

**Personal data**

Date of birth: October 10, 1964
Nationality: Norwegian
Present position: Professor, University of Oslo,
Chief Research Scientist, Simula Research Laboratory
Home page: www.simula.no/people/magnej

Education

1994 Ph.D. in Software Engineering, University of Oslo.
1988 Master of Science in Economy and Computer science, Universität Karlsruhe (TH).

Work experience

2001 – present Chief Research Scientist at Simula Research Laboratory
2002 – present Professor, University of Oslo (80% leave)
2009 – present Guest professor, Kathmandu University
1999 – 2002 Assoc. Professor, University of Oslo
1998 – 1999 Head of the Software Process Improvement Department, Storebrand IT
1997 – 1998 Head of the Software Process Improvement Department,
Telenor Telecom Solutions
1995 – 1997 Senior Adviser, IT strategy, Telenor ONP
1989 – 1995 Programmer, scientific researcher, Telenor Research and Development

Fields of research:

- Management of software projects
- Software development methods
- Evidence-based software engineering
- Judgment and decision making in software development
- Empirical methods for software engineering

Publication record, research impact, funding, collaborations, other activities:

- h-index (Google Scholar): 42. Number of citations (Google Scholar): >6500.
- Ranked as the “top scholar” (most productive researcher) in system and software engineering for the periods 2001-2005, 2002-2006, 2003-2007 and 2004-2008. The rankings, published in Journal of Systems and Software, is based on number of publications published in the top system and software engineering journal and includes about 4000 researchers.
- Published 70 journal papers, 4 sections in edited books, 66 refereed conference papers, 20 keynote talks, and 150 invited talks in software engineering, psychology, forecasting and project management.
- Transfer of research results to software professionals by writing a monthly column in Computerworld (Norway). Since 2004 about 100 articles have been published.
- Founder of “evidence-based software engineering”, together with prof. Barbara Kitchenham and dr. Tore Dybå.
- Received in 2014 the ACM Sigsoft award for most influential paper last ten years for the initial paper on evidence-based software engineering.
- Supervision of nine PhD-students to completion (six in software engineering, two in psychology and one in education).

- Started/supported, with former PhD-students, two consultancy companies based on evidence-based software engineering principles.
- Member of the editorial board of Journal of Systems and Software, Evidence-based Information Systems and, previously, also in Software Quality Journal.
- Assessed by Computerworld Norway to be one of the fifty most influential professionals within ICT in Norway in 2012, 2013 and 2014.
- Member of the Norwegian Digitization Council (digitaliseringsrådet).
- Leader of a national industry-research collaboration network (the HIT-network) with regular information transfer, research studies, seminars and experience sharing with software industry participants.

Selected research results the last ten years:

- **Software project governance:** In several studies I examine how the clients' strategies of selecting software development companies affect the likelihood of project success. Especially of interest are the results on how much selecting a bidder with low price negatively affects the likelihood of success, even when the selected company is among those with high competence. Also of great interest to the software industry is the demonstration of how much software companies with seemingly similar skill may differ in productivity and quality. Based on the studies, I propose an improved method for the selection of software providers. The results have been published in academic journal papers and presented at industry arenas (seminars, conferences, newspaper articles). A new selection process – "trialsourcing" – has been introduced and has been successfully used by several clients.
- **Results in judgment-based effort estimation:** I wrote – with my PhD-student - the currently most comprehensive knowledge summary on judgment-based effort estimation. The review is published in Psychological Bulletin (ISI Impact factor of 12). One of my recent studies gave that a selection bias, i.e., the tendency towards selecting among the most over-optimistic bidders, may explain much of the tendency towards cost overruns reported in software project surveys. A study (invited paper to International Journal of Forecasting) gave that judgment-based effort estimates are typically more accurate than model-based ones in the domain of software development, which is a surprising result given that the opposite is the case in most other domains. The most important results of the review are related the insight into *when* we can expect formal estimation models to produce more accurate estimates than expert judgment and when not.
- **Improved research design in empirical software engineering:** In two studies I show how and why software engineering studies documenting economy-of-scale and increased cost overrun with increased project size cannot be trusted. In a third study I show the need for improvement in the design of software engineering experiment, which most likely include a lot of incorrect results due to low statistical power, high degree of publication bias and questionable use of statistical analyses. In a more recent paper (accepted for publication, not yet published) I empirically evaluate the result validity of result in empirical software engineering. These results have been presented (keynotes, invited talks) on several occasions and started to affect empirical practices. I have published several papers where I disclose myths and misinterpretation in software engineering. In particular much cited is the paper where I show that the main source documenting the "software crisis", i.e., the Standish Group's CHAOS report, is severely flawed.
- **Improved effort estimation of software projects:** A (not yet published) review by researchers at Brunel University, they find that I am involved in about 10% of all journal papers on software development effort estimation. In particular of strong impact are the studies where I document how easily software project cost and effort estimates are misled by irrelevant factors. One example is the finding on how estimation is misled by anchoring and priming effects. My results on estimation biases are regularly presented to the software industry and, as a result, there

seems to be an increasing awareness among software companies about these effects. One of the studies resulted in a new method for judgment-based estimation, based on contrasting ideal and most likely use of effort to complete a task.

