THE UNIVERSITY OF AUCKLAND
NEW ZEALAND

RESEARCH UNITS, CENTRES AND INSTITUTES

Annual Report Template

Please refer to the University of Auckland Policy on Research Units, Centres and Institutes for more information on reporting and accountability requirements (clause 2.5). A copy of this policy is available from the University Policy Register.

Section 1a - IDENTIFICATION INFORMATION:

Title of Unit, Centre or Institute:	Centre for Mathematical Social Sciences
Name of Director:	Mark Wilson (2014)
Name of Deputy Director:	Matthew Ryan

Section 1b – ENDORSEMENT OF REPORT:

Signatures:	*Please sign in appropriate space below*
Director (Required for all Units/Centres/Institutes)	
Head of Department (Required only for Department/School Units)	
Dean (Required for Faculty/University Centres/Institutes)	

Section 2 – ADVISORY BOARDS AND MEETING DATES:

Names of Oversight Advisory Board members (for Faculty and University Centres that have Oversight Boards)	N/A
Names of Expert Advisory Board members (for Faculty and University Centres that have Expert Advisory Boards)	N/A
Names of Management Committee Members (for University and Faculty Centres)	N/A
Dates of advisory board and management committee meetings that took place during the year	N/A

Section 3 – PARTICIPATING MEMBERS AND EMPLOYEES/STUDENTS:

Names and Departments of participating members	Mark Wilson (Computer Science), Matthew Ryan (Economics), Arkadii Slinko (Mathematics), Patrick Girard (Philosophy), John Hillas (Economics), Valery Pavlov (ISOM), Geoffrey Pritchard (Statistics), Fernando Beltran (ISOM), Jeremy Seligman (Philosophy). External: Simona Fabrizi (Massey-Albany, Economics), Jack Vowles (VUW, Political Science), Steffen Lippert (Otago, Economics).
List names, positions, and FTEs of all staff employed and postgraduate students involved in the Unit or Centre	PhD students: Nina Anchugina, Sergey Ozernikov, Shaun White, Addison Pan, Ali Hameed, Antonia Chen.

Section 4 – INTRODUCTION:

Provide here a brief introduction to the report (maximum of 300 words)	The CMSS was reviewed a few months ago and has decided to remain a departmental centre for 2014, while we try to expand our influence by maintaining our academic achievements while making greater connections nationally, outside the university sector. We also intend to focus on external funding applications. 2013 was another good year with a well received international workshop and high quality visitors. Co-supervision continued, and new collaborative research between centre members has started.

Section 5 – AIMS, GOALS AND FUTURE PLANS:

a. General Aims: Briefly describe the general aims (plans and objectives/goals) of the unit or centre. Identify how they address the University and Faculty Strategic Plan.	We are a group of researchers interested in applying mathematical and computational modelling to social sciences (particularly politics and economics), based at the University of Auckland. The central topic is mathematics of collective decisions made by a group of self-motivated agents. We aim to be a centre of expertise in this area, recognized as a leader in academic and nonacademic circles throughout Australasia. We plan to generate external income via grants and consulting. This relates closely to Objectives 9,10, 13 of the University Strategic Plan, and points 2,6,9,10 of the Faculty Strategic Plan.
b. Goals for Reporting Year: Describe the specific goals for the reporting year.	Increase profile locally, obtain more secure funding.
c. Plans for Upcoming Year: Outline the plans for the next year. Identify any resource implications.	Run international workshop Dec 2014, theme social networks, keynote speaker Matt Jackson (Stanford). Run regular seminar. Establish contacts with Electoral Commission. Look for consulting opportunities. Apply for substantial international grant. We have a list of more specific plans as a result of the Dec 2013 review (see below), which was communicated to HoD Maths previously. HoD Maths has helped us to secure more secure funding, a big improvement on previous years.

Section 6 –MAJOR ACHIEVEMENTS AND OTHER NOTABLE ACTIVITIES:

Faculty of Science Annual reporting for 2013 year

Report against the specific goals listed in 5b above	Our main events as in previous years were the regular CMSS seminar and the international workshop held in December. The latter was run with input from EPOC (Engineering Science) who ran a session on the theme of energy economics, and was coordinated with a workshop held at Massey-Albany by our external member Simona Fabrizi.
Summary of major developments and achievements. Identify how these activities contribute to the research capability of the department or faculty (beyond what would be achieved through the activities of the individual members). Please provide greater detail for anything noteworthy that may give useful publicity to the University	The workshop increased links with other centres as described above. Co-supervision of students both at UoA and jointly with Massey-Albany continued. New research projects were started, particularly one on diffusion in social networks by Wilson, Girard and Pavlov, which would not have occurred without CMSS facilitation.
Comment on any co-operative commercial activities, research with other University or Government laboratories or research groups	See above: EPOC.
Comment on any courses given or workshops and seminars held	Regular seminar met 15 times and had talks by locals and international visitors. The mean audience size continues to increase.

