Preliminary Material: Please Do Not Quote

This presentation contains preliminary data and analyses. Our final report on this research will be published on this site in November, 1999.

Software Entrepreneurism in Korea

Avron Barr and Shirley Tessler
Stanford Computer Industry Project
www.stanford.edu/group/scip/

A/PARC Silicon Valley Seminar
Stanford University
October 19, 1999

Software Entrepreneurism in Korea

An eight-month study of a country that was agrarian in 1960 and is now the worlds 11th largest industrial economy.

Software and Wealth: How Software Creates Value

- Software products & services have grown rapidly to a $400B global industry in 1998.
  - 3 of the 10 richest people in the United States
- A tool for competition in all industries
  - Cost reduction, operational efficiency, global reach
  - Strategy: TQM, ERP, BPR, 1:1, CRM, KM, SCM, SFA, ...
  - Software-enabled businesses: Yahoo!, e-Trade, e-Bay
- An essential component of products of all sorts
  - Computers, cars, airplanes, phones, electronics, toys
- The use of software in business is accelerating

The Good News

- All markets for software are growing at least 10-15% annually.
- There is a global shortage of software and software talent.
- Dramatic expansion of demand and entirely new platforms, of the magnitude of the PC and Internet, are likely again, soon.

More Good News – Korea's Strengths

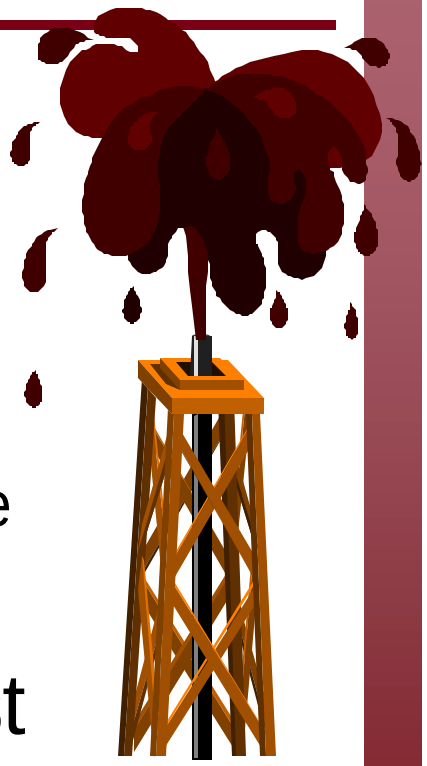
- Educated workforce
- Strong existing technology industries
- Proactive government
- Good telecommunications infrastructure

Areas That Warrant Attention

1. Focusing on emerging opportunities in the rapidly-evolving global software industry
2. Developing the human resource: software professionals at the cutting edge
3. Encouraging new business creation
4. Developing a supportive habitat for software startups
5. Expanding the domestic market
6. Facilitating global marketing of software

Focusing on Emerging Global Opportunities

Targeting Emerging Segments



- Competing globally in mature segments is difficult and expensive
  - In software publishing, no mfg. costs
  - Costs are amortized over market share
  - Low-price strategy doesn't work
- Emerging software opportunities must be global plays from the beginning
- Important new niches emerge frequently

National Software Strategies — In Retrospect

Country	Software Industry Today	Strategy
Israel	export technology	military high-tech
Ireland	services to SW publishers	knowledge transfer
India	export software services	utilize existing human resources
Japan	Nintendo and Sony titles	"New Hard"

Emerging Software Niches – Some Examples

- Web portal and web-based services
- Toys: Tickle-Me-Elmo, Tamagotchi, Furby, ...
- E-commerce products and services
- Portable, wearable and home computing
- Animation, entertainment and education
- Financial services, telecommunications, consumer electronics, ...

