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In this month's issue:

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Readers' comments and inputs are always welcome.
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Case Studies: Business Innovation for HotGloo: The Online Wireframe App

This article presents a shortened (be warned, though, it's still quite long – we thought, however, that it was instructive to include as much as possible of the original content in order to show the flow of the project) version of a real-life project conducted by Masters students at Campus02 in Graz, Austria on behalf of the client company, HotGloo.

1. Current Situation

HotGloo has been designed for the creation of interactive prototypes, known as "wireframes", and is intended for use in web projects to help visualize planning processes, co-work with team members, coordinate website contents with clients, and provide a precise framework for designers and coders. It's not an application to create Web-Sites. HotGloo is web-based, and therefore platform and terminal independent. The application stands out for its intuitive design and high standard of interactivity. The focus is very clearly on collaboration. With HotGloo, it's possible for several users to work on one project at the same time as a team and to discuss the project in real time via a chat function. Thanks to the custom templates function, an individual template design is guaranteed, as is the simulation of complex states using the states and view stacks function. Wireframes can be exported as PNG or PDF files. Preview links enable the smooth and seamless integration of clients in the development process. HotGloo has been designed for everyone involved in web projects, whether project managers, information architects, usability experts, freelancers, small project groups, or large agencies. It is also important to point out that HotGloo has been designed very much with the user in mind. All feedback is taken very seriously and improvements are made to the service provided on an on-going basis in order to render the application even more usable.
Figure 1 shows the idea of Hotgloo. In the right side are the different elements which can be drawn into the work space. After clicking the symbol a pop-up opens and the element can be changed. The repositioning can easily be done by picking the object and drawing it into a new position.

2. Task

The main task of this project is to find new possible directions for further development of Hotgloo's application. With this development, Hotgloo should be able to increase the customer base while meeting their requirements.

3. Project Aims and Results

The project aims are:

- Generate clues using the TrenDNA method of idea generation to improve HotGloo
- Solve possible clues and give ideas for further development
- Provide a short summary

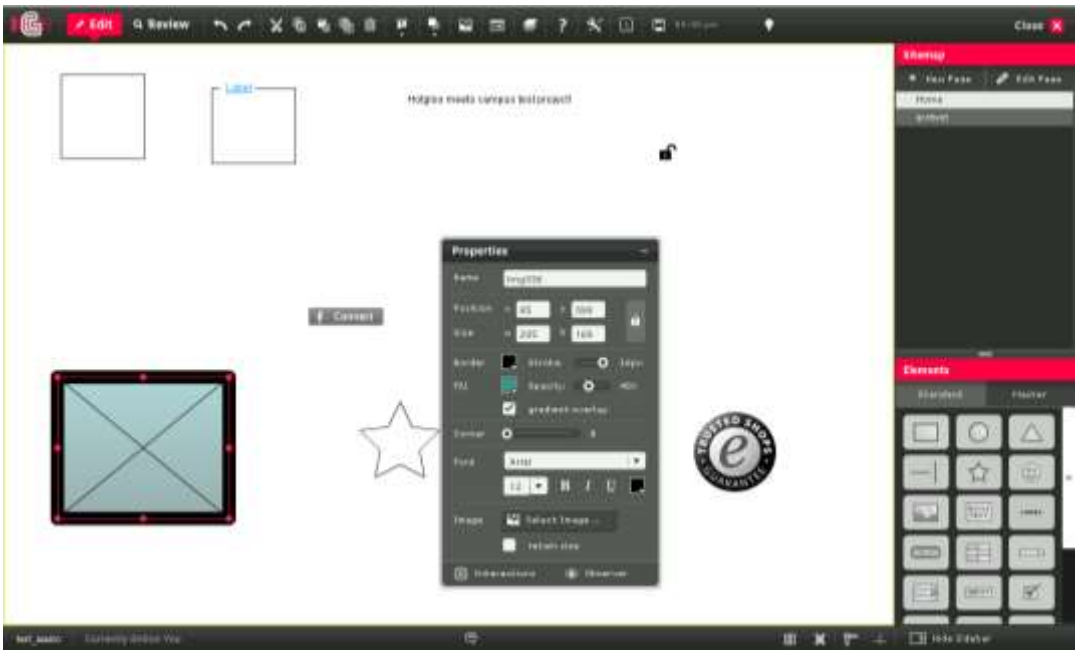


Figure 1: graphical user interface from HotGloo

4. Non Goals

The non goals of the project are:

- Product development itself
- Financial evaluation of the product

5. Measuring Success

The achievement of the project aims could be measured by:

- Generating more than 50 clues
- Solve 20 clues

6. Project duration and phases

250 total hours of effort was scheduled across the project team. Figure 2 contains the schedule of the whole project.

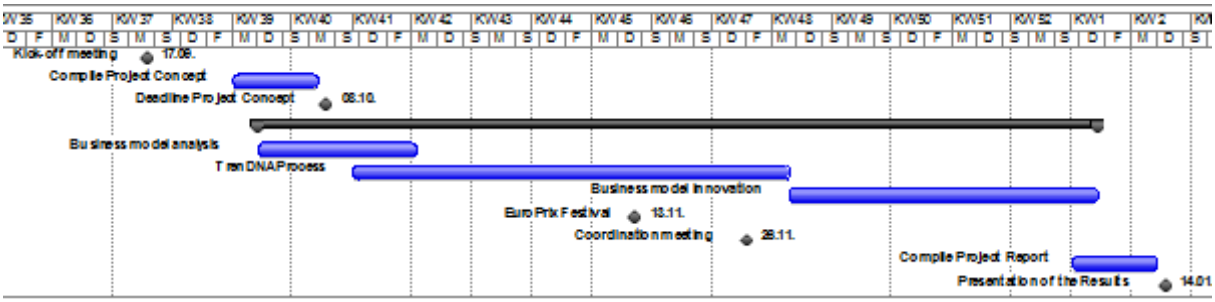


Figure 2 schedule plan for the project

7. Project work

Description of Used Method “TrenDNA”

In today’s complex world is very difficult for businesses to meet the customers’ expectations exactly right on time and to get economic success. Many businesses think they only need to ask people about their wishes and their future needs but this often leads to bad economic data. Innovations are mostly unsuccessful and when they're successful, it seems to be more a matter of luck than something based on analytical judgment.
Innovations are essential for companies to survive in today’s accelerating world where the customer’s tastes and preferences change very fast and competitors around the world don’t sleep. And innovations are not cheap. Companies must spend money to develop new solutions and to bring them on the market. The risk of failure is given and if the innovations don’t turn out successful, companies will be out of business.
Therefore it is necessary for companies to launch successful innovation within short cycles to be ahead of competitors which have a low risk of failure.
The behavior of human beings is generating trends. Companies that are up to date with trends and using them are mostly successful players. Research companies investigate and report their trend findings. The research of IFR Consultants Ltd company discovered a pattern behind consumer and market trends – the DNA. The first important thing they found out is that not the trends only influence the success of innovation but the interaction between them is a key factor. The second important fact is that many steps of complexity can be built if a surprising low number of rules will be hierarchical combined together.
The outcome of this investigation is a process called TrenDNA which guides the user. Every process step contains tool(s) which support the user’s creativity to generate clues for his future business. Then the clues can be transformed into solutions.
The process contains seven main steps and is shown in the Figure 3. The process can be done in more than one cycle if the outcome of one cycle is not satisfying enough.

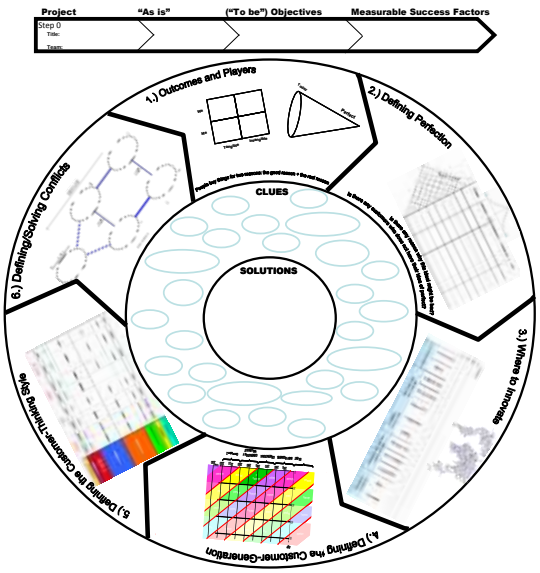


Figure 3 TrenDNA process

The process was done in one cycle through the project team. Every step was carefully discussed by all team members. The following section contains the complete process with the results. To give the reader a better understanding every step is in the beginning shortly explained and the results are shown. In addition to the whole process a trend evaluation was done using the method of perception mapping. This is done in an intermediate step.
All clues which were found are listed in section A. Section B contains the solutions of 20 most important clues and section C contains a short summary of the results as well as recommendations for Hotgloo.
Finally there will be a short summary about the work and the lessons learned.

Step 0: Goals and Context:

Step 0 is necessary to clarify the project by itself. It should help to get a common understanding on what has to be done between the project teams Zotter and Hotgloo. It contains the following information:

Project	"As is"	("To be") Objectives	Measurable Success Factors
Business Innovation for HotGloo Team: Zotter	- Hotgloo is a web based application for generating concepts for webpages	- Improve Hotgloo - Established Community - Offer other web based products	- New Sign Ups till 2012: 555

Step 1: Outcomes and Players

Customers want to get jobs done. This is what they're willing to pay for. Getting the job done is so called outcome. The good things on outcomes are that they remain constant whereas the product can change, e.g. an outcome of a car is the same as an outcome of a train. Both delivers travel. It is important to define them in the beginning phase of an innovation process and to try to generate an outcome better than the competitors.
However outcomes are not always the visible and touchable things. People often buy because of hidden reasons, e.g. to demonstrate having money. These hidden reasons are mostly not articulated during the purchasing process.
The next point of outcomes is the fact that human beings are social individuals living in a social network. Therefore they often put their purchasing decisions into a society context.
These two dimensions create an outcome matrix with four different fields. The dimensions are me/we and tangible/intangible. Me/We put the purchasing process into the society context whereas tangible/intangible the difference make between articulated and not articulated reasons. The real reason why people buy things is often found in the right upper quadrant (We/Intangible). The results of these steps are shown within the picture.

We	• always online • collaboration • community • independent working • platform independent	• less discussions • less stress • independence • security
Me	• easy website layout • intuitive working • usability • interactivity • functionality	• professional • more projects in the same time • less angry
	Tangible	Intangible

The clues on We/Intangible refer mostly to the work process. Work should be fun and not a source of problems for the team.
The clues on Me/Intangible should give the individual a more professional look and the feeling of high productivity. Additionally the individual wants to avoid frustration and be less angry.

Step 2: Defining Perfection / Ideality IFR

Perfection is a condition of a system when the Ideal Final Result has been reached. That means that all the benefits exist in a system, and none of the cost and harm factors subsist. The evolution of every system should be in this direction to work free and perfect from all influences.
One way to describe the way to the Ideal Final Result is the IFR cone. This cone tries to describe how you can get from the current situation to the IFR. At the beginning there is a lot of possibilities to get to the IFR and when the cone gets closer to it, it's more difficult to see possible ways to it or to change over the system.
To get to the IFR you can use three fundamental ways:

- You work from the current system status into the direction of the IFR to make continuously improvement of the system – Trimming, Trends, S-Field, Contradictions
- You change the starting point of the cone by using other technologies or sub-systems – Knowledge, Effects
- You jump directly to the IFR and work yourself back to the initial point (Reverse engineering) or the current realizable solution.

All barriers on the way to the IFR are contradictions, which must be solved to reach the aim. To localize these contradictions it is helpful to use the IFR table. In this table are all attributes of the system defined with the additional information how an attribute has to be for all involved parties. This parties could be Suppliers or/and Consumers. An attribute must not be the same for each party, so there is a possibility to find a contradiction that can be solved to improve the system to the way of the IFR. Contradictions can appear between the different requirements of an attribute or between different attributes. With the IFR table you have also the possibility to localize new properties or functions of the system to get closer to the IFR.

Definition IFR for HotGloo

Random generated WebPages with an individual design according to specifications based on HTML and a self-learning system.

IFR CONE - Evolution of HotGloo

We defined six steps from the current situation of HotGloo to the IFR which are visualized in the figure Figure 4.

1. **Create a community**

Create a community to transfer know-how, ideas and knowledge between different users and HotGloo. Establish a worldwide working network for sharing information.

2. **Use community feedback and know-how, Combine with other apps, use community knowledge**

With the generated information from the community the HotGloo can improve their portfolio to meet the special requirements from the users. On the second hand HotGloo can expand their portfolio by using API (Application Programming Interface) and other Application (e.g. Project Management Tool, Documentary)

3. **Create database for designs (Layout, Web-Shop)**

HotGloo uses best practices samples from their customers to create a database for layout-concepts. With this improvement customers can realize their projects in less time.

