Holistic Approach to Modernisation

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Why is Modernisation Such a Hot Topic These Days? #1 Cost Containment – Increasing Scrutiny of IT Budgets

In a world of scarce budgets, savings from Modernisation efforts can fund the CIO’s priority projects – affect the business bottom-line.
Why is Modernisation Such a Hot Topic These Days? #2 SOA – Move to Service Oriented Architectures

Application, Asset Silos:
- Business Logic (LEGACY)
- Business Logic (ERP)
- Business Logic (CRM)
- Business Logic (FINANCE)

Business functionality buried in applications, asset silos ... proprietary interfaces serving the silos

Open & Service Oriented Applications & Assets:
- New Business Processes
- Business Services
- Business Logic (LEGACY)
- Business Logic (ERP)
- Business Logic (CRM)
- Business Logic (FINANCE)

Business functionality exposed as business services ... standards-based, shared & reusable services
Why is Modernisation Such a Hot Topic These Days?

#3 Risk – IT Exposure Makes Businesses Nervous

• “We believe the medium mainframe is an endangered species. We expect the number of mainframes in the tiny and small categories to decline significantly over the next five years.” – Ovum

• “By 2010 80% of smaller mainframe environments will migrate off the platform, while large environments will SOA-enable and remain on this platform” – Gartner

• “No one is learning [Cobol] in school anymore, and new applications aren’t being built in Cobol anymore,”….. “Cobol is like Latin.” – Zapthink

• “Migrate away from Legacy Databases”
  “…IDMS and Datacom in next 5 years”
  “…IMS and ADABAS in next 10 years” – Gartner

What are you doing with your Cobol applications?

ComputerWorld
April 2006
Modernisation Views

Architectural “big picture” view
Align software/all assets with enterprise architecture vision:
*Unisys Perspective ➔ Architecture-Driven Modernisation*

Ongoing management process view
Disciplined, strategic planning for old and new applications:
*Application Portfolio Management (APM)*

Cost-benefit view
Apply across all software assets:
*Application Portfolio Analysis (APA)*

“Home Improvement” view
Never-ending
Plan to spend money
Unisys Perspective of ADM Is All About Service Orientation

- Service Oriented Infrastructure
- Applications based Service Oriented Applications
- Service Oriented Enterprise (SOE)
- Service Oriented Economy
SOA Modernisation Benefits the ”Top 5” categories

- 3 mention explicit integration of:
  - services
  - data thesaurus
  - mission critical applications

- need for flexible architecture
- composite application development

- the ability to rapidly assemble:
  - new services
  - new processes

Enablement of:
- Application and process services
- Data access (data services)
- Service integration and management

*Source: InfoWorld 2006. Survey conducted by IDG Research Services Group January 2006. Sample population was composed of 1,040 IT Managers in organizations of 500 or more
Abstracted Access to Legacy Apps & Data is a Major SOE Barrier

Legacy Systems Are…

- Functional & Robust
- Brittle & Complex
- Difficult to Integrate
- Hard to Abstract
- An Asset & a Liability
Modernisation is Key to Enabling Legacy Systems for SOE

Architecture-Driven Modernisation is the **process of understanding & evolving existing software assets** for purposes of:

- application portfolio management
- code improvement
- programming language translation
- integration
- platform migration
- data migration
- consolidation
- data warehousing
- reuse
- package selection
- service-oriented architecture (SOA)
- model-driven architectures (MDA)

— Object Management Group ADM Task Force

The many scenarios can be represented by combinations of six basic modernisation building blocks (a.k.a. Unisys ADM Scenarios)

- Discover
- Refactor
- Translate
- Wrap
- Replace
- Orchestrate
There are many modernisation scenarios

- Modernisation can mean several different things
- Defined by modernisation expert William Ulrich
- Basis for OMG ADM framework
- A modernisation effort may involve multiple scenarios

| I. | Application Portfolio Management |
| II. | Application Improvement |
| III. | Language-to-Language Conversion |
| IV. | Platform Migration |
| V. | Non-Invasive Application Integration |
| VI. | Services Oriented Architecture Transformation |
| VII. | Data Architecture Migration |
| VIII. | Application & Data Architecture Consolidation |
| IX. | Data Warehouse Deployment |
| X. | Application Package Selection & Deployment |
| XI. | Reusable Software Assets / Component Reuse |
| XII. | Model-Driven Architecture Transformation |
Unisys ADM Framework

MODERNISATION BUILDING BLOCKS

Discover & Understand | Refactor | Translate | Wrap (Integrate/Enable) | Replace | Orchestrate

Business processes

Business info reqs
Business rules

Logical data model
Application boundaries
Application logic

Physical data model
Interface definitions
Execution flows

Program logic

“AS IS” APPLICATION

“TO BE” APPLICATION

APPLICATION PERSPECTIVE

Business
Application
Realisation
Implementation

Unisys ADM Framework

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Unisys ADM Promotes Abstraction of Rules/Policies/Flows/Processes

Discover Existing Application

Abstract

- Apply discovered business processes, info needs, and rules.
- Apply discovered business info needs, vocabulary, and rules.
- Apply discovered app logic, app interface boundaries, and logical data model.
- Apply discovered execution flows, interface definitions, and physical data model.
- Apply discovered logic.

