Alexander Graf / Holger Schneider
The E-Commerce Book

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Managed Cloud Hosting for Agile E-Commerce

Change is the only thing that never changes

Chocolate manufacturer Ritter Sport secured a real marketing coup with its limited unicorn edition: thanks to the surprising hype in social media, the response was exponentially greater than they had planned for. The result of the campaign surpassed all expectations, with the unicorn edition being celebrated as a viral hit in the media. This was premature, however, as the online shop completely collapsed under the sheer number of enquiries. Although the campaign was a communicative success story, it turned into the opposite due to the overloaded infrastructure, driving Ritter Sport to expand their server capacities prior to the second round of sales. But despite the advance warning and the precautionary measures, they were once again unable to cope with the stampede. In the words of Ritter Sport’s social media team: “Despite massively increased server capacities and even more #unicorn-power, you are bringing our webshop to its knees.” The initial wave of enthusiasm gave way to disappointment, with social media this time amplifying the anger and frustration felt by their customers. The Ritter Sport campaign shows how quickly a successful marketing campaign can turn into a PR fiasco, in the age of social media when the infrastructure and technology of the webshop cannot cope with high numbers of potential customers.

Lost revenue running into the millions

The scenario described above is, of course, not an isolated incident. Online shops crash for many different reasons. In any case, downtimes are expensive! Figures provided by the analysts from Crisp Research show that German online traders lost around €1.2 billion in 2016 alone as a result of downtimes and non-scalable IT infrastructure. Large e-commerce shops lose tens of thousands of euros per minute when they are momentarily not available. The reasons for this are obvious; it is becoming ever more difficult to predict and calculate customer access numbers, and environments have become increasingly more complex in recent years. Unfortunately, the performance of the infrastructure is often neglected as it is not part of the shopping experience: it operates outside the perception of managers, invisible and in the background. However, choosing the right platform is crucial for a successful business model, particularly in these times of customer-centric e-commerce.
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Dynamic business – changing requirements

The e-commerce market has undergone extremely dynamic development in recent years. Requirements have risen at the same rate as sales revenues. Today, shopping on the smartphone, multimedia product presentations, and short loading times are essential for customers. Transaction rates have grown massively. And above all, online shops are no longer stand-alone solutions, but are deeply integrated in IT systems and processes. There is a large ecosystem of providers that has become far more complex; and as a result, the agile, high-performance and failsafe operation of the server, storage, database and application infrastructure often plays a decisive role as to whether the annual results will be positive or negative. In the long term, it determines the innovative capacity of an e-commerce provider. The operators of e-commerce shops must therefore measure up to the dynamism of the market as well as the necessary stability of the platforms, a balancing act between failsafe 24/7 operation and enormous flexibility. These challenges mean that there are now very few large companies that take care of their own hosting.

Prerequisites for high-end e-commerce

Traditional hosters too are very often not able to cope with these new challenges. Ultimately it makes no difference to the customer; whether a downtime was caused by an overloaded connection to the datacentre, an overstretched firewall, or inadequate hardware in the rack. What counts is availability – for the sake of both sales revenues and the reputation of the brand. But what exactly are the requirements for high-end e-commerce, and what should be considered when choosing a hoster? We believe four "pillars" are the essentials for modern managed hosting, and the performance of online shops.
Scaling is a must

The example of the unicorn campaign certainly shows that the expansion of classical servers has its limits. The unpredictability of the number of visits alone means that the needs-based and economically prudent provision of resources cannot be achieved by simply adding further hardware, but rather requires highly scalable cloud solutions. The public cloud platforms of the large hyperscalers AWS, Google and Azure offer virtually unlimited resources here. With these solutions, scaling from zero to hundreds of thousands of users is possible within a very short time between launch and the first TV campaign. Another advantage of large public cloud providers is their international footprint. This allows comprehensive global projects to be distributed across various locations worldwide. However, specialist knowledge is required in order to use public cloud platforms optimally and to benefit from the high frequency of new platform services. Managed services providers support companies in designing, deploying and managing an optimum architecture, reproducing the innovative potential of the hyperscaler for the individual. As shop operators may not wish to transfer all systems to the public cloud, hybrid scenarios are often the solution of choice. In these cases, the public cloud platforms of hyperscalers can be linked up with other systems. For example, the front end of a shop is run on the public cloud, while the ERP or PIM system is located in a private cloud.
Performance as a sales lever

