



# WHAT WOULD YOU CHANGE WITH A UNIVERSAL UNDO BUTTON?

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UNDO BUTTON?.

— *Albert Einstein*

**P**repare yourself for a voyage into the impossible. I assure you, we will arrive at specific strategies for business growth and profitability, but the road to our destination leads us through the darkest forests of theoretical physics. Don't be afraid. There are no equations to memorize and no test at the end, but you must understand the logic behind hypothesis-based innovation to guide you in designing your own.

Otherwise, you might end up taking advice from experts, without testing whether their reasoning is sound. Bad advice from people who call themselves experts is really the worst thing in the world for your business.

Never take the advice of experts, not even me, without testing it for yourself. Test, experiment and learn.

In the quest to test if your reasoning is sound and your results are valid, the Universal Undo Button will be your greatest ally. This paper shows you how to create one.

## **Part One: Is it Groundhog Day Again Already?**

Sometimes an idea is so clever that it transforms itself into a genre. Edwin Porter's *The Great Train Robbery* set off a stampede of Western Movies after 1903. F. W. Murnau's silent masterpiece *Nosferatu* give birth to the genre known as Monster Movies in 1922. And Harold Ramis' time-twisting *Groundhog Day* created the Infinite Loop genre. The rule in this genre is that the main character must get stuck in a seemingly endless repeat, reliving a single day or single situation forever until they are able to figure out what they did wrong.

Films in the genre include: *Run Lola Run*, *Naken*, *Primer*, *Source Code*, *Edge of Tomorrow*, and *the Last Day of Summer*.

In all these films, the protagonist is granted (or cursed with) the Universal Undo Button. They involuntarily keep hitting Undo and trying variations of their own behavior until they achieve success, whatever that means in the story.

We have all wished for something like that, but just not stuck in the always on position. We wished that we had a do-over, that we hadn't sent a sensitive email, that we paused before handing over our credit cards, that we took a different route to work, or that we hadn't said what we said.

Just a few seconds of Undo would make a lifetime of difference. That's what we want to create for your company.

The Universal Undo Button is more than a psychological learning mechanism in fantasy films. There is a form of the Undo Button that actually exists in our world. It is, in fact, the most powerful tool there is for the successful innovator.

It is not a physical mechanism like a remote control. The Universal Undo Button is the process of structured experiments based on hypotheses. It lets you try out many possible realities. What would you attempt if you knew you could hit reset if it didn't work? What kinds of innovation have you not attempted due to the fear of failure?

When you use it to mitigate fear, the Universal Undo Button can unleash powerful waves of creativity for your business processes. You can work through alternate futures on your own, in a group, or even at the level of the entire organization. This teaches you how to embrace experimentation and to fail fast without fear.

## Part Two: The Physicist and the Angry AI

Max Tegmark is a genial Swedish physicist with a roguish smile and sudden bursts of intensity that tend to unsettle people. While his meticulously detailed work on hydrogen tomography or gravitational lensing might lull you to sleep, his plausible scenarios of genocidal AI have terrified both business leaders and academics, from Elon Musk to the late Stephen Hawking. Tegmark told IEEE Spectrum, "Just because we don't know quite what will go wrong doesn't mean we shouldn't think about it. That's the basic idea of safety engineering: You think hard about what might go wrong to prevent it from happening."



Tegmark wrote about the safety engineering for runaway AI in his book titled *Life 3.0: Being Human in the Age of Artificial Intelligence*. With the speed of AI's development, he argues, we may never get a chance to hit the Universal Undo Button before it erases humanity from the world's hard drive.

He wrote that the emergence of a non-human intelligence is essentially different from any other innovation humanity has developed before. Tegmark said, "We invented the car, screwed up a bunch of times, and invented the safety belt. But with things like nuclear weapons and super-intelligent AI, we don't want to learn from mistakes. We need to get it right the first time, because that might be the only time we have."

Tegmark sees himself as an optimist, and makes the point that if AI were to wipe out humanity, but then go on to do wonderful things, it might not be the worst outcome. Like children fulfilling the dreams of their parents, the intelligent algorithms we create may further our values or they could develop an intelligence without a conscience. A tiny variation in initial conditions could result in vastly different outcomes. It's up to us to do as much as we can now to prevent the latter.

