



# Software Process Improvement Activities in Shanghai

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SEPG Japan 2005



# Agenda

- ***Background***
- ***Shanghai Budding Software Industry***
- ***CMM-Based SPI in Shanghai***
- ***Activities of Shanghai SPIN***
- ***Towards A Mature SW Industry***

# Background: Great Opportunity For Development





# Shanghai – A Special Time

- Shanghai Towards Her Goal Of Being The “World City” “Pearl Of The Orient”
- Shanghai Economy Keeps Continuous, Rapid And Healthy Development , Remains Two-Digital Growth Continuously For More Than Ten Years
- “A Change Every Year And A Great Change Every Three Years”



## Shanghai – A Special Time (cont.)

- Shanghai's GDP Per Capita To Exceed \$5,000 In 2002, \$7,500 By 2007, Top 10,000 By 2010
- Shanghai Won The Bid To Host World Expo 2010
- Shanghai Is Well Known By Her “World's Fair Of Architecture”, And Blending Of Eastern Traditional And Western Culture, A Fascinating And Prosperous Metropolis



# China -- Largest Markets In The World

- Largest Telecommunication Market
- No.1 Mobile Phone Market
- Largest Household Appliances Market
- 2nd Largest PC Market
- 2nd Largest Semiconductor Market
- 2nd Most Active Web Audience With 80 Million Internet Users



# Why Shanghai ?

- High quality SW talents pool
- Strong industrial & business base
- Good foundation in IT applications
- A well-informed center
- Inherent cooperative network linked to the world and domestic areas
- An open land from its past history, closer to western culture

