

Adventures in Technology Transfer

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CTO, Fetch Technologies

My History

- CMU (1981-88)
 - Ph.D. in computer science
- NASA Ames (1988-95)
 - Principal Investigator, AI Research Branch
- USC/Information Sciences Inst. (1995-99)
 - Project Leader/Research Associate Professor
- Fetch Technologies (2000-present)
 - Co-founder and CTO

The Bad News:

Technology Transfer is Really Hard

- Lots and lots of money is spent on research and technology development
- Most projects don't seem to go anywhere ☹️
- Change is resisted
 - Technology is viewed positively “in the abstract”
 - But in reality new technology is costly and rarely performs up to expectations

The Good News

- Somehow, tech transfer happens!
- Let's consider some successes...

Story 1: Mission Control

- Houston “Mission Control”
 - Green screens
- Idea: Use AI technology
 - improve safety, efficiency, etc.
- The Mole:
 - An early adopter in the customer organization...
 - ... who can champion your technology

Story 1: Mission Control (continued)

- Early benefits
 - Computer graphics and pretty screens
 - Gained converts
- Big win for AI program 😊

Story 2: HST scheduler

- HST = Hubble Space Telescope
- First try: Scheduler built by NASA contractor
 - Very, very expensive
 - Built “on top of” a satellite control system
 - Resulting scheduler very, very slow
 - More than one week to schedule week of observations
 - Astronomers thought it was useless
 - NASA “approved it” anyway

Story 2: HST scheduler (continued)

- Second try: Scheduler built by astronomers
 - Surprisingly fast
 - Used “odd” Neural network
- Third try: Astronomers & computer scientists
 - Analyzed neural network
 - Represented problem as *constraint satisfaction*
 - Derived very simple *iterative repair* algorithm
 - Worked well *and* resulted in a highly cited paper
 - Approach picked up by industry! 😊

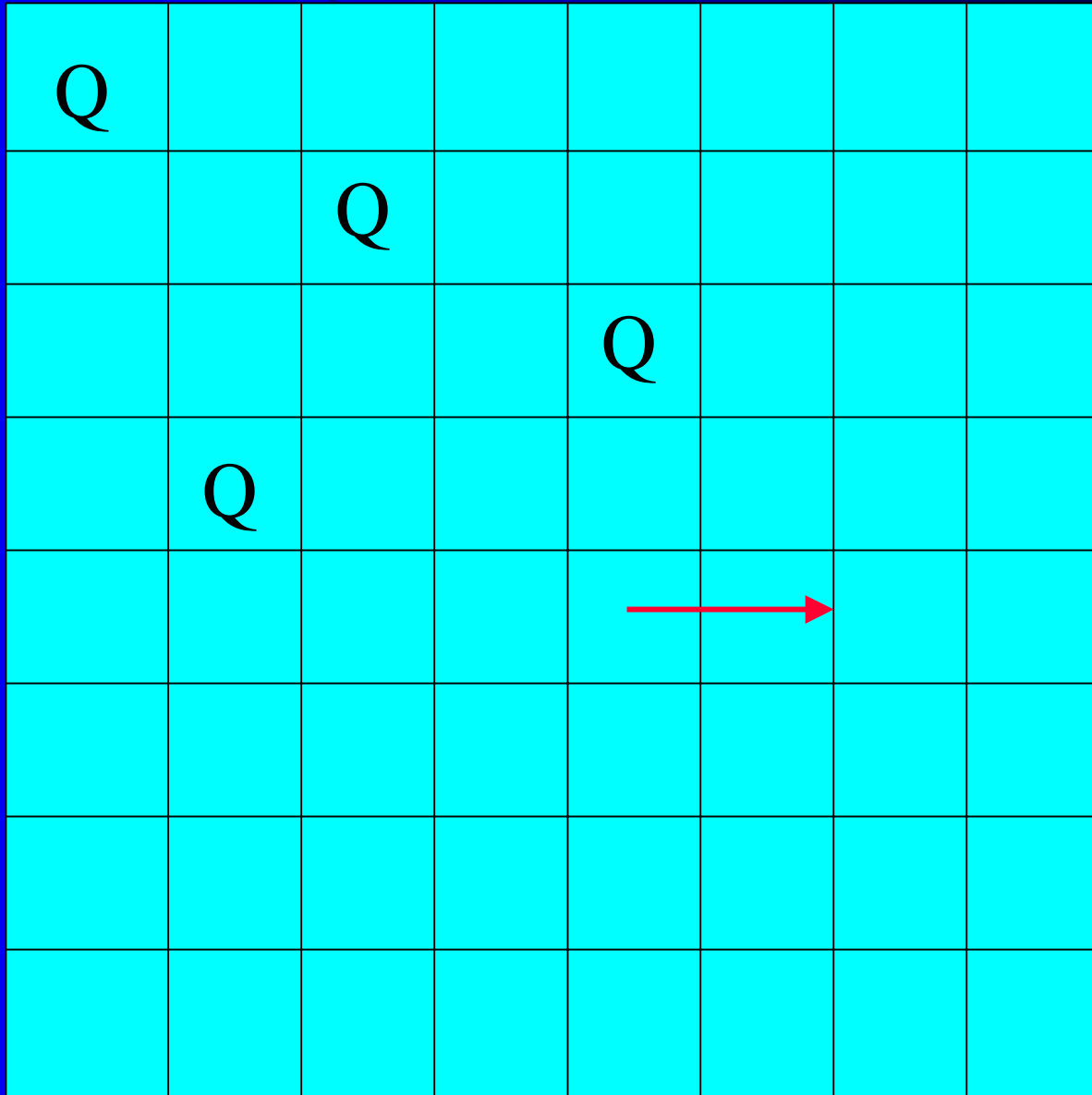
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ITERATIVE REPAIR APPROACH

