ACCELERATED BUSINESS DEVELOPMENT (ABD) BRIEF

ULSTEIN INTERNATIONAL AS
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The Vessel Investment Challenge

Anyone making a multi-million Euro vessel investment is faced with a number of critical decisions: What is the business idea, what could be an appropriate business proposition, what is a better transport or marine system solution? Which type of vessel? How many vessels? What functionality? Which price level? Will I make money with this vessel? How does it look compared to my current vessels? And compared to competitors? How well does it satisfy my expectations? What will be the lifelong performance and goodness of fit of my vessel? Can my project handle a significant reduction in the charter rates? How do I prepare for future desirable and undesirable events?

These decisions are usually based on individual experience, knowledge and gut feeling. The process is time consuming – going on for months, or even years. All too often, it lacks rigour and formality which could easily result in an immature vessel design solution and a faulty investment plan.

However, such unrefined ideas are often presented to a naval architect who is asked to sketch a solution (General Arrangement). This leads to a lot of technical design work without the benefit of a clear understanding of the commercial and operational requirements and their consequences. The end result can be high costs, poor quality and time-consuming projects to all parties involved.

Accelerated Business Development (ABD)

The *Ulstein Accelerated Business Development* (ABD) is an approach that structures the process of turning a vessel business idea into a comprehensive business concept and eventually a ship specification and general arrangement (GA) (Brett, Boulougouris, *et al.*, 2006). The Ulstein ABD was initially developed to handle the intrinsic complexity and uncertainty of ship design (the wicked problem), by supporting the early design process with fast, fact-based decision making (Ulstein and Brett, 2015). It provides guidance and decision-making support to the ship designer, investors, ship owners and other relevant stakeholders in the development of new vessel designs (Brett, Carneiro, *et al.*, 2006), especially in those cases characterized as wicked or ill-structured problems. The most relevant information affecting the vessel business case is elicited in a compressed series of workshops which are used as bases to conceptualize the vessel design, to further develop the basic and detail designs. Notice that during an ABD process, the intention is not to gather information to carry out in-depth analyses or the development of ship and systems drawings, but rather, to explore in-breath and necessary depth potential factors affecting the business case and vessel design and facilitate a continual and facts-based real-time decision-making process about the business-case at hand. Hence, the ABD facilitator (the person structuring and facilitating the workshops and activities), needs a reference to evaluate continually whether a set of information or analysis is good enough, or more in detail evaluations are required. Here is where the notion of “value of information” comes into place. Its nine modules can be divided into exploration and exploitation activities respectively, as shown in Figure 1.

