STPS AND AIS AS KNOWLEDGE HUBS: BALANCING INNOVATION AND BUSINESS DEVELOPMENT

PLENARY SESSION 1

Technology and business: balance and priorities
in STPs and AIs

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STPs and AIs as Knowledge Hubs: Balancing Innovation and Business Development

by Dr. Arthur Murray and Michael Runde

Executive Summary

In response to dealing with the challenge of conflicting interests among academia, business and the marketplace, we introduce the notion of STPs and AIs taking on the role of knowledge hubs, enabling the flow of knowledge across these three communities. We start by looking at the typical startup company and how knowledge flows break down as the company expands. Next we examine a case history of a world trade center that has evolved into a knowledge hub, and show how an STP/AI can use the same approach to deliver a variety of high-value tenant services. We expand the concept to a network of knowledge hubs connecting STP/AI tenants with world trade centers, academic and research institutions, government agencies and other knowledge sources. Finally, we show how knowledge hubs will play a critical role as we continue the transition to a global knowledge economy.

Introduction

Many Science and Technology Parks (STPs) and Areas of Innovation (AIs) struggle trying to achieve the right balance between innovation and business development. Some end up attempting to choose one over the other. We propose reframing the question as follows: *"How can STPs and AIs create an environment that satisfies the needs of the academic community, the business community and the market?"*

One of the reasons this is such a formidable challenge is the perception that these three communities have conflicting goals that are nearly impossible to reconcile. For universities, an obvious goal is to obtain a stable and growing stream of funding to support world class research and education. Attracting and retaining top-tier faculty, researchers and students through peer recognition is also a key goal. For businesses, access to new markets and top talent is paramount, as is locating in a community with a favorable business climate and quality of life.

Access to markets is essential for both. A business cannot exist without customers, and with no demand for graduates in a particular discipline, student enrollment and research funding drop, and entire university departments may close. As for today's market, its fickle personality is exacerbated by the ability of customers to instantly access, organize, and network, which in turn drives demand for rapid improvement, higher quality and mass customization.

While the goals of each of these three communities are important, too much attention is often given to differences rather than seeking common ground. We maintain that one thing all three have in common is *knowledge*, more specifically, the need for creating, sharing, applying and growing highly specialized knowledge.

The next generation science park has a unique opportunity to create a rich environment for accelerating, at reduced risk, knowledge flows among its tenants and stakeholders. Enhanced knowledge flows lead to increased capacity for innovation, improved risk mitigation, better, more timely decisions, and less time and resources wasted due to repeated errors, redundant effort and missed opportunities. We call the mechanism for doing this a *knowledge hub*.

We define a knowledge hub as: *a system that accelerates and enhances learning and innovation within and among organizations and communities with similar goals.* We consider a *system* to be any purposeful combination of *people, processes and technology*.

The basis for our knowledge hub approach is the small startup company found in almost every science park. We maintain that with today's technology, coupled with a willingness to share and managed by a minimal set of stable processes, a knowledge hub can be expanded far beyond the walls of the startup and the STP in which it resides. Our ultimate goal is to create a global knowledge network of communities and organizations, small and large, public, private and nonprofit.

The ebb and flow of the knowledge pipeline

By their very nature, startup companies are small enough and their brain trust (usually the founders and a few close advisors) in close enough proximity that knowledge flows are not a problem (see Figure 1). It also helps that the required knowledge tends to be limited to a few critical topics such as experimental design, meeting development milestones, and obtaining early buy-in from customers and investors.


"The Scientist"
One of only a few who understand the theory behind the technology

"The Money Person"
Good with numbers; understands and closely controls cash flow

The Startup Knowledge Hub

"The Techie"
Lead developer; understands what is and what is not "doable"

"The Sales Guru"
Networker; relationship-builder; understands the competitive environment and pricing from the buyer's perspective

Figure 1. The startup company is naturally organized as a knowledge hub

In a startup most of the knowledge resides in the heads of the founders and their advisors. The knowledge hub infrastructure in this case usually consists of a conference table and white board. Decisions, which are a key output of any knowledge exchange, are frequent and typically made on-the-spot.

For example, the sales guru gets a question from a potential client about a need that would require putting together a customized solution. The scientist likes the idea. The lead developer balks at the change in requirements, while the money person demands up-front payment with premium pricing, which elicits a stern grimace from the sales guru. After going around the table a number of times, an agreement is reached.

