



BioBusiness in Asia:

Global Value Chain Partnering Opportunities and Challenges

Fall 2004 Seminar Series

“Cross-border partnering in Asia: Globalization challenges for high-tech industries”

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Proposed Agenda



- ✓ **Background: BioBusiness and Asia**
- ✓ **Global Value Chain Partnering**
- ✓ **Making Things Happen**

About Asia: Some Facts and Figures



Largest continent (> 60% of world's population). Great socioeconomic diversity

- Range: least developed → most developed
- Fastest growing economies – also, Asian BioBusiness market expanding rapidly

Some Asian concerns may be amenable to bio-based solution

- Population concerns – from contraception to fertility concerns
- Healthcare concerns – infectious disease, epidemiological transition, rapidly aging populations
- Agriculture and food supply concerns – reduction in arable land with urban development, denatured soil, need for higher yields
- Environmental concerns – meeting rising energy needs, pollution concerns

Potentially valuable Asian resources

- Rich biodiversity
- Traditional and folk medicines – TCM, Ayurveda, South East Asian, Unani (Arabic) traditions
- Increasingly educated and technologically skilled workforce

About BioBusiness



Definition

Commercial activity based on an understanding of life sciences and life science processes:

- Biomedical
- Agri-veterinary and Food
- Environmental/Industrial
- Related Areas (bioinformatics/computational biology, bioengineering, nanobiotechnology, etc)

Market

BioBusiness already constitutes over 25% of global GDP and employs some 40% of the world's labor force:

- Accounts for over US\$9.7 trillion (2001)
- Employment figures skewed by > 50% engaged in subsistence level farming and low wage food processing in developing countries (including China and India)

Some Considerations: Asia and BioBusiness



Asia is a late entrant in the BioBusiness revolution:

- USA – late 1970s/early 1980s
- Canada – early 1990s
- Europe – mid 1990s
- Australia – late 1990s/early 2000s
- Asia - ? circa 2005

Starting late has its benefits:

- learn from mistakes of those who went before (shorter learning curves)
- scientific/knowledge/technology base more mature and better validated
- opportunity to partner and license pre-existing technologies to jumpstart innovation

Some “Summit” Innovation and Value Creation Opportunities in Asia



Biomedical

- ✓ Mainstreaming traditional medicines
- ✓ From generic → proprietary formulations
- ✓ Nutraceuticals, cosmeceuticals
- ✓ Diagnostics – infectious/tropical disease
- ✓ Medical informatics and Health-IT
- ✓ Wellness and disease management
- ✓ Contract research and contract services
(including clinical trials, contract mfg, etc)

Agri-Vet and Food

- ✓ Organic farming
- ✓ Plantation of high demand nutraceuticals, cosmeceuticals, biomaterials
- ✓ Transgenics
- ✓ BioPharming
- ✓ Diagnostics – infectious disease

Environmental/Industrial

- ✓ Biomaterials and bioplastics
- ✓ Sustainable energy
- ✓ Pollution control and environmental clean-up technologies
- ✓ Waste management
- ✓ New industrial enzymes/applications

Other Key Areas

- ✓ Bioinformatics/computational biology
- ✓ Outsource information management and services
- ✓ Molecular modeling and simulations
- ✓ Systems biology
- ✓ Life science education and human resource development

Snapshot: BioVentures in Asia



Region	Estimated Number of BioVentures (2001)	Per Capita (per mil pop) 2001
USA	1,500 (2)	6.0
Europe	1,800 (1)	4.7
Asia	1,200 (3)	0.4
Country		
Korea	300 (1)	6.4
Israel	160 (2)	33.3
Australia	150 (3)	7.8
Japan	130 (4)	1.1
Taiwan	120 (5)	5.1
China	100 (6)	0.1
Hong Kong	50 (7)	7.0
Singapore	30 (8)	6.9
India	30 (8)	<0.1
Malaysia	20 (10)	1.0

Source: BioEnterprise Asia, original research, 2001-4



Global Value Chain Partnering

Understanding Global Value Chain Partnering



Global Value Chain Partnering focuses on how states, organizations and corporations can best capitalize on their people, competencies, resources and networks to maximize value creation, including:

- ✓ maximizing asset utilization
- ✓ maximizing returns on investment
- ✓ maximizing shareholder returns
- ✓ maximizing benefit to consumers

