WHITE PAPER

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elum

Virtual Training Development & Deployment

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Executive Summary

The Virtual Training Industry is a rapidly expanding sector that seeks to transform the delivery of education and training to students. Utilizing web-based platforms, extended reality (XR) technologies, and embedded analytics, virtual training provides numerous advantages, including accessibility, flexibility, cost-efficiency, and personalized learning experiences.

This white paper comprehensively analyzes the virtual training industry, including its definition, significant benefits, and challenges. We investigate the use of XR technologies such as augmented reality (AR), virtual reality (VR), and mixed reality (MR) to create immersive and interactive training experiences. We also examine how Learning Management Systems (LMS) and Training Management Systems (TMS) facilitate virtual training programs' delivery, administration, and evaluation.

Despite potential access, cost, and efficacy obstacles, the virtual training industry is expected to grow substantially over the next few years, driven by increasing demand for flexible, accessible training solutions and technological advancements. The global virtual training and simulation market is projected to reach $519.7 billion by 2027, expanding at a compound annual growth rate of 15.2% from 2020 to 2027.

Integration Innovation, Inc. (i3), an industry leader in virtual training, provides the Virtual Training Suite (VTS), a comprehensive digital training platform for military personnel and other stakeholders. i3's elum platform is a commercial solution that leverages sophisticated instructional systems design, military-grade security, and XR deployment to deliver an unmatched virtual training experience to businesses across all industry verticals.

By leveraging the power of virtual training technologies and platforms, organizations can optimize their training initiatives, enhance learning outcomes, and equip their workforce with the necessary knowledge and skills to succeed in today's competitive global market.

The Virtual Training Industry

Definition

Virtual training, also known as e-learning or online learning, is the remote delivery of educational or training content through technology. Virtual training can include online courses, webinars, virtual simulations, and other digital learning opportunities. Personal computers, mobile devices, and wearable technologies can all be used to deliver virtual training. For instance, virtual training courses can be accessed via a desktop or laptop computer, while mobile devices such as smartphones and tablets can access training content while on the go. In addition, wearable devices, such as smart eyewear or head-mounted displays, can be used to deliver training experiences that employ extended reality (XR) technologies, such as augmented reality (AR), virtual reality (VR), and mixed reality (MR). These technologies can provide learners with immersive, interactive training that simulates real-world scenarios and allows them to practice skills and techniques in a safe, controlled environment (Dinh).

XR technologies such as AR, VR, and MR can be used to enhance virtual training experiences. AR involves superimposing digital information or objects onto the actual world, whereas VR creates an entirely interactive digital environment. MR incorporates elements of both AR and VR, allowing digital and physical objects to coexist and interact. These technologies offer several distinct advantages over conventional training methods, such as providing immersive, engaging training experiences tailored to each learner's specific requirements. AR, for instance, can provide learners with real-time feedback or instructions in a physical setting. In contrast, VR can simulate complex, high-risk scenarios that would be difficult or hazardous to recreate in the real world (Kapp).

Virtual training is deployed through web-based platforms, such as Learning Management Systems (LMS) and Training Management Systems (TMS), which provide a centralized location for managing, delivering, and tracking educational content. These platforms enable organizations to efficiently distribute training materials, monitor learner progress, and assess the effectiveness of the training. In addition, embedded analytics within the LMS or TMS can support customers by offering valuable insights into learner performance, identifying areas for improvement, and personalizing the learning experience for each individual.

By leveraging analytics, organizations can ensure that their virtual training programs are not only engaging and immersive but also adaptive to the unique needs of each learner. Additionally, integrating XR technologies like AR, VR, and MR within these systems further enhances the virtual training experience, allowing learners to practice and develop skills in a more interactive and realistic environment. Ultimately, the combination of web-based platforms, embedded analytics, and XR technologies help create a comprehensive and effective virtual training ecosystem,

enabling learners to gain valuable knowledge and skills while allowing organizations to manage and optimize their training initiatives efficiently.

Challenges

There are also potential challenges associated with virtual training, such as the requirement for learners to have access to technology and a reliable internet connection, the cost of development, and concerns regarding the comparative efficacy of virtual and in-person training.

