

# SEFS Concept Selection

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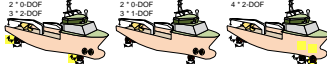
## Abstract

Concept selection is useful at many levels, from the customer application to the technology concept for specific functions. The Pugh matrix is a lightweight decision matrix facilitating early phase concept selections. When the design is crystallizing out, then trade-off analysis provides a more specific insight in the relation between specification and design parameters.

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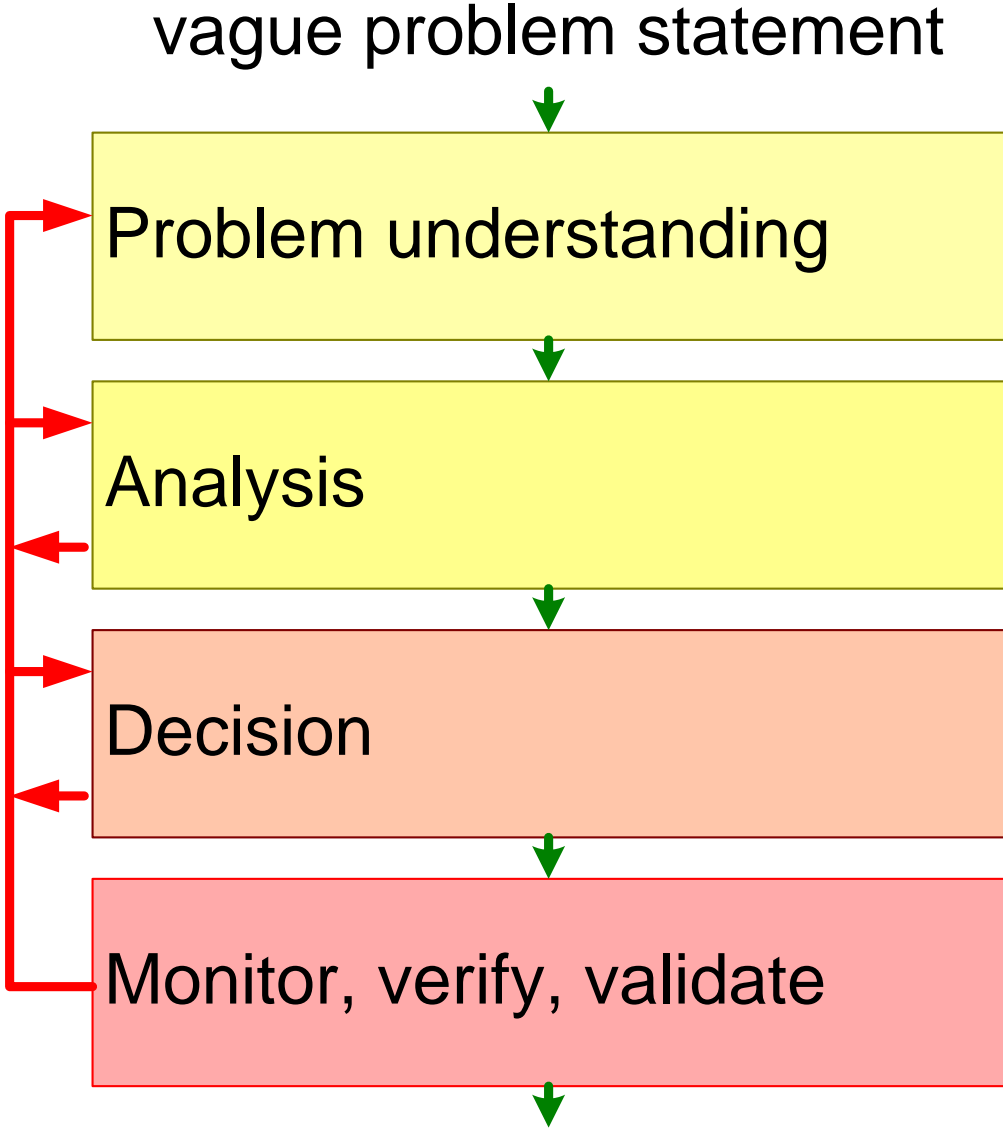
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|                    |   |   |   |
|--------------------|---|---|---|
| Manoeuvrability    | 4 | 4 | 5 |
| Energy consumption | 5 | 3 | 5 |
| Development Cost   | 3 | 4 | 2 |
| Maturity (risk)    | 3 | 4 | 1 |
| Purchasing Cost    | 3 | 4 | 3 |
| Maintenance Cost   | 2 | 4 | 2 |

