

MITSloan

Management Review

John Shook

Toyota's Secret: The A3 Report

Toyota's Secret:

How Toyota solves problems, creates plans, and gets new things done while

WHILE MUCH HAS been written about Toyota Motor Corp.'s production system, little has captured the way the company manages people to achieve operational learning. At Toyota, there exists a way to solve problems that generates knowledge and helps people doing the work learn how to learn. Company managers use a tool called the A3 (named after the international paper size on which it fits) as a key tactic in sharing a deeper method of thinking that lies at the heart of Toyota's sustained success.

A3s are deceptively simple. An A3 is composed of a sequence of boxes (seven in the example) arrayed in a template. Inside the boxes the A3's "author" attempts, in the following order, to: (1) establish the business context and importance of a specific problem or issue; (2) describe the current conditions of the problem; (3) identify the desired outcome; (4) analyze the situation to establish causality; (5) propose countermeasures; (6) prescribe an action plan for getting it done; and (7) map out the follow-up process.

However, A3 reports — and more importantly the underlying thinking — play more than a purely practical role; they also embody a more critical core strength of a lean company. A3s serve as mechanisms for managers to mentor others in root-cause analysis and scientific thinking, while also aligning the interests of individuals and departments throughout the organization by encouraging productive dialogue and helping people learn from one another. A3 management is a system based on building structured opportunities for people to learn in the manner that comes most naturally to them: through experience, by learning from mistakes and through plan-based trial and error.

The A3s reproduced in this article represent just some of the stages in a typical development sequence — a process that may involve numerous iterations of the A3 before it is final. To illustrate how the A3 process works, we've imagined a young manager — call him Porter — who's trying to solve a problem. The problem is that his Japan-based company is building a manufacturing plant in the United States, requiring many technical documents to be translated into English, and the translation project has been going badly. Porter uses the A3 process to attack the problem, which means that he gets coached through it by his

boss and mentor — call him Sanderson. The A3s shown on these pages will give an idea of how one learning cycle might go, as Porter works on the problem under Sanderson's tutelage. Porter's first attempt at the A3 reveals, as early-stage A3s often do, his eagerness to get to a solution as quickly as possible.

(Editor's note: The example is drawn from *Managing to Learn*, by John Shook, The Lean Enterprise Institute, 2008.)

Seeing this first version, Sanderson uses the A3 process as a mechanism to mentor Porter in root-cause analysis and scientific thinking. Through coaching Porter and others in this manner, Sanderson seeks to embed organizational habits and mind-sets that enable, encourage and teach people to think and take initiative.

The iterative process of producing progressive A3s generates practical problem-solving skills for the learner, while providing the manager with a practical mechanism to mentor others while achieving desired business results.

The last pages of this article show the final A3 in this iterative sequence. Author Porter uses the A3 process not only to figure out the



THE LEADING QUESTION

Toyota has designed a two-page mechanism for attacking problems. What can we learn from it?

FINDINGS

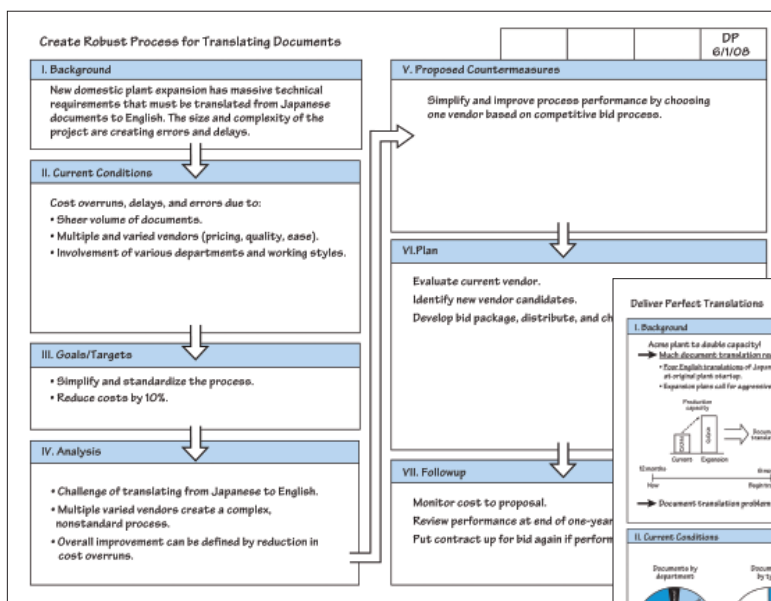
▶ **The A3's constraints (just 2 pages) and its structure (specific categories, ordered in steps, adding up to a "story") are the keys to the A3's power.**

