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Dan Edgar



Dan Adams

How Dupont uses New Product Blueprinting at the Front End—and implemented a new e-learning model to teach it

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During the deep recession of 2008-2009, DuPont wrestled with two fundamental issues in new product development. The first was how to upgrade the Fuzzy Front End (FFE) of its new product development to make that segment of the NPD process more effective. Secondly, how to disseminate knowledge of this new technique on a worldwide basis to all of DuPont's global teams during a global recession—without exorbitant cost. The authors describe these challenges and how DuPont met them: take a look at the solution to both questions.

Few companies have a letter from Thomas Jefferson praising their products. And few have a history of new products as well-known as nylon, Teflon®, Kevlar®, Tyvek®, Corian® and Lycra®. But many companies face the problem that DuPont faced in 2007: How to understand market needs so research and development (R&D) could focus on solving only those problems customers truly cared about.

The good news: In early 2008, DuPont teams began using a relatively new set of tools and skills called “New Product Blueprinting”—

with outstanding results. DuPont teams were now discovering exactly what customers wanted—and did not want—and this was allowing them to kill some projects quickly and attack others more aggressively. In the first part of this article, we will explain the decision

to use New Product Blueprinting—and why it has been more successful for us at DuPont than many other front-end techniques. (See Exhibit 1 on page 13.)

But there was bad news, even after DuPont selected New Product Blueprinting. The traditional workshop-based training model just wasn't keeping up. New Product Blueprinting skills are best learned and applied as part of a project when that project calls for them—not during a few workshop days. And in late 2008, discretionary travel became as popular as a government bailout program. So we went to work creating a new training model, discussed in the second part of this article.

Part I: Selecting New Product Blueprinting for the Front End

How and why DuPont selected it

In 2007, DuPont completed an exhaustive study of its major new product introductions. Perhaps some of the problems they uncovered sound familiar:

First of all, DuPont lacked deep customer insight at the market-segment level. By targeting market segments—clusters of customers with similar needs—we knew we would use our R&D

resources in the most efficient manner. This would let us avoid two extremes: When we react to a single customer, our sales aren't as great as when pursuing the entire segment. And if we create a one-size-fits-all product for several markets with different needs... we can't really please anyone.

We also felt that DuPont was only going through the motions of meeting with customers and coming home with specifications. We had a superficial Voice of the Customer (VoC) process. Our people were not coming home with the “ah-has!” that lead to breakthrough offerings.

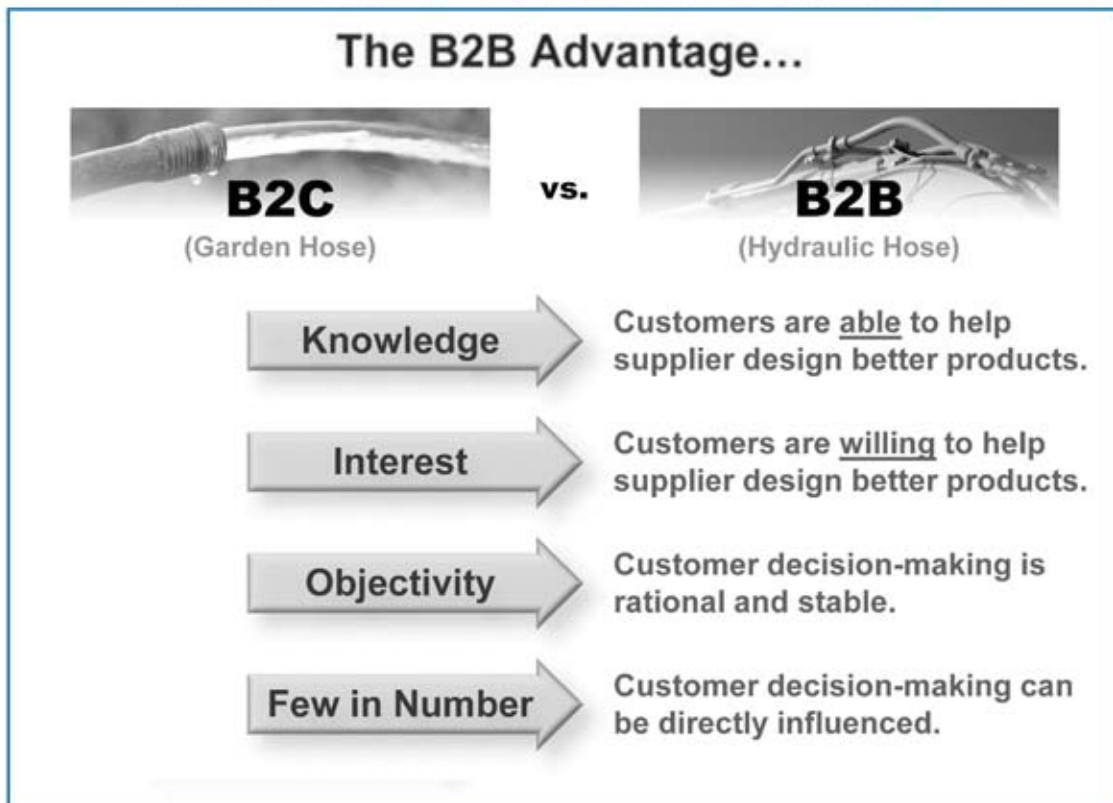
Third, we had a sort of “value chain myopia.” Our sales, marketing, and technical people would meet with our direct customers, but not our customers' customers. Unfortunately, many of our customers' customers “call the shots”... and our direct customers are unwilling or unable to communicate customers' true needs to us...Or, to put it another way, we are frequently seen as a “supplier,” i.e., a company that sells to a direct customer—the company or person who pays DuPont's invoice. But in actuality it is the customer's customer—who is downstream one level—who is the one with the most important needs—the needs that need to be met by the new product.