ADM Scenarios

- Orchestrate
- Replace
- Wrap (Integrate/Enable)
- Translate
- Refactor

Transformed Application

Guided by overall ADM strategy and 3D-VE vision

End
Why Abstract Knowledge?

Direct Transformation

Extract Vocabulary
Rationalise Bus. Object

Extract Bus. Rules
Rationalise Service Definitions

...
Unisys KMA
Discovers & Maps App. Knowledge

Unisys Rules Modeler
The first industry implementation of the OMG SBVR standard ("TFR")

Code implementation discovered by 3rd-party mining tool

Unisys “Knowledge Modeler”
Working name of product to integrate Rules Modeler with 3rd-party mining tools

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Working name of product to integrate Rules Modeler with 3rd-party mining tools
Unisys is a Leader in the Modeling Space

• At the forefront of following industry standards:
  – UML – Unified Modeling Language
  – MOF – Meta Object Facility
  – XMI – XML Metadata Interchange
  – CWM – Common Warehouse Metamodel
  – EDOC – Enterprise Distributed Object Computing
• Led the OMG SBVR (Business Rules) standard
• Key contributor to MDA (Model Driven Architectures) initiative
• Led the JMI (Java Metadata Interchange) effort
• Key contributor to OMG ADM and KDM (Knowledge Discovery)
Unisys Has a Rich Modernisation Portfolio

- **Strategy Development Credibility**
  - Experiential Workshop

- **Expertise in Four Major Scenarios**
  - Discovery: Knowledge Mining & Abstraction
  - Re-platforming / Re-hosting
  - Application Wrapping
  - Language to Language Translation

- **Enhanced by Value-Add Capabilities**
  - Data Modernisation
  - Coexistence of existing and new solution
  - Modernisation Security
  - Validation & Verification
  - Workflow Modernisation
-Business process modeling paths
Integration centric + Business Centric -

ESB/ BPM/ SOA/ EDA

Enterprise application integration

Integration-centric BPMS

Business process integration

Business process management

Human-centric BPMS

Workflow

Document Imaging

Process focus

Source: Forrester Research, Inc.
Business Alignment is the Key to Success Toward Enabling SOE

**Business Architecture**
- Locations
- Processes
- Organisations
- Projects
- Finance
- Success Factors
- KPI’s …

**Technical Architecture**
- Servers
- Databases
- Networks
- Storage
- Applications
- App Modules
- IT Rules & Policies

**Discover & Link**

**Visibility**
See IT elements in context of the business they support

**Governance**
Ensure corporate policies implemented and sustained

**Prioritization**
Plan for an optimal configuration of IT environment

**Alignment**
Map and optimize IT spending with business value
## Responsibilities, Roles, Interactions

one of the cultural changes of modernisation

### Business Domain
- developing business cases and strategies
- business rules and event related:
  - discovery
  - analysis
  - change management
  - policy management
  - performance metrics
- process related:
  - discovery
  - design & creation
  - simulation
  - optimisation & change
  - analysis and activity monitoring
  - documentation
  - contents management
  - collaboration

### Shared Domain
- **business and process rules related**:
  - analysis
  - management
  - execution
  - performance surveillance
- **process, events and rules related**:
  - detailed design
  - repository deployment
  - execution
  - performance, benchmarking
  - operational procedures
  - version control
  - surveillance
  - governance

### IT Domain
- standards for technical, security and operational procedures
- performance benchmarking & tuning
- integration infrastructure related:
  - tools evaluation & testing
  - scalability, load balancing
  - redundancy, clustering
  - fail-over (fault tolerance)
  - discovery
  - deployment
  - communication
  - orchestration
- process related:
  - services orchestration
  - security
  - data transformation
  - communication

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**Driven by continuous re-evaluation of the processes**
Enterprise Modernisation/Evolution to ESB/BPM/SOA target infrastructure

**Business Domain**
- As-Is Business Model (Vocabulary + Rules + Processes)
- To-Be Business Model (Vocabulary + Rules + Processes)
- Upgrading & Optimization

**IT Domain**
- As-Is Application Model (Data + Logic + Flows)
- Existing Solution
- Reversed Engineering
- Forward Engineering

**ADM**
- Define ESB/BPM/SOA
- Instrumentation Tooling
- Governance
- Target Solution

**INTEGRATION ENABLING CENTRIC**
- Target Infrastructure

**Operate**
- Deploy in SOA

**New Business Requirements / Optimization Criteria**

**“re-learn”**
Sample Case Studies
Success Stories: Mainframe Modernisation

US Department of Agriculture

The USDA was originally running a home-grown mainframe application for HR, which was hampered by a number of inefficiencies, slow turnaround for reports and queries, delayed data updates and a lack of self-service capabilities. A 32-processor Unisys ES7000, an open systems strategy and the assistance of Unisys Modernisation Services has positioning the USDA for future growth.

