



ARTHURANDERSEN

Java Boot Camp April '01

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Java Boot Camp April '01

- Architecture
 - What is architecture?
 - The 4 architect roles
 - Architects in Andersen
- Case study
 - Large scale EJB implementation
- Andersen Software Engineering Community
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- Emerging technologies



What is Architecture?

- We're not sure, but we know one when we see one!
- The structure or structures of the system, which comprise software and hardware components, the externally visible properties of those components, and the relationships among them.
 - Bass et al.
- The fundamental organization of a system embodied in its components, their relationships to each other and the environment and the principles guiding its design and evolution.




Purpose of Architecture

- A system's architecture provides a model of the system that suppresses implementation detail, allowing the architect to concentrate on the analyses and decisions that are most crucial to structuring the system to satisfy its requirements.
- Have an architecture that makes sense before you write 3.5 million lines of code.
 - Patrick Naughton



Structuring of components

- Architectural design processes consists of structuring the system as a whole into a suitable structure of components and relationships between components.
 - The structuring addresses concerns, including:
 - Allocation of responsibilities to components, in such a way that each component has a cohesive set of responsibilities and redundancy is avoided.
 - Partitioning of components to take into account distribution requirements (for example, an initial component may have to be split into a client and a server component).
 - Optimizing the component structure to satisfy service-level requirements such as performance
 - Incorporation of reusable components in the design, accommodation of legacy systems, or other constraints
- 

Types of Architecture or Views

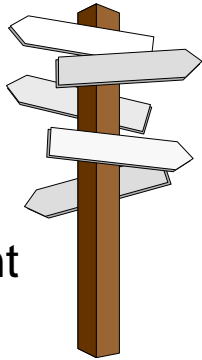
- Software
 - Layout of software modules, connections and relationships among them
- Hardware/Network
 - Organization of hardware components
- Data Architecture
 - Data flow, relationship between them
- System
 - Overview of systems (Software, Hardware and Information)
- Enterprise
 - Highest level of systems and their relationships



Architecture vs. design

Architecture

- Architecture precedes design
- High-level essential component representation
- Defines general guidelines, standards, principles and constraints.
- Addresses overall, system level issues
 - Decomposition of functional elements, physical distribution, components, performance, security, protocols, etc.

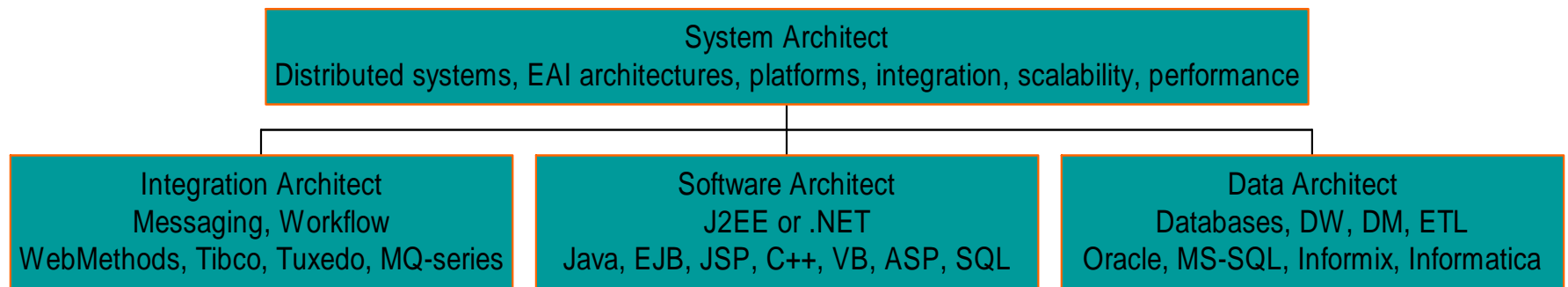


Design

- Design follows analysis and uses architecture
- Sufficient details for developing the system, coding
- Defines methods (OOAD) and tools for implementation within the architectural constraint
- Focus is on specific component implementation within the architectural guidelines