For these reasons, many of our new product value propositions suffered from three problems: They were uninspired, which caused customers to yawn. They went untested, and thus were based on wishful thinking, not data. And finally, they were conceived internally at

“It was clear DuPont needed a front-end process that would bring new vitality to the company's stage-and-gate processes.”

Caveat Lector on New Product Blueprinting

Caveat Lector (reader beware). If you sell consumer goods products, you may not find this article helpful. New Product Blueprinting is built on the principle that business to business (B2B) customers are much different than B2C customers: They're usually more knowledgeable, rational, interested in helping, and fewer in number. New Product Blueprinting maintains that B2B suppliers who know how to take advantage of these characteristics will run circles around those that treat B2B customers the same as end-consumers.—*The Authors.*



SOURCE: Dan Adams, *New Product Blueprinting: The Handbook for B2B Organic Growth*, pp. 12-13.

DuPont's laboratories, not born out of pressing customer needs.

It was clear DuPont needed a front-end process that was rigorous, repeatable, and rapid; a process that would bring new vitality to the company's stage-and-gate processes, which are often heavy on tracking but light on training. They needed a way to get many highly skilled teams doing great business to business (B2B) interviews as a routine practice.

These were not trivial problems. DuPont knew it would need an innovative approach to improve its innovation process. The company

determined—and this was a bit out of character—to look outside for ideas. So you might say, we began to use “open innovation” to search for the right front-end innovation process.

Our discovery of New Product Blueprinting

We struck gold at the Institute for the Study of Business Markets (ISBM). There DuPont discovered an advanced approach called New Product Blueprinting, developed by a firm called AIM (of which one of the authors is president). New Product Blueprinting has a heavy focus on training teams in new methods and skills optimized for developing B2B products. So why is it a big deal if your customer is in business, as opposed to consuming goods (B2C products) for personal use? There are several major differences.

One is knowledge. B2B customers have the education, training,

and work experience to help suppliers design better products. Secondly, B2B customers are willing to help suppliers design better products because innovative new products help them save or make money. Third, B2B customers' decision-making is generally rational and stable. Finally, B2B customers may be relatively few in number and their decision-making can be directly influenced.

To put it another way:

New Product Blueprinting helps us do two things. The first is to “go

“ In early 2008, DuPont teams began using a relatively new set of tools and skills called ‘New Product Blueprinting’—with outstanding results.”