In e-commerce shops, the performance of infrastructure and the application have a direct impact on revenue. Long loading times can significantly lower the "conversion rate" in an e-commerce shop. Systems must communicate in real time, and virtual products are generated in real time. This requires high-performance platforms, e.g. on the basis of hyperconverged infrastructure, which guarantees above-average performance. Caching mechanisms and content delivery networks ensure the optimised delivery of multimedia content, thereby allowing videos, high-definition images and animations to be presented with the necessary performance. Here it is important that not only the platform, but also the application is available and comes with certain performance parameters. Customers aren’t interested in whether the computer centre is running, but rather that their shop system meets the necessary performance requirements.

DevOps and containers – the basis for agility

For an exciting and varied shopping experience, customers constantly expect new functions. Modern e-commerce shops don’t just launch features once per quarter, but are instead in a process of continuous releases. The hosting partner should therefore be just as innovative and agile as the shop operator. Only when the hoster supports the flexible launch of new functions can an e-commerce platform keep up with the pace of innovation in the market. The method of choice here is the deployment of DevOps and containers. DevOps represent a new culture of cooperation between application development (Dev) and operations (Ops), which is geared towards ensuring agile and coordinated action across departmental boundaries. Processes are accelerated and simplified through the use of automation tools. Containers enable the simple portability of applications to different system environments. The use of DevOps and containers makes it possible to provide new applications without downtimes and delays – from development to the productive environment, and in a wide range of different environments.
Fig.: Innovation and release cycles are becoming shorter  
*Source: Crisp Research AG, 2015*

**Trust is essential – security and compliance**

Confidential and personal customer data is processed in e-commerce. Online shops are increasingly integrated in the entire corporate process and are subject to the same security and compliance requirements. It is therefore crucially important for shop operators to guarantee data protection and security. Due to the importance of trust and the availability of the platform for business success, threats to shops are no longer an exception but part of everyday business reality. E-commerce companies are the target of blackmail and in the worst cases, customer data is stolen. This not only affects the big players but all online business providers. However, managed services providers can take care of the majority of compliance requirements on the behalf of shop operators and protect them from security threats. This is demonstrated by relevant certifications, such as ISO 27001 in connection with the ISO 27018 standard for data protection in the cloud. The successful protection of credit card transactions is confirmed by the PCI DSS certification and independent inspection reports regarding the secure outsourcing of e-commerce applications; and those such as the Service Organisation Control (SOC) reports in accordance with the international assurance standard ISAE 3402 can be viewed via the service provider. Of course, a service provider should not only possess the appropriate certifications, but also offer managed security services to protect shops against threats, e.g. mechanisms against serious distributed denial of service (DDoS) attacks.
Managed Cloud Hosting for Agile E-Commerce

Guaranteeing security and compliance in connection with extreme scaling capability, short loading times and high agility in the delivery of applications are key prerequisites for a modern online business. As such, good and high-performance hosting forms the foundation for every e-commerce success story – while ideally running unnoticed in the background.

Claranet supports companies in their digitalisation efforts with innovative hosting, cloud, and network services. The managed services provider specialises in the agile hosting of business-critical environments on flexible cloud infrastructures while meeting the most stringent security, performance and availability requirements. To do this, it is important that the e-commerce application supports all of the concepts and requirements described above. One exemplary solution here is the Spryker e-commerce suite, which incorporates the latest DevOps and operational concepts on a container basis, and is scalable to every modern cloud platform, enabling secure and agile e-commerce concepts.

For more information

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Foreword: Trying to do it like Zalando

It’s been almost two and a half years since we handed in the manuscript for the first edition of this book, and producing a second one presents us with a convenient opportunity to cast an eye back over what has happened in the intervening period. While working on the book first time round, I was also in the process of setting up a company called Spryker Systems with my co-founder Nils Seebach. It was a step we had decided to take because, from the experience of a large number of consultancy projects, it had become abundantly clear that the existing tools and methods had reached the limits of their usefulness. Or, to put it bluntly: they just weren’t working. This insight was our motivation to start Spryker Systems.