Access

With elum, we address access to the training material in two ways; for those with limited access to reliable internet or bandwidth issues, we provide the lesson material as downloadable content that runs directly on the client machine. As the user progresses through the training material, their activities and progress are cached locally. Once the client is back online, that metadata is transferred to their cloud account. For those with hardware limitations, elum's virtual training content is optimized to run smoothly on machines with limited capabilities.

"We have realized unprecedented Soldier access to our training. With nearly 4000 users, we have doubled participation in the last 7-months. Put it this way, Soldiers are accessing training at home on the weekends"!

DAC Chris Stuart – Chief of Academics, 110th AVN BDE

Cost

With more than a decade of experience building advanced virtual training technologies, we have established a sound, lean methodology for designing, developing, and deploying a first-class product and customer experience. Our standardized development pipeline and automation methods allow us to produce the highest quality content at the lowest possible price in the market.

Efficacy

Some studies indicate that virtual training can be as practical as in-person training, while others suggest that in-person training is more effective for specific skills or knowledge (Rovai). With these challenges in mind, i3 has incorporated an architectural design that

Virtual training allows us the ability to significantly reduce our parts-task-training hardware requirements and the number of trainers needed to oversee it. We still perform hands-on training for evaluation but the students already know what their doing when they get there".

DAC Dan Griffen – Maintenance Examiner, Ft. Novosel, AL.

mitigates these risks. This has been proven with our numerous government customers, and the technology platform has been uniquely designed to support the needs of the commercial marketplace.

Despite these challenges, virtual training is anticipated to continue growing in prevalence and significance, especially as remote work becomes more prevalent and the demand for flexible, accessible training solutions rises. Technological advancements and the need for flexible, accessible training options have partly driven the rapid growth of virtual training in recent years.

"It's not a matter of when you will adopt virtual training, but of how far you're going to be behind once you start."

Anonymous

The Global Market

According to ltd, R. and M. (n.d.), "North America will be the leading region with 32% of the market's growth during the forecast period. The US and Canada are the key countries for the military simulation and virtual training market in North America". They go on to highlight that "The cost-effective virtual training is driving the market growth. Real-time training is costly and includes many additional costs on resources. However, virtual training is highly cost-effective. It reduces the risks associated with real-time training. Hence, defense agencies have shifted their focus to simulation and synthetic training methodologies. In addition, the rise in budgets for defense and law enforcement over the last few years has increased the demand for innovative simulation training systems by military and police forces".

Source: Research and Markets
Link: https://www.researchandmarkets.com/reports/5319176/global-virtual-training-and-simulation-market

"The global virtual training and simulation market will reach $519.7 billion by 2027, growing by 15.2% annually over 2020-2027, driven by the growing awareness, cost-effective benefits of virtual training and simulation, and rising applications across industry verticals" (ltd, R. and M., n.d., p.88).

Integration Innovation Inc. i3

Who We Are

Integration Innovation, Inc. (i3) is a Huntsville-based, employee-owned mid-tier business with more than 700 employee-owners. We are ISO 9001:2015 and AS9100 D certified and are committed to creating an excellent workplace culture, as evidenced by our seven Best Places to Work Awards, achieved through employee engagement, strong leadership, and excellent communication. i3's diverse set of technical capabilities includes Systems and Software Engineering; Full Life-Cycle/C5 Engineering Services; Corrosion Protection; Cyber Security; Hypersonic Weapons; Electronic Warfare; Unmanned Aerial Vehicles (MQ-1C, MQ-9, RQ-4, and RQ-7); Digital Missile Simulation; Interactive Multimedia Instruction (IMI); and IT Solutions.