From Tegmark's aloof perspective on the scale of eons and star systems, the problems of a few startups might seem insignificant, but the same principles apply on a personal level as they do on the grandest of scales. As above, so below.

Tegmark's ability to draw out detailed scenarios based on minor variations in assumptions is closely related to his work on multiple universes, which is the underpinning for the logic of the Universal Undo Button.

### Part Three: The physics of the Universal Undo Button

Quantum cosmology represents one of those math-heavy niches of obscure research where science and science fiction tend to bump into each other a bit. To understand Tegmark's work on multiple universes, we must take a quick detour back through the science of what is actually happening on the scale of the microscopic.



Hard evidence for an infinite, interconnected series multiple universes began with the simple experiment of the double slit, first performed by polymath Thomas Young in 1801. Young had sought to settle the argument over whether light is made of particles or waves, which had been raging for centuries.

Young allowed sunlight to shine through two tiny slits in paper cards to project patterns of light and shadow on the walls. That pattern is a classical wave form, indicating that light passed through both slits and interferes with itself. He concluded light was made of waves.

Later experiments by Albert Einstein proved that light reflects off objects in tiny packets called quanta. This was the birth of quantum physics, which Einstein helped to create but could never bring himself to accept. He concluded light was made of particles.

So, which is it? Is light made of particles or waves? Who is right and who must apologize? The answer, of course, is both and neither.

Like most debates in science and arguments over business strategy, the true path lies in a third way, a synthesis of the two. Any time your business is faced with two equally valid but mutually exclusive options, you are not thinking deeply enough about the problem.

Light is made of photons, which are neither waves nor particles but something we can't imagine that has some of the qualities of both. Maybe call them wavicles or maybe we'll leave the naming to someone else.

Now comes the really weird part, that opens the door to the effects of multiple universes in the real world. When you shoot individual photons toward the two slits, the pattern on the wall changes. Photons arrive one at a time like particles. But, when you turn off the particle detectors, so no one and nothing is watching, the familiar wave form pattern reappears. It seems as if each individual photon goes through both slits at the same time and interferes with itself.

That doesn't make sense. An object like a particle can't split into two and interfere with itself. But of course, common sense doesn't work in the uncommon space of the quantum world. You have to just accept the evidence and try to explain it. This is the same problem that data scientists face every day when the data presents answers that business leaders don't want to hear. The professional must follow the data, no matter what the boss says.

So, what is really happening here with the photons interfering with itself? There are three possibilities.

1. Nothing is really there, until its measured. Danish physicist Niels Bohr wrote this generally accepted explanation of what's happening in the quantum realm, known as the Copenhagen Interpretation. Bohr wrote that in the quantum world, things only exist as probabilities until they are measured. Yes, this is really the bedrock of the modern science. The math works and quantum science has produced functional miracles like lasers, X-rays, MRI machines, GPS, satellites, atomic clocks, and the computer you are using right now. They all depend on the laws of quantum physics, predicted by the Copenhagen model.
2. We don't and we can't understand it. The Hidden Variables theory arose because Einstein couldn't stand the Copenhagen Interpretation. He politely warred with Bohr in a series of letters filled with thought experiments. Einstein said one set of physics should apply across the universe, at every scale from microscopic to cosmic. We don't understand the results because we haven't figured out all the variables yet. It's hard to argue with that but it's not very useful either. We can't discuss what we don't know. Meanwhile, the Copenhagen Interpretation kept on racking up actual results in engineering, chemistry, medicine and more.
3. Multiple universes. The third possibility is what we need to talk about, because that is where the Universal Undo Button comes in. Hugh Everett, a student of superstar astrophysicist John Wheeler, proposed the Everett-Wheeler model. At the moment when the photon arrives at the double slit, when things could go either way, the interference does not come from a single photon, but from another, identical copy of that photon in a nearby mirror universe. You will only ever detect one photon in our world when you turn on the particle detector because it is only measuring physical manifestations in this universe, not possibilities within the greater multiverse.



The math works for this interpretation just as well as it does for the Copenhagen model, but it answers many other problems in theoretical physics. More and more physicists are coming to the conclusion that the Everett-Wheeler, also known as the Many Worlds Interpretation, is the best answer to what's really going on at the quantum scale. One fifth of working physicists today use the multiverse as their basic assumption in experiments, according to a survey from the University of Portland.

