

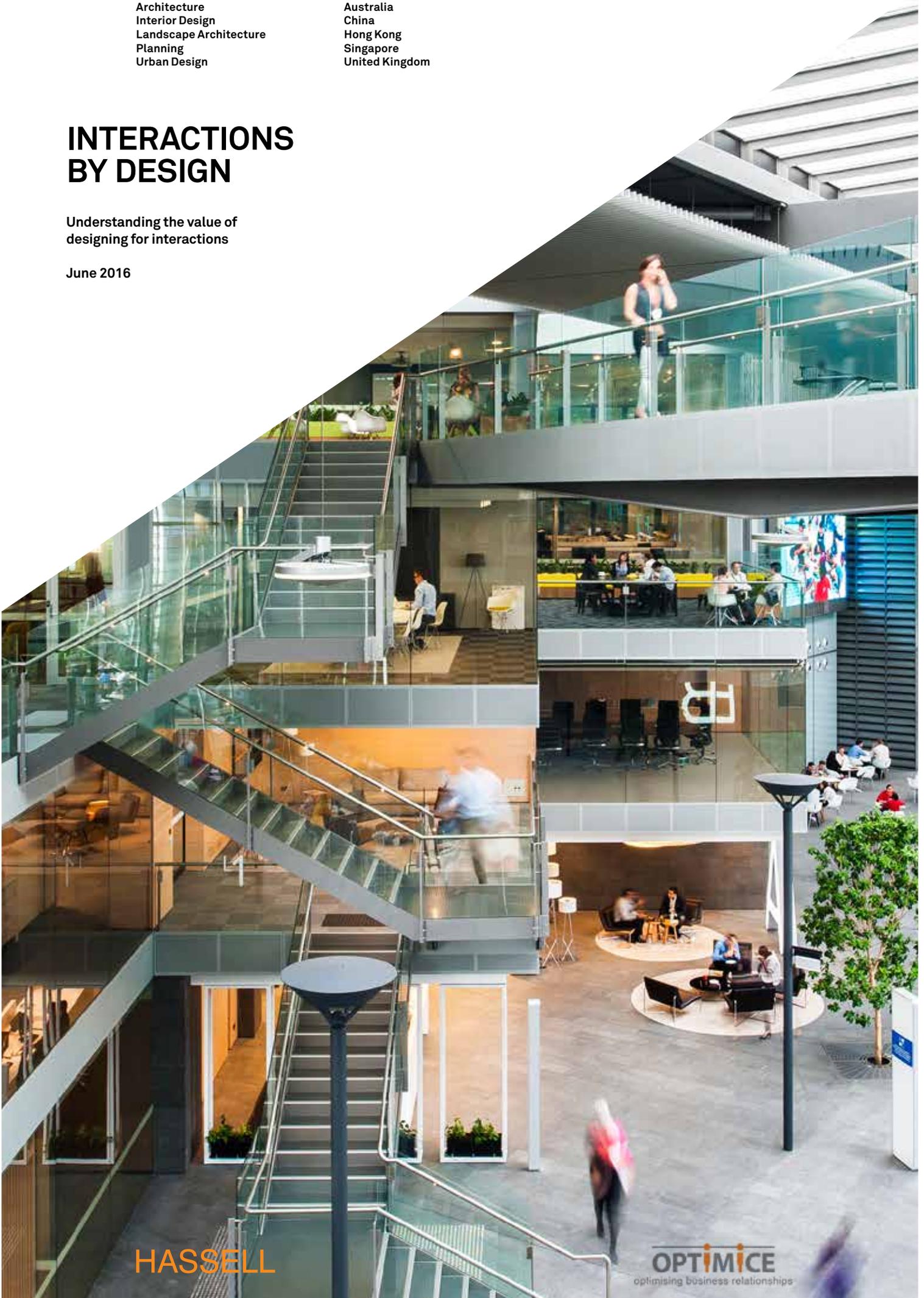
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INTERACTIONS BY DESIGN

Understanding the value of
designing for interactions

June 2016



HASSELL

OPTIMICE
optimising business relationships



ANZ Centre, Melbourne, Australia
Photography by Peter Bennetts

Front cover image: Qantas Campus, Sydney, Australia
Photography by Nicole England

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The importance of interactions

Innovation in business often occurs through informal interactions. Smart organisations monitor these interactions – discovering natural preferences for interacting – and reassess the design of their workplaces and management practices to foster and encourage innovation.

Through Social Network Analysis, organisations can identify and then enhance interaction networks. They can move beyond traditional workplace design methods to ultimately become more efficient, effective and dynamically innovative.

“Efficient ongoing collaboration has a significant impact on business innovation, performance, culture and even the bottom line.”

Google for Work +
Raconteur¹

Our understanding of the way people interact in organisations is evolving. This is due to intrinsic changes in people's interactions as well as the fact that new methods allow us to study interactions in more detailed ways. Understanding interactions is important because it can lead to new possibilities in workplace design that better enable organisations.

