The Role of Diversity in US Competitiveness

Doug Busch

**Vice President
Chief Technology Officer
Digital Health Group
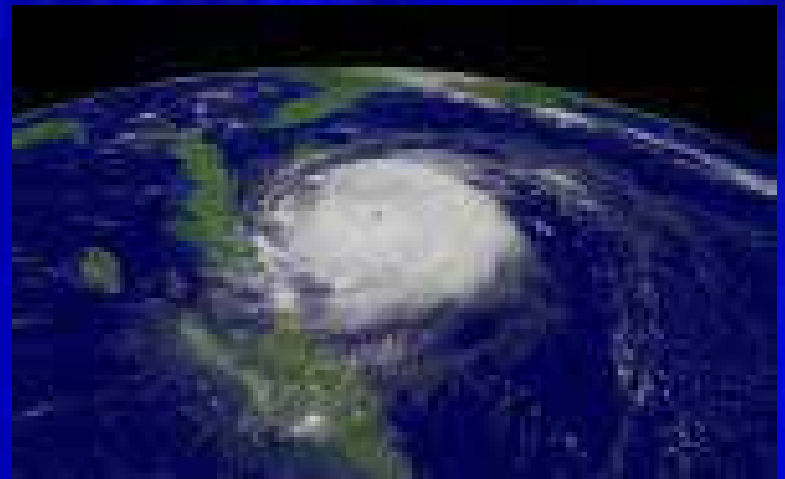Intel Corporation**

**WEPAN NAMEPA Conference
April 11, 2005**

Three Powerful Forces Converging

- *Technology* is becoming ubiquitous
- *Globalization* is accelerating
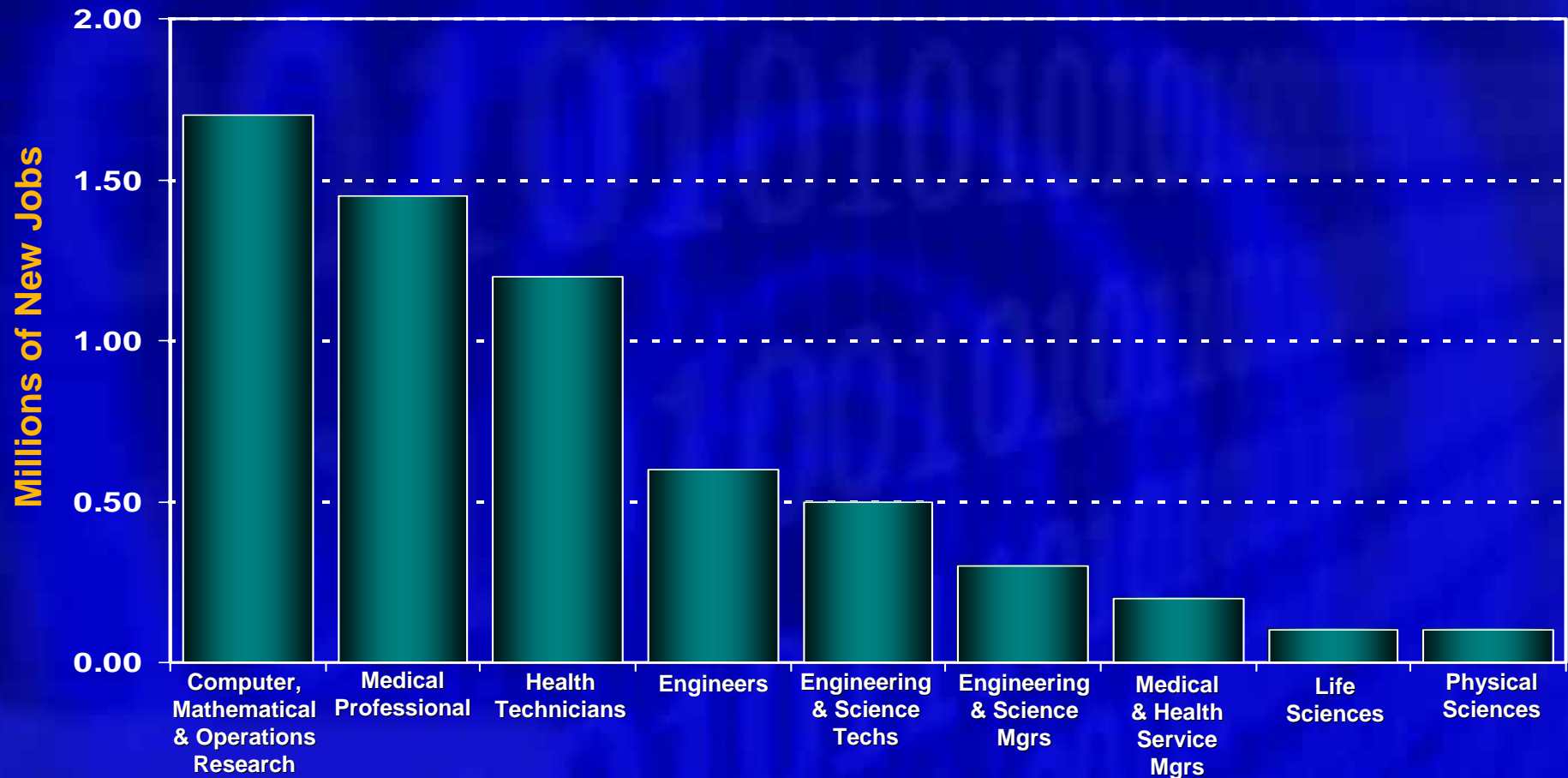- *U.S Demographics* are changing

