IT Human Resource Development and Management in Korea

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aims

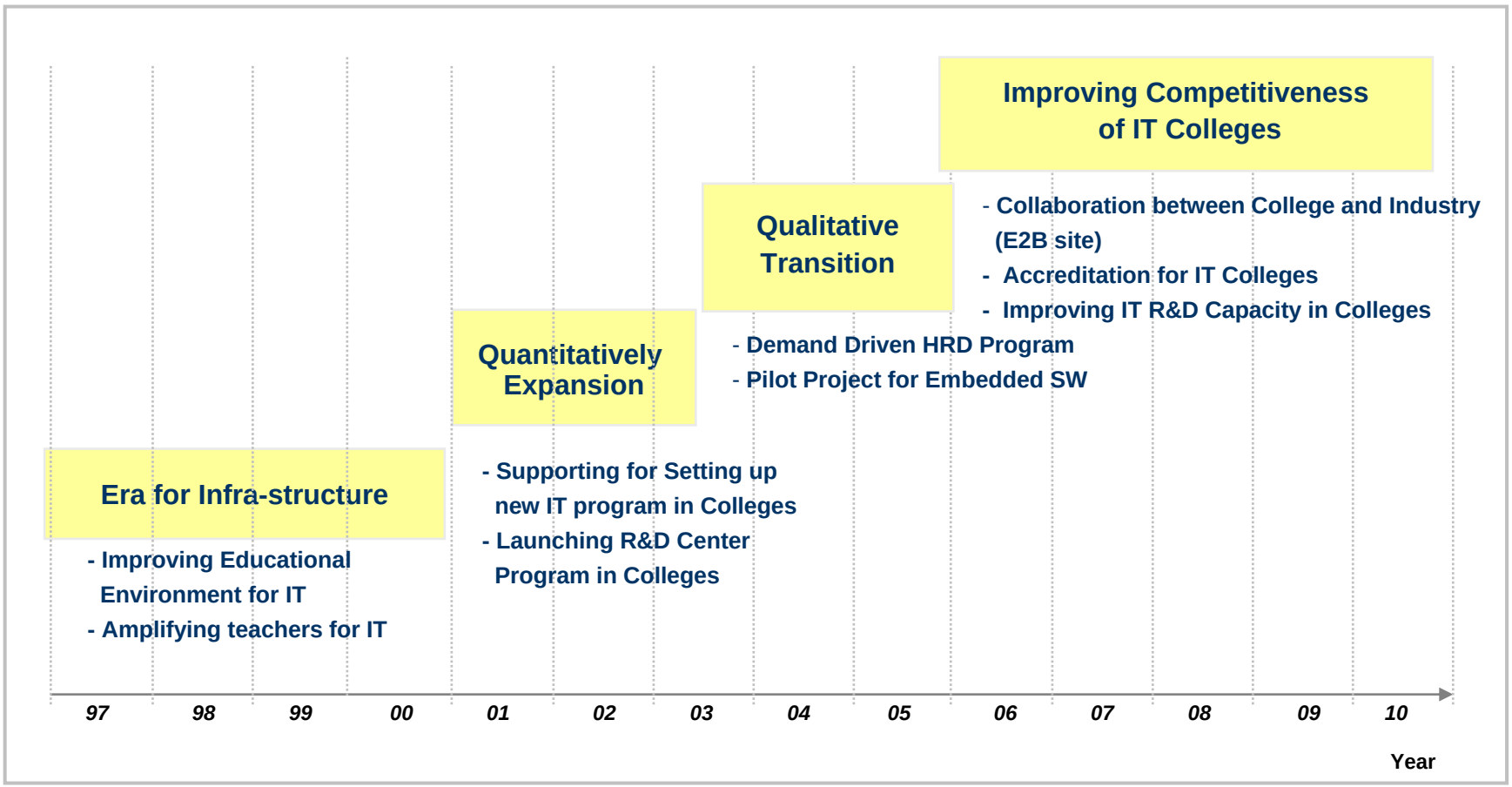
1. **to explain the Korean government's demand-driven IT Human Resource (HR) policy**
2. **to introduce the concept of "Supply Chain Management (SCM)" in the framework of IT Human Resource Development (HRD).**
3. **to introduces how Korea utilizes foreign IT HR.**
4. **to suggest the next step for IT HRD policy in Korea.**

In 2006, 4 main IT HR policies with the budget in brackets

- **Innovating the curriculum of undergraduate courses responsible for the demand of business (US$ 40.2million with US$ 1 equivalent to Korean unit 1000)**
- **Cultivating IT Research Center and core designer for SoC (US$ 56.4million)**
- **Providing researcher-retraining through the special program in university (US$ 15.6million)**
- **Strengthening IT HR related information based on specialized IT statistics (US$ 1million)**

In general, the Korean HRD policy for IT has been relatively well dapted to the change of labor. Present task is to improve competitiveness of IT colleges.