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Story 3: Fetch Technologies

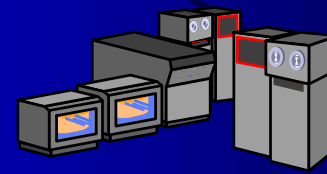
(in progress)

- Spun off from USC in December 1999
- Based on years of sponsored research (DARPA, NSF, Air Force...)
- Information agents: Access and integrate information on the web

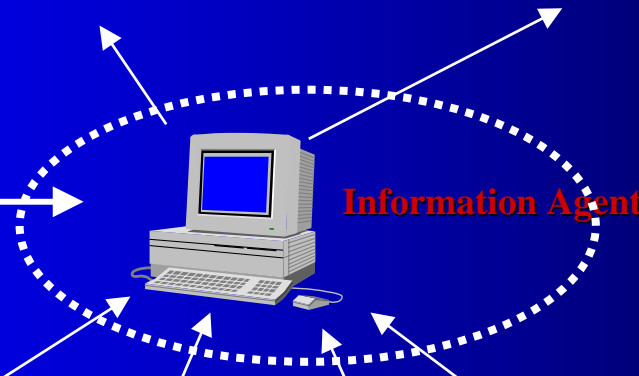
Rapidly Building Information Agents



Decision Support



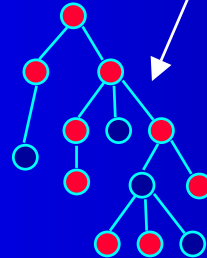
Application Programs



Information Agent



The Web



Knowledge Bases



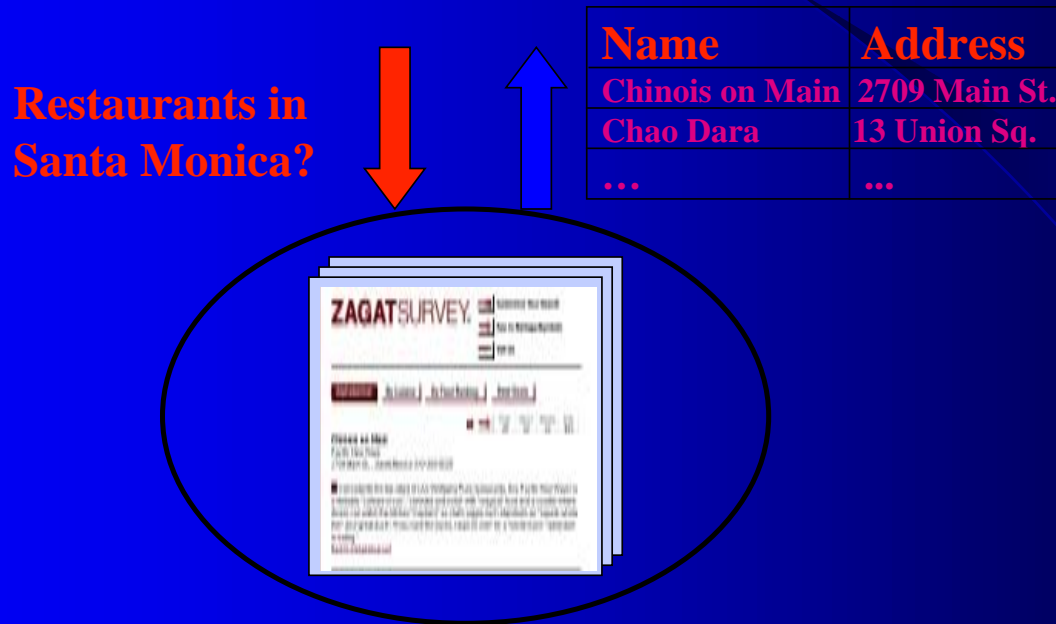
Computer Programs



Databases

Technology: Wrapper Induction

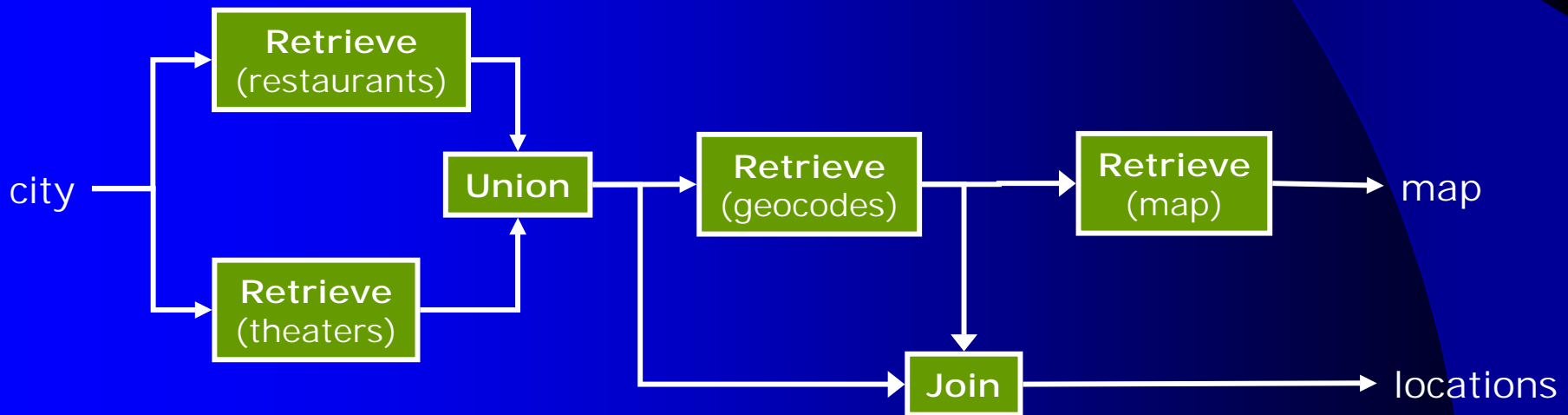
- Wrappers provide database-like access to websites



