

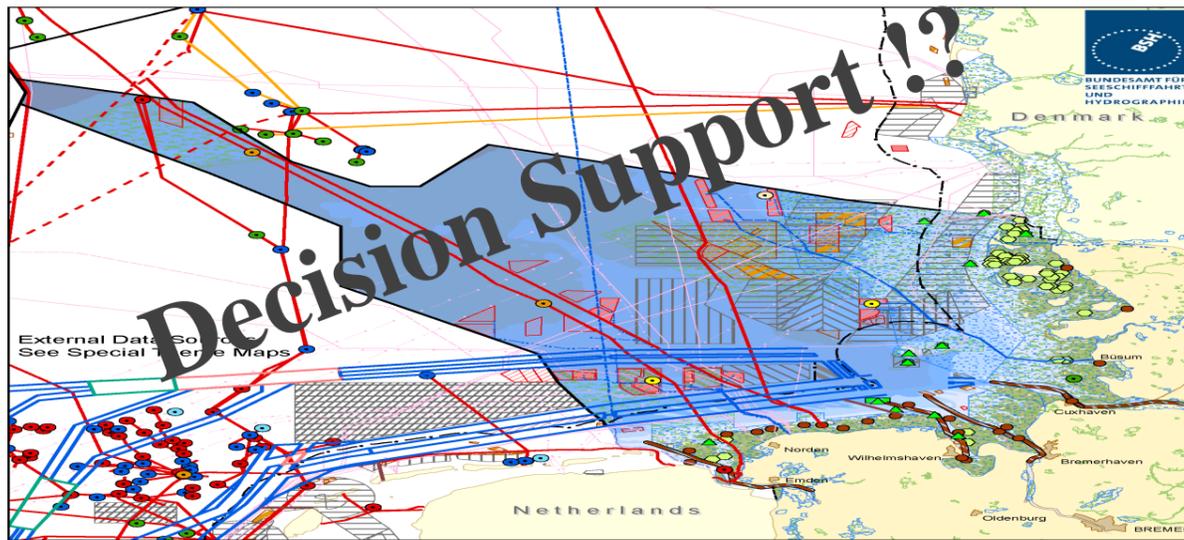
Managing Offshore Wind Farm Planning: Offshore Decision Support Systems

Thomas Pahlke¹, Dr. Hans-Peter Wald¹, Dr. Dietmar Kraft², Susanne Adam², Germany
¹Overspeed GmbH & Co. KG,
²University of Oldenburg, Institute for Chemistry and Biology of the Marine Environment



Study on Potentials of the Application of Software Decision Support Systems

- Embedded In the framework of the EU-Project POWER
- Questionnaire and report on existing SDS-Systems and Classical Software Tools
- Review of Classical Software Tools as basis for a SDS-System
- Identification of gaps and analysis of demands of the offshore wind energy sector



Existing Decision Support Systems Related to Offshore Wind Energy

Name	Company	Area	Type
OWECOP	ECN, The Netherlands	Project development	Integrated
O&M DSS	ECN, The Netherlands	Operation, Maintenance	Integrated
OWFLO	Uni. of Massachusetts, USA	Project development	Integrated
ANEMOS	ICBM, Germany	Education (Proj. dev. game)	Integrated
Ventum	TU Delft, The Netherlands	Education (Proj. dev. game)	Integrated
EeFarm	ECN, The Netherlands	Grid Integration, Costs	Specific
Maintenance Manager	ECN, The Netherlands	Operation, Maintenance	Specific
GIS – cable route	ICBM, Germany	Project dev., Cable Route	Specific, discontinued

Gaps and Demands

- Information deficit in which way SDS-Systems can support decisions
- The need for more comprehensive SDS-Systems seems to be high but specifications are vague
- SDS-Systems should base on "standard" software tools and have simple comprehensible structures
- Financial calculations are done mostly with MS-Excel (precarious)

