

point of view

The State of Modernization in Transportation

What it means, how to achieve it, and why it matters.

velocity

This paper represents the Unisys point of view on the independent quantitative research conducted in support of the Unisys Enterprise Modernization Benchmark program. The survey was conducted via the web and fielded by Saugatuck Research Partner, using Business Week Research Services, in December 2007 and January 2008.

The independent, double-blind survey of 1,200 organizations worldwide, including 200 transportation organizations, was designed to gauge the state of modernization in terms of a number of critical capabilities – such as innovation, collaboration, advanced communication and strategic decision-making. On the whole, the research provides a clear framework for defining modernization, a frequently misunderstood concept, and for understanding its importance to transportation organizations.

Roughly 45% of the surveyed organizations are based in North America, with another 45% in Europe (mainly the UK, France, Germany and Italy). The balance came from Australia, New Zealand, Brazil, China, South Korea and South Africa. About 25% of respondents were C-level executives. Some results and findings are summarized on the following pages.

Executive Summary: The State of Modernization

Transportation organizations, and airlines in particular, have made some of the largest investments and taken some of the boldest steps in modernizing their business models and IT environments. And there's no doubt ongoing modernization of core processes and critical technology (including infrastructure and applications) will remain of utmost importance. In fact, it's no exaggeration to say that those transportation businesses that are furthest advanced also expect to be the most successful.

Key Research Findings

- Process/performance improvement, enhanced workforce skills and expertise, and process automation are transportation's top investment priorities when it comes to driving business success. In terms of IT, data security and external customer relationship management are most important.

However, the independent research conducted by Unisys and Saugatuck shows that broad-based modernization programs have yet to benefit the industry in the expected ways. Transportation companies display quite a bit of unease in their ability to innovate, leverage IT for greater business agility and secure key operations – all vital factors in long-term success. While honest, clear-eyed assessments of internal capabilities are critically important, there is considerable – and perhaps unjustified – optimism that past and current investments will soon provide the anticipated rewards. Specifically, the research shows that a broad range of modernization programs carry the expectation that they will deliver significant value, including clear gains in the areas of collaboration and strategic decision-making capabilities, within three years. Many transportation executives are quite pessimistic about internal capabilities today, but have great faith that IT will brighten the future.

But there is a huge gap in that transportation businesses can no longer hope, or even make “best guesstimates,” as to which initiatives or investments are certain to bring benefits. Due to rapidly increasing fuel costs and general market uncertainty, new investments are under intense scrutiny as budgets are being further tightened. Consequently, there needs to be much greater clarity and predictability about ROI from modernization programs, providing assurance that the investments are well chosen.

Our analysis suggests that many transportation firms aren't entirely clear about the ultimate goal, which is a synchronized modernization drive that supports the business. Unfortunately, modernization is widely seen as a “rip and replace” project akin to redoing a kitchen – that is, hugely expensive, massively disruptive and surrounded by uncertainty. If that perception is true, few transportation providers are in a position to undertake the task.

Unisys POV:

- Transportation companies have, by and large, built the platforms they need to operate, but many may lack the tools necessary to acquire new customers, strengthen relationships with existing customers and develop new services. There's a pervasive sense that the full value of IT has not yet been realized.
- There is a dangerous gap between what transportation companies rate as their most important objectives and their ability to achieve them.

Furthermore, the notion that IT modernization is somehow separate from enterprise modernization underscores a lingering strategic issue – the lack of IT alignment with the core business missions and/or specific business objectives. In too many cases, IT is still too often viewed as simply an operational support function. Organizations that view IT strictly as “overhead” or purely as a support function will continuously struggle to reach their full potential in terms of agility, innovation and growth. They will be unable to maximize return on the investments made in their process and technology optimization efforts, as well as being unable to generate more value from existing assets, including their people.

