

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

By:

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*“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 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 2001 Argentina's economic collapse, 30 percent of the population was unemployed, and penniless -since their savings were caught in the broken banks and available at 200-dollar-a-week withdrawals paid in 70 percent-devalued pesos per original dollar deposited. (Mussa, 2002)

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During that period of social turmoil, while most “porteños” flooded the streets of Buenos Aires banging pots and pans<sup>1</sup> at protest rallies asking for governmental help, others took a different path.

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

They did it in small groups of 3 to 4 under-35 year old entrepreneurs, buying ruined and abandoned houses with initial investments of around 10,000 dollars.

The 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 businesses moved from expensive downtown Buenos Aires rents into the new places. Those with business degrees and good English started publicizing Palermo in *US* 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 US and EU newspapers, so tourists could check and make reservations directly of all the services and products.

Soon, an avalanche of tourists -attracted by the *Web*-information as well as the peso

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<sup>1</sup> That form of protest was called “cacerolazo” (pan-banging) for the characteristic pan-banging of the demonstrators.

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devaluation- started roaming through the neighborhood, patronizing their stores and restaurants and "getting out the news" to their countries of origin.

Old homes -bought for fewer than 35,000 dollars- are now listed and sold to nationals and internationals on an average of 350,000, redesigned and redecorated by Argentinean architects and engineers, with Argentinean young artists art and furniture. (Fast propiedades, 2008)

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

Coppola filmed his last picture in Palermo, with its old houses painted and decorated by young Argentinean artists.

The entire neighborhood organized itself as 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 and to keep everything clean, safe and organize street commerce -from high end to street sellers- in a harmonious way.

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

Today, the many skeptics that forecasted Palermo's entrepreneurs' demise don't laugh anymore at them: they buy their houses, eat at their 200 restaurants and shop at their stores, which in total provide income and jobs for an estimate of 45,000 families.

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

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

*“A Mexican migrant to the US 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)

World Bank’s findings about countries apply as well 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 “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 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.*

*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)

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The factors that Buffett summarized: *education, rule of law, financial and technological support* constitutes the nurturing ground for any successful organization: what World Bank calls the *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 the support and collaboration with others contradicts experience and history.

“*Business networks did not start with the Internet*” comment Harvard researches 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.*” (Iansiti & Levien, 2004, p. 5)

### **Good ecosystems, bad ecosystems**

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

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Yale economists William J. Baumol, Robert E. Litan and Carl J. Schramm distinguish four different types of ecosystems<sup>2</sup>: *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 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 ecosystems* –characteristic of socialistic economies in Asia, Africa and Latin America and “hybrid” European economies such as France- government directs the market through centralized planning, price controls and complex regulations, “picking winners and losers” according with 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 big firms vertically integrated that operate at 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 the markets.

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<sup>2</sup> 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.

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

**Table 1: Ecosystems comparison**

Factors	Ecosystem types (Baumol, Litan, & Schramm, 2007)			
	Oligarchic	Big-Firm	State-Guided	Entrepreneurial
<b>Characteristics</b>	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
<b>Advantages</b>	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
<b>Pitfalls</b>	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
<b>Examples</b>	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 Sonora corridor)
<b>DBR</b>	High > 40	Medium 20-40	High > 40	Low < 20
<b>Gini index</b>	High > 50	Medium-High 40-50	Low < 40	Medium-High 40-50

*Our research has shown that inequality in income distribution—as measured by 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 or even encourage the creation of enclaves of entrepreneurial ecosystems to facilitate economic growth and stimulate innovation. Such is the case 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.

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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 the sixties- during turbulent times.

