

Systematic Innovation



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The Systematic Innovation e-zine is a monthly, subscription only, publication. Each month will feature articles and features aimed at advancing the state of the art in TRIZ and related problem solving methodologies.

Our guarantee to the subscriber is that the material featured in the e-zine will not be published elsewhere for a period of at least 6 months after a new issue is released.

Readers' comments and inputs are always welcome.
Send them to darrell.mann@systematic-innovation.com

'Where To Innovate' Deep-Dive

One of the clear findings from all of our research and deployment activity on organizational innovation capability maturity is that some of the TRIZ/SI tools work better than others. Level of capability of an organization seems in fact to be the single biggest driver determining whether a tool or method will 'work' in the sense of delivering implementable solutions. One of the tools that we find works for pretty much every organization, irrespective of capability is the 'where to innovate' template. In simple terms, all this template demands is that users first map what innovations have happened in and around their industry in the recent past, and then, looking at the least exploited places, suggest ideas for innovations that could happen. The basic template is reproduced in Figure 1:

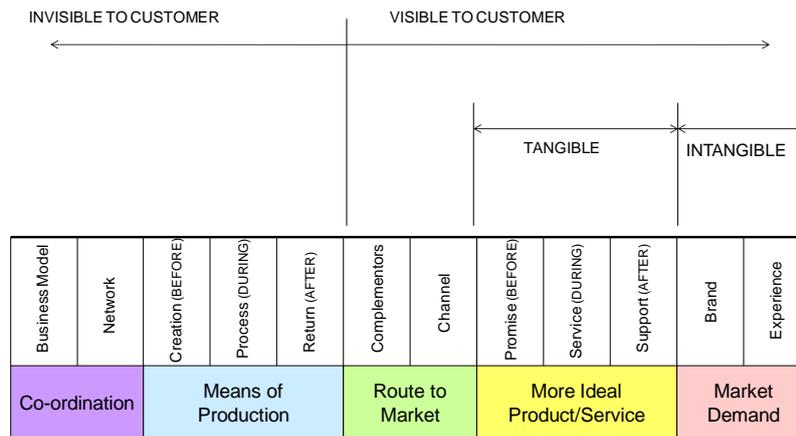
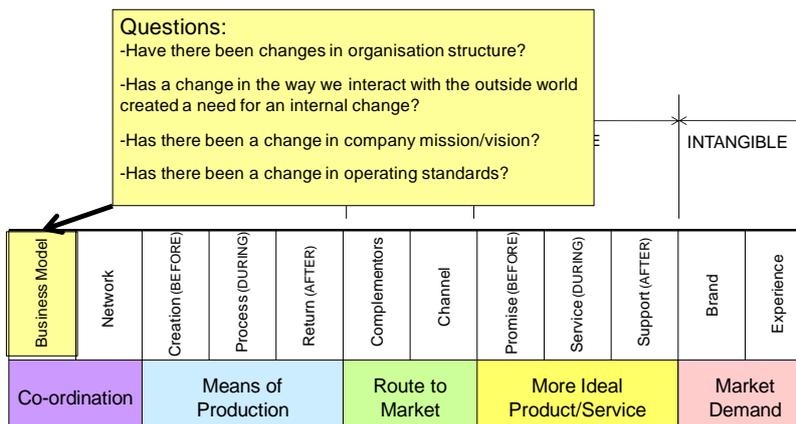
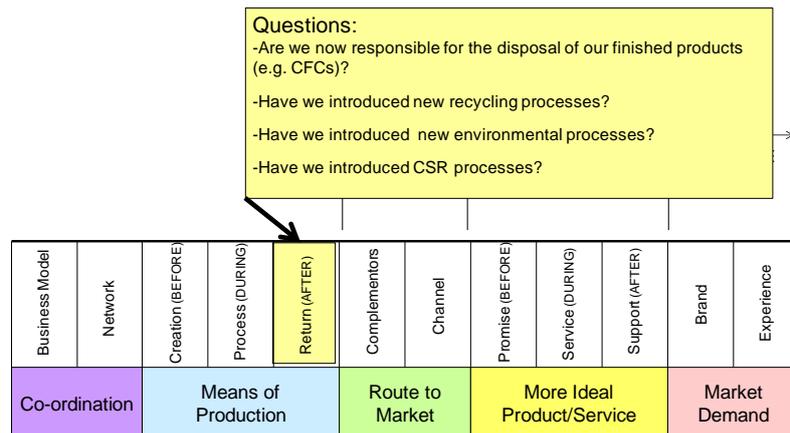
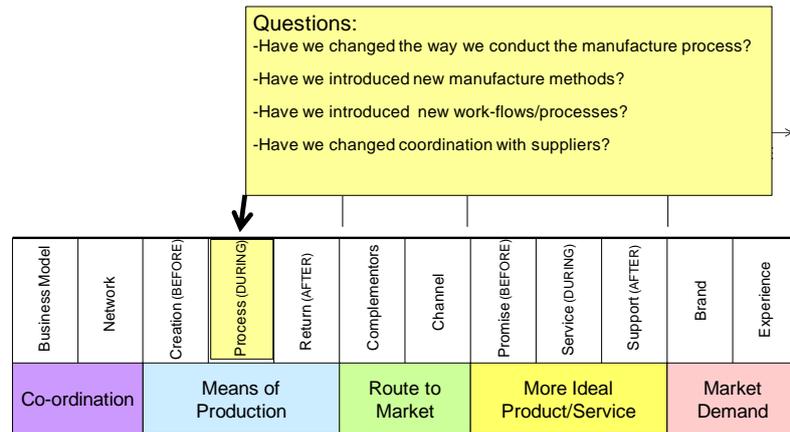
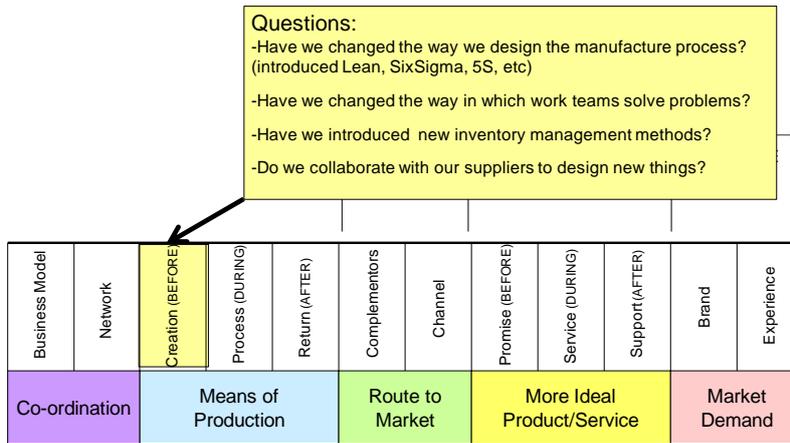
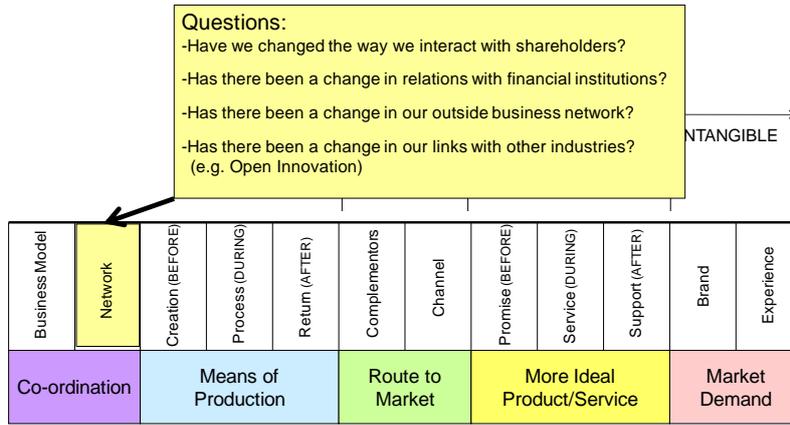


