

Project Kickoff in 2005

- Following Information is publicly available
- The Next 3 Slides are from the customer's project justification

Current Mainframe Environment Cont.

Annual Hardware Costs:	\$450,000	(12%)
Annual Software Costs:	\$2,450,000	(65%)
<u>Annual Labor Costs:</u>	<u>\$890,000</u>	<u>(23%)</u>
Total Annual Cost:	\$3,790,000	
<i>(Hardware/Software</i>	<i>\$2,900,000)</i>	

Software maintenance and licensing fees are the largest single component of the annual cost of the current mainframe environment.

CUSTOMER SLIDE FROM PROJECT KICKOFF

Option 4: Estimated Migration Costs Cont.

The estimated one time costs of the migration are:

Development Cost	\$4,000,000
Project Management	\$200,000
Software Acquisition	\$1,300,000
Hardware Acquisition	\$300,000
<u>Testing/Training Costs</u>	<u>\$500,000</u>
Total One Time Costs	\$6,300,000

Note: *Testing will require significant agency resources; the cost of these resources is not included.*

CUSTOMER SLIDE FROM PROJECT KICKOFF

Comparing Ongoing Annual Costs

Current Mainframe Cost	\$3,790,000
Future Mainframe Cost	\$4,030,000
Outsourcing Cost	\$5,100,000
Migrated Environment Cost	\$1,865,000

- Outsourcing increases annual operating costs by more than \$1,000,000 and will not be considered further.
- Migration offers a reduction of \$1,925,000 in operating costs from current levels, and a reduction of \$2,165,000 in when compared to future mainframe cost.
- With a project cost of \$6,300,000 this reduction translates to payback within 2 biennia.

CUSTOMER SLIDE FROM PROJECT KICKOFF

Familiar Claims

Project Startup Document (3/29/2005)

Solution

A number of alternatives have been explored, including keeping the mainframe, outsourcing the mainframe, and migrating the existing applications to another platform. **The most cost effective solution lies in migrating the existing applications to another platform.** Note this is not an application rewrite: application functionality will not change. Rather, the existing applications will be ported to another operating environment while maintaining the existing functionality, including look and feel.

In addition, **migrating away from the mainframe platform will provide a large reduction in Software licensing fees.** The current mainframe environment costs \$2,900,000 per year in hardware and software maintenance and fees. Estimates of the migrated environment indicate that hardware/software costs will be reduced to about \$1,000,000 per year, which translates to a savings of roughly \$1,900,000 per year.

Let's Extract the Key Numbers

- Mainframe Operating Expense \$3.7M Annually of which \$890K is Labor
- Replacement System Operating Expense \$1.875M Annually of which \$890K is Labor
- Migration Cost is \$6.3M
- Payback within 4 years (2 biennia)

Some obvious problems with the numbers

- HW / SW Acquisition costs are \$1.6M
- Annual HW/SW related Operating Costs of \$1M
 - ▶ Assuming 20% for S&S and 3 year amortization of HW we only get \$360K Annual Expense for HW and SW.
 - ▶ If the projections are accurate, there are clearly “other” HW and SW operating expenses and extrapolating from the Operating Expense projection would indicate that Acquisition costs are also much higher (nearly 3x higher than indicated)

Let's Take a Look At The Business Case

	Capital	Y1	Y2	Y3	Y4	Y5
MF Expense Replacement		\$ 3,790,000.00	\$ 3,790,000.00	\$ 3,790,000.00	\$ 3,790,000.00	\$ 3,790,000.00
Revised Mainframe		\$ -	\$ -	\$ -	\$ -	\$ -
New System	\$ 6,300,000.00	\$ 1,865,000.00	\$ 1,865,000.00	\$ 1,865,000.00	\$ 1,865,000.00	\$ 1,865,000.00
Net Cash	\$ (6,300,000.00)	\$ 1,925,000.00	\$ 1,925,000.00	\$ 1,925,000.00	\$ 1,925,000.00	\$ 1,925,000.00
Break-Even Cash		\$ (4,375,000.00)	\$ (2,450,000.00)	\$ (525,000.00)	\$ 1,400,000.00	\$ 3,325,000.00
NPV	\$ 2,269,757.99					
IRR	16%					
Break-Even Time	40	Months				