A\$46 billion per year is the estimated value of workplace collaboration to Australian businesses, with another A\$9.3 billion per year on offer if companies fully harnessed collaboration opportunities². However, the degree of specialisation that allows companies to compete in an increasingly complex technological, regulatory and economic environment has also created professional silos. A decade-long study³ of global organisations found that when specialists work together across the boundaries of their expertise, the organisation earns higher profits, inspire greater client loyalty, and gain a significant competitive advantage.

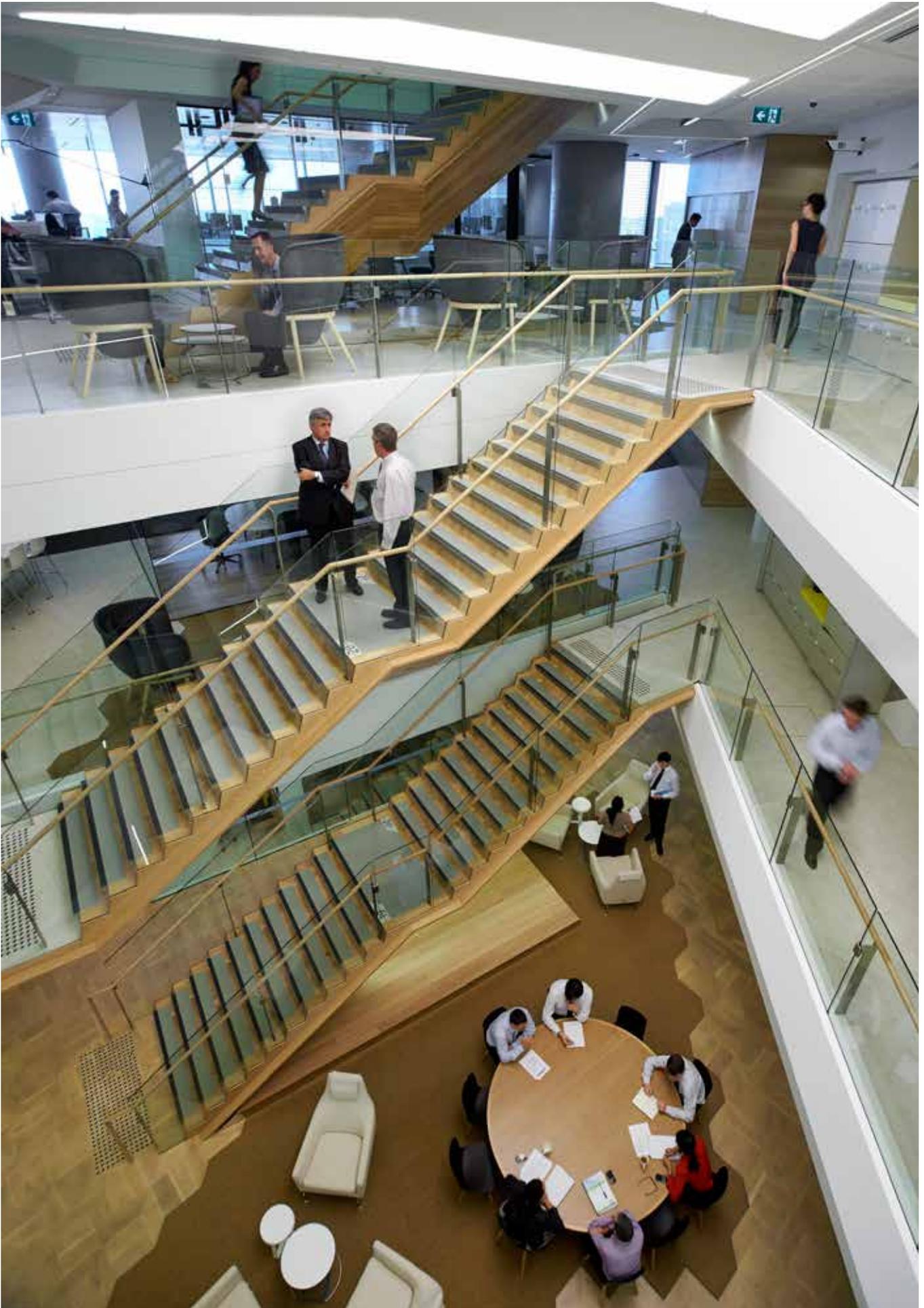
On the other hand, for the individual, the benefits of collaboration might not always be that apparent. Individuals can sometimes be less inclined to invest the time and effort required to collaborate³. Promoting a blanket statement of 'collaborate!', might be ineffective and even counter-productive. MIT researchers⁴ analysed 10 million financial transactions across 1.6 million users of eToro, an online trading platform, and found that investors that traded in isolation (without consulting others) were just as (un)successful as those that were hyper-connected. The most successful traders were those that had the right balance of their own and other's ideas.

Successful collaboration is about quality, not quantity. Based on minority influence theory⁵ a team of researchers⁶ demonstrated that an 'extra miler', a team member with the highest frequency of extra-role behaviours, can increase team effectiveness beyond the influences of all the other members. This is echoed by another study⁷ on more than 300 organisations that found that in most cases, over a third of the value-added collaborations came from only 3%-5% of employees. Unrestrained collaboration can also have undesired effects, like 'escalating citizenship'⁸; in which some collaborators become institutional bottlenecks and work does not progress until they have had their say^{7,8}.

