THE EVOLUTION OF OUR INDUSTRY
ANTICIPATED MARKET DEVELOPMENTS

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Executive Summary

Introduction

This Whitepaper is intended as a guide for senior decision makers to summarise current trends in the office IT industry as well as the production printing market. It should serve as an orientation in an ever faster changing world and should provide helpful information with regards to the buzzwords heavily used in the industry. Konica Minolta wants to provide an assessment and comprehensive summary of all the challenges in the industry affecting a company’s ICT strategy and planning as well as to show the solutions Konica Minolta has to offer for the respective challenge. To provide this, the paper takes a look at different market studies conducted by global market intelligence companies such as IDC, InfoTrends, Photizo Group and Quocirca, and outlines the general trends and conclusions Konica Minolta draws from this.

Recent and anticipated ICT developments

Before diving deeper into the single developings, this chapter wants to provide a summary of the movements on the ICT market from a meta-level:

These days, corporate executives are demanding a lot more from their IT departments, and don’t just stop there. After the worldwide economic crisis that had its beginnings in 2008, corporate focus has meanwhile shifted from the initial cost cutting and ensuring short-term profitability to a long-term focus on positioning and investing for growth. Consequently, the cost, expenditure and performance of the entire company as well as individual departments – and here in particular IT – are being assessed and questioned more closely than ever.

At the same time, business technologies are undergoing extreme technological changes. Computing has been transformed and the Information and Communication Technology (ICT) is being newly defined by high-impact innovations – keywords are cloud, apps, mobility, outsourcing, etc. These trends are shaping our working environments in a fundamental way.

The “3rd Platform”

In their 2008 Top 10 Predictions, IDC concluded that the ICT industry was just at the very beginning of a "hyper-disruption" – a “once every 20–25 years” shift to a new technology platform for growth and innovation. In their 2011 Top 10 Predictions, IDC named this post-disruption IT world the “3rd Platform” – which is built on mobile devices and apps, cloud services, mobile broadband networks, big data analytics, and social technologies.

Same as in 2012, IDC sees the most important market-shaping events in 2013 clustering around this “3rd Platform for IT growth and innovation”. For 2013, IDC expects much greater urgency and much bigger moves in this market, as it “shifts beyond the exploration” stage to full-blown, high-stakes competition. The ability (or inability) to compete on the 3rd Platform will reset leadership ranks in the IT market and every industry that uses IT.

IDC sees a huge IT market, with “worldwide IT spending in 2013 exceeding $2.1 trillion, up 5.7% from 2012, driven by double-digit growth in the 3rd platform foundations of mobile, cloud, big data, and social technologies; and also by the growth of emerging markets.”

In this challenging and future-oriented climate, InfoTrends research indicates that executives want two major changes from their IT. They expect to drastically lower the cost of delivery for mainstream, day-to-day IT. And with IT becoming ever more central to the running of the business, they ask how their IT department can help meet the on-going commercial challenges across their whole enterprise. In other words, IT today is expected to deliver organisation-wide efficiencies, increase the overall effectiveness, and to facilitate competitive differentiation and innovation.

1 IDC 2012: “Top 10 Predictions 2013: Competing on the 3rd Platform”
2 InfoTrends 2010 “Future Proof Investments in Document Technology”
Software as a Service (SaaS/PaaS)

As a consequence of this growing cost pressure and demand for a more flexible IT environment, cloud computing has increased considerably in the last four years; and it is expected to grow even faster over the next years. With cloud computing and especially Software as a Service (SaaS), companies can reduce high up-front investments in IT infrastructure while enhancing their flexibility with regard to changing company and economic environments. The SaaS market is expected to be 27.8% of the worldwide enterprise application market and to generate $50.8B by 2018.3

At present, content, communication and collaboration applications, such as the cloud-based Microsoft SharePoint, create the highest demand. But for the coming years, cloud-based project and portfolio management applications, software to create digital content, and office suites will have the highest growth among SaaS offerings.

As the default choice of the future, SaaS is expected to minimise capital expenses & lower the complexity of IT infrastructure: The question is how IT departments can benefit from adding SaaS applications to their portfolio of services? The emergence of SaaS as an effective software-delivery mechanism creates an opportunity for IT departments to change their focus from deploying and supporting applications to managing the services that those applications provide. A successful service-centric IT will be more valuable for the enterprise by providing services that draw from both internal and external sources and align closely with business goals.

SaaS offers substantial opportunities for organisations of all sizes to shift the risks of software acquisition, and to move IT from a reactive cost centre to being a proactive, value-producing part of the enterprise.

Another buzz word among industry analysts is PaaS, which stands for “Industry Platforms as a Service”: For the immediate future, IDC predicts a rise of PaaS, expecting that “the number of industry-focused public cloud services platforms (less than 100 in 2012) will increase tenfold by 2016, while "horizontal" PaaS will become more commoditized.”

Konica Minolta’s ITS strategy

Konica Minolta is well set to bring context into the “information chaos” and address the rapidly expanding market for enterprise content management: With acquisitions in the market (such as the acquisition of Koneo in Sweden in 2011 as well as Serians in France and Raber+Märcker in Germany in 2012) that include a host of IT services, which cater to small-to-medium businesses, Konica Minolta is reinforcing its portfolio of IT services.

In this context, the Konica Minolta Cloud from 2014 on, will be offering convenient scan-to-cloud and document management services, thus catering to a workforce that is becoming ever more mobile. At the same time, the Cloud supports vertical solutions as demanded by individual industries such as legal or healthcare, in order to serve these customers better. The Konica Minolta Cloud will also create access to Google apps and Microsoft Office 365.

But also on a level very close to the MFP itself, Konica Minolta is able to offer trend-setting technology: The bizhub MarketPlace offering (see below) for example facilitates the central

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management, deployment and commercialisation of common device embedded apps. bizhub MarketPlace customers will be able to deploy applications without any on-site support.

In the following major office and production printing trends will be described as well as their implications for the ICT market. To fulfil an IT responsible’s need for solutions as well as Konica Minolta’s standard of feasibility this paper will also be displaying adequate solutions by Konica Minolta to each analysed market trend.

Major trends in the Office Market

One, and probably the most significant, impact in business with regard to IT setup is the increasing mobility of the workforce:

Trend #1 = Increasing mobile workforce

With today’s extensive availability of technological innovations, knowledge workers are increasingly mobile. Most office employees no longer need to spend their entire working time within the company they work for but can frequently work from a location of their choice. IDC predicts the mobile worker population to reach 1.3 billion by 2015, representing 37.2% of the total workforce. These changing work conditions bring about fundamental changes to the collaboration among co-workers; information and documents need to be available everywhere. Enhanced flexibility is what this mobile workforce most depends on; and this in turn is causing a significant increase in the use of smart mobile devices. For 2013 for example, IDC expects that the sales of smart mobile devices will grow by 20%, generating 20% of all IT sales, and driving 57% of all IT market growth. Excluding these devices, the IT industry growth will just be 2.9%.

