Australian Space Industry Skills Gap Analysis

Project Case Study

Project Partners

Western Sydney University (WSU), Asia Pacific Aerospace Consultants (APAC)

Project Overview

The Space Industry Skills Gap Analysis study established a space-related skills taxonomy specific to Australia, comprising 319 individual skills, encompassing Australia's space industry current and future needs. This study was commissioned by SmartSat with support from the Australian Space Agency as an initial step to understanding the skills needs of the national space workforce. The study provides a detailed assessment of Australian space-related skills.

Development of an Australian Space Skills Taxonomy

Without an existing job skills taxonomy from which to begin, the study team set about developing an Australian Space Skills Taxonomy (ASST). The ASST is based on a three-tier hierarchical structure; with 12 Tier One Skills categories, 56 Tier Two Skills Groups and 319 specific Tier Three Skills covering technical, business, management, and governance skills. Analysis of the responses identified key current and future skills needs across the Australian space industry.

The study revealed some interesting and unexpected information about current job skills, and current and future needs for the Australian space industry:

- Current skills exist within Australia's space industry for virtually all the 319 Tier Three space-related skills in the ASST (317 skills indicated as currently employed within organisations surveyed);

- Current skills shortages exist in virtually all the 319 Tier Three space-related skills in the ASST (310 current skills shortages indicated within organisations surveyed);

- Future skills requirements exist in all 319 Tier Three skills in the ASST;

- Sensitivity analyses identified 86 Tier Three skills of high intensity based on current and future skills demand versus currently available skills and training providers able to train to the specific skills. These were identified in two groups with many overlaps.

Training providers

This study also explored providers who might be able to deliver training and skills development for space-related skills needs. A range of training options to build skills capability were explored, such as tertiary education, in house training, professional development and bespoke training programs. Some of the key findings on training providers include:

- Of the 90 survey respondent organisations, 46 organisations (51%), spread across Australia, indicated they could provide some form of training for space-related skills development, training, or education;

- The largest number of training provider respondent organisations were from the private sector (46%), with 39% from the university sector, 9% from the not-for-profit sector and 7% from the government sector;

- Providers of university undergraduate or postgraduate programs were the most frequently referred to training activity (37%), while in-house training comprised 33%, bespoke training programs 22% and industry training programs 7% of training providers. No training providers from the TAFE or vocational sector participated in the survey.

- Of the 86 high intensity Tier Three skills, 67% have one or no training providers identified in the survey (20 have no training provider identified, 38 have one training provider identified).

- Only 28% of the training providers (13) have identified any ability to deliver training for the 86 high intensity Tier Three skills, resulting in a number of training gaps.

- There are 25 high intensity skills that might be needed for SmartSat research programs that have only one or no training provider.

The data indicates there are some potential gaps in training providers for space-related skills. In addition, the training needs for such a large skills-set seems to rest with a handful of training providers, and often relies on in-house training programs.

The burden of training for the current skills shortages and future demand may lead to additional training provider shortages or gaps, and may require:

- more training programs, and
- more training provider capacity

Utilisation

The premise for the study was that there are discrete key gaps in the Australian space sector. The fact that current skills and shortages exist for almost every skill is an unexpected finding. The data indicates that all 319 Tier Three skills will be required in the future. This suggests an industry poised for growth that cannot keep up with skills demand. It also suggests there may be potential imbalances between skills capability and shortages across the Australian space industry. It further suggests there is a likely need for training and other strategies such as outsourcing and skilled migration to address current shortages and future requirements.

The study also identified that Australia's space industry is heavily engaged in outreach activities to attract new people as an important long-term strategy towards building a sizeable, suitably trained workforce.

Collaboration

A survey was distributed widely throughout the Australian space community and training providers to capture demographic data, organisational information, areas of space activity and skills shortages, in order to build upon previous findings and emerging trends.

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The SmartSat analysis is the only space industry job skills taxonomy in existence globally.

Office of the Australian Chief Scientist

The nature of space activity globally and the shape of national space industries have been changing with technological advances and will continue to evolve into the future. As we see in other countries, new capabilities, services and fields of endeavour are emerging, and the Australian space community must be prepared to take advantage of its unique capabilities and technical expertise to maximise the opportunities that will arise.

Emeritus Law Professor Steven Freeland from Western Sydney University (co-author)

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