T3's Windows-Based Liberty Vanquishes Pennsylvania Treasurer's Bloated Mainframe Batch Window

In October 2011, Pennsylvania's Treasury Department seamlessly re-platformed two mission-critical mainframe applications onto a Liberty Windows-based system. Having achieved production-quality operation after a few months of vendor migration effort, they now operate on a user-compatible and much more reliable platform. Best of all, the new system shrank batch processing elapsed time by 85 percent and eliminated crushing mainframe software costs.

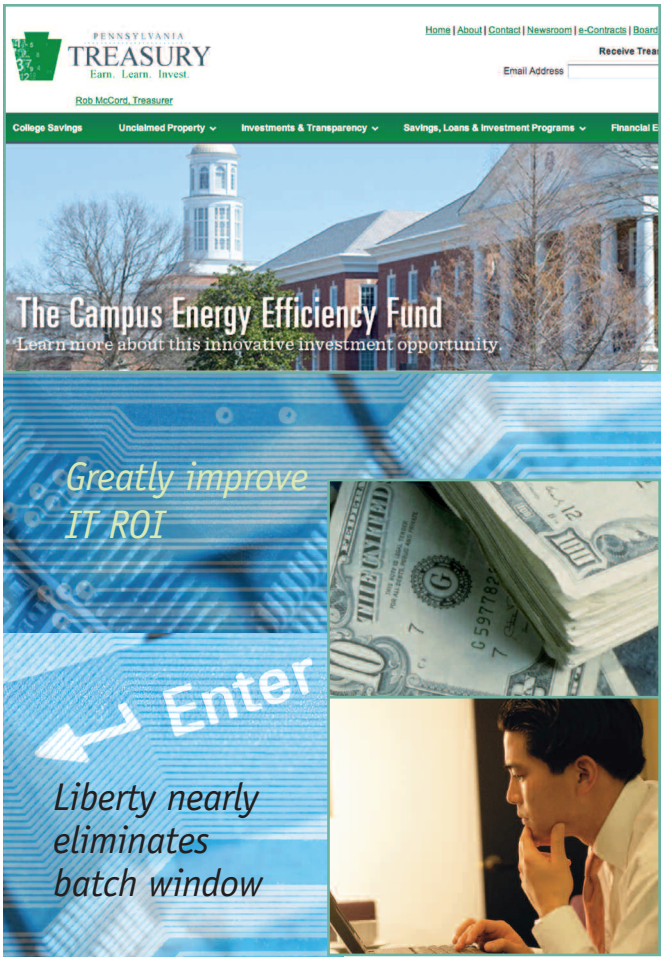
The benign term "batch window" sometimes doesn't quite describe out-of-control processing requirements consuming disproportionate resources and impeding employees' interactive work.

That's what plagued Pennsylvania's Treasury Department.

Ask Pennsylvanians what their Treasury Department does and, chances are, they'll answer, "Since it's called 'Treasury,' the department must be responsible for tracking the state's money." While simplistic, those few words indeed address the heart of the department's paramount duty: safeguarding the Commonwealth's financial assets — more than $120 billion of public funds.

Pennsylvania Treasurer's Broad Mission Serves Citizens in Many Ways

But this independent agency, headed by elected State Treasurer Rob McCord, does much more than simply manage and invest the Commonwealth's financial assets. It serves as fiscal watchdog, ensuring that tens of billions of dollars in payments are lawful and correct. It also operates innovative programs generating positive returns for taxpayers and improves economic security of Pennsylvania's citizens. The Treasury is committed to efficient, productive, and transparent operations — eliciting citizen pride in this branch of government.



Replacing a Flintstone-Era Computer

Unfortunately, the mainframe — an obsolete and cruelly overloaded Clinton-era IBM 9121 running ancient VM/ESA and VSE/ESA versions, jokingly called a "Flintstone computer" — had become too expensive to maintain and too unreliable for Treasury's mission-critical workload.

The system supported extensive and critical payment and appropriation balance functions, but its aged hardware and processing limitations constrained Treasury from improving practices and support efficiencies. Making things worse, its relative fragility exposed Treasury to intolerable risk of unexpected service interruptions, and imposed significant maintenance and disaster recovery costs.