One consequence of these developments is that companies need to profoundly reassess and redefine their IT requirements and infrastructure – accessibility, connectivity and security will be the most crucial factors for IT divisions. Already today, most employees require remote access to the company’s Intranet: A Kleiner Perkins Caufield Byers (KPCB) analysis forecasted already as early as 2008 that mobile was going “to overtake fixed Internet access by 2014.” This increase in mobile devices goes along with an urgent requirement for simpler and more straightforward mobile printing.

Already in 2010, the answers given by knowledge workers in Germany as part of a survey on mobility indicated printing from mobile devices as an essential demand. InfoTrend found that, excluding the thirty-odd percent of users who did not have an immediate requirement, the big majority would have printed from their mobile devices, had they not lacked access to a suitable printer (more than 40%) or encountered some other technical obstacle.

Without doubt, this obvious requirement for mobile printing has increased further since the InfoTrend survey was published. The obstacles preventing mobile printing that were mentioned in the survey ranged from mobile devices that do not support printing, or printing from hand-held devices requiring too much time, to a lack of understanding on the user side – all challenges that are easy to overcome and that enterprises urgently need to tackle if they want to enhance the flexibility and productivity of their employees.

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4 Press Release, IDC 2012: "Mobile Worker Population to Reach 1.3 Billion by 2015"
6 KPCB 2008: “Mobile Technology Trends”
7 InfoTrends 2010: “Mobile Knowledge Workers: Emerging Opportunities (Overview)”, page 58
Trend #1 proposition from Konica Minolta: Cloud & Mobile Printing

To meet the demands of the increasing mobile workforce, professional cloud and mobile printing applications should provide reliable secure printing, offer flexible job submission – such as native printing from iOS devices via AirPrint – and support a choice of mobile devices as part of an organisation’s BYOD policy (see below). They should also facilitate accounting and charging, and naturally offer support for different file formats and output settings.

In the Konica Minolta portfolio, various cloud and mobile printing applications answer these requirements:

- **PageScope Mobile** is a mobile printing app that is free of charge and connects mobile devices with bizhub output systems using Android and iOS operating systems. Printing from and scanning to a handheld device are the two main functionalities of this application, which ensures that business users have their important documents ready to hand at any time.

- **EveryoPrint (EOP)** offers mobile printing based on private cloud technology. This makes it similarly interesting to small and medium-sized businesses operating in the corporate environment, and to organisations that need to offer secure mobile printing for instance in the educational sector. EOP’s private hosted cloud network provides enterprises with secure mobile printing including follow-me printing without the need to modify or install any additional applications on the client device.

- **The “Konica Minolta Cloud”**, Konica Minolta’s PaaS offering, will provide convenient scan-to-cloud and document management services. At the same time, the Konica Minolta Cloud will support vertical solutions as demanded by individual industries such as legal or healthcare; and it will provide access to Google apps as well as Microsoft Office 365. All of this will be available to customers via single sign-on with a choice of pay-per-use or flatrate payment schemes and 24/7/365 availability from 2014 on.

Trend #2 = BYOD drives Cloud Computing

As outlined above, the use of smart devices in the office is an important topic with a strong impact on the ICT market. The trend of an increasing mobile workforce is reinforced by another emerging trend among employees, namely the desire to use their own smart devices for work. “Bring your own device” – or BYOD – seems to have benefits for both workers and employers: Employees can choose preferred, familiar devices while companies face lower upfront equipment expenses.

On the downside however are security and operational risks, which is why the increasing use of mobile devices accelerates the demand for private cloud solutions and enhanced security. In a whitepaper on BYOD, Quocirca points out, “The reality is that this is no longer an issue to avoid. Employees will have their own mobile devices and many will, at times, want to use them for work purposes, even if only occasionally.” But, Quocirca also states, “There is no point trying to turn a blind eye or ignoring the inevitable … Dealing with these issues is something all organisations should address now if they want to avoid costs and security risks over time.”

Trends like BYOD will accelerate the interaction of technologies/devices/platforms: in the immediate future any combination of devices and technologies, for example of Apple devices, mobile phones, copier device panels, and tablet PCs, is imaginable. With such extensive interaction, knowledge workers benefit from virtually unlimited flexibility and freedom of access, which in turn supports their unimpaired mobility.

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8 Quocirca, March 2013: “BYOD – who carries the can?”
Trend #2 proposition from Konica Minolta: Cross-platform mobile developments

- **bizhub MarketPlace:** This is a perfect example for such functionality: With its innovative bizhub MarketPlace platform, Konica Minolta presents a new and easy way to browse and download apps that have been designed specifically to enhance the functionality of the bizhub MFPs. Similar to apps used on mobile devices but specific to customers’ business needs, the apps offered in the bizhub MarketPlace can be conveniently accessed right from the control panel of the bizhub MFP. With the bizhub MarketPlace, Konica Minolta customers can flexibly deploy applications without any on-site support.

- **Smart MFPs:** The “copier” of old is no longer just a static input/output device but evolves into a “Smart MFP” that is not only freely accessible from anywhere, but that also provides flexible access to any environment itself.

Trend #3 = “Big data”

“Big data means the utilisation of extensive amounts of data from multiple sources with high processing speed to create commercial gains.”

Today’s availability of enormous amounts of information has led to a dramatic explosion of content that will reach even more extreme dimensions in the near future. Before the end of 2013, the “Digital Universe” is expected to expand to over 4 zettabytes, which equals more than 50% growth from 2012. And predictions are that digitally available content will continue to double. Data variety is increasing, with over 90% of all data unstructured and from heterogeneous sources. Data velocity is also up, is often dynamic and changing. The Big Data focus is predicted to shift towards analytics, discovery and analytic applications – and, in plain figures, spending related to Big Data is forecast to reach $10 billion in 2013, over $20 billion by 2016.

While offering companies countless new opportunities and exciting potential, the processing, analysis and management of such massive content for individual purposes within an acceptable time frame will require analytical applications that go way beyond “just search”. As outlined by the McKinsey Global Institute (MGI), the implications of “big data” for companies are manifold:

“The amount of data in our world has been exploding, and analyzing large data sets – so-called big data – will become a key basis of competition, underpinning new waves of productivity growth, innovation, and consumer surplus … Leaders in every sector will have to grapple with the implications of big data, not just a few data-oriented managers. The increasing volume and detail of information captured by enterprises, the rise of multimedia, social media, and the Internet of Things will fuel exponential growth in data for the foreseeable future. (…) The use of big data will become a key basis of competition and growth for individual firms. From the standpoint of competitiveness and the potential capture of value, all companies need to take big data seriously. (…) Several issues will have to be addressed to capture the full potential of big data. Policies related to privacy, security, intellectual property, and even liability will need to be addressed in a big data world. Organizations need not only to put the right talent and technology in place but also structure workflows and incentives to optimize the use of big data. Access to data is critical – companies will increasingly need to integrate information from multiple data sources, often from third parties, and the incentives have to be in place to enable this.”

