The University of the West Indies

AGILE BI IN HIGHER EDUCATION:

A Case Study From The Mona Campus, UWI, Jamaica

Agenda

- BI in Higher Education - *Opportunities*
- Conceptions of Agility
- Information Maturity Assessment – *A Synopsis*
- Proof of Concept BI Initiative – *Student Lifecycle Dashboard*
- Towards a Strategic BI Roadmap
- Q&A

BI in Higher Education

- Transformational impact of *Business Intelligence / Business Analytics* repeatedly demonstrated across a range of industries and business cases, from finance to retail to the gaming industry

- Emerging field of **Academic Analytics**: data-driven decision making practices applied to operational and administrative purposes as well as to student teaching and learning issues

BI in Higher Education

- *Exploit Key Data Sources*

- Student Life-Cycle *(prospect, application, admissions, enrolment, performance, graduation, interaction, demographics)*
- Faculty / staff *(number, type, level and qualifications of staff as well as demographics)*
- Knowledge production *(number, type, frequency of publications)*
- Outreach and engagement with external stakeholders *(type, # of projects, outputs)*
- Curriculum *(# and types of courses and qualifications offered)*
- Space *(infrastructure, facilities, equipment)*
- Finance *(costs & revenues – tuition / grants)*
- Labor market needs *(Demand driven decision-making)*

BI in Higher Education - *Analytics*

- Example Applications
  - Corporate Performance Management: *Aligning Strategy with Execution through KPIs*
  - Credit (*Tuition*) Default Risk models
  - Student Performance Early Warning Predictive Models
  - Student Admissions / Retention Analytics
  - Teaching Facilities Utilization Analytics/Optimization

Conceptions of Agility

- ***Enterprise agility*:** the ability of organizations to sense and respond readily to rapid change reflective of increasingly turbulent and dynamic environments
- Information Technology plays a critical role in enabling organizational sense and response capabilities
- Traditional Enterprise information systems rate poorly in this regard, being designed to enforce process consistency rather than support agility *- Rouse (2007)*
- Business Intelligence systems enable strategic, tactical, and operational decision-makers to be more flexible and more responsive to the fast pace of changes to business and regulatory requirements

Conceptions of Agility

- *E*

"…enterprise grade BI platforms are often anything but agile. Indeed, while modern enterprise BI platforms are scalable and robust, support and promote a single version of the truth, and minimize operational risk..

***[But]** these capabilities carry a hefty price tag of complexity, rigidity, and inflexibility, and as a result they are slow to react to constantly changing customer and business requirements."*

- Forrester (2014)

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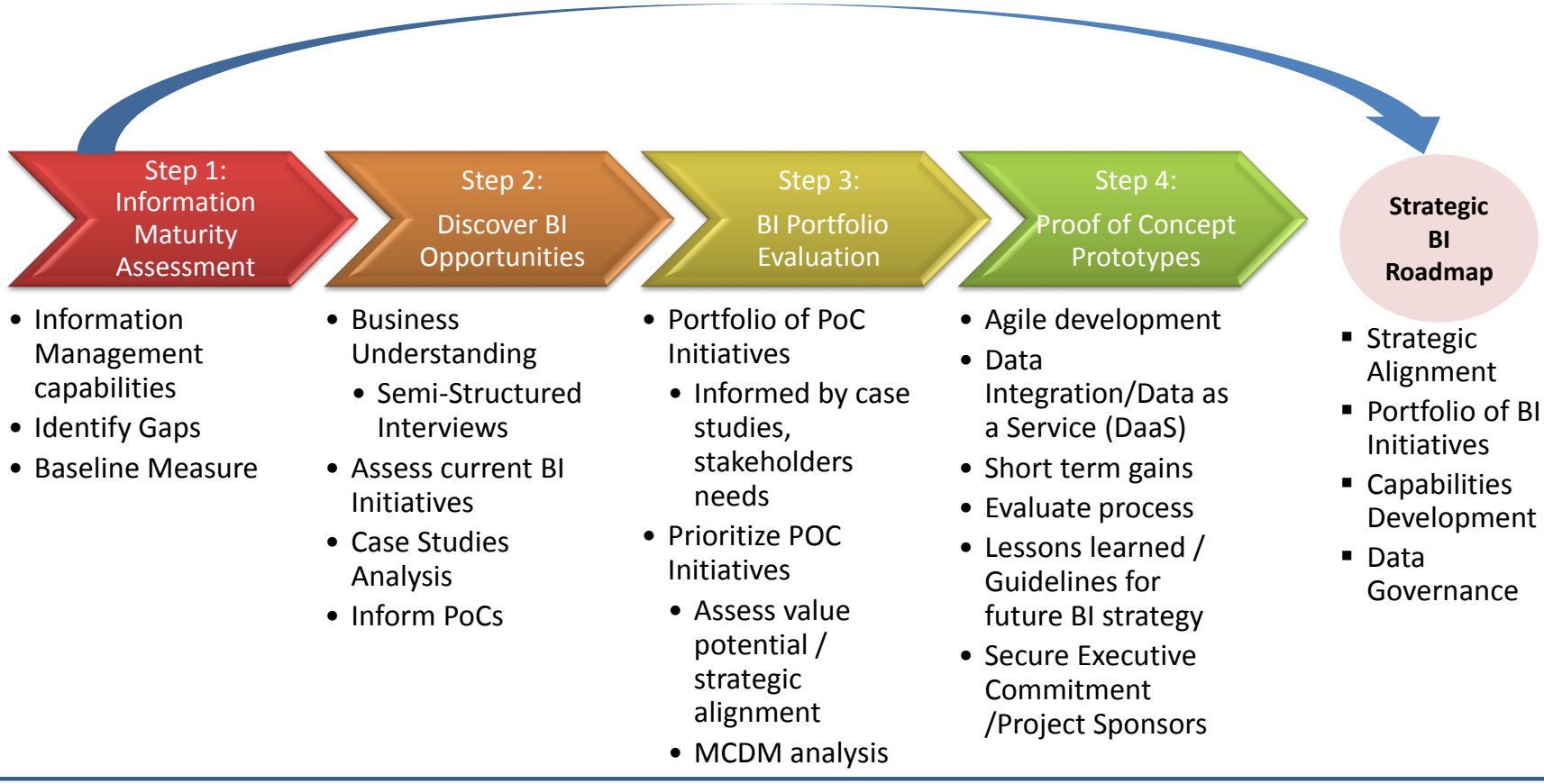
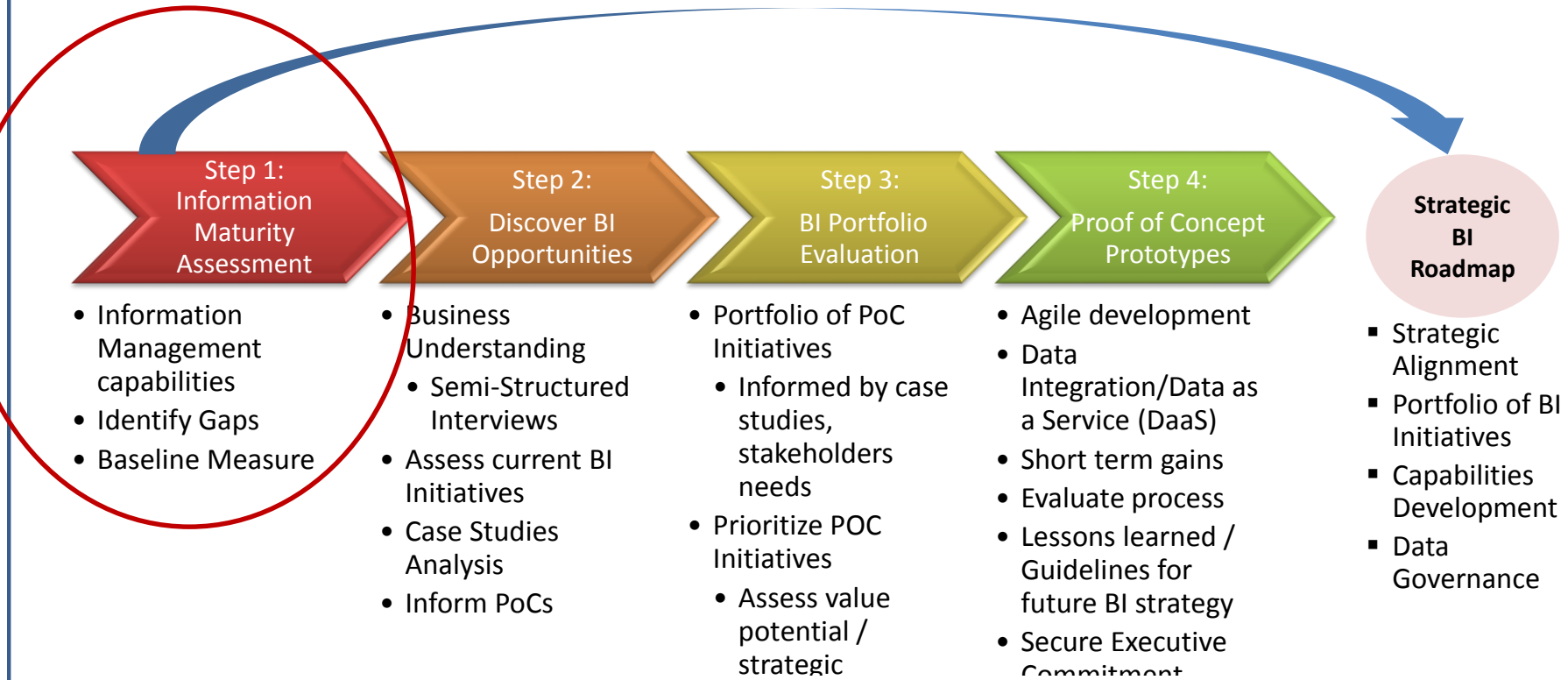
responsive to the fast pace of changes to business and regulatory requirements