- **Improved methods for assessment of uncertainty in use of effort in software projects:** I have documented a high level of over-confidence in the accuracy of effort estimates. Several new uncertainty assessment methods have been suggested and evaluated in real-life contexts, some of them with documented good effect on judgment realism and implemented in software companies. In a study on risk assessment, I found that there were situations where more work on risk assessment led to *higher* degree of over-confidence. I explain this surprising effect and suggest way to avoid this potentially harmful side effect of extensive risk analysis.

Selected journal publications the last ten years:

1. M. Jørgensen, T. Dybå, K. Liestøl, and D. Sjøberg. Incorrect Results in Software Engineering Experiments: How to Improve Research Practices, Accepted for publication in Journal of Systems and Software, 2015.
2. M. Jørgensen. Better Selection of Software Providers Through Trialsourcing, Accepted for publication in IEEE Software, 2014.
3. M. Jørgensen. Failure Factors of Software Projects at a Global Outsourcing Marketplace, Journal of Systems and Software, 92, 157-169, 2014.
4. M. Jørgensen. Relative Estimation of Software Development Effort: It Matters With What and How You Compare , IEEE Software(March): 74-79, 2013.
5. M. Jørgensen. The Influence of Selection Bias on Effort Overruns in Software Development Projects, Information and Software Technology 55(9): 1640-1650, 2013.
6. T. Halkjelsvik and M. Jørgensen. From origami to software development: A review of studies on judgment-based predictions of performance time, Psychological Bulletin, 138(2): 238-271, 2012.
7. M. Jørgensen and S. Grimstad. Software Development Estimation Biases: The Role of Interdependence, IEEE Transactions on Software Engineering, 38(3): 677-693, 2012.
8. M. Jørgensen and B. Kitchenham. Interpretation problems related to the use of regression models to decide on economy of scale in software development, Journal of Systems and Software, 85(11): 2494-2503, 2012.
9. T. Halkjelsvik, M. Jørgensen, and K. H. Teigen. To Read Two Pages, I Need 5 Minutes, but Give Me 5 Minutes and I Will Read Four: How to Change Productivity Estimates by Inverting the Question, Applied Cognitive Psychology, 25(2): 314-323, 2011.
10. M. Jørgensen. Contrasting Ideal and Realistic Conditions as a Means to Improve Judgment-based Software Development Effort Estimation, Information and Software Technology, 53(12): 1382-1390, 2011.
11. M. Jørgensen and S. Grimstad. The Impact of Irrelevant and Misleading Information on Software Development Effort Estimates: A Randomized Controlled Field Experiment, IEEE Transactions on Software Engineering, 37(5): 695-707, 2011.
12. M. Jørgensen. Selection of Effort Estimation Strategies, Journal of Systems and Software, 83(6): 1039-1050, 2010.
13. M. Jørgensen. Identification of More Risks Can Lead to Increased Over-Optimism of and Over-Confidence in Software Development Effort Estimates, Information and Software Technology, 52(5): 506-516, 2010.
14. M. Jørgensen and T. Halkjelsvik. The Effects of Request Formats on Judgment-based Effort Estimation, Journal of Systems and Software, 83(1):29-36, 2010.
15. M. Jørgensen. How to Avoid Selecting Providers with Bids Based on Over-Optimistic Cost Estimates, IEEE Software (May/June), 26(3): 79-84, 2009.
16. M. Jørgensen and T. Gruschke. The Impact of Lessons-Learned Sessions on Effort Estimation and Uncertainty Assessments, IEEE Transactions of Software Engineering, 35(3): 368-383, 2009.