The Virtual Training Suite (VTS)

Source: VTS Logo - VTE/PEO-AVN,

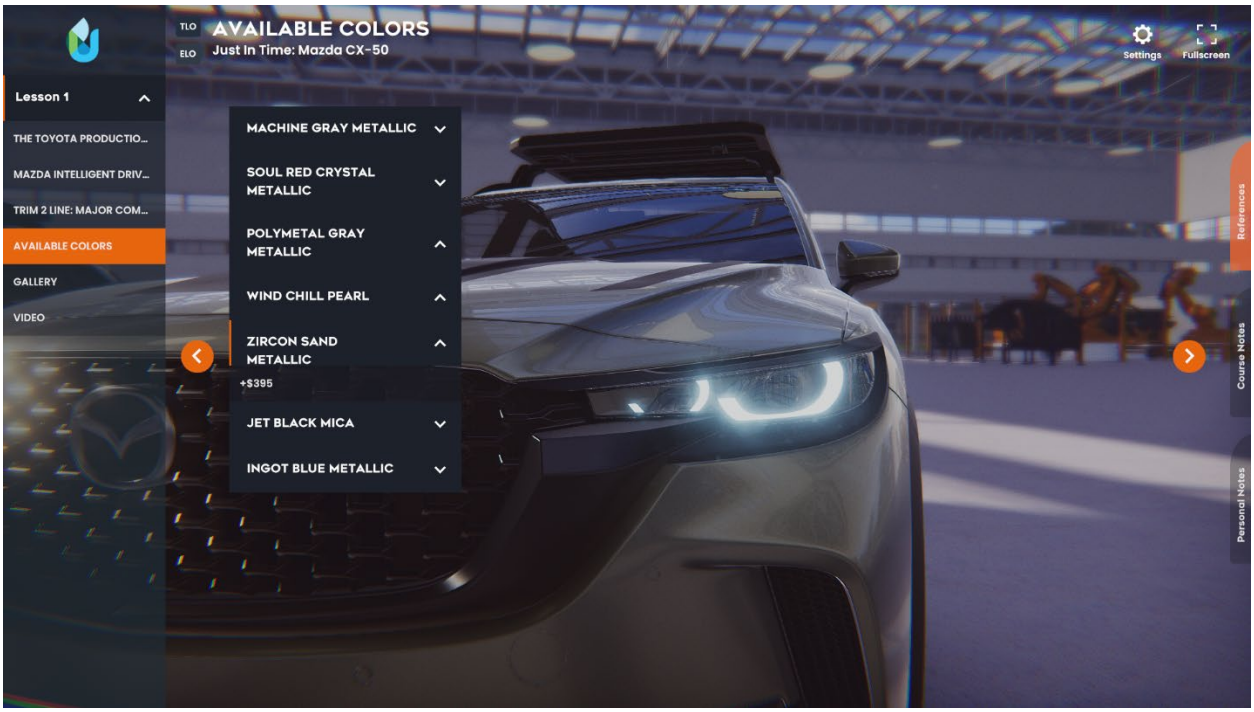
Our flagship IMI content development and deployment product is the Virtual Training Suite. VTS is a comprehensive digital training platform that utilizes Microsoft Azure Cloud services and is administered by i3, on behalf of the US Army, in the government cloud space supported by ECMA cArmy. VTS serves multiple military branches, Department of Army civilians, and authorized Original Equipment Manufacturer partners as the US Army Aviation Enterprise standard for future Interactive Multi-Media courseware. The platform prioritizes standardization, distribution, and change management to provide a single, secure, and globally accessible library of relevant and current courseware resources. VTS's standardization model promotes economies of scale and long-term cost reduction, while its modern, cutting-edge distribution strategy ensures accessibility and automated global updates. The well-designed Change Control Board manages courseware updates, ensuring that users can always access the most recent training resources. Overall, the VTS provides a comprehensive, systems-based framework for delivering high-quality, standardized virtual training to military personnel and other stakeholders.

Company Talent

At i3, we recognize that retaining an exceptionally talented staff is crucial to the success of any organization, especially in creating high-quality virtual training solutions. Staff with a high skill level and experience can contribute knowledge and expertise to the development process, ensuring that the training meets the intended audience's needs and produces optimal learning outcomes. In virtual training development, particular skill sets are indispensable for success.

Instructional System Design, Software Engineering, Data Science, Cybersecurity, and Customer Service are among these skill sets.