An *Emergent* Approach to Agile BI



- **Rapid assessment**
  - **Business Alignment, Engagement**
    - **Proof-of-Concepts Prototypes**
      - **Agile technologies (Open-Source)**
        - **Enterprise-scope, Agile-execution**

Information Maturity Assessment – *Anchoring the BI Program*



- Information Maturity Assessment is a key foundational step for BI Capability benchmarking and Program Development
- IM Assessment is a precursor to formulating a Strategic Business Intelligence (BI) capability for supporting corporate transformation

Why Information Maturity Assessment?

- Maturity Models popular in I/S Discipline
  - Measure & Benchmark Organizational capabilities: People, Process & Things (Objects)
  - Establish Capability Gaps - Formal assessment of: *Where am I today? Where would I like to be?*
  - Basis for informed development programs & continuous improvement
  - Self- / 3rd party Independent-Assessment
  - Best Known: CMMI – Software Development

- Maturity Models exist for specific domains:
  - Software Development, Project Management, Business Process Management, ***Enterprise Information Management***

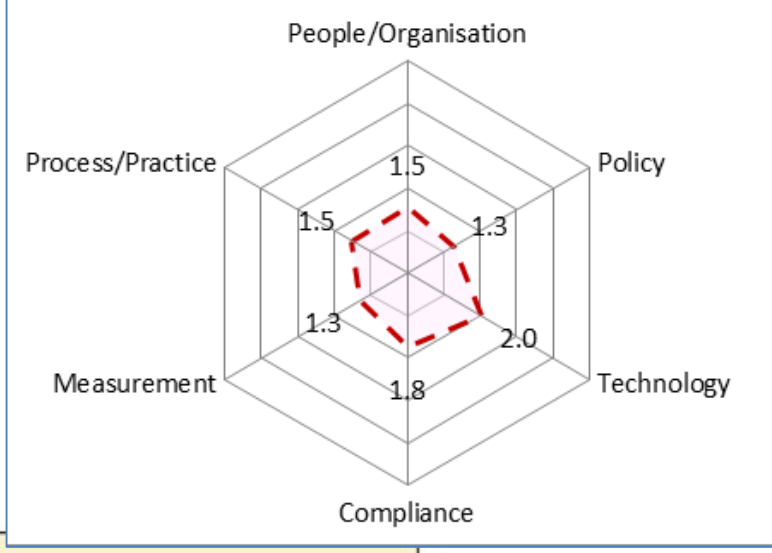
Information Maturity Assessment - Scope

Categories	Definitions
People / Organisation	Considers the human side of Information Management, looking at how people are measured, motivated and supported in related activities
Policy	Considers the message to staff from leadership. The assessment considers whether staff are required to administer and maintain information assets appropriately and whether there aew consequences for inappropriate behaviours.
Technology	Covers the tools that are provided to staff to properly meet their Information Management duties.
Compliance	Surveys the external Information Management obligations of the organisation.
Measurement	Looks at how the organisation identifies information issues and analyses its data.
Process / Practice	Considers whether the organisation has adopted standardised approaches to Information Management

Survey Instrument: A series of ~*100 Capability Statements* that assess both business capabilities and data management / use capabilities to gain a broad and deep understanding of the information management practices in place and how they impact business performance.

Information Maturity Model Assessment

****for illustrative purposes only**



META Group has developed a 5-level Information Maturity Model (IMM) to use as an information maturity guideline.

It is similar to the Software Capability Maturity Model (CMM) and focuses initially on data quality.

The key criteria for assessing information maturity is being able to measure it.

Level 1 Aware

Level 2 Reactive

Level 3 Proactive

Level 4 Managed

Level 5 Optimized

- People/Organisation
- Policy
- Technology
- Compliance
- Measurement
- Process/Practice

IM QuickScan is an objective assessment of the current and desired information maturity levels to construct a roadmap for improving data quality.

High

Information Maturity

Low

Information Accuracy & Organizational Confidence

High

Information Maturity

Information Maturity Model	Capability Definitions
Level 1 - Aware	no common information practices. Any pockets of information management maturity that the organization has are based on the experience and initiatives of individuals.
Level 2 – Reactive	little in the way of enterprise information management practices. However, certain departments are aware of the importance of professionally managing information assets and have developed common practices used within their projects. At the enterprise level, a level 2 organization reacts to data quality issues as they arise
Level 3 - Proactive	has a significant degree of information management maturity. Enterprise awareness, policies, procedures, and standards exist and are generally utilized across all enterprise projects. At level 3, the information management practices are typically sponsored by and managed by IT.
Level 4 – Managed	manages information as an enterprise asset. The business is heavily engaged in information management procedures and takes responsibility for the quality of information that they manage. A level 4 organisation has many mature and best-in-class practices and utilizes audits to ensure compliance across all projects
Level 5 – Optimized	considers information to be as much an enterprise asset as financial and material assets. A level 5 organisation has best-in-class information management practices that are utilized across all enterprise projects. The distinguishing characteristic of a level 5 organisation is the focus on continuous improvement. At level 5, all data management practices and assets are regularly measured and the results are analysed as the basis for process improvement.

