ITS Executive Steering Committee (ITESC)

Agenda and Materials – May 04, 2017
Agenda

Business Intelligence
  • T. Vavarutsos, K. Smith

Summer Project: 10Gb Connectivity/NGFW
  • D. Vonder Heide, J. Sibenaller

Academic Year 2017-18 Project: Box to OneDrive
  • D. Vonder Heide

Information Security Training
  • J. Sibenaller
Business Intelligence (BI) Progress

Business Intelligence Team: bi-team@luc.edu
Tony Vavarutsos – avavarutsos@luc.edu
Definition

Business Intelligence (BI) are the set of strategies, processes, applications, data, products, technologies and technical architectures which are used to support the collection, analysis, presentation and dissemination of information. BI technologies provide historical, current and predictive views of operations.

The goal is to allow for the easy interpretation of these data.

- Wikipedia
BI Progress

Purpose of presentation

• Quick review of *Business Intelligence (BI)* evolution and use at LUC
• Show LUC demos
• See what other schools are doing
• Share cost effectiveness of BI solutions
  • What started at $2,000/user down to $30/user per year

• GOAL: Increase comfort and expand access to web facing dashboards and other visualizations of LUC data
Business Intelligence technologies over time
BI Progress

BI Evolution: Data Visualization – LUC specific
Data Visualization: Gartner Magic Quadrant (MQ)
Power BI functionality which is currently in the cloud, will eventually be ported to in-house
BI Progress

Use Cases at LUC

• Classroom Utilization
• Student Profile
• Alumni Giving Based on Geography
• Sakai
Power BI (On Premise) - **consumer perspective** – Classroom Utilization Matrix
LIVE DEMOS

• Student Profile
• Alumni Giving Based on Geography
• Sakai
BI Progress

BI solutions cost for one user per year

Cost for one consumer for a year

<table>
<thead>
<tr>
<th>BI SOLUTIONS</th>
<th>Power BI - EDU</th>
<th>Tableau Online</th>
<th>Tableau on premise</th>
</tr>
</thead>
<tbody>
<tr>
<td>BI ONLINE SOLUTIONS</td>
<td>$0</td>
<td>$200</td>
<td>$400</td>
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<td>BI ONLINE SOLUTIONS</td>
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<td>$600</td>
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<td>BI ONLINE SOLUTIONS</td>
<td>$800</td>
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<td>$1,200</td>
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BI solutions *initial* cost for 100 end-users (consumers)

BI Online solutions Cost

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<tr>
<th>BI ONLINE SOLUTIONS</th>
<th>PBI – EDU $3,000</th>
<th>Tableau Online, $90,000</th>
<th>Tableau on premise, $100,000</th>
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<td>$120,000</td>
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</table>

- Power BI - EDU
- Tableau Online
- Tableau on-premise
BI Progress

BI solutions **FY17 LUC actual cost**

![Bar chart showing the current cost per year for BI solutions.](chart.png)

- **PBI – EDU, $630**
- **Tableau on premise, $12,000**
- **WebFOCUS, $45,000**
BI Progress

BI Maturity by Industry

Look Across Industries for Inspiration

<table>
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<tr>
<th>Industry</th>
<th>Rating</th>
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<td>Services</td>
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<td>2.76</td>
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<td>Manufacturing &amp; Natural Resources</td>
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<td>Other</td>
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<td>Government</td>
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<tr>
<td>Education</td>
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</table>
BI Progress

What other colleges are doing

Ivy Community College: Measures of Success

- Self-service BI users grew from 225 users to over 3,000 users.
- Model that predicted class failure with 80% accuracy. Reduced D and F grades by 3.3% through active outreach to students.
- Will receive up to $4 million in state performance funding by identifying degrees achieved but not awarded.
BI Progress

What other colleges are doing

This University Is Transforming Education Quality Through Big Data

- **Opportunity:**
  - Georgia State University was facing student advisor crunch and wanted to improve graduation rates by optimizing available resources.