These ghost particles from other universes are not theoretical constructs. They are actually physically real. They are real enough to cast a shadow on the wall. What those other universes might look like is beyond the reach of modern science, just as the chemical composition of the sun was outside the reach of the science in Ancient Greece.

#### **Part four: What the subatomic means to the board room**

Now let's leave the laboratory behind and return to the business boardroom to see what the Many Worlds models means for you. These theories may seem remote from everyday decision-making, but you cannot go back to thinking in old ways once you are aware of the physics that operate behind the scenes in objects we use every day.

In some other universe, infinitesimally close to our own, all of your worst decisions never happened. You didn't hit send on that sensitive email, or you put your credit card away, or you took an alternate route to work. In that universe, you didn't do what you now regret and that made all the difference in that other world.

How does this knowledge help you?

This is how you must think about experimentation and failure. It helps you understand how to go about innovating successfully. Innovation is a hybrid creature. It is part business and part science. You must be proficient in both to make it work.

Failure is necessary, as Thomas Edison insisted, and his assessment of how innovation works is still valid. In 1910, when Edison kept failing at creating a new type of energy storage battery, Edison's friend Walter Mallory shook his head in sympathy and blurted out, 'Isn't it a shame that with the tremendous amount of work you have done you haven't been able to get any results?'

Edison then gave his most famous reply, which has been misquoted ever since, "Results! Why, man, I have gotten a lot of results! I know several thousand things that won't work!"

The point is that innovators develop a commitment to failing until they succeed. That mindset helps you overcome the innate fear most company leaders have of taking necessary risks.

Another word for business is venture and another word for a venture is a risk. Smart managers reduce risk as much as possible, but don't shy away from taking smart risk. Not all of those risks are going to pay off, but you will win or you will learn. That's how you will build your own functional Universal Undo Button in our universe.

You deploy the build-measure-learn loop by taking measured risks, testing hypotheses, re-running experiments and keeping careful records of what works. Don't waste resources on innovations until you test each hypothesis about why the innovation will work.

Change as little as possible to keep the experiments clear. Question your assumptions at every turn and try again. Risk tolerance is something you can acquire through practice, and it is also something you must acquire to succeed in an economic landscape that is always in motion and exposed to sudden, unpredictable reshuffles.

## **Part five: The perpetual engine of science fiction**

As you prepare yourself to innovate without fear, there may be no better place to start than inside classic works of science fiction.

All of science and all of fiction emerge from a single impetus and single word – If. The word if is the atomic unit of counterfactuals. From that launchpad you can build any experiment.

To innovate repeatedly and successfully, it will be necessary for your company to develop an If Launchpad. This is where innovations will be built and where they will blast off into the market.

Thought experiments that take off from the If Launchpad begin with the natural world and then slightly alter a few critical factors to see what that does to the world.



Literary works at the intersection of science and fiction has been a rich source of innovation since the genre began in Ancient Rome. The first science fiction story was an ironically named tale called *A True Story*, about a voyage to the moon. It was written by Lucian who wandered the ancient world as an itinerant rhetorician. In other words, he went about arguing with people for a living. Lucian's work was listed as an inspiration by the chemical engineers and aeronautics designers who built the first rocket that actually went to the moon.

You have doubtless heard of other science fiction speculations that became real world success stories. Some examples from the nineteenth century include television, genetic engineering, and lasers predicted by HG Wells or smartphones and nuclear submarines envisioned by Jules Verne. A work of speculative fiction verging on science fiction inspired the invention of the Internet, which began with Vannevar Bush's *As We May Think*.

In my own experience, I took part in a large-scale research project that sought to bring to life a translation device, similar to the Babel Fish from *The Hitchhiker's Guide to the Galaxy* by Douglas Adams. If you haven't read the book, the Babel Fish is an alien creature that automatically translates any language in the universe. All you have to do is stick the wiggly fish into your ear.

This Babel Fish-inspired research project was known as Verbmobil. Its goal was to develop a robust algorithm inside a portable travel device that could translate speech instantaneously and bidirectionally from one language to another. For simplicity, we began with German to English and German to Japanese. It was funded by the German Federal Ministry of Research and Technology, using the resources of the German Research Center for Artificial Intelligence in Saarbrücken, in association with the Advanced Telecommunications Research laboratories in Kyoto, Japan.

