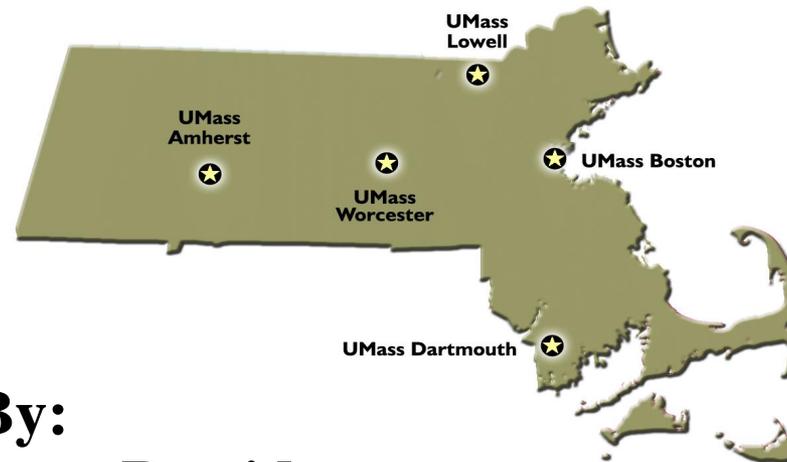


UMass: An Innovation Imperative for the Commonwealth



By:
Jack M. Wilson, President
University of Massachusetts

September 1, 2004

Mass Software Council





UMass Focus and Mission

- UMass is a state-wide, high-quality learning and discovery institution that transforms the lives of students and communities in Massachusetts.
- The path to the **economic and social development** of **Massachusetts** and its diverse regions goes **through UMass**.

A Substantial Higher Education Resource

- **\$1.7 B enterprise** in FY05 (\$326M state appropriation- \$400M+- in FY05)
- **Over \$320M in sponsored research** (90% outside of Rt 128)(# 3 in Mass)
- **\$25 Million per year** (top 20) in commercialization of research
- **5 campuses** and 80 off-campus sites throughout the Commonwealth
- **14,000 employees**, making UMass a major employer across the state
- **About 58,000** undergraduate/graduate/continuing education students
- **UMassOnline: 14,700** enrollments in workplace in 40 degree programs
- **Over 10,000 graduates** annually
- **Over 450 BS/MS/PhD** programs
- **Over 320,000 alumni** – 2/3 living and working in Massachusetts
- **\$1.7 B capital program** with huge deferred maintenance needs

Recent UMass Successes

Federal Grants

- **\$40 M** UMA ERC -Atmospheric Sensing
 - (with Raytheon, IBM, MA/Com. etc)
- **\$17 M** UMD/Tufts Botulinum Center
- **\$16 M** UMW Immunology Grant
- **\$12 M** UMB-Boston Science Ed Partnership
- **\$3 M** UMB BATEC Grant
- >\$10 M pending ERC to UMass Lowell, Northeastern, UNH, etc.

Tech Commercialization

- **\$20 M CVIP** last year and \$13 M in Q1 of this year
- **\$10 M +** Licensing of **RNAi** (Araios start-up)

Philanthropy

- **\$20 M** Partnership with Nantucket Conservation Foundation
 - \$20 M to endowment with 6 endowed chairs and \$ 8 M strategic fund
- **\$3 M** Blais Chair to Craig Mello at UMW

UMass Online

- **\$12.7 M** in UMassOnline external revenues

A Recent Case in Point

- CASA: An Engineering Research Center
 - Collaborative Adaptive Sensing of the Atmosphere
 - University partners: UMass Amherst, University of Oklahoma, Colorado State University, and the University of Puerto Rico, Mayaguez
 - Industrial partners: Raytheon, IBM, MA/COM, Vaisala, Vieux and Associates, Telephonics, and The Weather Channel
 - Government partners: NSF, NOAA's National Severe Storms Laboratory and Oak Ridge National Labs



CASA: Not an accident

- Began with ~ \$1 million donation from John Armstrong, former VP of IBM which was matched to create the Armstrong Chair at UMA.
- David McLaughlin fills chair.
- Research Constellation develops with Computer Science Professor Jim Kurose and others.
- Research funding grows
- Local investment to prepare ERC
- Governor gives \$ 5 million match in difficult time
- Potential \$ 40 M ++ Center is funded.