Fundamentally, Unisys believes the promise of enterprise modernization lies not in its composition but rather in the value it produces by reducing costs, lowering risk, and increasing agility. When organizations develop a working definition of modernization and gain clear insight as to their present capabilities, it becomes far easier to move forward on the modernization journey. That’s when IT will finally be freed to help the business address its most important challenges and pursue core goals—thus making IT modernization an enabling and irresistible force for full enterprise modernization.

The Truth About Modernization

The process of modernization is rife with myths and misconceptions. Some include the idea that it is inherently expensive and utterly disruptive. Others define it as referring to only a small set of next-generation tools or technologies. Yet others believe that achieving IT nirvana is a single endeavor involving one great leap forward. Modernization is a concept differently perceived by different players and various industries. Some include:

- “Rip and replace” outdated infrastructure and completely start over
- Standardizing on Microsoft or Linux or getting down to one exclusive instance of ERP
- Using only open source assets
- Virtualizing and automating everything
- Deploying the latest, greatest apps
- Getting out on the leading, and hopefully not bleeding, edge by embracing Web 2.0 or 3.0 or X.0

It is no wonder that modernization has acquired a bad reputation and that many people fear it outright.

Those ideas are not definitively wrong, they’re just incomplete. Modernization programs certainly can include some of those components. While at many organizations, the process incorporates both hardware and software, there are wide differences in the optimal modernization path, varying both by company and industry.

Perhaps the biggest modernization challenge for IT executives at transportation organizations is ensuring that every investment in technology serves to improve the business in some quantifiable way, perhaps as a lever for transforming service levels or by reducing costs. Even if the objectives are clear, how does one discern which solutions are most satisfactory?

This confusion about the meaning and variables of modernization causes many to miss its highly strategic, targeted and, yes, cost-effective results. Done properly, enterprise modernization can be low-risk, even when incorporating relatively new technologies. By clarifying the definition, as our research does, modernization can produce exactly what your organizational goals, budgets and current IT environment require.

A Working Definition

The Unisys-Saugatuck research helped to call out these misconceptions and underscored the need for a better working definition which is useful for setting priorities. Here’s how Unisys defines modernization:

A holistic and ongoing evolution of business processes, applications, and technology where business and IT are aligned to produce flexible, low-cost operating models that reduce risk, improve performance, and increase agility.

As you can see, modernization impacts a lot of things – hardware, infrastructure software (operating system, virtualization, middleware and databases), as well as architecture and business applications. More importantly, this definition focuses clearly on the business-to-IT linkage – that is, the way core strategies and mission-critical processes are executed and fulfilled by IT assets.

Many organizations start with the “stuff” of IT, and worry primarily about updating the portfolio and having the latest “stuff”. But world-class performers that get the most from their IT investments think first of the business problems to be solved and goals to be achieved, and then assemble a

portfolio, both as a whole and in terms of individual elements, that can enable those solutions. IT modernization leads directly to enterprise modernization when it begins with alignment and insight.

Through the independent research and our long-term track record with a number of world-class enterprises, we have further deconstructed modernization into a framework of six dimensions:

- **Business Resilience:** processes, information, networks and applications are managed for continuity, reliability and predictable access
- **Collaborative Business:** communication channels and tools optimize the use of trusted knowledge and relevant data across the enterprise in secure environments
- **IT as a Business Enabler:** IT's ability to optimize available resources and deliver against synchronized business objectives
- **Open Business & IT:** the use of open standards to promote integration and easier access to tools and data – for workers, suppliers and business partners, and customers
- **Green Business:** reduction of energy and resource consumption in IT, the supply chain and across the business
- **Business Execution:** the ability to execute business and technology initiatives in line with overall business objectives.

It is somewhat surprising that transportation companies cite business resilience and business execution, both basic dimensions, as the most important areas. Amazingly, after years of large investments, the industry remains focused on the fundamentals.

These six dimensions are not just a to-do list of capabilities to be developed, but are also useful as a measuring stick for overall performance. Furthermore they specify that modernization is not a set endpoint, but an ongoing process, that the business and IT portfolio will need to continually change and modernize as business conditions and competitive imperatives evolve.