Figure 1: 'Where To Innovate' Template

All this template essentially does is divides the world of innovation possibilities into twelve small-enough-to-be-manageable segments. Oftentimes we simply give groups a copy of the template and tell them to get on with the job. Simply because what they come back with at the end of the exercise gives a pretty good indication of the capability of the group, specifically in terms of how far outside their current box they are willing or able to travel. If a group is finding it difficult – especially in terms of the second, creative, part of the exercise – it is helpful to give them some additional clues about the definition and content of each of the twelve segments. This article is a collection of some of the main generic 'clues' that we've found to be the most helpful over the years. What follows, then, is a series of twelve sets of questions, one for each of the twelve segments, working from left to right across the template:





Questions:

- Have we found something outside our offering that our customer purchases that we can integrate with ours?
- Have we found other **functions** that our customer needs that we could integrate with our offer?
- Have we identified other **attributes** that our customer needs that we could integrate with our offer?

Business Model	Network	Creation (BEFORE)	Process (DURING)	Return (AFTER)	Complementors	Channel	Promise (BEFORE)	Service (DURING)	Support (AFTER)	Brand	Experience
Co-ordination		Means of Production			Route to Market		More Ideal Product/Service			Market Demand	

Questions:

- Have we introduced a new route to market (e.g. online)?
- Have we introduced or removed intermediaries in the supply chain?
- Have we integrated/re-bundled several of our products/services?
- Have we shifted from a product to a service?

Business Model	Network	Creation (BEFORE)	Process (DURING)	Return (AFTER)	Complementors	Channel	Promise (BEFORE)	Service (DURING)	Support (AFTER)	Brand	Experience
Co-ordination		Means of Production			Route to Market		More Ideal Product/Service			Market Demand	

Questions:

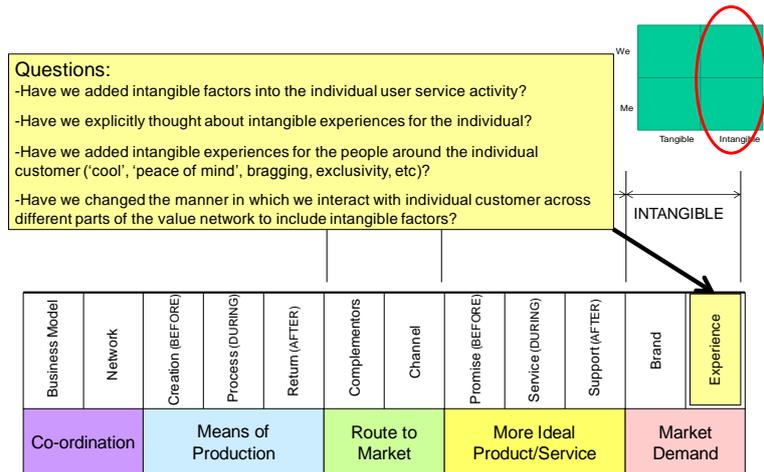
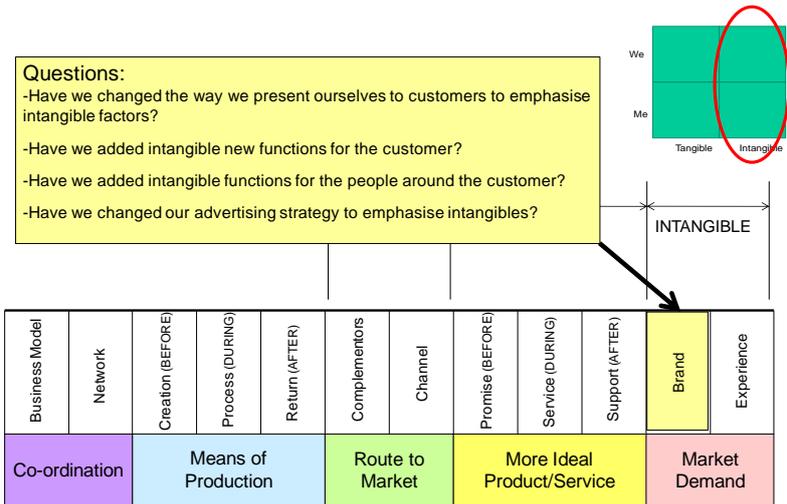
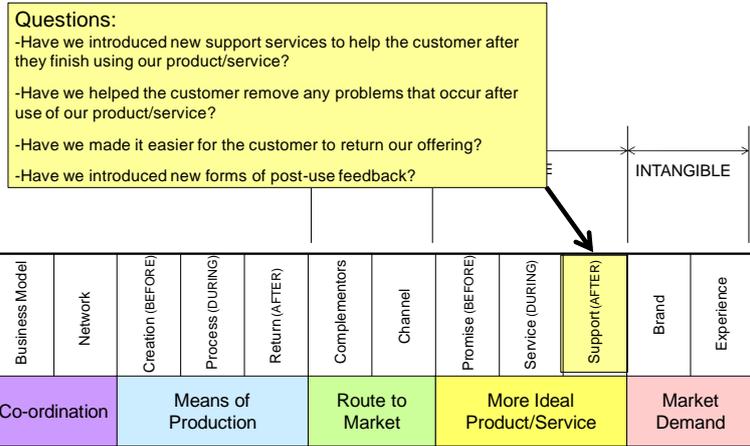
- Have we introduced new offerings into the catalogue?
- Have we introduced new functions into our product range?
- Have we introduced new attributes into our product range?
- Have we targeted a new type of customer?
- Have we changed from a product to a service?