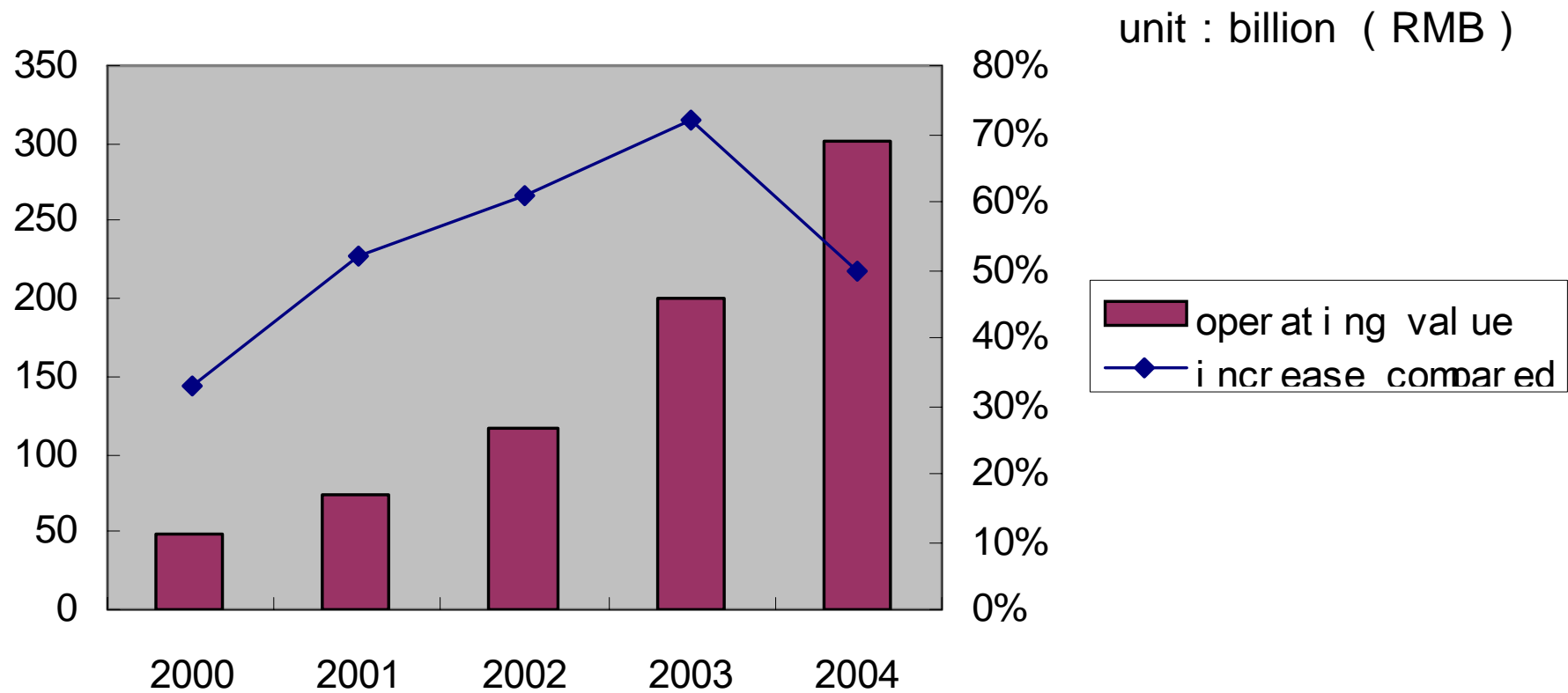


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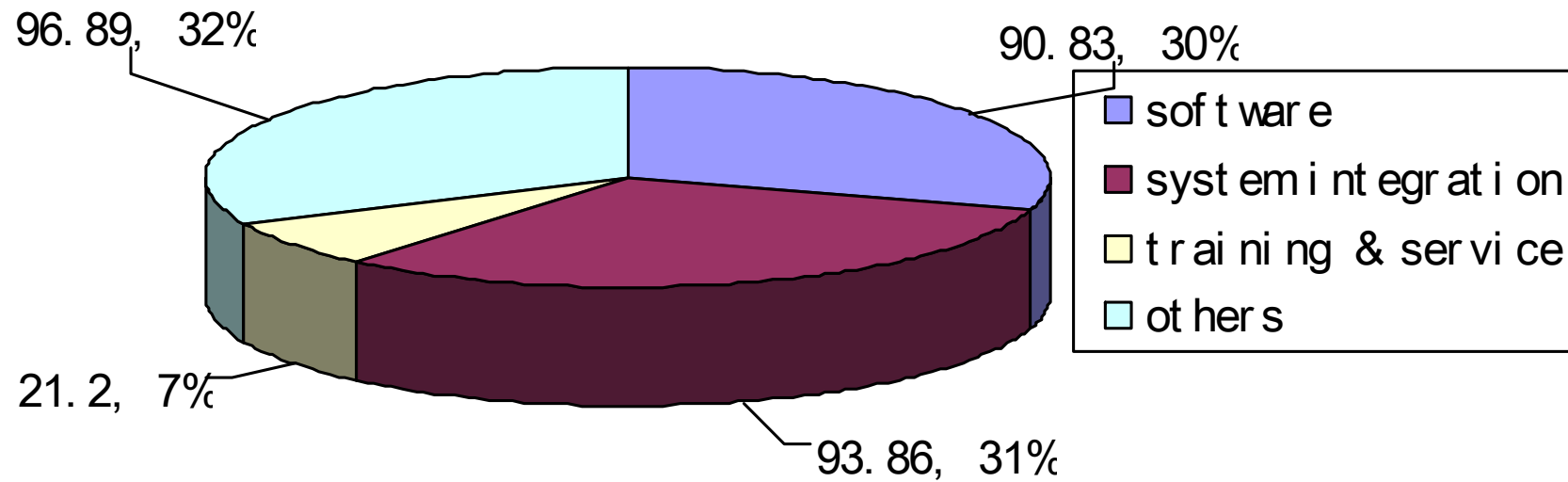
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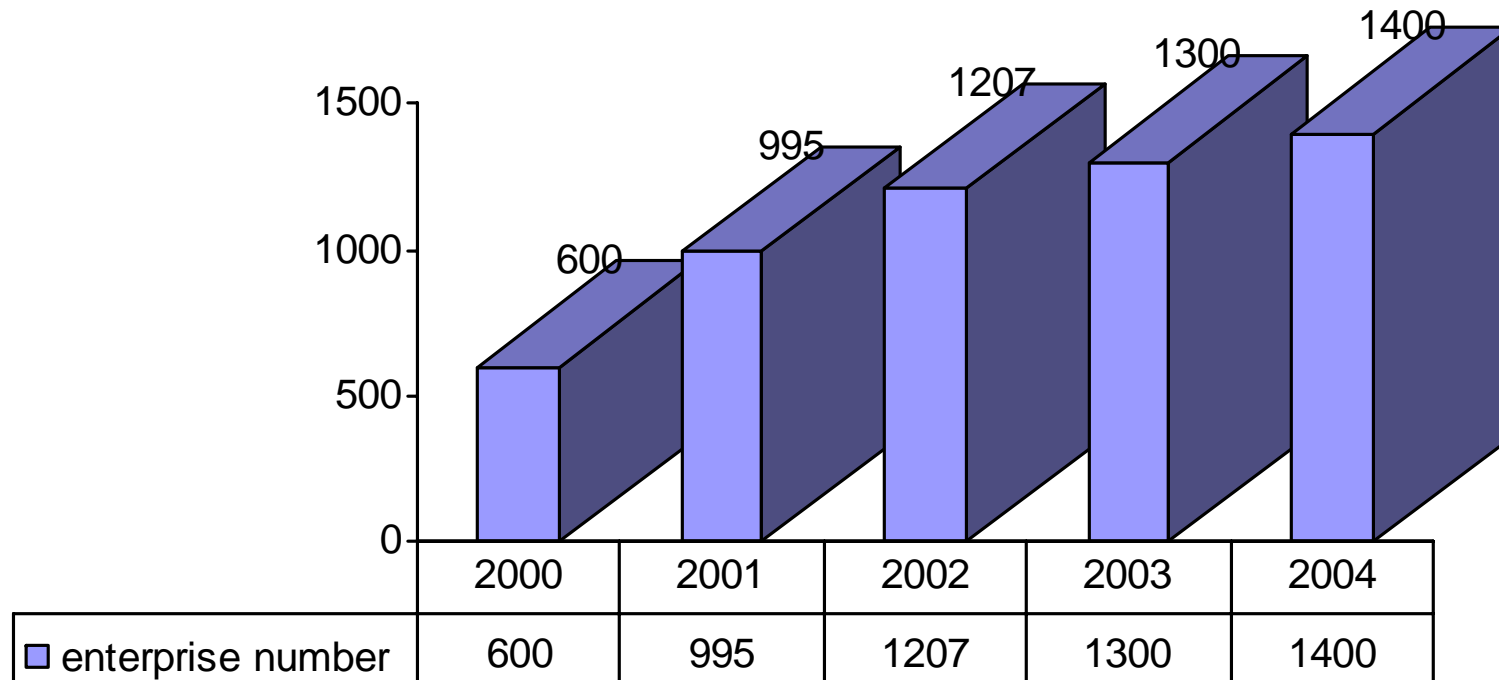
# Increased Operating Value of Shanghai Software Industry



