Enable your organisation to grow, evolve, and transform.
Stefan Hajkowicz
Senior Principal Scientist – Strategy And Foresight, CSIRO
“the best way to anticipate change in your sector is to spend some time outside of it”

Quote from The Australian Financial Review, 9 April 2015
Photo of Michael Cameron, GPT CEO by Louie Douvis
Global Megatrends

- More From Less
- Planetary Pushback
- The Silk Highway
- Forever Young
- Digital Immersion
- Porous Boundaries
- Great Expectations
Why a Venn Diagram?

Each area of overlap tells a unique story about the future

Does the strategy perform in most/all areas of overlap?
More from Less
About 60-70 percent more food will be required to meet demand by 2050.

The world consumes 33% more energy, and 70% more electricity, by the year 2040.
Energy Supply and Demand

The world consumes 33% more energy, and 70% more electricity, by the year 2040

The energy mix changes. By 2040, oil & coal decrease share by 9%. Renewables increase by 5%. Gas and nuclear increase by 2%.

Renewables overtake coal for electricity by 2030

The world will spend US$68 Trillion on energy infrastructure by 2040

Artists impression on solar farm on Queensland’s sunshine coast. Will generate electricity for 500 homes. Source: Sunshine Coast Council.
My House

Annual solar production is 7201 kWh (more than we use)

Solar Potential

Optimum Solar Panel Layout
Planetary Pushback
Climate Change

So far 2015 was the warmest year on record. And 15 of the 16 warmest years on record have now occurred since 2001.

NASA’s Goddard Institute for Space Studies
Antibiotic Resistant Bacteria

2 million Americans acquire serious infections caused by antibiotic-resistant bacteria each year.

23,000 people die each year as a direct result of these infections.

63% of infectious disease doctors have treated patients with infections that did not respond to any antibiotics.

US Food and Drug Administration Guidance #213 Takes Effect in 2017 and aims to limit/manage medically important antibiotics in livestock production.

Global use of antibiotics for livestock was 63,000 tonnes in 2010 and will rise to 106,000 (67%) by 2030 at current trends.

29 new antibiotics were approved in the 1980s.

23 new antibiotics were approved in the 1990s.

9 new antibiotics were approved in the 2000s.

Data source: The PEW Charitable Trusts, Fact Sheet, 2014
Boeckl et al, PNAS, 2015, 112(18), Global trends in antimicrobial use in food animals
Pesticide and Herbicide Resistance

The Dimaondback Moth which damages crops such as broccoli, brussel sprouts and cabbage has resistance to all modern insecticides which have been in use since the 1990s.

Image Source: Western Australian Government, Department of Agriculture
Data source: South Australian Research and Development Institute
The Silk Highway
A Shifting World Economy

Source: Quah, 2011; Global Policy
Making Cities in 20 Years - What Took Europe 400 Years

Shenzhen 1982

Shenzhen 2007

Image source: (c) The Chinese UPLA urban planning network, http://www.upla.cn
The Rise of the Services Sector

Example: Transition in the Chinese Economy

Source: World Bank Indicators
By 2030 China and India alone will account for more than 60% of combined OECD and G20 STEM graduates.

The BRIICS countries\(^a\) will produce three-quarters of global STEM graduates

Source: OECD (2015) Education Indicators in Focus

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\(^a\) BRIICS = Brazil, the Russian Federation, India, Indonesia, China and South Africa.
Forever Young
“In 2010, overweight and obesity were estimated to cause 3.4 million deaths, 3.9% of years of life lost, and 3.8% of disability-adjusted life-years (DALYs) worldwide”

The Lancet 2014 384, 766-781. Ng et al.
Today we spend 25 percent of all government taxes in Australia on healthcare.
By the year 2043 it will be 40 percent.

