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STPs and tenants meeting emerging regional needs: In wellness and health, security and prevention of crime, and environmental issues

Roundtable 3

STP Services and Regional Needs

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Executive Summary

This paper is perhaps on the 'softer' side of Science and Technology Park (STP) management and concerns the opportunity that exists for STPs in most regional communities for the extension of their services to cover the "need to lead" at a regional level. It explores the role that STPs can play in covering the regional leadership void, particularly in times of downturn and economic hardship. The paper explores why and how the Innovation Campus at the University of Wollongong, expanded local leadership services based upon issues and opportunities that emerged from a review of the first three years of operation (2008-2011) of the Innovation Campus, a wider review of research capacity within the university; and, the declining local economic conditions.

The Innovation Campus is an STP in the city of Wollongong in a region known as the Illawarra, some 80km outside the major capital city of the state of NSW, Sydney. This region is currently undergoing a painful major transformation from a manufacturing and export resources led economy to a knowledge based economy. The paper highlights the strong role the STP stakeholders (owners, tenants and the management) have played in shaping the emerging economy of the region and the subsequent business opportunities that are explored and continue to emerge. Taking the upchallenge of a leadership role within the regional community, being increasingly seen as thought leaders, change agents and on occasions provocateurs the key stakeholders of the STP have made a significant impact.

While the examples chosen are context specific perhaps the broader message is that every park in a regional location has something significant that they can contribute, by way of an extension of their services, to regional development. This paper serves to encourage other smaller regional based Science Parks to step up and fill the leadership gap, if it exists, and to start to be a regional solution provider, a source of visionary leadership and above all else, being seen as having a team within the local economy prepared to have a “go”^{*1} when the going gets tough.

The regional economic situation of the host city (Wollongong) is these days unfortunately familiar and as with many such regional cities throughout the world, it faces massive changes brought on by industrial restructuring and closures affected by global financial turmoil and the subsequent downstream adjustments. Many regional cities in this situation were not prepared nor were they expecting the suddenness or depth of change coming. They are often stunned by the circumstances and paralysed in terms of effective response. As previously bustling regional centres they haven't necessarily done anything strategically wrong nor did they contribute significantly to their own predicaments. They are victims of global movements. What these regional cities, racked by downturns, all have in common is that they have to ‘muscle up’ and face what is happening to them and use what they have at their disposal to remodel an economic future.

The specific situation in Wollongong is that it is a city with a rich manufacturing heritage built on the back of a very proud steel making history, the largest integrated steelworks in the southern hemisphere in fact, and a completely modern, highly skilled, thoroughly efficient steel works at that. In the space of just a few months in 2011 the city saw the burgeoning steel exports worth in excess of a billion dollars plummet to almost zero through a collapse of international demand from other countries hit by the aftershocks of the GFC. And then if that wasn't enough, a rapid and sustained appreciation of the local currency (A\$), which appreciated against nearly all global currencies and especially the key market currency, the USD.

This currency appreciation crushed the existing prospects for export markets for high grade steel and the only logical step open to the Board of Directors was to cut, first a thousand jobs, then more, then the contractors. This is a similar sad story of decline that can be told across the globe. The Steelworks in Wollongong underwent major adjustment, shutting down one blast furnace, shedding further technical staff and yet still remains a fine domestic steel maker, with the capability to once again gear up for export markets should things turn around. But, as times goes on that seems increasingly less likely.

So what happens to the huge hole left in a local regional economy and community? Those staff who have skills in demand (and fortunately, as there is a mining boom in the country, most people can find work, albeit several thousand kilometres from home) can depart and find jobs elsewhere. However, there is still a huge hole ripped in the local economy and who comes to the rescue of those left behind and above all else who gives them hope for the future. This is where STP's can make a difference in regional communities!

Governments of all persuasions across the globe spend a lot of time worrying about mitigating the impact of such events or avoiding them in the first place. They are often and unreasonably asked to bailout completely or to cushion certain sectors impacted by such events. In democratic nations,

**1 having a “go” is a quaint colloquial Australian expression which means literally to participate with real vigour and enthusiasm.*

depending upon the political orientation of your local electorate, the situation in your community may get better or worse treatment than others around it and this is a political reality. STPs offer a convenient conduit for regional assistance by Governments in times of need. Science Park leaders have at their disposal, the facilities and the opportunities to make things happen in their communities and perhaps in many locations more so than anyone else.