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9 BITKOM, 2012: “Big Data im Praxiseinsatz – Szenarien, Beispiele, Effekte”, page 21 (translated from German)
11 McKinsey Global Institute, “Big data: The next frontier for innovation, competition, and productivity”, May 2011
Various aspects make the explosion of content a real challenge for businesses: With the rapid growth of unstructured corporate content, enterprises face increasing difficulties in managing documents and electronic information. It is important to bear in mind that most regulatory and legal compliance processes concern printed as well as electronic documents. Knowledge workers possibly spend up to 50% of their time looking for content. But if more than 30 minutes are needed to find a document, this has the same negative effect as not having it at all. 90% of all corporate information assets are in documents; but 7.5% of all documents are lost. Folder and document structures are often ineffective and therefore related to document chaos. The resulting danger is that different employees might be working with different document versions so that errorless updating becomes impossible. 12

**Trend #3 proposition from Konica Minolta: Document Capture & Management**

The above underlines how important it is for enterprises to face the “big data” issue and tackle its implications now. With the help of professional document capture and management applications, organisations can optimise their internal and external communication processes. Efficient scanning and capture applications for example facilitate the processing of incoming and outgoing information and, in conjunction with comprehensive content and document management solutions, ensure the smooth and speedy distribution, delivery and management of all information into the right hands.

Konica Minolta offers various document capture and management applications that answer the requirements of users in corporate environments who work with multifunctional printers and need to optimise document workflows:

- **The dokoni SUITE** provides control of enterprise content and facilitates the management of unstructured information. The two applications dokoni CONTENT and dokoni CONNECT combine the modules Outlook Integration and Desktop Integration with a content management module. This efficient combination is Konica Minolta’s ECM proposal that makes content easier to share, encourages collaboration, and boosts process productivity. The dokoni SUITE shortens reaction times, increases the overall productivity, and ensures corporate governance – all of which effectively reduces the cost of accessing and managing information.

- **The Konica Minolta Document Navigator** offers intelligent document capture, processing and delivery, providing seamless electronic workflows for paper-based documents. This simple and flexible capture solution enables easy and absolutely reliable management of document-based processes, letting office workers concentrate on the essentials of their business. Another easy and intuitive capturing solution is the **Document Navigator Essentials**, which saves companies time, effort and money by automating daily work routines.

- **The Unity Document Suite** is a user-friendly suite of three applications and an optional server module that integrates fully into existing business processes. As a convenient desktop document management solution, the Unity Document Suite supports office workers in creating, organising, combining, searching and converting PDF or other files.

**Trend #4 = Data & information security**

The above outlined trends and developments raise important concerns regarding the security and protection of corporate data and sensitive information. With the transmission of extensive amounts of critical and confidential data via the Internet, both general data leakage as well as cyber crime are major concerns on corporate as well as personal level. More so than ever, enterprises have to look for all-encompassing security functionality in their IT equipment to reliably protect against loss and theft of sensitive corporate information.

For example, in any enterprise environment, the day-to-day use of copying, print, scan and fax systems, as the elementary components of work processes and workflows, makes MFPs indispensable at

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12 Kenneth Megill, "Corporate Memory: Records and Information Management in the Knowledge Age", 2005
many levels. Just imagine coming to work and finding that your printer has printed, as if by magic, a page with a QR code on it, all by itself. Unthinkable?
In August 2013 thousands of people all over the world shared this experience and wondered about their devices, which seemed to have developed an inscrutable life of their own. It wasn’t magic: a group of German hackers wanted to draw attention to the security risks of integrated cloud printing systems by submitting a remote print job. This showed that it is of paramount importance to protect these devices to withstand ongoing safety threats.

**Trend #4 proposition from Konica Minolta: Industry-leading security standards**

The demand for private cloud solutions and enhanced security presents enterprises and organisations with the challenge to work out strategies and policies to manage hybrid and other complex situations. Konica Minolta is well positioned with regard to its comprehensive security offering – as the following evaluation by Quocirca Ltd. underlines:

“Security is the key element of Konica Minolta’s overall strategy …

Konica Minolta has a comprehensive range of print and document security features, many of which are standard features for their bizhub range of devices. Rather than certifying optional security kits, Konica Minolta claims to have the widest range of ISO 15408 fully certified MFPs in the market.”

Konica Minolta meets the security and protection challenge with hardware systems that have extensive built-in security features and can be further enhanced with various optional software applications:

- **Konica Minolta’s standard security features** provide print security, device access control, document security, and data leakage prevention. The functionalities cover access control with features like copy/print accounting, secure printing (lock job), user authentication (by ID plus password, IC card reader or finger vein scanner), event log; data security ensured by features such as data encryption (hard disk), hard disk data overwrite, hard disk password protection, data auto deletion; and comprehensive network security, including functions like user authentication, POP before SMTP, SMTP authentication (SASL), manual destination blocking, etc. In addition, various optional software tools extend and enhance the security and protection further wherever required, such as:
  - **bEST Guard** is a security application that helps protect confidential company information by storing copies of documents and transaction log data in an external database. This facilitates identifying and avoiding data leakage, which is important for companies and departments where data confidentiality is essential.
  - **The PageScope My Print Manager** is an advanced solution to support centrally managed printing. Available as a module of the PageScope Enterprise Suite, it provides versatile functionality around personal secure printing in managed print environments, including controlling and limiting printer access.
  - **The PageScope Authentication Manager** provides central user, access and cost management. Part of the PageScope Enterprise Suite, it facilitates the monitoring and control of user access and permissions. Dedicated to comprehensive print access and user rights control, it is handled by the IT or print administrator and provides a reliable means to control the scope and scale of access to devices as well as the appropriate authentication mechanisms.

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13 2011 Quocirca market study “Closing the print security gap. The market landscape for print security” (page 11)
Overview Trends Office Market

The following infographics shows how the above explained trends all interact:

(Mega-)Trend #5 = Environmental sustainability

In addition to the mentioned technological trends, one market trend is the general environmental awareness, which has grown remarkably (mainly in the office market, but importance is also growing in the production printing area). As a topic of ever-increasing importance, society’s focus on environmental issues causes a strong demand for products and services that support companies in attaining environmental sustainability. Many companies have established their own CO₂ targets and will only select IT equipment with a low CO₂ footprint. In recent years, this trend has grown from basic eco friendliness into an essential component of Corporate Social Responsibility. Today, organisations are no longer just looking for straightforward ECO friendliness but require solutions to ensure their all-encompassing Corporate Social Responsibility (CSR). As a consequence, suppliers nowadays have to consider environmental sustainability more than ever before.

Trend #5 proposition from Konica Minolta: Eco Vision 2050

“Eco Vision 2050”, Konica Minolta’s long-term environmental guideline, was formulated to express the company’s long-term environmental vision, establishing a number of goals and guidelines, charting a course to achieve future objectives and in so doing meet its responsibilities as a globally present business enterprise by helping to establish and contribute towards sustaining the earth, its environment and human society.
Such achievements are, for example, acting to prevent global warming, ensuring that finite global resources are used effectively, including reuse, as well as supporting the preservation and restoration of the planet’s biodiversity. It is a corporate conviction that technological innovation is the driving force which provides the means for achieving sustainable business development while at the same time reducing the impact of manufacturing on the environment and being able to offer innovative products with improved eco-performance. Among other things, Eco Vision 2050 calls for a reduction of CO₂ emissions throughout the product life cycle by 80% as compared to 2005 levels. The CSR Report 2013 features Konica Minolta’s global activities which for instance led to a reduction of lifecycle CO₂ emissions in fiscal 2012 down to 50% of what they were in fiscal 2005. Also in place is a 2015 Medium-Term Environmental Plan formulating intermediate goals.

