Bio-Clusters and University Spin-offs

International Symposium on Biotechnology Clusters in Japan and Germany

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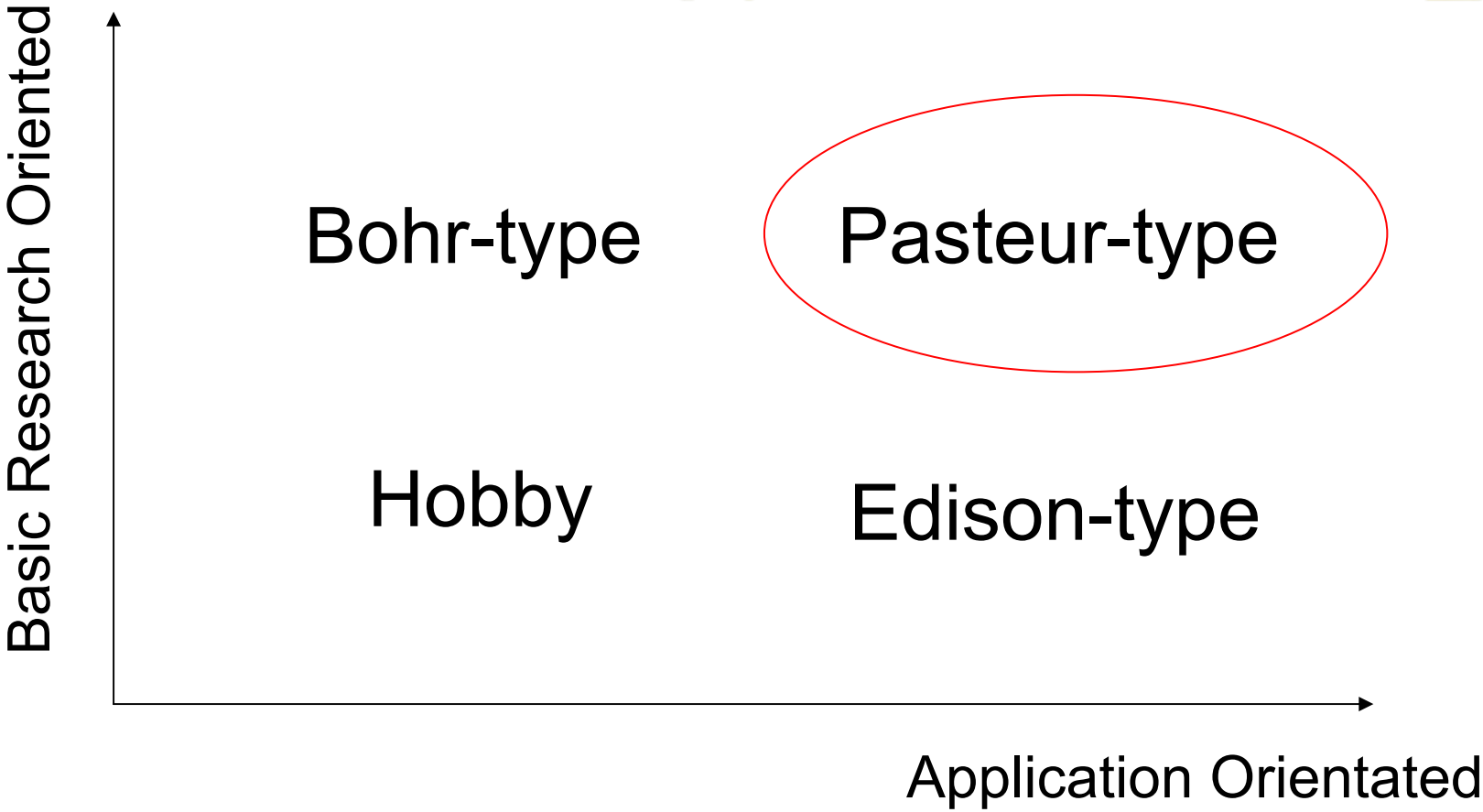
Increasing Importance of Science-based Technology

