

Education System Digital Strategy

Transforming education for the digital age

Stuart Wakefield
Chief Information Officer
Ministry of Education

Tertiary ICT Conference
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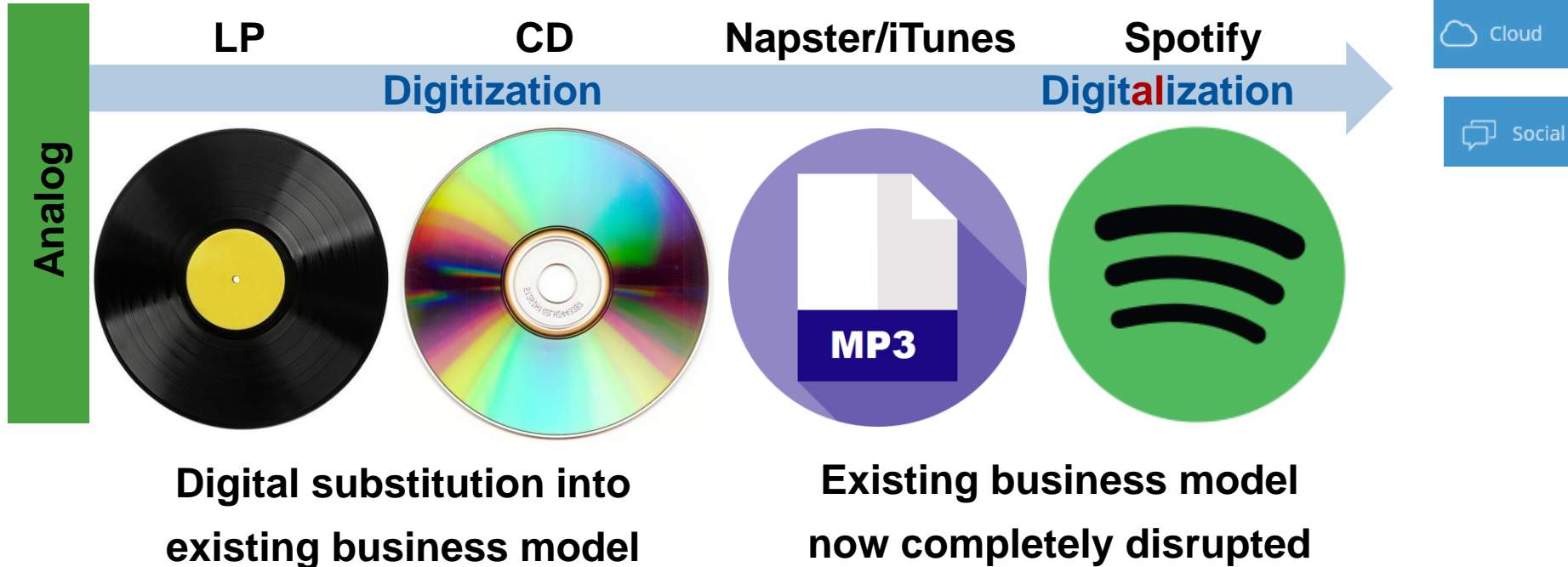