It is important to note that some visionary nations and their STPs already have it in their charter and in their funding agreements that they must engage in this leadership behaviour and in some this is a core part of their mission. Gwangju in South Korea, is a very enlightened^{*2} example. This interesting & historic southern metropolitan city is a great is home to Gwangju Science Park ^{*3} where the mission is to be a “*Mecca for advancement of future strategic industries and success of high technology companies*”. The whole thrust of the STP is geared towards supporting identified strengths and the “invigoration of the local economy”^{*4}. The whole system is geared to constant review and adjustment, with direct central government support. Something not all regional STPs can enjoy.

Alas such overt financial and visionary support is rare in many western countries where STPs can, if they want, extend their ‘services’ to cover this area of regional need. They can be very useful tools for those trying to cushion the blows of harsh economic times. But they have to be prepared to play an active role and be strategically position themselves to be in the situation where they can be part of the rescue mission, part of the vision for the future and even more importantly avoid being tagged as just a sad reminder of how great the community once was or worse, being tagged as part of the problem!^{*5} This later attempt was dealt with quickly and all efforts trained on what is possible in future.

The services offered by the Innovation Campus are minimal, it runs a very lean team as it is a very new operation and there is no financial backing from Government for operational services. For example, it took three years to initiate incubator services (simply because there was so little deal flow and it seemed pointless to start an engine where there is insufficient fuel source) but three years on and an IT start up initiative (Scratch Pad) is now underway. Efforts to get the local services firms in the financial and IT sectors (who largely work on back of house services) to meet together is slowly gaining traction after a coordinator was appointed.

It is interesting to note that often people can’t see opportunities because they can’t read the sign or see the interconnectedness of various events, capabilities. It is also very true that a community in crisis is often incapable of seeing a direction forward simply (or knowing what to do next) because it is still in shock, in much the same way as a human body reacts to a traumatic situation known as ‘post traumatic shock syndrome’. So by providing a forum and an event, to allow the involvement of local people to see a future and play a role in the putting together of the pieces, is something we could do.

The review of our operations 2008-2011, revealed that there were several areas where the Park and its tenants could contribute to community restructuring and putting together economic opportunities for the regional community. The three areas where identified where the Science Park had a capability, were not our key areas of focus. These have been teased out and built upon and doing very well. What this exercise uncovered was a secondary level of capability, where suitable tenants and emerging institutional research capacity were present but not connected in an optimal way. These three areas were not yet at a point where they were “performing” but various people had started to see the potential and the possible connections and there was some excitement of expectation but little real action.

^{*2} <http://en.wikipedia.org/wiki/Gwangju> Gwang (hanja 光) means “light” and Ju (hanja 州) means “province.” Is also sometimes called the “the shrine of Korean democracy”.

^{*3} <http://www.gjtp.or.kr> - “Mecca for advancement of future strategic industries and success of high technology companies. pp1-18

^{*4} <http://www.gjtp.or.kr> - “Mecca for advancement of future strategic industries and success of high technology companies. p 10

^{*5} There have been several attempts by disaffected land holders or business men to blame the local STP for the declining economic conditions for business, rising rental rates, reduced vacancy rates etc.

Each STP probably has a similar opportunity albeit with a different mix of tenants and research capability, but conditions don't vary all that much from place to place and we all struggle to see opportunities especially when blinded with the consequences & issues of harsh global trends. Emerging sectors and opportunities are ever moving and this requires constant surveillance and review.

The three areas are: Health & Ageing, Crime Prevention (Transnational) and Environment Sustainability. We left aside areas where there is already some evidence of clustering such as IT & Financial Services and Advanced Materials as these were already areas of key focus and had some considerable traction. Positioning and seeing opportunities that are global in reach and locally based upon unique capabilities are best to explore and that is what we have tried to do.