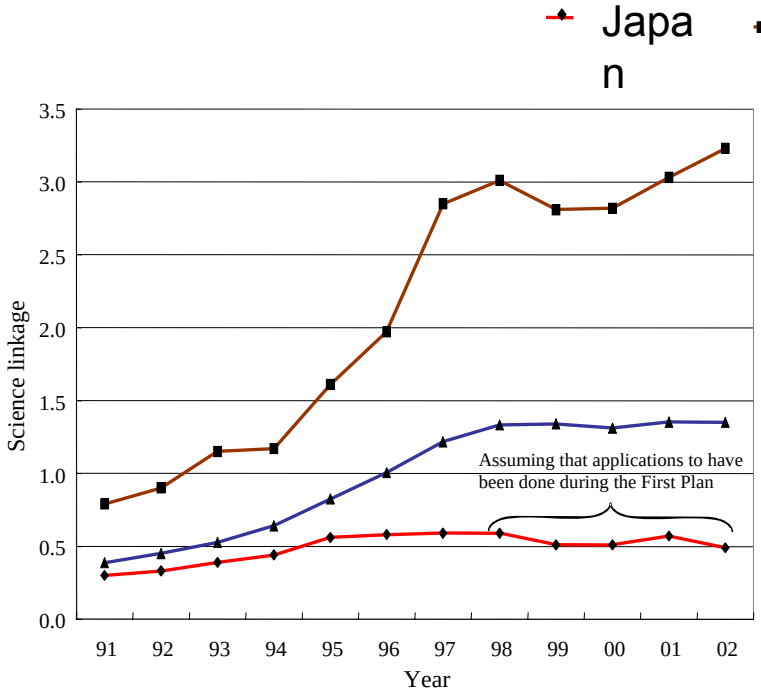


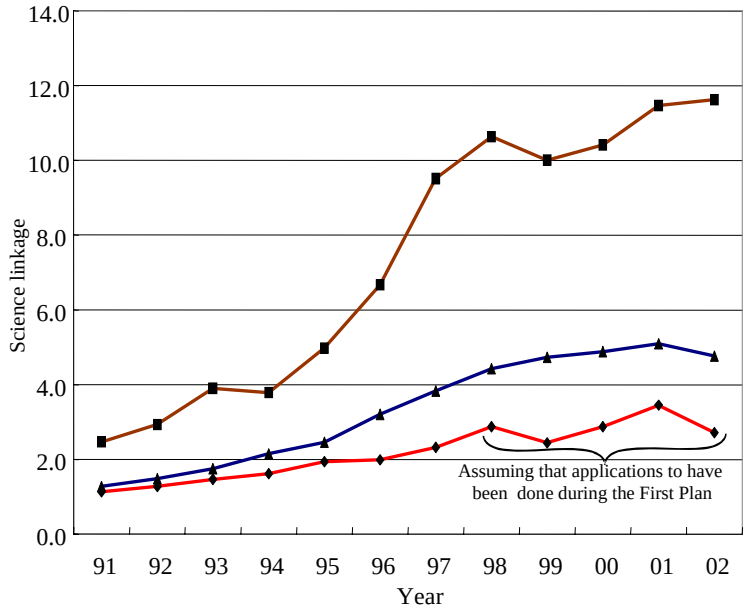
Note. The author drew this diagram based on Stokes's R&D matrix.

Science Linkage in U.S. Patents

All Areas

Life Sciences





*: “Science linkage” is the number of cited scientific papers in the U.S. patent examination reports per registered patent. It indicates a frequency of the use of scientific knowledge among patents.

Data: CHI Research Inc. “International Technology Indicators 1980-2002”

Source: NISTEP

High Potential of Biotech University Spin-offs in Japan

Medical Science Researchers in Japan

(in 2001)

Organization	Universities	Research Institutes	Industry	Total
Ratios (unit:%)	84	3	13	100

Source: Kondo (2003).