Source: MIKE2.0 (www.openmethodology.org)

UWI IM Assessment - Excerpt

The Technology assessment covers the architecture, tools and processes required to support best practice information management functions.

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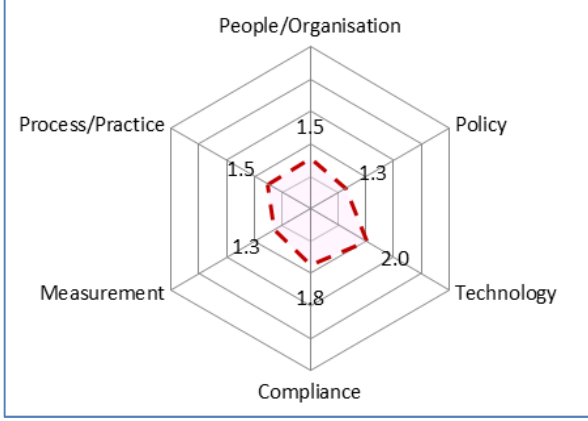
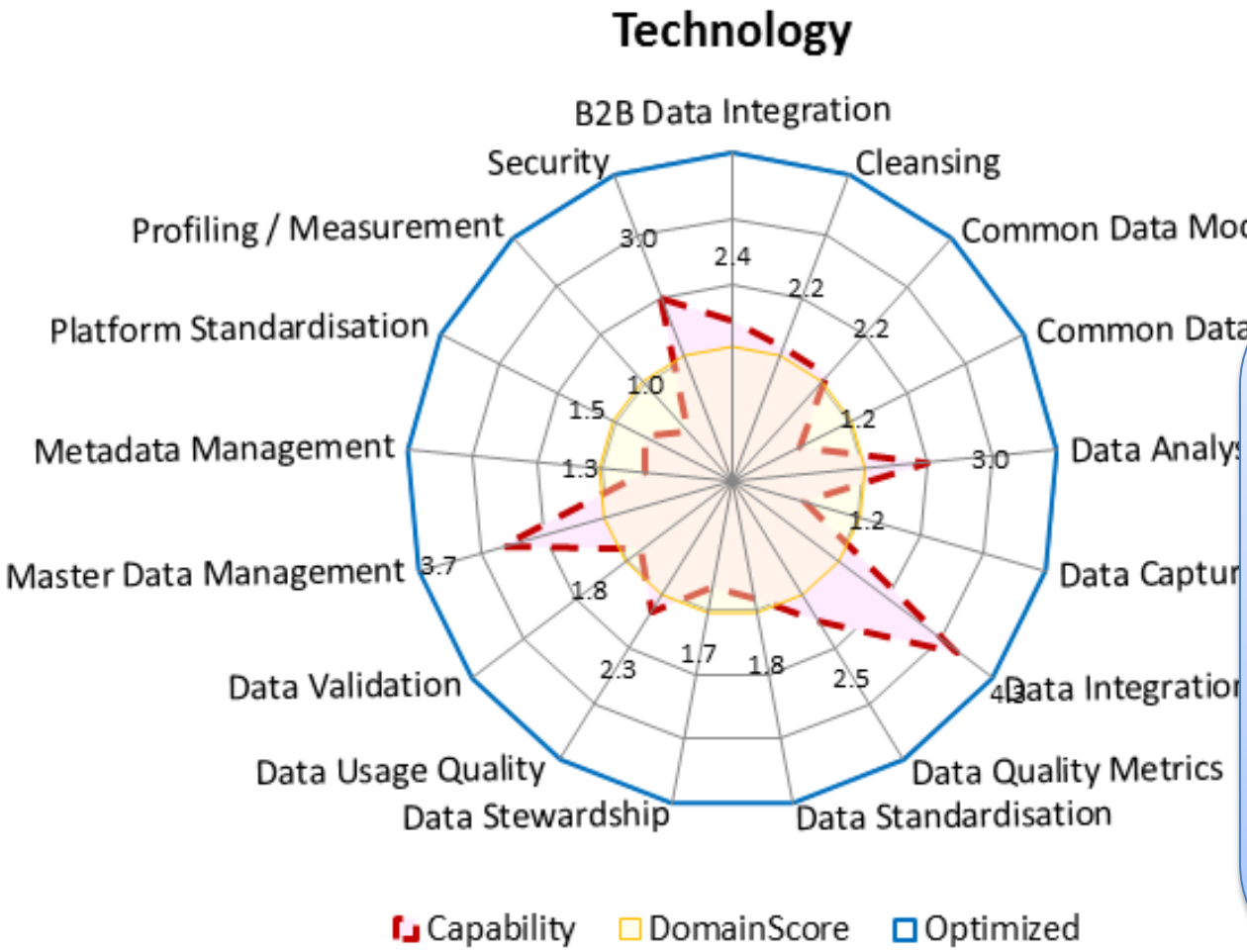
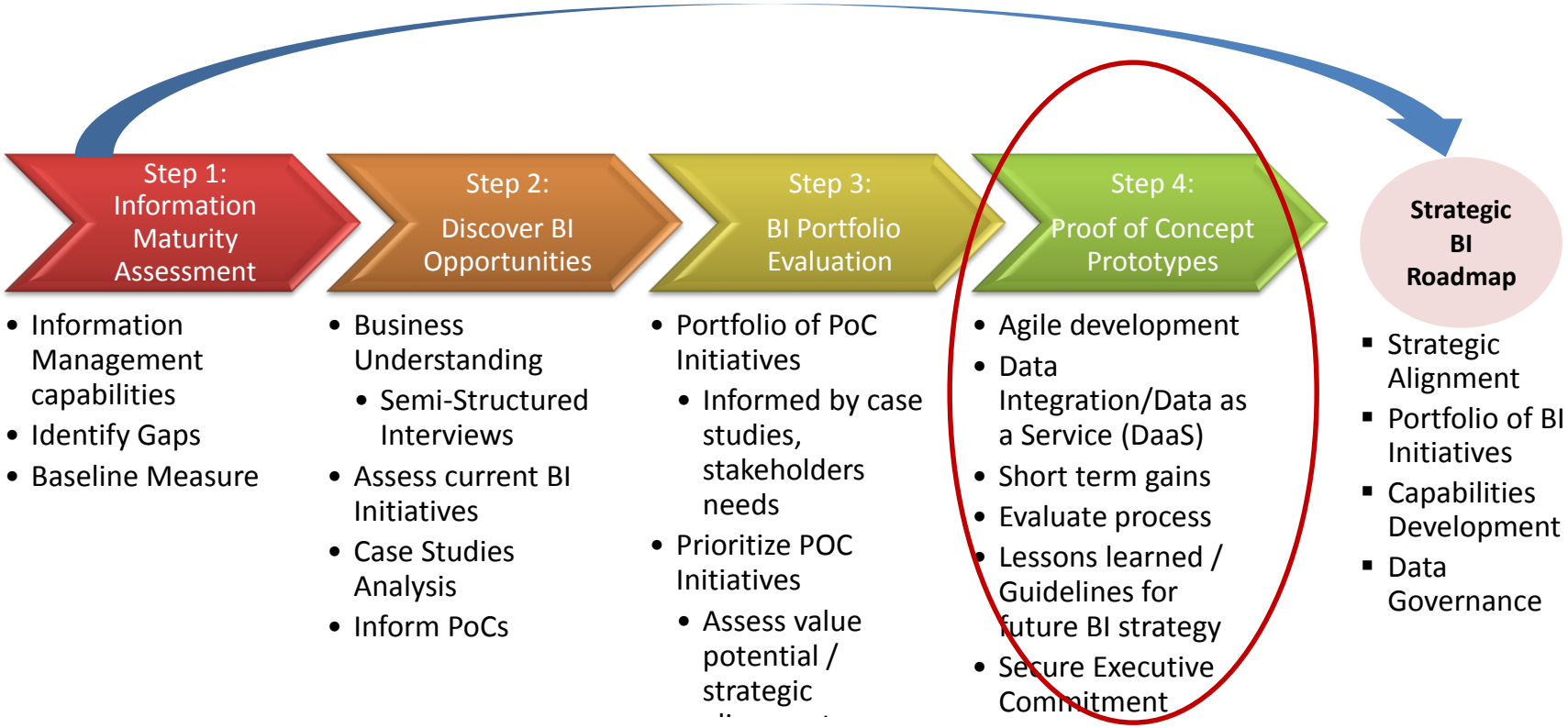