Disruptive Technologies

Disruptive Technologies



Music Industry



Driverless Trucks



 Cognitive/AI Systems

 Internet of Things

 Big Data & Analytics

 Robotics

Bricklaying



 Cognitive/AI Systems

 Internet of Things

 Robotics

AI in “white collar” industries

THE AI IN FINTECH MARKET MAP

CREDIT SCORING / DIRECT LENDING



ASSISTANTS / PERSONAL FINANCE



QUANTITATIVE & ASSET MANAGEMENT



REGULATORY, COMPLIANCE, & FRAUD DETECTION



GENERAL PURPOSE / PREDICTIVE ANALYTICS



BUSINESS FINANCE & EXPENSE REPORTING



INSURANCE



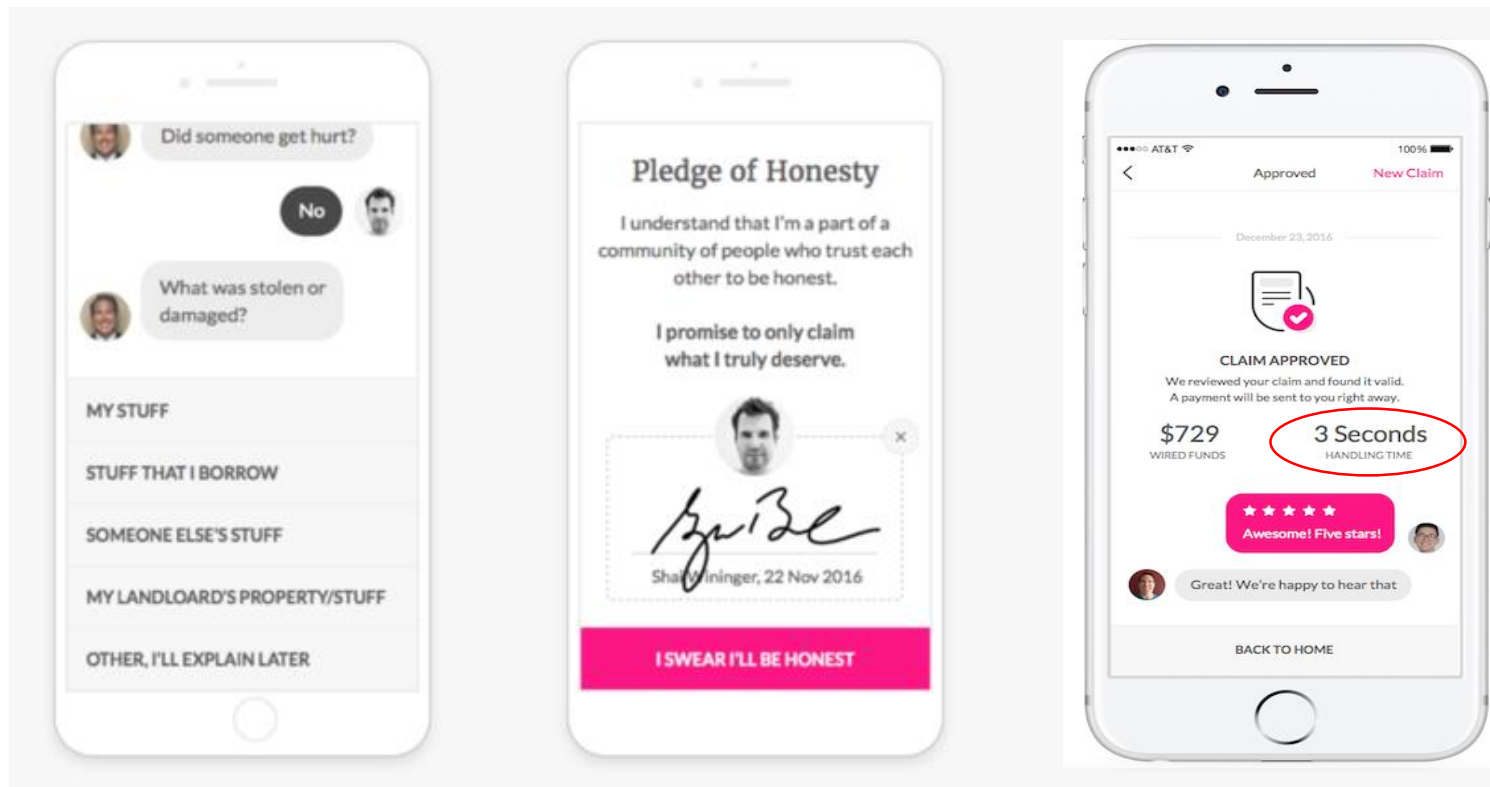
MARKET RESEARCH / SENTIMENT ANALYSIS



DEBT COLLECTION



Insurance



Cloud

Mobile

Social

Big Data & Analytics

Cognitive/AI Systems

Legal Services

NBR

> Minter Ellison invests \$2m in artificial intelligence technology to replace lawyers



Minter Ellison invests \$2m in artificial intelligence technology to replace lawyers

CHRIS KEALL AND SOPHIE BOOT · TUESDAY FEBRUARY 28, 2017 · 17

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MyNBR RADIO

Replacing lawyers with artificial intelligence? Minter Ellison CEO Mike Schubert on his company's AI joint venture

▶ PLAY + ADD TO MYNBR RADIO 0

Law firm MinterEllisonRuddWatts has invested \$2 million of "pre-seed" capital into a joint venture exploring the potential use of artificial intelligence (AI) for legal services.

Chief executive Mike Schubert, who is chair of the



Big Data & Analytics



Cognitive/AI Systems




Cloud



Accounting



COMPUTERWORLD
FROM IDG



NEWS TECHNOLOGY TOOLS WHITEPAPERS





Xero adds machine learning to small business accounting


Stuart Corner (Computerworld New Zealand)
15 March, 2017 09:00


**4****61**


0 Comments

Xero has introduced what it says is the first personalised machine learning capability for a small business cloud accounting system. Its main role is to automatically allocate the correct account code to invoices.