The impact of scaling on knowledge flows

Now consider what happens years later, as the company breaks through the 20 million-dollar sales barrier and reaches the 100-employee mark. The organization will in all likelihood resemble the chart in Figure 2. The same type of sales opportunity pops up, this time from a large company halfway around the world. The scope, scale, and complexity are one or two orders of magnitude greater than the opportunities in the startup phase. In addition, the opportunity requires taking on additional suppliers, financing, and all the risks associated with international sales.
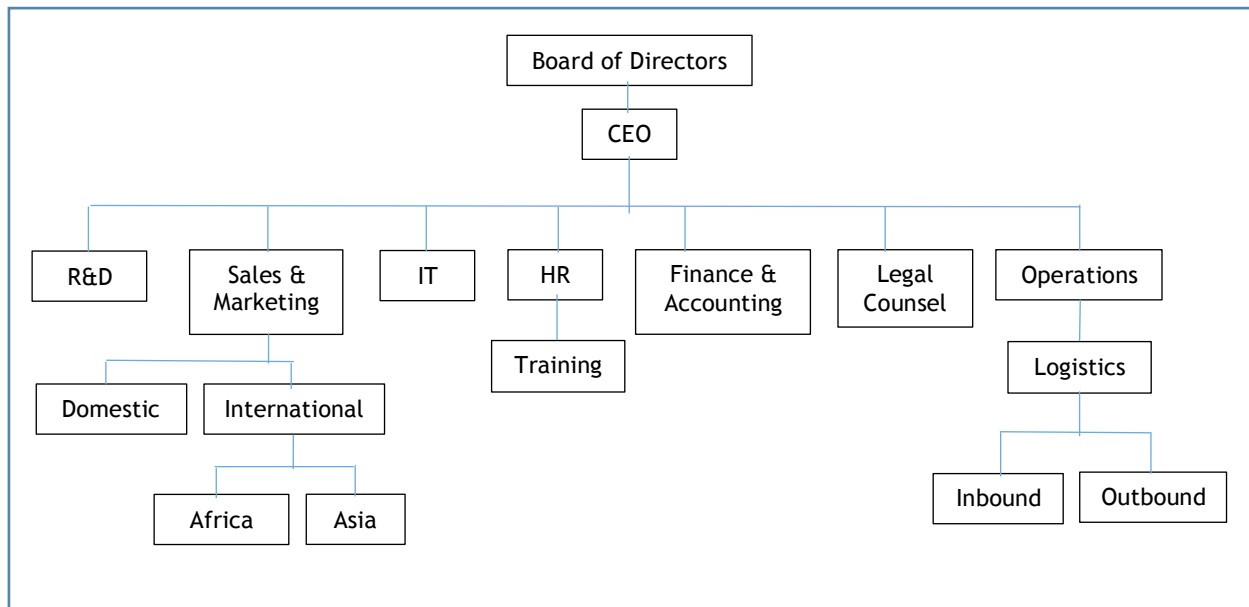
Figure 2. Knowledge flows break into silos as startup companies enter the early growth phase

The office where the opportunity originated is now many miles and organizational layers from the nascent outbound logistics office. No longer taking place around a conference table, the decision process has slowed considerably. Legal counsel needs extra time to grapple with complex tax regimes and customs regulations. Finance attempts to put systems in place needed to handle foreign currency transactions and international banking. Outbound logistics and training both need time to ramp up in order to support the language and culture of the new customer base.

A real example of what can happen when organizations become very large and their knowledge gets trapped in silos occurred recently in a new $100M emergency facility which was added to a hospital in a small U.S. city. In the new, ultra-modern wing, ER doctors were experiencing difficulty using their stethoscopes. Air ducts, strategically placed to maximize air flows, were directly above the patient beds. The noise from the diffusers seriously impeded the physicians' ability to hear the subtle sounds needed to quickly assess a patient's condition.[1]

This was clearly a case of a clogged knowledge pipeline. Two obvious dots that should have been connected were not. In designing and building a new emergency healthcare center, neither the architects nor the HVAC (heating, ventilation and air conditioning) engineers fully took into account the needs of the people who mattered the most, the end users: the doctors, nurses and patients who would actually be using the facility.

In the world of HVAC design, air flow (volume, temperature, velocity and moisture) is critical. In a hospital emergency room, positive air pressure must be maintained. But with pressure and velocity come noise, and a high level of ambient noise is something you don't want when you're listening through a stethoscope for subtle abnormalities in breathing or heart function. That's the critical knowledge nugget that was missing.

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[1]Art Murray, *Smart hospitals: Transformational medicine for the knowledge age Part 1*, KMWorld Magazine, July/August 2012.

Let's take a look at another real-world example of critical knowledge flows, this time involving a World Trade Center and a small business.

Success story: a World Trade Center knowledge hub

Signature Worldwide is a U.S.-based training company located in Dublin, Ohio's tech corridor, directly adjacent to the city's Entrepreneurial Center and Technology Park. Founded in 1986, *Signature* was originally focused on the hospitality industry. In 2002, looking to expand into the global marketplace, the company approached the World Trade Center (WTC) Dulles Airport for help.

A World Trade Centers Association (WTCA) licensee since 1997, WTC Dulles has access to WTCA's vast network of over 15,000 tenant companies worldwide. This is in addition to its own network of clients and partners, many of which are located in WTC Dulles' backyard in Loudoun County, Virginia, which has come to be known as the Washington DC *Netplex*.[2] It got this name based on the fact that over half of all U.S. internet traffic passes through the county's massive underground fiber optic network and highly secure data centers every day. The region also boasts more technology professionals than anywhere else in the nation. This gives WTC Dulles unique positioning to offer services beyond those of traditional WTCs.

It would be overwhelming for Signature's sales staff to comb through all 15,000 WTCA tenant companies to find the right matches. That's where the knowledge hub model fits in (see Figure 3). By applying their understanding of *Signature's* goals and objectives (step 1), along with their know-how and expert insights into the vast WTCA network, WTC Dulles staff proceeded to refine the list of candidate customers and partners to a more manageable set (step 2).
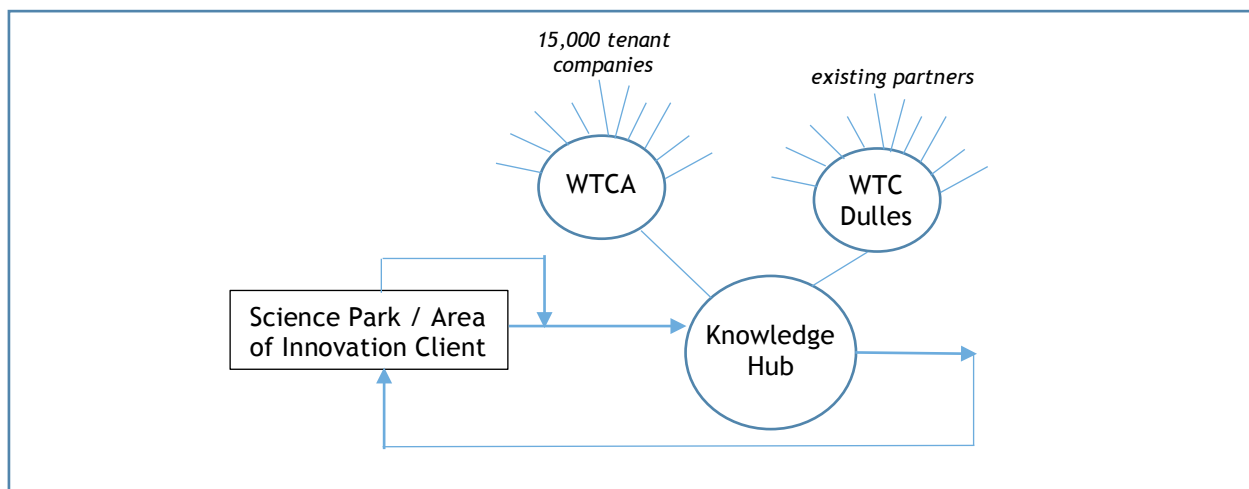

