Update of Activities and Achievements of the
RE-ENGINEERING AUSTRALIA Foundation LTD
April 2009
NATIONAL & FOUNDING PARTNERS

Defence Material Organisation
Dassault Systemes
CONCENTRIC Asia Pacific
IBM Australia

INDUSTRY PARTNERS

Association of Professional Engineers, Scientists & Managers Australia (APESMA)
Association of Consulting Engineers Australia (ACEA)
Australian Industry Group
BOEING
Bombardier Transportation
Coal & Allied
Engineers Australia
GKN-Aerospace
Hawker de Havilland
Intel
Navy
RESMED
Victoria University
Warren Centre for Advanced Engineering
WebEx
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REA STRUCTURE

Company Structure: The Re-Engineering Australia Foundation Ltd
                       ACN 095 876 323
                       A ‘Not for profit’ public company

Patron: The Hon. John Button

Chairman: Michael Myers BE MBA FIEAust CPEng FAICD.

Advisory Committee: CONCENTRIC Asia Pacific,
                       Engineers Australia, A.I.G., L.G.E.A.,
                       A.P.E.S.M.A., Warren Centre, State
                       Government Representatives.

The National Advisory Committee provides
oversight of the implementation of the
Foundation’s programs.

Marketing Committee: REA Director plus representatives from
                       National Sponsors.
REA BACKGROUND

In 1998, in response to the now widely accepted perception that few young Australians view Engineering as a preferred career path of choice, a group of like-minded people from industry and government came together to establish the Re-Engineering Australia Foundation Ltd (REA) a not-for-profit organisation. The Foundation’s objectives are to put in place a series of stepping stone activities, starting at the earliest ages, that form a pathway of encouragement, along which school students can progress, with each step adding to their interest and understanding of Maths, Science & Engineering activities, trades and professions. We hope to inspire younger generations to consider technology based industries as a fulfilling career path.

The REA Foundation understands the increasing need for more engineers to be a part of Australia’s skills pool, contributing to a vibrant and strong work, social, business and economic environment. REA has embarked upon a program of promoting engineering specifically to school-age students by providing technology, motivation and opportunities across Australia through a series of structured experiential education programs. These programs are aimed at developing employability skills.

One of the most recognised stepping stone programs REA initiated to achieve its goals is the Schools Innovation Design Challenge (SIDC). SIDC is a competition which commenced in 2003 and is offered to all high schools across Australia; aimed at students in years 7–10. This program focuses on developing the creativity and innovation of high school students through a structured engineering design project based on the development of a model Formula One racing car. The program is linked with the international F1inSchools challenge which now runs in 18 countries.

The SIDC program forms one step in the development of a pathway of sustainable interest, not only inspiring students but also developing in them the key employability skills which will assist in their transition into the work force. REA is recognised as being the fastest growing and a global best practice example of how to implement the F1inSchools program. Our incorporation of skills shortages objectives, collaboration and industry links are unique and now being adopted in many other countries around the world with our support.

REA projects links Schools, Industry, TAFE, Universities and parents in a collaborative and experiential environment focused on changing the metaphor of the education process. In 2007 over 280 secondary schools across Australia, together with numerous Universities and TAFE colleges will participate in the program providing a platform for over 30,000 students to actively participate in this challenge with another 300,000 students being exposed to the activity and the outcomes.

Our goal is to equip these children with the skills and knowledge to allow them to take on the world.
**PARTNERSHIP CONTRIBUTIONS**

REA Foundation has enjoyed significant corporate, government and organisational support since its inception. Vigorous campaigning has led to backing by State Governments and Departments of Education for the development of the Schools program throughout Australia.

Defence Materiel Organisation, Dassault Systemes, IBM and CONCENTRIC Asia Pacific have embraced the Foundation as National Founding Partners. They have committed significant financial support and provide Board members to oversee the implementation of the Foundation program.

Of particular note is the contribution of Dassault Systemes who have contributed over $450 Million of software in-kind to Australian Schools.

The following companies have also committed significantly with cash and in-kind contributions to the REA Foundation:

- Australian Industry Group, Webex, Hawker de Havilland, BOEING, Bombardier, GKN Aerospace, Coal & Allied Community Trust, Engineers Australia, APESMA, QMI Solutions, Local Government Engineers Association (LGEA), Association of Consulting Engineers Australia (ACEA), Intel, Toyota Australia, Victoria University, Swinburne University, Chifley Business School, RMIT, NSW Govt, SA Govt, Qld Govt, Vic Govt, Many local Councils and many local industries.

The following are just some of the many examples of partner contributions which have been made:

**DEFENCE MATERIEL ORGANISATION**

In 2008 the Department of Defence, Defence Materiel Organisation (DMO) became a major supporter of REA initially through to 2011. The DMO’s contribution includes a significant cash contribution together with in-kind assistance with the development educational deliverables which will be provided to all schools.

**TELSTRA**

Telstra has provided a significant cash contribution to assist with the management of REA and the hosting of many events; an invaluable contribution.