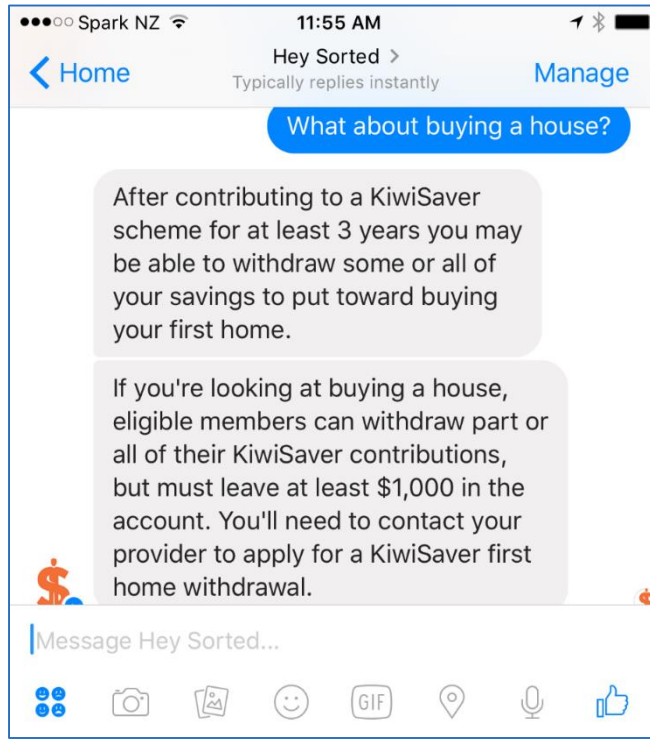
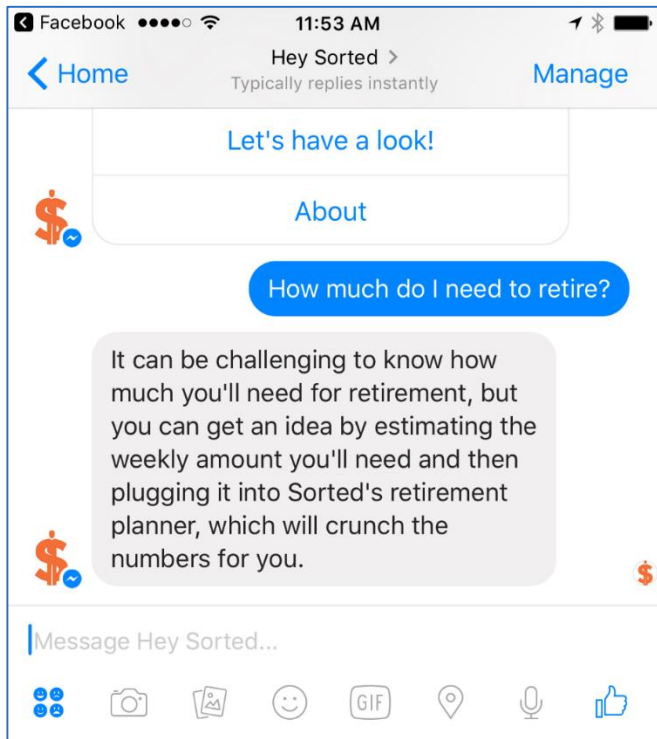
Editor's Recommendations**NZTech urges action on IoT**

 **Big Data & Analytics**

 **Cognitive/AI Systems**

 **Cloud**

Retirement Planning



Big Data & Analytics

Cognitive/AI Systems

Cloud

Social

Pace of Change

1 The accelerating pace of change ...

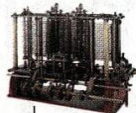


2 ... and exponential growth in computing power ...

Computer technology, shown here climbing dramatically by powers of 10, is now progressing more each hour than it did in its entire first 90 years

COMPUTER RANKINGS

By calculations per second per \$1,000



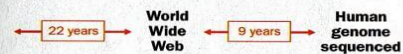
Analytical engine
Never fully built, Charles Babbage's invention was designed to solve computational and logical problems



Colossus
The electronic computer, with 1,500 vacuum tubes, helped the British crack German codes during WW II



UNIVAC I
The first commercially marketed computer, used to tabulate the U.S. Census, occupied 943 cu. ft.



3 ... will lead to the Singularity



Apple II
At a price of \$1,298, the compact machine was one of the first massively popular personal computers



Power Mac G4
The first personal computer to deliver more than 1 billion floating-point operations per second

2045
Surpasses brainpower equivalent to that of all human brains combined

Surpasses brainpower of human in 2023

Surpasses brainpower of mouse in 2015

Source: Time Magazine



So what are we
doing about it?