4. **Configurator based on date base layout (Library)**

A configurator selects, based on customers' requirements, examples for possible solutions for the problem. The customer selects the basic conditions of his problem and the configurator generates the solution.

5. **Random generation algorithm**

To assure that the design is not always the same for the solution, an algorithm generates randomly designed solutions, so that individuality is guaranteed.

6. **Random generator for automatic web design including automatic HTML-Code output**

Randomly generated WebPages with an individual design according specifications are generated. The output also includes the HTML source code. The system is able to learn by itself to improve database and algorithm for the generation of solutions.

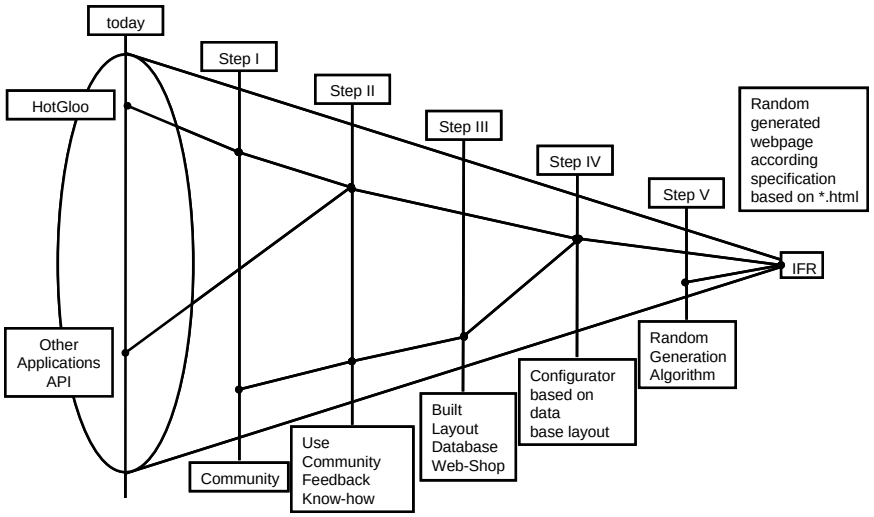


Figure 4 IFR table

Ideality / IFR

Although you can define an ideal final result it does not necessarily means that it is valid for all customers in the same way. Different customers have different preferences and the supplier too. Satisfying the average customer is not always the best choice. Often the best solution comes out if the contradiction between the extreme positions of different

customers is solved in the matter that both are satisfied. Then the product or service will be attractive to all groups and the range of possible customers is widened.
In Table 1 the attributes from the HotGloo product and two perspectives from extreme customers are mentioned. Customer A is the final client, who is buying a design for a product/webpage from the professional (HotGloo user). Customer B is the professional who uses HotGloo to develop WebPages for Customer A. The third perspective is the view of the supplier – HotGloo.

Attributes
Following information describes each attribute of the IFR table:

- Usability: How easy to handle is HotGloo?
- Easy Access: Is it difficult to Log-In and get access to project information?
- Access 24-7: Is it possible to get access 24 hours 7 days a week?
- Speed: Does the system works fluid via the Internet?
- Completeness: Are there any process steps supported by HotGloo to generate a whole project
- Design: Is the design of HotGloo pleasing?
- Intuitivity: Is the use of HotGloo easy and intuitive?
- Saveability: Are the project information also saved offline?
- Multi-User: Is it possible that more then one person can work on a project at the same time?
- Cost: Does it matter how expensive HotGloo is?
- Safety: Can user trust HotGloo about information that is saved online?
- Flexibility: Must be the HotGloo flexible in any matter?
- Community: Is it necessary to run a community?
- Support: Does the customer require support?
- Imitation: Does it matter if other companies have the same product as HotGloo?
- Multi-Browser: Can customers work with different types of browsers?
- Surface language: Is the surface language available in different languages?
- Compatibility: Are there any problems with the compatibility between versions and updates?

Attribute	customer A	customer B	supplier
	end user, comercial	pro-user, comercial	hot gloo
usability	easy	middle	important
easy access (configuration)	easy	not necessary	very important
acces 24-7 anywhere (webserver	should be	very important	very important
speed	must have	must have	very important
completeness (process)	important	not necessary	important
design	important	important	important
intuitivity	important	important	very important
saveability (offline)	not important	middle	middle
multi-user capability	middle	important	important
cost	important	middle	important
safety (confidentiality)	middle	important	important
flexibility	important	not so important	middle
community	important	important	very important
support	important	important	important
imitation	don't care	don't care	don't care
multi-browser	important	important	important
surface language (GUI)	middle	middle	middle
compatibility (versions, updates)	important	important	important

Table 1: Customer Contradictions

The red labeled arrays in Table 1 are contradictions either between customer and customer or customer and supplier. The arrays in blue give information about attributes which are important/very important for all parties. The yellow arrays are also attributes where all parties have the same status, but this attribute is less important for the parties.
Clues and contradiction of this table are mentioned in the overview of the clues.

Contradictions of attributes

The matrix of Table 2 reflects contradictions between attributes themselves. The contradictions are developed in that way that every attribute was compared with each other. Every contradiction which occurred is mentioned in the overview of the clues.

	usability	easy access (configuration)	acces 24-7 anywhere (webserver)	speed	completeness (process)	design	intuitivity	saveability (offline)	multi-user capability	cost	safety (confidentiality)	flexibility	community	support	imitation	multi-browser	surface language (GUI)	compatibility (versions, updates)
usability			x			x	x		x	x		x				x	x	x
easy access (configuration)			x	x				x	x	x				x		x		x
acces 24-7 anywhere (webserver)				x	x			x	x	x	x	x				x	x	x
speed									x	x		x				x		
completeness (process)							x			x			x	x		x		
design							x			x						x		x
intuitivity									x	x							x	x
saveability (offline)										x	x	x						
multi-user capability											x	x				x		x
cost											x	x	x	x	x	x	x	x
safety (confidentiality)												x	x		x	x		x
flexibility													x	x		x	x	x
community															x	x	x	
support																	x	
imitation																		
multi-browser																	x	x
surface language (GUI)																		x
compatibility (versions, updates)																		

Table 2 attributes contradiction

Step 3: Where to innovate?

To be successful, the improved product or the service itself has to be integrated in a complete system. This system is called “Law of System Completeness” and explains which elements are essential to drive a complete business. The complete system consists of five parts:

- Coordination …the system itself or the company
- Means of Production …the machines or the Know-How
- Route to Market …the route and the commercial relations
- More Ideal Product/Service ...the product/service itself
- Market Demand …consumer trends and customer wishes

Using this tool it can be found out where the competitors are focusing and where they put their efforts in being innovative.

Within the project the competitors from HotGloo where investigated using desk research on the internet. Table 3 below shows the results of this investigation. Almost all companies invested on the product (promise, service, support). Only one company started to differentiate and had some channel partners. All the other fields are free and give room for investments.

These free fields have the potential to be so called a 'blue ocean'. This means these are parts in your system where neither you nor your competitors have improved the system. Once you found them, you could use them to generate ways to improve your business. This can be for example a service or a new feature for your product. All free fields are clues.

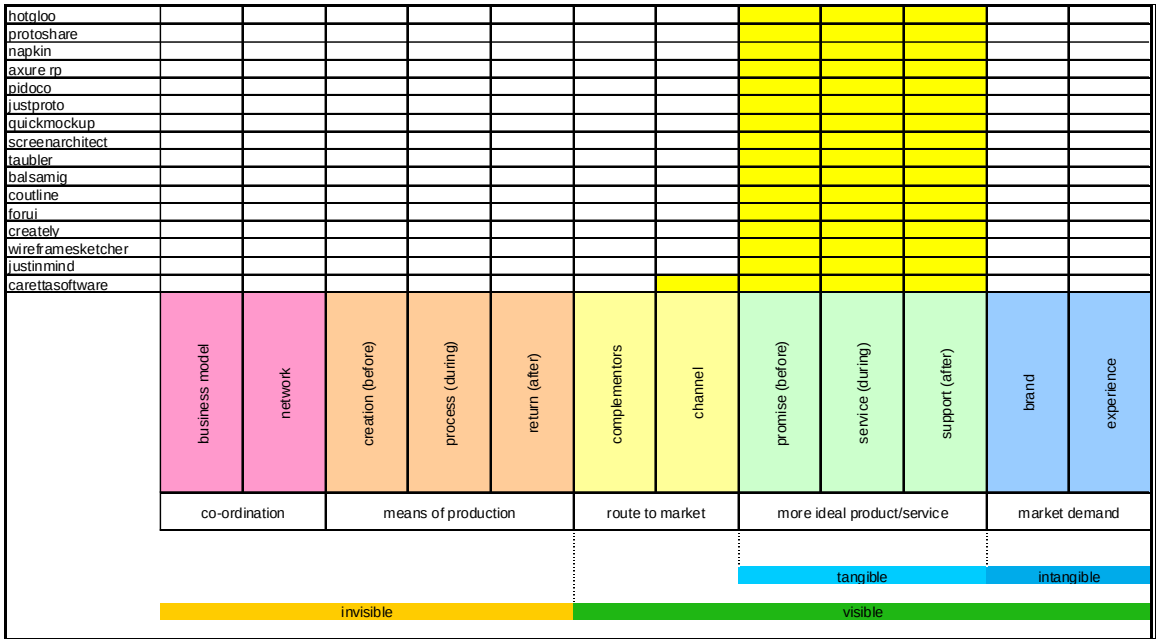
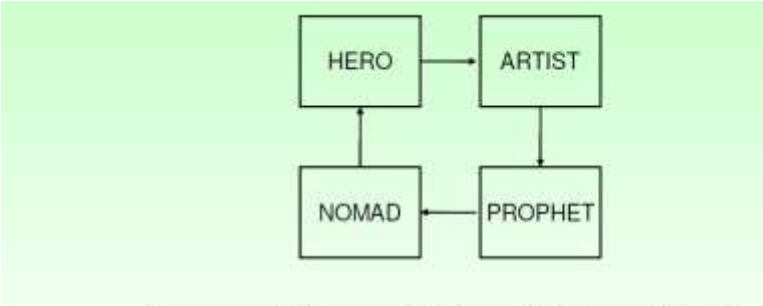


Table 3 Law of System Completeness for HotGloo

Step 4: Defining the Customer Generation

To understand the wishes and needs from the customer, you can use the generation model from Strauss & Howe. The model in Figure 5 presents four archetypes and it's most important characteristics. Each archetype contemplates lifecycles, with 'jumps' happening about every 20 years (20, 40, 60 and 80 years old). Knowing your customers' age, you can then match them with one of the four archetypes from the model.

- the hero: protected -> heroic -> hubristic -> powerful
- the artist: suffocated -> sensitive -> indecisive -> empathic
- the prophet: indulged -> narcissistic -> moralistic -> wise
- the nomad: abandoned -> alienated -> pragmatic -> tough



		0-20	21-41	42-62	63-83
(Generation Y)	HERO	protected	heroic	hubristic	powerful
(Silent)	ARTIST	suffocated	sensitive	indecisive	empathic
(Boomer)	PROPHET	indulged	narcissistic	moralistic	wise
(Generation X)	NOMAD	abandoned	alienated	pragmatic	tough

(2006 characteristics in red)

Figure 5 Generation table from Strauss & Howe

The change of archetypes happens in a cycle and repeats after four generations. That means the typical behavior of one group can be extracted from the behavior of the same group one cycle before.
Being able to identify your customer's archetype should give you enough knowledge to develop better products/services to fit to their expectations and needs.

The typical customers for HotGloo are within the age of 18 – 40 years old, that means there were born in 1970 – 1992.