- Decent Business Case
- Somewhat long break-even
- **Flawed**
- **Note that the case assumes that mainframe costs go to \$0 immediately.**

Important Costs Were Omitted

	Capital	Y1	Y2	Y3	Y4	Y5
MF Expense Replacement		\$ 3,790,000.00	\$ 3,790,000.00	\$ 3,790,000.00	\$ 3,790,000.00	\$ 3,790,000.00
Revised Mainframe	Aggressive	\$ 3,790,000.00	\$ 3,790,000.00	\$ 1,500,000.00	\$ 1,500,000.00	\$ 1,500,000.00
New System		\$ 1,865,000.00	\$ 1,865,000.00	\$ 1,865,000.00	\$ 1,865,000.00	\$ 1,865,000.00
Migration Costs	\$ 6,300,000.00					
Net Cash	\$ (6,300,000.00)	\$ (1,865,000.00)	\$ (1,865,000.00)	\$ 425,000.00	\$ 425,000.00	\$ 425,000.00
Breakeven Cash		\$ (8,165,000.00)	\$ (10,030,000.00)	\$ (9,605,000.00)	\$ (9,180,000.00)	\$ (8,755,000.00)
NPV	\$ (8,727,132.31)					
IRR	-45%					
Breakeven Time	25	YEARS (at least)				

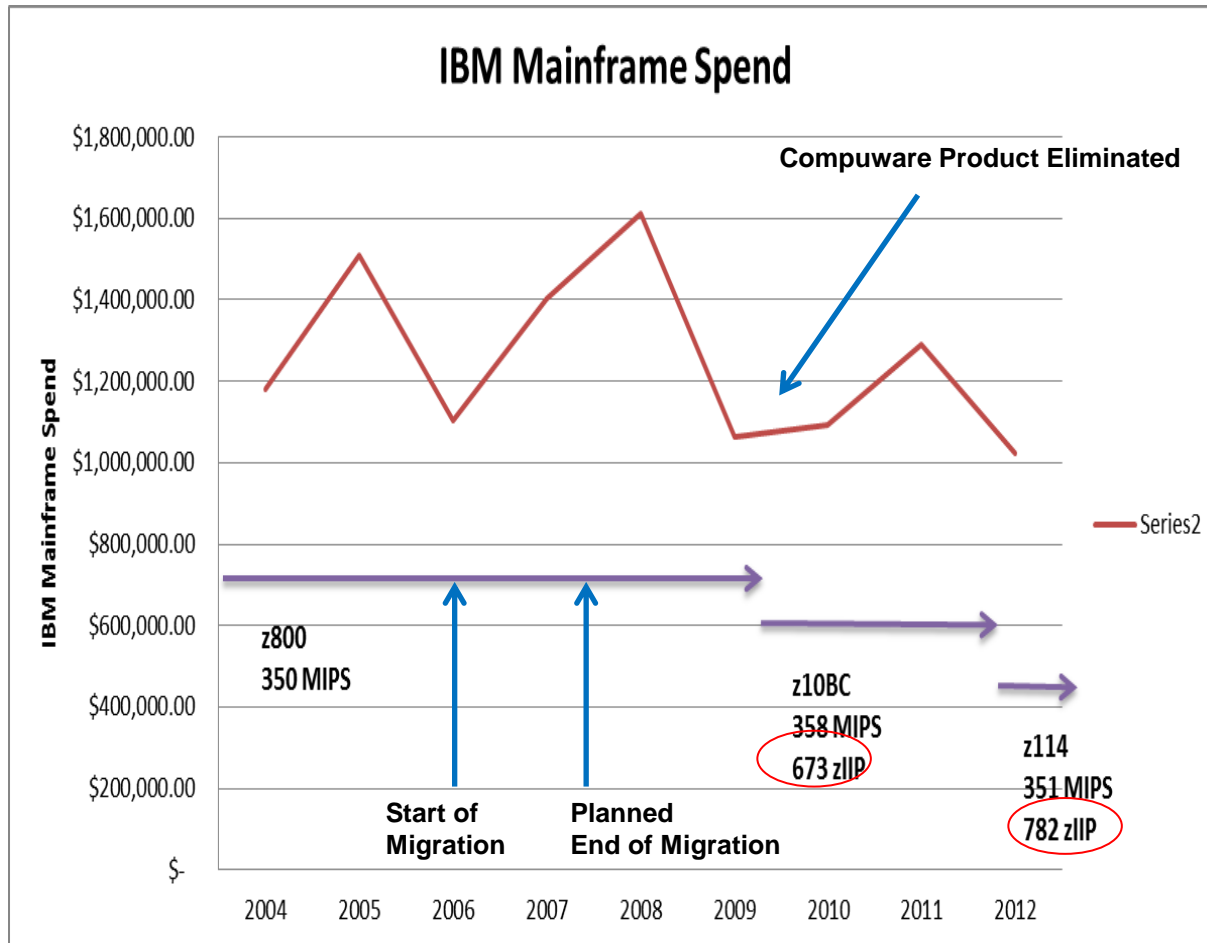
- Mainframe costs will continue during migration (marked in orange)
- Mainframe costs do not go to zero (total migration is not planned) (marked in yellow)
- In reality costs are not reduced in proportion to MIPS removed
- Business Case is Now Negative
 - Aggressive savings assumptions
 - Assuming successful migration within 2 Years