▶ **Though the A3 process can be used effectively both to solve problems and to plan initiatives, its greatest payoff may be how it fosters learning. It presents ideal opportunities for mentoring.**

▶ **It becomes a basis for collaboration.**

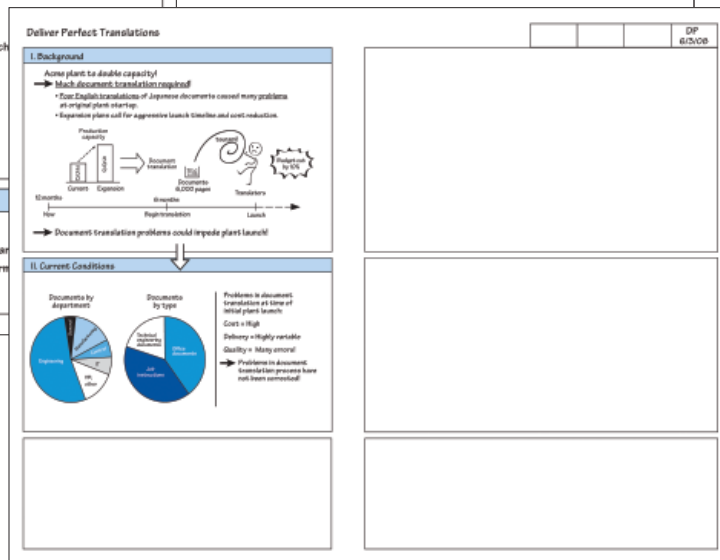
The A3 Report

developing an organization of thinking problem-solvers. BY JOHN SHOOK



Sanderson used the A3 as a mechanism to prevent his mentee from jumping ahead to a solution. Porter discovers he can simply be an investigator and let the needs and facts of the situation speak for themselves. Rather than the answer, he must simply state succinctly, "What is the problem?"

Like many A3 authors, Porter's first effort reveals his need to show he has an answer — *the* answer. He jumps to a conclusion and develops a strong emotional attachment to it without having traced a more rigorous analysis of the situation through seeing and confirming the actual situation.



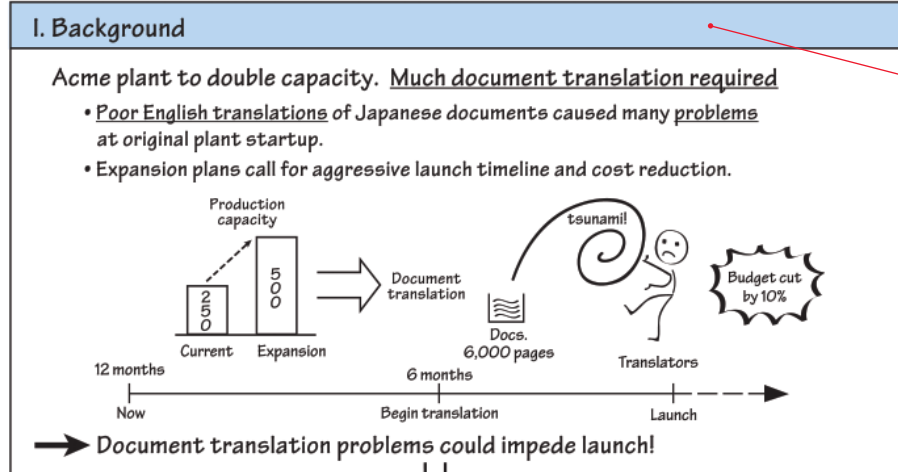
best solutions to his problem, but to manufacture the authority he needs to proceed with his plan. Sanderson uses it to mentor his protégé, while getting the required results for the company (in this instance, the solution to a problem). Organizations use A3s to get decisions made, distribute authority to the level needed for good decisions, align people and teams on common goals and learn for constant improvement. The ultimate goal of A3s is not just to solve the problem at hand, but to make the process of problem solving transparent and teachable in a manner that creates an organization full of thinking, learning problem solvers. In this way, the A3 management process powerfully embodies the essence of operational learning.

