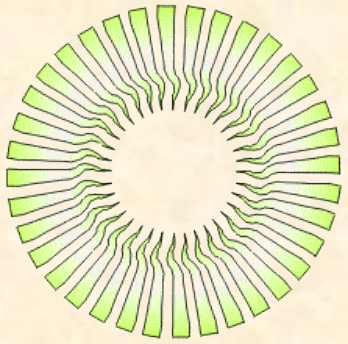
Your Cluster Initiative:
Moving to the Next Level

Fred Phillips,PhD

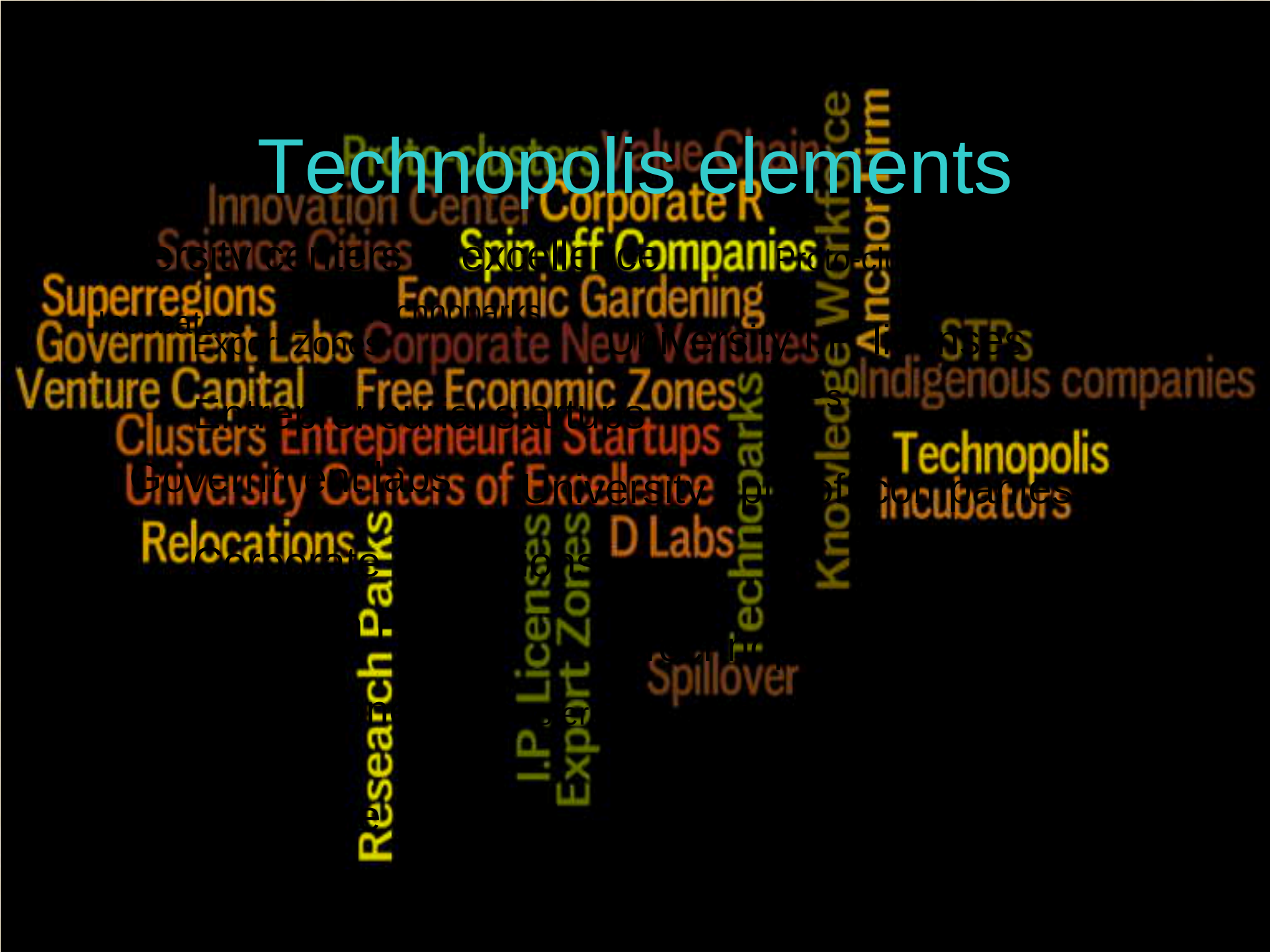
SUNY Stony Brook and General Informatics LLC

Water Technology Innovation Cluster Leaders Meeting, September 28, 2014

New Orleans



Technopolis elements



Fred Phillips and General Informatics LLC have guided

- **Austin**'s software cluster
- The **Oregon-Washington** education cluster
- **San Diego** biomimicry cluster
- The **Cincinnati** Confluence regional water technology innovation cluster
- **Serbia** Innovation Fund
- And more

Agenda

1. Clusters: A review
   - Organization, structure, leadership, and governance
   - Anchor companies
   - Role of each sector
2. Collaboration mapping and patent mapping
3. Cluster life cycle & maturity
4. Benchmarking your cluster initiative
5. Funding
6. Deciding your program offerings
7. Cluster trends worldwide

Valorization: Your technopolis repays constituents' investment, via

- More and better local jobs
- Increased tax revenues
- More local educational opportunities
- More efficient economic development programs
- Invention and production of products & services suited to
  - Local market
  - Export market

Valorization: A failure and a success

- “The failure of one high-profile US R&D consortium was partly due… to the lack of a productization function.”
  - *This was Austin’s MCC consortium.*
- “A key success factor… was the inclusion of production facilities and manufacturing companies.”
  - *This was Hsinchu Science-Based Industrial Park.*

Measure…

- New company formation
- Patents
- FDI and venture investment
- Growth of support services
- Growth of existing indigenous companies
- University grads employed locally
- Cross-citations
  - Scientific papers
  - Patents
- Ratio of business tax income to ED budget
- % local suppliers

Example: Malaysia multimedia corridor

Cluster life cycle: a case study of the Multimedia Super Corridor

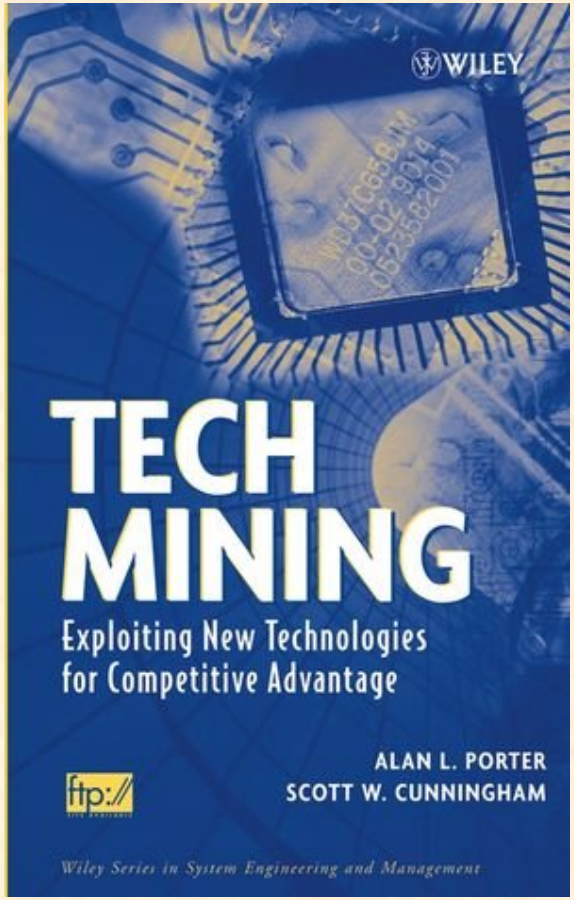
MSC performance indicators	97	98	99	00	01	02
Total number of approved MSC status companies	94	197	300	429	621	812
Jobs created	1831	3192	5681	7334	nd	18906
Knowledge workers (%)	57	61	62	58	nd	84
Sales (in billion RM)	0.39	0.61	1.02	1.34	1.89	3.93
Export sales (in billion RM)		0.174*		nd	0.7	0.67
R&D expenditure (in million RM)	10	24	30	79	95	258
IP registered (cumulative)	nd	nd	nd	nd	53	123
MSC performance indicators	**03**	**04**	**05**	**06**	**07**	**08**
Total number of approved MSC status companies	973	1163	1421	1728	1994	2173
Jobs created	21270	27288	33851	63907	79005	nd
Knowledge workers (%)	87	89	76	78	82	nd
Sales (in billion RM)	5.86	7.22	9.84	12.99	17.06	nd
Export sales (in billion RM)	1.24	1.57	2.65	4.03	5.57	nd
R&D expenditure (in million RM)	428	670	574	815	1404	nd
IP registered (cumulative)	276	395	1072	1815	2600	nd
Business creation via MSC Technopreneur				171 companies**		
Pre-seed fund programme				(24.5 million RM)		

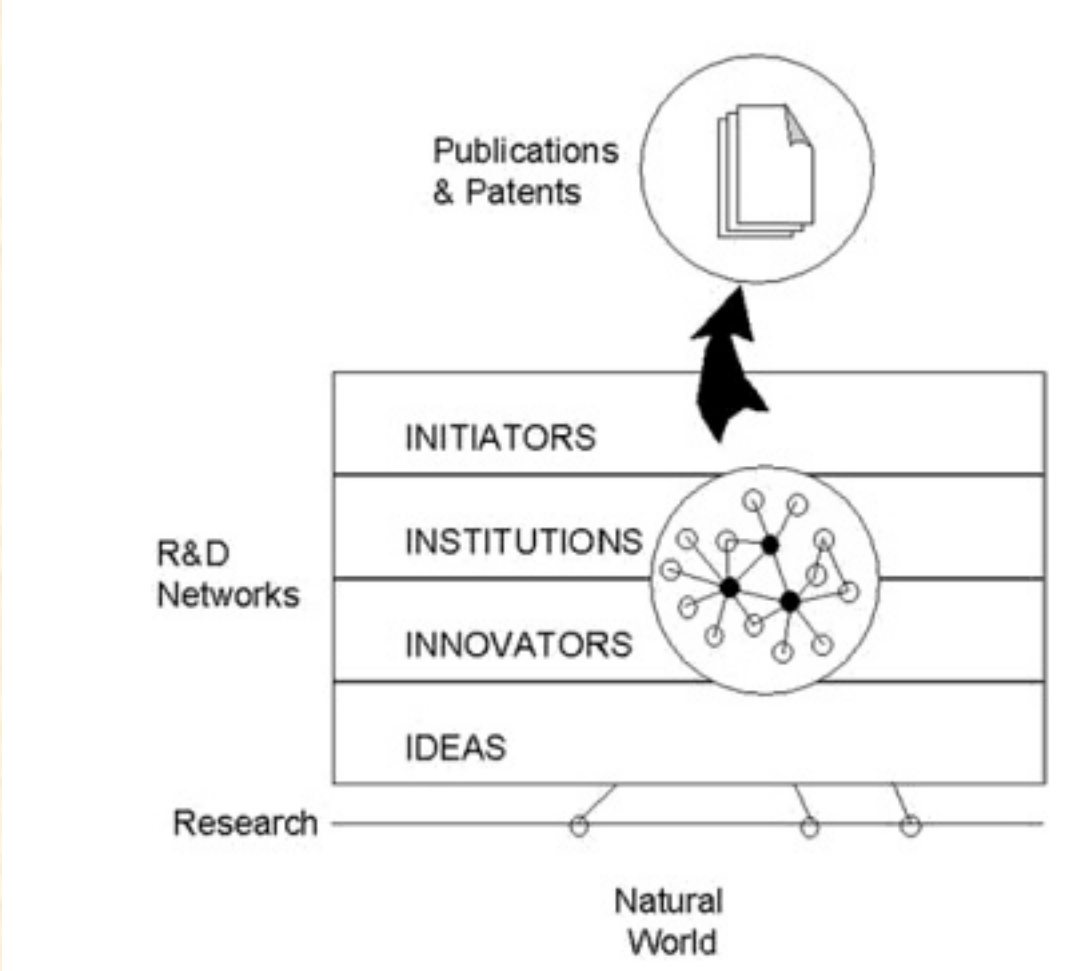
Source: Ab-Aziz, *Tech Monitor* • Jul-Aug 2011.

