

## Examples of typical overseas clusters (high-tech type) 1

Country	Area	Main fields	Economic scale (area, population, etc.)	Main universities and research institutes	Main companies and ventures	History of development
U.S.	Silicon Valley	Information communication	Area with the south-north length of about 50km and the east-west width of about 15km, with population of approx. 2.3 million (Santa Clara County)*1	Stanford University (with some distance, UC Berkeley, UCSF) Great many venture companies exist.	Approx. 5,000 high-tech companies (about 1,500 manufacturers, 2,000 R&D and service companies)*3 HP, Intel, Oracle, Sun Microsystems, etc.	Science parks were established in 1950s. Spin-off from Fairchild. Major companies from around the world set up research institutes in 1990s.
	Austin (Texas)	Information communication	Workforce: about 100,000 (mainly high-tech companies)*2	University of Texas at Austin	About 1,750 high-tech companies including Dell.*2	National semiconductor research project in 1980s. George Kozmetsky's activities led to many IT ventures.
	Boston city area	Medical apparatus, biotechnology	Population of about 700,000 concentrate along Route 128 (Boston + Cambridge)*4	MIT, Harvard University, Boston University, etc. Major hospitals including Massachusetts General.	250 bio-related companies (18% of US total).*3 65 of them are venture companies. 100 medical device companies including Biogen and Genzyme.	Harvard and MIT researchers set up bio ventures one after another in 1970s and 1980s.
	Research Triangle Park (North Carolina)	Pharmaceutical biotechnology	Three cities of Raleigh, Durham and Chapel Hill, with the north-south length of 20km and the east-west width of 30km. Workforce: about 40,000.*2	Three universities: North Carolina State, Duke, and North Carolina. National Institute of Environmental Science, Research Triangle Institute, etc.	Core US research institute of Glaxo Smith Kline. Approx. 140 bio ventures.*1 65 bioresearch-related service companies.	The research park was set up by the State in 1960s and was developed at the state government initiative. Spin-offs from GSK increased in 1990s. The state promotes bio ventures.
Britain	Cambridge	Biotechnology	Area within 50km radius of central Cambridge. Workforce: 32,000+*5	Cambridge University, Cambridge Science Park, St. John's Innovation Centre	1,250 high-tech companies, including about 150 bioresearch-related companies*5	Successive spin-offs from Cambridge University in 1980s. Next-level spin-offs from them in 1990s.
	Northeast England	Nanotechnology (new)	Population: about 2.6 million (about 13,000 were employed by new high-tech enterprises)	Five universities including Durham, Newcastle, Northumbria. COE project.		One NorthEast Development Agency established in 1999. COE development in five fields including nanotechnology in collaboration with five universities.

\*1 2003, \*2 1999, \*3 1997, \*4 2004, \*5 1998

Source: Various data compiled by Mitsubishi Research Institute, Inc.

## Examples of typical overseas clusters (high-tech type) 2

Country	Area	Main fields	Economic scale (area, population, etc.)	Main universities and research institutes	Main companies and ventures	History of development
Germany	Outskirts of Munich (especially Martinsried area)	Pharmaceutical biotechnology	Population of Munich: about 1.3 million. 20% of biotechnology workforce in Germany is concentrated there. Bio ventures are especially concentrated in Martinsried, 10km from central Munich.	Munich Institute of Technology, Ludwig Maximilian University, Max Planck Institute of Neurobiology, National Research Center for Environment and Health, etc. BioM also plays an important role. About 20 venture companies.	Bayer, Hoechst, Boehringer-Ingelheim. About 100 bio-related companies. 31 bio ventures including MediGene.*1	“BioRegio”, an industrial cluster policy to promote bio-industry development in Germany was launched in 1996, based on the concentration of Max Planck Society’s research institutes.
Finland	Oulu	Information communication, biomedical	Population: about 124,000*2. More than 7,500 of them work in Technopolis enterprises.	Oulu University, Technical Research Center of Finland (VTT), Technopolis	More than 500 high-tech companies reside in Technopolis. Related companies of Nokia, etc.	Head of VTT announced development plan of Oulu City utilizing a science park in 1980. Based on it, Technopolis launched incubation activities.
France	Sofia Antipolis	IT, environment, life science, etc.	About 24 square kilometers. Employees: 22,000	Centre National de la Recherche Scientifique [National Center for Scientific research], Nice University science laboratory, Paris Ecole des Mines (graduate school), etc.	About 1,100 companies including IBM, Air France, and France Telecom.	Plan developed in 1960s. Designated as a national project in 1972. Took current form in 1980s. Ventures have been created since 1990s.
South Korea	Daedeok Research Park	High-tech	Employees: about 17,000. Students: about 30,000. About 5 square kilometers. Population of Taejon City is about 1.3 million.	59 research institutes: 25 private research institutes, 30 government-related research institutes, 4 institutions of higher education; and 7 government organizations	300 tech ventures have been created since 1995, 130 of them reside in incubation facilities within universities.	National project whose plan announced in 1971. Spin-offs activated since Asian currency crisis of 1997.
China	Zhongguan cun (Northwest Beijing)	High-tech	Area of 340 square kilometers in northwest Beijing. More than 360,000 people work in companies there.*1	30 universities including Qinghua and Beijing. More than 200 national research institutes	10,000 companies. The number is increasing by 2,000 companies each year.	Designated as high-tech industry development area by the government in 1988, and as science park special zone by Beijing city in 1999.