17. T. M. Gruschke and M. Jørgensen. The role of outcome feedback in improving the uncertainty assessment of software development effort estimates, *ACM Transactions on Software Engineering and Methodology*, 17(4): 20-35, 2008.
18. J. E. Hannay and M. Jørgensen. The Role of Artificial Design Elements in Software Engineering Experiments, *Transactions on Software Engineering*, 34(2): 242--259, 2008.
19. M. Jørgensen and S. Grimstad. Avoiding Irrelevant and Misleading Information When Estimating Development Effort, *IEEE Software*(May/June): 78-83, 2008.
20. S. Grimstad and M. Jørgensen. Inconsistency in Expert Judgment-based Estimates of Software Development Effort , *Journal of Systems and Software*, 80(11): 1770--1777, 2007.
21. M. Jørgensen. Estimation of Software Development Work Effort: Evidence on Expert Judgment and Formal Models, *International Journal of Forecasting*, 23(3): 449-462, 2007.
22. M. Jørgensen and M. Shepperd. A Systematic Review of Software Development Cost Estimation Studies, *IEEE Transactions on Software Engineering*, 33(1): 33-53, 2007.
23. M. Jørgensen, B. Faugli, and T. M. Gruschke. Characteristics of Software Engineers with Optimistic Predictions, *Journal of Systems and Software*, 80(9): 1472-1482, 2007.
24. S. Grimstad, M. Jørgensen, and K. J. Moløkken-Østvold. Software Effort Estimation Terminology: The Tower of Babel, *Journal of Information and Software Technology*, 48(4): 302-310, 2006.
25. M. Jørgensen. The Effects of the Format of Software Project Bidding Processes, *International Journal of Project Management*, 24(6): 522-528 , 2006.
26. M. Jørgensen and K. J. Moløkken-Østvold. How Large Are Software Cost Overruns? Critical Comments on the Standish Group's CHAOS Reports, *Information and Software Technology*, 48(4): 297-301, 2006.
27. T. Dybå, B. Kitchenham, and M. Jørgensen. Evidence-based Software Engineering for Practitioners, *IEEE Software*, 22(1): 58-65, 2005.
28. M. Jørgensen. Practical guidelines for better support of expert judgement-based software effort estimation, *IEEE Software*, 22(3): 57--63, 2005.
29. M. Jørgensen. Evidence-Based Guidelines for Assessment of Software Development Cost Uncertainty, *IEEE Transactions on Software Engineering*, 31(11): 942-954, 2005.
30. A. Karahasanovic, B. C. D. Anda, E. Arisholm, S. E. Hove, M. Jørgensen, D. I. K. Sjøberg, and R. Welland. Collecting Feedback during Software Engineering Experiments, *Empirical Software Engineering*, 10(2): 113-147, 2005.
31. K. J. Moløkken-Østvold and M. Jørgensen. Expert Estimation of the Effort of Web-Development Projects: Are Software Professionals in Technical Roles More Optimistic Than Those in Non-Technical Roles?, *Journal of Empirical Software Engineering*, 10(1): 7-30, 2005.
32. K. J. Moløkken-Østvold and M. Jørgensen. A Comparison of Software Project Overruns – Flexible vs. Sequential Development Models, *IEEE Transactions on Software Engineering*, 31(9): 754-766, 2005.
33. K. H. Teigen and M. Jørgensen. When 90% confidence intervals are only 50% certain: On the credibility of credible intervals, *Applied Cognitive Psychology*, 19(4): 455-475, 2005.
34. M. Jørgensen. Top-Down and Bottom-Up Expert Estimation of Software Development Effort, *Journal of Information and Software Technology*, 46(1): 3-16, 2004.
35. M. Jørgensen. Regression Models of Software Development Effort Estimation Accuracy and Bias, *Journal of Empirical Software Engineering*, 9(4): 297-314, 2004.
36. M. Jørgensen. A Review of Studies on Expert Estimation of Software Development Effort, *Journal of Systems and Software*, 70(1-2): 37-60, 2004.
37. M. Jørgensen. Increasing Realism in Effort Estimation Uncertainty Assessments: It Matters How You Ask, *IEEE Transactions on Software Engineering*, 30(4): 209-217, 2004.
38. M. Jørgensen and G. J. Carelius. An Empirical Study of Software Project Bidding, *IEEE Transactions on Software Engineering*, 30(12): 953-969, 2004.
39. M. Jørgensen and K. J. Moløkken-Østvold. Reasons for Software Effort Estimation Error: Impact of Respondents Role, Information Collection Approach, and Data Analysis method, *IEEE Transactions of Software Engineering*, 30(12): 993-1007, 2004.

40. M. Jørgensen and D. I. K. Sjøberg. The impact of customer expectation on software development effort estimates, *International Journal of Project Management*, 22(4): 317-325, 2004.
41. M. Jørgensen, K. H. Teigen, and K. J. Moløkken-Østvold. Better sure than safe? Overconfidence in judgment based software development effort prediction intervals, *Journal of Systems and Software*, 70(1-2): 79-93, 2004.
42. K. J. Moløkken-Østvold and M. Jørgensen. Group Processes in Software Effort Estimation, *Empirical Software Engineering*, 9(4): 315-334, 2004.