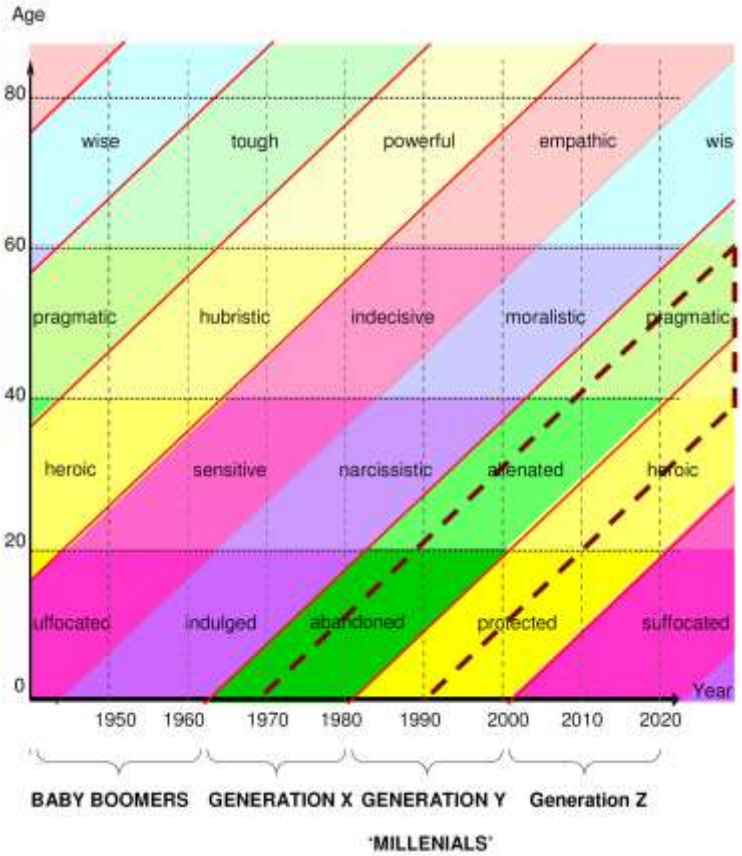


Table 1 Customer Generations

Using the Table 1 above they can be put in two different archetypes – heroes and nomads. Using the category it is possible to get the typical behavior and the properties of these groups.

Heroes:
Pretentious (Optimistic, difficult to reach, media-weary, high brand awareness, hard worker, grew up with computers, free-spending, extreme independence, freedom of expression, innovation / research, distrust of corporations, respect for legal authority, an open mind - on an emotional and intellectual level)

Nomads:
Alienated (skeptical, concerned, independent, independence, initiative, key child, adaptable, resourceful and creative, demand and anti-institutional, relaxed, politically disinterested, social infrastructure, contradictory)

This information can again be used as clues.

Step 5: Defining the Customer Thinking Style

Spiral Dynamics describes a system that helps to understand human behavior by their value system. It argues that human nature is not steady and that humans are able to adapt to their environment. If the world becomes more and more complex the people living in it are able to handle it and solve more complex problems. This changing environment and the adaptation to it changes the people and their value system.
Back and Cowan developed a model where they describe different steps of development and which helps to categorize the people and groups of people. It is not an individual categorization like the different customer groups in marketing it is more a general description of folks. They found out that the people living in one folk could be different but in sum they are very homogeneous.

The model steps are called [V]Meme. They are described in the following way and have different colors to distinguish them:

Beige
Summary: Archaic-instinctive—survivalistic/automatic/reflexological
Description: "Express self to meet imperative physiological needs through instincts of Homo sapiens."

Purple
Summary: Animistic-tribalistic magical-animistic Tribal order
Description: "Sacrifice to the ways of the elders and customs as one subsumed in group." This is the level of traditional cultures.

Red
Summary: Egocentric-exploitive power gods/dominionist
Description: "Express self (impulsively) for what self desires without guilt and to avoid shame." Expressed by the mentality of street gangs, Vikings, etc.

Blue
Summary: Absolutistic-obedience mythic order—purposeful/authoritarian
Description: "Sacrifice self for reward to come through obedience to rightful authority in purposeful Way." Embodied by fundamentalist religions.

Orange
Summary: Multiplistic-achievist scientific/strategic
Description: "Express self (calculatedly) to reach goals and objectives without rousing the ire of important others." Expressed in the Scientific Revolution and the Industrial Revolution.

Green
Summary: Relativistic-personalistic—communitarian/egalitarian
Description: "Sacrifice self-interest now in order to gain acceptance and group harmony." Expressed in 1960s pluralism and systems theory.

Yellow
Summary: Systemic-integrative
Description: "Express self for what self desires, but to avoid harm to others so that all life, not just own life, will benefit."

Turquoise
Summary: Holistic
Description: A sacrifice self-interest system which is still forming.
If a people falls into a ^{V}Meme it has benefit needs and a pattern how to avoid pain.

This different categorization helps to understand the value system of potential customer and offer them a product or service which fits in their view on the world.

Within the project the head of HotGloo was asked how he sees his customer using the typical characteristics of the ^{V}Meme.

The results of this step have shown that Hotgloo has two main types of customers.

Orange Type:
Benefit needs: knowledge / wisdom, independence / self-discovery / challenge
Pain Prevention: sub-optimization, intransigence, senseless rules

Yellow Type:
Benefit needs: Recognition by peers, "the best of the show"; biggest / best / fastest, physical signs, salary
Pain Prevention: defeats, errors, "Keeping up with the Jones"

They have special needs of benefits and pain prevention which will be used as clues.

Intermediate Step: Trend Analysis
The trend analysis is not directly part of the process as it shown in the beginning but it gives valuable clues that should be taken into the account.
To include the trends into the process the book TrenDNA contains a large number of customer trends which can be selected. TrenDNA provides different methods on how to find out the most important trends that can be used as clues.
Within the project the team decided to use the perception map method. It was done using the following three steps:

1.) Selecting the trends which have a connection to the project topic.
2.) Generate connection between the trends using “leads to”
3.) Generating a perception map and finding the most important trends (loops and contradictions)

2. <u>Generate connection between the trends using "leads to"</u>

For each selected trend, another trend was chosen that is connected by "leads to". That means the every selected trend leads exactly to another trend.

Selected Trend		Leads to					
P 3	3rd Age-Lifestyle	P 4	Security paranoia	all 9	Individuality		
N 6	3rd Place	all 10	Tribalism				
N 7	Technology dependency	H 8	Communication 24 h				
H 4	All-About-Me Bloggs	N 2	For a bit of sleep				
A 2	TechnoFear	P 5	Cocooning				
P 8	Convenience	P 5	Cocooning	H 3	Just-in-Time Earners	all 7	Obesity
P 5	Cocooning	N 2	Still home at 35				
H 6	Digital Social Network	H 8	Virtualism				
H 1	Easy Life (proud to be stupid)	N 5	Simplicity	all 9	Customisation		
P 4	Uniqueness	N 4	Women is smarter	all 9	Individuality		
all 7	Obesity	H 8	Internet Shopping				
N / P 2	Global Brain	N 3	Lohas				
H 8	Cellphone Cult	H 8	Communication 24 h				
all 3	Home-Working	N 5	Work-Life-Balance	P 5	Cocooning		
A 4	Homo Economicus	N 5	Consumer distrust	P 4	Lifelong learning	P 4	DIWM - Do it with me
all 9	Individuality	N 4	Job-Revolution				
N 4	Women is smarter	H5	Multitasking	N 6	3rd Place	P 3	3rd Age-Lifestyle
N/P 2	Interconnection	all 10	Social circles	H 8	Cellphone cult	all 10	Tribalism
H 8	Internet Shopping	P 8	Convenience	all 9	Customisation		
N 4	Job-Revolution	H 3	Just-in-Time Earners	N 5	Work-Life-Balance		
H 3	Just-in-Time Earners	N 8	Treasure hunters	N 5	Work-Life-Balance		
H 8	Communication 24 h	all 9	Customisation	N 2	For a bit of sleep	H 5	Escape from Reality
all 9	Customisation	all 9	Individuality	all 4	Well organized		
P 4	Lifelong learning	H 5	Multitasking	all 10	Tribalism		
N 3	Lohas	N 2	Pre-Cycling	P 4	DIWM – Do it with me	a 6	Vigilante consumer
N 2	For a bit of sleep	H 5	Escape from reality				
N 5	Consumer distrust	P 4	DIWM – Do it with me	A 2	TechnoFear		
H 5	Multitasking	N / P 2	Global Brain				

N 2	Still home at 35	P 8	Convenience	N 5	Simplicity		
N 3	Met online & married	H 5	Escape from reality	H 8	Virtualism	H 1	Easy Life (proud to be stupid)
H 4	Online addiction	all 7	Obesity	H 4	All-About-Me Bloggs		
all 4	Well organized	H 5	Multitasking	N 5	Work-Life-Balance		
N 2	Pre-Cycling	A 4	Homo Economicus	N 3	Technology with Charm		
H 5	Escape from reality	P 4	Security paranoia	A 2	TechnoFear		
N 8	Treasure hunter	P 4	Uniqueness	N 5	Consumer distrust		
P 3	Hard of hearers	H 5	Escape from reality				
P 4	DIWM – Do it with me	all 3	Home-Working				
P 4	Security paranoia	N 2	For a bit of sleep				
all 10	Social circles	P 5	Cocooning	N 6	3rd Place		
N 4	Speed-X	H 3	Just-in-Time Earners	H 8	Cellphone cult		
N 3	Technology with Charm	H 8	Cellphone cult	H 8	Communication 24 h		
H 2	Tennie-entrepreneurs	all 9	Individuality	H 8	Communication 24 h		
all 10	Tribalism	H 1	Easy Life (proud to be stupid)	alle 10	Social circles		
H 6	Up-Ageing	P 3	3rd Age-Lifestyle	N7	Time pressure		
N 5	Simplicity	N 3	Technology with Charm	P 8	Convenience		
H 8	Virtualism	H 6	Digital Social Network	H 4	Online addiction		
A 6	Vigilante Consumer	N 2	Pre-Cycling	N 5	Consumer distrust		
N 5	Work-Life-Balance	H 3	Just-in-Time Earners	H 2	Tennie-entrepreneurs	P 4	Lifelong learning
N7	Time pressure	N 7	Technology dependency	N 2	For a bit of sleep	H 8	Internet Shopping

3. <u>Generate the perception map</u>

Now a perception map can be generated using the information from the table under point 2 with the results in Figure 6.

Figure 6 perception map

The connections come from the “leads to” information and the arrows show the direction. The interesting trends are those in a loop (red lines) or those that have more arrows pointing at them (green letters). These will be used as clues.

Section A: Clues

Now all found clues from the previous steps can be listed. One of the project goals was to find more than 50 clues. The project team found almost 100 clues.

Nr.	Clues	Nr.	Clues
1	access 24-7 anywhere (webserver) vs. compatibility (versions, updates)	51	multi-user capability vs. safety (confidentiality)
2	access 24-7 anywhere (webserver) vs. completeness (process)	52	safety (confidentiality) vs. community
3	access 24-7 anywhere (webserver) vs. cost	53	safety (confidentiality) vs. compatibility (versions, updates)
4	access 24-7 anywhere (webserver) vs. multi-browser	54	safety (confidentiality) vs. flexibility
5	access 24-7 anywhere (webserver) vs. multi-user capability	55	safety (confidentiality) vs. imitation
6	access 24-7 anywhere (webserver) vs. safety (confidentiality)	56	safety (confidentiality) vs. multi-browser
7	access 24-7 anywhere (webserver) vs. saveability (offline)	57	saveability (offline) vs. cost
8	access 24-7 anywhere (webserver) vs. speed	58	saveability (offline) vs. flexibility
9	access 24-7 anywhere (webserver) vs. surface language (GUI)	59	saveability (offline) vs. safety (confidentiality)
10	community vs. imitation	60	speed vs. cost
11	community vs. multi-browser	61	speed vs. multi-browser
12	community vs. surface language (GUI)	62	speed vs. multi-user capability
13	completeness (process) vs. cost	63	support vs. surface language (GUI)
14	completeness (process) vs. intuitivity	64	surface language (GUI) vs. compatibility (versions, updates)
15	completeness (process) vs. multi-browser	65	usability vs. acces 24-7 anywhere (webserver)
16	completeness (process) vs. support	66	usability vs. compatibility (versions, updates)

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17	cost vs. community	67	usability vs. cost
18	cost vs. compatibility (versions, updates)	68	usability vs. design
19	cost vs. flexibility	69	usability vs. intuitivity
20	cost vs. imitation	70	usability vs. multi-browser
21	cost vs. multi-browser	71	usability vs. multi-user capability
22	cost vs. safety (confidentiality)	72	usability vs. surface language (GUI)
23	cost vs. support	73	easy access (configuration) - easy vs. very important
24	cost vs. surface language (GUI)	74	completeness (process) - not necessary vs. important
25	design vs. compatibility (versions, updates)	75	saveability (offline) - not important vs. middle
26	design vs. cost	76	flexibility - not so important vs. important
27	design vs. intuition	77	Benefit needs: Knowledge / wisdom, independence / self-discovery / challenge Pain Prevention: sub-optimization, intransigence, senseless rules
28	design vs. multi-browser	78	Benefit needs: Recognition by peers, "the best of the show"; biggest / best / fastest, physical signs, salary Pain Prevention: defeats, errors, "Keeping up with the Jones"
29	easy access (configuration) vs. acces 24-7 anywhere (webserver)	79	Heroes: pretentious (Optimistic, difficult to reach media-weary, high brand awareness, hard worker, grew up with computers, free-spending, extreme independence, freedom of expression, innovation / research, distrust of corporations, respect for legal authority, an open mind (on an emotional and intellectual level)
30	easy access (configuration) vs. compatibility (versions, updates)	80	Nomad: Alienated (skeptical, concerned, independent, independence, initiative, key child [Every man for himself next], adaptable, resourceful and creative demand and anti-institutional, relaxed, politically disinterested, social infrastructure, contradictory
31	easy access (configuration) vs. cost	81	online Network vs. safety paranoia
32	easy access (configuration) vs. multi-browser	82	easy life vs. longtime learning
33	easy access (configuration) vs. multi-user capability	83	just in time
34	easy access (configuration) vs. saveability (offline)	84	multitasking of projects
35	easy access (configuration) vs. speed	85	pre-cycling
36	easy access (configuration) vs. support	86	open project management
37	flexibility vs. community	87	comfort zone
38	flexibility vs. compatibility (versions, updates)	88	barrier of culture
39	flexibility vs. multi-browser	89	community
40	flexibility vs. support	90	re-use
41	flexibility vs. surface language (GUI)	91	cookbook
42	intuition vs. compatibility (versions, updates)	92	individuality
43	intuition vs. cost	93	customization
44	intuition vs. multi-user capability	94	cocooning
45	intuition vs. surface language (GUI)	95	communication 24
46	multi-browser vs. compatibility (versions, updates)		
47	multi-browser vs. surface language (GUI)		