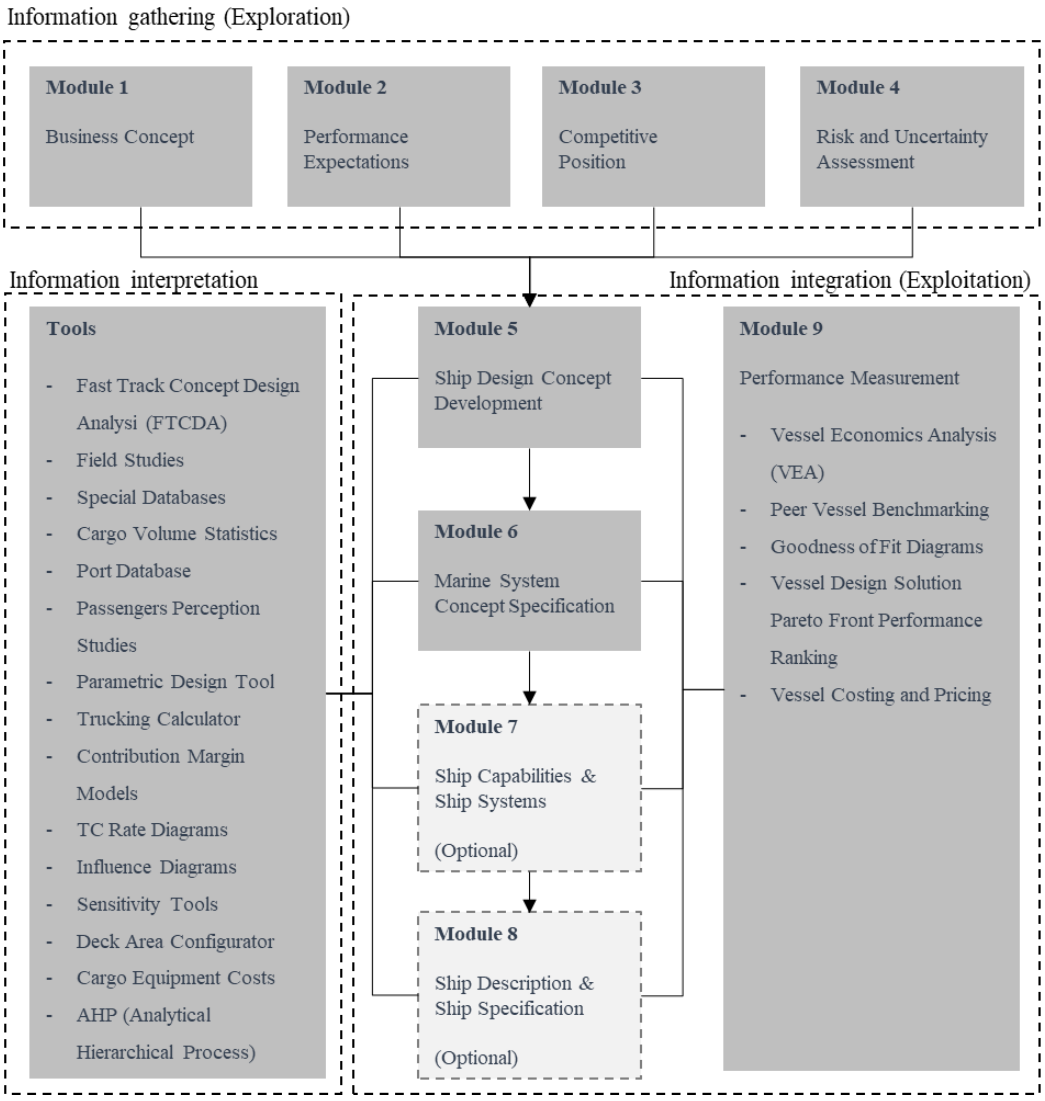


Figure 1. Accelerated Business Development (ABD) modules (Garcia 2020).

The nine modules conforming the Ulstein ABD are developed in a way that forces the users to think about all the aspects of the business concept which influence the vessel design and to explore areas that otherwise wouldn't be considered (Brett, Boulougouris, et al. 2006). Its structure and the multi-disciplinarily character of the participants spur the exchange of information among them, facilitating learning and better decision-making (Surowiecki, 2005). A more detailed description of the activities taking place in the different modules can be found at (Brett, Boulougouris, et al. 2006), or more recently in (Brett et al. 2018; Keane et al. 2017).

Modules 1 to 4 (see Figure 1) relate to the business concept development, to test the initial expectations of the customers or stakeholders being involved (shipowner, operator or charterer) and define vessel requirements and constraints. The modules are developed in a way that forces the users to think about all the aspects of the business concept, which influence the vessel design, and to explore areas that otherwise wouldn't be considered (Brett, Boulougouris, et al. 2006; Brett, Carneiro, et al. 2006). Modules 5 to 9 (see Figure 1) relate to the vessel concept design solution development and the definition of the vessel functional and capacity specification and performance ranking fulfilling the design requirements elicited in modules 1

to 4. The series of complementary analyses tools facilitate the necessary analyses to be carried out and the interpretation of the information gathered during the exploration phase and support the design decisions taken during the vessel concept development phase. In the paragraphs below, three of these tools are described in more detail, relating their role in the handling of uncertainty in the design process: (i) daily vessel economics, (ii) peer-vessel performance benchmarking, and (iii) goodness-of-fit metrics. Daily vessel economics refers to the cost and revenue associated with a vessel design solution on a per-day equivalent level, including the uncertainty factors associated with them. These equivalent time-charter rates can be a trade-off with the potential vessel daily revenue and extract a contribution margin or return on investment (ROI) benchmark. Peer-vessel benchmarking and performance ranking builds on the methodology presented by Ebrahimi *et al*. (2015) and supports the modern way of selecting a better vessel. The three measures support and contribute to the reduction of uncertainty towards the vessel owner: Will I make money with this vessel? How well does it satisfy my expectations? And can it be used by the ABD facilitator and ship designer to evaluate when a set of information and analysis is good enough and decide to finalize the exploration phase to initiate the detailing of the vessel and further verification during the exploitation phase. What will be the lifelong performance and fit of my vessel? Can my project handle a significant reduction in the charter rates? How do I prepare for future desirable and undesirable events? (Epoch-Era events preparation).

