

Mission Statement

AMSI's mission is the radical improvement of mathematical sciences capacity and capability in the Australian community through:

The support of high quality mathematics education for all young Australians.

Improving the supply of mathematically well-prepared students entering tertiary education by direct involvement with schools.

The support of mathematical sciences research and its applications including cross-disciplinary areas and public and private sectors.

The enhancement of the undergraduate and postgraduate experience of students in the mathematical sciences and related disciplines.



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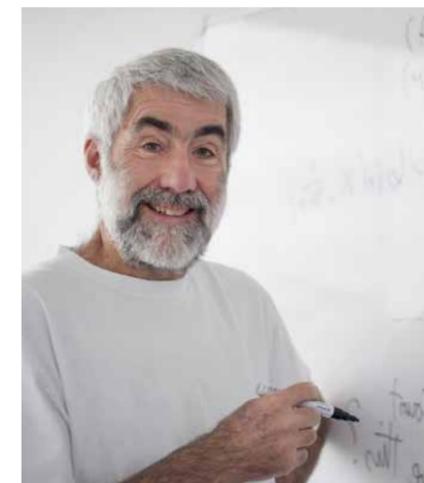
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Full Members



Associate Members



Government Agencies



Society Members



Summing up 2014

AMSI is the Australian Mathematical Sciences Institute—a national collaborative venture of Australia’s universities, professional societies and government agencies. Since its establishment in 2002, AMSI has become an important central voice for the mathematical sciences in Australia, providing an effective and efficient way of delivering mathematical and statistical capability to research, education and industry. AMSI conducts a wide range of activities including scientific workshops, distinguished visiting lectureships, short courses, professional development for school teachers and industry liaison. The following pages outline our activities for the calendar year 2014.

“Australia as a nation is facing some very significant challenges [...] the mathematical sciences are essential.”



Australia as a nation is facing some very significant challenges; as the minerals boom draws to a close we must increase our productivity or face the reality of a reduced standard of living. The mathematical sciences can play a major role in enhancing national productivity by addressing our country's challenges in areas as disparate as health care, the development of new industries, taming the data deluge and national security. In all of these areas the mathematical sciences are essential.

AMSI continues to take a national leadership role on behalf of its members to ensure the recognition of these issues and develop initiatives to build on this recognition.

The re-energising of the Industry Advisory Committee, under the leadership of board member Dr Mark Lawrence, has, at its core, the mission to outline these issues and ensure industry leaders address them.

Part of this endeavour must address the crisis in mathematics education that Australia is facing. The AMSI leadership, in particular Professor Geoff Prince and Janine McIntosh, have been exploring major opportunities to address these issues with government and industry.

AMSI's Higher Education program has seen spectacular growth in participation across all its programs, for example attendance at the summer

and winter schools increased by an average of 25 per cent in 2014. This growth was facilitated by the very welcome joint funding from the Commonwealth, but wouldn't have happened without Simi Henderson's outstanding leadership. The passion among scholars to learn more about new developments in the mathematical sciences is very encouraging.

Similarly, the growth of AMSI Intern — with its focus on placing postgraduate students into industry to tackle challenging business problems — has been a very positive development. AMSI's Cate Ballard has worked tirelessly on this project. Its early successes have now garnered significant financial and other support from a number of member institutions in New South Wales and Victoria.

The Chief Executive of Mitacs (the inspirational and proven Canadian model for AMSI Intern) Professor Arvind Gupta, has taken up the position of Vice Chancellor and President of the University of British Columbia. As a consequence, he has had to resign from the AMSI Board. Arvind made major contributions during his tenure and previously as a member of the AMSI Review Panel; we wish him every success in his new role.

In conclusion, I would like to record my appreciation of the input of the members of the AMSI Board, and on their behalf, gratitude to the leadership of our Director, Professor Geoff Prince, and the outstanding people who make up the AMSI team.

AMSI has now entered a phase in which it is recognised by government and industry as a leading provider of policy advice, services, programs and strategic initiatives. Our public profile has become established with the 2014 Discipline Profile documents receiving unprecedented media attention. Our three headline concerns: out-of-field teaching, dropping Year 12 participation in calculus-based mathematics and the low engagement of girls and women in the mathematical sciences, have all attracted national attention. This heightened interest has brought support for our programs and those of our sister organisations in the mathematical sciences. AMSI has excellent relations with both state and Commonwealth governments.

In 2014 we sought to develop new, sustainable income streams through AMSI Intern and the establishment of an AMSI philanthropic trust. Cate Ballard and I have been successful in creating relationship agreements with six Melbourne-based universities and two in Sydney which will see the appointment of six new staff starting in 2015. On the other hand, the philanthropic trust is taking longer to develop because of the extended legal and financial processes involved but Rod Birch has made considerable progress.

In addition to these new initiatives our Schools program, led by Janine McIntosh, has been building both its activities and its influence with a number of philanthropic trusts, governments and education authorities funding our work in schools. Very considerable business development has been put in place this year which we believe will have a transformative impact on AMSI's delivery of our mission in the near future.

2014 has been a year of achievement for our Research and Higher Education program. Simi Henderson has made innovative changes in the way we promote and deliver our research training events: the Summer and Winter Schools, BioInfoSummer and the Vacation Research Scholarships. The outcomes are remarkable increases in participation and a strong growth in the attendances by women. We have been able to report to the Commonwealth that we are well in front of the targets of our cooperative funding agreement.

Much of our 2014 success has relied on the excellent work of Mari Ericksen in building and delivering our media and communication capacity. Our ability to target our media releases, reports and marketing messages has been transformed by our adoption of the Salesforce customer relationship management platform. The quality of all our publications, web sites and social media content is very high and I want to thank Jo Wilson, Stephanie Pradier and Michael Shaw for their hard work and dedication to quality. Anne Nuguid deserves special mention for the project management of our new websites which have earned considerable external praise.

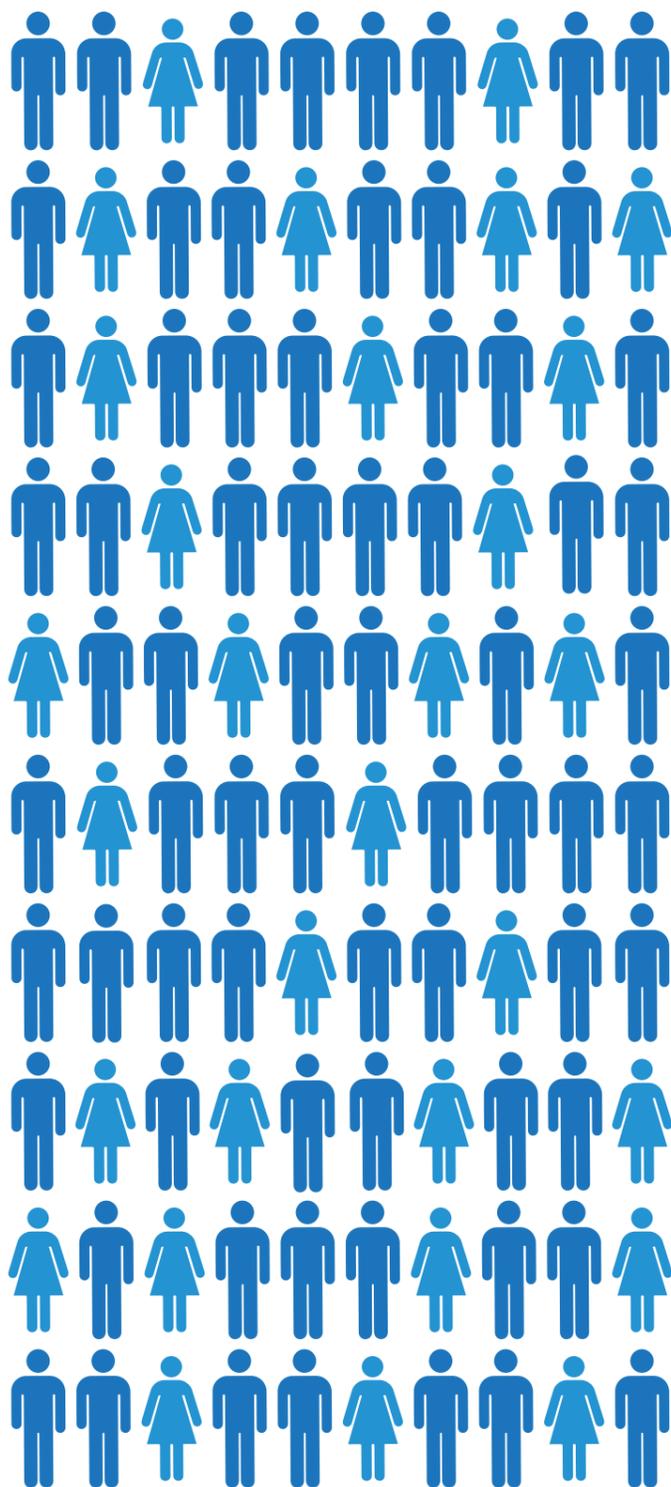
It is a pleasure to acknowledge the work of AMSI's committees and the AMSI Board. Their activities significantly add to the quality of our programs and their delivery and deepens our engagement with our members and stakeholders. On behalf of all the AMSI staff and members I thank the chairs, Ron Sandland, Bob Anderssen, Jon Borwein, Mark Gould and Gary Froyland, and Adelle Howse and Mark Lawrence.