Source: ACE–Prevention: Deakin University and University of Queensland.
Source: AIHW health expenditure database

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<table>
<thead>
<tr>
<th>Year</th>
<th>Cardiovascular</th>
<th>Mental</th>
<th>Neurological</th>
<th>Cancer</th>
<th>Diabetes</th>
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<td>9.3</td>
<td>5.2</td>
<td>4.7</td>
<td>3.5</td>
<td>1.6</td>
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<tr>
<td>2032–33</td>
<td>22.6</td>
<td>12.1</td>
<td>21.5</td>
<td>10.1</td>
<td>8.6</td>
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</tbody>
</table>

Expenditure Per Year (A$ Billions)
The pandemic of physical inactivity

“Physical inactivity is the fourth leading cause of death worldwide”
- Prof Dr Harold Kohl et al., 2012 The Lancet

In Australia Physical inactivity is main cause for 21–25% of breast & colon cancers, 27% of diabetes and 30% of heart disease.

Only one-third of children undertook the recommended 60 minutes of daily physical activity.

60% of Australian adults did less than the recommended 30 minutes of moderate intensity physical activity per day.

- Australian Government, Department of Health

Source: Australian Bureau of Statistics (ABS) 2013 - Australian Health Survey: Physical Activity, 2011-12. ABS Catalogue number 4364.0.55.004
Build it and they will come

If we build health promoting city infrastructure it will be used (shown in numerous studies).

Source: Foster & Partners Designed Bikeway shown by CNN
Digital Immersion
Computing Speed

Moore’s Law – Number of transistors on an integrated circuit doubles at same cost every 1.5 years

And then there’s quantum computing which could be 10,000 times faster ...

Jury’s still out on whether D Wave 2 (second commercially available quantum computer by Google, NASA and D Wave Systems) actually works. But maybe soon?
According to IBM, the world creates 2.5 quintillion bytes of data daily; 90% of the data was made in the last 2 years.
The Internet of Things

2006
2 Billion Devices

2015
15 Billion Devices

2020
200 Billion Devices

225 times more functionality

40,000 times more functionality


Metcalfe's Law
Value of a network = $n^2$
The Data Smart, Highly Automated and Digitally Connected City
Towards Automation
In Pittsburgh you can now select “Automated” when you order a taxi on your smartphone... Automated fleet cars are a transport game changer.

Source: ABC News
Blockchain and Distributed Ledger Technology

“A distributed ledger is a consensus of replicated, shared, and synchronized digital data geographically spread across multiple sites, countries, and/or institutions”

- Blockchain Technologies

A blockchain is a type of distributed ledger comprised of highly tamper resistant digital data records stored in packages called “blocks”.

- Definition Adapted from Blockchain Technologies
Task Automation and Job Replacement

47% of Jobs in America at High Risk of Automation

Michael Osbourne
Oxford University

Learn to race with the Machine, not against it

Erik Brynjolfsson and Andrew McAfee
Massachusetts Institute of Technology (MIT)
What Jobs do People Get?

After seven years of effort by scientists from UC Berkeley a robot can fold a towel in ...

20 mins.

The Berkeley Robot for the Elimination of Tedious Task (Brett) by Prof Abbeel at UC Berkley. Image source: Youtube
Photographers Versus Lab Staff

Australian Photographic Industry

Not Everyone is Making the Transition

Working Age Males in Australia, Labour Force Participation Rate

Porous Boundaries
Rethinking the Theory of the Firm?

1. Information asymmetry

is where one party has more or better information than the other. But ...

2. Transaction Costs

Are incurred in making an economic exchange (i.e. the cost of participating in a market). But ...

consider two ways of buying an e-Scooter from China.

... can customer generated content create symmetric information?

