

The power of entrepreneurial ecosystems: extracting booms from busts

The power of entrepreneurial ecosystems: extracting “booms” from “busts”

By:

Mariano Bernardez

“Never believe that a few caring people can't change the world. For, indeed, that's all who ever have”.

Margaret Mead

During large economic downturns, scared citizens and organizations turn their attention to their governments' massive stimulus plans to reactivate the economy.

A closer look at the history of past economic recoveries, however, seems to indicate that an economic turnaround not only requires large scale, “top-down action, but also – and more frequently - of “bottom-up” initiative by clusters and networks of organizations that form a “business ecosystem”.

This article will show specific examples of how entrepreneurial, market-based ecosystems can – and have – extracted “boom” from “bust” in Argentina, United States, Israel, India, China and Mexico and discuss a methodology to design and create business clusters able to protect individual organizations, create jobs and spur growth out of adverse economic and social conditions.

Reinventing a community during a default: the Palermo case in Argentina

During Argentina's economic collapse in 2001, 30 percent of the population was unemployed and penniless. People were only allowed to withdraw \$200 per week from their savings, which were paid in 70 percent-devalued pesos per original dollar deposited. (Mussa, 2002)

During that period of social turmoil, while most “porteños” flooded the streets of Buenos Aires banging pots and pans¹ at protest rallies asking for governmental help, others took a different path.

Many young professionals moved to a cheap, blue-collar historic Buenos Aires neighborhood, named Palermo by Italian immigrants, and transformed it into the most successful and tourist-chic area of Buenos Aires: Palermo-Soho and Palermo-Hollywood. (Williamson, 2004)

¹ That form of protest was called “cacerolazo” (pan-banging).

The power of entrepreneurial ecosystems: extracting booms from busts

Small groups of 3 to 4 under-35 year old entrepreneurs joined together and bought ruined and abandoned houses with initial investments of around \$10,000.

These now self-employed architects and engineers renovated the old houses, transforming them into boutique hotels, restaurants, art galleries, stores and private homes.

Figure 1: Palermo case



Palermo's neighborhood low rent and housing cost and central location in Buenos Aires was a key success factor



Young architects, builders and artists remodeled old houses creating lofts and spurring a new real estate market.



Boutique hotels developed by young architects, restaurateurs and hospitality professionals catered to high-end tourism.

Those in the restaurant and art business moved from expensive downtown Buenos Aires to this revitalized neighborhood. Those with business degrees and good English started publicizing Palermo in U.S. and European newspapers. (Lee, 2008)

Those who were tech-savvy used *e-performance* to link their offerings to international tourism-related Web sites such as Expedia, Priceline and all major U.S. and EU newspapers, so that tourists could investigate and make reservations directly.

Soon, an avalanche of tourists, attracted by *Web-information* as well as the peso devaluation, came to explore the neighborhood, patronize the stores and restaurants and "get out the news" to their countries of origin.

Old homes, originally bought for less than \$35,000 each, are now marketed and sold to nationals and foreigners at an average cost of \$350,000. They have been redesigned and redecorated by Argentinean architects and engineers, with the art and furnishings of young Argentinean artists. (Fast propiedades, 2008)

Palermo's entrepreneurs also started a small film industry that produces art and TV films subsidized by the government. It attracts Hollywood stars and moguls such as Francis Ford Coppola, Madonna, Robert Duvall and Robert de Niro who film and buy houses in Palermo. (Independent Film , 2008)

The entire neighborhood became an entrepreneurial ecosystem, creating clusters of compatible businesses - hotels, restaurants, stores, art galleries, developers and builders - organized block by block to offer a unique client experience to tourists and locals. This resulted in clean, safe and harmonious street commerce - from high end to street sellers.

The power of entrepreneurial ecosystems: extracting booms from busts

At the time of the 2008 crisis, Palermo remained strong, backed by steady income from returning tourists that chose the neighborhood's creative neighborhood hotels, low prices and tourist-friendly, English-speaking young waiters, restaurateurs and artists.

Today, the many skeptics that forecasted Palermo's demise buy homes in the neighborhood, enjoy its 200 restaurants and shop at its stores. This commerce in total provides income and jobs for an estimated 45,000 families.

In Argentina, other neighborhoods, such as Boedo and La Boca have already followed the ecosystem idea. (Mount, 2008)

Wealth creation rules: building social capital from the “bottom-up” through business ecosystems

“A Mexican migrant to the U.S. is five times more productive than one that stays home. Why is that?

The answer is not the obvious one: this country has more machinery or tools or natural resources. Instead, according to some remarkable but largely ignored research – by the World Bank, of all places - it is because the average American has access to over \$425,000 in intangible wealth, while the stay-at-home Mexican’s intangible wealth is just \$34,000.

Once one takes into account all of the world’s natural resources and produced capital, 80 % of the wealth of rich countries and 60% of the wealth of poor countries is of this intangible type. The bottom line: “Rich countries are largely rich because of the skills of their populations and the quality of the institutions.”

(Bailey, 2007, p. 1)

The World Bank’s findings about countries also apply to organizations and individuals. Decades of economic assistance to underdeveloped countries have shown that those societies that fail to provide a hospitable environment to develop productive enterprises keep falling behind, while those who manage to establish healthy business ecosystems make progress even without external help.

Successful organizations and individuals do not “self-create” or grow from the “inside-out.” Their success is not due only to internal factors, such as organizational or individual competences, but also, critically, to external factors that Warren Buffet summarized candidly to then presidential candidate Barak Obama:

“Take me as an example. I happen to have a talent for allocating capital. But my ability to use that talent is completely dependent of the society I was born into. If I’d been born into a tribe of hunters, this talent of mine would be pretty worthless. I can’t run very fast, I’m not particularly strong. I’d probably end up as some wild animal’s dinner.

The power of entrepreneurial ecosystems: extracting booms from busts

But I was lucky enough to be born in a time and place where society values my talent, and gave me a good education to develop that talent, and set up laws and the financial system to let me do what I love doing – and make a lot of money doing it.” (Obama, 2006, p. 191)

The factors that Buffett referred to - *education, rule of law, financial and technological support* - constitute the nurturing ground for any successful organization, or what the World Bank calls *available social capital*.

Putnam (Putnam, 1993), Cohen and Fields describe social capital as “*a moral resource; the features of social organization that facilitate coordination and cooperation for mutual benefit. Social capital is embodied in networks of civic engagement.*” (Kenney, 2000)

The history of business in developed and development economies shows that social capital is not only built “top-down” by societies and governments, but also – and more frequently - “bottom-up,” by clusters and networks of organizations that form a “business ecosystem.”

Actually, the notion that a business can operate and be sustainable without support and collaboration with others contradicts experience and history.

“*Business networks did not start with the Internet*” states Harvard researchers Iansitti and Levien. “*For hundreds of years, the Italian apparel industry (originating in the Prato region) has been organized as a loosely connected network of many organizations.*” (Iansitti & Levien, 2004, p. 5)

Good ecosystems, bad ecosystems

Although all societies and markets organize business ecosystems more or less spontaneously, following the framework of their historical, economic and political reality, research in societal performance indicates that ecosystems can be as much of a hindrance to economic growth as they can be a stimulant factor.

