

## UCOP Visual Data Analytics and Insights Service

### The Problem

The Office of Human Resources is responsible for system wide human resources and programs. This office oversees all aspects of university wide health and welfare programs; and policies as well as administration of UC retirement operations.

UCOP HR Benefit Information Systems (BIS) team wanted to find an efficient way to get insights on the data they receive from various sources. Cognos is the current reporting solution and requires a heavy dependence on IT for reports and implementing changes completes with several other IT projects. HR BIS was looking for a solution that had the ability to empower their users to be self-sufficient and a solution that could do the following

- User friendly and mobile capable
- Ability to tell a unique story using various disparate data sources in HR
- End users ability to have quick insights into data
- Faster lead time to develop new reports and distribute
- Should be dynamic and Interactive
- Should allow for collaborative report development
- Should be cost effective

The current technology is not user-engaging or dynamic nor sufficient to meet the needs of the BIS customer, thus limiting their productivity.

With the wealth of information at their disposal and the critical nature of decision making, the BIS group needed a service that would empower the analysts to be self-sufficient and be more efficient. The new service is geared to control the cost and create value through ease of use and adaptation.

### Project Goals and Timeframe

#### Goals:

Implement a Visual Data Analytics solution which is easy to learn and master for the average business user. As an effective Business Intelligence product it should have wider end user adoption with end users in the UC Retirement Administration Service Center (RASC), Application Support Group (ASG), Business Partnerships and Services (BPS) and other business groups.

This would eventually serve as a de-facto framework for executing future Data Visualization projects.

A project team comprising of multiple staff members from Human Resources - Benefits Information Systems (HR-BIS) and Information Technology Services – Enterprise Application Services (ITS-EAS) and OSMG embarked on the project. The team was based at the Kaiser Center and 20th street OSF locations in the Office of the President.

## Timeframe:

The effort started in the middle of 2016. The initial challenge was to procure the data as the source systems were themselves in flux with new implementations going live for e.g. Retirement Choice Program. We still made progress with a lot of headwinds and successfully delivered the solution.

We followed a multi-phased approach:

### Phase I (Dec 2016)

- i) Research
- ii) Architecture & Setup
- iii) Requirements Definition - Extensive Collaboration; Agile methodology; Iterative process
- iv) Design and Implement:  
(a) Retirement Choice Program; (b) Actuarial ; (c) Call Center – Phase I

### Phase II (May 2017)

- i) Design and Implement Data Warehouse
- ii) Call Center – Phase II

The above systems are live in Production. These services are now being used actively providing the business users access to aggregated information in a unique unprecedented way which was not possible earlier. The users are able to slice and dice the data; the way they would like to.

## The Solution: A Comprehensive Visual Data Analytics Service

The HR-BIS data originates from every campus and medical and laboratory systems via secure channels. The data is then aggregated in a central system at UCOP. We also get data feeds from Fidelity (external vendor), Interactive Intelligence, Salesforce and others via secure channel i.e. PCSSC (Berkeley).

The data is then aggregated and obfuscated for reporting purposes and stored in the reporting database.

### Steps

- Architect the solution
- Set-up new infrastructure – Databases, Gateways, SAAS
- Processes to consume the data from all campuses
- Processes to consume the data from third parties (Fidelity, InIn, Salesforce)
- Production Control Shared Services Center (PCSSC) Jobs
- Design the Staging database
- SQL Server Integration Services (SSIS) Jobs to populate the Staging and DW tables.
- Design the Data Warehouse and SSAS cube
- Analyze and Transform the staging data into the Data Warehouse
- Create Visualization using Power BI
- Active Directory Integration with Power BI
- Publish Reports online
- Access via the web or on mobile device

New Technologies were used throughout the project.