Customer Benefits:

• Increased concurrent user count from 50 to 2,000
• Reduced costs
• Easier systems management and administration
• Expanded room for growth
• Batch reports and online transactions, ad-hoc queries and reports are running much faster…what used to take hours now takes minutes—and even seconds—to complete.

“It was very important to work with a company that had the expertise to get things up and running very quickly. We have a very small staff here, and we don’t have time to run around looking for solutions. We like to get people that know what they’re doing up front, such as Unisys with their Intel processor-based servers and Microsoft Windows solutions.”

Donald Whitcomb, i*CAMS Technical Lead at the USDA, USDA
Success Stories: Mainframe Modernisation

State of Indiana
Department of Administration

The mainframe supporting the HR and financial functions was costing the taxpayers of Indiana $200,000 per month. When IDOA looked at expanding usage to cover all state employees, it found that the number would have grown to $2 million per month. IDOA began to research options for providing a cost-effective, highly scalable server environment to support the growing user community and found it in Unisys, the ES7000 and technical expertise second to none.

Customer Benefits:
• 90-day return on investment
• 90-percent decrease in average end-user response times
• Scalable foundation for growth supporting doubling of database size every six months
• High availability to support 24/7 operations
• Monies that used to be paid to support the mainframe were used to further the PeopleSoft rollout into more agencies, delivering further cost reductions and productivity improvements.

“Complaints about slow response times have disappeared. We have no issue whatsoever with response time at this point.” In fact, at first the results seemed too good to be true. We compared the performance against a tuned DB2 database on our mainframe and it ate the mainframe alive!”

Steve DeMougin, Deputy Director for the Division of Information Technology, IDOA
Federal Government Logistics Agency

**Situation**
- Agency manages logistics for the entire federal government, encompassing dozens of other agencies and properties

**Challenge**
- The automated processes embedded in its application portfolio were becoming progressively more complex – to address this challenge the agency decided to redevelop its mission-critical application to make it more flexible
- However, the sophistication of the processes meant that continuity of the business processes once modernised would be difficult to ensure

**Solution**
- Following the 3DVE methodology, Unisys professionals have leveraged the Modernisation Workbench (RMW) to visualize the targeted application, yielding metrics and documentation that has helped to generate a roadmap towards modernisation
- Following their defined methodology for business rules mining, Unisys professionals then leveraged RMW to uncover and document the business logic that supports the system

**Results**
- Demonstrated the effectiveness of combining Unisys’ visualization and business rule mining methodologies with RMW to generate accurate specifications for redevelopment of a key application
U.S. State Government Agency

**Situation**
- Agency is responsible for the distribution of social assistance to state’s neediest residents
- Sophisticated OS2200-based processes manage calculation and distribution of payments

**Challenge**
- Approaching retirement, the development team wanted to ensure that these proven processes are understood and managed by the incoming team

**Solution**
- The heart of the application is its business processes. Unisys service professionals are mining business rules with RMW to integrate with the Unisys Rules Modeler. Doing so provides a robust visualization of the processes that automate the agency’s operations
- RMW inventoried the application portfolio, generated metrics regarding where complexities exist, and allowed users to probe their application for elements of interest for production support
- Detailed diagrams allow users to dive-down into the structure and nature of even highly complex systems, allowing next generation of users to ‘visualize’ their applications

**Results**
- Detailed application visualizations ensure the continuity of the system and its processes
- Ongoing production support issues resolved in substantially less time
State of Washington

Situation
- Government agency that disburses $1.5B a year to needy families
- Sophisticated 25 year old application must always be stable to support the state's neediest

Challenge
- Legislative changes compelled changes to the application, which the agency wanted to ensure was as stable as possible
- Ongoing application maintenance had to be efficient to ensure optimal resource allocation

Solution
- Building on Unisys' 3DVE methodologies, on-site Unisys professionals leveraged RMW’s visualization capabilities to create accurate and detailed visualizations of the application
- Impact analysis capabilities allow users to quickly locate where changes (like those required by impending legislation) could affect the stability of the application

Results
- New staff brought up to speed quickly, allowing senior team members to focus on high priority changes and ensuring continuity of the application following retirements
- Avoided down-time in the application stemming from required modifications
Success Stories: 3D-VE and Modernisation

Charter Communications

Charter has grown through numerous acquisitions of smaller cable companies and because of the numerous acquisitions, Charter has a very decentralized and inefficient IT organization. Charter is undergoing a major IT transformation which is aimed at driving costs and redundancy out while improving performance and service levels for clients.

