



Appendix 1 - Summaries of Presentations

The section below provides a brief summary of presentations across the trade mission. All presentations from the week can be found in the attached dropbox location.

<https://www.dropbox.com/sh/pvwjexh2jnxyslr/AACw2i7Vdc0xteuTgkvjr-UPa?dl=0>

Brisbane event - Day 1 – 5th March 2018

➤ EU delegates Round Table with Queensland Chief Scientist

Visiting EO delegates from Europe had a round table discussion with Dr Christine Williams, Queensland Chief Scientist.

Feedback from delegates indicated it was very positive and informative discussion.

A comment was also made that Queensland was fortunate to have a Chief Scientist who really understood the opportunity and value of remote sensing.

➤ Setting the Scene Keynote presentations - speaker highlights

Speaker: Prof. Bronwyn Harch, Queensland University of Technology

As a board member of Innovation and Science Australia, Professor Harch provided a detailed overview of the *Australia 2030: Prosperity through Innovation* report, launched January 2018. Presentation highlighted that Internationally Australia is: Good at knowledge creation, Fair at knowledge translation, and Poor at knowledge application.

Key recommendations of the report included:

- Need to encourage start-ups and scale-ups
- More global thinking by Australian research and industry is needed
- Use government procurement to stimulate innovation - 33% for Australian SMEs, accelerate trials with Government as “first customer”
- Vision of making Australia the “healthiest place on earth”

Speaker: Prof. Stuart Phinn, University of Qld, Earth Observation Australia (EOS)

As the convenor of Earth Observation Australia, Professor Phinn highlighted the long term Queensland and NSW Government collaboration to invest in joint remote sensing research program. EO is part of critical government infrastructure in states and nationally, and GA’s Digital Earth Australia is one national example of EO investment. EOA has published a EO Plan with input from all sectors and stakeholders, the Earth Observation Community Plan, which can be found at www.eoa.org.au

Speaker: Geoff Sawyer, European Association of Remote Sensing Companies (EARSC)

EARSC represents over 100 members of the Earth Observation industry in Europe, mostly representing SMEs and small start ups. EARSC are participating member of Group on Earth Observations (GEO), and maintain a number of formal international relationships with associations. EARSC are developing EU marketplace online called eoMALL, expected to launch online June 1st 2018. EARSC conduct an industry



survey every 2 years, noting from the last survey that there are approximately 500 companies in the sector in Europe. 96% are small companies and the public sector accounts for > 50% of revenues in the EO sector.

Speaker: Steve Jacoby - Exec Director Land and Spatial Information, Queensland Dept. Natural Resources, Mines and Energy

Steve Jacoby presented the most visually pleasing and illustrative presentation of the mission, and used this to highlight the evolution of the QLD government's use of satellite imagery over the previous 12 months. While QLD are a long time user of satellite data, primarily Landsat and SPOT, the previous 12 months have seen increasing shift towards high resolution, service based approaches to data. This has resulted in significant new applications for monitoring, assessment and planning across state government departments. Jacoby finished with a call to attendees to help move the government from data producers to data consumers.

Speaker: Dr. Christine Williams, Queensland Chief Scientist

Dr Williams built on Jacoby's presentation discussing the drivers and use of EO data across government. Williams highlighted that a key role of government is monitoring the environment and in Queensland it is large enough that there is every type of landscape, huge variety of ecosystems and habitat and significant climate variability. She presented the view that core EO monitoring and analysis activities will continue to be done within government with existing capability, and that Machine Learning, AI and data management for EO data is key.

Speaker: Deanna Hutchison - SIBA | GITA

Deanna Hutchinson outlined SIBA as effectively an Australian equivalent of EARSC serving the broad spatial industry which include EO. Membership covers from Perth to Tahiti and includes New Zealand. The primary roles of advocacy and market creation for the members. The market is largely government but it is moving to a better balance with industry, particularly the built environment and agricultural markets. The big technical challenge in Australia is internet connectivity which is quite poor particularly in the regions and its impact on moving large spatial datasets. Finally, Hutchinson highlighted that Asia is the 2nd biggest remote sensing market forecast out to 2020 on our doorstep.

➤ **Short 5 minute company introductions**

The following companies provided 5 minute presentations to present a company overview, as well as discussing key opportunities for collaboration. The presentations from these companies can be found as attachments to this report.