Yale economists William J. Baumol, Robert E. Litan and Carl J. Schramm distinguish four different types of ecosystems²: *oligarchic, state-directed, big-firm and entrepreneurial.* (Baumol, Litan, & Schramm, 2007)

In the *oligarchic ecosystem* – characteristic of most Latin American, African and Asian countries - economic power is concentrated in a small group of individuals or families. Companies are usually organized in vertically-integrated “groups” or “holdings” exerting

² We prefer to call *ecosystems* what Baumol et al refer more generally as “good and bad capitalism” because it reflects better the microeconomic nature of the concept and also because most “state-guided ecosystems” economies are in fact not capitalistic but socialistic.

The power of entrepreneurial ecosystems: extracting booms from busts

monopolistic or oligopolistic control over the internal markets. Although the few firms prevailing in this ecosystem have guaranteed market share and control of the market, oligopolistic markets tend to have lower growth rates and to be more vulnerable to economic downturns, particularly when the oligarchic ecosystem depends on exporting commodities.

In the *state-directed ecosystem* – characteristic of socialistic economies in Asia, Africa and Latin America and “hybrid” European economies such as France - government directs the market through centralized planning, prize controls and complex regulations, “picking winners and losers” according to their priorities. Most financial, logistics and utilities firms are state-owned or controlled. Although state-guided ecosystems often proselytize equality in income distribution based on low-price exports, they achieve these goals at the expense of innovation and competition, keeping low wages, generating red tape, black markets, graft, poor support services and inadequate allocation of investment and resources that stifle growth.

Big firm ecosystems – prevalent in most OECD developed economies - are dominated by vertically integrated big firms that operate at a global, transnational scale. Big firm ecosystems generate large financial resources and invest heavily in R&D, but are slow to react to market changes, and take innovation to market.

Entrepreneurial ecosystems – the “engine” behind all fast-growing economies - are characterized by small, nimble and innovative firms, frequently startups or large firm spinoffs that both generate innovation and bring it to market quickly and efficiently.

Table 1: Ecosystems comparison

Factors	Ecosystem types (Baumol, Litan, & Schramm, 2007)			
	Oligarchic	Big-Firm	State-Guided	Entrepreneurial
Characteristics	Economic power concentrated in few individuals of families	Big firms guide and control the market	Government directs the economy and owns ecosystem factors	Small, nimble and innovative firms drive change and growth
Advantages	Fast decisions, large resources	Large resources Global scale Investment in R&D, leverage	Low labor cost, exports-led growth, focus on equality	Fast, nimble, innovative and resilient to downturns
Pitfalls	Slow growth, social unrest, informality, corruption, dependence on natural resources	Slow to introduce innovation Rigid, high fixed costs and overhead Legacy costs	Dependence on exports, commodities, bureaucracy, ideological restrictions	Limited resources, unstable, requires incubation
Examples	India, México, Brazil, Africa, Asia	US, EU, OECD	Venezuela, Cuba, China, India, France	China (SEZ), India (IIT), Argentina (Palermo); US (Silicon Valley, Silicon Fen), Mexico (South of

The power of entrepreneurial ecosystems: extracting booms from busts

				Sonora corridor)
DBR	High > 40	Medium 20-40	High > 40	Low < 20
Gini index	High > 50	Medium-High 40-50	Low < 40	Medium-High 40-50

Our research has shown that inequality in income distribution – as measured by the Gini index - correlates negatively with economic growth. Countries with low inequality tend to be those that have uniformly low wages and per capita income. As income rises in the entrepreneurial and big firm ecosystem, so does inequality – although growth spills over – through indirect jobs- raising all incomes. (Bernardez, 2008)

Big-firm, state-guided or oligarchic ecosystems frequently allow and even encourage the creation of enclaves of entrepreneurial ecosystems to facilitate economic growth and stimulate innovation. Such are the cases of the Special Economic Zones in state-guided China, Silicon Valley in big-firm United States, or South of Sonora in oligarchic Mexico that will be discussed in this article.

Because of their leaner structure and flexibility, horizontally-integrated entrepreneurial ecosystems such as Microsoft, Dell or Amazon, have proven more resilient than vertically-integrated conglomerates such as Ford Motors or IBM during turbulent times.

The decentralized management and distributed risk of entrepreneurial ecosystems encourages innovation and shared services and collaboration between larger firms. They provide business platforms and smaller, specialized niche players that protect the latter with steady cash flow and economies of scale that would otherwise be beyond their reach.

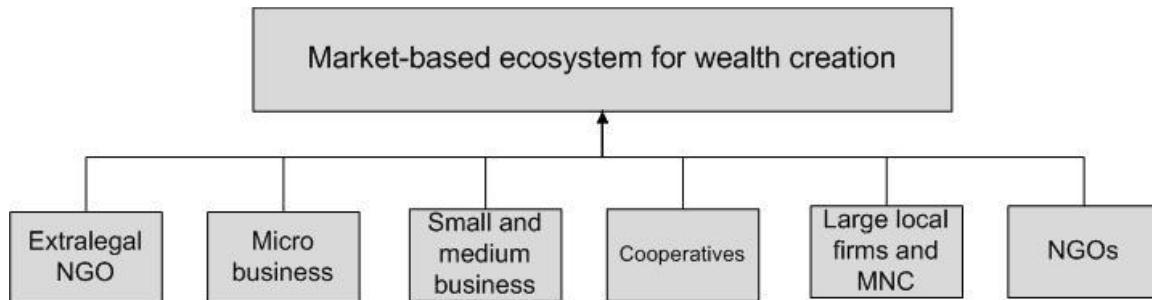
The broadest definition of an entrepreneurial ecosystem “*is a framework that allows private sector and social actors, often with different traditions and motivations, and of different sizes and areas of influence to act together and create wealth in a symbiotic relationship*” (Prahalad C. K., 2005, p. 65)

Entrepreneurial, market-based ecosystems are not only “supply” or “value” chains horizontally integrated from an operational or commercial standpoint.

Ecosystems provide non-profit organizations, “prosumers” and communities access to a common market, creating demand for their products and services, facilitating exchange and coordination, marketing the entrepreneurial community under an “umbrella” of leveraged branding – be that Café de Colombia, Palermo Soho or Made in China - and sharing services - e-commerce, design and logistics - that would otherwise be beyond the reach of many small businesses.

The power of entrepreneurial ecosystems: extracting booms from busts

Figure 2: Market-based social ecosystem



Market-based business ecosystems combine all sizes and kinds of organizations, from non-profits and micro business to multinational and large for-profit firms. While larger firms and multinationals provide a financial and technological framework to support the ecosystem, small and medium businesses bring aboard “niche” expertise and affordable innovation and social organizations ensuring a “virtuous circle” by multiplying the investment in human and social capital.

The key components of an entrepreneurial ecosystem are:

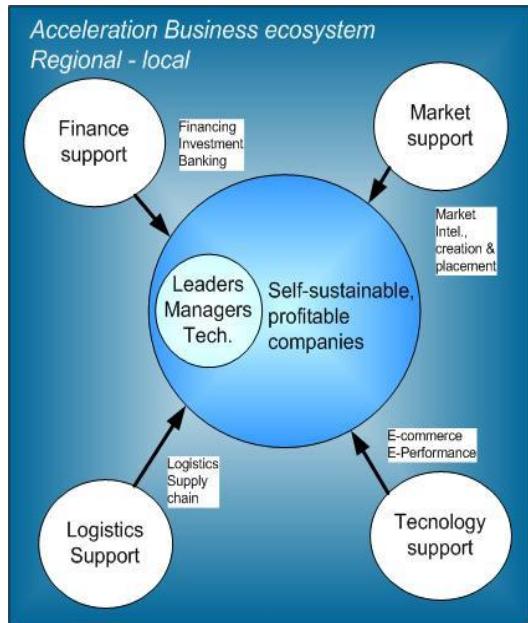
1. *Central strategic, value-creating cross-organizational competencies*

Each entrepreneurial ecosystem develops based on specific value-adding competencies. For example, tourism, gastronomy and hospitality for Palermo; software and high-tech for Silicon Valley, Silicon Fey or Silicon Alley; finance for Wall Street and London; manufacturing for China; engineering and business process outsourcing for India; agribusiness, ecotourism and export logistics for South of Sonora.

