

Lean without Limits

IMPROVE TEAM ENGAGEMENT AND OPERATIONAL EFFICIENCY IN CONSTRUCTION WITH DELMIA 3DLEAN



3DLean



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The construction industry has moved into the digital age with continued advancements in Building Information Modeling and design. Ultimately, realizing the finished project still comes down to massive amounts of human time and labor, which requires teams of construction workers in the field to manage large amounts of complex information and tasks to meet project goals and deadlines.

There would seem to be a distinct disparity between the digital and real worlds separating virtual and manual operations. However, if we can connect the two together, it is possible to drive continuous improvement and efficiency.

In this eBook, we examine today's most pressing concerns that Construction companies can help their teams address—and take a look at a solution that accelerates the path to project success.



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Increasing complexity of building designs have led to a corresponding increase in construction operation complexity. New materials and methods are being introduced—which workers may not be familiar with—as well as constantly changing building codes and regulations.

In addition, the scope of project work includes numerous suppliers, contractors and trades that all need to be planned and coordinated precisely to ensure continuity of work and to avoid delays. These operations and teams work regardless of the elements and often in hazardous environments and under pressure to reduce cost and time.

Fundamentally, there are several challenges that must be addressed to optimize team operations for continuous improvement in construction.



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Business challenges affecting construction project efficiency



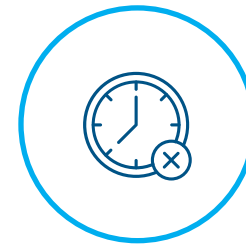
Construction worker safety

Teams are often working in external environments, exposed to the elements while dealing with heavy equipment and materials



Coordination of on-site operations

Daily tasks are reliant upon many people and external suppliers working together effectively, along with the coordination of material supplies



Project time overruns

Lack of overall team efficiency can lead to costly project delays and missed customer expectations

The challenges impacting Construction teams

1 INCREASING THE SAFETY OF CONSTRUCTION TEAMS

The safety of site workers is one of the most important elements of concern for construction companies. Team safety comes from being able to learn in real-time about activities and construction methods taking place throughout the lifecycle of projects. Understanding how to mitigate the risk of physical labor as well as the use of heavy machinery and materials is critical.

Typically, teams are briefed by third-party experts and operational leaders who share and present information in different formats, sometimes sharing the information via email or handouts. The challenge with such a dynamic workplace is that workers often need help to ensure the information is received and understood properly.

An ideal solution is to provide a collaborative environment where information can be visualized and workers are engaged, so that their feedback and comments can be captured and put into practice. This is far better than traditional presentations and documents shared by email.



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2 COORDINATING ON-SITE OPERATIONS

Construction projects require coordination of activities across time but also in physical space. Technical blueprints show a static view of the project site layout, but design details often change, and different phases of construction will require different detailed construction views. Daily team meetings typically leverage these paper documents which rapidly become out of date or redundant leading to difficulties in visualizing operations.

Material and contractors arrive at the site constantly, following a schedule that should be visible and understood by the site teams. Since the schedule is constantly changing, it can become difficult for the workers in the field to keep track of exactly what might be happening on a daily basis. Again, paper charts do not lend themselves to the task of managing this dynamic process.

Since many projects already have detailed 3D digital models of the construction, it would be simplest to leverage these to visualize and plan operational tasks. Similarly, a digital method of showing delivery schedules would benefit in understanding critical timelines and activities.



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3 PROJECT AND TEAM EFFICIENCY

Construction projects are time based and customer expectations are firmly focused on meeting deadlines with a high standard of quality. Overruns can be extremely costly and can include penalties, and they often have a significant negative impact to the company brand.

Since construction projects rely so heavily on human effort and operations, it is critical to ensure every one of the hundreds of team meetings that take place are as efficient as possible.

The best way to achieve this is to provide structure and discipline to all meetings so that all information is covered, and all actions are assigned and tracked. Additionally, allowing team members to visualize complex information easily not only allows for better understanding and collaboration; in many cases it also means that teams can work more autonomously. Teams that are self-sufficient need less oversight from more skilled resources that may not always be available.



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It's clear by now that overcoming these challenges means the need to transform construction team operations to improve their productivity, work quality and safety. This may seem like a Herculean task but starting on the right foot can make all the difference. Solving the main issue of unstructured, ineffective teamwork will require visibility across operations, accountability from all team members, as well as improved collaboration. In addition, understanding the potential of your teams to solve problems and be efficient together enables them to create more value for the organization.