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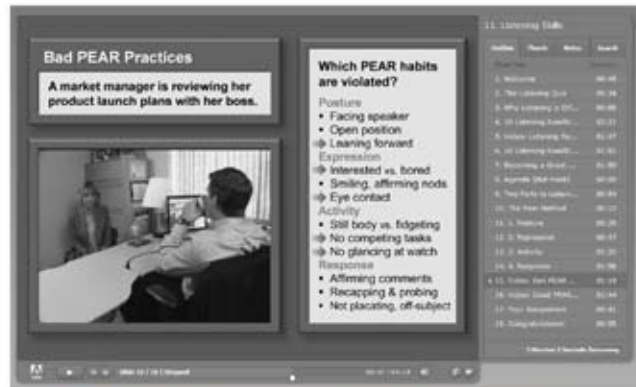
DuPont Company

DuPont is an American chemical company founded shortly after the American Revolution in July 1802 to produce gunpowder. DuPont is currently the world's second largest chemical company (behind BASF). Today it produces a wide variety of science-based products and services in markets that include agricultural and food, building and construction, communications and transportation. DuPont employs more than 58,000 people worldwide in more than 70 countries.

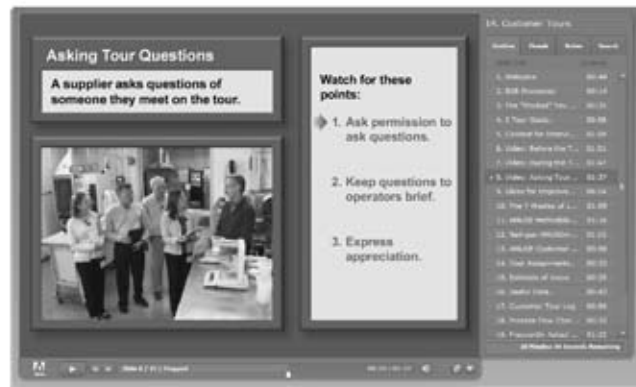
Exhibit 2: Online Training for New Product Blueprinting—
TEAM e-MMERSSION, How it Works



B2B customers become engaged when they see their ideas projected.



The training helps interviewers eliminate poor listening habits.



DuPont employees participated in the module for teaching effective tour methods (except for the woman second from right, a professional actress).

These slides illustrate the different facets of the TEAM e-MMERSSION online learning program that DuPont uses to teach employees around the world about New Product Blueprinting.

SOURCE: DuPont

deeper” with direct customers... that is, whereas traditional VoC uses tape recorders, observation, questionnaires, and sometimes treats the customer like Jane Goodall’s chimps, Blueprinting interview methods allow us to go much deeper. Special probing takes advantage of the B2B customers’ superior knowledge, willingness to help, rational decision-making, and so on. Secondly, Blueprinting strongly encourages us to take these interview methods to our customers’ customers. Traditional VoC—borne of consumer goods experience—doesn’t consider this, since the product never goes beyond the consumer.

“New Product Blueprinting helps us to ‘go deeper’ with direct customers.”

An example of the value of New Product Blueprinting

Imagine your company makes hoses. Picture an interview about garden hose with a home-owner, who mostly thinks about it when he runs over it with the mower. Now imagine a conversation with a mechanical engineer at Caterpillar about hydraulic hose. Think of the engineer’s education, on-the-job training, accountability for decisions, need for group consensus... and the fact that you could make her a hero. See the difference?

Just because that engineer has these wonderful qualities doesn’t mean you’ll benefit from them as a supplier: You seldom get more than you ask for. So New Product Blueprinting interviews are designed to put these smart B2B customers to work... and they like it! If you were watching one of these customer interviews, here are some the features of New Product Blueprinting which makes them so effective:

- **Digital projections**
Whenever possible, the interview team records its notes on a projector screen for the customer to see. This engages the customer—more than you might imagine—and allows the customer to correct the supplier on a real-time basis. To create an “idea-generation” atmosphere, customer ideas are recorded on digital sticky notes
- **No questionnaires**
If someone comes to your front door with a survey, are you too busy to fill it out? What about at work? Do you have a lot more free time there? Most customers hate to answer your questions... but love to give you their opinion. New Product Blueprinting isn’t about developing brilliant questions. It’s about brilliantly probing whatever the customer says... and letting them take you wherever they want to go.
- **Just customer outcomes**
If your new product development process starts with “Generate Ideas,” is it usually your idea... or the customers’? Suppliers that start with their own solutions often try to validate them, and “lead the witness” during interviews. New Product Blueprinting inverts this: Customer outcomes first, then supplier solutions. No substantiating... no selling... no solving.... just searching for what the customer wants to have happen.

