Preface

This book was built on top of three pillars: service, customization and Web. The following pages will try to explain how these three concepts and their inter-play have been the driving forces and motivation behind the writing of this book.

Let’s begin in reverse order: the Web. The Web is perhaps the most important phenomenon of the late twentieth century. Today, not only does it play a central role in the functioning of modern economies, but as argued by many, also in the reshaping of structures and relations in our societies. The Web needs neither an introduction nor definition, as together with its sibling concept Internet, is today the most recognized word across cultures, societies and geographies.

Services are also ubiquitous concepts, essential underpinnings of today’s economic structures, as they, arguably, have been since the early days of the human civilization. Services, unlike ‘products’, are not tangible, and are the result from the performance of activities by a party or parties for the benefit of another party or parties, and they might or might not involve some kind of monetary exchange between the involved parties. The significance of services cannot be over-emphasized: modern economic activity is based on provision of services and in many developed countries has surpassed in value other economic activities such as agriculture and manufacturing.

Having so far tackled the Web and services just leaves us to deal with the term that occupies the middle spot in this book’s title: customization.

Like the Web and services, customization is a concept that should not be alien to even the most layman kind of reader. We have all experienced customization and so have our forefathers over the past millennia. Provably, customization was taking place even before the first organized agricultural societies were being established in places like Mesopotamia. It is evident to anthropologists, archaeologists, ethnologists (as to mere documentary watchers like the rest of us!), that since ancient times, humans have always enjoyed customizing things in their environments: from their appearance to their surroundings, possessions and belongings.

The main difference between customization of old and new is that people in ancient tribes and civilizations used to customize things by themselves, or by perhaps employing the skills of the local craftsmen. Customization was always a one-to-one, or a one-to-self activity. A craftsman was always customizing for one client at a time (or for herself, sometimes when the craftsman and customer were the same person).

Mass customization started to change this in the early twentieth century. In most people’s minds today, this is what customization has come to mean: obtaining goods that are personalised to our tastes, but come from a mass producer.

Most customization of products today is mass produced. Although, of course, people still enjoy truly non mass (personalized) customized services when, for example, they visit our hairdresser for a truly unique and personal hairstyle.
But, one-to-one customization has always been more time consuming, hence more expensive, and out of reach for the majority of consumers. That is the reason why customization only really took off in the early 20th century when it was applied to manufacturing processes by the likes of Henry Ford. So, mass customization means applying customization techniques to mass production, to make them cost effective, and takes place each time an option is given to specify the trim of a car, the fabric of a sofa, or the exact colour chosen to paint a living room.

Mass customization is customization for a little extra cost, but it has limitations. Although choices can be made from often thousands of configurations when an individual specifies his or her new car, there are limits to how far one is allowed to go with customization. One wouldn’t normally be allowed, for example, to specify a drastically different shape for his new car’s exterior, or to have absolutely any engine he would like fitted to it. For drastic customization, the mass approach stops to work, and it becomes necessary to revert to the old one to one, or one to self modes of customization: too time consuming, expensive or requiring specialist skills.

This discussion has by now completed covering the triad of web, services, and customization. However, it still hasn’t explained how the three concepts bind together and have come to occupy adjacent places in this book’s title. Let’s then say, in a nutshell, that their relationship goes like this: customization is potentially easier when the services are provided over the Web. In other words, the Web as the enabler for services offers the greatest potential for their customization.

To explain this further, it is necessary to be a bit more specific about services conducted over the Web, otherwise known as e-services. Although the rest of the book provides many more and rather more elaborate definitions of e-services, let’s say for simplicity’s sake that e-services are services which use the Web as their delivery channel. As a consequence, all other things that go together with a service delivery such as context data, processes and interfaces must be digital too, or Web-based.

Next, a justification is needed for the claim that customization of e-services has to be easier than customization of tangible products, and what exactly makes that true. To do so, it is necessary to go back to the beginning of customization and look at the tools that made that possible, such as the craftsman’s hammers and chisels, or Henry Ford’s car assembly line. It appears that customization of tangible goods involves physical tools/machinery that are usually expensive to make, acquire, and hard to replicate, and/or knowledge and skills that are hard to acquire and master.

Now, contrast that with digital services: They are made of bits and bytes that these days cost next to nothing to store and replicate. Because the services are digital, the tools to customize them must be digital too. Hence, e-service customization ought to be easy, or at least a lot cheaper than physical product customization.

Let’s pause again on this idea of easiness of customization. The primitive craftsmen as well as the 20th century mass customizers had both the knowledge and the tools needed to customize. With e-services, the tools should be easy to obtain or at least to duplicate, but what about the knowledge?

Alas, service customization knowledge does not always come cheap. The knowledge of how to customize physical products, although having the potential to become very large and complex, seems to be a lot more tractable in comparison to the knowledge of how to customize services: Products are made from a finite number of parts or modules and these have a finite number of properties (at least observable by the customers) that can be customized.