A Transformation Agenda

CONNECTING
THE SECTOR

Education System Digital Strategy *Transforming Education for the Digital Age*

2015-2020

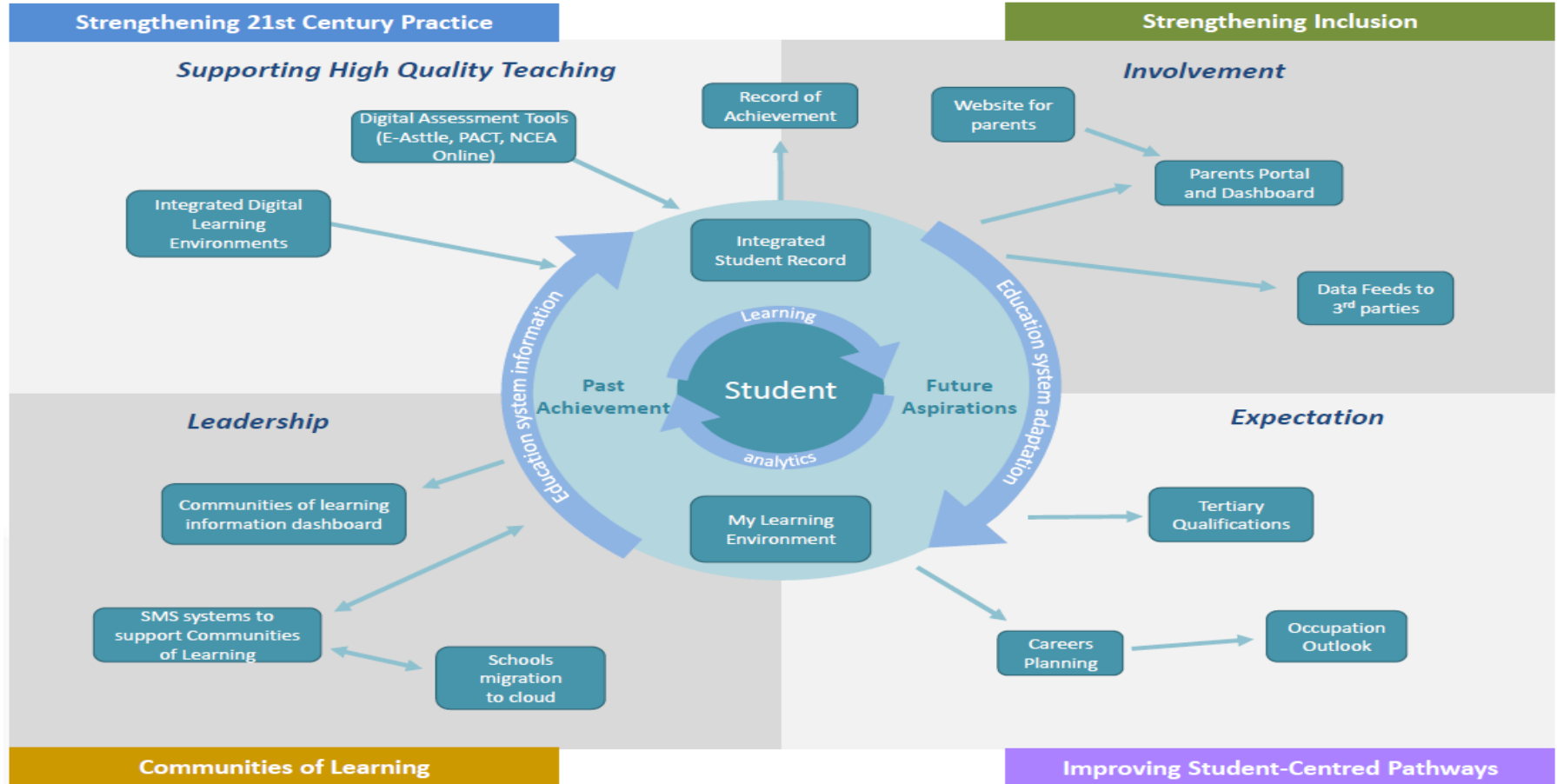


Digital Transformation Approach



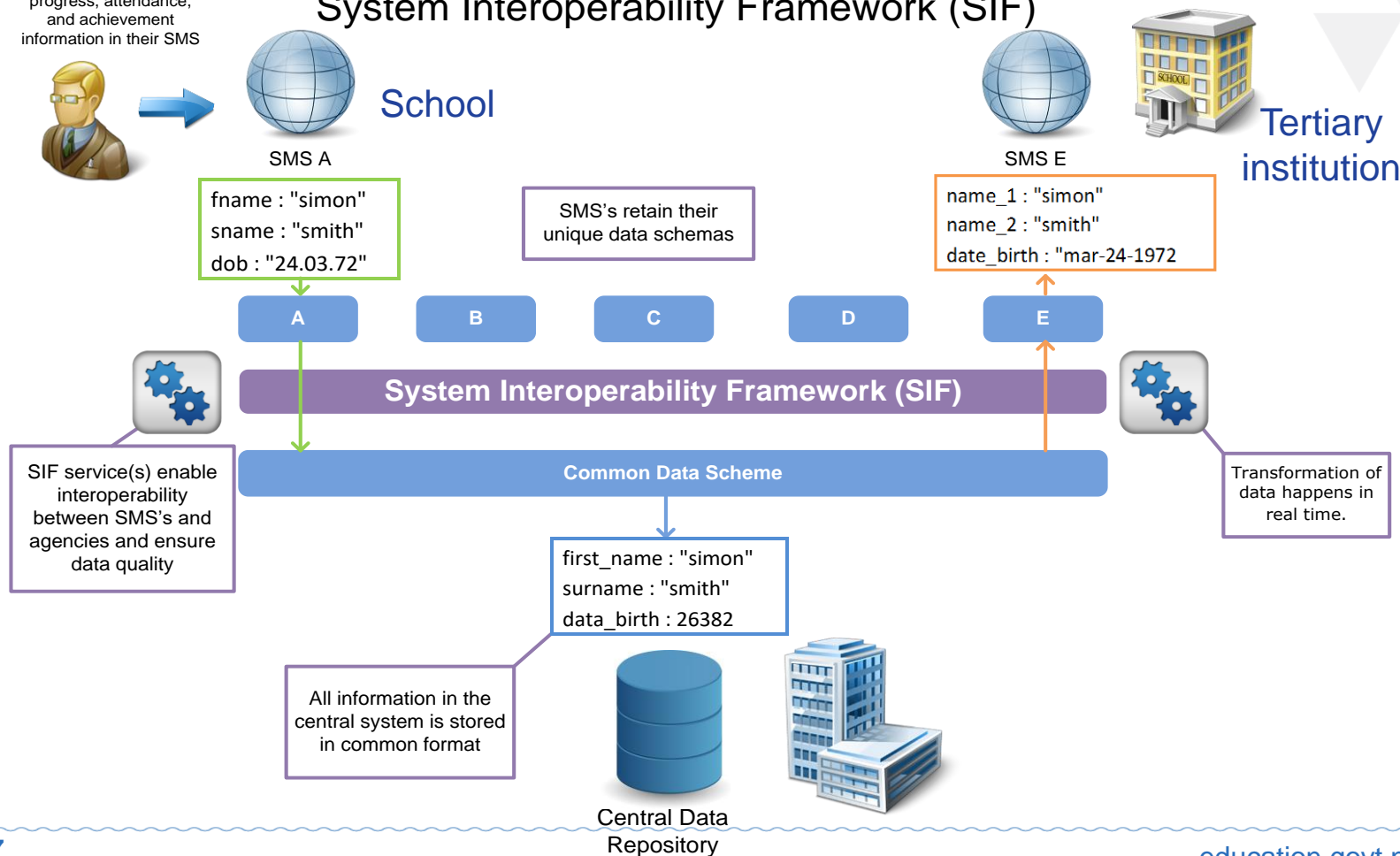
- Student/Learner centric
 - Information to follow the student (*EC->Primary->Secondary->Tertiary*)
 - Support personalised learning for all students
 - Skills & competencies for a digital future
- System-wide approach
 - Outside-in view of functions/services rather than agency centric
 - Balance between supply & demand side actors
 - Support government-wide citizen “life-events” model
- Create an information “level playing field”
- Enhance workforce productivity
- Drive cost out of education administration