While all of these dimensions are important to consider (as well as the unique interplay among them), not every company will have next-generation capabilities or be a world-class performer in every single dimension. Rather, the focus should be on those dimensions most critical to a company's specific goals and competitive position.

As you can see, modernization means more than having the latest gadgets or embracing the latest programming trend. In our view, modernization should focus less on composition and more on the value that IT produces, whether that be lower costs, reduced risk, better services, increased agility or any combination of those benefits. Therefore, the focus should be on skills, resources and investments as much as on service oriented architectures (SOAs), or virtualized data centers that may be cutting edge yet inappropriate for the situation. The tools, or other means of achievement, need to be adopted for their ability to facilitate the goals – not for their individual properties or attributes. When transportation CIOs think about modernization, they should emphasize, first and foremost, the capabilities of IT infrastructure required by customers and business partners.

Our Results and Their Relevance to Transportation Modernization Benchmarking

The Unisys-Saugatuck research highlights the challenges and points a way forward for transportation companies. As noted, resilience and execution are the two dimensions most valued by our transportation respondents, sending a clear message that modernization is essential to fundamental operations. To meet this goal, modernization investments should be targeted to improve basic process performance, making it faster, cheaper, and better, while securing operations like data integrity, reliability in up-time, continuity, back-up and recovery. When supported by hard metrics, there is a strong business case for proceeding.

Unisys Point of View

- Modernization is about the value technology provides, not what it comprises.
- IT modernization leads directly to enterprise modernization.
- With modernization, IT is free to break through the innovation barrier and pursue bold service improvements.

Our research indicated a number of issues of special concern to the transportation modernization process. A closer examination can help to understand some of the obstacles.

Budget Constraints vs. ROI Opportunities: Transportation organizations face serious budget constraints, which means any investment must deliver real value. Most airlines have made significant progress in updating core systems and re-deploying them for use with modern communications tools and channels. However, many still spend a huge percentage of overall IT costs on maintenance fees to support increasingly outdated and poorly performing systems, representing significant expenditure. This situation often presents one of the best first opportunities for modernization programs. By perhaps replacing or upgrading those systems (with SOA “wrappers” for instance) carriers can reduce costs significantly, while simultaneously boosting performance.

This combination of better performance, coupled with reduced cost, means that modernization programs can – and absolutely should – be self-funding. A phased, targeted modernization strategy will help shape the ideal ROI model – making investments that pay off in short, pre-defined periods of time. Done right, modernization programs can free up cash to be invested directly in innovation or service expansions. We’ve seen it time and again in our work with transportation organizations, and that clear value proposition makes them worthwhile.

Unwarranted Optimism Regarding Innovation & Collaboration: Perhaps the most surprising finding of our transportation research was the consistent optimism of respondents. For instance, only 10% of respondents believe they have significant collaboration among internal teams, suppliers and customers today, but 56% expect to achieve that goal only in three years. Similarly, while only 14% of companies today say decision-making incorporates both internal and external stakeholders, 50% believe that will be the case by 2011.

While admirable goals, the time frames cited may be unrealistic. There remain significant gaps between what respondents cite as their top priorities and their ability to execute on those priorities. Even as transportation organizations are thinking about innovation, they don’t appear to be developing the tools and resources that enable it on a broad scale. These gaps will be difficult to bridge, especially as budgets tighten and customers grow

ever more demanding. While setting ambitious goals and expectations can be a motivator, excessive optimism can result in unmet goals and a sense that the initiative was ill-conceived. Modernization that is effective and beneficial has clear business applications and realistic timelines.