**DASSAULT SYSTEMES**

Dassault Systemes has contributed so far over $450 Million of the world’s best engineering technology and software in-kind to Australian Schools.

**TOYOTA AUSTRALIA**

Toyota provided a significant cash contribution to assist with the establishment of operations and activities of REA.

**COAL & ALLIED, CESSNOCK CITY COUNCIL, SINGLETON COUNCIL AND MAITLAND COUNCIL**

Local mining company Coal & Allied provided $50,000 through the Coal & Allied Community Trust to ensure Hunter region students could be involved. Cessnock City Council, Singleton Council and Maitland Council have made supporting contributions.
and joined with the Community Trust to install new engineering technology to be used by Singleton High, St Catherine’s College, Mount View High, Cessnock High, Maitland High and Francis Greenway High school students.

**Victoria University**

In addition to the time and material provided by Victoria University to run a 28 school super hub VU provided significant financial support to help students from Trinity Grammar School, Kew, attend and win the F1inSchools’ 2006 World Championships in the UK.

**Webex**

Webex has provided collaboration software in-kind to all schools competing in the program. This contribution has a value of over $1m.

**Boeing, Intel, GKN Aerospace, Victoria University and LGEA**

Boeing, GKN Aerospace, Toyota, Victoria University and the Local Government Engineers Association provided the funding to send both the 2004 and 2005 SIDC National Champion teams plus teachers to compete in the International Finals in the U.K. in 2006. Intel has invested in excess of $50,000 to send Australian Champion teams overseas to compete, and toward the running of national championship events in Australia over the past few years.

**Bombardier Transportation**

This high profile Engineering-manufacturing company has contributed sponsorship towards the 2006 SIDC National Final. Bombardier Transportation will also be a primary sponsor towards the international technology study tour to be undertaken by the reigning National Champions of SIDC, from Laverton Secondary College. The tour will take in Bombardier’s Centres of Excellence in Vienna and Stuttgart.

**QLD Govt, NSW Govt, Vic Govt, SA Govt**

Each of the states has contributed much in terms of cash and support to the program. The total of the financial support now totals over $3m. A list of the major Government and Community funding is listed below. This is in addition to the significant industry funding.

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
<th>Funding Support</th>
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</thead>
<tbody>
<tr>
<td>2003/04</td>
<td>$50 K</td>
<td>SA Government</td>
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<tr>
<td>2004</td>
<td>$50 K</td>
<td>Qld Government</td>
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<td>2008</td>
<td>$450 K</td>
<td>Defence Materiel Organisation</td>
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**Benefits for Partners**

Outcomes have far surpassed our own expectations with incredible stories of success around many schools and individual students. Most importantly, many schools involved in the program are reporting enrolment demand in design and technology related subjects increasing by 300-400%.

Annual participation rates by schools in Australia surpass those in any of the 18 other countries involved, including the UK and USA. All of these facts are testimony to the all round high standard, school suitability and sustainable nature of REA’s SIDC program model.

A fundamental and key differentiator within this program is the requirement for students to work directly with Industry partners in the context of their projects. This results in students seeing a direct relationship between classroom activity they enjoy and the world of work. Another point of difference is the provision of the latest communication technologies which enable teachers, students and industry to collaborate easily in ‘smart’ classrooms.

The forces and agendas which influence the process of attracting students to engineering are many with complex linkages between the parties who play a role in determining the critical path. The benefits for each of the stake holders can thus be very different. For student participants, the outcomes achieved by the program may not become evident in their eyes till some time after they have completed their involvement.

To be considered effective the SIDC, along with other programs introduced by REA, must achieve, amongst others, the following Key Performance Indicators (KPI’s):

1. The programs must be such that they attract students to participate;
2. The programs must improve the employability skills of the students taking part;
3. The programs must increase the acceptance of Engineering as a profession of choice.

Some of the benefits which have been seen to be achieved by each of the stake holders in the process are the following:

For Staff:

- The staff of all our partners have embraced the goals of the program. It has provided valuable opportunities for personal development through mentoring programs with students and the chance to share ideas gained from a lifetime of experience. These partnerships are an excellent example of what organisations can achieve by working together with communities to encourage as many young Australians to contribute their innovation toward developing a better Australia - Helping Australia take on the World.

For Students:

- Children respond to heros. We introduce the students to as many Heros as possible. Heros in business, in engineering and in the local community at large. It is through these interactions that we plant the seed of inspiration and “what is possible” in their minds, providing them with role models and mentors that they
can follow in life.

- Being able to operate with the best tools available in the world helps to generate enthusiasm in students. This Computer Aided Engineering (CAE) software they are provided is exactly the same as used by BOEING for the design of the 787 Dreamliner, GKN-Aerospace on the design of the Joint Strike Fighter, Toyota and Ford for the design of their vehicles. If we provide students, teachers and schools the best technology we will end up with the best students.

- The skills the students learn make them immediately employable.