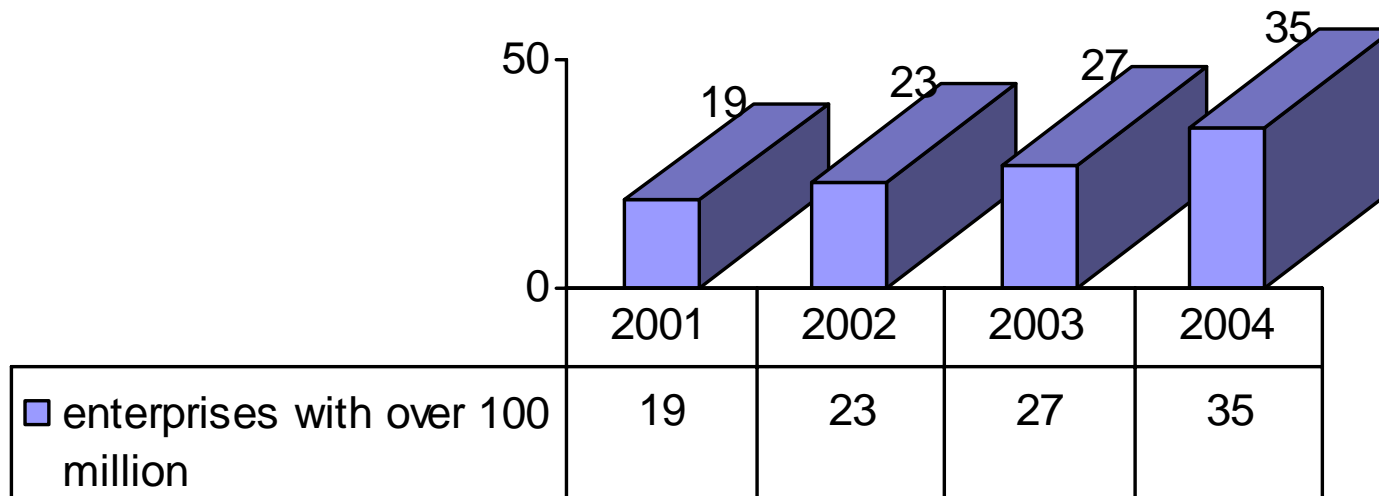
# Composition of Operating Value



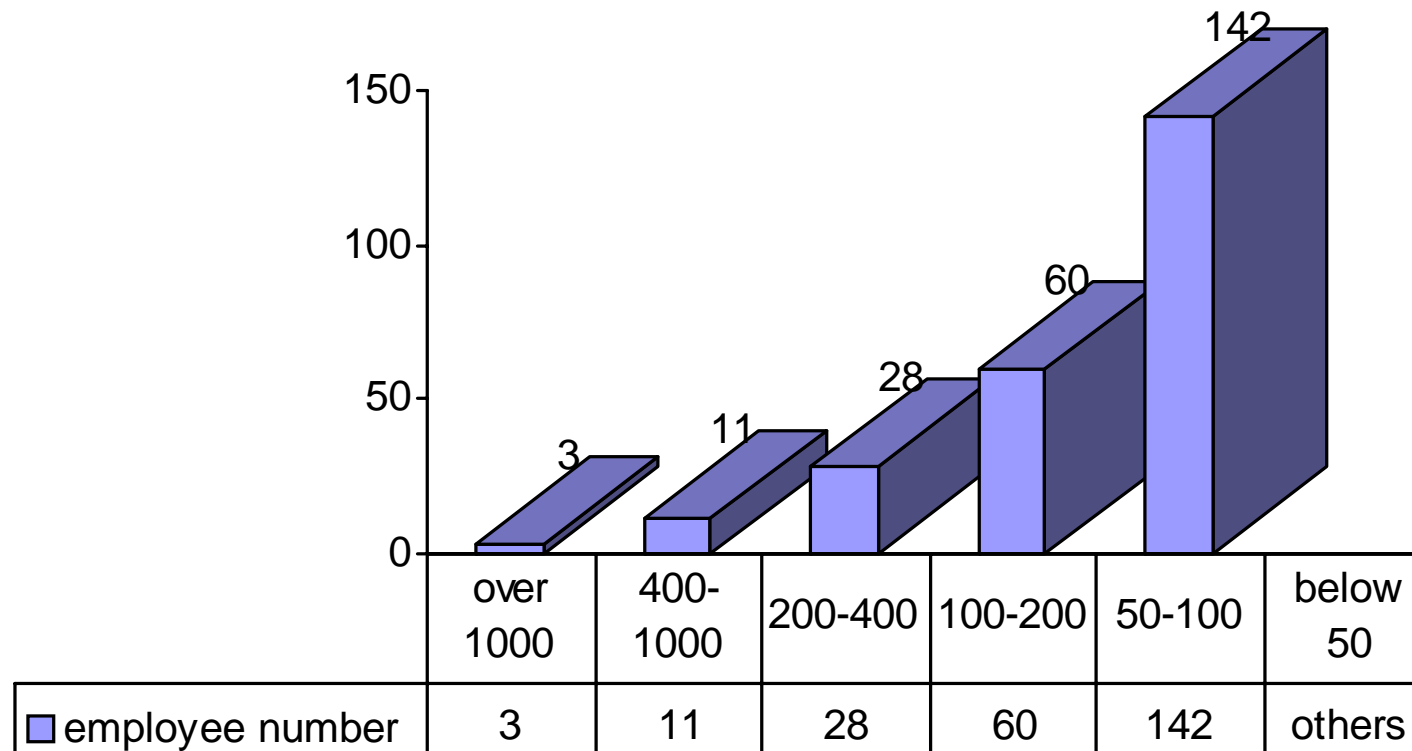
# No. of Shanghai Software Enterprises



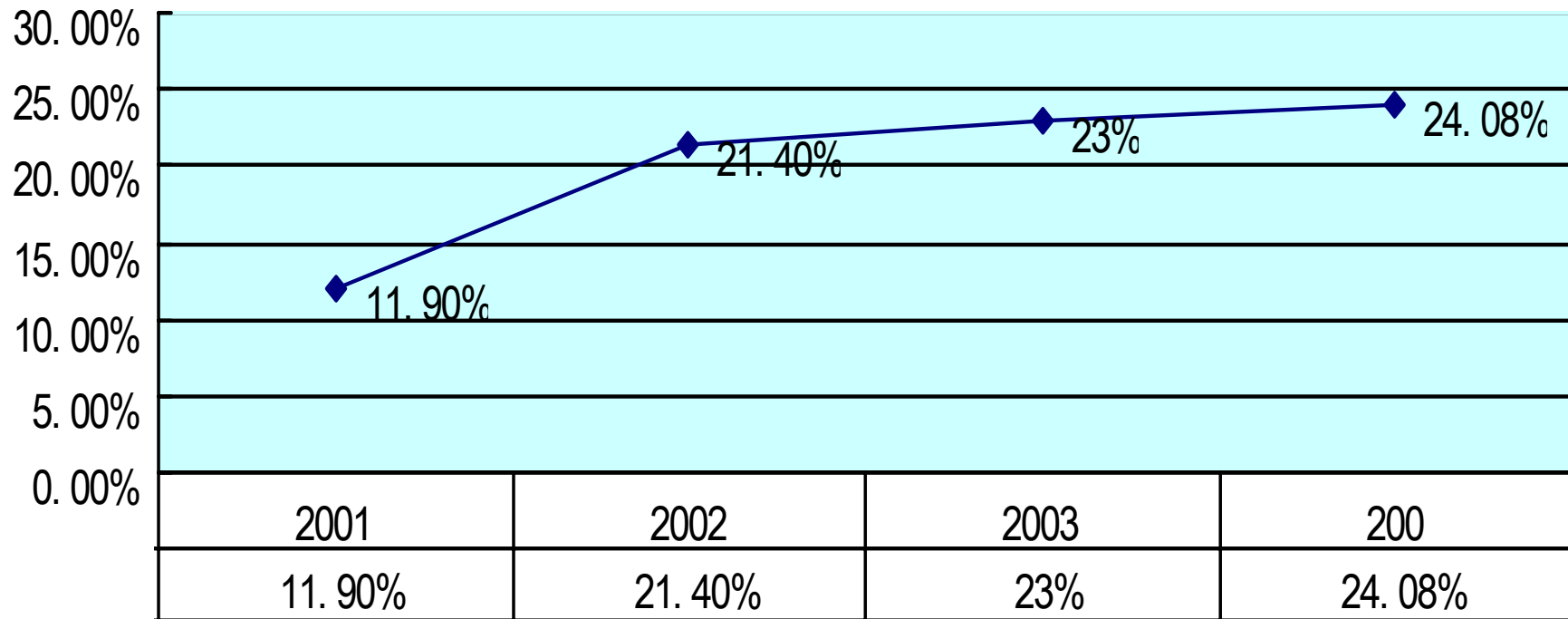
# Scale of Shanghai Software Enterprises