More than 900 researchers and engineers spent nearly a decade of intensive research on topics that included deep semantic analysis, where research concentrated on recognizing casual mistakes in everyday speech. By comparing what a speaker said against what they were trying to say, the AI began to understand patterns of thought and ellipses.

Flexible short hands in every spoken language simplify both communication and understanding for speakers and their listeners, but they tend to wreak havoc on rigid rules-based systems. The Verbmobil project established for the first time the theoretical and practical foundations of the signal processing that people perform autonomously every day.



Speech processing, prosodic analysis, parsing, semantic analysis, discourse understanding, translation, generation and speech synthesis were all codified and published for anyone to access. It has since become a landmark project in the history of natural language processing, often referred to as NLP.

Today, Verbmobil's industrial partners, including DaimlerChrysler, Philips, Siemens, and Temic are applying the resources in translation developed during this project. This is one of the best examples of what we call the Third Innovation Horizon. The goal of these projects is not to return profits for one individual company, but to build a new S-Curve that your company can build products for in the Second Innovation Horizon and extract profits from in the First Innovation Horizon.

There were many wrong turns and false starts in understanding this complex series of problems. If they would have begun by listening to the experts in language translation, the project would have been mired from the start in faulty assumptions. They used the Universal Undo Button many times to rerun experiments, each with a new hypothesis.

Hypothesis testing is both the cornerstone of science and the most direct path to successful innovation.

The secret is in doing many, many experiments, but doing them as cheaply as possible. Otherwise, you will bankrupt the business in trying to save it. To illustrate how that works, let's talk a bit about real life zombies.

## **Part Six: How to win at hypothesis testing**

You should expect that the first time you attempt to create something truly innovative, something that has never been done before, you will make mistakes and you fail to realize the innovation's true potential.

A wise man said, quitters never win and winners never quit, but if you don't win and you don't quit, you've got a gambling problem.

As a responsible business leader, you must develop the delicate sense of when to move on, and that only comes with practice. There is an epidemic of over-commitment of resources to failing projects, called zombie projects because they won't die. This financial rigor mortis has doomed many commercial ventures. The same is true of projects where market conditions change after launch and late adjustments muddle the results.

Given the new normal of hyper-competition and economic uncertainty across the globe, firms have a better chance of survival using the hypothesis approach from the start. It creates a framework where companies can make serious mistakes as early and as cheaply as possible.

One of the most important practices that distinguishes a company as more successful at innovation is the sheer number of attempts that are fully tested. There's an entire website devoted to the Google

Graveyard, which catalogs all the projects the search giant has launched and killed recently. The principle of hypothesis-based testing is sometimes expressed as “Fail fast, fail cheap. Learn faster, learn cheaper.” In this case, “failure” is just a rhetorical device referring to the validation or refutation of hypotheses.

The Hypothesis-based approach to innovation consists of four steps:

- **Step one**, formulate your assumption as a testable hypothesis, such as customers love cute animal avatars.
- **Step two**, design and run experiments to test the hypothesis, by introducing a variety of cute animal avatars to representative customers and partners.
- **Step three**, observe their reactions and act like an anthropologist, following the techniques described in Episode two. Measure results and come to a consensus on what those results indicate.
- **Step four**, verify or discard hypothesis and return to step one.

These don't have to be fancy experiments costing thousands of dollars over six months with testing software. It can be as simple as running concepts past selected customers in coffee shops. As validated concept evolve into prototypes and minimal viable products, your testing can become more rigorous and extensive.

All of this may sound eminently reasonable, yet it is rarely practiced in the business world. Instead, the normal procedure is that executives assign project teams that become responsible for innovation. The leaders then follow-up with a solution-based approach, where they define a problem and immediately try to come up with wholly-formed solutions. These teams don't have time or space to experiment, so they prefer to bring in subject matter experts or SMEs to justify what they want to do anyway. The SMEs take the blame when things go bad as they usually do.

Experts give their opinions based on gut-instinct or prior experience, which is usually out of date or based on assumptions that were never fully tested in the first place. Experts make a reputation for themselves by exuding confidence so they assert that they know their solution is the best one imaginable. The SMEs wouldn't be sought out otherwise.

When asked to support their reasoning, experts can normally cite countless statistics and case studies that back them up, thanks to selective research and confirmation bias. Confirmation bias is the natural human tendency to pay attention to only the data that confirms what you already believed in the first place.

