

MASS CUSTOMIZATION NEWS

A Newsletter on Mass Customization, Personalization, and Customer Integration, edited by Frank T. Piller, TUM Research Center on Mass Customization & Customer Integration

www.mass-customization.de • Vol. 6, 2003, No. 1 • Munich, May 2003

Contents: What do you find in this issue?

- **Editorial: Finally, this Newsletter in English:** Welcome to the English Edition of the Newsletter – und ein Wort an meine deutschen Leser, warum dieser Newsletter nun auf Englisch erscheint
- **What is Mass Customization?** A focused view on the term: What is mass customization? There is a wide variety of understandings and meanings of mass customization in the literature. What are the major defining elements from our perspective?
- **Customize your time: Mass Customization in the watch industry:** Watches are one of the most prominent fashion items and a dominant matter of self expression. Thus, customization of watches is a very interesting field to study. Recently, three new examples of mass customization in this industry came to the market: the Microsoft SPOT watch, the customization initiative in Swatch's Via della Spiga concept store, and Custom-made Swiss watches from Factory 1to1.
- **Enormous Feedback on the MCPC 2003 Call for Papers:** The "2003 World Congress on Mass Customization and Personalization", to be held in Munich, October 6-8, 2003, is coming closer. We got almost 200 speaking proposals for this event.
- **Offer customization, get standardization?** Online shoppers enjoy being able to customize the products they are buying, but they often rely on default configurations when selecting options. Let's have a closer look on this result of a recent study.
- **"Best Cooperation Award":** Many examples of mass customization are based on an intense cooperation between several partners. A German award looks for the best cooperation between SME (*article in German language*).
- **Market study configuration systems for mass customization:** Configuration systems are a key element of any mass customization system. While in former times most configurators were developed from the scratch, more and more software vendors offer standard

systems suitable for the requirements of mass customization. A study (in German language) by ThinkConsult compares 24 of these systems and provides an overview of the German market (*article in German language*).

- **New Books on Mass Customization:** Within the next quarter, three new or revised books from our research center on mass customization will be published (however, two in German language only). Get an overview what will come on the market (*article partly in German language*).

© 2003

Editorial:

Mass Customization News in English

Dear Mass Customization News Readers,

Finally: an English Edition of this Newsletter. (*Deutsche Leser: Für Sie gibt es unten noch einige Zeilen in Deutsch*). While this newsletter was started as a community service for German speaking mass customization researchers and managers interested in customizing their offers efficiently, it increased its reach to an audience like journalists, students, marketing and e-commerce specialists, among others, interested more generally in the topic. Making our world more personal and introducing new ways of creating value by serving customer individually is an issue that goes beyond introducing flexible manufacturing systems and developing configuration engines. It is very much a topic of strategic management, marketing strategy, and has many consequences for the design profession, retail operations or customer behavior research.

Since I started this newsletter six years ago, I got much feedback from non-German speaking people interested in mass customization asking for an English version of it. Some companies published a "Google trans-

lation” of my newsletter, others urged my to translate some pieces. Finally, you won ! Starting with this edition, each newsletter will contain its most important articles in English language (only). Please don't expect text book English, there is no expert editing of my writings (I hope that the content counterbalances my language flaws).

However, to serve the very active German mass customization community, each volume will still contain some German language articles reporting on special topics like German books, market studies or national events. When it makes sense, I will add an English abstract so that no one feels excluded.

**An meine deutschen Leser
(to my German readers):**

Sie haben mir lange die Treue gehalten und diesen Newsletter zu einem großen Erfolg gemacht. Doch die Mass-Customization-Welt entwickelt sich zu schnell und vor allem zu international weiter, um den Blick über den deutschsprachigen Tellerrand zu vernachlässigen. Deshalb gibt es ab sofort den Hauptteil dieses Newsletters nur noch in englischer Sprache.

Fühlen Sie sich dadurch aber bitte nicht ausgeschlossen oder vernachlässigt. Ich sehe in der internationalen Öffnung der recht aktiven deutschen Mass-Customization-Community eine große Chance, das Thema Mass Customization weiterzubringen. In diesem Sinne: Diskutieren Sie weiter mit und berichten Sie von Ihren Erfahrungen mit Mass Customization in Deutschland (am liebsten in Zukunft in Englisch, aber wir helfen gerne bei der Übersetzung).

And: **Participate !!** I am very open to receive your ideas, articles, feedback, observations, case studies etc (but, please, no pure company PR or advertising).

Send me your ideas and input for the next edition to piller@ws.tum.de. This will help also to get again more editions out. While there are more than enough interesting developments to report, I lack the time to put it all together more frequently if I have to write it all alone.

To start with, a nice **new example of mass customization**: Did you ever asked yourself what to do with all your digital holiday pic-

tures? Put them on your wall with the customizable wall paper by “Berlintapete” (www.berlintapete.de). Upload your digital pictures, and get them in wall size as your new wall paper. This is a good indication what modern digital printing technology offers as an enabler for mass customization (however, as stated in an earlier issue of this newsletter, it might be not a good idea from an aesthetical point of view if everyone designs his or her own wallpaper ...).

Well, I hope you enjoy this edition, and I'm looking forward to get your feedback.

Yours, Frank Piller

☺☺☺

What is Mass Customization? A focused view on the term

What is mass customization? There is a wide variety of understandings and meanings of mass customization: „Extant literature has not established good conceptual boundaries for mass customization“, state Duray et al. (2000, p. 606) after a literature review. The same is true for managers and consultants who use the term mass customization nowadays in many forms. In the following, I will share the points which are – from my perspective – the most important ones and which are characterizing the concept. This might be a good start for the English edition of this newsletter.

