

# Transforming Human Services for the Digital Era







# Introduction

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Innovation – not simply additional resources – is essential to providing better public services to Australians. The digital economy has emerged as a global force with implications for almost every aspect of governance and public policy. Governments the world over have embraced the notion and implementation of digital services agendas. Some, like those in the UK and New Zealand, have already seen major benefits to how they engage with and improve the quality of life of citizens.

Where does Australia fit into this international agenda? Over the past five years, the Department of Human Services has adopted a leading position in digitally transforming its services for better citizen outcomes. Supporting this transformation has been the Human Services Delivery Research Alliance

between the department and CSIRO, Australia's national science agency.

For today's public-sector agencies, improving efficiency and service levels is no longer simply a matter of adding personnel or budgets. Business-as-usual, in other words, is no longer an option. The department recognised this when it created the Alliance to apply evidence-based and multidisciplinary research to transform its Australia-wide services.

Leading the way in services transformation makes sense for the department because of the sheer scope and depth of its remit. At the conclusion of the Alliance, the department was managing payments worth more than a third of the overall Federal Government's budget.



The emergence of the digital economy has many implications for the public sector, but perhaps one of the greatest is that almost anything can now be measured and, by extension, better managed. Agencies often struggle to identify what data will help improve a service outcome – particularly when seeking to better meet citizens’ needs without compromising their rights to privacy and informational security. Alliance initiatives, however, have demonstrated that not only is this possible, but the immediate and flow-on benefits render it a wholly worthwhile exercise.

As the public sector seeks further efficiency dividends and citizens expect more from their digital services, government agencies will need to become more agile and responsive to change than ever before. By applying evidence-based, multidisciplinary science to many aspects of service delivery, the department and CSIRO have developed knowledge and processes that are applicable across not just health



and welfare payments, but a range of public-service initiatives both in Australia and around the world.

This approach to service transformation is scalable, flexible, and methodical. We believe it makes the global challenges of the public sector’s digital services agenda that much easier to tackle.

Four of the Alliance’s 21 initiatives are described in greater depth as part of this report.

*“Government agencies will need to become more agile and responsive to change than ever before.”*

# Case Study:

## Optimising service channels through evidence-based messaging

The Department of Human Services has taken a leading role in offering online services through mobile applications, online portals, and self-service terminals provided in Service Centres. Despite the availability and convenience of these alternate channels, customers were slow to transition. In 2011, two-thirds of Centrelink transactions were still completed in-person at Service Centres. As the department moved to roll out its Express Plus mobile apps, its main priority was to find a quantifiably effective and cost-efficient means of motivating customers to embrace self-service transactions.

Based on behavioural economics principles, a set of messages were co-designed, that sought to alert and encourage customers towards the value of using these online services. These messages specifically targeted factors not normally considered by citizens when interacting with the department, including opportunity costs (how time spent queueing could otherwise be used); and social norms (how peers were already experiencing benefits of the app). The messages were tested in a number of real-life service settings – including a two-week trial across an entire service centre – with CSIRO evaluating each customer’s subsequent take-up of digital service channels over the following five months. Each trial was designed based on detailed input from front-line staff, ensuring that it could be scaled across more service centres and channels if successful.

These trials quantified the effectiveness of the messaging: in one trial with 402 full-time students, those who heard both opportunity cost and social norm messages were almost 20 per cent more likely to show interest in downloading the Express Plus app than those who received the business-as-usual message. Following the two-week service trial, customers who heard about the opportunity cost of not “going digital” were 18 per cent less likely to return to face-to-face transactions. Perhaps most surprisingly, the messaging proved effective across age cohorts, not just for younger Australians – in fact, the rate of digital service uptake jumped from 38 per cent to 50 per cent amongst customers aged over 45 who heard the opportunity-cost messaging.

Applying CSIRO’s expertise in psychology and statistical modelling

proved instrumental in quantifying the effectiveness of each message. Equally critical was the close collaboration between the department and CSIRO in developing a practical framework through which to test the messaging: insights and ongoing feedback from service centre workers determined how CSIRO’s team of behavioural scientists implemented the messages in each trial, down to the time and wording of phrases in each staff member’s customer service routine. Thanks to the scalability of the co-designed trials, the department is now incorporating the results from the experiments into how it interacts and communicates with customers.