Instructional System Design is essential to developing effective training materials because it entails the creation of learning objectives and a thorough understanding of learning behaviors, pedagogy, assessments, and evaluations aligned with the training program's goals. Software Engineering is essential for creating a scalable, efficient, user-friendly virtual training platform. Data Science is indispensable for analyzing user data and identifying trends and patterns that can inform the development of more effective training solutions. Cybersecurity is essential for safeguarding sensitive data and ensuring the virtual training platform is secure and impervious to external threats. Finally, customer service is crucial for ensuring that users have a positive experience with the virtual training platform and that any issues or concerns are resolved quickly and effectively.



Elum

Introduction

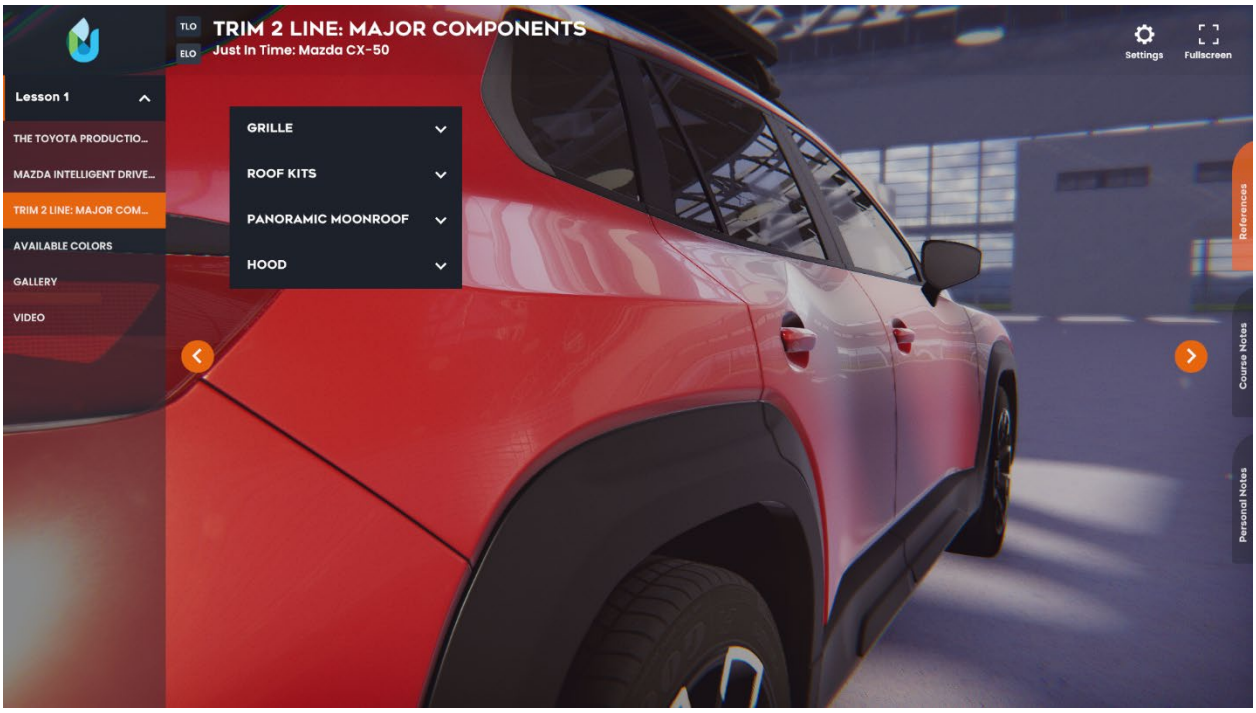
The elum platform leverages a wealth of experience, investment, and insight gathered over several years of development efforts for the federal government. Curating this unprecedented capability into a unique commercial content development and deployment platform allows the

commercial business sector access to unmatched capabilities in traditional Learning and Training Management Systems (LMS/TMS). As a result, the elum learning platform is the gold standard for the best training resources you can provide to your employees and customers. What's more, elum is not just virtual training.

