structure for an engineering project.

Source data or client information is one of the important project documents to be prepared at the start-up of a new project. The designer needs information to be able to start the design process as well as when proceeding with the design.

It is essential to have all specifications and other contract documents, vendors' equipment documentation, yard standards and it is preferable to have reference documentation as possible.

Information is needed for the systematical follow-up; including system number, document name, description of necessary information, date when requested, needed and received and any deviation remarks.

For managing this information a suitable system is required in order to collect the necessary information, e.g. input for certain design area or missing information.

Source Data Listing Last						PXXXX NBXXXXXXXXXXXXXXXXXXXX		Date: 21.8.2002
ID	RelName	Dwg. No	Rev.	DM/BP	Server	Exp	Rec	Dev. Remarks
62016	- Diagram of Black Water System, D7-D10530-R17603		25.7	8.8.2000		0026	0032	preliminary
63001	- Heating and Cooling for Air Conditioning					0026		-9
64001	- Study of Air Conditioning Duct Routing					0026		-9
64002	- Air Conditioning Routing Scheme					0026		-9
64003	- Air Conditioning and Ventilation Sharing Scheme					0026		-9
64004	- Fan Rooms and Air Inlets					0033		-2
64005	- Air Conditioning Moistening System					0033		-2
64006	- Air Conditioning and Ventilation Systems					0033		-2
64007	- Air Intakes and Outlets					0028		-7
64008	- Trunk Sharing Scheme					0026		-9
64009	- Air Conditioning Duct Routing					0028		-7
64010	- Ventilation Routing Scheme of Machinery Spaces					0026		-9
64011	- Ventilation Routing Scheme of Deck Stores					0026		-9
64012	- Car Deck Ventilation, D1-D5	0028-1370-01-2	7.7	14.7.2000		0026	0028	-3 novenco
64013	- Fire Dampers					0032		-3
64014	- Equipment: Fans for Cargo Space Ventilation					0032		-3
64015	- Car Deck Ventilation, D6-D7	0028-1370-01-1	7.7	14.7.2000		0026	0028	-3 novenco
64016	- Ventilation Deck1-2	3700-A00301	8.8	10.8.2000			0032	
65001	- Waste Flow Scheme					0028		-7
65002	- Waste Handling System Diagram					0035		0
65003	- Waste Handling Room Arrangement					0035		0
65004	- Shredder System							
66001	- Diagram of Water Fire Extinguishing 7240-R15001		31.5	14.7.2000		0028	0028	-1
66002	- Sprinkler System Diagram					0036		1
66003	- Drencher System Diagram					0028		-7
66004	- CO2 Room Arrangement					0035		0
66005	- Diagram of Water Fire Extinguishing 7240-R15002		31.5	14.7.2000			0028	
66006	- Diagram of Water Fire Extinguishing 7240-R15003		31.5	14.7.2000			0028	
66007	- Fire Fighting Devices					0035		0

Missing Source Data PXXXX				21.8.2002	1(3)
ID	RelName	Dwg. No.	Exp. Rec. Dev.	Remarks	
16003	- Yard Standards				0030: not available
17009	- TB standard structure	SBF_DB_FSTD			0023: not necessary
17010	- TB references	SB_REFDB			0023: not necessary
32007	- Tank Top				not necessary
32009	- Deck 2 and Bulkheads Below				see 32008
42001	- Chain Lockers and Pipes				not necessary
42002	- Anchor Pockets				not necessary
42004	- Freeing Port Calculation				
45006	- Tendering Equipment Arrangement				not necessary
45007	- Accommodation Ladder Arrangement				not necessary
52003	- Ship's Offices				
52004	- Purser's Offices				
52005	- Steward's Offices				

Example of missing source data list.

Filing system

A major engineering and design project includes thousands of produced documents, requiring a lot of source data and other managing information. For managing this vast amount of information a comprehensive filing system is required. Some documents are produced only as CAD-files others in paper copies. Correspondence, memorandums, etc. need to be filed as well.

Typical files for a major design project include basic information, (yard's standards and information), source data / client information, inspection copies (own documents with markings for corrections etc.), delivered documents, approved / commented documents and correspondence (covering letters, faxes, etc.).

Each document in the file must have a dedicated number; different colours in different files and each document file should include a list of contents. When material from the files is removed a "borrower's card" must be used showing the location of the document.

CAD-files are easy to be arranged in a main computer system according to disciplines, where at least subdirectories should be arranged for ready, delivered and update status of each document indicating also inspections and revisions.

Potential problems

It is advisable to evaluate at the very early stage what kind of risks and potential problems a new project may include, such as new rules and their interpretations, missing or delayed source data, excessive time for feed-back, underestimated required capacity, new technical solutions and configurations, prototype equipment etc.

Possible corrective actions for each item should be carefully thought in beforehand.

And if a problem arises a short and quick response system should be planned.

Follow-up and reporting

A regular follow-up is arranged on weekly or fortnightly basis at least for progress of work, in percentage, used design hours, percentage of hours, milestones, source data, separate open questions and possible problems and modifications.

Results of follow-up are reported, usually monthly or fortnightly. S-curves and other graphical form of showing information are used.

Modification management

Usual updatings due to normal iterative process and modifications due to changes should be handled separately.

Updatings should be done in a reasonable way. It is not advisable to correct immediately all the typing errors and minor mistakes, which are not significant from the performance point of view, especially if all inspectors have not yet

given their feed-back. Otherwise it may be, that seven or eight updates are made instead of the normal one to three.

Each modification is reported for the client, including at least: reason for modification, effect on schedule, costs, weight, stability and any other specific requirement. Modifications should generally be handled centralised via project manager, not between individual designers and inspectors. Modifications should be agreed without delays, minor ones in a week, major ones in two weeks time. Design should not be modified without an agreement in beforehand.