While the Campus has enterprise grade transactional and operational systems, the assessment shows manifest gaps in several key areas of the technology architecture, tools and practices required to support best practice information management functions eg. meta-data management, profiling & measurement

Proof of Concept Prototypes

- Building the Case for Strategic BI



- Proof of Concept initiatives help to secure/reinforce **Executive Commitment** by demonstrating Business Value of Advanced Analytics
- Deployment agility enabled through use of Open Source Software: reduced lead-time/cost/time-to-value, increased experimentation, pervasiveness

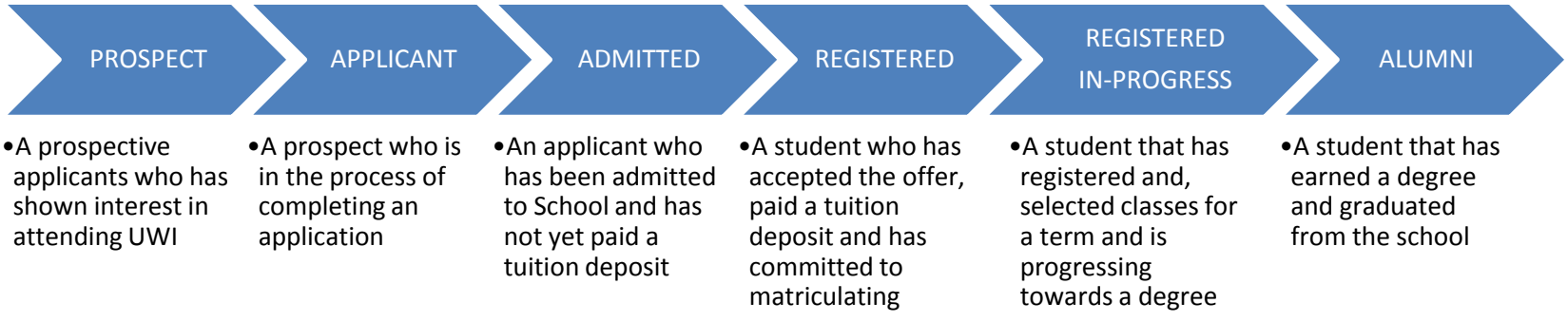
Student Lifecycle

Supports Campus Strategic Objectives

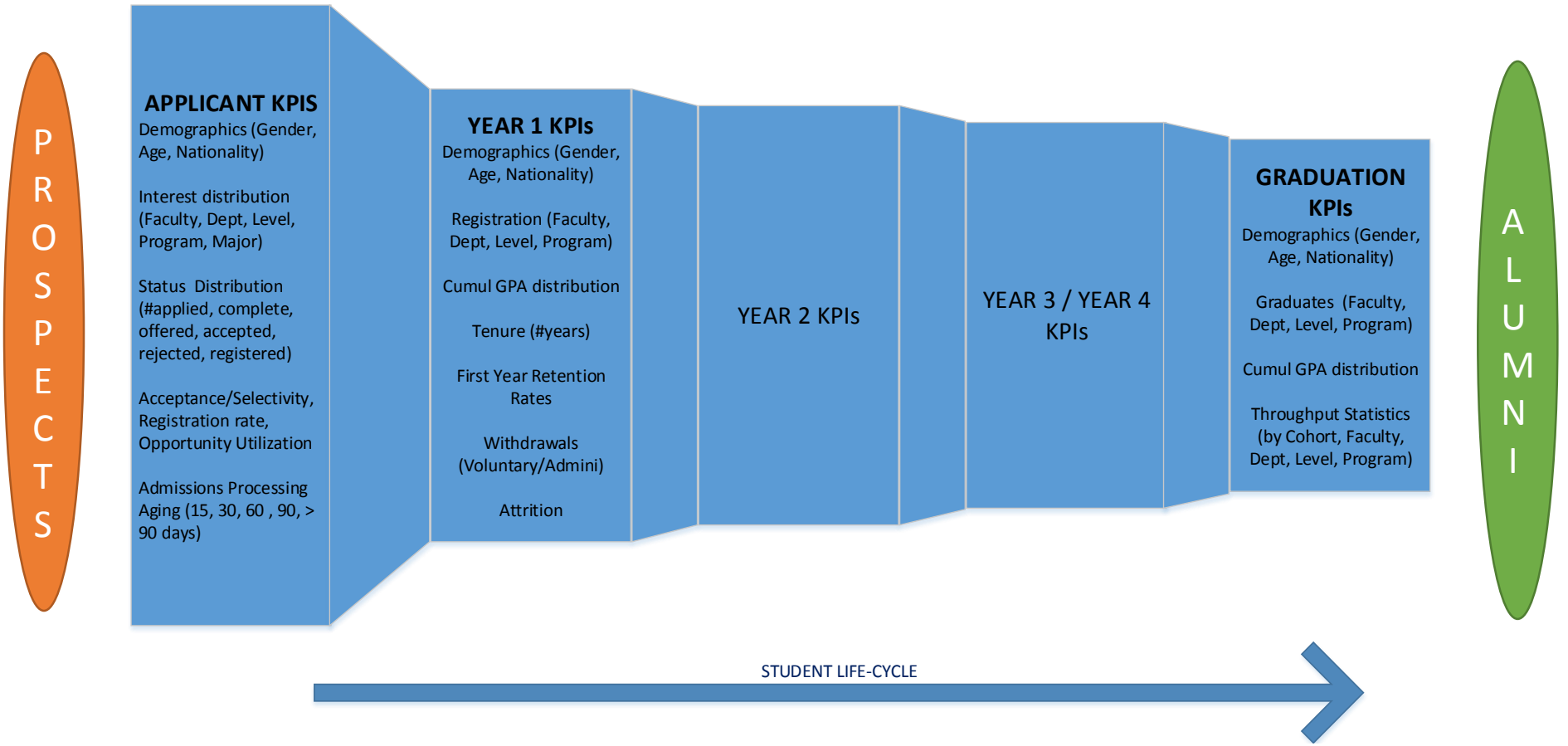
3.1 Improve academic and administrative process efficiency

