# Tough Choices or Tough Times: Developing Competitive Advantage by Exploiting the Changing Career Dynamics in the IT Industry

## ECC 2011 CONFERENCE PRESENTATION


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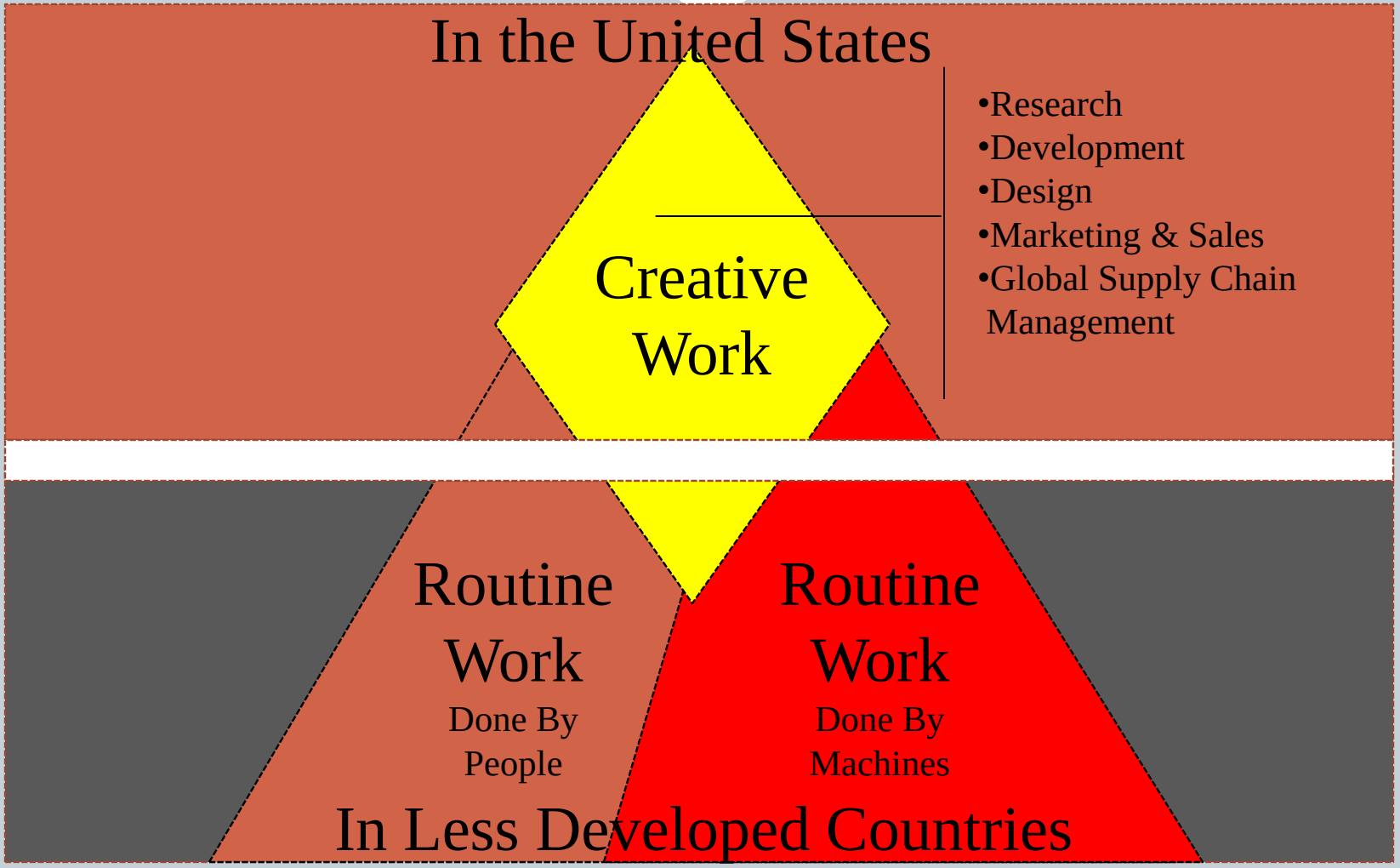
- The first report from the Commission on the Skills of the American Workforce, America's Choice: high skills or low wages was released in 1990.
- The commission concluded that:
  1. A world-wide market was developing for low-skill labor.
  2. For the U.S. to compete in that market it could look forward to a continued decline in wages and very long working hours
  3. Or it could focus on competing in the world wide market for high-value-added products.
  4. To do that, it would have to adopt internationally bench-marked standards for educating its students and workers.