48	multi-user capability vs. compatibility (versions, updates)		
49	multi-user capability vs. flexibility		
50	multi-user capability vs. multi-browser		

Section B: Selected Clues

The 95 clues found during the process are hints for Hotgloo to improve their business but some of them have big potential to turn them into good solutions using the conflict solving mechanism within step 6 of the process (shown in the cycle). Solving a conflict has often a very high potential for innovative solutions because an upcoming conflict points out the borders of an existing system and the necessity to overcome the borders by finding new solutions. This principle is one of the key factors of contradiction based innovation methods like Systematic Innovation, which is also developed by Darrell Mann.
The project team of Hotgloo selected 20 clues that for them, seemed as the most promising. They are listed in the table below:

Nr.	Clues
1	access 24-7 anywhere (webserver) vs. saveability (offline)
2	completeness (process) vs. intuition
3	cost vs. support
4	easy access (configuration) vs. saveability (offline)
5	intuition vs. multi-user capability
6	safety (confidentiality) vs. community
7	saveability (offline) vs. flexibility
8	Benefit needs: Knowledge / wisdom, independence / self-discovery / challenge Pain Prevention: sub-optimization, intransigence, senseless rules
9	Benefit needs: Recognition by peers, "the best of the show"; biggest / best / fastest, physical signs, salary Pain Prevention: defeats, errors, "Keeping up with the Jones"
10	Heroes: pretentious (Optimistic, difficult to reach media-weary, high brand awareness, hard worker, grew up with computers, free-spending, extreme independence, freedom of expression, innovation / research, distrust of corporations, respect for legal authority, an open mind (on an emotional and intellectual level)
11	Nomad: Alienated (skeptical, concerned, independent, independence, initiative, key child [Every man for himself next], adaptable, resourceful and creative demand and anti-institutional, relaxed, politically disinterested, social infrastructure, contradictory
12	online Network vs. safety paranoia
13	just in time
14	multitasking of projects
15	barrier of culture
16	community
17	open project management
18	communication 24
19	cookbook
20	customization

Step 6: Defining / Solving the Conflict

The last step of the TrenDNA is to define and solve the conflict. Solving the conflict requires the usage of the contradiction matrix and the inventive principles. The contradiction matrix for business is extracted from many good solutions.
To work with the matrix the parameter that has to be improved must be identified. It is necessary to map the real world parameter to the generic one. In the next step the parameter that will be the worse has also being identified and mapped to the generic one. On the cross section of both parameters there can be found a general solution called inventive principle. It is somehow a general solution recommendation.
Figure 7 show as example how to handle with the matrix.

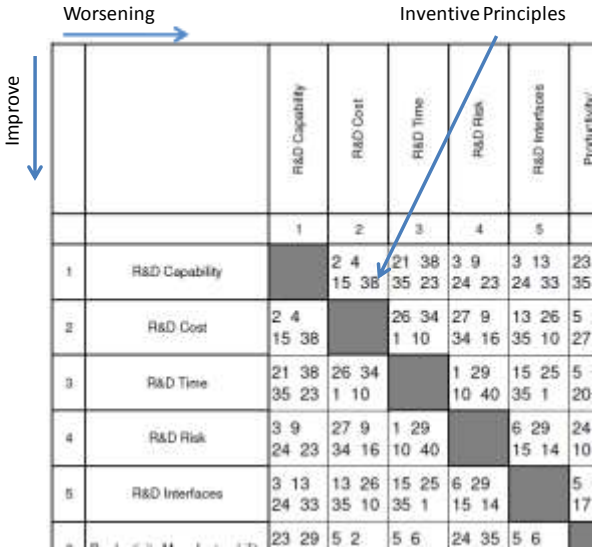

Figure 7 defining/solving the conflict

The inventive principles are enriched with examples to give the user a more easy access to the solution. One inventive principle “segmentation” is shown on the Figure 8 below. It recommends dividing the system into independent parts and as an example, to divide an organization into different product centers.

Principle 1. Segmentation

A. *Divide a system or object into independent parts.*

- Divide an organisation into different product centres.
- Autonomous profit centres.
- Use a work breakdown structure for a large project.
- Franchise outlets
- Red team/Blue team proposal preparation structures
- Kano Diagram – Excitement, Performance, and Threshold product attribute parameters.
- Marketing segmentation by demographics, sociographics, psychographics, lifestyles, etc (creation of ‘micro-niches’)
- Segmentation of ‘idea management’ process into Fertilization, Seeding, and Incubation phases
- Strength/Weakness/Opportunity/Threat (SWOT) analysis

Figure 8 example for inventive principles

Within the project all conflicts are solved in this way, using the contradiction matrix and the inventive principles. This step transforms the specific conflict into a general conflict, to be solved in the next step with general solution [inventive principles]. After that it was tried to find a new (specific) solution for Hotgloo by transforming the general solution [inventive principles] back into a specific solution. The Figure 9 below tries to explain the process.

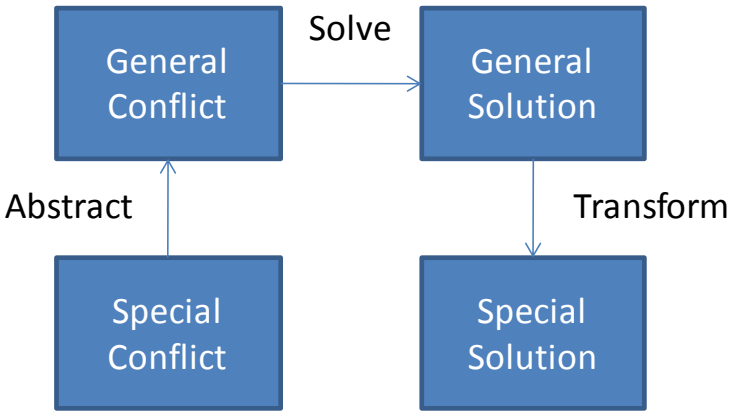

Figure 9 process of transformation conflicts

Not all clues that were selected by Hotgloo contain conflict. The other clues, which do not contain conflicts, the project team tried to find some solution. The following table contains the solutions.

Nr	Cycle Step	Results
1	Special problem	access 24-7 anywhere (webserver) vs. saveability (offline)
	General	Convenience [general parameter #26] & supply risk [general parameter # 14]
	Solution general	Merging [Inventive principle # 5] Prior action [Inventive principle # 10] The other way around [Inventive principle # 13] Slightly Less/Slightly More [Inventive principle # 16]
	Solution special	- API Interface with Project Management software - Data on second server - Own company server (Remote access for service from HotGloo) - Automatically Back-up/Sync - Button for “Going out to the customer” creates an offline-version of the current project including serviceability and will be compared after return from the customer meeting. - Local Server/Offline – Back-up on online server
2	Special problem	completeness (process) vs. intuition
	General	Amount of information [general parameter # 22] & Production interface [general parameter #10]
	Solution general	Taking out [Inventive principle # 2] Asymmetry [Inventive principle # 4] The Other Way Around [Inventive principle # 13] Self-service [Inventive principle # 25] Relative Change [Inventive principle # 37]
	Solution special	- Monitoring of software function -> Trimming of unnecessary functions - Individual configuration for: o Important functions => Big Icons

		○ Not important functions => Small Icons - start with an empty GUI and let the user design his own GUI based on the functions he need (e.g. with usage of help) - Open innovation - user can set the GUI of his own - Change of GUI according to used functions - Evolving of GUI
3	Special problem	cost vs. support
	General	Supply Chain [general parameter #12] & Support Interfaces [general parameter #20]
	Solution general	Segmentation [Inventive principle # 1] Universality [Inventive principle # 6] Prior Action [Inventive principle # 10] 'Intermediary' [Inventive principle # 24] Self-service [Inventive principle # 25]
	Solution special	- Services levels, modules - Autonomous profit centers - Different support levels for each cost model - communication protocols HTML/XML - Webinare online (eg: Youtube) - Training/Consulting - Teacher in schools - Community - Introduction of a considerably FAQ to avoid permanent support costs - Run blog action beside daily business to answer questions and give very quick useful/helpful hints - do permanent software update and probably offer special features/solutions for additional money - provide several software packs with different content - Karl Klammer (guide through the program)
4	Special problem	easy access (configuration) vs. saveability (offline)
	General	Convenience [general parameter #26] & supply risk [general parameter #14]
	Solution general	Merging [Inventive principle # 5] Prior action [Inventive principle # 10] The other way around [Inventive principle # 13] Slightly Less/Slightly More [Inventive principle # 16]
	Solution special	- have a local client - have a internal server with an Hotgloo application running - redundant data saving: local and on a server - two different interfaces (programmer and client) - periodic auto-syncronisation with server - periodic saving - periodic update check - periodic data integrity check - Save data on different servers an local simultaneously
5	Special problem	intuition vs. multi-user capability
	General	Adaptability/Versatility [general parameter #27] & System complexity [general parameter #28]

	Solution general	Merging [Inventive principle # 5] Universality [Inventive principle # 6] Dynamics [Inventive principle # 15] Self-service [Inventive principle # 25] Mechanics substitution [Inventive principle # 28] Pneumatics and hydraulics [Inventive principle # 29] Parameter changes [Inventive principle # 35] Relative change [Inventive principle # 37]
	Solution special	- Button for user-settings: Desktop can be changed from beginner to experienced user - Systems recognizes the itself the needs of the user by measuring the input and dimension of the started project - Metaphorical helpdesk
6	Special problem	safety (confidentiality) vs. community
	General	System Generated Harmful Effects [general parameter #25] & Customer Feedback [general parameter #21
	Solution general	Merging [Inventive principle # 5] Universality [Inventive principle # 6] Prior Action [Inventive principle # 10 'Intermediary' [Inventive principle # 24] Parameter changes [Inventive principle # 35] Strong oxidants (enriched atmosphere) [Inventive principle # 38]
	Solution special	- Merge a special community group deeper in your company network (specialist, lead customers…) - Make the discussion answers from company very general and universal - generalize special problems into general problems - Select possible confidential problems in advance before they come to discussion (keep an eye on user groups; invite them into a separate room) - Use a professional moderator for the community - Hire good people from the community - Try to set up a user-friendly environment, where the discussion is fruitful
7	Special problem	saveability (offline) vs. flexibility
	General	Adaptability/Versatility [general parameter #27] & Convenience [general parameter #26]
	Solution general	Segmentation [Inventive principle # 1] Dynamics [Inventive principle # 15] Partial or excessive actions [Inventive principle # 16] Periodic action [Inventive principle # 19] Pneumatics and hydraulics [Inventive principle # 29] Discarding and recovering [Inventive principle # 34] Phase transitions [Inventive principle # 36]
	Solution special	- Identified content can be modified offline (not the whole project, only partly). Synchronization with web after a certain time is necessary. - Create possibility (module, version) to show offline the current status of a project. (not everywhere is web available)
8	Clue	Benefit needs: Knowledge / wisdom, independence / self-discovery / challenge Pain Prevention: sub-optimization, intransigence, senseless rules
	Solution	- Give the user the feeling to help him expanding his knowledge - Give the user the possibility to discover new things