Business Model	Network	Creation (BEFORE)	Process (DURING)	Return (AFTER)	Complementors	Channel	Promise (BEFORE)	Service (DURING)	Support (AFTER)	Brand	Experience
Co-ordination		Means of Production			Route to Market		More Ideal Product/Service			Market Demand	

Questions:

- Have we introduced new services to help the customer use our product offering?
- Have we introduced new functions the user can benefit from while using our product?
- Have we made it easier for the customer to use our offering?
- Have we provided services to the people around the customer?

Business Model	Network	Creation (BEFORE)	Process (DURING)	Return (AFTER)	Complementors	Channel	Promise (BEFORE)	Service (DURING)	Support (AFTER)	Brand	Experience
Co-ordination		Means of Production			Route to Market		More Ideal Product/Service			Market Demand	



(If anyone wishes to have an electronic copy of these images – for example to use on workshops – please get in touch with Hannah and she will email them to you.)

Case Studies: Blocked Nose



One of the trickiest balancing acts in and around the TRIZ/SI world is creating case studies that are simultaneously convincing and meaningful. The usual problem being that those that achieve both tend to be owned by organizations that have no interest whatever in sharing their success – or rather the method of how they achieved the success – with the wider world. So, this is one of our own real case studies. While on the surface it might appear a little trivial, our hope is that it solved a real problem, and – more important – is something you might not know about, and that you can demonstrate for yourself that it works.

The problem here is my blocked nose. I fly a lot and as many people will know, spending lots of time in an artificially climatized environment is very de-hydrating. That's why it's a very good idea to drink lots of fluids not only during the flight but also before you get on the plane. If you're anything like me, it's usually fairly easy to remember to do the former, but not so easy to remember to do the latter. Especially now you're not allowed to bring more than 100ml of fluid through security control.

So anyway, a few weeks ago, I find myself having forgotten to drink enough before I get on the plane and sitting way at the back of cattle class an hour into a twelve hour flight and struggling to breathe through my nose. I'm not sure if it's the same for you, but a blocked nose is one of the first signs of dehydration I get. Only a dry mouth comes before it. Plenty of things come after – like cramp – but it's usually possible to use the blocked nose as the 'canary in a coalmine' indicator that something needs to be done about the problem.

The only usual problem, then, in solving the blocked nose problem is that there is an inevitable time lag between drinking more fluid and your body getting some of that fluid to the blocked nasal region. As much as anything because I was bored as well as being unable to sleep because of said blocked nose, I decided to see if TRIZ/SI could help.

I made the connection to the method, because, as we tell everyone we work with, it should work on any problem. I made the connection to the Contradiction Matrix in particular because it felt like my dehydration was a classic case of pushing a system (my water-management physiology in this case) beyond its inherent capability.

Here's what I plugged into the Contradiction Matrix:

IMPROVING PARAMETERS YOU HAVE
SELECTED:

Loss of Substance (25)

WORSENING PARAMETERS YOU HAVE
SELECTED:

Duration of Action of Stationary Object
(13)

SUGGESTED INVENTIVE PRINCIPLES:

24, 15, 18, 38, 17, 35, 28

Top of the list was the instruction to use an Intermediary. Hmm. I looked around me, there didn't seem to be too many resources at all, never mind anything that looked like it might make a suitable intermediary, temporary or otherwise. The suggestion did make me think, however, about 'between what' – between what two things did in need to place this intermediary solution?

I decided it was the blocked parts of my nose. Which in turn suggested that if there was an intermediary that might help in this situation, it was going to have to be small. And specifically smaller than my finger. I looked around again. Everything amongst what I had seemed bigger than my finger. Except... except maybe the water in my plastic airline glass. So I dipped a finger into the glass and then inserted my newly moisturized finger into one of my nostrils. Then the other one.

To my (still) enormous surprise, within about twenty seconds, I could feel my blocked nose beginning to unblock. Within a minute one of the nostrils was completely clear. Within another minute they both were. I tell you, at this stage, forget about TRIZ or Contradiction Matrices, I was simply ecstatic about being able to breathe properly again. There's nothing quite like breathing... especially after you've not been able to do it for a while.

In essence, that's the case study. To quickly fix a dehydration-caused blocked nose, simply insert a damp finger into one nostril and then the other. Hopefully simple enough that anyone in a similar situation that can give it a try.

Of course, for me, (after I reached my destination I might add) it meant an obligation to examine some of the other suggested Inventive Principles. Here's what I also learned – strategies for not just dehydration, but for more serious cold-and-flu-related blocked noses:

Principle 35, Parameter Changes – the colder the water is, the quicker the unblocking effect

Principle 17, Another Dimension – tipping your head on one side helps considerably if you have one nostril that is more stubbornly blocked (i.e. if, say, your left nostril is blocked, tip your head to the right for a minute or two and chances are the nostril will become unblocked)

Principle 38, Enriched Atmosphere – sparkling water works better than still water!

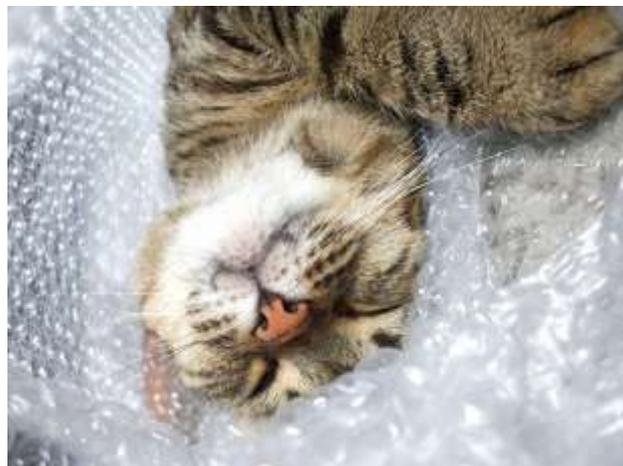
Principle 18, Mechanical Vibration - light tapping on the bridge of the nose helps a little; higher frequency vibration (I tried pressing the casing of an electric toothbrush against the outside of my nose) works much better... although you might wish to try that one in the privacy of your own home.

