| | |
|---|---|
| **From:** | no-reply@mbie.govt.nz |
| **To:** | Research, Science and Innovation Strategy Secretariat |
| **Subject:** | Draft Research, Science and Innovation Strategy submission |
| **Date:** | Sunday, 10 November 2019 3:58:58 p.m. |

Submission on Draft Research, Science and Innovation Strategy recevied:

**Are you making your submission as an individual, or on behalf of an organisation?**
Organisation

**Name**
Brian Syron

**Name of organisation or institutional affiliation**
Clarivate Analytics

**Role within organisation**
Account Manager

**Email address (in case we would like to follow up with you further about your submission)**
brian.syron@clarivate.com

**Which of the below areas do you feel represents your perspective as a submitter? (Please select all that apply)**

**If you selected other, please specify here:**

**Gender**

**Ethnicity**

**Name of organisation on whose behalf you are submitting, if different to the organisation named above**

**In which sector does your organisation operate: (Please select all that apply)**
Interface of research and industry

**If you selected other, please specify here:**

**How large is your organisation (in number of full-time-equivalent employees)?**
4,000+

**Please indicate if you would like some or all of the information you provide in your submission kept in confidence, and if so which information.**

**Please upload your submission document here**
Clarivate_response_NZ_Research_Science_and_Innovation_Strategy.pdf - Download File