The 4 architect roles



Top priorities for the architect

- Create and own the technical vision of the system
- Provide technical thought leadership
- Peer with the project manager
- Develop an architecture that satisfies the client's requirements for:
 - Business strategy
 - Functional requirements
 - Scalability
 - Maintainability
 - Performance
- Reduce or eliminate complexity, risks and time



The architect is less concerned about

- Sales
- Client interaction
- Analysis
- Design
- Use-case internals
- Test
- User training



The architect is successful when

- The project team understands the architecture
- The project team is able to write modules that execute within the architecture
- The project team can implement all system requirements
- The project team is working in a efficient environment that maximizes the productivity
- The system can be deployed and performs as expected
- The architect can disappear



Andersen career levels (TCT)

Partner

(partner)

Thought leadership
Practice development

Senior Architect

(senior manager)

System architect
Thought leadership
Multiple platforms and systems

Architect

(manager)

Software, Data or Integration Architect
Multiple languages
Multiple databases
Java Architect Certification

Senior Software Engineer

(senior consultant)

Lead developer
Analysis & design
One or more languages
One or more databases
Java Developer Certification

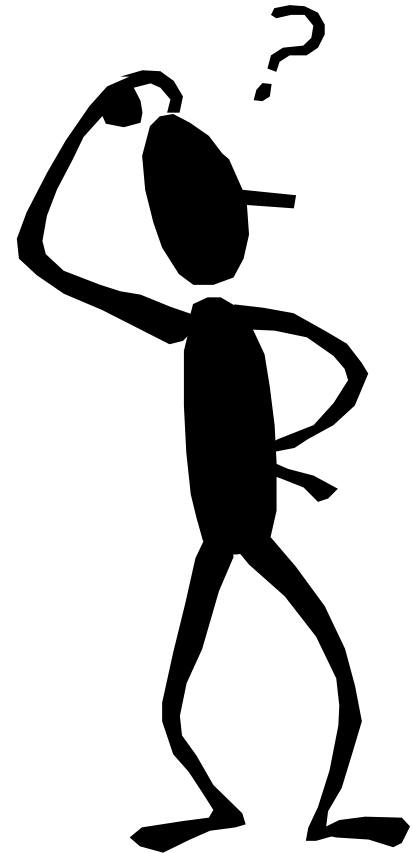
Software Engineer

(consultant)

Developer
Some analysis and design
One language
One database
Java Programmer Certification



Questions?



Case study

- Andersen's first and largest EJB implementation
- Objective: Build a software development organization and architecture for a large scale multi-family REIT
- Result:
 - A CMM level 3 compliant software development organization
 - A virtual leasing office kiosk system
 - An apartment management system handling more than 20% of the US multi-family apartment market
 - A scalable, clustered architecture that can support millions of transactions
 - EJB 1.0 compliant application deployed on WebLogic 4.5, Oracle database and Sun hardware/software



Case study (continued)

- Technology:
 - RAD*Frame* development framework
 - Rational Rose Object Modeling
 - Rational ClearCase Configuration Management
 - Rational ClearQuest Defect Tracking
 - JBuilder development
 - WebLogic 4 EJB Application Server
 - Apache webserver
 - JRun servlet engine
 - Oracle 7 database
 - NT development platform
 - Sun Solaris deployment platform



Step 1 - Create cover story

When:

- During proposal phase or mobilization.

What:

- Create and articulate a high-level picture of the proposed system and involved components.
- The cover story highlights strategic business and system goals.
- The cover story can suggest platform from a high-level point of view, i.e.. Thin-client, client/server, WAP etc.



Step 1 - Create cover story

Why:

- Ensure that the initial vision of the system is properly articulated to stakeholders and team members.

Deliverable:

- Cover story (Word + Visio).



Step 2a - Analyze business requirements

When:

- During the analysis phase.

What:

- Analyze functional and non-functional requirements.

Why:

- Understand what constraints that the system will have.

Deliverable:

- High level system requirements document (Word + Visio).



Step 2b - Analyze environment

When:

- During analysis phase.

What:

- Analyze the existing environment to understand the culture, standards, constraints and issues that surrounds the system.

Why:

- Identify preferred or existing standards, components and platforms that can be “re-used”.

Deliverable:

- Environment description (Word + Visio)



Step 3 - Select candidate architectures

When:

- During analysis phase.