Trajectory of IT HR Program in Korea



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According to the recent manpower projection (Chang et al., 2005), the quantitative expansion and qualitative mismatches are anticipated.

Projection of IT HR based on occupation

(Unit: thousand people, %)

	2004	2005	2006	Annual growth rate(04-15)
IT Occupational HR	1,462	2,161	2,440	3.0
Whole Occupational HR	22,557	24,444	25,600	1.2

Supply-Demand difference of IT HR, for 2004-2015

(Unit: thousand people)

	Growth Demand(Dg)	Substitution Demand(Ds)	Supply (S)	Difference [S-(Dg+Ds)]
Polytech	228	33	418	156
Undergraduate	444	46	578	88
Graduate	220	11	167	-64
Total	892	90	1,163	180

Other studies anticipating skill-mismatch in IT HR.

Lee et al. (2005) : despite of the overall over-supplied IT HR, the shortage of IT experts will be serious.

The jobless rate of college and university graduates who majored in information technology was almost 68% in Feb. 2001(KISDI. 2003).

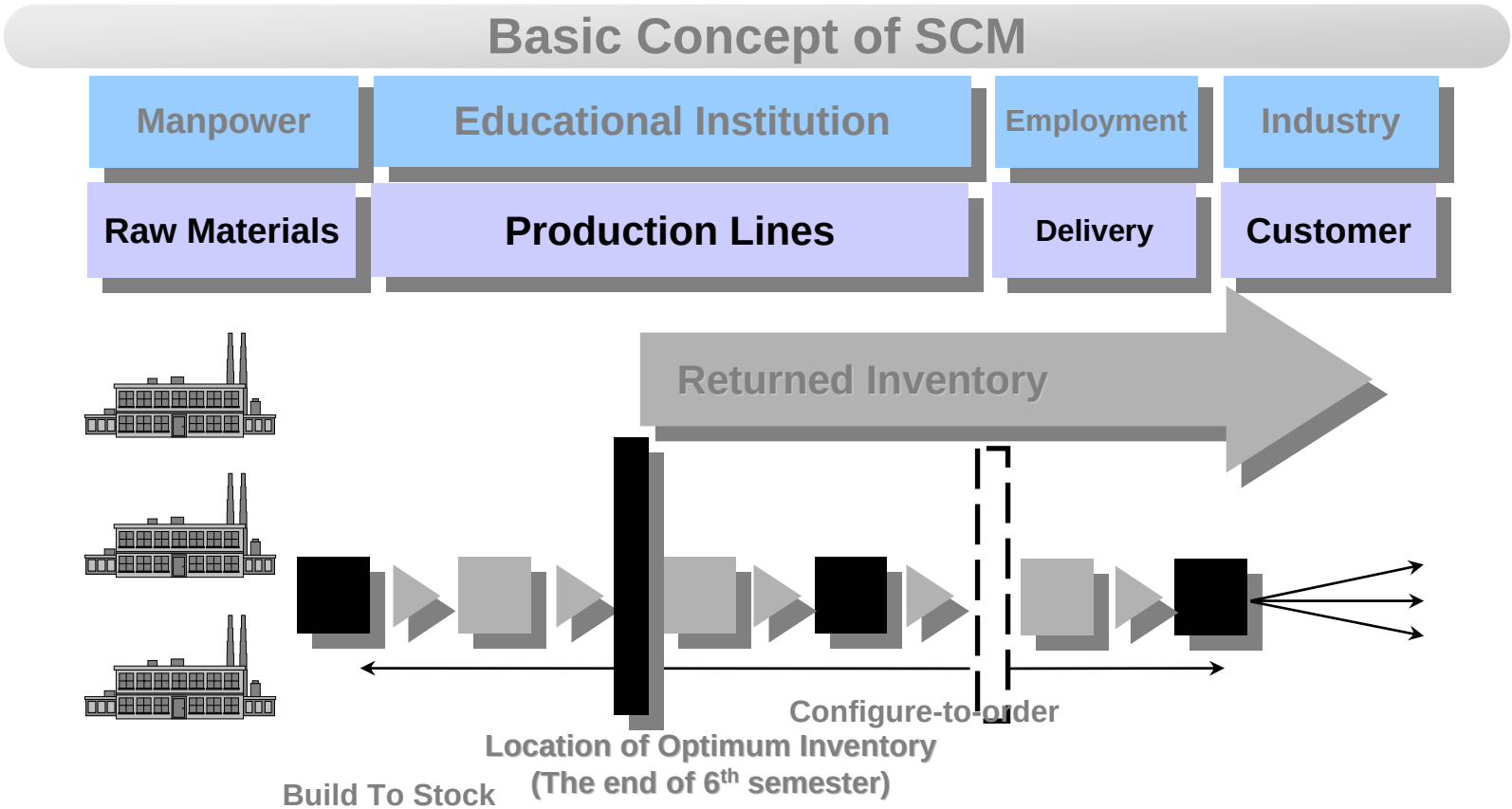
However, according to the survey, over 70% of the companies have a lot of problems in hiring a suitable person who they need (KIPA, 2003).