Web of Science Group

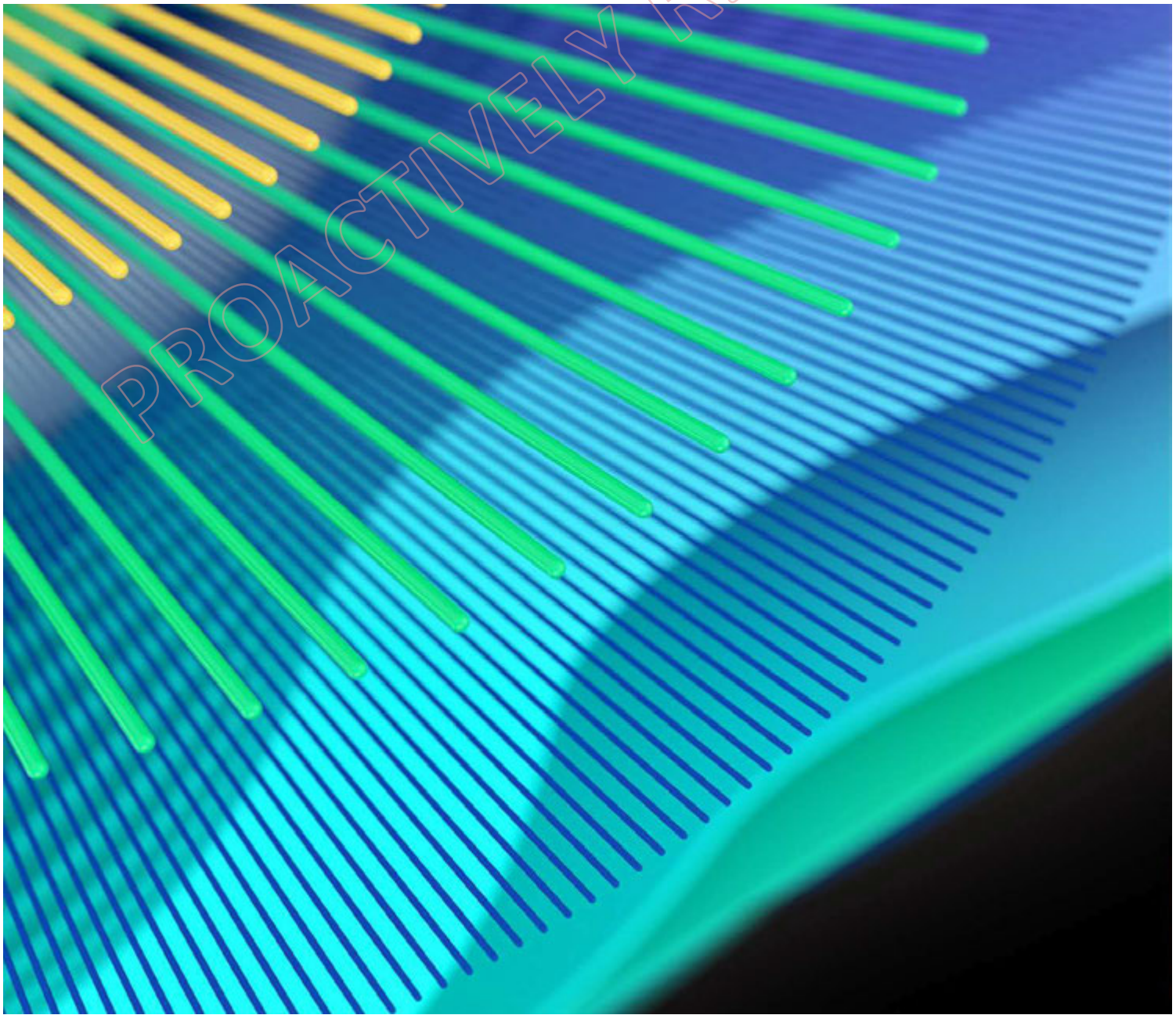
A Clarivate Analytics company

Response to consultation

# Web of Science group

## New Zealand's Research, Science & Innovation strategy





# Our Research and Innovation System

The New Zealand government has set a target for 2027 to transform the country into a global innovation hub and a world class generator of new ideas that relies on bold, frontier Research, Science and Innovation (RSI) to ensure NZ can achieve the sustainable, inclusive and productive future they want. In parallel, raising the national R&D expenditure to 2% of GDP will help to make available the investment required to quickly capitalize on NZ's unique areas of opportunity and growth, with a critical focus on excellence, impact and connections within the RSI system.

The Web of Science Group at Clarivate Analytics welcomes the opportunity to comment on the draft RSI strategy. In this response, we focus on two key areas, outlined below, that and provide a brief showcase how Clarivate could work with MBIE further to provide unique, rapid and evidence-based data and insight that will help support NZ's most important decisions in the future. We look forward to expanding on this discussion and how we can partner with MBIE to dive deeper into these topics.

1. **Researching and innovating towards the frontier:**
    - We provide examples in how Clarivate can support MBIEs' wider data analysis and decisions to identify or confirm areas New Zealand have an ability to solve problems that nobody else in the world has solved. This includes highlighting areas of NZ's unique strengths as a focal point for nationally relevant topics.
2. **Excellence**:
    - We provide a response under selected questions to highlight areas in which NZ can leverage its best people and connections within the RSI system in NZ and abroad to drive ongoing and sustainable excellence.



**Expertise and experience:**

Clarivate Analytics, through the Web of Science Group is the information and technology provider for the global scientific research community. We have over 60 years' experience in supporting national governments to design, implement and evolve bold, ambitious and frontier science and innovations strategies to achieve their objectives.

We provide data, analytics and insights, as well as workflow tools and bespoke professional services to over 7,000 research institutions, national and local governments, private and public research funding organisations, publishers and research-intensive corporations, across the world. Through our wider Clarivate network, our Derwent and Cortellis businesses support the broader innovation lifecycle, to drive commercialization outcomes around the world, monitor technology trends and competitive landscapes and identify whitespace using data driven evidence, and we have the most comprehensive suite of solutions for life science professionals, providing unmatched content, intelligent search, state of the art analytics.

*"Working with Clarivate Analytics we had a very collaborative relationship right from the start... they were able to help me understand how the publication world, the patent world and the research world all fit together and bringing that information together in a communicable way."*

**– Derek Minihane, Head of Sound Processors Development/Head of IP Strategy, Cochlear Limited**

More locally, in New Zealand, our team has been working with the higher education and government sector for over 15 years. This includes supporting all 8 universities, the Crown Research Institutes and other RSI professionals in the corporate, technology and pharma sector in New Zealand. We have been delighted to have worked with NZ researchers and administrators over many years and we look forward to a continuing relationship in the implementation of the new RSI strategy.

We commend the clear and transparent structure used in the draft RSI summary to set out the principal focus of the strategy. In particular, we agree that people are at the heart of any well-founded strategy and it is on this that we wish to comment.

Bringing talent back, and building on their valuable overseas experience, is best achieved through a rich research and innovation culture in TEOs, funded to address tomorrow's problems. The CRIs' invaluable complementary role is focused on existing industry rather than in developing talent.

We also note the benefits of 'homing' schemes: the assurance to a mobile researcher of a soft landing on return. This has been used by several European countries, including Switzerland, with particular benefit. It is also being adopted by Asian economies. Selective offers to departing researchers with exceptional Researcher Profiles can secure the benefits of international research engagement while committing costs only when talent returns to source.