Central competencies are each ecosystem’s *competitive* advantage, combined and leveraged with its *comparative* advantage – labor cost and location (Sonora); innovation “density” (Silicon Valley); global currency and finance (Wall Street); or labor cost, large, scalable and English-speaking workforce (India, China).

2. *Support structure* that makes individual business viable and clusters collectively competitive:

The power of entrepreneurial ecosystems: extracting booms from busts



1. *Finance*: access to venture capital (VC), organization of angel capital groups (AC) and monitored public investment.
2. *Logistics*: transportation, communications, energy and an efficient supply chain
3. *Technology*: use of e-commerce, broadband access, e-performance
4. *Market*: access to global markets and target customers, pricing power.
5. *Organizational capital*: viable business plans, efficient processes, management quality
6. *Human Capital*: competencies, work ethic, availability, labor rules

Palermo's success is based on its ability to combine the central competencies of *Financials*: access to angel capital committed to long-term returns and business ideas; *Logistics*: well-located, low cost buildings; *Technology*: Web-savvy, access to Web-catalogs and e-commerce; *Market*: access to international tourists from the United States and the EU via the Web; *Organizational capital*: U.S.-EU educated young entrepreneurs, innovative business plans; *Human capital*: abundance of English-speaking architects, engineers, designers, and low-cost labor.

3. *Success Metrics*: business ecosystems can be measured using the *Doing Business Ranking* (DBR) (World Bank, 2007), the *Economic Freedom Index* (EFI) (Heritage Foundation) and the *Human Development Index* (HDI) (United Nations Development Program (UNDP), 2003).

These indexes enable the identification of specific metrics to measure an ecosystem's performance and to compare it with 120 other countries and regions in the world that might be competing for global markets and investment.

Using DBR and EFI indexes, ecosystem stakeholders can detect gaps between current and desired ecosystem performance and reduce barriers for investment, business and job creation.

The power of entrepreneurial ecosystems: extracting booms from busts

Table 2: Ecosystems Metrics: Doing Business Ranking, Economic Freedom Index, and Human Development Index

Doing Business Raking (DBR)	Economic Freedom Index (EFI)	Human Development Index (HDI)
1. Starting a business	1. Business freedom	1. Life expectancy
2. Dealing with construction permits	2. Trade freedom	2. Literacy
3. Employing workers	3. Government size	3. Educational attainment
4. Registering property	4. Monetary freedom	4. GDP per capita
5. Getting credit	5. Investment freedom	
6. Protecting investors	6. Financial freedom	
7. Paying taxes	7. Property rights	
8. Trading across borders	8. Labor freedom	
9. Enforcing contracts		
10. Closing a business		

Source: (Bernardez, Capital Intelectual: creacion de valor en la sociedad del conocimiento, 2008, pp. Cap. 5, 283-285)

Business clusters can implement different support systems to compensate or close the gaps, for example, facilitating trade across borders with business intelligence or shared e-commerce without having to wait for changes at the country level.

China's *Special Economic Zones* and India's *Indian Technology Institutes* clusters are examples of business ecosystems operating as "facilitating interfaces" that help individual businesses close the handicapping DBR gaps without changing the overall economic system and rules.

A further proof of the power of entrepreneurial ecosystems is the high positive correlations between *Economic Freedom Index - EFI*-/per capita GDP (0.95), *Doing Business Ranking – DBR*-/per capita GDP (0.86), and DBR/EFI/Human Development Index – HDI- (0.85).

Table 3: Correlation between Economic Freedom (EFI), Doing Business Ranking (DBR) and per capita GDP and Human Development (HD)

Country	GDPpc	EFI	HDI	Gini ³	DBR
1. Luxembourg	1	8	15	37	42
2. Ireland	2	7	12	41	8
3. United States	4	4	7	75	3
4. Hong Kong	6	1	26	85	4
5. Switzerland	6	9	10	36	16
6. Canada	12	10	8	29	7
7. United Kingdom	13	6	13	52	6
8. Singapore	17	2	28	81	1
9. Australia	18	3	4	47	9
10. New Zealand	28	5	20	53	2
11. Chile	58	11	43	109	33

³ Gini index measures the inequality of income distribution

The power of entrepreneurial ecosystems: extracting booms from busts

12. Russia	59	120	63	67	106
13. México	63	46	55	97	44
14. Brazil	65	59	65	116	122
15. China	86	138	104	91	83
16. India	118	69	127	28	120

Source: (Bernardez, Capital Intelectual: Creación de valor en la sociedad del conocimiento, 2008, p. 279)

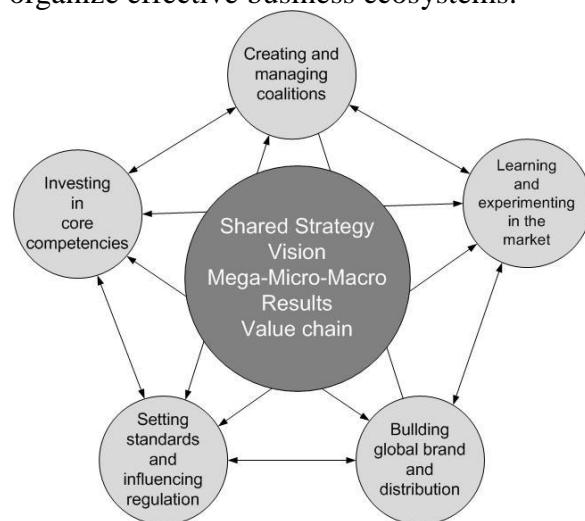
Ecosystems design

History shows that successful entrepreneurial, market-based ecosystems are seldom the fruit of tactical alliances or short-term compromises focused on circumstantial advantages.

They are instead the result of a shared vision of the future, based on defining common goals at three levels: benefits for all social stakeholders – Roger Kaufman’s “Mega” level; benefits for each organization – the “Macro” level; and a “division of labor” based on complementary sets of products and services – the “Micro” level of results. (Kaufman, 2006)

Palermo neighbors started by working on a shared vision for the future of their own families and community. This vision included developing their professional interests and creating a community around a lifestyle that could attract a shared potential market (international, cultural tourism). This, combined with their different competencies, made it possible.

Building ecosystems by successive approximations of “trial and error” often ends in failure. The Sonora Institute of Technology (ITSON) PhD program in Social and Organizational performance has developed an innovative methodology to help design and organize effective business ecosystems.