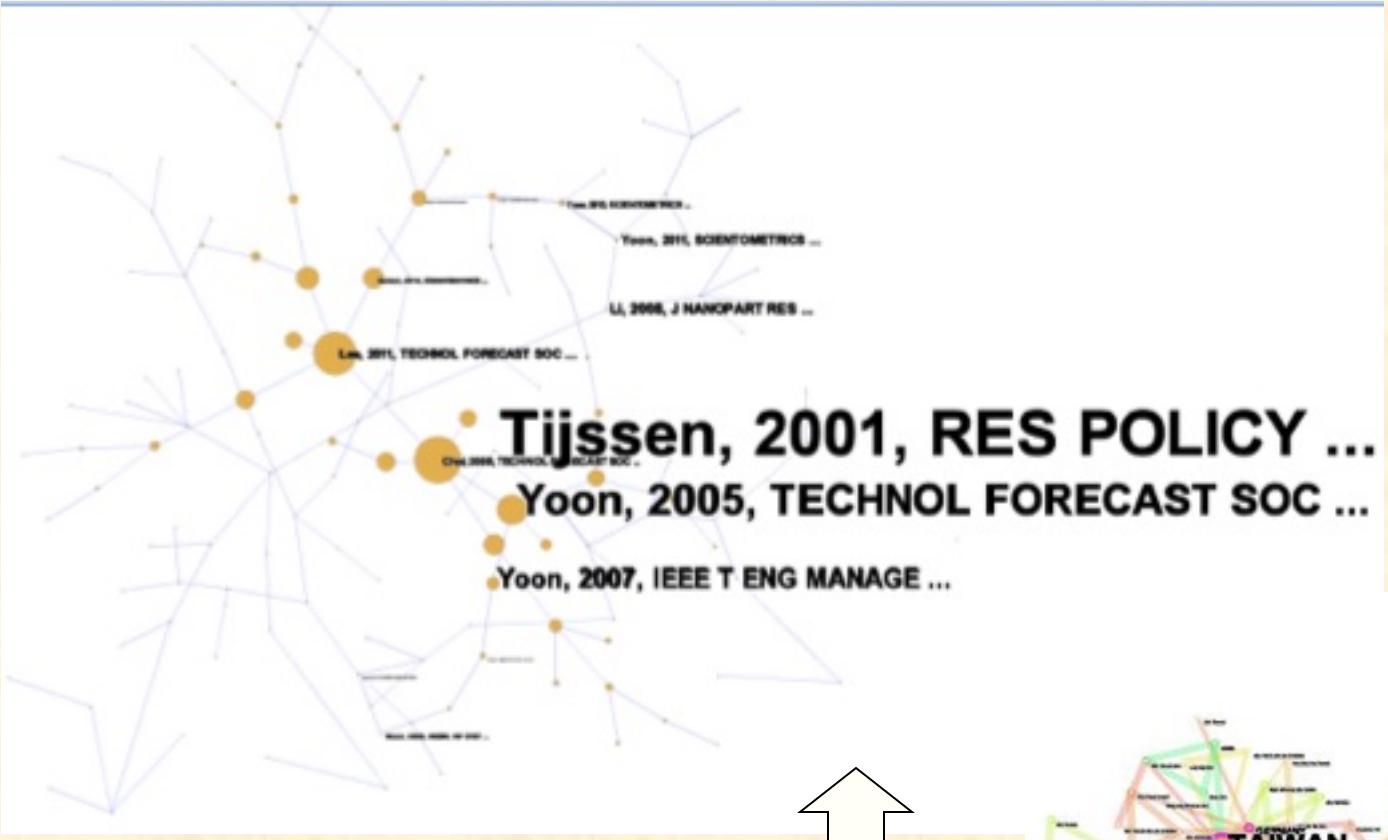
Parenthetically: Measurement requires continuity.

- From one political administration to another.
- From one park director to the next.

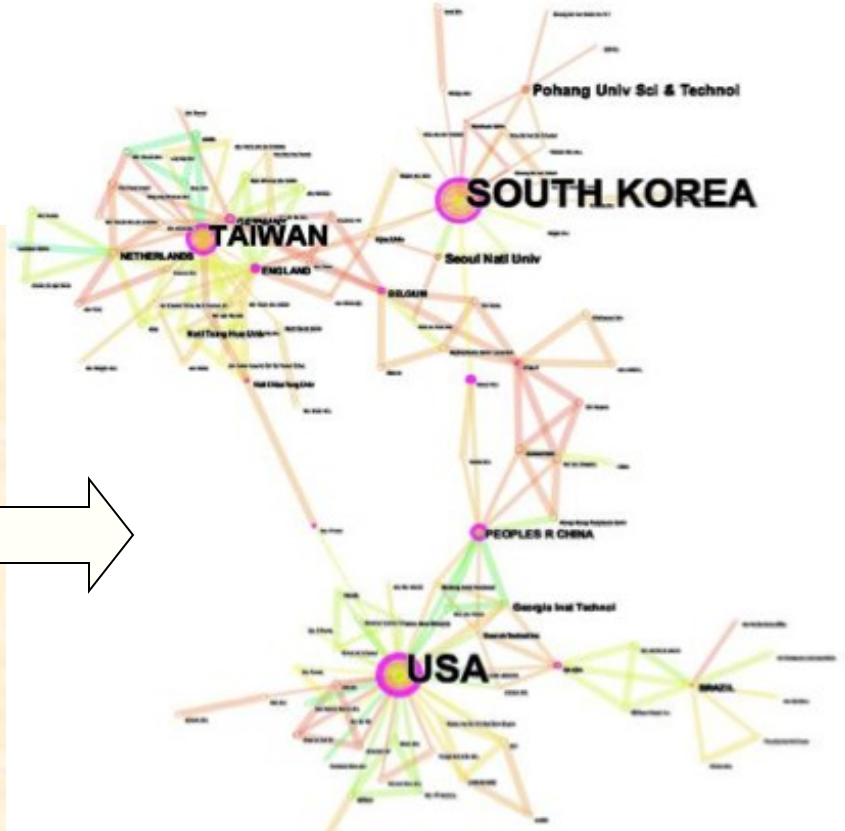
Collaboration mapping. Patent mapping







Mapping co-authors; collaborating labs



Farshad Madani, Technology mining bibliometrics analysis: applying network analysis and cluster analysis. Portland State University, 2014.

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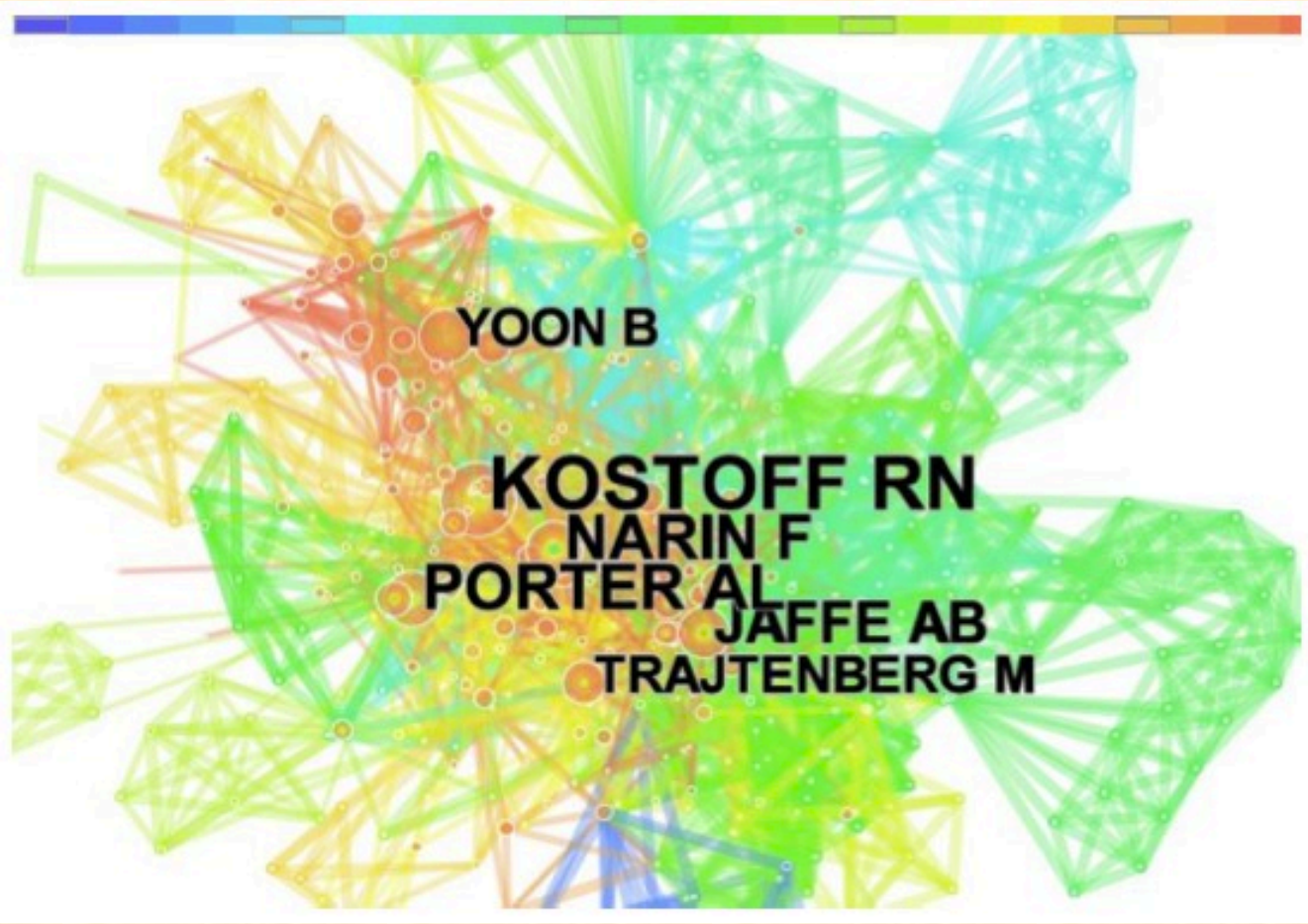
Mapping Citations



Mapping key term timelines

Resources for Mapping

- http://www.epa.gov/nrmrl/watercluster/docs/Patent_Mapping_Report.pdf
- Dan Brass, *Do It Yourself Social Network Analysis.* linkscenter.org/teasna/2008/brassoverview2008.pdf
- *Scientio's Intelligent web services.* www.conceptstrings.com/
- General Informatics consultant Steve McMillan:
  - "I have used Ollie Persson's Bibexcel to generate the matrices, etc. and then Pajek for the actual mapping.
  - "Other programs are Netdraw, Netminder, and Vantage Point."
- Routines for Social Network Analysis in the R Environment erzuli.ss.uci.edu/R.stuff/

More references for mapping

- G. Steven McMillan, “Mapping the invisible colleges of R&D Management.” *R&D Management* 38, 1, 2008, 69-84.
- G. Steven McMillan and Debra L. Casey, “Paradigm Shifts in Industrial Relations: A Bibliometric and Social Network Approach.” *Advances in Industrial & Labor Relations,* issue 17, 207 - 255.
- *Scientometrics*. Volume 100 , Issue 3, Special Issue on TechMining.