Science and engineering capability will be the foundation of economic success for the US in the 21st century
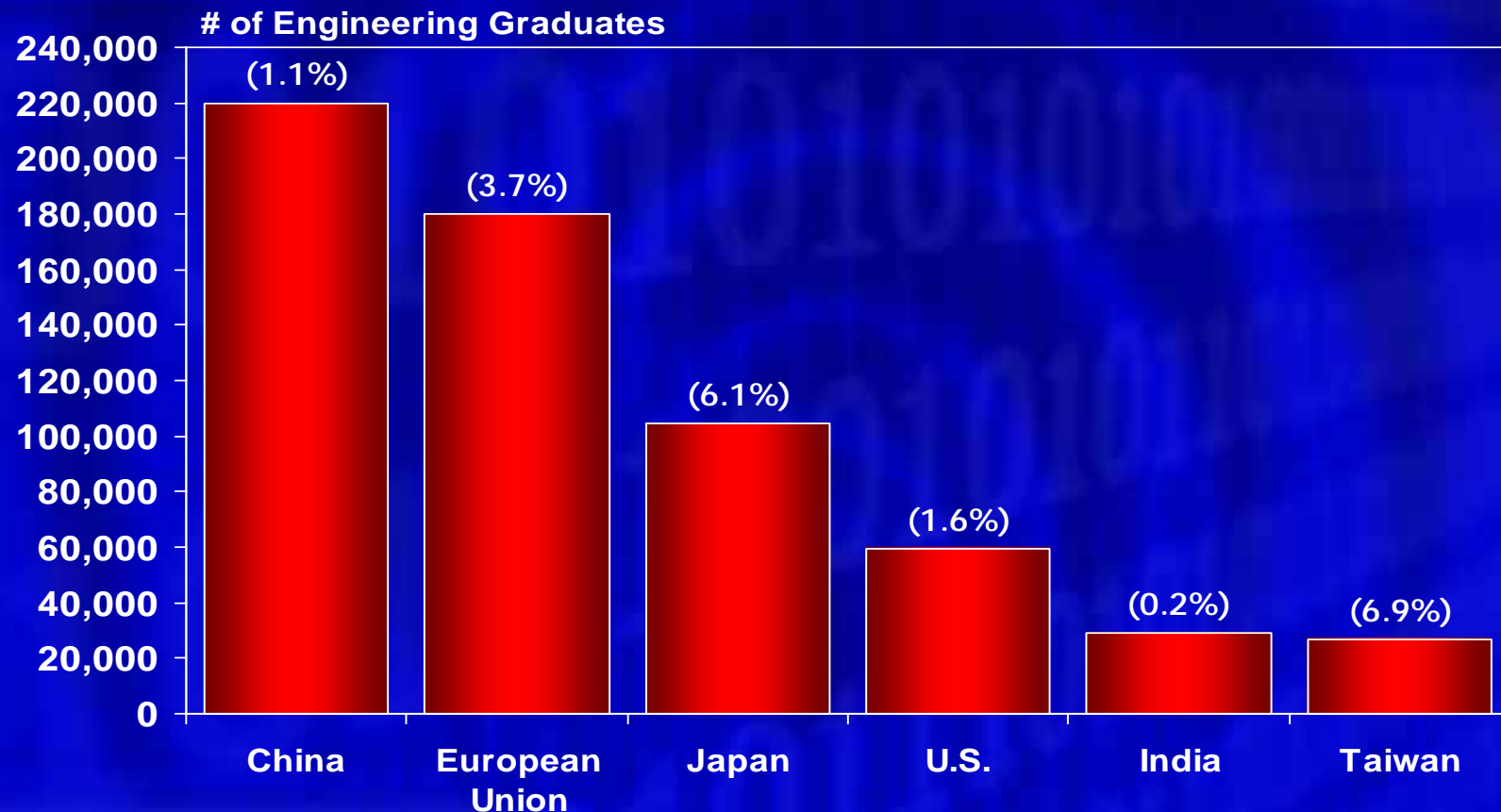
Demand is High