2014 has been an excellent year for the Australian Mathematical Sciences Institute and I commend this report to you.



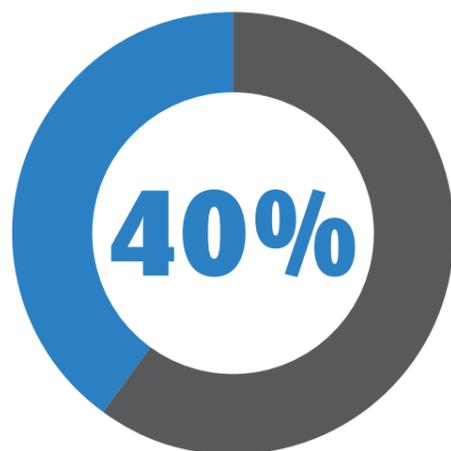
From the Director
Prof. Geoff Prince FAustMS

“Very considerable business development has been put in place this year which we believe will have a transformative impact on AMSI's delivery of our mission in the near future.”



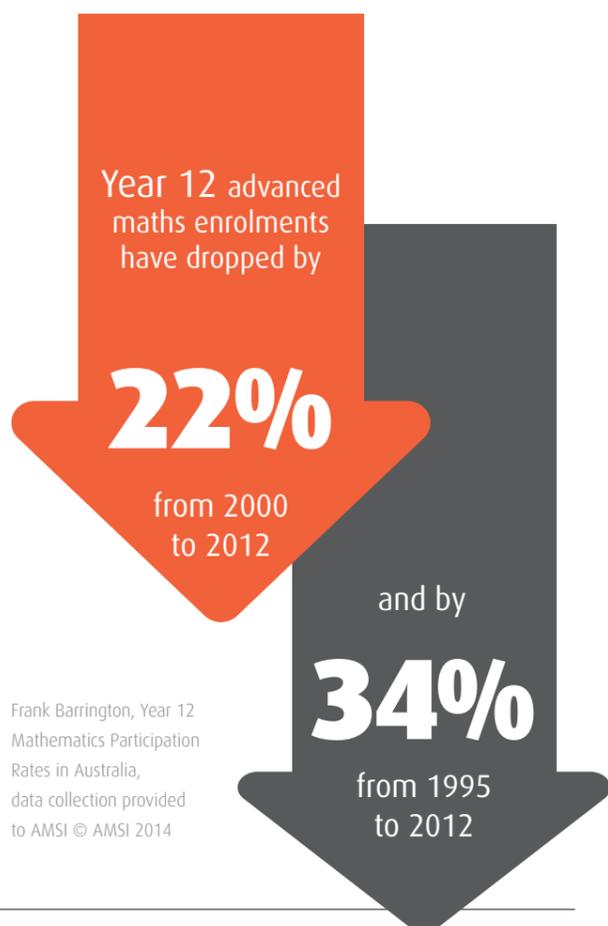
Females make up only **30%** of undergraduate and postgraduate enrolments in mathematics

AMSI Member Survey 2013 © AMSI 2014



YEAR 7-10 MATHS CLASSES are without a qualified mathematics teacher, roughly **3 times** the international average and roughly **twice** the estimated rate for Year 7-10 science classes

Phillip McKenzie, Glenn Rowley, Paul Weldon, Martin Murphy, Staff in Australia's Schools 2010, ACER, November 2011 © AMSI 2014



Frank Barrington, Year 12 Mathematics Participation Rates in Australia, data collection provided to AMSI © AMSI 2014

The third edition of the *Discipline Profile of the Mathematical Sciences* was released in June. AMSI's 2014 publication highlights trends as they apply to school education, higher education, research and research training, and career prospects for graduates. Each year the discipline profile is accompanied by a policy document that identifies key priorities for government intervention and actions for peak bodies (commercial, educational, scientific and technological) to undertake.

Census of the Australian mathematical sciences

The mathematical sciences are of critical importance to our human and economic capital. By many measures Australia has been running a mathematical deficit for years: low adult numeracy, falling numbers of trained teachers coupled with worsening school performance, low participation by women, a critically low number of graduates, lack of access for regional and low-SES areas and uneven uptake of mathematical and statistical capacity by business.

Demand for mathematical and statistical skills far outstrips falling supply, and maintaining Australia's international competitiveness, security, population health and climate stability requires a mathematically literate population. New policies and action are needed now to bring Australia into mathematical surplus.

The data collected for 2014's profile reveals that:

- The demand for mathematical and statistical skills at all levels far outstrips supply.
- The proportion of Year 12 students studying advanced mathematics shows a long-standing continuing decline.
- Qualified mathematics teachers are still in short supply in Australia's schools, particularly in regional and low-SES areas.
- Females are under-represented in mathematics in schools, higher education and the workforce.
- Australia's PhD graduation rate in the mathematical sciences is one of the lowest in the OECD and at half the OECD average — the demand for graduates, however, remains strong.

The challenges

The declining interest in intermediate and advanced mathematics subjects at Year 12 is a particular challenge to securing Australia's future skills base. We believe this trend continues because the fundamental role played by mathematical scientists is generally unknown.

The public, those learning mathematics in schools and universities and those preparing public policy must be made aware that the mathematical sciences are pivotal to innovation.

Without recognising and meeting these challenges, we threaten the future supply of mathematically capable professionals able to work on current and future global challenges. Australia cannot afford this loss of capacity.

We strongly believe that isolated measures will not be successful; various stakeholders must undertake actions in concert.

The 2014 Discipline Profile and Policy Measures are available online: amsi.org.au/publications

Policy measures

Australia's international competitiveness, security, population health and climate stability requires the workforce to be mathematically literate. AMSI's policy document has been structured to address the challenges apparent from the 2014 profile data.

AMSI recognised three distinct priorities:

- Train the unqualified teachers of school mathematics and secure the future supply of mathematics teachers.
- Reverse the decline in intermediate and advanced mathematics enrolments at Year 12.
- Increase the number of girls studying maths and women employed in the quantitative professions.

Advocacy

On top of being an active member of all AMSI Committees, Professor Geoff Prince serves on the following advisory panels and task forces: UTS review panel (2013-14), National Committee for the Mathematical Sciences, Bid Committee for ICME-14 in 2020, Australian Mathematical Society (AustMS) Steering Committee, AustMS Council, Decadal Plan for the Mathematical Sciences Executive Committee and Australian Technology Network of Universities IDTC Board.

Geoff attended the following non-AMSI events: ASEARC meeting, FYiMaths National Forum, Science Meets Parliament, Australian Academy of Science meeting on economic value of STEM, STEM Education Conference, MAGIC at the Office of the Chief Scientist and meetings with the Chair of ATSIHEAC.

“AMSI’s success is a tribute to the mathematical sciences community. A special debt of gratitude is owed to the foundation members from outside of Victoria who enabled AMSI to be national from its inception. AMSI is an example of collaboration at its best.”

Jan Thomas OAM, AMSI Fellow

2008
AMSI won the National Innovation Award for Science Innovation.



2006
AMSI supported the Australian Academy of Science’s National Strategic Review of the Mathematical Sciences in Australia.



2003
\$7.8m from the Department of Education, Science and Training established the International Centre of Excellence for Education in Mathematics (ICE-EM). This funding supported a range of initiatives aimed at ‘strengthening education in the discipline of mathematics and its contemporary applications’.

2005
1st edition of ICE-EM Mathematics textbooks written.



2005
\$750k funding provided through ICE-EM for the installation of Access Grid Rooms in 11 member universities.

2003
AMSI was a collaborating partner and significant influence in the set up of the Centre of Excellence for Mathematics & Statistics of Complex Systems (MASCOS). Out of an Australian government grant of \$10.9m, \$2.2m was jointly administered by AMSI and MASCOS.



2002
AMSI established through a \$1m grant from the Victorian government’s Science, Technology and Innovation infrastructure grants program.



2013
AMSI led the Australian effort for the International Year of Mathematics of Planet Earth.



2010
AMSI Intern expanded through a \$1.7m three year partnership with Enterprise Connect, an initiative of the Department of Innovation, Industry, Science and Research.



2008
The Carrick Institute of Learning and Teaching (now the Australian Learning and Teaching Council) provided \$100k for the year-long project Mathematics for 21st Century Engineering Students.



2007
AMSI awarded a \$2m Collaborative and Structural Reform (CASR) grant that funded a number of flagship programs in Higher Education, including the Summer and Graduate Schools, and also funded industry collaboration through workshops and the establishment of the internship program.



2011
Dr Jim Lewis stepped down as chair of the AMSI Board. Dr Ron Sandland AM picked up the torch.



2010
A wide-ranging, transparent, external review of AMSI was undertaken. This review led to the revision of AMSI’s mission statement and expansion of its board.



2009
AMSI awarded a \$2m grant from the Department of Education, Employment and Workplace Relations (DEEWR) for The Improving Mathematics in Schools (TIMES) project.



2013
AMSI Intern became a supplier for the Victorian Department of State Development, Business and Innovation Voucher program.

2011
ICE-EM Mathematics textbooks entered their second edition and Cambridge University Press distribution began.



2014
AMSI’s Higher Education program doubled student participation in flagship events since funding began in 2012.

2014
AMSI quoted in 43 news articles appearing across 25 unique publications.

2013
AMSI’s Schools program boosted with funding from Boeing, The William Buckland Foundation and an AMSPP grant in partnership with Regional Universities Network to deliver professional development to mathematics teachers around Australia.