Vessel economics: vessel costs, relating to capital expenditure (CAPEX), operational expenditures (OPEX) and voyage expenditures (VOYEX) are calculated following the model proposed by Stopford (2009); although includes some modifications to be adapted to the peculiarities of the different vessel segments and ship types and the evolution of costs over time. The revenue of the different vessel design solutions is associated with the rates of their relating vessel segments or to the associated revenue-making capability of the vessel measured against peers. For a platform supply vessel, for example, rates are market-driven, while for a cruise vessel it comes defined by how many passengers it is carrying and how much are they willing to pay per night onboard. To count for the uncertainty relating to revenue making, in addition to the current dayrates, 10 years average, 3 worst years average and 3 best years average are included to reflect the dynamism of the market. A similar exercise can be carried out with fuel prices or crew costs, to see the influence of those in the overall business case.

Vessel performance benchmarking and performance ranking: Ulstein's vessel performance benchmarking is used to compare the technical, operational and commercial performance of vessels inside each specific vessel segment (Ebrahimi, Brett, Garcia, et al. 2015). The objective of such benchmarking methodology is to say factually, which is a better vessel design solution among peers (Ulstein and Brett 2015). Furthermore, it can be used as a reference of the designer and the vessel owner to decide what is good enough and stop the exploration phase and focus on further developing and verifying the concept design.

Goodness-of-fit (GoF) index: the GoF index evaluates a vessel design towards the fulfilment of its intended expectations set by relevant stakeholders (Ulstein and Brett 2015). It ranks the

different concept design alternatives under evaluation and gives, on a quantitative way, to ship designer and vessel owner an idea of what vessel concept is closer to their expectations.

One recent example of the application of ABD in ship design can be found in Garcia *et al.* (2018).

The Ulstein Solution

Ulstein has developed a structured and systemic (holistic) business development methodology to guide this decision-making process. Performed in collaboration with the customer and relevant experts, the Ulstein Accelerated Business Development Approach (ULSTEIN ABD) takes approximately one to two months from start to finish. As a concentrated effort, a week might be enough to concede a better vessel concept design solution, but a period of two weeks in between workshops is highly recommended. The ABD approach is typically separated into three sessions. The facilitator guides participants, following a pre-set structure that is flexible enough for individual adaptations.

Session 1 - Business-case analysis: 2 days

Session 2 - Concept development: 2 days

Session 3 - Business-case analysis reporting and concept design solution review: 1 day

Presentation of results and reporting.

A chronological extract of scientific publications on Ulstein's ABD:

Brett, Per Olaf, Evangelos Boulougouris, Richard Horgen, Dimitris Konovessis, Ivan Oestvik, George Mermiris, Apostolos Papanikolaou, and Dracos Vassalos. 2006. "A Methodology for Logistics-Based Ship Design." in *International Marine Design Conference (IMDC)*. Ann Arbor, Michigan, USA.

Brett, Per Olaf, Goncalo Carneiro, Richard Horgen, Dimitris Konovessis, Ivan Oestvik, and Jan Tellkamp. 2006. "LOGBASED: Logistics-Based Ship Design." in *International Marine Design Conference (IMDC)*. Ann Arbor, Michigan, USA.

Ulstein, Tore and Per Olaf Brett. 2009. "Seen Whats Is Next in Design Solutions: Developing the Capability to Develop a Commercial Growth Engine in Marine Design." in *International Marine Design Conference (IMDC)*. Trondheim, Norway.