Just have a look at Google. Its (very helpful) glossary function gives the following definitions covering a broad range of perspectives and views on mass customization:

- *Producing in volume, but at the same time giving each individual customer something different according to his or her unique needs.* (<http://www.winwinworld.net/Network/Glossary.htm>)
- *The process by which custom-designed products are offered to more consumers at ever lower prices.* (<http://www.preferredgroup.com/Glossary/m2.htm>)
- *A manufacturing environment in which many standardized components are combined to produce custom-made products to customer order.* (http://highered.mcgraw-hill.com/sites/0072394668/student_view0/chapter2/glossary.html)

- *Shorthand for high variability in marketing. Uses the power of the database to vary the marketing message - or the actual product - to fit the characteristics of an individual customer or prospect.* (<http://www.unitedwire.net/buzzwords/buzzdf01.htm>)
- *A highly streamlined and flexible approach to production that enables quick and efficient production of customized products and/or services at low cost and high volume.* (<http://www.risnews.com/glossary.htm>)
- *A powerful marketing tool that uses a database to tailor a marketing message or the actual product to fit the characteristics of each individual customer or prospect.* (<http://www.smartdm.com/index.cfm?nav=resources&menu=glossary>)

So, what is mass customization? A marketing tool, a manufacturing strategy, an innovation process? Stan Davis, who coined the phrase in 1987, refers to mass customization when “the same large number of customers can be reached as in mass markets of the industrial economy, and simultaneously they can be treated individually as in the customized markets of pre-industrial economies” (Davis 1987, p. 169). In order to address the implementation issues of mass customization, Tseng and Jiao (2001) provide a working definition of mass customization that I find very useful. The objective of mass customization is “to deliver goods and services that meet *individual* customers’ needs with *near* mass production efficiency”.

This definition implies that the goal is to detect customers needs first and then to fulfill these needs with an efficiency that almost equals that of mass production. Often this definition is supplemented by the requirement that the individualized goods do not carry the price premiums connected traditionally with (craft) customization (e.g., Pine uses this definition in his 1993 classic book).

However, mass customization practice shows that consumers are frequently willing to pay a (sometimes huge) premium for customization to reflect the added value of customer satisfaction due to an individualized solution, i.e. the increment of utility customers gain from a product that better fits to their needs than the best standard product attainable (Chamberlin 1962; Du / Tseng 1999).

I consider the value of a solution for the individual customer as the defining element of mass customization. A mass customizer recognizes that customers have alternatives of choice which are reflected through their purchasing decisions: Customers can either choose

- mass customized goods which provide better fit,
- compromise and buy a standard product of lesser fit (and price),
- or purchase a truly customized product with excess features but also at a higher price.

Thus, value reflects the price customers are willing to pay for the increase in satisfaction resulting from the better fit of a (customized) solution for their requirements. Mass customization is only applicable to those products for which the value of customization, to the extent that customers are willing to pay for it, exceeds the cost of customizing (Piller 2003; Tseng/Piller 2003). This implies, that – even while the price of a to-be-customized product may increase – the same group of customers that before was buying a standard (mass) product is now heading towards customized products. Mass customization does not imply a change of market segments as usual its is often the case with (traditionally craft) customized products.

An important indicator of the extent of value being created is the level of customization. Within the EuroShoe project, a large scale European project dedicated to mass customization in the footwear industry (see <http://www.euro-shoe.net>), the following structure was developed in relation to footwear customization. However, it can be easily transferred to other products.

Customization can be carried out with regard to *fit, style, and functionality*. In the case of a shoe, fit is mostly defined by its last, but also by the design of the upper, insole and outsole etc. Style is the option to influence the aesthetic design of the product, i.e. colors of the leathers or patterns. A shoe’s functionality can be defined by its cushioning, form of heels, structure of cleats (e.g., for sport shoes).

In the case of cereal, these options could be translated into package size (fit), taste (no

chocolate and raisins, many strawberries), and nutrition (vitamins, special fibers).

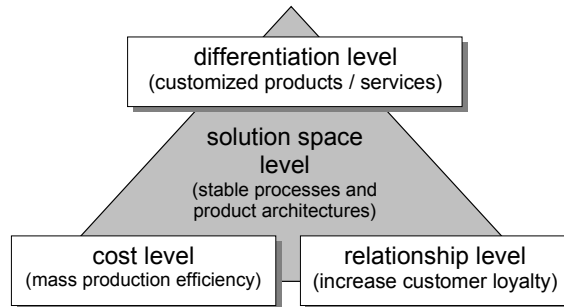
Taking these options, there are three major approaches for delivering customization (at the example of footwear):

- **Style Customization:** Based on standard lasts (and sizes) customers can choose options of the style (colors, fabrics, applications) within constraints set by the manufacturer.
- **Best (Matched) Fit:** The feet of each individual customer are examined (by the means of a foot scan or in combination with biomechanical data) and used to match the customer's feet to an existing library of lasts, insoles and soles with a much higher granularity than in today's mass production and retail systems. Additionally, style customization may be possible to a specific extent.
- **Custom-Fit:** Feet of each individual customer are examined (foot scan and biomechanical data), his/her specific habits are analyzed and used to make an individual last, insole and sole for each customer. Additional, style customization may be possible to a specific extent. Shoes and lasts can only be produced when an order is placed by an end-consumer.

The difference between these approaches is not only the possible degree to address the needs of a specific customers (and, thus, the possibility to create additional value), but also the degree of complexity when manufacturing the product. Obviously, matching a foot to an existing last is much less complex than crafting the last for each individual customer (note: the complexity issue is also important from the customers' perspective as an article below discusses). Here, the divergence between mass customization and (craft) customization is based. The competitive advantage of mass customization is based on combining the efficiency of mass production (stable processes) with the differentiation possibilities of customization.

Doing so, mass customization is performed on four levels (see the following Figure). While the *differentiation level* of mass customization is based on the additional utility (value) customers gain from a product or service that corresponds better to their needs, the *cost level* demands that this can be done at total costs that will not lead to such a price increase that the customization process implies a switch of market segments

(Piller 2003). The information collected in the course of individualization serves to build up a lasting individual relationship with each customer and, thus, to increase customer loyalty (*relationship level*).



The four levels of mass customization

While the first three levels have a customer centric perspective, a fourth level takes an internal view and relates to the fulfillment system of a mass customizing firm: Mass customization operations are performed in a fixed *solution space* that represents "the pre-existing capability and degrees of freedom built into a given manufacturer's production system" (von Hippel 2001).

Correspondingly, a successful mass customization system is characterized by *stable* but still flexible and responsive processes that provide a dynamic flow of products (Pine 1995). While a traditional (craft) customizer re-invents not only its products but also its processes for each individual customer, a mass customizer uses stable processes to deliver high variety goods.

A main enabler of *stable processes* is to modularize goods and services. This provides the capability to efficiently deliver individual modules of customer value within the structure of the modular architecture. Setting the solution space becomes one of the foremost competitive challenges of a mass customization company. Taking again the example of custom shoes, a "custom fit" solution for mass customization would be based on stable processes to transfer a customer's foot into a last (today, e.g., by automating the transfer of a 3D-scan into a CAD form, and transferring this model to a flexible milling robot making the last) and adopting a selected model to this last, while a traditional shoe maker needs several steps of measurement and refinement ("trial and error") to build a customer specific last.