CASA: What does it mean?

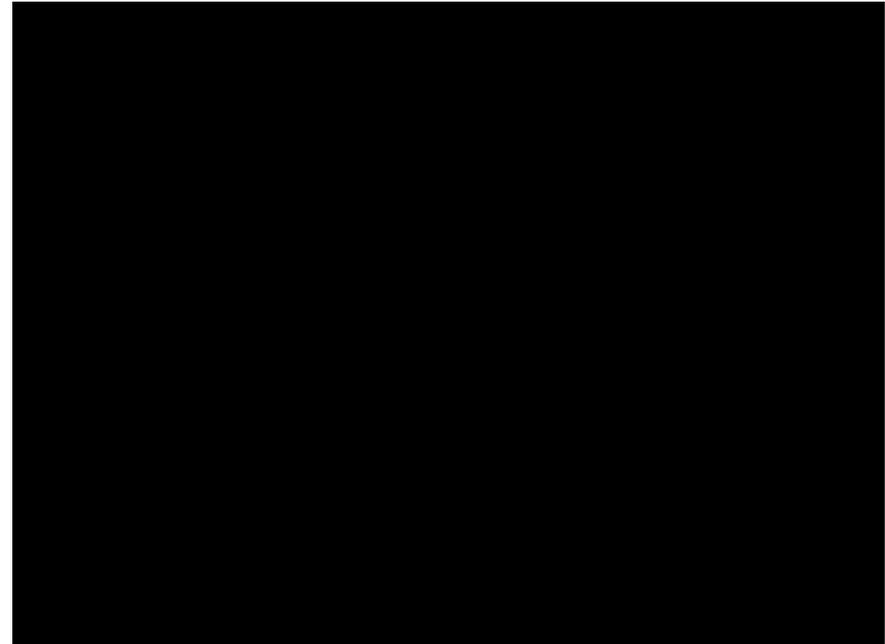
- Ensure leadership in research in area.
- Collaboration positions key Massachusetts employers for continued success.
 - Raytheon: microarrays of collective radars
 - IBM: Real time data analysis from multiple sources.
- Yields possibility for new company spin-offs.
- Provides economic stimulus in western Mass.

Another Case in Point

- RNAi Discovery (2 of 3 researchers at UMassMed)
- Promises opportunities for both research and treatment of genetic or DNA and RNA based diseases.
- Science magazine designates this as the number one discovery of 2002.
- Initial license for \$10 million to existing company.
- New company created in Worcester.
- Worcester positioned to be the center of development of RNAi technologies

And there is more

- Konarka Technologies
 - Lowell
- Avant Immunotherapeutics
 - Fall River
- Green Chemistry
 - Boston – Lowell
- Fisheries and Marine Sciences
 - Dartmouth
- UMass Amherst
 - BayState Partnership



Microsoft and UMass

- “The University of Massachusetts Amherst remains a very rich source of highly talented and highly technical graduates who help shape the future of our industry. Microsoft appreciates the ongoing technical, strategic and recruiting relationships established with UMass over the years.”
 - Microsoft in 2002 Annual Partnership Report
- \$10 million in software donations
- \$1 million in cash grants.

Partnerships for Research- Microsoft

- Professor Keith Rayner (Psychology)-- \$200K research grant on visibility in reading
- Professor Prashant Shenoy's (Computer Science)—Technology support for class in Operating Systems (hand-held devices for research and learning) valued at over \$13K.
- Professor Beverly Woolf (Computer Science) \$38K for a research grant on intelligent tutoring software.
- Professor Gino Sorcinelli, (Isenberg School of Management) --\$50K (in several grants) to develop a learning portal for students with Microsoft Sharepoint software.
- Microsoft donated \$45,000 over three years to create the Microsoft Center for Women in Engineering and Science to support our mutual goal of increasing the number of women graduates in Engineering and the sciences. The center provides a space for women engineering students to study and develop an academic community.