Companies will confront the lack of IT experts but the job-seekers will suffer to find the opportunity to work.

Additionally, the life cycle of IT HR is getting shorter as the speed of IT technology becomes quicker. Nowadays, the average life cycle of S/W human resource is about 7 years.

Therefore, the industry requests a systematic industrial recall in education (KIPA, 2003).

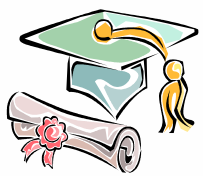
It is well known that the SCM perspective emphasizes global optimization of all activities along the supply chain and foremost satisfaction of customer demand (Andersen & Favrer, 1997).



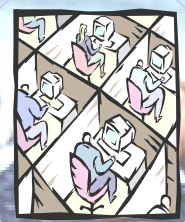
❖ Location of Optimum Inventory : The Processing Point at which IT Advanced Curriculum is influenced by the Demand of Customers

- Shifting from Supply-oriented to Demand-oriented

Academia



Industry



Strategic Meaning of IT HR

Suppy Chain Management

Optimization of Education Improvement Effect

Maximizing the Efficiency in Matching HR

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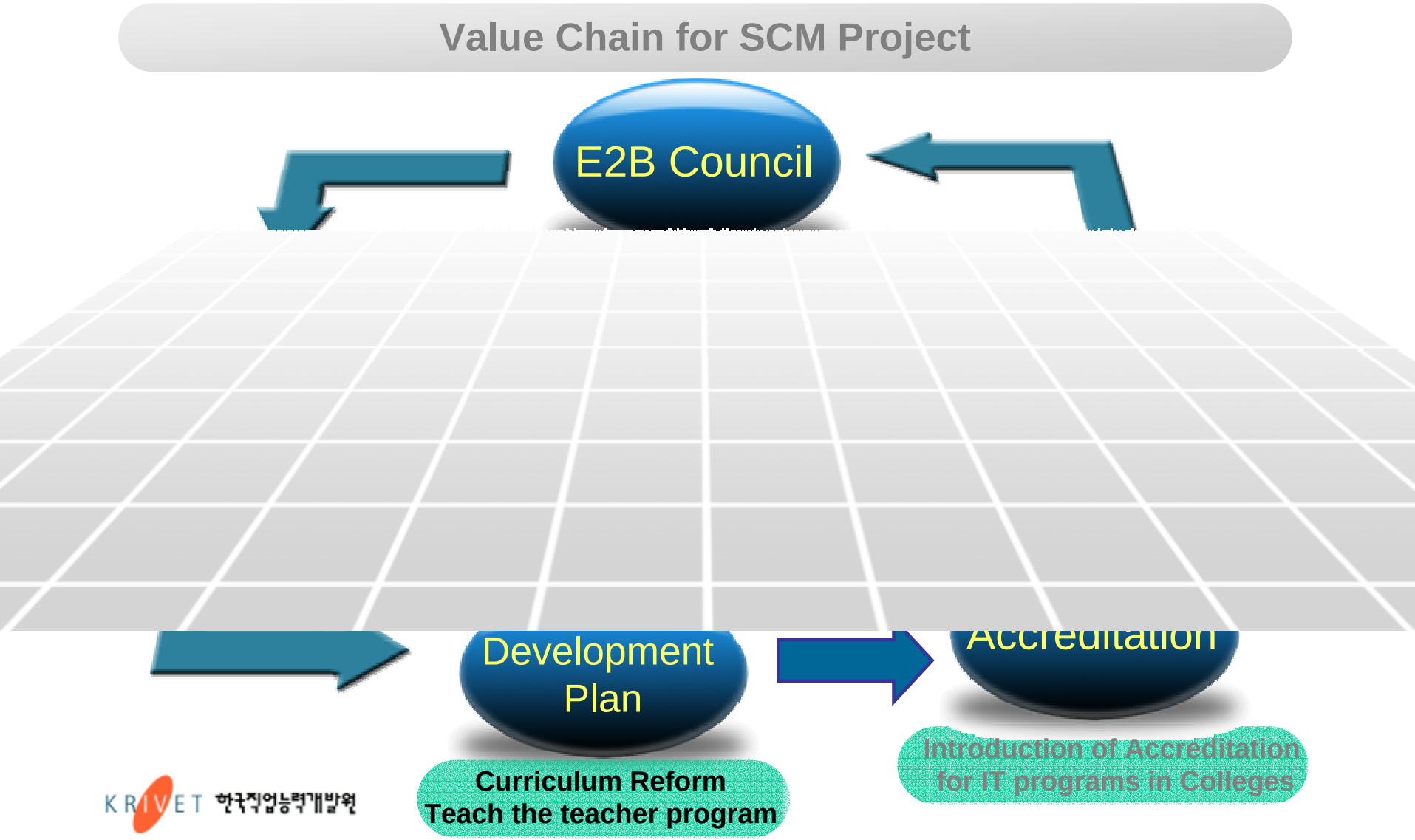
These characteristics of SCM are expected to improve the supply-oriented IT HRD process, producing a robust university-industry collaboration system.