## Driving continued Excellence:

*Ensuring a high standard in current and future development: Institute for Scientific Information*

Clarivate supports the responsible development of metrics and in 2018 Clarivate Analytics announced the re-establishment of the prestigious Institute for Scientific Information (ISI). This new incarnation of the institute will be focused on the development of existing and new bibliometric and analytical approaches, fostering collaborations with partners and customers across the academic community.

The newly energised ISI is a place where we house our expertise, experience and deep thinking that drives our editorial rigor, our policy and partnerships, rankings and analytics. From ISI we work with and for the research community – researchers, publishers, governments, industry bodies and funders to help solve the problems of our key customers. The Director of ISI is Professor Jonathan Adams:

Prof. Jonathan Adams is Director of ISI, a part of Clarivate Analytics. Prior to joining Clarivate in April 2018, he was the Chief Scientist at Digital Science. Jonathan was previously the lead founder of *Evidence* Ltd (2000-2009), and then Director of Research Evaluation for Thomson Reuters until March 2013. *Evidence* developed products and services providing decision support to research managers and carried out research evaluation for agencies and institutions in the UK, elsewhere in Europe, Brazil, Australia, China, India, Singapore and Malaysia. Jonathan led the NZ government's 2008 review of research evaluation and was a member of the Australian Research Council indicators development groups for Excellence in Research for Australia (2009) and impact and engagement (2016).



### Case Study: Identifying Frontier Research to Inform Future Projects and Policy in China

Working in collaboration with both the Institutes of Science and Development and the National Science Library of the Chinese Academy of Sciences (CAS), Clarivate bibliometric experts utilized the Essential Science Indicators (ESI) database, a web-based research analytics platform, and a unique compilation of science performance metrics and trend data based on scholarly publication and citation data from the Web of Science platform from 2012 – 2017 to develop the 5th collaborative, annual report that identifies 138 key Research Fronts including 100 hot and 38 emerging specialties spanning 10 broad areas of sciences and social sciences, based on a comprehensive analysis of scientific literature citations.

> "*In today's highly competitive global economy and technology landscape, it has become increasingly necessary for us to accurately predict development trends and discern organizational needs, and to continuously strengthen technology innovation in various fields...We hope the Chinese Academy of Sciences and Clarivate Analytics will continue to deepen our collaboration on frontier research and to develop innovative research methods so that our annual Research Fronts report will become a world-class resource of growing influence in advancing global science and technology.* "

- Deputy President of the Chinese Academy of Sciences, Professor Zhang Tao, 2018

## Researching and innovating towards the frontier

**Question 5: In which research and innovation areas does New Zealand have an ability to solve problems that nobody else in the world has solved? Why?**

New Zealand's research and innovation ecosystem is unique by many measures. Here we highlight an example of the nation's unique capability in one broad domain that drives social and economic impact rooted locally with a global outreach.

We have measured the number of papers published in New Zealand over the last 10 years (2009-2018). The total publications are represented by 255 disciplines of research. For each discipline, we calculated the level of specialization of New Zealand research compared to all OECD countries. The result is an index (RSI) for which 0 represent no specialization compared to the rest of OECD, RSI<0 is an under investment, and RSI>0 a high specialization. These results are summarized in Figure 1.