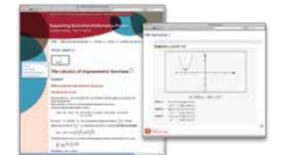
2014
AMSI Intern secured a co-investment scheme with eight member institutions worth a total of \$6.7m over three years.



2014
AMSI Intern established partnerships with key national associations: the Defence Science Institute, veski and the Australian Centre for Financial Services.



2012
AMSI’s Research and Higher Education flagship programs boosted with \$2m from the Department of Education and Training, enabling expansion of the Summer and Winter Schools, Vacation Research Scholarships and BioInfoSummer.





Australian Mathematical Sciences Institute: Simon Singh entertains the crowd at his public lecture — *The Simpsons* and their mathematical secrets.

The wonderful world of numbers lies hidden most of the time. AMSI's mission to lift it from the shadows is accomplished through our advocacy work and by involving the general public with our outreach events. By engaging with the government and actively providing submissions and policy advice, we continue to be a strong public voice for the mathematical sciences.

Reaching out to the mathematical community

Our 2014 events began when Simon Singh — author and physicist — visited Melbourne. Singh entertained a full house with the many mathematical witticisms hidden in the much-loved series *The Simpsons*. He reminded the audience that all our students should leave school feeling confident in numeracy and science. Singh and AMSI agree: popular books, public lectures and an engaging curriculum will motivate students to embrace STEM disciplines and pursue them further.

We include some form of outreach at all Research and Higher Education flagship events. These typically take the form of public lectures, careers panels or Women in Mathematics social events. Their purpose is to link the general public and industry with the community of graduate and postgraduate students of mathematics and cognate disciplines.

Public lectures

In the third week of Summer School, Professor Michael Barnsley taught the audience all about fractals in the public lecture: 'How to tile the moon and other fractal manifolds.'

July saw Professor Andrew White imparting his wisdom in quantum cryptography to AMSI Winter School students and the general public. And throughout his tour of Australia — as the AMSI-SSAI Lecturer — Professor Terry Speed delighted audiences with his "user-friendly" lecture: 'A new frontier: understanding epigenetics through mathematics.'

Careers panels were held at BioInfoSummer, the Big Day In and Summer School. We recruited panellists from government agencies, universities, private

industry and even a couple of entrepreneurs. Panellists shared their experiences of transitioning from university life to the workforce.

AMSI's revised websites and increased social media presence have contributed to our brand and message. Weekly blogs, written by students, have two major benefits: students gain experience communicating their findings in a non-technical engaging way and they celebrate young Australian researchers. The @DiscoverAMSI Facebook page is well run and planned — posts appear at least daily. This constant dialogue and interaction has grown our fan base to well over 2000.

Women in maths

Under our agreement with the Australian Mathematical Society (AustMS) Women in Mathematics special interest group we facilitate embedding a Women in Mathematics event in the vacation schools. Open to all, they raise awareness of issues faced by women in the mathematical sciences and create a national support network. On January 28, a luncheon was held as part of Summer School. And the networking evening at the University of Queensland on July 16, was a terrific success; over 90 people attended, including members of the general public and local press, as well as a group of Year 11 Science Ambassadors representing several Queensland high schools.

Our outreach work also includes interviews with speakers to use in promotional material and a partnership with ABC Science Online. Opinion pieces, written by academics and experts, comment on current scientific endeavours and offer future

predictions across many research areas — these pieces are popular with our broader target audience.

Submissions and policy

AMSI partakes in many advocacy activities, including facilitating the Australian Council Heads of Mathematical Sciences (ACHMS) annual meeting in February. The ACHMS is administered through AMSI as a service to the broader mathematical community. Its origins provide a broader base for input to policy and discussion on matters of concern to the mathematics and statistics community.

The 2014 meeting was chaired by Professor Joseph Grotowski. It featured talks from representatives of the National Committee for the Mathematical Sciences and the Women in Mathematics special interest group, and reports from AMSI, the Statistical Society of Australia Inc., the Australian Mathematical Society and Science & Technology Australia. Topics such as the Australian Qualifications Framework, course sharing across universities lacking mathematics majors were discussed, as well as the bid to host ICME 2020.

AMSI Director Professor Geoff Prince made three detailed submissions in 2014. In May, Geoff along with Simi Henderson, Program Manger (Research & Higher Education), made a submission to the National Security Science and Technology discussion paper. In June, he and Janine McIntosh, Program Manager (Schools), made a submission to the Teacher Education Ministerial Advisory Group. And in July, Geoff made a submission to the Senate Inquiry into Australia's Innovation System. All policy and submissions are available from AMSI's website.

Janine McIntosh - Program Manager

AMSI's Schools program delivers valuable resources and training for Australian mathematics teachers. Face-to-face Professional Development (PD) is delivered through workshops, in-class support, modelled lessons, digital and print resources and program development support — all in line with the Australian curriculum, to meet the needs of individual schools. Our Schools program is staffed by experienced teachers who have been closely involved in writing the Australian Curriculum: Mathematics.

Improving mathematics education in schools

AMSI, along with our members and funding partners, is committed to enhancing the mathematics education of Australian primary and secondary school students. In 2014 AMSI's Schools program continued the support of students and teachers by providing professional development for teachers, career information for students and quality teaching and learning resources for all.

Ongoing funding from our partners allowed the program to expand. In 2014 we worked with 54 schools in five areas throughout metropolitan, regional and rural Australia. AMSI's specialist team worked with teachers to develop their teaching practices and cement their content knowledge.

Though four of the five clusters have reached the end of their funding arrangements, the Geelong Cluster — comprising twelve schools funded by The William Buckland Foundation until 2016 — continues to be a vibrant focus for mathematics in the region. All professional development evenings in 2014 were well attended with over 90 teachers per session.

Free online resources

The addition of the Calculate website in 2014 has helped us to create an online hub for our community; it has been received well and continues to grow. New teacher and student resources are added regularly and we have had over five thousand visits since its launch. Unsurprisingly, the most popular resource remains the TIMES Modules. Along with our digital and print resources, we produced a popular series of posters and videos that showcase how mathematics enriches a variety of careers. For all our resources jump online: calculate.org.au

Working with our marketing and design team we produced a colourful new wallet and flyers to promote all resources. Our fresh look proved extremely popular with teachers at the Mathematical Association of Victoria (MAV) conference.

Australian schools receive Maths Ad(d)s

Part of the aim of the AMSI Schools outreach program is to inform teachers, students, parents and career advisors of the breadth of careers that involve mathematics. In addition to the Maths: Make Your Career Count resources, we are now in the 17th year of *Maths Ad(d)s*. An annual edition, produced in conjunction with La Trobe University, this booklet gathers job advertisements that have recently appeared online. The common theme of the advertisements is mathematics and statistics, but the actual jobs vary across a very broad spectrum. This popular resource gives an overview of possible careers available to prospective university students after graduation if they include mathematics or statistics in their degrees.

The Hon Christopher Pyne MP, Minister for Education and Training, endorsed the 2014 edition and the PDF was distributed to Australian high schools with the assistance of the Australian Association of Mathematics Teachers (AAMT).

amsi.org.au/mathsadds2014

AMSI undertook an international literature search on gender bias in the mathematical sciences and reported the results in, 'AMSI Gender Report 2014 — Engaging more Women and Girls in Mathematics and STEM Fields: The International Evidence.' The research articulates the underlying causes of under representation of women in STEM fields, particularly mathematics, and outlines effective measures for change. This research provides the evidence base for the design of an upcoming program and is available online: amsi.org.au/genderreport2014

The Australian Academy of Technological Sciences and Engineering (ATSE) approached AMSI Schools to assist in producing materials provided as part of the Science and Technology Education Leveraging Relevance project. This collaboration is promoting links between the science, geography and mathematics curricula. The materials can be found online: stelr.org.au/maths-of-solar-panels

"I commend AMSI for this publication [Maths Ad(d)s], which is an example of its leadership in mathematical education."

The Hon Christopher Pyne MP, Minister for Education and Training



Australian Mathematical Sciences Institute: Janine McIntosh working with the next generation of mathematicians.

Participation



We reached over 400 individual teachers

Time

676 Hours

Total School Visits and PD sessions

Funding

\$800,000

- 50 Footscray, Vic (Boeing)
- 100 Warrallda, NSW (RUN/AMSPP)
- 100 Dalby, Qld (RUN/AMSPP)
- 100 Gippsland, Vic (DEECD)

450 Geelong, Vic (The William Buckland Foundation)

Simi Henderson - Program Manager

AMSI's Higher Education program pursues our mission to enhance the undergraduate and postgraduate experience of students in the mathematical sciences and related disciplines. Our flagship events comprising of research training schools, scholarships and graduate courses have created the vibrant young community of researchers so important for innovation in the public and private sectors.

Encouraging undergraduate students

2014 was an exciting year for the AMSI Higher Education program — over 600 students and early career researchers participated in the program; 48 national and international experts gave their time and shared their passion for research and teaching with AMSI students; and we were supported through partnerships with 13 organisations.

Specialist talks, cutting-edge research and one-off courses motivated attendees to pursue their chosen field of endeavour. STEM disciplines are the building blocks for future technologies and ideas that will improve Australian lives and the country's prosperity.

between our members as we upgrade from Access Grid Rooms (AGR) to Advanced Collaborate Environment (ACE). The national roll out of this new platform will give greater access to all members and make remote collaboration more user-friendly.