The core of ecosystem design is Kaufman’s core *strategic planning* elements as the shared strategy – *Vision; Mega, Macro and Micro level results* . Once defined a shared strategy and measurable Mega, Macro and Micro goals, all key ecosystem stakeholders, investors, government, NGOs, planners and entrepreneurs, work together to get a “first design” of the ecosystem.,

The power of entrepreneurial ecosystems: extracting booms from busts

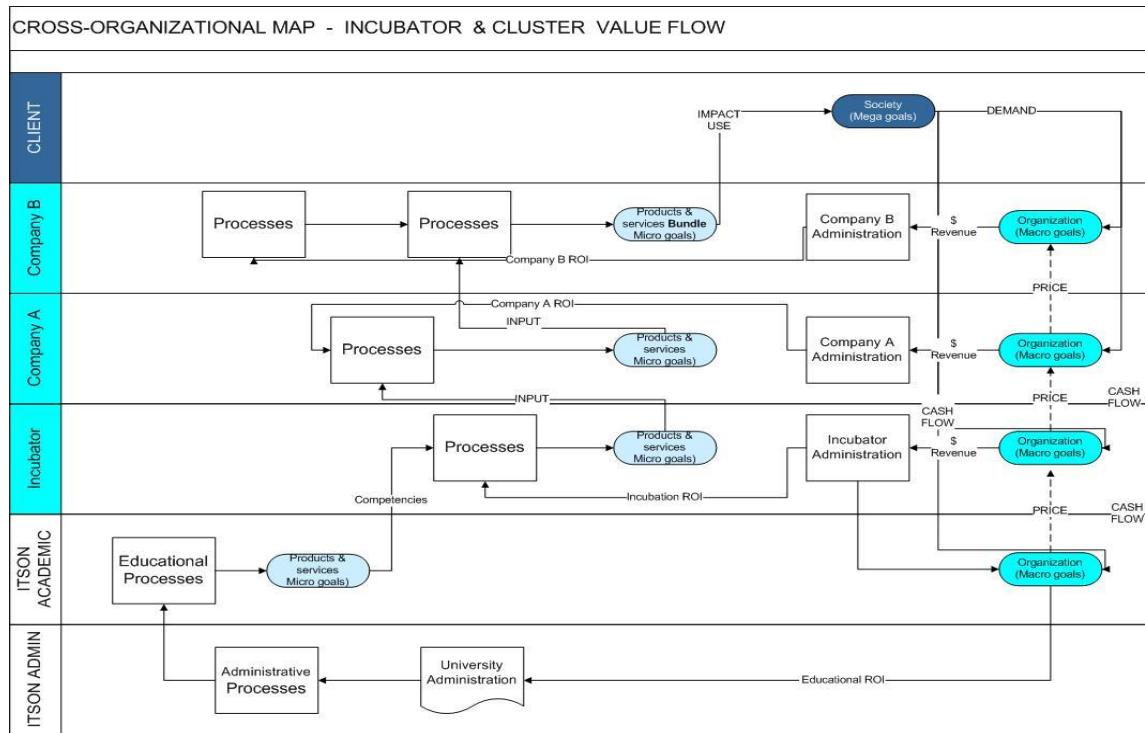
The first step is to identify business opportunities related to the strategic goals. Using the *Metaplan “market of ideas” technique*⁴, entrepreneurs and investors discuss possible contributions and alliances on multiple whiteboards that help “visualize” the new ecosystem.



Once they have identified the business and social impact opportunities, ITSON planners⁵ help stakeholders design an integrated, cross-organizational value chain following Dale Brethower and Geary Rummler's *Anatomy of Performance*⁶ methodology.

Introducing an outward twist to process design, AOP methodology starts by flowcharting the strategic process required to deliver Micro products and services, produce Mega social impact and benefits for shared customers and collect Macro-level revenue.

Figure 3: Ecosystem design with cross-organizational AOP flowchart



⁴ (Bernardez, Capital Intelectual: Creación de valor en la sociedad del conocimiento, 2008)

⁵ PhD and MBA graduate students in charge of business incubation projects (ITSON - Sonora Institute of Technology, 2007)

⁶ (Brethower, 1972) (Rummler & Brache, 1995)

The power of entrepreneurial ecosystems: extracting booms from busts

Each one of the “lanes” in the cross-organizational flowchart of the ecosystem strategic process describes how a specific organization participates in the value-creation flow. Entrepreneurs can identify and discuss which Micro products and services to deliver, what kind of benefits they will provide to other partner organizations, end consumers and community, and their Macro returns as revenue and each ecosystem member’s participation in the final price to the consumer.

Based on AOP-based process maps, ecosystem partners engage in five critical management functions (Prahalad C. K., 2005):

1. Create and manage *effective coalitions*: benefit from the ecosystem’s leveraged bargaining power. For example, small agribusiness producers who partner with transport and storage facilities increase their bargaining power with wholesale retailers.
2. Learn and experiment in a *controlled market*: design client experiences and testing products and services collaboratively. For example, bus drivers, guides and tourist operators pilot their routes with a sample of clients and conduct surveys and focus groups to improve their coordination.
3. *Build a global brand and distribution* based on a shared definition of the *client experience*⁷ and the combined products, services and processes that ecosystem partners must deliver to the client. For example, Sonora’s agribusiness partners organized as ecosystems create and support regional brands that are similar to those demanded by Whole Foods market clients.

Table 4: Client experience matrix (Banking example)

Client Experience		ATTRIBUTES						
KEY STAGES AND STEPS	Fast services	Correctly managed interaction	Products and services knowledge	Knows client and his/her history	Provides adequate solutions	Fast problem-solving	Professional attitude and behavior	
	Open new account	<i>One step , 5 minutes setup One form</i>	<i>Recognizes client Recalls all previous information</i>	<i>Explains, compares and tailors P&S to client needs</i>	<i>Recognizes client Follows up Explores needs</i>	<i>Offers solutions tailored to needs Implements and follows up</i>	<i>Helps client solve problems Takes charge</i>	<i>Saves time Achieves high client satisfaction Data 100% correct</i>
	Routine transactions	<i>Under 5 minutes</i>	<i>One step, one person</i>	<i>Manages each product OK</i>	<i>Anticipates solutions</i>	<i>To client satisfaction</i>	<i>Saves client time</i>	<i>Saves time Zero mistakes</i>
	Financial planning and advice	<i>One step assessment FAQ</i>	<i>Makes sure client understands plans and risks</i>	<i>Offers two best alternatives Compares</i>	<i>Tailors plans to client priorities</i>	<i>Brochure Calculator Simulation</i>	<i>Helps client get information</i>	<i>Minimizes risk Client understands</i>
	Credits and loans	<i>Automatic scoring</i>	<i>Online pre-qualification</i>	<i>Knows client industry</i>	<i>Knows client history</i>	<i>Minimizes risk</i>	<i>Provides self-help to select</i>	<i>Idem + Meets S&L standards</i>
	Problem - solving	<i>Routes correctly</i>	<i>Uses decision-making algorithms</i>	<i>Solves problems w/all products</i>	<i>Zero "old problems"</i>	<i>Cost-benefit-consequences</i>	<i>Gets it solved the 1st time</i>	<i>Zero recurrence Optimal solution</i>
	Information requests	<i>Uses all job aids</i>	<i>Keeps human contact</i>	<i>Helps finding info Prints handout</i>	<i>Follows checklist QA</i>	<i>Saves time</i>	<i>Gets all info together</i>	<i>Instant < 5 min Zero recurrence</i>
SUPPORT	Technology People Policies Processes	<i>Usable Web EPPS tools One step process</i>	<i>Client information screens (EPPS)</i>	<i>Online products FAQ Training</i>	<i>Needs assessment online tool Commercial platform</i>	<i>FAQ system Simulator Web access</i>	<i>EPSS for problem solving Fast, reliable system</i>	<i>Screening Performance Appraisal Bonus Training</i>