What is mass customization? I think the phrase is, first of all, a vision. A vision to perform a company's processes truly customer centric, resulting in products or services which are corresponding to the needs and desires of each individual customer, and doing this without the surpluses traditionally connected with customization. However, in the end it seems to be paradoxically to find a standard definition of mass customization, of a concept that refers to address individuality. But make sure that you have a strong understanding what you personally mean when using the term.

References:

- Chamberlin, E.H. The Theory of Monopolistic Competition, 8. ed., Cambridge: Harvard University Press 1962.
- Davis, S. Future Perfect, Reading: Addison-Wesley 1987.
- Du, X. and Tseng, M.M. Characterizing Customer Value for Product Customization, Proceedings of the 1999 ASME Design Engineering Technical Conference, Las Vegas 1999.
- Duray, R. et al. Approaches to Mass Customization: Configurations and Empirical Validation, Journal of Operations Managements, 18 (2000), pp. 605-625.
- Piller, F. Mass Customization, 3rd edition, Wiesbaden: Gabler: 2003.
- Pine, B.J. Mass Customization, Boston: Harvard Business School Press, 1993.
- Pine, B.J. Challenges to Total Quality Management in Manufacturing, in J.W. Cortada and J.A. Woods: The Quality Yearbook 1995, New York: McGraw-Hill, 1995, pp. 69-75.
- Tseng, M.M. and Jiao, J. Mass Customization, in G. Salvendy (Ed.) Handbook of Industrial Engineering, 3rd edition, New York: Wiley, 2001, pp. 684-709.
- Tseng, M.M. and Piller, F. Towards the customer centric enterprise, in M. Tseng and F. Piller (Ed.) The customer centric enterprise: advances in mass customization and personalization, New York et al: Springer, 2003, pp. 1-27.
- Von Hippel, E. Perspective: User Toolkits for Innovation, The Journal of Product Innovation Management, 18 (2001), pp. 247-257.

Acknowledgment: The text above is taken in part from a chapter I co-authored with Mitchell Tseng, HKUST, for the upcoming book "The customer centric enterprise: Advances in mass customization and personalization" (to be published at Springer in June 2003).



Customize your time: Mass Customization in the watch industry

Microsoft's SPOT watches, Swatch Via d. Spiga, and Factory 1to1

In the age of the cell phone, who needs still a watch? All of us – but more and more not to get the time but to express our personality. Watches are one of the most prominent fashion items and a dominant matter of self expression. Thus, customization of watches is a very interesting field to study. While different companies started several attempts to offer customized watches within the last decade, I would consider few of the existing offers as a serious and professional move towards mass customization. Many companies are either small start up operations with limited scope or professional management of the customization processes, or they do not offer real customization but only small series (e.g., logo watches for promotion activities). But recently, there is a change, and more serious initiatives to customize watches on a real one to one base are approaching.

Microsoft SPOT watches

Bill Gates of Microsoft recently announced plans to use watches as a transponder for customized services. Teaming up with Fossil Inc., Suunto and Citizen Watch Co. Ltd., Gates presented in January 2003 a concept wristwatch based on Microsoft's Smart Personal Objects Technology (SPOT). With compelling features such as customizable watch faces, access to personal messages and appointments, and the ability to receive up-to-date news, traffic, weather and sports information, the watches are the first wave of smart objects that shall extend Microsoft's reach from personal computing to everyday objects. However, first models are expected to be available not before fall 2003. But it will be very interesting to see how these companies bundle hard and soft customization around the physical product and accompanying services.

Two other great examples of mass customization of watches are already available, both focusing on the (aesthetic) design level of customization:

Swiss based watch customizer *Factory121* opened its Internet store some months before, and launched officially in April 2003. This is not only the best customization site in the watch industry, but also one of the best configuration systems in all categories. Why? See below.

But let's first have a look on the customization initiative of a big and established player in the industry: *Swatch*. This brand is sometimes quoted as an example of mass customization – but it is not. Swatch is a typical example of a variant manufacturer that has the capabilities to bring out a huge quantity of variants and collections in a short time. However, customers can only select between made-to-stock products out of a huge variety.

Swatch Via della Spiga

After two very successful decades, the brand lost some of its original power in the last couple of years. While in former times Swatch could handle forecasting and product planning pretty easily as demand was so strong that even not so popular models could be sold without problems, new competition (trends) and an too established brand name force the company to go new ways. One approach to redefine the brand is the introduction of new (standard) models breaking with the traditional product platforms. Another tactic is customization which was recently introduced quietly in one concept store and is now in a pilot phase.

"Experience the language of fashion – you become the artist and accessorize your own Swatch." This is the advertising claim of Swatch's Via della Spiga concept store in Milan, Europe's fashion and style metropolis #1. Placed in the trend setting arena of the city where all big international designers have their stores, Swatch tries to update its image by using the latest fashion details of the surrounding designers for a very special collection of watches. "Catwalk details, chic styling, fabric trimming, edgy appliqués, unexpected coupling of materials, textile variants, enhancers such as crystals, feathers, fun fur, chandelier strands, studs, stones, ribbons, snaps, buckles, and beads await you. It's a chance to indulge your personality. Define your fashion silhouette," says the catalogue.

I visited the store three weeks ago. It looks much more boutique than the standard swatch store, more like a fashionable jewelry store. First of all you recognize a really beautiful collection of ready-made watches which are only available in this store, however, pre-configured. In a second room, a workshops appears. Here, as demonstrated in a video, customers can design their own (women's) watches. Breaking with the traditional concept, clients choose from pre-assembled watch bodies and combine them with a made-to-measure jelly ribbon plastic band that is supposed to be turned around one's wrist, ankle, neck or waist several times. The band can be decorated with heart, flower and star crystal appliqués, and even filled with different objects like small pearls or stars. The results is a very special look (you can get an idea on <http://www.swatch.com>, go to the "Via della Spiga" section). All custom assembling is done by the client with the help of a sales clerk on the spot. Watches are priced between 37 and 100 Euro.