### Database

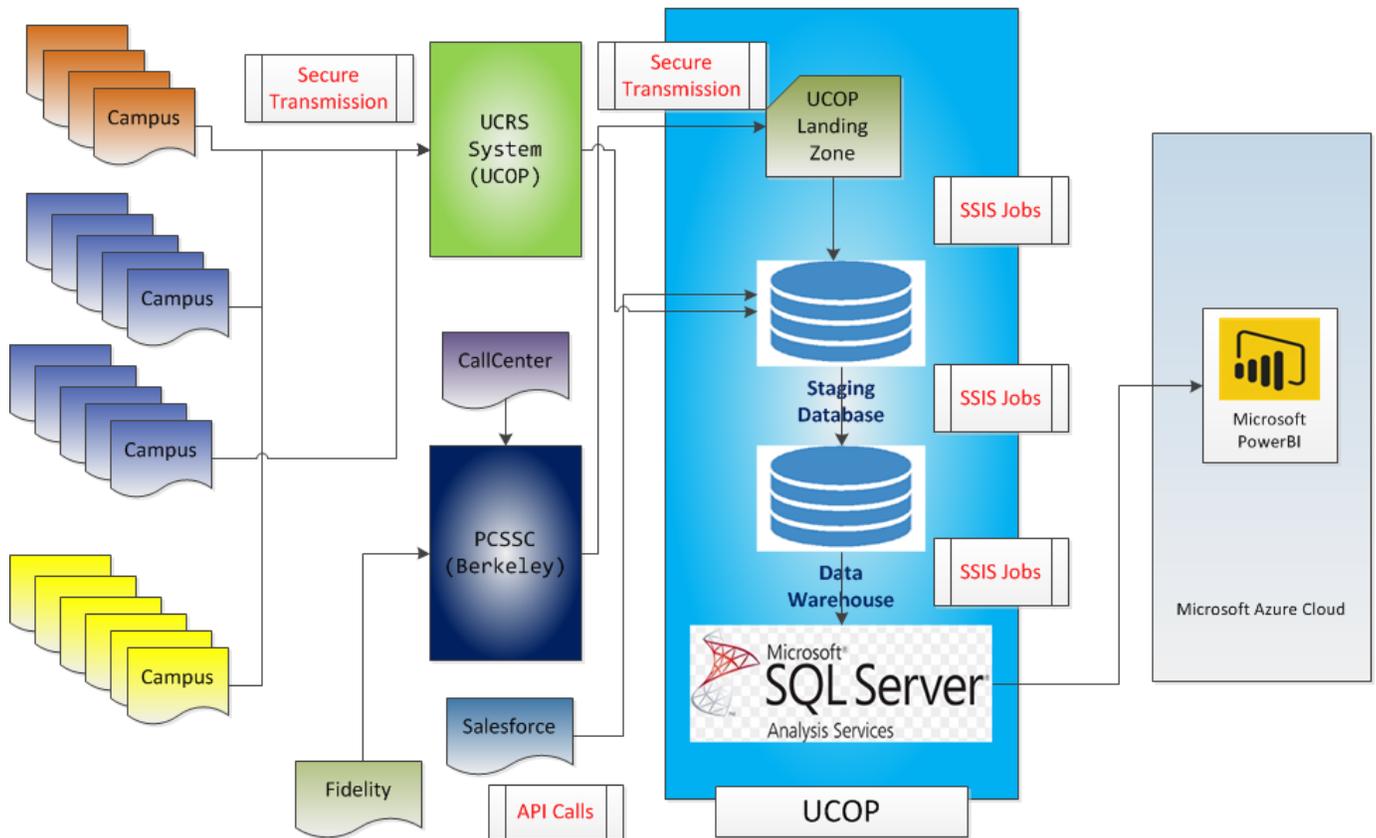
- Microsoft SQL Server Database Engine
- Microsoft SQL Server Integration Services (SSIS)
- Microsoft SQL Server Analysis Services (SSAS)

### Data Visualization

- Microsoft Power BI Desktop
- Microsoft Power BI SAAS Service (Azure)