The initial success and lessons in optimising the digital channel through behaviourally-designed, non-intrusive and low-cost messaging changes are

*“The messaging (about the opportunity cost of not ‘going digital’) proved effective across age cohorts, not just for younger Australians.”*

already being shared across several other leading government agencies. The department is also evaluating further applications of the channel optimisation process to areas including front-of-house interactions with customers, interactive voice response (IVR) scripting, and even the design of new services currently in development.

# Channel Optimisation

In 2011



**“Carefully constructed messages can change customer preferences”**

## Opportunity Costs:



There are better things you could be doing with your time

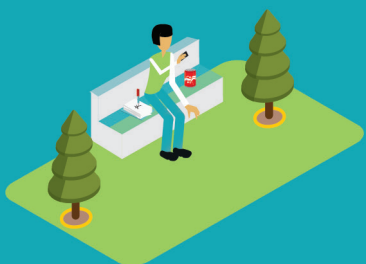


## Social Norms:

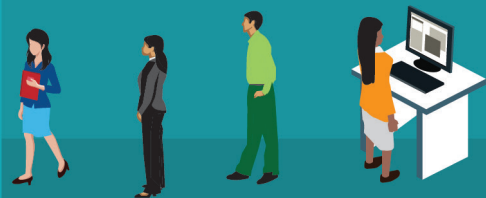
Many other customers are using digital



**“We tested these messages in real-world settings on various groups and found...”**



**18%** are less reliant on face-to-face transactions after hearing about opportunity costs



**28%** of customers are more interested in using the department’s mobile apps after hearing about opportunity costs and social norms



In over-45s, opportunity costs messages led to digital reliance jumping from

**38% to 50%**

# Case Study:

Adding a shot of LATTE for more intuitive website experiences



With more than three quarters of Australian citizens preferring to access services electronically, the design of efficient, user-friendly digital channels has become paramount to the Department of Human Service's mandate. Web content offers government agencies greater control

and consistency when it comes to disseminating public service information.

The department sought to optimise its complex website, to ensure customers could find information and complete tasks effectively. To do so, it deployed LATTE, a software tool which deciphers patterns in how people interact with



# Website Optimisation

websites. Unlike most conventional web analytics tools, LATTE compares the sequence and duration of page visits to patterns that denote user frustration or an inability to easily find information (like jumping to a Google search after loading four or five pages in succession). Doing so allows the software to detect not only when, but why people encounter trouble with finding certain information on a website – revealing the direct impact of vocabulary choice, page hierarchy, and other contextual elements on the effectiveness of online channels.

LATTE distils all this data from the standard log files captured on any web server, mitigating many of the potential data privacy concerns that the department might have otherwise faced. This also means the software can be rolled out at scale with minimal change to existing IT systems: an initial prototype was operating within several months of the project first being floated.

Today, the department’s staff access LATTE through a web browser plugin that displays real-time findings as they are using the website themselves, as well as potential “trouble spots” based on the software’s back-end analytics. The plugin, which came about through an iterative design process led by CSIRO’s researchers, allows department personnel to adapt their online content and structure in response to LATTE’s analytics reports.

With no other tool providing the same balance between scalability and accuracy of web experience tracking, CSIRO is now developing a number of commercial solutions based on LATTE, including cloud-based services for both private and public-sector agencies.

One frustrating web experience can drive customers away for life



Introducing  
**LATTE**



Analyses user experience in a browsing session



Helps web admins figure out when and why users give up



Identifies patterns that denote user frustration and where customers can’t find what they need



Informs improvements and measures their impact



Customers are more likely to find what they need on the department’s website. CSIRO is now looking to commercialise LATTE, including as a cloud-hosted service for the public sector

“ The (LATTE) plugin...allows department personnel to adapt their online content and structure in response to LATTE’s analytics reports.”