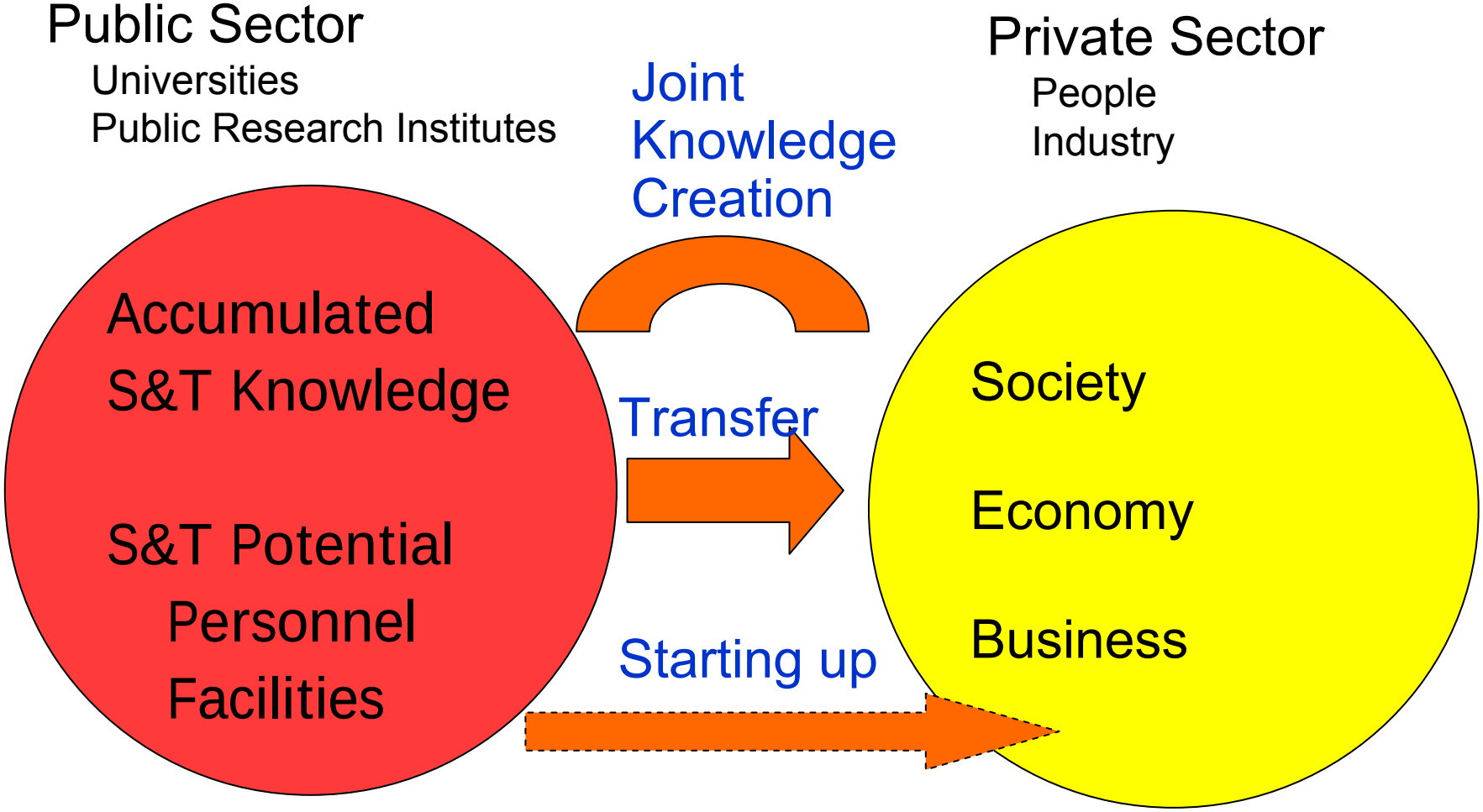
University Researchers in Japan

(in 2001)

Fields	Physical Sciences	Engineering	Agricultural Sciences	Medical Sciences	Total
Researcher ratios (%)	15	26	7	52	100

Source: Kondo (2003).

Question:
How can we utilize S&T for society, economy and business in a national innovation system?

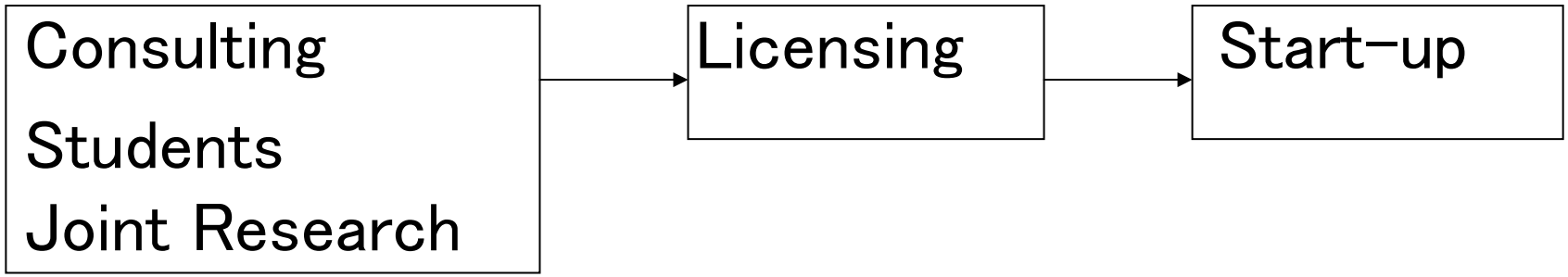


Source: M. Kondo, University-Industry Partnerships in Japan, Proceedings of Symposium on "21st Century Innovation System for Japan and the United States," Tokyo, January 10-11, 2006.