		- Expand the thought that the user can have everywhere good ideas; bring a HotGloo “light” as app for mobile devices to let them have ideas everywhere every time - Work with the user actively on software boarders which make no sense, try your best and never say it won’t work - Knowledge data base (design, customers), Offline Version, - Own configurable GUI
9	Clue	Benefit needs: Recognition by peers, "the best of the show"; biggest / best / fastest, physical signs, salary Pain Prevention: defeats, errors, "Keeping up with the Jones"
	Solution	- Make some contest for the best designed webpage - Award the best community idea for improving HotGloo through the community (let them vote, built a voting possibility) - Error and logical monitoring and controlling so that no user errors can appear,
10	Clue	Heroes: pretentious (Optimistic, difficult to reach media-weary, high brand awareness, hard worker, grew up with computers, free-spending, extreme independence, freedom of expression, innovation / research, distrust of corporations, respect for legal authority, an open mind (on an emotional and intellectual level)
	Solution	- Establish HotGloo as a brand and as a tool for hard worker - Ideas must everywhere every time be catchable via hotgloo (mobile app) - Own source code input method, Possibility to make own features in HotGloo (like Macros)
11	Clue	Nomad: Alienated (skeptical, concerned, independent, independence, initiative, key child [Every man for himself next], adaptable, resourceful and creative demand and anti-institutional, relaxed, politically disinterested, social infrastructure, contradictory
	Solution	- Hotgloo should never give any doubt about the capability - Hotgloo should transport that it expands creativity - Background music for relaxing during work
12	Special problem	online Network vs. safety paranoia
	General	Communication flow [general parameter #23] & Tension/Stress [general parameter #30]
	Solution general	Local quality [Inventive principle # 3] Asymmetry [Inventive principle # 4] Universality [Inventive principle # 6] "Nested doll" [Inventive principle # 7] 'The other way round' [Inventive principle # 13] Phase transitions [Inventive principle # 36]
	Solution special	- Saving data on a internal Hotgloo Server - Saving data on a mobile disk - Implement “screen sharing” to present to the client => no online data needed. - Merge data on server with encryption key on the local pc - Merge different storage drives to one - Create encryption key for data - Self data integrity check - Check file configuration date on server with date on local pc - Encrypt data on server
13	Clue	just in time
	Solution	- Let the customer just in time follow the development of his webpage if he is interested

		- Pay as use model
14	Clue	multitasking of projects
	Solution	- Have the possibility to open more than one project - Put one project in the background (freeze it and overlay the new one)
15	Clue	barrier of culture
	Solution	- Try to use buttons and signs which will be understood around the world, don't use specific language which is only understood by designers, think on the customer of your customer - Create a own culture of working which is not influenced by specific culture
16	Clue	Community
	Solution	- Establish a community - Use the community - Award prizes within the community - Establish a community platform, - Use social networks, blogs
17	Clue	open project management
	Solution	Use HotGloo as Intranet version
18	Clue	communication 24
	Solution	- Integrate a communication function in HotGloo (e.g. integration with Skype) - News about updates in project at every time via Mail, SMS
19	Clue	Cookbook
	Solution	- Set good tutorials - Award tutorials - Let the community produce Youtube videos showing how they work with HotGloo and award them - Book: 1x1 for designing WebPages (Use community knowledge and realized projects)
20	Clue	Customization
	Solution	- Offer customized service for big companies - Offer special HotGloo versions for lead customers - Free & individual design of the HotGloo surface for each user

Section C: Summary and Recommendations for HotGloo

The process has brought many new ideas for the improvement of Hotgloo. The can be seen in the table above. In the final step the solutions were discussed with Hotgloo member. They answered in the following way:

"We will definitely keep an eye on the training and tutorial recommendations as well as the community building factors. We also need to expand the web-based factor to position our assets: trying to combine our wireframe software with project management and cloud

storage software - providing not only a concept tool, but a full web project management solution.”

Additionally they made a quote about the cooperation with the team from campus02:
“Thanks to the Campus02 team we were able to gather great insights, which will be really helpful in order to sharpen our USP, provide a better service environment and expand our market share.”

Final Remarks about TrenDNA

The project team followed the TrenDNA process as it is recommended in the book. It can be said that TrenDNA helps especially in fuzzy business methods, where the generation of new ideas is needed. The process is logic and can be followed very easily and the generation of ideas is possible. To improve the process the project team recommends including the trend process into the cycle because the clues generated by this step were also very useful. It can be said that TrenDNA works.

Proximities

Non-Linear Patterns Of Human Behaviour

Four triggers:

1) An argument with a neighbor about plans to install a small wind-farm about 2 miles from our home resulted in and agreement to disagree and me walking back into our house mumbling about NIMBYism and (temporarily) vowing to go and install a turbine in our garden to see how he liked *that*.
2) Hearing that, in a bid to improve the diet of their workers, a company had successfully reduced average lunchtime calorie intake by over 30% simply by moving the 'unhealthy', calorie-laden product choices from the eye-level to the bottom shelf of the display cabinet.
3) Talking to the technical team at a UK company where various different facilities that had been dotted at different buildings around the site had recently been consolidated into a single, new building, and learning that the intended increase in communication between groups hadn't occurred. 'We spend more of our time talking to the team in Germany than we do each other', one of the team said.
4) Remembering a time during a Dallas-Austin-San-Antonio road-trip across Texas when, on a whim, I decided to take a 150 mile detour to Corpus Christi, and then finding myself puzzled that, had I been back home in the UK, I would have viewed a similar 150 mile journey as an expedition requiring several days of planning.

Somehow each of these triggers all managed to rise to the top of my mind at the same time. Each one seeming to connect strongly to the idea of distance, but at the same time suggesting four very different perceptions of distance. Or rather proximity. Which in turn lead our searches to the scientific field of 'proxemics' (Reference 1).

Proxemics father, Edward T Hall, identified a series of non-linear behavior drivers relating to a person and their connection to either other people or artifacts. The essence of his core finding regarding these distinct, step-change-different proximities is reproduced in Figure 1. The main idea behind the different layers of the picture is that as a person or artifact shifts from one proximity zone to another, our behaviour shifts. Someone moving from your personal space to your intimate space, for example, triggers an inherent shift in your behavior which might range from wanting to physically pushing them away to holding them closer. There seemed to be something in this picture that corresponded to one of our trends of evolution: distinct shifts from one model to another. On the other hand, the picture didn't seem to offer any kind of explanation for either the NIMBY ('Not In My Back

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Yard' for any non-colloquial English speakers) story or my strange detour to Corpus Christi. Something was missing from the proxemics model.

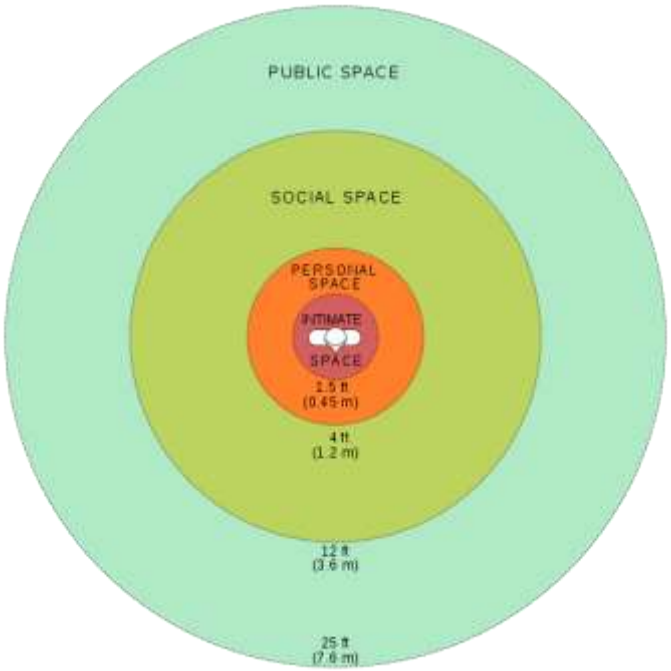


Figure 1: Edward T Hall 'Personal Reaction Bubble' Model

Before we try and extend the model, it is worth noting the distances plotted onto the Figure 1 image. Hall was at pains to note that different cultures maintain different standards of personal space. In Latin cultures, for instance, those relative distances are smaller, and people tend to be more comfortable standing close to each other, whereas in Nordic cultures the opposite is true. Realizing and recognizing these cultural differences improves cross-cultural understanding, and helps eliminate discomfort people may feel if the interpersonal distance is too large ("stand-offish") or too small (intrusive). Comfortable personal distances also depend on the culture, social situation, gender, and individual preference.

Also interesting within the proxemics story are the eight proxemic behaviour categories, that apply to people engaged in conversation:

posture-gender identifiers: this category relates the postures of the participants and their gender. Six primary sub-categories are defined: man prone, man sitting or squatting, man standing, woman prone, woman sitting or squatting, and woman standing.
the sociopetal-sociofugal axis: this axis denotes the relationship between the positions of one person's shoulders and another's shoulders. Nine primary orientations are defined: face-to-face, 45°, 90°, 135°, and back-to-back. The effects of the several orientations are to either encourage or discourage communication.
kinesthetic factors: this category deals with how closely the participants are to touching, from being completely outside of body-contact distance to being in physical contact, which parts of the body are in contact, and body part positioning.
touching code: this behavioural category concerns how participants are touching one another, such as caressing, holding, feeling, prolonged holding, spot touching, pressing against, accidental brushing, or not touching at all.
visual code: this category denotes the amount of eye contact between participants. Four sub-categories are defined, ranging from eye-to-eye contact to no eye contact at all.

thermal code: this category denotes the amount of body heat that each participant perceives from another. Four sub-categories are defined: conducted heat detected, radiant heat detected, heat probably detected, and no detection of heat.
olfactory code: this category deals in the kind and degree of odour detected by each participant from the other.
voice loudness: this category deals in the volume of the speech used. Seven sub-categories are defined: silent, very soft, soft, normal, normal+, loud, and very loud.

If nothing else, this list seems to offer an intriguing set of resources to think about when working on personal communication or product design problems. Interesting, but not necessarily pertinent to our current investigation.

What about the NIMBY problem? One hypothesis here is that the problem being experienced by my (otherwise completely charming I should add) neighbour is about the possibility that he would look out of his upstairs windows and potentially see the offending wind-turbines. Whereas, referring to the wonderful cartoon at the head of the article, other, far more polluting and dangerous forms of energy generation, didn't cause him any apparent concern simply because they weren't visible. The visibility or otherwise of something seems, thinking about a variety of other cases, like another trigger that causes us to shift from one set of behaviour to another.

Would my neighbour's attitude about wind-turbines be any different if the farm was moved just over the horizon so he couldn't see them? Apparently yes. He said. I'm not so sure, but thinking about the problem triggered a connection to my Corpus Christi adventure. A 150 mile journey in the UK might be the same as a 150 mile trip in Texas, but it sure didn't *feel* the same. The difference was all about perception, and the fact that, depending on the context, some distances can feel a lot bigger or smaller than they are in reality. Perceived proximity it seemed was also a potential trigger to cause a switch between one set of behaviours and another.

Taken together, and plotting the story in our usual discontinuous trend format, a broader version of Hall's proxemics story began to look something like the picture reproduced in Figure 2:

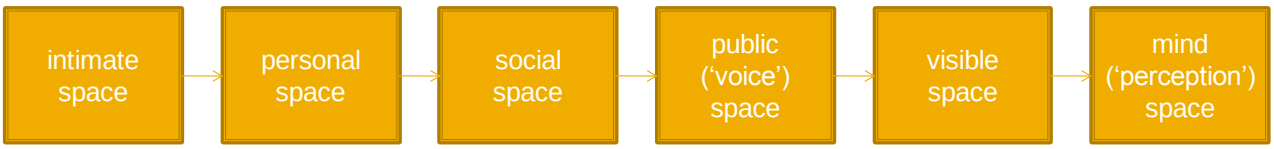


Figure 2: Proposed 'Proximity Behaviour Shift' Trend

Four triggers do not, of course, a validated theory make. We're still in the process of testing the model on as many cases as we can (please feel free to join the process if you think you know of exceptions), but thus far, the theory appears to be robust.

Back to the work canteen calorie reduction story, the shift in behavior occurred (we think) because eye-level shelves are positioned in such a way that, when we stand next to them at a distance suitable for identifying what the goods they contain are, they (deliberately) intrude into our intimate space. Moving the calorie-laden products to the bottom shelf meant that they exited the 'intimate space' zone and entered 'personal space'; a space where our behavior changes. Not least of which being in this case that bending down to pick something up from the bottom shelf required a physical movement of our whole body rather than just an arm. That seemingly trivial distance, however, was responsible for 30%

of people deciding to go with the eye-level healthy option rather than going through the 'effort' of bending down.