Customer Benefits:

- Positioning CC for future growth.
- Reduced costs
- Client is able to clearly see the problems with their current environment through the use of the 3D-VE models
- Able to understand how the recommended changes to their environment for the Future State will have very real impact in the short and long term

Additional Challenges:

The challenge has been working with Charter in a very dynamic environment. Over the term of this engagement, the client has had significant organizational and strategic issues that the delivery team has had to adapt to in the course of its consulting engagement.
Success Stories: 3D-VE and Modernisation

Western Australia Courts

Western Australia is almost four times the size of Texas and the Department of Justice in Western Australia had 14 legacy systems that manages court administration for all the courts in the state, the magistrate courts, the district courts, and the state supreme court. The systems provide all key functionality from case management, scheduling of cases with judges and courtrooms, tracking case outcomes, financials, fines and enforcement of judgments.

Customer Benefits:

- The MDA architecture provides the agility in system design to ensure adaptability to coherent changes in environment
- Accelerated development by leveraging the 3D Blueprinting methodology and providing significant time and cost saving along with the business agility they demand.
- After system was accepted, late changes were requested and would have taken $3 million to perform – the Unisys design allowed them to do it at $1 million
Success Stories: 3D-VE and Modernisation

Nassau County, NY

Nassau County Health and Human Service (HHS) provides more than 250,000 residents with an array of services through: social services, health, mental health, veterans, physically challenged, substance abuse, senior citizens and youth. Like many government entities, the county’s situation was not uncommon—revenue shortfalls and reduced state funding had resulted in a serious deficit. Officials needed to take action and figure out a way to balance the budget. Simply, they needed to do more with less.

Customer Benefits:

• Instead of having to access each of the eight services independently, residents can come in and have a one-stop-shop for all of their needs

• Multi-partner project that Unisys managed included hardware, software and migration expertise, saving the county

• A county that is constantly evolving and needing to respond to changing state and federal regulations is now agile and can develop and launch services in 1/10 the time

“Unisys consultants showed us that by migrating our existing development platform onto the Unisys ES7000 enterprise server as opposed to reengineering and rewriting our code, HHS would see about a five-to-one cost savings…We were hard-pressed to find another platform that offered the same flexibility and reliability of the ES7000 server.”

Donald Rodgers
HHS Systems Manager for Information Technology
Nassau County, LI, NY
Success Stories: SOA and Modernisation

Federal Financial Institution Examination Council (FFIEC)

The charter of FFIEC is to send and receive messages (regulatory required data) between financial institutions and their regulators (call data, summary of deposits, etc…) in an agile web based format. As the business is completely data-driven, the content and format of the message payload can change frequently causing significant reporting and business process challenges for banking regulators looking for timely and consistent data exchanges.

Solution:

• The FFIEC utilizes an SOA to support an extended enterprise of 8200+ banks, 5 Federal agencies, the FDIC, the Federal Reserve Bank, The Office of the Comptroller of the Currency, The Office of Thrift Supervision, and the National Credit Union Administration

• Lifecycle Management governed by joint committee comprised of vendors, participating agencies and Unisys

• Includes maintaining a SOA Repository documenting metadata, lifecycle management responsibilities and services contracts

Results:

• Improved business processes
• Increased data quality and usefulness
• Freed up resources for data analysis
• Decreased time to publish data.
• Cleaner more accurate data
• Faster data inflows and end-user data access
Success Stories: SOA and Modernisation

GSA Solicitation Writing System (GSA SWS)

Online since the Fall of 2006 the entire purpose of the GSA Solicitation Writing System (SWS) is to utilize Web Services to communicate between several disparate applications and to communicate the status of solicitations between the multiple applications of SWS, FedBizOpps (Federal government procurement opportunities over $25,000), eOffer (tool to submit contract offers and contract modification requests to GSA FSS online) and the Offer Registration System. A favorable return on investment (ROI) from FSS’ investment cannot be realized until the systems it interacts with can receive offers electronically for all the solicitations. Vendors find doing business with FSS difficult due to the complex solicitation process and lack of standardization in the solicitation formats and layouts.

Solution:
- Use Web Services to publish and notify multiple external systems of solicitations and utilizes BPEL, SOAP/HTTP, and SOAP/JMS
- Runs entirely on Open Source SOA Stack (JBoss and JEMS)
- Lifecycle Management governed by joint committee of application owners and Unisys

Results:
- Facilitated standardization of solicitations across FSS
- Provided the capabilities of creating, approving and publishing solicitations and regulations electronically to multiple disparate systems
- Integration with eOffer and other systems reduced the overall time consumed by officials in creation and maintenance of the solicitations and evaluation of offers.