Section 7 - Reviews

Date of last review	Dec 2013 (reviewers P. Bardsley, M. Gahegan)
Review Recommendations List the	It is recommended that: • The CMSS continue in existence in some form. • Members of CMSS, along with their Advisory Board, urgently decide on a path forward and commit to it.

| recommendations of the review and give an update of progress on addressing the recommendations. | This might be as an informal research group, or as a Departmental or Faculty Centre. If a path of growth is chosen, then a Faculty Centre might be most appropriate in the longer term, given the interdisciplinary nature of the Centre. However the spread of disciplines across Faculties might make this awkward.
• A stable, annual funding base be negotiated, to be contributed by participating Departments. The amount required will obviously vary on the outcome of #2 above. As a bare minimum, to continue to offer their excellent summer school activities, an operating budget of $15k-20k needs to be secured annually, and ideally in advance. Given there are several departments involved, this amount does not seem onerous.
• Continued establishment and funding should be conditional on preparation of a satisfactory strategic plan, and the achievement of incremental steps towards an expansion of the scope and influence of the Centre. This would be evidenced by external funding and relationships, to contribute towards future growth.
• A strategic plan is urgently needed, to specifically address the increase the range of scholarly and policy related partners and stake holders, and to restructure the Advisory Board. We would suggest a three year horizon.
• The success and viability of the Centre be assessed not only in financial terms but also through scholarly impact (using metrics appropriate to the relevant disciplines) and through its contribution to public policy and public debate on policy issues on which it has expertise. |

Section 8 – FINANCIAL REPORT

State whether the Unit or Centre has its own Activity Centre/s and list the Activity Centre/s being used	No – all via Mathematics Department.
State sources of funding, for example, from research funds from outside bodies, from the Department or Faculty, or other	Ad hoc grants from Departments of Mathematics, Computer Science, Philosophy.

List any significant resource allocation decisions taken by the Oversight Board during this reporting year (if applicable)	N/A
Include a statement of financial performance (contact Faculty Accountant for assistance), or give a clear explanation of the reasons if there has been no financial activity	We received several ad hoc grants from departments of participating members. All these were spent on supporting our international workshop in Dec 2013 (travel support for visitors, catering). For 2014 we have a cost code in the Department of Mathematics, which will enable easier reporting.

Section 9 – RESEARCH OUTPUTS

Include a list of publications and other research outputs	Skowron, P. K., Faliszewski, P., & Slinko, A. M. (2013). Achieving fully proportional representation is easy in practice. AAMAS: 399-406. Skowron, P. K., Faliszewski, P., & Slinko, A. M. (2013). Fully Proportional Representation as Resource Allocation: Approximability Results. IJCAI. Obraztsova, S., Elkind, E., Faliszewski, P., & Slinko, A. M. (2013). On swap-distance geometry of voting rules. AAMAS. : 383-390. Edelman, P., Gvozdeva, T., & Slinko, A. M. (2013). Simplicial Complexes Obtained from Qualitative Probability Orders. SIAM Journal on Discrete Mathematics, 1820-1843. Betzler, N., Slinko, A. M., & Uhlmann, J. (2013). On the Computation of Fully Proportional Representation. Journal of Artificial Intelligence Research, 47, 475-519. Hameed, A., Gvozdeva, T., & Slinko, A. M. (2013). Weightedness and structural characterization of hierarchical simple games. Mathematical Social Sciences, 65, 181-189. Gvozdeva, T., Slinko, A., & Hemaspaandra, L. A. (2013). Three hierarchies of simple games parameterized by "resource" parameters. International Journal of Game Theory, 42, 1-17. Hameed, A., & Slinko, A. M. (2013). A Characterization of

Ideal Weighted Secret Sharing Schemes. CoRR, abs/1308.3763.

Skowron, P. K., Faliszewski, P., & Slinko, A. M. (2013). Achieving Fully Proportional Representation is Easy in Practice. CoRR, abs/1301.6400.

Chevyrev, I., Searles, D., & Slinko, A. M. (2013). On the Number of Facets of Polytopes Representing Comparative Probability Orders. Order, 30 (3), 749-761.

Seligman, J., Liu, F., & Girard, P. (2013). Facebook and the epistemic logic of friendship. In B. Schipper (Ed.), TARK 2013 - Proceedings of the 14. Conference on Theoretical Aspects of Rationality and Knowledge (pp. 10 pages). Retrieved from http://arxiv.org/abs/1310.6382

Girard, P., & White, S. (2013). Comments on Dietrich and List's "Where do preferences come from?. In J. van Benthem, & F. Liu (Eds.), Logic Across the University: Foundations and Applications. College Publications.

Girard, P., Seligman, J., & Liu, F. (2013). Response. In J. van Benthem, & F. Liu (Eds.), Logic Across the University: Foundations and Applications. College Publications.

Seligman, J., Liu, F., & Girard, P. (2013). Knowledge, friendship and social announcements. In J. van Benthem, & F. Liu (Eds.), Logic Across the University: Foundations and Applications : proceedings of the Tsinghua Logic Conference, Beijing, 2013. London, UK: College Publications.

Girard, P., & Moretti, L. (2013). Antirealism and the conditional fallacy: The semantic approach. Journal of Philosophical Logic. doi:10.1007/s10992-013-9288-0

G. Pritchard, R. Reyhani, and M. C. Wilson, ``Power measures derived from the sequential query process''.Mathematical Social Sciences 65 (2013), 174--180.

A. B. Philpott and G. Pritchard, ``An electricity procurement model with energy and peak charges'' in Stochastic Programming: Applications in Finance, Energy, Planning and Logistics (2013)(Gassmann, Ziemba eds.).

Robin Pemantle and Mark C. Wilson. Analytic Combinatorics. 378 + xiii pages. Cambridge University Press, New York 31 May 2013

Mark C. Wilson, _Review of Models of Conflict and Cooperation_

	by David Gillman and Rick Housman. SIGACT News **44**(1):34-35 Mar 2013

Please forward your report to your Head of Department or Faculty Office for endorsement (Section 1B above). Note: Annual Reports to be submitted to Research Committee must reach the Research Office by 28 February.