John Shook is an industrial anthropologist and senior advisor to the Lean Enterprise Institute, where he works with companies and individuals to help them understand and implement lean production. He is author of *Managing to Learn: Using the A3 Management Process to Solve Problems, Gain Agreement, Mentor, and Lead (Lean Enterprise Institute)*, and coauthor of *Learning to See (Lean Enterprise Institute)*. He worked with Toyota for 10 years, helping it transfer its production, engineering and management systems from Japan to its overseas affiliates and suppliers. Comment on this article or contact the author at smrfeedback@mit.edu.

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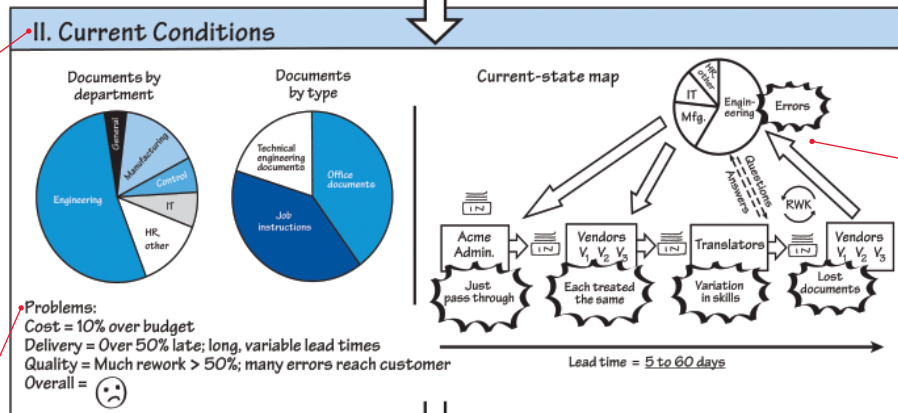
Support Launch Objectives with Accurate, Timely Document Translation

One way to describe the A3 is as "standardized storytelling," which refers to the ability of A3s to communicate both facts and meaning in a commonly understood format. Like any narrative tale, an A3 tells a complete story, with a beginning, a middle and an end, which can be traced from the upper left-hand side to the lower right side. Because readers are familiar with the format, they can focus easily on the matter contained. It becomes the basis for reaching a shared understanding.



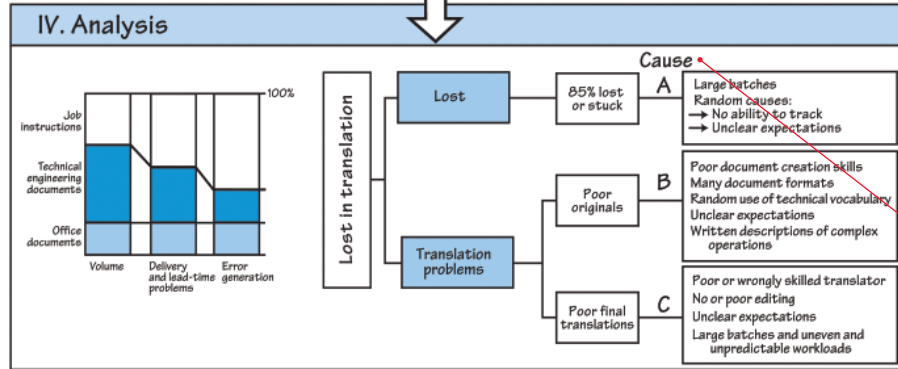
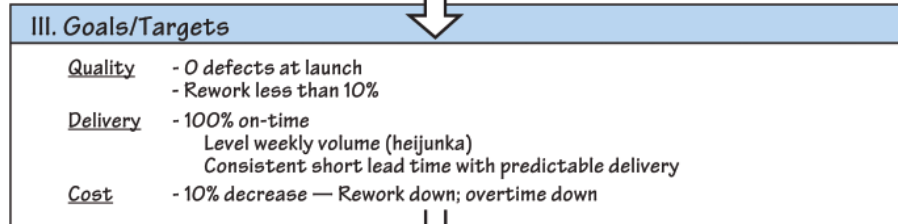
Despite the specific categories used in this A3, there's no one fixed, absolute, correct template. Regardless of the setting or use, it's always the underlying thinking that matters. Every A3 is no more than a visual manifestation of a problem-solving thought process involving continual dialogue between the owner of an issue and others in an organization.

Current conditions are always based on facts derived from the *gemba* — the place where the work takes place. Real facts about the real work are derived from careful investigation on the part of the author.



A3s employ visual methods to share information and thinking. This helps condense key facts into meaningful visual shorthand — storytelling tools that help pack a great deal of data into an elegant presentation.