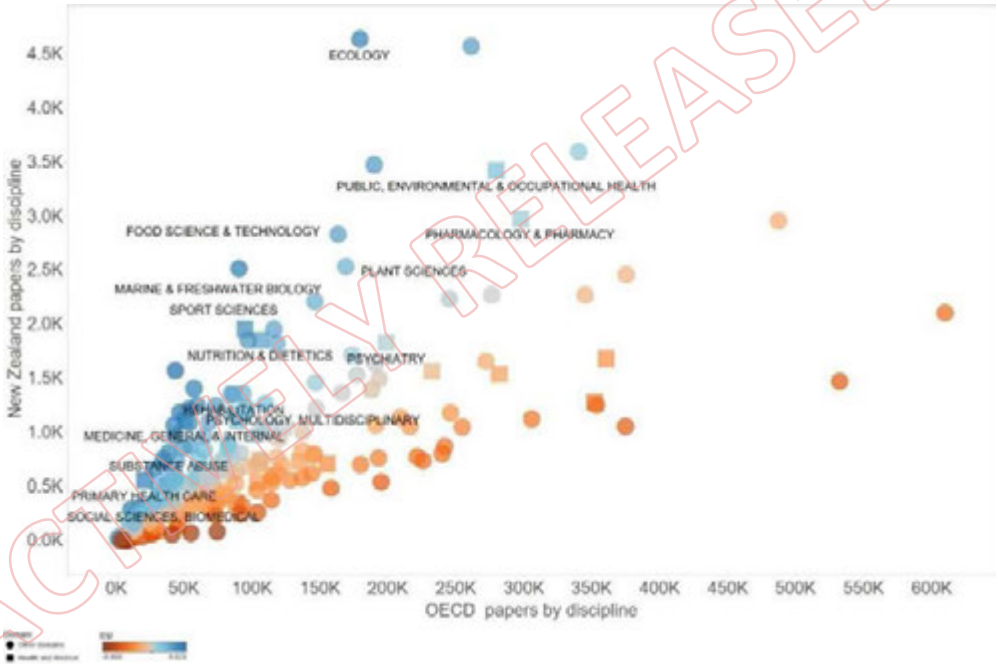



**Figure 1 Relative Specialisation (RSI) of New Zealand research compared to OECD (Source: InCites, Web of Science data 2009-2018). Blue represent higher specialisation, orange low specialisation.**

We see that some of New Zealand's most prolific and specialized disciplines include Health and Medical research such as public, environmental & occupational health, primary health care, rehabilitation, nutrition, and mental health (showing in blue for having a RSI>1). These results show that New Zealand research in these disciplines is the outcome of a strong capability arising from long term investment from MBIE and HRC as well as the Universities and the Health Boards. Illustrating this leadership, last year, Clarivate Analytics and the Chinese Academy of Science identified the emergence of the research in drug-eluting bioresorbable scaffolds in patients with Coronary Artery Disease, in which New Zealand teams play a crucial role with connections in the Netherlands, UK, and USA through Abbott Labs[1].

Figure 1, also highlights specialization in other disciplines that include ecology, plant sciences, marine biology, and food science. All these disciplines leverage the unique environment in New Zealand land and waters. Capabilities in both domains can only drive successful outcomes from functional foods, and new plant and seafood-based products developed with substantiated health and lifestyle benefits.

[1] PENDLEBURY, D., et al. (2018). Research fronts 2018, Institutes of Science and Development, Chinese Academy of Sciences, The National Science Library, Clarivate Analytics,**:** 1-93.

**Question 6: In which areas does New Zealand have a unique opportunity to become a world leader? Why?**

New Zealand capability highlighted in Question 5 has also been recognized through data analytics in a recent report by Clarivate's Institute for Scientific Information (ISI) for health and health care of Māori and other first nations, hence taking a leading role for the UN's Sustainable Development Goals (SDG)[2].

We have measured the relationship between research outputs linked to the UN's Sustainable Development Goals and mapped domains of research to individual 17 SDG goals. The topology of the map provides unique insights for further consideration. A portion of this map is represented in Figure 2. At the upper right, the cluster Health and Healthcare of Indigenous Peoples appears as a separate domain, albeit connected strongly to Community Mental Health and to Maternal, Newborn, and Child Health as well as Nutrition and Childhood Development and Global, Regional, and National Health Surveys. The most-cited paper within Health and Healthcare of Indigenous Peoples is a pioneering report published in *The Lancet* (Anderson et al. 2016) that surveyed 28 Indigenous groups spanning 23 countries, representing more than half of the world's Indigenous peoples. The study found poorer health outcomes for this population compared to their non-Indigenous counterparts.