Student data at the core



Teacher records student contact, pastoral, health, progress, attendance, and achievement information in their SMS

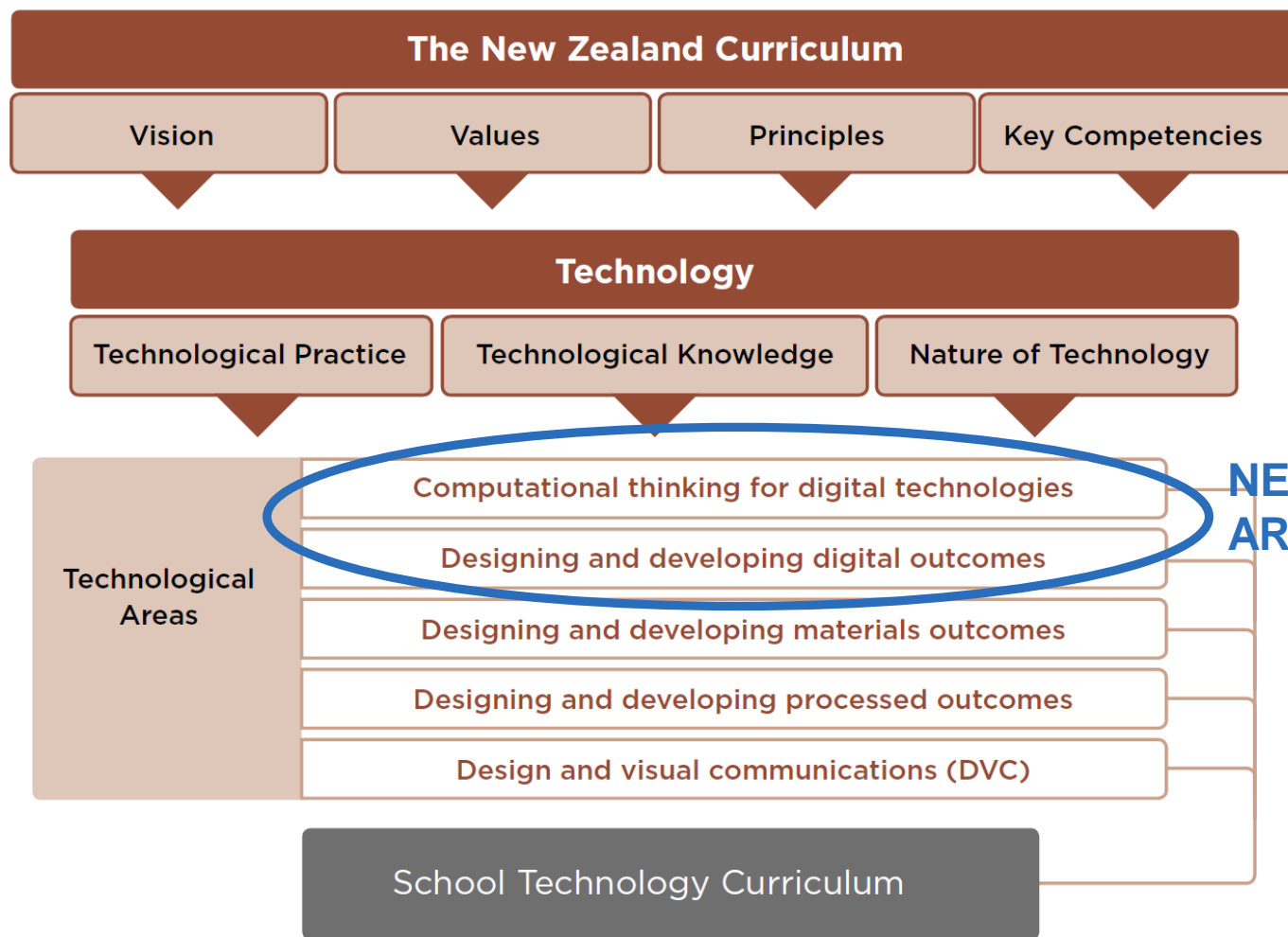
Student Information Sharing Initiative System Interoperability Framework (SIF)