6 million job Openings are projected for Technically Trained Talent

Projected # of job openings by technical field, New Jobs, & Net replacements, 1998-2008

Source: US Bureau of Labor Statistics

Supply is International

# of Engineering Graduates

Country	Graduates	(%)
China	~220,000	(1.1%)
European Union	~180,000	(3.7%)
Japan	~105,000	(6.1%)
U.S.	~60,000	(1.6%)
India	~28,000	(0.2%)
Taiwan	~26,000	(6.9%)

y-axis scale: 0, 20,000, 40,000, 60,000, 80,000, 100,000, 120,000, 140,000, 160,000, 180,000, 200,000, 220,000, 240,000

(%) = Percent of 24 year olds with engineering degrees
Source: National Science Board, "Science and Engineering Indicators – 2004"; Table 2-33. India data from 1990. NSF estimates 251k Sci & Tech degrees in 1999

intel

4

Current Examples

- **Radiology**
- **Investment Analysis**
- **Computer, Cell Phone Design**
- **Software Development**
- **Business Process Operations**
- **Research chemistry**
- **…**

VIRTUAL RADIOLOGIC CONSULTANTS

Home   Services   Company   Careers   866.

Radiologist: FAQs

What qualifications do your Radiologists need?
Virtual Radiologic employs only U.S. Board certified Radiologists. We handle the licensing, credentialing and insurance processes required for you to practice in different states.

What are the benefits of working for Virtual Radiologic?
Virtual Radiologic offers an unbeatable quality of life and the freedom to work from where you want to live. Our Radiologists earn prime industry salaries, and typically work only 26 weeks a year. Virtual Radiologic provides all equipment necessary to provide a highly productive interpretation, and provides back office support including licensing, credentialing, and malpractice insurance.

Can I read from anywhere in the world?
Yes, if a cost-effective network infrastructure is available. At minimum, we require, DSL/ADSL, or Cable Modem connection of at least 1mb/sec. Virtual Radiologic's insurance carrier extends medical liability coverage to all but a handful of countries.

Can I read at home?
Absolutely. Virtual Radiologic helps you purchase and set up your home office, dedicated workstation and necessary telecommunications equipment. Virtual Radiologic's centralized call center will assist as a "virtual secretary/technologist" to greatly limit the number of distracting phone calls during your workday.

What's "Safe" ?

- **'Hands-on' local services**
- **Face-to-face interaction**
- **???**

America <u>can not</u> depend on the jobs that are 'safe' from global competition for our economic future

intel

Potential Competitive Strategies

- ~~Legal / trade barriers~~
- ~~Capital investment~~
- ~~Wage reductions~~
- ~~Intelligent citizens~~
- ~~High literacy~~
- ~~Average years of education~~

intel

7

Results

- **>800,000 jobs moved outside the US, 2000-2004**
- **Centers of competence growing in India, China, Malaysia, Russia, …**
- **Emerging market governments investing in education, infrastructure**

Center of gravity is shifting --

intel

Reality Check-
Information Technology Workers

Generalized Characteristics

	US	Asia	Eastern Europe
Hourly wage	1.00	.30	.20
Total cost	1.00	.50	.40
Math Skills	Fair	Good	Excellent
Dev Methods	Fair	Excellent	Good
Entry Level Qual's	AA/BS	BS/MS	BS/MS
Advanced Degrees	Scarce	Available	Abundant
English Skills	Excellent	Good	Fair

intel

We must react swiftly-

- **Make American technology workers the most <u>productive and creative</u> in the world**
  - **Innovative**
  - **Collaborative**
  - **Highly skilled**
  - **Adaptive**
  - **Efficient**

Critical Characteristics

- **Teamwork**
- **Discipline**
- **Process oriented**
- **Analytical skills**
- **Problem solving**
- **Creativity**
- **Integrity**
- **Accountability**
- **Adaptability**