European Companies

- Airbus - Fabrice Triffaut
- e-geos - Frederica Mastracci
- EARSC - Geoff Sawyer
- earth-i - Peter Hausknecht
- Geospatial Enabling Technologies - Gabriel Mavrellis
- GMV - Antonia Tabasco Cabezas
- Planet - Shankar Sivaprakasam

Australian Companies

- Farm Map 4D - Phil Tickly
- OVASS - Dave Newman
- Dialog - Glenn Irvine
- Data Farming - Time Neale
- Pangaea.space - Nick Knowles
- QUT - Gavin Winter



➤ Horizon 2020 Session

The European Union Horizon 2020 program is an €80 Billion fund for research and innovation from 2014 - 2020. H2020 now encourages industry and SMEs to participate, where previous investment programs were research focused. The program is very collaboration focused, and generally require a minimum of 3 partners from 3 different EU countries to submit proposals. Generally, Australia is welcome to participate in all calls but generally organisations need to bring their own funding.

A specific Horizon 2020 Call announced last year, opening in October 2018, is for €5 million for Copernicus downstream applications. This call requires EU to partner with Copernicus international partners, which currently covers only Australia and the USA, and can fund Australian partners directly.

It is recommended to start collaboration discussions early, and putting together a compelling bid requires time, effort, trust and significant effort. For the October call, organisations should start their partnership conversations now.

EU partners have strong experience leading and putting in successful proposals, and make logical bid leaders to maximise the potential to submit a winning bid in a competitive bid process.

Organisations such as EARSC, CRC-SI and SIBA|GITA can assist in introductions, coordination and management of collaboration bids.

Australia have a National Contact Point (NCP) based in Brussels who can help with specific clarification if needed around calls and their requirements. Extensive video resources on Horizon 2020 are available online through video services like Youtube.

➤ Networking Session

Drinks and food was served for the follow on informal networking activities for all attendees for an hour. Informal feedback indicated a number of initial connections were made both between the EU delegates and Australian organisations and among the Australian organisations attending further validating the event.

Canberra event - Day 2 – 6th March 2018

➤ Tour of Geoscience Australia

Geoscience Australia hosted the EU delegates at their premises in Canberra. A tour of Geosciences facilities and collections proved to be of significant interest. This was followed by two presentations:

➤ Speaker: Dr Adam Lewis, Dr Trevor Dhu - Geosciences Australia - Digital Earth Australia

GA introduced the federally funded Digital Earth Australia program, a national scale EO data infrastructure focused on distributing analysis ready data focused on free and open government data. While the infrastructure was set up to deliver digital data and products to other government departments, but GA recognise that support for the future requires a focus on innovation and industry growth.

Discussion from the EU mission attendees focused on the line between what DEA is doing and what industry can/should be doing is being defined. Where does government investment in service delivery stop and industry opportunity start, and the availability of public good data is seen as role for Government rather than industry.



➤ **Speaker: Gerry Stanley PSMA - Geoscape Workshop**

Geoscape capabilities presented - 3D continent wide data product generation from space focused on defining the built environment. Partnered with Digital Globe for developing and delivering Geoscape.

PSMA owned by Federal and State Governments but is required to be self-sustainable. The business model adopted is to be a Wholesaler of analytics ready data on the build environment to industry and government through reseller partners.

Some observations and feedback from the EU delegates:

- Geoscape was viewed as a “disruptive” technology advance for the spatial industry;
- The PSMA business model where pricing is per organisation based on organisation size and the “value” of the service to that organisation and not priced to usage was surprising to EU delegates
- The question was raised where a wholly government owned spatial services development and delivery company is encouraging of industry investment Vs competing with industry, how do you manage that effectively?

Canberra event - Day 3 – 8th March 2018

➤ 'Collaborating to grow the 'space economy' panel and workshop, with introductory remarks from EU Commissioner Bionkowska

➤ **Panel Members:**

- Former Senator the Hon Kate Lundy
- Andreas Veispak, Head of Space Data for Societal Challenges and Growth, European Commission
- Graeme Kernich - CEO, CRC for Spatial Information
- Dr Adam Lewis - Chief Scientist, Geoscience Australia
- Dr David Williams - Group Executive, CSIRO
- Geoff Sawyer - Secretary General, EARSC

➤ **Keynote presentation from EC Commissioner Elżbieta Bienkowska**

Commissioner Bienkowska visited Canberra for a week, with a focus on impact and collaboration on both the space and digital economies. The Commissioner highlighted that Space matters to Europe, and the EU has and is making a massive investment in space capability for EU. Copernicus is the EU EO system, and Galileo is EU's own satellite navigation system.

