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MISTAKES

That Block Problem-Solving
and Successful Innovation,
and How to Avoid Them



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In today's fast-paced
global market,
competitive advantage
is driven by relentless
innovation that
solves a company's
biggest problems

...but the art and science of problem solving and accessing relevant innovation are themselves being radically re-invented in the 21st century. Strategic guidelines that served as proven principles a few years ago, now stand as obstacles to competitive success.

Conversely, counter-intuitive strategies that were once seen as impractical, or even impossible, have suddenly become achievable, affordable and smart, thanks

to new technologies that range from Big Data to Artificial Intelligence and beyond.

What follows are 5 of the most common (and most costly) mistakes that companies make when they try to solve problems and innovate using a 20th century model...and a quick recap of the new insights and new technologies that are driving 21st century innovation in today's globally interconnected economy.



“Not Invented Here” Syndrome

Of all the legacy innovation strategies of the 20th century, this one may be dying the hardest death. Many engineers and R&D heads continue to cling fiercely to their favorite justifications for “NIH” syndrome: why pay “outsiders” to do something we can do ourselves? If we’re the world’s best, what could we have to learn from anyone else? How could anyone who doesn’t understand our industry, our corporate culture, our products, or our way of doing things, possibly contribute a relevant idea?

Make no mistake, however: NIH syndrome is dying rapidly. Every year, the world spends \$1 trillion on technological innovation. Leading companies from global conglomerates to boutique firms are realizing that no matter how big their in-house budget is, the world as a whole is outspending them on any given problem or solution by at least 1,000%. And, no matter how smart the home team is, there are thousands of people outside the corporate wall who are equally smart or smarter, equally or more experienced, equally or more talented and expert at the R&D challenges relevant to your company.

A growing number of top companies are seeking “connect and development” relationships with third parties

Since no company – not even a global conglomerate – can alone compete successfully against the entire world, the question is no longer “whether” to look outside the company silo for inspiration and applicable ideas to help solve internal problems. The questions now are “where” to look and “how” to find the right experts and organizations that have already developed technologies, knowledge,

talent and expertise related to your challenge. For example, a 3D printing process used to manufacture aerospace engine parts may have surprising applications in, say, the cosmetics industry. (Or the engineer who developed that aerospace 3D printing application may have

surprising insights about how its principles could be adapted to work in cosmetics.)

This is why, in a world where internal R&D alone isn’t enough to compete, a growing number of top companies are seeking “connect and development” relationships with third parties that possess complementary technology or knowledge. Some companies call this a “networked innovation” strategy.



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Reinventing the Wheel

Companies that can't or won't survey the global market to stay on top of relevant innovations, can easily end up wasting massive time and budget to develop "new" solutions that, in reality, duplicate technologies or innovations that already exist.

Truly competitive companies systematically gather market intelligence about relevant innovations from anywhere and by anyone

Companies are especially vulnerable to duplicating work already done in other industries when they have no window into industries beyond their own.

Adding to the costs and dangers of reinventing the wheel is the fact that a company's "new wheel" could even infringe the patents on one or more innovations owned by third parties in other industries.

The secret of not reinventing the wheel is to adopt an aggressive, proven and practical process of gathering business intelligence. In the 21st century, it's no longer good enough simply to keep tabs on your competitors, or to keep a close eye on your industry – not even on competitors on the other side of the world. Truly competitive companies systematically gather market intelligence about relevant innovations from

anywhere and by anyone, including sources far beyond their own industry and outside of their domestic market.

Not only does this wide-ranging business intelligence gathering process help prevent companies from reinventing the wheel; it also helps companies avoid being blindsided by innovations that "come out of left field" when they pop up in a competitor's product or service.

The tools of Big Data and Semantic Search are now ready and available to help companies find unexpected approaches already in use that may have strong relevance to their own challenges. (Semantic Search is the next generation beyond keyword search. It searches for concepts, no matter what words are used to describe those concepts. Semantic Search is particularly good at ferreting out relevant technologies, ideas and approaches – along with the experts and companies that own them – from surprising sources that can match up with a company's innovation challenges.)

Fortunately for small and midsized companies, the cost of these advanced technologies has come down dramatically in recent years, while access and availability are now within reach of virtually any firm.