We hope you give some of these a try next time you have a blocked nose. By all means let me know if you find other strategies that do the job.

Humour – Bubble Wrap



The other week I discovered my cat loves bubble-wrap. I was sitting in the lounge reading, when I started to hear the occasional sound of popping plastic bubbles coming from the kitchen. Then the sound of something being chased around the kitchen floor. Turns out the cat had discovered bubble-wrap made for a very comfortable, only rather temporary mattress. During the process of tossing and turning in her sleep, she had gradually punctured all the bubbles under her body. So when I got into the kitchen, she was chasing the rest of the roll to, as far as I could tell, find some more un-popped bubbles to lay on. All very charming...



...if a tad wearing after a while. Still, it got me to thinking about other possible uses for this universal stress-reliever. Turns out, quite a few...

...of which clothing seemed to be the overall winner. Seems like quite a few other people have made the connection between popping bubbles and keeping warm:



Also pretty stylish. Although not quite in the same league as this most excellent bikini...



Now that's really what I call stress relief...

...albeit maybe not quite so durable as this winning little product...



...never ending bubble-wrap popping. I think I might have died and gone to heaven. This is 'Puch Puch'. Available from all good psychiatrists.

Patent of the Month – Electromagnetic Flow Control

Strictly speaking, the use of fields to control the flow over the wings of aircraft is nothing new. It represents a technology jump completely consistent with the Dynamization trend – mechanical solutions all eventually evolve to a ‘field’. Only problem is, up until now, it doesn’t seem to work very well. Fifty years ago, publications began to discuss the possibilities of using EMFC (electromagnetic flow control) to improve aerodynamic performance. This led to an era of research that focused on coupling the fundamentals of magnetohydrodynamics (MHD) with propulsion, control, and power generation systems. Unfortunately, very few designs made it past an experimental phase as, among other issues, power consumption was unreasonably high.

“Current commercialized methods for high-speed aerodynamic surface and vehicle control involve actuation of large, bulky control surfaces or the use of reaction jets. Unfortunately, such methods have adverse consequences for high-speed flight, such as high surface loading, high heating and flow unsteadiness. The methods have also been found to cause undesirable aerodynamic interference with other vehicular components.”

So says the inventor of this month’s Patent of the Month, US7,907,038, granted on 15 March. The University of Texas inventor goes on to say, “One or more problems associated with current limitations in aerodynamic actuation are solved as described herein. Such improvements include an actuator for controlling surfaces that is lightweight, compact and requires very low power.”

Here’s what that problem looks like when mapped onto the Contradiction Matrix:

IMPROVING PARAMETERS YOU HAVE
SELECTED:

Trainability/Operability/Controllability (34)

WORSENING PARAMETERS YOU HAVE
SELECTED:

Weight of Moving Object (1) and Volume
of Moving Object (7) and Power (18)

SUGGESTED INVENTIVE PRINCIPLES:

35, 28, 15, 1, 2, 13, 10, 25, 7, 16, 4, 21,
26, 8, 36, 37

Interesting to note that both of the top two recommendations point clearly in the direction of field-based solutions. In that sense, the Matrix has apparently told us what we, or rather the aerospace industry, already knows. And furthermore knows doesn’t work. In order to solve this problem, therefore, we need, like the inventor, to dig a level deeper into the problem and establish what it is about the current field based solutions that prevents them from delivering an effective solution to the problem. Here’s what the inventor goes on to say in his disclosure:

There are two primary approaches applied when using electromagnetic (Lorentz) forces for flow control: (a) electric field alone, which is known as plasma flow control, and (b) a combination of electric and magnetic fields. Solely applying an electric field causes a plasma to either accelerate or decelerate depending on electrode arrangement. This distorts the flow-field to produce a virtual aerodynamic surface. The distortion, however, appears to be too small for use in a high dynamic pressure environment of high-speed flows. While the flow may be modified through volumetric energy addition, new attempts to affect the flow volume have been plagued with difficulties in energy deposition.

The second approach involves MHD interactions between a weakly ionized gas and an electromagnetic field and entails volumetric or surface interactions, as in plasma flow control. Volumetric interactions, however, as understood and applied, center primarily on hypersonic propulsion. Yet, as further described herein, MHD interactions appear appropriate for high-speed aerodynamic applications because they scale quadratically with the magnetic field strength according to the interaction parameter, which is $I \cdot B \cdot L / (\rho \cdot U)$.

The drawback to date has been that existing magnet technology makes volumetric MHD concepts impractical for aerodynamic applications because magnets that produce 1-5 T (similar to that used with magnetic resonance imaging) are massive and bulky. There is, to date, inadequate understanding of volumetric MHD when applied to high-speed aerodynamic flows.

Which we might in turn map onto the Matrix as follows:

IMPROVING PARAMETERS YOU HAVE SELECTED:
 Force/Torque (15)
 WORSENING PARAMETERS YOU HAVE SELECTED:
 Stress/Pressure (19) and Loss of Energy (27)
 SUGGESTED INVENTIVE PRINCIPLES:
 2, 21, 19, 18, 15, 9, 40, 5, 12, 14, 35, 24, 17, 3, 34

And here's what the invention describes as the solution to the problem:

A method for controlling a surface comprising: injecting electromagnetically active conducting materials into an air flow proximate to a surface; applying a first electric field downstream from an injection point to create a plasma; and applying a second electric field and a magnetic field downstream to the plasma wherein the second electric field and the magnetic field are oriented such that a force is exerted on the surface...