This investment provides EU autonomy and leadership in space, and provides key information on the planet and the environment.

The EU space programs are world class and the EU represents ⅓ of the open world space markets, and the EU Space Strategy guiding these programs has core focus on

- Applications & services
- Security & defence
- Role of the private sector

The EU is now moving to actively promote international cooperation around space, with Australia the first country to sign international collaboration agreements for the Copernicus program. The aim of this collaborations is ultimately to create business opportunities through investment.



➤ Signing of MoU between EARSC and CRCSI

This MoU aims to establish a formal cooperation initiative between EARSC, responsible for promoting the use of Earth Observation (EO) technology and supporting companies in Europe which offer EO-related products and services, and CRCSI, an Australian and New Zealand collaborative R&D organisation which conducts user-driven interdisciplinary research in spatial sciences to accelerate industry growth, improve social wellbeing and build a more sustainable environment.

The main beneficiaries of this MoU will be organisations and firms located in Europe and Australia willing to develop partnerships and joint projects, and that are interested in benefiting from the sharing of best practices and exchange of experience, information, people and technologies related to EO which are not available in their home locations. This exchange will be supported by EARSC and CRCSI.

➤ Panel members were asked to make brief opening statements

Hon Kate Lundy

Since retiring from federal politics, the Hon Kate Lundy has been actively promoting space as an industry opportunity across Australia. She sees strong economic benefits both upstream and downstream for space technologies and service, with data from space being key for societal, defence and government outcomes.

Andreas Veispak, Head of Space Data for Societal Challenges and Growth, European Commission

Andreas Veispak opened by stating that the space and digital worlds form a complementary ecosystem, and that data from space is critical to enable applications across many economic themes. However, to truly see impact, needs a stable operating environment for industry. Veispak echoed the theme from the previous day's discussion focusing on the delineation between public and industry roles for the sector.

Geoff Sawyer - Secretary General, EARSC

EARSC focuses is the downstream sector EO services, and currently has 100+ members and growing. This growth reflects the leveraging of Copernicus open data, as well as cooperation and partnerships internationally is opening doors outside and inside EU for members. Key to the future of Copernicus will be the Data and Information Access Services (DIAS) that facilitate access to Copernicus data and information from the Copernicus services. Horizon 2020 a good tool to start working together between Australia and Europe.

Graeme Kernich - CEO, CRC for Spatial Information

Graeme Kernich highlighted that mission has proved to be a tremendous opportunity for organisations to meet face to face to collaborate. CRCSI is now 15 years old, and over that time has undertaken research that supports and influences industries across Australia. CRCSI is seeing industry moving into services for the consumer world, increasingly fusing data from different sources and applying innovative techniques such as AI.

Dr Adam Lewis - Chief Scientist – Geoscience Australia

Dr Lewis is seeing an exponential growth in data form space, with Australian industry realising the value of these data streams. In Australia, the key application in the sector is in EO and navigation/positioning,



and space works both for government and the private sector. Following the previous comments, Dr Lewis discussed how delineating what government does and industry does is a challenge.

Dr David Williams - Group Executive, CSIRO

Dr Williams was instrumental in establishing Space as an industry in the UK. He noted that it is not a quick road when you do space. Some of his key observations and challenges were:

- It is Science that leads to application;
- Geography - satellites don't respect geography or country borders;
- Market externality - how space is being used and how it is evolving;
- Political will to this – space activities require long term vision and sustainability.