Figure 3. Initial Knowledge Network

Several selection criteria were taken into account. Private companies were given preference over government agencies and NGOs. Among the many private companies identified, those known to have an entrepreneurial mindset and friendly inclination toward early-stage companies were chosen. The choice of business model was another important consideration. The list of candidates was further refined to include those with CEOs known to favor licensing as opposed to franchising.

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[2] *The Netplex: It's A New Silicon Valley*, Fortune, March 7, 1994.

Finally, the all-important ingredient of culture was taken onto account. For this aspect, if it was determined that an American style of training would fit within the culture, while at the same time provide new insights that could help grow the host nation's hospitality sector, then that candidate business rose toward the top of the list.

This knowledge-based filtering process resulted in narrowing down the list of candidate companies from 15,000 to less than 100. After making the appropriate introductions, meetings were set up (step 3), and the client entered into discussions with each candidate customer/business partner (step 4). Based on feedback obtained during the various encounters, the list was further refined (step 5). A more detailed list of the activities performed in each of these five steps is provided in Table 1.

Table 1. Critical knowledge applied at each step in the *Signature* case

Step	Knowledge applied
1. Identify Need	Elicit requirements, including implicit requirements derived from interviews with company executives
2. Match	Establish and apply matching criteria; find international customers and/or partners who can help tap new markets • Private companies • Hospitality industry • Entrepreneurial mindset • Willingness to work with a small, early-stage company in U.S. • Willing to enter into licensing agreement • Cultural differences not an insurmountable barrier • Looking for new insights and ways to incorporate American training approaches
3. Plan	Develop agendas and schedule meetings with qualified decision makers
4. Engage	Establish mutually agreed upon objectives and constraints: • Sales growth targets • Geography • Business model • Language(s)
5. Review & Refine	Continue expanding to other countries • Identify additional countries • Determine best locations and establish regional headquarters offices

In the months and years that followed, with the help of WTC Dulles, *Signature's* market expanded from zero countries outside the U.S. to forty. Today, *Signature Worldwide* serves 90 countries from regional offices in Cyprus, Argentina, Brazil, Canada and Thailand, along with its headquarters in the U.S.

A generalized approach

Returning to our example of a startup company entering its early growth phase, let's assume they are a science park tenant. As they struggle to acquire the knowledge needed to act upon a growing number of risk-filled but potentially lucrative opportunities, they depend heavily on the advice of their current staff. But staff members don't always have the answers. They often need to look outside the firm for help.

It is quite possible that the knowledge a company is seeking resides in the heads of other tenants elsewhere within the science park. The question is whom, and where? This is where the new role of the science park as a knowledge hub comes into play (see Figure 4).
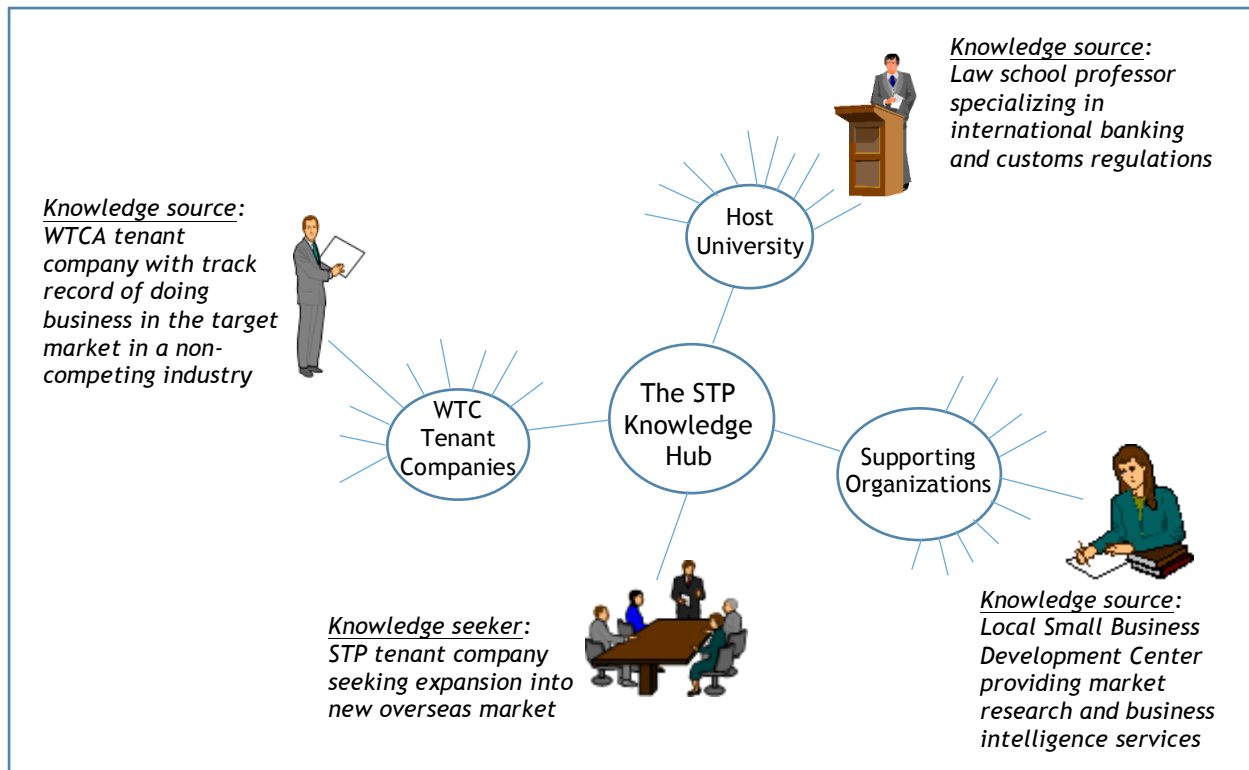
Figure 4. The STP as a knowledge hub