Assumption of >50% reduction in costs is very aggressive. A 70% reduction in MIPS for a system of this size would only reduce software costs by no more than 40%. There would be little or no change in hardware or labor costs.

Mainframe Migration Lessons – Part I

- Remember dual operating costs during migration
- Carefully estimate savings from MIPS removal
 - ▶ Removal of applications may not reduce chargeable MIPS at all. Some applications may not run during peak periods and will not reduce average MIPS during peak charging periods.
 - ▶ Due to pooling of workloads peak demand for removed workloads may be much higher than the average demand measured.
 - ▶ Mainframe software is volume priced. The MIPS removed may be as much as $\frac{1}{2}$ the cost of the average price.
 - ▶ Other costs may be fixed (such as Labor) and will not decrease without removing all of the workload

Where is the customer today?



There has been some reduction in mainframe cost

However, the reduction is likely due to factors unrelated to migration

- Elimination of costly 3rd party tools
- Migration to newer lower-cost mainframes
- Application of newer mainframe technologies (zIIP processors)

Slipped Schedules and Major Reduction in Scope

Schedule Objectives			
Met / Not Met	Scheduled Completion Date	Actual Completion Date	Variance
Not Met	Original 6/15/07 moved to 5/31/08 moved to 6/30/08 moved to 6/30/09	11/30/08	165% based on August 9, 2008 transfer of final application

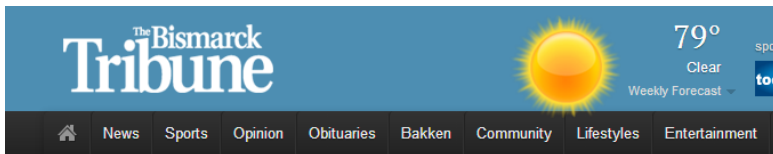
Major Scope Changes
<ul style="list-style-type: none"> • Extension of project timeline – September 2006 • Substitution of Micro Focus JCL Engine for original product ESPBatch – January 2007 • Removal of NDPERS from the migration – July 2007 • Removal of DHS TECS/Vision Application – September 2007 • Removal of DOT Drivers License Application – December 2007 • Removal of all of Phase IV (DHS and ITD Billing Applications) May 2008 • Removal of all DOT applications from the migration – July 2008

- Original Completion Date 6/2007 – Actual “completion” 11/2009
- Major Scope reductions throughout the project

Slipped Schedules and Major Reduction in Scope

Schedule Objectives				
Met / Not Met	Baseline Budget	Actual Expenditures	Variance	
Not Met	\$8,271,274	\$5,762,037	<u>Planned</u>	<u>Actual</u>
			Applications Migrated	84
			Percentage Completed = 55%	46
			CPU Reduction:	77%
				10%
			Budget Variance Based on Applications Migrated = 127%	
			Budget Variance Based on CPU Reduction = 536%	