More efficient economic development programs.

- *Your goal is cluster-building!*

Know your ED jargon

1. **Civic boosterism**
   - Advertising, fairs, lobbying, bragging
2. **“Economic Development”**
   - The above, plus targeted company recruitment
   - Later, balanced attention to recruitment, start-ups, and helping indigenous companies. University’s role is recognized.
3. **Business ecologies/ecosystems**
   - Sustainable networks of suppliers, distributors, amenities, etc.
4. **Research parks**
   - Facilities for collocating university, government, and corporate laboratories
   - Usually close ties to universities.
   - Builds international research networks while building on local strengths.
   - May have a technology focus, e.g., semiconductor research.
   - Precursor to new industry clusters, new exportable products.

Know your ED jargon: Technopolis

1. "Small" technopolis
   - Artificial sci-tech cities
     - Tsukuba, Japan
     - First embraced in US by Bechtel Corp.
   - Science parks and specialized real estate developments near existing cities.
     - Daejeon, South Korea; Zaragoza, Spain; many others
2. "Big" technopolis
   - Major parts of a regional economy oriented to innovation, technology & entrepreneurship,
     - Including tech parks
     - Broad social consensus
     - Silicon Valley; Austin; Seattle

Seminal source: S. Tatsuno (1986) *The Technopolis Strategy: Japan, High Technology, and the Control of the Twenty-First Century*. Englewood Cliffs, NJ: Prentice-Hall/Aperture. (+Later work by Gibson; Saxenian; Malecki; Phillips)

Know your ED jargon: *Clusters*

- **Critical mass** of firms in one industry or closely related industries, located close to one another - including direct competitors.
- **Dense web** of designer/supplier/ manufacturer interrelationships.
- At least **one company engaging in world class** innovation and significant exports.
- Resulting in ample knowledge workforce, and knowledge spillovers leading to still more start-ups. Companies “stick” to the locale.
- May arise spontaneously or by design.

Seminal sources: Alfred Marshall, Principles of Economics (1890). M. Porter (1998) “Clusters and the New Economics of Competition.” *Harvard Business Review* Nov–Dec, 77–90.

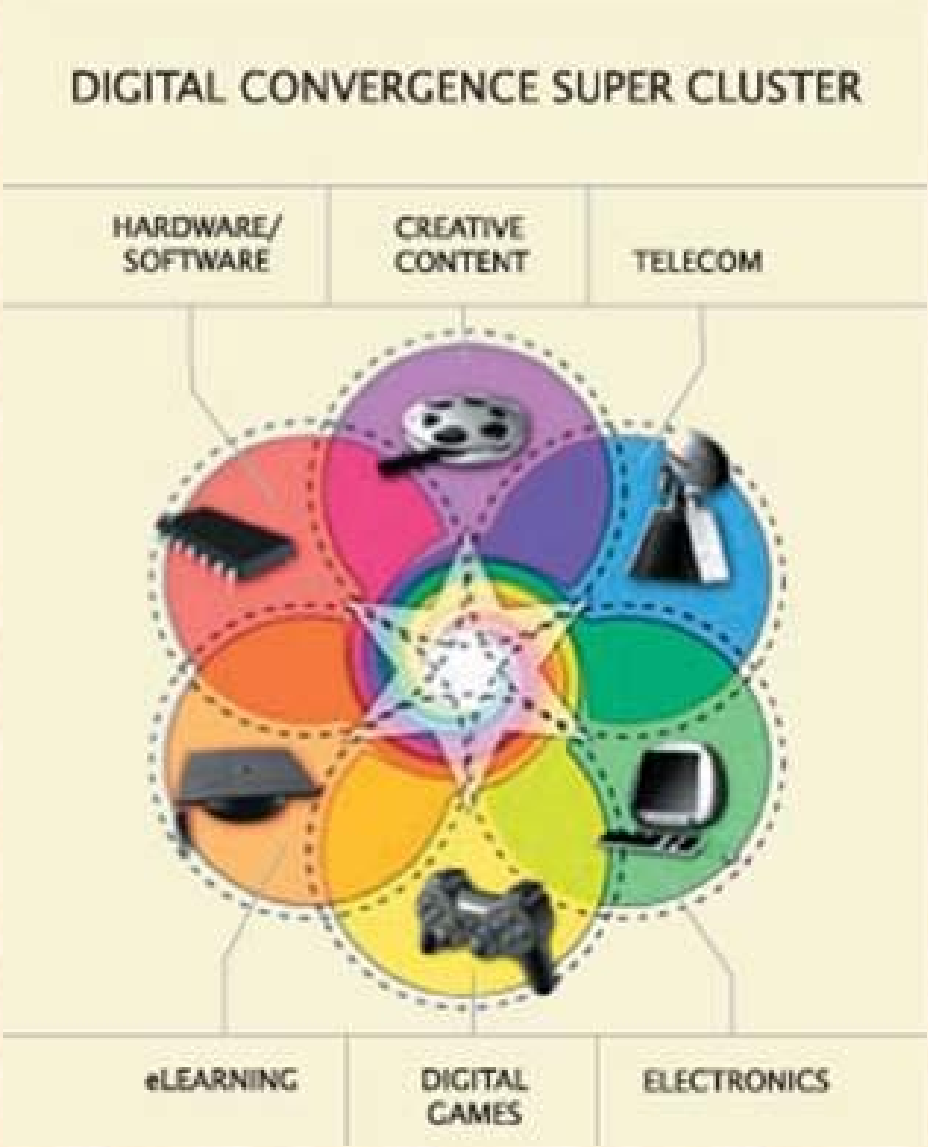
Know your ED jargon: newer cluster-related ideas

1. **‘Triple helix’**
   - Government-industry-academic cooperation reinforces lock-in effect of industrial location.
   - But raises complexity and so introduces new risks.
2. **Convergence clusters**
   - Collocation of companies in industries that are converging or expected to converge*
     - Example: forging/stamping and vehicle assembly
       https://secure.hbs.edu/isc/login/login.do?http://data.isc.hbs.edu/isc/
3. **Micro-clusters**
   - Promising but not yet world class clusters
   - Targets for state funding and ‘buy local’ connections with potential customer companies

* In some usages, ‘convergence’ means reduced wealth disparity between two regions.

Know your ED jargon: *Superclusters*

- Dialog/commerce between clusters in related industries.
- More synergies.
- More economies of scope.
- More “Lock-in.”



Benefits of Clusters

- You have heard that clusters mean
  - A plentiful workforce and
  - More efficient supply chains.
- This is true, but from a government perspective, this benefit is *small*,
  - Compared to ***Lock-in.***

Benefits of Clusters: ***Lock-in***

- Companies come *because other companies are here* – not because of your ED programs.
  - »Lower or eliminate cost of recruiting companies to the region.
- Knowledge **spillovers** lead to
  - »Still more start-ups.
  - »Increased local stock of knowledge.
- **Companies "stick"** to the locale.
  - »Less ED marketing expense.
  - »Fewer clawback problems.

Marshallian clustering

- *Input sharing.*
  - More firms involved in the making of specialized input.
- *Labor market pooling.*
  - Larger clusters offer better matches between workers and firms.
  - Easier for a worker to get a new job, and for the firm to fill the old job.
- *Knowledge spillover.*

Mark Alan Hughes | Next American City Measuring the Impact of Innovation Clusters 08/07/2012 12:52pm
http://americancity.org/daily/entry/ways-means-measuring-the-impact-of-innovation-clusters

Knowledge spillover

- Marshall: “The mysteries of the trade become no mysteries; but are as it were in the air…”
  - Hardest to measure.
  - Importing knowledge less efficient than “exposure to new knowledge before anyone knows it’s worth importing.”
  - Tacit knowledge far more difficult to convey over distance.
- Spillovers need right ‘distance.’
  - Not too different knowledge, languages, organizational cultures and settings
  - Not so little cognitive distance, that there will be competitive reasons to not communicate.

Mark Alan Hughes | Next American City Measuring the Impact of Innovation Clusters 08/07/2012 12:52pm
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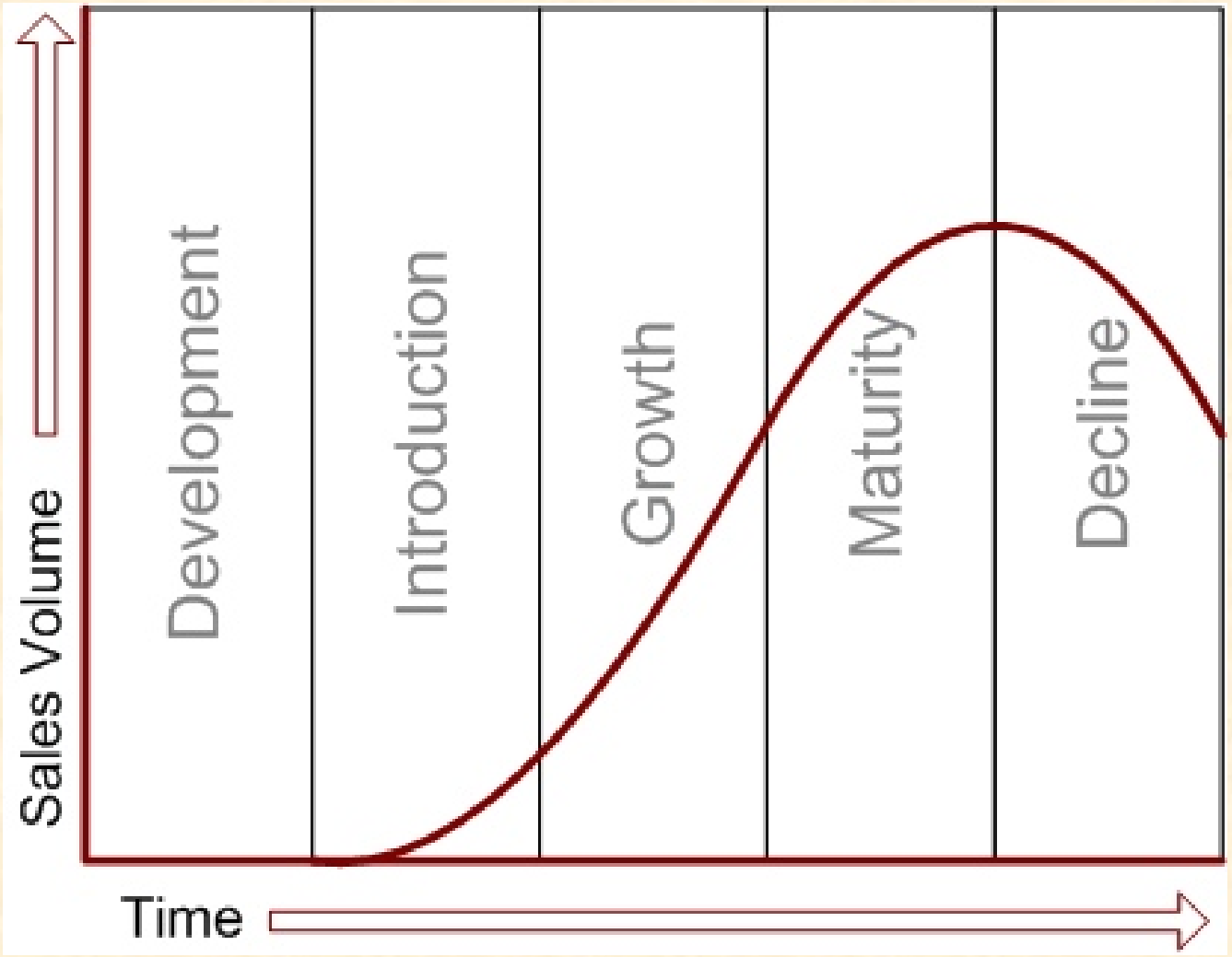
These are important, but…