The figure contains the following labels:

Knowledge source: Law school professor specializing in international banking and customs regulations

Knowledge source: WTCA tenant company with track record of doing business in the target market in a non-competing industry

Host University

WTC Tenant Companies

The STP Knowledge Hub

Supporting Organizations

Knowledge seeker: STP tenant company seeking expansion into new overseas market

Knowledge source: Local Small Business Development Center providing market research and business intelligence services

Building upon our experience with *Signature* and other clients, we've evolved a generalized five-step approach for identifying and enabling key knowledge flows that are typically needed for helping emerging technology companies to tap into global markets. We believe these steps are generic enough that they could be applied by STPs and AIs in enhancing their role as knowledge hubs. The steps are *identify, match, plan, engage,* and *review*:

1. *Identify* requirements and perform analysis to reveal critical knowledge gaps and/or opportunities.
2. *Match* the knowledge gaps to a source that can fill them; match the knowledge opportunities with qualified beneficiaries.
3. *Plan* by formulating simple yet clear approaches for the effective transfer of knowledge needed to close the gaps or exploit the opportunities; define mutually agreed upon goals, objectives, roles and responsibilities, using simple, easy-to-understand language.
4. *Engage* by using an agile approach with clearly defined constraints but flexible enough to evolve as the relationships, requirements, capabilities, technologies and business models evolve. Such an approach accelerates the progression from concept to prototype to initial release, while generating revenue and obtaining financing of the right type, at the right time, at the right level. Business model innovation plays a major role, and value exchanges are closely monitored and adjusted as needed.
5. *Review* by periodically evaluating progress and making adjustments.

While most of our original application of the methodology involved people, we have spent the past year looking at ways technology and process innovation can be used to build a more efficient and effective knowledge hub. We will now take a look at our initial design for the enabling infrastructure and how it can be applied to STPs and AIs and their partners around the world.

Building the enabling infrastructure

To some extent, each of the three communities of businesses, universities and markets has a knowledge-sharing infrastructure in place. The market appears to be the most organized, with social media acting as the primary driver. Universities are also well networked but tend to be organized into tight, restricted-access silos, usually limited to a specific department, school or discipline. Businesses are still sorting it all out, trying to find the right balance between allowing the free flow of information and maintaining tight controls to prevent the loss of intellectual property and privacy. STPs and AIs, enabled by recent advances in technology, have an opportunity to bring these disparate worlds together.