Stage-by-Stage Penetration

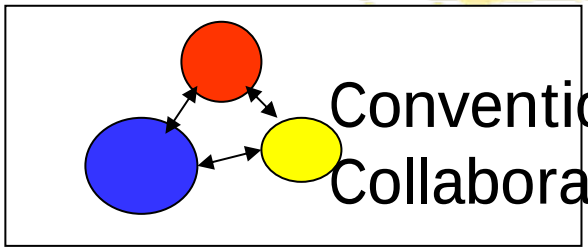
An Enterprise to Overseas Market

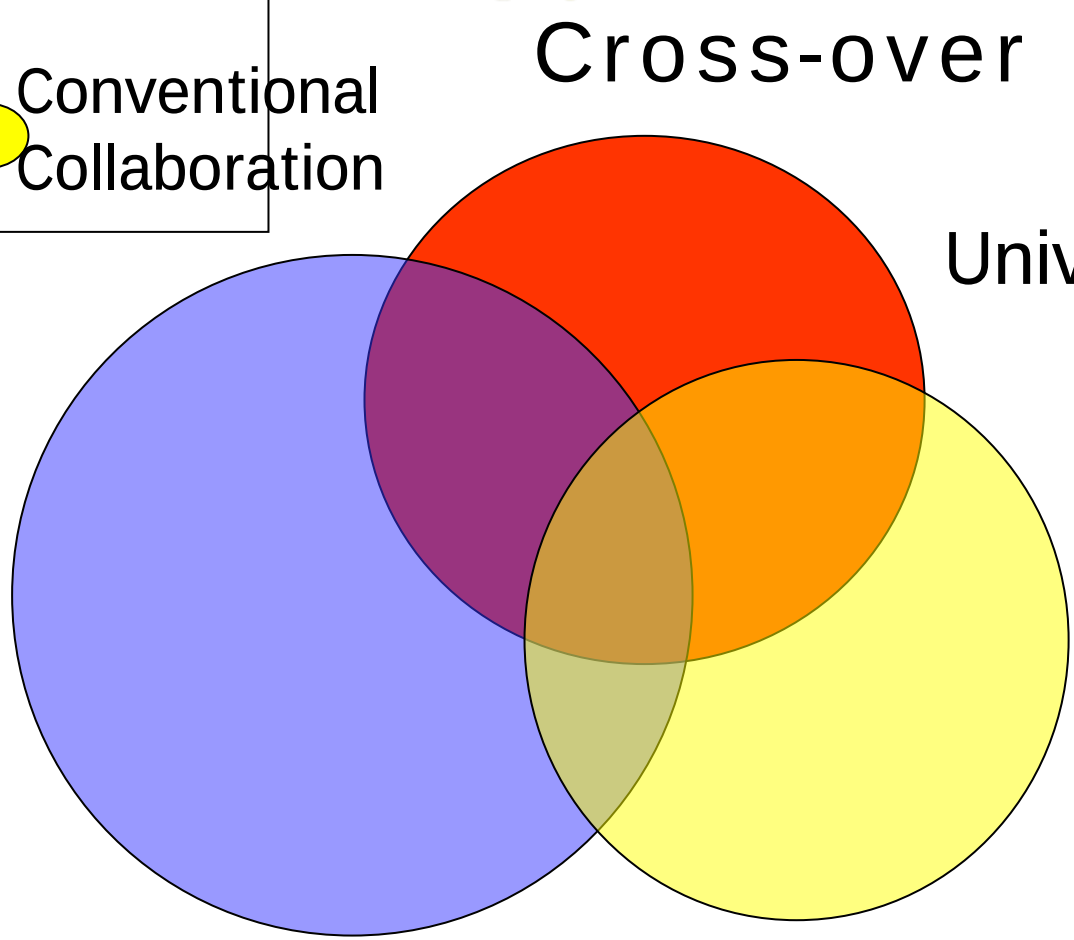
A Professor (or a Researcher) to Market/Society



Source: M. Kondo, Policy Innovation in Science and Technology in Japan –from S&T Policy to Innovation Policy-- (in Japanese), *J of Science Policy and Research Management*, Vol.19, No.3/4, pp.132-140, 2004.

