University of Colorado
Advanced Technology Series

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Time Frames and Possible Collaboration between RW and UC

- Far future - We could support your research with software
- Near future - We could collaborate on projects that might have commercial utility
- Present - We are looking for potential recruits who want to work on cutting edge technology
3 Dimensions of Future Research

- Deeper - Beyond Moore’s Law
- Higher - Emulating Brain Power
- Broader - Pervasive Computing
Beyond Moore’s Law

- Quantum computing
- Molecular and nanocomputing
- DNA

Recommendation: Non-deterministic computation strategies and methods for handling uncertainty and errors.
Brain Power

- Vision
- Speech recognition
- Natural Language Processing
- Robotics

Recommendation: Be aware of feedback loops between higher order and lower level sub-systems. (e.g. vision and speech)
Pervasive Computing

- Wireless devices
- Embedded systems
- Broadband communication
- Message content standards (e.g. XML)

- Recommendation: Emergent behavior and phase transitions are to expected in highly integrated systems.
The Most Interesting Questions

• What do you get when you combine all of the previous capabilities?
• What can a pervasive broadband network of high performance intelligent components do? (Don’t ignore non-determinism and fault tolerance).
• What will be the unexpected effects of deploying this technology? (Consider the current Web as a toy prototype)
Near Term Projects

• XML, Processes and Objects Symposium at OOPSLSA

• Next Generation Workflow Processes – Products, Standards and Research

• Portability and Interoperability Across Internet Marketplaces

• Simple Object Access Protocol (SOAP) – Alternate Viewpoints
OOPSLA 2001

- Pervasive Computing Symposium
- Software for devices
- Infrastructure and architecture
- Current applications and future visions
Rogue Wave’s Next Generation - Device to Database XML Framework
Overview

• Problem: Devices to database connectivity
• Rogue Wave framework technology
• Framework customization
• XML interfaces to back-end resources
• Middleware for multiple device access thru XML
• High performance device to database solutions
Problem: Accessing RDBs

- One of the key industrial problems is accessing relational databases from multiple locations using diverse client platforms.
- This will be an increasingly critical requirement as mobile access and real-time multiple user interaction applications are required.
Rogue Wave Technology

- Rogue Wave is the market leader in object (C++) software components.
- DBTools is the most widely used software product for linking applications to multiple relational databases
- We also have new frameworks that enable domain specific access to relational databases
Our professional services group customizes and extend our frameworks for large-scale mission-critical applications.

- Example: DBTools-XA enables transaction processing on top of DBTools.
- In the financial services area, we are deploying a large-scale system for accessing an assets database.
Business Object Cache

Object-relational mapping

- App 1
- App 2
- App 3

RDBMS
RDBMS
RDBMS
XML LINK

- We have created XML Link interfaces to several back-end components
- Existing XML interfaces include a DB link to DBTools and a CORBA link
- XML Link interfaces can also be created to other legacy applications and integrated into a robust package
Mobile Internet Middleware

- Our newest middleware enables multiple devices to have orchestrated access to enterprise XML frameworks
- The middleware is flexible and extensible including queuing, device independence and event-based dispatching
Device and Protocol Leveling

We’ll get your data to your pervasive clients, so you can worry about the job of developing the business logic for your back-end and enterprise systems. Our patent-pending Device Service Registry (DSR) will store and forward data for off-line devices to pick up on their next activation.

Protocol and Firewall Interaction

The Dispatcher operates on all standard Internet protocols, so you won’t have to reconfigure your firewall, or open any new ports.

Internet Workflow

The Dispatcher enables workflow for node-to-node logic. We’ll support, service and host your specific workflows, or you can host it yourself.
Conclusion: End-to-end Integration

- Rogue Wave has end-to-end solutions/services for high performance device-to-database applications
- In the near future, M-business solutions will require these capabilities to meet the demands of consumer and business applications.
Some URLs of interest

- http://www.ccs.fau.edu/
- http://www.ebiquity.org/
- http://oopsla.acm.org/fp/2g_xml.html
- http://www.oasis-open.org/cover/
- http://kunz-pc.sce.carleton.ca/sce581/
- http://www.joeyoder.com/Research/objectmappings/