Ulstein, Tore and Per Olaf Brett. 2012. "Critical Systems Thinking in Ship Design Approaches." in *International Marine Design Conference (IMDC)*. Glasgow, United Kingdom.

Ebrahimi, Ali, Per Olaf Brett, Jose Jorge Garcia, Henrique M. Gaspar, and Øyvind Gjerde Kamsvåg. 2015. "Better Decision Making to Improve Robustness of OCV Designs." in *International Marine Design Conference (IMDC)*. Vol. 3. Tokyo, Japan.

Ulstein, Tore and Per Olaf Brett. 2015. "What Is a Better Ship? – It All Depends …." in *International Marine Design Conference (IMDC)*. Tokyo, Japan.

Ebrahimi, Ali, Per Olaf Brett, Henrique M. Gaspar, Jose Jorge Garcia, and Øyvind Gjerde Kamsvåg. 2015. “Parametric OSV Design Studies – Precision and Quality Assurance via Updated Statistics.” in *International Marine Design Conference (IMDC)*. Tokyo, Japan.

Garcia, Jose Jorge, Sigurd Solheim Pettersen, Carl Fredrik Rehn, and Ali Ebrahimi. 2016. “Handling Commercial, Operational and Technical Uncertainty in Early Stage Offshore Ship Design.” in *Conference on System of Systems Engineering (SOSE)*. Kongsberg, Norway.

Keane, André, Per Olaf Brett, Ali Ebrahimi, Henrique M. Gaspar, and Jose Jorge Garcia. 2017. “Preparing for a Digital Future - Experiences and Implications from a Maritime Domain Perspective.” in *International Conference on Computer Applications and Information Technology in the Maritime Industries (COMPIT)*. Cardiff, United Kingdom.

Brett, Per Olaf, Henrique M. Gaspar, Ali Ebrahimi, and Jose Jorge Garcia. 2018. “Disruptive Market Conditions Require New Direction for Vessel Design Practices and Tools Application.” in *International Marine Design Conference (IMDC)*. Helsinki, Finland.

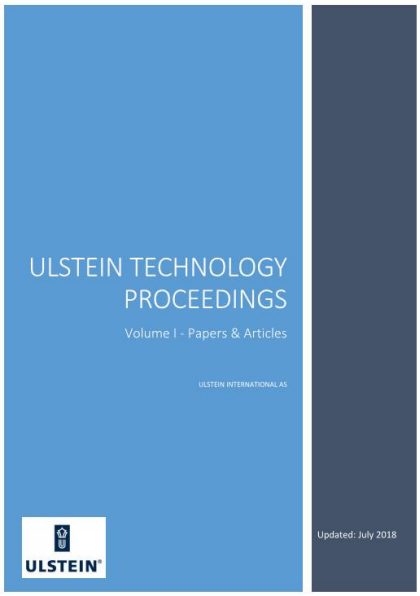
Ebrahimi, Ali, Per Olaf Brett, and Jose Jorge Garcia. 2018. “Fast-Track Vessel Concept Design Analysis (FTCDA).” in *International Conference on Computer Applications and Information Technology in the Maritime Industries (COMPIT)*. Pavone, Italy.

Garcia, Jose Jorge, Per Olaf Brett, Ali Ebrahimi, and André Keane. 2018. “Quantifying the Effects of Uncertainty in Vessel Design Performance - A Case Study on Factory Stern Trawlers.” in *International Marine Design Conference (IMDC)*. Helsinki, Finland.

Pettersen, Sigurd Solheim, Carl Fredrik Rehn, Jose Jorge Garcia, Stein Ove Erikstad, Per Olaf Brett, Bjørn Egil Asbjørnslett, Adam M. Ross, and Donna H. Rhodes. 2018. “Ill-Structured Commercial Ship Design Problems: The Responsive System Comparison Method on an Offshore Vessel Case.” *Journal of Ship Production and Design* 34(1):72–83.

Garcia, Jose Jorge. 2020. “*Effectiveness in Decision-Making in Ship Design under Uncertainty*.” Norwegian University of Science and Technology (NTNU).

For further reading please contact us. More information is available in *Ulstein Technology Proceedings*, that can be made available upon request.



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