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Introduction of Accreditation for IT programs in Colleges

- **Improving Global Standard IT Human Resources Competitiveness through ABEEK (Accreditation Board for Engineering Education in Korea)**

  -Installation of CAC(Computing Accreditation Commission) for IT Field

- **Accreditation activities will focus on if IT departments are reflecting industrial demand in courses and team projects properly, observing standardized curriculum, and equipped with recommended devices and facilities**

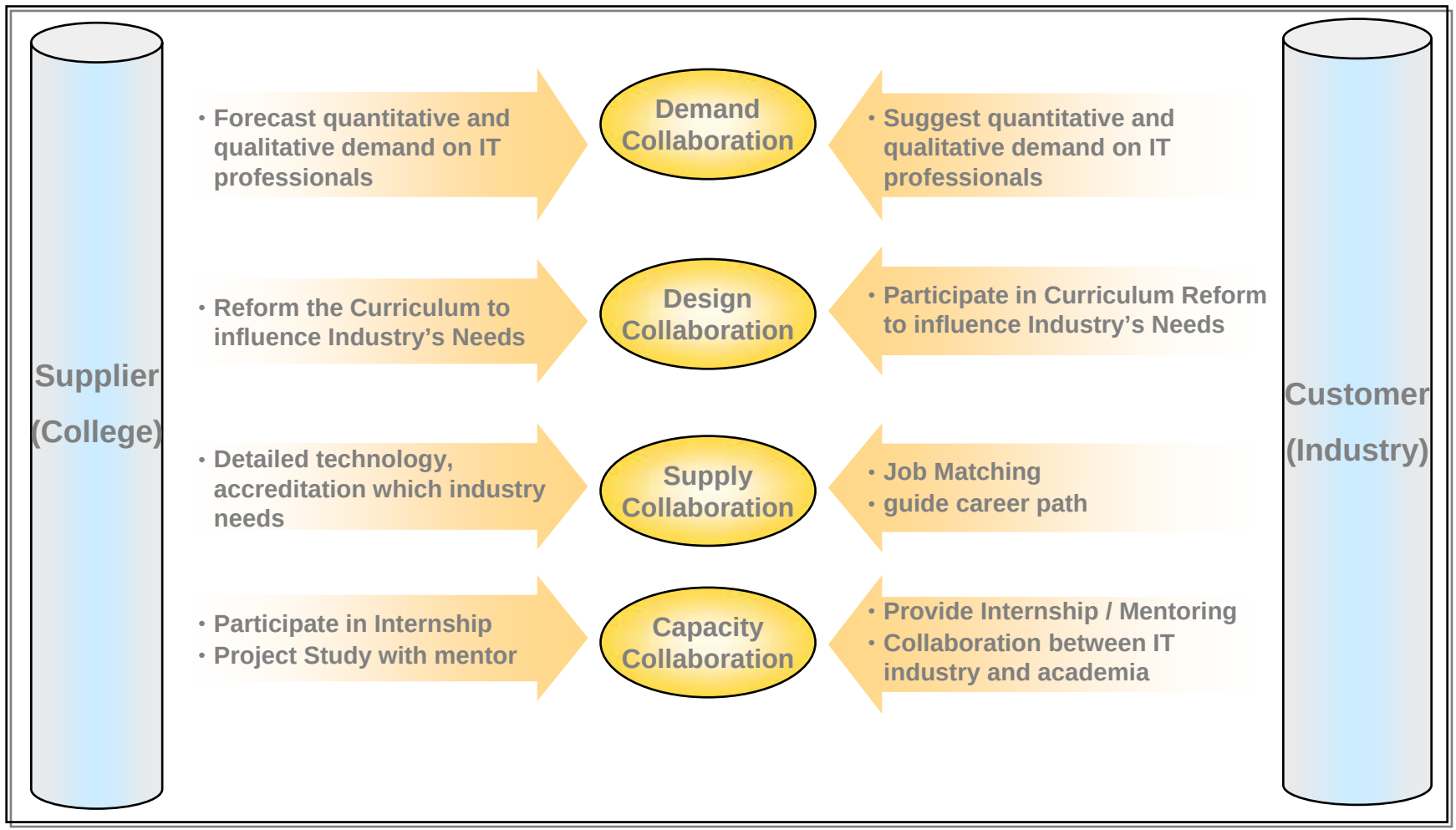
The SCM-based IT HRD model does not intend to restrict the discretion of universities or to pursue blindly the requirements of businesses. Rather, it focuses on facilitating a mutual understanding and benefit.