Developing the Human Resources

Human Resources

- Size of the potential talent pool
  - Software professionals
  - Startup-savvy managers and financiers
- Cutting-edge software education

  Prestige of software careers
- English-language competence

What Is Software Talent?
A Multitude of Skills

- Analysis — needs, vision, and requirements
- Architecture — form and function
- Design — usability, construction, maintenance
- Development —craftsmanship, concentration
- Debugging & maintenance — skill, temperament
- Testing — still undervalued
- Documentation, training and support
- Project management — key to success

Graduation Requirements

University	Degree	Math & Science	Computer Science	Theory	Software	Project
Stanford	B.S., CSE	34.3	51.4	7.6	17.2	8.6
	B.S., CS	36.3	52.4	11.8	24.5	2.9
UC Berkeley	B.S., EECS	28.3	42.5	0.0	6.7	3.3
San Jose State	B.S., CE	22.1	45.8	0.0	13.0	0.0
	B.S., CS	25.0	39.8	8.6	9.4	0.0
Santa Clara	B.S., CE	24.7	43.4	6.6	11.1	7.0
	B.S., CS	25.1	23.4	10.3	6.3	0.0
KAIST	B.S., CS	2.3	36.2	12.8	21.3	6.4
SNU	B.S., CE	4.6	34.6	17.6	0.0	11.8
Postech	B.S., CS&E	2.1	40.4	7.0	24.6	14.0
Yonsei	B.S., CS	15.0	25.7	16.7	0.0	0.0

Percent of units required for graduation.

Human Resources: Some Ideas for Discussion

- Encourage education in the science and practice of software (professional schools)
- Encourage broad interactions between universities and industry
- Encourage education in the business of software
- Encourage careers in software
- Encourage lifelong learning

Encouraging New Business Creation

New Business Creation

- All entrepreneurs should be encouraged
  - Not just high-tech startups
  - Society's attitudes about entrepreneurism factor into every entrepreneur's decision
- Weighing risks and rewards
  - Ownership and venture financing
  - Failure and bankruptcy law

Why Startups Are Important in the Software Industry

- Innovation, risk (diversified approach)
- Speed, responding to rapid change
- Flexibility: technology, platforms, partners
- Cooperation with competitors
- Co-invention with customers
- Giving innovators a bigger piece of the pie

Forms of Software Businesses

- Software publishing
  - Tools for enterprise developers, etc.
  - Titles: “artistic software”
- Software services to business and government
  - Design, development, integration, maintenance
- Software-enabled services to business, consumers
- Outsourced services to the software publishers
  - Product localization, training and technical support
- Technology licensing and “R&D acquisitions”