In 2015, HASSELL and Optimice, specialist social network analysts, undertook research to understand the collaboration and interaction networks that occur within an organisation, and the role that the physical space plays in supporting these. The organisation studied has over 800 personnel located in 11 workplaces across Australia, Asia and the UK. Data were collected from a number of sources including an online survey, timesheets, Yammer (Enterprise Social Network tool), Lync (instant messaging, voice and video call platform), floor plans and observations. Extensive analysis of the data was undertaken using propriety Social Network Analysis software to understand the collaboration and interaction patterns at a number of levels including: between individuals, within business unit and across offices.

The analysis revealed three key insights:

1. The new water cooler is virtual, but face-to-face is still the preferred waterhole.
2. Design to enable, not control, users.
3. The path to workplace innovation is not new technology, but new thinking.



ANZ Tower, Sydney, Australia
Photography by Earl Carter

1. The new water cooler is virtual, but face-to-face is still the preferred waterhole

“Knowledge accidents happen when people run into each other at places like this [conference] or at the water cooler, exchange information, and realize an opportunity for collaboration and a synergy between the projects they’re working on. We need to make knowledge accidents happen on purpose, regularly and, most importantly, with intent.”

- Al Zollar⁹

In the late 70s MIT professor Thomas Allen found that there was a strong correlation between physical distance and frequency of communication^{10,11}. In other words, people tend to communicate more with people who are in close proximity to them. That might seem reasonable, perhaps obvious, because the interactions between people were primarily face-to-face. In 2006 he undertook a similar study to answer the pressing question of what would happen to this relationship following the advent of distance-shrinking technologies like email¹².

Surprisingly, the study showed that email followed a similar pattern, suggesting that you are more likely to email someone who you also interact with face-to-face – refer to Figure 1.

But, would Allen’s Curve still hold almost 10 years later? Perhaps people’s email behaviour, or even face-to-face interactions, has changed as more digital natives have entered the workforce.

Our study showed that face-to-face and email interactions follow a similar distribution as Allen’s, see Figure 2.

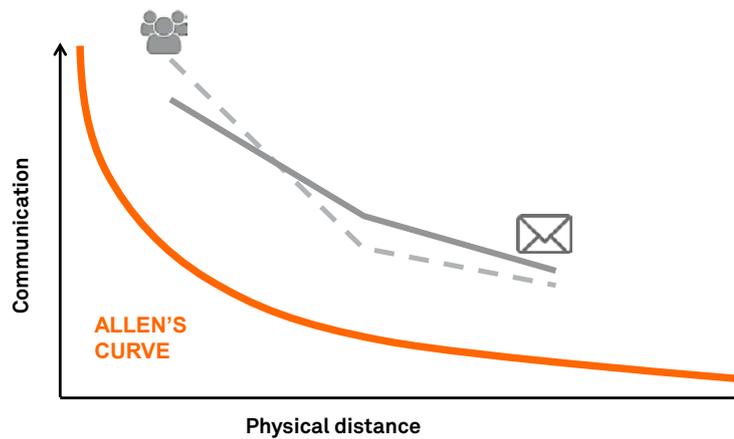


Figure 1: Allen’s Curve¹²

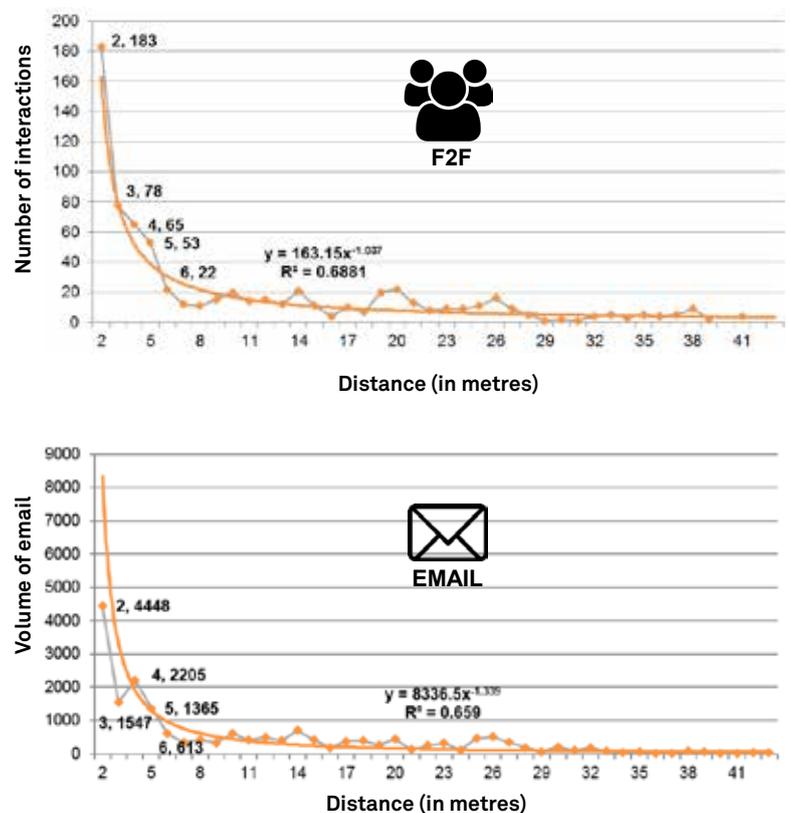


Figure 2: Face-to-face and email interactions, 2015 data

In fact, the association between distance and volume of email was so strong that an amusing recommendation for employees of the participating organisation who wanted to reduce the number of emails they received, was to move their chair 7 metres away from others.