What:

- Compare architectures (platforms) based on support for functional and non-functional requirements, viability, performance, alignment with business strategy, training and cost.

Why:

- Understand the various benefits and drawbacks each architecture will provide.



Step 3 - Select candidate architectures

Deliverable:

- Candidate architectures and preference.



Step 4 - Develop Meta architecture

When:

- During the analysis phase.

What:

- High-level description of the system based on the candidate architecture, principles, environment, hardware and software platforms and components.

Why:

- Articulate the high-level view of the final implementation.

Deliverable:

- Meta architecture (Word + Visio)



Step 5 - Build proof-of-concept (technical prototype)

When:

- During the analysis phase

What:

- Validate candidate architecture by building a “vertical slice” of the architecture.
- Refine candidate architecture or throw-away.
- Benchmark candidate architecture.
- Clarify and mitigate risks.



Step 5 - Build proof-of-concept

Why:

- Ensure that the candidate architecture is viable.
- Allows us to make architecture adjustments before development begin.

Deliverable:

- Proof-of-concept (software + hardware).



Step 6a - Develop conceptual architecture

When:

- During design phase.

What:

- Create a high-level diagram showing system-wide components and their responsibilities and interfaces to other systems.

Why:

- Articulate the conceptual grouping of functionality.

Deliverable:

- Conceptual architecture (Visio).



Step 6b - Develop the physical architecture

When:

- During design phase.

What:

- Model the physical architecture showing the functional components within the hardware components.
- Model network and hardware components.

Why:

- Articulate the physical environment.



Step 6b - Develop the physical architecture

Deliverable:

- Physical architecture and description (visio + word).



Step 6c - Develop logical architecture

When:

- During design phase.

What:

- Model the logical architecture: Interfaces, model-view-controller layers, transaction boundaries.
- Identify reusable components.
- Identify design patterns.

Why:

- Articulate the design rules of the final system.



Step 6c - Develop logical architecture

Deliverable:

- Logical architecture (rose + visio + word).

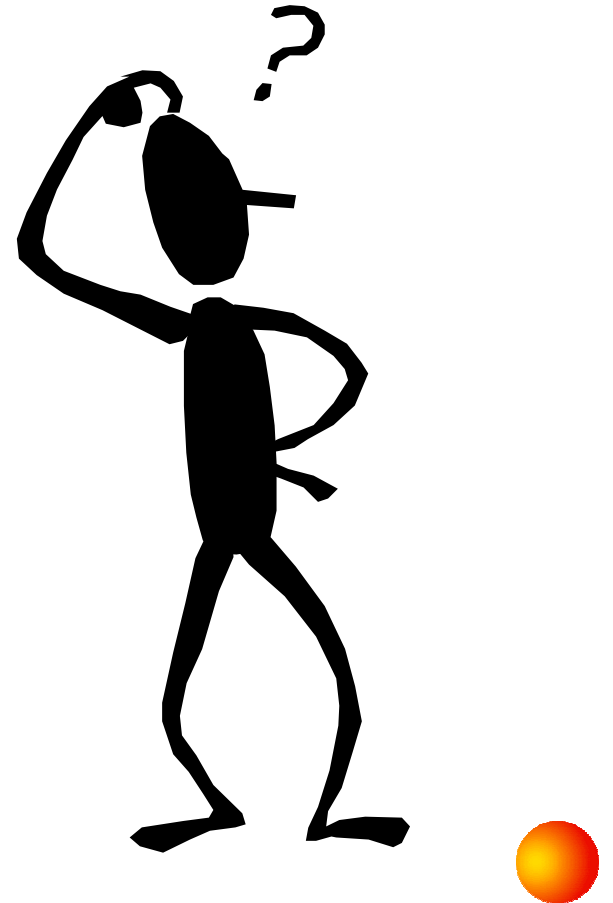


Step 7 - Implementation

- This is what you are doing...



Questions?



Andersen Software Engineering Community

What is it?