4.2 Improve the end-to-end student experience

- a continuum of stages that a Student enters as they progress in their relationship with your school
- each stage intersects with different university processes requiring different offices to interact with the Student
- Metrics are defined at each stage of the lifecycle to support the university processes
- Provides a basis for managing and optimizing the Student experience

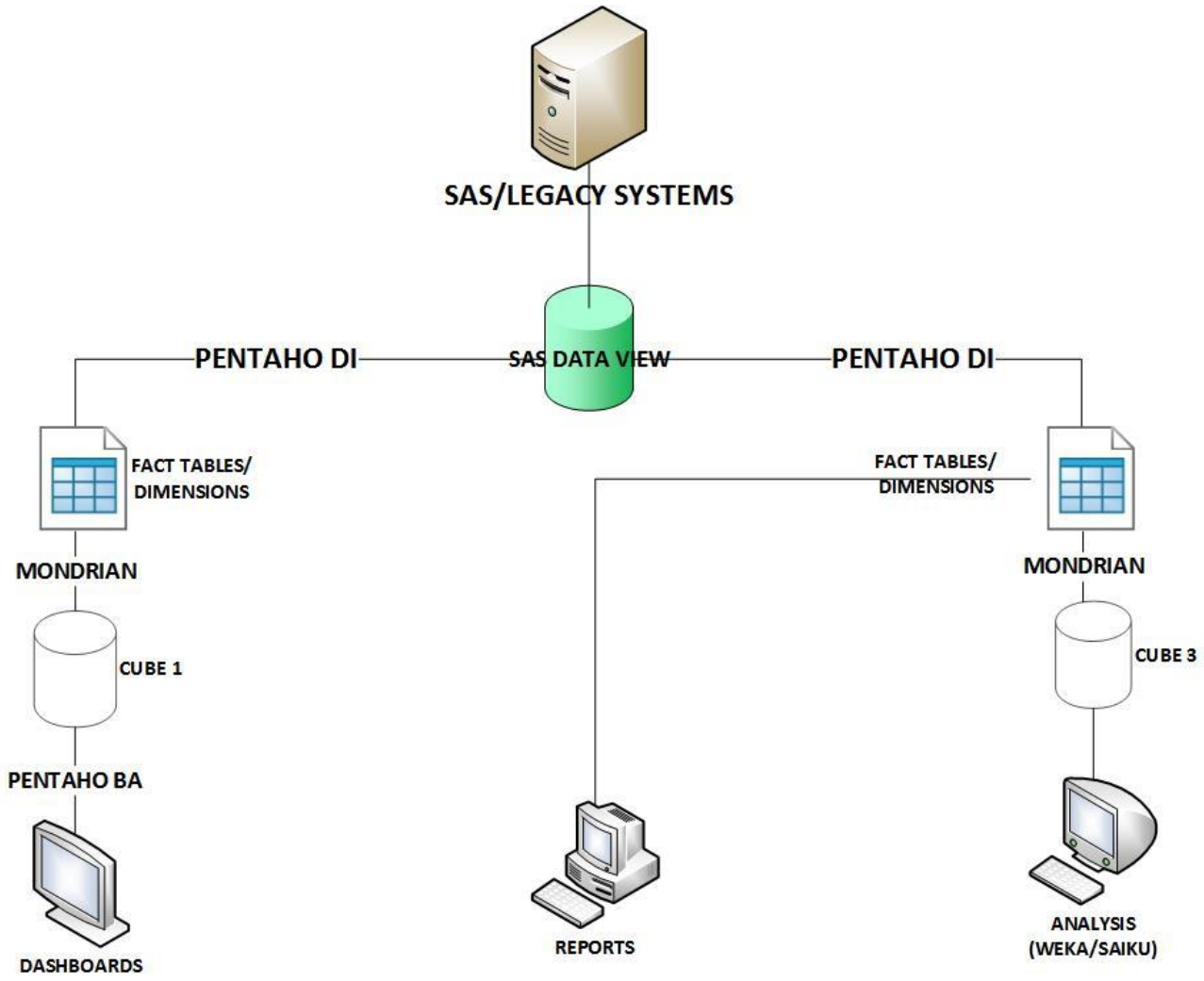


Campus BI Initiative – Student Lifecycle Dashboard



- Supports Campus Strategic Objectives
  - *3.1 Improve academic and administrative process efficiency*
  - *4.2 Improve the end-to-end student experience*
- Dashboard Features
  - Applicant Processing, Student Throughput Analytics
  - Interactive, Views by Demographics, Faculty/Departments