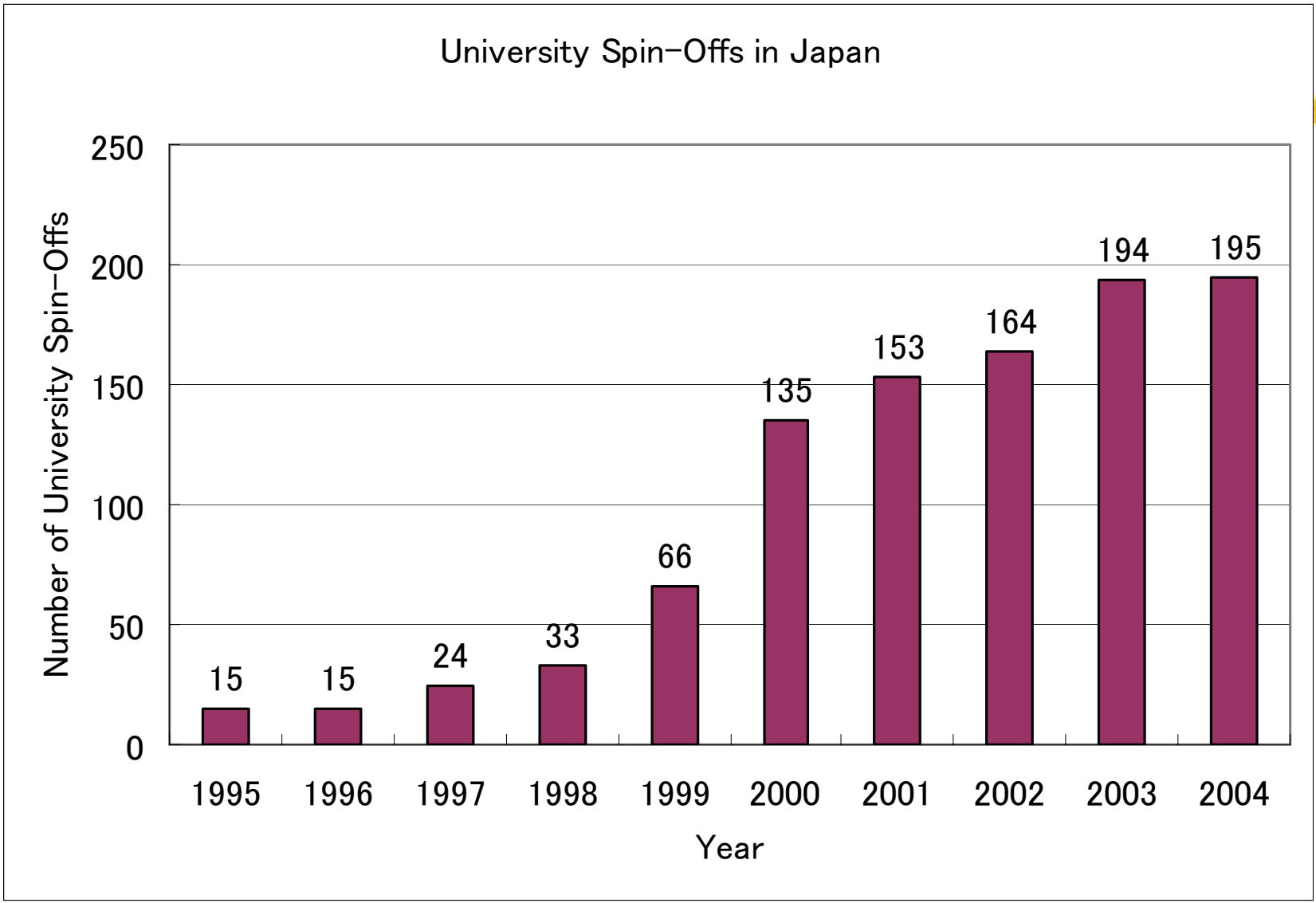
Cross-over among Industry, Universities and Public Research Institutes