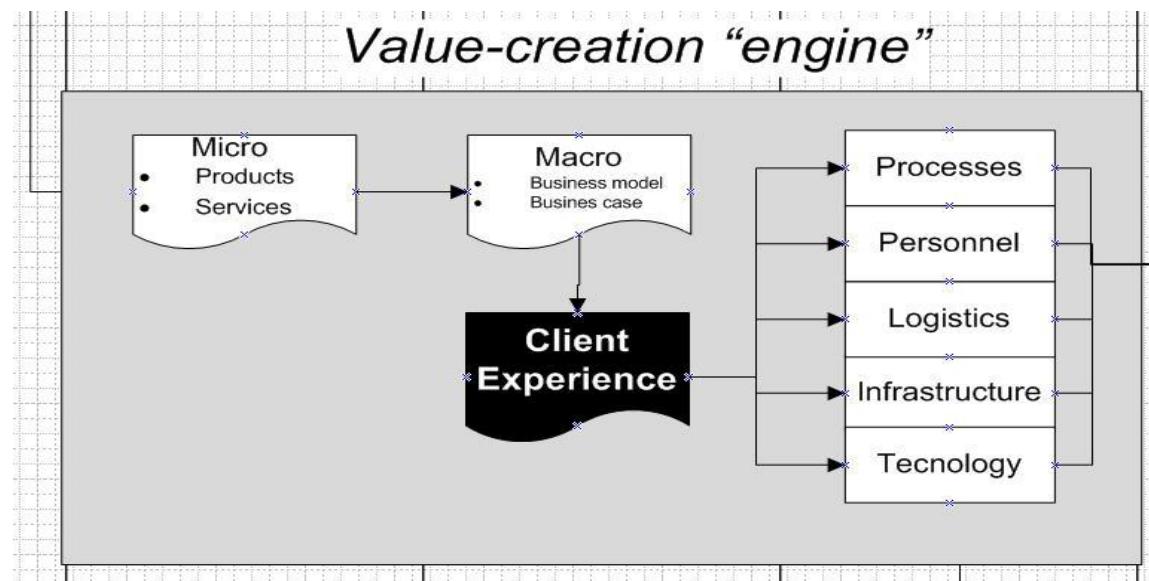
⁷ (Bernardez, Capital Intelectual: Creación de valor en la sociedad del conocimiento, 2008) (Bernardez, Minding the business of business: tools and models to design and measure wealth creation, 2008, Volume 1, Number 1)

The power of entrepreneurial ecosystems: extracting booms from busts

Once the *key attributes and steps* of the client experience are defined, the different organizations partnering in the ecosystem can take charge of specific steps and identify key processes. For example, “speed” and “cleanliness” can be attributes of the Sonora ecotourism corridor experience; these standards must be shared and specified for all those in transport, hospitality and food supply and monitored by the ecosystem supervisors – in this case, tourist guides.

Once identified, the core processes, personnel, logistics, infrastructure and technology for speed and cleanliness help build support for a consistent experience. Cleaning processes and personnel can be identified for taxis, restaurants and hotels in the ecotourism circuit; Infrastructure such as standardized recyclable garbage collection bins; Logistics such as donkeys to retrieve the bins daily from mountainous roads; Technology such as recycling can then be established and supported with the collaboration of all ecotourism ecosystems.

Figure 4: The Value Creation engine core: the Client Experience



4. *Setting standards* and influencing government regulation help attract clients and Venture Capital –VC– and Angel Capital –AC– investment by closing gaps and meeting Doing Business Ranking –DBR– standards (World Bank, 2007). For example, Sonora’s technological region ecosystem’s shared services provide foreign investors with professional help to obtain building permits, business licenses and intellectual property law protection.
5. Investing in *core competencies* (Prahalad & Hamel, 1994) that constitute the ecosystem’s competitive advantage. For example, English-speaking professionals who meet U.S. Ivy League standards and have e-performance capabilities such as virtual work platform and videoconferencing, provide core competencies for Wipro and other firms housed in the Mumbai ITT cluster ecosystem.

The power of entrepreneurial ecosystems: extracting booms from busts

Ecosystems as responses to economic cycles

“A crisis is a terrible thing to waste”

Paul Romer
Stanford University
Economist
(Florida, 2009)

Business ecosystems have proven to be resilient to economic downturns and critical to economic recoveries. They attract and concentrate human and intellectual capital. They also provide a “strategic umbrella” and a support platform of processes, logistics, infrastructure and technology, thus operating as “hothouses” and “nurseries” for organizations and talent during hard times.

The power of the ecosystem derives in large measure from its ability to concentrate talent. According to modern urbanization expert Richard Florida, *“well-educated professionals and creative workers who live together in dense ecosystems, interacting directly, generate ideas and turn them into products and services faster than talented people in other places can.”* (Florida, 2009, p. 6)

Experience shows, however, that “circling the wagons” and creating “make-work” jobs and artificial projects does not result in viable, sustainable ecosystems, regardless of the amount of “economic stimulus” poured in by anxious governments or daydreaming pioneers.

Let’s look to a variety of ecosystems that have proven durable sources of wealth creation and economic recovery to identify the common factors for success.

The best of hard times: ecosystems extracting “booms” out of “busts”

Silicon Fen: growth during the Great Depression

Ever since its creation in 1918, the Massachusetts Institute of Technology (MIT) has established a close collaboration with business organizations. While other Ivy League research universities such as Harvard and Yale avoided direct involvement in business projects – other than attracting endowment funds -, MIT sought from its inception to use organizations as “real world labs” for scientific and technological application.

The power of entrepreneurial ecosystems: extracting booms from busts



MIT students were required to contribute to the development of projects and encouraged to start entrepreneurial activities in what was to be called the Silicon Fen, on the route 128 corridor.

Key success factors were:

1. MIT and Cambridge orientation toward collaboration with business
2. U.S. government roles as co-sponsor and client of MIT business projects
3. Route 128 corridor connecting high-density professional enclaves
4. Strong ports and transportation logistics.

In 1918, MIT launched a plan to attract some large technological companies like General Electric, Eastman Kodak and Dupont to the Boston-Cambridge region and obtain their financing for technological projects. In 1920, MIT created a Division of Industrial Cooperation and Research – later renamed Office of Sponsored Projects - to solicit and gain corporate contracts.

Silicon Fen and the corridor of Boston Route 128 – connecting with the large centers on the East and West Coast - showed continued and resilient growth in the midst of the Great Depression.

When the United States entered WWII, the Silicon Fen region was uniquely positioned to scale up production and rise to the challenge of meeting wartime needs. During 1940-1945, revenue for Raytheon, GE, Westinghouse, RCA and Bell Labs jumped from \$3 million to \$143 million, and employment ballooned from 1,400 to 16,000 jobs.

In 1946, MIT started ARD, the first venture capital enterprise of its class. In 1951, construction of the Road 128 corridor created the first American high-tech corridor, and employment grew to 26,000 technology jobs. Although MIT suspended its involvement in financing in 1955, this was continued by private banking. In spite of the defense spending downturn in 1970, Silicon Fen returned to life by introducing the minicomputer and CAD/CAM design software. By the end of 1980, the region had created 100,000 technology jobs. (Saxenian, 1994)

The power of entrepreneurial ecosystems: extracting booms from busts

As a report from *Bank Boston* points out, “graduates of the MIT have founded 4000 firms, which in 1994 alone, employed at least 1.1 million people and generated \$232 billion in world sales. If the companies founded by MIT graduates and faculty formed an independent nation, the revenues produced by the companies would make that nation the 24th largest economy in the world”. (Barrow, 2001, p. 50)

Silicon Valley: or how collaboration among start ups created an industry

The development of Silicon Valley has been closely related to the University of Stanford and the demand of defense and communication industries located in the San Francisco Bay area. From 1910 through 1940, Stanford labs and graduates dominated the radio and media industries with start ups such as RTC, RCA, and Magnavox in the radio and telecommunications industry and Fisher Research Laboratory and Litton Industries in electronics. During this period, Philo Farnsworth developed the first TV; Ralph Heinz pioneered the short-wave radio, and other early Silicon Valley start ups developed new technologies such as airborne radar (Damo-Victor) and tape recording (Ampex).