The knowledge hub infrastructure being developed by WTC Dulles currently consists of a three-layer architecture: a network layer, a data layer, and an application layer (see Figure 5). A user experience/user interface (UX/UI) layer is planned in the near future. This is the layer that defines specifically how the user will interact with the system, including accessing, retrieving and refining knowledge, as well as contributing new knowledge.
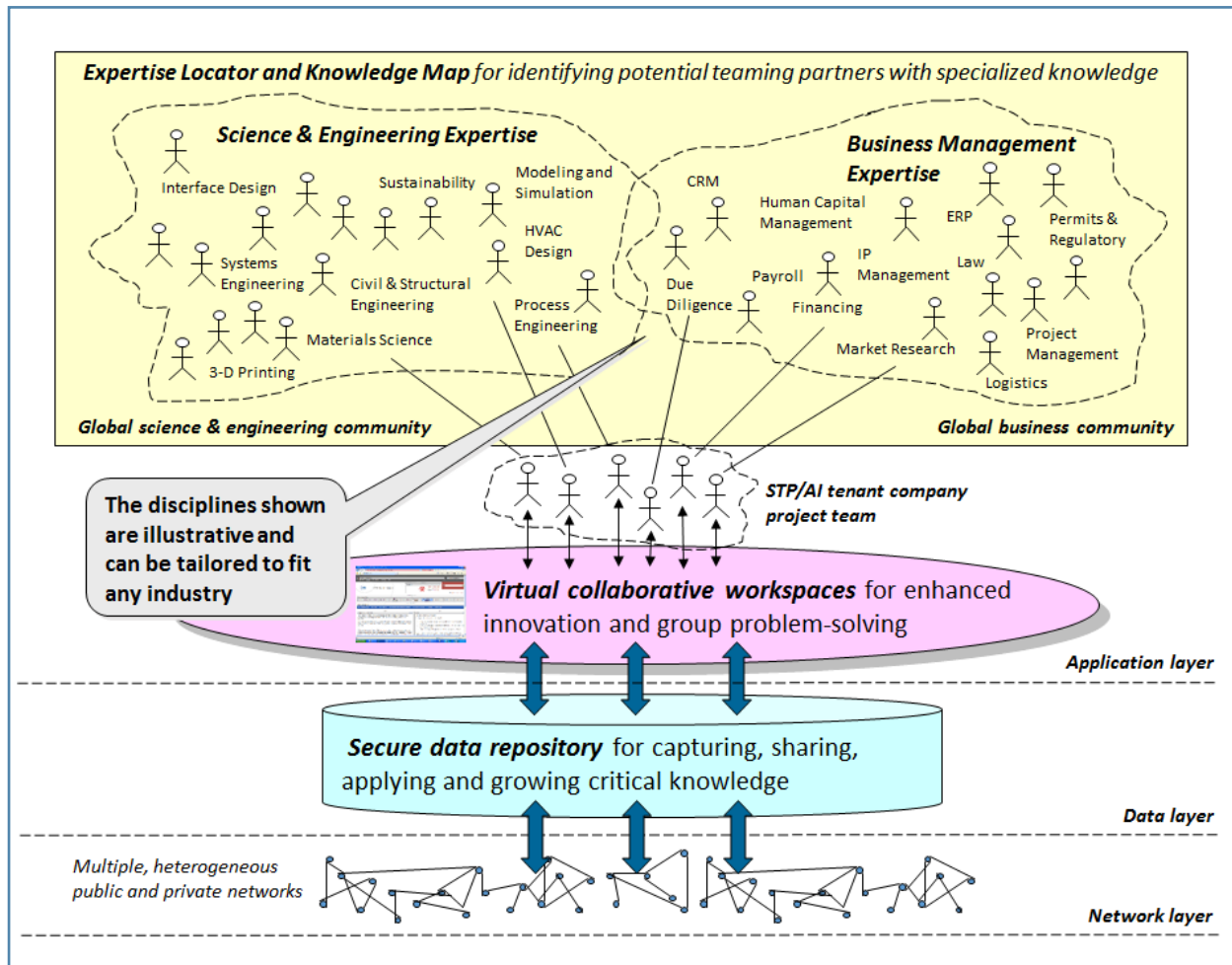

Figure 5. Knowledge hub enabling infrastructure

The network layer. A global knowledge hub must allow easy data accessibility for knowledge sharing and collaboration while protecting proprietary information. For this, WTC Dulles discovered that one of

its local partners had already developed, tested and deployed a mature platform for secure collaboration and data-sharing over an open, unclassified network, including the internet. The platform is ideal for secure knowledge-sharing and collaboration among STPs and WTCs, their tenant companies, trade and professional organizations, government agencies, and NGOs.

Data layer. With the secure network layer as a foundation, services offered by the next-generation STP and WTC will include access to a rapidly expanding database of technology providers and other businesses. This currently includes 15,000 WTCA and 128,000 IASP members and tenants worldwide, along with an ever-expanding list of trade association contacts.

Application layer. This is the "sweet spot" for knowledge sharing and collaboration. Two relevant knowledge management applications are knowledge maps and expertise location systems. A GPS app finds and directs users to a physical location such as an office building. In much the same way, knowledge maps and expertise locators help users locate a source for the knowledge they are seeking.

Concept mapping and attribute matching tools are useful for pairing businesses with technology developers. A sample screen shot of a concept map aimed at helping economic regions improve their resilience, which was developed using TheBrain® software, is shown in Figure 6. The concept map provides a visual representation of the key components of economic resilience and how they are interrelated. The global economy has grown extremely complex, with innumerable interrelationships and dependencies. Creating a concept map is a good first step at identifying the critical components and their interrelationships. For example, the ability to purchase fuel is dependent upon the widespread availability of electric power, transportation and logistics (fuel trucks need fuel in order to deliver fuel), and access to financial networks for credit/debit card transactions, to name a few.
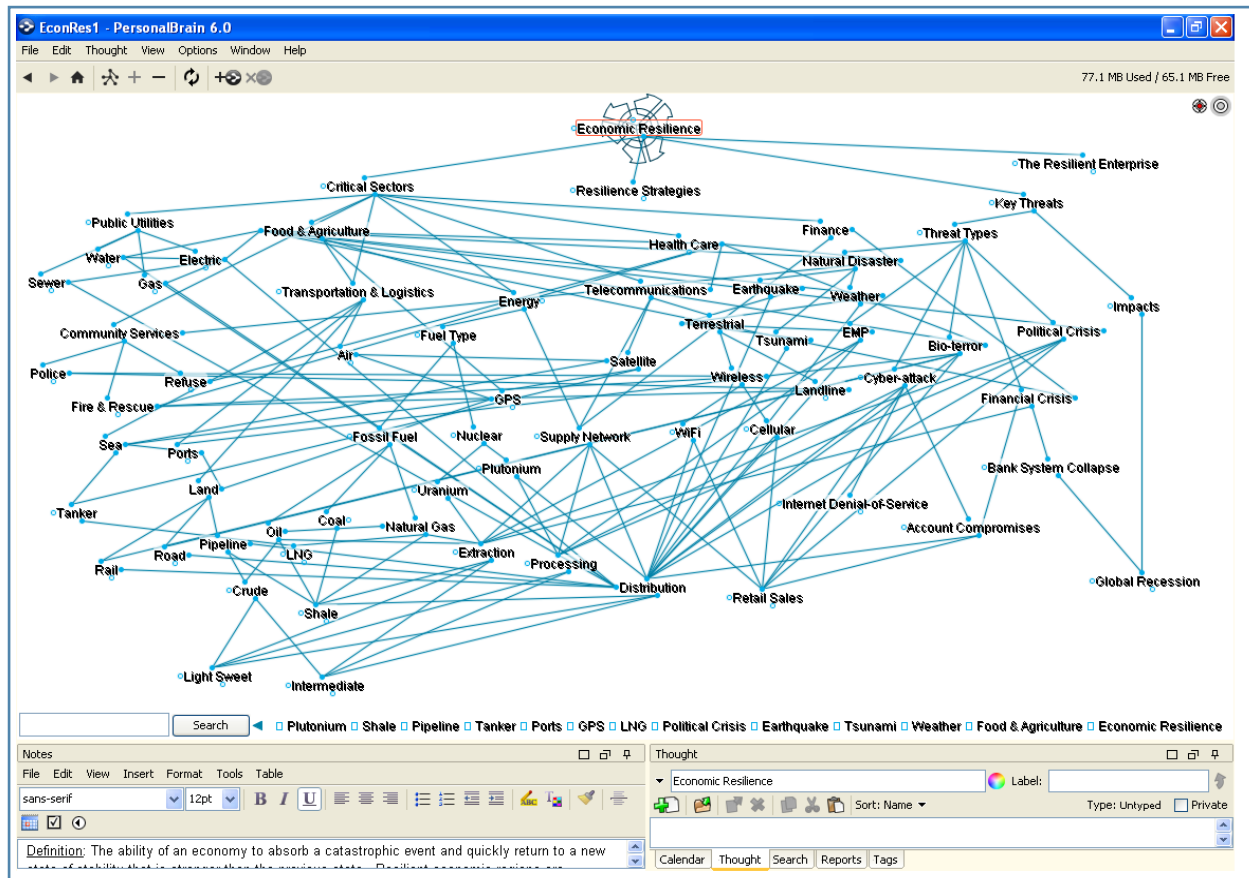