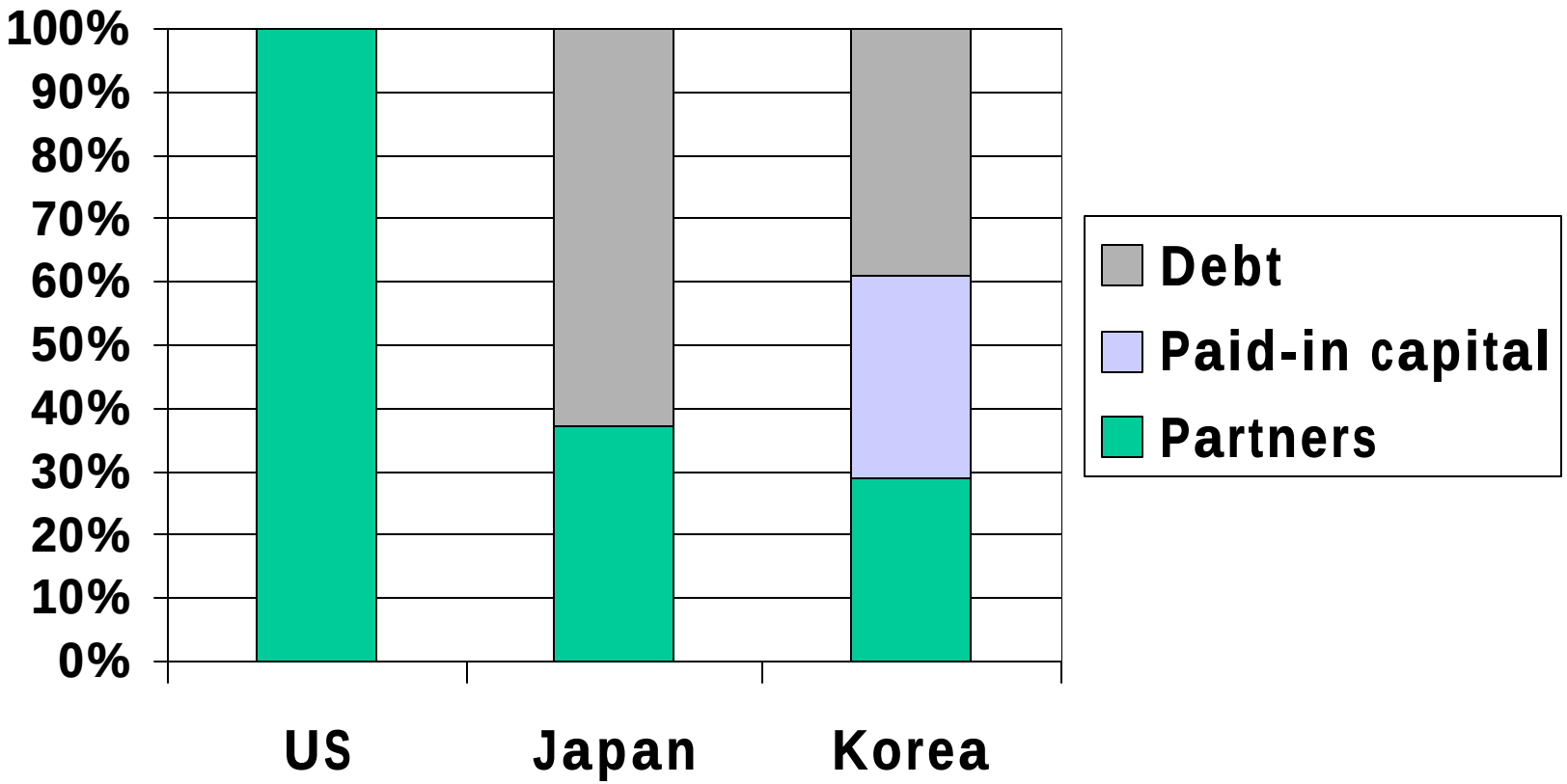
Issues in Venture Capital

- Risk sharing through equity participation
  - Debt service by the VC firm or by the startup limits business strategies and risk taking
- Expertise in high-risk investments
  - Working knowledge of the industry
  - Investment selection, portfolio management
  - Networking and advice for entrepreneurs
- Existence of good exit alternatives
  - IPO's and acquisitions

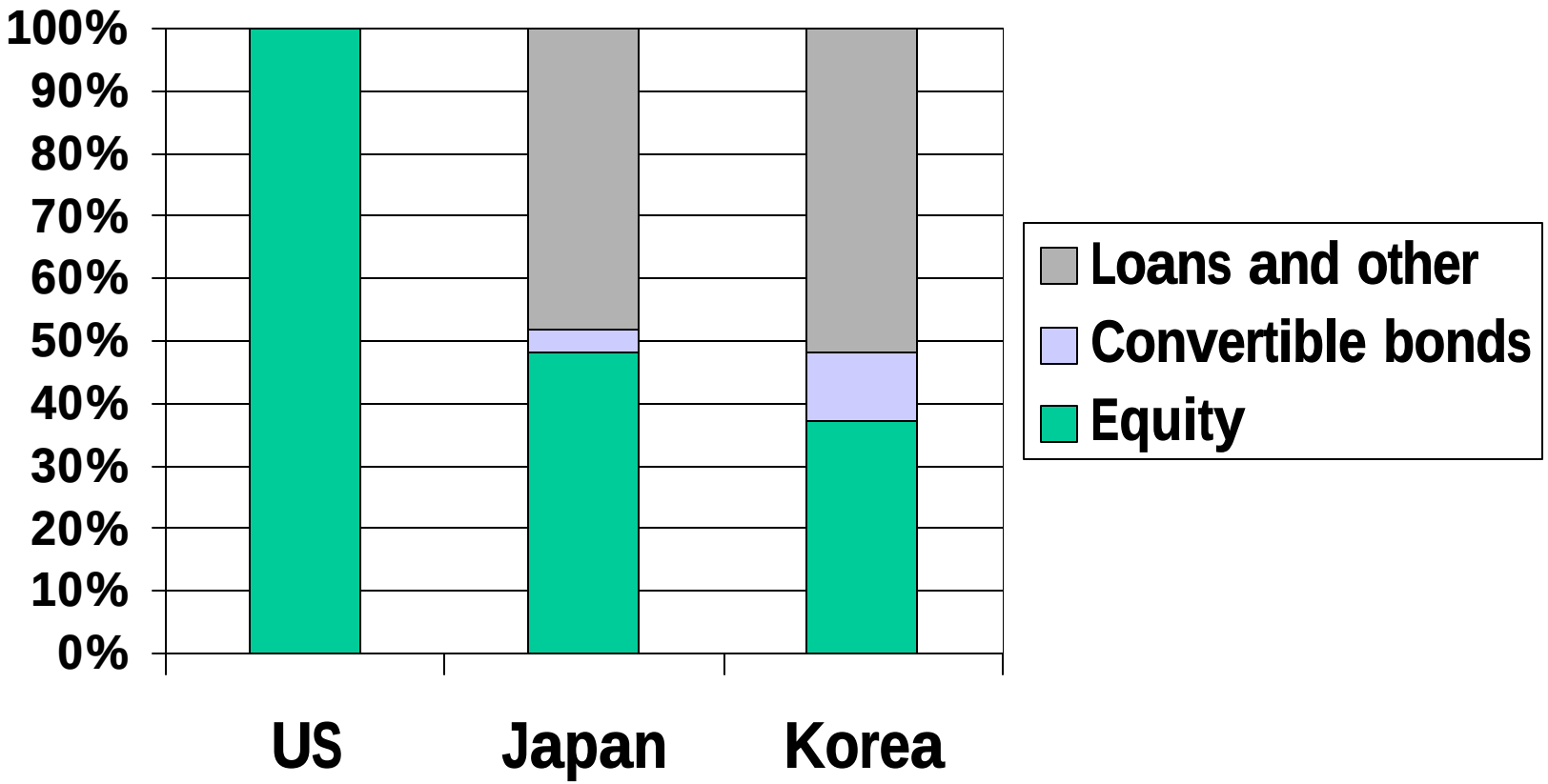
Issues in Venture Capital, cont.

