



NEW ZEALAND BUILT ENVIRONMENT RESEARCH SYMPOSIUM

14 November 2014

Auckland, New Zealand

The impact of building information modelling (BIM) on professional roles, relationships and skills in the architecture/engineering/construction industry

Work-In-Progress

By:

Kathryn Davies

PhD Candidate

(supervisors: Dermott McMeel and Suzanne Wilkinson)

School of Architecture and Planning, University of Auckland



OUTLINE

- ❑ Research Motivation
- ❑ Research Questions
- ❑ Research Objectives
- ❑ Research Method
- ❑ Preliminary results
- ❑ Conclusions



Davies, K. (2014), [The impact of building information modelling \(BIM\) on professional roles, relationships and skills in the architecture/engineering/construction industry](#), Research paper presented at the 4th New Zealand Built Environment Research Symposium (NZBERS), 14 November, Massey University, Albany campus.

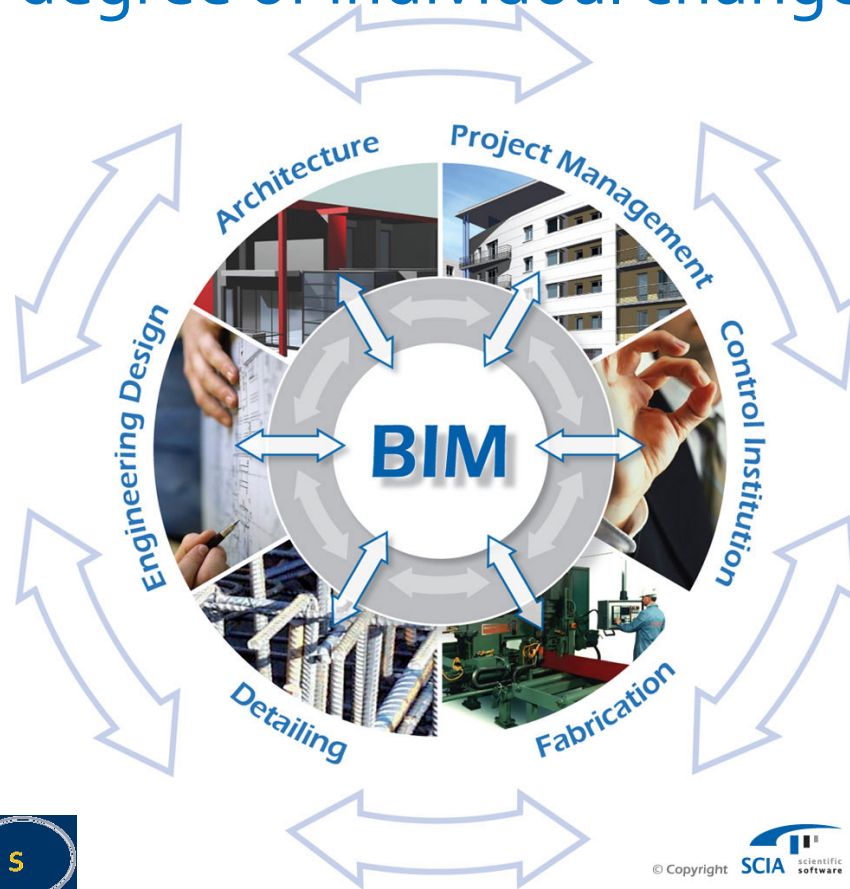
RESEARCH MOTIVATION

- ❑ Need for improvement in construction productivity
 - ❑ BIM is a mechanism for improvement
- ❑ BIM implementation requires change in process as well as technology
- ❑ Process change means people have to change



RESEARCH MOTIVATION

- BIM affects all sectors in the construction cycle
What degree of individual change is required?