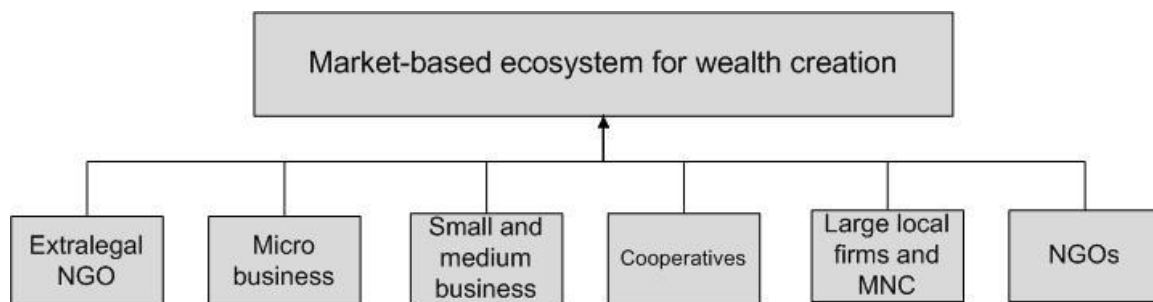
Entrepreneurial ecosystems’ decentralized management and distributed risk encourage innovation and shared services and collaboration between larger firms providing business platforms and smaller, specialized niche players protect the later with steady cash flow and economies of scale that would be otherwise beyond their reach.

Defined in their widest concept, 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 –being Café de Colombia, Palermo Soho or Made in China- and sharing services –e-commerce, design, logistics- that would otherwise be beyond many small businesses’ reach.

**Figure 2: Market-based social ecosystem**



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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 business bring aboard “niche” expertise and affordable innovation and social organizations ensure 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*

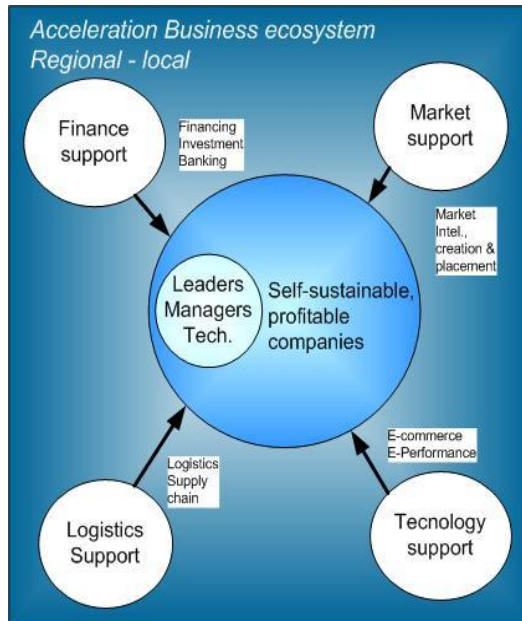
Each entrepreneurial ecosystem grows around and based on specific value adding competencies such as tourism, gastronomy and hospitality for Palermo; software and high-tech for Silicon Valley, Silicon Fey or Silicon Alley; finances for Wall Street and London; manufacturing for China; engineering and business processes 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, scalabe workforce and English (India, China)

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

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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 based its success in combining *Financials*: Angel Capital access –smaller capitals committed to long-term returns and business ideas-, *Logistics*: low cost buildings, well-located; *Technology*: Web-savvy, access to Web-catalogs and e-commerce; *Market*: access to international tourists from US and EU through the Web; *Organizational capital*: young entrepreneurs, EU-US educated, innovative business plans; *Human capital*: abundance of architects, engineers, designers, English-fluent 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 allow identifying specific metrics to measure an ecosystem's performance and compare it with other 120 countries and regions in the world that might be competing for global markets and investment.

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

**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)

DBR metrics can be used to identify gaps between ecosystem’s current and desired performance. Business clusters can implement different support systems to compensate or close the gaps –e.g.: facilitating trade across border with business intelligence or shared e-commerce- without having to resort –and thus 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 business close the handicapping DBR gaps without changing the overall economic system and its 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).

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

Country	GDPpc	EFI	HDI	Gini <sup>3</sup>	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. Singapur	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
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 –at 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)