- Over the last 20 years, the American workforce has had to face the following important trends:
  1. A swiftly rising number of American workers at every skill level are in direct competition with workers in every corner of the globe.
  2. Further , if someone can figure out the algorithm for a routine job, chances are that it is economic to automate it.
  3. As a result, many good well-paying, middle-class jobs involve routine work of this kind and are rapidly being automated.
- In the future, to be competitive U.S. workers would have to possess a very high level of educational preparation, particularly, in the science, technology, engineering, and mathematics (STEM) disciplines.

# Here is what the Commission envisioned a prototypical U.S. Industry will look like in 10 years if all goes well




Source: National Center on Education and the Economy, 2006

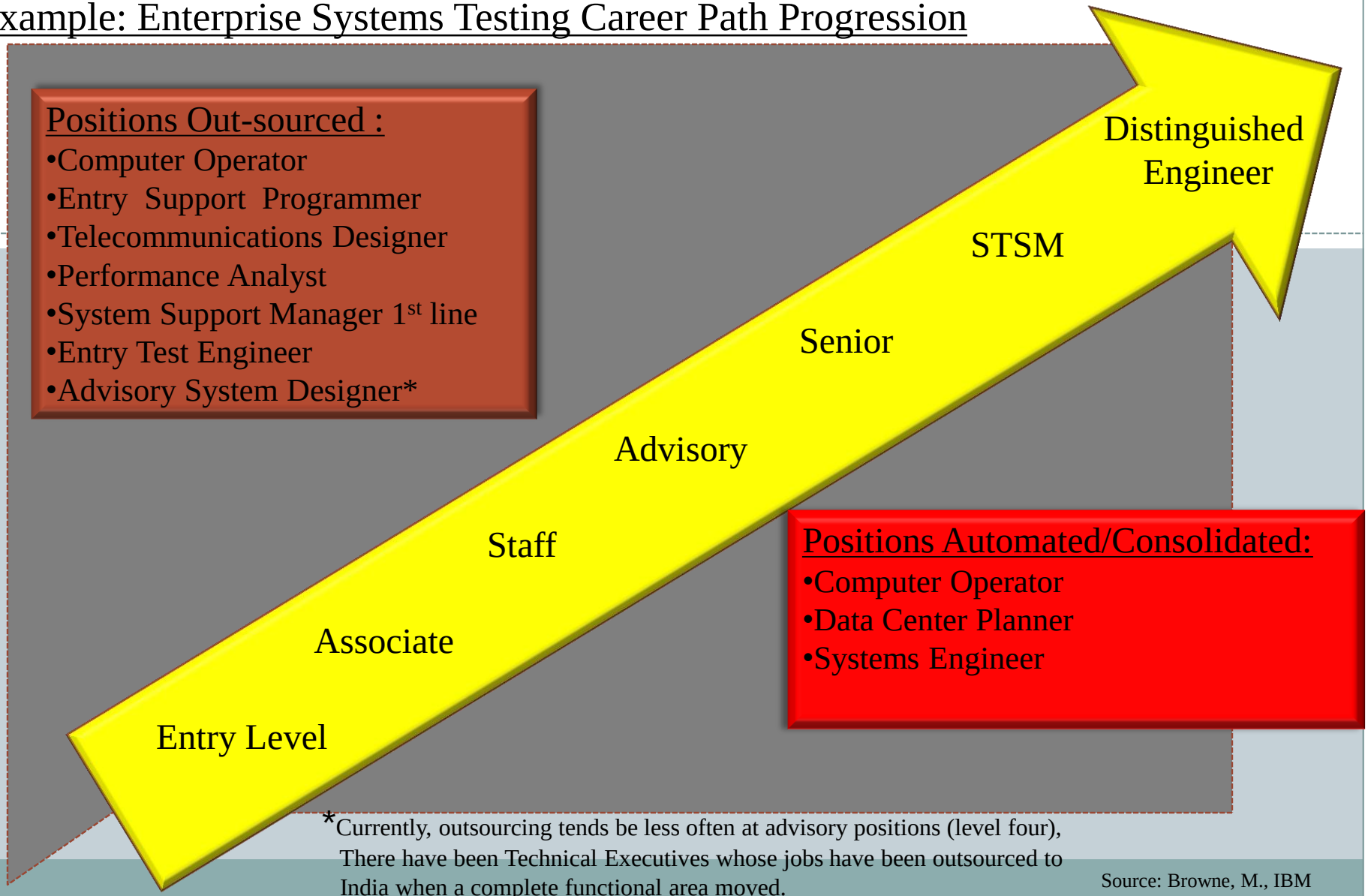
# This reality requires a fundamental different approach for institutions of higher education