This year we also partnered with the Australian Mathematical Sciences Student Conference — an annual conference run by students for students. Our support assists Australian students to communicate their work by encouraging collaboration within a friendly and informal atmosphere.

seen an increase in female participation across our flagship events — testament to our positive actions.

New ways to communicate

AMSI's Higher Education website was launched in August. The interactive site and modern design target our young audience. Students can easily navigate to relevant program information, funding opportunities, careers, scientific events and the latest news.

In conjunction with this redevelopment we have rebranded and refined our flagship events to include home pages, online registration and online application for travel grants.

Our e-news subscribers and social media presence steadily increased throughout 2014 — effectively growing our impact and our ability to stay connected with students, members and alumni.

Increasing gender equity

Currently women make up only 30 per cent of undergraduate and postgraduate enrolments in the mathematical sciences. We have introduced a number of measures to support female participation in our programs, including embedded Women in Maths events, participation targets and increased female representation among speakers. We have

Program development

Joint funding from the Commonwealth has allowed us to grow our flagship events — this year we saw a 96 per cent increase in total participation across these events from the award of funding in 2012. Many thanks to all the 2014 event directors: Professor Steve Roberts, Australian National University; Associate Professor Jonathan Keith, Monash University; Dr Victor Scharaschkin, The University of Queensland; the Vacation Research Scholarship supervisors and support staff who generously gave their time to ensure the success of these events.

The popularity of our shared honours program over the Access Grid Network continues, with 17 subjects offered in 2014. The program gives students access to a wider range of subjects and supports the honours programs of AMSI's smaller members. 2015 will be a landmark year for remote collaboration

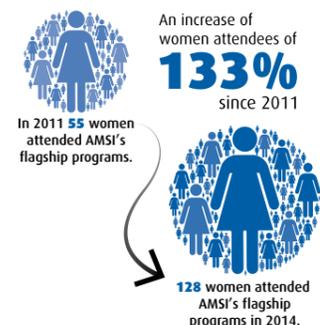
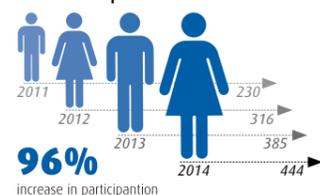
“The Australian Government is proud to invest in the valuable work done by the Australian Mathematical Sciences Institute to support students to get the very best start in their maths and science education and careers.”

Senator the Hon Scott Ryan
Parliamentary Secretary to the
Minister for Education and Training



Australian Mathematical Sciences Institute: Students and researchers stay ahead by attending our flagship events.

Participation



Funding
\$881,000

“Being a VRS student gave me the confidence to believe I could pursue mathematics as a career; all of a sudden I was being paid to do mathematics. And, as a VRS supervisor I can pass that message on, tell my students that they, and their skills, are valuable.”

Dr Simon James, 2006 VRS student, 2014 VRS supervisor

Australia’s biggest event for maths students

Vital bioinformatics training event

Summer School

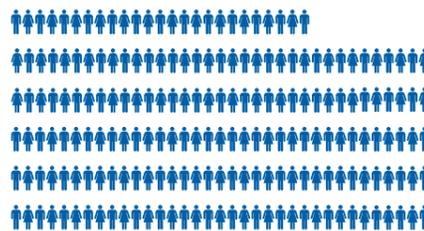
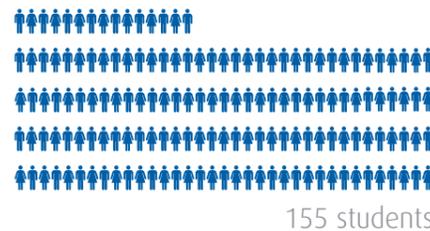
BioInfoSummer

Australian National University

Monash University

Over four weeks the residential school gave 155 students the opportunity to tackle one or two intensive subjects chosen from the eight honours level subjects in pure and applied mathematics and statistics on offer. The academic work was complemented by enrichment lectures, social events, a careers afternoon and other special events.

Two hundred students and researchers from the public and private sectors gathered to learn about the latest developments in bioinformatics. Senator Scott Ryan opened the conference by highlighting the importance of bioinformatics and the advanced mathematical, statistical and computational techniques that underpin it. An outstanding group of Australian and international speakers and software training helped upskill and inspire delegates.



Intensive themed research school

A summer of research

Winter School: Contemporary Aspects of Cryptography

Vacation Research Scholarships

A series of mini-courses ran for two weeks. Introductory lectures in the first week gave the foundations for understanding current research problems in the second week. Courses covered a range of topics in cryptography and were taught by leaders in the field. The highlight of the social program was the Women in Mathematics evening, with speakers from industry and academia.

Fifty-six of our brightest undergraduate students worked throughout the summer on a research project with a supervisor. At the end of the six weeks, they presented their work in Sydney at the CSIRO Big Day In conference. AMSI provides monetary scholarships to give students a taste of life as a researcher and encourage them to pursue mathematics as a career.



The AMSI Vacation Schools and Scholarships are jointly funded by the Department of Education and Training and AMSI. They are also generously supported by our event partners.



Australia’s iconic flora and fauna sustained with statistics

AMSI continues to provide statistical support to Parks Victoria’s environmental monitoring, evaluation and reporting processes through the partnership program established in 2010. This year, AMSI statistician Kally Yuen worked with staff at the Parks Victoria Science and Management Effectiveness Branch on a number of projects.

weed management approaches by determining which herbicides are most effective and how to use them most efficiently.

chapter for the CSIRO publication: ‘Camera Trapping Wildlife Management and Research.’

Weed monitoring in the Dandenong Ranges

A series of weed surveys were conducted over several years to assess the effectiveness of the program. I analysed the data and produced a report with Dr Marie Keatley, Environmental Scientist (Flora). Our results have assisted regional staff to guide weed management and have been used to support an application for further funding from the Urban Fringe Weed Management Initiative (UFWMI). The findings were presented at the 19th Australasian Weeds Conference by Kym Saunders, UFWMI Officer, Yarra Ranges Council.

Dr Marie Keatley and I designed the second stage of the program and updated the progress of the initiative at a workshop for land managers. Charlie Pascoe, Alps Landscape program manager for Environment, Land and Water, presented our results at the 19th Australasian Weeds Conference.

AMSI Intern program

Over-browsing by koalas inhabiting French Island has a significant impact on vegetation and consequently, the koala population is considered too large to be sustained by the habitat. RMIT University student Harmeet Kaur and her supervisor Dr John Hearne were selected from a list of AMSI Intern applicants to work on the development of a framework to guide decision-making and implementing management actions on French Island. Lorraine Ludewigs, Environmental Scientist, and I assisted in the intern selection process and I provided feedback on Harmeet’s final report.

Coast wattle at Great Otways National Park

In September, I attended the 2014 Ecological Society of Australia annual conference in Alice Springs where I had the opportunity to present results from a randomised trial that aimed to control the infestation of coast wattle within the Great Otways National Park. The same study was also presented as an e-poster at the International Union for Conservation of Nature World Parks Congress in Sydney in November. This was a great achievement as the congress is only held once every ten years.

Many thanks to Dr Marie Keatley, Dr Mark Antos and Lorraine Ludewigs from Parks Victoria for their continuing support of this important research collaboration.

Kally Yuen - AMSI statistician

Experimental weed management in the Alpine National Park

Stage 2 of the English Broom adaptive experimental management program commenced in November 2013. The program compares a range of different ways to control the English Broom weed and it evaluates how well different methods work. The information we collect is used to continually improve

Remote camera monitoring

Parks Victoria deploys remote cameras in a wide range of parks and habitats to provide information on native fauna, mainly in response to management activities. Since 2012, I have been involved in monitoring programs at Great Otways National Park and Warrandyte State Park. This year, Dr Mark Antos, Environmental Scientist (Fauna), and I co-wrote a



Simi Henderson - Program Manager

AMSI's Research program delivers on our mission to support mathematical sciences research and its applications. We promote cross-disciplinary collaboration in both public and private sectors. AMSI's Research program has one of the nation's largest sustained workshop programs and our stewardship of the Mathematics of Planet Earth 2013 in Australia won us international acclaim.

Supporting early career researchers

2014 has been another year of growth for AMSI Research and we continued to lay the foundations for an Australian National Research Centre.

We are pleased to have entered into research agreements with the Mathematical Sciences Institute (MSI) at the Australian National University and the Centre for Computer Assisted Research Mathematics and its Applications (CARMA) at the University of Newcastle. By joining these partnerships, we enhance and increase the reach of our individual programs.

In September we launched the new AMSI Research website, an online hub for our research community here in Australia and abroad.

Designed with the audience in mind, the new site provides a modern, accessible portal to all AMSI Research activities, news and promotion of our members' successes. Streamlined online applications for funding coupled with a navigable events listing has increased participation in AMSI Research programs.

National collaboration

2014 saw an overhaul of the AMSI workshop funding program, refining the delivery of the workshops to increase national benefit for all our members. The Scientific Advisory Committee funded 18 scientific workshops on topics ranging from fractal geometry to mathematical finance. The workshops bring together researchers from around the world to strengthen Australia's knowledge base.

We awarded 47 grants to our members to cover travel expenses for their staff and students attending our workshops, meetings and courses — all made easier by the new online application.