However, we found that interactions on Yammer, did **not** follow the Allen's Curve, see Figure 3. People interacted with others based on interest and topic, not on proximity. Yammer, thus, could be described as the new (virtual) 'water-cooler' where people interact and come across other people and conversations that are not bound by proximity or pre-existing relationships.

Our study found that face-to-face dominates people's perception of the method used to interact, see Figure 4. This perception could be biased by the qualities of face-to-face (e.g. more memorable than other types of interactions). It could also be a reflection of the inertia of traditional methods (comfort zone), or that in fact people prefer to interact face-to-face. Face-to-face interactions are still considered a very good indicator of productivity and creativity in a team¹³.



The HUB, Adelaide, Australia. Photography by Nathan Dyer.

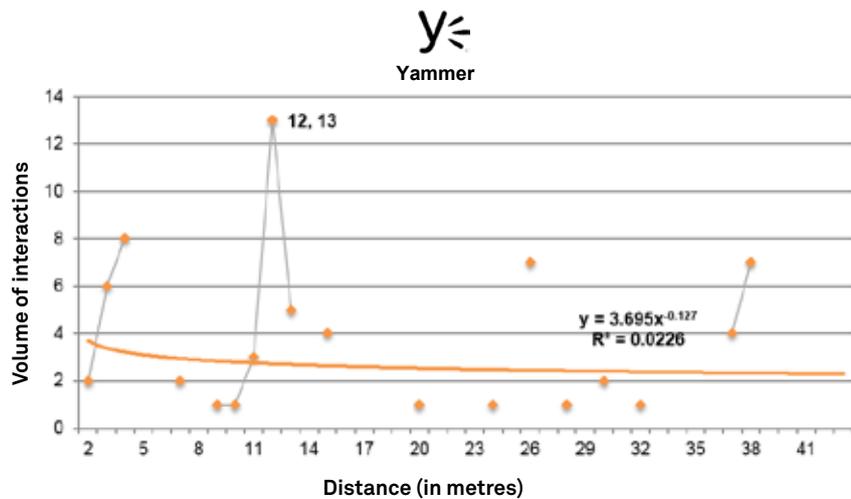


Figure 3: Yammer interactions, 2015 data

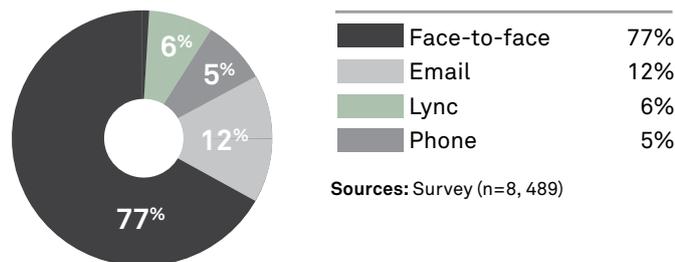


Figure 4: Percentage of interaction by method: Face-to-face, Email, Lync and telephone



Figure 5: The HUB, Sydney, Australia.
Photography by Nathan Dyer

Design implications

Social network tools have the ability to identify and if used properly, help to eliminate silos, including those created by proximity, and should be considered as efficient information management tools. On the other hand, face-to-face interactions seem to hold unique characteristics that better facilitate exchange of ideas and socialising—two fundamental interactions in knowledge based organisations.

As such, it is anticipated that the importance of the physical environment will only increase with the development of knowledge based organisations.

As an example, The HUB Sydney – a co-working community established to create value through collaboration—uses Yammer to connect all of its member virtually, even when not there. Whereas the space is designed to promote social interactions and ideas sharing, see Figure 5.

2. Design to enable, not control, users



Photography by Michael Sankey.
Figure 6: Designed vs created.
‘The path of least resistance’¹⁵

“Frequently in parks, or on college campuses, although there are many sidewalks, there will be a few well-worn paths through the grass. These informal paths show where people really want to go, and where the paths should have been located in the first place.”

Zachary Neal¹⁴

While the informal paths of travel created by pedestrians are easy to see, the equivalent informal interactions and collaboration paths within companies are much harder to see and understand. These informal paths usually differ from the organisational structure created by the company.

Social Network Analysis allows us to find and assess these informal interaction paths or networks within organisations. Visualising these networks provides the ability to understand the informal and formal structures and lines of reporting. Interestingly, the informal network mimics the organic pattern of the informal path to

the same extent that the formal network is similar to the more structured footpath, see Figure 7.