Konica Minolta puts extensive effort, time and resources into a wide range of technologies, functions and features all with the same goal: that Konica Minolta hardware products help conserve resources and protect the environment, and that all products are compliant with the worldwide environmental laws and regulations. A few of many examples for this commitment are:

- In addition to eco and energy-saving product features, Konica Minolta products include numerous proprietary technological developments to reduce their environmental performance during production, use and disposal. Polymerised Simitri® HD toner for example is made using materials that include biomass. This contributes to achieving CO₂ neutrality during recycling and helps reduce the overall carbon footprint of Simitri® HD and, consequently, of the Konica Minolta MFP’s. **Induction heating fusing technology** is a suitable technology for greater energy efficiency and integrated in numerous Konica Minolta devices. Induction heated fusing units have a shorter warm-up period and require less energy during stand-by so that the overall energy consumption can be reduced.

- Innovative products like the bizhub C554e series use originally developed recycled material that makes up nearly 40% of the outer casing. The material was developed by evenly mixing materials from recovered one-gallon water cooler jugs and plastic drinking bottles to create a material that has the required strength and fire-retardant properties to meet safety standards and that can be mold injected.

- For many years, Konica Minolta products have been at the front line in the industry concerning their environmental performance. Consequently, the products in our portfolio have been receiving important eco marks in the past, and continue to do so:
  - **German Blue Angel** is the world’s first environmental labelling system: it is awarded to products and services that have a reduced environmental impact. With very few exceptions, almost all applicable Konica Minolta devices are awarded the Blue Angel.
  - **Energy Star**: Only office equipment that satisfies set standards for energy saving is awarded the Energy Star. The key decision criterion is the TEC value. Konica Minolta devices are always well within the Energy Star limits and are among the products with the lowest TEC values in the market.
  - **ISO 14001** is the internationally recognised environmental management standard. Konica Minolta operates a management system compliant with ISO 14001: its management system was long ago adopted as its basic policy for all group production sites across the globe, and all of these facilities have been awarded the ISO 14001 certificate.

- With specific biodiversity projects in place, Konica Minolta pursues what is known as a 360° approach when it comes to sustainability. The markets have been recognising this, and Konica Minolta has received various CSR awards and indices:
  - Konica Minolta, Inc. was rewarded with a listing in the **Dow Jones Sustainability Index World** for two consecutive years. DJSI World could be described as the most trusted and authoritative rating in the world. The companies selected all balance growth against social contribution.
  - Konica Minolta, Inc. has been commended by **CDP** for the action it is taking to reduce emissions and mitigate the risks of climate change and for its approach to the disclosure of climate change information.
achieved a position both in CDP’s Japan 500 Climate Performance Leadership Index (CPLI) and CDP’s Japan 500 Climate Disclosure Leadership Index (CDLI). These annual indices highlight the constituent companies within the large Japanese 500 companies (Japan 500) including companies in the FTSE Japan Index.

- In 2013, Konica Minolta has been included in FTSE4Good Global Index for the tenth consecutive year, one of the best known indices in the world for socially responsible investment (SRI**) communities.

- In addition, Konica Minolta was awarded Gold Class in the 2013 RobecoSAM Corporate Sustainability Assessment, with results published in the “Sustainability Yearbook” of the Swiss investment specialist, who focuses exclusively on sustainability investment. Within the last three years, we won the Silver Class award twice (2010, 2011) and were listed in the Sustainability Yearbook in 2012.

- The environmental friendliness of Konica Minolta products has also been highlighted with the Japanese Eco Mark award. Konica Minolta received the Eco Mark Award 2012 Bronze Prize for its initiatives to reduce the environmental footprint throughout the life cycle of its latest series of colour MFPs (including bizhub C754, C654, and C554).

**Major trends in the Production Printing Market**

Although digital printing devices have been around for many years, it took the innovative technology with its manifold flexible capabilities some time to really penetrate the Production Printing domain. While digital presses have meanwhile found their way into production facilities everywhere, the true volume shift from offset to digital has only recently gained momentum – and still counts as a major trend in the PP arena:

**PP Trend #1 = Shift from Offset to Digital**

In recent years, the typical advantages of digital technology have brought a dramatic shift in print volumes from static offset production to flexible digital print runs. The main reasons for this development are shorter run-lengths, a much higher demand for personalisation and a strong transition towards distributed printing. This creates pressure on turnaround times and turnaround complexity. All of this is eroding the market for offset printing, especially since digital printers require much lower up-front investment than offset machines. However, not just economics drive this shift from offset to digital; digital printing quite simply offers superior capabilities when it comes to areas such as in-line finishing and variable data printing.

Print providers have realised that digital equipment enables them to react more flexibly and above all much faster to customer demands: Print runs can be smaller, enabling frequent updating of information and avoiding extensive printed waste. In digital production, last-minute changes are no problem; and personalised print products up to 1:1 printing are just so easy to create in a digital production process.

With the advent of digital equipment that produces true high-quality colour, the volume shift from offset to digital is meanwhile also a shift to digital colour: InfoTrends not only predicts a continuing decline of digital black &
white printing but an increase of colour volumes\textsuperscript{14} due to production shifting from offset to digital: According to InfoTrends, the retail value of digital colour printing will experience a compound annual growth rate (CAGR) of 3.6% between 2012 and 2017. Service providers should follow the money – from now on all bets are on digital colour!

**PP Trend #1 proposition from Konica Minolta: Market-leading colour, equipment and technologies**

- **Market-leading colour:** The current infoSource figures\textsuperscript{15} for the second quarter of 2013 show that Konica Minolta has further strengthened its number one position in the European PP market. In Western Europe we achieved a market share of 25.5% (based on units). Our position in the Eastern European market is likewise remarkable: With a market share of 42.1% (based on unit sales), we are the obvious market leader.

- **Superior technology:** Konica Minolta’s digital presses combine a range of innovative features and technologies. This combination provides impressive benefits that support the production of an extensive range of print products and help print providers achieve fast turn-around times, outstanding quality, sophisticated colour, etc.

  Tangible advantages are:

  - More effective short-run printing with faster turnaround times
  - Consistent, high-quality colour and output
  - Simple incorporation of last-minute changes
  - Optimised work processes
  - Reliability and stable output
  - Perfectly complements existing offset equipment
  - No mark-up from print storage, waste prints and errors
  - Product quality confirmed by independent sources
  - Easy diversification of print products and services
  - Attracting new customer groups
  - 24/7 availability with web-to-print
  - Centralised print orders and convenient job tracking

**PP Trend #2 = Shift to Cross-Media**

In our age of smart mobile communication, social media and augmented reality, businesses that strive to remain abreast of things are confronted with a number of marketing challenges – these include time, skills, cost, and expertise. Especially small and medium-sized firms (SMBs) are seeking partners to automate such marketing processes and help them install trigger-based marketing programs. Many studies emphasise the effectiveness of personalised marketing, for example Pira summarises that personalised marketing leads to 31% greater profits compared to general marketing materials, and that customers also become more loyal through personalisation, leading to repeat orders – customer loyalty can often rise by over 40%.