When, back in 2009, the German fashion online shop Zalando started to grow strongly, there was no shortage of excuses for those looking hard enough: “What do you expect? They had so much start-up capital...” was one you used to hear a lot, along with: “Well, they did have that special TV advertising deal...” The excuses soon wore thin, though, because the growth didn’t stop – not at Zalando, and not at many of the other pure-play outfits expanding rapidly at the time. In Germany, they were all gunning for the customer base of one particular legacy retail champion, the Otto Group (which happened to be my employer at the time), and the closer we looked, the more arguments there were in favour of Zalando. Somewhere along the line, I came to the very simple conclusion that you had to respect Zalando: not for selling better trousers than Otto, but for selling the same ones better. However did they manage it, though, despite being new to the market and having no contacts, fewer staff, and less experience than Otto?

Change is the only thing that never changes

Let’s start with a look back. When my co-author Holger Schneider and I started at the Otto Group, online shops – or indeed online business models generally – with a turnover of more than 10 million Euros were “big”; so big, in fact, that it was realistic to expect them to continue growing under their own steam and become the leaders in their niche (see 1.1. The beginnings of a revolution). In the following years, this threshold climbed upwards, and between 2009 and 2012, we were on the look-out for companies in the 100-million-Euros range; and now that Zalando has passed the billion-Euros mark and got into the black, the definition of “big” has once again been revised upwards. There are no lasting niches in e-commerce; at least, if there are, we haven’t seen any yet. Going for growth is pretty much the only play.
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Fig.: The new „big“
*Source: Our graphic*

What’s astonishing about this development is that the modified definition of “big” has not just changed the competitive landscape, but actually altered the way the market works in and of itself. Today’s e-commerce heavyweights are becoming less and less reliant on profits from retail and are instead creating an ever greater proportion of their value from services they can hire out to third parties. With Amazon Web Services (AWS), the Seattle giant is only the largest-scale example of an increasingly widespread B2B model with which Zalando and others are already generating significant turnover. All of these services have one thing in common: they came about more by luck than by judgement. There was no way of arriving at them using shrewd product development approaches; rather, by and large, they were “leftovers” from the existing core business processes. Amazon, for example, just happened to have a lot of spare server capacity from its e-commerce business, so it opened it up to other companies – and stumbled upon a highly profitable area of growth in the process.

Nevertheless, you make your own luck, and tech firms like Amazon have retained the capabilities they had as start-ups: they are able to throw themselves and their resources into new services, and just keep reinventing themselves to explore new growth avenues. That makes life difficult for everyone – including analysts like me – but makes the market more interesting, too. In one article I wrote for my blog, Kassenzone.de, I was quite open about the fact that I don’t have a clue about how Zalando will be earning its money in five years’ time. What I am sure of; however, is that their current capabilities will no longer be decisive, and so the company will have little choice but to reinvent itself.
This kind of reinvention is easier for companies who are essentially made up of code and data than for operators with more traditional business models; tech firms will be able to keep adapting code as long as they stay hungry and ambitious – i.e. as long as they nurture the mentality of the start-ups they once were. What is more, companies like Amazon and Zalando have another advantage in that their bosses are under less pressure from the market, while managers at corporates with armies of analysts and shareholders to keep happy have a much more restricted radius of action. Companies who are principally reliant on analogue business models are often dead in the water in any case.

![Digital vs. Analog](source: Our graphic)

To find out whether a company can keep up with the pace, you just have to look at the structure of its management. While classic corporates still divide up remits on the board along the lines of their analogue value chains, digital thoroughbreds place the management emphasis on the people who are responsible for code and data; in a traditional business model, IT is a cost centre and gets looked after by the “board member for whatever’s left over”: look out for titles like “CFO & CTO” or “HR & IT”. If the briefs are mixed, the company is not digital.