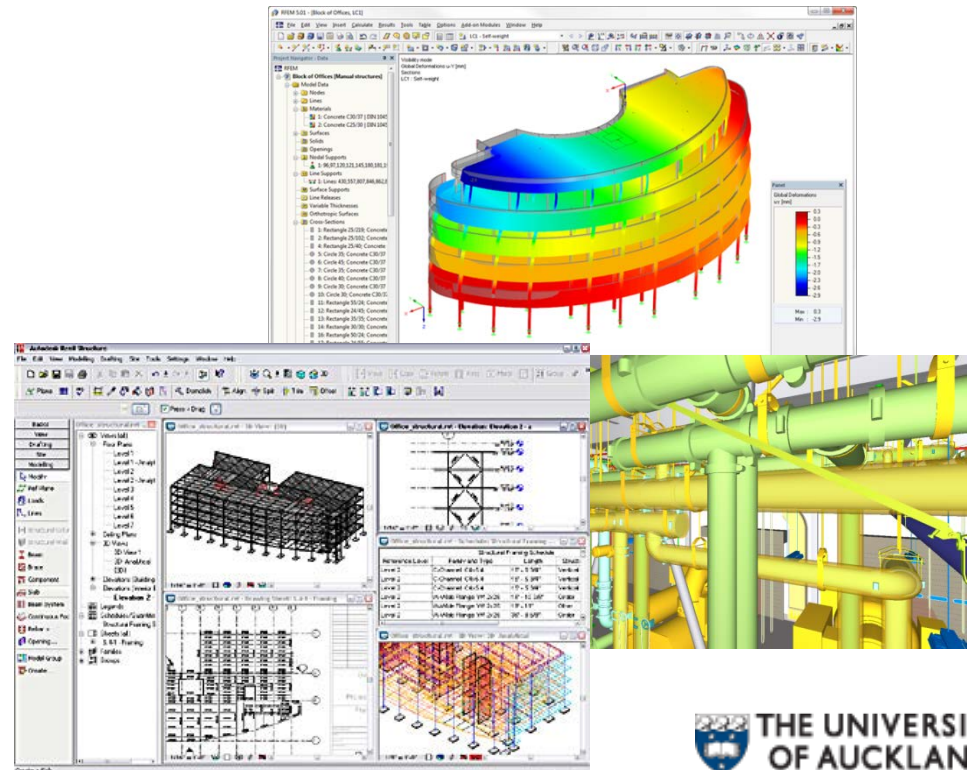


RESEARCH MOTIVATION

□ Current research focus:

Uptake - surveys

Technology - tools



RESEARCH QUESTIONS

- What new roles have developed in the industry as a result of the introduction of BIM?
 - What are the skills requirements for BIM-specialist roles?
 - What are the spheres of responsibility of the new roles?
 - How do the new BIM-specific roles relate to traditional industry roles?
 - How do organisations appoint and develop individuals in these roles?



RESEARCH QUESTIONS

- How does use of BIM affect relationships and interactions between project participants?
 - How is BIM used within project communication processes?
 - How does BIM affect formal and informal interactions between project participants?
 - What changes are evident at project and organisational levels?



Davies, K. (2014), [The impact of building information modelling \(BIM\) on professional roles, relationships and skills in the architecture/engineering/construction industry](#), Research paper presented at the 4th New Zealand Built Environment Research Symposium (NZBERS), 14 November, Massey University, Albany campus.