Digital Technologies in the curriculum



- Two new technological areas are being added to The New Zealand Curriculum and Te Marautanga o Aotearoa from 2018 (compulsory from 2020), from Y1 to Y13
 - Computational Thinking
 - Designing and Delivering Digital Outcomes.
- Associated NCEA achievement standards are being refreshed.
 - Level 1 will be available for 2018
 - levels 2 and 3 by 2020
- The changes will involve extensive support to parents, whānau, teachers, schools, kura across the learning pathway, from early learning to senior secondary



**NEW DT
AREAS**

New Digital Technology Areas



For both English and Māori medium:

- Computational Thinking in Digital Technologies (*Te Whakaaro Rorohiko*)
 - Understanding the computer science principles that underlie all digital technologies
 - Develop computational and algorithmic thinking skills
 - Know how to develop instructions to control digital technologies and solve problems
- Designing and Delivering Digital Outcomes (*Te Hoahoa me te Hanga Otinga Matihiko*)
 - Know how to use digital technologies to get the job done
 - Understand the digital world, how to use technologies ethically, and the implications of being a digital citizen,
 - Understand how to design and operate digital devices and systems

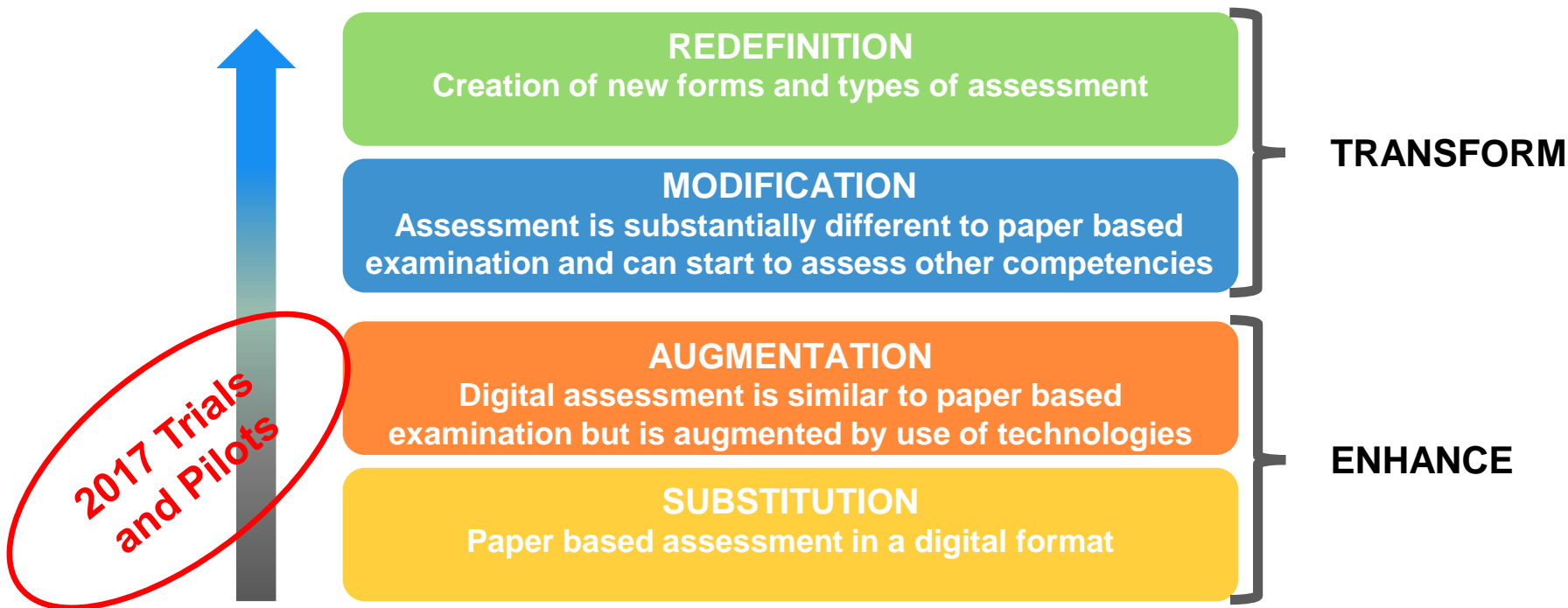
Te Marautanga o Aotearoa will have two further progressions