Wellness and Health: The emergence of an ageing population profile in the world's major economies is a huge challenge that demands an innovative response by providing broad holistic & cross disciplinary responses to an ageing population. These aged population profiles are not just the sole concern of western countries as it is estimated that by 2020 China will have a similar aged population profile to the USA, i.e., average age 37, while in Western Europe it will be 45 and in Japan 49 *6. From the existing tenant base at the Innovation campus, research units within the University and other related entities in the community a number of cross disciplinary teams have been developed, drawing together people from diverse areas: including engineering, business systems, statistics, nanotechnology, biology, hospital researchers, medical technicians, treatment centres and patient groups to develop responses and take up emerging business opportunities. In particular a new model for the delivery of health care based on 'ageing in place' services and the delivery of home based therapy services to aged & infirm people in their homes using emerging technologies.

Developments in technology are empowering more people to act locally and this is turning models of service delivery on their head. STPs need to help bring their clients into contact with new business models and embrace the change and use their connections to form new market opportunities and collaboration partners. Health is a booming industry and STPs are well placed to create the right mix of partners and people will be innovative and fast to respond to challenges. Increasingly medical and health related developments are cross disciplinary in nature and creating a place where practitioners, students, engineers, biologists, chemists, and entrepreneurs are all located can help channel efforts. By hosting researchers who examine the activity based costing of existing health care operations and looking at where to remove or improve functions will give teams the data they need to identify further innovative opportunities.

The Innovation Campus (iC) has gone on to put forward an exciting proposal for future expansion that not only facilitates this type of interaction but will through a new hospital, medical school and primary health care facilities help to re-engineer the health service provision model that is currently in operation. Sometimes it is necessary to sidestep the old culture and its expectations and create a new model, one that is holistic and patient wellness not illness is the focus.

The Innovation Campus (ice) now has Nanotechnologists sitting down over coffee with Medical researchers & specialists and coming up with design changes to medical devices and within hours are able to see them created by 3D depositional printing. Rapid prototyping of devices has revolutionised the collaborative medical research scene. STP can play a pivotal role in creating an environment that facilitates bringing these key players together and helping them to realise their potential, once thought only the domain of large commercial laboratories that controlled the prototyping and trialling of such devices and ideas.

The Wellness and Health cluster at the Innovation Campus now looks like this, led by the **Australian Health Services Research Institute (AHSRI)** established in May 2011, which brought together eight research centres and aims to improve the management and provision of health and community services in Australia by achieving greater equity in resource distribution, fairer access

*6 The other demographic dividend" Oct 7 2010 The Economist

to services, better continuity within and across the health and community care sectors, and the use of evidence to assist management decision-making.

In addition to producing robust academic output, the products of the Institute include practical and expert advice to a variety of government and non-government agencies and interest groups. AHSRI is comprised of the following eight research centres:

- *Centre for Health Service Development (CHSD)*
- *Palliative Care Outcomes Collaboration (PCOC)*
- *Australasian Rehabilitation Outcomes Centre (AROC)*
- *National Casemix and Classification Centre (NCCC)*
- *Australian Centre for Clinical Terminology and Information (ACCTI)*
- *Australasian Occupational Science Centre (AOSC)*
- *Australian Health Outcomes Collaboration (AHOC)*
- *Centre for Applied Statistics in Health (CASiH)*

The *Centre for Health Initiatives* (CHI), moved from the main campus to the Innovation Campus in 2011. CHI brings together a range of research strengths from the Schools of Nursing, Midwifery & Indigenous Health; Psychology; Health Sciences; and the Graduate School of Medicine. It also provides a structure for developing and encouraging cross-school, cross-faculty and industry-linked research in the following areas: Alcohol, Aged Care & Dementia, Cancer, Health Professional Education, Workplace Health, Safety & Productivity.

Illawarra Health and medical research Institute (IHMRI) has been developed on the main campus over the past three years and has developed a broad-based research framework of six focused themes: Cancer Continuum, Healthy Ageing, Infectious Diseases, Metabolic Conditions, Neuroscience and Mental Health and; Primary Care and Rural Health.

This research program draws on and develops the research capability and strengths of local institutions and partners. It also promotes a translational approach by breaking down the boundaries between research groups, encouraging collaboration and the development of new areas for investigation, and delivering novel research findings into clinical care. This leadership model promotes strong links between the academic and clinical research contexts and facilitates collaborative research agendas that ensure research findings can be rapidly translated into improved clinical practice and better health outcomes for the community. These are emerging strengths and already have had a profound impact upon the number of professional jobs available in the local area.