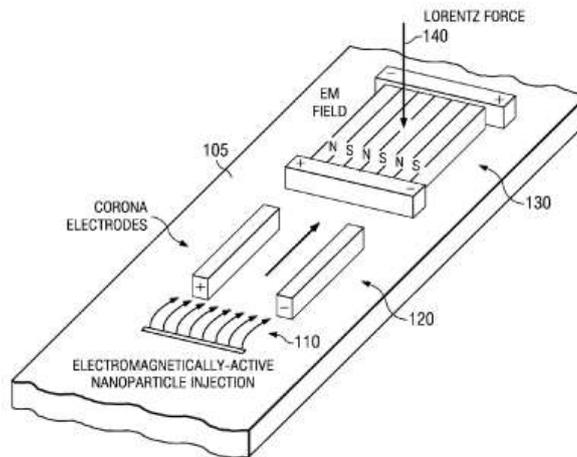
...It is, thus, described herein that two parameters govern electromagnetic interaction of weakly-ionized gas flows of interest here, namely, the interaction parameter $I = \frac{EBL}{\rho U}$ and the Hartmann number $H = BL \sqrt{\frac{\sigma}{\mu}}$ where σ is the gas conductivity, E is the electric field strength, B is the magnetic field strength, L is an interaction length and μ is the gas viscosity. For high-speed flows, a value of I is ostensibly small due to a low value of σ and the large flow speed. Hence, volumetric EMFC have appeared to be problematic. However, as newly determined by the inventors and further described herein, localized boundary-layer control is appropriate because only local ionization is needed near the surface where the velocity and density are low, and where the electromagnetic fields are most intense.

Which sounds rather like an illustration of a number of Inventive Principles:

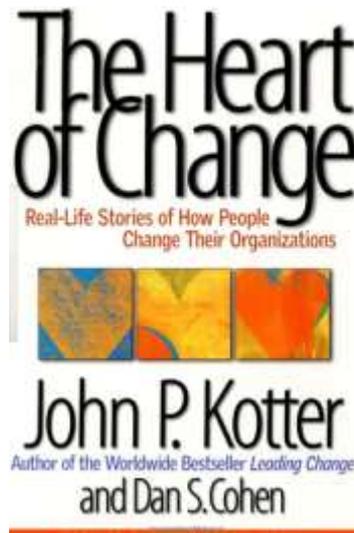
- a) Principle 5 – merging of two different fields
- b) Principle 24 – ‘injecting electromagnetically active conducting material’ intermediaries...
- c) Principle 3 – Local Quality - ...injecting them into the localized boundary layer

Looking at the aerospace industry more generally for a second, it seems recent proposed advancements in technology like the MARIAH hypersonic wind tunnel and the AJAX scramjet engine have led to a new phase of MHD research in the aerospace industry, with many interdisciplinary applications. Aside from propulsion systems and

channel flow accelerators, electromagnetic flow control concepts applied to control surface aerodynamics have not seen the same level of advancement that may eventually produce a device that can be integrated with an aircraft or missile. With the granting of US7,907,038 that story looks like it may be set to change. And another piece in the Concorde-replacement jigsaw makes itself known. Everything really does evolve to the field. Sometimes, it just takes a little longer than others.



Best of the Month – The Heart Of Change

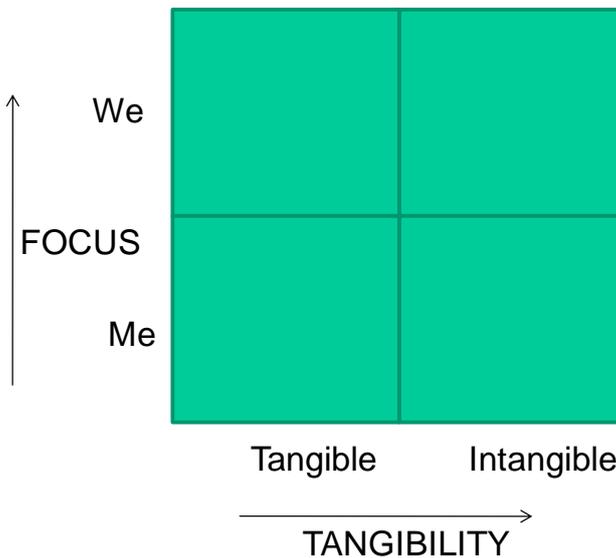


John Kotter's 1996 international bestseller *Leading Change* struck a powerful chord with legions of managers everywhere. It acknowledged the cynicism, pain, and fear they faced in implementing large-scale change-but also armed them with an eight-step plan of action for leaping boldly forward in a turbulent world. Since its publication, the book has sold over half a million copies, a fairly clear sign that Kotter hit upon a nerve. *The Heart of Change* is Kotter's 2002 follow-up to *Leading Change*.

As the title suggests, the primary theme of the follow-up is about the emotional aspects of change. *Leading Change* was about the tangible; *The Heart of Change* concentrates on the intangible. The essence of Kotter's message is this: the reason so many change initiatives fail is because they rely too much on (tangible) "data gathering, analysis, report writing, and presentations" instead of a more creative approach aimed at grabbing the "feelings that motivate useful action" (the intangible).

In *The Heart of Change*, Kotter, with the help of Dan Cohen, a partner at Deloitte Consulting, shows how his eight-step approach has worked at over 100 organisations. And in just about each case, change happened because the players were lead to "see" and "feel" the change. In one example, a sales representative underscores a sense of urgency to change a manufacturing process by showing a videotape interview of an unhappy customer; in another example, a purchasing manager makes his point to senior management about corporate waste by displaying on the company's boardroom table the 424 different kinds of gloves that the company had procured through different vendors at vastly different prices. Well written and loaded with real-life examples and practical advice *The Heart of Change* is one of those rare things, a management text book with considerably more substance than spin.

The fact that the book was published almost a decade ago means we perhaps owe readers an apology for being so tardy in adding this excellent book to our list of recommendations. In our defence, we made the (as it turns out, poor) assumption that it was going to be a weak cousin to *Leading Change*. It is also fair to say that we hadn't really made quite the same inroads into the world of intangibles back in 2002. Today, the book fits right in with what has become our most frequently used 2x2 matrix:



In the same way that this 2x2 matrix serves to remind us of J.P.Morgan’s old chestnut, ‘a man does things for two reasons; a good reason and a real reason’. Although Kotter never quite says it in such terms, the Heart Of Change might be read as ‘a person changes for two reasons; a good reason and a real reason’. The book providing a series of very meaningful examples of what exactly those ‘real’ reasons are – compelling truths that reformulate the evidence for change into reasons to believe and reasons to want to join the ride.