# Case Study:

## Listening to customers concerns on social media

When the Alliance commenced in 2009, social media was still a relatively new phenomenon – yet Centrelink’s communications team recognised that it would soon play a major and fundamental role in how they delivered customer services. Even at that early stage, the agency’s social media managers were encountering significant volumes of social media chatter which they had to sift through as part of their rapidly-growing remit. The Department of Human Services sought a platform that would allow its communications team to answer queries, combat potentially misleading rumours, and track trends in key human services topics – all without significant manual labour, privacy risk, or upheaval of surrounding processes.

This need was met by the Alliance’s development of Vizie. Vizie is a web based software system that tracks, integrates and visualises customer feedback across a range of social media channels in real time. Unlike most commercial social media tools, Vizie uses CSIRO’s expertise in natural language processing and text analysis algorithms to group content by topic, providing the department with immediate insight into the major issues that they can expect to deal with on any given day. Vizie also allows social media

# Transforming Human Services for

## Human interactions

### Tailored Documents

We examined how asking customers a few questions can help tailor information to fit their specific needs, so they spend less time reading through irrelevant information.

### Call Centre Dovetail

Sharing data from social media channels, face-to-face inquiries, and call centres allows consistent and accurate responses to emerging issues.

### Social Media

Vizie is a tool that uses natural language processing to organise social media based on its content. The department's social media managers use Vizie to respond to questions, tackle potential rumours, and track trending issues faster and more comprehensively than by hand.

### Channel Optimisation

By analysing the way people respond to how messages are framed, customers can be encouraged to use digital self-service channels like the department's Express Plus mobile app – freeing up staff time to spend more face-to-face time with those most in need.

### Web Optimisation

We developed a tool called LATTE to identify if people are struggling to find what they need on the department's website. This information has guided website improvements, leading to a better experience for customers.

# the Digital Era

## Online Referral Model

We are exploring automated systems that can help recognise customers who should be offered referrals for additional support.

## Supporting service delivery

## Emergency Response

We created a software tool that integrates data from numerous government agencies during an emergency. This data is displayed in a web-based map which lets department staff see what's going on in real time, so that they can better serve Australians.

## Online Communities

We created an online forum, moderated by department staff, where customers with less complex needs can get support by sharing their experiences with other customers in a similar situation.

## Planning for the Future

Our research into the complex ecosystem of human services – from finding the most efficient debt waiver limit to predicting vulnerable individuals – is helping the department improve service delivery.



Australian Government  
Department of Human Services



managers to drill down to channels and individual posts; record any engagement with these as part of permanent “case histories”; and automatically archive and produce reports on all indicators measured by the platform.

CSIRO designed and developed Vizie based on extensive time spent with the department’s social media managers, including observations of everyday workflows and co-design of a series of iterations of the platform. This approach saw the development of several subsequent features in Vizie, most notably an “activities” monitoring function which allows department personnel to define, track, and allocate social content about subjects (like families or pensioners) that aligns to specific services. Since Vizie’s initial deployment, CSIRO and department personnel continue to collaborate on incremental updates to the tool, with researchers currently looking at how best to incorporate separate databases of social media “approved to post” permissions into Vizie’s platform.

queries. The department’s social media managers are also able to take an increasingly targeted “triage” approach to identifying at-risk individuals, based on the language and post structures they’re using.

CSIRO is currently in the process of commercialising Vizie, with a number of government and public-sector agencies also looking at adopting customised versions of the platform. Building on the linguistic analysis research that informed Vizie’s unique topic-monitoring functionality, its designers are also examining applications across broader public issues like health and environment. One such application is integration with WeFeel, a CSIRO tool that tracks the specific mood of social media communities, to better understand how individuals and nations are responding to these issues on an emotional level.

Perhaps most indicative of the close relationship between both teams is their continued joint work on the research and analysis level. The department and CSIRO personnel are currently researching the return of investment (ROI) from social media for government, using data collected by Vizie over the Alliance’s duration. One of the research project’s objectives is to suggest potential measurement frameworks by which governments and other non-profit organisations can better guide their investment in social media – an area where Vizie and the Alliance collaboration helped demonstrate major value for the department.