- To be successful and relevant institutions of higher education must pursue one of the following educational options:
  1. Forge long-term partnerships with government and industry leaders to provide basic research and new product innovations.
  2. Forge long-term partnerships with industry leaders to provide practical research and workforce training.
  3. Reorganize themselves into entrepreneurial institutes to create the new industries (diamonds) of the future.
- UMES is potentially well positioned to provide students educational opportunities in all of these important areas.

- For example, over the past three years UMES has worked with IBM forged a unique partnership to help supply some of its next generation of IT workers.
- The School of Business & Technology is working with its Poughkeepsie Manufacturing Facility to create a new paradigm for educating its product testing and legacy systems workforce.
- We in the process of developing an innovative four to five course hardware and software testing curriculum that is planned to reduce IBM's new tester's training and development time by 6 to 8 months.
- Thus, enabling UMES to develop a unique competency in a critical area of the Enterprise IT Industry Diamond. Creating a win-win for UMES and IBM and its business partners.

# Competition for career opportunities inside the Diamond has intensified due to the impact of outsourcing and advances in IT.

Example: Enterprise Systems Testing Career Path Progression




*Currently, outsourcing tends be less often at advisory positions (level four), There have been Technical Executives whose jobs have been outsourced to India when a complete functional area moved.

Source: Browne, M., IBM

# Positions Held by Mikey Browne at Distinguished Engineer at IBM

- Third shift print pool operator
- Third shift computer operator
- Data center planner
- Entry VM & MVS system programmer
- Assign to a major university system 6 months to setup statewide S/36 network for SBA
- 6 months shadowing a VM System Engineer at a local branch office
- Telecommunications designer
- VM/VTAM performance evaluation
- SNA Network Designer
- VM System Support manager
- VTAM System Support manager

Positions in red are outsourced or automated

- AIX/370 Test Engineer
- AIX/ESA Test Engineer & Designer
  - Promoted to Senior Engineer
- Live Oak Test Engineer
- RS/6K SP2 System Designer & Developer
- SP2 PSSP Development Mgr
- SP2 Test Engineer & STSM
- Loan to Trading Firm Unix System Architect – 1 yr
- STG Hardware & Clusters Test Engineer
- 6 months IGS Check Archive Firm Crit Sit
- STG Chief Test Engineer
- 5 months Entertainment Firm Crit Sit
- STG Chief Test Engineer & DE
- Member IBM Academy