Is one path or network better than the other? Using the analogy of the park, perhaps the informal path feels more natural, but when it is rainy and muddy the sidewalk might be the one to take. In a company, and paraphrasing Neal, the informal network shows how people really want to interact and might be arguably the best one to promote innovation with people interacting more broadly and naturally.

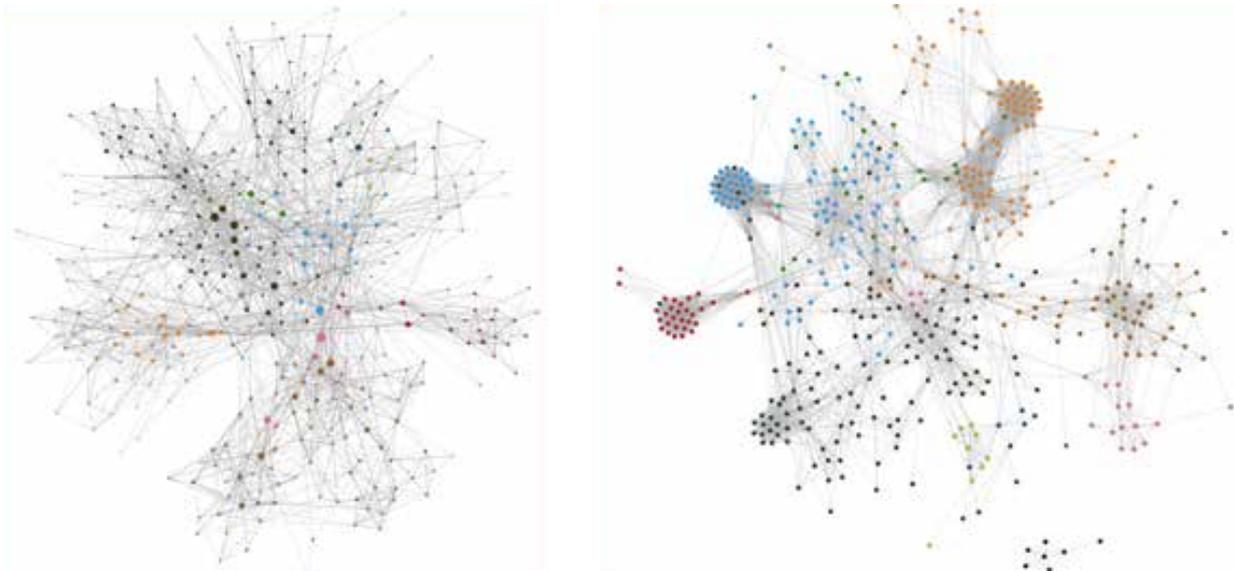
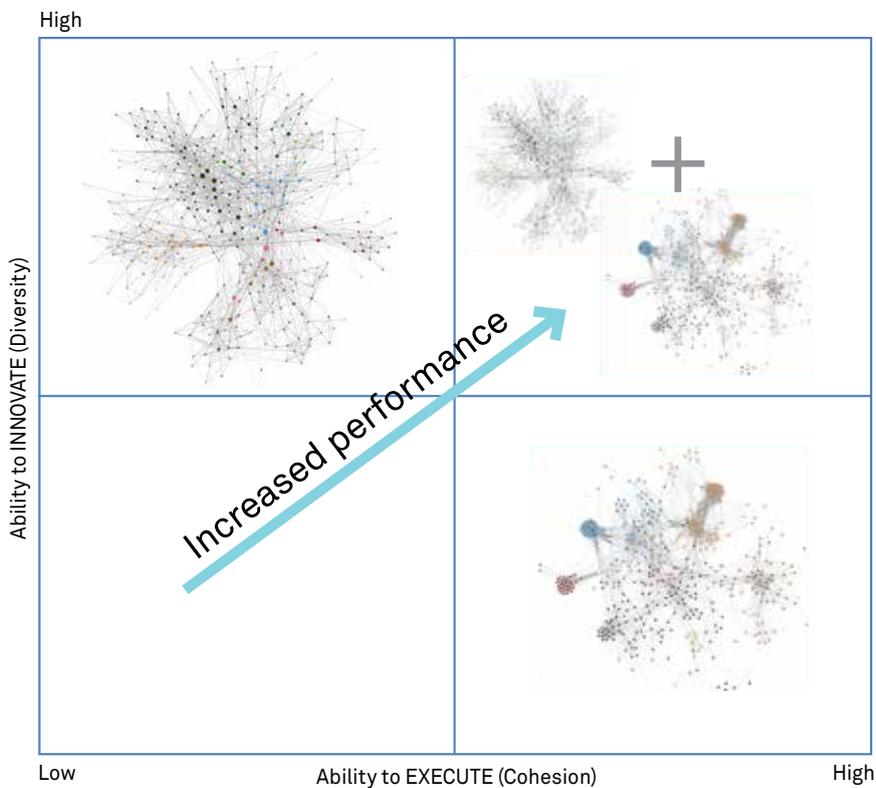


Figure 7: Informal (left) vs Formal (right) networks of interactions within an organisation.