A second round of development for Silicon Valley came in 1938 with the formation of Hewlett-Packard, then Bell Labs in 1947, Stanford University’s Innovation Incubator in 1948 and Shockley Transistor in 1955. During the 1960s, disgruntled engineers from Shockley started Fairchild Semiconductor to cater to new sophisticated clients like NASA.

Silicon Valley’s ecosystem development is similar to Silicon Fen’s: a large concentration of defense technological contractors and several university centers with incubation parks and entrepreneurial programs that got also a huge boost from the WWII and post-war technological demand.



Five key factors emerge as a common pattern of ecosystem development:

1. Great research universities (Stanford, California, MIT) involved in serving industrial demand and incubating and supporting new start ups
2. Large concentration of top engineers
3. U.S. government as sponsor, angel investor and client
4. Venture capital firms
5. Access to seaports and logistics (San Francisco, Boston, Route 128)

The power of entrepreneurial ecosystems: extracting booms from busts

There were however, three key characteristics that made Silicon Valley's success dwarf that of Silicon Fen's:

1. *Collaborative culture*: Most engineers in the region started at either Hewlett-Packard or Fairchild, two bastions of collaborative practices where engineers were encouraged to share know-how and tools among different departments and even to leave the firms to create new start ups. During the late 1960s and early 1970s, many Hewlett-Packard and Fairchild alumni became new Silicon Valley entrepreneurs, bringing to the ecosystem a culture based on sharing and collaborating *among firms*. Stanford professors like Frederick Terman encouraged their students in “*providing extended assistance to other firms in the region, providing new entrepreneurs with encouragement, advice, computer time, space and even financing.*” This also created a close-knit professional community where “*the informal socializing that grew out of these quasi-familial relationships supported the ubiquitous practices of collaboration and sharing of information among local producers.*” (Saxenian, 1994, p. 32)
2. *Angel capital firms*: Silicon Valley's financial industry was also a product of its technological firms. Silicon Valley venture capitalists had engineering backgrounds and previous experience in local firms. This made them operate more in the way of “*angel capitalists*,” that is, attracted by untested concepts and ideas still not turning a profit rather than, in classical VC fashion, focused on market-tested companies. This kind of venture capital made Silicon Valley the most innovative region in the United States.
3. *Law firms*: Another big factor encouraging innovation was the protection to intellectual property offered by specialized legal firms, which were instrumental in making Silicon Valley start ups turn profits faster and develop more effective revenue models than those of other regions.

BOP ecosystems: India and China

During the 1960s and 1970s, China and India were often cited as “*basket cases*” of economic backwardness.

Suffocated by central planning and high barriers to business innovation, Chinese and Indian engineers and scientists strived to take the admission tests to enter Ivy League universities in order to be able to migrate to the United States or the EU. Because only a meager ten percent of each year graduates was able to get a visa, a growing underemployed, professional workforce languished in service or clerical jobs back at home.

The power of entrepreneurial ecosystems: extracting booms from busts

Critics that viewed this social phenomenon as educational overspending and waste coined the “brain drain” theory, which states that excessive investment in higher education only results in higher losses of local talent.

Chinese President Deng Xiao-Ping’s entrepreneurial reform after Mao’s death, and Economy Minister Manmohan Singh’s economic opening in post-Nehru India brought about new growth and proved the “brain-drain” theory wrong.

When China and India started to develop entrepreneurial ecosystems, the abundance of underemployed, highly-educated, English-speaking science and engineering graduates with advanced degrees became a clear success factor.

British economists Dovesh Kapur and John McHale reformulated the old “brain drain” theory as “*brain drain, brain gain*,” noting that even the “diaspora” of talented professionals to OECD markets had beneficial effects in India and China when their entrepreneurial ecosystems attracted repatriates that brought back their managerial skills to foster competitiveness. (Ozden & Schiff, 2006)

China emerged from the massive famines and obsolete infrastructure left by 50 years of crippling communist centralized planning, Red Guard persecution and massive bureaucracy by establishing Special Economic Zones (SEZ) that operate as free market, free trade, entrepreneurial ecosystems that brought 400 million Chinese into the ranks of the middle class in one decade..

At the center of each SEZ and business ecosystem are China’s universities which, following the performance-centered model, provide not only highly educated graduates, but entire teams organized in small company “spinoffs” controlled and financed by the university.

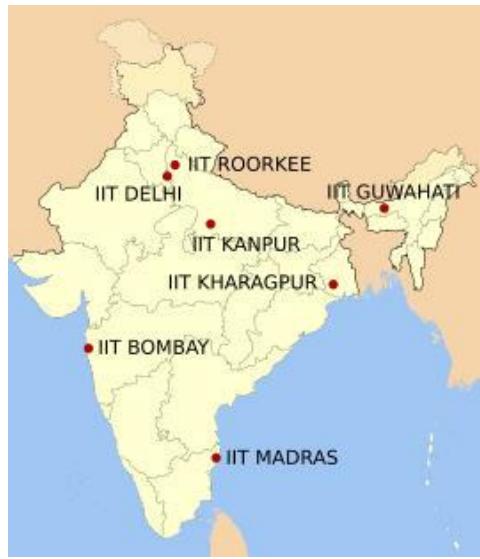
In India, the Indian Institutes of Technology created in the sixties in seven Indian cities to produce Ivy League standard scientists and engineers, became the backbone of technological ecosystems focused on exporting and outsourcing engineering and business processes services using online technology.

The power of entrepreneurial ecosystems: extracting booms from busts

Figure 5: China and India education-centered ecosystems



Shengzen's SEZ is organized around the university campus in multiple clusters of incubated companies that export through Hong Kong.



Created by Jawaharlal Nehru in the 60s, Indian Institutes of Technology became the center of business clusters such as Mumbai (Bombay) that produced record economic growth during 1990s.

Source: (Bernardez, Capital Intelectual: Creación de valor en la sociedad del conocimiento, 2008, pp. 113-114)

Each cluster of university-incubated companies used massive educational technology applications such as e-learning, EPSS and virtual teamwork to serve overseas clients and to undertake the challenge of quickly retraining a rural workforce into new urban jobs to serve overseas markets.

India and China entrepreneurial ecosystems sparked spectacular economic growth during an entire decade, raising the living standards of 800 million people through the combined impact of increased revenue – direct and indirect jobs - and leveraging technology – such as cell phones, digital markets and microfinance for thousands of rural villages. (Prahalad C. K., 2005)

Planting tech jobs in spite of war and desert: Silicon Wadi in Israel

Israel, a young, small nation with large urban areas and small rural settlements in arid soil surrounded by military menaces, is a textbook case of the power of a small but organized ecosystem to prevail over challenges that have prostrated neighboring economies.