It requires a carefully structured experimental design to counter the effects of confirmation bias. That is one of the primary reasons that even great innovations fall apart on execution. A study by McKinsey found that although executives at global firms agreed on the critical value of innovation, 94 percent of

them were not satisfied with their own results and they lacked clarity on how to improve the situation. Next time you are speaking with other executives about innovation, remember that they are probably thinking that you have a 94 percent chance of screwing it up.

What innovation teams that fail usually lack is a functional Universal Undo Button, in the form of hypothesis-based innovation testing. Built on their successes from rapid and incremental iterations, companies grow more innovative, more agile and pull further ahead of their rivals. They reduce risk and take advantage of increasingly narrow windows of customer demand.

## Part seven: Cluster your data like the CIA

Once you have gathered enough data from experiments, you can deploy a radically new tool for innovation management we call clustering, based on the technology the CIA used to find Osama bin Laden and Netflix still uses to recommend movies to you.

Now what on Earth do Osama bin Laden and Netflix have in common?

Back in 2011, we were wondering how to develop the first hypothesis in a large and deeply complex assignment. We decided to look at other trades and industries to see how they approached tasks like these. After investigation, we found that the CIA used “grounded theory.” This turned out to be a vital element in their successful location of Osama bin Laden.



We decided to learn more about grounded theory. After a while, we found out that it was also used in research relating to finding relatives for DNA matching. A number of scientists had developed a piece of open software called Cytoscape. This caught our attention, and we started to experiment with this software and grounded theory, in order to analyze the huge amount of data that we were collecting as part of a highly complex innovation assignment.

Using these tools, we were able to draw out from the massive amount of data some really good hypotheses. After a while, we also realized that grounded theory is a perfect methodology for codifying both quantitative and qualitative information—and identifying relationships, and clusters of relationships. This was how the CIA used grounded theory and a large volume of data to figure out where Osama bin Laden was hiding:

The connections between data points were visualized as lines, with shorter lines representing stronger connections. The CIA has released to the public nearly 470,000 additional files recovered in the May

2011 raid on Usama Bin Ladin's compound in Abbottabad, Pakistan. Former CIA Director Mike Pompeo authorized the release in the interest of transparency and to enhance public understanding of al-Qa'ida and its former leader.

What does all this have to do with running your business? The answer is in using data connectivity to make better decisions.

In terrorist networks, high degree centrality, or connectedness, may identify influential actors who are most at risk of detection by law enforcement due to redundant ties. The centrality measures for individual network members reveal a notable amount of variability. At the lowest end of the continuum, Salem Sa'ed Salem in-Suweid is only connected to two actors, which scores a 3.7 percent connectedness rating.

Conversely, Said Bahaji is linked with 48 others, an 88.9 percent connectedness. The relative differences in connectedness has advantages and disadvantages. Bahaji may be most able to significantly influence the network, but he also has the greatest exposure and so is most vulnerable to detection. On the other hand, bin-Suweid is least susceptible to detection, but he is also the most isolated and therefore the least able to exert leverage.

My team and I learned from this data that we could take this technique in a new direction—not using just source, target, and relationship, which is the cornerstone of grounded theory, but rather taking perspectives on clustering on several levels.

The enhanced clustering technique is now widely used by cutting-edge technology companies like Netflix, which is most interested in discovering what customers like to watch and what is likely to keep them glued to the platform. Netflix can only justify its prices by keeping the user base enormous and engaged.

Netflix monitors which scenes make the viewers hit the pause button, which scenes they like to replay, what they skip over and more. Based on that data, Netflix designed new shows based on crowdsourced preferences. This is really digital anthropology on a massive scale, all to keep viewers engaged and binge-watching.

It reminds me of the film *Scrooged*, in which a TV executive discovers that a majority of his viewers have cats, so he creates a detective program where the protagonist dangles a string everywhere he goes.

Grounded theory is just one of the many ways my team and I have been handling, codifying, comparing, and contrasting vast amounts of complex quantitative and qualitative data to generate hypotheses and form tested theories. Those theories be used on a deeper level to enhance understanding and to make recommendations that are tangible, measurable, trackable, and actionable.



