

# Outline of Arguments about the Software Talent Shortage

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## Evidence for the shortage

Delays in projects caused by movement of personnel  
Delays in hiring  
Wage increases  
Silicon Valley start-ups having more difficulty finding key talent  
Project failures caused by unqualified people in some sectors

## Arguments against this evidence

There was a surplus of IT professionals 5 years ago  
There have been dire predictions before: telephone operators and physicists  
Labor shortages are cyclical and will disappear with rising wages  
There are plenty of programmers, employers are too picky  
No shortage exists -- employers want access to cheaper immigrant labor

## Impact of the shortage

This issue will reshape the SW industry  
Consolidation in some publishing categories  
New relationships with outsourcers  
New awareness in top-level corporate strategy  
New tradeoffs and liabilities in product design  
Migration of talent to publishers and "software-aware" firms  
In many industries, e.g. finance, some firms will gain competitive advantage  
Increasing cost of software development  
Increased failure rate for software products and software-intensive devices  
Increased delays and abandonment rate for projects of all sorts  
Slowing the overall adoption of technology  
America's advantage is fundamentally tied to rapid technology change

## Reason for the shortage

This is a demand vs. supply problem  
Computing technology becomes increasingly more accessible & accepted  
Demand for software comes from new ideas about how to use computers  
We appear to be reaching the limit of our programming capacity  
We still cannot mass-produce software -- we depend on craftsmen  
In many industries, SW has become critical to product and competitive strategy  
The trend is for more SW of greater complexity & importance

### **The scope of the shortage**

The shortage is global: not regional or national

Not limited to a few technologies like Java or HTML

Not caused by crises like the Year 2000 problem

Will get worse before it gets better; not likely to get better for a decade or more

### **Are there any solutions to this problem?**

Limited increase in output of talented programmers from schools

- Capacity of training institutions is limited

- This is not the career for every smart kid: alternatives, stress, lifestyle

- Demographics is working against us as first-generation IT folk retire

Limited resources from abroad, even if immigration policy were relaxed

- India was a special case

No new technologies for pervasive improvement in programmer productivity

### **Enterprise strategies for coping with the shortage**

Recognition of the strategic importance of software

- Audit software expenditures and software "asset"

- Business value of software may be clearer after December 31, 1999

Recruiting -- the best candidates no longer apply to IT shops

Retention -- it's not just money

- Reorganize software development groups to attract top talent

Think strategically about software investment

- Simplify operations and systems

- Buy vs. build tradeoffs

- Make investments of money and talent for greatest impact

Nurture alliances with outsourcing partners and contractors

Invest in software infrastructure