For Schools:

- An increase in the numbers of students choosing to undertake Design & Engineering subjects has increased by up to 300-400%.
- Increased the reputation for the schools involved and status of technology teaching.
- Increased teacher enthusiasm.
- Increased involvement and collaboration with Industry.

For Universities & TAFE:

- Staff involvement has increased morale and excitement for their profession.
- Allowed staff to participate in mentoring programs.
- Improved the image of industries and engineering courses offered within their local communities.
- Creating a funnel of students interested in undertaking engineering.

For Industry:

- Created increased desire for industry to establish linkages with their local community.
- Increased involvement with schools.
- Provided an increase in new entrants with improved employability skills.
EXAMPLES OF SPECIFIC PARTNER BENEFITS

Many partnerships have been established through the REA program and have provided genuine benefits to all participating parties. The following are some examples:

TELSTRA

Bernadette Breedon, National Education Manager, Telstra.

"Telstra is proud to be a partner of the REA Foundation. It is a great pleasure to be involved in and recognised as a supporter of such an innovative initiative. The driving philosophy behind the REA Foundation is one shared and demonstrated by Telstra. Telstra’s history of serving enterprises in Australia spans 150 years. As Australian companies have innovated and evolved, so have we.

Our active participation in the REA Foundation’s “Schools Innovation Design Challenge” provides Telstra with the opportunity to work closely with our Education and Industry customers to ensure that the solutions we provide meet their needs and provides them with a superior customer experience. Our involvement with the REA Foundation has allowed Telstra to collaborate with industry partners to further build on our strong partnerships and unique market offerings.

Telstra sees its greatest return from this relationship, coming from it’s ability to highlight to the world what can be achieved by children who have been given the opportunity to access the world’s best technology. Their achievements become inspirational for our customers, our staff and the nation as a whole."

While Telstra is primarily a provider of facilitating technology it is keen to highlight that despite our nation’s isolation we can overcome the tyranny of distance and compete on a world stage. Telstra’s success in the future is critically dependant on its ability to attract engineering students to its ranks. The REA programs highlight that there is no need to go overseas for a challenging engineering career.

GKN-AEROSPACE

Tony Quick, Managing Director GKN-Aerospace.

"We were amazed at just how good the kids involved in the SIDC challenge had become, both from a technical competence level and from a professionalism level. As a result we are working very closely with a number of schools to promote engineering to as broad a range of children as possible. This program has open our eyes to the potential of Australian Children … we would employ the kids from the ‘Stingers’ or ‘Brisk in Pink’ tomorrow if we could”.

“The Stingers”, a team of 13 and 14 year old students from Trinity Grammar in Victoria, won the 2006 International F1 in Schools World Championships, producing a body of work that impressed Europe’s top engineering executives with its innovation, understanding and use of advanced engineering techniques. They scored highly across eight categories including car design, innovation, technical portfolio, verbal and multi-media presentation, static display, team marketing and car speed. Their bumble bee coloured racer was voted “Best Designed Car in the World.” They received international acclaim for their work and a $1.5 M scholarship to
attend City University London when they finish their VCE.

The Stingers competed with another Australian team from Cheltenham Girls High School, Sydney, which won “Most Innovative Design in the World”. The year 11 students who call themselves “Brisk In Pink” were the inaugural national champions of the “Schools Innovation Design Challenge” in 2004.

**Royal Children’s Hospital Education Centre**

Students from the Royal Children’s Hospital Education Centre for cancer patients can participate in the SIDC via laptops in the hospital. The RCH Education Institute has been actively involved as one of the hub participants in the Victoria University managed Super Hub.

This opportunity has provided these kids with a distraction from their day to day issues and allowed them to continue to participate in the community and with other school students outside the hospital through the on-line collaboration capabilities.

**Thursday Island Community**

The tyranny of distance is no barrier for the students and teachers from Tagai State College on Thursday Island, nor is it for their community. As a link school to the Smithfield SHS (Cairns) Design and Technology Hub, the Thursday Island community have thrown their full support behind ensuring the students in their community are given the same standard of education and opportunities as other schools in Queensland and throughout the country.

This initiative has provided all facets of the community with the catalyst to create new partnerships and develop existing relationships with Tagai State College through financial and tangible support. The community has developed a sense of pride in their students’ achievements and their involvement in the REA program and have become ardent supporters of the students having witnessed change and improvement in student self confidence, work ethic and the development of skills relevant to local industry and beyond. The community ensures these achievements are highlighted across the Torres Strait through local radio, television and newspaper communication on a regular basis.

**Bentleigh Secondary College**

Bentleigh Secondary College made Victorian Government education history when technology teachers and several year 10 students, initiated an on-line class from their homes using the latest digital communication technology – made possible through the REA partnership with Webex Communications.