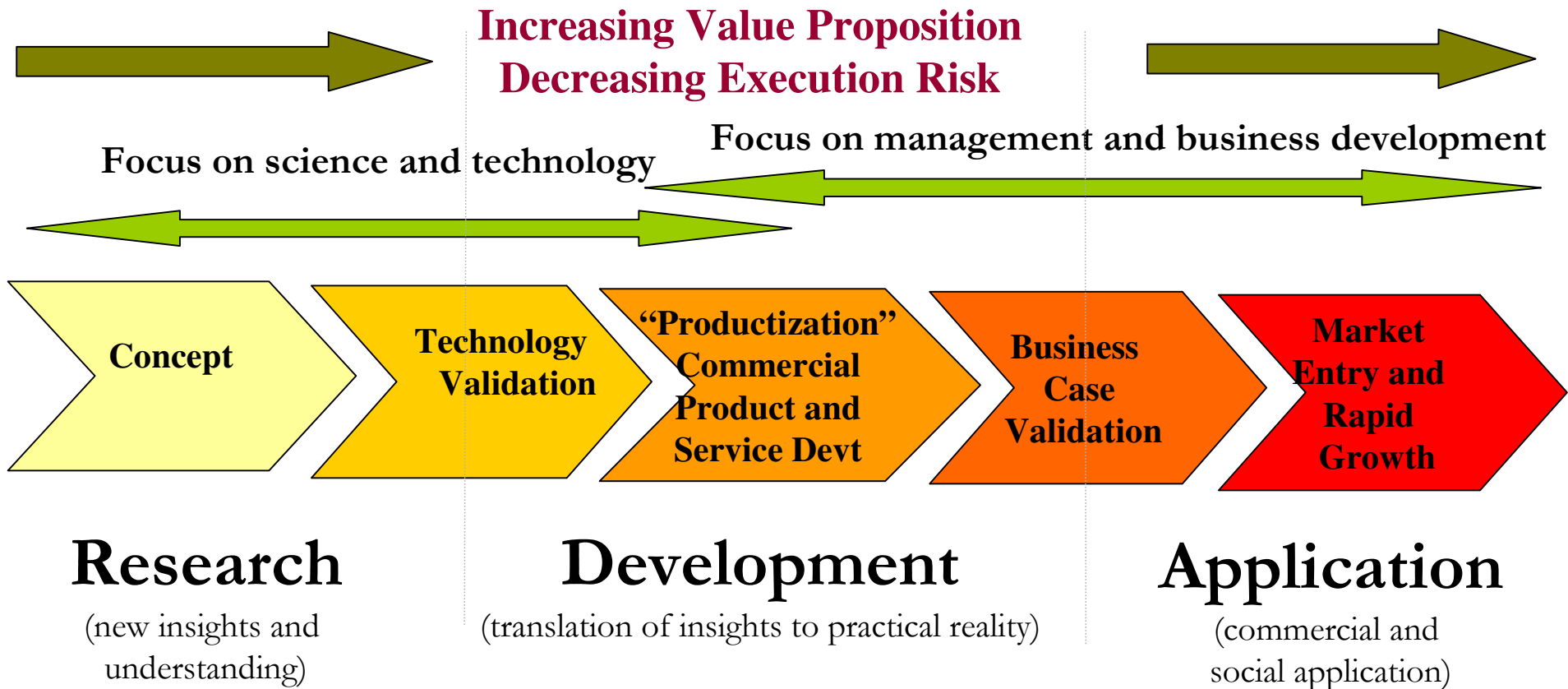
Two key areas in partnering:

- public-private partnership
- collaborative partnering

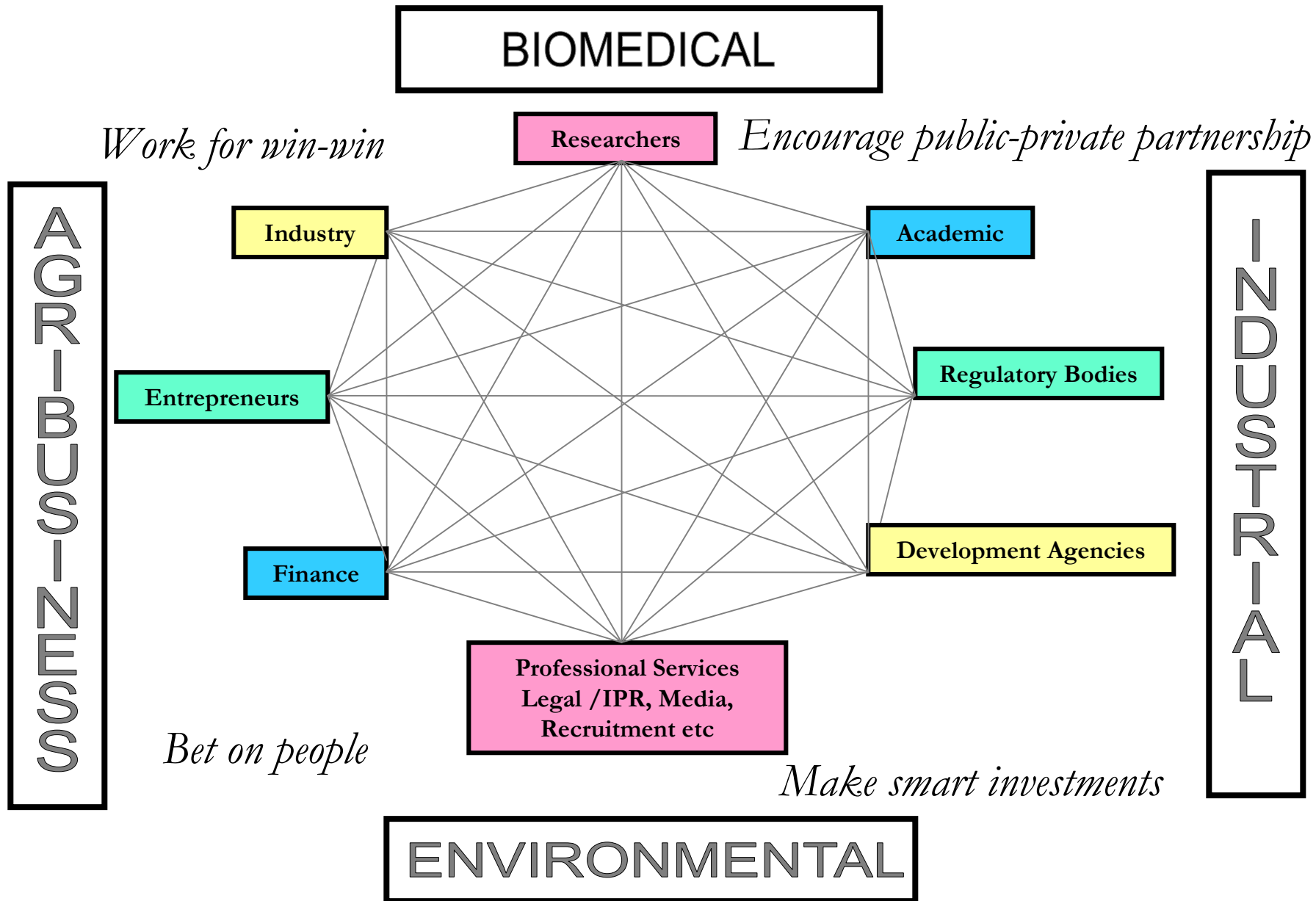
Innovation-based BioBusiness Technology/Enterprise Value Creation Pipeline



responding to market realities



BioPartnering: Capturing the Value Proposition



Collaborative Partnering: Why Enter Smart Strategic Alliances and Partnerships?



International technology players are actively seeking strategic alliance and partnership opportunities across the innovation and development pipeline:

- collaboration in new product development
- clinical trials and product registration
- manufacturing alliances
- marketing/distribution

Collaborative Partnering: Who will be the Asian Partnership Winners?



Asian players who will be most successful in securing high value partnership and alliance opportunities will be those who:

- are committed to respecting and safeguarding intellectual property rights of their international partners
- demonstrate the necessary technical competence and capabilities to successfully manage and implement technology transfer and partnering initiatives;
- possess strong market and business development capabilities in the region
- are prepared to share the risk of new product development for mutual value creation

A Note on Intellectual Property Management in Collaborative/Partnering Relationships



- o Intellectual Property Management in Partnerships is EASY (done right!)
- o The fundamental principle is that IP management must be based on mutual respect.
- o The golden rule of collaborative IP management:

“What is yours is yours. What is mine is mine. What we develop together belongs to us collectively”

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- o To use shared IP, typically parties have the right to use the IP for internal purposes but would simply need to inform and request permission from other partners if they wish to use IP for non-commercial reasons, and should ensure that other parties share in commercial benefits are in proportion to their ownership of the shared IP.



Making Things Happen

Making Things Happen



- ✓ **Asia is investing heavily in the life sciences and biotechnology: laying the foundation for future growth and value creation**
 - Opportunity to help build on growing infrastructure and put in place the 4 “Smarts” (see later)

- ✓ **Capturing Strategic Partnering and Alliance Opportunities**
 - R&D alliances – product development, clinical trials
 - Manufacturing alliances
 - Marketing/distribution alliances

- ✓ **Capturing Asia’s tremendous arbitrage potential through outsourcing/contract work**
 - Lower cost of doing business
 - manufacturing of pharmaceutical and biological products in Asia
 - clinical trials and product registration
 - Capitalizing on time-to-market advantages
 - as low as 2-4 years from IND to registration versus 5-8 years or longer in the US and Europe

- ✓ **Financing Opportunities**
 - VC++
 - Strategic private equity investment (including M&A)
 - IPO and financial valuation arbitrage

Conclusions



1. Asia is fast approaching critical mass in BioBusiness value creation as innovative technologies mature and come to fruition.
2. BioBusiness success will come to those Asian players who create a confluence of enlightened investment (*smart money*) in bioinnovation (*smart ideas*) and bioentrepreneurship (*smart people*) – and who are well plugged in to working synergistically with key players around the world (*smart alliances and partnerships*).
3. There is clear opportunity and need to invest in building up the requisite skills, knowledge and competence in Asian countries to drive innovation and capture the value that the BioBusiness revolution will bring.
4. Asia is well placed to strategically enter into collaborative partnering relationships in building global value in the BioBusiness arena.