Businesses are asked to express precisely the specifications of knowledge, skills and capability of workforces they need at work, rather than just complain about the lack of skilled manpower.

Universities are going to be more effective at helping students find a job after graduation by aligning all their educational efforts and resources with what the industry really needs.

Also, the government could formulate and implement more adequate HRD policies on the basis of the accurate information on when and how many workers are required in what areas.

Matching: Systematic Collaboration between Industry and College



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For the new HRD model to be implemented effectively, the following three tasks are needed to be done in advance.

First, a more improved IT HRD and supply process has to be designed in view of SCM on the basis of a thorough diagnosis and analysis on the existing one.

Secondly, an effective university-industry collaboration system has to be established in order to put the new industry-oriented education process into practice.

Thirdly, an accreditation system has to be set up for businesses to recruit upon trustworthy graduates who have undergone the new demand-oriented educational programs.

To become a demand-oriented “pull process,”

1. Universities start to seriously take industrial needs into account in their education.
2. In addition to the HRD process innovation, it is also significant to match expectations on qualifications of students between university and industry.
3. To ensure a fit, they should have an open discussion and come to a consensus on a standardized curriculum comprising of detailed courses and course trees. IT-based Business-to-Business (B2B) collaborations are expected to provide information sharing among participating companies.
4. The IT HRD process improvement based on the SCM model will, in the end, result in a collaboration mechanism which enables both the supply and demand sides to cooperate. A physical form of the collaboration mechanism could be an Education-to-Business (E2B) web site on the Internet.

Major participants in the E2B site will be businesses, universities and the government and they will work together across planning, implementation and ex-post analysis stages. Detailed information on the collaboration among them is presented in <Table 3>.

<Table 3> Participants of E2B site and their division of labor

Stage Participants	Planning stage	Implementation stage	Ex-post analysis stage
Businesses	- Required technological areas - HR demand forecasts and recruiting plan - Policy suggestions	- Recruiting plan - Recruiting results - Recruiting results vis-à-vis plan information	- Feedback on educational effectiveness - Suggestions on curriculum change
Universities	- Curriculum information - HR supply forecasts - Acquired technological areas	- HR supply plan - HR supply results - HR supply results vis-à-vis plan information	- Review on the adequacy on the curriculum based on demand information - Curriculum change plan
Government	- Analysis on the imbalance between supply and demand - HRD policy formulation	- Monitoring of HR supply and demand - HR statistics - Interim review on policy effects	- Overall analysis and evaluation on HRD and supply

accreditation

The role of accreditation in the IT HRD and supply is twofold.

First, it will discriminate between good and bad educational programs of IT departments and make publicly the evaluation results to help businesses to find more reliable and quality workforces.

Second, the widespread deployment of accreditation is anticipated to upgrade the overall level of IT education around the country. Preparation for the accreditation in universities will derive improvement of curriculum and changes in educational methods and content to yield more industry-oriented workforce.

three traits of accreditation

The accreditation system will have the following three traits.