Security and the prevention of Crime: The sophistication of organised criminal activity, especially that perpetrated by transnational cartels, is often beyond the capability of current detection techniques available in regional areas; and, even if detected and apprehended they are often immune from effective prosecution because of deficient evidence collection and poor presentation of relevant material in court. This illegal transnational criminal activity tends to flourish in regional economies that are conveniently beyond the watchful eye of national enforcement agencies, usually based in large metropolitan and Capital cities. At the Innovation Campus the tenants and their partners are playing a major role in addressing the shortcomings in regional security systems by providing a new and exciting levels of sophistication in the technologies applied to the detection & tracking and enforcement of illicit activity and the provision of new systems and techniques for the collection, storage and presentation of digital evidence in court to effect prosecution. Tenants work in digital watermarking technologies, encryptions techniques and phone traffic inception and signal merging that have been effectively applied in to the security challenges in the region.

A major tenant *The Institute for Transnational and Maritime Security* (ITAMS) builds on the combined strengths and international reputations of the *Australian National Centre for Oceans Resources and Security* (ANCORS) and the *Centre for Transnational Crime Prevention* (CTCP).

ANCORS provides real-world interdisciplinary research outcomes in these interconnecting areas dealing with the oceans. These areas are oceans law and governance, maritime security and strategy and marine resources, industry and environment. CTCP focuses on the nature of organised cross-border criminal activities that affect regional and global security, including terrorism, human

trafficking, money-laundering, cyber crime, and identity fraud. Under the umbrella of ITAMS, both Centres work together on the intersecting areas of oceans and transnational security, including people smuggling by sea, piracy and transnational marine environmental crime. Recently because of the focus given to the connectivity of these groups and their outstanding reputation several other tenants have been attracted from outside the country. So now software developers, enforcement agencies and management system specialists are working locally with these research groups to increase the product range and develop new and robust systems from international implementation.

Environmental issues : While these have been well documented and discussed within the STP community for many years now a whole raft of opportunities have arisen here in Australia precipitated by the recent adoption of a 'carbon trading policy' by the Australian Government which will lead to an Emissions Trading Scheme within the next two years. While this will place Australia in a very strong position in future the introduction of this scheme is having a major impact on established businesses and industries. Many other countries are now either considering such schemes or have them on trial. Tenants at the Innovation Campus have after they have been connected to one another and discovered their complementary taken the lead develop new products systems and services to assist firms to address and/or comply under new legislation, i.e.; energy, water and waste systems in particular. Even the family home will have to undergo major change and be retrofitted with a variety of products to increase efficiency. This is something that many other countries will need to address in the near future.

The Innovation Campus in conjunction with the University of Wollongong developed a new research centre bringing together researchers, major industry players and other stakeholders and called it the Sustainable Building Research Centre (SBRC). The mission is "to assist in the rapid decarbonization of the built environment". Thus, a major focus of the SBRC is the retrofitting of existing buildings, since replacement of existing building stock occurs practically at between only 1 or 2% p.a. The SBRC brings together researchers, tenants and other industry partners to develop, prototype and test sustainable building technologies and designs for residential and commercial applications. To perform in-depth experimental and theoretical analysis of the thermal design of buildings. To develop architectural and structural design tools to facilitate the inclusion of ecological costing throughout the design phase of buildings (e.g. water, embodied energy, carbon). To investigate day-to-day behaviour of building occupants to improve our effectiveness of building use and design and improve the uptake of environmentally sustainable technologies. To develop novel control systems and sensor technology for improving building performance; and to develop novel modelling tools to aid sustainable design.

Already several existing tenants have identified new business opportunities in services and consulting and some new ones in product opportunities. There is a strong link with existing research strengths in new materials already going on at the Innovation Campus and the impact new nanostructured materials will have on retrofitting products and environmental sensitive technologies.

The three areas outlined above are just a sample of activities that the Innovation campus as a regional STP and its tenants have engaged in with their local community. To develop new business opportunities and new employment opportunities for the emerging knowledge economy. The feedback so far is strong and consistent from local stakeholder, businesses & all levels of Government - that we must continue what we started and continue to be relevant, open & inclusive of the regional community and help them address their needs, meet their challenges and aspire to be transformed. As a consequence the Innovation Campus and tenants are well supported politically & publically and have become a beacon of community leadership and hope in a community desperate for leadership and vision.