- You will get no political favor by talking about “input sharing.”
- You will get no public acclaim by talking about “knowledge spillovers.”
- *Measure these things for internal use only.*
- *Be clever about what measures you publish.*
  - *Only numbers that are meaningful to your intended audiences.*

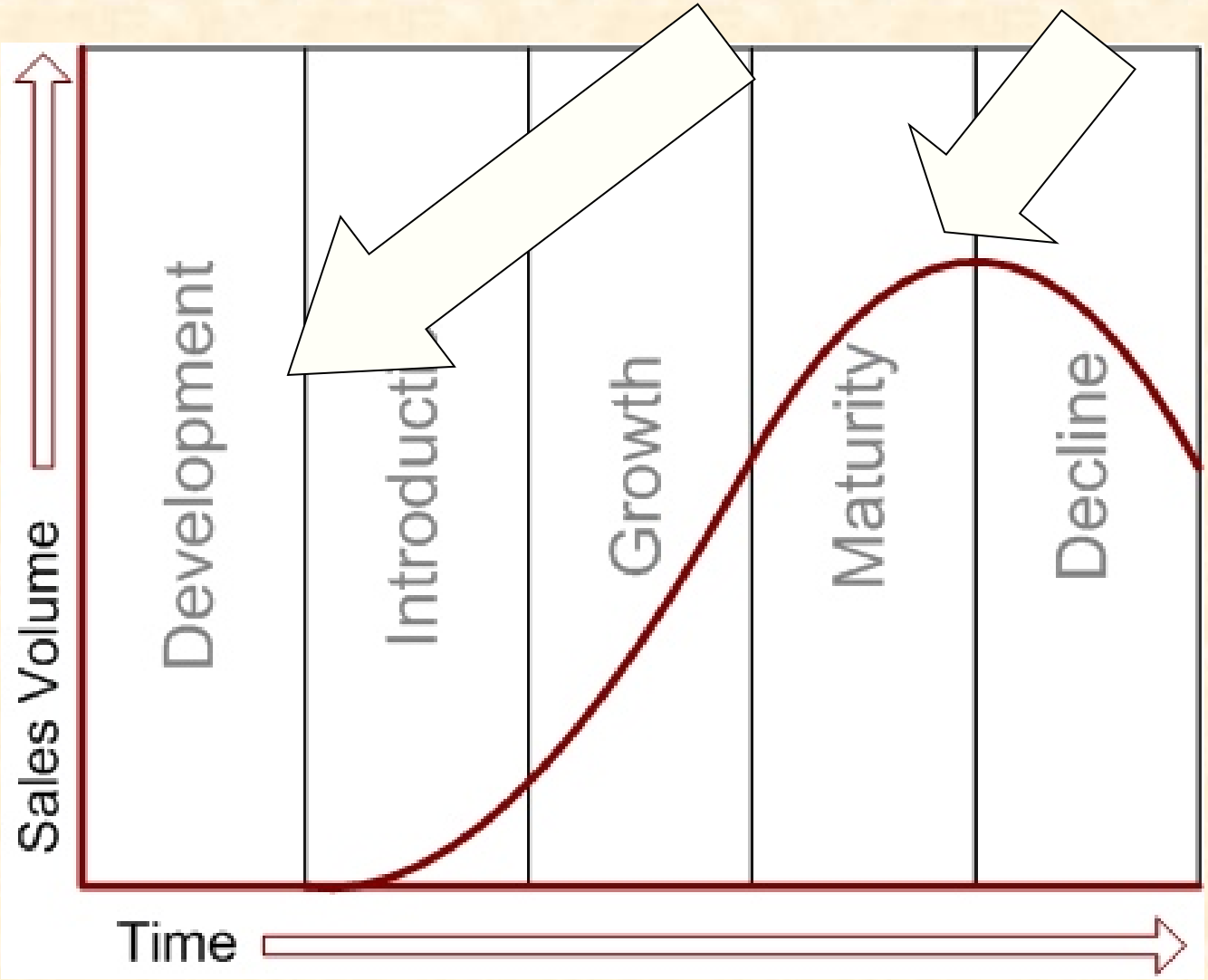
Bottom Line:

- Clusters are highly desirable elements of technopolis growth.
- S&T parks should drive toward cluster formation.

Cluster Life Cycle & Maturity

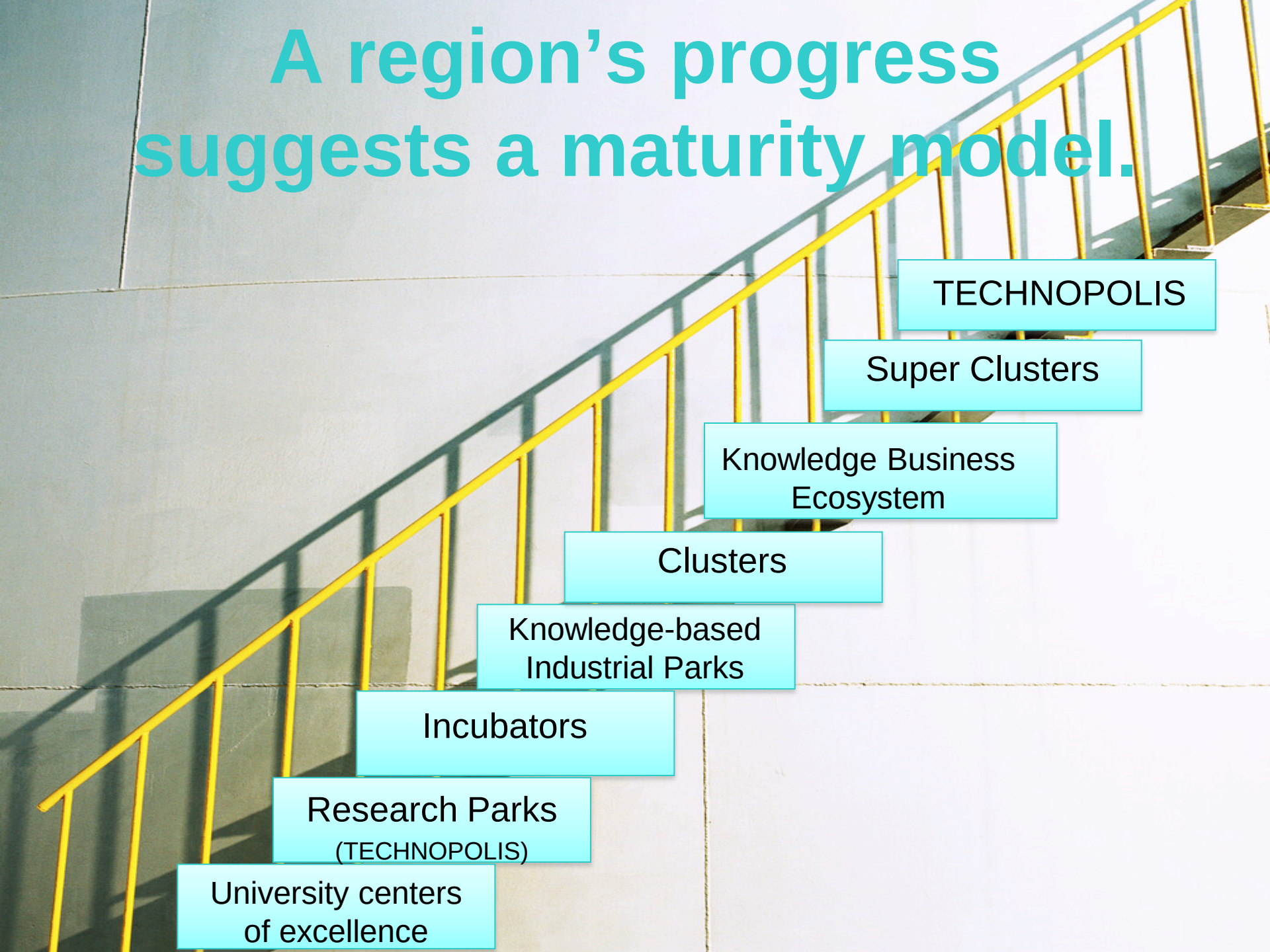


But the problem is how to get from here to here.



- Supplement your life cycle model with a maturity model.

A region's progress suggests a maturity model.



Uses of maturity model

- Benchmark your technopolis against true comparables.
- Help envision next steps and formulate objectives.
- Celebrate moving from one maturity level to the next.

Elements of maturity model

- Science & technology
- Industry
- Social capital
- Relational capital
- Institutional support
- Access to finance

Maturity Level 1

- *S&T:* Professors teaching from the book. Little updating of textbooks. Little/no research.
- *Industry:* Little university-industry interaction. Microclusters may be identified. Little knowledge-based industry.
- *Social capital:* No meso-level voluntary organizations. Some civic boosterism, organized economic development programs.
- *Relational capital:* Few people with non-local connections. Little communication across sectors.
- *Institutions/QOL:* Extremely bureaucratic government. Undeveloped infrastructure. Environmental problems. Incubators and tech parks isolated from the natural city.
- *Finance:* A few local investors.

Maturity Level 2

- *S&T:* Curriculum modernized. Little research. Few international collaborations. Entrepreneurship education programs launched.
- *Industry:* Multiple microclusters. Local industry employs university grads; professors consult. First university spin-off companies. Skepticism about knowledge economy still evident.
- *Social capital:* Growth of trade, professional, business and neighborhood associations.
- *Relational capital:* Local opinion leaders and change agents take initiative for developing networks.
- *Institutions/QOL:* Export zones, etc. Government making reforms toward more business-friendly, green environment. Professionals in law, real estate, accounting, ready to serve tech clients.
- *Finance:* Successes of firms with "friends & family" financing. Angel clubs. First VC investments.

