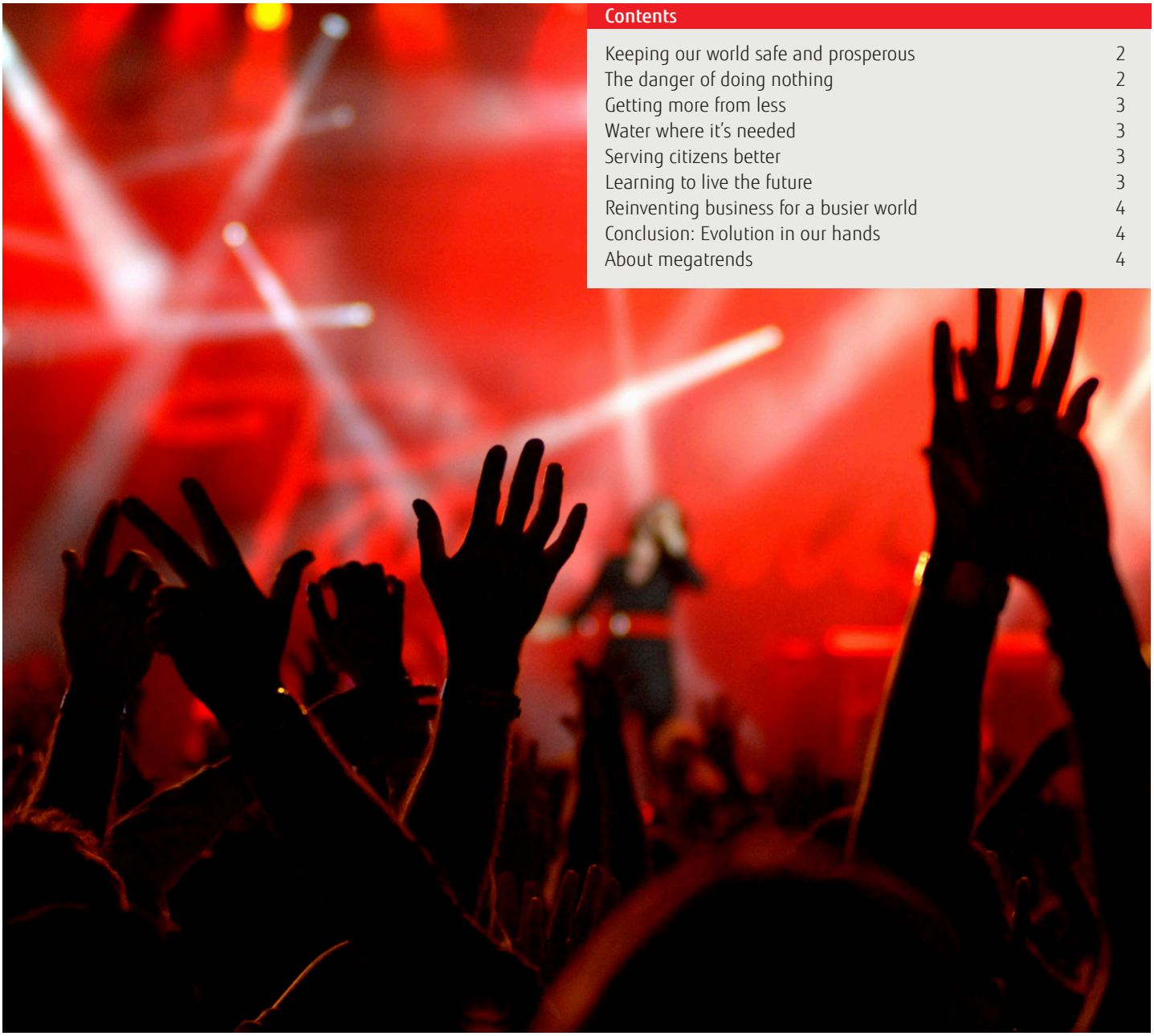
Megatrends
Population Growth

The speed and scale of the changes affecting both business and society demand new thinking and new solutions. At Fujitsu, we are addressing these challenges in a responsible and sustainable way by exploiting new and emerging technology.