While the Commonwealth's history and development began with that of the United States — and are reflected in Treasury's venerable tradition of in-person services —

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a replacement system needed to accommodate present and predicted transaction volumes, support functional enhancements and new applications, and embrace modern processing and interaction technologies.

The re-hosting project's primary motivation was eliminating perpetually high IBM software costs while achieving multiple ancillary benefits such as reducing the two-hour batch window — during which employees couldn't work interactively! — as well as improving reliability and facilitating disaster recovery.

As background, the 9121 installed in 1997 — not quite prehistoric but many system generations outdated — ran a primary COBOL application handling state employee payroll processing; significant components of the software environment included CICS, batch, and Easytrieve. In addition, the mainframe supported the agency's extensive and critical payment and appropriation balance functions.

Burdened by multiple legacy infrastructure technologies, it was essential to modernize, go green, handle substantially more data and transactional workload, and be more accessible to staff and Pennsylvanians. But the huge transformation couldn't happen overnight, or be accomplished with one transition.

The Grand Plan

So Treasury developed a strategic process to plan, procure, and implement a comprehensive update of its information technology architecture. This involved reviewing current IT mainframe support for payment processing and appropriation balance functions and considering all viable alternatives.

The process implemented changes needed to reach the desired configuration and capabilities over several years. Given the necessary extended timeframe, Treasury issued a Statement of Work for a near-term interim solution to reduce or eliminate mainframe disadvantages, meant to complement, not conflict with, the permanent enhancement.

Liberty Modernizes Technology and User Experience

But hardly intended as a stopgap or compromise, the new system was required to introduce cost savings, increase supportability, and increase system functionality and output via modern technology. A minimum of 25% batch window reduction was specified, along with reduced operational costs, increased agility (adaptability to changes), and minimal retraining through maintaining key business logic, account structure, and look-and-feel of GUI and reports. A quick ROI of one to two years was necessary, as was increased integration with in-place Microsoft Windows and Microsoft SQL infrastructure.

The project involved migrating the two remaining custom- and Treasury-maintained applications (Treasury Automated Bookkeeping System, TABS; and Treasury ACH Control System, TACS) while minimizing changes to program source code, data structures, batch job processing, and supporting artifacts.

Migration included defining and implementing a target architecture with backup/recovery and job scheduling solutions consistent with the existing Windows infrastructure.

To complement in-place technology, Florida-based T3 Technologies was selected to deliver a "lift and shift" Liberty integrated solution including:

- HP Model DL380 Intel server with 32GB of memory, 1TB internal RAID 5 storage
- Microsoft Windows Server 2008 R2
- Microsoft SQL Server 2008 R2
- Microsoft System Center Operations Manager 2007 R2
- Microsoft Hyper-V
- Complete migration services including all COBOL, CICS, and batch programs and maps, JCL, VSAM datasets, and Easytrieve-to-COBOL conversion

Source Code Artifact	Approach
Batch / Online COBOL Programs	Programs compiled and linked for execution on Windows-based system. Source code preserved.
CSP Programs	Programs converted to COBOL CICS programs and maps. Application logic and user experience preserved.
Assembler Programs	Programs rewritten in COBOL (preferred) or C# depending on functionality required.
Easytrieve Programs	Programs converted to batch COBOL programs providing similar functionality.
Batch job streams	Job streams cataloged for execution on new system. Source code preserved.
Sequential files	Migrated to new system. No schema changes required.
VSAM files	Migrated to new system. No schema changes required.
SQL/VSE Databases	SQL/VSE databases migrated to Microsoft SQL Server R2. No database schema changes required except for platform compatibility. Embedded SQL preserved.

Migration transformations emphasize software and user-interface compatibility.

Additional services included:

- Conversion completed for testing in 90 days
- Hardware architecture & configuration documented, delivered, and functional for pre-production and production environments
- Data and application migration
- End-user/ support staff training
- Benchmarking and load testing to ensure scalability and reliability
- Operational process migration, batch job documentation, monitoring and resource management
- Setup in parallel acceptance environment
- Secure communication between re-hosted solution and existing Treasury network infrastructure
- 7x24 two-hour problem resolution

Specific transformations show how rapid and compatible migration was accomplished. (See table above.)

Having set out to reduce the batch window by at least 25%, the Liberty re-platforming project shrank it from two hours to about 17 minutes, dropping it by a factor of 7, or 85+ percent.