While the extent of customization is not going very far, and the total approach is rather simple, this is one of the most striking examples of a new customization trend that goes beyond the traditional differentiation advantages of mass customization:

- Swatch uses customization in this store as an expression of self, as a concept to redefine its brand. While in former times a single, often famous professional designer was featured creating a special watch, in this concept the individual customer and its creativity and personal style is in the center of the product design. This is a total change of thinking.
- However, the product family design and constraints of the product system stop "bad design". Even if users have plenty of choices, restrictions prevent that the Swatch brand image is spoiled by bad consumer co-design.
- The open store atmosphere and the public workshop invite a community driven co-design. While in most mass customization applications individuality means also a one-to-one configuration process, the Swatch store provides the platform for a community of users to create an in-

dividual piece jointly. Using virtual and real-life communities to support mass customization is a concept that got just recently growing attention.

I am curious to see how this system develops: is it only a short pilot or the starting point of a larger movement? I will keep you posted.

Factory 121

In the watch-making industry, high quality "Swiss made" brands have been out of the reach of the majority of watch buyers – if they didn't want to get a Swatch. The intention of mass customization pioneer *Factory121* is to close this gap. Frédéric Polli, one of its founders states it very clearly: "Margins and cost structures in the classic watch distribution channels are a major obstacle to the positioning of 'Swiss made' watches for the majority of watch buyers. New information technologies, like the internet, give us the ability to offer the excellent quality of Swiss watches to ordinary buyers under different conditions."

But the firm does much more than just bypassing the traditional sales channel. On Factory121's Internet site, users can co-design their very own wristwatch. After several years of planning, product development, marketing tests, and technology development Factory121 opened its (virtual) doors at the beginning of this year. The visible center of Factory121 is its web site, developed over a two-year period under the lead of Pete Beck, CEO of Brighton based Electrostrata LTD (<http://www.electrostrata.com>).

I had the opportunity to follow the development of this company since a longer period of time, and even if I had an idea of what would come up, I was really expressed when the official site launched. What makes this mass customization site an foremost exemplar for its industry (and mass customization in general, make sure that you interact with the site at <http://www.factory121.com>):

- The customer co-design process begins with a watch model that is already partially assembled. By presenting this pre-configuration, complexity is reduced. However, the combinations offered are almost infinite.

- As in the case of Swatch, the product family design prevents "bad design". Restrictions of choice prevent that a specific style is spoiled by "bad" consumer co-design.
- The 3-D quality of the design tools delivers a great user experience. Speed and feedback of the site are excellent. Virtual images are created in real-time depending upon the users' choices. The interaction and animation elements of the Internet site are based on Java, a mature, reliable and popular technology that does not demand any plug-in.
- Users get a game-like interactive experience in which they perceive themselves living a unique and fun buying process ("flow experience"). When designing and purchasing a watch from Factory121 the buying process becomes an important part of the product – and, thus, an important driver of customer satisfaction.
- Despite the nice design and experience, the site offers also plenty of explanations and product information. Just have a look at the customized product description once you finished the customization process.
- The site supports price customization. It enables customers to design a watch within the constraints of their personal budget. Therefore, just by choosing, e.g., a leather strap over a stainless steel one, clients can choose an option suiting their budget. As customers work through each category of components, colors and selections, they are always aware of how their design choices are impacting the watch's final price. Doing so, Factory121 is one of the few examples using modular pricing.

The site is supplemented by high customer service. The firm operates own repair centers in its most important international markets, free shipping, and a strong quality guaranty. As buyers cannot physically touch the watch they are ordering, Factory 121 guarantees that, in case of any problems, the product will be exchanged or taken back after repayment in ten days without any question.

The price paid by customers (between 120 and 200 Euro) represents very much a mass customization cost structure – and is much below the average price of a standard Swiss watch of this category. Costs and distribution margins which can easily reach two thirds of a watch's price in a traditional distribution system have disappeared in this model. This enables Factory121 to invest heavily in the maintenance and development of the firm's online platform – and to counterbalance the additional manufacturing and transaction (handling) costs of dealing with individual customers' orders.

As soon as an order is made, it is transferred to the manufacturing site of Rhodanus AG, located in the Swiss province of Valais. The sixty employees of this family owned watchmaker have been assembling prestigious Swiss brands for over thirty years. A made-to-order watch will be mailed to the customer within ten working days. Despite the already launched web site, the owners plan to offer their products also in affiliate stores and for corporate customers.

The web site has just launched, and it's too early to evaluate if Factory 121 will become the DELL of the Watch Industry. However, early user feedback is very promising ("Je suis impressionné en bien par la qualité de votre service client", says Marc Priolo, Head of DELL Customer Service Switzerland). I will follow this case closely and keep you informed what's happening at Factory 121. In the meantime, I am waiting for the real big innovation in this field: How could I customize my time and get that 25-hour-day?

☺☺☺

Enormous Feedback on the MCPC 2003 Call for Papers

As announced already in earlier issues of this newsletter, we are in the process of planning the "2003 World Congress on Mass Customization and Personalization", to be held in Munich, October 6-8, 2003. We organized the same event already with large success two years ago in Hong Kong, and from the feedback we got until now it will become a great event in Munich as well.

The conference will be organized as a platform for interaction and discussion, and to

continue the dialogue between mass customization researchers world wide. We will have lots of networking possibilities, an idea fair, project presentations, and a presentation format with short presentations and long discussion time. While mass customization is developing from an "emerging technology to a mainstream business application" (so the conference motto), the conference shall bring together different voices and thinking on the topic from an interdisciplinary perspective.

We received up to now almost 200 speaking proposals from academics and practitioners from all parts of the world (great stuff, innovative ideas, and new voices!). As it looks today, the MCPC will become the largest international event in the field of mass customization and personalization ever (so we hope), with more than 80 keynotes, presentations, panels etc. on the topic.

Audience will come from around the world, and we expect a total participation of 300+ people (ratio of 50:50 between academics and practitioners). Together with my co-chairs, Prof. Mitchell Tseng, from the Hong Kong University of Science and Technology, and Prof. Ralf Reichwald, Dean of the TUM Business School, I would be very pleased if you would be one of our participants! I would like to welcome many readers of this newsletter at the MCPC 2003, to discuss your ideas and experiences with mass customization.

And: Munich in October is great place to visit. If you like this kind of attraction, you may want to arrive one or two days earlier to have a chance to visit the world famous "October Fest" (last day is Oct. 5; however, this event is more about "Mass" than customization). Or head to the mountains and Bavaria's famous chateaus and castles before or after the conference. And, last but not least, the city of Munich is regarded as one of the most desirable places to life in Europe. Discover why!