Competitive Assets

- **<u>Diversity</u>**
- **Shared culture**
- **Creativity**
- **Rule of Law**
- **Flexibility**

intel

12th Grade Math & Science Achievement … *a national tragedy*

Math
12th grade
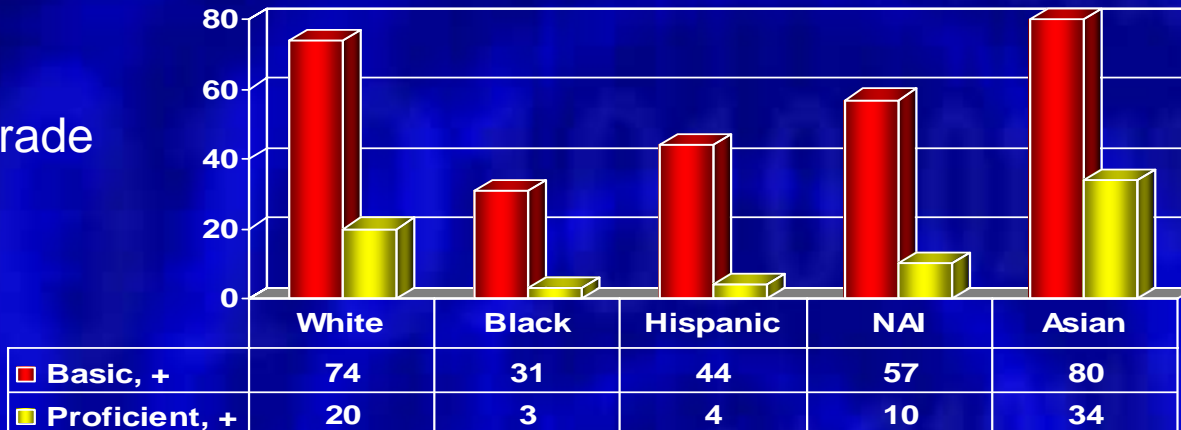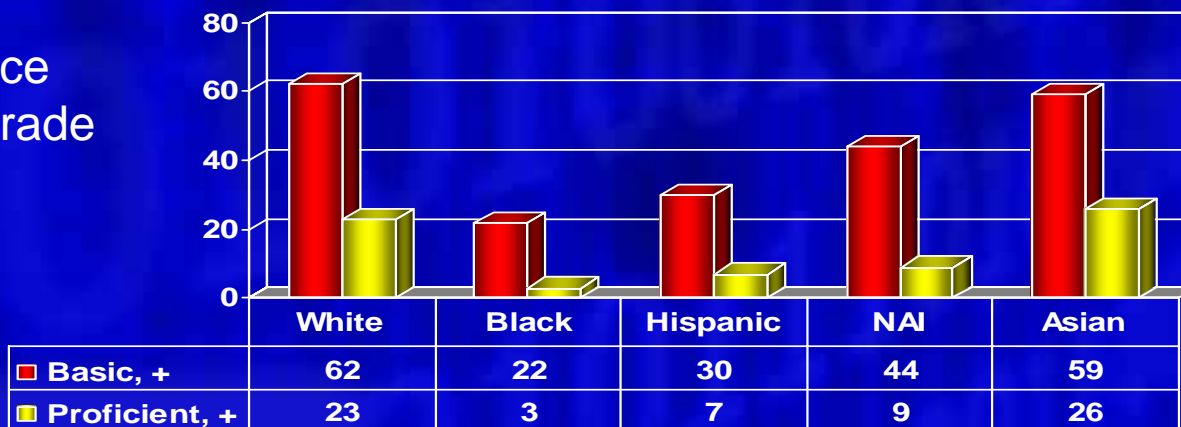
	White	Black	Hispanic	NAI	Asian
■ Basic, +	74	31	44	57	80
■ Proficient, +	20	3	4	10	34

Science
12th grade

	White	Black	Hispanic	NAI	Asian
■ Basic, +	62	22	30	44	59
■ Proficient, +	23	3	7	9	26

URM Retention Rates in Engineering

Retention Rates by Selected Discipline, 2001		
	Retention Rates	
Discipline	**Total URM**	**Non-URM**
Chemical Engineering	35.0	48.1
Civil Engineering	37.9	44.2
Computer Engineering	47.6	58.7
Electrical Engineering	36.3	47.2
Industrial Engineering	44.2	51.3
Mechanical Engineering	38.0	48.7
Total	38.9	49.5
Note: Retention rates for "total" include only the six disciplines listed.		

