DATA AS COMPETITIVE ADVANTAGE
MERGING SPORT AND BUSINESS

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The use of data and analytical techniques to aid decision making and strategies for growth is a developing area for the sport industry, as it is across many industries.

This presentation focusses on the application of processes and tools in sport, and provides examples of how organisations are adapting data and analytics practices to add value to different areas of their businesses.

Using sport as a high involvement case, applications spanning human resources, product and services marketing and consumer behaviour seek to demonstrate how sport organisations use of data and analytics may translate to other industries or areas of business.
BACKGROUND

Sport Analytics and Competitive Advantage
SPORT ANALYTICS

...management of data and application of predictive models and use of information systems to gain a competitive advantage (adapted from Alamar, 2013)

Building blocks: data management, information systems, analytical models, decision making

‘reasoning artefacts ... that explain a phenomena’ (Goldsberry, 2015)

Elemental, patterns and spatial, higher order constructs and complex reasoning constructs (Anon, 2005)
# Sport Analytics - 4 Areas of Focus

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<th>Player and Game Performance/Outcome Analytics</th>
<th>Player Health/Injury Analytics</th>
<th>Sport Business Analytics</th>
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<td>Descriptive Analytics on Player Activity</td>
<td>Variable and Dynamic Ticket/Product Pricing</td>
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<td>Draft Analysis / Efficiency</td>
<td>Injury Analysis of Video Data</td>
<td>Fan Loyalty Analytics</td>
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<td>Player Salary Optimization</td>
<td>Analysis of Location/Biometric Data</td>
<td>Fan Satisfaction Analytics</td>
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<td>Simulation of Games</td>
<td>Predictive Analytics on Injuries</td>
<td>Fan Engagement</td>
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<td>Analysis of Game Tactics</td>
<td>Detailed Biomechanics Analysis</td>
<td>Match Day Experience</td>
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<td>Analytics on Locational/Biometric Data</td>
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<td>Player and Talent ID</td>
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<td>Marketing and Service Optimization</td>
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<td>Predicting Player Career Success</td>
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<td>Mobile Location Analytics</td>
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<td>Fantasy Sport / Betting Game Outcome Applications</td>
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<td>Social Media</td>
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<td>Training and Match Day Preparation</td>
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<td>Fan Segmentation/ Personalization</td>
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**The Sport Analytics Function**

**Systems, Capacity and Capability**

Integrating and Communicating Sport Analytics Outcomes
GROWTH OF SPORT ANALYTICS

Sport Analytics is a **growth** area for the sport industry, with **investments** made to systems, technology and human resources in attempts to **build competitive advantage** for sport organisations.

- **(Sport) Organisation Investment** (Systems, Technology and Human Resources)
- **New ‘business’ domains** (marketing, organisation performance, economics and finance, labour and talentship)
- **Fan Consumption and Data Availability**
- **Culture - Books, Movies, Websites and Podcasts**
- **Conferences, Journals and Associations**
- **University and MOOC Courses**
THE APPROACH

The majority of raw data, particularly big data, doesn't offer a lot of value in its unprocessed state (Bertolucci, 2013)

- In sport, this is particularly relevant given the volume of data available:
- Consider: Match Statistics, Consumer Lifetime Value/Fan Equity Metrics, Athlete Career Success

- **Descriptive** analytics - summarise what happened;
- **Predictive** analytics - forecast what might happen in the future;
- **Prescriptive** analytics - recommend courses of action (Wu, 2013)

How can organisations use new techniques to aid development of competitive advantage?
UNIQUE ASPECTS OF SPORT

• Cooperation of parties
• High emotion and involvement, uncommon loyalty
• Unpredictability
• Consumer pays minimal part of overall cost
• Production and consumption concurrent
EXAMPLES

Sport Business – Off Field Applications
APPLICATION TO SPORT BUSINESS

...management of data and application of predictive models and use of information systems to gain a competitive advantage (adapted from Alamar, 2013)

QUESTIONS / TOPICS

- Attendance Demand
- Price Modelling
- Behaviour Prediction
- Marketing and Service Optimisation
- Fan Experience and Satisfaction
- Mobile Location/Tracking
- Segmentation/Personalisation
- Sentiment and Brand Tracking
- Behavioural Science Applications

COMPETITIVE ADVANTAGE

- Better CX
- Enhance Planning and Resourcing
- Operational + Cost Efficiencies
- Enhanced Revenue
- Churn Limitation
- Data Driven Interventions
- Enhance Brand
- ‘Live’ Issue Management
- More Robust Interpretation of Data

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TOOLS – Sport Business Analytics

- Predictive Analytics
- Data Mining
- Clustering and Segment’N
- Customer Experience
- Natural Language
- Machine Learning
- Geo-Spatial Analysis
- Pattern Analysis
- Visualisation
### ‘OFF FIELD’ EXAMPLES