![Value Chain Analog vs. Digital](source: Our graphic)
Timing / Luck

It’s not that traditional companies aren’t trying: in fact, I’ve lost count of the number of attempted transitions from analogue to digital in recent years. Yet for all the big talk of “transformation” (with plentiful side-orders of “empowerment”, “advocacy”, and “inspiration”), what you most often get is a “change management” approach predicated on trying to secure a safe place in the digital economy for the least possible amount of investment risk. This leads to companies misinterpreting the challenge of digitisation as surveying a smorgasbord of moon-shots in order to pick the mission that most suits their existing strengths and assets: and that’s why home shopping companies end up trying to become online retailers, or why carmakers want to transform themselves into “transportation service platforms”.

Almost all are doomed to fail. And that’s not always because the companies concerned don’t want the change badly enough or because they pick Apollo 13 rather than number 11. The simple fact of the matter is that, by their very nature, there is a high chance that online business models will fail; they don’t call these things “moon-shots” for nothing, after all, and genuine innovation doesn’t happen on demand. This realisation is not new: there’s a whole body of literature on it, and perhaps the most concise and exciting way of explaining it is the formula used by Sam Altman, the long-serving director of the famous Y Combinator, in his lecture for Stanford University’s legendary CS183b course, “How to Start a Start-Up”. In it, Altman states that the prospects of success for a new company can be expressed by the formula “idea x product x team x execution” and that, if even one of these factors is not good enough, the whole enterprise is doomed to fail. Then there’s a fifth variable, “timing/luck” outside of the control of the business and factored in as a random number anywhere between 0 and 10,000. This last element in the equation is Altman’s way of explaining why even some of the best teams at Y Combinator, who have all gone through a gruelling selection process, can still fail; the same formula also applies to established companies by extension. Why should they, on average, come out of this equation any better than the market? You can’t manage your way to success; therefore, failure is the default setting.
My way of processing this was to write an article on my blog which I called “The second half of the chessboard”. In essence, the drive is that I see us as being only at the start of a very disruptive period – not midway through – and that Y Combinator can thank its lucky stars that it manages to hit a success rate of 10 percent. This might sound a little overblown or obscure, but it’s easy to break down if you just look at devices, for example. Ten years back, the first iPhone was completely new on the market; if you were relaunching an online shop, the only display issue you needed to think about was how the interface would look on a range of differently sized monitors; as the iPhone spread and smartphones became the norm, however, “mobile first” became the design order of the day within five years. Now that there is a degree of competence in this area, though, and all but the most listless of screen designers have put themselves through the professional development necessary to become mobile experts, Google Home and Amazon’s Alexa have into view: they are totally screen-free devices and are likely to become standard in short order. Who could have foreseen that and planned for it accordingly?
From shops to platforms

It’s not just a device issue; there are all sorts of things happening that are changing the way we see e-commerce systems. In the early years of internet shopping, online retail systems were the next evolutionary step after the existing ERPs, and therefore still wholly dependent on their DNA: logic on the one level, interface on the other. Then came the revolution which promised to break from this line with systems such as Intershop and Hybris displacing their predecessors within a few short years to become the dominant e-commerce solution species in both large legacy retailers and many pure-plays across the world. Back then, the competitive environment was such that the companies with the best shops performed best on the market and that organisations who didn’t have a handle on their web presence got left behind. Now, however, we’ve entered into a new phase in which an online shop actually has to be a kind of platform architecture housing business-critical functions and which is under continuous development (i.e. towards things like personalisation functions); ERP systems have lost all of their key role and are used for nothing more than inventory management. While this shift can’t be applied as such to every industry, there are certainly few in which business functions are not forcing changes to customer interfaces; it thus follows that the customer interfaces are where the real productivity should be.

Fig.: Three Generations of „Shopsystems“
Source: Our graphic
Mediating between two worlds

Before setting up Spryker in 2014, Nils Seebach and I had spent several years building up our consultancy business, eTribes. In the period between 2011 and 2014, it became clear that lots of corporates were looking to tread the path to digital beaten by other legacy organisations – most successfully in Germany by the Springer media concern and the Otto retail group. These clients were looking to set up new projects that would be able to keep up with the Zalandos of this world, and so our standard piece of advice was, in most cases, to simply go ahead and do it like the Zalandos of this world. Just find yourselves a talented CTO and product owner, set a proper budget aside, and go for that moon-shot. Catch you on the flip side!