Webex Communications delivers on-line collaboration tools allowing discussing Foundations, document sharing, on-line meetings, web conferencing and video conferencing services. Hosting a meeting through the on-line collaboration portal provided to the college, the teachers designed and customised the class and taught from their dining room tables. They took it a step further by collaborating with a class in Miami USA and manipulated computer design files on-the-go, whilst liaising via webcam.
Victoria University

Victoria University has been a key technology and education supporter of REA Foundation for several years.

Victoria University set up the Victorian arm of REA Foundation's "Schools Innovation Design Challenge", which involves 28 secondary schools from metropolitan and regional Victoria for Years 7-10 students. This was the program’s first ‘Super-Hub'.

VU’s Program Manager Schools, Joe Micallef, says,

"This project is the greatest I have seen in 28 years of teaching...This has been a fantastic opportunity for secondary students who have been able to use sophisticated engineering technology - some of which professional engineers haven’t even used yet. REA Foundation’s Schools Innovation Design Challenge has inspired girls and boys right down to Year 7 to grapple with engineering challenges and to imagine creative solutions."

"Victoria University is thrilled to be involved in this program which is raising the level of importance and awareness of technology and innovation. It is not only helping to develop the skills of the students participating, but is also encouraging them to consider manufacturing and engineering as a profession;"

"We also hope to encourage more female students into engineering and they might consider the fact that the 2004 Australian REA Foundation champions was a team of five females."

Victoria University has reaped numerous rewards from being involved in the REA Foundation’s initiative.

1. **VET in School (VETiS) Engineering and Electrotechnology students, Bradley Portelli and Costa Kyriacou, participants in the SIDC Challenge, both received Australian Vocational Student Prizes in 2006. This award recognises exceptional Year 12 students undertaking Vocational Education and Training in Schools (VETiS) programs as part of their senior secondary certificate.**

2. **In late 2006, student Mark Van Den Oever, a REA participant, received the Australian Vocational Student Prize and the Prime Minister’s Award for Skill Excellence for his outstanding achievement in VET Engineering undertaken at Victoria University.**

3. **VU TAFE student Kevin Baker, another SIDC participant, was named Apprentice of the Year in 2006. Kevin was an apprentice electrician at Holden’s Engine Plant in Fisherman’s Bend, and also runs two businesses of his own in the automotive and computers fields. He says that he had an interest in robotics, mechatronics and industrial automation, and is thinking about doing a university degree in electrical engineering next.**

WebEx

Webex, supported a team from a Western Australian high school to represent their nation at the F1inSchools Technology Challenge World Championships at the Telstra Dome, Melbourne in 2007. The "Race-A-Roos" as they are called from Wesley College are boarders from the far reaches of south-west Western Australia, living hundreds of kilometres apart. Utilising
Webex’s web-based technology combined with Telstra’s high speed broadband communication the boys were able to collaborate on the development of their car.

"The enthusiasm this created within our organisation was staggering ... all of our employees wanted to work with these kids to make things happen ... they emotionally became part of their team." Kevin Mackin, Managing Director.

**Coal and Allied**

Local mining company Coal & Allied, through its Coal & Allied Community Trust, has provided high schoolers in the Hunter region with the resources to join this national program.

"This is an exciting project and we are proud to be able to bring REA’s program to the Hunter for the first time. While the activity is fun and engaging the students are learning valuable skills that can be applied to senior studies and their future careers.” Coal & Allied Community Trust Chair and General Manager External Affairs, Nik Senapati.

Cessnock City Council, Singleton Council and Maitland Council have made supporting contributions and joined with the Community Trust to install new engineering technology to be used by Singleton High, St Catherine’s College, Mount View High, Cessnock High, Maitland High and Francis Greenway High school students.

Lew Oldfield, Director Works and Services, Cessnock City Council and President of the Local Government Engineers Association of NSW, is similarly excited about the program.

“As local government engineers we support initiatives which show young Australians just how exciting and challenging an engineering career can be,”

“The Association of Local Government Engineers is a key supporter of REA and we have seen the Challenge take off dramatically around the nation. Our goal here in the Hunter will be to get as many students involved as possible.”

**REA Champion Receives OAM**

Tim Griffin, President of the Association of Professional Engineers and Scientists Australia, was presented with the prestigious Medal of the Order of Australia in the General Division. Mr Griffin was instrumental in establishing the North Rockhampton High School as a technology hub through its partnership with the Re-Engineering Australia Foundation. The technology hub saw students represent Qld in the SIDC National final in November 2006.