First, when IT departments establish and implement standardized demand-oriented curriculum and study courses in terms of SCM, the accreditation system will mitigate the burden of each university to contact businesses individually and develop their own curriculum.

Secondly, the weight of accrediting activities will not be given to external aspects of universities such as the number of faculty members, educational facilities, etc., but to the internal educational process.

Thirdly, quantitative criteria are needed to eliminate any possible risks of distorting evaluation results by subjective judgments of evaluators.

procedures to deploy demand-driven (pull-based) IT HR projects

The procedures to deploy demand-driven (pull-based) IT human resource projects in Korea have three steps.

First, quantitative and qualitative supply and demand forecasting on HR of IT companies, with career path map, and survey of detailed technical levels based on skill standard framework.

Secondly, supplying IT HR to IT companies through a competitive reinforcement program in college education that includes curriculum reform, internship, and competent faculty leadership.

Thirdly, university and industry collaboration systems
- demand collaboration (forecast model and career path map for manpower),
- design collaboration (curriculum, detailed syllabus, etc.),
- supply collaboration (job matching), and
- capacity collaboration (internship)

Utilization of Foreign IT-HR

In general, utilization of foreign IT-HR has not been very common in Korea yet. Overall domestic IT HR is already over-supplied.

The utilization of foreign IT HR is still in the early stages.

three kinds of indirect ways of utilization
- inviting foreign students to higher Korean educational systems
- hosting foreign research centers
- establishing branches of Korean companies abroad.

supporting policy for foreign IT workforces: The Ministry of Communication and Information (MOCIE) issues employment references and assists for foreign IT workforces to achieve a working VISA(E7) when there is a request by companies

<Table 4> Ratio of employment references by education level

(Unit: persons)

	2001	2003	2004
Doctor	15	6	5
Master	68	90	47
Bachelor	130	136	138
Etc	12	8	4
Total	225	240	194

Inviting foreign students to Korean IT graduate schools was introduced in 2003.
The selected foreign students are supported to study in Masters or Doctoral courses in IT specialized graduate schools.

<Table 5> Invited foreign student (2004)

(Unit: persons)

	IT major					total
	S/W	digital contents	electrics-electronics	communication and radio-electronics	etc	
Master	16	17	18	30	3	84
Doctor	10	11	12	18	2	53
Etc	1	1	1	2	1	6
Total	27	29	31	50	6	143

Furthermore, there is another graduate course of IT policy for IT government officials and experts. It has been provided through Seoul National University since 2003. In 2004, there were 3 new people enrolled in the Masters course and 5 new people in the Doctoral course. With 7 continuing students since 2003, there are a total of 15 persons in 2004.

<Table 6> Invited foreign student (2004)

(Unit: persons)

		2003	2004
	Master	3	3
	Doctor	4	5
	Total	7	8

a recent important aspect in utilizing foreign IT experts is the expansion of overseas research centers coming to Korea.
Korea has become the test-bed of IT devices and services for global markets and attracted foreign IT companies that want to establish a research center in Korea.

<Table 7> Oversea-based Research Center in Korea, by industry

Year of Establishment	electrics-electronics	chemistry	machine	Etc	Total
Until 1994	13	15	7	5	40
1995~1997	7	5	5	2	19
1998~2004	38	15	8	14	75
Total	58	35	25	21	134

Data: Korea Industrial Technology Association (2004)

Concluding Remarks

In order to match the academic institution's optimal supply of IT HR to industry's needs) at the right time, the Korean government has reformed curriculum, reinforced cooperative relations between academic and industrial institutions through SCM.

- demand collaboration (forecast model and career path map for manpower)
- design collaboration (curriculum, detailed syllabus, etc.)
- supply collaboration (job matching)
- capacity collaboration (internship).

However, even though the government might directly support universities to adapt the curriculum according to the requirements by introducing SCM, it is more necessary to motivate universities to accord to the requirements for themselves. The most important role of the government should be to solve the informational imbalance between educational suppliers and educational consumers, between the new comer into the labor market and the demands of IT HR.

- manpower report including the causes of manpower shortage.
- the payment report classified by occupations
- statistics of IT HR and prospect of human resource supply
- the career records of IT human resources

Also the government should provide various motivations in order to promote the competition of educational institutions for meeting the industries' requirement and competition of industries for accepting competent human resources. Under these systems, individuals will spend their time for suitable IT training, and they will ask universities or training centers, as educational providers, for educational training according to an industries' requirement.