Source: Browne, M., IBM

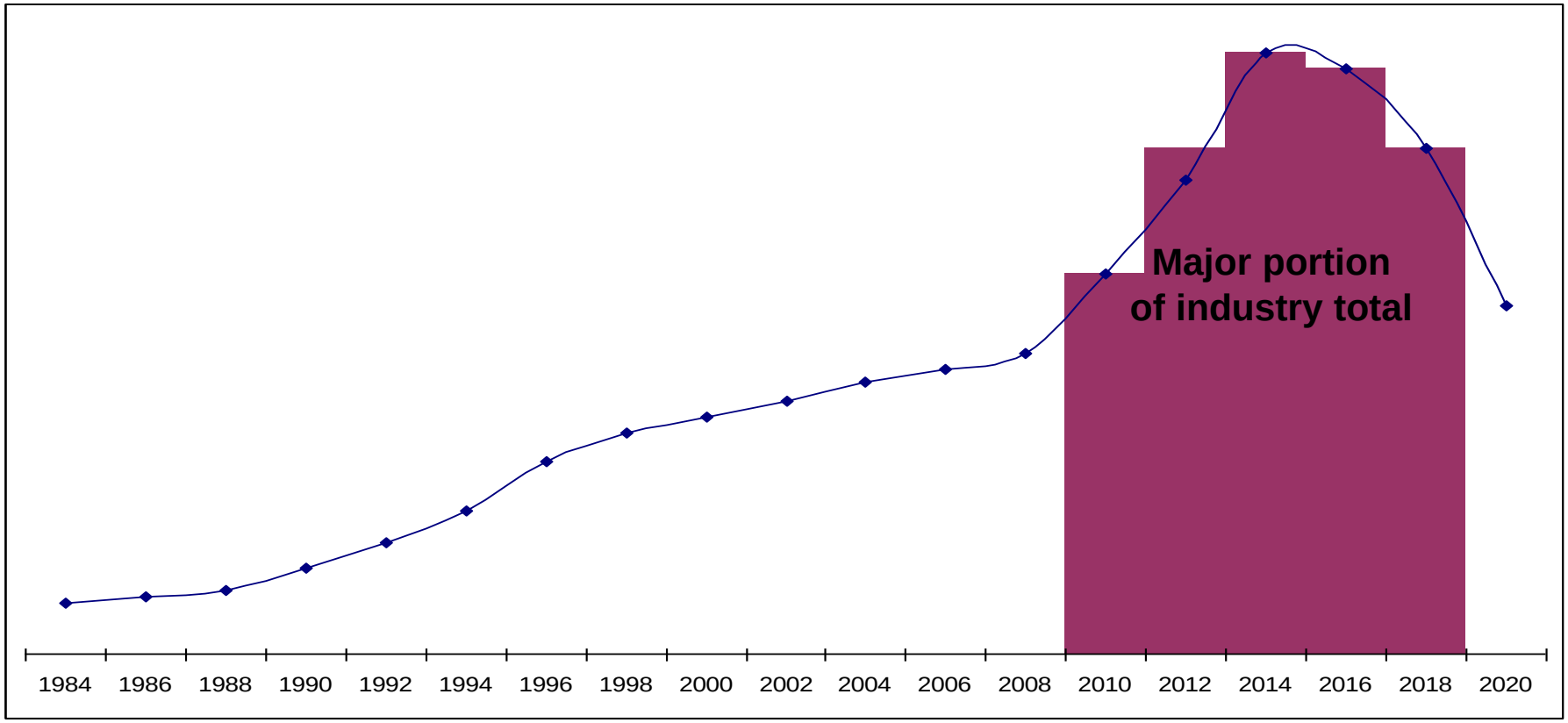
- The compelling story here is that many of the jobs that previously provided a tester the foundation knowledge to do the advanced jobs that are now being outsourced or automated. This raises some fundamentally important issues for firms like IBM:
  1. Where and how will the testers of the future acquire foundation knowledge embedded in those now extinct jobs.
  2. What new structures and mechanisms need to put in place today to assist the workers of the future in climbing the corporate latter?
  3. Can America's institutions of higher learning change fast enough to respond to these potential challenges and opportunities? Or will they become irrelevant?

# What have we learned from our work at IBM?

- Currently, outsourcing stops at advisory position (level four) but there have been Distinguished Engineers at IBM in test whose jobs have been outsourced to India when all of test was moved.
- The same has occurred in the system support arena; the entire function gets outsourced then all jobs are moved regardless of level.
- What keeps you ahead of the curve is continual leaps of innovation and risk usually every year each time adding significant complexity to what you are doing.
- This is what successful entrepreneurs do. Working harder and longer only holds off the outsourcing by a year or two at most.
- To be successful, what is needed is a T-Shaped Knowledge worker.