“Encouraging and providing opportunities for young regional people to pursue a career in engineering and technology and contributing to the development and contribution to the developing of regional Queensland has been rewarding in itself” Mr Griffin said.
S U C C E S S & R E C O G N I T I O N

R E A R E C O G N I T I O N

The following are some of the awards and recognition REA has achieved thus far:

- Engineers Australia, Engineering Excellence Award NSW 2004 & 2006
- Engineers Australia, National Presidents Award 2006
- Warren Centre Medal for Outstanding Contribution to Engineering 2006
- Association of Consulting Engineers (ACEA), Presidents Award for Outstanding Contribution to Consulting Engineering 2006
- Prime Minister’s Award for Skills Excellence 2006
- Dassault Systems Global Education Award 2006
- Peter Doherty Science Award 2005
- Smart State Science Award 2005

A U S T R A L I A N S T U D E N T S U C C E S S
F I N S C H O O L S W O R L D C H A M P I O N S H I P S

2005

- Noosa District HS & Cheltenham Girls HS - 3rd Outright
  - Best Engineered Car

2006

- Trinity Grammar Melbourne - 1st Outright
- Cheltenham Girls HS Sydney - Best Engineered Car
  - Best Team Marketing

2007

- Laverton HS Melbourne - 6th Outright
- Trinity College Perth - Best Engineered Car

2008

- Trinity Christian College Canberra - 2nd Outright
  - Best Engineered Car
- Barker College Sydney - 3rd Outright
- Team Pitomia from France won the Best Newcomer Award, another win for Australia. REA has been working with the Université de Versailles in Paris, assisting with implementation of the REA model to several disadvantaged Parisian schools.
2008 Success

Aussies 2nd and 3rd at F1 in Schools World Championships in Malaysia

Team Goshawk, a group of year eight F1 designers-engineers sponsored by the Australian Defence Force Academy and Royal Australian Navy, has finished second outright at the World Championships of the F1 in Schools Challenge at Kuala Lumpur, Malaysia!

Standing alongside them on the winners dais was Impulse F1, the team from Barker College in Sydney. It was a stranger-than-fiction moment for the year eight students - Alistair Smith, Dan Boucher, Ed Larkin and Luke Abberton and their teacher Graeme Hutton from Trinity Christian College in Canberra - because they only became involved in the F1 in Schools program in late 2007! Not only did they come within mere points of becoming World Champions (that honour went to an English team), they were awarded Best Engineered Car. This is a major coup because it means that since Australian teams began competing in the World Championships four years ago we have won Best Engineered Car every time! Says something about our ingenuity and reinforces that having access to 'best in the world' design tools, like CATIA, provides for greater innovation capabilities.

Impulse F1 are "veterans" of the F1 in Schools competition having finished very close to becoming Australian National Champions for several years, until finally achieving that goal in November 2007. And, to prove their expertise, they managed to outscore 17 other nations! 25 teams flew to KL to compete in the annual international showdown which was staged in association with the Malaysian Grand Prix. They raced miniature 100 km/h F1 cars that they had designed, tested, made and raced themselves!

Despite only having joined the F1 in Schools competition in late 2007 the Goshawks were very quick to embrace the space-age 3D design and engineering analysis software (CATIA) they were provided with. They designed a clever, aerodynamic car capable of 100 km/h... machined it from a block of balsa... assessed it with Virtual Wind Tunnel software and physical wind and smoke tunnels, and completed the other tasks such as collaborating with industry, obtaining sponsors, preparing a detailed engineering portfolio of their ideas and reasoning, and marketing. ADFA, Navy and Neal Bates Motorsport (responsible for building the Australian Rally Championship winning Toyotas) got behind their project and also began their association with REA Foundation at both the ACT finals and National Finals in Noosa. Proud onlookers were two teams which were crowned 2006 Australian National Champions (senior and junior): DASHA The Eagle from Melbourne and the Race A Roos from Perth.
LONG-TERM OUTCOMES FOR THE COMMUNITY

In general terms the project has increased the numbers of students electing learning pathways aligned to manufacturing and engineering by focusing on:

- Developing the skills of our children to assure their opportunities for the future;
- Creating world leadership in engineering and manufacturing and encouraging young Australians to participate by choosing engineering as a profession;
- Promoting collaboration between our cities and country regions in support of innovation;
- Creating new skills training opportunities for young Australians in the field of engineering technology thereby increasing employment opportunities through an expanding technological manufacturing base;
- Forming sustainable partnerships between industries and schools, cities and the bush;
- Raising the level of engineering and manufacturing skills development in regional areas;
- Developing in students the employability skills industry is demanding;
- Developing our students and their teachers to become the best in the world.

Students from schools all over Australia, from both city and regional communities, participate in the program. The Schools are linked through technology into hubs, focusing on the development of collaboration skills. Over the course of the school year, both in their own time and in class with the supervision of dedicated teaching staff, these students follow the Design, Appraise, Make and Test learning steps. This curriculum tests their problem solving skills and encourages innovative and imaginative thinking to create a model vehicle that fits the competition design constraints.

The students collaborate with many organisations, industry and higher education facilities to source knowledge and resources during their project. In doing so, they provide tremendous return on investment and education outcomes for all parties.

REA has well-established hubs operating in Victoria, South Australia, Western Australia, Queensland and hubs are being established across Western Sydney and Regional NSW. Tasmania has become the latest state to roll out the SIDC program.