For Construction in particular, it is key to bridge the gap between the complexities of design and information in the digital world with the reality of human operations in the real world. Working efficiently with less wasted time and materials can be achieved if teams are aligned to project goals and clearly understand what daily actions need to take place.

This can be enabled by leveraging a collaborative digital solution with an engine powerful enough to connect the dots between people, ideas and data. Such a tool will allow you to optimize construction team operations, give autonomy to on-site teams, as well as encourage impactful, efficient interactions between all workers and stakeholders in the enterprise—ultimately driving greater project success.



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ACHIEVE OPERATIONAL EXCELLENCE WITH 3DLEAN

DELMIA 3DLean is a modern, customizable and interactive tool designed for operational teams anywhere—in the office or on-site. DELMIA 3DLean is powered by the **3DEXPERIENCE** platform and applies the same principle: leveraging virtual universes to model and optimize resources and work processes before performing them in the real world. It allows teams to capture, monitor and track operational meetings and problem solving, providing the ability to aggregate relevant and key information from different areas of operations.



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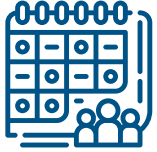
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Animation of Effective Safety Briefings

Regular team meetings are required to make sure safety issues are discussed and shared with all team members. The information is often discussed in person but shared by email separately and relies upon individuals to follow up independently. 3DLean provides a digital environment for information sharing where different information formats can be shared (video, documents, etc.), and also allows teams to share feedback and questions in a common location.



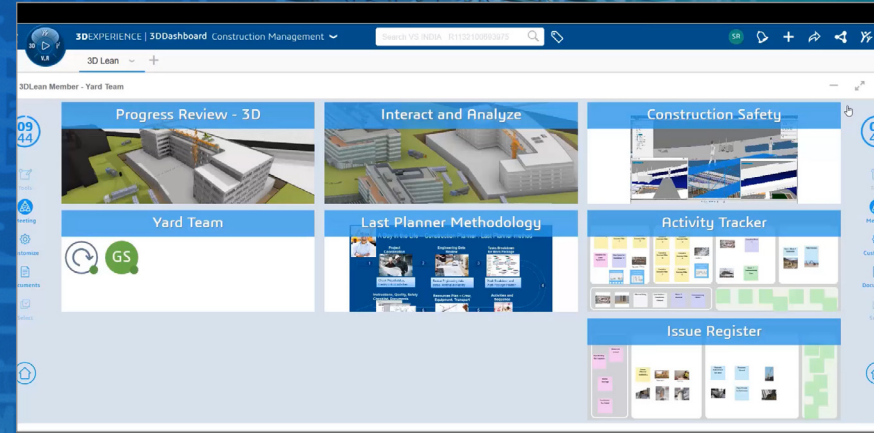
Daily On-Site/Operational Meetings

Teams meet daily to understand the numerous tasks and events that will be prioritized on the project. Information and updates change constantly, meaning paper-based tracking is difficult to maintain and often out of date. 3DLean provides a digital method of maintaining information and allowing dynamic updates for the team to stay on target for daily operations.



Project Coordination

Projects require numerous meetings at all levels to review operations and solve problems. Teams lack a digital methodology and structure for discussions, which can lead to missed opportunities for improvement. 3DLean can visualize project design models and information to enable collaboration. It also provides lean analysis methods to enable more effective problem solving.



Aggregate and display key and relevant information from different areas according to the immediate tasks/on-site operations.