1. Learn Cantonese
2. Travel to China
3. Search for sellers
4. Evaluate quality
5. Deal with Bureaucracy

Buy a Scooter
Scenario Planning of the P2P Economy: A Case Study of Uber

New Data in a study by Uber Technologies and Princeton University, published 2016

Proxy measure for Market Share

Scenario B3: Vehicle fleet automation
Scenario B2: Natural S-shaped levelling off
Scenario B4: Regulations bite, trust & confidence breaches
Scenario A1: Customer trust & quality perceptions won
Scenario A2: Nothing much happens
Question: The area of lilly pad doubles every day. It takes 19 days for the pond to be half-covered. On what day is the pond completely covered?
Answer: On day 20 (one day later) the pond is covered.
Great Expectations
The Experience Economy 2.0

Is it really just $C_8H_{10}N_4O_2$?
Even In a Digital World; People Still Like People

More tech = more complex finances = more consultations

Towards a cashless society (we pay with smartphones or fingerprints, retinal scans, body movements...)?

Source: World Economic Forum and VoxEU
And people still like the physical world...

Despite ever growing virtual options

Australian Bureau of Statistics: 4114.0 - Attendance at Selected Cultural Venues and Events, Australia
The Innovation Imperative

Now is the time to rattle the cage, experiment with new business models, invest in ideas & rethink organisational structure because...

... Elephants must learn to dance.
The Innovator’s Dilemma

World Economic Forum via Flickr. Zanny Minton Beddoes interviews Clayton Christensen
T-Shaped professionals and organisational ecosystems (as opposed hierarchical structures)
The Data61 Insight Team
Research excellence combined with business relevance

Please connect with us @stefanhajkowicz
Microsoft mission

Empower every person and every organisation on the planet to achieve more
Digital Transformation

Engage customers
Empower employees
Optimise operations
Transform products
“Having Microsoft manage the cloud environment and infrastructure meant that we didn’t have to commission a separate system on premise. As we know, funding is changing and for us, the move from on-premise to Cloud with Dynamics 365 has paved the way for further digitisation. Now more than ever, we’re focused on living our own sustainable vision.”

Chris Moon, Information Systems Business Manager, Sustainability Victoria
Digital Transformation with Microsoft Dynamics
Microsoft Dynamics 365

Business applications

CRM

ERP
Business apps in the cloud

- Purpose-built
- Productive
- Intelligent
- Adaptable
Purpose-built

Built for your business, works with existing systems

Implement business processes across silos

Start with what you need, expand at your own pace
“Our sense is it’s a bit like the umpires in a game; you don’t notice the system if it works and I think from a patient perspective it’s been seamless. If you get good care and you’re looked after, you don’t notice all the systems and processes that are set behind it.”

Dr Daryl Kroschel, Medical Director for Silver Chain
Implement business processes across silos

Lead → Opportunity → Quote → Sales Order → Fulfillment → Invoice

Prospect → Cash
Unified experience across apps

The new home for all your business apps

Here you'll find all your Microsoft Dynamics 365 apps — from sales and service to operations and financials — along with apps that work with them from Microsoft AppSource.

Take a quick tour →

Learn more about Dynamics 365

Dynamics 365 for

Customer Service
Earn loyalty by giving your agents the complete information and digital intelligence they need to provide seamless service.

Financials
Makes ordering, selling, invoicing, and reporting easier—starting on day one.

Operations
Optimize your operations with digital intelligence that helps you make smarter decisions faster and grow globally at your pace.

Sales
Increase your sales with automation and digital intelligence helping your salespeople stay focused and work smarter.