Beyond this stellar accomplishment — which greatly improves employee productivity by making online processing available throughout the workday — this change supports Treasury's mission-wide operation for the Commonwealth. And it validates concepts and strategies of the larger in-process agency transformation towards smarter and more accessible government.

Project Reports and Control

Besides the Liberty system, T3 Technologies' contribution included a detailed task plan identifying work elements, resources assigned to tasks, time allotted to elements, and deliverable items to be produced; weekly project status reports; as-needed problem identification reports; and a project conclusion summary report.

Paralleling classic "Great taste! ... Less filling!" beer commercials, this project's tag line could be, "Saves money! ... Runs faster!"

Results like this demonstrate the feasibility and economic benefits for re-hosting of mission-critical mainframe applications to a more mainstream platform, simultaneously reducing costs, improving throughput, enhancing reliability, and simplifying business continuity — all without disrupting system users. Other state/local government data centers — take notice!

"The economical Liberty re-platforming project shrank the batch processing window from two hours to about 17 minutes."

t3 technologies

The Mainframe Alternative Company

2010 Microsoft Technology Momentum Award Winner

Business Partner hp invent

T3 Technologies has provided cost-effective mainframe alternatives to data centers worldwide since 1992. T3 Technologies was an early innovator in mainframe alternatives with the tServer in 1999. The tServer solution allowed mainframe users to migrate from expensive IBM mainframe hardware onto Intel-based hardware running mainframe emulation software, significantly reducing mission-critical computing costs. Over 600 tServer systems were sold in 28 countries!

Building on knowledge and experience gained since 1992, T3 introduced Liberty Server Integrated Solution, a mainframe re-platforming solution representing the latest innovations in mainframe-to-Windows or .NET migration technology. Based on the Microsoft Application Platform, Liberty allows small and medium-sized mainframe users to finally and completely disassociate from IBM mainframe hardware and software and enjoy up to 90% reductions from mainframe processing costs. Best of all, Liberty maintains all RAS + Security features mainframe users have come to expect. Liberty is already an award-winning, fully integrated solution with project planning, hardware, software, services, training, and single-point-of-contact support — all for a low, **fixed** price.

Each Liberty proposal is custom designed to meet specific and unique customer characteristics and requirements. In most cases, a fixed price proposal can be generated without the need for an on-site assessment.

T3 Technologies has partnered with Microsoft and Hewlett-Packard to design the most reliable, available, secure, and high performing platform available. The Liberty system is built on HP's industry-leading servers running Windows Server 2008 R2 and Microsoft SQL R2 for an enterprise-class infrastructure, with TCO far lower than mainframes it replaces.

"T3 Technologies has provided cost-effective mainframe alternatives to small and medium sized data centers world-wide since 1992."

Liberty uses **re-platforming** technologies to migrate mainframe languages, databases, artifacts such as COBOL, DB2, IMS, JCL, Adabas, Datacom, and many others. Re-platforming preserves underlying business logic and source code and avoids expensive and risky rewrite projects. The process goal is operational equivalence, meaning all processes can be reused. This ensures operational excellence and comparable service levels, allows existing staff to remain productive without extensive retraining, and positions developers to take advantage of the more modern and flexible Microsoft Visual Studio platform. Users won't even notice a difference — except for improved performance.

Unique to Liberty are T3's DataMover and tTime Job Scheduler technologies. DataMover facilitates data migration from VSAM and DB2 formats to SQL file formats quickly and accurately. tTime Job Scheduler provides Liberty users with mainframe-level job scheduling capabilities, features, and functions.

T3 Technologies has aligned with financial partners who understand this technology and specialize in providing lease/finance options. Since T3 is a sole-source provider of all components, lease options become simple. Experience shows that annual lease payments on a three-year term are generally less than annual mainframe operating budgets. That means working within current budgets and customers realizing savings immediately upon go-live dates!

The T3 support team provides single 7x24 point of contact for hardware, operating system software, database software, or infrastructure problems. That means a single phone number for any Liberty support requirement invokes a recognized and highly responsive support team.

Over the years, T3 has gathered nearly 1,000 verifiable references for unparalleled support and innovative solutions. Additional documented success stories like this one and other references from a large list of satisfied clients are always available upon request.

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