- **Data please**

When suppliers only do qualitative interviews, they often hear what they want to hear, and develop products based on internal bias and wishful thinking. New Product Blueprinting also includes quantitative interviews that allow creation of a Market Satisfaction Gap (MSG). If a customer outcome has an MSG over 30 percent, the market is eager for change, and the supplier can pursue it with confidence. $MSG = Importance \times [10 - Satisfaction]$, where customers' Importance and Satisfaction (with current solutions) are measured on scales of 1–10.

Testing this technique on three projects

DuPont sponsored several workshops in 2008 to gauge the usefulness of this approach. Newly trained teams enjoyed the market-focused mindset... and appreciated that Microsoft Excel®-based software took them step-by-step through interviews and other front-end activities. But would it work? Here is a synopsis of what happened to three projects when the teams handling them used this new technique:

- **Project A: A display market product for Asia**

One team was working on Project A. This project had been started before the New Product Blueprinting training. It was aimed at developing a product for the displays market in Asia. After several interviews, the team realized customers were not interested in doing anything other than purchasing materials that would meet their specifications. They were not interested in any more. It became apparent that any investment in improvements beyond the current materials had no value for this market segment. This is a good example of an overserved market. So the project was killed.

- **Project B: A product for the global electronics market**

Project B was directed at the global electronics market. The team had already done a good deal of internal development, but lacked good understanding of the VoC. The team used New Product Blueprinting to uncover good customer outcomes, and soon realized that it would take DuPont five more years of development work to meet them. After careful consideration, this project was also killed.

- **Project C: Global solar energy project**

Project C was aimed at the global solar energy market, and the timing coincided with the New Product Blueprinting training. The team's interviews uncovered strong market needs that were a good fit with DuPont's capabilities. With hard VoC data supporting a strong value proposition, this project was approved for continued development effort.

“You might ask, ‘Is that good? Killing two out of three projects?’ The answer is, ‘Absolutely!’”

You might ask, “Is that good? Killing two out of three projects?” The answer is, “Absolutely!” When DuPont kills a bad project in the front end, it loses thousands of dollars. When a bad project passes through

the development and launch stages, the company loses millions of dollars.

Key Features of TEAM e-MMERSION A New Online Learning Tool

- *Deliver training just-in-time*
You don't need a face-to-face trainer, but you do need training precisely when the team is ready to do the work. If a learner applies what he just saw in an online module and reviewed in a web-conference... he'll probably “own” that new skill the rest of his career.
- *Proper team set-up is critical*
Don't skimp on qualifying a team before the training. If they don't have a business sponsor, charter, budget, and committed team members, better wait until another time when they are ready.
- *Rapid company-wide dissemination is now possible*
It's ideal to have internal employees—not external consultants—spread a practice such as New Product Blueprinting through a company. But preparing an individual to be a New Product Blueprinting workshop trainer can take a year and a dozen workshops. Internal coaches can be qualified much more rapidly, since the training portion has been captured in online modules.
- *Use job aids and learning logs*
Initially, we relied too heavily on an electronic-only format. As teams provided feedback, we added over a dozen downloadable, printable job aids. Mid-stream, we also added a Blueprinting Log—a printable document that allowed learners to make notes, prepare quiz answers, and reference the material later.
- *Experiment with different learning venues*
We found that teams enjoy having “learning lunches,” where they watch a 20-minute online module together and discuss it.

Many companies complain of being resource-constrained, but overlook the power of killing bad projects. If you hire new employees, they need to learn your technology, customers, etc. If you kill a bad project, you free up existing employees that are already knowledgeable, can start tomorrow, and cost nothing extra.

Now, having tested New Product Blueprinting, we wanted to implement it on a worldwide basis. The challenge was how to do this in the midst of a global economic downturn.

Part II: The Second Challenge: Training and Implementation

The solution: to create a new training model that would work virtually to replace typical workshop in-person training but also steer clear of “e-learning-because-it's-cheaper.” We also wanted to avoid the creation of “parachute” workshops to teach this New Product Blueprinting technique. With that form of training, a trainer parachutes in for a few days, and at the end says, “Good luck. Hope this works out for you.” It seldom does. (The original workshops were broken into two sessions and supported by monthly web-conferences.)