And, finally, back to the story of the recently co-located office workers and their non-improvement in communications. Why hadn't co-location worked? Figure 3 perhaps provides a hint. It describes another piece of research, this time on the effect of proximity (or lack thereof) on the probability of a communication between two people taking place in an office environment:

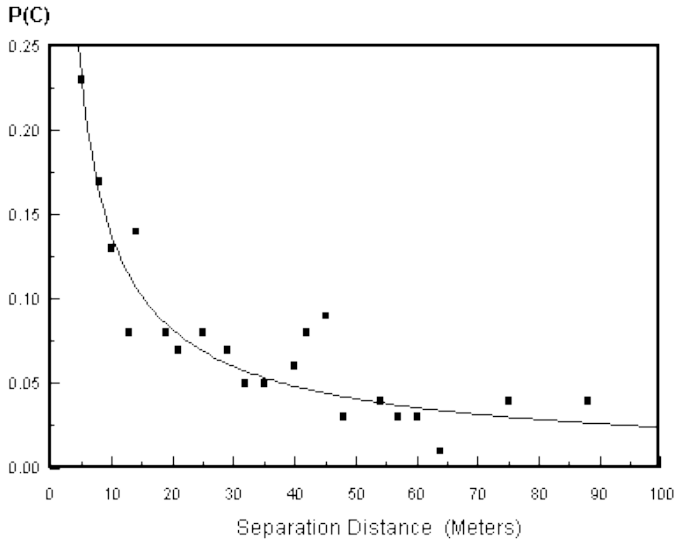


Figure 3: Probability Of Communication Versus Proximity In An Office Environment (Reference 2)

Looking at the shiny new office the people had been moved to revealed that, with a separation distance of over 12m between different cubicle-cells, the proximity had not been sufficiently close to cross the 'public space' threshold. Outside this boundary, conversation in a normal speaking voice is not possible; inside it and it is. As the Reference 2 data suggests, if people are separated by more than this 'voice space' distance, they might as well be 1000km away. 'Mind-space' being the same, the likelihood of striking up a conversation would not be any greater.

Summary

Finding new discontinuous trend-jump patterns is long, arduous work. Ultimately, it is never possible to 'prove' their existence or otherwise. The key (to us) is to find patterns of discontinuity that define **useful innovation resources**. A good test of how 'right' something is, is does it seem obvious having written it down. The proximity pattern in Figure 2 seems to have many of those hallmarks to us. Not least of the reasons being that much of the story comes from greater minds than ours doing some hard work for us. Classic 'someone, somewhere already solved your problem' territory in other words. We think the trend is useful – we've already utilized the pattern to good effect on a number of occasions now – and hope you will contemplate adding it to your armoury of potential problem solving resources.

References

1) Hall, E.T., (1966). The Hidden Dimension. Anchor Books. ISBN 0-385-08476-5.
2) Allen, T.J. and Hauptman, O., (1989). The influence of communication technologies on organization structure: A conceptual structure for future research. Communication Research, 14(5): 575-587

Not so Funny – Defence
(or: What Makes Britain Great, #277)

The global success of the English Premier League has created a tremendous influx of the most talented footballers on the planet. The inevitable consequence has been that local players find it much more difficult to gain a place in any of the Premiership sides (on average well over half of the players playing on any given weekend are from overseas). One only has to look at the pitiful state of the England national team to see some of the consequences.

One English town has decided to do something about the problem. Enter a whole new form of defence:

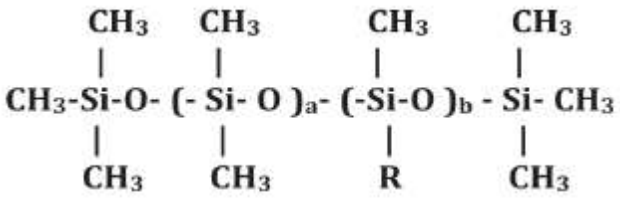
Quite literally a brilliant way of reducing those troublesome opposition strikers.

And also, as it happens, another telling illustration of the plummeting intelligence levels of the population. The (d')fence was recently installed by a team of contractors in York. Apparently none of the workers stopped to think that maybe they were putting the fence up in the wrong place.

Or maybe they were working on behalf of the England Coach? If we see the design reproduced for the next England game at Wembley, we'll know the York trial proved to be a success.

SYSTEM·ATIC INNOVAT·ION

Patent of the Month – Star Silicone Polymers

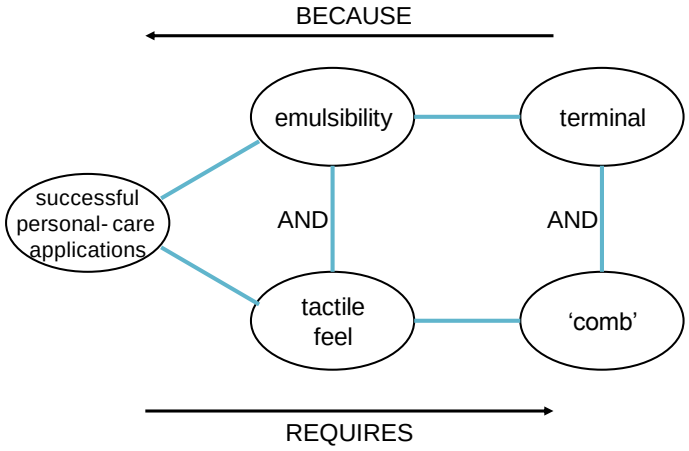


We head deep into the world of chemistry for this month's patent of the month. US7,951,893 was granted to long-time silicone chemistry gurus, father and son team, Kevin and Tony O'Lenick. We've known about the pair for sometime now through their rather excellent – if more sporadic than they proclaim – 'Silicone Spectator' e-zine (check out http://www.siliconespectator.com/articles/Oil%20Modification.pdf for a terrific article relating to their latest family of patents. In simple terms, what the pair have recently discovered is a whole new structure of silicone-based molecule that turns out to offer some considerable 1+1>2 benefits.

Here's what the invention disclosure has to say about the benefits delivered by the new structure:

Unlike either of [the two known silicone structures – 'terminal' and 'comb'], we have surprisingly found that when a molecule has both terminal and comb groups present it forms different associations we refer to as star associations in which smaller aggregates form. If one considers these materials as tennis balls, the core is silicone and the yellow fuzzy coating is the oil phase. These small compact units have unexpected properties both in terms of tactile feel on the skin and the ability to make micro emulsions in water or oil, making them very valuable for use in personal care applications.

There are several ways to think about the new structure, but the one we think is the most helpful is to plot the terminal-comb structure as a physical contradiction:



The new 'star' configuration effectively represents a resolution of the terminal-or-comb physical contradiction. In essence, the inventors solved that contradiction using the strategy of 'separation between the parts and the whole'. For giving us an illustration of this relatively rarely observed solution strategy, the patent is worthy of closer consideration than normal. So, for example, by mapping the technical conflict version of the terminal-comb conflict we can tap into the Contradiction Matrix. Or, we can in theory. In practice mapping parameters like 'emulsibility' and 'tactile feel' are not so straightforward. Even

with the newer versions of the Matrix tool. Here's what we think is the most direct way of mapping the emulsibility-versus-tactile-feel story using the 2010 version of the Matrix:

IMPROVING PARAMETERS YOU HAVE SELECTED:

Compatibility/Connectivity (33)

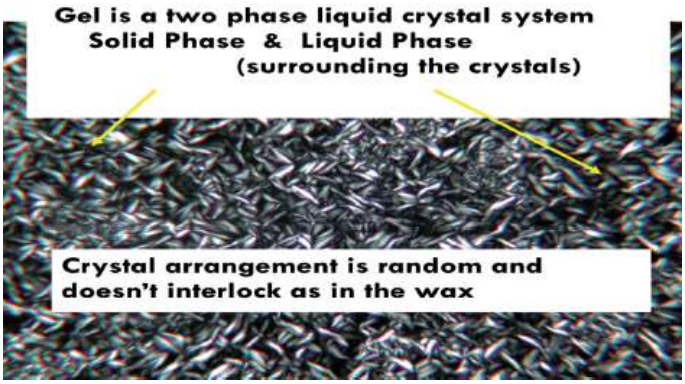
WORSENING PARAMETERS YOU HAVE SELECTED:

Aesthetics/Appearance (39)

SUGGESTED INVENTIVE PRINCIPLES:

28, 7, 13, 17, 3

Looking at the blue text from the invention disclosure and the Silicone Spectator article, the new structure presents a very nice example of Principle 7, Nesting.

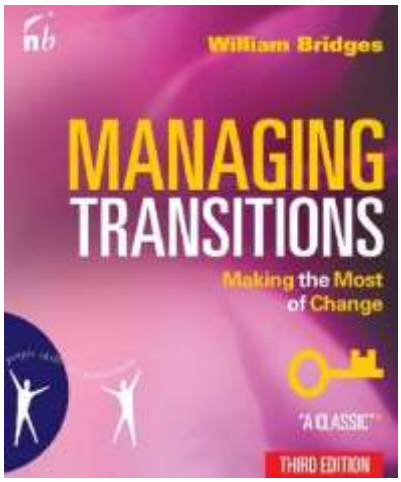


Mapping to the TRIZ/SI story is one thing, but ultimately, this seems like a pretty important invention to us. Rare enough that someone discovers a novel molecular structure. Even rarer that the structure results in so many synergies. And so many potential applications:

Example	Appearance
18	Clear liquid with an outstanding dry skin feel.
19	Clear liquid with some cushion and outstanding feel
20	Intermediate hardness solid. Easily spread outstanding lotion additive.
21	Intermediate hardness.
22	Hard wax but yields well under pressure
23	Hard solid white wax with exceptional skin drag. Useful in stick products.
24	Water soluble with an outstanding slip and conditioning.
25	Water soluble material with outstanding wet comb when applied to hair.
26	Water soluble product. Provides outstanding feel in antiperspirant applications.
27	Micro emulsion. Outstanding lubricant in water.
28	Micro emulsion.
29	Water soluble solid white wax with exceptional emolliency

Watch this one fly!

Best of the Month – Managing Transitions



What's the difference between a change and a transition? Quite a lot according to the author of this month's Best Of choice. Sufficient indeed to help answer another question: why do so many (more than 70% according to our statistics) organizational change initiatives end in failure?

Managing Transitions is the third edition of a book that first appeared over 30 years ago. That fact alone should highlight the importance of William Bridges words, for it is a rarity indeed that any kind of 'business book' has a shelf-life even half that amount. Not that the book is strictly speaking a 'business' book at all. Which is probably half of its secret. Rather the book is an exploration of personal transitions described by someone who pretty much wanted to find an explanation why he was finding some of the changes in his life so difficult to cope with.

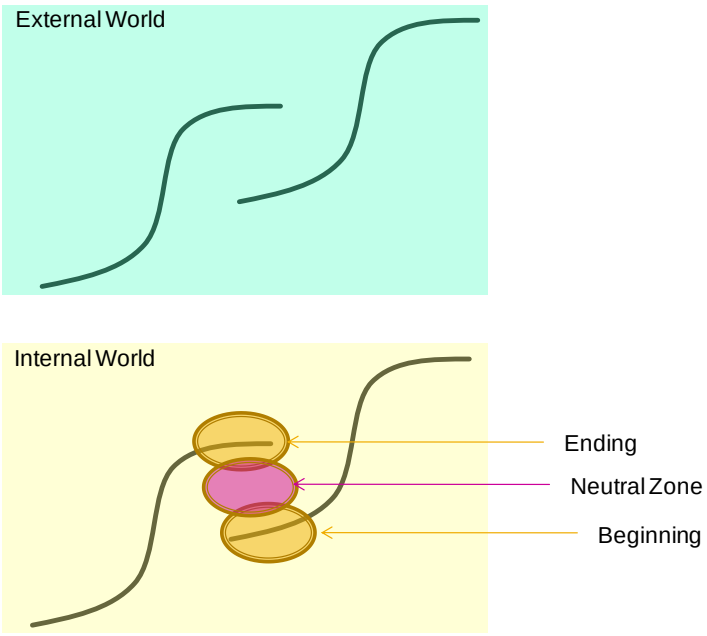
And his conclusions? There is an enormous difference between 'change' and 'transition'. Change is something situational. Like moving to a new city. Transition, on the other hand, is psychological. It is the internal re-orientation and self-redefinition that you have to go through in order to incorporate any of those changes into your life. How about that for a blinding flash of the obvious? The majority of change initiatives fail because, while we might manage the external situations, we usually don't think about the internal transitions. Which in turn provides an explanation why so many apparently successful 'changes' revert back to their pre-change state once the instigating manager leaves the scene: people had made the change but not the transition and as soon as the pressure to maintain the change disappeared the absence of any transition means the external state quickly reverts back to be consistent with the unaltered internal states of the people present in the system.

Although he never uses the expression, it quickly becomes clear Bridges' book is all about S-curves. Moreover two closely linked chains of s-curves: one describing the external world, and one describing our internal mind-state. 'Change' is then all about the jump from one curve in an external-world chain to the next; transition being all about the jump from one curve in the parallel internal-world chain.