Defining the problem simply and powerfully represents the most important part of any A3. Effective A3s persuade others by capturing the right story with facts (not abstractions) and communicating the meaning effectively.



A problem is something that presents itself as a barrier to the organization achieving its goal. Articulating this problem requires the author to identify the gap between current state and the desired performance at any given time. The root cause or reason the gap exists is identified through examining the way the work is currently being performed and asking why the problem occurs. If the root cause is clearly defined, effective countermeasures can more easily be developed.

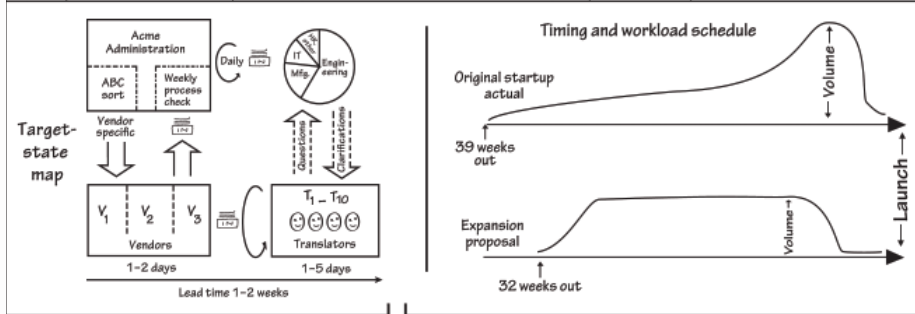
A3 proposals typically use the word "countermeasure" rather than "solution." Countermeasure refers to the way that proposed actions are directly addressed to existing conditions. More importantly, the wording recognizes that even apparent "solutions" inevitably create new problems. Once a countermeasure is in place, it will create a new situation, with its own set of problems that will require their own countermeasures.

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All A3s include the initials or names of the author and manager. The value of the A3 process to the manager cannot be overemphasized. The manager now has a tool to mentor and establish alignment. The individual now has the means to propose answers to problems that he/she owns, to create authorization to act and to manufacture the authorization needed to see the proposal carried out.

V. Proposed Countermeasures				
Cause	Countermeasure	Description	Benefit	Responsible/support.
A	Central document-flow tracking process	Overall process ownership established Document flow and timing management - Timing control chart; weekly check - Segmentation by document type	Delivery Quality Cost	Porter - Each department - Vendors
B	Standard vocabulary database and templates	Standard terms for processes, equipment tools, work flow across job sites Create standard templates and include photos and videos Gathered from each department, input into database for use by internal document creators and translators	Quality	Administration IT Each department
C	Standard vendor three-step process	Step ① Translation by topic specialist Step ② Rewrite by native English speaker Step ③ Check by highly skilled bilingual	Quality Delivery	Administration - Each vendor - Procurement

The A3s process explores a set of potential countermeasures rather than just one solution. By examining a range of potential choices, individuals uncover a broader and more meaningful basis for dialogue, analysis and agreement.



Note that effective countermeasures can be produced only by speaking with everyone who touches the work. And so producing a viable plan requires meaningful input from everyone.

VI. Plan				
Deliverables	Timeline	Responsible	Support	Review
Overall Launch Timeline				Plant management Committee Japan HQ
Planning	Nema-washi A3 authorized	Administration/ Porter	Each department	
Vendors	Evaluate Bid Select	Procurement Frances	Administration/ Each department	
Document creation - Database and templates - Training - Creating documents	Compile Ongoing updates	Each department - Administration/ Carter - Each department - Each department	Administration/Porter - IT (Rick and Terry) - HR - Administration	Each department Administration/ Sanderson
Document translation management system - Flow segmentation - Traffic control chart	A, B, C sort Weekly check	Administration/ Porter	Each department Ana	Administration/ Sanderson
Midproject review				

Producing a realistic plan through the A3 process shifts the basis of decision making from formal authority to ownership of the problem itself. By developing a mastery of the issue at hand and involving the players in the process, the A3 author earns the authority to propose and move forward an effective plan.

VII. Followup	
Midterm review	Ensure ongoing collaboration
Prelaunch review	Monitor system weekly. All metrics, especially quality and delivery

Every action plan includes a schedule for *hansei*, or reflection, to identify problems, develop new countermeasures and communicate improvements to the rest of the organization. A3s are part of a learning cycle of continuous improvement — which is why a key Toyota saying is, "No problem is a problem."

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