*“Vizie, a web-based platform, tracks, integrates and visualises customer feedback across a range of social media channels in real time.”*

Vizie’s success has seen it scale up to match the department’s fast-growing social media presence, with the platform now deployed across a number of service lines as well as Centrelink. Initially developed for (and by) a team of less than five people, Vizie now acts as the primary social media platform for far larger teams.

The platform also significantly contributed to the department’s reputation for providing timely and comprehensive digital responses wherever relevant queries arose – including in forums as varied as those for video gamers and caravan owners. Following initial reactions of surprise at these responses, a growing body of citizens now turn to official department social media channels as a first preference for information and



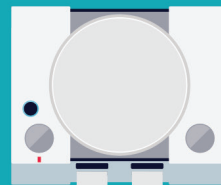
# Social Media

People are using social media more than ever before



Vizie uses natural language processing techniques to organise social media posts based on content

This helps the department's communications teams connect with customers faster and track topical issues in real time



Vizie has helped the department build a great reputation on social media – engaging with customers even in unusual places like video game and caravanning forums

# Case Study:

## Improving disaster response effectiveness with the aid of ERIC

In the event of a natural disaster or other emergency, access to accurate and timely situational analysis is critical. For the Department of Human Services, emergency situations require rapid aggregation of information from a range of sources, from state emergency services to national bodies like the Australian Bureau of Statistics. When responding to an emergency, the department requires a clear, easily-accessible snapshot of the situation.

Prior to the Alliance, department personnel collated information and produced reports manually in a time-consuming process. The department had a clear priority to make situation reports as timely and accurate as possible.

The Alliance developed the Emergency Response Intelligence Capability (or ERIC) software to automate situation reporting during large-scale emergency events. ERIC integrates data from a range of state and federal agency sources (including the State Emergency Service, Australian Bureau of Statistics, Bureau of Meteorology, and state road authorities) into a single web-based map interface. This allows department staff to view where and how conditions are affecting the area, in real time.

The software also provides department personnel with templated situation reports which automate much of the previous manual reporting – reducing the time taken per report from a few hours to as little as 20 minutes. ERIC's reports are also captured and stored within a consolidated database, allowing department personnel to retrieve regular historical snapshots where once only the latest situational analysis was available.

Apart from its immediate contribution to improving the effectiveness of the department's emergency response, ERIC's deployment provided the catalyst for ongoing transformation to existing department processes. While working with CSIRO, department leaders identified areas in which the status quo could be reengineered for efficiencies and service improvements, such as the rollout of standardised protocols for

report information, event handling, and naming of situations. As a result, the department was able to take advantage of ERIC's deployment to refresh their business processes and eliminate a range of cumbersome manual tasks, with much less disruption and cost than foreseen by either side of the Alliance.

Elements of ERIC were successfully tested during bushfires in the summer of 2012-13. The tests demonstrated the opportunities for government agencies to leverage data from emergency services agencies for significant secondary purposes, including post-emergency claims and infrastructure management. CSIRO is currently investigating possibilities for expanding ERIC's scope, including potential integration with other CSIRO tools that track social media trends and data during disaster events.

*“The department was able to take advantage of ERIC's deployment to refresh their business processes... with much less disruption and cost than foreseen.”*



# Emergency Response



In emergencies, a clear and accurate understanding of the situation is essential for an effective response



We created ERIC to integrate data from numerous government agencies to provide a clear and accurate understanding of emergency situations

This data is displayed in a web-based map which allows department workers to see what's going on in real time, so that they can better serve Australians



**ERIC** can reduce the time taken to assemble a situation report from **a few hours** to **20 minutes**, helping the department deliver the right help in the right place at the right time

# Working with Us

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SARAH DODS, RESEARCH DIRECTOR DIGITAL ECONOMY, CSIRO

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When it was first initiated, the Alliance constituted a particularly novel partnership in the public-sector space – but one which ultimately proved prescient, given the increasingly apparent inevitability of digital transformation and the sheer number of lives which the department has an impact upon. The Alliance demonstrates the department and CSIRO’s credentials as partners of choice for service transformation leadership and research; and the benefits that our approach can have across all public-sector outcomes.

