Analytics Centre of Excellence: Roles, Responsibilities and Challenges

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Changes to Analytics Landscape

- Digital Disruption is being driven by:
  - Cloud
  - APPS
  - Mobile Devices
  - Internet of Things
  - Robotics
  - Big Data
  - Analytics

- It is changing the way we live, work, learn and are entertained
Changes to Analytics Landscape

- Business is now Global, Online and 24*7
- The workplace is no longer an office, desktop and telephone but is now a mobile device
- People can now work anywhere at anytime
- Digital Disruption is affecting all institutions such as government, education, health, finance and defence
Changes to Analytics Landscape

- There has been an explosion of data in the world since the Year 2000 as a result of the development of mobile devices, the rise of social media and the introduction of the internet of things.
- This explosion has significantly changed the analytics landscape.
- The discipline has gone from being a back office function to being a core function in most organizations.
Changes to Analytics Landscape

- It is now being recognized that the future of organizations lies in extracting knowledge from data
  - It is said that data is the new oil in the world
  - The international currency is no longer finance but knowledge
  - Nations and organizations that will prosper in the future will be those that make the best use of data
Changes to Analytics Landscape

- My organization has established the Smarter Data program and analytics has gone from approximately 40 to 300 staff.

- Smarter Data also consists of the intelligence and risk functions plus a project management office.

- There are challenges with these changes including:
  - What skills Smarter Data requires to support analytics
  - Where is my organization and others are at in terms of their maturity with the use of analytics
Skill Requirements

- There have been various estimates of numbers of staff who can do analytics in the next three-to-five years eg McKinsey estimate that there will be a shortage of 140,000 to 190,000 data scientists by 2018.

- These studies have the deficiency that they only focus on the data-scientist issue.

- The skills requirements are much more complicated than this.
Skill Requirements

There are at least nine different skill streams required to support the analytics function including:

- **Service Analytics** for using visual analytics and self-service analytics to analyse data and produce results for management
- **Data Science** for mining and modelling
- **Data Analytics** for data wrangling
- **Data Engineering** for data required to support large-scale production of data
- **Model Management** for managing deployed solutions such as model fleet management
- **Cognitive/Decision Science** for determining what solutions decision makers need to reach decisions
Skill Requirements

- **Behavioural Science** for selecting treatments to modify attitudes and behaviours of target populations
- **Programming** to develop prototype capabilities when it comes to profiling, analytics and decision support systems and tools
- **Analytical Solution Architects and Engineers** to produce analytics packages consisting of models, treatments and reports

- We have not yet worked out numbers but it could be that organizations are **overestimating** numbers required to do data science but **underestimating** numbers to do service analytics and data analytics
Skill Requirements

Service Analytics Stream
To do routine analytical tasks
Support Layer

Data Science Stream

- Data Analysts
- Data Engineers
- Model Managers
- Cognitive Scientists
- Behavioural Scientists
- Analytical Solution Architects and Engineers
Issues

There are challenges with the above skills requirements:

- One is tail-to-teeth ratios. One rule of thumb I use is that 3 data analysts should support every data scientist.

- Up to 90 percent of project time is spent on data wrangling - i.e., data prospecting, data harvesting, and data preparation.

- Demands on data analysts are increasing with the increasing use of external data to enrich internal data.

- The above data-analytics support would free data scientists to focus on mining and modelling tasks rather than have their time absorbed by data-wrangling.
A similar ratio of data analysts to service analytics staff may be required because of the increasing appetite of organizations for data.

Whereas PhD and Masters graduates are required for many analytics employments such as data scientists, undergraduate degrees may suffice for model management, data analytics and service analytics employments.

Skill requirements is one issue the Australian Government Data Analytics Centre of Excellence is addressing to ascertain these numbers across government departments and agencies.

This will assist with both workforce planning and learning and development requirements.
Another task my organization is doing is developing comprehensive model to assess the level of maturity with uptake and use of analytics.

There are a number of these models including the Gartner one of descriptive, diagnostic, predictive and prescriptive levels of analytics model development.

We are focused on identifying core components of an organization that contribute to analytics maturity.

This includes issues such as strategy, practice, people, outputs, data and technology.
Analytics Maturity

- A simple example for Data Maturity is:
  - Level 1 Infancy
  - Level 2 Technical Adoption
  - Level 3 Business Adoption
  - Level 4 Enterprise Adoption
  - Level 5 Data & Analytics as a Service

- This model when developed and agreed will be used to assess the level of analytics maturity in other government departments and agencies

- The results will be employed to determine:
  - The level of maturity for each component for each organization
  - Where improvements are required
Centre of Excellence

- The Data Analytics Centre of Excellence is also examining:
  - Three-to-five Years Vision of where we want to be with big data and analytics
  - Challenges to sharing data across departments and agencies
  - How to share skills, tools, techniques etc

- This is being done against a background where the Federal Government has established the Digital Transformation Office to provide online government services to citizens
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- The Government is also supporting open sharing of data and the move to cloud computing

- It also sees big data and analytics assisting with development of policy and the achievement of smaller government

- This is an appropriate point to describe more fully what a centre of excellence is and what roles and responsibilities it can perform
A centre of excellence is not the following:

- It is not responsible for the delivery of capability such as online services

- It is not a governance body with oversight of programs and projects

- It is not a policy making organization though it can make recommendations on strategy, policy, business models, organizational structures and enterprise architecture when it comes to big data and analytics
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What it is a forum for:
- Keeping abreast of developments in artificial intelligence, information technology and analytics
- Identifying and analysing issues that impact on the effective use of big data and analytics
- The sharing of ideas, tools, skills, learnings and solutions
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- The development of doctrine on use of big data and analytics
- The setting of standards as they apply to big data and analytics
- Determining the skills requirements and training and development for analytics staff
- Liaising with professional associations and academic institutions on registration and educational requirements for analytics professionals
Centre of Excellence

The structure of a centre of excellence can vary but three recommended components include:

- **Leadership Group** to manage the responsibilities detailed in the previous slides
- **Community of Practice** to inform members of developments in tools, techniques and technology
- **Innovation Space** which includes a tool repository, document space, question and answer site, wiki and blogosphere to enable members to share developments and help others that need assistance with using big data and analytics