IT Skills Management: This is an important concern today, and will only become more urgent as transportation firms face the approaching “brain drain” as older workers retire and organizational upheavals continue. Today, 41% of organizations find themselves constantly upgrading their workforce, a figure that drops to 15% in 3 years, perhaps in anticipation of the need for further cost control and smaller workforces. The survey additionally revealed that only 25% are presently planning for a flexible workforce while that number rises to 35% in 2011. The two numbers correlate in that smaller staff numbers will require wider and more varied skills for those employed. More startlingly, only 6% of companies are investing in an adaptable workforce today, though they recognize the need to increase their activities in this area. A full 44% will be making those investments in 2011, again recognizing that the market is rapidly changing and there will be an increasing need for new and broader employee skills.

Sourcing: Once again, the research shows the industry is counting on bold leaps forward. New sourcing models are coming into play as transportation CIOs face market realities. Interestingly, 51% of Transportation Companies have no outsourcing strategy today, but that number falls to 21% by 2011. That’s mainly a matter of necessity as firms focus more on core activities. For instance, the outsourcing of all non-core IT services is predicted to double in three years, from 8 to 16%.

We see that talent management and sourcing strategies will go hand-in-hand as key components of effective modernization. The key to both sourcing models and workforce management concerns is to understand the impact on current process, services cycles and overall IT operations and then choose proper strategic responses.

The Business-IT Gap: IT management must be seen as a key facilitator of better collaboration and alignment with the business strategy. For instance, if IT has a purely operational focus, it is often reduced to the role of an order-taker rather than a change inducer. Our results show that IT will continue to grow as a component of progress in achieving business

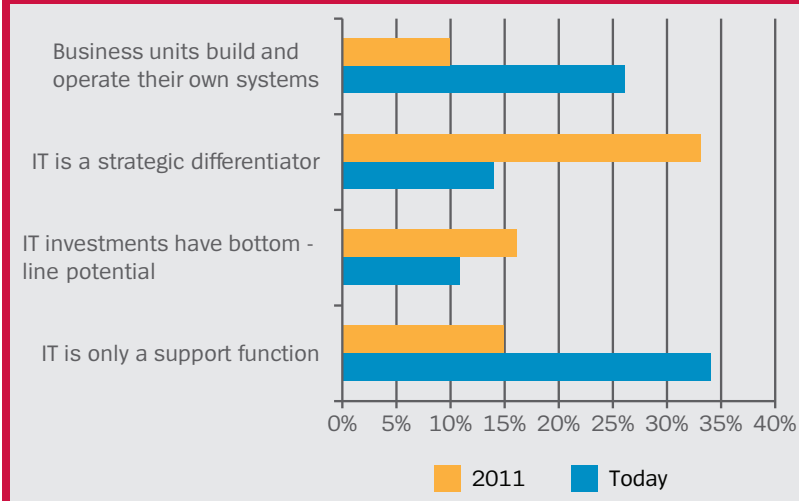
requirements, gaining 5 points, from 26% to 33% in the three year period. Similarly, IT strategy is projected to factor more prominently in business plans, though the envisioned move from 8% to 42% suggested in the survey again seems overly optimistic. Nonetheless, improvement is certain, further diminishing IT's purely operational focus.

There is reason to believe that investments in supply chain visibility and track-and-trace capabilities will provide significant value and this appears to be a particularly good area for better business-IT collaboration. According to our survey, a significant minority of companies – 30% – will achieve full end-to-end integration in three years, validating the premise.

The Security Imperative: Mandates for secure operations and positive passenger information place an especially severe burden on transportation businesses. At present a full 90% have security standards in place, though 100% is the target. But at present, a smaller percentage of that group, approximately 75%, extends those standards beyond mission-critical systems. Again, big improvements are expected within three years, when 94% will achieve the broader goal. Lastly, the percentage of those transportation organizations that apply rules-based security for both internal and external systems is envisioned to grow from 18% to 52%. There is an obvious, and we hope realistic, belief that security initiatives will pay off in the near term.

Transportation CIOs understand the stakes, especially since they will be the ones on the firing line in the event of data breaches or security incidents. As it can be difficult to “prove the negative” of stronger protections and privacy, innovative CIOs must ensure that security models also impact and enhance other modernization initiatives, like process re-engineering or open source deployments.