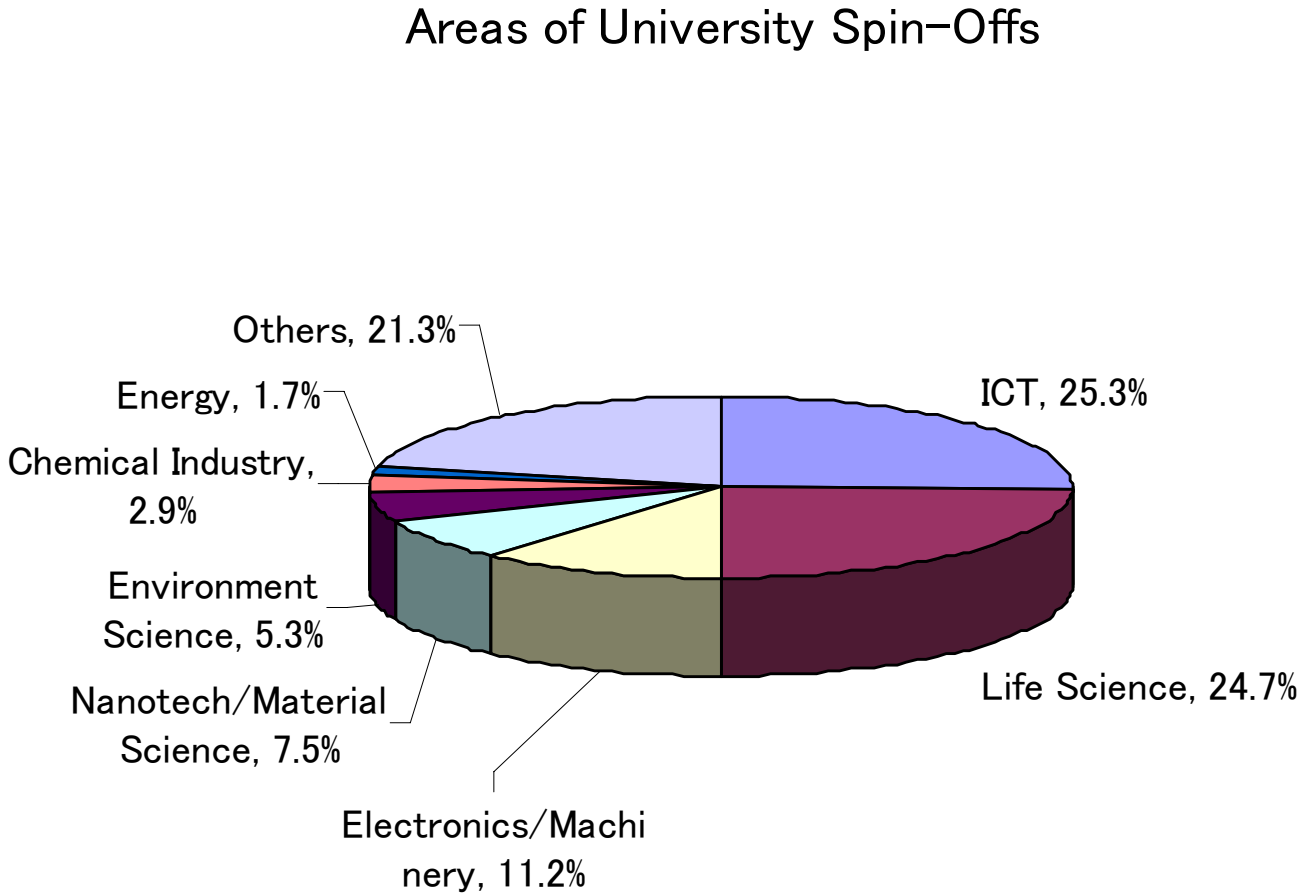
Source: M. Kondo, University spin-offs in Japan, Asia Pacific Tech Monitor, March-April 2004, pp.37-43, Asian and Pacific Centre for Transfer of Technology, ESCAP, UN.

University Spin-offs in Japan



Source. The survey conducted by the author and Prof. Kikumoto and Dr. Shinya in 2005.