**Sport Business/Marketing**

<table>
<thead>
<tr>
<th>KNOWLEDGE (Manager Questions)</th>
<th>OUTCOME (Comp Advantage)</th>
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<tbody>
<tr>
<td><strong>DEMAND MODELLING</strong></td>
<td>• Cost Efficiency (e.g. stadium staff)</td>
</tr>
<tr>
<td>How many will attend/watch this game?</td>
<td>• Revenue Efficiency (e.g. advertisers, concessions)</td>
</tr>
<tr>
<td>When will people engage in the game/broadcast?</td>
<td></td>
</tr>
<tr>
<td>How can I track stadium movement and spend?</td>
<td></td>
</tr>
<tr>
<td><strong>PRICE MODELLING</strong></td>
<td>• Planning and resourcing</td>
</tr>
<tr>
<td>How can I set prices and develop products with confidence?</td>
<td>• Efficiency and revenue capture through product development</td>
</tr>
<tr>
<td>How to use pricing analytics and predictive modelling to understand demand?</td>
<td></td>
</tr>
<tr>
<td><strong>BEHAVIOUR PREDICTION</strong></td>
<td>• Churn limitation / Higher engagement</td>
</tr>
<tr>
<td>How will people behave?</td>
<td>• Develop interventions and actions that resonate</td>
</tr>
<tr>
<td>• Predicting Renewal of users/STH</td>
<td></td>
</tr>
<tr>
<td>• Predicting Campaign or Activity Engagement</td>
<td></td>
</tr>
<tr>
<td><strong>OPEN TEXT MINING</strong></td>
<td>• ‘Live’ understanding of issues / sentiment / CX</td>
</tr>
<tr>
<td>How do I use text (comments, social) to understand CX?</td>
<td>• Drive position and understand points of attachment</td>
</tr>
<tr>
<td>How is my brand developing and what sentiment do people hold?</td>
<td></td>
</tr>
<tr>
<td><strong>ENHANCING OTHER FINDINGS</strong></td>
<td>• Enhanced decision making and efficiency</td>
</tr>
<tr>
<td>Can I trust the linking of attitudes and (likely) behaviours?</td>
<td>• Better and more accurate interpretation of data</td>
</tr>
<tr>
<td>How does sports uniqueness impact my data? (e.g. the impact of winning on survey results)</td>
<td></td>
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<tr>
<td>How can I cluster and segment consumers?</td>
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FAN EQUITY

VALUE
- Service Quality
- Satisfaction
- Game Experience
- Media Experience
- Expectations
- Value Perceptions
- Personal Interaction Quality

BRAND
- Traits/Values
- Associations
- Recall / Share
- Equity
- Sentiment / Health
- Points of Attachment

RELATIONSHIP
- Loyalty
- Trust
- Commitment
- Reciprocity
- Recommend/Promote/WOM
- Involvement and Centrality
- Fandom, Support and Passion

ENGAGEMENT
- TRANSACTIONAL
- NON-TRANSACTIONAL
SPORT BUSINESS ANALYTICS CASES

CHURN AND BEHAVIOUR PREDICTION

IMPROVING CUSTOMER EXPERIENCE

VALIDATION AND DATA CONFIDENCE

Predictive Modeling + Data Mining

CX Modelling + Text Mining + Visualisations

Data Mining + Segmentation
CONSUMER PREDICTION

WHO WILL?

- ATTEND OR WATCH A GAME?
- SUPPORT A DONATION PROGRAM?
- TAKE UP A SPONSORS OFFER?
- RENEW A SEASON TICKET?

Process:
- **Past Data**: Binary Logistic or Chi-squared Automatic Interaction Detection (CHIAD) Models
- **Future Prediction**: Risk Score / Profiles and Supervised Learning Models
- ‘Art vs Science’ approach to operationalisation
VARIABLES AND OUTCOMES (SPORT STH)

DATABASE
- Demographics
  - Location
  - Tenure
  - Utilisation
- Segment/Product Price

PRODUCT/BEHAVIOUR
- Game attendance
  - Seat Location (section, row, seat)
  - No of seats
  - Communications received

SELF REPORTED (SURVEY/INSIGHT)
- Intention/Probabilities
  - Service Exp (Y/N)*
  - Reason for Joining
  - Media Behaviours
- Engagement (non-trans)
  - Open Responses*
  - Brand
  - Relationship Quality

CONSIDERATIONS
- Aggregate v Individual prediction
- Team Performance
- Different Product Models
- Different Tenure Models
- Product Movement up/down

