

# Analytics Centre of Excellence: Roles, Responsibilities and Challenges

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- ▶ Skill Requirements
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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



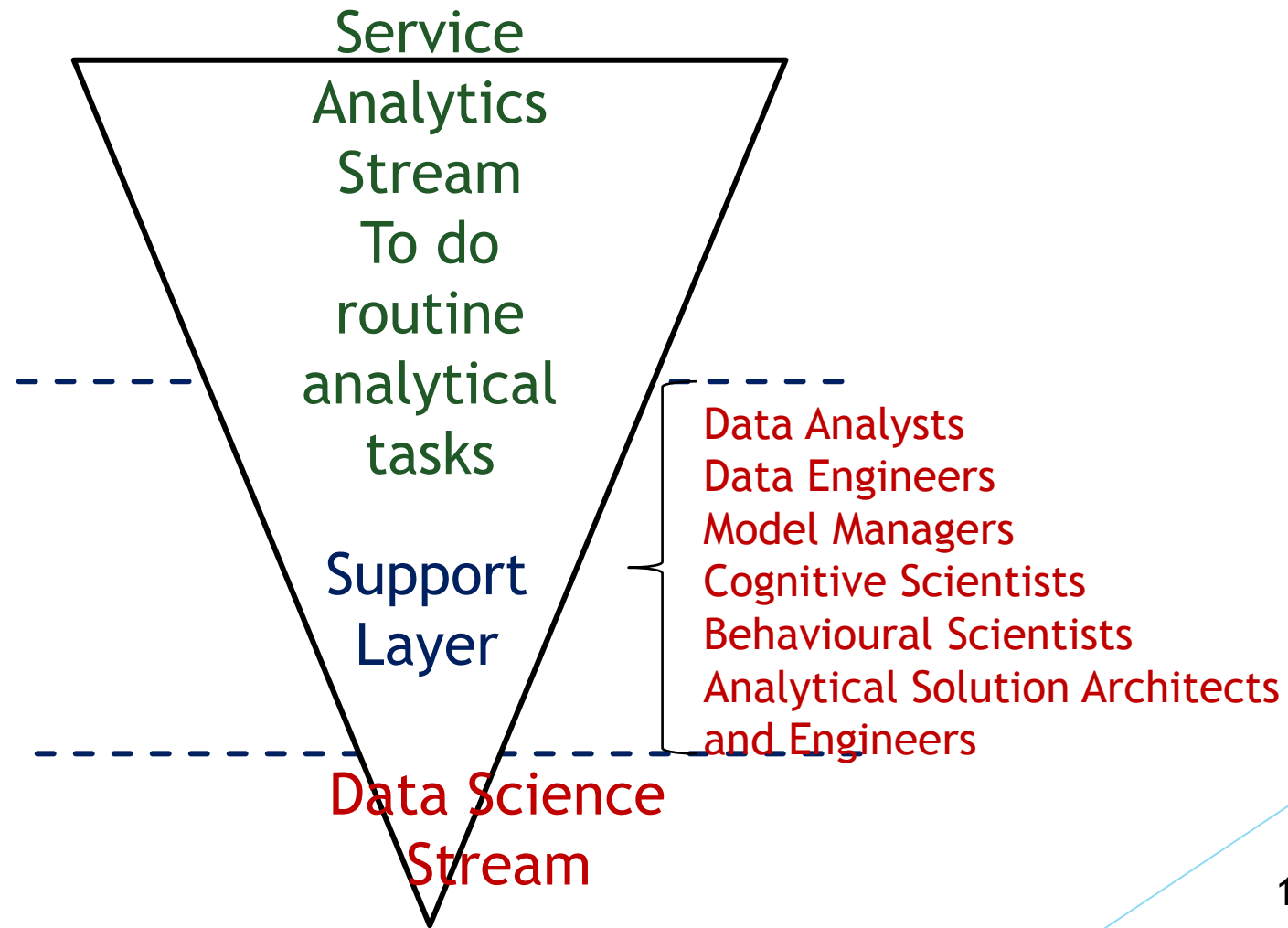
# Skill Requirements

- ▶ 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



# 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 - ie 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

# Issues

- ▶ 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

# Analytics Maturity

- ▶ 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



# Centre of Excellence

- ▶ 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

# Centre of Excellence

- ▶ 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

# Centre of Excellence

- ▶ 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

# Centre of Excellence

- ▶ 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