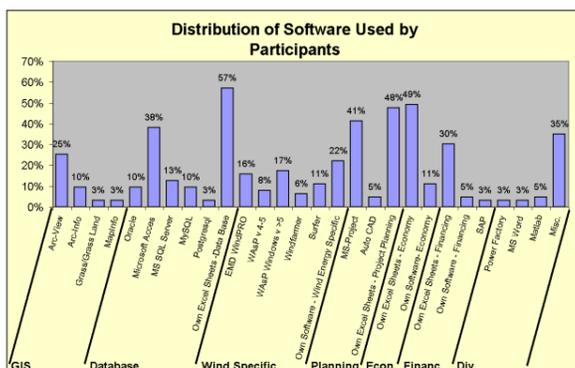


Figure 5: Currently used offshore tools in the different categories with relation to offshore wind energy planning

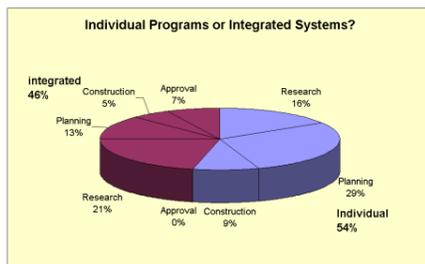


Figure 2: The need for a collection of individual programs or an integrated SDS-System is nearly balanced - but only in total

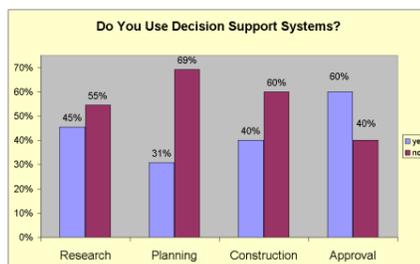


Figure 3: The current use of decision support systems seems to be high, but is mainly dominated by the use of Geographical Information Systems (GIS)

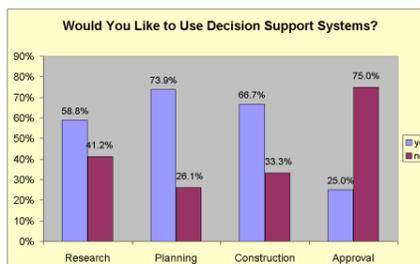


Figure 4: The potential to use Decision Support Systems by user groups seems to be high, except category "Approval"

Results of the Questionnaire

- Main needs of SDS-Systems are currently seen in the area of project development and planning
- High priorities for nearly all fields including financing and ecological evaluation (Fig.1)

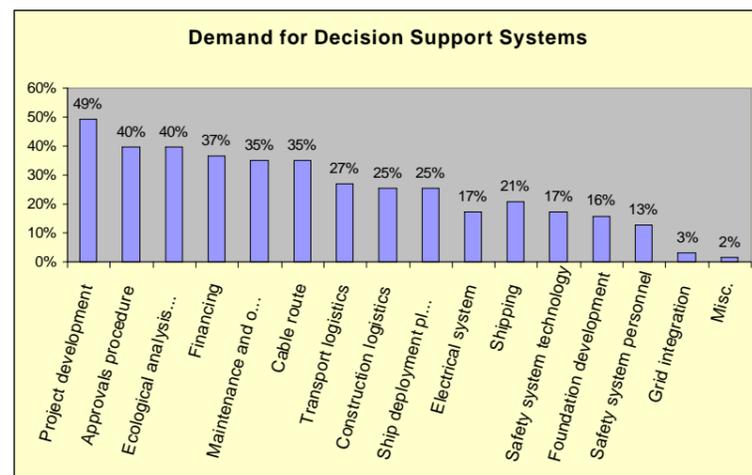


Figure 1: The demand of Software Decision Support Systems. Results of the Questionnaire based on 63 answers from 350 addressed companies and institutions. Multiple choices were possible.

Conclusion

- GIS-Systems as basic SDS-Systems are a must in offshore planning
- The needs for detailed SDS-Systems in different categories seems to be high
- Separate standard tools should be extended to interface to/as SDS-Systems
- The extension of existing GIS-Systems with external tools seems to be an appropriate way
- Short Term Perspective for SDS-Systems:
 - * Wind Farm Development
- Long Term Perspective for:
 - * Wind Farm Operation