Figure 6. Concept map developed for improving regional economic resilience

Expertise locators are specialized search tools for finding and vetting subject matter experts and potential host nation business partners. Once a credible knowledge source is identified, the user engages in knowledge transfer/exchange with that source, such as by using a virtual collaborative workspace. Both participants contribute feedback regarding the effectiveness of the knowledge transfer and its application, allowing the knowledge to continually grow and improve. Systems for building and maintaining lessons-learned and best practices repositories (documenting what works, what doesn't work, and why, based on previous experience), along with communities of practice (CoP) platforms are common tools for this purpose.

Knowledge-based data analytics

Massive amounts of data are generated by the three communities, and the volume continues to grow. Much of that data can be transformed into information that can be put to use solving problems and generating new innovations and opportunities. This is where analytics and curation come into play, with analytics being the technology component and curation the human component.

Working in tandem, these two components identify patterns, connect the dots, and extract new nuggets of knowledge that may have been lost in the shuffle of research activity (often very narrow in focus by design) and data too voluminous to be mined manually. Knowledge-based data analytics can help sort through the massive volumes of publicly available economic and trade data, tender offers, trade missions, travel alerts, global banking regulations, etc.

The human curator, working with tools such as knowledge maps and repositories, expertise locators, requirements tracking systems and the like, enables the transfer of knowledge from qualified sources to those seeking it. The knowledge is then applied, including the generation of additional knowledge based on the success or failure of its application. As artificial intelligence technologies continue to advance, automated systems will continue to acquire a greater role in the curation process.

On the surface, this may seem like an insurmountable challenge, as many STPs and AIs lack the necessary IT resources. However with cloud services providing cost-effective access to processing, storage capacity, SaaS (software-as-a-service) and PaaS (platform-as-a-service), a business model can be set up to start small and scale up. In principle, renting office space and janitorial services is no different from "renting" cloud services. Even better, cloud services can be easily expanded or contracted as needed.

Building a global network of knowledge hubs

Our rapidly growing knowledge hub network is shown in Figure 7. As a member of the WTCA, WTC Dulles has direct access to the 330 licensed World Trade Centers around the globe, along with their 15,000 tenant companies and organizations. In addition, WTC Dulles has entered into direct partnership agreements with trade centers in Italy, India, China, Uruguay and the U.S., as well as an economic free zone (Daegu) and Area of Innovation (Daedeok), both in South Korea.

Along with being a member of the WTCA, WTC Dulles is the first (and as of this date, the only) WTC to be a member of IASP. As part of the collaboration, WTC Dulles facilitated a broader alliance between WTCA and IASP in which the two organizations have agreed to the following mutual goals:
1. Expansion of both organizations' international network
2. Combination of services to enhance regional technology sector competitiveness
3. Development of joint investment vehicles
4. Cooperation in mixed-use facility design.

Around the same time, WTC Dulles entered into a strategic partnership with the Consumer Electronics Association (CEA), organizer of one of the world's largest trade shows, the Consumer Electronics Show