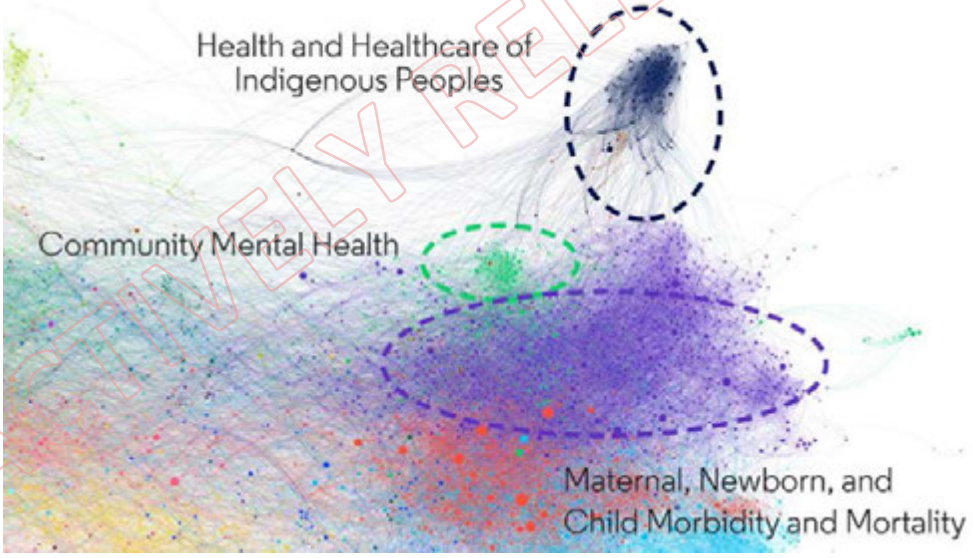



**Figure 2 Partial map of UN's Sustainable Development Goals related research showing health and healthcare of indigenous peoples in a distinct position from other health related topics (Source: ISI, see footnote).**

Is this specialty so unique and insular that it warrants a position on the periphery? Should it not be more closely integrated within the large mass of research on health and healthcare? New Zealand is indeed the key nation for the topic (with nearly 10% of the research output in the topic) and is also on the periphery (geographically) and it is noteworthy that New Zealand has focused on policy integration between its '*Western*', Mātauranga Māori and Pacific priorities. The picture is otherwise concerning and suggests something of a 'step-child' status elsewhere.

A recent review (Harfield et al. 2018) observes however that, "*the evolution of indigenous primary health care services arose from mainstream health services being unable to adequately meet the needs of indigenous communities and indigenous peoples often being excluded and marginalised from mainstream health services. Part of the solution has been to establish indigenous specific primary health care services, for and managed by indigenous peoples*."

Because the map (Figure 2) accurately portrays this topic as a separate specialty area sufficiently distinct from traditional public health care, it shows an area where New Zealand leadership and uniqueness is clearly identified.

[2] Nakamura, M., et al. (2019). Navigating the Structure of Research on Sustainable Development Goals, Institute for Scientific Information.

## Guiding Policy – Excellence

**Question 11: Do you agree with the definition of excellence presented here as the best thing possible in its context? Why or why not?**

The proposed definition of Excellence diverges from established national and international definitions and standards. In the recent MBIE documents, including the *2018 Science and Innovation System Performance Report* and the *2015 National Statement of Science Investment*[3], Impact is defined as the direct and indirect '*influence*' of research or its effect on an individual, a community, or society as a whole, including benefits to our economic, social, human and natural capital. Excellence is defined by well-designed, well-performed, well-reported research, recognised as such, e.g. through peer review. Here, excellence is defined by the ongoing pursuit of the best thing possible. It applies equally across research and innovation, but in different ways. We argue that the proposed definition of excellence covers both "*excellence*" and "*impact*" as defined previously and these definitions should be maintained. However, the drive towards the "*ongoing pursuit of the best thing possible*" needs to be stated as a policy strategy towards the "best research" and "best impact".

The discussion paper states that '*excellence*' refers solely to the number of times an academic paper is cited. Citation measures have been used for decades as an indicator of the influence of given research findings on a community of researchers and is often used in addition to peer review. While crude measures of cites have led to abuse and gaming, numerous alternatives exist to evaluate research through citation profiles, for instance. Activities of researchers and innovators cannot only rely on a unique measure of excellence to recognise how diverse these activities are.

Here we want to give an example of how a researcher profile has successfully be used in New Zealand to give another dimension of excellence in research. *Web of Science* Group's *Researcher Profiles* have been developed by our Publons business unit. Publons is a New Zealand company founded by Andrew Preston, a returning NZ researcher, and later acquired by Clarivate. Its original focus on peer review has been broadened out to capture all aspects of a researcher's work, drawing but not concentrating solely on publication and citation data.

> *Australia's Chief Scientist, Dr Alan Finkel, put the possibility of a private provider oversighting journal quality, pointing to Clarivate Analytics for the "rigour of their journal selection process – focused on agreed standards, not citation impact"*
>
> Reported by
> **https://campusmorningmail.com.au/news/finkel-calls-for-quality-over-sight-in-research/**

The growth of NZ *Researcher Profiles* appears to have been driven by the PBRF cycle. There are now 5,470 Profiles associated with a researcher affiliated in New Zealand. Around one-fifth of those active in the last twelve months downloaded full *Researcher Profile* reports in the lead up to the PBRF.