Recognising that it's the gap between the curves that then represents the difficult part of both the change and the transition processes, Bridges' devotes the bulk of the book describing the three key stages of any journey from one curve to the next. Each journey requires, in sequence, an Ending, a Neutral Zone, and a Beginning. The same three steps

are present in both the internal and external worlds. A shift in one ultimately requiring a shift in the other – although the trigger for the shifts can be instigated from either the internal or external worlds.

Of the three journey stages, it is probably the first where the book makes its biggest contribution: any transition first of all requires a 'letting go' of something inside of us. Most transition attempts fail at this stage because for most of us the taught mental image through life is that as we get wiser, we do it by accumulating more and more knowledge. There is little if any recognition in these conventional (Western at least!) views that encourages the un-learning of things we have accumulated. Going back to an earlier Best of the Month book, 'Being Wrong' (Issue 106, January 2011), a big part of the issue here is that letting something go means admitting that we somehow got it wrong by having that something in the first place. Either way, Bridges fills the chapters on Endings with some very nice stories of a variety of different cases that have turned up in the Transitions classes he has given over the years.



Transition, Bridges ultimately concludes, is the way to personal development. There is ultimately nothing new in the book – the author himself recognizing that by defining 'rites of passage', ancient civilizations already clearly understood the importance of separation from the tribe (an Ending), a time in the wilderness (the Neutral Zone) and a return to the world with the new internal mind-state (the Beginning). Maybe – just maybe – the new Third Edition of the book is a timely reminder (to Generation Y and their parents?) that although the idea of a rite of passage in its simple form is probably mis-placed in modern society, the ancients had found absolutely the right concept when they forced their youth to make an internal as well as an external journey away from the tribe. Perhaps the only mistake they made was thinking it only had to happen once during a lifetime. Perhaps the difference between ancient and modern is that now we have to make a whole series of rites of passage during our lives.

Essential reading for all.

Conference Report – ICSI2, Shanghai

The second International Conference on Systematic Innovation took place in Shanghai between 26 and 28 May at the Jiao Tong University. Around 150 people attended at least one day of the event and, in theory, there were over 60 papers on offer. I say 'in theory' because in reality what felt like close on a third of the presenters didn't turn up. Whether this was because of some of the 'political difficulties' surrounding the conference (think conference organized by ROC Taiwanese people being held in PRC China and then move on and away swiftly) or whether the world of conferences is now changed so much that attending these kinds of events sits firmly at the bottom of everyone's priority list remains unclear. Based on the quality of the papers that were presented, I'd have to say that the no-shows probably made the right decision. The quality wasn't quite 'awful', but sitting through two days of stuff and coming away with less than a quarter of a page of new thoughts other than expletive-filled anger at the rubbish-ness of some of the offerings has to be said to be a pretty poor return on investment.

For what it's worth, here was the intended structure of the event:

Thursday 11/05/26	09:00-09:20	Opening				
	09:20-10:00	Speech: "How does Dominant Innovation Tools Help Companies Achieve Strategic Advantage" Jay Lee, Univ. of Cincinnati				
	10:00-10:40	Speech: "Harnessing Innovation to create the future of human life" Dr. Zhengrong Shi, President of Sunrech				
	10:40-11:00	Coffee Break				
	11:00-11:40	Speech: "Form Consumer Insight to Great Innovation", John Liu, R&D Director , Johnson & Johnson				
	11:40-12:00	Group Portrait (Loc: Front Square of Mechanical Engineering Building)				
	12:00-13:30	Lunch				GCSI Exhibition Starts @ 1PM 1st Fl. Hall way (Static)
	13:30-14:10	Speech: "How to build a strong innovation team", William Ye, President of Security Technology & Residential Solutions, Asia Pacific, Ingersoll Rand				
	14:10-14:50	Speech: "How to Create the Innovation Culture", John van der Linden, Associate Director Oral Care Asia, Procter & Gamble				
	14:50-15:10	Coffee Break				
	15:10-15:40	Speech: "Innovation practices from Brazil", Prof. Carlos Eduardo Pereira, UFRGS, Brazil				
	15:40-16:10	Speech: "Innovation Education at UM-SJTU Joint Institute" Prof. Jun Ni, Dean of Univ. Of Michigan and Shanghai Jiao Tong Joint Institute.				
	16:10-16:30	Speech: "VillageTowns: A Practical Model for Global Innovation in the 21st Century", Irv Beltman, Senior Partner, Village Town				
	16:30-17:30	Technical Sessions-A (Regular and Oral session)			Poster Session: Loc: Hall way 2nd floor	GCSI Exhibition 1st Fl. Hall way (Live)
		Track A1	Track A2	Track A3		
		Room: F210	Room: F203	Room: F207		
Friday 11/05/27	09:00-09:40	Speech: "Systematic Component Trimming for Breakthrough Problem Solving" , Prof. D. Daniel Shen, President, the Society of Systematic Innovation				
	09:40-10:30	Speech: "Main Parameters of Value - from Business Challenges to Technical Problems", Dr. Simon Litvin, Managing Director & Chief Scientific Officer, GEN3 Partners, Inc.				
	10:30-11:00	AM Coffee Break				
	11:00-12:00	Speech: "Biomimicry and how it can be used for systematic product / process / service innovation", Bryony Schwan, Executive Director, Biomimicry Institute				
	12:00-13:00	Lunch				
	13:00-13:30	Speech: "Innovation System in Japan and some new activities", Dr. Furukawa Yuzo, President of Polytechnic Univ. of Japan				
	13:30-15:00	Panel Discussion: Enablers, Obstacles, and Conditions for Innovation: Experience sharing & lesson learned (Invited speakers)				
	15:00-15:30	PM Coffee Break				
	15:30-17:30	Regular and Oral sessions				
		Track B1	Track B2	Track B3	Poster session	GCSI Exhibition
		Room F210	Room F203	Room F207	Hall way 2nd floor	1st Fl. Hall way (Static)
	18:30-21:00	Banquet (Loc:)				
Saturday 11/05/28	09:30-11:00	Regular and Oral sessions				
		Track C1	Track C2	Track C3	Poster session	
		Room F210	Room F203	Room F207	Hall way 2nd floor	
	11:00-11:30	Coffee Break				
	11:30-12:00	Closing Award & Announcement (Conference Dismissed)				
	13:00-17:00	Tutorial: Basic TRIZ/Systematic Innovation - Introduction Darrell Mann, Managing Director, IFR Consulting (Extra fee: USD 80/each person) (Room F203) (Lunch provided on site)		Tutorial: Advanced TRIZ Methodology: GEN3 Innovation Discipline (GInID), Dr. Simon Litvin, Managing Director and Chief Scientific Officer, TRIZ master (Extra fee: USD 80/each person) (Room F207) (Lunch provided on site)		

Things, it has to be said, didn't get off to a great start. The first keynote speaker making the decision to present, as far as my memory can tell, the exact same set of slides he presented last year. Which wouldn't be so bad if the news wasn't already old news in 2010. The next three keynotes sounded great from their titles, but alas failed to deliver on the expectation they set. Great that the organizers made an attempt to go broader than TRIZ and bring in more hands-on industrial speakers; not so great that the ones they chose didn't really have anything to say. Aside that is from telling everyone how great their company was.

The less said about the non-keynote presentations and the '1st global competition on SI' the better. The only useful correlation I could see was that the further along the MATRIZ certification journey a presenter or competition entrant was, the worse their paper or solution was. Diabolical problem definitions and tragic solution strategies being the overall theme. If the intention of MATRIZ is to make people into worse problem solvers, what was on show here was the amplest of proof. If it wasn't for the fact that the awfulness of the work could tarnish the reputation of SI, I'd be rubbing my hands with glee that if word gets out that 'TRIZ did this' when people show their solutions to others, it would kill the method stone dead within a fortnight. 'If TRIZ did *that,* I don't think I ever need to look at TRIZ' being the feeling I think nearly everyone would go away with. Shame on you MATRIZ.

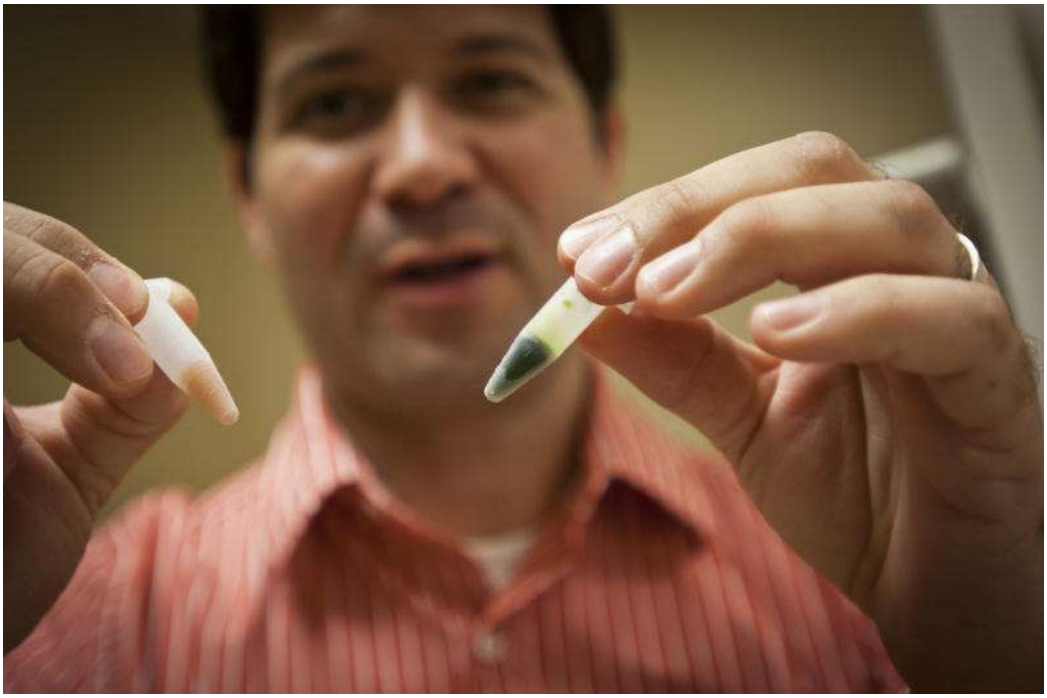
Ditto the MATRIZ (err, sorry, Simon Litvin) 'Advanced' tutorial on the last afternoon of the conference. Nine parts advertisement to one part content does not a tutorial make. Unless the intention is to teach people to be dependent on the services offered by your company. Duh. That was the aim, right? I guess I got it wrong with my 'basic' level parallel session. One day I will learn. Possibly.

Anyway, let's move on before we burst any more blood vessels. As always, the people were ultra friendly and there were some excellent conversations to be had. Good enough to merit heading to Korea next March for the 2012 event? Definitely worth a few Skype calls. Probably not worth the hassle of fighting your way through the 'Professor Lee' effect (the host for the next conference - if you've met him, you'll know what I mean).
Here's a picture of the attendees to remind me of the nice conversations:

And here's this month's caption competition (I have no idea what was happening when this pair of seconds-apart images was taken):

Investments – Hydrogen Producing Micro-Organisms

Many kinds of algae and cyanobacteria, common water-dwelling microorganisms, are capable of using energy from sunlight to split water molecules and release hydrogen, which holds promise as a clean and carbon-free fuel for the future. One reason this approach hasn't yet been harnessed for fuel production is that under ordinary circumstances, hydrogen production takes a back seat to the production of compounds that the organisms use to support their own growth.



But Shuguang Zhang, associate director of MIT's Center for Biomedical Engineering, and postdocs Iftach Yacoby and Sergii Pochekailov, together with colleagues at Tel Aviv University in Israel and the National Renewable Energy Laboratory in Colorado, have found a way to use bioengineered proteins to flip this preference, allowing more hydrogen to be produced.

"The algae are really not interested in producing hydrogen, they want to produce sugar," Yacoby says - the sugar is what they need for their own survival, and the hydrogen is just a byproduct. But a multitasking enzyme, introduced into the liquid where the algae are at work, both suppresses the sugar production and redirects the organisms' energies into hydrogen production. The work is described in a paper published online during June in the *Proceedings of the National Academy of Sciences*, and was supported in part by a European Molecular Biology Organization postdoctoral fellowship, the Yang Trust Fund and the U.S. Department of Energy's National Renewable Energy Laboratory.

Adding the bioengineered enzyme increases the rate of algal hydrogen production by about 400 percent, Yacoby says. The sugar production is suppressed but not eliminated, he explains, because "if it went to zero, it would kill the organism."

The research demonstrates for the first time how the two processes carried out by algae compete with each other; it also shows how that competition could be modified to favor hydrogen production in a laboratory environment. Zhang and Yacoby plan to continue developing the system to increase its efficiency of hydrogen production.