Maturity Level 3

- *S&T:* Local research yields novel solutions to local problems; contributes to international knowledge base.
- *Industry:* Corporate new ventures locate or stay in region. Many incubator graduates stay in area. Strong supplier base and job growth. Visible anchor company for cluster.
- *Social capital:* High level of mutual support among business, government, education, and NGO sectors.
- *Relational capital:* Local, regional, international, and cross-sectoral networks established and growing in strength.
- *Institutions/QOL:* Government knowledgeable & supports tech growth. University grads want to stay in area. Expanding transportation & communication infrastructure.
- *Finance:* "On the radar" of investors worldwide. Banks are entrepreneur-friendly. Government venture funds.

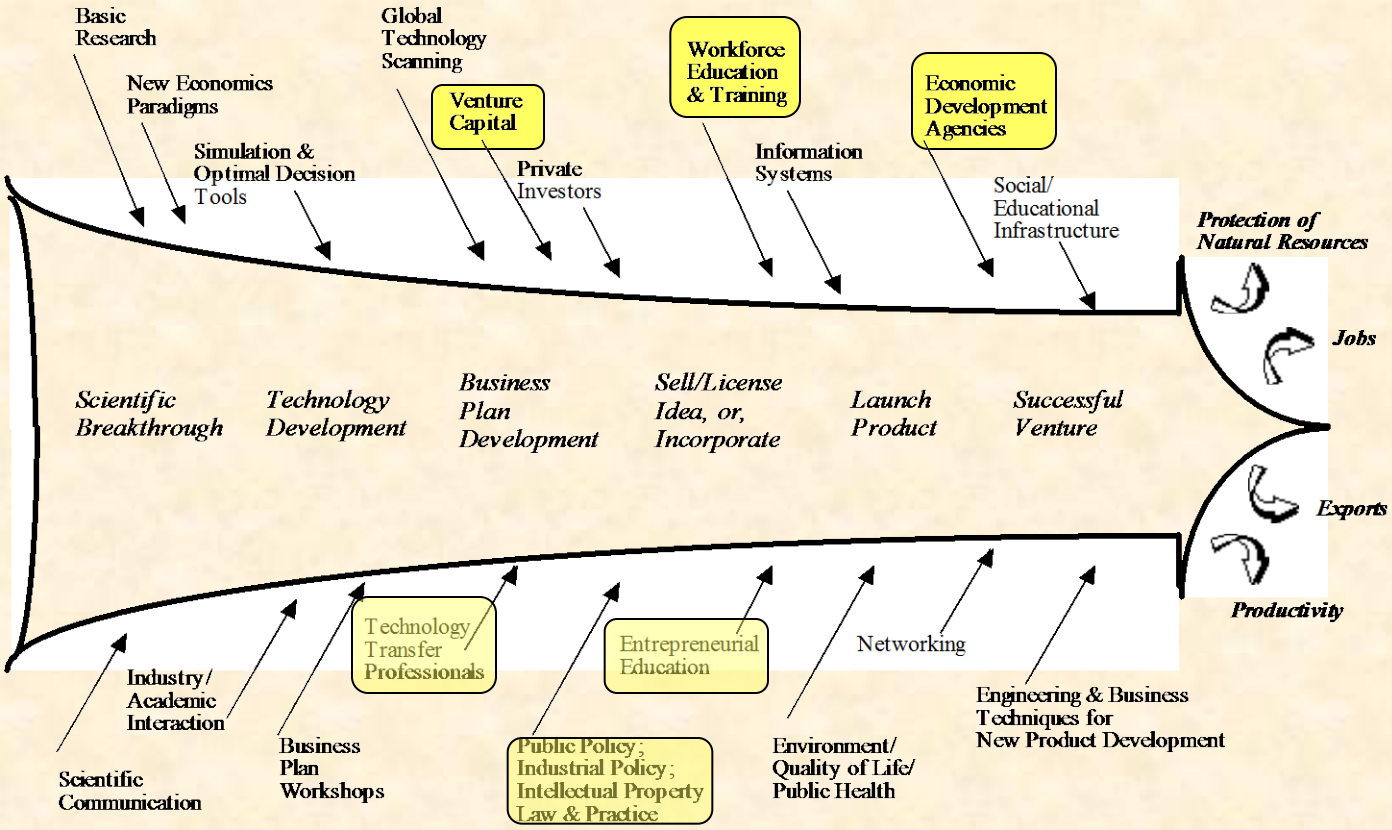
Maturity Level 4

- *S&T:* Multiple areas of international research excellence. Known for high-quality graduates.
- *Industry:* Multiple clusters, with synergies. Region is major exporter.
- *Social capital:* Innovative economic development initiatives and technology-oriented organizations.
- *Relational capital:* Strong international networks. Foreign labs locating in area. Reaching out to neighboring areas.
- *Institutions/QOL:* Sensitive urban renewal. Attractive living for singles, families, seniors. Labs & parks integrated with the natural city.
- *Finance:* VC firms establish local offices.

Maturity Level 5

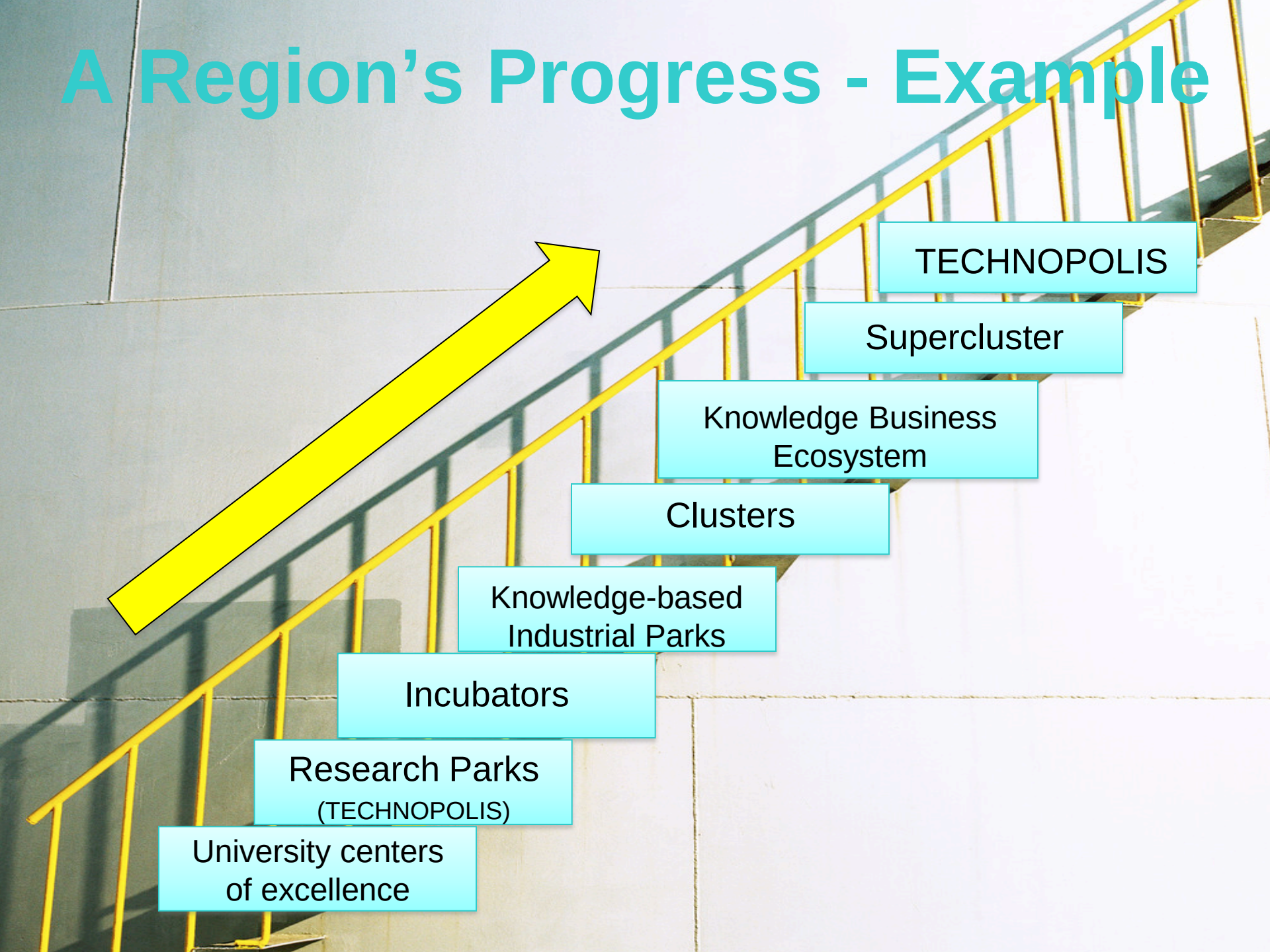
- *S&T:* Has self-renewed, reinventing its research strategy. Universities rank high in world surveys.
- *Industry:* Convergence cluster strength. Near universal citizen support for high-tech growth.
- *Social capital:* Experimentation with new PPP forms and e-government. New roles for the universities.
- *Relational capital:* Unlimited business networking opportunities. Region is widely viewed as role model. Super-region integration well-advanced.
- *Institutions/QOL:* City committed to solving problems of growth and congestion.
- *Finance:* Entrepreneurs move to area to be near concentration of investors.

Support Services for Innovation



- Local
- National
- International

A Region's Progress - Example



From One Step to the Next

TECHNOPOLIS

Supercluster

Knowledge Business Ecosystem

Clusters

Knowledge Industrial

Incubators

Research Parks (TECHNOPOLIS)

University centers of excellence

- Land, buildings
- Government, military contracts
- Private sector contracts, alliances
- Attracting company & government labs from near & far
- Skilled park managers
- Advice from WTA

From One Step to the Next

- TECHNOPOLIS
- Supercluster
- Knowledge Business Ecosystem
- Clusters
- Knowledge-based Industrial Parks
- Incubators
- Research Parks (TECHNOPOLIS)
- University centers of excellence

- Entrepreneurship education
- Cheap space, surplus equipment
- Skilled incubator managers
- Attracting tenant companies from many sources
- Strong interaction with university, local government
- Strong P.R.
- “Know-how network”

From One Step to the Next

TECHNOPOLIS

Supercluster

Knowledge Business Ecosystem

Clusters

Knowledge-based Industrial Parks

Incubators

Research Parks (TECHNOPOLIS)

University centers of excellence

- New product development
- Manufacturing capability
- Export capability
- Logistics capability
- Continuing R&D

From One Stage to the Next

TECHNOPOLIS

Supercluster

Knowledge Business Ecosystem

Clusters

Knowledge-based Industrial Parks

Incubators

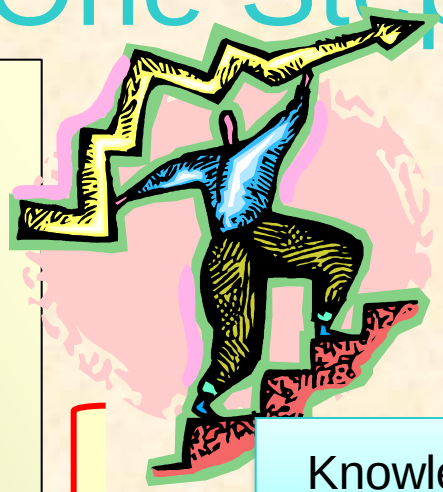
Research Parks (TECHNOPOLIS)

