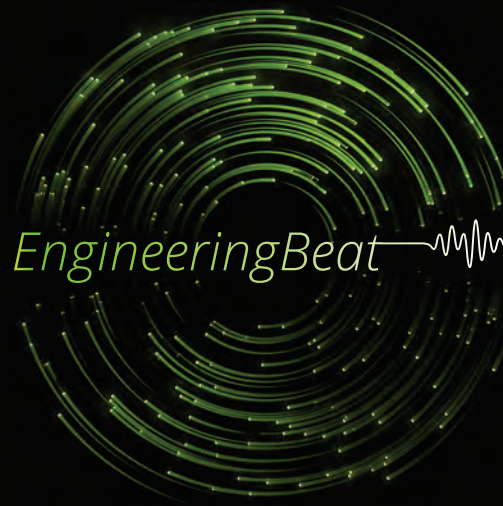


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EngineeringBeat: Accelerating mainframe modernization

Insights to address digital transformation challenges in transportation and hospitality



Transportation and hospitality organizations are laser-focused on creating a seamless customer experience throughout their travel journey, which is driving a shift toward modern retailing practices that deliver a tailored experience. Further, post-pandemic consumer demands have created an expectation of smooth omnichannel experiences for all aspects of their journey. Meeting these demands requires modernizing from “heart-of-the-business” legacy systems like mainframes and outdated solutions.

Transportation: Customer satisfaction and operational efficiency are paramount

Many airlines are seeking to transform the sales and distribution of their products to boost revenue per traveler, but efforts often face headwinds due to critically important legacy systems for passenger sales, service, and operations management—including crew, flight, baggage, and maintenance management systems. Additionally, these aging, inflexible systems are increasing operational risks due to the growing complexity of recovery and maintenance—which can decrease customer satisfaction and impact revenues. These potential risks are further exacerbated by a quickly diminishing number of engineers experienced in these systems and corresponding technologies.

Hospitality: Information consolidation and a tailored guest experience are essential

For hotels, outdated and fragmented legacy systems across different properties can make it difficult to offer a consistent customer experience and to effectively comply with strict regulations like General Data Protection Regulation (GDPR) and Payment Card Industry Data Security Standard (PCI DSS). There's also a strong push to streamline workforce systems, reduce manual processes, and leverage cloud-native platforms to reduce costs and improve speed of onboarding for new team members.



Challenges to modernization and strategies to address them

Despite the clear need for modernization, however, there is often significant hesitation to embark on a modernization journey. Frequently, concerns include fear of operational disruption due to the potential for delays, lack of deep insight into legacy systems, and cost. These fears aren't without merit. Challenges, such as legacy systems complexity, data and compliance issues, and the lack of a strong business case to justify the effort, often bedevil modernization efforts.

Though they can be formidable, these challenges aren't insurmountable. The right strategies, experience, and tooling to modernize are available and have successfully helped many enterprises overcome obstacles and accelerate digital transformation.

1 Complexity is a big hurdle. Clear it with automation and optionality.

The complexity of legacy systems can pose significant challenges for both the airline and hospitality industries. Airlines are burdened with systems that are 40 to 50 years old, written in specialized/legacy software languages, making it difficult to obtain insights into functionality and data and leaving them heavily reliant on a limited group of overburdened engineers. Similarly, hospitality organizations tend to struggle with outdated systems for reservations, property management, guest services, and loyalty programs. These legacy systems hobble access to the modern technologies that drive digital transformation and innovation.

Automation and optionality are key to addressing complexity challenges. Deep, automated mainframe discovery and mining tools and services that support organization- and industry-specific technologies can enable accelerated extraction of key knowledge from mainframes with far less reliance on specialized workers. To help further reduce complexity and mitigate risk, employ an incremental (or hybrid-agile) approach to modernization that starts with less critical components before moving to core systems.

Leveraging multiple modernization/migration approaches, such as rebuild, COTS, rapid migration, and/or conversion, enables prioritization of investment toward strategic product solutions versus short-term tactical ones. Additionally, full-life-cycle automated migration—as well as utilizing AI for automated codebase analysis, business rules extraction, dependency insight, and data-flow insight—can accelerate and reduce risks of modernization.

These legacy systems hobble access to the modern technologies that drive digital transformation and innovation.