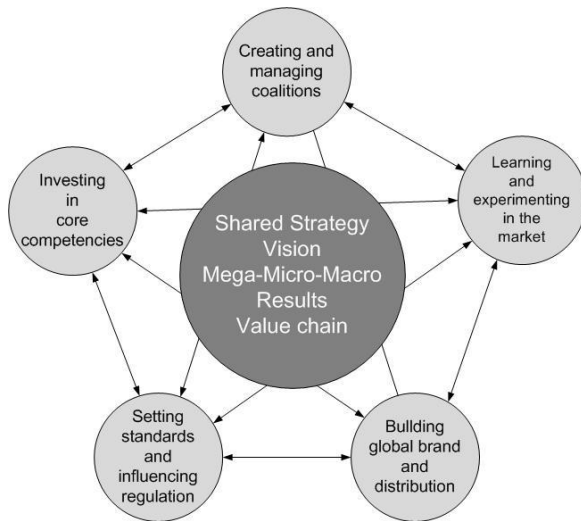
Palermo neighbors started by sharing a vision for the future of their own families and community, -a vision that combined developing their professional interests, creating a community around a lifestyle that could attract a shared potential market –international, cultural tourism- and combined their different competencies to make it possible.

<sup>3</sup> Gini index measures the inequality of income distribution

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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:



Combining Roger 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 first step is identifying business opportunities connected with the strategic goals. Using the *Metaplan* “*market of ideas*” *technique*<sup>4</sup>, entrepreneurs and investors discuss possible contributions and alliances in multiple boards that help “visualize” the new ecosystem.



Once they have identified the business and social impact opportunities, ITSON planners<sup>5</sup> help stakeholders design an integrated, cross-organizational value chain following Dale Brethower’s and Geary Rummler’s *Anatomy of Performance*<sup>6</sup> methodology.

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

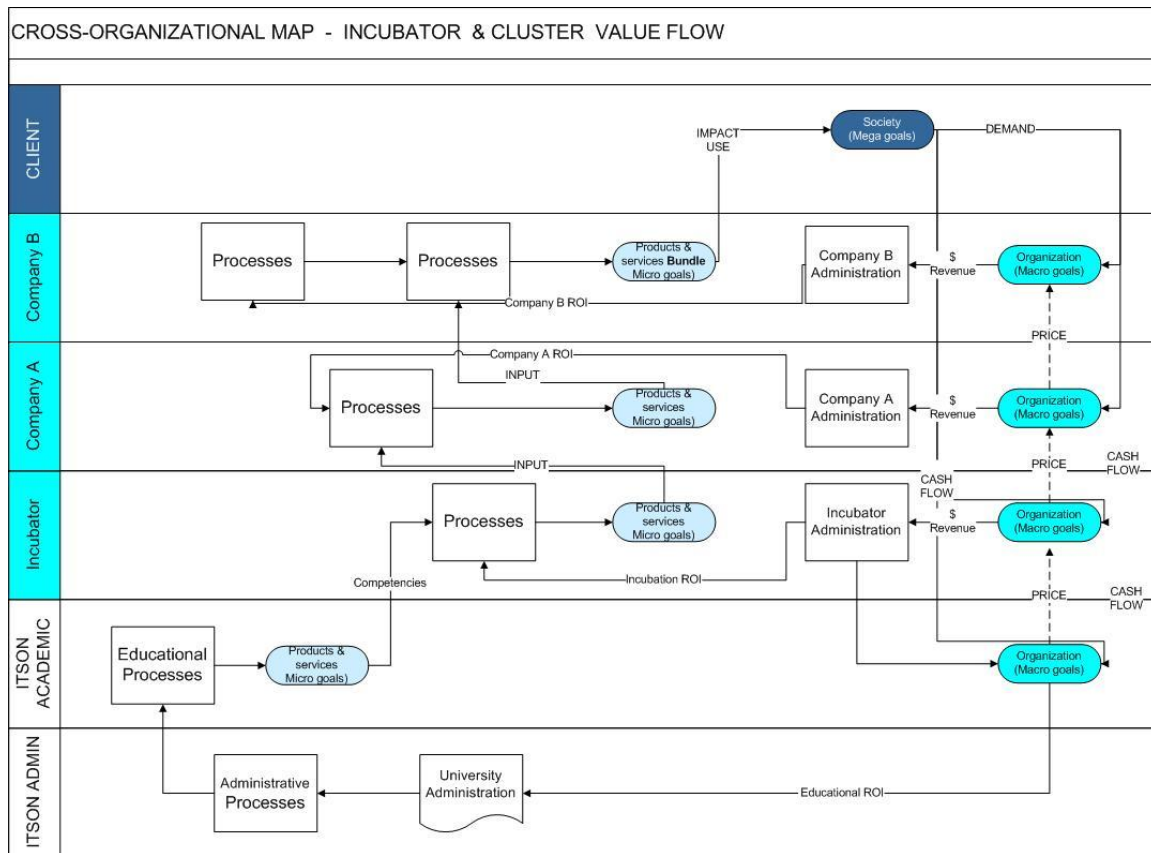
<sup>5</sup> PhD and MBA graduate students in charge of business incubation projects (ITSON - Sonora Institute of Technology, 2007)