- Government involvement reinforces low-risk, low-return model
  - Governments have low tolerance for failures, even if portfolio succeeds overall
  - Regulations to protect parties in inherently high-risk undertakings are problematic
  - Government definitions of who qualifies for various incentives can be counterproductive

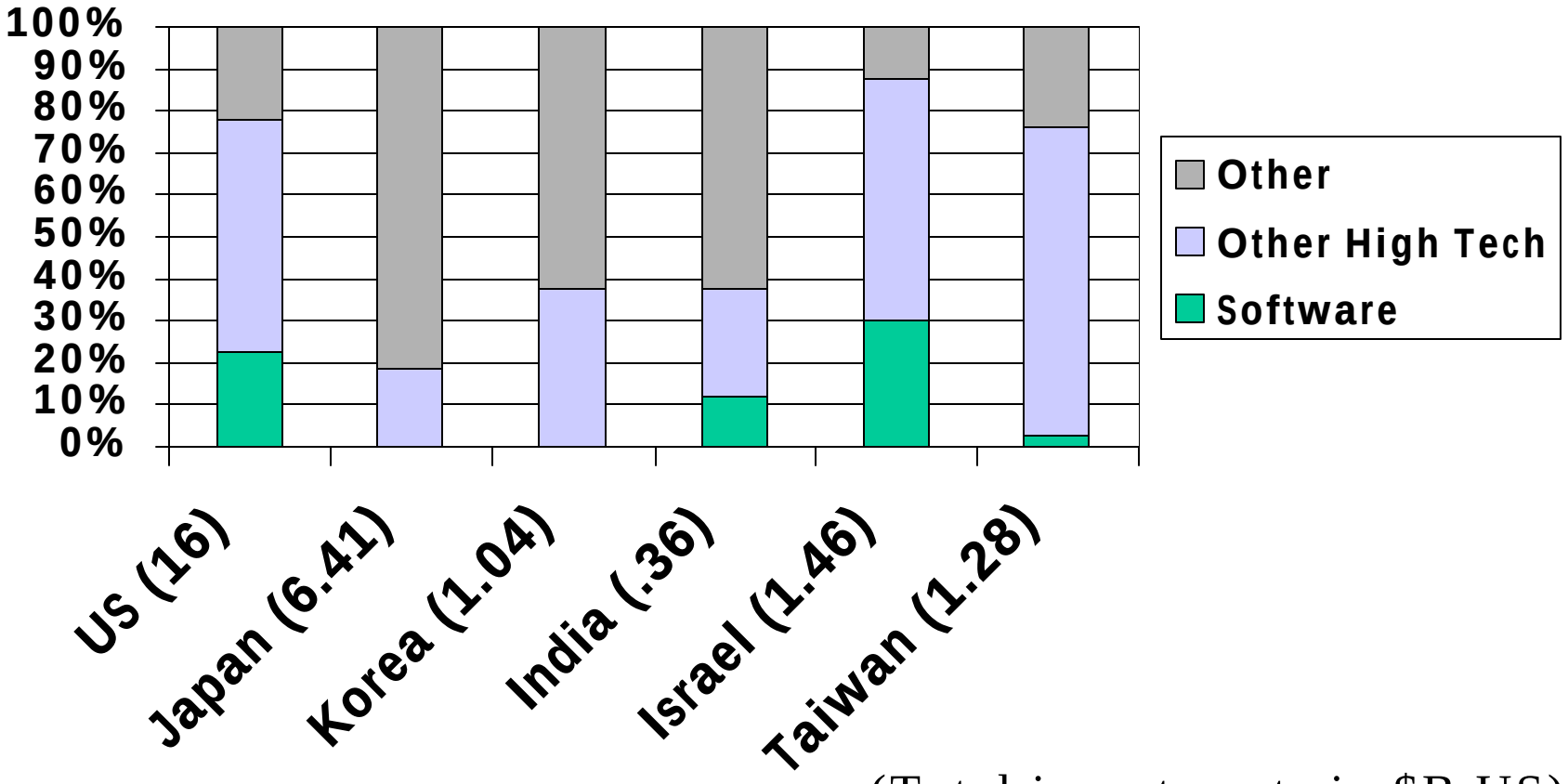
Source of Funds for Venture Capital Firms