In most cases, however, the companies we were imparting this advice to were always going to be unable to put it into practice – and not because they lacked the money, but because they were missing rather more basic competences, like being able to tell a good CTO from a bad one or how to start a project on the green field. Given this state of affairs, I talked to Florian Heinemann, one of the founders of Project A, about how this issue might be solved. Due to its involvement with Rocket Internet, Project A had developed a technological application that was made to fit this kind of greenfield project: not generic software, but a framework designed specifically to allow developers as much room for manoeuvre as possible and to keep IT productivity high even following the launch. Its name was Yves & Zed, a complete rethink of the Alice & Bob system which is, still today, the workhorse in almost every Rocket Internet project – and using which more than three billion Euros of turnover have already been generated to date.

Fig.: Spryker Ecosystem
Source: Our graphic
Foreword: Trying to do it like Zalando

The technical analyses and user feedback about the system were what led us to set up Spryker. I am utterly convinced that, in a digital world, only companies defined by technology will be able to have a say in how things play out; and to get this definition, they need to start building up technological capabilities. If this sounds like an abstract model difficult to put into practice, that's because it is. After all, you find me a company that doesn't claim to be a technology leader in its field, or one that admits that it's not taking digitisation particularly seriously, and... well. That's why, to cut through the bluster, we've started dividing the market into two worlds: World 1.0 is where we put companies whose defining feature is an analogue product or service and who erect their competitive advantage on that foundation. From their point of view, technology is little more than a low-priority internal service which gets managed as a cost centre because it, by and large, is one; because it doesn't generate any income, technology in these companies has to be as cheap as possible and is often lumped together with other internal services such as human resources or auditing. In the past, almost every company was living in World 1.0, and today, many are still there, mostly producers of goods such as Adidas or IKEA, for instance.

For companies in World 2.0, however, technology is a key value driver – in many cases, the key value driver. Current inhabitants include Amazon, Zalando, and Etsy, i.e. companies which, because they were born digital, are organised around code and data. They don't have a “CIO” or “Head of Digital” on their board, and the people who set the company up, or later joined its management, are representatives of the (digital) product. In this world, IT is a business unit in its own right which works with, and not for, other departments such as marketing (in some cases, other departments work for IT): there are no specifications for systems drawn up by the “business side” for IT to implement using the “waterfall model”. Why would there be? The business models in this world don't earn money because the products offered on the companies' websites are better than the competition; they earn money because the website – or the application, or the voice interface, or whatever – is in and of itself the better product. An these are exactly the companies with a proper agile mindset and a tendency to take entrepreneurial risks (Amazon, Zalando...).
I’m not trying to say that World 2.0 is better than World 1.0; rather, they are two completely different models and companies need to decide in which of the two worlds they want to try and make it. My own personal view is that we will soon reach a point where there is no room left in World 1.0 for relevant companies, but I know others see that differently and there are certainly good arguments either way. What must be conceded, however, is that World-1.0 IT concepts will no longer work in World 2.0: there is no generic off-the-peg software solution, no SaaS (software as a service) provider, and no PaaS (platform as a service) operators that can help its clients be successful in World 2.0. You can’t buy in a successful moon-shot, and so our intellectual honesty as consultants means that our advice is now that companies need to start building up their own IT know-how if they want to stake out their territory on the market. Spryker is nothing more (and nothing less) than a bridge into the digital world, a booster rocket if you will, that offers three things:

- *a way to maximise IT productivity*;
- *software design built for high-performance web applications*; and
- *a high degree of flexibility to keep development effective past launch and beyond.*

In the last two years, people have often asked me what the difference is between Spryker and, say, Hybris or Magento. The answer we’ve got into the habit of giving is that we are neither better nor worse than these platforms, but that we are solving a different problem. Spryker’s numerous clients have understood how Zalando has been able to grow so quickly and are using Spryker to follow on its flight path.

*Alexander Graf*
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The E-Commerce Book

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3.16 Etsy – Hand-made, long-tail, gold mine
3.17 Fahrrad.de – Niche winner looking to expand Europe-wide
3.18 Gilt – How a flash seller became a flash sale
3.19 Grainger – A.k.a The last hurdle for Amazon in B2B
3.20 Harry’s – New York start-up insources value creation
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