Visual Analytics with Tableau Software
Who is your presenter today?

Enterprise Architect @ Tableau

• I work with Strategic Accounts across Public Sector – SLED to facilitate Tableau deployment, usage, and adoption;

Joined Tableau on March 16, 2015

• 18 Years of Prof. Experience
• Lots of time working with Financial Management, ERP, and deploying Legacy BI Applications in the Pentagon and around the beltway;
• I am a Hokie, a Liverpool Supporter, I coach soccer, love to hike, fish, not run, and take long road trips to the Western US
What is my talk about today?

- What is Tableau?
- Why Does Visual Analytics Matter?
- Why should you have a visual approach to Open Data & Transparency?
- What does it actually look like when you Tableau?
What is Tableau?

Tableau is the leading Data Analytics & Visualization Platform in the World!

More than 60,000 customer organizations worldwide use Tableau to solve their most important data challenges;

Those customers range from the largest retailers in the world, to the smallest non-profits that all use the power of Tableau to be masters of their data;

Even better... in the Public sector, all 50 States, all of the Top 10 Largest Cities, and all of the Top 10 Largest Counties in the United States use Tableau to drive their mission of constituent services.
Well What is Our Mission?

- In the most efficient, effective, collaborative, beautiful, & meaningful way possible;
- We empower people to ask and answer not just the obvious questions they have, but to discover those that they don’t know they have;
- We enable freedom of choice, expression, and engagement through the most flexible analytics platform available;
What Does The Tableau Platform Enable?

1. **Data Access**
   - Live | In-memory | Hybrid Connectivity

2. **Data Prep**
   - Data Blending | Query Federation | Visual Data Prep | Auto Data Modeling

3. **Governance**
   - Centralized Data Sources | Certification | Usage Analysis | Permissions

4. **Content Discovery**
   - Projects | Recommendations | Versioning | Search

5. **Analytics**
   - Visual | Ad-hoc | Advanced | Spatial | Calculations | Statistics

6. **Collaboration**
   - Alerting | Subscriptions | Storytelling | Sharing | Discussions

Deployment

- **ON-PREMISES**
- **CLOUD**
- **HOSTED WINDOWS**
- **LINUX**
- **MAC**
- **MULTI-TENANT**
Who uses Tableau?

Adam – Executive
- Needs to just know
- Needs to be mobile
- Always asks questions after he sees the first answer
- **Dashboards**

Norm - Data Architect
- Builds joins, hierarchies, calculations and other meta-data
- **Governance**
- **Metadata Management**
- **Security**
- **ETL Integration**

Susie – IT Manager
- Validation of data source and calculations
- User Experience focused
- **Governance**
- **Publishing Lifecycle**
- **Standards & Compliance**

Chris - Business Analyst
- Knowledge worker
- Excel user
- Exports data from other tools to Excel
- Wants to Tableau
- **Ad Hoc Analytics**
- **Data Blending**
- **Visualization**
Why Should You Tableau?

Data is an Opportunity... Tableau empowers you to take full advantage of that opportunity

Ease of Use
- The visual is the interface for the data, and not just a way to display the result.
- Complements humans’ natural ability to ask questions.
- A seamless and undisturbed workflow, as opposed to a set of features and capabilities.
- Easy to deploy, administer and maintain.

Analytical Depth
- Going from simple analysis to more complex exploration is easy.
- Understand your data with an iterative and explorative journey.
- Access, query and display all your data.
- Powerful statistical capabilities are easy for everyone.
- Push the boundaries and explore every angle, because a wrong path will never require starting over.

Choice & Flexibility
- Consistent powerful analytical experience regardless of your underlying infrastructure.
- Value of data realized to a single user, and equally to thousands across an enterprise.
- Have the flexibility to interact with and gain value from data at any level.
- Leverage and extend the value of your existing data and technology investments and platforms.

Community
- We do not have a customer base, we have a fan base.
- We believe in the power of peer support and collective learning
- We think our customers are smarter and know more about what they need than we will ever be.
- We focus on building people’s data skills.
- We help our customers build internal communities to drive customer success.
What About Open Data & Transparency?
Why should you have a visual approach to Open Data & Transparency?

Open Data in Government is nothing new. Since 1967, the Freedom of Information Act (FOIA) has provided the public the right to request access to records from any taxpayer funded entity.

However, that process is often burdensome, redundant, and generally takes so much time to produce, that another nearly identical request has already taken its place.

But you still have to fulfill it.

What about a different approach? Let’s see how it can evolve?
You’ve seen this right?
What About This One?
This is good right?
This is built with the same exact, boring data as the previous three...
Staple it together

- It makes sense to tell the story you want, vs. letting journalists and others tell your story for you;
- FOIA requests can become Tableau Dashboards to reduce production of redundant requests;
- You can still make the data available to your constituents via Tableau;

Let’s see how we can take advantage of the power of Tableau to address the open data challenge
Ask and Answer with Tableau
Navigating Cannabis Tracking Systems
Denver Marijuana Management Symposium 2017
About Us

What We Do
Software that allows governments and businesses to comply with all tracking requirements, and improve operations with robust data reporting.