Types of Investment by Venture Capital Firms



High-Tech Focus of Venture Capital Firms



(Total investments in $B US)

Venture Capital: More Ideas for Discussion

- Reduce over-specific regulations on the venture capital industry
  - Structure of VC firms
  - Form of venture deals
  - Selection of investments (based on industry, firm size, age, location, etc.)
  - Level of VC involvement in operations
- Require comprehensive disclosure
- Centralize and streamline government oversight of the industry

The Impact of Bankruptcy Laws on Startup & Risk Taking

- Discourages entrance for some percentage of would-be entrepreneurs
- Limits the entrepreneur's ability to try again after a failure
- Encourages conservative growth strategies in a dynamically changing environment

Bankruptcy Law

- Goals of bankruptcy laws differ among countries
  - Liquidation – US (Chapter 7)
  - Rescue – US (Chapter 11), India
  - Workout – Japan
- Severity of legal impact of bankruptcy differs
  - Can't start new business until discharge – Israel
  - Can't practice profession until discharge – Ireland
  - Just decriminalized in the past year – Korea

Bankruptcy Laws: Some Ideas for Discussion

- More access to mediation for smaller firms
- More protection for shareholders
- Protection through disclosure vs. oversight
- Re-think purpose of bankruptcy laws
  - Encourage “fresh start” attitude
  - Natural selection and recycling of resources

Developing a Supportive Habitat for Software Startups

Habitat for Software Startups

- Infrastructure: transport and telecom
  - But physical infrastructure is not enough
- Specialized firms, consultants and contractors who, like VC's, are not just "suppliers" to startups, but also partners
- Physical, legal, and social mechanisms that promote speed in product development and in cross-firm learning about both technical and business issues

What Software Startups Need

- Experienced new hires, no training required
- Advice from more experienced business folk as well as outside technical expertise
- Specialized business functions: recruiting, marketing research, PR, accounting, ...
- Specialized technical functions: QA, website hosting, disc manufacturing, doc writing, ...
- Continued financing through life cycle

Things That Slow Things Down

- Hiring
- On-the-job training
- Government: regulation, approvals, reviews…
- Bureaucracy
- Consensus-based decision making
- Bank loans
- Import substitution strategies
- Doing it all yourself, vs. partners and outsourcing
- Perfect quality
- Risk reduction strategies