Areas of University Spin-Offs



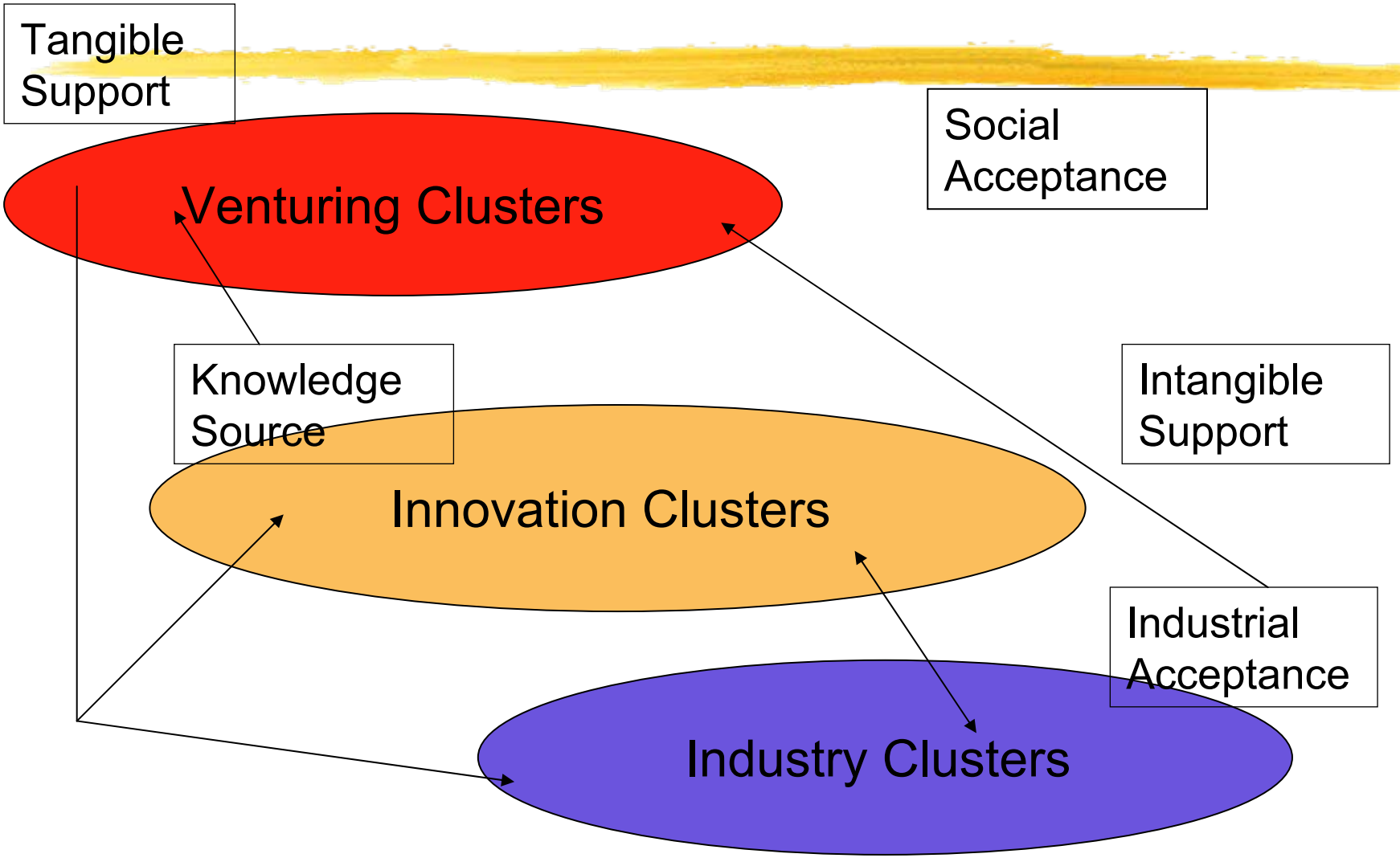
Source: The survey conducted by the author and Prof. Kikumoto and Dr. Shinya in 2005.