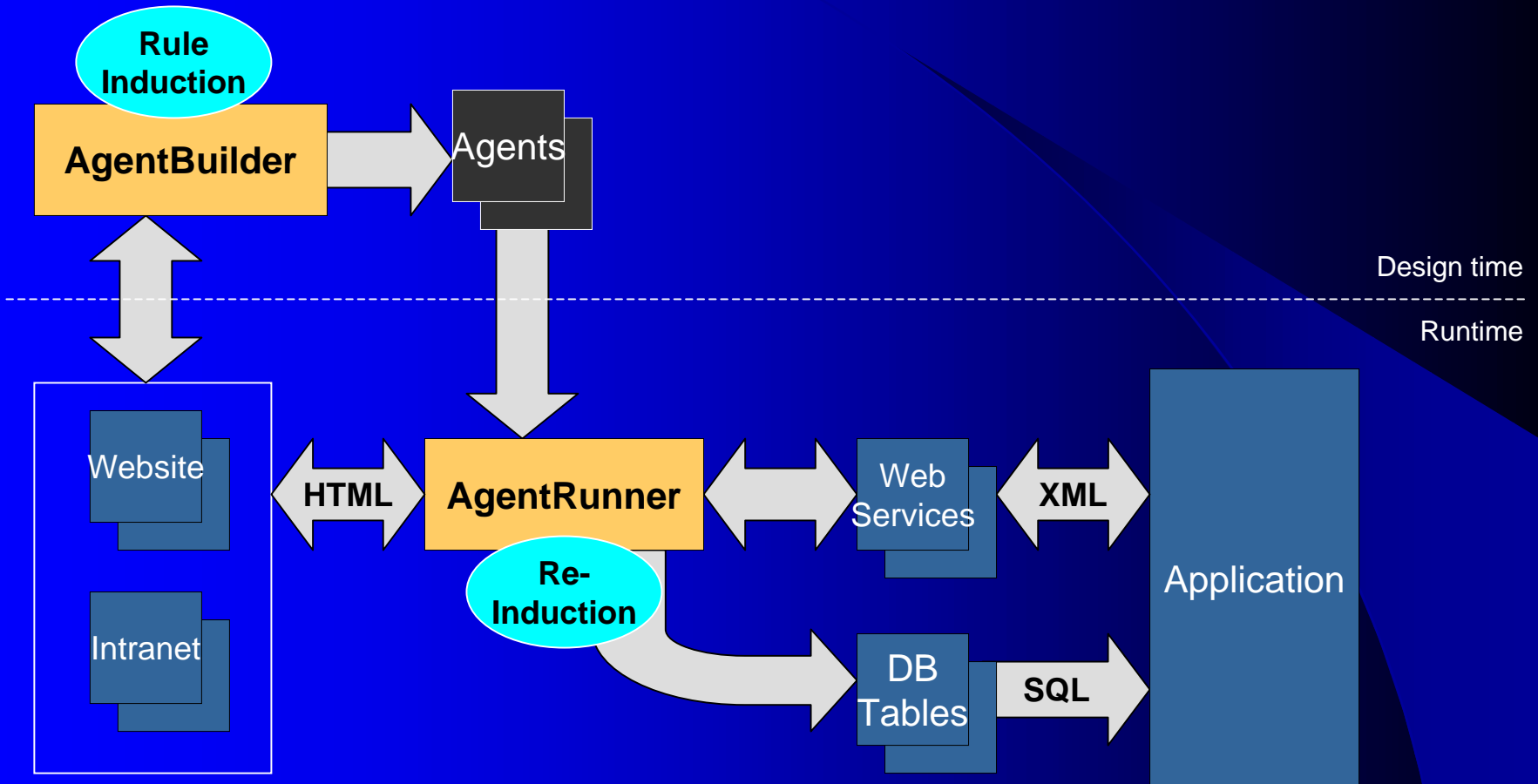
- Automatically wrap web pages from examples
 - Demonstration-oriented user interface enables users to show system what to extract “by example”
 - System automatically induces extraction patterns