- **Data and Analytics:**
  - Took help with a consulting firm, EAB and analyzed 2.5 million grades records over 10 years to create a list of factors that hurt chances for graduation.
  - It then applied predictive analytics and built an early warning system, which it calls GPS, for Graduation and Progression Success.

- **Results:**
  - System prompted 51,000 in-person meetings between students and advisors and graduation rates are up 6% points since 2013.
  - Graduates are getting that degree an average half a semester sooner than before, saving an estimated $12 million in tuition.
BI Progress

What other colleges are doing

**MOTIVATION**

Why did we need to change?

- Need for timely information
  - Data digest took 8-9 months to produce from the time of data availability
- Increase user functionality and experience
  - Many desired data cuts had to be custom build on request, and pre-existing data was separated into over 60 pages of content
  - Reduce clutter and confusion
- Improve internal process efficiencies
  - Share and create more data faster, via dashboards

Purdue – need to replace their official IR “Data Digest” site
BI Progress

What other colleges are doing

**WHAT IS IDAP?**

**THE INSTITUTIONAL DATA ANALYTICS PLATFORM (IDAP)**

- IDAP is a data storage and computation environment
  - Holds structured or unstructured data
  - Massively parallel processing for high-speed analytics
- Currently holds many sources of data
  - Student information systems
  - Learning management systems
  - Card swipe access data
  - Wireless network activity (Big Data: ~56B Rows, 20+TB raw text)
  - Ad-hoc data sources as needed
- Acts as a ‘gray box’ to hold all data in one place, making data exploration across data sets from different systems easier

Purdue – uses Tableau to generate dashboards that replace old web pages with embedded PDFs
BI Progress

What other colleges are doing

**CONSOLIDATION**

**MASSIVE REDUCTION IN USER FACING PAGES**

**Enrollment Webpages with PDFs:**

- Enrollment by Student Level
- Enrollment by College/School and by Student Level
- Enrollment by Full-Time and Part-Time
- Enrollment by Residency
- Residency as a Percentage of Enrollment by Student Level
- Full-Time Equivalency
- Enrollment by Gender
- Female Enrollment by Student Level by College/School
- Enrollment by Race/Ethnicity
- Enrollment by International Students
- Enrollment by Age
- Regional Campus Enrollment by Full-Time and Part-Time and Full-Time Equivalency
- Regional Campus Enrollment by Gender
- Regional Campus Enrollment by Race/Ethnicity
- Regional Campus Enrollment by Level and Residency
- System-wide Enrollment by Student Level
- System-wide Enrollment by Full-time and Part-time and Full-Time Equivalency
- System-wide Enrollment by Gender, Race/Ethnicity
- System-wide Level and Residency
- Enrollment by Indiana County
- Enrollment by U.S. State and Region
- International Student Enrollment by Level by Country

• In total, 61 webpages with embedded PDFs reduced to 12 dashboards, which contain **more** information than what was originally available

Purdue – uses Tableau to generate dashboards that replace old web pages with embedded PDFs
BI Progress

What other colleges are doing

Decision Support Initiative (DSI)

The Goal of the Decision Support Initiative: Transform Decision-Making

To improve decision making at all levels of Indiana University by dramatically enhancing the availability of timely, relevant, and accurate information to support decision makers.

Empower Decision-Makers

Improve Decision Outcomes

Support IU Strategic Plan 2020

Indiana University – DSI definition
BI Progress

What other colleges are doing

DSI Resources: Budget and Staff

BUDGET

$\$, $\$, $\$, $\$, $\$

STAFF

TIME

28 months

Indiana University – DSI
BI Progress

What other colleges are doing
A typical Blackboard report…

User Pain Points
- Static PDF
- No drill down
- Can’t analyze cross-courses
- Limited insight

Temple University – Fox School of Business uses Power BI to track student competency score
Stetson University – The IR department of Stetson University uses Power BI to publish all of their official data
BI Progress

What other colleges are doing

Arizona State – has very mature model and is also using Microsoft Power BI
Acknowledgement and Research:

- **Gartner Magic Quadrant for Business Intelligence and Analytics Platforms** (Rita Sallam and Others – G00270380)
- **Power BI End-To-End Features** (Melissa Coates)
- **MS BI Integration for 4 Primary Report Types** (Melissa Coates)
- **Origin of Data Visualization** (Andrei Pandre)
- **Higher Education Data Warehousing Forum**
- **Microsoft Higher Education DW/BI/BigData Community**
- How to innovate with Information: 40 Real-worlds Examples – Gartner Data and Analytics Summit 2017 (Douglas Laney)
- **BICC to ACE: From Command and Control to Collaborate and Enable** – Gartner Data and Analytics Summit 2017 (Cindy Howson)
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Internet Usage

Custom time range 16.09.15 0:00 - 17.09.15 0:00

Datasource: Data Transfer Rate

Network Load mren-960 / ge-3_2_1-Loyola-University-via-GigaMAN-[AS7968]

Load (bps)

- Input Rate 112.36 Mbps last 77.72 Mbps avg 112.36 Mbps max
- Output Rate 872.37 Mbps last 643.60 Mbps avg 872.37 Mbps max

Custom time range 05.04.17 0:00 - 06.04.17 0:00

Datasource: Data Transfer Rate

Network Load mren-S60 / ge-3_2_1-Loyola-University-via-GigaMAN-[AS7968]

Load (bps)

- Input Rate 70.81 Mbps last 72.94 Mbps avg 134.52 Mbps max
- Output Rate 956.51 Mbps last 555.84 Mbps avg 938.44 Mbps max
Current Internet Connectivity
Proposed Internet Connectivity
Information Security Impacts

• Why did we look into this?
  • We need to provide information security protection on 10Gb worth of internet traffic. Our current Intrusion Prevention System at Lakeshore has a maximum capacity of 3Gb.
  • Upgrading our Trend Micro Tipping Point IPS from 3Gb to 10Gb was not cost effective.
  • The announced end-of-life for the Pulse Secure VPN provides a unique opportunity to possibly combine our firewalls, IPS and VPN into one product, reducing the complexity of our technology inventory.
  • Considered Next Generation Firewall technology to provide advanced threat protection.

(planned maturity step for the information security program at Loyola)

• What is a Next Generation Firewall?
  • A next-generation firewall (NGFW) is a hardware or software-based network security system that is able to detect and block sophisticated attacks by enforcing security policies at the application level, as well as at the port and protocol level.
  • NGFW’s typically integrate three key assets: enterprise firewall capabilities, an intrusion prevention system (IPS) and application control. For this analysis we also included virtual private network capabilities.
Future State – Next Generation Firewall, Threat Prevention & LSA/VPN

10G
Internet
Internet Router
Next Generation Firewall
IPS/LSA
Campus Network
High Security
Next Generation Firewall
IPS/LSA
High Security

NGFW Selected:

[Image of Palo Alto Networks logo]
Value of a NGFW

- Fully functioning state of the art firewall
- Advanced cyber threat protection/real-time notification and blocking of malware
- Zero day attack prevention (sandboxing)
- Granular site blocking capabilities (Weebly ex.)
- Fully functioning VPN
- Eliminate multiple devices, 3-1
  - Firewall
  - Cyber threat prevention
  - Virtual private network

- Palo Alto NGFW
  - Scored the highest during our “bake off” comparison
  - Best NGFW in the Market
  - Sizing based on Campus need
  - Best price point of 4 options reviewed
  - Used by 50+% of polled EDU’s (incl. Fordham, Marquette, Xavier, USF)
10Gb Internet Bandwidth/NGFW Next Steps

- Infrastructure & NGFW equipment ordered
  - Delivery scheduled for June
- Equipment installs scheduled for June
- Administrative Training - June
- 10Gb circuits ordered & scheduled for July
- Validation beginning August 1st
- Live for FY18 Fall Semester

High Level Timeline

- 1/1/2017 - 4/30/2017 DESIGN & ARCHITECTURE
- 5/1/2017 - 7/15/2017 EQUIPMENT/SERVICE DELIVERY
- 6/16/2017 - 7/31/2017 TRAINING & CONFIGURATION
- 8/1/2017 - 8/18/2017 VALIDATION
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Box to OneDrive