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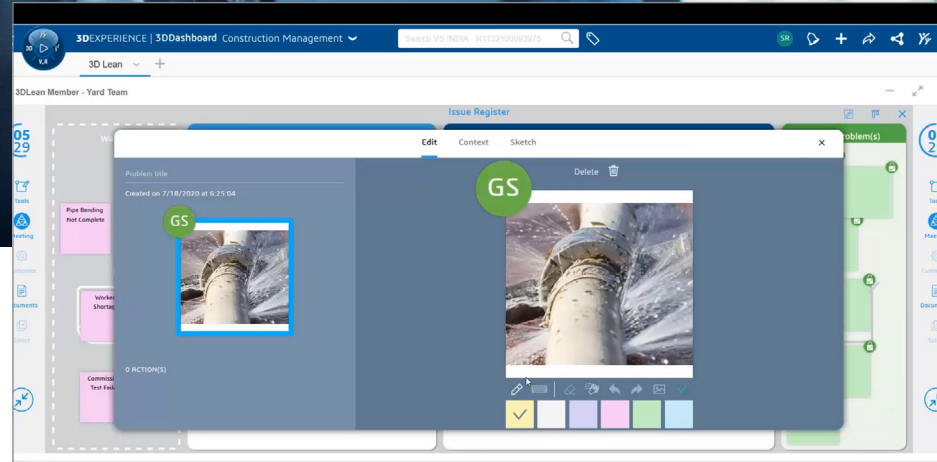
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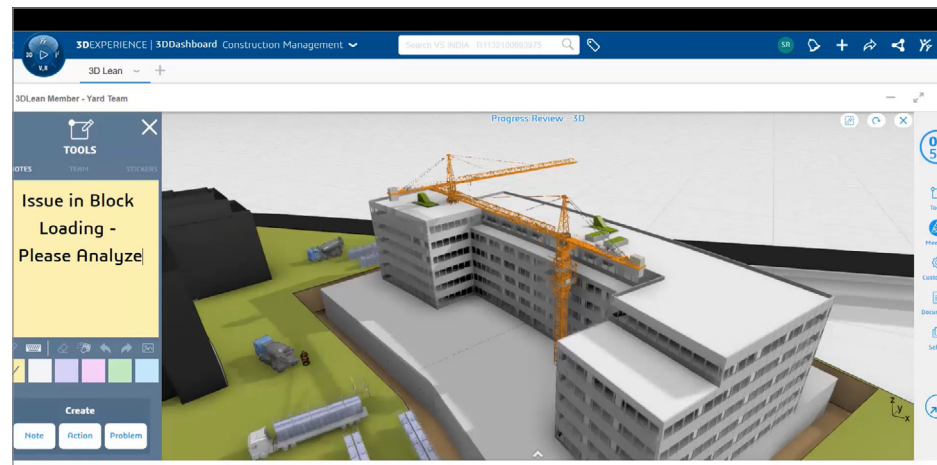
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As its name entails, 3DLean operates on the foundation of “Lean” or Kaizen: a methodology used to eliminate all categories of waste and maximize efficiencies. It puts Lean principles into action to address operational waste, variability and efficiency by engaging the next generation workforce regardless of where or how they work. On top of that, teams can explore new ways to solve problems and improve operational issues with the ability to visualize rich 3D content and data, made easy with 3DLean.



Leverage Lean methodologies and principles as guides and aids towards common activities such as problem solving and root-cause analysis.



Seamlessly work with rich 3D content and visual data to explore operational issues and areas for improvement and innovation.