The power of entrepreneurial ecosystems: extracting booms from busts



Silicon Wadi center is in Tel Aviv, with satellite centers in Haifa, Rehovot, Kiryat Gat and Migdal HaEmek, all seating major research universities

The key success factors in the case of Israel's Silicon Wadi are:

1. *Highly educated, abundant human capital* – Israel has one of the highest investments in education and R&D as a percentage of GDP in the world, and has particularly strong focus on math, the sciences and engineering
2. *Attracting talented migrants* – During the 1980s, as the USSR and the Eastern block started to collapse and limit emigration, more than 1 million immigrants arrived in Israel; of these, almost 6,000 first-rate scientists were immediately absorbed by the Silicon Wadi firms. As a result, Silicon Wadi created 150,000 jobs - 56,000 in manufacturing and 92,000 in services - with exports of \$15 billion in 2000 and an average 50 percent growth in employment and revenue during 1990-2000.

3. High DBR standards – Israel has one of the highest levels of intellectual property protection and safety for business and investors in the world.
4. Venture capital groups – As a consequence of the three previously-noted key success factors, Silicon Wadi was able to attract almost \$16 billion in local and international high tech investment.
5. Defense requirements – Israel's large and sophisticated military demand for electronics and high-tech independence has been a powerful driver for advanced technology military and civilian applications development.
6. Teamwork-centered, highly organized culture – The status of most Israeli adults as citizen-soldiers, as well as their upbringing in kibbutzim and collective farming, has provided the Silicon Wadi ecosystem companies with an unusual combination of highly participative culture and strong work ethics.

The power of entrepreneurial ecosystems: extracting booms from busts

Keeping Mexicans in Mexico, exporting Mexican products: South of Sonora case

Mexico has been battling for decades against chronic economic and structural problems, consequences of the pitfalls of oligarchic and state-guided ecosystems. This has resulted in low economic growth, a large, bureaucratic state, extreme corruption and barriers to business and investment that keep 50 percent of the population in poverty and create a continuous migratory outflow of low qualified workers to the United States.

Remittances from those migratory workers in the United States represent Mexico's second source of revenue after oil, creating a large variety of associated problems, from drug trafficking to family disintegration and the perpetuation of the poverty cycle.

In 1995, the Sonora Institute of Technology (ITSON) began to develop a new university model to respond to these challenges based on Roger Kaufman's *Mega planning*. (Rodriguez Villanueva & Guerra-Lopez, 2005). ITSON's new model focused not on producing graduates but in creating sustainable organizations able to employ them and generate positive social impact. (ITSON - Sonora Institute of Technology, 2007)

In 2005, ITSON made this even more far-reaching. This new model would create entrepreneurial and market-based ecosystems in the South of Sonora that would coordinate large and small businesses, non profits, NGOs and government under a shared vision and strategy with the support of new university program focused on "business graduation" and social impact.

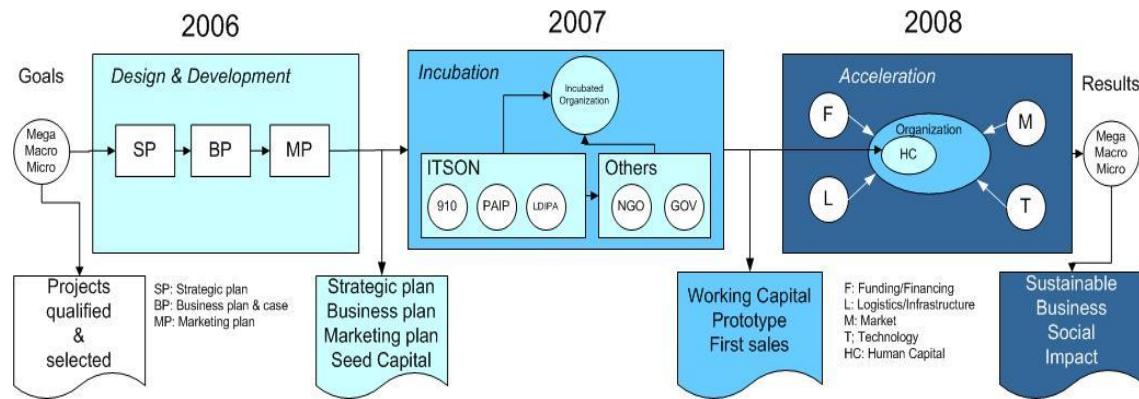
ITSON's *PhD program of Social and Organizational Performance Improvement (PII)* combines learning, applied research and consulting to develop companies from the planning stage until their positioning in their target market with the design and organization of regional ecosystems that merge and leverage their organizational competencies.

PhD and MBA students are responsible for planning, incubating and placing new for-profit and not-for-profit companies into the market that follow ITSON's strategic plan vision. This vision is focused on five key Mega-level goals: *developing economic self-sufficiency, improving well-being and quality of life, including health, family life and community development*.

The Performance Improvement Institute PhD program at ITSON operates at three main levels: (1) in the *planning phase*, by providing methodology and expert support from an international faculty and dedicated PhD students (2) as a "virtual" *incubator*, by supporting each project with ITSON's incubating facilities and consulting services to organize an operating company around its business plan and (3) as an *accelerator*, by helping organize the ecosystems - alliances and cooperation among projects, angel capital, sponsors, access to markets, technology – and operating as a business support interface to reduce or eliminate barriers to business (gaps) between current and required DBR indicators.

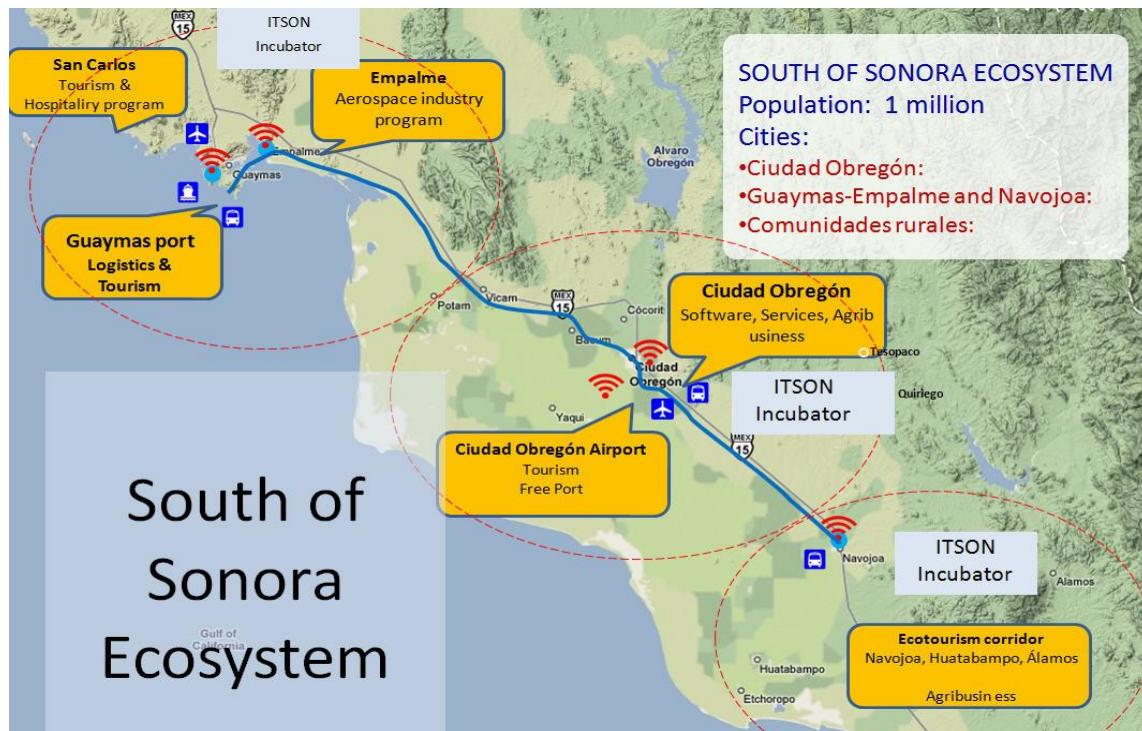
The power of entrepreneurial ecosystems: extracting booms from busts

Figure 6: Company graduation at PII / ITSON



Investors, business owners and stakeholders participate in three critical ways: (1) proposing a business idea or an existing business to the PII. PII experts help evaluate the initiative in terms of its societal value-added (Mega impact), the impact and value of products and services (Micro impact), and the financial viability of the business model (Macro impact); (2) proposing or selecting to sponsor project leaders as PhD candidates through the program, and (3) participating in the three phases described in Figure 6 – design & development, incubation and acceleration- as sponsors and as members of a larger “angel capital” group supporting the South of Sonora ecosystem.