We were delighted to have Professor Terry Speed, world-renowned statistician and 2013 Prime Minister's Prize for Science recipient, as the 2014 AMSI-SSAI Lecturer. From August he embarked on a four-month tour around Australia. During the tour he visited seven states and territories, where he delighted the local research community and members of the public. Terry put on eight public lectures and six specialist talks — two were broadcast over the Advanced Collaborative Environment (ACE), formerly the Access Grid Room network.

International expertise

The 2014 National Seminar Series — also broadcast over AMSI's ACE network — included lectures from established researchers including: 2006 Fields Medallist Professor Wendelin Werner; historian and mathematician Professor Karen Parshall; and prize-winning young researcher Professor Rick Kenyon.

Under the scientific workshop funding a further 51 international experts were supported to visit Australia.

This year we had good attendance at the Early Career Workshop, which was held in conjunction with the Australia-New Zealand Mathematics Convention (ANZMC). This year's theme, 'The first

five years post-PhD,' saw attendees receive advice from experts on a broad range of topics from the secrets to grant success to effective strategies in managing time between teaching, research and administrative commitments.

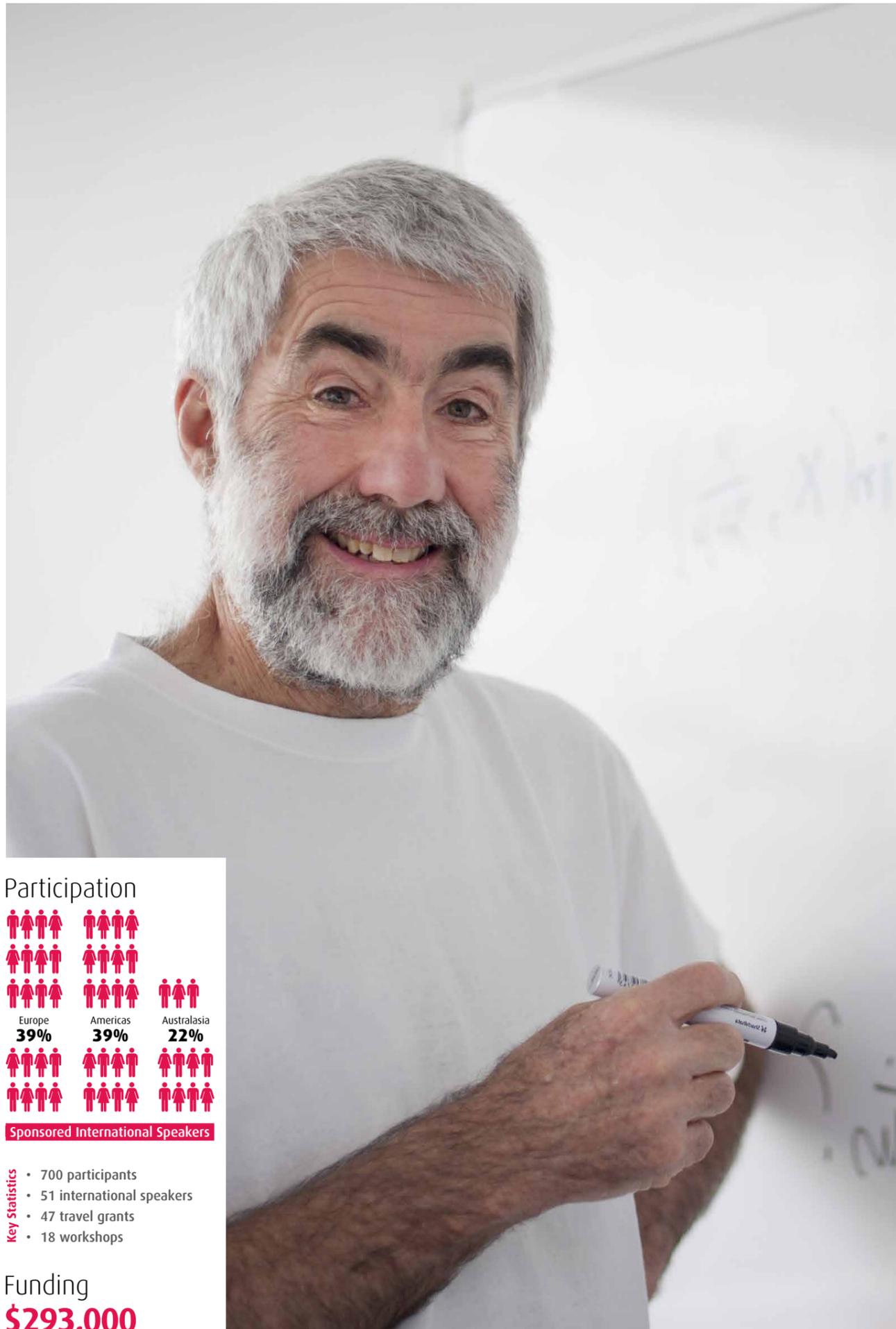
Each year AMSI supports the Mathematics in Industry Study Group (MISG). MISG 2014 provided a valuable experience for students to work as part of a collaborative team on a range of interesting and relevant industrial problems. Over 100 delegates came together at Queensland University of Technology to work on solving industrial problems from Venus Shell Systems Pty Ltd, Centor Designs, Bechtel and the Fonterra Co-operative Group Limited.

AMSI thanks Professor Mark Gould, the outgoing Chair of the Research and Higher Education Committee. Our thanks are also extended to all committee members for their support and advice throughout 2014. Much gratitude to Professor Jon Borwein and the Scientific Advisory Committee who have continued their stewardship of the scientific workshop funding program.

2015 promises to be another big year working with the National Research Centre partners to grow Australia's mathematical sciences research programs.

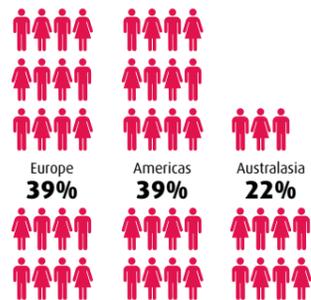
"I enjoyed getting out & meeting mathematical scientists in all their different contexts. It was also great to meet the general public! Overall the tour is a great opportunity to engage with both the research & wider community."

Prof. Terry Speed, AMSI-SSAI Lecturer 2014



Australian Mathematical Sciences Institute: Prof. Terry Speed tours Australia revealing the crucial links between statistics and biology.

Participation



Sponsored International Speakers

- 700 participants
- 51 international speakers
- 47 travel grants
- 18 workshops

Funding
\$293,000

AMSI Intern provides a link between AMSI's member institutions and the wider business community. Organisations contact AMSI Intern with short-term research focused projects and we aim to find postgraduate students working in the field to assist the development of tools and/or resources to help tackle the problem. Sometimes these projects are hands on: students are in the field or the lab. Other times, students work on a theoretical problem, build software, simulate circumstances and predict outcomes.

Breaking into new markets

Since the program began in 2008, AMSI Intern has facilitated in excess of 115 internships. Each intern receives pre-placement training from AMSI Intern and is supported throughout the internship by an academic mentor based at their home institution.

Visionary partnerships

Over the last twelve months, growth of the AMSI Intern program has been significant. We established partnerships with three key national industry associations — the Australian Centre for Financial Services (ACFS), the Defence Science Institute (DSI) and veski. The DSI and veski partnerships offer funding schemes to support research for industry in the defence, manufacturing and finance sectors.

The inspiring women industry internships were launched in September. This innovative program was designed with veski and the Office of the Lead Scientist to support, advance and inform Victorian women. The program will connect female honours and masters students with the Victorian manufacturing industry to work on a research and development problem. The Victorian government is offering ten funding grants for eligible companies who are interested in the program — four interns were placed in 2014.

Victorian Government Lead Scientist, Dr Leonie Walsh, believes the program will promote links between academia and industry and help meet the current and future skills needs of the state.

The partnership with DSI will link highly skilled PhD candidates from all disciplines with industry to address a research challenge facing their business. The projects will align to DSI's current strategy and will focus on the technology themes

of human protection and performance, modelling and simulation, propulsion and energy storage and surveillance and autonomy. DSI has five funding vouchers on offer for eligible companies who are interested in the program.

Cate Ballard, AMSI Intern National Program Manager, trusts the opportunity to connect the defence industry with students and academics will help to further develop and innovate the Australian defence industry.

Providing impact through co-investments

As of December 2014, AMSI Intern secured a co-investment partnership arrangement with six member universities in Victoria: the University of Melbourne, Deakin University, La Trobe University, Monash University, RMIT University and Swinburne University, and two in NSW: the University of Sydney and the University of Technology, Sydney. The total value of the program is worth \$6.7 million.

These partnerships will help expand and build the overall scale of AMSI Intern, with the expectation to place over 270 interns over the next three years. Additional business development and project officers will be hired to oversee these expansions in both Victoria and New South Wales. AMSI Intern's increased capacity will have a transformative effect

on the Australian higher degree research community and will simultaneously increase the quality and quantity of industry-academic collaborations.

Subject to the success of the New South Wales and Victorian cluster co-investment arrangement, it is the intention to roll the program out to the other states in 2016 and 2017.

Our presence has expanded into new markets, new members and new states and territories. We placed our first intern in the Northern Territory and we have become voucher suppliers for both the Victorian and the Northern Territory state government's Innovation and Technology Vouchers. These vouchers provide funding to help businesses create products, services and processes to improve their competitiveness and productivity.