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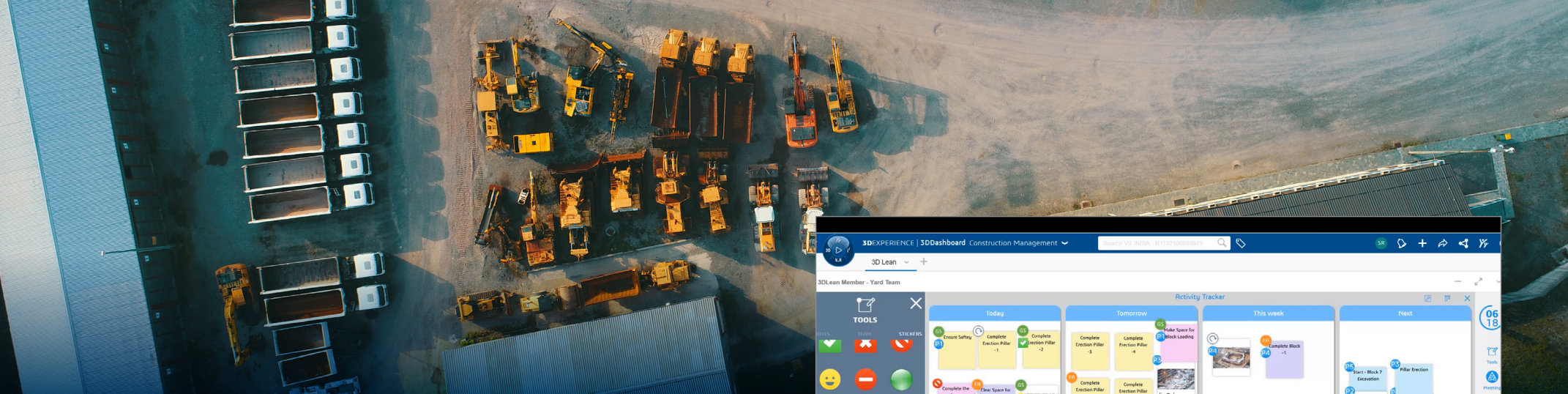
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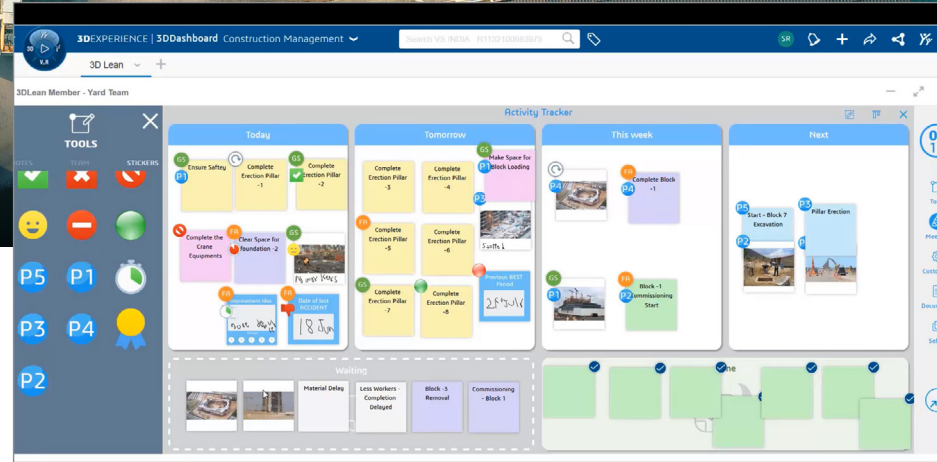
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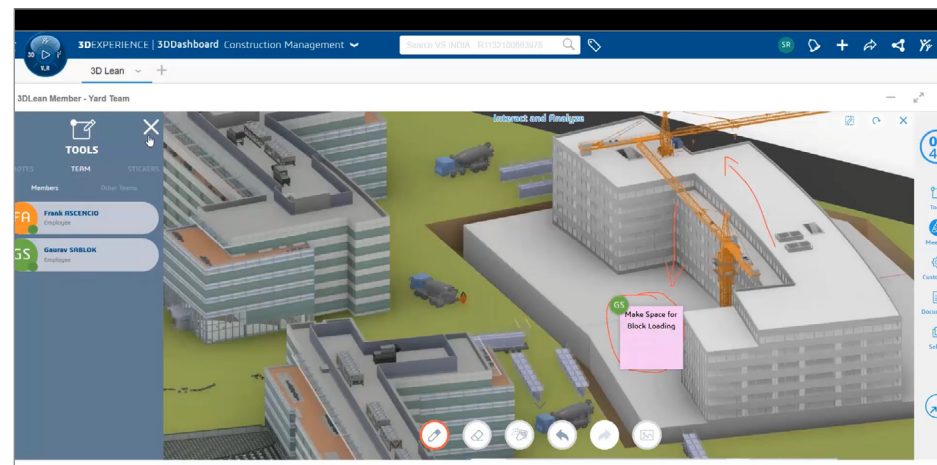
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This widget-based web app provides an interactive environment accessible to everyone on the cloud and in all environments, bringing people together in a structure that guides discovery, analysis and collaboration to nurture better team relationships and improve performance. Using touchscreens in the office or collaborating virtually with on-site workers, it drives constructive behaviors to help teams make better decisions and manage actions. It delivers a common, clear and up-to-date view of operations, digitally connecting all users in the organization so everyone from teams to stakeholders can have visibility into, control over and synchronization across construction projects.



Manage actions and drive accountability using familiar methods updated for the digital age.



Align teams around common goals and metrics across all aspects of construction and operations.

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Teams will be able to:

-  **Digitalize and easily deploy Lean practices**
-  **Animate and collaborate digitally in operational meetings**
-  **Access and contribute to the Lean board between meetings, ensuring the whole team remains informed, involved and updated**
-  **Innovatively solve problems leveraging visualized data and evidence**
-  **Capture and retain institutional knowledge, intellectual property and know-how**

Regardless of role, DELMIA 3DLean supports Construction teams through various challenges and goals to continuously improve operational efficiency. It helps companies and teams reimagine, enhance and optimize their practices at every new turning point in operations by these means:



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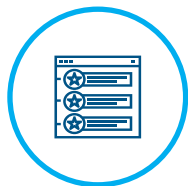
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Features

- 3DLean operates on the cloud and is easily accessible on-site or at the office
- Enables collaboration between site and operational teams
- Can incorporate BIM information from other tools and systems like CATIA