The University in the Convergence of

- **Computing, Communications, and Cognition**
 - **Transforming our educational programs**
 - **Online programs, partnership with WebCT, Centra, and others.**
 - **Interactive learning in traditional classrooms**
 - **Linking communities in different geographies**
 - **Developing global programs**
 - **Transforming our business practices**
 - **Enterprise systems – expensive and powerful**
 - **Development of Central Shared Services**
 - **Transforming our research**
 - **Transforming our community service.**

Maintenance contract on every degree

- No longer good enough to give a student a four year degree and send him or her out into the world with a quick goodbye and an occasional request for a donation.
- Need to be there for every student throughout his or her career.
 - Updating a degree
 - Career direction changes
 - Lifestyle education requirements

NY Times Midnight Question

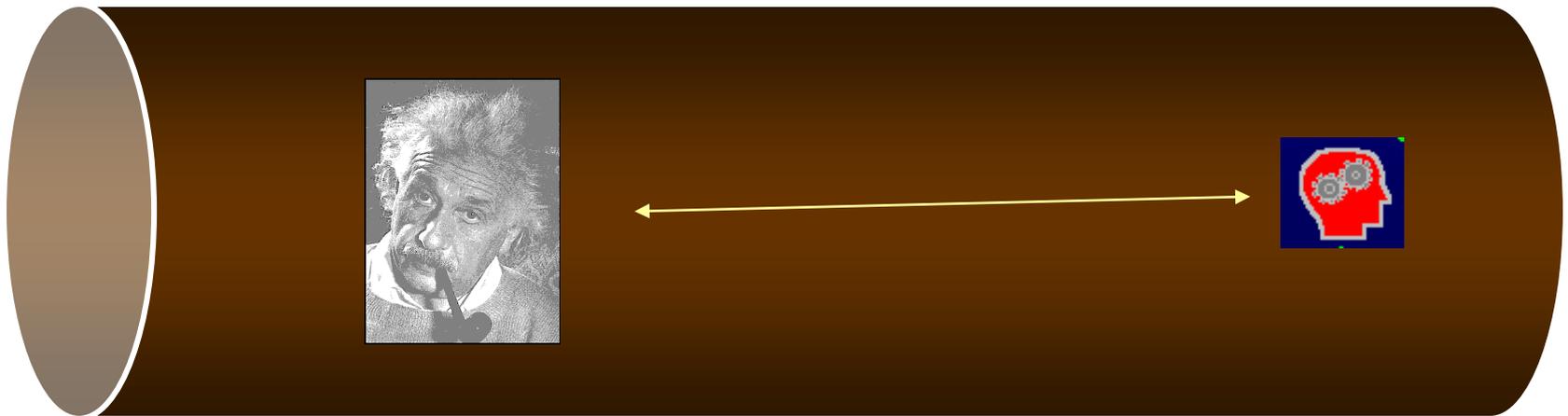
- “Dr. Wilson, Governor Kean told me that all this technology emphasis was fine but the the best education was:
Mark Hopkins on one end of a log and the student on the other.”
- “Could you comment on that?”
 - Rosalie Stemer, New York Times reporter in a late night call

The Electronic Log?