However, the structured network ensures things get done. Dr John Kotter, an internationally renowned management and organisational expert, has developed the concept of the 'Dual Operating System'¹⁶ which places the informal organisational network (diversity) side by side with the formal hierarchy and business processes (cohesion), see Figure 8. The best scenario for businesses, he argues, is when the ability to innovate matches the ability to deliver.

Our research also uncovered that different networks exist depending on the reason for the interaction. That is, people organise themselves differently depending on whether they were interacting to exchange information, solve problems, review or approve work, exchange ideas or socialise, see Figure 9.

Figure 8: Kotter's 'Dual Operating System'¹⁶

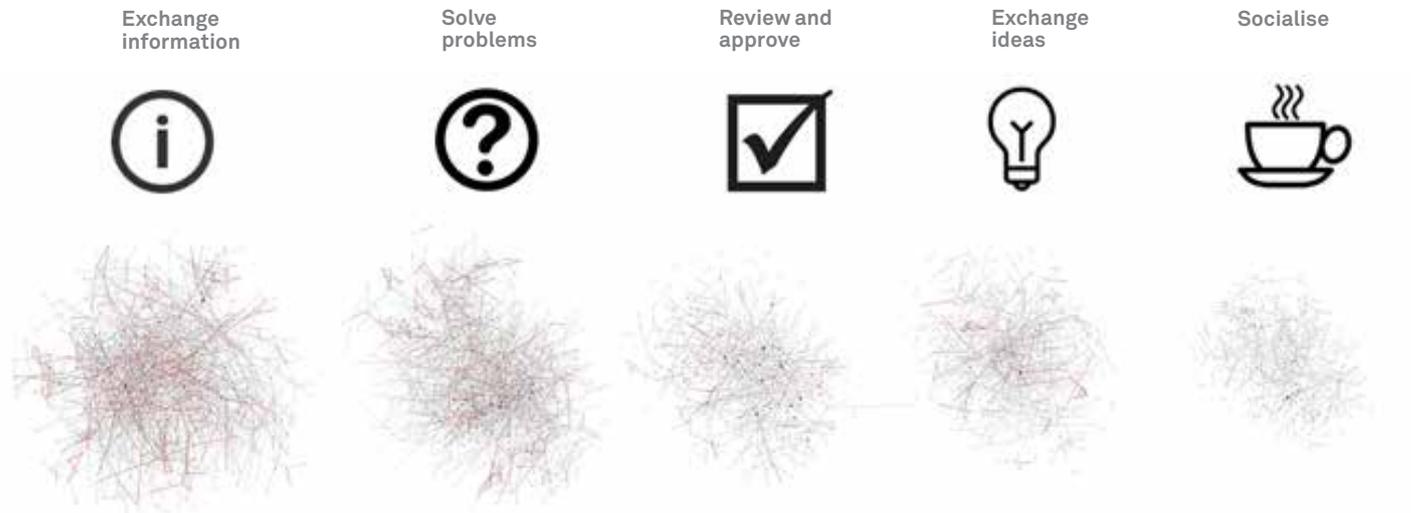


Figure 9: Networks of interactions shown by reason for interaction.

These different networks align with Professor Karen Stephenson's Quantum Theory of Trust¹⁷ in that different people play different roles in different networks. A person may be a hub in one network, and a gate keeper in another.

Not only are the networks different, but our research shows that the preferred interaction channel, or medium, differs based on the reason for such interaction. Email, Lync and telephone were the preferred interaction channels for the exchange of information. This makes sense as information can be easily codified and communicated via these channels.

On the other hand, face-to-face interaction was preferred for developing ideas and socialising, arguably, because these types of interactions are more difficult to codify and benefit from non-verbal communication, see Figure 10.



Figure 10: Preferred channel by reason of interaction.



Figure 11: Flinders University at Tonsley, Adelaide, Australia.
Photography by Sam Noonan.

Design implications

Social Network Analysis provides companies with the ability to understand the characteristics of their interactions and put in place strategies to enhance or adjust networks to help drive business performance. This approach reinforces the importance of understanding the nature of interactions over promoting everyone to just 'collaborate'. To designers, Social Network Analysis provides unique insights to develop space solutions that match the complexity and variety of people's interactions beyond a 'breakout' area.

For example, pin up walls can support ideas sharing and process mapping interactions where people can organically interact with each other and benefit from non-verbal communication.

These settings are increasingly important in organisations that have adopted agile project management because they offer similar modes of collaborative working and visual information hubs. Their configuration and location relative to other work settings are critical to their effective use in agile project teams, see Figure 11.

3. The path to workplace innovation is not new technology, but new thinking

A tempting implementation of Social Network Analysis would be to use it to inform the vertical distribution of business units within a building, also known as ‘blocking and stacking’. We, indeed, experimented with the development of an algorithm to allocate over 2,000 people distributed in over 20 business units, see Figure 12.

This process might assist in providing an optimal spatial arrangement that reflects the current interaction patterns, but is it the best solution for the company? As the organisation evolves, this arrangement could start to favour the concreted footpath over the informal path, restricting the ability of the organisation to innovate.