# Size of Shanghai Software Enterprises

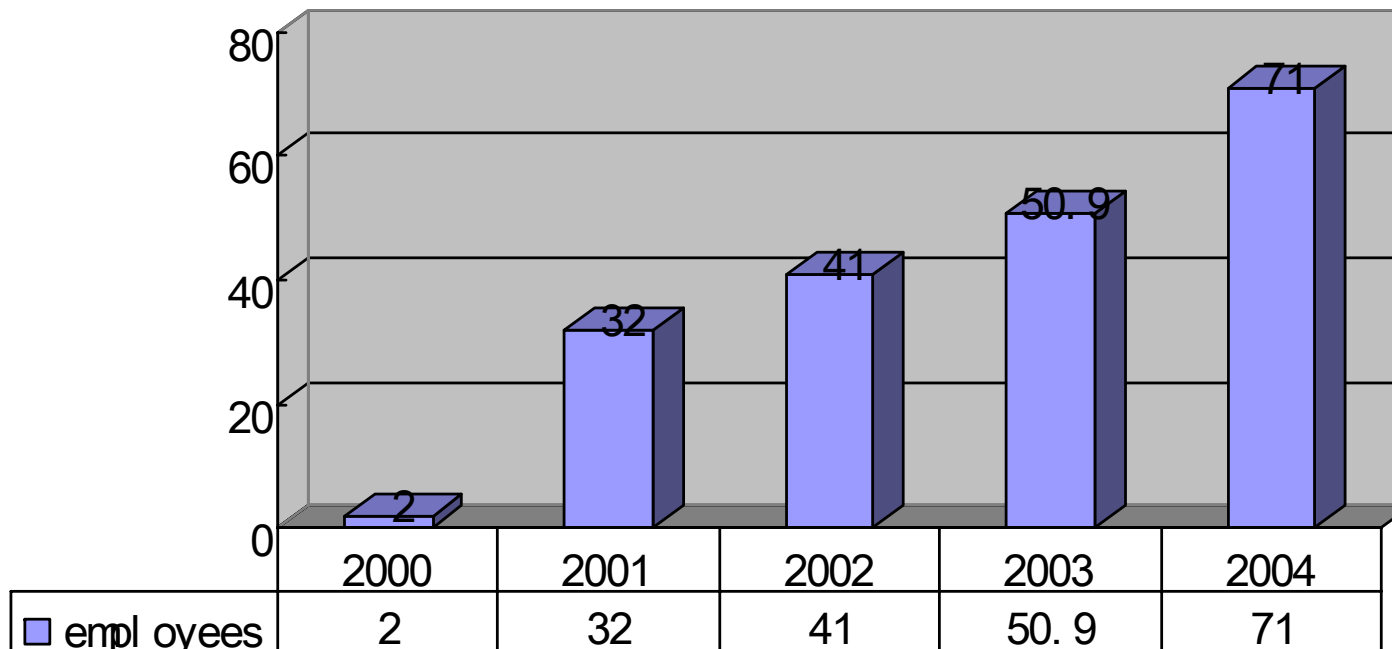


# R&D Expense Ratio of Shanghai Software Enterprise Revenue



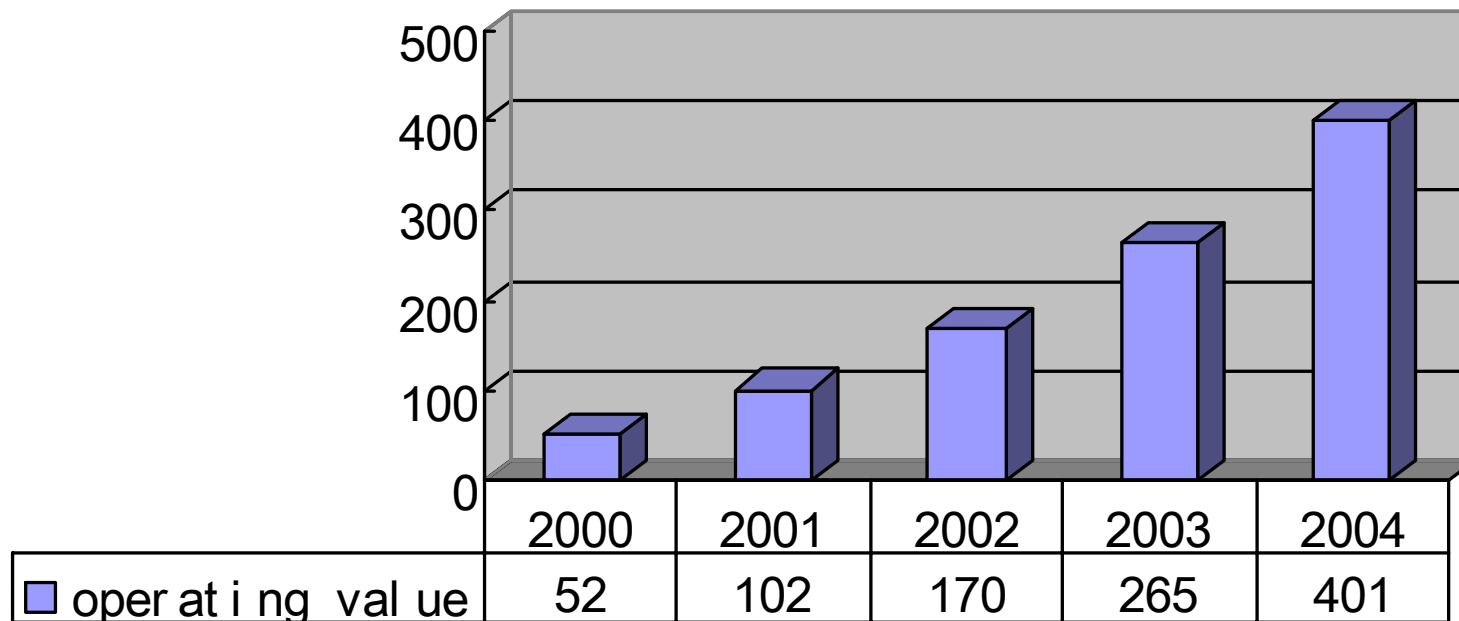
# Increased Shanghai Software Staff

unit : 1K