- “Rosalie, I couldn’t agree more..... as long as you will allow me to make it an **electronic log**.”
 - A sleepy Jack Wilson:
- This became the lead for the NY Times piece.
- My other hours of interviewing at other times did not appear.
 - **NY Times:** [The Virtual Classroom: Colleges face tough questions about using technology to teach more students. Can video lectures and E-mail offer the give-and-take of real learning?](#) By Rosalie Stemer; The New York Times, Sunday, January 8, 1995

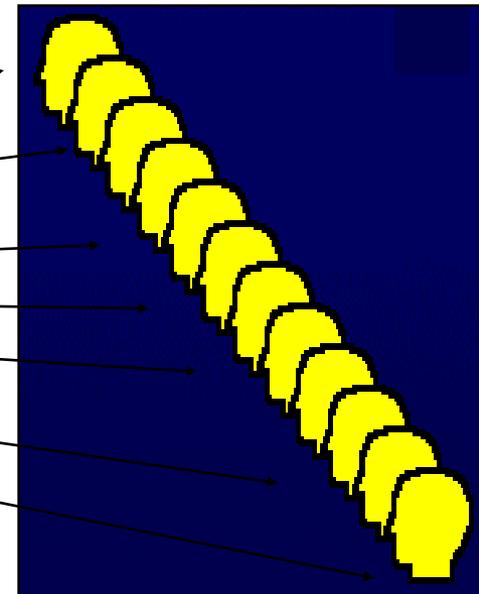
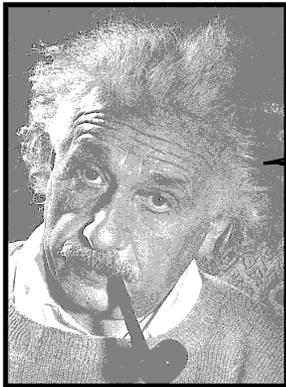
One to One Learning