# A significant opportunity for UMES Students is being created by the existent of a critical IT Industry Skills Problem

## Retirement Exposure




Source: Prewitt, R.., IBM and
Thompson, J. MCEC

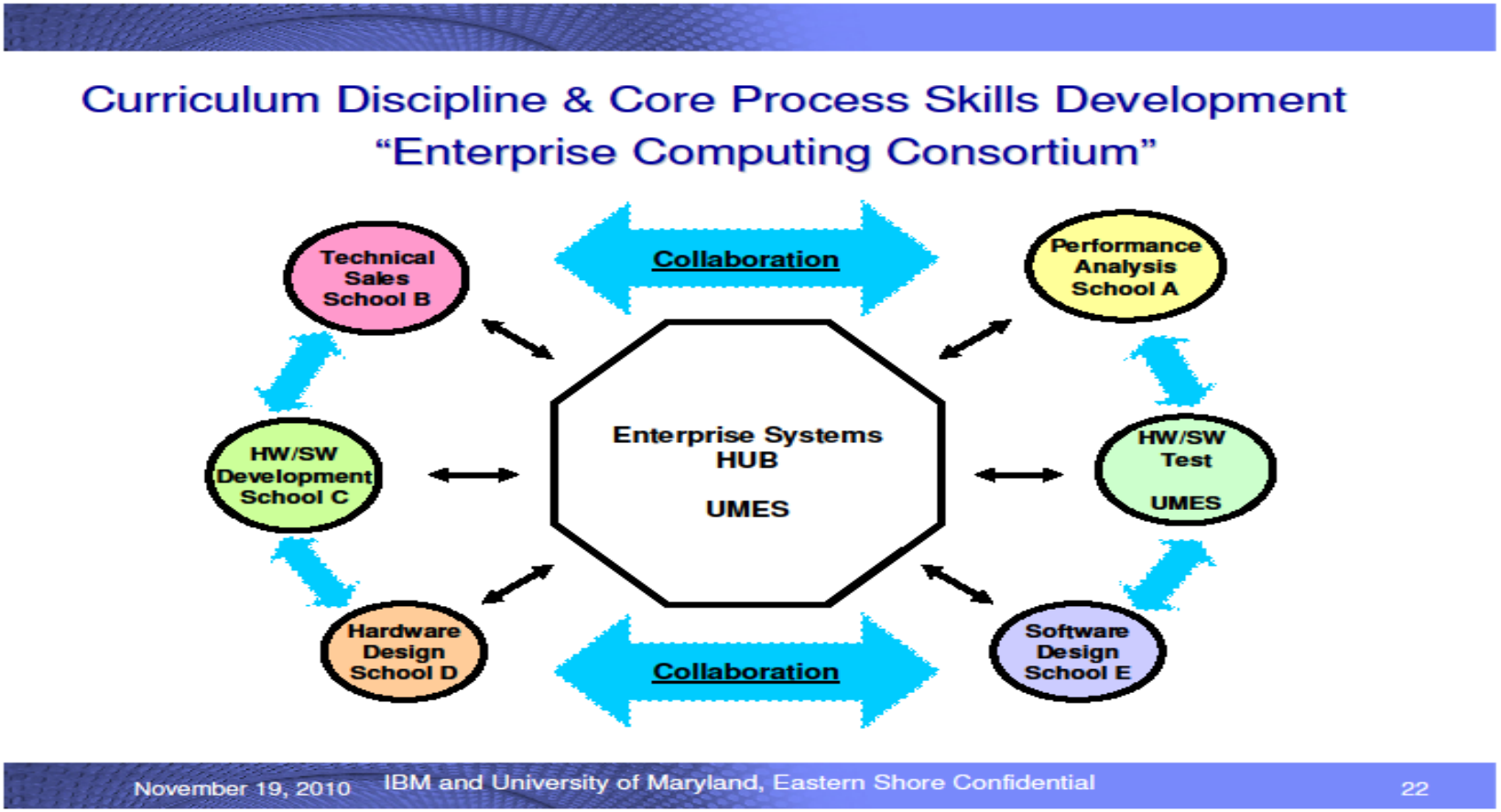
# What is a T-Shaped Knowledge Worker?