Contents

Headlines

- The human family is growing fast – but can the world's finite resources cope?
- Sensitive use of technology can improve resource management, asset usage and access to the good things in life – for everybody.
- We can bring better services to every citizen, even as numbers rise and needs become more complex.
- Putting digitalisation to work will reshape business – generating new opportunities for us and our children.

Keeping our world safe and prosperous

The world's population is growing fast, but its resources are dwindling. How will population growth affect the daily lives of your customers? And how will it affect your business?

The future is set to be more complex and competitive than ever, putting immense strain on existing commercial and social systems.

Although the challenges are daunting, mature technologies and proven methods offer ways of dealing effectively with population growth. We can use technology to improve resource management, asset usage and inclusion. We have the power not just to keep up with a rising population, but to transform the quality and reach of services – as well as ensuring our businesses continue to drive value for all their stakeholders.

Covering key issues such as growing more and better food, managing water supplies, delivering intelligent public services and introducing creative approaches to education, this paper considers how ICT is helping to reinvent business and keep our world safe and prosperous.

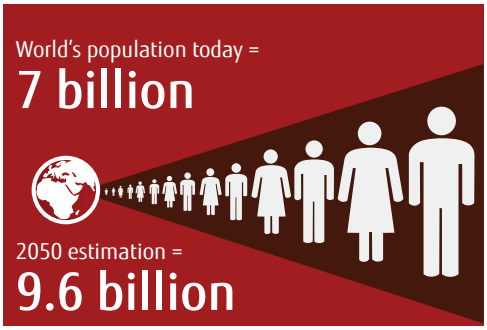
"Population growth is rewriting the rules of business, but IT will help us survive and thrive"

Author Ste Nadin, Fujitsu Distinguished Engineer and Chief Architect for business and application services focuses on how demographic change combined with the spread of digitisation, creates both threats and opportunities for business, but with the right technologies, we can ensure a better quality of life for an even larger human family.

The danger of doing nothing

Humankind is amazingly successful in at least one respect – reproducing itself. The latest forecasts suggest the world's population will reach 9.6bn by 2050[1] with the UK's population swelling to 77m by the same date, a rise of almost 24%[2].

We are going to have to feed, clothe, light, heat, educate and employ all these people, against a backdrop of dwindling resources. Unless we change the way we do things, our social and economic systems will buckle and break.



Population growth will drive increased demand on finite resources such as land, food, energy and water. Combined with the growing trend of urban migration, this will drive prices up, turn "the basics" into a far larger share of expenditure, and potentially spark conflicts over natural resources, exploitation rights and distribution channels.

Government organisations will also feel pressure on the provision of everyday services such as education, transport, health and social care for the growing population, restricting access and opportunity. There is also the added concern of the impact of natural disasters on a larger number of people.

"Unless we change the way we do things, our social and economic systems will buckle and break"

Meanwhile the same demographic forces will reconfigure the traditional economic world order, with the UK and France set to drop out of the top ten economies, while Nigeria and Mexico move in[3]. This will provide an influx of new companies unencumbered by old structures or attitudes, and well placed to exploit digital solutions enabling global operations. They will recruit their customers, workers and partners from all over the world, operating with lightweight, agile processes that leave traditional competitors standing.

1 United Nations Department of Economic and Social Affairs (DESA), June 2013; https://www.un.org/en/development/desa/news/population/un-report-world-population-projected-to-reach-9-6-billion-by-2050.html

2 [UK] Office for National Statistics; http://www.ons.gov.uk/ons/interactive/uk-national-population-projections---dvc3/index.html

3 PwC, The World in 2050, February 2015; http://www.pwc.com/gx/en/issues/the-economy/the-world-in-2050.jhtml

Getting more from less

As the saying goes, land won't get any cheaper because they're not making any more. We are already seeing conflicts over land use around the world, with bio-fuel crops supplanting food crops, export markets distorting local production patterns and farmland being lost to housing. The resulting pressure on food production has, in the worst cases, led to physical conflict and ethnic cleansing. It is estimated that a 70% increase in food production will be required by 2050 to meet the needs of population growth[4].