To facilitate the learning process the technology hubs are provided with hardware including a 3D CNC Router, a Smoke Tunnel, a Wind Tunnel, and a 20 metre long race track for each hub. Each school is also provided with world’s best Computer Aided Engineering (CAE) software, as used by BOEING, Toyota, Mitsubishi, Ford and many others, to the value of over $2M per school. All of these technologies are donated to schools and available 24/7 for use by students for the F1 in Schools and many other projects.

Both metropolitan and rural schools are linked to encourage ongoing collaboration between country and urban students. The students develop a confidence that they have skills and understanding of technology to allow them to continue to live where they like (city or country), following their chosen careers. It teaches city and country students how to collaborate over distance in business, empowering them to deal with people anywhere in the
The locations of these Design and Technology Hubs in regional centres help to ensure equitable access to equipment and skills for rural students and help to create new career, employment and manufacturing opportunities.

We aim to open the eyes of regional communities and regional industry to the level of technology that they can implement in their local environments and provide the feed of students direct to industry able to understand and work with this technology.

The program provides a practical, flexible and an integrated approach that addresses the key drivers of skills shortages specifically in regional areas by:

- Utilising a mix of schools in hubs selected by industry and geography (including disadvantaged schools, students and parents) as such, issues relating to limited access to training and education programs can be alleviated.

- By promoting collaboration between regions, rural access issues can be overcome preventing internal migration of young adults from rural to metropolitan areas.

- With appropriate school participation and training, low levels of education and employment among Indigenous Australians can be improved.

- Encouraging support from both large and smaller local businesses. Business and marketing skills are integrated into the school support base.

- Providing both installation and skills development in use of the latest broadband real-time communications systems. This will help with regional infrastructure and services, attracting workers and their families to regional areas.

All of the activities started by this project are sustainable. The technology implemented in the schools remains in the schools to use any day of the week, on any type of learning, such as industrial design, interior design, science and the arts. The partnerships that are established between the schools and industry also continue. In fact, we have found that one of the outcomes of this project is the growth through the development of additional new projects (at a school level) implemented using the technologies and partnerships that have been put in place.
PROMOTING TO AND TARGETING SCHOOLS:

REA is very active in presenting its initiatives and the opportunities its programs present to schools and students through a range of strategies. These include presentations at Teacher Professional Development and relevant Association events, public and education sector exhibition functions and membership of national technology teacher networks. Schools in cities, regional and disadvantaged areas are also targeted.

These efforts are combined with our representation to Federal and State Government Education agencies in both the public and independent (private) school sectors. Our network continues to grow successfully with distance as no barrier through a web based set of collaboration, networking and support tools.

We have a database of a further 300 schools keen to get involved from all areas of Australia. Our roll-out priorities are often aligned to best present funding opportunities through government grants and industry sponsorships. REA works with relevant Government departments to identify regional school priorities according to specific project agendas.

PLANS FOR GROWING REA

We have major roll-out projects under way in QLD and NSW through State Government funded initiatives, along with significant existing activity and further planned expansion in VIC.

This year will see the implementation of our first Hub that has direct Defence industry links and collaboration in the ACT through the Navy and the ADFA and several ACT High Schools.

REA is working with Government in SA and through organisations such as ASC and AWD to identify funding for mass deployment of existing and new pilot REA programs with a focus on addressing needs around defence and ship building related engineering and manufacturing skills requirements.

Our first Hubs have been deployed in WA involving 10 schools around Perth. Testimony of this project’s success is encouraging further expansion into regional areas such as the Pilbara. Our WA growth plan is modelled on the strategy in other States such as QLD where the success of initial pilot Hubs has been used to leverage significant Government funding for targeted mass project deployment.

REA has expanded into Tasmania, following an expression of interest from the TAS Department of Education, and is poised to roll-out in the Northern Territory with support from their Department of Education.
FURTHER PROGRAMS UNDER DEVELOPMENT.

OZ-BLOBS CHALLENGE
The Oz-Blobs Challenge is about placing in the hand of our children, at the earliest age possible, the tools that will allow them to design and manufacture their own toys.

Children in primary school classes as low as kindergarten are provided with 3D modelling software and given the task of designing their own toy. The toy design is then sent to the “BLOBS Factory” where it is rapid prototyped and sent back to the child, every child, giving them the experience of being able to be totally creative and seeing the outcome of their imagination.

They learn music and dancing in Kindergarten why can’t they learn design & engineering.

This program is currently undergoing a pilot in a number of schools with one school they have taken the activity into the science class. Students examining insects under the microscope, then go about designing their own killer bug which is then rapid prototyped.

HYBRID CARS DESIGN CHALLENGE
An extension activity of F1inSchools, the proposed Hybrid Design competition provides from never before realised collaboration opportunities between school students and automotive supplier design engineers in the design of the wheels for the new breed of Hybrid cars.

In conjunction with the Australian OEM’s, students will be given the opportunity to design real components for real cars. As with the SIDC, students will gain an understanding of the manufacturing cycle from the idea to design to manufacture and test, and finally the proof of their design by having it installed on a production car.
SKILLS & THRILLS INITIATIVE

THE AIM
To encourage young Australians to take up careers which build a nation, fostering interest in the prerequisites or Maths, Science, Engineering and Technology.

