

Conceptualising Support for Young Geospatial Professionals in New Zealand

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Summary

In 2013, New Zealand added “other spatial scientist” to the long-term skills shortage list. This addition seeks to address an immediate national geospatial skills shortage but long-term reliance on this policy assumes that New Zealand cannot fill this shortage from within. This paper explores the support given to young geospatial professionals to develop skills and expertise. Drawing on interviews with education practitioners, employers, and geospatial professionals themselves, this paper uses a community of practise perspective to explore the current support environment for new entrants to the geospatial industry.

KEYWORDS: geospatial professional, support, community of practise, skill, skill shortage

1. Introduction

In 2013, New Zealand added “other spatial scientist” to Immigration’s long-term skills shortage list (de Róiste 2014). This addition seeks to address an immediate national geospatial skills shortage (de Róiste 2012) but long-term reliance on this policy assumes that New Zealand cannot fill this shortage from within. A skills shortage can be caused by a lack of new entrants to the industry, an inability to retain current employees or a combination of the two issues (OECD 2016). The longer-term solution, for New Zealand, is the development of internal geospatial capability. New Zealand needs to attract and retain Young Geospatial Professionals (YGPs), and develop their skills and expertise. Implicit in a definition of professional is the need to cultivate a “blend of technical, business, analytical, and interpersonal competencies” (Gaudet 2003 p25). Often, a professional is expected to undertake ongoing and continued development in both generic and technical skills.

By detailing the current support landscape for young geospatial professionals, this paper aims to identify current pathways for new geospatial industry entrants and development opportunities offered to young professionals to gain skills and experience. In this paper, we define YGPs as under 35 but recognise that many of the support structures and issues identified will also apply to older new entrants to the geospatial industry. This paper adapts a community of practice framework (Wenger 1998) to understand the development pathway of a geospatial professional within the industry.

2. Methodology

This study comprised of three phases. The research framework as well as the questions asked in the surveys or interviews were approved by the Victoria University of Wellington Human Ethics committee.

In phase 1, 101 young geospatial professionals were surveyed about the support available to them in the geospatial industry. The response rate was 70%. Dillman et al.’s (2014) tailored design method (TDM) was followed to promote a high response rate. The questionnaire covered the recruitment of young geospatial professionals, support and opportunities available to young geospatial professionals and characteristics about the organisation.

In phase 2, 159 geospatial organisations were invited to participate in an online, anonymous questionnaire. As with phase 1, the TDM was followed to promote a high response rate. 159

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organisations were contacted, and 132 valid responses were returned; a response rate of 83%. The questionnaire comprised of 3 sections covering: Recruitment process of young geospatial professionals; Characteristics and attributes of desirable young geospatial professionals; and Support and opportunities available to young geospatial professionals.

In the final phase, geospatial educators at tertiary institutions were interviewed to provide information on university-industry links and the perceptions of skills demanded by the geospatial industry. Ten tertiary geospatial educators at different institutions in New Zealand were contacted by email and invited to participate in a semi-structured telephone interview. Interviews were carried out with 8 educators (including the author of this paper) by a research assistant. The interviews were transcribed, and a copy of the transcript was sent to the educator to check and amend where appropriate.

3. Support landscape in New Zealand

The geospatial support landscape in New Zealand can be conceptualised into three stages.

3.1 Attracting new entrants

Certain school curriculum (NCEA standards) seek to develop geospatial skills but are not commonly taught in secondary schools. However, the number of students taking geospatial NCEA standards are rising.

3.2 Foundation skill development

Geospatial qualifications are primarily offered at postgraduate level with introductory courses offered at undergraduate. As the industry develops, expectations of formal geospatial qualifications are likely to increase. A drawback to this postgraduate emphasis is the delay in which professionals with the appropriate skills will enter the workforce (an additional one to two years after their primary degree). Benefits of formal tertiary education courses or programmes over other skill development options, such as software training, include the formal assessment of the student's knowledge and the inclusion of theory as well as hands on experience (Whyatt et al. 2011). Education courses have a wide remit and ideally should cover concepts and critical thinking skills rather than simply tools or techniques (Bearman et al. 2016).

3.3 Continued skill development

Once in employment, professionals are expected to update their skills as new areas emerge or roles change. Continued skill development by YGPs once in employment is facilitated by internal support (e.g. mentoring with senior staff), vendor and professional training courses, education courses, and conferences and networking events. Professional certification is primarily provided by the New Zealand Institute of Surveyors (NZIS) but only surveying professional certification is common.

The support landscape in New Zealand for young geospatial professionals is viewed positively by the majority of geospatial organisations and young geospatial professionals. Some gaps in provision (e.g. servers and project management) were identified. At each of the three stages of support, awareness of support opportunities could be improved and promoting awareness of opportunities for support (e.g. courses, and internship opportunities) should facilitate the development of in-demand skills.

A number of opportunities exist to improve education-industry links and encourage new entrants into the industry as well as ensuring these new entrants have relevant skills. Collaboration between education institutions and industry in the development of sustainable curriculum and research possibilities will help ensure that new entrants to the industry possess relevant skills. Graduate entry pathways (e.g. short-term roles or internships) were seen as beneficial in the development of both geospatial and generic skills by the young geospatial professionals surveyed.