"It's one step closer to an industrial process," Zhang says. "First, you have to understand the science" - which has been achieved through this experimental work. Now, developing it further - through refinements to produce a viable commercial system for hydrogen-fuel manufacturing - is "a matter of time and money," Zhang says.

Ultimately, such a system could be used to produce hydrogen on a large scale using water and sunlight. The hydrogen could be used directly to generate electricity in a fuel cell or to power a vehicle, or could be combined with carbon dioxide to make methane or other fuels in a renewable, carbon-neutral way, the researchers say.

In the long run, "the only viable way to produce renewable energy is to use the sun, [either] to make electricity or in a biochemical reaction to produce hydrogen," Yacoby says. "I believe there is no one solution," he adds, but rather many different approaches depending on the location and the end uses.

This particular approach, he says, is simple enough that it has promise "not just in industrialized countries, but in developing countries as well" as a source of inexpensive fuel. The algae needed for the process exist everywhere on Earth, and there are no toxic materials involved in any part of the process, he says.
"The beauty is in its simplicity," he says.

We tend to agree. For more information, interested readers might like to check out:

I. Yacoby, S. Pochekailov, H. Toporik, M. L. Ghirardi, P. W. King, S. Zhang. Photosynthetic electron partitioning between [FeFe]-hydrogenase and ferredoxin:NADP -oxidoreductase (FNR) enzymes in vitro. *Proceedings of the National Academy of Sciences*, 2011; DOI: 10.1073/pnas.1103659108

Generational Cycles – Breastapo

This from last weekend's Wales On Sunday newspaper:

Standing up to the 'Breastapo'

It's hard enough being a mum without people criticising your every move, so I felt pleased to see Soap Star to Opera Star's Myleene Klass making a stand against the 'Breastapo' – aka breast-feeding police!

Fellow Hear'Say member Kym Marsh was recently unfairly vilified for giving up on breast-feeding her daughter earlier than generally recommended.

Of course it is preferable to breastfeed your baby, but it is not always that easy and everyone's circumstances are different. Kym Marsh's difficulties to produce enough milk while her daughter was on an IV drip are a case in point.

A friend went to an ante- natal class where flash cards were used saying breastfeeding was "good" and bottles were "bad"!! Unbelievable!!

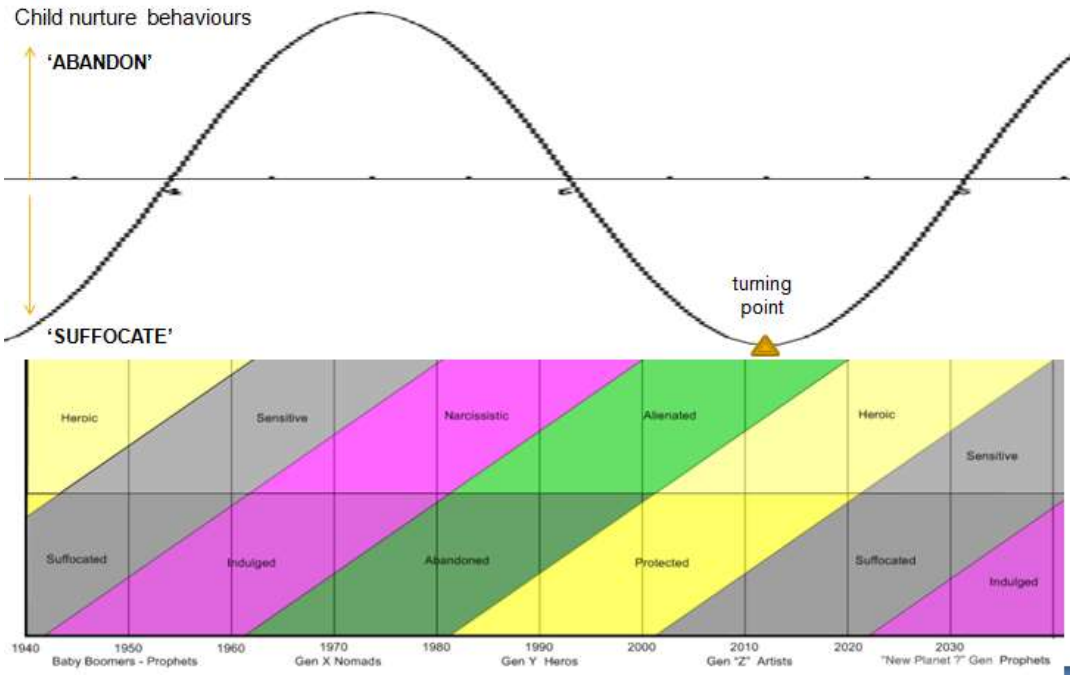
Women are under enough pressure already.

As Myleene put it "Aren't we all just doing the best we can?"

The moment something acquires a name, it is fairly safe to say that it represents a phenomenon that resonates with a critical mass of people. 'Breastapo' is just such a word. One that feels like a really important signal in the Generations story.

We know that one of the strong oscillations in parent-child relationship through the years is between the two extremes of 'abandonment' (the poor Nomads) and 'suffocation' (the perhaps even deserving of our sympathy new generation of Artists). We know also that the full cycle spans four generations – as shown in the sine-curve picture overlaid onto the usual Generations Map.

Since the Nomads were being raised during the 1970s and 80s, the tide of societal expectation on parents has been towards protection and, now, suffocation. For the last ten years or so it has been a brave journalist or public figure that has said anything that even hints at the idea that children aren't the most important people on the planet.



As the picture also shows, at some point – around about 2011-2012 – this tide begins to turn. We're already starting to see some early signs of this shift in perspectives, largely (in the UK at least) from teachers, police and industry leaders that our emerging generation are becoming so pampered and cosseted that we're in danger of raising people who are completely incapable of functioning in the 'real world'.

We suspect that the increasing use of very emotive language like Breastapo – there aren't too many more graphic metaphors than Nazi Germany – is a clear sign that we're at the predicted turning point, and that power is just on the verge of returning to the parent who steps out of the current societal norm and says, 'enough already, I'm going to be doing things my way from now on' and I don't care what you think'.

Was that an 'about time' I heard you shout?

Biology – Mycrohylid Frogs (And Tarantulas)

There are many examples of ‘mutualism’ in nature – situations where two different life-forms co-exist to mutual benefit – but one of our favourites is the recently discovered relationship between tarantulas and mycrohylid frogs. For most frogs, tarantulas are represent a significant threat. In the picture below, in fact, the mob of tarantulas is busy devouring a rather large frog. The mycrohylid in the bottom left of the picture, however, is able to watch on in the re-assuring knowledge that the taratntulas see it as friend rather than food.

Microhylids - or narrow-mouthed frogs - are not exactly the superstars of the frog world: they're only really familiar to specialists, despite the fact that (as of June 2009) they contain over 450 species distributed across Africa, Madagascar, the Americas, and Asia.

At first blush it is quite surprising to learn that microhylids in Peru, India, Sri Lanka and perhaps elsewhere have developed close relationships with large spiders. One of the first published discussions of this phenomenon was produced by Crocraft & Hambler (1989). Noting a close association between individuals of the Dotted humming frog *Chiasmocleis ventrimaculata* and the burrowing theraphosid tarantula *Xenesthis immanis* in southeastern Peru, they suggested that the spider - well capable of killing and eating a frog of this size - used chemical cues to recognise the frogs. Young spiders have sometimes been observed to grab the frogs, examine them with their mouthparts, and then release them unharmed. Microhylids are probably unpalatable due to their skin toxins, and this might explain how this association arose in the first place.

Crocraft & Hambler (1989) noted that the frog seemed to benefit from living in proximity to the spider by eating the small invertebrates that were attracted to prey remains left by the spider. The frog presumably also benefits by receiving protection: small frogs like this are preyed on by snakes and large arthropods, yet this frog is protected by a formidable spider bodyguard. Other researchers have suggested that the spider might gain benefit from the presence of the frog: microhylids specialise on eating ants, and ants are one of the major predators of spider eggs. By eating ants, the microhylids might help protect the spider's eggs.

So, both the frogs and the tarantulas seem to benefit from the association of their 'partner'. This kind of mutualism describes the condition whereby both species gain benefit from the

relationship. In extreme forms of mutualism, both species become utterly reliant on the other. It's possible that things might be heading that way, but there are no indications as yet that microhylids or tarantulas have become that specialised, given that all of the species discussed here can survive without a 'partner'.

In these kinds of mutualism relationship, it is often possible to relate the partnering solution back to the resolution of a conflict or contradiction being faced by each partner prior to the relationship. As such, when mutualism becomes the solution, it represents a clear illustration of Inventive Principle 5, Merging.

Here's how the tarantula conflict (the need to protect eggs when the egg predators are small, nimble and able to run rings around the relatively speaking enormous tarantula) and the frog conflict (the desire to thrive when food is scarce) can be seen to point to precisely this Merging solution:

IMPROVING PARAMETERS YOU HAVE SELECTED:

Productivity (44)

WORSENING PARAMETERS YOU HAVE SELECTED:

Amount of Substance (10)

SUGGESTED INVENTIVE PRINCIPLES:

35, 3, 2, 25, 9, 19, 13, [illegible], 5

IMPROVING PARAMETERS YOU HAVE SELECTED:

Safety/Vulnerability (38)

WORSENING PARAMETERS YOU HAVE SELECTED:

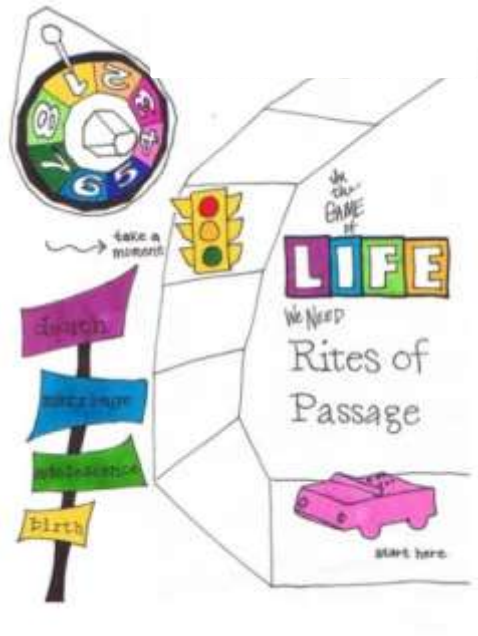
Adaptability/Versatility (32)

SUGGESTED INVENTIVE PRINCIPLES:

30, 13, 15, 28, 17, 29, 5

Short Thort

Rite Of Passage:
A ritual or ceremony signifying an event in a person's life indicative of a transition from one stage to another, as from adolescence to adulthood.



The same thing with innovation:
Every innovation project needs and must face its own
Rite Of Passage

News

The Road To True Professionalism…
…has now (finally!) arrived from the printer. Copies of the book can be ordered from the website…

Website
…speaking of which, by the time you read this, we should have a brand new website up and running. Along with a shiny new PayPal-friendly on-line shop. It's almost like being part of the 21st Century.

Mauritius
It's-A-Dirty-Job-But-Someone-Has-To-Do-It Part 23. It seems we've been invited for a week of workshops, seminars and 'meeting the President'. 19-25 October in case anyone might be interested in attending a Systematic Innovation session in a non-Clevedon environment.

Part 24…
With a following wind, we might also be visiting another paradise, this time Jamaica, to conduct a project as part of the government's Science, Technology and Innovation programme. Hopefully before the end of the summer.

Matrix2010 NL
This month saw us agreeing with long-term Dutch friends 'Innovative Partners' to translate and publish the Matrix2010 toolkit. The poster version is expected to be ready for a September launch. With a following wind, the book should be ready for the end of 2011.

TrenDNA
The Chinese translation of the TrenDNA book and cards is just about complete and the book should be available from next month. It is also planned to start running 2-day TrenDNA workshops in China (in Mandarin) starting in August. Since the book is a direct translation of the English edition, the focus of the workshops will be on helping Chinese manufacturers to better understand Western customers.

ICMM Launch
Well, it's taken even longer than the worst projections, but we finally achieved a critical mass of launch partners across industry and academia, so the official Innovation Capability Maturity Model invitations will go out to the wider world in the coming days. Anyone interested that doesn't receive their invitation, please get in touch with Hannah.

Building Societies Association
We have been invited to give a keynote address at one of the key moments in the UK financial services sector calendar. The session will take place on 13 September in – where else? – central London. Details on the website.

New Projects
This month's new projects from around the Network:

- FMCG – Eyes on the World study
- Finance – IP valuation studies
- Materials – Customer trend directions and new product development study
- Medical devices – trendstorm/'invent-to-order' study
- ICT – problem solving workshops
- Automotive – manufacture cost-reduction project
- University – innovation masters degree curriculum design
- Automotive – bespoke SI text-books
- Aerospace – innovation strategy project
- Medical devices – patent 'invent-beyond' study