University centers of excellence

- Anchor company (ies)
- Local, national, international networks
- Critical mass of suppliers, distributors, customers, competitors
- Quality of life attractive to knowledge workers

From One Step to the Next

- Service & support businesses
- Strong civic, trade associations
- Government committed to sustainable business growth
- Transp., comm. infrastructure
- Strong, diverse educationa
- K-12 educ
- Plan
  life



TECHNOPOLIS

Supercluster

Knowledge Business Ecosystem

Clusters

Knowledge-based Industrial Parks

Incubators

Research Parks (TECHNOPOLIS)

University centers of excellence

From One Step to the Next

- “Bridge-builders” and convergence visionaries
- Interdisciplinary university research
- Innovative business models
- Seeking synergies
- Outreach to neighbori regions; creating ‘superregions’

TECHNOPOLIS

Super Clusters

Knowledge Business Ecosystem

Clusters

Knowledge-based Industrial Parks

Incubators

Research Parks (TECHNOPOLIS)

University centers of excellence

From One Step to the Next

- Continual renewal
- When you get to the top of the mountain, keep climbing.
- There is no “end”!
- Continuing attention to QOL

TECHNOPOLIS

Super Clusters

Knowledge Business Ecosystem

Clusters

Knowledge-based Industrial Parks

Incubators

Research Parks (TECHNOPOLIS)

University centers of excellence

3 planning categories (See Indonesia report)

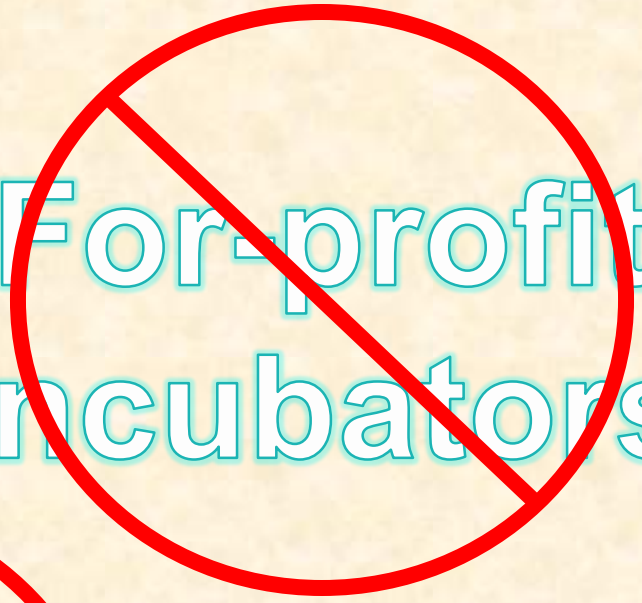
1. Hardware
   - Land use: residential, industrial, commercial, etc.
   - Infrastructure: road, water supply, electricity, gas, telecommunications, drainage, etc.
   - Public facilities: park and green, school, government building, etc.
2. Software
   - Institutionalization, legal system, governance, finance, missions, strategies, NIS/RIS.
3. Human-ware/Organization-ware
   - Human capital, HRM, psychology, day-to-day management
   - Population's capacity to form organizations, perform within organizations, and cooperate between organizations both locally and globally

Other bits of the terminological soup may be helpful. But don't let them distract you.

- Free economic zones
- Science museums
- Export processing zones
- Urban renewal

- *Your goal is cluster-building!*

Especially be wary of…



Ways to organize … for climbing from one step to the next.

- We have said *what* is needed.
- Now, *how* to get it?

First, recognize that

- The TECHNOPOLIS
- is different from
- The TECHNOPOLIS INITIATIVE.
- A technopolis is the *desired outcome.*
- The technopolis initiative is the *organization(s) and activities that make it happen.*

Cooperating for technology development: Ways of organizing

- Professional Society
- Industry/Trade Association
- Incubator/Accelerator
- Sci/Tech/R&D/Manufacturing Park
- Alliance
- Cluster initiative
  - Virtual cluster
- Technopolis initiative
- Consortium
  - Virtual consortium

Cooperating for technology development: Ways of organizing

- Professional Society
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- Consortium
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Societies & Associations

- Often HQ'd in capital cities
- Dispersed membership
- Project orientation =
  - Lobbying
  - Standards-setting
- Examples: IEEE; Air Conditioning & Refrigeration Institute

Cooperating for technology development: Ways of organizing

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  - Virtual consortium

Incubators

- Can be focused on one industry
- Usually located near universities, sources of VC
- Oriented to start-ups
- Industry involvement as
  - funder
  - customer
  - acquirer
- Example: Austin Tech Incubator

Cooperating for technology development: Ways of organizing

- Professional Society
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- Consortium
  - Virtual consort

Tech Parks

- Often located in free trade zones
- Not project-oriented, except for general growth of knowledge economy and attraction of FDI

Cooperating for technology development: Ways of organizing

- Professional Society
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- Consortium
  - Virtual consortium

Alliances

- Usually 2 companies
- For:
  - Technology development
  - Product development
  - Value chain efficiencies
- Usually no location
- Example: Apple + Verizon

Cooperating for technology development: Ways of organizing

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- Consortium
  - Virtual consortium

Cluster initiative

- May be PPP but not nec.
- May involve new non-profit org.
- Project goal: Bring selected
- local industry to critical mass
- Goes virtual by trading assets
- with distant same-industry
- clusters.
- Example: Cincinnati water tech
- cluster

Cooperating for technology development: Ways of organizing

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- Cluster initiative
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  - Virtual consortium

Technopolis initiative

- Usually cross-sector initiative
- Ongoing or long-term
- Goal: Develop multiple
- viable tech industry clusters

Cooperating for technology development: Ways of organizing

- Profess
- Industr
  Associa
- Incuba
- Sci/Tec
  ing Par
- Allianc
- Cluster
  - Virt
- Techno
- Consortium
  - Virtual consortium

Consortium

- An *alliance* with >2 partners
- Should have clear project goals
- Usually location-based
- *Virtual consortia* are mostly an education industry phenom.
- Exception: IBM-Mayo Clinic Open Health
- Natural Language Processing (NLP) Consortium
  - But this is for open-source development.

Your initiative’s activities

Selecting programs and partners

An ”Outcomes-Programs-Resources-Partners“ concept

First, list desirable outcomes. Set priorities!

- Green jobs?
- Exports?
- Growth in existing companies?
- High-paying jobs?
- "Innovator" image?
- New companies - relocations?
- New companies - start-ups?
- Sustainable local economy?
- Trained, flexible workforce?
- Others

Next, select a balanced ‘model’ for the initiative.

___ Idea center / think tank
___ Incubator
___ Educator
___ Facilitator
___ Urban redevelopment agency
___ Networking organization
___ Economic development agency
___ Trade association
___ Curriculum developer

___ Aggregator association
___ Consultancy
___ Advocacy NGO
___ Investment promotion agency
___ R&D Lab
___ I.P. holding company
___ Philanthropic foundation
___ Industry consortium

_____

∑=100 (Allocate 100 points)

Specific program types

- Business support
- Company recruiting
- Conferences
- Curriculum
- Economic measurement & assessment
- Equipment sharing
- Government relations
- Grant etc funding
- Incubators
- Investment
- Market research
- Nonprofit Industry Association
- Patent & Licensing
- Publication
- Publicity
- Science/Engineering Research
- Speaker events

Intemediary Organization	CTM	FPX	Wetsus	Triple Steelix
Description	CTM carries out research, development and technologic innovation projects and provides specialized services regarding analysis, innovation support and industrial training.	FPX is an independent society that supports and develops the member companies' competitive abilities and presence in the market within the GIS-field.	Wetsus is a centre of excellence for sustainable water technology. It is a facilitating intermediary for trend-setting knowhow development in the water treatment technology.	Triple Steelix regional developmenta effort to furth strengthen the successful ste industry in its region.
Year of creation	2000	2004	2003	2004
Area/sector	Materials Technology, Environmental Technology and Support to Innovation.	GIS (Geographical Information Systems).	Water technology.	Sheet steel, stainless steel, machining, services and subcontracting
Legal form	Foundation	Cluster organization	Foundation	Cluster organization
No. of workers	134	850	250	21
No. of private partners	35	40	93	Not available
No. of public partners	6	9	67	21
No. of projects	258	40	105	25
Budget	€ 69 million/year	€ 25 million/year	€ 16 million/year	€ 200 million/year

Examples

Source: Alexandra Simon and Pilar Marques, SUCCESS FACTORS FOR INTERMEDIARY ORGANIZATIONS: EVIDENCE FROM EUROPEAN CASE STUDIES. Autonomous University of Barcelona, 2014.

Answering these questions will lead to your best "organizational identity" and partner selection.

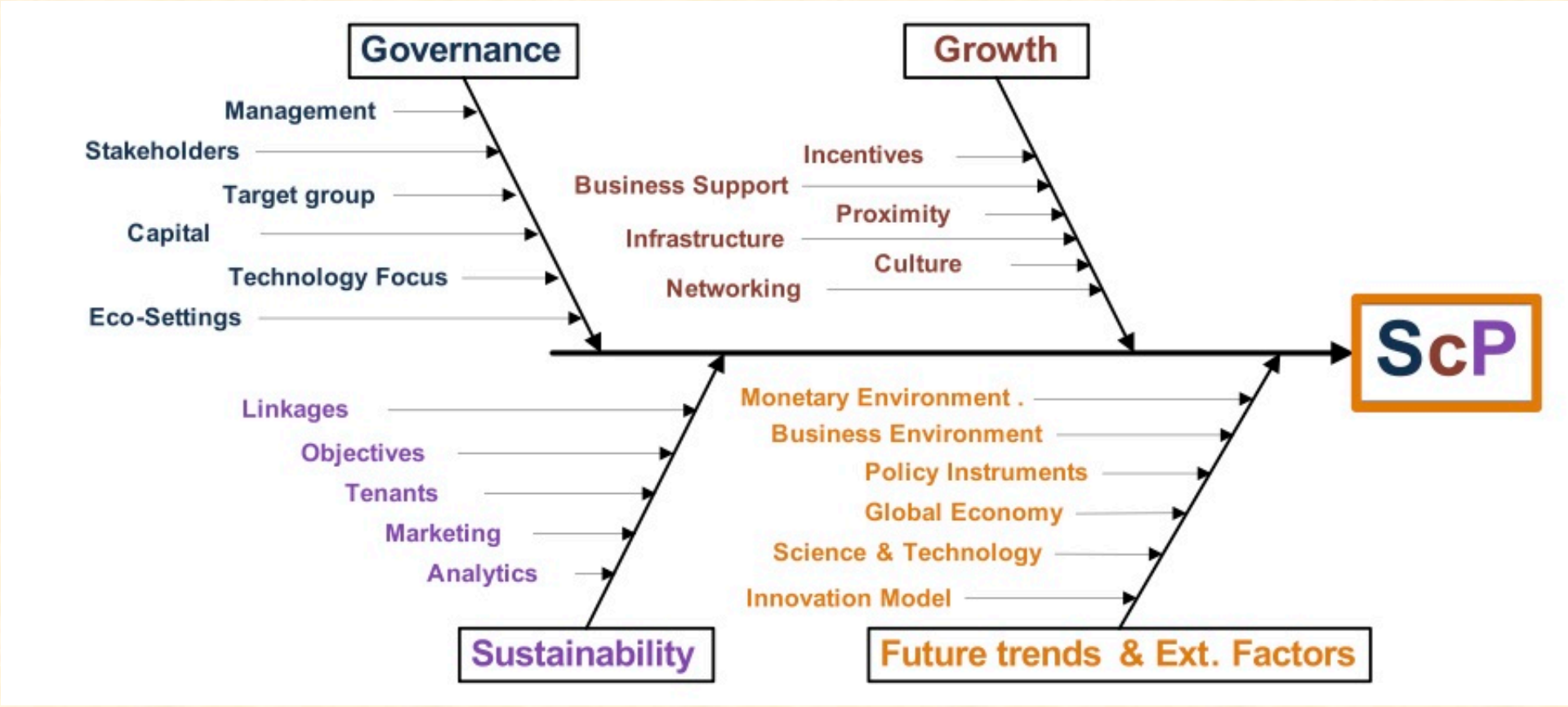
1. Which programs best serve the highest-priority outcomes?
2. What skills and resources are needed to make those programs work?
3. Which potential partners/participants bring those skills and resources ?