\textsuperscript{14} InfoTrends Western Europe Print on Demand 2012–2017 Market Forecast, 2013

\textsuperscript{15} infoSource Q2 2013/Production Devices/Category 1, 3 & 4, by manufacturer
Commercial printers on the other hand have to consider a more holistic approach in their business to maintain good customer relations, keep their customers and extend their customer base. Dealing mostly with SMBs, print service providers are ideally set up to evolve from mere suppliers into competent consultants, to offer and optimise a managed marketing supply chain and deliver results – thus enhancing their value proposition.

For print providers, there is a certain urgency to include other channels beyond just print into their range of products and services. By proposing multi-channel marketing to his SMB customer, the printer will involve himself in his customer’s process of marketing to consumers simultaneously across different channels and provide continuous reinforcement of the marketing message in multiple media over a period of time. Thus, the launch of a new product might be supported with a television ad, radio ad, direct mail, billboards and social media marketing at the same time – all of which the customer would obtain from the commercial printer.

Cross-media applications do nothing else: they use one channel (medium) to send people to another channel as part of their response. For printers to remain competitive this means that they can no longer afford to offer their customers just the direct mailing piece. They also need to arrange the entire setup for this mailing to include for example a personalised URL (PURL) that takes the recipient from print to the web. Or a QR code that the recipient scans with his mobile phone to take him to the web. Print providers can no longer ignore social media but have to take advantage of them including them in their offerings.

The software tools required for this are becoming increasingly sophisticated, which facilitates offering these services and very quickly makes their availability a market reality. Print providers are ideally positioned to become perfect partners to the SMBs and offer such services. On the other hand, to capture this SMB marketing automation opportunity the print providers need qualified support.

To keep up profitability, many print providers and in-house print facilities have already diversified their services portfolio beyond just printing to cross media offerings. Therefore, cross media applications are expected to be one of the fastest growing areas in the PP arena. Results from an InfoTrend survey conducted in 2012 show the market potential arising from the fact that SMBs are generally not in the position to run automated marketing campaigns and follow them up on their own. SMBs depend on professional partners to make the most of automated marketing – and printers are in the perfect place to become these professional partners.

PP Trend #2 proposition from Konica Minolta: make use of cross-media campaigns

To ensure that both the commercial printer and his client can benefit from this, one of the Digital1234 (Konica Minolta’s PP Business Enabling Programme) fields is the Variable Data Printing opportunity that suggests to print providers that they include other channels beyond just printing in their range of products and services. For example, a cross-media campaign could create more pinpointed marketing materials for a printer’s client: imagine a car dealer contacting clients via email. This email links to a PURL, a personalised website, which offers the opportunity to indicate personal likings with regard to cars. If, for example, someone indicates that safety is of the utmost importance to them, this information

16 InfoTrends Survey, “Capturing the SMB Marketing Automation Opportunity”, 2012
goes directly back into the database. After a few days this very client receives a printed invitation for a VIP event that includes a list of the safety features for a specific new car that will be presented to the public during the event. Every touchpoint (email, PURL, feeding of database and printed invitation) can be initiated and steered through the printer for his client, the car dealer. In this context we offer – together with our partners like DirectSmile – a broad product portfolio of VDP software which allows our customers to develop individualised cross media campaigns quickly and to a high standard. VDP is an extremely attractive tool for direct marketing, customer relationship management, advertising, invoicing and speeding up the addressing of mailing campaigns.

PP Trend #3 = Print automation

Driven with the need to streamline their workflow organisation, to save costs, and to increase their overall efficiency and productivity, enterprises seek to minimise human intervention in processes – a development that in Production Printing results in a strong demand for workflow automation and electronic job submission. Especially in this field, an extensive choice of professional print automation software is meanwhile available, for example enabling print providers and in-house print rooms to streamline production processes with templates. Automating print production with job tickets is simple and straightforward, and includes the automatic setup of output devices as well as fully automated inline finishing.

However, by many finishing is still considered the weakest link in production s: 23% of print service providers agree that finishing is a bottleneck in the overall print production workflow.Finishing processes reportedly are the least automated area in production workflows today. As print service providers continue to work towards developing fully automated workflows, they will also be looking for solutions that automate finishing, enabling the creation of a completely automated end-to-end production workflow.17

This trend away from highly labour-intensive processes to more automated approaches is growing and expressed especially through the use of inline and near-line finishing equipment for digital printing. The essential aspect is to maintain product flexibility at the same time. The type of automation that has been used on printing presses is migrating into the finishing department, with collators, binders and folders automating the setup to reduce make-ready, especially for repeat or same format jobs. A recent survey with commercial print companies highlights the fact that more complex digital finishing and particularly inline finishing is growing rapidly.18

PP Trend #3 proposition from Konica Minolta: Operational efficiency and workflow automation

With professional print automation software enterprises can enhance their competitiveness and profitability. Its templates and job tickets help optimise internal workflows and production processes, avoid redundancies and improve the overall operational efficiency. Automatic device setup and inline finishing minimise operator errors and misprints. Konica Minolta has suitable print automation applications for varied demands in its extensive portfolio, some of which are listed below. These make the most of the extensive inline finishing versatility available on Konica Minolta’s digital production presses, including features like automatic booklet production, various folding modes, trimming, perfect-bound books, ring binding, trolley stackers – to name but a few.

- JT Man 5 is Konica Minolta’s software solution for Make-Ready and professional print workflow automation. Optimised for use in CRDs and in-house print shops of public institutions, universities and corporations, this is an essential tool to optimise print processing, minimise costs and maximise return on investment.

17 InfoTrends, May 2013: “Workflow Bottlenecks: The Need for Automated Finishing”, page 4
18 SmithersPira, “Unlock the potential of inline finishing”, Konica Minolta Whitepaper, Digital 1234
Printgroove POD Queue ensures streamlined workflows and provides control of print queues. The application effectively manages and edits print queues by linking multiple output devices throughout the production floor – including control of processes, tasks, capacities and devices. As a result, the entire available hardware is most efficiently utilised and workflows are perfectly streamlined.

PJ Analyzer and PJ Optimizer offer a range of powerful modules for everyday prepress tasks. Streamlining everyday prepress work, this comprehensive PDF workflow processing system provides ideal tools to prepare jobs for printing and facilitate the tasks of print providers and in-house print room operators.

**PP Trend #4 = Web-to-Print**

Web-to-print with a high level of process automation will also be critical in order to keep up and enhance profitability. Web-to-print is fast evolving into web-to-finish and web-to-product offers, providing comprehensive online printing services that on the production side are based on all-inclusive, fully automated workflows. Providers entice corporate and individual print buyers with sophisticated portals offered, using totally automated prepress workflows, linked to the press and finishing, and even handling the administrative side virtually without involving staff.  