Please feel free to contact me or Christoph Ihl, Head of the Organizing Committee, for any questions (Tel +49.89.28924834; ihl@ws.tum.de).

All information also at <http://www.mcpc2003.com>.

Offer customization, get standardization ?

“Online shoppers enjoy being able to customize the products they are buying, but they often rely on default configurations when selecting options.” So CRMDaily.com, an online magazine, summarizes the findings made by Kansas State University instructor Janis Crow (<http://info.cba.ksu.edu/crow/>) in investigating customer behavior at Web shopping sites.

In the mass customization field, there are many well known example of build-to-order products available through on the internet. Crow found, however, that while consumers appreciate having many options from which to choose when customizing products online during the order process, they also rely heavily on standard configurations provided by a retailer (a journal article describing the study shall be published in the May issue of *Behavior Research Methods, Instruments and Computers*).

Participants in Crow's study were asked to visit a web site and customize a pizza, shoes and a personal digital assistant. Participants could choose either to create their own product from scratch or to use the site's suggestions. In a majority of instances, participants relied on the default configurations, Crow found, even though they could choose many other options. She said study participants indicated that they preferred to buy products with many attributes to choose from, but also found it more difficult to customize their products this way.

So, is mass customization this easy? Just offer all the customization possibilities, but don't care about its execution in manufacturing as customers will just order the standard product? I don't think so. However, the question of choice and how consumers perform mass customization is one of the most important ones in today's mass customization research landscape. I addressed this issue already several times in this newsletter before, but some more comments in the following.

(1) I had not the possibility to evaluate the configuration web sites used in the study quoted above. However, the design, product representation and explanations on the site

are an important driver of consumers' choice behavior. This is still a major draw-back of many build-to-order web sites. Even Lands'End's highly acclaimed web site is only standard when it comes to its configuration engine. There is still much to be done in firms to implement recommendation modules and support for helping users to find their particular specification ... just presenting modular product structures in pull-down menus is not enough.

(2) Product category does matter a lot. For shoes, several empirical studies show that customers are first of all interested in fit, not in design (see. e.g. <http://www.aib.ws.tum.de/piller/euroshoe1.pdf>). Electronic devices are customized often by software – during the use but not during the buying process. Other products like watches, jewelry, shirts, or other gift items, however, are dominated by the design option. Here, many vendors report a heavy use of customization options.

(3) Often, presenting choice has other reasons: In developed credit card markets like the UK and US, some banks offer clients to customize their credit card contracts in regard to the annual fee, interest rates, bonus points (miles), and insurance options. Standard contracts are focused on one or two of this options (no annual fee and high bonus points, but high interest rates for credit sales; or an annual fee and no air miles, but low interest). By giving this selection process in the hand of the customers with the help of an internet interface, the bank makes this trade-off visible to its clients. Customers get the chance to experience how different advantages counterbalance each other. This is a great way to educate clients, even if in the end the configurator just matches a customer profile to a standard contract.

(4) In an own study, conducted at our mass customization research center jointly with Prof. Nik Franke from the Vienna University of Economics and Business Administration, we found quite different results (this research will presented on the MCPC 2003, see also Franke/Piller 2003). We looked on the co-design processes of 180 real customers of a commercial mass customization web site. Here, users often reported they wanted more choice, and even while there were some dominant selection patterns (repre-

sending market trends and fashion trends), the selected products were pretty heterogeneous.

So, offering customization badly may result in the selection of standard products (as this is the less risky option for consumers), but offering customization in an appropriate way by the use of a dedicated mass customization configuration system is a way to harvest the true differentiated benefits of customization – and to deliver true customer value.

Reference:

Franke, N. / Piller, F.: Key research issues in user interaction with configuration toolkits in a mass customization system, International Journal of Technology Management (IJTEIM), Vol. 15, 2003 (forthcoming).



Ausschreibung des Wettbewerbs „Die beste Kooperation“

English Abstract: Many examples of mass customization are based on an intense cooperation between several partners. A German competition awards the best cooperation between SME (one firm has to be based in Germany).

Mass Customization funktioniert häufig nicht allein. Kooperationen sind ein Schlüssel für viele erfolgreiche Systeme. In diesem Sinne ist der folgende Wettbewerb für Sie vielleicht interessant: Wirtschaftswoche und Industriemanagement suchen mit dem BMBF und der Pleyma AG wieder die besten Kooperationen von kleinen und mittleren Unternehmen. Ein Gastbeitrag von Dr. Arne Engelbrecht (Pleyma).

Besonders kleine und mittlere Unternehmen stehen neuen Formen der überbetrieblichen Zusammenarbeit eher skeptisch gegenüber. Dabei können gerade sie überproportional von Kooperationen profitieren und ihre Wettbewerbsfähigkeit steigern. Das zeigt der Wettbewerb »Die beste Kooperation – Produzieren mit Erfolg«. Er wird vom Bundesministerium für Bildung und Forschung im Rahmenkonzept »Forschung für die Produktion von morgen« gefördert und findet jetzt zum zweiten Mal statt.

Am vergangenen Wettbewerb beteiligten sich insgesamt 50 Kooperationen. Preisträ-

ger des vergangenen Jahres waren die »Kooperation Metall« sowie die Hand-in-Hand-Werker GmbH in der Sonderkategorie »Kooperationen von Handwerksbetrieben« und die LOGEX System GmbH & Co. KG in der Sonderkategorie »Kooperationen von Dienstleistungsunternehmen«.

Teilnehmen können in diesem Jahr wieder alle kleinen und mittelständischen Unternehmen, die mit ihren Partnern erfolgreich in Forschung, Entwicklung, Einkauf, Beschaffung, Produktion, Service oder Vertrieb kooperieren. Mindestens ein Unternehmen muss seinen Sitz in Deutschland haben, und die Kooperationspartner müssen rechtlich eigenständig sein. Angesprochen sind produzierende Unternehmen aus der Industrie, aber auch aus dem Handwerk.

Die Bewerbungsbögen für den Wettbewerb können von April bis Ende Juni 2003 von der Internetseite

<http://www.die-beste-kooperation.de>

abgerufen werden. Informationen bei:

Dr. Arne Engelbrecht (Pleyma),

Telefon: +49.40.41928460,

arne.engelbrecht@pleyma.de.