Figure 7: Performance-Centered Ecosystem: South of Sonora – Sonora Institute of Technology (ITSON)



The power of entrepreneurial ecosystems: extracting booms from busts

ITSON/PII organized the South of Sonora corridor that connects five key cities – Obregon, Guaymas, Empalme and Navojoa - and created a “logistics’ backbone” with airports, railroad and Wi-Max broadband coverage. It also developed agribusiness, technology and ecotourism clusters that help the university incubate the new organizations, connect them to the markets and attract consumers and investors to the region. The program created 34 new organizations and 960 new sustainable jobs in the region during 2006-2008 and has a goal of 14,000 new jobs by 2014. (ITSON - Sonora Institute of Technology, 2007)

The road ahead

Our review of almost a century of experience shows that business ecosystems can be particularly effective in protecting and creating social wealth during economic downturns.

The organization of effective entrepreneurial ecosystems, however, requires a major shift in the conventional paradigms of doing and teaching business. We need to move from maximizing the market share of individual organizations towards maximizing their ability to develop and sustain the growth of a shared market.

“Booms” and recoveries are engineered by entrepreneurial ecosystems, but “busts” are often the consequence of pre-existing, dysfunctional ecosystems – oligarchic, big firm or state-guided. Analyzing and improving an ecosystem’s performance can be not only “corrective” but preventive, helping to tame the business cycles that characterize modern economies and avoiding the “systemic risks” that leverage economic crisis into economic meltdowns.

Societal performance-centered universities can help improve the performance of ecosystems and create entrepreneurial “interfaces” if they move from graduating individuals to graduating organizations, such as in the cases discussed in this article.

In order to graduate sustainable organizations we must work with students, entrepreneurs and stakeholders to enable the required “outside-in” strategic thinking and management. At the same time we must provide core competencies and ensure a business-neutral orientation toward the common purpose.

As the clouds of new and historical economic upheaval gather in the global economy, and the future seems hard to predict, entrepreneurial ecosystems might make it easier to follow Peter Drucker’s advice:

“The best way of predict the future is to create it”
(Drucker, 1993)

The power of entrepreneurial ecosystems: extracting booms from busts

Bibliography

Bailey, R. (2007, September 29). The secrets of intangible wealth. *Wall Street Journal* .

Barrow, C. (2001). *Business incubators: a realist's guide to the world's new business accelerators*. West Sussex, UK: John Wiley & Sons.

Baumol, W. J., Litan, R. E., & Schramm, C. J. (2007). *Good capitalism, bad capitalism and the economics of growth and prosperity*. New Haven: CT: Yale University Press.

Bernardez, M. (2008). *Capital Intelectual: creacion de valor en la sociedad del conocimiento*. Chicago:IL: Global Business Press.

Bernardez, M. (2008). *Capital Intelectual: Creación de valor en la sociedad del conocimiento*. Chicago, IL: Global Business Press.

Bernardez, M. (2008, Volume 1, Number 1). Minding the business of business: tools and models to design and measure wealth creation. *PII Review* , 12-49.

Brethower, D. (1972). *Behavioral analysis in business and industry: a total performance system*. Kalamazoo, MI: Behaviordelia, Inc.

Drucker, P. (1993). *Managing for the future: the 1990s and beyond*. New York: Penguin Books.

Fast propiedades. (2008, March 12). *Palermo real estate for sale*. Retrieved January 12, 2009, from FAST propiedades: <http://www.fastpropiedades.com/investment.php>

Florida, R. (2009). How the crash will reshape America. *The Atlantic Monthly* , 23-36.

Heritage Foundation. (n.d.). *Index of Economic Freedom*. Retrieved October 25, 2007, from Heritage Foundation: <http://www.heritage.org/index/>

Iansiti, M., & Levien, R. (2004). *The keystone advantage: what the new dynamics of business ecosystems mean for strategy, innovation and sustainability*. Boston, MA: Harvard Business Press.

Independent Film . (2008, June 5). *Independent Film Resources in Buenos Aires*. Retrieved January 12, 2009, from La Producción y servicios filmicos en Argentina: <http://www.mandy.com/1/services.cfm?t=argn&c=0prd>

ITSON - Sonora Institute of Technology. (2007). *Contribucion de las instituciones de educacion superior a la generacion de consecuencias sociales positivas*. Chicago, IL: Authorhouse.

Kaufman, R. (2006). *Change, choices and consequences: a guide to Mega thinking and planning*. Amherst, MA: HRD Press.

Kenney, M. (2000). *Understanding Silicon Valley: the anatomy of an entrepreneurial region*. Stanford, CA: Stanford University Press.

Lee, D. (2008, March 16). Argentine nights. *New York Times* , pp. 1-3.

Mount, I. (2008, January 27). Rebirth of a Bohemian barrio: Boeado. *New York Times* , pp. 12-13.

Mussa, M. (2002). *Argentina and the Fund: from triumph to tragedy*. Washington, DC: Institute for International Economics, IMF.

Obama, B. (2006). *The Audacity of Hope: thoughts on reclaiming the American Dream*. New York: Ny: Crown Publishers.

The power of entrepreneurial ecosystems: extracting booms from busts

Ozden, C., & Schiff, M. (2006). *International Migration: Brain Drain or Brain Gain?* Washington, DC: The International Bank for Reconstruction and Development/The World Bank.

Prahalad, C. K. (2005). *The fortune at the bottom of the pyramid: erradicating poverty through profits*. Saddle River, NJ: Wharton School Publishing/ Pearson.

Prahalad, C., & Hamel, G. (1994). *Competing for the future*. Boston, MA: Harvard Business Press.

Putnam, R. D. (1993). The prosperous community: Social Capital and public life. *The American Prospect* , 35-42.

Rodriguez Villanueva, G., & Guerra-Lopez, I. (2005). Educational Planning and Social Responsibility: Eleven Years of Mega Planning at the Sonora Institute of Technology (ITSON). *PIQ, Volume 18, Number 3* , 3-5.

Rummel, G., & Brache, A. P. (1995). *Improving performance: how to manage the white space in the organization chart*. San Francisco: CA: Jossey-Bass.

Saxenian, A. (1994). *Regional advantage: culture and competition in Silicon Valley and route 128*. Cambridge: MA: Harvard University Press.

United Nations Development Program (UNDP). (2003). *Human Development Index - Human Development Report 2003*. Washington, DC: UNDP.

Williamson, E. (2004). *Borges: a life*. New York, NY: Penguin.

World Bank. (2007, jANUARY 12). *Doing Business Ranking*. Retrieved jANUARY 24, 2008, from The Doing Business Project:
<http://www.doingbusiness.org/economyrankings/>