# Increased Export of Shanghai Software

unit : 1 M dollars



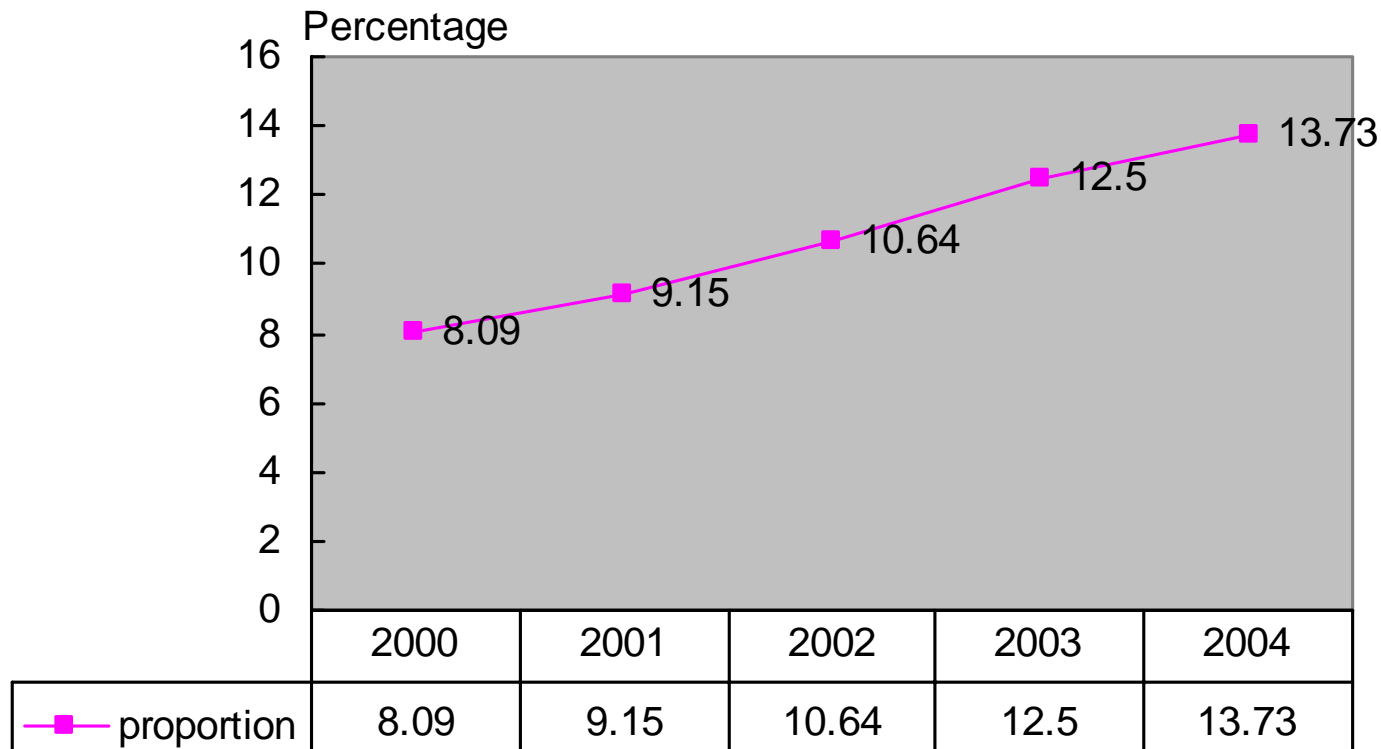




# Leaping Development In Shanghai's IT Industry

■ Desktop PC	7.34M units	7 Times +
■ Notebooks	6.51M units	11 Times+
■ IC	3.96 B chips	51% +
■ IT Revenue	\$36.3 B	67.5% +