➤ Open Questions Issues & Challenges - Commentary

- Collaboration
 - Scale of EU Vs AU supports seeking quality / niche opportunities
 - Importance of creating long term value
 - Partnering at scale needs support of political will
 - Clear openness to Australia from the EU
 - Means taking AU into a global mindset
 - Clash of long term Vs short term objectives focus to achieve long term ambitions
- Public Vs Industry delineation in EU
 - Depends...
 - Advocating public procurement of services to encourage industry
 - Copernicus - meeting public needs at the heart of the program ~5% of data specifically for EU public use
 - Also providing access to the data to general public as well
 - Industry provides professional management of the program
 - Defined a perimeter around what Copernicus is
- Question around commercial data service ~ 30 in EU
 - Commercial licensing a challenge
 - Time value of data considerations in licensing a discussion point
 - Scientific data application potentially greater value
- Business model - to start in government and move to public/private to create industry
- Demonstrable demand from the public to release all the data as open data
- Expecting an increasing shift to online services delivery
- Moving from government value add to open data to increasing raw data release to public
- Big opportunity in bringing EO data integrated with new datasets
- Research is truly enabled by extensive access to open data

➤ Opportunities Across Association of Southeast Asian Nations Region

Session Coordinated by Dr. Zaffar Sadiz, CRC for Spatial Information, and Trevor Dhu, Geoscience Australia

ASEAN is the world's 6th largest economy, it has 50% of the world's middle class and is EU's 3rd largest trading partner. Agriculture products was largest good export for Australia for SMEs 2014-2015. Australia has Free Trade Agreements in place with a lot of the ASEAN countries.



Australia Unlimited companies have established a Landing pad network of start-up companies and are providing a Landing pad for Australian start-up companies in Singapore.

The ASEAN countries have invested in MPAC 2025 the ASEAN Master Plan with key focus on achieving:

- Seamless logistics
- Regulatory excellence
- People mobility

A Malaysian Geospatial Master Plan has been developed with a spend of ~ \$4M for the plan. It is support by an Act of Parliament. It focuses on:

- Establishing geospatial infrastructure
- Consolidated geospatial information
- Taking a regulatory control approach to stimulate industry to deliver products and services

Willing to collaborate internationally to get access to best practice.

There is extensive opportunities for spatial work for World Bank / ASEAN Development Bank.

The Asia Pacific Regional Space Agency Forum was established in 1993 and is an active industry forum for the region.

➤ [Horizon 2020 Presentation and Questions](#)

The Horizon 2020 presentation session given in Brisbane was repeated for the Canberra attendees. It was again met with interest from the floor.

➤ [Business to Business Matchmaking](#)

Brief introduction presentations from each of the EU delegates

- Airbus
- e-Geos
- earth-i
- GET
- GMV
- Planet

Drinks and food was served for the follow on informal networking activities for all attendees for an hour. Informal feedback indicated a number of initial connections were made both between the EU delegates and Australian organisations and among the Australian organisations attending, further validating the event.

Sydney event - Day 4 – 9th March 2018

➤ [Key Application Market Overview - Asking the right questions](#)

Application Market Panel Members:

- Banking & Finance - Phil Delaney
- Insurance – IAG - Elise Mckenna
- Agriculture – MLA Nick Sangster
- Natural Resource Management – North Coast Land Service - Louise Orr - GM
- Mining – MWIRA - Anil Subramanya

- NSW Government - Office of Environment & Heritage - Jeremy Black

➤ Brief panel member presentations

Banking & Finance – Phil Delaney, CRCSI

Phil Delaney offered apologies for the banking sector who were unable to attend but was able to provide some insights from work with the sector. He noted that demand is coming from improving risk management and asset validation, for example validating land assets for loans.

Agriculture is a key sector, including valuing crops, how a farm is performing, and how are the natural resources involved performing.

Insurance - Elise McKenna - IAG

IAG are the largest general insurer in the market. For them, it's about understanding the risk. Elise is from the Geospatial team, which is relatively new - the aim is better faster smarter information.

AIG ~ \$11B turnover and ~15,000 people, and provides insurance for homes, contents, bikes, cars, personal asset insurance. 25% of the business is in commercial lines.

IAG use data & analytics for EO and downstream applications, and recognise the importance of capturing and keeping customers. IAG want to create innovative, simple digital experiences for the customer, increasing personalisation of products.

Quality geospatial data supports improving risk rating and pricing competitiveness, minimising underinsurance, improving peril alert and response for customers, and attracts new partners, products, and adjacent services.