POC Deployment Configuration- Open Source



Student Applications Dashboard - UWI, Mona

Cohort Year: 2016

Faculty: 1 selected

Gender: 2 selected

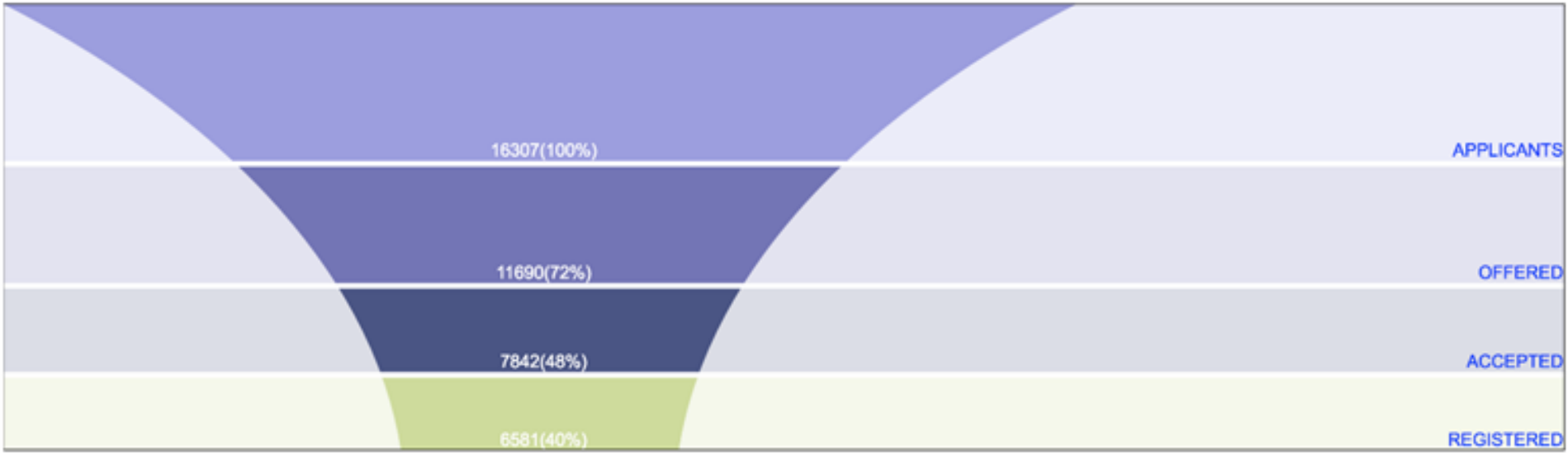
Program: 1 selected

Department: 1 selected

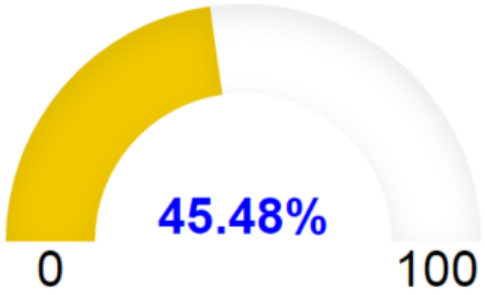
Major: 23 selected

SUBMIT

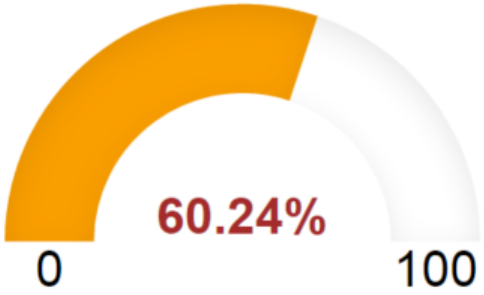
STUDENT APPLICATIONS



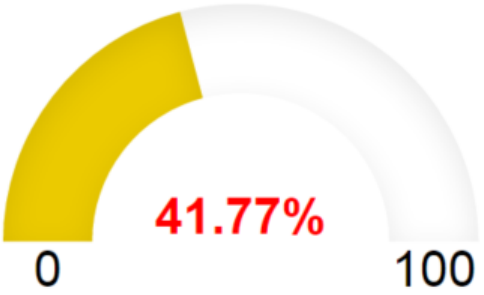
SELECTIVITY



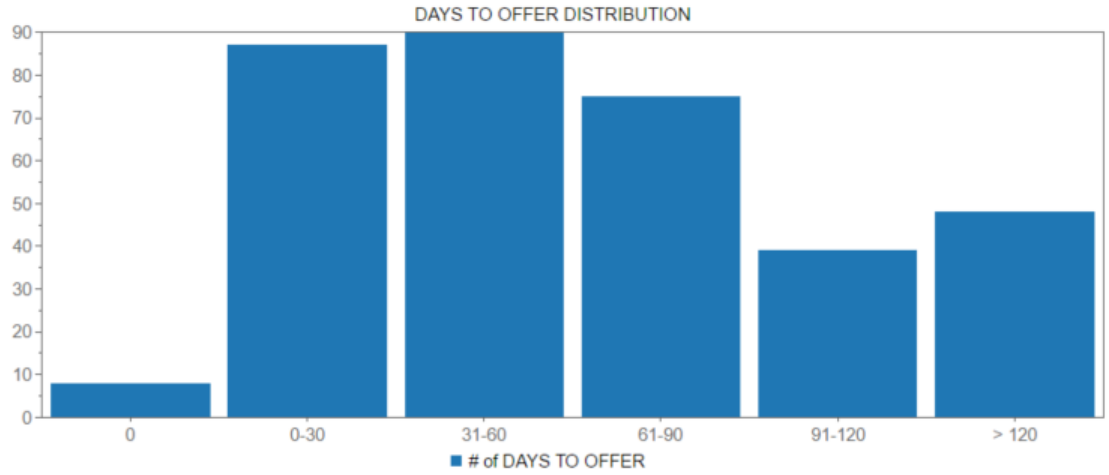
REGISTRATION RATE



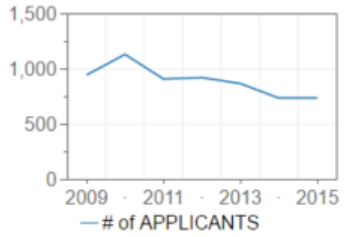
UTILIZATION

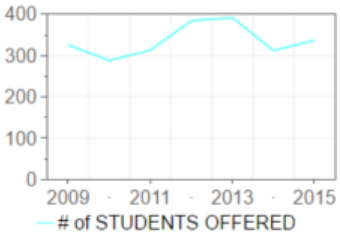


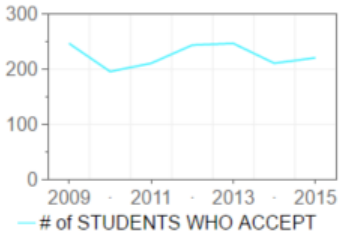
APPLICATIONS THROUGHPUT

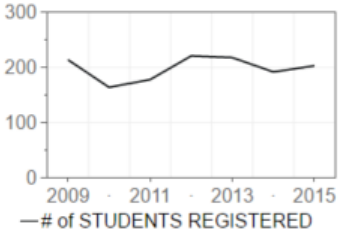


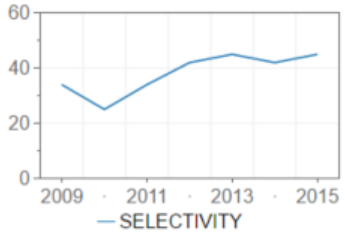
TEMPORAL CHARTS OF APPLICATIONS KPI

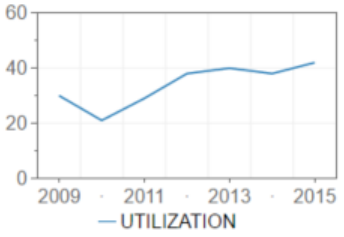












Student Life Cycle Dashboard - UWI, Mona

Cohort Year: 2009

Faculty: 9 selected

Gender: 2 selected

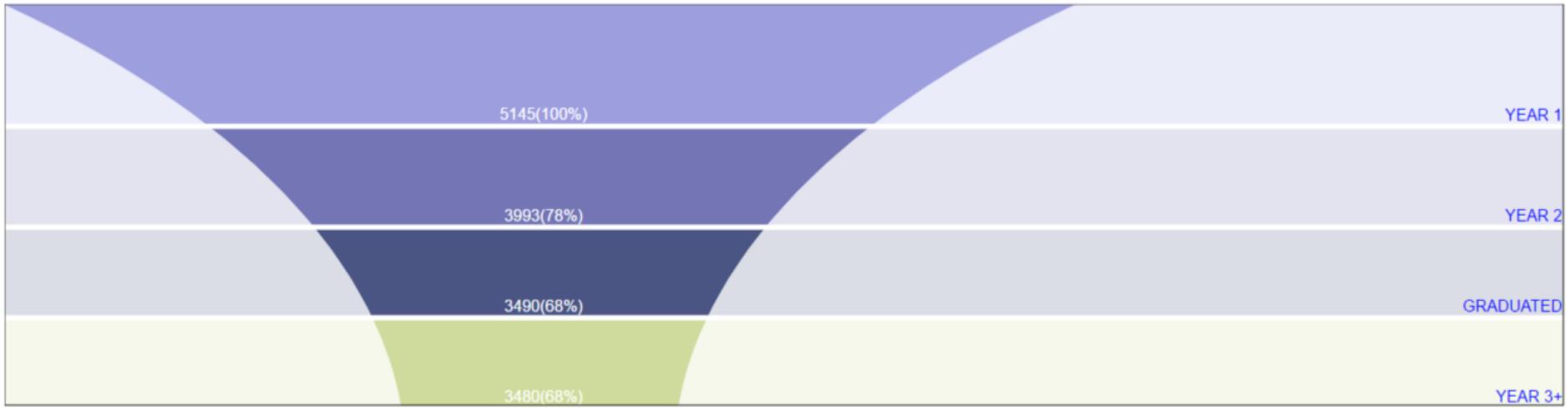
Program: 6 selected

Department: 73 selected

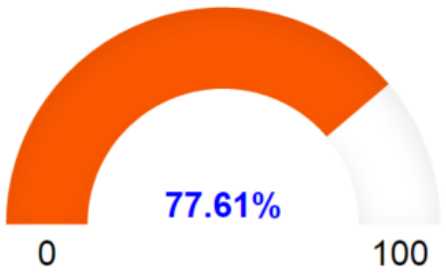
Major: 328 selected

SUBMIT

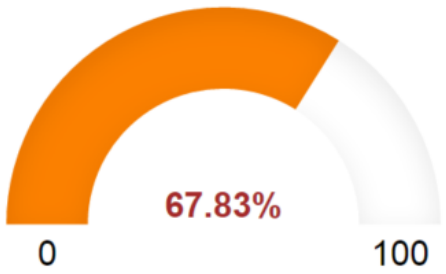
STUDENT THROUGHPUT



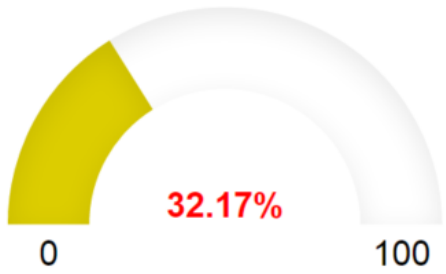
FIRST YEAR RETENTION



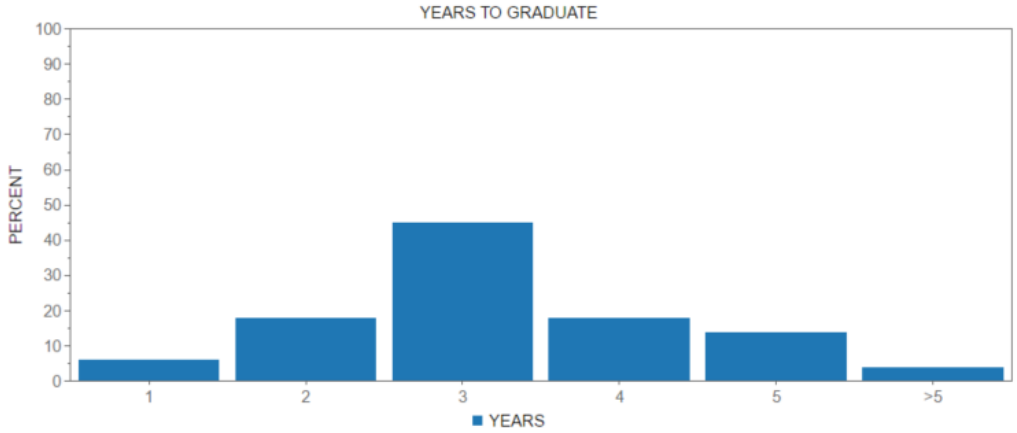
COMPLETION RATE



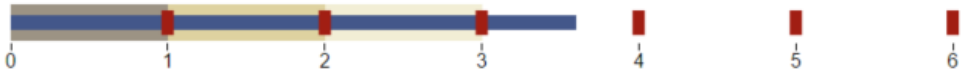
ATTRITION/INCOMPLETION RATE



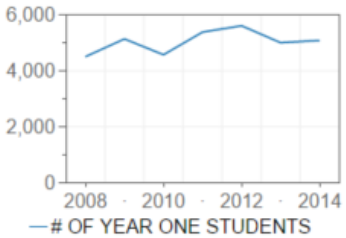