With services that are made of bytes, there is potentially infinity of permutations in which these bytes can be arranged. It looks, therefore, that the possible customizations of services could be infinite or at least a lot broader than that for products.
Such customization potential could turn to be both a boon and a nightmare, however. It probably has to be a good thing to be able to offer an almost infinite variety of services, but the real issue is how to choose out of this variety of customized services the ones that will appeal to their consumers.

To be able to draw some guidelines as to what should be customized in services and which customized services to select out of the vast numbers of permutations, it is useful to recall some principles that have emerged from research into services (not only on e-services but also of the more traditional type). The first principle is that of service quality. Although it is possible to recognize quality in service when it is experienced, some find it harder to externalize in comparison to tangible product quality which is easier to describe. Unlike with the use of a product, a service transmits or exchanges nothing tangible when consumed, and is a lot more transient than the typically longer lasting physical product. It seems therefore that quality of service can only be defined in terms of its intended recipient: the service consumer.

One rule of thumb for service customization could be as follows: customize for quality. In other words, add, remove, and modify service characteristics that will result in an increase of what the customer sees as quality in the delivered service. But, how can one find out what quality attributes customers seek in a service? An obvious way is by asking them, which is however not always an appropriate method, especially when the customer has a one-off interaction with our service. Another way is by building profiles of our customers as they consume the e-services and then try to match new customers to existing profiles. Yet another, more radical, approach is to let customers shape the service dynamically as they interact with it. By providing the right tools and environments, customers can explore on the fly what is possible to customize, as well as what they desire to customize. In this way, service customization is democratized again. The service providers lose the exclusive control of the customization tools and the consumers are empowered. This approach, however, is not suitable for all types of consumers or for all types of e-services.

Thus, a big challenge in service customization seems to be what exactly is worth customizing: a problem being exacerbated by the infinite number of potential customizations and by the difficulty in quantifying what things the consumer values in a service.

Services are intangible entities and their quality attributes cannot be easily quantified. In contrast, most of our computer tools used to manipulate service descriptions need quantified and crisp data. There seems to be this dichotomy therefore between the fuzzy/imprecise service properties and the crisp and precise data that computer tools need to process. To make possible to bridge the two domains, we need a new generation of tools that have the capability to process the fuzzy perception of services by their consumers, and translate them to crisp values. Luckily, the area of fuzzy computing has matured enough to provide us with computational models and methods that fit our purpose.

Once the right toolset is in place, e-service customization can become more automated, hence cheaper, and at the same time more effective. Totally automated customization that requires no participation from either provider or consumer is still not within our technological capabilities. What the current customization toolsets can do, at best, is to help navigate through the huge expanse of customization possibilities to identify the fruitful ones on which to focus.

As a final thought, it seems that when it comes to services, customization is still more of an art than an exact science.

Let’s move next to another question that is bound to crop up from at least a subset of this book’s audience. It sums up as, “Is there any profit potential in e-service customization”? Again, it’s necessary to draw analogies with physical products where customization was initially a source of competitive advantage, although, these days has become more of a competitive necessity as almost every competitor
is building customization in their products. Will it become the same with e-services? Let’s go back to
the analogy of customization for physical products, once more. Although consumers arguably, would
still buy cars even if they weren’t customizable at all, for the manufacturer, being able to customize
would mean that it had a competitive advantage over the other car manufacturers. When eventually
everyone caught up with customization, it became not a competitive advantage but a competitive
necessity. The answer is that, no, this situation does not have to apply to services. With e-services,
there is the potential to create services through customizations that are very different from the original
ones. That could tempt the consumer to buy something more than once, as she would effectively buy
two different services.

What are the growth areas for e-services? At the moment, there are few standalone e-services that
are sold for a profit. In the e-commerce world, it can be said that it is the e-product that attracts money
paying consumers, not the e-service as yet. Services that can be consumed online are still limited in scope
and are typically information offerings. These tend to be provided on a free basis to typically supplement
the selling of e-products as add-ons. So, while an e-service on its own might not be revenue making, as
an add on and booster to the selling of products it has potentially great scope to create customer loyalty,
product differentiation, and even indirect revenues by for example attracting advertising to a web site.

Two service industries with potential for future growth are e-learning and e-health. E-learning is a
relatively new area that currently lacks truly original models and paradigms. At the moment, it is modeled
around the old fashioned face to face style of tuition. As with other tangible products, physical
delivery of knowledge with face-to-face interaction is too expensive for one-to-one customization. In
contrast, there is scope for cost effective and effective customization in e-learning once our knowledge
and experience on what exactly constitutes learning and what are the effective online knowledge transfer
strategies becomes more substantial.