The Defence Science and Technology Organisation (DSTO) has joined the AMSI membership to take advantage of the intern program. Placements with DSTO commenced in 2014 and internships for early 2015 were confirmed late in the year.

We also secured opportunities with large businesses — a market with which we have previously had only brief encounters. Two placements were made with Canon and NBN Co, and we have organised placements with ANZ, NAB and Telstra to commence in 2015.

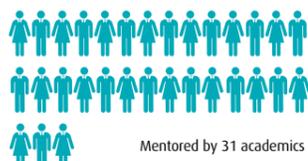
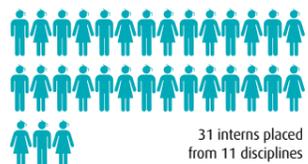
“This alliance with AMSI Intern is central to our strategy to build stronger industry-university connections for the benefit of defence R&D.”

Assoc. Prof. Simon Ng, Assoc. Director of DSI



Australian Mathematical Sciences Institute: Rezwanul Haque, AMSI Intern, tests Henrob's self piercing rivets.

Participation



Funding
\$775,000

Mari Ericksen - Marketing & Communications Manager

AMSI has a broad target market, ranging from primary and secondary students, teachers and parents, university students, the AMSI membership, government and industry – nationally. Our position as an authority on the state of the mathematical sciences in Australia was cemented this year. We built strong relationships within many news and media outlets. Over the year AMSI was quoted in 43 news items appearing across 25 print and digital publications.

Customer-centric marketing strategy

A customer-centric marketing strategy has been adopted to achieve detailed, staged growth to raise awareness of the AMSI brand, increase lead generation and promote advocacy.

This strategy focuses on marketing initiatives to communicate targeted messages with unique selling propositions to our specific market demographics. Key messages consider tone, timing, channel, design, cost and resourcing with an aim of achieving a high return on investment.

Customer Relationship Management system (CRM)

A new CRM was integrated into AMSI in 2014. The CRM provides a 360-degree view of interactions with AMSI contacts and organisations, manages marketing campaigns and is used to track and grow lead generation.

Integration with existing marketing automation systems, as well as new and existing online web forms, are now automating data collection and storing historical data on organisations, individuals and groups in a central cloud-based CRM.

Growth and strong health of data in key sectors including academia, government, industry and media will enable more specific segmentation of lists and more targeted messages to our core markets across AMSI's programs.

Publicity

When the New South Wales state government proposed to make mathematics compulsory to Year 12, Channel 10 News, ABC Radio and journalists from The Australian and the Daily Telegraph called upon AMSI Director Professor Geoff Prince for comment.

In June we released the 2014 Discipline Profile of the Mathematical Sciences. This brought with it a wave of media coverage that we continued to ride all year.

Professor Geoff Prince appeared on ABC News Breakfast, ABC Radio National and key statistics from the discipline profile appeared in both print and online news articles. The accompanying policy document sparked interest from the media and government departments and agencies.

'AUSTRALIA 2025: How will science address the challenges of the future?' was a collaboration between Australia's Chief Scientist, Professor Ian Chubb, and the Conversation. It asked how each science discipline would contribute to Australia now and in the future; Geoff answered on behalf of the mathematical sciences.

The marketing, media and communications team worked closely with the ABC Science online editor to identify and source experts to provide content on relevant topics. The suite of opinion pieces help promote AMSI's Research and Higher Education flagship events while communicating important Australian research to the community at large.

BioInfoSummer 2014 (BIS) captivated the media with its press release: 'Eradicating Ebola with mathematics and statistics.' BIS director, Professor Jonathon Keith,

was interviewed for ABC TV's National News and he wrote a piece for the Conversation. A journalist from the ABC News team spoke with several BIS speakers and wrote a feature article about the vital role mathematicians and statisticians play in current and future battles against infectious diseases. Prior to BIS, Dr David Lovell contributed to ABC Science online as part of our new alliance.

AMSI's Stéphanie Pradier (Media and Communications) contributed three pieces to Radio National's The Science Show throughout the year and built strong relationships with other ABC journalists. She was also commissioned to write the introductory article for the Office of the Chief Scientist's publication 'Australia's Future' and was an invited keynote speaker at the Mathematics Association of Victoria 2014 teacher conference 'Maths Rocks!' in December.

As the tide was rolling out on 2014, AMSI Schools was approached by ABC's Catalyst to find them some lively students to appear in a segment hosted by Simon Pampena on Fermat's Last Theorem. It aired on November 27, and received high praise from the mathematics community.

Over all, AMSI was quoted in or contributed to 43 news items in 2014. We produced and distributed 18 press releases.

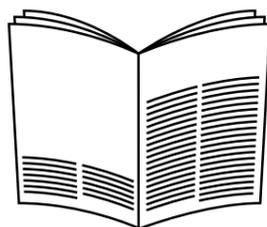
"It has been my pleasure as a broadcaster to work with AMSI over the past two years to bring maths, both everyday and challenging, to the Australian and international public. The service has been with flair and superb efficiency - and the response of the audience has been immensely gratifying."

Robyn Williams, Producer & Presenter, ABC Science



Australian Mathematical Sciences Institute: AMSI's marketing and media team interacts with delegates at BioInfoSummer 2014.

43 news articles quote AMSI in 2014 up from just 11 in 2013

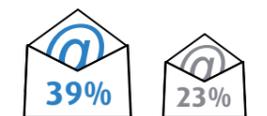


2013 2014



2291 Likes

Social media exposure 31% increase



39%

23%

Education Sector average open rate 23%
AMSI open rate 39%



Australian Mathematical Sciences Institute: AMSI's Board planning for the future - the sky's the limit.

AMSI is an unincorporated joint venture which is a collaboration of universities and other bodies related to the mathematical sciences. Six universities signed a Joint Venture Agreement (JVA) in 2002 to become the first full members of AMSI. The University of Melbourne is AMSI's lead agent and since 2002 five additional universities have become full members, including all Group of Eight universities.

AMSI's organisational structure proven effective

AMSI has made, and continues to make, a significant contribution to furthering the interests of the mathematical sciences in Australia. Our initiatives and programs are important parts of an overall strategy to enhance the standing and health of mathematics and statistics across the community.

AMSI is critically dependent upon the support of its member institutions. Without this support — both financial and via active participation in AMSI's enterprise — the institute would not be able to provide the many services that are of direct benefit to the mathematical sciences.

Management of AMSI

The JVA empowers the AMSI Board to be responsible for the overall direction of the institute, formulation of policies and management of activities in AMSI's three portfolio areas:

- Primary and Secondary School Education
- Research and Higher Education
- Business, Industry and Government

External advice is provided by four high-profile advisory committees.

Activities are detailed in the annual Business Plan and Budget document, authorised annually by the full members and the board. Management of the institute and its activities is the responsibility of the Executive Committee. Members of the Executive Committee are listed on page 28.

AMSI Board Composition

The board comprises:

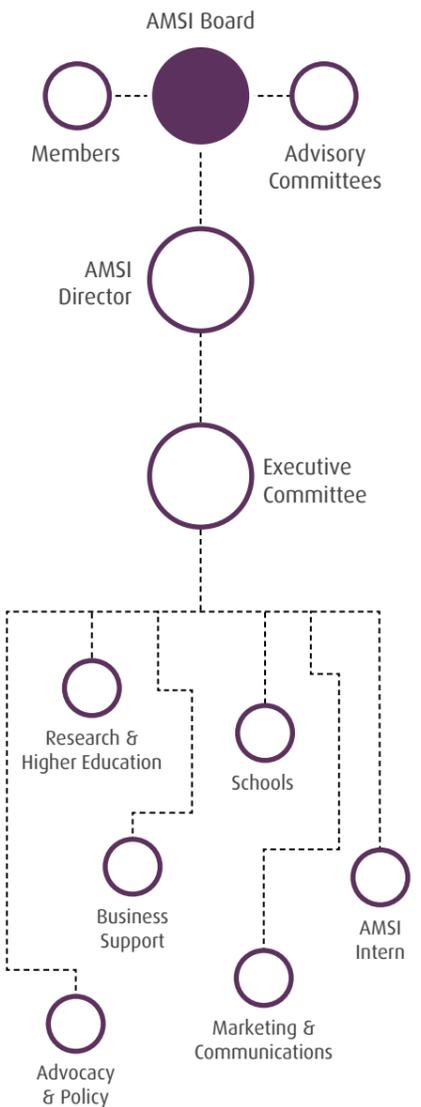
- An independent chair appointed by the full members
- The institute director
- The institute deputy director appointed by the full members
- One person representing the lead agent — the University of Melbourne.
- Two people representing the full members appointed by mutual agreement of the full members
- Two people representing the associate members appointed by mutual agreement of the associate members
- Up to five independent members representing business and industry appointed by mutual agreement of the full members

Remuneration of board members is noted in the financial statements at the conclusion of this report.

Term of board members

The persons comprising the board are appointed for terms of one year but are eligible to serve for one or more further terms if reappointed in accordance with clause 19.3 of the JVA. Board representatives for the full members and associate members will serve two-year terms.

In 2014 board meetings were held on February 25, April 29, July 10 and October 29.