Today’s web-to-print software solutions increasingly allow combining different media, such as print, e-mail and QR Codes. Advanced applications offer online portals for creating, archiving, managing and deploying business-to-business and business-to-consumer communications. Such portals might even provide certain VDP capabilities that enable non-print or non-design professionals to create, customise and order VDP documents.

Adopting web-to-print, enterprises active in the PP environment enhance their services and availability by offering their customers the efficient ordering of print products via the Internet. Customers can comfortably order prints on their PC at home and pay for them online, 24 hours per day and 7 days per week. After ordering, a job tracking functionality keeps them informed of their job status until their prints are delivered or they collect them. Using a web-to-print solution is not only convenient for end customers. Print providers also benefit from the centralised submission of print jobs and with Konica Minolta’s hosting support don’t even need to worry about setting up a professional server environment.

**PP Trend #4 proposition from Konica Minolta: Web-to-print**

Professional web-to-print applications not only support printing businesses in retaining their existing customers but also help them gain new business. With features such as online job submission and payment, online status tracking as well as individual photo book creation, print providers can diversify, offer new services and ensure their availability to customers around the clock. And there is the choice of hosting support from Konica Minolta, so that printers do not need to worry about providing a professional server environment or taking on specialised IT personnel.

Printgroove JT Web 5 provides job-ticket based web submission around the clock. Combining online job submission, online payment and online status tracking in one professional web-to-print application, this is the perfect tool for any print provider of web printing services running their own server environment. Printgroove JT Web 5 is one of the modules of the comprehensive Printgroove JT Suite 5, in which the Web-to-Print functionality is enriched with Make-Ready and workflow management capabilities.

Printgroove JT Web 5 GO is the affordable entry package for easy web printing. The application offers in-house print shops, public authorities, the educational sector and print service providers (B2B) easy entry to the web-to-print market. As a sophisticated web-to-print application that is hosted by Konica Minolta, it provides secure, job-ticket based web submission of print jobs 24 hours a day – irrespective of the end user’s location, data format or printer hardware.

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19 Smithers Pira, 2012: “Post-drupa Technology Forecast for Printing and Publishing to 2022”

Overview PP Trends

The following infographics shows how the above explained trends all interact:

MPS market trends – A look at the Managed Print Services landscape

Managed Print Services (MPS) have been on the rise for quite a number of years.

MPS experienced modest growth from 2011 to 2012, with an expected CAGR of 9.14 percent through 2017. By 2017, MPS are estimated to reach $26.7 billion US-Dollar in total revenue\(^\text{21}\). Initially, enterprises opting for this alternative were mostly looking for device consolidation and optimisation. Meanwhile, the reasons for working with a single supplier for the management of a company’s entire printing and communication infrastructure have shifted more to ones of long-term business improvement. With new and renewed MPS contracts, customers aim to lower costs further while at the same time enhancing their overall productivity and efficiency. Nowadays, MPS customers can rightfully expect innovation, industry expertise, customised solutions and a commitment to continuous improvement from their providers. Leading MPS providers are well prepared for the challenge and offer a wealth of business process optimisation capabilities, evolving their range of services to include business process services (BPS) and IT services (ITS).

In principle, the key issues in managed printing are the same as those discussed earlier in this paper. Consequently, MPS providers have to include aspects like mobility and security into their approach. With regard to enterprise mobility for example, providers are beginning to offer integrated cloud-based mobile print platforms that embrace mobile platform diversity, applying similar security and control to mobile printing as already established for laptops and workstations. Besides tightening security, established access control mechanisms also help save costs by minimising wasteful printing. Consequently, Quocirca expects security and associated offerings to become an essential component in MPS tenders in the immediate future.\(^\text{22}\)

\(^{21}\) Photizo, “2013 MPS Forecast”
\(^{22}\) Based on: Quocirca, “Managed Print Services Landscape, 2013”
Companies looking for a professional MPS partner should pay special attention to the assessment of their present document and printing infrastructure: As it provides the foundation for any future contract, the assessment must be in-depth and effective and should take a thorough look at all print-related processes, at the very least analysing the print processes throughout the company. Additional environmental and security assessments are worth considering. Furthermore, an assessment of document workflows is essential to identify opportunities for business process optimisation. The more comprehensive the assessment, the better the opportunities to achieve cost savings and productivity improvements in the long term.

As a business continually evolves, so should the MPS agreement, including the scope and terms of the contract, as well as the staff and location(s) involved. An MPS contract should in particular be sufficiently flexible to allow the incorporation of new solutions and evolving technologies. Innovations such as software as a service (SaaS), web-based technologies, open standards, cloud computing, business intelligence and ITIL-based process methodologies could ensure that business objectives are met throughout the duration of the contract. Also, SLAs should be flexible and the MPS provider able and prepared to advise on future needs in good time. Any agreement between an MPS customer and a provider should ideally be based on continuous improvement and include an integral focus on best practices in order to fulfil and ideally exceed the expectations defined in the contract.

**MPS proposition from Konica Minolta: Optimized Print Services (OPS)**

- Konica Minolta’s OPS approach focuses on creating an efficient printing infrastructure by developing improvement strategies on the basis of precise facts and figures, guaranteeing cost reductions as well as trouble-free processes. Konica Minolta’s OPS concept considers the four essential areas Fleet, Process, Finance and Security, and adopts a three-pillared approach of Consult, Implement and Manage. Expert support is combined with detailed individual optimisation design and management for a smooth transition, not only to help enterprises install their optimal printing infrastructure, but also to operate this in the most efficient way. Once implemented, this approach guarantees minimal risk and interference with daily business operations, and helps companies achieve maximum control and efficiency. Konica Minolta’s MPS-performance is continually improving, lately Konica Minolta has been ranked 5th in market share forecast for 2013 by Photizo Group\(^\text{22}\). Surpassing Lexmark, Konica Minolta holds 6.7% EMEA market share, being by far the fastest growing company in MPS in the last three years and is predicted to continue at this pace over the next five years (MPS Forecast worldwide and within EMEA with a CAGR Growth Rate of 56.32 percent respectively 67.10 percent) \(^\text{22}\).
Conclusion

As companies face growing cost pressure and require more and more flexibility in their IT infrastructure, Cloud computing has been growing apace over the past few years. This is a development that is set to continue. In parallel, Software as a Service, or SaaS, is another area headed for continued growth. What may change is that SaaS will be less about mere communication and collaboration and more about the creation of digital content and office applications, areas in other words that are especially important to a company in the imaging business. Additionally, the workforce is becoming more and more mobile. Just a few months down the road, more than one worker in three will be mobile. More than one in three workers, then, will need non-local access to documents. This raises issues such as accessibility, connectivity and security. These will become the most crucial factors for IT divisions. In this connection, security will be even more of a focus. Also, every week seems to bring a new report about a cyber-attack affecting a major company somewhere in the world. In addition, there is also non-criminal data loss to worry about, think social media accidentally publishing thousands of user telephone numbers. Little wonder, then, that cyber-crime and data leakage rank among one of the main concerns of companies regarding their IT.