Two Māori medium unique progressions / He Whakatupuranga Kaupapa Māori Ake

- Ngā Āria o Ngā Whanaketanga Hangarau Matihiko Arareo (*Concepts of Digital Technology*)
 - focused on the development of different concepts of digital technologies through Māori values, knowledge, language and education.
 - enables students to learn about and use digital technologies in various situations from a Māori worldview.
- Te Tangata me te Rorohiko (*People and Computers*)
 - focused on the demonstration of incorporating Māori values and principles that ensure designers and users are considerate of how their designs will have a positive impact on them, their whānau, hapū, iwi and the local and global environment.

NCEA Online Assessment



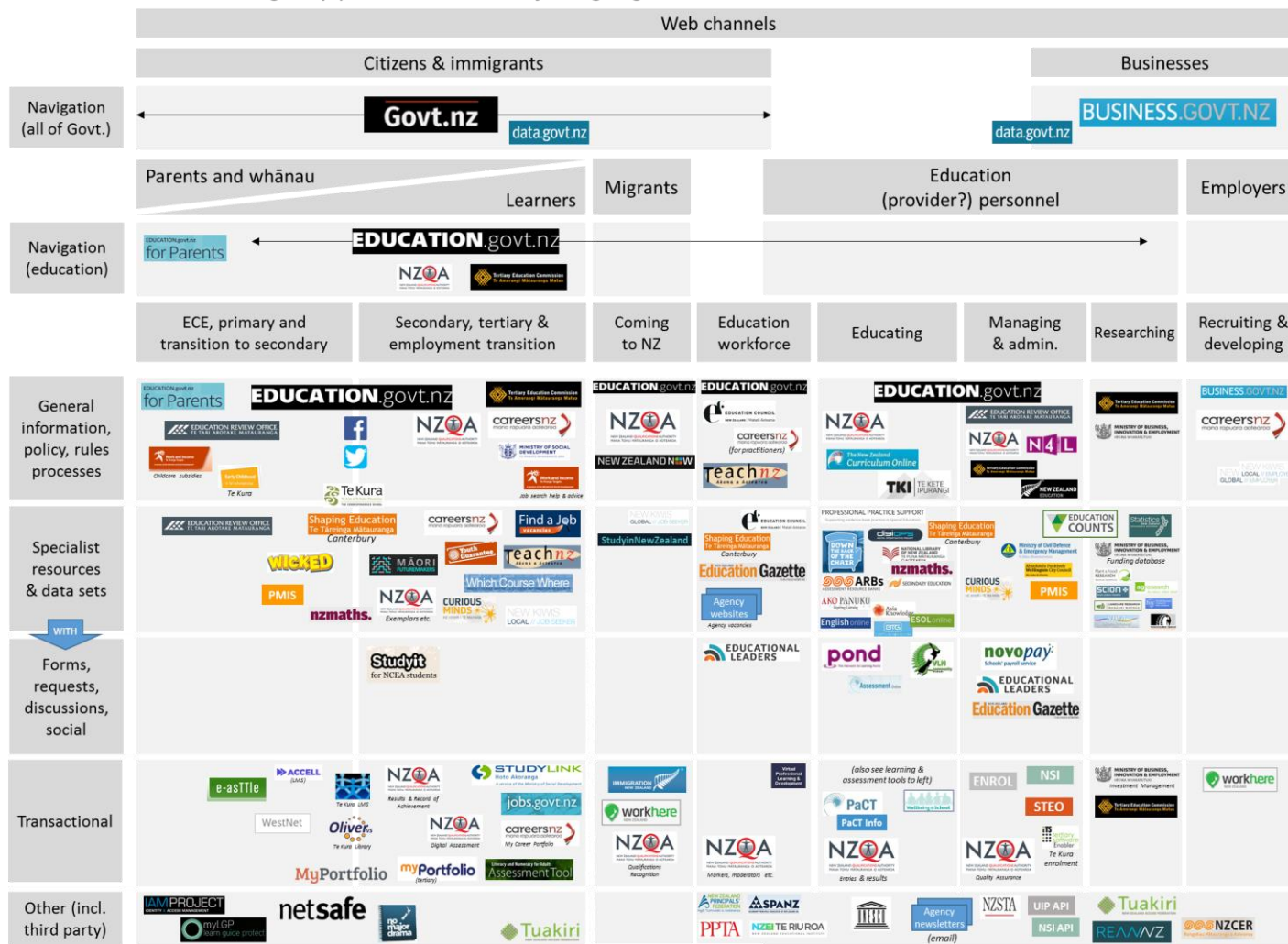
Digital Channels



- Consolidated digital channels organised around customer segments and life stages
- Enduring customer knowledge across channels and across agencies
- Higher degree of self service and automation
- Rethink call centres as assisted digital
- Explicit support for intermediaries (via API's)