<sup>6</sup> (Brethower, 1972) (Rummler & Brache, 1995)

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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**



Each one of the “lanes” in the cross-organizational flowchart of the ecosystem strategic processes describes how a specific organization participates in the value-creation flow. Entrepreneurs can identify and discuss which Micro products and services are to deliver, what kind of benefits they will have to other partner organizations or end consumers and community and their Macro returns as revenue and participation in price to the consumer. Based on the AOP-based process maps, ecosystem partners engage in five critical management functions<sup>7</sup>:

<sup>7</sup> (Prahalad C. K., 2005)

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1. Create and manage *effective coalitions*: benefitting from the ecosystem's leveraged bargaining power. E.g.: small agribusiness producers partnering with transport and storage facilities increase their bargaining power with wholesale retailers.
2. Learn and experiment in a *controlled market*: designing client experiences and testing products and services collaboratively. E.g.: 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*<sup>8</sup> and the combined products, services and processes that ecosystem partners must deliver to the client. E.g.: Sonora's agribusiness partners organized as ecosystems create (and support) regional brands that respond to the standards of Whole Foods markets clients.

**Table 4: Client experience matrix (Banking example)**

Client Experience		ATTRIBUTES						
		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
KEY STAGES AND STEPS	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&amp;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&amp;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 1<sup>st</sup> 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 &lt; 5 min Zero recurrence</i>
SUPPORT	Technology People Policies Processes	<i>Usable Web EPSS tools One step process</i>	<i>Client information screens (EPSS)</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>

<sup>8</sup> (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)

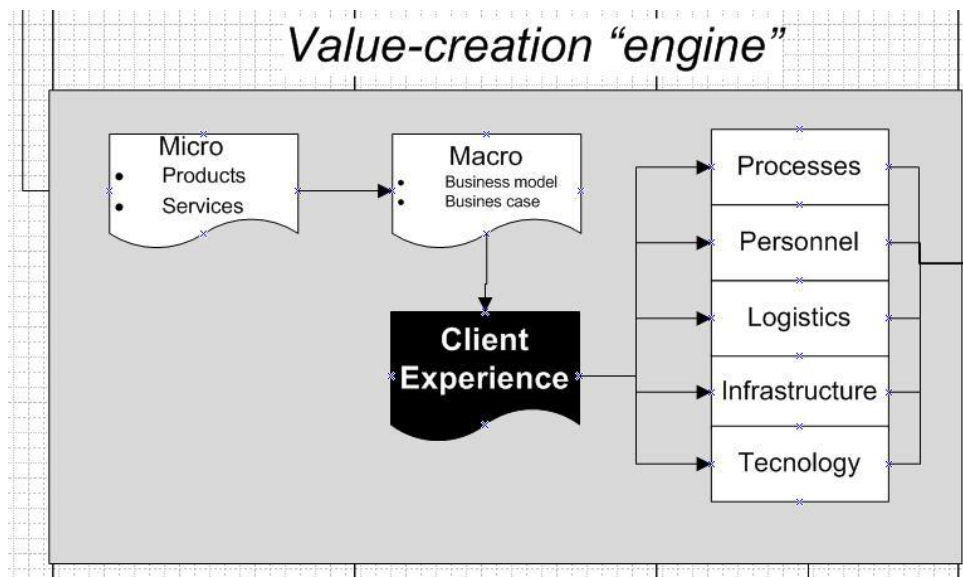
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Once the client experience's *key attributes and steps* are defined, different organizations partnering in the ecosystem can take charge of specific steps and identify key processes.