- Microsoft Power BI Enterprise Data Gateway

## UCOP Data Visualization Data Flow



The project created a comprehensive Visual Data Analytics platform to empower the HR-BIS to efficiently manage their data assets at a minimal cost. Our challenges were in quickly getting a working solution that could unify our organization's data, whether in the cloud or on-premises in a cost effective way with faster time to market. The focus was also to have an easy integration with our AD, and the solution was required to be both Web and Mobile ready. The project utilizes the Microsoft cloud-based business analytics service called Power BI. Microsoft Power BI transforms data into rich visuals for easy comprehension, pattern recognition and analysis. The project focused on enabling the end users to become a Power User in Data Analysis and Reporting. We evaluated multiple competing products and settled on Microsoft Power BI for our Project. The integration was seamless with the rest of the Microsoft database stack. Educational licensing cost made Power BI affordable for us; also it integrates really well with AD (Active Directory); is secure (HTTPS) and mobile capable. We faced initial challenges understanding the Power BI stack and getting it to work with the various on premise and cloud components. We chipped through the hurdles one piece at a time and finally had the various pieces figured out and configured correctly. There are various components to creating Data Visualization using Microsoft Power BI.

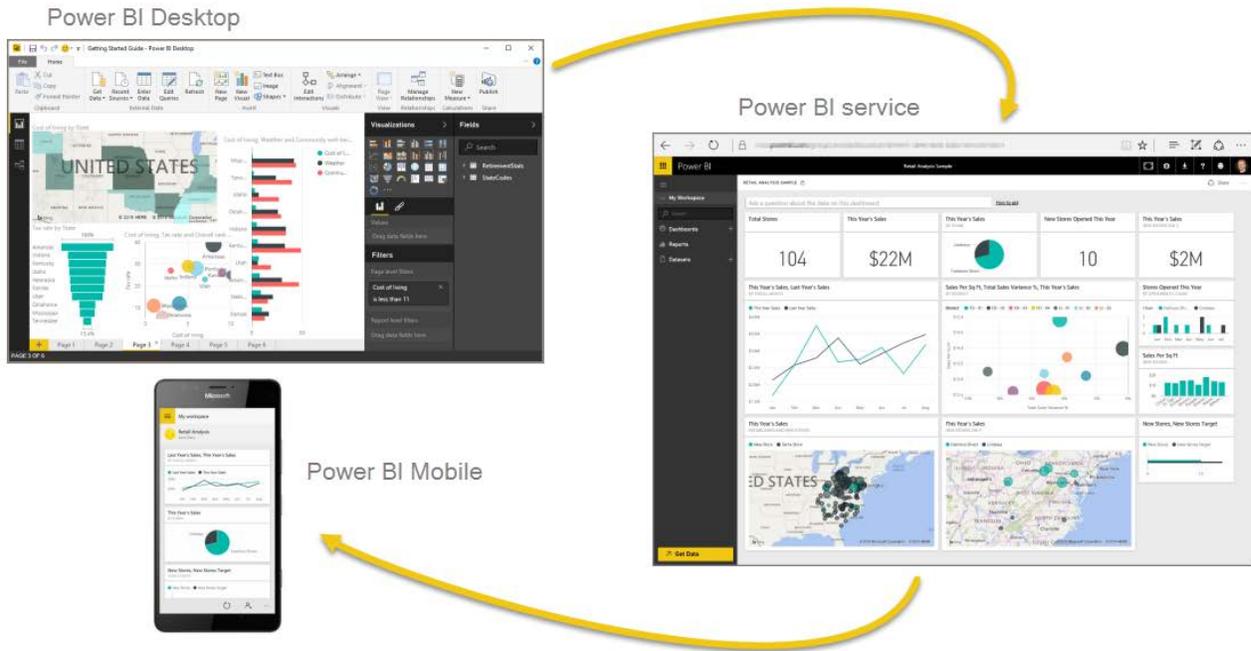


Image Source: Microsoft website

- Power BI Desktop Tool – Enables easy Report creation
- Power BI Service
  - Active Directory Integration – Authentication & group authorization to secure & limit access to the reports
  - Collaborate and edit the report in real-time with colleagues
  - Publish or view the Report and share with colleagues/superiors – advanced data manipulation/filtering
- Mobile Application
  - Mobile Application on Windows, iOS and Android
  - Active Directory Integration – Authentication & group authorization to secure & limit access to the reports
  - Anywhere, anytime connection to the data
  - Easy data interaction in a touch-optimized experience