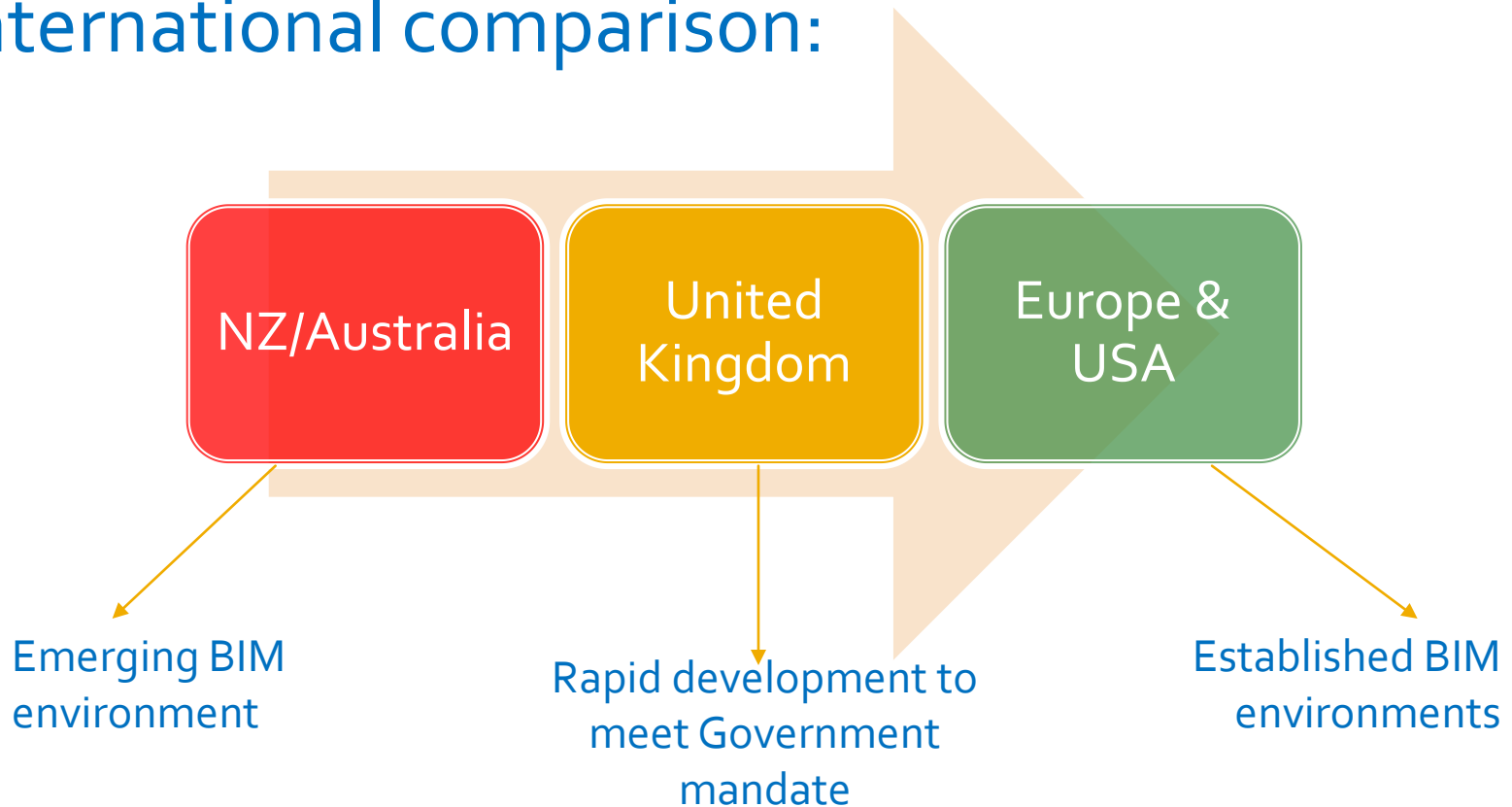
RESEARCH OBJECTIVES

- Highlight best practice around roles and relationships in BIM that will help facilitate uptake and better use of the tools available:
 - guidance on recruitment and/or training for companies establishing a BIM environment
 - guidance on training and development for individuals interested in a career in a BIM-active role
 - recommendations for educators on curriculum development to fill BIM role/skill gaps



RESEARCH METHOD: DATA & SCOPE

International comparison:



RESEARCH METHOD: RESEARCH PLAN

	Literature review	Document analysis	Survey of BIM specialists	Case studies
Skills requirements for BIM-specialist roles	✓	✓	✓	
Spheres of responsibility of the new roles	✓	✓	✓	✓
Relationship of new BIM-specific roles to traditional industry roles	✓		✓	✓
Organisational approaches to appointment and development of individuals in BIM roles	✓		✓	
Use of BIM within project communication processes	✓	✓		✓
Effect of BIM on formal and informal interactions between project participants	✓			✓
Changes resulting from BIM, at project and organisational levels	✓			✓



Davies, K. (2014), [The impact of building information modelling \(BIM\) on professional roles, relationships and skills in the architecture/engineering/construction industry](#), Research paper presented at the 4th New Zealand Built Environment Research Symposium (NZBERS), 14 November, Massey University, Albany campus.