Board Members

Dr Ron Sandland AM — Chair

AMSI

Prof. Geoff Prince

Director, AMSI

Prof. Gary Froyland

Deputy Director, AMSI

Dr Adelle Howse

Leighton Holdings Ltd

Prof. Bruce Henry

The University of New South Wales

Dr Eileen Doyle FAICD

Company Director

Prof. Karen Day

The University of Melbourne

Lily Serna

Speaker and Presenter

Dr Mark Lawrence

Mark Lawrence Group

Prof. Nigel Bean

The University of Adelaide

Assoc. Prof. Sergey Suslov

Swinburne University of Technology

Prof. Song-Ping Zhu

University of Wollongong

Scientific Advisory Committee

Prof. Jonathan Borwein — Chair

University of Newcastle

Prof. Geoff Prince

Director, AMSI

Prof. Ben Andrews

Australian National University

Prof. Philip Broadbridge

La Trobe University

Prof. Darren Crowdy

Imperial College London

Prof. Ezra Getzler

Northwestern University

Dr Frances Kuo

The University of New South Wales

Prof. Kate Smith-Miles

Monash University

Prof. Terry Speed

UC Berkeley; Walter and Eliza Hall Institute

Prof. Terry Tao

UCLA; Clay Mathematics Institute

Research & Higher Education Committee

Prof. Gary Froyland — Chair

The University of New South Wales

Simi Henderson

AMSI Program Manager (Research & Higher Education)

Prof. Geoff Prince

Director, AMSI

Prof. Andrew Eberhard

RMIT University

Prof. Jan De Gier

The University of Melbourne

Prof. Jonathan Borwein

The University of Newcastle

Prof. Joseph Grotowski

The University of Queensland

Dr Matt Ritchie

Walter and Eliza Hall Institute

Prof. Norm Dancer

The University of Sydney

Dr Peter Caccetta

CSIRO

Assoc. Prof. Regina Burachik

University of South Australia

Education Advisory Committee

Dr Bob Anderssen — Chair

CSIRO

Janine McIntosh

AMSI Program Manager (Schools)

Prof. Geoff Prince

Director, AMSI

Abdulmoed Arayne

Brunswick Secondary College

Dr Amie Albrecht

University of South Australia

David Treeby

Presbyterian Ladies' College

Dr Frank Barrington

The University of Melbourne

Prof. Jacqui Ramagge

University of Wollongong

Prof. Kim Beswick

President, AAMT

Dr Michael Evans

Senior Consultant

Peter Brown

The University of New South Wales

Dr Philip Swedosh

King David School

Industry Advisory Committee

Dr Mark Lawrence — Chair

Mark Lawrence Group

Cate Ballard

National Program Manager (AMSI Intern)

Prof. Geoff Prince

Director, AMSI

Dr Eileen Doyle FACID

Company Director

Joe Forbes

Biarri Commercial Mathematics

Dr Adelle Howse

Leighton Holdings Limited

AGR Steering Committee

Dr Maaïke Wienk — AGR Coordinator

AMSI

Prof. Geoff Prince

Director, AMSI

Jason Bell

Central Queensland University

Prof. Jonathan Borwein

The University of Newcastle

Dr Darren Condon

La Trobe University

Prof. Andrew Eberhard

RMIT University

Prof. Andrew Mathas

The University of Sydney

Board Observers

Dr Bob Anderssen

Chair, Education Advisory Committee

Prof. Jonathan Borwein

Chair, Scientific Advisory Committee

Prof. Nalini Joshi

Chair, National Committee

for the Mathematical Sciences

Prof. Peter Forrester

President, AustMS

Prof. Tony Guttman

Director, MASCOS



Prof. Geoff Prince

Director of AMSI

director@amsi.org.au

Prior to joining AMSI again in 2009, Geoff was Head of the Department of Mathematics and Statistics at La Trobe University, sat on the board of the Australian Centre of Excellence for Risk Analysis (2006–2009) as AMSI's representative and was Vice President of the Australian Mathematical Society (2008–2009). Geoff's involvement with AMSI dates to 2004–2006 when he was Deputy Director, Executive Director, Acting Director and Access Grid Room coordinator. His research interests are in the field of applications of differential geometry to ordinary and partial differential equations, uncovering results in electrodynamics through to highway design.



Prof. Gary Froyland

Deputy Director

g.froyland@unsw.edu.au

Gary Froyland is an ARC Future Fellow and Professor in the School of Mathematics and Statistics at the University of New South Wales (UNSW). His research areas include ergodic theory, dynamical systems and optimisation. In the last nine years at UNSW he has been awarded three ARC Discovery Projects, an ARC Linkage Project, a Future Fellowship and has been a Chief Investigator in MASCOS. Prior to his appointment at UNSW, he was a Senior Scientist at BHP Billiton Technology in Melbourne. His work at BHP Billiton produced three patent applications and he was awarded the BHP Billiton Innovation Prize.



Janine McIntosh

Program Manager (Schools)

janine@amsi.org.au

Janine is the Schools Program Manager. Her role is to develop school mathematics material and to work with teachers to enhance the mathematics experiences of the children they teach. Janine is an experienced primary school teacher, curriculum writer for the VCAA and the Australian Curriculum, Assessment and Reporting Authority and mathematics educator at the University of Melbourne. She is also a member of the Maths Challenge committee of the Australian Mathematics Trust.



Simi Henderson

Program Manager (Research & Higher Education)

simi@amsi.org.au

Simi's role is to facilitate national and international research collaborations and provide research training for AMSI Members. In her time at AMSI, Simi has increased the scale and impact of the Research and Higher Education programs by developing partnerships, implementing a coordinated marketing strategy and securing funding. Simi graduated in 2002 with a Bachelor of Science in Social Policy from the London School of Economics.



Cate Ballard

National Program Manager (AMSI Intern)

cate@amsi.org.au

Cate has been the National Program Manager for AMSI Intern since September 2011. Her role is to develop and grow the postgraduate internship program. Before coming to AMSI, Cate worked at the International College of Management, Sydney in a dual role as an Industry Training/Business Development Manager. She has also held strategic sales and marketing roles with two leading hotel chains in Australia.



Mari Ericksen

Marketing & Communications Manager

mari@amsi.org.au

Mari is responsible for developing the marketing and communications strategies and plans for AMSI and its programs. Before joining AMSI, Mari held senior marketing positions at the Financial Times (UK) and the Victorian National Parks Association. Mari graduated in 1999 with a Bachelor of Business in Tourism and Hospitality from La Trobe University.



Rod Birch

Business Manager

r.birch@amsi.org.au

Rod joined AMSI as Business Manager in October 2011. Formerly with the Faculty of Medicine, Dentistry and Health Sciences at the University of Melbourne, his career has spanned work in Government, two major accounting firms and a major bank and has included consulting to the tertiary education sector.

Honorary Staff

Jan Thomas OAM

Senior Fellow

Dr Michael Evans

Senior Consultant

Non-Executive Staff

Anne Nuguid

Executive Assistant to the Director

Michael Shaw

Multimedia Manager

Jo Wilson

Project and Event Officer, R&HE

Stéphanie Pradier

Media and Communications

Michael O'Connor

Outreach Manager, Schools

Dr Maaïke Wienk

Program and Finance Officer

Kally Yuen

Statistician, Parks Victoria

Lauren Draper

Administrative Assistant, Schools

Margo Brown

Administrative Assistant, AMSI Intern

Liam Williamson

Administrative Assistant, R&HE

Christa Jonathan

Design Assistant

The AMSI Research program supports Australia's academic community, fostering the critical links between researchers in universities, government agencies and business. We bring exceptional speakers to Australia to engage students, researchers and the wider community with the state-of-the-art in the mathematical sciences. In 2014 AMSI's Research program sponsored the following 51 academics from the Americas, Europe and Australasia.

Professor Monika Ludwig	Technical University of Vienna	Professor David Applebaumof	Sheffield University
Professor Haizhong Li	Tsinghua University	Professor Douglas Lind	University of Washington
Professor Hui Ma	Tsinghua University	Professor Richard Schoen	Stanford University
Professor Yuguang Shi	Peking University	Professor Pavel Bleher	Indiana University-Purdue University Indianapolis
Professor Soren Eilers	University of Copenhagen	Associate Professor Ioana Dumitriu	University of Washington
Dr Vincent Pagneux	University of Le Mans	Associate Professor Arnab Sen	University of Minnesota
Professor Christoph Bandt	University of Greifswald	Dr Tom Trogdon	New York University
Professor Gerhard Huisken	University of Tubingen	Professor Michael Lacey	Georgia Institute of Technology
Associate Professor Tamara Grava	SISSA	Professor Jill Pipher	Brown University
Professor Kazuo Akutagawa	Tokyo Institute of Technology	Dr Cristina Pereyra	University of New Mexico
Professor Masaaki Kijima	Tokyo Metropolitan University	Professor Kenneth Golden	University of Utah
Professor Kang-Tae Kim	POSTECH	Professor Graeme Milton	University of Utah
Professor Tor Helleseth	University of Bergen	Dr Paul Martin	Colorado School of Mines
Professor Gaven Martin	Massey University	Professor Ben Weinkove	Northwestern University
Professor Eamonn O'Brien	University of Auckland	Professor Gang Tian	Princeton University
Professor Ana Ferreira	The University of Lisbon	Professor Paul Yang	Princeton University
Professor Leonardo Colzani	Universita di Milano-Bicocca	Associate Professor Kate Juschenko	Northwestern University
Professor Jean Bertoi	University of Zurich	Professor Rostislav (Slava) Grigorchuk	Texas A&M University
Dr Jih-Hsin Cheng	Academia Sinica	Professor Dilip Madan	University of Maryland
Professor Peter Topping	University of Warwick	Professor Rong Chen	Rutgers University
Professor Sarah Rees	The University of Newcastle	Professor Tze Lai	Stanford University
Professor Ron Doney	University of Manchester	Professor Andrei Tetenov	Gorno-Altaiisk University
Professor Andreas Kyprianou	University of Bath		

AMSI's Scientific Workshop program facilitates collaborative mathematical research throughout Australia by

- sponsoring local and international workshops and conferences
- providing travel support for Australian students and researchers to attend AMSI-sponsored events
- bringing leading international researchers to Australia for scientific collaboration and public outreach

Sydney Random Matrix Theory Workshop

JAN 13 – 16 **THE UNIVERSITY OF SYDNEY** **ATTENDEES – 38**

This workshop was on recent and future advances in the analysis, computation and application of random matrices. Random matrix theory is an active and vibrant field with exciting recent theoretical developments in universality and deep connections with many different areas of mathematics: free probability, integrable systems, orthogonal polynomials and stochastic differential equations. In the last few years, powerful computational tools have been developed, allowing for a deeper understanding of random matrices. Random matrices are also becoming increasingly important in applications, including statistics and wireless. The workshop provided a valuable forum for interaction between the many sub areas of random matrices.