*35 MIPS
(of 350 MIPS)



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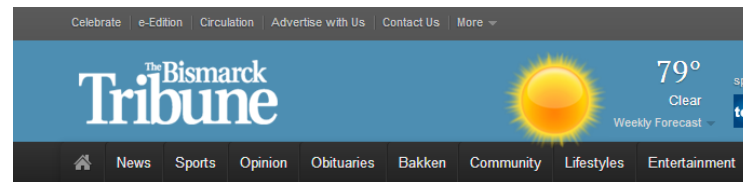
Glitches hamper computer system for Legislature

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August 10, 2008 7:00 pm • Associated Press (0) Comments

Delays and production glitches have been common on major computer projects in North Dakota government. Now, the state Legislature, which is laboring to replace its own computer system, is getting its own lesson on how treacherous the job can be.

A \$5.7 million overhaul of the Legislature's system, which was scheduled for completion before the 2009 session begins in January, has been delayed, lawmakers and staffers say. The project's manager is being replaced this week.



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Woes continue for computer revamp

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November 23, 2008 6:00 pm • Associated Press (0) Comments

The North Dakota Legislature's proposed budget for the next two years includes \$3.91 million for a troubled computer replacement project that already has cost more than \$3 million without producing any usable software.

Earlier this month, the Legislative Council declined to pay a \$303,516 bill from the initiative's software developer, PTC Corp., of Needham, Mass. The bill was submitted for wrap-up work after the company notified the council it was dropping the project.

Success? Or Failure?

Success Story

The Mainframe Migration Project was stopped prior to all predetermined applications being migrated.

The project did technically prove that mainframe systems can be ported to a Linux environment.

The Linux environment is in place to accommodate any future migrations should those agencies decide not to rewrite their existing mainframe applications.

Though the project was not a complete success, those departments that were migrated were done successfully and have reported favorable acceptance and results of the new environment.

When we learned that most of the applications were not going to be migrated, we should have strongly considered scrapping the Linux environment in order to eliminate the effort of maintaining two environments. Linux only running 10% of our total Cobol/Natural capacity.

The mainframe is more expensive to operate than the computer servers that most state agencies use. State officials worry about whether a serious system crash can be repaired, because many of the people who developed it have retired or are no longer available. Mike Ressler, assistant director of the state Information Technology Department, said it is about 35 percent more expensive for an agency to run its software on the state's mainframe computer than it is to use servers. Most agencies have removed their operations from the mainframe, Ressler said, although North Dakota's departments of Human Services and Transportation, the Bank of North Dakota and the Legislature still use it. "You have applications that are 30 years old, and they've been patched so many times. It's kind of like an old tire," Ressler said. "The potential for the (software) code to have problems increases because of all the complexity that is built into it. It is definitely time to get on something new."

Increased Cost Projection For Replacement But only 10% of MIPS Removed

	Capital	Y1	Y2	Y3	Y4	Y5
MF Expense		\$ 3,790,000.00	\$ 3,790,000.00	\$ 3,790,000.00	\$ 3,790,000.00	\$ 3,790,000.00
Replacement						
Revised Mainframe		\$ 3,790,000.00	\$ 3,790,000.00	\$ 3,000,000.00	\$ 3,000,000.00	\$ 3,000,000.00
New System		\$ 2,200,000.00	\$ 2,200,000.00	\$ 2,200,000.00	\$ 2,200,000.00	\$ 2,200,000.00
Migration Costs	\$ 5,762,000.00					
Net Cash	\$ (5,762,000.00)	\$ (2,200,000.00)	\$ (2,200,000.00)	\$ (1,410,000.00)	\$ (1,410,000.00)	\$ (1,410,000.00)
Breakeven Cash		\$ (7,962,000.00)	\$ (10,162,000.00)	\$ (11,572,000.00)	\$ (12,982,000.00)	\$ (14,392,000.00)
NPV	\$ (13,529,084.28)					
IRR	NA					
Breakeven Time	NEVER					

Running new Unix infrastructure will cost
approximately **2,200,000 / year** *Source: Project Closeout Report

- The actual operating expense for the combined systems is now higher than the original projected expense for the single mainframe system
- Other sources of information indicate that “mainframe migrations” were also funded under additional budgets

Familiar Success Stories by Vendors (source MigrationWare website 2008)

MigrationWare Completes Project with Software AG at North Dakota State

The Information Technology Department (ITD) of North Dakota State in the United States contracted with Software AG in 2005 to migrate their legacy computer software applications, running on the mainframe computer, to a more cost effective Linux based environment.