# Proportion of Shanghai Software Industry in the Nation's Total





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# A Hot Spot

## -- CMM-Based SPI in China

- By recognizing their disadvantage, China's software community is adopting active and realistic measures toward a more mature industry
- A priority strategy for many software companies is to improve their business image, especially in quality management to make difference in competition.
- Almost all of mainstream enterprises have received ISO9000 certifications. Their next target is CMM-based capability maturity evaluation.
  - Shanghai 200 SW companies got ISO9000 certificate



# Why CMM Now ?

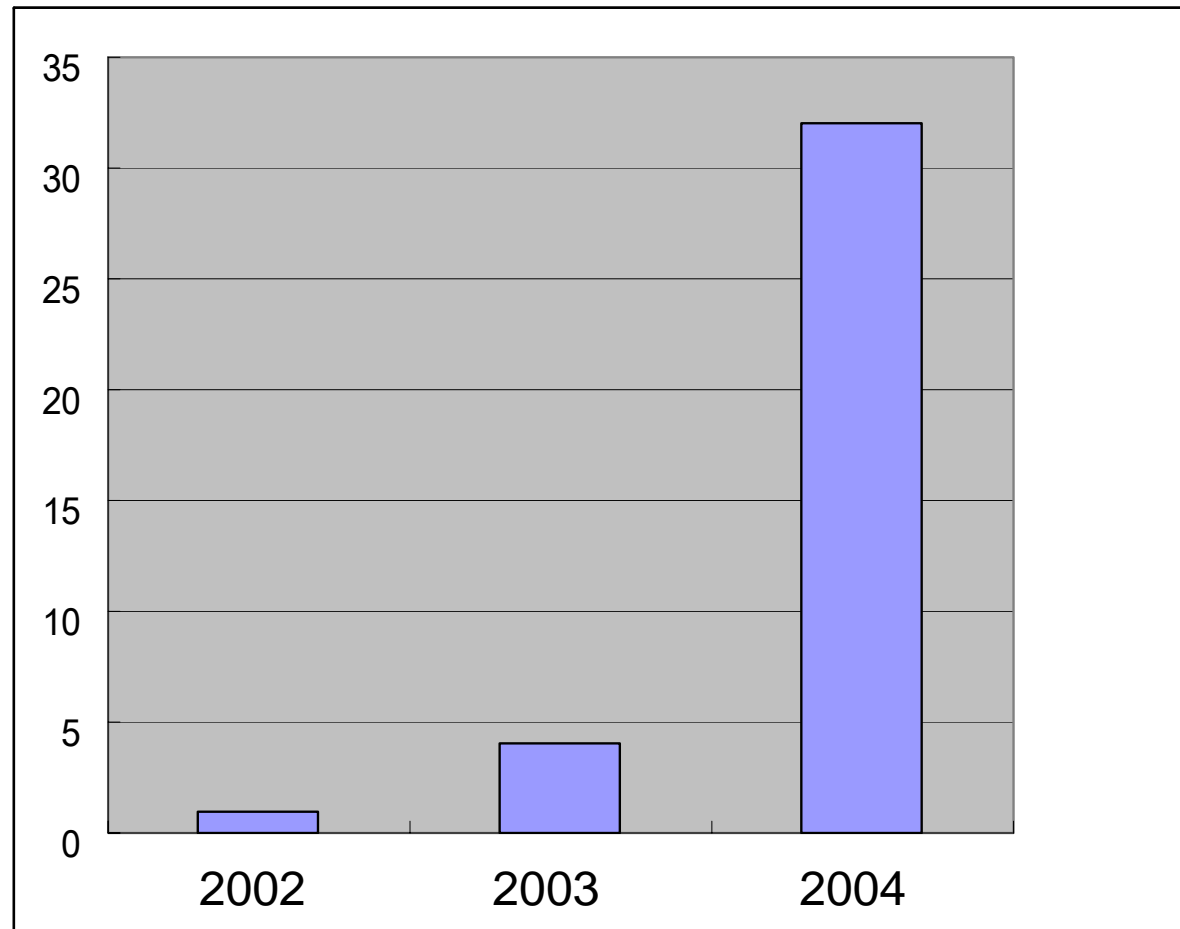
- A passport to offshore business.
  - China's software industry has to raise its level in the process and quality management for fully matching with the international standards.
- Best SE practices are a necessity for a mature software organization.
- The government even promised to provide subsidy to the software enterprises which engage in CMM-based evaluation.