CSIRO offers deep and multidisciplinary research capabilities over a broad portfolio of research projects and outcomes, ensuring a balanced approach to risk/return that combines rapid gains with the foundations for longer-term renewals and reform. By aligning our research initiatives directly to specific outcomes and return on investment, we are able to deliver efficiency dividends and targeted support for citizens in a way that’s based on hard evidence – allowing agencies to make smarter, more systematic investment decisions.

Perhaps the most critical success factor for the Alliance was unprecedented collaboration and co-design between the department and CSIRO teams. Our

approach involves not just bringing together complementary expertise, but also investing time in defining each specific challenge; as well as practical pathways through which to scale and implement each project’s results. For the department, this has meant becoming a leader in establishing evidence-based thresholds for research and investment – many of which can be readily adapted to other facets of public-sector operation.

At CSIRO we believe now, more than ever, the public sector must take up a proactive approach to transforming how it delivers services to all Australians. Doing so is imperative to sustaining quality-of-life improvements and agency operations in the years to come.



# Appendix 1:

HUMAN SERVICES DELIVERY RESEARCH ALLIANCE PROJECTS, 2009 - 2014

**Projects in bold are examined as case studies within this report.**

- ◆ **Channel Optimisation**
- ◆ **Emergency Response Intelligence Capability (ERIC)**
- ◆ Regional Planning Research Capability
- ◆ Authenticated Web Analytics
- ◆ Call Content Intelligence
- ◆ End to End Digital: Older Australians
- ◆ Online Referral Model feasibility study
- ◆ Government Services Network
- ◆ Retirement Benefits scoping study
- ◆ Predicting Subjective Well-Being Among a Human Services Customer Population
- ◆ “Next Step” Online Community
- ◆ **Web Site Optimisation (LATTE)**
- ◆ Using Social Media Monitoring to Manage Smart Centre Demand
- ◆ **Social Networks for Human Services (Vizie)**
- ◆ Tailored Information Delivery
- ◆ Supporting Investment Decisions and Evaluating Outcomes
- ◆ Human Services Ecosystem
- ◆ Cross-Channel Dynamics
- ◆ An Analysis of the Debt Waiver Limit
- ◆ Social Worker Information System
- ◆ Business Process Monitoring
- ◆ Service Oriented Architectures

#### **AT CSIRO WE SHAPE THE FUTURE.**

We do this by using science to solve real issues. Our research makes a difference to industry, people and the planet.

As Australia's national science agency we've been pushing the edge of what's possible for over 85 years. Today we have close to 6,500 talented people working out of 58 centres in Australia and internationally.

Our people work closely with industry and communities to leave a lasting legacy. Collectively, our innovation and excellence places us in the top ten applied research agencies in the world.

We ask, we seek, we solve. We are CSIRO.

#### **CONTACT**

**t** 1300 363 400  
+61 3 9545 2176  
**e** [enquiries@csiro.au](mailto:enquiries@csiro.au)  
**w** [www.csiro.au](http://www.csiro.au)

#### **ABOUT THE DEPARTMENT OF HUMAN SERVICES.**

The Department of Human Services is responsible for the development of service delivery policy and provides access to social, health and other payments and services. The department offers a range of health, social and welfare payments and services through the Medicare, Centrelink and Child Support Programs, CRS Australian and Australian Hearing.

#### **CONTACT**

**e** [digital.strategies@humanservices.gov.au](mailto:digital.strategies@humanservices.gov.au)  
**w** [humanservices.gov.au](http://humanservices.gov.au)

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#### **FOR FURTHER INFORMATION**

Dr Sarah Dods  
Research Director, Digital Economy  
Digital Productivity Flagship

**t** +61 3 9545 8462  
**e** [sarah.dods@csiro.au](mailto:sarah.dods@csiro.au)