For Production Printing, one long-term trend is that print runs are steadily becoming shorter as customization of print documents increases. This creates pressure on turnaround times and turnaround complexity. All of this is eroding the market for offset printing, especially since digital printers require much lower up-front investment. But it is not just mere economics that drive this shift from offset to digital, it is also digital printing’s superior capabilities when it comes to areas such as in-line finishing and variable data printing. This should continue to bolster demand for digital printing systems, as does an ongoing shift from black and white to colour devices. Another driver reinforcing this will be strong demand for workflow automation and electronic job submission in Production Printing as organizations seek to minimize human intervention in processes. This has prompted many print providers, but also in-house print facilities to move beyond mere printing. Also driving this trend is the evolution of marketing automation. Customers realize they need to introduce innovations such as trigger-based programs as specialist software becomes available. However, customers need support in executing these programs, and this is where printing expertise on the part of a partner can make the difference.

Konica Minolta, as a global player, can not only point to a broad product portfolio, both as a whole and as a leading provider of business technology, it is also a company that is moving ahead, expanding its reach both in terms of geography and in terms of its services offering through judicious acquisitions. As our customer’s partner, we strive to provide them with the services and products that best serve their particular environment. We closely observe global trends and seek to draw the right consequences so that our customers can rely on us in the long term.
Future Enterprise Trends

Konica Minolta strives to innovate across the globe, with industry and market leaders, partners and customers to drive increased value to the enterprises, organisations and society in general. We believe there is a core set of trends that will reshape the way we work in the future and therefore are actively focusing on those technologies to incubate, commercialise and bring to market in the medium to long term. This part of the whitepaper represents a first look at some of those key trends with some of the key technologies emerging and how they are matched to our existing portfolio.

This is a journey for us all and we encourage and welcome your feedback.

Konica Minolta’s Business Innovation Radar

Future Trend #1 = Workplace of the Future

How our experience of work and place will change

Work is an essential part of our lives. We shape and change our living space, because we recognise that the type of work environment impacts our productivity. In an evolving digital world, new technologies are transforming our work environments and our communication is shifting to virtual spaces.

People from all walks of life are behaving more and more like consumers at work and this will have a great impact on what is expected from our work environment in the future. Workplace of the future technology should enable us to be more productive and flexible, at any time and any place. As a result of new service-orientated technical environments, more and more services that we already use in private will also be available in our work environment. They will be enabled by, for example, hybrid work/home environments in which the technologies

23 Under continuous development
required are available for employees everywhere – by means of social media applications in the car, at the office and at home. Such solutions combine the use of on-premise software and Office as a Service (OaaS) concepts from the cloud, so software and documents will be available and always up to date both locally and on any device. Security of documents will be ensured by security services solutions which protect data stored in the cloud, data transfer and documents stored locally. Irrespective of location and device used, team members will be able to collaborate on their digital content securely.

So in the not too distant future, the workplace will be about making each of us more effective both individually and together. Within a few years work tools will also develop, with intelligent new devices that are increasingly easy to use via next generation interfaces, such as by gesture control. An increasing number of ever smaller ubiquitous devices equipped with GPS positioning and sensors and incorporated in wireless networking solutions will continue to shape our private lives through intelligent use of data from both the digital and physical world. In fact, such technologies already create new business opportunities such as location-based electronic vouchers for retail. In this ‘Internet of Things’ scenario, devices that perform different tasks will communicate independently via a multi-layered network and share trading impulses or references to measurements and events. Autonomous software agents and smart systems will solve different tasks for companies independently.

Our familiar smartphones will become non-reflective, thinner and physically flexible. Furthermore, flexible displays will facilitate more ergonomic working and transform the boundaries of the workplace, creating virtual environments which will be truly immersive. In an increasing number of work scenarios augmented reality solutions will support users by means of large scale computer-assisted images, creating overlays on the physical and virtual world. These capabilities will drive new layer of collaboration: knowledge and social technologies will ensure that know-how is made available to all employees in the company via enterprise social communities and personalised data provisioning.

Because employees will be more accessible and productive any time, anywhere, Results Only Work Environments will be created for some, in which reward will be based on results achieved rather than on hours worked. This will lead to greater flexibility in work schedules and deeper understanding of team performance measures. Employees in the emerging creative and innovation economy will find virtual marketplaces for the programmes, projects and tasks to which their talents are best suited.

**Trend #1 proposition from Konica Minolta: Workplace of the Future**

As a consumer I am accustomed to being able to enjoy my music and my films everywhere and on all devices. Using Enterprise Content Management (ECM) solutions from Konica Minolta I can find content regardless where I am and which device I am using, and that also applies to the security standards at the company where I work. The dokoni suite makes it easy to share content and collaborate in working on it – straight out of Microsoft Outlook or in Microsoft SharePoint. Konica Minolta’s bizhub MarketPlace provides applications for other devices centrally via multifunctional printers (MFPs). Such applications hubs are comparable with app stores for smartphones; different applications can be downloaded via the MFP display and adapted to personal requirements, rapidly and without the mobile network dropouts which are common in office environments.

Konica Minolta makes a contribution toward more ergonomic living and working with Symfos OLED (organic LED) panels that are as thin, lightweight and flexible as a sheet of paper. They make new lighting concepts possible for buildings, cars and electronic devices, for example. LCD displays are taking over in our surroundings and are an essential component of screens, mobile phones and navigation devices. Konica Minolta has achieved high quality by using cellulose triacetate (TAC) film that protects the polariser, the key component in LCD displays. Konica Minolta is also working on the working world of the future with new print systems, colour management technologies, new digital document formats and optical systems for copiers, scanners, fax machines and cameras that are extremely powerful by advanced innovations in coating and polishing.
Future Trend #2 = Service Automation

How automation paves the way to higher value

Computers are increasingly becoming decision makers in an automated world. For example, image processing algorithms based on pattern recognition already help doctors to more quickly and consistently evaluate X-ray images, CT scans, MRIs and ultrasound. Combined with cognitive systems, which understand the question being asked of them, computers may well raise the standard of care through decision-automation.

Increasing standardisation in the enterprise helps to continually improve the consistency of service delivery and to shorten innovation cycles. This trend contrasts the development of most IT systems which are highly customised and developed in-house. More and more IT services are available standardised, predesigned and preconfigured – highly automated and repeatable, scalable and reliable in order to fulfil the requirements of many organisations. IT will become the backbone for new cognitive support systems to operate on and make data driven decisions on.

In the short-term we are already seeing standardising and consolidating IT processes improving the speed of project deployment and operational costs. This will quickly lead to better integration and automation of different systems and processes in second generation hybrid services, both from the cloud and on-premises, helping organisations stay on track. Organisations of today manage decisions by many different dashboards and complex contractual terms across IT service towers. This will change with new and adapting views of the IT system and processes and reduce decision complexity as well as help create common data formats, interfaces and performance indicators to make decisions on. The end goal is to release operational staff from coordination of tasks role to management and improvement of IT services.