2 Data security and compliance aren't optional. Make them modernization keystones.

Managing sensitive guest and passenger information while helping to ensure compliance with regulations such as GDPR and PCI DSS is a significant challenge during digital transformation for both transportation and hospitality enterprises. Regulatory risk compliance can be particularly challenging due to the extensive, maddeningly complex efforts required to manage regulatory changes.

To address security and compliance challenges, it's essential to make compliance a transformation cornerstone from the outset. Another key component of effective security and compliance is a secure cloud architecture with robust encryption, access controls, and data protection measures. Cloud providers and third-party vendors should also have a solid reputation for successfully enabling compliance and for robust continuous monitoring and auditing processes. Finally, data anonymization techniques are critical to protect sensitive information during migration.



3 A strong business case is vital. Build it with communication and sound management.

One of the primary challenges in modernizing legacy systems—especially for airlines—is the “bubble cost,” which is characterized by high initial capital expenses coupled with difficult-to-quantify business benefits. The potential financial burden can be difficult to stomach for executives and stakeholders as they attempt to justify the upfront investment needed for extensive transformations.

To overcome this challenge, the first step is to engage the transformation leadership team early with key stakeholders to help define and align business and technology goals, and to ensure that transformation efforts aren't limited to IT projects alone. Adopting organizational change management (OCM) and FinOps practices for cloud financial management also helps by aligning spending with business objectives, which can mitigate the risk of ballooning cloud costs. An incremental approach to transformation is also essential—one that combines quick wins with foundational migration and setting tangible milestones to show success early. Early planning for “bridging solutions” can also help avoid the pitfalls of a “big bang approach,” which can drive a smoother transformation.



The modernization payoff

While the challenges to modernization can be steep, the payoff is worth the effort. By embracing mainframe modernization, transportation and hospitality organizations stand to realize significant competitive advantages and operational improvements.



Airline sector

Scalability and flexibility:

- Ability to adjust compute for systems during peak times, off-peak times, and irregular operations (IROPS)
- Flexibility to adapt to new business models and market changes

Competitive advantage:

- Faster innovation and service enhancements via adoption of modern retailing practices
- Improved customer experience through the delivery of personalized and seamless interactions
- Achievement of a modularized platform, enabling leverage of leading-class COTS

Enhanced operational efficiency:

- Faster IROPS recovery leveraging modern, AI-augmented solutions
- More predictable maintenance, repair, and operations (MRO) activities, optimizing fleet use and reducing delay risk
- Improved crew management flexibility

Cost reduction:

- Reduced legacy system and maintenance costs

Enhanced product distribution capabilities:

- Ability to effectively and consistently sell all products across all channels



Hospitality sector

Enhanced guest experience:

- Improved systems that help enable seamless multimodal interactions with customers throughout their journey with the ability to offer more personalized products and services
- Achievement of a modularized platform, enabling leverage of leading-class COTS
- Improved consistency across properties and regions
- Ability to leverage Generative AI (GenAI), AI, and machine learning to more effectively use available data to gain deeper insights into the customer journey and optimize pricing and promotions accordingly

Improved security and compliance:

- Improved protection of sensitive guest information
- More effective compliance with data protection regulations like GDPR and PCI DSS



Mainframe modernization in action

A large global airline wanted to transform its customer experience with modern retailing



The airline wanted to provide its customers with a “one-stop” shopping experience that would allow travelers to browse, book, and buy everything they need in one place. However, simply planning those changes—like updating seating functionality—took more than six months because of mainframe complexity, unexpected discoveries, and delivery issues.

Using Deloitte’s mainframe modernization solution, the company accelerated its discovery process from six months to 10 days. The solution also leveraged GenAI to help the airline understand business rules, dependencies, and other nuances in a matter of minutes, significantly accelerating modernization, as such tasks used to take many months with a low degree of accuracy. Now, the airline’s teams can spend time delivering new customer experiences and building the future of their business.

Take the leap

The urgency for organizations in the transportation and hospitality sectors to modernize their legacy systems cannot be overstated. As markets evolve, the risks of inaction grow exponentially. Organizations that fail to modernize could face increasing operational inefficiencies, higher costs, and the potential loss of market share to more agile competitors. The path to modernization is fraught with challenges, but the benefits—from enhanced customer experiences and operational efficiencies to improved compliance and reduced costs—are well worth the investment. The imperative to act is clear. The time to act is now.

To learn more about how your organization can unlock the potential of legacy systems to fuel innovation, read our **full report**.

Get in touch



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