Feature set

The elum platform - development and deployment services, will provide all the advanced technological services realized with our government customers and more. The value we have recognized in standardization, distribution, and change management is carried over into this commercial resource. Deploying your training with elum provides the following:

- Advanced Instructional Systems Design
- Secure (military-grade) global access
- Administrative Dashboard
- Role-Based Access Control (RBAC) allows customer administration of their licenses.
- Analytics data views
- Instructor Dashboard – Training Management System (TMS)
- User/Student Dashboard – Learning Management System (LMS)
- Training Dojo – Provides the virtual training user interface with 508 compliances.
- XR deployment – VR, AR, MR via phone, tablet, and headset.
- Analytics harvesting
- Premium customer service

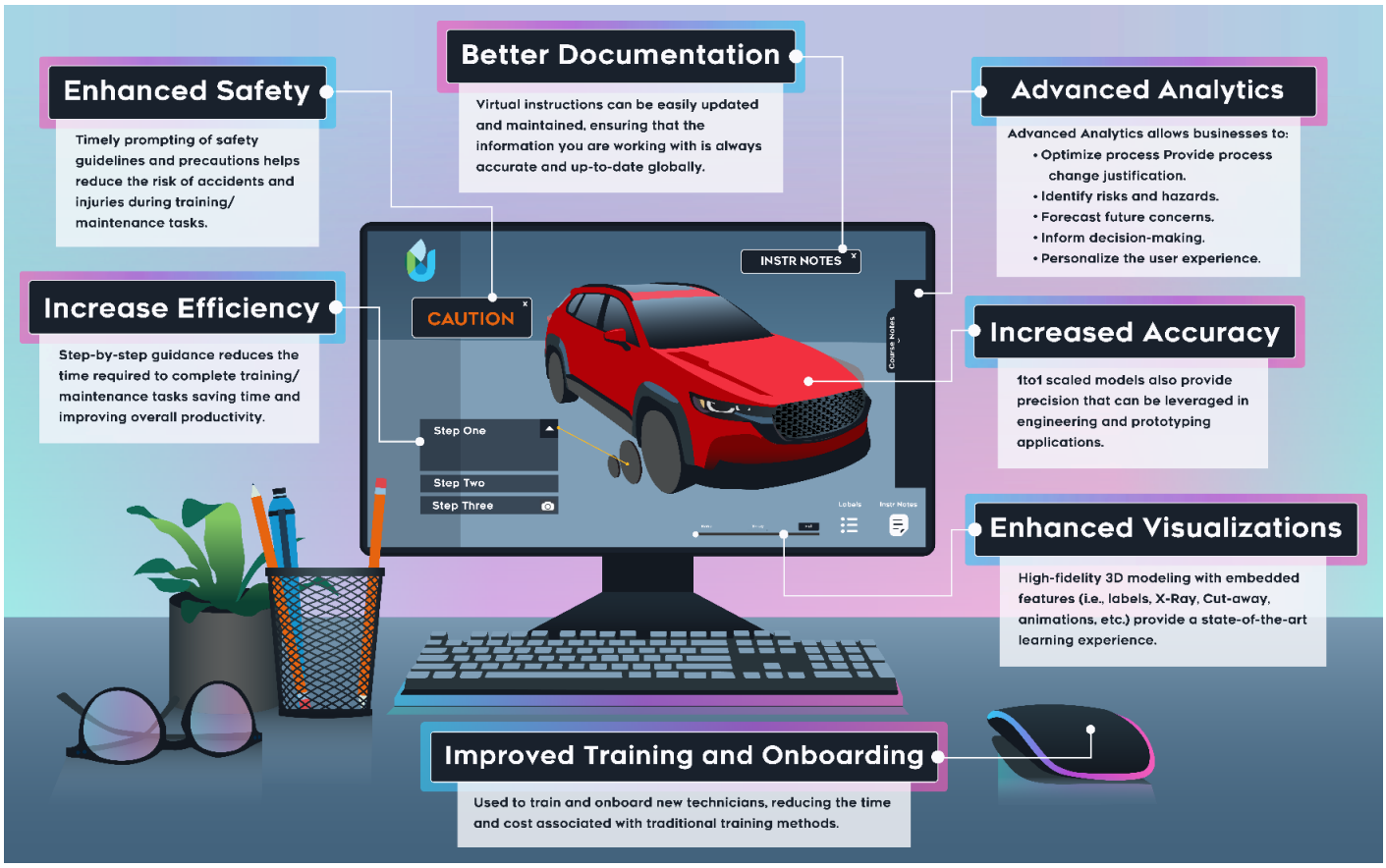


Our Unique Value Proposition

The implementation of virtual training platforms with attributes such as improved accessibility, enhanced visualizations, increased efficiency, enhanced safety, increased accuracy, improved training and onboarding, better documentation, advanced analytics, and personalized user experiences offers technical industry training with unprecedented unique value propositions (Day & Foley, 2006; Johns & Mewhort, 2009; Sitzmann, 2011). These characteristics offer several benefits that can improve trainees' learning experience and increase productivity, cost savings, and enhanced safety outcomes. The anytime, anywhere, on any device accessibility allows learners to remotely access training materials, providing advantages in prerequisite, distance, sustainment, and cross-training (Day & Foley, 2006). (Johns & Mewhort, 2009) High-fidelity 3D modeling with embedded features provides a cutting-edge learning experience, allowing trainees to visualize complex systems and procedures accurately. In addition, step-by-step instructions decrease the time required to complete training/maintenance duties, thereby saving time and increasing overall productivity (Sitzmann, 2011). 1to1 scaled models provide precision that can be utilized for engineering and prototyping (Day & Foley, 2006).

Virtual training platforms can train and onboard new technicians, reducing the time and cost associated with traditional training methods. In contrast, the virtual instructions can be easily updated and maintained to ensure that the information you are working with is always accurate and current globally (Johns & Mewhort, 2009). In addition, advanced analytics provided by virtual