Agency provided external facing digital channels – current state overview

WORKING DRAFT v0.2

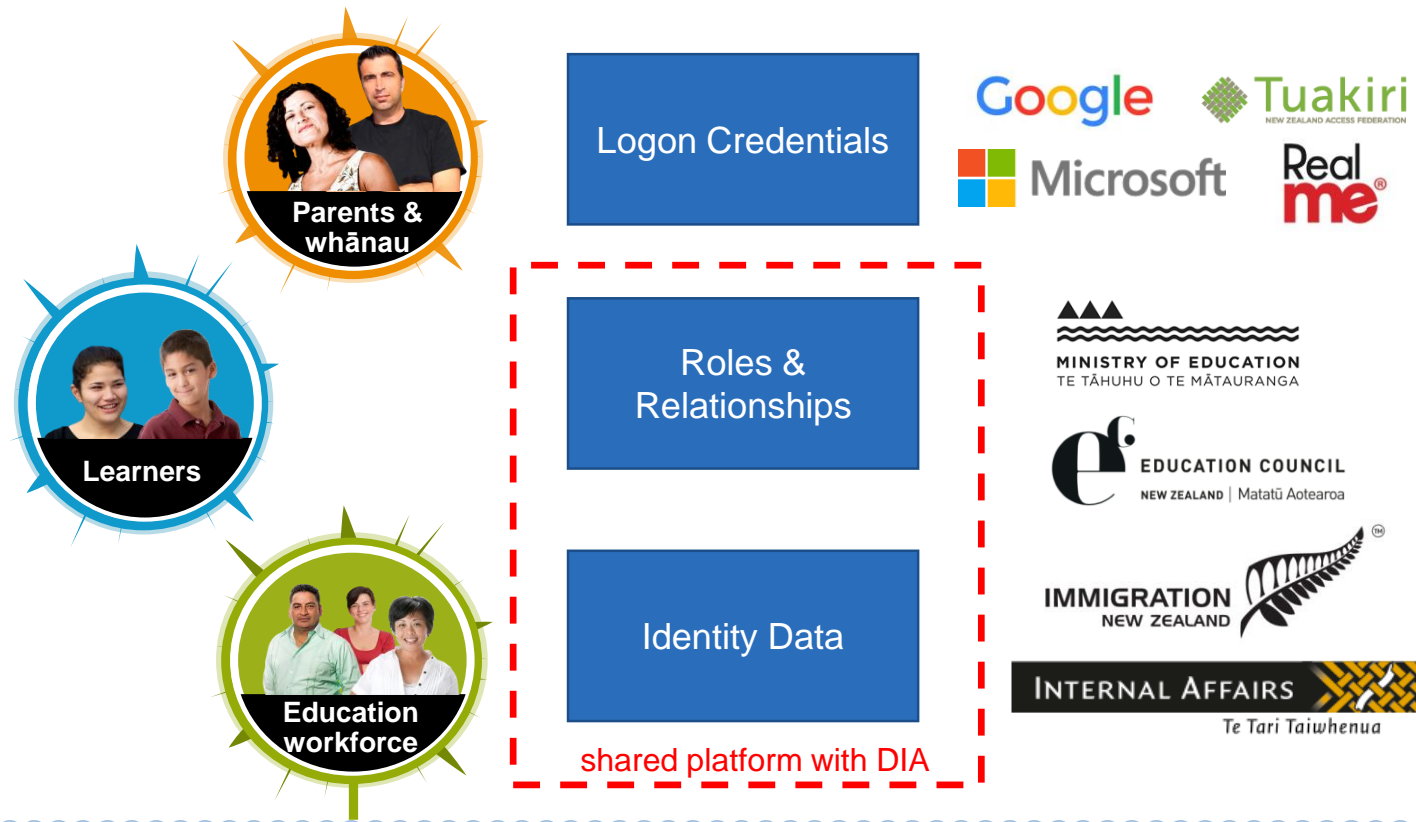


Identity & Access Management



1. Establish an individual's identity reliably at point of first contact
 - *eg: at time of enrolment or employment*
2. Match to government's authoritative identity records & maintain this linkage to survive underlying changes in identity
 - *eg: registers held by DIA*
3. Enable all users to only need a single logon credential in order to access systems and services they require
 - *ie: use your primary logon to access everything*
4. Leverage existing IAM systems to the maximum extent possible
 - *eg: Google, Microsoft, RealMe, Tahi*
5. Take an active risk management approach
 - *eg: introduction of biometrics when needed*

IAM Approach



Schools Cloud

”Moving spend out of the server room and into the classroom”

- Key enabler – Fibre to every school at 98% coverage
- A standardised but not centralised approach
- Initial focus on Microsoft & Google office productivity & commonly used software applications
- Commercial outcome – “Software as a Service” only
- Enable schools to exit ALL on-premise server infrastructure
- Enable greater levels of inter-operability

Lifting aspiration and educational
achievement **for every New Zealander**