MISSION
The Skills & Thrills Initiative (STI) will provide Education, Industry and the broader community with an umbrella matrix of accredited Maths, Science, Technology and Engineering outreach intervention programs which are mapped against National Curriculum outcomes and which also meet employability outcomes as defined by industry. It also aims to provide performance objectives and a management focus for existing Maths, Science, Engineering and Technology career intervention programs.

BACKGROUND
Most of the career intervention programs focused on attracting students to Maths, Science, Engineering and Technology which are currently in place in Australia have historically been developed with mixed agendas by individuals, teachers or industry organisations. Some are driven by a personal passion to develop activities which interest children, some a desire to achieve financial reward or in the case of corporations more recently, specifically designed to address the skills related issues. In each case the outcomes, whether intentional or not, have all had at least some impact on increasing awareness of engineering for those that participate in the activities.

The more recent activities, designed specifically to address the shortage of students taking up Maths, Science and Engineering include, for example, the Science and Engineering Challenge by Engineers Australia, the activities of Re-Engineering Australia Foundation, Australian Academy of Technological Sciences and Engineering STELA project, Science by Doing and the Formulae SAE challenge by the Society of Automotive Engineers. These have had a much more direct focus on increasing the level of awareness of specific professions and prerequisites. Further activities with the similar goals are currently under development by The, The Warren Centre for Advanced Engineering and a number of the State Governments.

Within the United Kingdom this historical passion driven development of intervention programs also gave rise to a plethora of programs each with its own set of goals and Key Performance Indicators (KPI’s) but with little common focus. At least within the UK there has been an attempt, in hindsight, to bring together and recognise the programs that exist under a single banner of the “Technology Learning Grid”. This UK recognition process has not taken the next step of aligning the goals and KPI’s of each of these programs to those of the nation in general. The STI aims to mirror achievements in the UK, and go much further, by undertaking the following key activities.
**Key Primary Activities**

1. Document and publicise all the intervention programs which are currently available to Australian Schools, in a similar format to the UK’s Technology Learning Grid,

2. Provide programs with a common set of task oriented outcomes aimed at unifying the outcomes and guiding principles used to develop and manage intervention programs. These would include, as an example, a definition of current industry employability skills as developed by organisations such as Australian Industry Group (AIG).

3. Provide each of the intervention programs with current research applicable to the development of career intervention programs, particularly in terms of influencing children’s motivational drivers and systems based approaches to intervention development. This is aimed at aiding understand of the issues in play and assisting with the construction and implementation of programs based on founding research.

4. Assist programs with the knowledge and skills needed to increase collaboration with Industry and help facilitate interaction between Industry and the education system.

5. Host a showcase and conference of the best from each of the current intervention programs where the best of the best is put on display, giving students, teachers and industry the opportunity to gain recognition for their work and contributions. The showcase conference will call together people from all ends of the education and industry spectrum to share ideas and a vision for the future and discuss how Australian Society can build a better future for our children.

**Key Performance Indicators for Programs**

1. Inspiration & Excitement
2. Fostering Industry links and alignment to industry skill priorities
3. Increasing student understanding of the value and importance of Maths, Science, Engineering and Technology
4. Incorporation of “World Best” technologies and processes, building an education revolution
5. Sustainability and Curriculum Integration

**Benefits**

<table>
<thead>
<tr>
<th>Students and Parents</th>
<th>Teachers and Schools</th>
<th>Industry</th>
<th>Outreach Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Studies become relevant</td>
<td>Access Program information</td>
<td>Program matrix helps selection and engagement choices</td>
<td>Access funding for program administration and management. Marketing and promotional benefits.</td>
</tr>
<tr>
<td>Employability skills</td>
<td>Clearer choices</td>
<td>Programs mapped across industry domains</td>
<td>Access resources and support.</td>
</tr>
<tr>
<td>Career &amp; Learning Pathways</td>
<td>See outcomes and alignment</td>
<td>School Partnership opportunities</td>
<td>Collaboration and networks</td>
</tr>
<tr>
<td>Celebrations and recognition of learning</td>
<td>Industry links</td>
<td>Become skilling stakeholders</td>
<td>Improved outcomes and quality</td>
</tr>
<tr>
<td>Accredited outcomes</td>
<td>Engage students in Science, Maths and Engineering</td>
<td>Become education outcome stakeholders</td>
<td>Recognition of Excellence</td>
</tr>
<tr>
<td>Engaged in school</td>
<td>Increased Teacher career satisfaction</td>
<td>Resources for adopting schools</td>
<td>Competitive environment</td>
</tr>
<tr>
<td>Understand learning activity and assessment / attainment</td>
<td>Teachers as career role models</td>
<td>Recognition / leadership</td>
<td>Unified outreach platform</td>
</tr>
<tr>
<td>Increased engagement by parents</td>
<td>Curriculum and teaching program resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perform in a competitive environment</td>
<td>Networks and professional development</td>
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</tbody>
</table>
Most State Governments have now committed to fund the establishment of a number of school hubs across Australia. The Foundation is continually seeking further Government and industry "project specific" funding to establish further schools hubs across Australia, enabling all Australian schools to participate in the Schools Innovation Design Challenge. Each Hub allows up to 300 students to directly take part in the programs and provides access to the latest engineering technology for a further 1500 students.