(CES) held every January in Las Vegas. The addition of CAE completes a strategic "triad" consisting of STPs and AIs, WTCs and a major trade association, linking innovators, businesses and consumers. One of WTC Dulles' contributions to this alliance has been collaborating with the WTC Las Vegas and CES on the new "Eureka Park" segment of the show, which after only four years of operation has grown from 28 exhibitors to over 200.
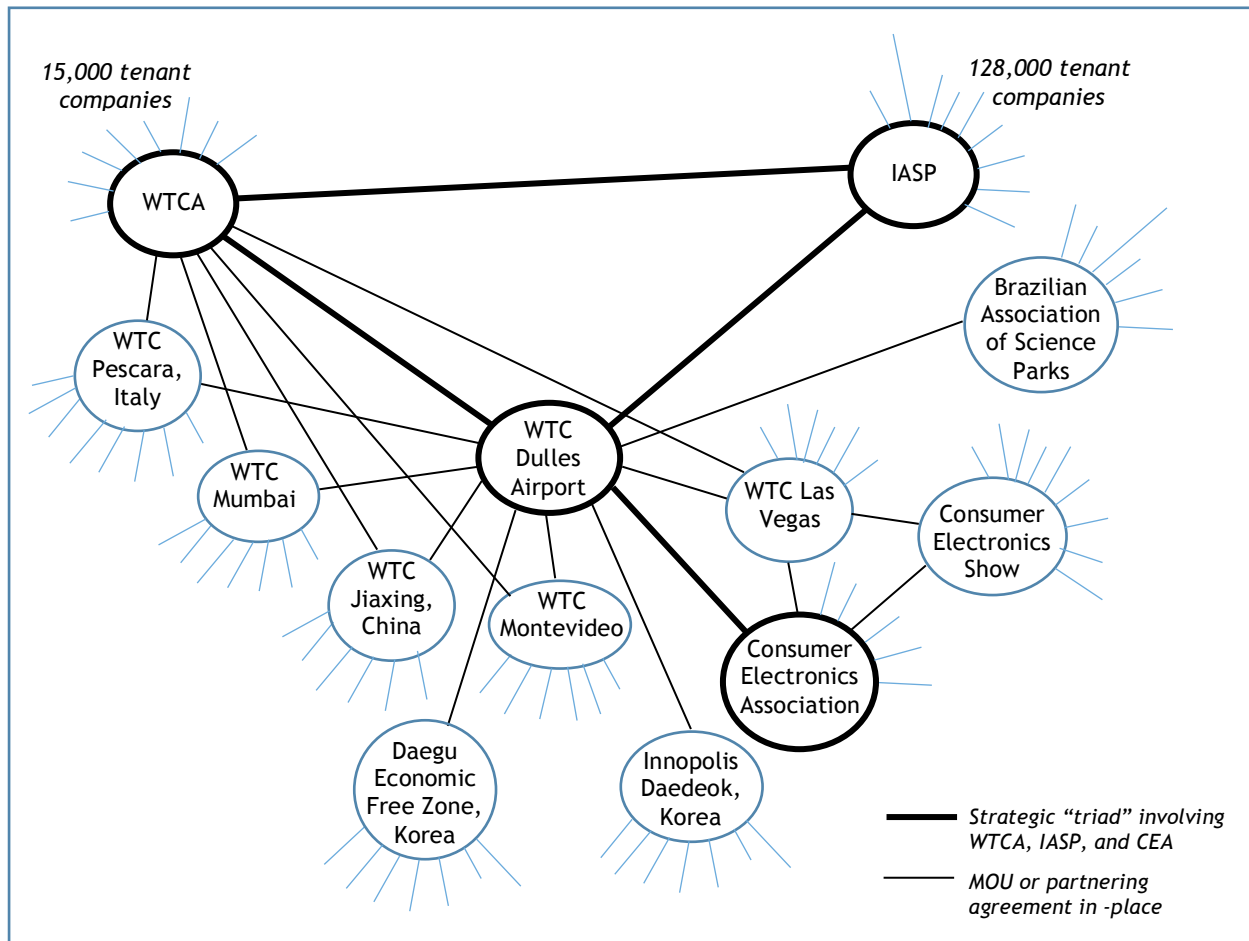

Figure 7. Global knowledge hub network

WTC Dulles' close proximity to Washington DC and its collective experience in government contracting make it an ideal partner for STP/AI tenant companies seeking to do business with U.S. federal, state and local governments. Relationships with local universities, research institutes and commercial businesses, when combined with this extensive government reach, form a body of knowledge aimed at providing small- to medium-sized STP tenant companies outside the U.S. with a "soft landing" capability. Relationships with regional organizations such as the Brazilian Association of Science Parks add to the opportunities. Direct access to embassies and their trade desks further expands the network, as do the many relationships with financial institutions specializing in global markets (see Figure 8).

Countless other organizations could potentially be included. *Sustainia*, for example, is a Copenhagen-based "innovation tank" that has spent the last few years building a database of best practices in sustainability, including many "grass roots" projects in frontier nations that have the potential for being

adapted and migrated to other locales.[3] Each year, the organization recognizes the top 100 innovations spanning ten different sustainability categories. The publicity helps raise awareness and connect innovators to funding sources to scale up and commercialize their ideas.[4] Sustainia's database currently stands at over 2,500 solutions and is rapidly growing.

The dashed lines in Figure 8 show the additional knowledge flows resulting from these relationships. By incorporating the associated knowledge flows into the three-tiered infrastructure of a secure network, shared data, and user-friendly applications, we will improve the speed and effectiveness with which needs are identified and knowledge is transferred, applied and refined. Table 2 lists the services currently offered by WTC Dulles, organized across the eight "C-level" functions of the notional early growth stage company previously shown in Figure 2. These services will be woven into the fabric of the global knowledge hub network over the course of the next several years.

Figure 8. Expanded global knowledge hub network

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[3] www.sustainia.me
[4] www.sustainia.me/resources/publications/2nd_sustainia100_2013.pdf

Whether an STP tenant succeeds or decides not to pursue an opportunity, the lessons-learned from that engagement can be captured, adapted, and re-applied to other, noncompeting companies in the same country or region. This allows for continuous expansion of the body of knowledge for bridging innovation and markets worldwide.