intel
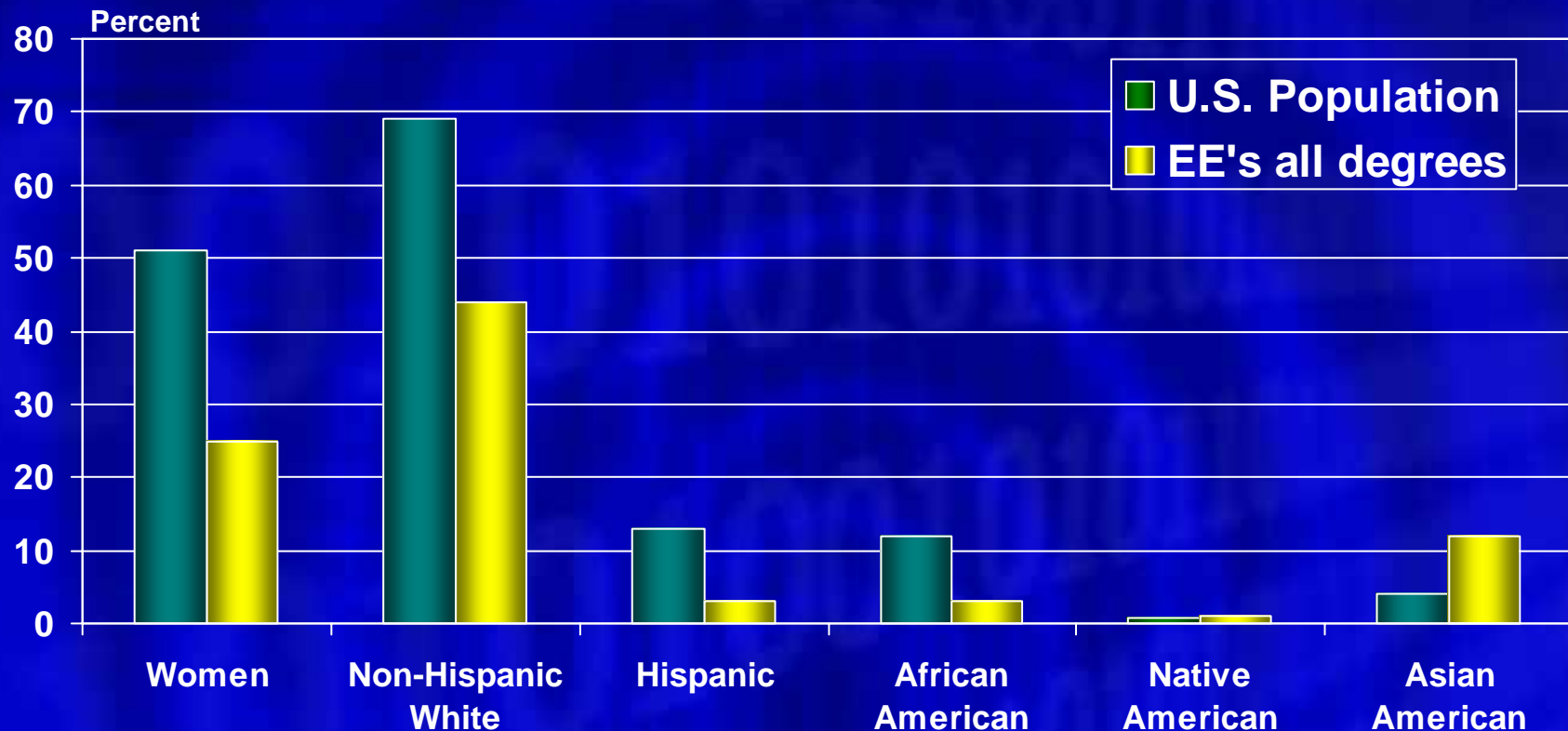
Challenges

- **Weak cultural focus on education**
- **Fragmented strategy and tactics**
- **Slow action**
- **Poor follow-through**
- **Inadequate investment**

MUST
What ~~can~~ we do?

- **Set aggressive goals**
- **Use data to understand what really works**
- **Work together collaboratively**
  - **Move upstream to improve K-12 education**
  - **Attract top talent into degree programs**
  - **Train them to be <u>the best in the world</u>**
  - **Retain students to graduation/advanced degrees**
  - **Help them grow into the next generation of leaders**

intel

Their future depends on our actions…

intel

18