Next steps to a technopolis maturity model (TMM)

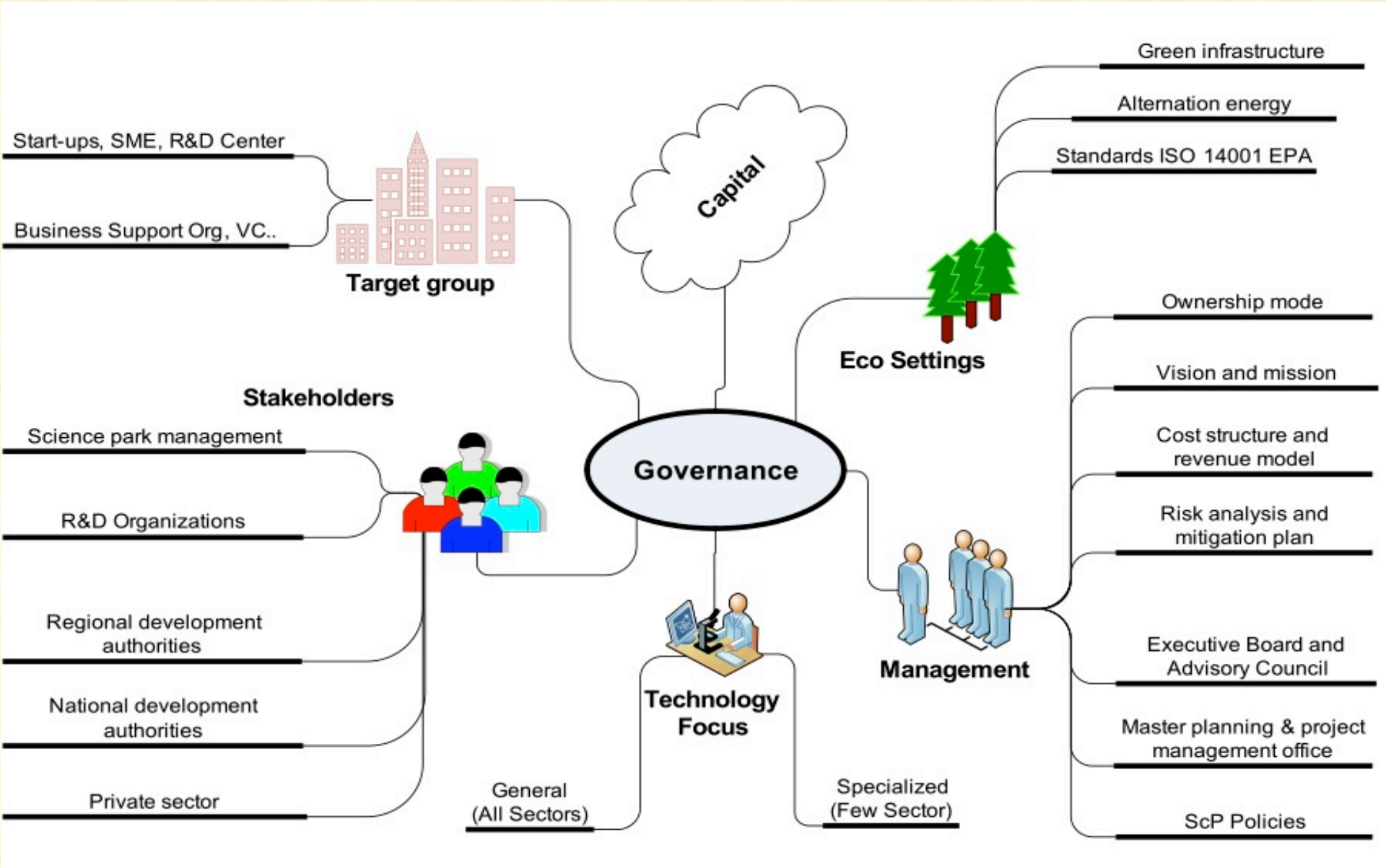
- At what stage is your technopolis?
  - If you are, e.g. at Level 2 on one dimension and Level 4 on another…
  - Rate your overall level modestly, but…
  - Build on your strength!
- What you have seen today is a 1st approximation to a TMM.
  - A more detailed TMM will be a student thesis.

Wasim: Planning

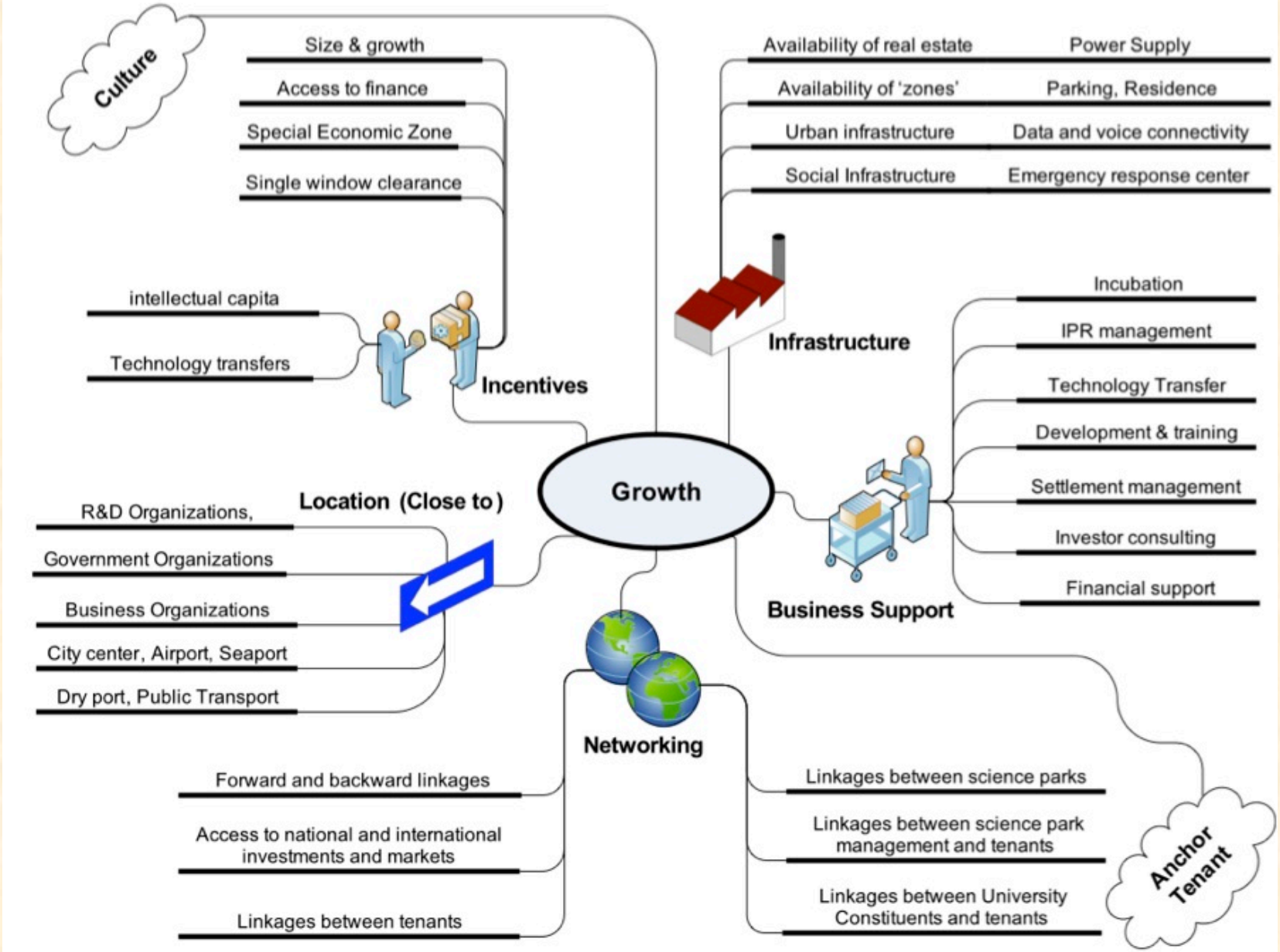
Umer Wasim, “Factors for Science Park Planning.”
World Technopolis Review, forthcoming.



Wasim: Governance



Wasim: Growing



Introducing WTA's technopolis database

- The fields:
  - Date; City; Country; Headline; Writer; Writer's contact info; People named; Affiliated organization(s); Organizational contact; Source of article; Description of technopolis activity; Description of organization; Organization URL.
- 145 records to date
  - More records added continually. Web address TBA.
  - Not all fields complete in all records.
  - Supplements WTA and IASP membership rolls
  - Please send links to articles that should be added.

Thanks to Daniel Chang for database design & admin!

Example Record

- Biblio: 15-Apr-04: Dundee, U.K. “Dundee a Center of Excellence for Life Sciences.” Writer, Susan Aldridge. Publication: *Genetic Engineering News,* www.genengnews.com.
- Contact: Tom Shepherd, PhD, Ceo of CXR Biosciences.
- Summary: Biotech R&D and partnerships with companies locally and globally due to highly rated facilities and reputation, low cost.
- Firms: BioDundee, Axis-Shield, Cyclacel, CXR Biosciences and others. Partnering with Univ. of Dundee.
- URL: www.biodundee.co.uk

Uses of the database

- Technology exchanges/partners
- Research collaborators
- Role models
- Look for peer efforts in same region.
- Look for contacts at distant S&T parks.
- Look for more details about activities in other technopolises.
- Look for companies to recruit/invite to your technology park.