Konfigurationssysteme für Mass Customization – aktuelle Marktstudie vergleicht deutsche Anbieter

English Abstract: Configuration systems are a key element of any mass customization system. While in former times most configurators were developed from the scratch, more and more software vendors offer standard systems suitable for the requirements of mass customization. A study (in German language) by ThinkConsult compares 24 of these systems.

Ein wichtiges Teilsystem eines Mass-Customization-Konzepts ist das Konfigurationssystem. Konfiguratoren bringen die Kundenbedürfnisse mit den Fähigkeiten eines Anbieters in Einklang und sind so integrales Bindeglied zwischen Produktentwicklung, Fertigung und Kundenwunsch. Ausgestattet mit einer einfachen Benutzerschnittstelle leiten Konfiguratoren den Kunden durch die verschiedenen Schritte zur Erhebung der Individualisierungsinformation – und prüfen

sogleich die Fertigungsfähigkeit der gewünschten Variante. Ziel ist die Reduktion der Anzahl von möglichen Varianten auf eine einzige, die den Kundenbedürfnissen und Wünschen am besten entspricht.

Dafür müssen Konfigurationssysteme eine Vielzahl an Funktionen beherrschen. Eine aktuelle Studie von Timm Rogoll (ThinkConsult) und mir beschreibt erstmals für den deutschen Markt die Ansprüche und technischen Hintergründe an Konfigurationssystemen speziell für Mass Customization und sehr flexible Variantenproduktion. Systeme für hochkomplexe Investitionsgüter, die von einem Vertriebsingenieur während der Verkaufsverhandlungen eingesetzt werden, stehen damit nicht im Mittelpunkt der Studie. Vielmehr geht es um Konfiguratoren, die – oft im Internet oder auf einem Sales-Kiosk – durch relativ ungeübte Benutzer bedient werden, die sich ihr eigenes Produkt konfigurieren wollen.

In den letzten Jahren sind eine Reihe innovativer Software-Anbieter mit Lösungen auf den Markt getreten, die sich den besonderen Aufgaben der Konfiguration durch einen ungeübten Nutzer stellen und hierfür Standard-Lösungen anbieten. Bis jetzt waren die meisten Mass Customizer noch auf die teure Selbstentwicklung der Systeme angewiesen.

Ziel der Studie ist es, den Anbietermarkt von Systemen zur Kundeninteraktion für Mass Customization zu beschreiben und zu strukturieren. Managern und Verantwortlichen für die Technologieimplementierung will die Studie eine wertvolle Strukturierungs- und Entscheidungshilfe bei der Auswahl eines Konfigurationssystems für Mass Customization geben. Die Studie vergleicht die Angebote von 24 Anbietern im Bereich Produktkonfiguration und überprüft die Produkte kritisch auf die Anforderungen an ein Konfigurationssystem, das von ungeübten Benutzern bedient wird und aufgrund der hohen Varietät und kurzen Lebenszyklen im Konsumgütermarkt auch eine einfache Aktualisierung von Preisen, Produktfeatures, Komponenten und Regelwerk der Konfigurationslogik sicherstellen muss. Neben dem Produktvergleich enthält die Studie auch eine ausführliche Darstellung der Ansprüche an und Gestaltungsoptionen von Konfiguratoren – aus Kunden- und Unternehmenssicht.

Nähere Informationen:



Timm Rogoll und Frank Piller: **Konfigurationssysteme für Mass Customization und Variantenproduktion: Marktstudie 2003**, München: ThinkConsult 2003. Ca. 200 Seiten, 290 Euro.

Weitere Informationen unter www.mass-customization.de/marktstudie (dort 30-seitiger Auszug aus der Studie gratis!)

Bestellung: Fax: 089-28924805, order@mass-customization.de

Download eines ausführlichen Auszugs und weiterer Informationen: <http://www.mass-customization.de/marktstudie/info2.pdf>

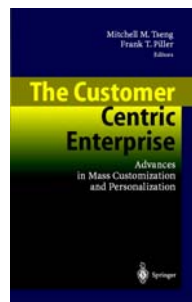
3333

New Books on Mass Customization

Within the next quarter, three new or revised books from the TUM Research Center on Mass Customization & Customer Integration will be published (however, two in German language only). Here a short overview what's coming up:

(1) **The Customer Centric Enterprise: Advances in Mass Customization and Personalization**, edited by Mitchell M. Tseng and Frank T. Piller

Despite a few exceptions, literature about mass customization and personalization is dominated by an argumentation focusing on the benefits of these strategies, but not delivering concepts and implementation steps how to build a customer centric enterprise. The book provides insight into these particular aspects. Following an interdisciplinary approach, leading scientists and practitioners in the field share their concepts and strategies for building a customer centric enterprise from the perspective of design, production engineering, technology and innovation management, customer behavior, as well as marketing.



The book builds on the results of the 2001 World Congress on Mass Customization and Personalization (held at the HKUST in Hong Kong). We selected 29 papers from the original conference proceedings. Selection of the papers was based first of all on the rankings of the reviewers' evaluation. In addition, we tried to select papers discussing specific topics or papers that provide a new perspective on contemporary mass customization research and applications. After the selections and based on the discussion in the conference, authors were invited to revise, extend and update their original conference contribution. The idea of the book is to give an introduction into the field, to show the scope of mass customization research, and to present recent research findings and the state of the art in selected perspectives of this subject.

In particular, the following topics are discussed in the seven parts of the volume:

- Which concepts and approaches exist to make enterprises more customer centric? What is mass customization and personalization ?
- What are customer centric design and development processes?
- What demands does customer interaction have, and how do configuration systems operate?
- Which are the starting points for customer centric manufacturing?
- A special part dedicated to the Fashion Industry demonstrates in five chapters how principles of being customer centric are employed in this industry.

