

**Erasmus University Rotterdam, the Netherlands**  
**CSC PhD 2015 Project Description**

<b>School/Department:</b>	Econometric Institute, Erasmus School of Economics
<b>Project Title:</b>	Preference learning for public policy decision support
<b>Abstract:</b>	<p>The current main mantra of public policy making is to assess and choose policies to implement based on quantitative real-world evidence. However, even when there exists a sufficient amount of data on the policy impacts, a choice between alternative policies still needs to be made. Often a quantitative impact assessment is performed to quantify the relative trade-offs between the policy options, and afterwards a choice is made and justified based on these trade-offs. The choice is often not trivial and multi-criteria methods have been developed for supporting such decisions.</p> <p>This research project will develop computationally intensive multi-criteria tools for analyzing and supporting public policy decision making. We will develop new inference procedures for describing trade-offs that support a given policy. In many areas of public governance there exists data only on a limited set of past choices, and thus the inference procedures have to consider how to choose the level of generality of the underlying preference model. We will also assess the applicability of non-structured data (e.g. text crawled from social media) for assessing the current public opinion on policy-relevant issues. Finally, we will implement decision support tools that allow incorporating both the quantitative evidence and the possibly vague public preferences.</p>
<b>Requirements of candidate:</b>	<p>Background:</p> <p>The candidate should have background in computational sciences (e.g. computer science, econometrics, statistics, or operations research) and solid skills in programming and mathematics. Basic knowledge about standard economical models of choice is considered a plus, but not absolutely necessary, as long as the candidate is interested to work in the field of preference learning.</p> <p>Master degree: Yes</p> <p>The PhD candidate will be attached to the Erasmus Research Institute of Management (ERIM), and must meet the ERIM qualification requirements <b>prior to acceptance</b>:</p> <ol style="list-style-type: none"> <li>1. IELTS &gt; 7.5 or TOEFL &gt; 100</li> </ol>

	<p><b>2. GMAT or GRE top 15%</b></p> <p>In addition, the supervisor will interview the candidate prior to acceptance. For further information on the ERIM qualification requirements, see <a href="http://www.irim.eur.nl/doctoral-programme/phd-in-management/admissions/admission-requirements/">http://www.irim.eur.nl/doctoral-programme/phd-in-management/admissions/admission-requirements/</a></p>
<b>Supervisor information:</b>	<p>Supervisor and promotor: Prof. Dr. Rommert Dekker</p> <p>Daily supervisor: Dr Tommi Tervonen – <a href="mailto:tervonen@ese.eur.nl">tervonen@ese.eur.nl</a> – <a href="http://smaa.fi/tommi">http://smaa.fi/tommi</a></p> <p>Recent publications of the daily supervisor (past 2 years):</p> <ul style="list-style-type: none"> <li>[1] M. Kadzinski, T. Tervonen, and J. Figueira. Robust multi-criteria sorting with the outranking preference model and characteristic profiles. <i>Omega</i>, (to appear), 2014.</li> <li>[2] G. van Valkenhoef, T. Tervonen, and D. Postmus. Notes on 'hit-and-run enables efficient weight generation for simulation-based multiple criteria decision analysis'. <i>European Journal of Operational Research</i>, (to appear), 2014.</li> <li>[3] O. Cailloux, T. Tervonen, B. Verhaegen, and F. Picalausa. A data model for algorithmic multiple criteria decision analysis. <i>Annals of Operations Research</i>, 217(1):77-94, 2014. [ <a href="#">DOI</a> ]</li> <li>[4] R. Spliet and T. Tervonen. Preference inference with general additive value models and holistic pair-wise statements. <i>European Journal of Operational Research</i>, 232(3):607-612, 2014. [ <a href="#">DOI</a> ]</li> <li>[5] T. Tervonen. JSMAA: open source software for SMAA computations. <i>International Journal of Systems Science</i>, 45(1):69-81, 2014. [ <a href="#">DOI</a> ]</li> <li>[6] D. Postmus, T. Tervonen, G. van Valkenhoef, H. L. Hillege, and E. Buskens. A multi-criteria decision analysis perspective on the health economic evaluation of medical interventions. <i>European Journal of Health Economics</i>, (to appear), 2013. [ <a href="#">DOI</a> ]</li> <li>[7] M. Kadzinski and T. Tervonen. Robust multi-criteria ranking with additive value models and holistic pair-wise preference statements. <i>European Journal of Operational Research</i>, 228(1):169-180, 2013. [ <a href="#">DOI</a> ]</li> <li>[8] M. Kadzinski and T. Tervonen. Stochastic ordinal regression for multiple criteria sorting problems. <i>Decision Support Systems</i>, 55(1):55-66, 2013. [ <a href="#">DOI</a> ]</li> </ul>

	<p>[9] T. Tervonen, G. van Valkenhoef, N. Bastürk, and D. Postmus. Hit-and-run enables efficient weight generation for simulation-based multiple criteria decision analysis. <i>European Journal of Operational Research</i>, 224(3):552-559, 2013. [ <a href="#">DOI</a> ]</p> <p>[10] G. van Valkenhoef, T. Tervonen, T. Zwinkels, B. de Brock, and H. Hillege. ADDIS: a decision support system for evidence-based medicine. <i>Decision Support Systems</i>, 55(2):459-475, 2013. [ <a href="#">DOI</a> ]</p>
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