Habitat for Software Startups: Some Ideas for Discussion

- Nurture private habitat support firms, independent contractors, and consultants
- Establish forums for cooperative learning among entrepreneurs and among technical innovators
- Facilitate movement of people between firms

Stimulating Domestic Demand

Domestic Demand is Important for Software Startups

- Software services is an important segment in Korea and a natural market to develop
- Prestigious customers give credibility to startups and legitimacy to entrepreneurs
- Local customers give better feedback
  - Features, marketing, competitors
  - Enterprise publishers need state-of-the-art beta sites that can co-invent new features
  - May filter firms, before larger investments
- Acquisition as an additional exit strategy
- A training ground for new entrepreneurs

Legacy Attitudes — Not Just Legacy Systems

- Information Technology was not originally introduced was as a strategic weapon.
  - Clerical: Efficiency, labor reduction, reports
  - Manufacturing: speed, capacity, labor, quality
  - Office: communication, global coordination, BPR
- Organizational, technical and psychological artifacts remain as barriers to re-deploying IT assets to take a strategic role in the business.
- The most important misconceptions involve software.

Stimulating Domestic Demand: Some Ideas for Discussion

- Government procurement procedures
  - Outsourcing
  - Software startup set-asides
- State-of-the-art government systems initiatives
- Stimulating strategic innovation in major industrial and financial firms

Global Software Marketing

Selling Software Globally

- There are very few examples of global software players outside of the US
- Software marketing is unique, and key
  - Deep knowledge of technical state-of-the-art is required
- Mature segments have high barriers and low margins
  - Opportunities exist in emerging markets

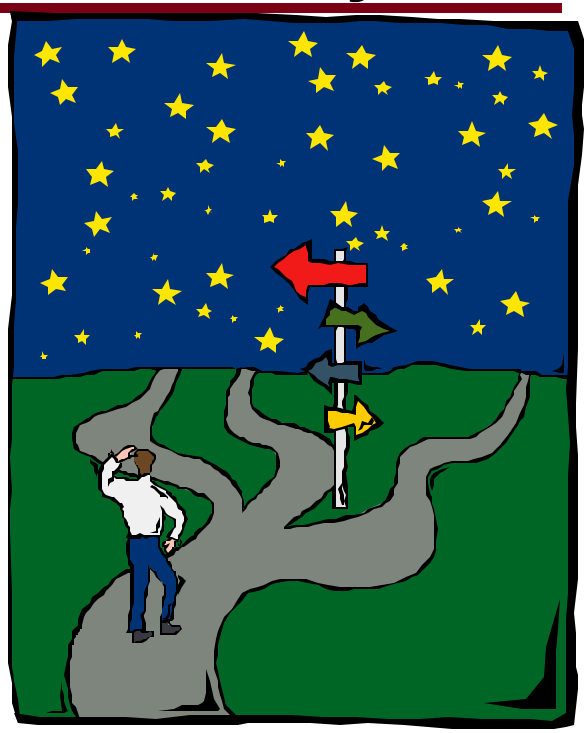
Software Marketing is Different

- No manufacturing phase – product is never "defined"
- Competitive products change rapidly
- Release management: bug & feature list prioritization
- Specific knowledge of domain & users' environments
- Interactions with platform, DB, and tool vendors, standards
- Interaction with customer doesn't end with sale: selling services, technical support, user groups, ...
- Beta & reference site management – credibility management
- RFPs, sales presentations, analyst interviews, trade show presentations, etc. require technical knowledge
- Support a complex sales process: channels, partners, platforms, industry verticals, geography, etc.

Developing Global Strategies: Some Ideas for Discussion

- Niche strategies may be the most effective use of limited resources
  - Software for industries where Korea is strong
- Consider technology licensing and sales
  - Israeli-style trade consulate
- Increase activity in Silicon Valley and other software centers
  - Gathering business intelligence, finding partners
- Exploit expatriate network
  - Encourage early career experience abroad

Encouraging Korean Software Entrepreneurism: Summary



- Identify emerging segments
  - Platform & marketing expertise
- Capitalize on technology strengths in existing industries
- Deregulate for market-driven new business creation
- Develop the human resource – it is the only resource in the software industry