To progress on the journey towards service automation, a number of technologies will be required. One is known as Software-Defined Infrastructures (SDI), enabling the adoption of virtualisation technology for desktops, servers and entire infrastructures. This makes such technologies uniform and controllable on a software basis. But it will also separate the task of controlling infrastructure from the data contained within it. In effect, data and infrastructures will become less ‘hard-wired’. Another contributor to service automation will be Data-centric cloud management of virtualised infrastructures. This will make it possible to use the enormous stream of operational data from data clouds and networks for real-time analyses and to improve performance and security management automatically. Data-centric approaches contrast with server- or service tower-centric management of today and indicate a new way of valuing assets and contracting for services will follow.

On the far horizon, Universal or Common Data Fabrics will make use of distributed networks within a cluster of computing resources such as memory, CPU and network bandwidth. This ensures continuous availability, high performance and linear scalability for managing data-intensive applications faster and more efficiently. Underpinning all these developments, by means of automated evaluation of large amounts of data to acquire security-relevant information, Intelligent Security will predict the attack vectors of attacks on technology in advance and quarantine their effect.

Going forward, as IT services become more standardised and automated, entire business processes can be obtained “as a service” from the cloud on the basis of these technologies. CIO explains that BPaaS mixes Business Process Management with one or more aspects of cloud deployment: SaaS, IaaS or PaaS. Therefore, Business Process as a Service – according to CIO – is any business process delivered as a service through cloud solutions and – like any other
cloud environment – “gives companies the opportunity to use cloud software in a pay-per-use model, instead of having to invest in hardware and maintenance”. This means that common processes may be shared by different enterprises.

The overall effect of the service automation path is to minimise of human intervention because the IT services are largely self-managing on the basis of the autonomic computing themes outlined above.

**Trend #2 proposition from Konica Minolta: Service Automation**

With Konica Minolta IT Solutions (former Raber+Märcker GmbH), Konica Minolta has acquired a leading software and system provider with branches all over Germany that implements solutions for customers. Together, the companies are developing a powerful portfolio of services that sets standards in business solutions and IT infrastructure with, for example, enterprise content management systems for companies.

Konica Minolta IT Solutions uses Business Process Services to simplify document-based business processes that used to be processed laboriously on paper – processes such as the approval of invoices and coordinating drafts. Employees can now deal with them entirely digitally, mapping them in future in the Enterprise Content Management (ECM) system by means of workflow specifications. Employees gain time in which to concentrate on their core business.

Another example is Konica Minolta’s Image Pilot which is an all-in-one solution for digital radiography. A consistent, user-friendly interface makes it especially easy to digitise, evaluate and store X-ray images. The patented technique eliminates the need for users to define and select specialised parameters for each body part and orientation, in effect a form of automation.

Also Konica Minolta’s Infomity services are a cloud-based technology that makes imaging workflows simpler. Using automatic IT servers, Infomity handles provisioning and backup for the management which minimise the need for human intervention to procure, provision and manage the relevant systems. Medical institutions use Infomity to save patient data back-ups automatically to the cloud, where all of the healthcare facilities involved in treatment can access centrally the documents they require.

**Future Trend #3 = Information Management**

How data will be the foundation of thinking systems

Data is one of the most important features of today’s information age. In our increasingly dense and complex world of information we need instruments to supply and tools to make sense of the information we need any time, anywhere, securely and simply. Big Data security concepts are needed to safeguard the organisation and its customers’ information – and to use Big Data techniques to analyse and even predict security incidents.

Yet the amount of potential Big Data that is analysed is still less than 1%; the rest lies in unrealised value extraction. This will give rise to the next data challenge: leveraging automatically small, partly hidden, data to support decisions and understanding. With the aid of predictive analytics, for example, companies will be able to forecast complex economic conditions and use this knowledge to make better investment decisions. Conceptual search methods can be of help here, enabling users to search databases for documents that are connected conceptually by a keyword in accordance with pre-established criteria.

Following this, a new category of data will emerge which we call ‘delta data’, forming a small packet of prequalified data, in contrast to ‘raw data’. Delta data will contain triangulated data points and be ranked by its capacity to enable change – a new coefficient of meaning - within a given search or discovery topic. Such packets will inform and shape IT and business process automation.

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24 CIO 2013, “How Business Process as a Service (BPaaS) works, on Enterprise CIO Forum
Transferred to the Internet, meta-information of this kind leads to smarter search engines that evaluate and interconnect information independently on a Semantic Layer. When Web 3.0 arrives, computers will understand information expressed by humans, so they are able to process it automatically and connect it intelligently. That will make machine processing of published data easier and intuitive searches possible.

Using text and content recognition and machine listening comprehension, computers will also be able to collect information independently. By means of sensor data that companies and institutions are collecting all over the world, machines will see, feel and react based on their programming. The basis for this is the ‘Internet of Things’; essentially a network of physical objects that contain embedded technology to communicate and make continuous environmental measurements. Machines will then process all the resulting information in artificial neural derived and device architectures.

This way of structuring complex data processing on the basis of human neural systems is known as neuromorphic engineering and will lead to increasingly smart systems that are capable of relating items of information to each other logically and independently. In this way machines work much more efficiently and will make this collected knowledge accessible for humans in structured form through automated ontologies.

**Trend #3 proposition from Konica Minolta: Information Management**

To leverage information assets which will become part of their ‘big data’, enterprises need to make an early start in their information management journey. Konica Minolta creates the preconditions for information management with technologies and enterprise content management solutions integrated into day-to-day business applications that simplify the management of documents and information. The individually configurable infrastructures of the dokoni suite, for example, reduce response times and thereby boost productivity – while at the same time ensuring corporate governance. The Konica Minolta Document Navigator creates seamless electronic workflows for paper-based documents and the Unity Document Suite provides support for the creation, management and searches of PDF and other files.

One of the challenges of big data is managing large files of different media types. With an image compression technology Konica Minolta also makes it possible to save high-resolution colour images as compact PDF files. These PDFs are smaller than a compressed image in JPEG format. With this technology, the time spent sending scanned image by e-mail can be reduced. As the result, it can be easier to use the digital multifunction machines.

Because large data files often contain sensitive information, various tools for encryption and user authentication enhance data security and protection. The bEST Guard security application, for example, stores copies of documents and transaction log data in an external database to identify and avoid data leakage. In addition, the PageScope My Print Manager provides functions for personal secure printing in order to keep control in managed print environments and, if need be, to limit printer access. In terms of accessing data, a central tool for managing users, access and costs is the PageScope Authentication Manager. With this application IT managers and print administrators will be able to keep an eye on the scope and scale of access to devices as well as the appropriate authentication mechanisms.

Big Data technologies are also available for small and medium-sized firms as Big Data-as-a-Service solutions. Without needing to invest in hardware, software or personnel, they can use Big Data analytics platform in the cloud to make business use of large amounts of data.

**Want to know more about future enterprise trends?!:**

If you want to know more about the KM innovation strategy and partners please contact us at innovation@konicanolta.eu
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