MigrationWare, the specialist technology migrations company, were contracted through Software AG to assist in performing these migrations for the State. A substantial portion of the State's mainframe applications have been successfully migrated onto the Linux platform, with this three year project now coming to completion with the final migration occurring during August 2008.

Mark Cooper, MigrationWare MD, says the company, as Software AG partners, was chosen to assist Software AG to perform this migration for the State.

"The contract involved moving more a significant portion of the State's mainframe applications onto a Linux platform. The applications were written in a number of legacy languages including COBOL, FORTRAN, Assembler, Natural and DYL280 and were migrated onto Micro Focus COBOL and Natural for the Linux platform," he says.

Izak Botha, Practice Manager for Software AG, says MigrationWare's technology facilitated the "lift and shift" approach enabling the re-hosting of the applications in a Linux environment without the need to change any significant aspect of the application or the deployment configuration.

"The State of North Dakota's inventory was vast and varied and in some cases part of the inventory needed conversion, requiring the use of tools that did not yet exist. MigrationWare therefore developed translation tools that would address the conversion of the mainframe applications to COBOL and, in some cases, to Natural," he says.

Cooper says the project was split into three phases and involved migrating applications including those responsible for information management, HR, vehicle registrations, drivers licenses, payroll, telecoms billing and crime reporting.

"What was key about the project is that it enabled the State to continue utilising their applications on a different platform, which not only saved them the cost of re-writing the applications, but also the support costs on the mainframe itself," he says.

Quote from project director (8/10/2008) Just before project was discontinued

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Source: The Bismark Tribune
Glitches hamper computer system for Legislature
(8/10/2008)

Another news article from 11/2008

The project involves writing new computer software for general drafting legislation, keeping track of agency budgets, scheduling and general information management. The Legislature wants to move its operations from a state mainframe computer to a server that is less costly to operate.

During the last four years, the Legislature has spent \$3.3 million on computer hardware, software development and consulting services for the project, including \$2.4 million to PTC Corp.; almost \$300,000 for new hardware; \$590,000 for a project manager, who has been replaced; and \$41,000 for services provided by the state Information Technology Department.

The Legislature's spending plan for the 2009-11 budget period includes \$3.91 million for the project. Lawmakers could also tap \$2.2 million in the current two-year budget that has not been spent.

Smith said the Information Technology Department, which manages computer hardware and software use in most of state government, will be studying whether it can take on the Legislature's project rather than have lawmakers search for another outside company.

Source: The Bismark Tribune
Woes continue for computer revamp
(11/23/2008)

Mainframe Migration Lessons II

- Beware of moving the goal posts
 - ▶ Vendors will declare successful migrations
 - ▶ What isn't clear is that very little of planned function was actually migrated.
 - ▶ How much was spent?
 - ▶ It appears that “mainframe migration” was covered under multiple budgets.
- Define Success
 - ▶ Reduction in operating costs?
 - ▶ Financial benchmarks (NPV, ROI, Break-even)
- Don't throw good money after bad
 - ▶ Temptations are strong to continue failed projects

When we learned that most of the applications were not going to be migrated, we should have strongly considered scrapping the Linux environment in order to eliminate the effort of maintaining two environments. Linux only running 10% of our total Cobol/Natural capacity.

If you are pursuing migration here are some recommendations

- Ask your vendor to allow you to monitor a **project in progress**
 - ▶ Work to quantify the goals and savings
 - ▶ No one will agree to be a reference for a failed project, so don't expect to find one
 - ▶ As you can see even “successful” projects are only successful on questionable grounds (technical success, “deadlines” met, “applications successfully migrated”)
- Ask for an Eagle Study
 - ▶ We can help you analyze your business case. We have models to allow you to get an accurate fix on projected savings