# Exploration and Analysis Flow of Concepts



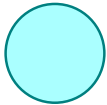
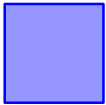
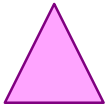






# Pugh Matrix: a Light-Weight Decision Matrix

Define at least 3 concepts

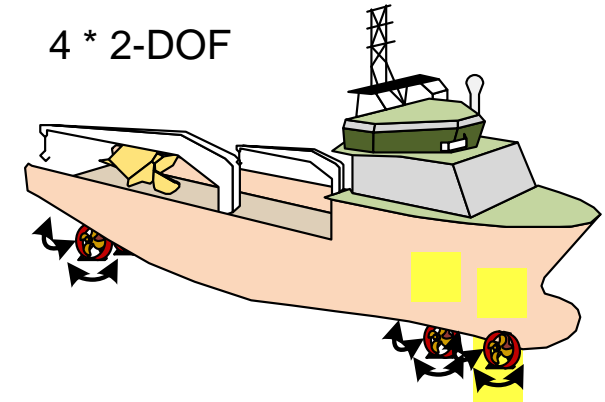
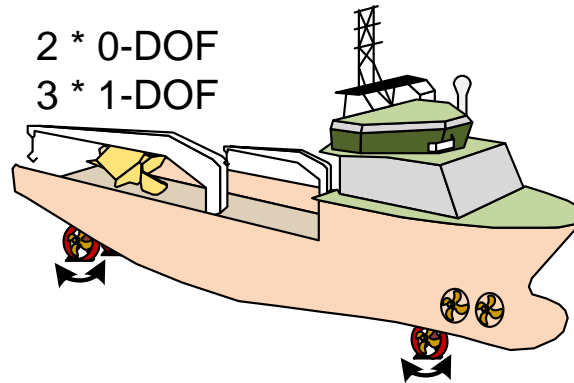
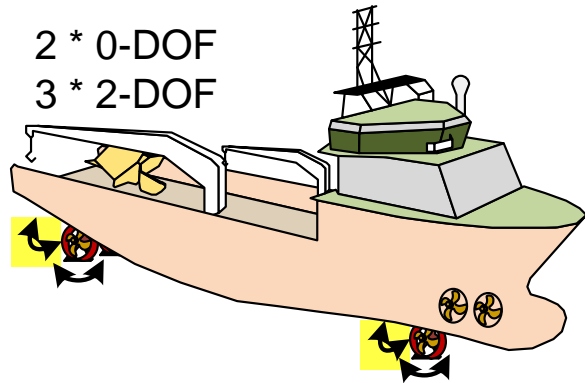
Define 7 to 10 criteria for selection

Score the concepts against the criteria, for example using a scale from 1 to 5: 1 = very poor, 5 = very good