Primary Objectives
Public safety through preventing diversion/inversion and facilitating safe and compliant operations.

Federal Guidance Carried Over
Consulted with the DEA and HIDTA to develop systems for tracking pharmaceuticals as a precursor.

Leaders in Innovation
First real-time Track and Trace System
First open-source API
First to integrate secure and transparent lab testing module
Government and Commercial Systems

“Track and Trace”
Government platform. Aggregates and analyzes compliance data across all licensees.

State has access to all necessary data for reporting.

“Seed to Sale”
Business platform. Captures data elements at each point of the supply chain. Focuses on business intelligence.

Produces reports necessary for licensees to submit to the State.
Cannabis Tracking

Following the life-cycle

Product Lifecycle Tracking
Follow the product through each of various life-cycle stages. Including composition changes and licensee transfers.

Product Quantity / Location Tracking
Real time representation of the precise location and size of each inventory lot.

Chain of Custody Management
Retain unadulterated and timestamped records of each system user who interacts with the inventory in any way.
Cannabis Tracking

Keeping up with changes

Product Origin Traceability
Trace complete genealogy to the product’s source, despite current disposition and inclusive of chain of custody data.

Product Workflow Control
Implement controls on when/how a process can be completed, and which processes a user has access to complete.

Data Management
Capture and retain robust inventory lifecycle data that goes below the surface to record inventory attributes and activity logs. Maintain data segregated and secured as necessary.
Real World Problems
Avoiding inflexibility in a changing environment

• Implementing Seed to Sale in the real world can become nuanced very quickly.

• Cannabis processes are often as much an art form as a science.

• Processes are often unique to individual licensees.

• Unique and varied processes will produce different data that still needs to “sync” with state systems.
• **Decentralized**: The State does not provide a central system or database. Each licensee uses their own business system and regularly submits exported reports to the State.

• **Distributed**: The State provides a central database that all licensees must upload data to. They may use their own business system but must still report the data digitally (API integration) to the central database.

• **Centralized**: The State provides a central system that all licensees must use. No use of other business system is valid or “official” as a system of record for reporting.
Data Propagation Sources

Closed Loop System

General Plant Lifecycle

Clone / Seed Pulled Internally

Output
Data Propagation Sources

Open Loop System

Clone / Seed
Sourced Externally

General Plant Lifecycle

Clone / Seed Pulled Internally

Output
System of Controls

It’s all about consumer safety

- Inventory quarantines for inspections
- Integrated laboratory testing requirements
- Immediate product recalls and freezes
- Inventory seizures and other regulatory actions
- Delivery and manifest policies upheld
- Consumer purchase limits
- Be in the driver seat
## Tracking Consumption Limits

*Fighting diversion and keeping consumers safe*

<table>
<thead>
<tr>
<th>Common Models</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product / Inventory Type</td>
<td>Limit based on count per product type during period.</td>
</tr>
<tr>
<td>Cannabis Content</td>
<td>Limit based on quantity of flower represented by concentrate.</td>
</tr>
<tr>
<td>Cannabinoid Profile</td>
<td>Limit based on cannabinoid ratio represented within the product.</td>
</tr>
</tbody>
</table>
Security and Disaster Recovery

Amazon AWS GovCloud

Amazon offers its AWS GovCloud to authorized government agencies and their contractors who have been properly vetted for eligibility. It has been granted a Joint Authorization Board Provisional Authority-To-Operate (JAB P-ATO) and multiple Agency Authorizations (A-ATO) for high impact level. Agencies such as the Department of Defense have utilized Amazon’s GovCloud for its reliability and security.

Been there, done that

BioTrackTHC is currently the only provider in the space that has already deployed a live seed to sale cannabis tracking solution, the state of Hawaii, within a FedRamp certified environment. BioTrackTHC invested several months converting, testing and finally deploying its software, base images and tools into the FedRamp approved environment.
Market Fairness
Avoiding unfair advantages and negative media

• Need for robust and up to date software APIs.

• Not to be burdensome on the industry.

• Ensure State solutions are accessible to all.
Banking Solutions

- Banks will only work with licensees who use proper reporting tools.

- Cryptocurrencies and “Seed to Bank” have become hot topics.
Regulations in Flux

Really? On a Monday?

- Keeping regulations up to date is critical.

- The process can be very disruptive to regulators and licensees alike.

- It is important to consider the flexibility of your chosen Seed to Sale solution.
The Solution

The right approach

Having the right approach and engaging with your development partners is key to navigating implementation successfully.

Successful Approach

• Be Proactive
• Be Informed
• Be Involved
• Look for Lessons
Thank You!  ¡Gracias!  Merci!  Dank je!

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Marijuana Management Symposium Presenter

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