To avoid both of those obstacles, DuPont teamed up with AIM and asked “What’s the best model for a team applying new methods and skills to a complex project? How do we make the best business decisions, even if those decisions are to kill the project early?”

The answer was the development of a new online training model, which was named by Mike McMillan of DuPont. The name was “TEAM e-MMERSION.”

The new training model also had to overcome two other limitations:

First, in order to be cost-effective, we knew we had to train several teams at the same time. This is a common approach, using multiple team breakout sessions to apply new skills to real projects. But the problem is that you typically catch only one or two teams at precisely the right moment—when they are ready for the training. Some teams may not be ready for months, while other teams’ projects are already well underway. With new skills and behaviors, what isn’t quickly practiced is quickly lost.

Secondly, we knew that scheduling workshops can be a cumbersome, expensive ordeal—especially when global teams are involved. Many companies pay more for airfare, lodging, and meeting facilities than the actual training. And concern about the cost of travel changed from a speed bump into a brick wall for DuPont in late 2008. The worst global economic crisis since the Great Depression forced the elimination of all discretionary travel.

Designing the new training model

There were further constraints—which at first looked daunting to the DuPont-AIM team. We had to create this new training module on a shoestring budget. The module had to be able to train scores of new product development teams scattered around the globe; coach these people in highly personalized skills such as listening, probing, and interviewing; keep the per-person costs no higher than traditional workshop training; and eliminate all travel for trainers.

In addition, we had one more critical objective which crept into the design. AIM had just completed a study of past client teams’ performance. As expected, top management support was a key differentiator between successful and stalled teams. But another

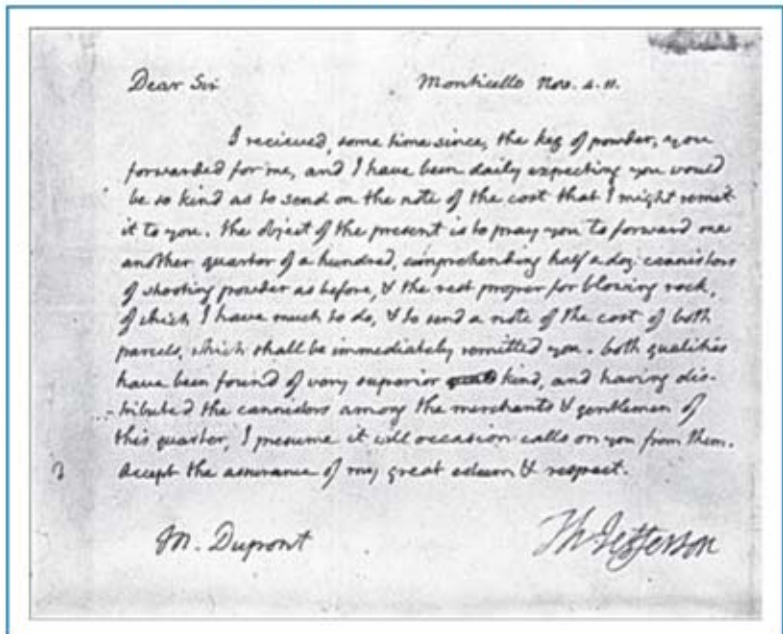
surprising factor proved to be just as important: Teams that began real-life interviews within four weeks of workshop training were much more successful than those that didn’t.

This should not have been a surprise. Over 100 years ago, Hermann Ebbinghaus developed his “forgetting curve,” which showed that most new learning is lost unless it is quickly recalled and reviewed. The new training model would have to treat new learning as perishable fruit. What teams couldn’t quickly apply to their real-life projects would be lost.

The key elements of TEAM e-MMERSION

Given all this, we plunged into the design of what would become called TEAM e-MMERSION. The key elements were the following:

Exhibit 3: DuPont’s Thomas Jefferson Letter



SOURCE: Hagley Museum and Library

- **Just-in-time learning.** The unit of learning would no longer be a workshop group; it would be a project team. This would allow training to be delivered precisely when the team was ready to use that training in its project. This training would have to be “parceled out” in small bite-size chunks at whatever pace the team drives its project.
- **Separation of training from coaching.** An important conceptual breakthrough was that training and coaching are quite different functions: One helps a team member understand while the other helps him apply that understanding. This recognition would allow greater flexibility in the design of the new model.
- **Self-Pacing of online modules.** It was decided that the training would be delivered in 31 self-paced 15- to 30-minute online modules, which team members could access from home or work... typically one or two per week over several months.
- **Web-conference team coaching.** Every two to three weeks, a coach would join the project team for a two-hour web-conference. The coach would review what the team learned in recent online modules, apply it to the team’s project, and make assignments for “learning” (more online modules) and “doing” (team project work).