We’ve already taken to constructing a pair of the 2x2 matrices (a ‘positive’ one and a ‘negative’ one) to map what might help or hinder change initiatives in any of the clients we’re working with. Taken together, J.P.Morgan and John Kotter tell us that unless the positives outweigh the negatives in *both* the tangible *and* intangible domains, no change initiative has a chance to be successful. We think managers and employees at organisations both big and small will find much to draw from.

Conference Report – ‘The Science Of Innovation’, UPH, Jakarta



March 23 saw our first public event in Indonesia take place. ‘The Science of Innovation’ was a two-hour seminar hosted by Universitas Pelita Harapan in Jakarta. Despite only a couple of weeks notice, close to 50 people eventually attended the event. Even more amazingly, the session overran by close to an hour due to the number of questions being asked.

Here’s how the event was summarized by the UPH media team:

The Science of Innovation



Darrell Mann, the speaker of the seminar. UPH students, IMA members, and industry professionals attended the seminar.

(next time I’m hoping they use a photo taken when everyone had arrived)

“Traditionally innovation is risky. Most attempts to innovate failed. What we’ve learned that it’s doesn’t have to be that way. There is a science of innovation. There is a repeatable process that says we can stop at the problem and reliably get to a successful solution,” said Darrell Mann, the speaker of Seminar “Sustainable Business Success in a Turbulent World” explaining his presentation. The seminar held at UPH Graduate School, March 23, 2011 was accomplished in cooperation with IMA Banten.

“In this seminar, Darrell Mann, the Director of Systematic Innovation Ltd., UK, encouraged people to keep innovating using the science of innovation. With this method, there is no need to be insecure, as the science of innovation will help people innovate by minimizing the ineffective attempts.

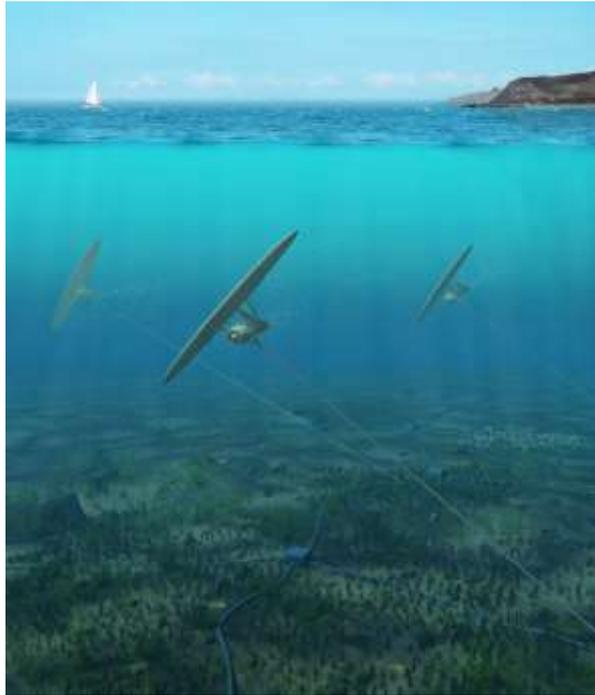
“Mann and his company do research to find the best way to innovate, discovering the science of it while teaching the science to people. By creating an innovation, business can be more sustainable.

“To industry leaders, Mann suggested to export ideas to other parts of the world. In order to do this, patents are important. This is the aspect which Indonesia should improve doing.

“This seminar was attended by UPH students and IMA members, and industry professionals.”

Hopefully, we will be back later in the year for more comprehensive teaching sessions done through UPH. In the meantime, a big thankyou to all at the University and IMA Banten for making the event happen. A real pleasure working with you!

Investments – Wave Energy Kites



“Kites on the beach soar on wind power. Kites beneath the ocean surface? They glide with the tide.” At least that’s what Minesto hopes their underwater “kites” will do—and produce 500 kilowatts of electricity while they do it.

The Swedish company (affiliated with Saab) has procured \$2.5 million to test their Deep Green tidal power technology off the coast of Northern Ireland in 2011. According to Minesto, the system is lightweight, more portable and easier to install compared to other tidal energy apparatuses, such as barrages.

At 7 tons, the tidal tech entails a kite-like device tethered to the ocean floor by more than 300 feet of “string.” As shown in the animated video on the Minesto website, the kite glides through the water in a figure-8 pattern. A 3-foot turbine rides beneath the kite’s 40-foot wing, capturing tidal stream energy and sending it to a generator on the seabed. Underwater cables then transport the electricity to shore.

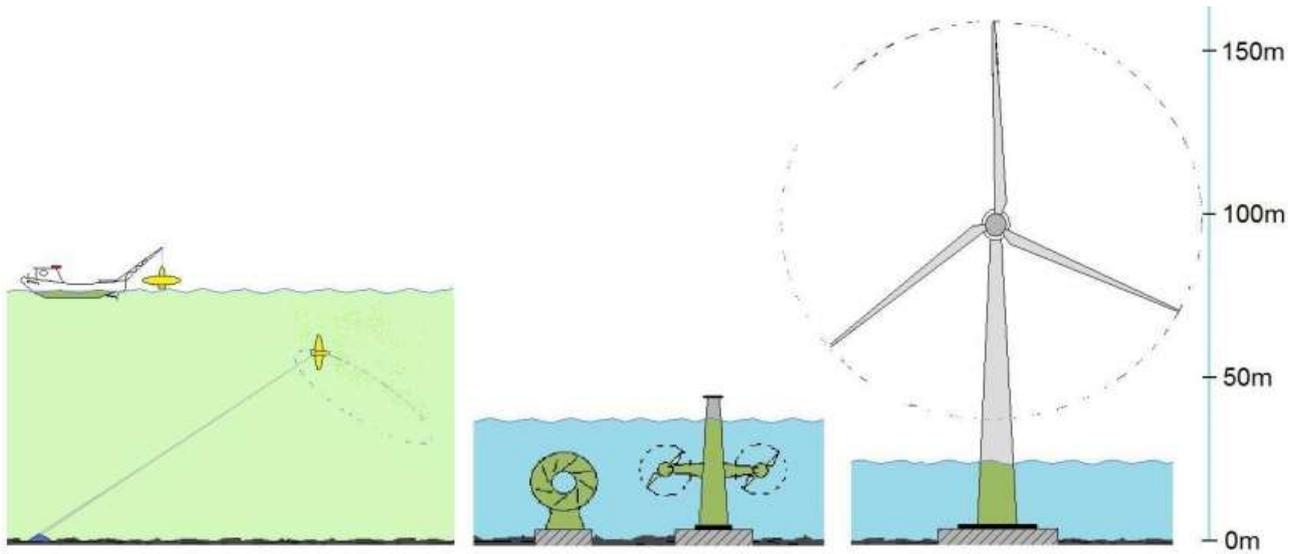
As the kite travels through the water, the velocity of the water running through the turbine is about 10 times the amount of the speed of the ocean current.