APPLICATIONS THROUGHPUT

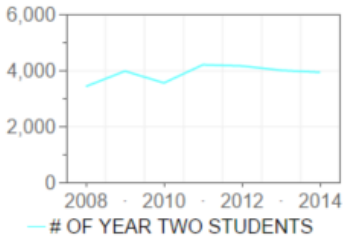


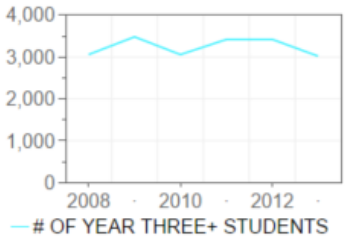
AVERAGE # OF YEARS TO GRADUATE

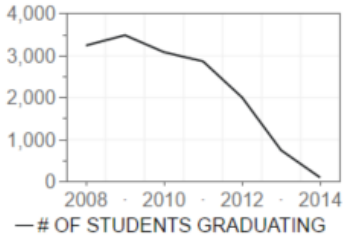


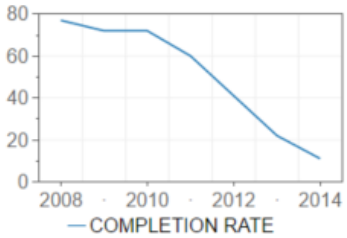
TEMPORAL CHARTS FOR STUDENT LIFE CYCLE KPI

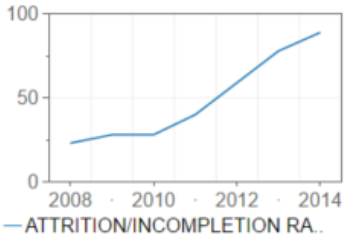




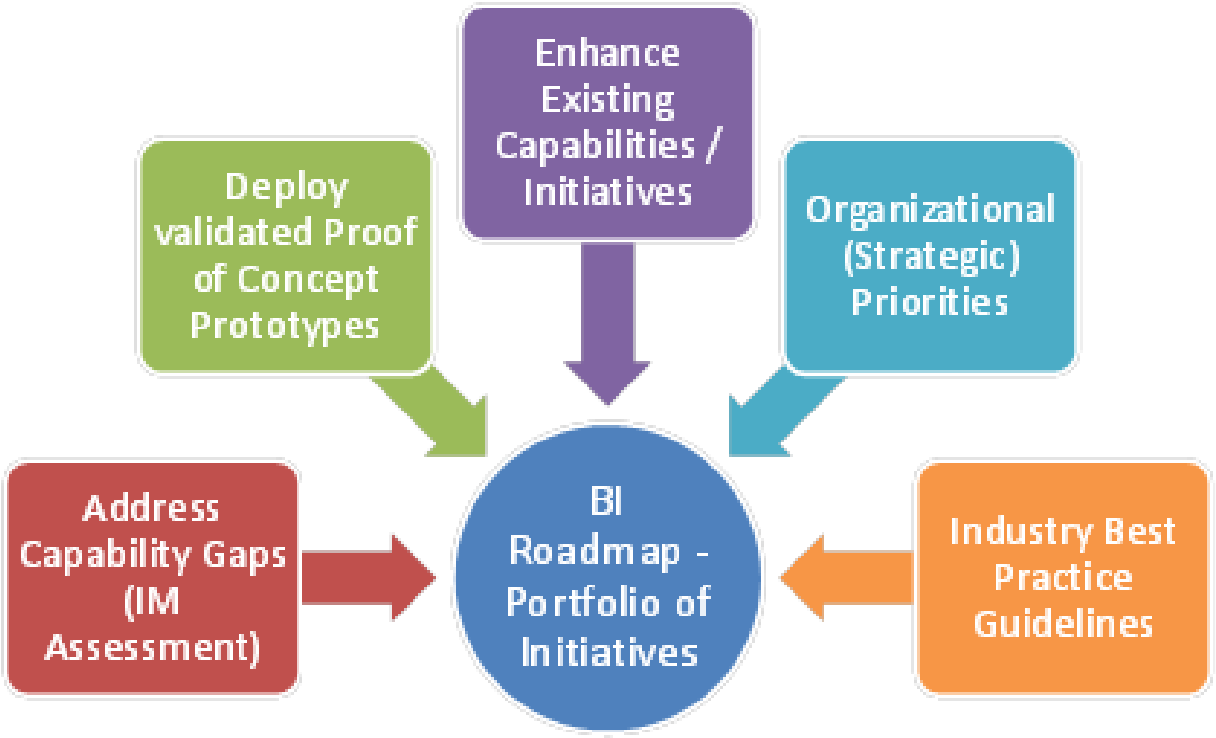






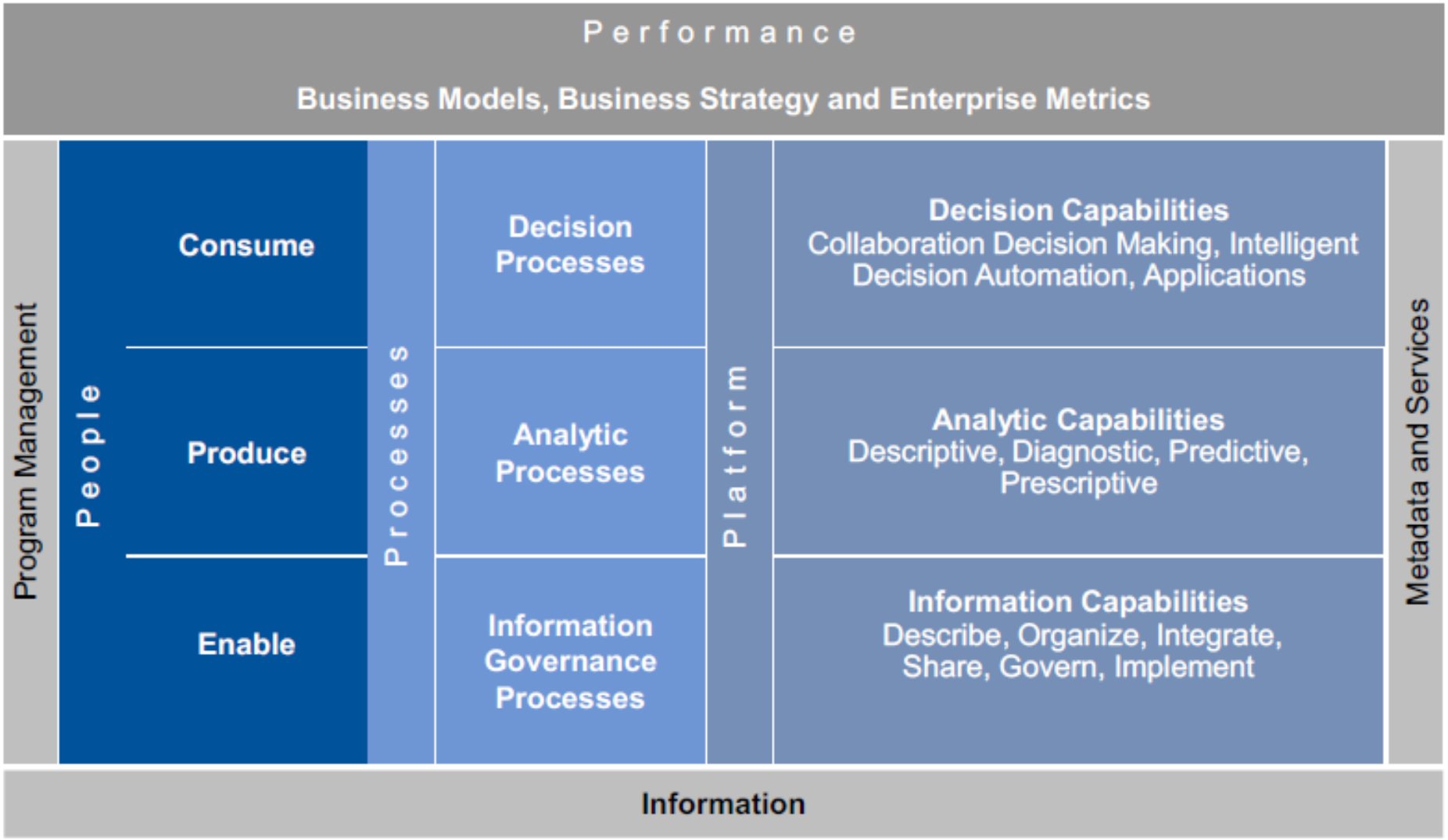


Synthesizing the Enterprise Strategic BI Roadmap



- Key Attributes of the Roadmap
  - Enterprise scope, incremental execution
  - Bootstrap initiatives (POCs provide “early wins”)
  - Develop, Leverage & Apply BI Capabilities
  - Intrinsic Progress Monitoring

Components of a Strategic BI Roadmap



The Gartner Business Analytics Framework

Components of a Strategic BI Roadmap

- **Performance**
  - Performance management links the strategic goals of the business with its execution and seeks to align operational activities and processes with an appropriate enterprise metrics
- **People**
  - Development and institutionalization of people capabilities and roles: *producers, consumers & enablers*
- **Processes**
  - Pay attention to three key interconnected processes: *decision processes, analytical processes and information governance processes*

Components of a Strategic BI Roadmap

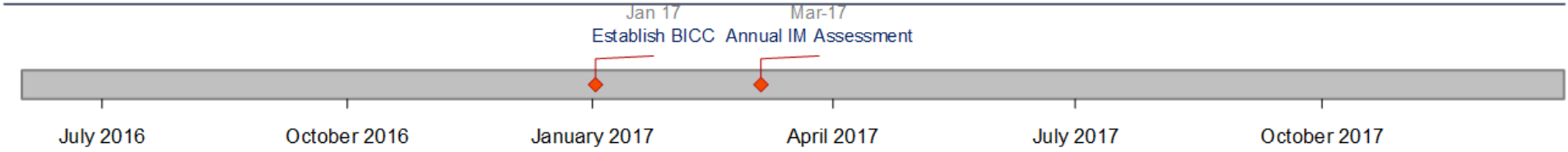