Producing the new learning module

Within the last several years, “Rapid Authoring Tools” have allowed proficient PowerPoint users to create highly professional e-learning modules. The “rapid” part didn’t seem to apply in this case: With 31 modules, over 1000 professional photos, and more than 100 videos, this project took a year and a half to complete.

But we believe that Rapid Authoring Tools did allow the DuPont-AIM team to achieve a level of quality it could not have otherwise reached in applied cognitive science and by the use of video. One of the world’s leading researchers in multimedia

“ We had to create this new training module on a shoestring budget.”

learning, Richard E. Mayer, has established several principles concerning the use of text, graphics, and audio—including their placement, timing, and so forth. Some of these principles have been shown to increase both comprehension and retention by over

“ Perhaps the next famous DuPont product will be built by New Product Blueprinting and powered by TEAM e-MMERSION.”

50 percent. These principles were closely followed in the production of this content.

The DuPont-AIM production team knew that high-quality video would be needed: An integral part of New Product Blueprinting is the development of

listening, probing, and interviewing skills... so role-playing examples and simulations would be needed. A total of 30 actors were used in these videos. Only seven professional actors were employed; the rest were DuPont employees.

The Rapid Authoring Tool selected was Adobe Presenter. This provided a solid Learner Management System (for online learner access and tracking), good quiz capabilities, access to downloadable job aids, and a flexible user interface. See Exhibit 2 for an example.

DuPont engages in beta team testing

In late 2009, DuPont established three beta teams for New Product Blueprinting projects powered by TEAM e-MMERSION. These teams—in photovoltaics, automotive coatings, and food testing—were chosen due to their diversity in global regions, industry dynamics, and type of offering to be developed (both physical products and services).

Overseeing the beta testing was an Expert Review Panel, with some of the best product development expertise available from the ranks of DuPont employees and retirees. Finally, each team reported to a Sponsor, had a Team Leader, and was assigned two DuPont coaches (with support from AIM).

It should be noted that the main focus of this beta testing was the training model (TEAM e-MMERSION)... not the training subject (New Product Blueprinting). New Product Blueprinting has been taught to hundreds of teams, with New Product Blueprinting interviews now being conducted on six continents.

Since many team successes have been recorded in a wide range of industries, the focus now is on how to ensure success by all teams... through improved training.

The results of testing the new training module

In a nutshell, we discovered that the DuPont beta teams absorbed and applied New Product Blueprinting more proficiently than teams trained using the workshop model. Before relating lessons learned, let us share two anecdotes.

One of us (Dan Adams) became too busy creating online modules—trying to stay one step ahead of teams—and worried about his lack of contact with a beta team. The team was at a critical point where many customer outcomes must be distilled into a carefully-worded list for quantitative interviewing. Typically, an AIM coach spends a lot of time with the team at this juncture, correcting and improving their work. In this case, the team's work was flawless! And done by a team getting direction solely from online modules and DuPont coaches who themselves were still fairly new at New Product Blueprinting.

In another case, a team's interview sheets were being reviewed by AIM and DuPont. One interview sheet had Chinese characters on each sticky note, with English translations. Another had German notes with English translations. A third had notes all in English. A single global team had sent representatives into three regions and had done a superb job of understanding and consolidating the global needs of their target market.

This quality of work has given DuPont the confidence needed for a broad roll-out of New Product Blueprinting powered by TEAM e-MMERSION.

That's the story so far. We recognize much of the work—team by team training and implementation around the globe—still lays ahead at DuPont. But we're excited about our progress so far, and what the future holds. Perhaps the next famous DuPont product will be built by New Product Blueprinting and powered by TEAM e-MMERSION. **V**

For more information about the use of the TEAM e-MMERSION technique, contact Dan Adams (dan.adams@aimtolead.com); Dan Edgar is a key leader of DuPont's Market-Driven Innovation and has worked with over 100 DuPont teams as the key leader for their Knowledge Intensity University Program.

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