4. Discussion and Conclusions

As the geospatial industry grows and matures in New Zealand, the structure of the industry is worth exploring. Wenger's Community of Practice framework (Wenger 1998, Lave & Wenger 1991) provides a means of exploring how new and peripheral community members become core industry

professionals. By identifying particular structures of the community, we can better understand the key points which mean New Zealand cannot currently fill its need for both new and experienced professionals.

Figure 1 identifies the current support pathways into and within the geospatial industry in New Zealand within an adapted community of practise framework. Future professionals are enticed into foundation skill development through exposure at school or university, and then into the industry through pathways, such as internships. Once in the industry, professionals can move from the periphery of the industry to being active or core members through continued development pathways, such as conferences.

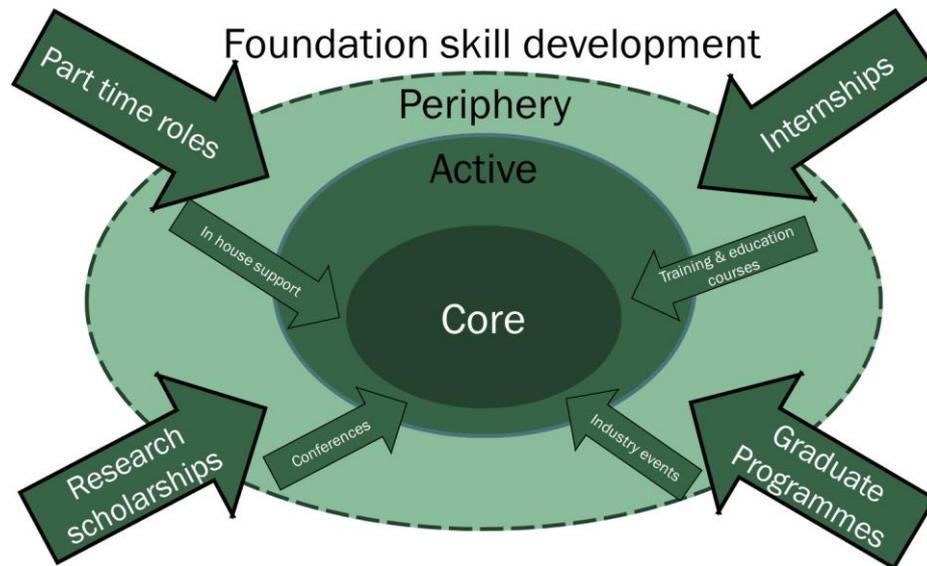


Figure 1 The Geospatial Industry as a Community of Practise with Support Pathways

What is the context in which potential professionals may choose not to enter the industry? Once in the industry, at what stage do young professionals decide that they will not become core or more senior members and decide to leave?

The geospatial industry does not appear to attract a proportional number of Māori (indigenous New Zealand) professionals and numbers are likely to be significantly below the proportion of the general population with Māori heritage. Whereas for young, female geospatial professionals, the key issue is retention. Women already in geospatial employment are significantly less likely to see themselves remain in the geospatial industry. Additionally, a substantial proportion of young male geospatial professionals also do not see themselves remaining in the industry. Preferential support may need to be offered to young geospatial professionals, and Māori and women, in particular, to ensure that future industry needs for both experienced and qualified professionals are met.

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6. Biography

de Róiste is a senior lecturer in Geographic Information Science. de Róiste has substantive research interests in how people use geographic information and systems incorporating usability, geovisualization, and public participation GIS, and pedagogy.

References

- Bearman N, Jones N, André I, Cachinho H A and DeMers M (2016). The future role of GIS education in creating critical spatial thinkers. *Journal of Geography in Higher Education*, 8265(March), 1–15.
- de Róiste M (2012) *The Geospatial Skills Shortage in New Zealand*, Report commissioned by the New Zealand Geospatial Office and SIBA NZ (Spatial Industries Business Association), July 2012. Available from: <http://www.victoria.ac.nz/sgees/about/staff/pdf/GeospatialSkillsShortageReport.pdf>
- de Róiste M (2014). Filling the gap: The geospatial skills shortage in New Zealand. *New Zealand Geographer*, 70(3), 179-189.
- Dillman D A, Smyth J D and Christian L M (2014). *Internet, phone, mail, and mixed-mode surveys: the tailored design method*. John Wiley and Sons.
- Gaudet C H, Annulis H M and Carr J C (2003) Building the Geospatial Workforce. *URISA Journal*, 15(1): 21-30.
- Lave J and Wenger E (1991) *Situated Learning: Legitimate Peripheral Participation*. Cambridge University Press, Cambridge.
- Wenger E (1998) *Communities of Practice: Learning, Meaning and Identity*. Cambridge University Press, Cambridge.
- Whyatt D, Clark G and Davies G (2011) Teaching Geographical Information Systems in Geography Degrees: A Critical Reassessment of Vocationalism, *Journal of Geography in Higher Education*, 35(2), 233-244.
- OECD (2016) *The LEED programme and skills/the OECD Skills Strategy*. Available from: <http://www.oecd.org/cfe/leed/oecdleedskillsstrategy.htm>