The secret is no secret at all. It is the same method that science has used for centuries to find verifiable truths about the world. Bit by bit, this original research forms the underpinning of every technology we use to navigate through our daily lives, from cloud-based apps that tell us where we need to go next, to the satellite-based GPS that tells us how to get there. The mechanism science uses is the Universal Undo Button, in the form of hypothesis-based experimentation and data analysis.

As the Germans say: One time is never. A single success tells you nothing. Only repeated successes or failures can tell your company which is the best way to proceed. You don't need to be stuck in an eternal loop of trial and error like Groundhog Day. Instead a sophisticated data analysis of crafted experiments can provide a deeper understanding of the nature of whatever you are testing. Successful innovation requires you to hit Undo over and over to discover the precise combination of capabilities that will bring your next innovation to life, and thereby prolonging the lifespan of your company.

## About the author Magnus Penker

Magnus Penker is an internationally renowned thought leader on innovation, artificial intelligence, digitization and business transformation. He is a speaker at prestigious global forums and events such as the Global Peter Drucker Forum, at top-ranked international business and design schools, at a variety of associations and at some of the world's largest companies. Mr. Penker is currently writing a five-volume series on business innovation entitled *The Complete Guide to Business Innovation* and is a contributing editor at the *International Journal of Innovation Science*.



As a result of these achievements, Mr. Penker has been honored with the *Business Worldwide Magazine* award of “Most Innovative CEO Sweden 2016” and appointed as a Global Top 100 CEO by *CEO Monthly* for 2018. He has launched 10 startups as well as acquired, turned around and sold +30 SMEs all over Europe.

For the past eight years, Mr. Penker has used his practical and theoretical insights to develop *InnoSurvey®*, a leading methodology and global innovation database that is used to analyze and advise companies, business leaders and scientists around the world. Today, Mr. Penker is the CEO and founder of the *Service Provider Innovation 360 Group*, which is headquartered in Stockholm, Sweden and in New York, NY, USA.

Through his bestselling American books on digitization and IT engineering and his more than 20 years of experience as a management consultant and business leader, Mr. Penker inspires leaders to find a new way of thinking and organizing to stay on top.

Mr. Penker is driven by the recognition that, in these turbulent times, we must understand what we are really good at and determine how we can use those capabilities and competencies to create advantages in a globalized market with endless possibilities. The global map is being redrawn at speeds we have not seen before, and historically low interest rates are attracting capital to global digital-risk projects that will further strengthen this movement.

Mr. Penker has a BSc in Computer Science (CTH, Sweden) and an MBA from the Henley Business School, England.

## About Innovation 360 Group

The Innovation 360 Group helps organizations establish an adaptable innovation process and foster a culture of innovation. Its data-driven action plans are based on analytics from thousands of innovative projects over many years. In today's intricately connected global marketplace, characterized by extreme competition and the daily appearance of new competitors, disruption is the status quo. Data trends indicate that around 40 percent of the companies thriving today will be gone within the next 10 years. In this new world, innovation is a basic survival skill.

The Innovation 360 is recognized as a leading international innovation management firm, with a growing presence in 30 countries and operations in nearly all major language groups. From its executive offices in New York and Stockholm, it oversees worldwide initiatives through a network of accredited practitioners trained in Innovation 360's methodology. It has aggregated the world's largest database of concepts in practical innovation and developed Sherlock, the first AI program devoted to deep mind pattern recognition within innovation data.

The Innovation 360's methodology includes research in innovation, evidence-based analysis and recommendations for concrete execution plans to increase innovation capability, profit and growth. An overview of this proprietary process is published in the Service Provider's five-volume series The Complete Guide to Business Innovation.

On a global scale, Innovation 360's innovation consultants are currently addressing the world's toughest challenges related to the equitable distribution of food, energy, water, security, global health, education, environmental sustainability and access to space. Its consultants have been tasked with formulating the upcoming ISO Standardization for Innovation Management. It helps organizations to align their operations with these emerging international standards.

Innovation 360 specializes in leading enterprises and governmental bodies on original approaches to ideation, codification of creativity and market strategies linked to developments along three horizons of breakthrough technology. Leaders can learn how to recognize advances in productivity and profitability from the intelligent management of innovation portfolios. The Service Provider can facilitate the design and execution of interactive training workshops (innovation circles) or help transform an organization through proven change management action plans.

# INNOVATI<sup>o</sup>N 360