- A T-shaped person combines broad understanding of business processes (the top, horizontal part of the T) with deep practical execution in a specific functional area (the bottom, vertical part of the T).
- People who share the same understanding of the business process (top of the T) can team up with colleagues with different I-shaped specialties (bottom of the T) to cover the waterfront of a business need without losing that common vocabulary and understanding of their shared business objective.
- Success in the 21st century is being defined by collaborative training that combines computer science/engineering skills with social sciences, languages, psychology, business, and other disciplines.

# How are T-Shaped Skills built?

- T-shaped skills can be built in a number of ways:
  1. Take existing narrow but deep specialists and teaching them broader business language and skills.
  2. Take generalists and teaching them deeper specialized skills.
  3. Or build T-shaped skills organically through educational institutions.
- This is where we believe institutions like UMES can build a niche and potential sustainable competitive advantage for themselves.

# Our vision of the future




Source: Prewitt, R , IBM and Thompson, J. , Collaborative Computing

# What is the alternative?

**NY Times (01/07/11): College's Value Added**

**By AMANDA M. FAIRBANKS**

At a time when recent graduates, age 24 and under, are experiencing a jobless rate of nearly 10 percent, a new study renews the debate over the value-added component of going to college.

The sociologists Richard Arum of New York University and Josipa Roksa of the University of Virginia tracked 2,300 students through four years of college and into the labor market. The first two years are chronicled in their forthcoming book, "Academically Adrift: Limited Learning on College Campuses" (University of Chicago Press).

This interview with Dr. Arum was conducted and condensed by Amanda M. Fairbanks.

***Q. What piqued your interest in this topic?***

A. For the last several decades, we've evaluated learning in K-12 education. But there's never been a serious attempt to follow kids through college. We conclude that large numbers don't appear to be learning very much.

***Q. You find that as many as 45 percent of students by sophomore year show little to no progress. What aren't they learning?***

A. To gauge their progress, at the start of college and also at the end of each student's sophomore year, we did surveys, collected transcripts and administered something called the Collegiate Learning Assessment, which measures higher education's impact on student learning. We tested them in areas like critical thinking, complex reasoning and written communication. These are the general skills that most people believe should be at the core of undergraduate learning.

***Q. These students started college in fall 2005 and graduated into a radically different economic environment in spring 2009. How have they fared since?***

A. They're getting hammered. For kids of the great recession, their life trajectories have been fundamentally altered. Whether it has to do in part with their undergraduate education or something more particular to the historic moment we're living in is an open question. Regardless, as global economic competition increases in coming years, U.S. higher education will have to focus more on improving the quality of undergraduate learning.

***Q. Describe the cohort since your book leaves off.***

A. Since graduating, 60 percent have full-time jobs, nearly 36 percent have moved back home to live with either their parents or relatives and nearly one-tenth are carrying more than $60,000 worth of debt. Of those who have jobs, more than two-thirds were making less than $35,000 a year and 45 percent were earning $15,000 or less.

***Q. What can you tell us about those who are succeeding?***

A. Employed graduates tended to have not only higher grade-point averages, but also higher test scores. And 20 percent of the time the person who had either interviewed or hired them had attended the same college.

***Q. As a professor at New York University, where one year of college costs $50,000 a year, what advice do you give your students?***

A. Granted, some of the underlying assumptions are changing. But I advise them to go to college, to get a degree and that the returns will still be significant.

But job or no job, I ask them what levels of debt are reasonable. We've just gone through a period when college graduates did very well. It coincided with an increase in the cost of higher education and subsequent increase in debt loads that students left college with.

When credentials always led to high-paying jobs, we were able to dismiss them as a sort of collateral damage.

***Q. So where do we go from here?***

A. Crises are opportunities to have serious conversations about the meaning of what college is about, our responsibility to these kids and mostly their responsibility to themselves. When society is booming you can say things like "college for all" and who can disagree with it. But what does "college for all" mean and what makes it important and meaningful for society to invest in it and, most importantly, for our students to invest in it?