The only way to produce enough food from the same land area is to improve productivity dramatically. Expert farming knowledge, combined with IT services, provide the key to this leap forward. By continuously monitoring and analysing metrics such as growth, available light, moisture and nutrients, then responding in real time, farmers can maximise yields while improving crop quality. Fujitsu is demonstrating such an innovative approach in a repurposed chip fabrication plant, where we are growing lettuces with increased yields of 250%. The produce has reduced potassium levels, making it less bitter and suitable for people on dialysis or who have kidney disease. The lettuces are made available to consumers – it's a business demonstrator as much as a technology showcase. Is this Fujitsu plant a farm or a factory? It's the future.

Water where it's needed

Many of us take access to clean, pure water as a given. It's just a turn of a tap away. But some 750m people lack access to a safe source of water today. The World Economic Forum sees this issue as the number one global risk to society[5]. Even the most sophisticated water infrastructure the world has ever seen – in the western states of the US – is pushing its dammed rivers and underground aquifers to their limits.

> "750 million people lack access to a safe source of water today"

Managing water innovatively to make it available in the right places in the right quantities will be essential to both security and economic growth. IT can make a massive difference here, by adding greater responsiveness to highly complex water infrastructure. For example, Fujitsu is working with the Japanese water industry to monitor plant and systems in real time, with data fed into the cloud for analysis. We are using analytics and augmented reality to guide engineers through complex operations in real time. It's a little like inserting an immune system into the technical infrastructure. We can spot and fix problems before they escalate, respond flexibly to changes in customer demand, and optimise asset life through smart maintenance. The result is a higher performing, more predictable and better value water ecosystem that delivers resources to the right places at the right time.

Serving citizens better

Local and central government services are under increasing strain as public finances slowly recover from the global downturn. The effects are felt immediately and personally, from worries about school places for children, to access to health services and even the frequency of waste collections. The increase in population will further challenge budgets and emphasise the need to make sure every penny is spent in the most efficient and transparent manner.

Local and regional authorities have tough decisions to make. The days of providing services in the hope that they will meet demand are long gone. With more fluid communities and more complex needs, policy making has to be more agile. At the same time the Open Data movement is matching citizens' demands for accountability with greater public access to IT. Innovation is key to meeting future needs.

Data analytics offers a powerful means of understanding and responding to population patterns and changing needs, allowing services to be more agile and tailored to actual requirements. For example, simple monitors embedded in dustbins can enable more targeted collection, and even form the basis of householder reward schemes. Collecting data from a wide variety of devices in the environment can give authorities a real time picture of needs such as parking, damage to street furniture and usage of public facilities. The data can then be shared with the community, enabling wider participation in the process of setting priorities.


Surge in data analytics

Learning to live the future

The growing support for the benefits of lifelong education and greater awareness of the importance of early years intervention sit uneasily with the current pressures on our education system. Class sizes are growing while libraries close. However, IT can help us maximise the use of our resources and deliver more targeted, individualised services. Personal interaction can be supplemented with online access to inspirational, expert tutors. Conferencing systems can enable students around the world to work together, while augmented reality systems offer a great way of teaching practical skills without investing in specialised workshops.

But the education is not just the responsibility of teachers – we need innovation at all levels. If we are to make sure tomorrow's workers have the right skills to drive business and society forward, organisations must engage more actively throughout the education process, from school curricula to apprentice programmes and in-work training. Fujitsu sees this engagement as part of our civic duty as well as sound business sense. We are not only providing opportunities to people in the communities we serve – we are also gaining the bright, enthusiastic people we need to evolve our business.