- Beyond storage, Box filled Loyola’s collaboration need

- OneDrive for Business part of Loyola’s existing Office 365 suite
Benefits Over Box

• Storage Capacity
  • 1TB per Individual VS. 54TB Shared for All

• Improved Security
  • Includes DLP / Auditing / Multi-Factor

• Real-Time Collaboration
  • Same Document, Same Time

• Office 365 Integration
  • Integrates into Email

• Windows 10 Integration
  • No Download to Synchronize Files/Folders

• Cost
  • OneDrive - Enterprise Agreement
Side-By-Side
Current Cloud Storage Usage

- Average Daily Users
  - Box – 450
  - OneDrive – 400

- Top 5 Users

<table>
<thead>
<tr>
<th>USER</th>
<th>STORAGE</th>
<th>USER</th>
<th>STORAGE</th>
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<tbody>
<tr>
<td>Facilities Shared Group</td>
<td>105 GB</td>
<td>Steve Kim</td>
<td>1 TB</td>
</tr>
<tr>
<td>Jessica Brann</td>
<td>50 GB</td>
<td>Rafael Arias Camero</td>
<td>174 GB</td>
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<tr>
<td>James Collins</td>
<td>44 GB</td>
<td>Chlece Neal</td>
<td>141 GB</td>
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<tr>
<td>Gina Kuffel</td>
<td>35 GB</td>
<td>Matthew Schreier</td>
<td>105 GB</td>
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<tr>
<td>Rodney Dale</td>
<td>32 GB</td>
<td>Jim Sibenaller</td>
<td>103 GB</td>
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Storage Growth
Migration Options

• Automated Box Migration
  • Retain Permissions w/ Loyola Users

• Manual Box Migration
  • Offers a Phased Approach

• Automated “U” Drive Migration
  • Currently Testing Within ITS
Migration Timeline (PROPOSED DRAFT)

- Working with Microsoft to Migrate Several Test Users
- Announce Fall Semester
- Box – “Read Only”
- Box Officially Retired December 2017
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<table>
<thead>
<tr>
<th>Awareness Program Components</th>
<th>Frequency and Usage</th>
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<tr>
<td>Posters</td>
<td>Annually during Cyber Security Awareness Month</td>
</tr>
<tr>
<td>Web Site</td>
<td>Online &amp; available to all</td>
</tr>
<tr>
<td>Social Media</td>
<td>Weekly postings</td>
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<tr>
<td>Newsletter</td>
<td>Monthly distribution</td>
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<tr>
<td>Coffee Sessions</td>
<td>Semi-annually at each campus</td>
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<td>Department Sessions</td>
<td>By request, average 1-2 per semester</td>
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<tr>
<td>Classroom Guest Lecture</td>
<td>By request, average 1-2 per semester</td>
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<tr>
<td>Emerge Class</td>
<td>Semi-annually at each campus</td>
</tr>
<tr>
<td>Video Training</td>
<td>Non mandatory, &lt; 2% participation</td>
</tr>
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</table>
Mandatory Information Security Training

• Proposal
  • Mandatory annual training for all faculty/staff
  • Training to commence in Fall FY18
  • 7 Videos, 23 minutes
  • No video longer than 5 mins
  • Learning outcome after each video
    o Test out in subsequent years
  • Total time approx. 45 minutes

• Process
  • Utilize Sakai Collaboration Space (or better tool if identified)
  • Reminders & escalations
  • Segment by Campus/Staff Type for ease of management
  • Allow to save and come back to finish
  • Allow 45 days to complete
  • Non completion will result in disabled login
<table>
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<tr>
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<th>Time</th>
<th>Topics</th>
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<tr>
<td>January 26, 2017</td>
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<td>Project Portfolio Prioritization Results, Status Updates – Major Upgrades</td>
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<td>o Student System, Phone System, Advance, Document Mgmt</td>
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