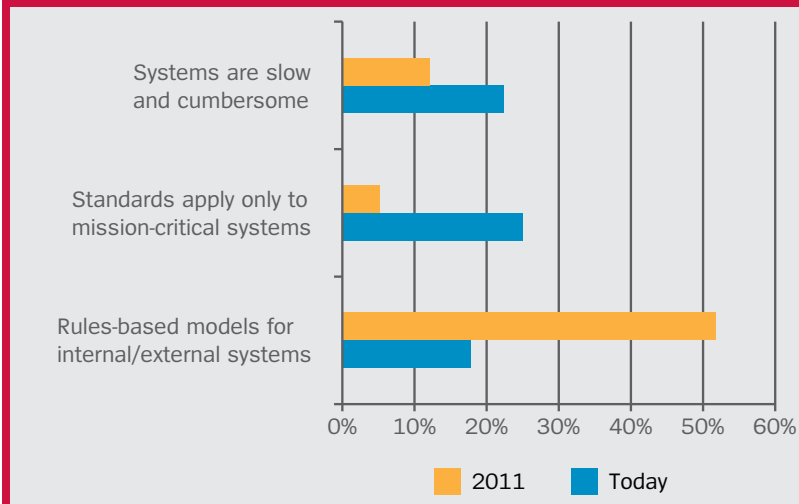
Key Research Findings: Strategic Disconnects



Unisys POV

Transportation organizations that hold to the view that IT plays a strictly support role won't reach their full potential in terms of agility, innovation and growth. The point of modernization is to drive more bottom-line and strategic value, aligning appropriate tools with business goals and processes.

Key Research Findings: Security Moves Up the Agenda



Unisys POV

Security is critical and transportation has some catching up to do. Security investments should be linked to performance-enhancing initiatives.

Modernization in Action – Unisys AirCore

AirCore is the Unisys industry-leading, next generation reservation and departure control solution. Through targeted investments and regularly scheduled upgrades, AirCore is completely modernized, a solution that is flexible, modular and adaptable to specific airline goals. That means dramatically improved speed to market, lower labor costs, improved revenue generation capabilities and a strong, flexible foundation enabling a more profitable future. Modernization with AirCore assures that fundamental systems can remain world-class over time, providing clear optimization paths and funding models to support this evolution.

The Way Forward

Because modernization has broad application and resonance, organizations are free to start the process along those dimensions that matter most to them. While some see “where do we start?” and “how do we see the big picture?” as paralyzing questions, the truth is that transportation organizations can start almost anywhere and find value. The only requirement is to ensure strategic alignment with the business and have clear insight as to connections among processes, applications and infrastructure. Stated succinctly, it is not where you start but how you start that matters. With a long list of assets and processes to be modernized at most transportation organizations, potential value is everywhere, but those opportunities need to be properly identified and prioritized.

Consequently, for maximum value it is wise to carefully define, and begin with, the core business mission and objectives. Such a review may refine the modernization agenda in ways specific to the organization. Airlines will likely focus on service offerings for high-value customers, while shipping and logistics firms will look to track-and-trace and supply chain initiatives. Other firms may start with data integrity and security efforts

Getting Past the Barriers

We are not offering a utopian vision, recognizing that considerable barriers exist even in beginning the long-term journey to modernization. Beyond the spectre of tight budgets, the potential barriers are many, and may differ across transportation organizations. They include:

- Cultural resistance
- Lack of management support for change
- Risk aversion and inertia
- Lack of coordination or centralization for overall IT strategy or funding decisions
- A fragmented or siloed IT landscape – with some elements or assets hidden from view
- Short-term focus on keeping the lights on.