E.g.: “Speed” and “cleanliness” can be attributes of the Sonora ecotourism corridor experience. Speed and cleanliness standards must be shared and specified for transport, hospitality and food suppliers and monitored by 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. E.g.: cleaning processes, personnel can be identified for taxis, restaurants and hotels in the ecotourism circuit. Infrastructure –such as standardized, recycling-able garbage collection bins-, logistics – such as donkeys to retrieve the bins daily from mountainous roads- and technology –recycling- can be then established and supported with the collaboration of all ecotourism ecosystem.

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



4. *Setting standards* and influencing regulation help attract clients and VC<sup>9</sup> and AC<sup>10</sup> investment by closing gaps and meeting their DBR<sup>11</sup> standards. E.g.:

<sup>9</sup> VC: venture Capital – focused on profitable business

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*Sonora's technological region ecosystem's* shared services provide foreign investors professional help for obtaining building permits, business licenses and intellectual property law protection.

5. Investing in *core competencies*<sup>12</sup> that constitute the ecosystem's competitive advantage. E.g.: English-proficient professionals, educated to US Ivy league standard levels combined with e-performance capabilities –virtual work platform, videoconferencing- are core competencies for Wipro and other firms housed in the Mumbai ITT cluster ecosystem.

### 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 more resilient to economic downturns and critical to economic recoveries. By attracting and concentrating human and intellectual capital and providing a “strategic umbrella” and a support platform of processes, logistics, infrastructure and technology, business ecosystems operate as “hothouses” and “nurseries” for organizations and talent during hard times.

The power of ecosystems derives in large measure from its ability to concentrate talent. Modern urbanization expert Richard Florida describes how the ecosystem operates: *“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

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<sup>10</sup> AC: Angel Capital – focused on business ideas

<sup>11</sup> Doing Business Ranking (World Bank, 2007)

<sup>12</sup> (Prahalad & Hamel, 1994)

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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 the “busts”

### Silicon Fen: growth during the Great Depression

Since its creation in 1918, the Massachusetts Institute of Technology (MIT) 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.



MIT students were required to contribute to develop 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. US 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.

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In 1918 MIT launched a Technology Plan to attract some large technological companies like GE, 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 US entered WWII, the Silicon Fen region was uniquely positioned to scale up production and rise to the challenge. During the 1940-1945 period, revenue for Raytheon, GE, Westinghouse, RCA and Bell Labs jumped from 3 to 143 million dollars 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, the construction of the Road 128 corridor created the first American high-tech corridor and employment grew up to 26,000 technology jobs. Although MIT suspended its engagement in financing in 1955, this was continued by private banking, and in spite of the 1970 defense spending downturn, Silicon Fen came back alive introducing the minicomputer, and CAD/CAM design software. By the turn of 1980, the region had created 100,000 technological jobs. (Saxenian, 1994)

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 24<sup>th</sup> 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

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Bay area. From 1910 through 1940, Stanford labs and graduates dominated the radio and media industries with star ups such as RTC, RCA, and Magnavox –in the radio and telecommunications industry- Fischer Research labs in Palo Alto 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 startups 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 company, followed closely Bell Labs in 1947, Stanford University incubator in 1948 and Shockley Transistor in 1955. During the sixties, disgruntled engineers from Shockley started Fairchild Semiconductor to cater to new sophisticated clients like NASA.

Silicon Valley ecosystem development shows many similarities with Silicon Fen: large concentration of defense technological contractors, several university centers –University of California, Stanford- 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 startups
2. Large concentration of top engineers
3. US government as sponsor, “angel investor” and client
4. Venture Capital firms

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5. Access to sea ports and logistics  
(San Francisco, Boston, Route 128)

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

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 sixties and early seventies, many HP 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 "*providing extended assistance to other firms in the region, providing new entrepreneurs with encouragement, advice, computer time, space and even financing*" which 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 grew also out of the Valley technological firms. Silicon Valley venture capitalists had engineering backgrounds and previous experience in local firms that made them operate more in the way of "Angel Capitalists" –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 become the most innovative region in the United States.
3. *Law firms*: other 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.

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## **BOP ecosystems: India and China**

During the sixties and seventies, China and India were often cited as “basket cases” for economic backwardness.