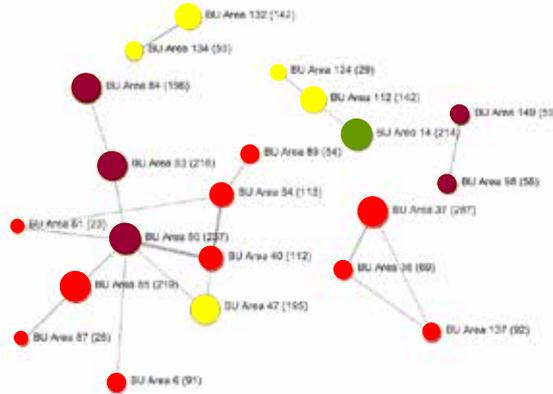
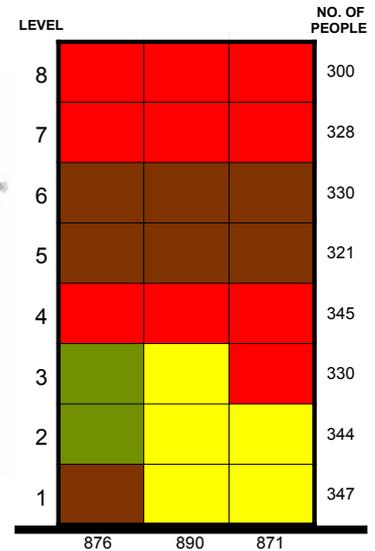


Figure 12: Example of Social Network Analysis based algorithm assisting stacking



The future of workplace design might not be based on making current solutions smarter, but in matching the potential of new insight derived from new technology with equally new thinking. For this, however, it helps to think beyond the workplace and even buildings.

As an example, the popular television program Mythbusters¹⁸ tested three different intersection arrangements to determine which was the most efficient: 4-way stop signs, replacing the signs with a traffic policeman, and a roundabout.

In 15 minutes, they managed to get 385 cars through the 4-way stop sign arrangement, but only 289 cars through when the traffic policeman controlled the intersection. The roundabout was the most efficient with 460 cars transiting in the same amount of time, see Figure 13. In addition, not only are roundabouts more efficient, but also safer having 37% less accidents¹⁹ than using 4-way stop signs.

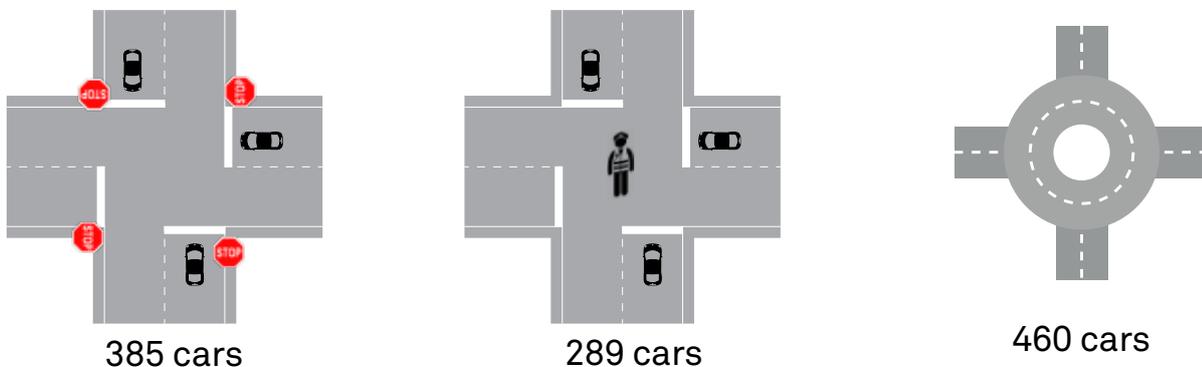


Figure 13: a) 4-way stop sign, b) Policed intersection, c) Roundabout

These efficiencies can be related to the rules behind each type of intersection. With a stop sign, the driver must stop the vehicle before entering the intersection²⁰, while a roundabout allows a driver to take into consideration the actual conditions of the intersection and assess if they can cross. This effectively gives the ability to make the decision to the person seeing the conditions first-hand and translates into a dynamic, more efficient system. Stacking people, even if done with Social Network Analysis, is a rule that does not take into consideration the dynamic conditions of the workplace.

In the roundabout, the spatial configuration of the intersection is adapted, from a cross to a circular form, to better enable users to make decision within a simple set of principles. As such, the design is a fundamental enabler of this system and while it supports the

necessary behaviour, it does not control it. The above principles have been, to some extent, acknowledged by flexible working solutions like Activity Based Working (ABW). However, ABW, for instance, tends to favour activities and a push for increased collaboration over identifying network configurations and qualified interactions. To this end, Social Network Analysis can be used to develop dynamic principles, rather than top down rules.