The (electronic) Log

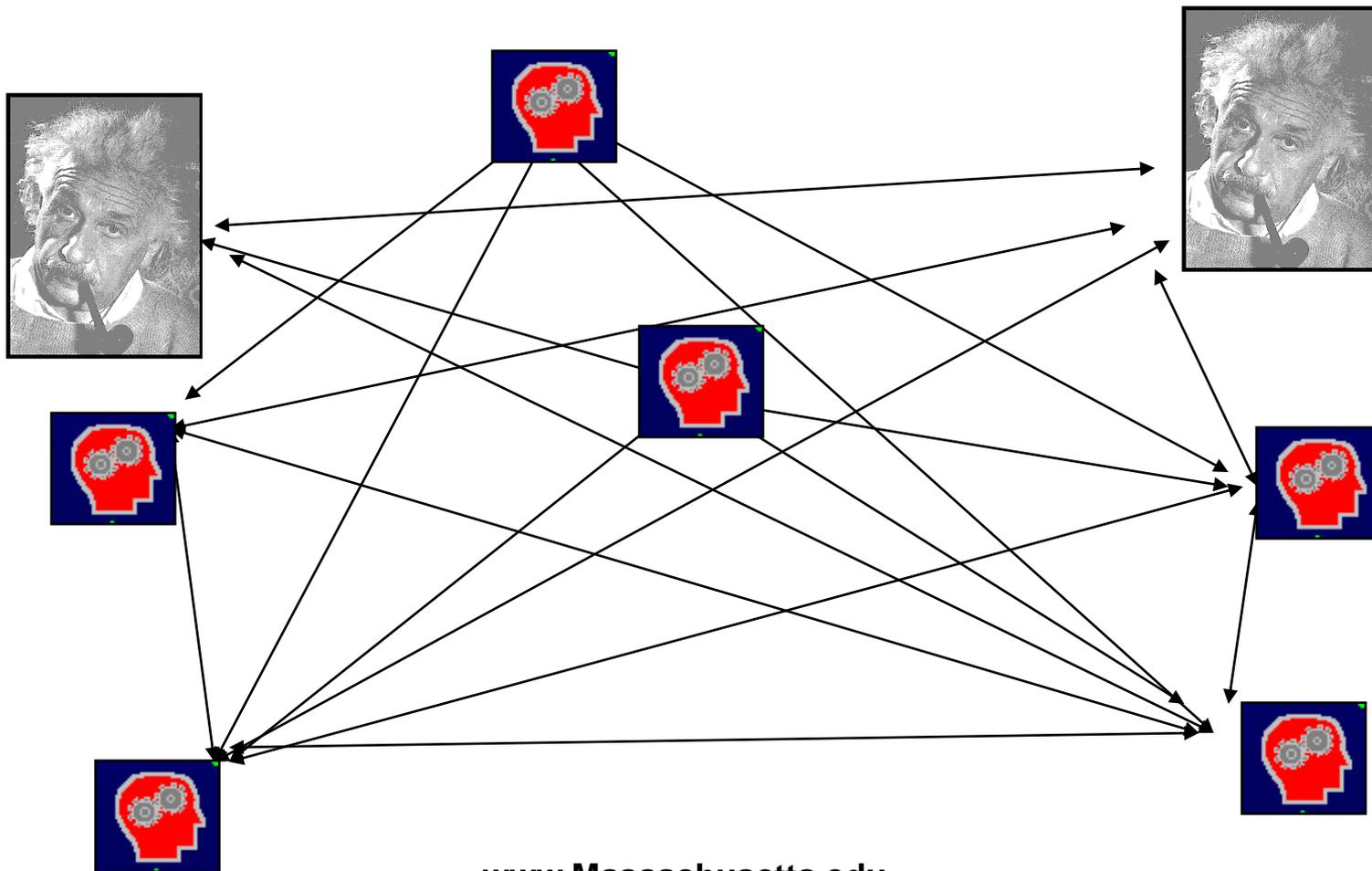


The transmission model

- The mainframe approach
 - Face to Face: The Lecture
 - Distance: TV (Cable or Satellite)
 - Pushes the back wall out a few thousand miles



Distributed Collaborative Model



Wilson's Favorite Laws!

- **Moore's Law:**

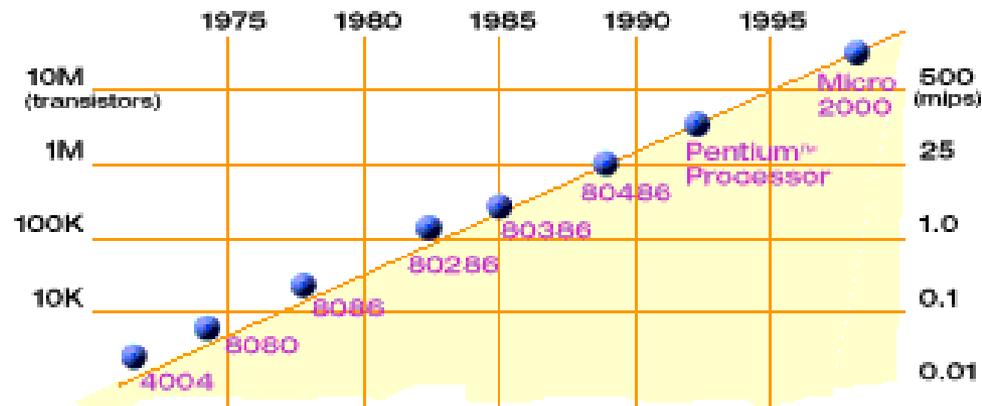
- CPU performance doubles every 18 months

- **Bandwidth law:**

- Bandwidth is doubling even faster!

- **Metcalf's Law:**

- the value of a network scales as n^2 where n is the number of persons connected.