While the tide forces the kite to move, an automatic rudder system controls the device’s trajectory. The control system also monitors for depth, turbulence and large objects coming/swimming nearby. For environmental, aesthetic and safety concerns, the company says the kites would also “fly” at least 65 feet below the surface.

Should Deep Green go into the deep blue—and work—these kites could be collecting the energy of deeper waters with lower current velocities, expanding the geographic potential for tidal power.

Minesto’s Chief Technical Officer Ted Rosendahl is quoted as saying:

“We are in the development stage at the moment so there are many things to look into. Of course there are things in the environment that we don’t know about fully yet.”



Having done some work in the wave energy arena, what we particularly like about the Minesto solution is the fact that it gets to the heart of the real problem – which is not so much extracting the energy as achieving a method of deploying the turbines that doesn’t require expensive and hard-to-hire drilling equipment to anchor the turbines to the seabed. The fact that the kite tethering solution also makes a nice jump along the Dynamization trend (rigid to flexible) is also a pretty good clue that this is a jump in the right direction.

Generational Cycles – Vettriano versus DeLempicka



Scottish painter, Jack Vettriano (born 1951) has been one of the most successful artists of recent times. To the extent that most households in the UK will have a print of one of his paintings in it, and go anywhere on the planet and show the above painting (called 'The Singing Butler') and they will likely as not recognize it. Despite (or perhaps because of) his success, Vettriano has never really been accepted by the art establishment. He is often criticized for being 'too populist' in his approach. What is perhaps odd about this comment is that The Singing Butler and pretty much everything else Vettriano paints looks back to a different age. And specifically the decadent, pre-Depression period of the 1920s. Why might this be such a popular focus right now?

To answer the question, we need to look a little more closely at the comment that 'most households in the UK' will own a Vettriano print. Actually, it would be more accurate to say 'most Generation X households'. Even though Vettriano himself is clearly a Baby Boomer, he didn't start painting until quite late in life (1989), and he didn't start getting popular until the mid-1990s... a time when GenX'ers had started families and, now in their 30s, were 'settling down' and looking to decorate the walls of what was likely to be their first 'proper' homes. Somehow, Vettriano's themes hit a nerve with the generation and made him the phenomenon he now is.

Shift back to the 1920s focus of Vettriano's work and we see the European art scene strongly dominated by what has come to be called Art Deco. The Vettriano of her day was Tamara De Lempicka. Born in Poland in 1898, De Lempicka was an ambitious woman and as such found herself drawn to the centre of the art world, Paris. She quickly became something of a phenomenon with her work. Not that she was overly popular with the critics. It was rather the public that loved her and she willingly courted their attentions. In true Nomad fashion (being born in 1898 puts her towards the end of the range for the previous round of Nomads), she was far more interested in the money that came from selling popular pictures than she was in gaining the approval of the critics. In this sense, she is very close to Jack Vettriano. The only real difference in fact between the two is that De Lempicka's buyers were her contemporaries, whereas Vettriano (a Boomer 'Prophet') found his audience with the generation that followed him.

Look at the pictures of both and we see not only a very clear focus on the 1920s, but also a near identical, highly sensual/sexual subject matter, and a very similar painting style:

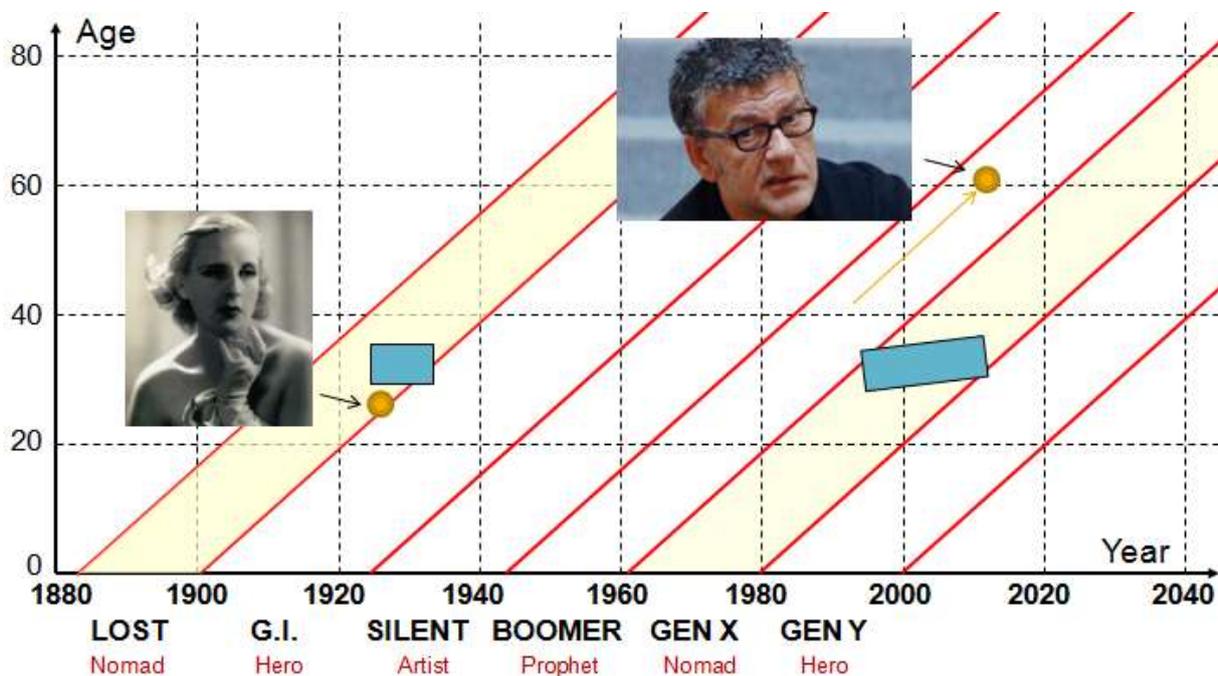


Vettriano



De Lempicka

The reasons for their respective success become much clearer when we plot their lives and particularly their periods of prime popularity onto one of our generational-time maps:



The blue areas represent the primary audiences for the two artists, first, in the 1920s, Tamara De Lempicka, and then in the 90s through to today, Jack Vettriano.