Financing a Cluster Initiative

- How can clusters create long-term financial stability?
  - *Should they?*
- Sources of funding

Why do I say *"Should they?"*

- Mature clusters are self-sustaining.
  - They don't need "funding."
  - They persist because the companies are making money together!
- A project-oriented cluster initiative should have a sunset clause.
  - Beware the feather-bedding staffer who knows success will cost him his job!
  - A non-project cluster-related organization will self-sustain from memberships, etc.
- *Often the problem is not continuity of funding, but continuity of staffing & leadership.*
  - And then there was the Minister who knew he wouldn't win re-election, and blew the whole EU grant on a big party...

Sources of Funding

- Government grant support
  - City
  - State
  - National
- Membership fees
- Event fees & sponsorships
- Corporate sponsorships
- Relo incentives??

Why not state/province support?

- Motives of state legislature
- Corruption in state-level innovation
- Budget-cutting governors

Relocation Incentives: Controversies

- *Do they "work," or not?*
  - Would the company have come anyway?
- *Do they cannibalize nearby communities?*
  - And thus just waste money?
- *Do companies honor the terms?*
  - Job creation
  - Tax valuation

Case 1: Should Austin have paid Apple to come to town in 2012?

- Pros
  - Shows a business-friendly policy.
  - Apple is world's most valuable company.
  - Consistent with Austin's overall tech development strategy.
  - Austin has strong policies for not rebating taxes until a company has met auditable job-creation targets.
  - Maybe Apple creates more jobs more quickly.
- Cons
  - Apple would have come anyway.
  - Apple didn't need the money.

Austin's tax rebate policy & performance

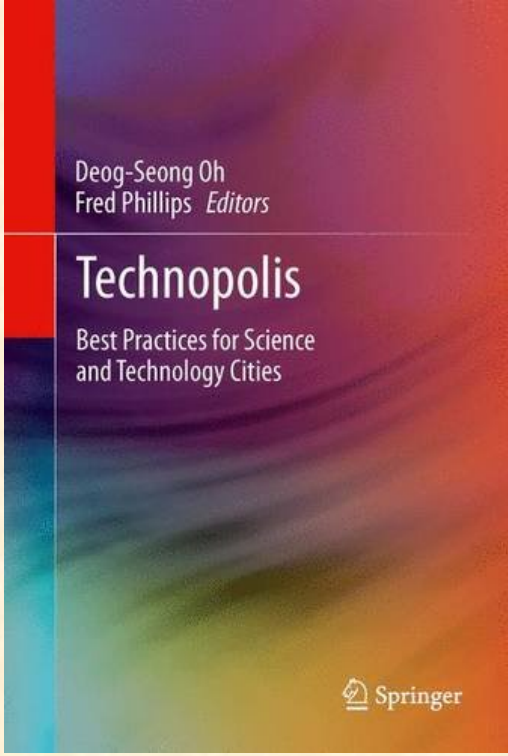
- 12 deals in 8 years, incl. eBay, Facebook, Samsung Electronics.
  - Far fewer incentive deals than Dallas, Houston, San Antonio or Fort Worth.
  - No incentives offered to any company promising fewer than 200 new jobs.
  - Apple: $8.6 million in tax abatements to create 3,600 jobs
  - 7 of the deals involved < $1 million in rebated tax.
    - 3 of those deals suspended for noncompliance.
- Formal incentive contracts
  - City hires outside firm to do detailed compliance reviews.
  - City holds the money, forcing company to perform to contract.
- 94% of companies moving in or expanding since 2004 got no deal.
- Companies receiving deals:
  - $ billions in investment and thousands of jobs.
  - Samsung's investment alone: $7B in factory & equipment.

Source: K. Ladendorf, "City rarely uses tax incentives." *Austin American-Statesman*, April 24, 2012

Case 2: Should Providence have paid 38Studios to come to town in 2012?

- Failed video game development company owned by former major league pitcher.
  - Loan defaults leave Rhode Island taxpayers on hook for $151 Million.
- Pros: No apparent pros.
- Cons
  - Aimed at stealing jobs from neighboring Massachusetts; a senseless zero-sum game.
  - Risk that this company's business model could not survive without public support.
  - Inadequate transparency: A state official asked 38S for a job, weeks after state made the grant.

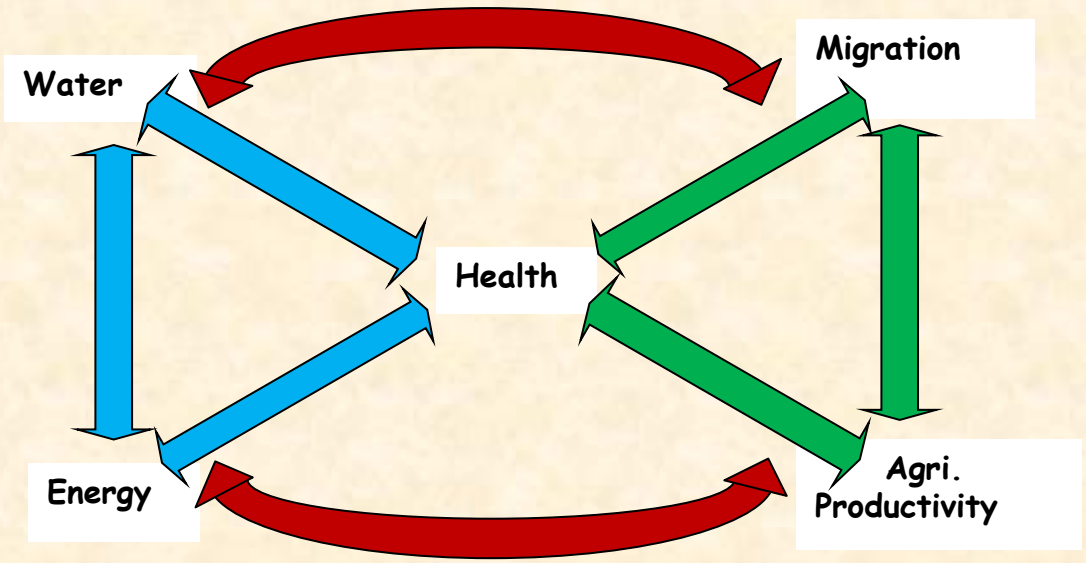
Trends in Cluster Initiatives



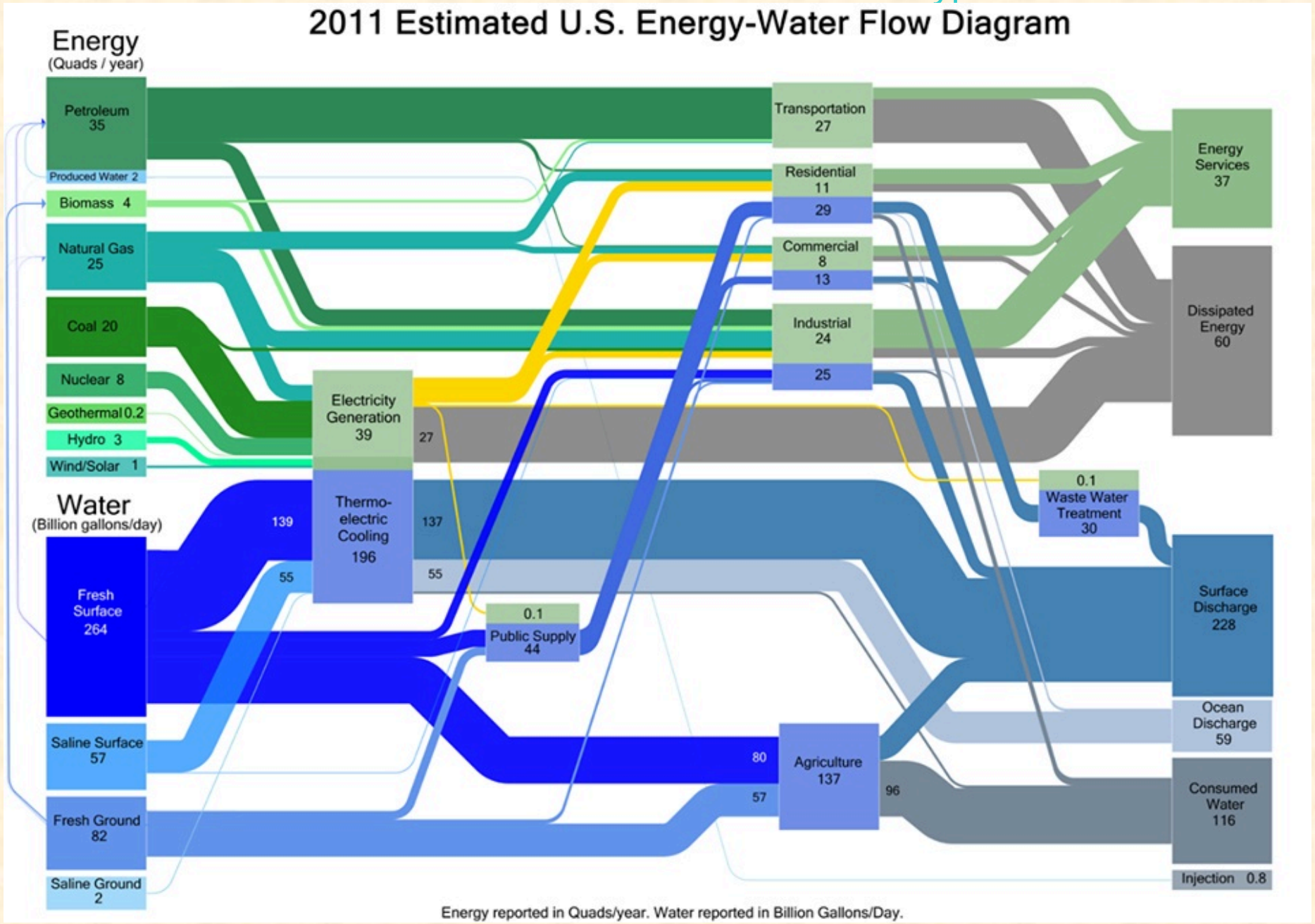
- 90+% will fail. Reasons include:
  - No continuity of leadership and/or funding
  - No anchor company, no university centers of excellence
  - Bad comm/transp infrastructure
- Some encouraging successes in ‘unlikely’ places
  - India, Pakistan, Iran, etc
  - Due to historical conditions, concentration of management talent, strong universities, massive government expenditure, globalized markets

What's next: Water's inevitable role in superclusters

- Inseparable linkage of food, water, and energy with each other & with the main effects of climate change...
- Means water clusters must soon reach out to energy, health, and food clusters!
- See also "How Water Supply is Impacting the Future of Manufacturing" www.redhotlocations.com/report/2014/aug/water.cfm



https://www.facebook.com/energygov/photos/a.289831064381327.73609.134652126565889/780632005301228/?type=1&theater



For another perspective, and a nice junket with my friendly competitor...

- TECHNOPOLICY NETWORK 3-day course in Managing an international technology cluster
  - “From regional strength towards international excellence”
  - 10-12 November 2014, Paris
  - http://technopolicy.net/index.php/activities/upcoming-activities/upcoming-training

General Informatics can work with you

- To **advise** on organization & management of your cluster initiative.
- To **forecast** water technologies and markets.
- To provide a **decision tool** for offering **relocation incentives** to companies.
- To **design** collaboration consortia among water innovation clusters.

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Thank you

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