Technology: Agent execution system

- Dataflow engine for efficiently combining information from multiple sources

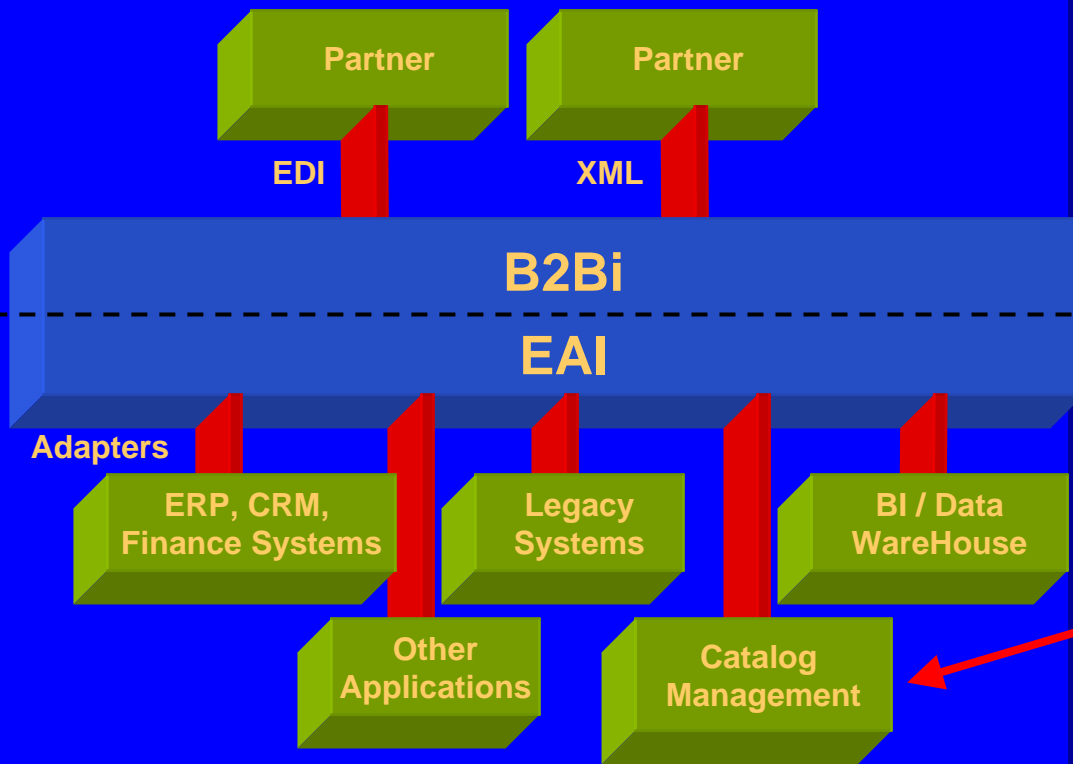


AI Applied: Fetch Agent Platform

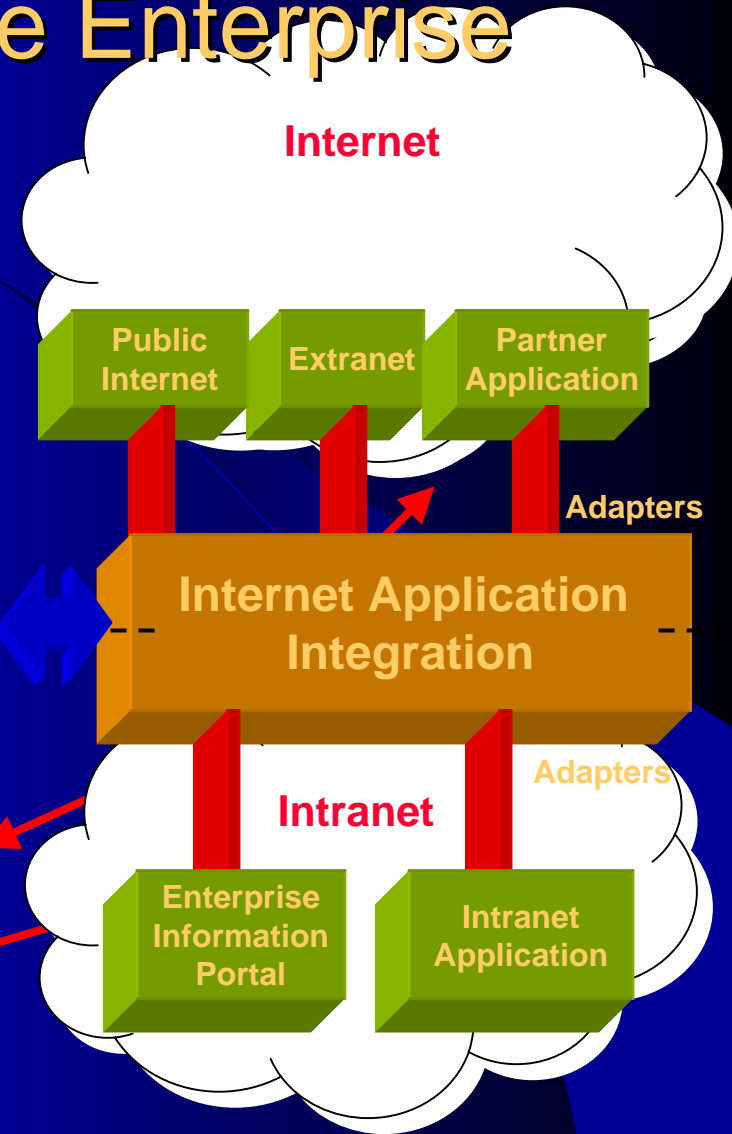


Web Automation in the Enterprise

B2B Integration



Enterprise Application Integration



Weathering the Storm

- Collapse of dot com economy.
- Shift in primary target market, from IAI to intelligence and government applications.
- Focus on building technology, identifying and developing market niches.

Demonstration

Hurdles and Rewards

- Investors are harder to please than funding agencies.
- More upside for inventors. Or at least founders....
- Satisfaction of seeing a “finished” product.
- Partnership between company and University.