Suffocated by central planning and the highest barriers to business innovation, Chinese and Indian engineers and scientists struggled to meet the tests of Ivy-league standard best universities to get a chance to migrate to US or EU. Because only a meager 10 percent of each year graduates could get a visa, a growing underemployed, professional workforce languished in service or clerical jobs at their home towns.

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

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

When China and India started to develop entrepreneurial ecosystems –China’s Special Economic Zones and India’s Indian Institutes of Technology-centered technological centers-, the abundance of underemployed, highly-educated, English-proficient PhDs and advanced degree in science and engineering graduates became a clear success factor.

British economists Doves Kapur and John McHale reformulated the old “brain drain” theory as “*brain drain, brain gain*”, noticing that even the “Diaspora” of talented professionals to OECD markets had beneficial effects on 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 Guards persecution and massive bureaucracy by establishing *Special Economic Zones (SEZ)* that operate as free market,

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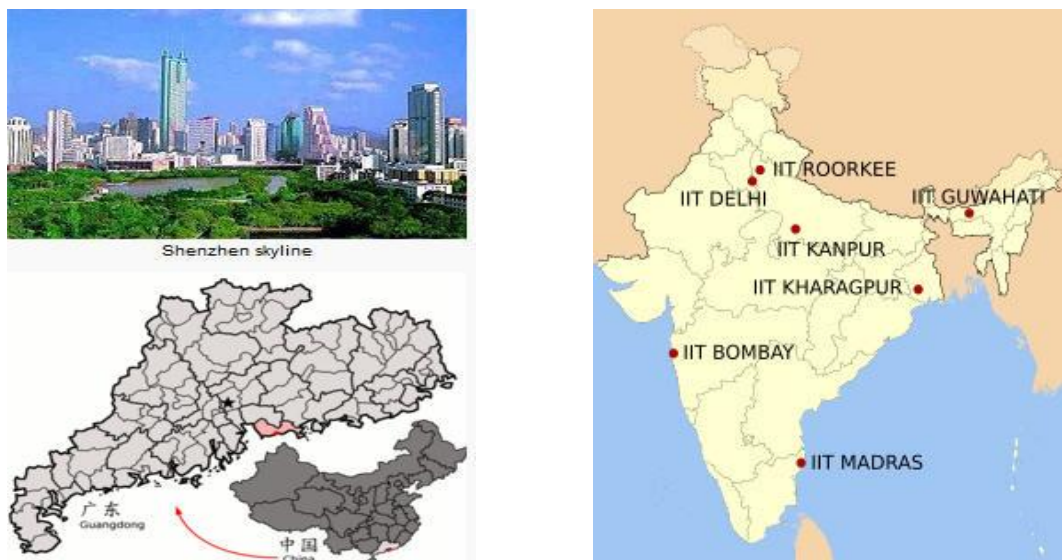
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free trade, entrepreneurial ecosystems that brought 400 million Chinese into the ranks of the middle class in one decade..

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 rate scientist and engineers, became the backbone of technological ecosystems focused on exporting and outsourcing engineering and business processes services using online technology.

**Figure 5: China and India education-centered ecosystems**



*Shenzhen'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 the record economic growth during the nineties.*

Source: (Bernardez, Capital Intellectual: 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 both serve overseas clients

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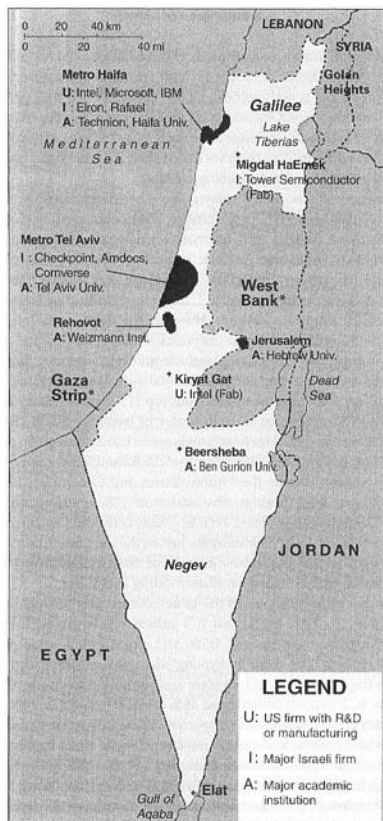
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and to undertake the challenge of quickly retraining a rural workforce into new urban jobs to serve overseas markets.