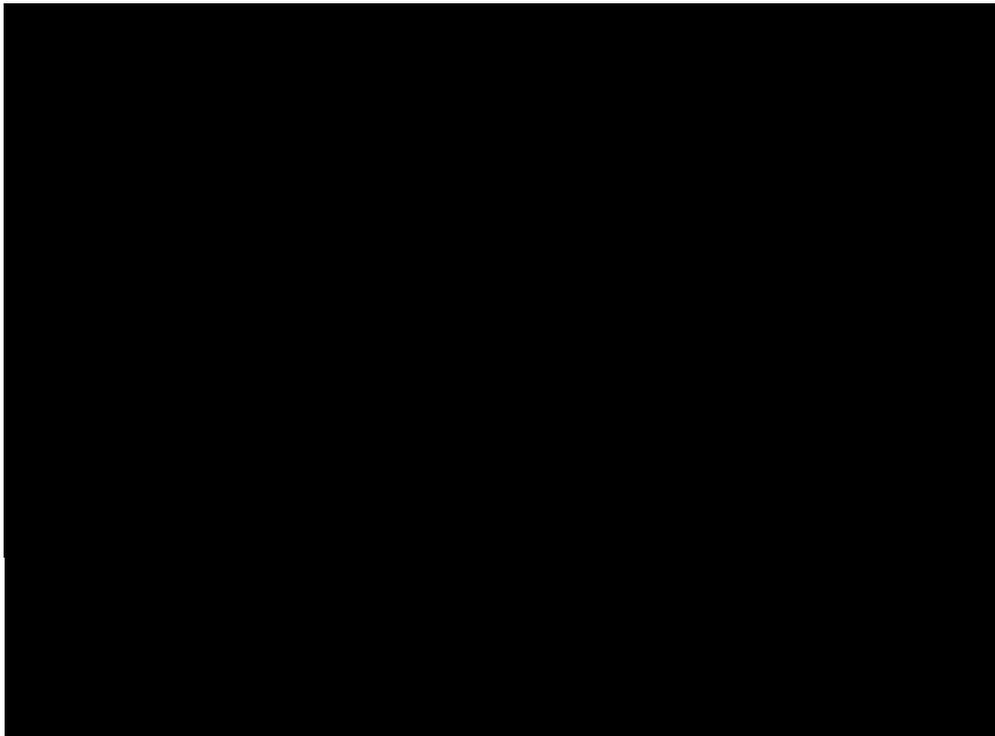
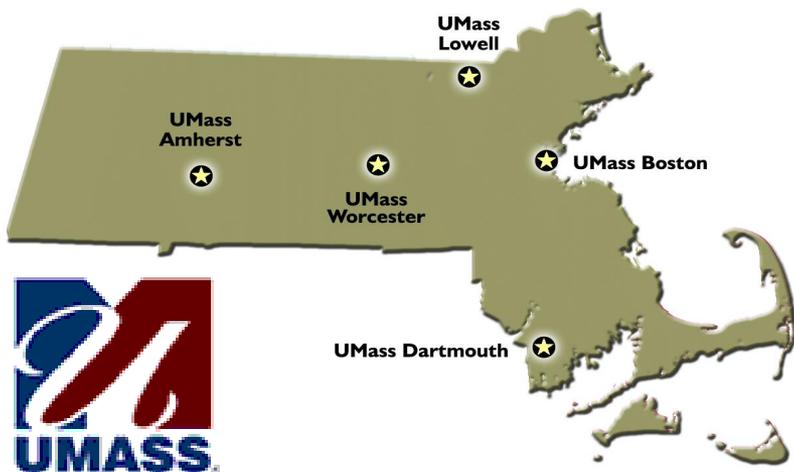


UMass is a Key Resource to Meet New State, Regional and National Challenges

- Strategic investments (public and private) in UMass can directly address the above challenges.
- Given its quality, relative affordability and retention of graduates in the state, UMass can help grow/keep a highly-educated workforce.
- Given the geography of its campuses, UMass can extend the economic benefits of R&D to under-developed regions of the state.
- Given its strong record of R&D growth and recent S&T successes, UMass can help the state maintain/expand its R&D leadership.
- Given its commitment to industry links and econ. devt., UMass can help the state capture more of the economic benefits of its R&D base.
- UMass will **partner** with government, industry, communities, and other academic institutions to **make this world a better place**.



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**THANK
YOU!**

Nantucket \$20M Environmental Partnership

- Sale of University property on Nantucket to Nantucket Conservation Foundation for \$20M
- Property to be preserved, allowing for continued UMass use
- UMass to create six endowed chairs in environmental science (\$12M)
- UMass to establish \$8M endowment for a University Excellence Fund