The other potential growth area, e-health is also something that awaits improvements in key technolo-
gies before it becomes a truly global and large industry. E-service customization seems to be the
perfect match for e-health delivery as every medical condition, diagnosis, healthcare delivery and patient
is unique in many aspects. What is currently lacking is the true arrival of the long awaited internet of
things, which will bridge the physical and information domains. Once all medical devices, diagnostic
equipment, patient records, and patient vital readings become digitally connected to the rest of the Web,
there will be tremendous potential to automate key health care delivery processes, and more importantly,
to effectively customize them to the individual needs of each patient.

How can companies prepare themselves in advance of the new wave of e-customization in the educa-
tion and health care industries and also in others such as media as well as other unforeseen areas? The
answer is by having a strategy for e-service customization that can be translated to actionable outcomes.
The biggest obstacle in service customization yet is understanding what is worth customizing. To under-
stand that, it is necessary to grasp concepts such as the customers’ needs and expectations, what quality
means to them, how quality can be delivered using the company’s processes, systems and resources.
E-service customization might be more cost effective than that of products, but even so, it still requires
a preparation and an infrastructure from the service provider. New tools such as those discussed above,
which offer fuzzy and linguistic modelling and analysis, can help individuals to shift through the limit-
less potentials for customization and to identify the true opportunities.

Now that the scene has hopefully been set for the book by explaining its three cornerstones (e-service-
customization-web) and how they relate to each other, it is time to turn the attention to how this book
is organized and what it hopes to deliver.
The book is organized in three largely autonomous sections. It does not need to be read from beginning to end in linear fashion in order to be understood. In a sense, Kardaras and Karakostas tried to apply the principles of customization to the book itself, albeit under the limitations of a fixed format and organization! Different readers coming to customization from different angles can jump directly to different sections of the book to find exactly what they need.

The three book sections mainly deal with concepts, technologies, and organization (business) aspects of e-service customization. They answer fundamentally the following three questions:

- What are the key concepts involved in e-service customization?
- What are the Web systems, tools, and techniques that can be used to implement e-service customization?
- What can I do as a company to setup and implement a service customization strategy?

Question 1 is mainly dealt by the Introductory Chapter, as well as Chapters 1 and 2.
Question 2 is handled by Chapters 3 and 4, while the final question is handled by Chapters 5 and 6, as well as Chapters 7 and 8 and the Conclusions Chapter.

The book strives to strike a balance between theory and practice, research and application. E-service customization is a young discipline, and it lacks mature theories and models. In Chapters 1 and 2, the authors tried to introduce customization from a holistic perspective by including everything and anything involved in it, in particular, the consumer and the provider of the e-service. Although in many cases the differences between provider and consumer of e-service are blurred, the chapters try to show all processes involved in customization from both a provider and a consumer perspective.

Chapters 3 and 4 introduce web tools that can help with e-service customization. In general, web tools that capture and analyze information such as customer profiles are a young and rapidly changing area. Many of the tools and techniques described are experimental and research driven. This is particularly the case for tools that help e-service consumers to directly customize (by composing or ‘mashing-up’) services. Here, the interested readers are invited to explore this emerging area of research.

The next section of the book looks at e-service customization from a business perspective. As said above, it is believed that businesses should be prepared for e-service customization because its impact will be significant, especially in areas such as learning, finance and health. From the authors’ experience, many strategy plans are too abstract and ambiguous to be directly realized. The book strives instead to suggest formal models of strategy that captures key customization knowledge (from customers, business goals, processes), and, more importantly, maps them to actionable operations on the company’s processes systems and data that drive the delivery of e-services. The method which is described deals with the inherent ambiguity and fuzziness of terms such as quality and customer expectations when it comes to e-services.

This method is illustrated in case studies from two different industries: health care delivery and finance. First, through a set of case studies, Chapter 7 shows how e-health customization is practiced today by online health portals and forums. A framework of factors is suggested that will support the acceptance of customization in e-health services.

Chapter 8 illustrates the customization method introduced in Chapter 6 by considering customization scenarios and analyzing their impact on service, business process structure and data entities levels.

The last case study (e-banking) in Chapter 9 is a step by step application of the customization methodology of Chapter 6 and considers customization scenarios for e-banking. For each identified scenario, the chapter analyzes its impact on the service quality, business process structure and data levels.
The last chapter of the book tries to be less of a summary of the previous chapters and more of a quick guide to e-service customization. First, however, it contains a comprehensive list of factors that can drive customization which are all linked to the elusive concept of customer perceived quality of a service. The chapter then attempts a ‘crystal ball’ approach by predicting how all these paradigms and technologies that are just emerging (social and semantic Web, Internet of things etc) are going to contribute to the trend for e-service customization. Lastly, the chapter offers a cookbook style “dos’ and ‘don’ts” of e-service customization. E-service customization is not an end-goal; it is a means to deliver services that meet the consumer’s quality expectations and the provider’s goals and objectives.

As is remarked in the Conclusions Chapter, it seems that the only limits to the growth of e-services are limits imposed by the creativity of their providers and consumers. The authors hope that this book breaks down some of these limits and unravels the true scope and potential of e-service customization.

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