India and China entrepreneurial ecosystems sparked spectacular economic growth during an entire decade raising the living standards of 800 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

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



*Silicon Wadi center is in Tel*

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 investment in education and R&D as a percentage of GDP in the world, and has particularly string focus on Math, Sciences and Engineering
2. *Attracting talented migrants* – During the eighties, as the USSR and the Eastern block started to collapse and limit emigration, more than 1 million immigrants arrived to Israel, with almost 6,000 first-rate scientists, that where immediately absorbed by the Silicon Wadi firms
3. As a result, Silicon Wadi created 150,000 jobs - 56,000 manufacturing and 92,000 in services with exports for 15 billion dollars in 2000 and an

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*Aviv, with satellite centers in Haifa, Rehovot, Kiryat Gat and Migdal HaEmek, all seating major research universities*

average 50 percent growth in employment and revenue during the decade 1990-200

4. High DBR standards – Israel has one of the highest levels of protection to intellectual property and safety for business and investors in the world
5. Venture Capital groups – the Silicon Wadi benefited from the three previous factors attracting local and international investment in high tech for almost 16 billion dollars
6. Defense requirements – Israel large and sophisticated military demand for electronics and high-tech independence has been a powerful driver for advanced technology military and civilian applications.
7. Teamwork-centered, highly organized culture – the condition of citizen-soldiers of most Israeli adults as well as their upbringing in kibbutzim and collective farming has transpired into the Silicon Wadi ecosystem companies in the form of an unusual combination of highly participative culture and strong work ethics.

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

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

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

In 1995, the Sonora Institute of Technology started to develop a new model of university 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

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graduates but in creating sustainable organizations able to employ them and generate positive social impact. (ITSON - Sonora Institute of Technology, 2007)

In 2005, ITSON developed an even far-reaching vision, involving the creation of entrepreneurial and market-based ecosystem in the South of Sonora that could coordinate business –large and small- , non profits, NGOs and government under a shared vision and strategy with the support of new program focused on “business graduation” and social impact.

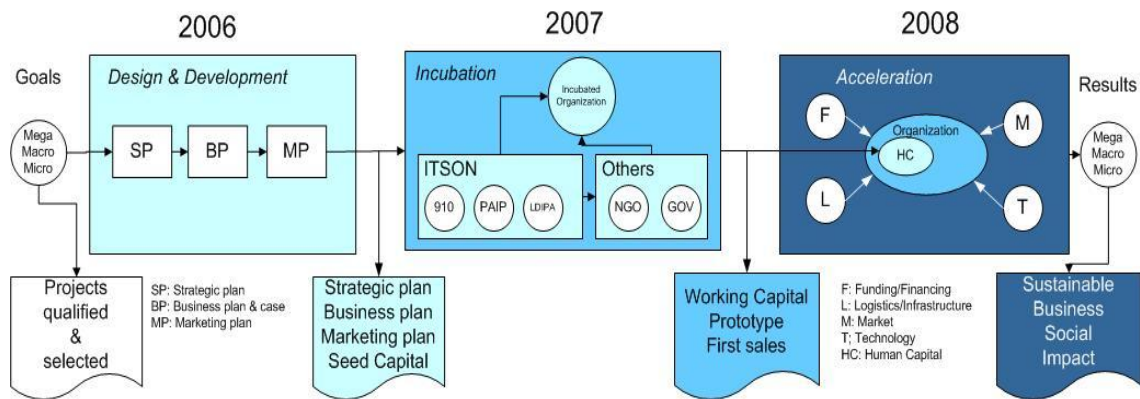
ITSON’s *PhD program of Social and Organizational Performance Improvement (PII)* combines learning, applied research and consulting to develop companies from the planning stage until their positioning in their target market with the design and organization of regional ecosystems that combine and leverage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