Both were very clearly admired by and bought by Nomad generations. Interestingly, De Lempicka was painting at a time when her Nomad contemporaries were approaching the end of their cycle, whereas Vettriano effectively hit the start of the next Nomad customer cycle.

After the end of the 1920s, it is striking to note how quickly Art Deco in general and Tamara De Lempicka in particular faded from the public eye. It is also perhaps interesting to note that the revival in De Lempicka's fortunes has only really happened since Vettriano

became popular. In other words, she still manages to hit the same nerves she did with her initial audience.

Either way, the disappearance of her audience at the end of the 20s doesn't bode well for Jack Vettriano. The generation map clearly shows that, although he has done a good job of 'bringing his audience' along with him – i.e. his audience has aged with him – he is now clearly approaching the end of the Nomad dominated age group he has sold to. Which might be another way of saying, for all those Vettriano collectors out there, be prepared for a sharp drop in the value of your investment. At least unless you're happy to wait for the next Nomad cycle. In, say, about 80 years time.

Biology – Bolas Spider



The Bolas spider (*Mastophora hutchinsoni*) is one of five *Mastophora* species known from the United States and occurs over much of North America. As its name suggests, the spider uses a bolas to capture moths. The spiders release a single thread with a sticky droplet at the end and hold it with one leg. Some species swing this “bola,” and others throw it when a moth approaches.

Bola spiders also release sex pheromones of female moths to lure the males. When one arrives, the spider swings its silk strand and sticky droplet on the end to capture the moth. When the sticky droplet strikes the male moth or sometimes other insect, the spider runs down the strand and sinks its fangs into the poor unsuspecting prey to kill and later digest it.

Adult bolas spiders often mimic bird droppings with splotchy pigmentation on the abdomen and grayish-white coloration on the cephalothorax. These spiders can sit in plain view and be ignored by foraging birds and other animals because of this coloration as most animals do not eat the excrement of others. Night active bolas spiders often have abdominal eye spots and coloration that resemble the moths they feed on.

Bolas spiders are related to orb weavers and have excellent eyesight and good hearing. Being richly endowed with hairs sensitive to air currents, bolas spiders can also detect insects flying nearby even in complete darkness. To further enhance the probability of capturing prey, these spiders secrete chemicals that attract insects to them.

From a conflict-solving perspective, the scent-and-bolas strategy represents an elegant solution to the parallel need to be productive (i.e. capture sufficient prey to survive) whilst simultaneously not wishing to have to devote lots of time to making a (complex) web. Here’s how we might map that problem onto the Contradiction Matrix:

IMPROVING PARAMETERS YOU HAVE
SELECTED:
Function Efficiency (24)
WORSENING PARAMETERS YOU HAVE
SELECTED:
Duration of Action of Moving Object (12)
and Loss of Time (26) and System
Complexity (45)
SUGGESTED INVENTIVE PRINCIPLES:
28, 3, 15, 4, 10, 1, 2, 14, 19, 18, 24, 35,
9, 12, 30, 36, 17

The two Principles that best match to the solution used by the spider are 28, Mechanics Substitution – representing the use of the female moth scent mimic to attract the male

moths – and 15, Dynamics – which is indicative of the shift from a static web to a moving thing... like a bolas.

Static images of the spider in action, as is so often the case with Principle 15 solutions, can do little to do the bolas solution justice. To see the spider properly in action, interested readers might like to check out:

<http://video.google.com/videoplay?docid=-3320375144441340622#>

Short Thort

*“Art produces ugly things
which frequently become more beautiful with time.
Fashion, on the other hand,
produces beautiful things which always become ugly with time.”*
Jean Cocteau



News

Austria TRIZ Forum

We are happy to announce that we will be presenting at the big TRIZ event in Austria this year. The conference will be held on 7 and 8 April in Vienna. Viktoria Zinner will be presenting a paper on TrendDNA.

UK TRIZ Forum #3

Well, no change from the last two events, a period of cat-herding has resulted in delivery of a critical mass of papers to be presented at the event, so the third UK Forum will take place on 12 May. In the end 15 papers were accepted. Meaning that it will be a pretty tight squeeze to fit them all into a single day. Details of the papers can be found in the Experience section of the website. For those that won't be able to attend, we expect to produce a CD containing the presentations after the event.

Innovate To Success

Speaking of conferences, what looks set to be the biggest innovation event in the UK takes place on 9 May in London. Chaired by Alastair Campbell, the conference will feature big-hitter presenters from MIT, P&G, Rio Tinto, Duke University and, err, Darrell. Details of the event and how to book a place (possibly for your CEO?) can be found at http://www.globalblackswan.com/solutions/transformation_conference.

UNESCO

Looks like we will also be presenting at the UNESCO Science Technology and Innovation conference on 'Embracing Structured Innovation for Socio-Economic Transformation in June. The International Science and Technology Innovation Centre (ISTIC) was

established on 21 January 2008 in Malaysia as a UNESCO initiative to promote collaboration and cooperation among South-South Countries in Science, Technology and Innovation. The focus of our two sessions looks like being on IP and 'understanding unspoken customer & societal needs'. More details on the website.

National Innovation Conference (US)

Just in case there was a danger we might get to do some actual work this year (writing books and the like), it also looks like we will be keynoting at Altshuller Institute spin-out, NIC2011, to be held in Dayton, Ohio in October.



Sustainable Innovation

With due thanks to the EU, we will be running a five day TRIZ/SI workshop in the UK in October (24-28). Sponsored by the Comenius/Grundtvig initiative, the big idea is that attendees from outside the UK can apply for a grant which effectively pays for all of your expenses (travel and subsistence and workshop fee). The event will be held in several exciting venues in and around the beautiful city of Bath. Details on the website. Interested parties will need to apply for their grant by the end of April.

New Projects

This month's new projects from around the Network:

- FMCG – product evolution study (x2)
- Oil & Gas – training workshops
- Education – train-the-educator programme
- Bio-tech – problem solving project
- FMCG – innovation capability maturity benchmarking
- Medical devices – IP generation project
- Financial – consumer insight study
- Industrial – asset sweat project