The Customer Centric Enterprise: Advances in Mass Customization and Personalization, edited by Mitchell M. Tseng and Frank T. Piller, New York / Berlin: Springer 2003. (XII, 535 p. 168 illus.), Approx. \$ / € 99,95, ISBN 3-540-02492-1. Available in late June / July. Pre-Order your copy already at <http://www.springer.de>

More information and a 30 page information leaflet with abstracts of all chapters is available on

<http://www.mass-customization.de/cce>

(2) Mass Customization: Ein wettbewerbsstrategisches Konzept im Informationszeitalter, 3. überarbeitete und erweiterte Auflage, von Frank Piller



Mein zweites deutsches Mass Customization Buch erscheint in der **dritten Auflage!** Ausgehend von den Potentialen der neuen Informations- & Kommunikationstechnologien und den wichtigsten strategischen Ansätzen wirtschaftlichen Handelns im Informationszeitalter analysiert das Buch die Möglichkeiten und Herausforderungen von Mass Customization. Als zentraler Erfolgsfaktor gilt dabei die effiziente und zielgerichtete Abwicklung der Informationsflüsse zwischen Anbieter und Nachfrager. Auf Basis von 150 Fallstudien innovativer Pionierunternehmen werden die Bedingungen diskutiert, wie Mass Customization dauerhaft Wettbewerbsvorteile schaffen kann.

Im Gegensatz zu meinen anderen Veröffentlichungen zum Thema Mass Customization (Piller 1998, Piller/Stotko 2003) wird hier bewusst ein breiter, wissenschaftlicher Fokus gewählt und das Thema ausführlich in seinen wettbewerbsstrategischen und informationsgesellschaftlichen Hintergrund eingeordnet. Erst so lässt sich die Logik dieses Konzepts erkennen und begründen. Für die dritte Auflage wurde der Text umfangreich überarbeitet, in den ersten Teilen gekürzt und in den Mass-Customization-bezogenen Kapitel erweitert. Neue Gegenüberstellungen und Vergleichstabellen stellen die aktuellste wissenschaftliche Entwicklung von Mass Customization dar (mehr als 80 neue Arbeiten zum Thema werden gegenübergestellt). Auch wurden die Fallbeispiele von internationalen „best Practice“ Unternehmen vollständig aktualisiert und um aktuelle Fälle ergänzt.

Frank T. Piller: Mass Customization: Ein wettbewerbsstrategisches Konzept im Informationszeitalter, 3. überarbeitete und erweiterte Auflage, Gabler Verlag: Wiesbaden 2003, (XXII, 415 S.), ca. € 65,00. Erhältlich im Juni 2003.

Nähere Informationen: Downloaden Sie einen ausführlichen Auszug (mehr als 50 Seiten) aus dem Buch unter <http://www.mass-customization.de/mc-gabler03.pdf>.

**(3) Mass Customization und
Kundenintegration: Neue Wege zum
innovativen Produkt,
hrsg. von Frank Piller u. Christof Stotko,
Düsseldorf: Symposion 2003**

In einem neuen deutschen Buch zur Thematik habe ich mit vielen Co-Autoren das Thema Kundenintegration aus praxisorientierter Sicht neu aufgegriffen und dabei vor allem auf die Umsetzung von Mass Customization wert gelegt. Vor allem aber kann dieses Buch von jedem Leser selbst individualisiert werden. Zahlreiche Beiträge von Experten vertiefen einzelne Bereiche, 30 ausführliche Fallstudien beschreiben Umsetzungsalternativen. Das Buch ordnet Mass Customization in den größeren Rahmen der Kundenintegration ein. Als Weiterentwicklung von Mass Customization wird das Konzept der „Open Innovation“ vorgestellt, der Einbezug von Kunden in die (grundlegende) Produktentwicklung. Weitere Informationen zu diesem Buch folgen im nächsten Newsletter.

*Frank Piller und Christof Stotko (Hrsg.):
Mass Customization und Kundenintegration:
Neue Wege zum innovativen Produkt, Düsseldorf:
Symposion 2003. Erscheint im Juni 2003 – nähere
Informationen folgen.*

MCPC 2003

**World Congress on
Mass Customization
and Personalization 2003**

**Meet the international Mass
Customization World ...
and discuss your work!**

TUM – Munich October 2003

www.mcpc2003.com

**Subscribe to this newsletter and get much more information on
our web site: www.mass-customization.de**

Share this newsletter with other interested parties: We are glad if you copy this newsletter for your friends and colleagues if it not modified in any kind. You are free to quote parts of this newsletter when giving full reference. If you like to use whole articles in any kind of publication, please contact us for an arrangement.

© Copyright 2003 by Frank Piller, TUM. All rights reserved.



Customer Driven Value Creation

The Center: Background and Organizational Integration

The **Department of General and Industrial Management** (AIB, www.prof-reichwald.de) within the TUM Business School is one of the largest departments of business management in Germany (Head: Prof. Dr. Dr. h.c. Ralf Reichwald). Its key areas of research are information & communication, organizational studies, and technology management. Major research fields are the role of information in competition and market dynamics, the modularization of the firm, strategic networks and virtual organizations, leadership research, service innovation, customer integration and mass customization. Research projects are performed in collaboration with the TUM Schools of Engineering and Computer Science, other international research institutions, partners from global corporations as well as local businesses, the federal government, and the European community.

The **Technische Universität München** (TUM, www.tum.edu), founded in 1833, is one of Europe's leading research universities. TUM consists of 12 schools with 19,000 students, more than 480 professors, eight Nobel Prize laureates and nearly 9,000 scientific researchers and administrative staff.

The **TUM Research Center Mass Customization & Customer Integration** is one of the leading institutions in the field (Head: Dr. Frank T. Piller). Its focus is to enable firms to become more customer centric by supplying customized products and services at near mass production efficiency. A major focus is the role of consumers and business customers in a value model based on customer integration (prosumerism). Primary research fields are the development of business models for mass customization and open innovation, empirical research on success factors, the design of configuration and innovation tool kits at the customer interface, and the use of customer knowledge. Methodological competences are in the field of empirical consumer research (market studies, usability research, consumer behavior research), the economical evaluation of business concepts, and piloting of process innovations. Dissemination activities include a regular newsletter reaching more than 3000 subscribers, the organization and co-chairing of the 2001 and 2003 World Congress on Mass Customization & Personalization, numerous workshops and symposia, and the publication of more than 100 papers, research studies, and several books on the topic (www.mass-customization.de).

Glossary

Mass Customization, Open Innovation, and Customer Integration

Today's markets are changing faster and customers are becoming more demanding than ever. Thus, **Mass Customization** was emerging in the last decade as a solution to address the new market realities while still enabling firms to capture the efficiency advantages of mass production. Mass customization meets the requirements of increasingly heterogeneous markets by producing goods and services to match individual customer's needs with near mass production efficiency. This preposition means that individualized or personalized goods can be provided without the high cost surpluses (and, thus, price premiums) usually connected with (craft) customization. To deliver mass customization, firms have to find new ways to interact with their customers during the process of co-designing and configuring a customer specific-solution.