From random walks to Lévy processes

JAN 25 – 31 **THE AUSTRALIAN NATIONAL UNIVERSITY** **ATTENDEES – 25**

The aim of the conference was to provide a unique opportunity for Australian researchers, practitioners and students to hear, meet and mingle with some of the most prominent international and Australian researchers currently working in Lévy processes or closely related areas. The ANU Kioloa Campus on the NSW coast provided a sequestered gathering place in a beautifully located environment with full accommodation and conference facilities, permitting close networking and interaction among participants.

Geometric invariance and nonlinear partial differential equations

FEB 9 – 14 **THE AUSTRALIAN NATIONAL UNIVERSITY** **ATTENDEES – 41**

This conference was the second major event in the 2014 ANU special year on nonlinear partial differential equations. The theme of the conference was the interaction between geometric invariances and nonlinear partial differential equations. We brought together a selection of leading researchers working in nonlinear partial differential equations arising from geometric problems, as well as some more focused on the geometric side. Particular structures to be embraced included those in affine and conformal geometry, convex and complex geometry and Lie groups as well as geometric evolutions.

KOZWaves

FEB 17 – 19 **THE UNIVERSITY OF NEWCASTLE** **ATTENDEES – 43**

KOZWaves was the first international Australasian conference on wave science. It provided a forum for contemporary research on wave science to be disseminated between the different branches of wave theory and its applications. It promoted interdisciplinary collaborations between Australasian wave scientists and with leading international researchers. The overarching aim of KOZWaves was to accelerate research progress in the various application areas of wave science conducted in Australasia by sharing recent research advances and exploiting the mathematical connection between the different types of wave phenomena. KOZWaves focused, in particular, on the development of theoretical and numerical tools to analyse waves. This aimed to result in more accurate predictions of wave behaviours and understanding how to control the unique properties of waves for our benefit.

Interactions between operator algebras and dynamical systems

JUNE 30 – JULY 4 **UNIVERSITY OF WOLLONGONG** **ATTENDEES – 40**

This workshop focused on the interactions between dynamical systems and operator algebras. Dynamical systems were introduced as a mathematical framework for analysing time-dependent physical systems. Operator algebras stem from the quantisation of classical mechanics and provide an algebraic structure for studying dynamical systems. This deep connection between traditionally separate fields has inspired a highly successful, emerging area of research. International leaders from both fields met to discuss trends and open problems. This forged strong links with the international community and introduced early career researchers to an exciting area of new research interaction, thus fostering the next generation of researchers.

Financials

AMSI's financial records are managed and administered by AMSI staff by utilising the accounting and financial systems of the University of Melbourne.

All financial statements are reconciled to the University's integrated financial system to ensure compliance with relevant policy and to confirm the amount of cash reserves held by the University of Melbourne on behalf of AMSI.

This year we are reporting income and expenditure for the 12 months to 31 December 2014, having moved to a 31 December year end for reporting purposes in 2013 (which for 2013 was an 18 month reporting period).

Income from memberships remains consistent and with some member prepayments, membership income of \$1,194,760 accounted for approximately 37.5 per cent of total funds received. AMSI received grants and sponsorships from a number of sources including the Commonwealth Government, philanthropic sources and corporations during the reporting period. In total, \$1,368,177 was received in the form of grant and sponsorships which accounted

for approximately 42.9 per cent of total funds received. The balance of funding was derived from commercial operation income and consulting, totalling \$623,292 or 19.6 per cent of total income received.

Total expenses incurred by AMSI was \$2,694,676. Major expenses included salary costs of \$1,542,329 which was in line with expectations and specific program expenses. Expenses across program areas were above expectation, which resulted from greater levels of activity and commitment to conducting these programs during 2014.

In overall terms, the institute incurred a net operating surplus of \$491,553 for the reporting period.

AMSI's cash position as at 1 January 2014 was \$924,149. AMSI's cash reserves as at 31 December 2014 were \$1,415,702.

Certification

The University of Melbourne undertakes to provide audited financial statements for all contractually funded activities when required by the relevant funding body but not generally for AMSI as a whole.

In the absence of an overall annual audit statement, the following certification is provided.

We hereby certify that funds received by AMSI during the reporting period ended 31 December 2014 and the expenditure incurred during that period were in accordance with relevant funding agreements, with the AMSI Joint Venture Agreement and the approved Business Plan.

The balance of cash reserves as at 31 December 2014 of \$1,415,702 — as detailed in the following financial statements — is consistent with the balance of AMSI funds as represented in the accounting records of the University of Melbourne as at 31 December 2014.



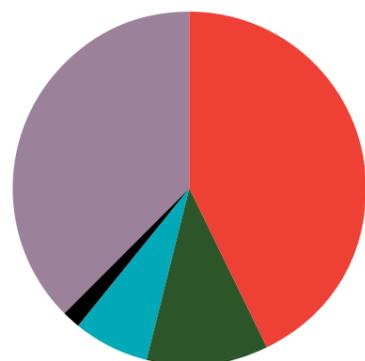
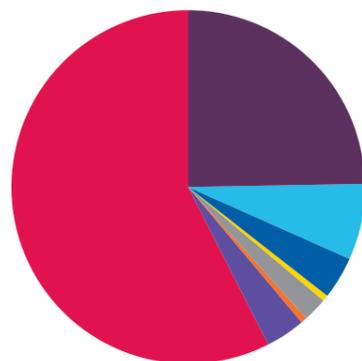
Geoff Prince
Director



Rod Birch
Business Manager

Group Income

Grants and Sponsorship	\$ 1,368,177
Commercial Income	\$ 356,832
Internship Program	\$ 214,000
Other Income	\$ 52,460
AMSI Membership Subscriptions	\$ 1,194,760
Total	\$ 3,186,229



Group Expenditure

Research and Higher Education	\$ 667,216
Business Industry, Governance and Outreach	\$ 192,693
Schools	\$ 103,109
Maths of Planet Earth (MPE 2013)	\$ 15,218
Visimeet Licences 2014	\$ 59,300
Secondment	\$ 10,501
Administration	\$ 104,310
Staff Salaries and on-costs	\$ 1,542,329
Total	\$ 2,694,676

Statement of Financial Performance

	January 2014 to December 2014		July 2012 to December 2013	
	\$	\$	\$	\$
Income				
Membership Income				
AMSI Membership Subscriptions		1,194,760		1,380,930
Major Grants				
Commonwealth Government grant for flagship programs		984,000		734,000
Other Grants - Schools Program				
Consulting Income		133,435		841,854
Publishing Revenue - CUP and copyright revenues				
		223,397		293,925
Sponsorships - includes MPE 2013, Higher Education				
		71,841		102,439
Internships - includes placement fees and collaboration payments (2014)				
		214,000		109,850
Other Income - includes salary support, cost recoveries and interest income				
		52,460		131,902
Total Income		3,186,229		4,020,318
Expenditure - Personnel				
Gross Salaries, permanent and casual		1,542,329		2,286,277
(Less external salary support)				
		1,542,329		2,286,277
Expenditure by Program (excluding salaries)				
Research and Higher Education		667,216		787,756
Schools		103,109		289,257
Internships		81,487		122,829
Other significant expenditures:				
Outreach and Engagement		84,807		59,506
Governance		26,399		22,417
AGR completion		-		157,709
MPE 2013 events and activity support		15,218		167,116
Visimeet licence fees 2014		59,300		-
Secondment		10,501		-
Administration		98,522		162,851
Total Expenditure		2,694,676		4,055,718
Operating Surplus/(Deficit)		\$491,553		(\$35,400)

Statement of Financial Position

	As at 31 December 2014		As at 31 December 2013	
	\$	\$	\$	\$
Assets				
Funds on Hand:				
Project 000020 - AMSI Core		806,807		812,961
Project 080060 - Commonwealth Government grant for flagship programs		608,895	1,415,702	924,149
Net Assets		1,415,702		924,149
Equity				
Retained income brought forward		924,149		959,549
Net of income over expenditure:				
AMSI totals		491,553		(35,400)
		491,553		(35,400)
Net Equity		1,415,702		924,149



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