PRELIMINARY RESULTS

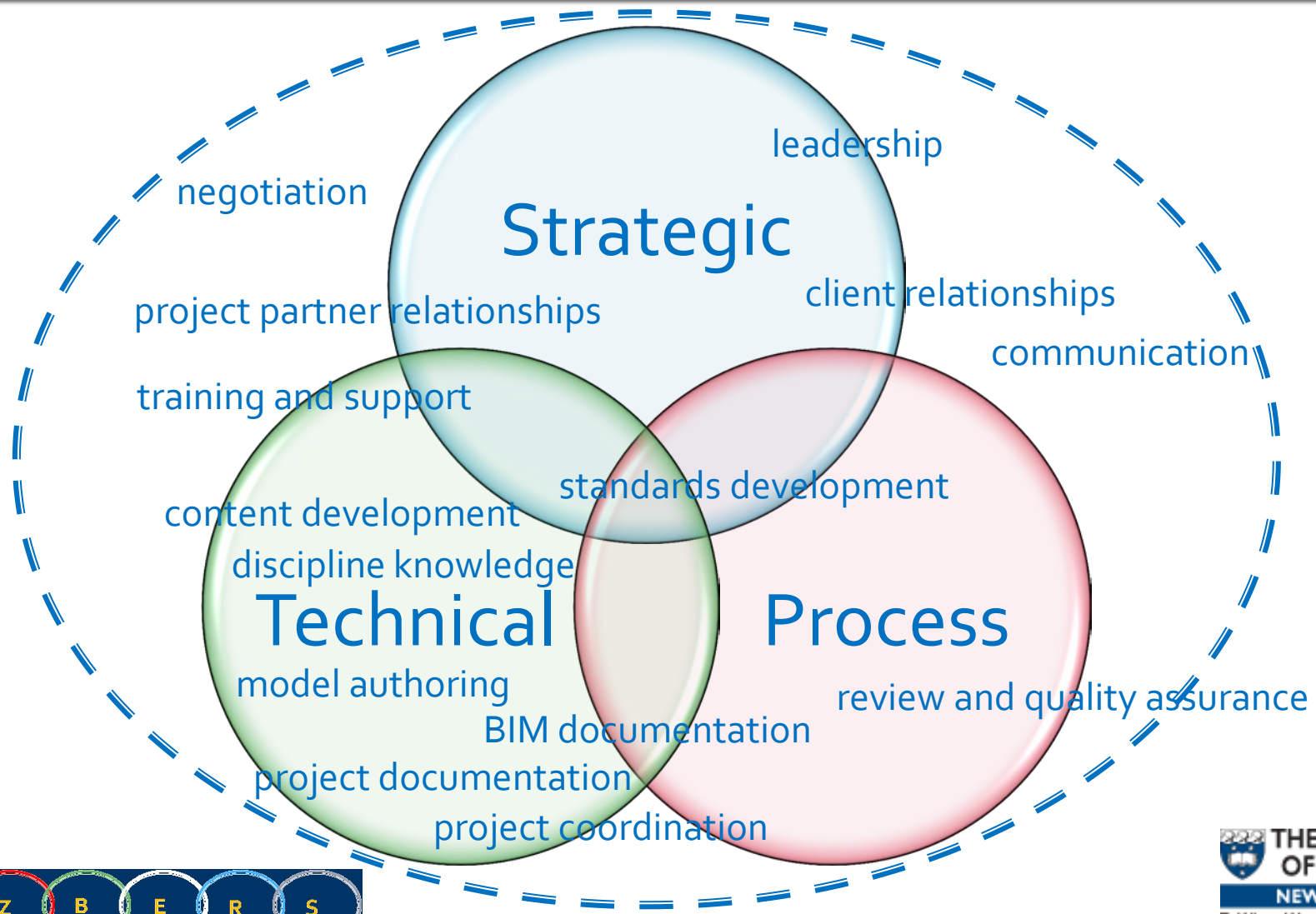
BIM-specialist role in New Zealand and Australia

- ❑ Very similar level of progress with BIM
- ❑ Highly interconnected job market
- ❑ Stages in BIM adoption related to spheres of influence of BIM specialist



Davies, K. (2014), [The impact of building information modelling \(BIM\) on professional roles, relationships and skills in the architecture/engineering/construction industry](#), Research paper presented at the 4th New Zealand Built Environment Research Symposium (NZBERS), 14 November, Massey University, Albany campus.

PRELIMINARY RESULTS



PRELIMINARY RESULTS

Tensions in the BIM-specialist role

- ❑ **Practice vs project**

Overhead and chargeable activities

- ❑ **Significant management element**

Lack in training, especially for those with a technical background

- ❑ **Jack-of-all trades**

“BIM specialist” is an oxymoron

- ❑ **Highly individual-dependent**

Company BIM ability often relies on one skilled/ knowledgeable person



PRELIMINARY RESULTS

Case study results – traditional BIM roles

- ❑ Very diverse levels of knowledge and advocacy within a single project team
- ❑ Hybrid environments are common
Incomplete/Sceptical/Defensive
- ❑ Changes communication rather than practice
- ❑ Limited impact on traditional roles and interactions
Informal rather than formal changes, depending on interest and enthusiasm of individuals



CONCLUSIONS

- ❑ Wide variation in understanding/adoption of BIM and BIM roles
- ❑ Change is not required in many roles
- ❑ Several tiers of BIM specialists necessary for successful adoption
- ❑ BIM skills essential for traditional project roles: “know what”, not “know how”



OUTSTANDING WORK

- ❑ UK/Europe and US investigation in 2015
- ❑ Document analysis – 25 BIM handbooks collected to date



Davies, K. (2014), [The impact of building information modelling \(BIM\) on professional roles, relationships and skills in the architecture/engineering/construction industry](#), Research paper presented at the 4th New Zealand Built Environment Research Symposium (NZBERS), 14 November, Massey University, Albany campus.

END



Davies, K. (2014), [The impact of building information modelling \(BIM\) on professional roles, relationships and skills in the architecture/engineering/construction industry](#), Research paper presented at the 4th New Zealand Built Environment Research Symposium (NZBERS), 14 November, Massey University, Albany campus.