- **Platform**
  - Technologies & Tools for building information capabilities, analytic capabilities and decision capabilities
- **Portfolio**
  - Develop a balanced portfolio of BI initiatives that includes technology and analytics projects, as well as capacity building/training, organizational structures/roles and policy initiatives

**for illustrative purposes only

Campus Business Intelligence Roadmap

Version 1
Updated: June, 2016

Student Experience | Financial | Efficiency | Research



PERFORMANCE – BUSINESS MODELS/ENTERPRISE METRICS

- Student LifeCycle Dashboard
- Institutional Ranking / Reseaarch Productivity Dashboard
- Enterprise Performance Management System / Dashboard

PEOPLE

- Training Workshop - Visual Analysis with Tableau
- Business Intelligence Competency Centre (BICC)
- Establish Data Stewardship – Roles & Organizational mechanisms

PROCESSES

- Data Quality Management on UWI Student Data
- Student Admissions / Student Intervention processes

DECISION / ANALYTIC CAPABILITIES

- Student Performance Predictive Anaytics
- Program Value Analysis
- Web Analytics – Student Interaction
- Tuition Default Risk Modelling
- Facilities Utilization analysis & optimization

INFORMATION CAPABILITIES / SERVICES

- Data Integration / Data as a Service
- Master Data Management for Student Data
- Data Standards Catalogue & Meta-Data Management