Table 2. Suite of knowledge hub service offerings for tenant companies

	Leadership	R&D	Sales & Marketing	IT	HR	Finance	Legal	Operations
USA sales, marketing and distribution			●					●
Technology transfer and joint ventures	●	●				●	●	
Government procurement and contracting assistance			●			●	●	
Corporate legal and intellectual property assistance	●	●				●	●	
USA regulatory product compliance services							●	●
Public relations and USA representation	●		●					
Multinational customer service and sales training			●		●			●
Executive search and skilled staff acquisition	●				●			
e-Commerce sales and marketing applications			●	●		●		
Immigration and visa requirement assistance					●		●	
Interim executive office suite	●							
Strategy development	●							
Sales force recruiting & training			●		●			
Prospecting and lead generation			●					
Research, business intelligence and analytics	●	●	●			●		
Customer relationship management system selection and implementation			●	●				●
Government sales management			●					●
Sales process development--government and commercial			●					●
Tools and database integration				●				●
Social media strategy and development	●		●	●				
Channel / partner development	●		●			●	●	●
University R&D / tech transfer / partnering	●	●					●	
Venture funding	●					●	●	
Content / communications development	●		●					

Looking to the future

Much has been written about how the global economy has transitioned through various phases, from agriculture to industrial to information to the emerging knowledge economy. The stability of today's capital markets is increasingly at risk as the world's highly leveraged, floating currency-based system remains built on central bank promises which are in turn based on forecasts which assume GDP growth indefinitely into the future.

As a result, various movements are emerging that seek to re-examine our current capital-based system and postulate systems of value exchange that extend beyond central bank notes. One alternative that has been gaining traction is the *triple bottom line*, or TBL.[5,6] This accounting framework incorporates three dimensions of performance: economic, environmental and social.

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[5] Darrell Brown, Jesse Dillard, R. Scott Marshall, *Triple Bottom Line: A Business Metaphor For a Social Construct*, Departament d'Economia de l'Empresa, Universitat Autònoma de Barcelona, Spain, 3 March 2006.
[6] Timothy F. Slaper, and Tanya J. Hall, *The Triple Bottom Line: What Is It and How Does It Work?* Indiana Business Review, Spring 2011, Volume 86, No. 1.

Economic measures are primarily associated with traditional variables of profit and loss, assets and liabilities, and cash flows, all expressed in currencies traded in the global financial markets. Environmental measures seek to include the current and possible future impact of a company's activities on non-renewable or limited renewable natural resources. Social measures refer to those aspects impacting community or regional viability in areas such as education, equity, access to social resources, health and well-being, quality of life, and social capital.

A broader view of the global knowledge economy as an integrated system aimed at meeting basic human needs is provided by Manfred A. Max-Neef.[7] He classifies nine fundamental human needs as:
- Subsistence
- Protection
- Affection
- Understanding
- Participation
- Leisure
- Creation
- Identity
- Freedom.

At this point, we don't know which framework if any will ultimately be adopted. As we continue to build and refine knowledge hubs, we need to expand the way we measure performance, from a single, monetary dimension of *ROI* (return on investment) to something more multi-dimensional, especially as it pertains to the impact of innovation on the economy, the environment, and society.

Overcoming cultural barriers

In order for all of this to happen, social behavior and cultural transformations need to occur in several key areas. The following are a few places to start.

University professors and researchers need to move the focus of their output product beyond publishing papers to creating and maintaining bodies of knowledge. By bodies of knowledge we mean not only scientific data, but the context and reasoning that went into the generation of the data, along with deeper insights into its application. The latter can best be provided by working in partnership with ATP/AI tenant businesses and potential end users in the marketplace.

On the business development side, the focus needs to expand beyond selling products and services to creating agile business models that create value on a sustained basis. This requires understanding and responding to the needs and capabilities of the entire socio-economic ecosystem, including customers, suppliers, investors, educators, and innovators. STPs and AIs are perfectly positioned to step up and serve as liaisons across these communities, and "connect the dots" in ways that might not be apparent from the perspective of any one community alone.

Conclusion

STPs and AIs are in prime position to take on the critical new role of knowledge hubs, facilitating more efficient and effective innovation and learning across the business, academic, and consumer communities. The result will be faster product-to-market cycles, enabled by the ability to quickly learn and make adjustments from both successes and failures (a key factor in successful innovation). Overall, less time and resources will be wasted by repeated errors, duplicated effort, slow technology transfer pipelines, and other problems impacting the smooth transfer of knowledge. In this way, STPs

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[7] Manfred A. Max-Neef, with contributions from Antonio Elizalde and Martin Hopenhayn, *Human Scale Development: Conception, Application and Further Reflections*, The Apex Press, 1991.

and AIs will serve as trusted, reliable resources, creating value by helping a growing body of knowledge quickly move from universities to businesses to markets, and vice versa.

As a science park or area of innovation, you have innumerable ways to enhance and expand knowledge flows that will in turn enhance the ability of your tenants to balance innovation and business development. Are your tenant companies actively engaged in pursuing international business? Are you partnered with a world trade center, especially one that is focused on building relationships and providing supporting services?

A huge opportunity exists for STPs and AIs to change their focus from bricks and mortar to taking on the role of clearinghouse and facilitator of knowledge flows across these communities that directly and visibly benefit existing and future tenants. Based on the emerging trends of increasing speed of change and complexity in the marketplace, along with the potential for major transformation in how economic value is measured, business as usual is not an option. Based on our experience to date in brokering knowledge flows among innovators and markets, we believe the knowledge hub model is an ideal enhancement, and enticement, for STPs and AIs to not only add value to their existing tenants, but to continue attracting quality tenants in a highly competitive future.

We invite you to connect with us and become a part of this exciting new development.

Keywords: science and technology parks; world trade centers; knowledge hubs; knowledge transfer; innovation; global knowledge economy.