At one of the leading NZ universities, each researcher with a *Researcher Profile* was e-mailed an automatically generated summary they could either include in their PBRF portfolio or use as a starting point to highlight their contributions. This is an example of one auto-generated summary:

> *During the period 1st January 2012 – 31st December 2017, the researcher completed 41 peer reviews for 25 academic journals (exceeding 97% of 6,626 Social Sciences reviewers). Of the reviews performed, 34% have been for journals ranked in the top quartile of their field by Journal Impact Factor. The reviewed journals include BMJ (with a JIF percentile of 97.7 among journals in its field), Journal of Medical Internet Research (with an JIF percentile of 97.0 among journals in its fields), and Journal of Health and Social Behavior (with an JIF percentile of 91.1 among journals in its fields).*

[3] Ministry of Business Innovation and Employment (MBIE) (2015). National Statement of Science Investment. Ministry of Business Innovation and Employment (MBIE New Zealand Government) (2018). Science and Innovation System Performance Report.

Researchers at this institution were encouraged to use *Researcher Profiles* to generate and use this record of their peer review activities because *Researcher Profiles* systematically verifies the content through links to publisher sites and verifies claimed publications through links to the journals. Researchers could therefore include these data with confidence in their PBRF portfolios knowing that the information was wholly verifiable, which was very well received.

It was estimated that 100-200 of the institution's researchers used *Researcher Profiles* to strengthen their PBRF portfolios. Because the system provides detailed, highly disambiguated, author-confirmed publication data with validated peer review, publication and citation tallies, there has been continued interest in broadening the population of staff covered by the system and making collated data reports available for management purposes. No other system, outside an institutional CRIS system, offers such detailed public profiling.

## About Clarivate Analytics

Clarivate Analytics™ is a global leader in providing trusted insights and analytics to accelerate the pace of innovation. We have built some of the most trusted brands across the innovation lifecycle, including Web of Science™, Cortellis™, Derwent™, CompuMark™, MarkMonitor™ and Techstreet™. Today, Clarivate Analytics is on a bold entrepreneurial mission to help our clients reduce the time from new ideas to life-changing innovations. For more information, please visit **clarivate.com**.

## About Web of Science Group

*Web of Science Group*, a Clarivate Analytics company, organizes the world's research information to enable academia, corporations, publishers and governments to accelerate the pace of research. It is powered by *Web of Science* – the world's largest publisher-neutral citation index and research intelligence platform. Its many well-known brands also include *Converis, EndNote, Kopernio, Publons, ScholarOne* and the *Institute for Scientific Information (ISI).* The 'university' of Web of Science Group, ISI maintains the knowledge corpus upon which the index and related information and analytical content and services are built; it disseminates that knowledge externally through events, conferences and publications and it carries out research to sustain, extend and improve the knowledge base. For more information, please visit **webofsciencegroup.com**.

## About Derwent

Derwent™, a Clarivate Analytics company, powers the innovation lifecycle from idea to commercialization – with trusted patent data, applications and services including Derwent Innovation™, Derwent World Patents Index™, Derwent Patents Citation Index™ and Derwent Data Analyzer™. We build solutions for inventors, patent attorneys and licensing specialists at start-ups and the largest global innovators, legal professionals at the leading intellectual property practices, and patent

examiners at more than 40 patent offices. Our solutions are used to monitor technology trends and competitive landscapes, inform FTO opinions, prosecute patents, monetize and license assets and support litigation activities. For more information, please visit **derwent.com**.

## About Cortellis

Cortellis™, a Clarivate Analytics solution, gives life to science by unlocking the hidden insights in data by curating broad and deep sources of intelligence to enable precise, actionable answers to specific questions across the R&D lifecycle — from discovery and clinical development through regulatory submission and commercialization. By supporting data-driven decisions, Cortellis helps pharmaceutical companies, biotech and medical device/diagnostic firms accelerate innovation. Over the past year, 80% of U.S. companies filing NMEs, 91% of companies achieving breakthrough therapy status and 70% of the top licensing deals were informed by Cortellis intelligence. For more information, please visit **clarivate.com/cortellis**.

## About the Institute for Scientific Information (ISI)

The *Institute for Scientific Information (ISI)* is the 'university' of *Web of Science Group* at *Clarivate Analytics*. It maintains the knowledge corpus upon which *Web of Science* and related information and analytical content, products and services are built; it disseminates that knowledge externally through events, conferences and publications and it carries out research to sustain, extend and improve the knowledge base. For more information, please visit **clarivate.com/webofsciencegroup/solutions/isi-institute-for-scientific-information/**

**For more information please contact**

Laura Matthews
Senior Business Development Manager
laura.matthews@Clarivate.com
+61 434 603 500

Brian Syron
Account Manager
Brian.Syron@Clarivate.com
+61 411 653 291

**webofsciencegroup.com**