Taking the Right First Step

We think the most effective modernization plans start with a clear understanding of where organizations are today, in terms of assets and capabilities, vulnerabilities and opportunities. Thorough benchmarking and a full, “business-centric” assessment are the best first steps to shaping a modernization strategy. That effort, which can be completed quickly and at a low cost, allows organizations to not only map their current architectures and application portfolios, but to also find hidden risks and gaps. That insight helps chart a course for long-term transformation, with tangible value generated along the way through targeted investments aligned to core objectives. Benchmarking also:

- Clarifies underlying business issues and challenges
- Provides quantitative and objective measures to guide technology discussions and track ROI
- Allows for comparisons with competitors
- Helps IT make its case in the board room
- Establishes milestones to track progress.

The six dimensions of modernization, as defined by the Unisys-Saugatuck research – as well as the important attributes and critical capabilities that comprise those dimensions – provide a means for defining a modernization strategy specifically tailored to each organization. That plan can define and describe objective cost-benefit analysis and business cases, both for short- and long-term investments. In some cases, this process reveals that the organization has made more progress towards modernization than they realized. Of course, the converse is also possible, as other organizations discover serious vulnerabilities. Either way, they gain clearer insight and support for prioritizing their agenda.

Unisys Point of View

- Understanding unique organizational barriers to modernization – including those that are hidden from view – is critical to charting the right course forward.
- Modernization efforts can – and absolutely should – be self-funding.
- Modernization can start almost anywhere and produce value – provided you clearly understand the connections among processes, applications and infrastructure.

Unisys Modernization Services

Unisys has championed the formalization of business rules for many years and is an active leader in the development of standards in this area. We have long recognized the need to change the modernization discussion from just technology and implementation to a full discussion of business goals and processes that then use the best technology to achieve those goals. To that end, Unisys consultants use a formal grammar that helps create a common language between business and IT leaders resulting in the ability to develop a rational strategy for a common way forward. What's more, Unisys has built a wide partner ecosystem to leverage a range of best-of-breed automation tools and domain-specific capabilities. To help organizations get started with modernization, Unisys has developed two key service offerings:

- Unisys Application Portfolio Management services help organizations gain a multi-dimensional view of their application portfolios and develop technology strategies that make sound business sense. Using a collaborative approach, Unisys experts measure the business and technical value of applications, along with cost implications. The resulting assessment provides a detailed analysis and management dashboard, as well as recommendations for future investments
- Unisys Knowledge Mining and Abstraction services help organizations uncover the value in existing applications, identify areas of misalignment between current systems and business processes, and move forward to construct applications that meet current and new needs. These services leverage specialized Unisys-developed tooling – Unisys Rules Modeler and Knowledge Modeler – along with the Relativity Modeling Workbench to extract business rules and processes from existing applications, model today's business processes, and create a “to be” model to support modernization.

Conclusion: Charting a Course Ahead

By breaking down modernization into achievable steps, transportation organizations can more easily negotiate the considerable barriers and traps they face. Tight budgets will always be a fact of life, which is precisely the reason modernization makes sense. Key to beginning is dropping perceptions of modernization and the way it has been stereotyped, as massively expensive and hugely disruptive. Rather there needs to be a new paradigm in which it is properly seen as targeted, self-funding and strategic. We believe IT modernization is central to enterprise modernization.

This does not imply that the process will be easy. Satisfying conflicting goals relevant to various organizational stakeholders and pleasing ever more demanding customers never has been easy, and never will be. Nonetheless, opportunities for transportation CIOs are considerable. But counterintuitive and strategic thinking may be necessary by going beyond a utilitarian “keep the lights on” mentality. Planning and careful analysis are key requirements to get a long-term vision in place. And while it's not difficult to see the need to secure and stabilize areas of greatest immediate risk, it can be challenging to contemplate steps with a less immediate, but ultimately vital, benefit. By freeing IT and its potential through modernization, however, visions become possible.

Modernization – Business Value You Can See.

For more information, contact your Unisys representative.

Or call Unisys today at:

1-800-874-8647 ext 795 (U.S. and Canada)

00-1-585-487-2430 ext 795 (Other countries)

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