Functional Value

- Engage teams by adopting a modern, interactive environment on the cloud
- Enable teams to formalize issue management using rich content and problem-solving structures
- Capitalize on company knowledge by leveraging virtual models, processes and resources to develop plans for improvement
- Convert Lean principles into actions to address operational waste, variability and efficiency
- Guide team collaboration and manage actions



User Experience Value

- Build collaborative team relationships despite physical or organizational barriers
- Create a dynamic environment for the next generation workforce

CONCLUSION

We see Construction companies that leverage 3DLean expanding the scope and reach of Lean practices across the board to new geographies and organizations previously not exposed to them. Companies will be able to better preserve, expand and extend accumulated knowledge, know-how and best practices for the coming workforce, thus further promoting collaboration and decision support.

Consolidating all interactions and information on a single source of truth through 3DLean—powered by the **3DEXPERIENCE** platform—enables the complete visibility Construction companies need to align workers and operations with structure and discipline. This empowers Construction companies to focus on completing projects on-time and with the utmost quality and worker safety.

The collaborative capabilities of 3DLean also enable Construction companies to close the gap between detailed 3D designs in the virtual world and connect the digital thread to the human workers in the real world. It becomes part of the overall strategy for the new “digital construction age”.

With the necessary knowledge and resources readily available on demand, and with your workers understanding their roles in the organization and value network, you can enable them to work better, more efficiently and become “Lean without limits.”

For more information on how DELMIA 3DLean can help you kick-start your team’s journey to operational excellence, visit <https://discover.3ds.com/discover-3dlean>

Our customers are leveraging 3DLean today to help guide engagement, improve performance and deliver sustainable benefits for their teams, garnering them these transformational results:

BEFORE

- **Unengaged employees**
- **Ineffective teamwork**
- **Massive amounts of hard-to-work-with data and content**
- **Wasted time and resources**
- **Missed opportunities for improvement**

AFTER

85%
workers feel
more involved
in meetings

100%
increase in
identification of
issues and
actions

92%
workers find
positive impact
to daily tasks

92%
workers say
information is
easier to find

7%
time
savings

1-2%
overall
productivity
improvements

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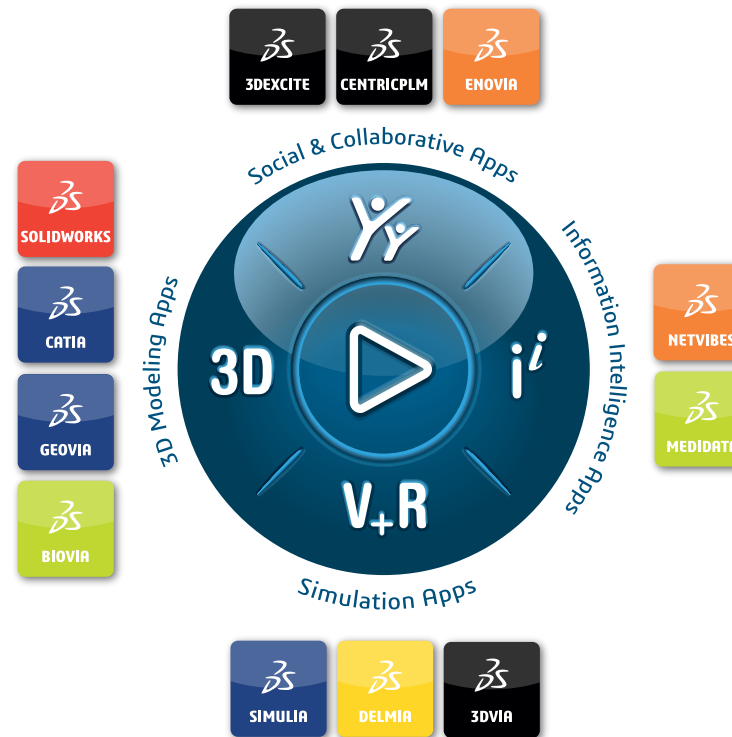
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Our **3DEXPERIENCE®** platform powers our brand applications, serving 11 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3DEXPERIENCE** Company, is a catalyst for human progress. We provide business and people with collaborative virtual environments to imagine sustainable innovations. By creating 'virtual experience twins' of the real world with our **3DEXPERIENCE** platform and applications, our customers push the boundaries of innovation, learning and production.

Dassault Systèmes' 20,000 employees are bringing value to more than 270,000 customers of all sizes, in all industries, in more than 140 countries. For more information, visit www.3ds.com.



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