Health360 Care Coordination
Engage patients, plan, coordination + personalize care.
Productive

Productivity where you want to work

Immersive user experience with Office 365

Available on iOS, Android, Windows and web
Dynamics 365 + Office 365
Microsoft Dynamics 365

Business apps in the cloud

- Purpose-built
- Productive
- Intelligent
- Adaptable
Intelligent

Built-in Artificial Intelligence

Out-of-box data visualizations and BI

Transformational Advanced Analytics platform
Dynamics 365 + Cortana Intelligence
Microsoft Dynamics 365

- Built-in Artificial Intelligence
  - Relationship Insights
  - Lead Scoring
  - Cross-Sell/Up-Sell
  - Knowledge Base Insights
  - Demand Forecasting
  - Cash Flow Forecast
  - Product Recommendations
  - Preemptive Service
  - Resource Optimization
  - Predictive Sales and Inventory Forecast
  - Intent Analysis
  - Sentiment Analysis
Relationship Insights

Spend more time selling with automated data capture of customer communication across Dynamics 365 and Office 365.
Relationship Insights

Stay on top of your relationships
Relationship Insights

Automated personal sales assistance makes you more productive

Opportunity at risk
500 3D Printers

There has been no activity with this opportunity in last 30 days. This may affect the relationship score

Open Opportunity

Sidney Higa just opened your email
Re: Proposal Update

“Re: Proposal Update” was just opened by Sidney Higa at 01:20 PM from San Francisco, CA, USA

Open Email
Microsoft Dynamics 365

- Built-in Artificial Intelligence
  - Relationship Insights
  - Lead Scoring
  - Cross-Sell/Up-Sell
  - Knowledge Base Insights
  - Demand Forecasting
  - Cash Flow Forecast
  - Product Recommendations
  - Preemptive Service
  - Resource Optimization
  - Predictive Sales and Inventory Forecast
  - Intent Analysis
  - Sentiment Analysis
Microsoft Dynamics 365 First Look

**Business Intelligence analytics across all your Dynamics data**
Transformational intelligence platform
Transformational intelligence platform

Intelligence → Action
Microsoft Dynamics 365

Business apps in the cloud

- Purpose-built
- Productive
- Intelligent
- Adaptable
Adaptable

Common Data Service across all your business

Automate tasks by integrating across applications

Build apps without writing code using PowerApps
Common Data Service: Dynamics 365

- Shipments
- Projects
- Support case
- Service requests
- Forecast
- Orders
- Leads
- Opportunities
- Digital marketing
- Equipment maintenance

Microsoft Dynamics 365 First Look
Common Data Service: **Dynamics 365 + Office 365**
Common Data Service: Dynamics 365 + Office 365 + Partner Industry Solutions

- Shipment
- Projects
- Patients
- Support case
- Citizen
- Service requests
- Storage
- Tasks
- Calendar
- Planograms
- Care plan
- Forecast
- Orders
- Email
- Leads
- Message
- Meetings
- Digital marketing
- Documents
- Trade promotion
- Opportunities
- Merchandise
- Equipment maintenance
“The way we see it, a client should be able to: find us online, be identified as a new or existing client, start a pre-planning instrument or make a request, enter all relevant information, find an appointment or an outreach service that suits them, make a booking and have it confirmed, and be seamlessly transferred to one of our client service officers for the face-to-face or videoconference interview. We hope that with this platform, staff will be equipped to provide the best service possible, and know as much as they can about clients before they walk in the door.”

John Chow, Director, Information Technology, NSW Trustee & Guardian
Business apps in the cloud

- Purpose-built
- Productive
- Intelligent
- Adaptable
“Integration, ease of access, and strict security protocols around entire business records were crucial factors in our selection of Microsoft technology. The solutions deployed allow us to fulfil a real desire to offer every part of KPMG to each of our clients through a simple and secure platform. Being a large organisation with thousands of users this can sometimes be complex, but this is not the case with Microsoft Dynamics 365.”

James Hunter, National Managing Partner-Markets and Growth, KPMG
“It is about using technology to create and return value through knowing, understanding and connecting with our customers and being enable to deliver an exceptional customer experience. This is the other way to bank.”

Robert Aitken, CIO Beyond Bank
“The days of having a call centre only are over. The omni-channel is far more varied, and Dynamics 365 is giving us the ability to not only create new services for our digital channel, but deliver them with ease.”

Godfrey Boyd, Program Director at BUPA
Thank you