Venturing Clusters

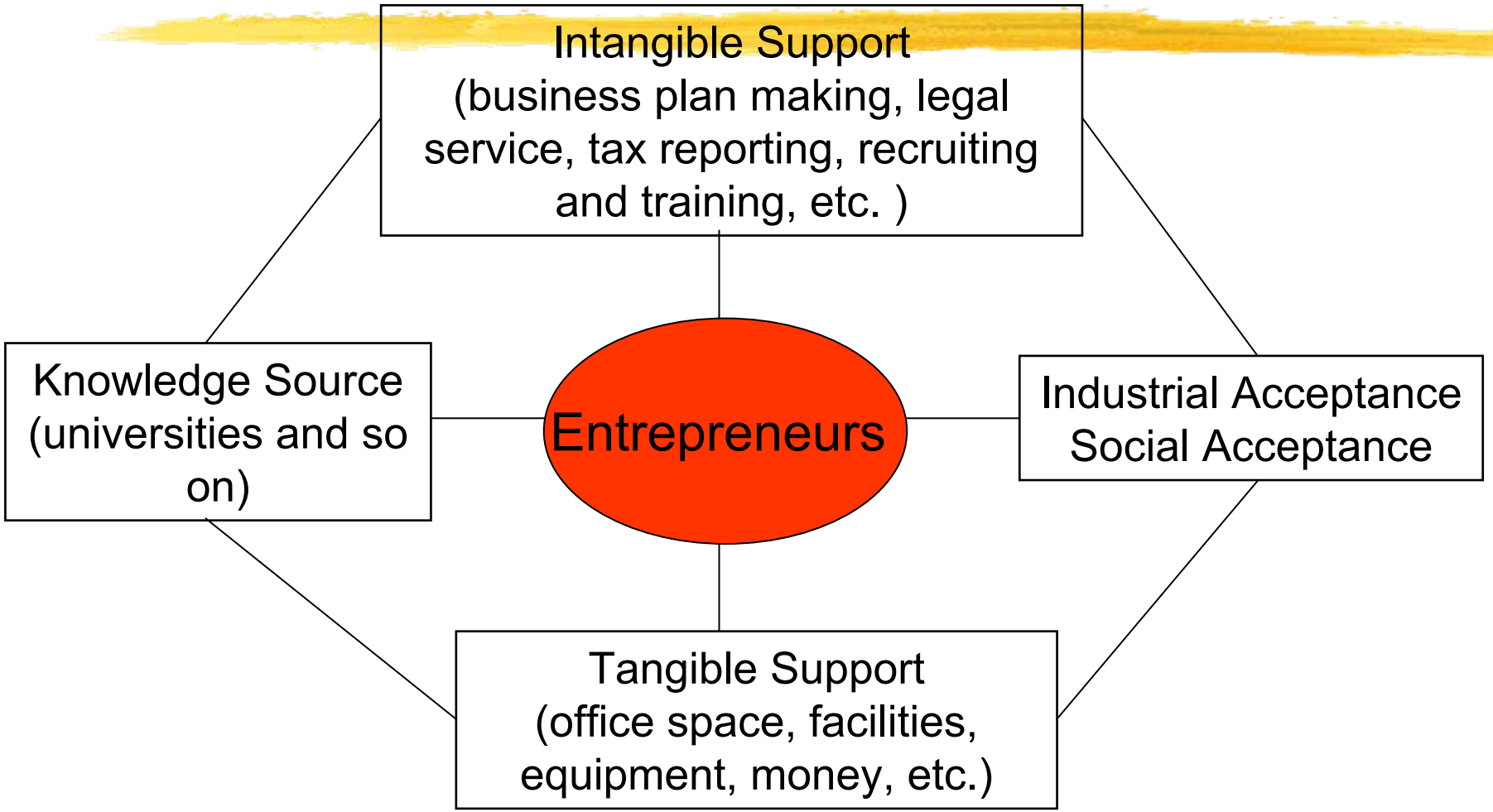
	Industry Clusters		**Venturing Clusters**
		Innovation Clusters	
Function	Production	Innovation	**Start-up creation**
Output	Products	New products and processes	Start-ups
Objective	Productivity and competitiveness	Regional interactive innovation system	Regional vitalization through start-up creation
Players	**Companies and industry support institutions**	**Research institutes, universities, company laboratories, and innovation support institutions**	Institutions that possess start-up support functions
German Policies	BioRegio (Including start-up policy)	InnoRegio	EXIST(University-based start-ups)
Japanese Policies	Industrial Cluster Project (Including start-up policy)	Knowledge Cluster Initiative	—

Source: M. Kondo, 'Bencha Kurasuta (Venturing Clusters),' *Japan Ventures Review* No.3 (2003) 101-107.

Interrelations among Three Clusters



Venturing Cluster Model



Source: M. Kondo, 'Bencha Kurasuta (Venturing Clusters),' *Japan Ventures Review* No.3 (2003) 101-107.