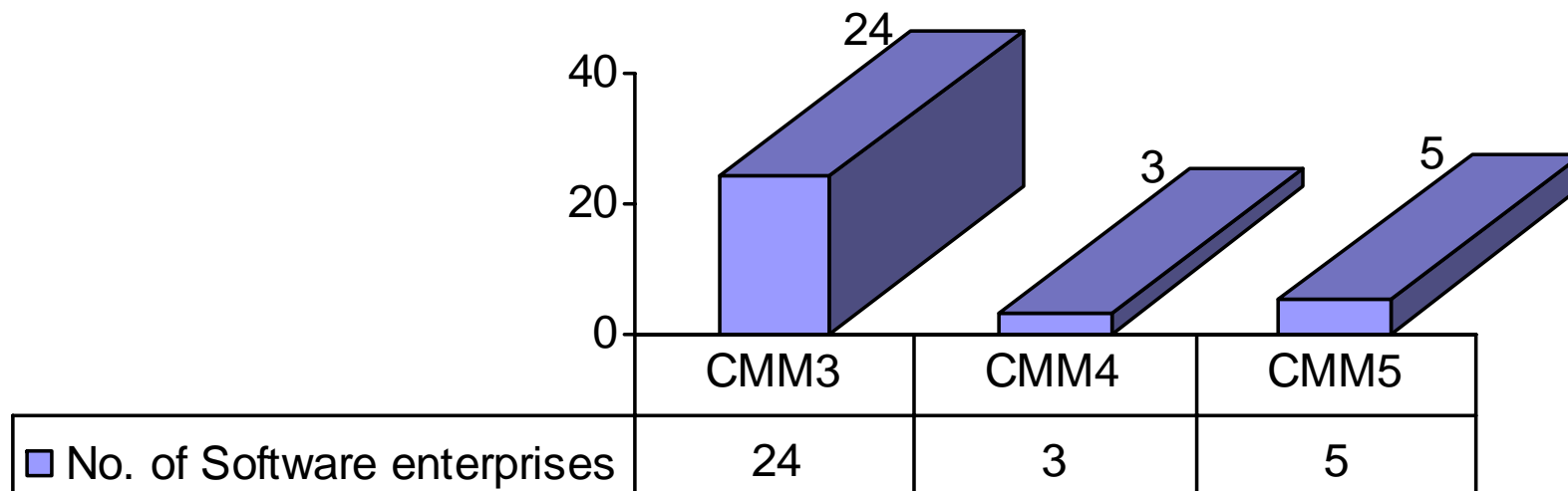
# The CMM Status in China

- More and more companies have passed CMM evaluation, or have being engaged in CMM-based software process improvement.
- Some foreign companies have rushed to do their CMM consulting and training business in China.
- There are a few of local lead assessors and certified instructors.

# No. of Shanghai Software Enterprises in CMM3 +



# State quo of CMM-based SPI in Shanghai







## 5 Software Companies in CMM 5

- Wonders Information Co., Ltd. (CMM5 & CMMI 5)
- Huawei Technologies R&D Center in Shanghai
- HP Research Center in Shanghai
- BearingPoint IT (Shanghai) Inc.
- Tata Consultancy Services (Shanghai) Inc.)



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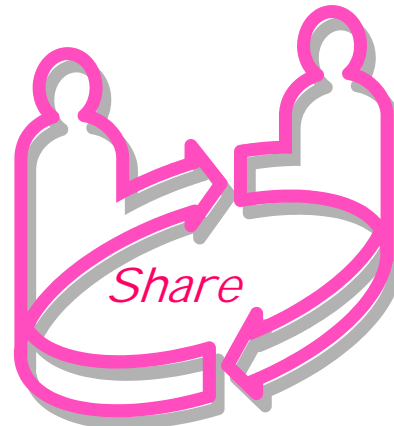
# Shanghai SPIN

- To promote SPI, in 2001 the first SPIN organization and QAI Federation Chapter in China were built up.
- Their mission is to align with CMU/SEI & US QAI in promoting process engineering and QA education/training as well as technologies & experiences sharing among members.
- Main participants include Shanghai Software Industry Association (SSIA), Shanghai Software Center, Shanghai Software Parks.

# Activities of Shanghai SPIN

SEPG members, Engineers, companies, software parks, universities

CMU/SEI  
US QAI  
Japan JUSE  
...



Shanghai software center  
SSIA  
Beijing SPIN  
...

Training

Consulting

Seminar


Localization

SPI, Software Engineering, Software Quality Management, Testing  
CMM/CMMI, ISO9000, ISO12207, RUP, Agile Methods, ...

# Certificate Programs Introduced

- Five certificate programs
  - Cooperating With IEEE-CS, jointly promoting the CSDP Certificate an SWEBOK-based SE training into China
  - Cooperate with UMTP, Japan , promoting software modeling technique and UML as a future common standard between Asian SE communities
  - three domestic certifications sponsored by Shanghai government since 2003: Software Quality and Testing Engineers (CSQE/CSTE BOK based), CTOs and CIOs
- Shanghai SPIN acts as a crucial and active role in developing related BOKs and training programs





# Invited Lectures from International Experts

- In recent years, we have invited a series of famous SE experts visiting Shanghai and giving their lectures to implement so-called “Zero-Distance Contact” with the forefront SE professionals
- These experts include:  
Steve McConnell, Tom Gilb, Alan M. Davis,  
Craig Larman, Leon Osterweil, Lori A Clarke,  
Alexander Wolf, Mary Lou Soffa, Mary Jean Harrold,  
Ross Jeffery ...



# SE Code of Ethics in China

- To promote a mature SE professional, publicizing and spreading out the SE code of ethics is also a pre-determined task.
- The code has been translated into Chinese and passed the review as the Chinese version of Code standard, released onto IEEE-CS/ACM web-site.



# Global IT Outsourcing Summit

- To join the global family, open up the outsourcing market channels and let more overseas clients know more about China's potential and competitive advantages, the Shanghai Municipal Government, SSIA and Shanghai SPIN have successfully sponsored the Global IT Outsourcing Summit 2003 and 2004 respectively
- It will become an annual activity in view of its value
- Many VPs from world famous companies attended the events and presented their insights and concerns, including Siemens, Nokia, NTT, NEC etc.
- 2005 event will be held in next November





# ICSE 2006

- The 28th International Conference On Software Engineering (ICSE2006) will be held at Shanghai
- It is the first time of such top level event in software community held in a developing country
- It will be sponsored jointly by Shanghai Informatization Commission, ACM SigSoft, IEEE Computer Society
- A series of Pre-activities have been organized in 2004 and 2005 to promote international cooperation
- In a Workshop 2004, ten world famous SE experts have been invited to deliver their speeches at Shanghai and to seek potential partners in China



# A Joint Proposal On Building SEC China

- To construct a complete supporting environment for developing a mature software industry, we learn there is also a key link necessary, that is, building a software engineering center
- Prof. Dr. Dieter Rombach, the Fraunhofer IESE, and Prof. Ju have submitted a joint proposal on that in last year
- We hope the Chinese government can accept our proposal, as a solid step towards a mature industry, to follow the Japanese model where a new SE center was just built in last October



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# Seeking SPI Strategy in China

- Selection of a proper strategy for SPI is especially vital to China in view of such fact that most of Chinese software companies are small business with wide process diversity, which are used to an ad hoc development, obviously lacking of SE disciplines.



# Initial Recommendation

- Implementing by stage
- Just Enough strategy
- PSP/TSP/RUP as basic
- Human factor in SPI
- Grasping the CMM/CMMI essence



# Implementing By Stage

- Experiences demonstrated carrying out ISO9000 is always a beneficial step toward CMM/CMMI, in particular, when the enterprise suffers the lack of discipline.
- It can help enterprise, as a transition, to built up its quality system and gear with the SE disciplines.
- ISO9000 certification is currently an affordable program in China owing to many local consulting services existed
- Thus, it is recommended here to adopt a two-step strategy for CMM implementation. Taking the ISO9000, combined some CMM consideration in advance, as the first stage, so-called CMM level 1.5.