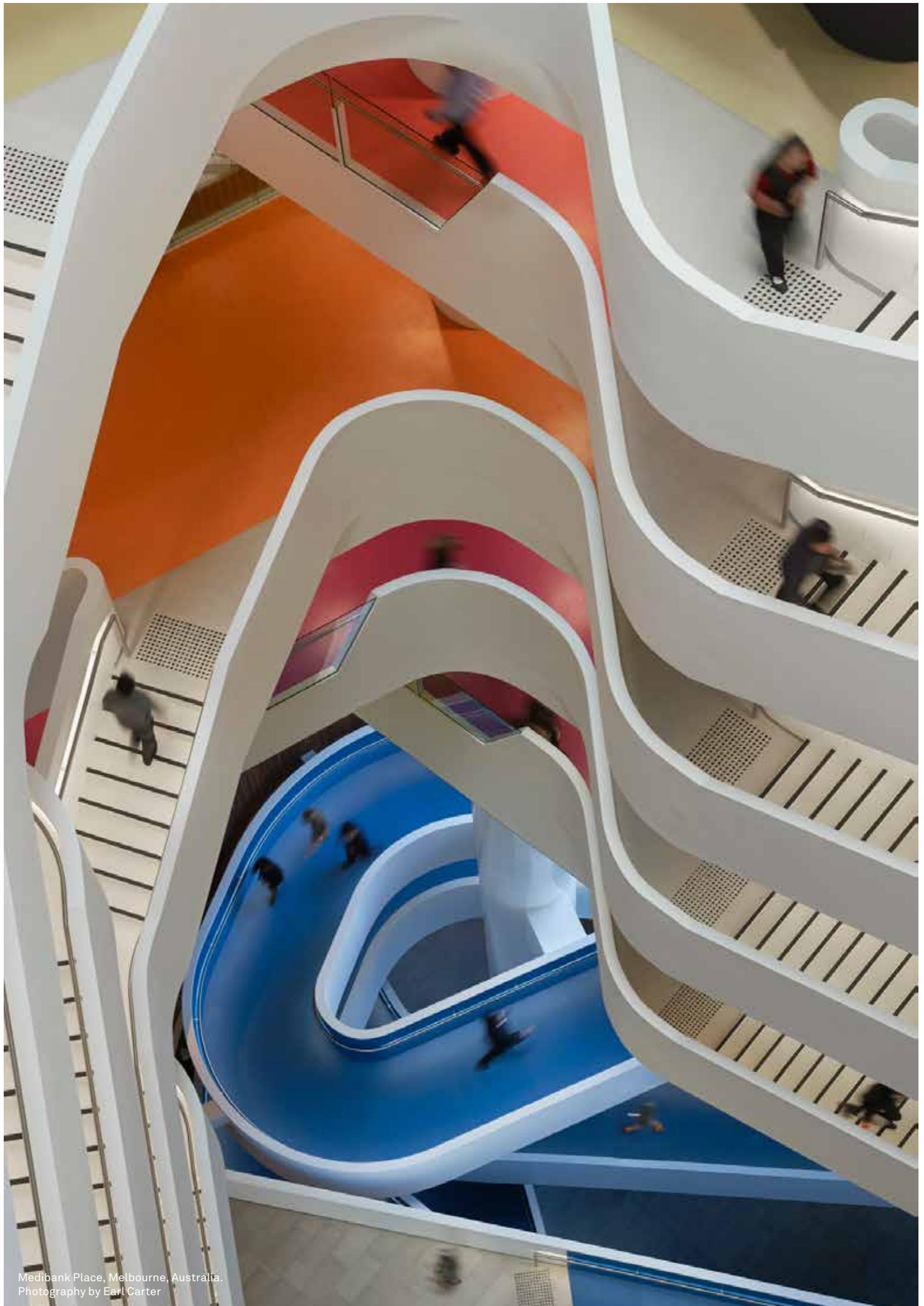
Under this context, design becomes the physical platform that enables user-determined behaviours within a dynamic and fluid context. As such, it is paramount to ensure the alignment between physical space and management practices, because the most inefficient (if not dangerous!) configuration, would be to have a 4-ways stop layout with roundabout rules.

Design implications

Design should aim to encourage behaviours in alignment with the dynamic nature of the organisation, rather than being an obstacle. For example, Medibank Place in Melbourne, Australia provides 26 different work settings on each floor for people to choose the one that best support their current need. This variety of choice is supported by an atrium and stairs connecting each floor allowing users to move and more easily interact across a range of informal networks, see Figure 14.



Figure 14: Medibank Place, Melbourne, Australia. Photography by Earl Carter.



Medibank Place, Melbourne, Australia.
Photography by Earl Carter

Conclusion

Our research has found that organisations operate through a multitude of different interaction networks. Social Network Analysis can be used to discover the natural preferences for interactions and provide insights that allow the design of workplaces to accommodate, rather than obstruct these preferences. It will also allow the design of workplaces and supporting management practices to increase the business performance through more effective interactions.

Innovation in business often occurs through informal interactions and therefore it is necessary to ensure that workplace design accommodates and facilitates such dynamic interactions. In essence, social network monitoring needs to be continuous, and followed by relevant design interventions as needed.

Enhancement of networks should be a key objective of workplace design, since this is where critical value creation, adaptability, speed and innovation of organisations is enabled. As such, Social Network Analysis is an enabler of better workplace design.

All in all, interactions by design encompasses the need to move beyond traditional workplace design methods, to incorporate informal preferences and 'soft touch' management guidelines required to sustain an efficient, effective and dynamically innovative organisation.

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