A USEFUL OUTCOME? UTILISING THE OUTCOME?
IMPROVING CUSTOMER JOURNEY / CX

- Quantitative metrics for all points
- Understand and benchmark key drivers
- Drive service improvements
- Links to Fan Equity Drivers
- YoY Tracking and Multiple points per year
- Model: 250+ surveys (45+ contexts)

- Visualise and provide aggregate and individual uses
- Use of Open Text Data/Natural Language Processing
- Identify and articulate root cause issues and supporting narratives
- Control and understand halo effect of winning/losing
MATCH DAY EXPERIENCE / CUSTOMER JOURNEY

• Logistics and Traffic
• Concessions Access
• Tracking entry, movement and purchase

• Towards a ‘360’ view
VIRTUAL CUSTOMER EXPERIENCE
COGNITIVE ENGAGEMENT
NATURAL LANGUAGE AND TEXT ANALYSIS

- Identifying **key topics** and using them as **predictors**
- **Range of data:** Social, Media, Forums, Survey data, Marketing partners

**Uses for Sentiment/Text Analysis**

- TO UNDERSTAND ISSUES AND NARRATIVES
- TO PREDICT OR ENHANCE PREDICTION
AGGREGATE BRAND SENTIMENT

Represents a score between -1 and +1 based on all responses to brand recall
FUTURE APPLICATION:

BEHAVIOURAL SCIENCE

• Neuro marketing
• Eye Tracking
• Bio metrics
• Experimental
• VR/AR
• Applications: brand, sponsorship, engagement
EXAMPLES

Sport – On Field Applications
# ‘ON FIELD’ EXAMPLES

Game Strategy/Health and Injury Prevention /Consumption

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<td><strong>SPORT PARTICIPANT USAGE AND DEVELOPMENT</strong></td>
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| **PLAYER RECRUITMENT/ TALENT ID** | • Creating efficiencies in drafting and valuation  
• Salary cap and list management  
• Enhancing inputs and on-field performance |
| **ANALYSIS OF GAME TACTICS** | • Enhanced match information and strategy  
• Individual and team success  
• Consumer interest and gains |
| **PREDICTIVE ANALYTICS ON INJURIES** | • Player Welfare/Athlete Management  
• Ind/Team Success |
| **SPORT PARTICIPANT USAGE AND DEVELOPMENT** | • Future facility/event planning and Management  
• Efficiency and decision making |
| **EXPLOITING INEFFICIENCIES IN GAMING/BETTING MARKETS** | • Consumer interest and gains |
RECENT APPLICATIONS

• Network analysis of basketball offences
• Trends in officiating
• NHL Player selection / College Recruiting Analytics
• Skater Impact on Shot Locations
• Win Probability Models using NFL data
• Load training in Athletics
• Machine Learning and Fantasy Sport
• Analytics in Journalism
• Hot Hand/Momentum Research
HR PREDICTORS AND INFORMATION

• Draft/Selecting talent in business?

• Predictors of success in fields?
  • Academics?
  • Accounting?
  • Marketing?
  • Cattle?

• The case (and advantage) of sport
SPATIAL ANALYSIS
GAME TACTICS AND STRATEGY

VARIABLES OF ANALYSIS
- Distributions
- Chains of Play
- Network Centrality/Density
- Entropy/Predictability
- Outcome and Expected Value

Source: Grantland (2014)
GEO SPATIAL MAPS - NBA
INJURY PREDICTION / WEARABLES

WELLNESS TRACKING / AR VR TRAINING

Gabbert, 2015
WIN PREDICTION

APPLICATIONS

Betting markets
Betting in efficiencies
Understanding Halo Effects and fan reaction/sentiment
CASES AND EXAMPLES
Business Applications for Sport
APPLICATIONS AND OUTCOMES

COMPETITIVE ADVANTAGE

CONSUMER BUSINESS
- INVolvement / ENGAGEMENT / HALO
- CX / PRODUCT AND SERVICE DEVELOPMENT
- PREDICTION

HR
- RECRUITMENT/TALENT (DATA RICH)
- WELLNESS/OPTIMAL PERFORMANCE
- DATA & AR/VR FOR TRAINING/DEVELOPMENT

SPORTS NATURAL OR UNIQUE ADVANTAGE

EFFICIENCY
ENGAGEMENT
REVENUE
EXPERIENCES
LOYALTY
BRANDS
PRODUCTS
SERVICING
WELLNESS
ACCURACY
ORGANISATIONAL NEEDS

- Data! (inc conceptual ideas of data collection, structure and use)
- Data capture and management systems
- Data preparation and dataset building and management
- Domain level understanding (i.e. sport marketing or sport science context – what is unique)
- Data Presentation, Visualisation and Communication skills
BUILDING ANALYTICS CAPACITY

PHILOSOPHY AND TRAINING

DSS AND TESTING

DATA MANAGEMENT

CAPACITY BUILDING

ART vs SCIENCE