training platforms can optimize process efficiency, justify process change, identify risks and hazards, predict future concerns, and inform decision-making (Sitzmann, 2011). Moreover, personalized user experiences can be designed to meet the unique requirements of each trainee, thereby enhancing engagement and retention of information (Johns & Mewhort, 2009). Therefore, virtual training platforms can provide a comprehensive and efficient solution for technical industry training, resulting in better-trained technicians, increased safety, enhanced productivity, and decreased costs. Improved Accessibility – Anytime, anywhere on any device provides advantages in prerequisite, distance, sustainment, and cross-training opportunities.



Conclusion

In conclusion, the elum platform stands out as a comprehensive virtual training solution that combines advanced technology, innovation, and user-centric design, tailored to the needs of the commercial business sector. By incorporating cutting-edge features such as XR deployment, military-grade security, role-based access control, and analytics harvesting, elum offers a unique

value proposition to its users. In addition, the platform's ability to provide enhanced accessibility, visualizations, efficiency, safety, accuracy, training and onboarding, documentation, and personalized user experiences makes it a powerful tool for fostering a well-trained workforce, improved productivity, and cost savings.

With its anytime, anywhere, on any device accessibility, elum ensures that learners can engage with training materials at their convenience, offering a state-of-the-art learning experience through high-fidelity 3D modeling and step-by-step guidance. In addition, the platform's commitment to safety, accuracy, and up-to-date documentation, along with advanced analytics, enables businesses to optimize processes, identify risks, and make informed decisions, ultimately leading to better-trained technicians, increased safety, and decreased costs.

The elum platform represents a significant leap forward in virtual training, offering unparalleled benefits to businesses and individuals. Its focus on delivering a personalized and engaging learning experience that can be easily updated, maintained, and adapted to individual needs sets it apart as a valuable resource for technical industry training. By investing in elum, companies can expect improved training outcomes, enhanced safety measures, and overall greater efficiency in their operations.

For More Information:

Visit
https://www.elumplatform.com

To Schedule a Demonstration and Discussion:

Reach out to Tim.VanAlstine@elumplatform.com

About the Author:

Tim Van Alstine is a 23-year veteran of the US Army. Serving as a UH-60 Blackhawk instructor pilot and commander of aviation training units and combat operations. With a passion for training development, execution, and management, Tim served as the primary innovator and Program Manager for the Program Executive Office – Aviation's development, fielding, and sustainment of the Virtual Training Suite project. Tim is a Ph.D. candidate focusing on Educational Technology and Design research and is the i3 - Special Projects Lead for elum.

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