Reference: The U.S. Competition Committee, led by Michael Porter, undertook 4 case studies including Research Triangle in 2001. National Institute of Science and Technology Policy, an affiliated organization of Ministry of Education, Culture, Sports, Science and Technology, compiled a “research on successful factors and promotion policies of regional innovations”, in which Munich, Boston, Zhongguan cun and Daedeok are taken up. Silicon Valley and Boston City zone have been frequently cited as cluster models since the publication of “Regional Advantage: Culture and Competition in Silicon Valley and Route 128” by Annalee Saxenian.

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## Outline of overseas cluster-related policies of central governments

	Britain (1) Cluster plan by Regional Development Agencies (RDA)	Britain (2) Micro and Nanotechnology Network	Germany (1) BioRegio	Germany (2) INOREGIO	Finland Center of Expertise
Period	1999 -	2003 - (2008)	1996 - 2001	1999 - (2006)	1994 - (2004)
Policy aim (corresponding to types on the previous page)	Enhancement of regional competitiveness (3, 4)	Promotion of nanotech industry by the central government (1, 2)	Promotion of bio industry by the central government (1, 2)	Development of former East Germany area (3, 4)	Enhancement of international competitiveness, and regional promotion (4)
Presiding ministry and budget	Department of Trade and Industry (DTI). 10 billion yen (for local innovation fund in 2001)	DTI. About 18 billion yen (for 6 years: 10 billion yen for research, 8 billion yen for base)	Federal Ministry of Education and Research. About 12 billion yen (for 5 years)	Federal Ministry of Education and Research. About 28 billion yen (for 6 years)	Ministry of the Interior. About 2.8 billion yen (total amount of government basic fund)
Target region	Whole country (each of 12 RDAs has about 10 clusters)	Whole country (promoted in collaboration with RDA)	Designated 3 special areas (Munich, Heidelberg, etc.) and 14 other areas	Designated 23 areas including Dresden and Potsdam	Designated 22 areas (8 areas for phase 1, 8 areas for phase 2, 6 areas for phase 3). Oulu, Tampere, etc.
Central government policy	Promotion led by RDA, affiliated organization of DTI. Provision of local innovation fund.	Assistance for industry-academia joint research. Assistance for development of research facilities. (Recommendation of RDA is required)	Assistance for industry-academia joint research projects applied for by regions. Assistance for the establishment of public venture companies.	Assistance for industry-academia joint research applied for by regions	Provision of basic funding (as pump-priming policy for investment)
Main local promotion body	RDA (special public corporation resulting from integration and reorganization of central government's local agencies)	RDA coordinates. In some cases RDA establishes research institutes with its own fund.	Public corporations (state government initiatives, city initiatives, etc.)	Public corporations (university initiatives, state government initiatives, etc.)	Technopolis (science park management company), etc.
Example of local cluster	Example: Southeast England	Example: Northeast England	Example: Munich	Example: Dresden	Example: Oulu
Resource	Many universities (including South London and Cambridge)	Newcastle University, Durham University, etc.	Max Planck Institute of Neurobiology, etc.	Dresden Institute of Technology	Oulu University, national research institute VTT (electronics field, etc.)
Promotion body	South East England Development Agency	Promotion organization Cenamps (established by One NorthEast, one of the RDA covering the northeast region of England)	BioM (established by the state of Bayern)	BioMet (collaboration with technology transfer company of Dresden Institute of Technology)	6 Forums managed by industry, academia and government centering on Technopolis
Project contents	<ul style="list-style-type: none"> <li>Development of 15 incubation facilities in the area</li> <li>Establishment of advisory groups according to cluster field to provide advice on commercialization</li> </ul>	<ul style="list-style-type: none"> <li>Promotion of large-scale industry-academia joint research projects (about 80 staff members)</li> </ul>	<ul style="list-style-type: none"> <li>Selection, application and implementation of industry- academia joint research projects</li> <li>Establishment of public venture companies for biotechnology field</li> </ul>	<ul style="list-style-type: none"> <li>Selection, application and implementation of industry- academia joint research projects</li> <li>Development of biotechnology center by state government</li> </ul>	<ul style="list-style-type: none"> <li>6 Forums managed by industry, government and academia centering on Technopolis</li> <li>Promotion of projects for practical application (application for cell phone, software, fusion of biotechnology and IT)</li> </ul>

Source: Various data compiled by Mitsubishi Research Institute, Inc.