The cost of the equipment which is supplied to each hub school, including training of teachers in the hub and satellite schools is $65,000. This money is raised from government, local industry and individual donations. In addition to financial support we would also welcome in-kind contributions to the activities of the Foundation and in particular, encourage business to adopt their local school as a way to share experiences and encourage young Australians to take up engineering and manufacturing as a profession.

REA National Sponsor

National sponsors are invited to have a participant on the National Management Committee. The REA implementation team also works with the sponsors marketing departments to develop an integrated internal & external marketing program that will provide an appropriate outcome commensurate with the generous involvement.

REA Foundation is involved in a wide variety of ongoing marketing activities throughout the year - via our internal marketing team and in cooperation with our partners’ resources. These initiatives range from media events to displays at trade shows and expo’s to black tie dinners. For example, a national road show of displays and presentations has been included as part of high-profile engineering conferences and expo’s, business development-careers-government and educational industry Foundations; and we have been asked to speak at a number of these. Direct mail campaigns, email campaigns (e-newsletters), advertising in selected national newspapers, and our website (www.rea.org.au) help stakeholders stay in touch with our progress. To date the flow of information has ended up on both international and national television, national radio, in major metropolitan newspapers, engineering industry and educational magazines and newsletters, local press, on corporate and government websites, and in school websites and bulletins.

Towards the end of each year a national celebration event is staged to profile the work of REA, our Partners, and of course the students. The next function is currently planned for November 2007.

To maximize the value of participation for each of our major sponsors we work with the respective marketing teams to develop a set of awareness activities to maximize the level of recognition achieved in the market place, ensuring alignment with each company’s strategic positioning.
Through its technology partners Telstra and Webex, REA has developed a significant collaboration and support network with schools, students and linked industries. These provide excellent opportunities for our partners to have their brands and messages communicated to thousands of students. Because our programs end up involving parents, they too are part of the target audience for marketing messages.

There are significant opportunities to raise awareness in schools around many defence career opportunities and the community promotion of the role and work of DMO, through REA program linkages, in the form of support and resources through our collaboration network.

REA would welcome opportunities to work with sponsor personnel to identify agreed key messages and priority target groups in order to define an education and marketing strategy that directly links to REA’s schools program.
# REA Sponsorship Benefits

<table>
<thead>
<tr>
<th>Benefit</th>
<th>National Sponsor</th>
<th>Ambassador</th>
<th>Corporate Member</th>
<th>Associate Member</th>
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<tbody>
<tr>
<td>Logo on equipment in hub schools</td>
<td>☑</td>
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<tr>
<td>National public relations coverage</td>
<td>☑</td>
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<tr>
<td>Member of the REA marketing committee</td>
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<td>Presentation of plaque recognising commitment to the Foundation</td>
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<td>Free admission to annual REA dinner &amp; REA seminar</td>
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<tr>
<td>Company name/logo in REA publicity materials, advertising &amp; other</td>
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<tr>
<td>distributed materials; included in ongoing REA activities – eg.</td>
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<td>Newsletters, invitations to key events, media opportunities</td>
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<tr>
<td>Use of REA Foundation logo on own company business materials</td>
<td>☑</td>
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<td>Acknowledgement in REA formal speeches/proceedings, incl. Launches,</td>
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<td>annual dinner; display of company banner/signage at Foundation events;</td>
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<tr>
<td>involvement at displays/trade exhibitions</td>
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<tr>
<td>Opportunities to develop relationships with key government figures</td>
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<tr>
<td>involved with the Foundation at different levels.</td>
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<tr>
<td>Networking opportunities at Foundation functions, lunches, etc.</td>
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<tr>
<td>Acknowledged on REA website, with a link to own website</td>
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<tr>
<td>Opportunities to network with students, teachers, P&amp;C’s,</td>
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<td>Families of students and businesses linked to participating Schools;</td>
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<td>increased community profile via initiatives – eg. School Visits, work</td>
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<td>experience, workplace tours, hosting events</td>
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<td>Discounted admission (50%) to annual REA dinner &amp; REA seminar</td>
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<tr>
<td>Presentation of “certificate of membership” recognising commitment to</td>
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<td>the Foundation</td>
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<tr>
<td>Benefit from ongoing rea activities – eg. Newsletters</td>
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<tr>
<td>Invitations to key events, media opportunities</td>
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<tr>
<td>Discounted admission (15%) to annual REA dinner &amp; REA seminar</td>
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