Agriculture - Nick Sangster - MLA

Meat and Livestock Australia - Producer and Government funded organization. MLA sponsor industry research projects ~ \$250M to date. The MLA strategic plan focuses on:

- Animal health
- Environment care
- Productivity and profitability

Australia is a leading exporter in meat particularly for the quality meat market ~\$18 B per annum. They are experiencing 11% growth per annum with 0.5 million people involved in production. 51% of Australia's productive land used for red meat production, 27 M cattle, 75,000 properties, and low cloud coverage over Australia making EO a valuable data source.

The industry currently uses satellite data down to around 5m resolution, with high res drones increasing in use. EO has potential applications across:

- Increased autonomous ground vehicles
- Animal welfare through monitoring forage conditions
- Condition assessment and maintaining the land
- Environmental stewardship support
- Water resources management
- Value chain logistics - moving cattle around, some properties very big
- Weed infestation and toxic weeds cost the industry more \$1 B per year
- Virtual fencing
- Demand for tracking provenance of animal products is emerging

- 
- Disease prediction insights and response

Natural Resource Management - Louise Orr - North COast Local Land Services

Louise was representing not just the North Coast LLS, but NRM Regions in Australia more broadly. NRM Regions organisations are focused on securing the long term viability of farming and the environment in the context of risk. They have targeted funds for on ground actions to be implemented, and evidence based decision support is key.

NRM focus is on the biophysical realm, landscape and land use, they need to monitor and predict, and consider social and economic data. As an example of investments, Australia spends \$20 M spent on weed eradication.

Data is critical to their role, but data always has a cost

- cost of interpretation
- cost of the data
- increasing resolution needs
- regular time rather than events based capture

Mining – Mining Resource Institute of Western Australia (MRIWA) - Dr Anil Subramanya

Mining is a heavy user of spatial data and EO data. Data is used to discover new deposits and address mine efficiency for reducing environment impacts. Climate Change is a huge issue for mining, as is the impact and monitoring of mine closure. Increasingly operations are data driven with spatial technology.

However, the lack of standards with providers for data & services is challenging - GSMG is a standards body addressing this. Standardised planning and approval supported by automated information capture.

Value add of data analytics is being sought - getting information to the end user without an array of analysts.

The concept of the Digital Mine is growing - fully modelled, monitored and operated. Increasing integrated sources of data, with greater environmental accounting demanded.

A lot of EO products from international sources are used but radiometric corrections need to be specific to Australia for required accuracy.

NSW Government - Jeremy Black, Science Division, Office of Environment & Heritage

Jeremy outlined the multiple uses of remote sensed imagery in OEH, which included vegetation assessment and monitoring, land use planning and regulation, water management, natural disaster response, tracking terrestrial change and monitoring and reporting on natural resources in the state.

OEH make use of multiple sources of imagery, satellite and aerial. They have an in-house imagery processing capacity to produce imagery products used internally and across government with purpose designed HPC and storage facilities in the government datacentre. This works is supported by a joint multistate funded research program. Looking towards future services and involving hybrid cloud services.

Challenges facing OEH is NSW is a large state ~80 million ha – mainly rural and land changes can be subtle both large and small scale. Answers to big and new questions on natural resources are expected



in shorter timeframes. Competing demands for decreasing government budgets means finding new solutions that deliver increasing capability. Looking to industry to provide more of this.

➤ Open Questions Issues & Challenges - Commentary

- The impact of availability of increased resolution and frequency of new satellite data on lower resolution satellites was raised. In effect it was seen as being used for different applications and that there was a role for all the different satellites as well as drones.
- The issue of the delineation of what government undertakes and what industry should provide was raised. Core needs being met within government capabilities using open data such as Copernicus will continue but addressing new needs and innovation are coming from industry

➤ Horizon 2020 Presentation and Questions

The Horizon 2020 presentation session given in Brisbane was repeated for the Sydney attendees. It was again met with interest from the floor.

Prof. Andrew Skidmore from Macquarie University generously provided another perspective on Horizon 2020 informed by his 22 years at University of Twente in the Netherlands and involvement in Horizon 2020 projects in Europe.

➤ Business to Business Matchmaking

Drinks and food was served for the follow on informal networking activities for all attendees for an hour.

This session resulted in even more active engagement with the EU delegates across a broader base of interests. This may have been a reflection of the different mix of attendees and the greater focus on EO applications across industry sectors, aligning more closely with immediate highlighted opportunities from the industry and H2020.