Recommend a concept with a rationale

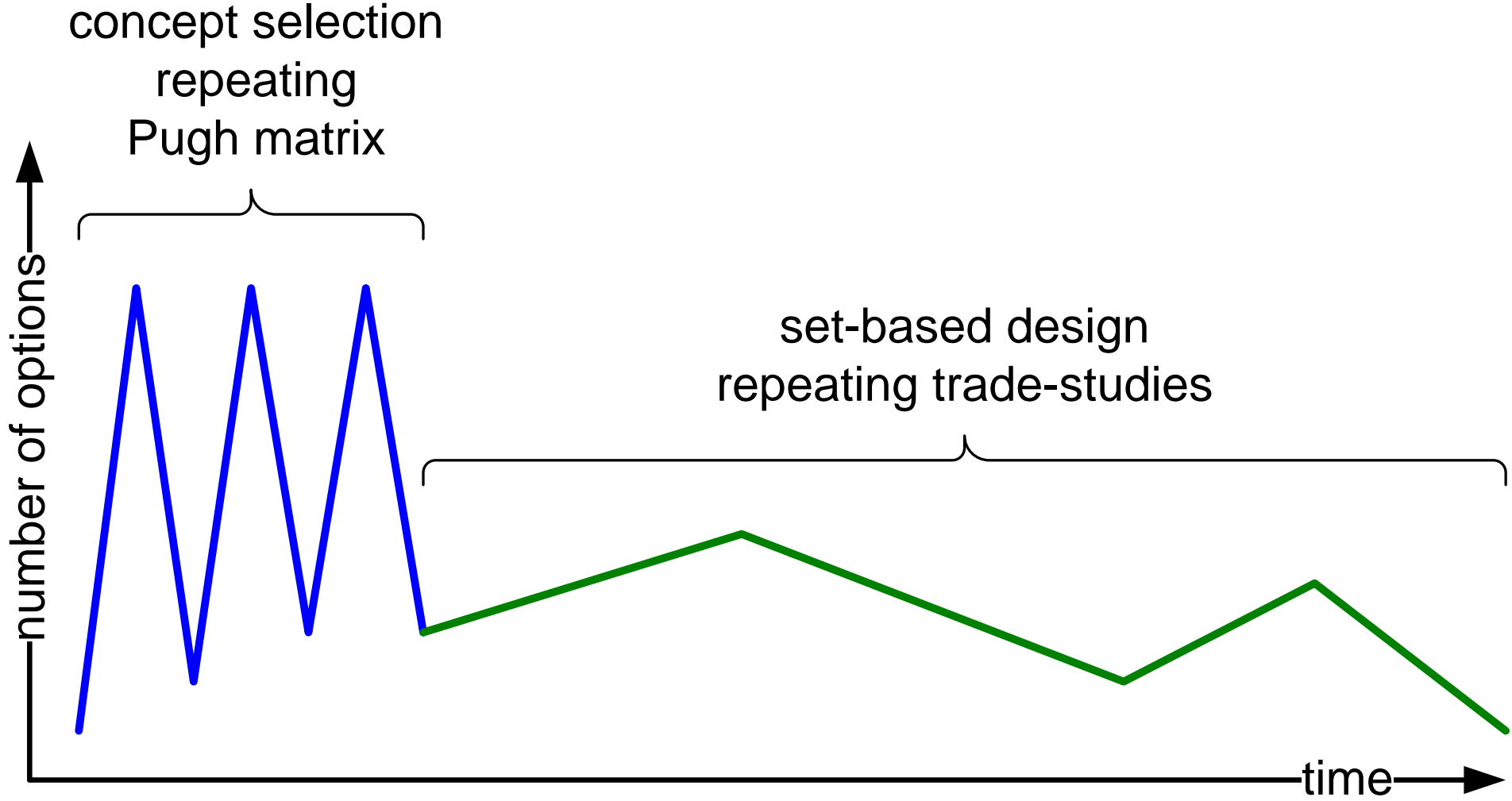
|             | concept 1<br> | concept 2<br> | concept 3<br> |
|-------------|--|--|--|
| criterion 1 |               |               |               |
|             |  |  |  |
| criterion n |             |             |             |
|             |  |  | recommended,<br>because ...  |

# Example of Pugh Matrix



|                    |   |   |   |
|--------------------|---|---|---|
| Manoeuvrability    | 4 | 4 | 5 |
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# Repeated Divergence and Convergence



# Set-based Design