# Just Enough Strategy

- A wise principle: Just Enough -- not too much, not too little.
- The emergence of Agile methods promotes much interests and attention on process agility. This enlightens Chinese software community a lot, also at a right time.
- The only problem is how to carry out and judge the “just enough” principle.
- The proposed strategy is to closely combine the SPI with enterprise’s business goals and seek a minimum set of key practices which can meet the goals of CMM KPAs and, meanwhile suitable for the business context
- To do so, Chinese enterprises should work together to create their own experiences. SPIN will act an important role for help information exchange and learning each other.



# PSP/TSP/RUP As Basic Skills

- Some SE experts advocate to promote PSP/TSP/RUP, as a basic skills for process improvement, even in a small enterprise.
- They believe the developers and teams are the cells of an organization. Their active involvement in the SPI is critical to enterprise's capability maturity.
- They claim SPI in China should start from the small and root.



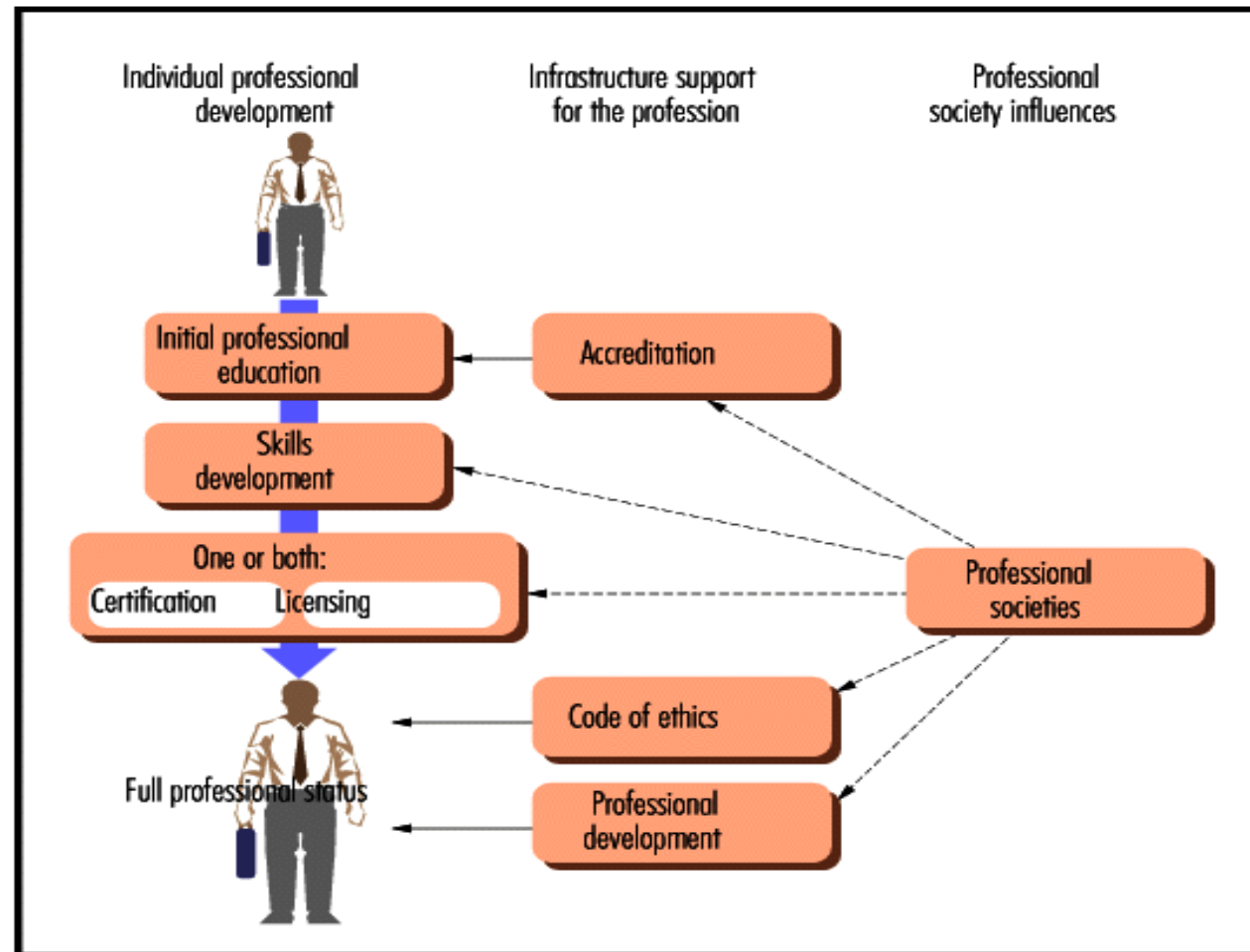


# Human Factor in SPI

- Besides the process itself, a vital side of SPI activity is human factor because process is carried out by people.
- Resistance from developers is often seen in many ISO9000 and CMM programs. To overcome the inertia for change and improvement can rely only on people's consciousness.
- It is important to help software people through necessary training to know-why and know-how.

# Towards Professionalism

- In Shanghai next Five-Years Plan (11<sup>th</sup> Five-Years Plan), an essential objective is to construct the **IT Talents Highland**





# Grasping the CMM/CMMI Essence

- CMM/CMMI is a principle, rather than a dogma.
- It is important to grasp its essence and be able to carry agilely out it based on business context.
- It should know CMM/CMMI evaluation is not the end and the key point is SPI, avoiding the order reversed.
- Such a risky trend should be prevented in China that many enterprises swarm toward getting CMM/CMMI evaluation merely for following others blindly and totally forgetting the essential purpose of SPI.

# ***Conclusion***

- ***As a part of the global economy, Shanghai software industry is moving toward more mature and will finally fuse into the international family.***