## Reporting

The Power BI Desktop Tool allows the business users to access the SSAS cube and the database to design the report layout of their choosing. They then collaborate online in real-time using the Power BI service to finalize the Dashboards. The business users have over time become power users of Power BI. The report queries are based on the data models, not affect the data warehouse tables directly. The Data Model was designed in a collaborative manner to ensure user friendly names which are intuitive to the end user. The queries are very responsive and predictable as they have been well thought out. Once published the reports are shared with the other group members. The reports or dashboards can be securely accessed online or on the mobile phone to gain critical insight anytime on the go.

## Implementations

### a. Retirement Choice Program

University of California implemented the new 2016 Retirement Tier for employees hired July 1, 2016 and after. When it comes to choosing the primary (required) retirement benefits, the new hires have two options — Pension Choice or Savings Choice.

The project provided a dashboard to the HR-BIS team to monitor the new enrollments as they would

happen. The data is anonymized in the report for security considerations. This provided the HR-BIS team valuable insight into the enrollments as they are taking place – the various factors, demographics, age, location etc. which influence the election. Historical analysis is supported. The insight to this data can be used to determine future retirement benefits programs.

b. Actuarial Reporting

The actuarial dashboard was prepared to analyze the data for University of California Retirement Plan (“UCRP”) as of July 1, 2016. The actuarial data is generated annually. The valuation is performed annually to determine if the assets and contributions are sufficient to provide the prescribed benefits. The dashboard and the reports presented interesting facts of covered active members, terminated vested members, retired members, disabled members and beneficiaries as of July 1, 2016.

It would help validate economic assumptions regarding future salary increases and investment earnings; and other actuarial assumptions, regarding member terminations, retirement, death, etc.

c. Call Center Reporting

The Call Center project is to gauge the efficacy of the Call Center operations. Objectively help determine if the required staffing levels are met during peak hours and peak seasons e.g. enrollment time etc. This would help drive efficiencies. The report would span two disjoint datasets (data sources) using the time dimension providing a unique consolidated perspective. The following are items generated in the dashboard; determine how many calls translate into actual cases. The average calls wait times. Determine average time to resolve a case. The different kinds of cases opened. Determine problem areas and root cause analysis.

The Call Center project is a unique achievement desired by business for a long time - To bring the data from two disparate systems InIn and Salesforce (CRM) and relate them on a single dashboard.

## Outcomes and Impact

The Visual Data Analytics and Insights service has been very well received by the business users. With the growing data the users feel more compelled to use the service to gain insight for better decision making. The data is growing at a rapid pace and so is the adaptation to this new service which is extremely easy to use and highly interactive; empowering the business user.

## Project Participants

### Project Implementation Team

The key project team included staff at the UCOP ITS-EAS department and many more participated in day to day work

- Donna Yamasaki, Senior Applications Manager, Technology Sponsor
- Bhanu Polakam, Applications Program Manager
- Sushant Prasad, Senior Web Application Developer
- Rajani Prakash, .NET Information Systems Analyst

### Project Stakeholders (HR-BIS)

The Benefits Information Systems team worked closely with the business staff to define the requirements; perform testing and provide prompt feedback for improvement.

- Esther Cheung Hill, Director, HR-UCOP Human Resources Benefit Information Systems, Business Sponsor
- Aliya Dibrell, Manager
- Christy Thompson, Manager
- Tashi Chagatsang, Business Systems Analyst