4 UN Food and Agriculture Organisation (FAO); http://www.fao.org/news/story/en/item/35571/icode/

5 World Economic Forum, Global Risks 2015; http://reports.weforum.org/global-risks-2015/

Reinventing business for a busier world

Emerging companies in developing regions may not have the assumed benefits of western infrastructure. But neither do they have the baggage associated with an ageing industrial landscape and entrenched habits of thought. As world population grows and becomes increasingly urbanised, these young communities can exploit digital technologies to leapfrog established players and set new standards for efficiency, effectiveness, quality and flexibility.

Emerging companies are embracing digitalisation and cloud services to acquire commercial capability rapidly and cheaply, as well as accessing global markets with ease. Where traditional companies still have sets of disparate systems these new entrants create agile processes connecting together multiple cloud services. They own less but can do more. For example, digital content company iHeart Studios has achieved a growth rate of 600%, with the help of Fujitsu's RunMyProcess solution.

"It's in our power to achieve whatever we can imagine"

This means we have to rethink what we define as a business. The integrated, end-to-end delivery of products or services is no longer the model to emulate. We are now seeing businesses created around the excellent execution of a single process component which is offered as a service via the cloud. Prominent examples include payment gateways and resource management services. These focused businesses in turn empower other organisations which can provide end-to-end services with great flexibility and creativity. New entrants can enter – and create – markets with minimal startup costs and low operational overheads. The risk profile for new ventures changes dramatically, leading to greater innovation.

Existing businesses can exploit these effects too. By digitalising their processes and using tools like Fujitsu RunMyProcess, organisations can take full control of their processes, systems and costs. Their data and applications become dynamic business assets rather than barriers to change. In this dawning era of digital business, it will no longer take months or years – and great cost – to change core systems such as HR, finance or billing. With systems digitally stitched together from component services, each chosen for its performance, fit and cost profiles, the CIO will be able to reconfigure the business by making a few simple changes. As cloud services will compete for customers, the CIO will be able to improve value or quality with a simple click. There will effectively be a market in business transaction services – and this market will become smarter in itself, with automated brokerage services that construct the best available end-to-end processes on the fly.

The relevant technologies are well advanced and take-up of cloud services is growing. However, many established businesses are making slow progress. They may be making the mistake of watching what their traditional competitors do, rather than responding to the game-changing new players emerging rapidly from our wider, more connected world.

Conclusion: Evolution in our hands

The world we're building for our children will be a very different place to the one we're used to. Population growth is a fundamental force with potentially radical effects. We simply can't achieve what we need to by doing more of the same. Innovation must become a habit – a purposive attitude to meeting the future head on and shaping it to our needs and goals. Organisations of all kinds must adapt to the evolving reality of limited resources and global competition. IT can help by improving resource efficiency and effectiveness well beyond traditional standards, and by balancing competition with new forms of collaboration.

Humankind has the technology. It's in our power to achieve whatever we can imagine. We need to spread the vision of a bountiful world that works for all its people – technology hand in hand with our hopes for prosperity, security and community.

Three things you can do today – to make tomorrow work better

- Rate the resource usage of the products and services you produce and consume. Find where can you trim waste, share resources and recycle. Encourage your partners to do the same.
- Reach out to potential customers, partners and competitors around the world and learn about their aspirations, cultures and business climates.
- Make a plan for digitalising your business from end to end. Align your development, procurement and assessment processes with the plan. Keep the plan supple and dynamic, and get as much external input and critique as you can.

Fujitsu would be delighted to discuss the megatrend implications for your organisation. Please contact the author Stephen.Nadin@uk.fujitsu.com

About megatrends

This paper is one in a series of megatrends papers written by Fujitsu to help inform organisations of the current and future trends impacting business and society. Highlighting how human centric innovation is responding to these global challenges, they aim to enable you to consider how you can contribute to a more prosperous and sustainable world.

Other papers tackle the challenges and opportunities of urban migration, an ageing population, healthcare, energy demand, and the Internet of Things.

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