PhD and MBA students are in charge of planning, incubating and placing into the market new companies –for profit and non-for profit- following ITSON’s strategic plan vision, 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 candidates; (2) as a “*virtual*” *incubator* supporting each project with ITSON’s incubating facilities and consulting services to organize a running company around the business plan and (3) as an *accelerator*, by helping organize the ecosystem –alliances and cooperation among projects, angel capital, sponsors, access to markets, technology- operating as a business support interface to reduce or eliminate barriers to business –“gaps” between current and required DBR indicators-

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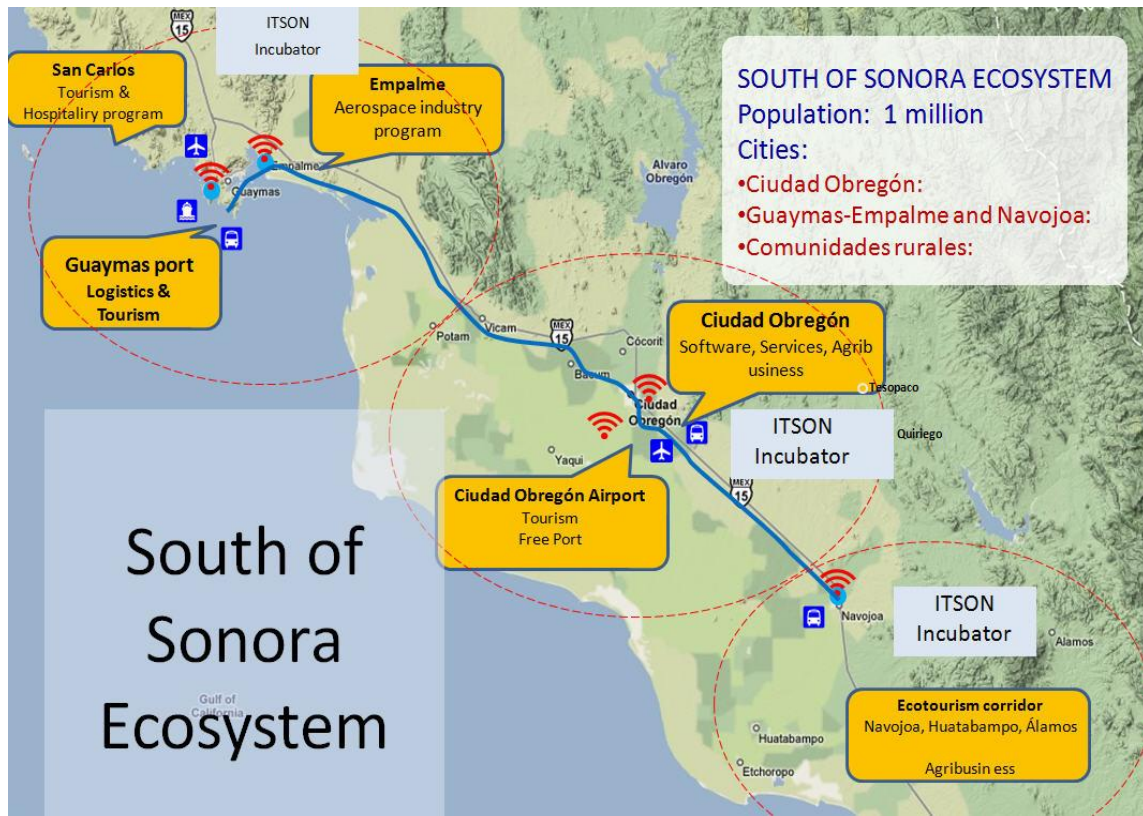
**Figure 6: Company graduation at PII / ITSON**



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 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)**

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ITSON/PII organized the South of Sonora corridor connecting five key cities –Obregon, Guaymas, Empalme and Navojoa- by organizing a “logistics’ backbone” with airports, railroad and Wi-Max broadband coverage and developing 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 to protect and create social wealth under economic downturns.

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

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

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

Graduating sustainable organizations requires, in turn, to work with students, entrepreneurs and stakeholders to bring together and bring about the kind of “outside-in” strategic thinking and management required while providing the core competencies and ensuring 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 easier to follow Peter Drucker's advice:

*“The best way of predict the future is to create it”*

(Drucker, 1993)

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