Closely connected with mass customization is a concept we coined **Open Innovation**. Open innovation aims at transferring the ideas and approaches from Open Source Software Development to the domain of other product categories and services. The idea is to build and operate platforms where (communities of) customers and users create, develop, and discuss new products and services with the objective to capture the joint creativity and knowledge of both the company and its customers. The result shall be innovative products and service that better meet the requirements and needs of their users.

Both mass customization and open innovation integrate the customers deeply into a firm's systems of value creation. **Customer Integration** represents practices of co-design and co-production. The customer can be seen from the firm's perspective as a production factor fulfilling tasks that in a traditional production system are done internally.

Current Research Projects of the Center (Selection):



SFB 582 (Sonderforschungsbereich 582): Mini plants for customer centric decentralized manufacturing of customized products (2001-2004, second stage: 2004-2007). Main elements of this National Research Cluster (funded by DFG – the German National Academy of Science) are scaleable, geographically distributed and networked facilities – so-called mini plants – each of them covering the majority of all value chain activities and located in close proximity to a particular local market. The mini plants are providing highly customized goods which are affordable to large market segments. Customization is not limited to physical goods, but extended to customized product-service bundles. The research team consists of more than 20 full time researchers. This project is conducted in cooperation with the TUM Schools of Mechanical Engineering and Computer Sciences. <http://www.sfb582.de>



EuroShoe (EU 5. Framework Project): Development of the processes and implementation of management tools for the Extended User Oriented Shoe Enterprise (2001-2004): EUROShoE is a research project funded by the European Commission aimed at a dramatic redefinition of the concept of a shoe as a product and of its production, based on the transformation from mass production towards mass customization. The project objective is to transform footwear companies into extended and agile enterprise capable of mastering the challenges deriving from a direct involvement of the consumer in the design and manufacturing process. In total, 36 European companies and research institutions are included in this project. At TUM, marketing and customer interaction related research is performed for all project partners. <http://www.euro-shoe.net.de>



WinSERV (BMBF-DLR Project) User Driven Innovation and Customer Integration in Innovation Processes (2002-2004): The development of new products and services incorporates high investments and risk. Therefore the orientation of all development activities to customer needs is required. Many studies prove that an early integration of the customer into the innovation process can increase the success of innovations significantly. WinSERV is aimed at the development of tools and services to facilitate the sustainable integration of the customer in innovation processes (Open Innovation). The project is conducted in cooperation with the Department of Marketing at the Ludwigs-Maximilians-University Munich (LMU) and funded by the German Federal Ministry of Research (BMBF). <http://www.win-serv.de>



EWOMACS (BMBF-PFT Project) Supply Chain Management Processes in the Footwear Industry (2002-2005): The objective of this project is to evaluate the supply and demand chain for mass customizing enterprises. The projects will provide tools and structures to control all planning, customer interaction, logistics, and SCM processes. Research is conducted in cooperation with two leading international mass customization pioneers. Funding is for the interdisciplinary project is coming by the German Federal Ministry of Research (BMBF), other research partners include five companies, the Fraunhofer Institute IFF and the University of Technology Ilmenau. <http://www.ewomacs.de>

***More projects and further information
on our web site www.mass-customization.de***

What can we do for you?

Speaking and Workshops

- ✓ Please contact us for speaking proposals and topics for keynote presentations on mass customization, open innovation, personalization, and other aspects of customer integration.
- ✓ Customized workshops can give you and your employees or customers an in-depth introduction into these fields and are the starting point for your own initiatives.

Contract Research and Consulting

- ✓ Mass Customization Research has to be customized, too. Thus we do not offer any pre-packed research & consulting products but work together with our clients on defining solutions that will provide sustainable value to both the client and its customers. Please contact us for more information.



These services are offered in close cooperation with *Think Consult*, a Munich based consultancy helping its clients to provide customer value profitably. www.thinkconsult.com

Contact Information

Dr. Frank T. Piller

TUM Business School
Dept. for General & Industrial Management
Technische Universität München

Leopoldstrasse 139
80804 Munich, Germany

T: +49 / 89 / 289-24820 (direct)
T: +49 / 89 / 289-24800 (dept. office)
F: +49 / 89 / 289-24805

piller@ws.tum.de
piller@mass-customization.de

Our web sites:

AIB Department of General and Ind. Management:
<http://www.prof-reichwald.de>

F. Piller's university homepage and download
of recent research papers on the topic:
<http://www.aib.ws.tum.de/piller>

TUM Research Center Mass Customization
and Customer Integration
<http://www.mass-customization.de>

The 2003 World Congress on Mass Customization
and Personalization:
<http://www.mcpc2003.com>



Dr. Frank Piller is the Director of the TUM Research Center on Mass Customization & Customer Integration at the Department of General and Industrial Management (AIB) of the Technical University of Munich. His research areas are the strategic implications of new information technology at the interface between strategic management, technology management, and marketing. Frequently quoted in *The Financial Times*, *The Economist*, and *Wirtschaftswoche*, amongst others, he is regarded as one of Europe's leading experts in the fields of mass customization and customer centric value creation.

Dr. Piller is the author of numerous articles and papers and has written / edited five books. His 1997 article in the German edition of the *Harvard Business Review* and his first book on mass customization (1997) brought the topic onto the management agenda in Germany and other European countries. He is a managing partner of *ThinkConsult*, a Munich based management consulting firm specializing in Customer Interaction, Service Innovation, and Mass Customization.

Dr. Piller is the author of numerous articles and papers and has written / edited five books. His 1997 article in the German edition of the *Harvard Business Review* and his first book on mass customization (1997) brought the topic onto the management agenda in Germany and other European countries. He is a managing partner of *ThinkConsult*, a Munich based management consulting firm specializing in Customer Interaction, Service Innovation, and Mass Customization.

Frank Piller graduated summa cum laude with a PhD from the School of Business Administration at the University of Würzburg, Germany in 1999, where he received his master's degree in 1994, too. In 2001, he was a visiting scholar at the Hong Kong University of Science and Technology. He is a fellow of the German Scholarship Foundation, a founding member of the European Academy of Management and an active member of several other scientific and professional organizations.

**Subscribe to our free newsletter and get more information on our main web site:
www.mass-customization.de**