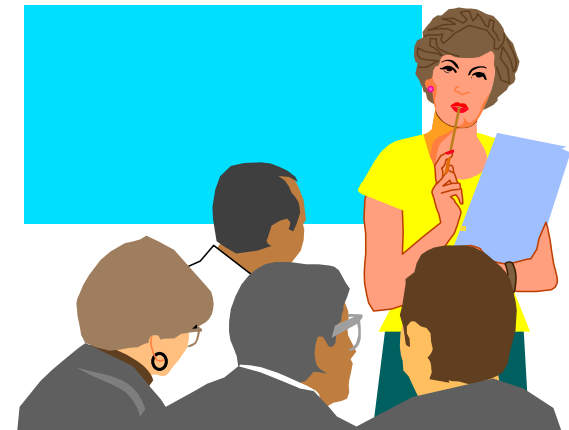
- Strong focus on SE
- GSECoE
 - Chicago, London, Atlanta
- Global and local communities
- TCT



Andersen Software Engineering Community (continued)

Training

- Java Boot Camp
- System Architect Boot Camp
- External training and certification
 - Programmer, Developer, Architect



Andersen Software Engineering Community (continued)

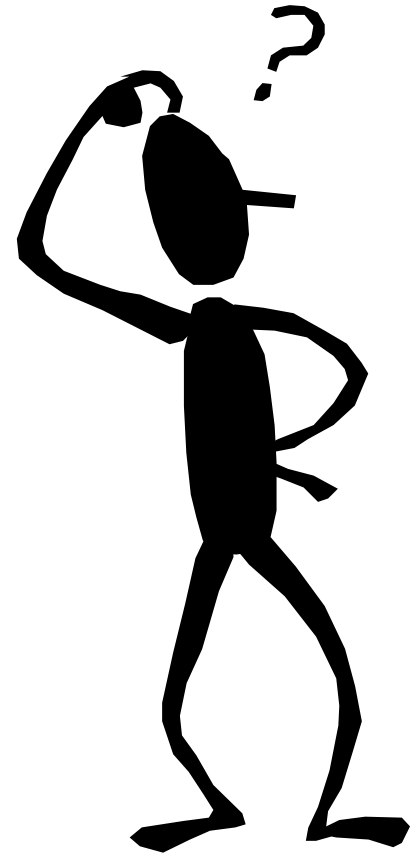
Initiatives

- Wireless Initiative
 - Labs in US, Malaysia, UK
- Global Asset Repository
 - GeekSpace
- Firmwide Software Engineering Methodology
 - *RADFrame*, Rational Unified Process, eXtreme Programming
- Global tool selection
 - Rational suite, WebLogic, TogetherJ, Jbuilder, Visual Age/WebSphere



Andersen Software Engineering Community (continued)

Questions?



Market trends

- Java/J2EE still growing
- .NET/C# interesting technologies but not yet a competitor to J2EE/Java. Maturing the next 24 months.
- Microsoft to drop Java - current 1.1.4 license expires 2008
 - Might drop JavaScript support with IE 6.0
 - IE is the most important browser but phones & palm's don't use Windows anyway
- eBusiness slowdown will increase competition
 - Development for 24/7/365 accessibility continues
 - (renewed) Focus on Enterprise systems and integration
- Sun's EJB server



Market trends

What happened to Digital Markets?

- Ariba lay off 30%
 - High \$173 1/2, low \$4 13/16
- Is Blue Martini selling?
 - High \$77 5/8, low \$1 21/32

Company Releases for Ariba Inc

- 5:30am 04/03/01 [Epoch Partners Issues Research Note on Ariba - PRNewswire](#)
- 6:59pm 04/02/01 [Cauley Geller Bowman & Coates, LLP Announces Class Action Lawsuit Against Ariba, Inc. - BusinessW](#)
- 4:39pm 04/02/01 [Ariba and Agile Announce Mutual Termination of Merger Agreement - PRNewswire](#)
- 4:08pm 04/02/01 [Ariba Announces Preliminary Second Quarter Results - PRNewswire](#)
- 1:12pm 04/02/01 [Law Firm of Schiffrin & Barroway, LLP Announces Shareholder Class Action Against Ariba, Inc. - Busine](#)



