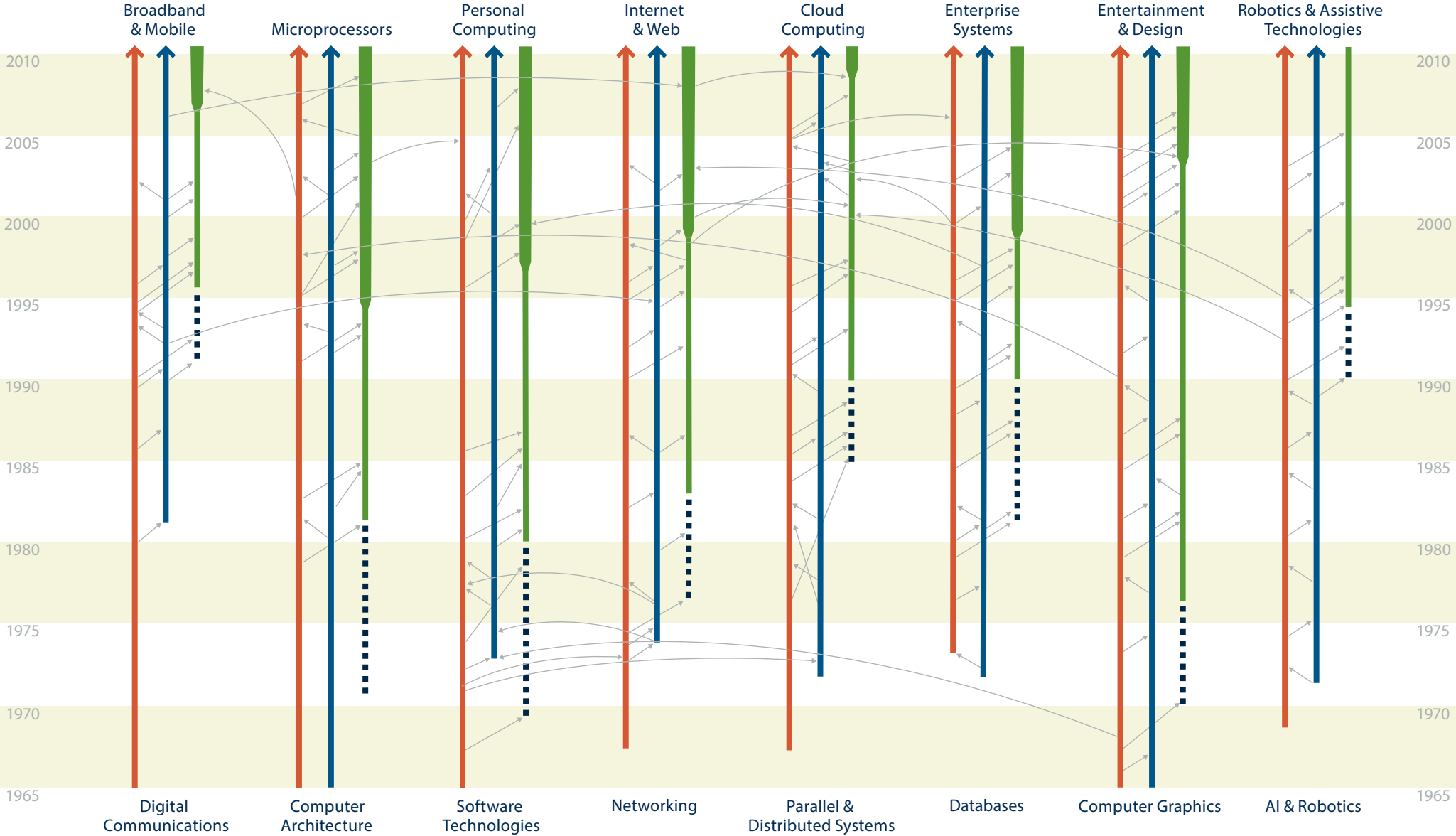


IT Sectors With Large Economic Impact

Motorola AMD Intel eBay Akamai Yahoo! IBM Electronic Arts
 Qualcomm HP Symantec Juniper Facebook Twitter VMware HP Adobe Autodesk
 Texas Instruments Apple Cisco Amazon Microsoft Oracle nVidia Pixar Xbox
 iPhone Dell Google Nuance
 Intuitive Surgical



Areas of Fundamental Research in IT

■ University
 ■ Industry R&D
 Products
 \$1 Billion Market
 \$10 Billion Market

TALKING POINTS FOR THE CSTB TIRE TRACKS CHART

1. The chart is a timeline that tracks the growth of different sectors of the IT economy. You can see the dates of the timeline up top.
2. The chart has three lines for each subsector of the IT industry -- a red line that indicates when research was performed in universities (largely supported by the federal government), a blue line that shows when industrial research labs were working in the space (largely with private sector funding), and a dotted black line that indicates when the first product was introduced in the sector. Where that dotted black line turns solid green, it indicates when that became a billion-dollar sector. The arrows indicate the flow of people and ideas between the sectors.
3. When the National Research Council's Computer Science and Telecommunications Board original produced this chart back in 1995, they identified nine different billion-dollar subsectors. When they went back and revised it in 2003, they identified 10 more -- 19 total billion-dollar subsectors of the IT economy. They're currently revising the chart for a third time and will identify even more (there's no search there, no social networking, digital video, etc).
4. The chart shows a number of key aspects of early-stage scientific research:
 - a. It often takes a long time before it pays off -- in a number of cases, the earliest research is more than 15 years before the introduction of the first product in the space.
 - b. It often pays off in unanticipated ways -- developments in one sector often enable advances in others, often serendipitously.
 - c. That research in universities doesn't supplant work done in industry, and vice versa
 - i. The research performed in universities is generally a completely different character than research funded by industry.
 - ii. Industry is generally focused on the next product cycle, or two -- not 5 or 10 years out.
 - iii. It's difficult for industry to capture the benefit of early stage scientific research because the results of that research, by nature, are available to everyone.
 - iv. The payoffs of early stage research are unpredictable.
 - d. The research ecosystem is fueled by the flow of people and ideas back and forth from university and industry, and this robust ecosystem has made the U.S. the world leader in information technology.
5. Each one of these sectors bears the clear stamp of the federal investment, investments that have demonstrated extraordinary payoff.
 - a. Payoff in the explosion of new technologies that have touched every aspect of our lives
 - b. Economic payoff, in the creation of new industries and literally millions of new jobs.