3

When Your Only Tool is a Hammer, All Problems Look Like Nails

A third critical mistake made by many companies in pursuit of innovation is to define their problems either too narrowly or too generically. For example, suppose your company manufactures and sells high-end commercial ovens. Your product team wants to develop a new model with sensors that will automatically shut off the oven when burning food is detected.

How do you meet this challenge? It's not enough to scour the world for adaptable sensors that perform well in high temperatures. You also need to find sensors that fit your price range, are food-friendly, and are available in batches of 10,000 or fewer at a time.

Simply searching for "food burning sensors" probably won't help you find components that meet all these tests. What's more, suppose there are advanced new sensors already being used by an industry that you don't know about, that could easily be adapted for commercial ovens?

Suppose these sensors can detect a problematic data signature before food starts to burn? And, suppose there are experts in other industries who have extensive knowledge of using these advanced sensors in food-sensitive

environments, who could provide your R&D team with invaluable insights?

The real problem you're trying to solve here is not shutting down ovens after burning occurs. The real problem is preventing food from being ruined so that consumers are guaranteed to have a great experience with your ovens. That's why problem-definition is one of the most important steps in successful innovation. Even the most advanced search tools are unable to find relevant results and promising ideas for innovative approaches,

unless you first define your challenge fully and accurately.

Here again, new technologies and procedures exist to ensure that a company's problems and challenges can

be defined and described in a comprehensive way that allows Big Data and Semantic Search to function with maximum effectiveness on your company's behalf. Human-facilitated problem definition, leading to algorithmic descriptions of your company's specific innovation challenge, can open up new worlds of possibility. Suddenly, not every solution is a hammer and not every problem is a nail. Like Big Data and Semantic Search, these tools for advanced problem-definition are also affordable and accessible for every sized company today.

Problem-definition is one of the most important steps in successful innovation



4

Looking Under the Streetlamp

Every patent is an “advertisement” for a person or organization that has specialized knowledge about a particular class of problems

An old joke tells of an inebriated man outside a bar one night. He gets down on his hands and knees under a streetlamp, searching for his lost car keys. A friendly passerby joins the search, without success. Finally the passerby says, “Are you sure you dropped your keys here?” The bar patron replies, “No, I dropped them up the street” – and he points to a dark

corner up the block. The passerby asks: “If you dropped your keys up the street, why are you looking here?” The inebriated patron points up at the streetlight and says, “Because the light’s better!”

Although it seems like an obvious error, too many companies employ a similar strategy when they need to make their products better, faster or cheaper. These companies focus on “looking under the streetlamp” of familiar territory...sticking to the near-at-hand, and insisting on going to old, familiar fields to search for answers to innovation challenges.

As world-class entrepreneur Victor Cheng has observed, “When you’re in an industry that’s been doing the same thing for 30 years and you personally have not spent much time outside of your industry, it is very hard to notice new opportunities.”

One of the world’s largest stockpiles of innovation, experts and companies with

targeted knowledge and talent is located in a place where few companies think to look: inside the U.S. patent database. Properly understood, every patent is not only a description of a single, limited technology or solution. It is also an “advertisement” for a person or organization that has specialized knowledge about a particular class of problems.

What’s more, that class of problems often has parallel challenges across many industries, regardless of what particular industry the inventor happened to address in his or her patent.

The good news is that the same new technologies that can help define problems with mathematical precision, and the same new technologies that can search the globe for relevant ideas and approaches, can also run your company’s problems against the “expert and company” directory that is the U.S. patent database.

These innovation-support technologies, used in combination, can then return a ranked list of relevant candidates that your company can consider approaching for consultation and perhaps even collaboration. Again, these advanced technologies and their related services are now easy and cost-effective enough for companies of every size to use.



5

Misunderstanding What Business You're In

Understanding what industry you're really in is closely related to understanding precisely what problem you're trying to solve

A classic business aphorism claims that railroad companies lost their market dominance in the mid-20th century

economy because their owners mistakenly thought they were in the railroad business. They failed to realize they were actually in the transportation business.

No amount of upgrading railroads from steam to electric, from iron to steel, and from telegraph signals to computer routing could make an industry profitable when

its real problem is lower-priced or faster-moving competition across the nation's highways and airways.

This lesson has powerful applications for successful innovation in the 21st century. Understanding what industry you're really in is closely related to understanding precisely what problem you're trying to solve.

No company can simply define its challenges in a way that leads to successful innovation, if it is stuck on trying to rescue or rehabilitate an entire class of technology or a business model whose time has passed.



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