Market trends

4/3/2001 5:30:00 AM

SAN FRANCISCO, Apr 3, 2001 /PRNewswire via COMTEX/ -- Mark Verbeck, Senior *A* Partners today issued a Research Note on preliminary Q2 results for Ariba, Inc. (Nasc key highlights included in the Research Note, which can be accessed in its full form a www.epoch.com):

- Ariba reported preliminary 2Q revenues well below our expectations, resulting in a (\$0.20) loss versus our already reduced \$0.03 estimate. Licenses of \$55-\$60 million came in at less than half of our estimates (\$130 million) on drastically reduced marketplace revenue and weak procurement sales.
- To compensate, Ariba is reducing headcount by 700 (30% of the company). In addition, Ariba also announced the termination of its announced merger agreement with Agile, delivering a blow to its recently introduced value chain management strategy.
- While we believe a lack of IT spending in the current economic climate has severely affected the stock, we also believe Ariba could do well going forward to focus on what it does best -- indirect procurement.
- Even with a reduced cost structure, we estimate Ariba must grow revenues significantly (we estimate by a third) from current levels to achieve breakeven. We expect the stock will mark time as the company reorganizes its sales effort in an exceedingly difficult environment.



Emerging technologies

- Household Internet access up to 41.5% in 2000
 - 26.2% in 1998
 - 116 million people have Internet access
- Internet penetrating minority communities
- Although the market looks bad, internet commerce (B2C) continues to grow
- Amazon still has great customer service
- Brick-and-mortar + online = good strategy
 - Buy online, pick up at store



Emerging technologies

- 207 million wireless subscribers in 2004 (idc)
 - 125 million 1999
- ADSL cannot be delivered fast enough (“we’ll be there in June”)
- WAP != US
- UMTS (3G) to provide 384 kbps+ bandwidth
 - Inception in 2002, widespread by 2003-2004
- Small devices, voice recognition, speech
 - Smaller, more powerful chips, but what about power?
- Instant marketing
 - We know who you are, where you are and what you want



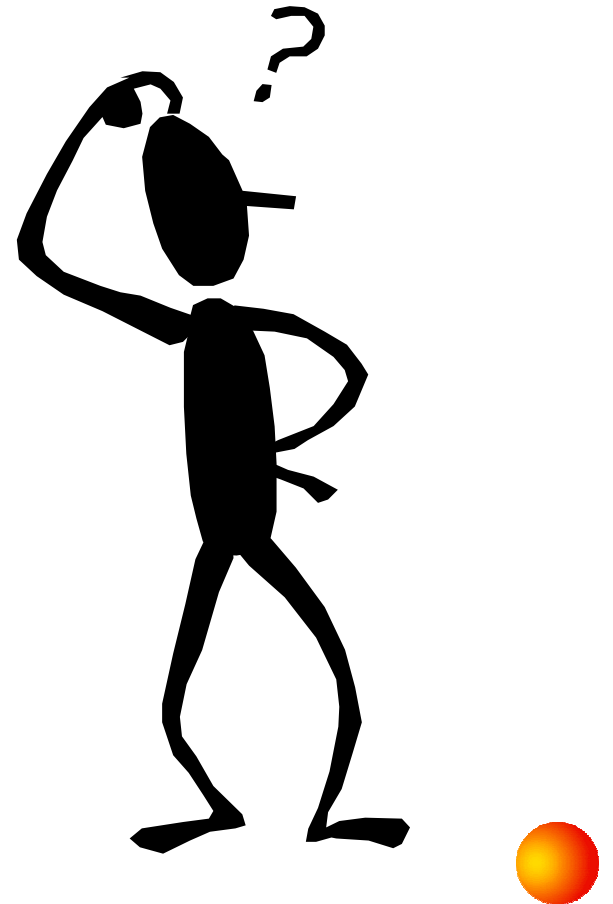
Emerging technologies

- Households to adopt multimedia technologies
 - Computers are better than VCR, TiVo
 - Video editors, Audio editors, Digital cameras, MP3
 - 60 GB storage for \$149
- Windows CAR?
 - In-dash computers
 - Rough start for Windows CE
- Bluetooth
 - no annoying cables anymore
- Fingerprint, iris, voice recognition
- Personal chipcard



Emerging technologies

Questions?





ARTHURANDERSEN

..Have a GREAT Boot Camp

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