

Reporting, Data Analytics and Business Intelligence Standard

Introduction

This standard specifies reporting, data analytics and business intelligence standards for State of Oklahoma agencies. The standard describes frameworks, tools and BI platforms included in the state reference architecture. This document and all information contained within are applicable to all State of Oklahoma agencies and partners.

Purpose

The purpose of this document is to describe the state standard for reporting, data analytics and business intelligence. The goal of this standard is to control costs, reduce technical debt and develop the analytics community of practice in state government through adoption of a standard set of tools for generating tabular outputs, visualizations, reports, data models and dashboards. Developing on common tools and platforms creates a shared context for understanding state data and facilitates knowledge transfer between agencies, departments and teams.

Definitions

[Glossary of Data-Related Terms \(Oklahoma.gov\)](#).

Report – A static document, table or visualization that gathers data into one place and presents it visually.

Dashboard – A centralized, interactive and visual display of data used to monitor conditions or facilitate understanding.

Data analytics – Interpretation of information in context, typically through the use of statistical measures, data models, reports and dashboards.

Key performance indicator – A critical indicator of progress toward an intended result. KPIs are typically numerical targets for measurements or derived statistics that grant insight into an organization's performance.

Business intelligence platforms – Software platforms that enable enterprises to build BI applications by providing capabilities in three categories: analysis, such as online analytical processing; information delivery, such as reports and dashboards; and platform integration, such as BI metadata management and a development environment. (Source: [Gartner](#).)

Self-service analytics – A form of BI in which line-of-business professionals are enabled and encouraged to perform queries and generate reports on their own with nominal IT support. Characterized by simple-to-use BI tools, dashboards and the use of aliasing and semantic layers to make data easier to interpret. (Source: [Gartner](#).)

Advance analytics – A form of BI in which analytics professionals carry out a detailed, code-driven investigation. Characterized by exploratory data analysis, statistical models and machine learning.

Google Cloud Platform – Provides infrastructure as a service, platform as a service and server-less computing environments, in addition to a multitude of cloud service offerings.

- Big Query – GCP scalable, managed enterprise data warehouse for analytics.
- Google Data Studio – Google’s entry-level, cloud-based visualization and dashboard platform. Part of GCP.
- Looker – Google’s visualization, reporting and BI platform.

Microsoft Azure – Provides infrastructure as a service, platform as a service and server-less computing environments.

- Power BI – Microsoft’s visualization, reporting and BI platform. Part of the wider Power Platform line of tools for BI, automation, app development and app connectivity. If using those components of Power Platform, please refer to the Power Apps standard.

Oracle Analytics Cloud – A scalable and secure public cloud service hosting financial information for the State of Oklahoma.

Python – An open-source interpreted high-level general-purpose programming language. In the context of data analytics, Python is an industry standard language for carrying out mathematical operations, data cleansing, data transformation, data visualization, data modeling and data mining tasks thanks to a wide and well-supported ecosystem of libraries.

R – An open-source programming language built for carrying out mathematical operations and data mining.

Tableau – Salesforce’s visualization, reporting and BI platform.

Standard

Agencies developing reports, developing data analytics products or implementing full BI platforms should select tools from our reference architecture. Three general principles guide which tool to use:

- First, whenever possible, use the BI tool nearest to where the data under analysis is stored. This is to minimize ingress/egress.
- Second, whenever possible, data for analytics should be staged in one of the state’s secure cloud environments. This is to facilitate data governance and ensure security and compliance.
- Third, wherever possible, reports, dashboards and analytics products should be deployed to centrally-located reporting platforms. This is to encourage secure sharing of reports and datasets, facilitate data governance and manage technical debt.

The OAC platform is the preferred platform for self-service dashboards and associated reporting related to financial data. Projects that require integrating financial data into dashboards, reports and analytic products outside of OAC must provide justification for the exception.

For advanced analytics such as exploratory data analysis, KPI development, modeling and custom visualizations, analysts should use Python or R.

On implementation of this standard and at each review cycle, agencies will update their registry of reports and analytic products and make plans for retiring out-of-standard reports and analytic products as appropriate. Plans for retiring and replacing reports and analytic products should be made and completed within 24 months or else make a case for extension or exception.

Compliance

This standard shall take effect upon publication and is made pursuant to Title 62 O.S. §§ 34.11.1 and 34.12 and Title 62 O.S. § 35.8. OMES IS may amend and publish the amended standards policies and standards at any time. Compliance is expected with all published policies and standards, and any published amendments thereof. Employees found in violation of this standard may be subject to disciplinary action, up to and including termination.

Rationale

To coordinate and require central approval of state agency information technology purchases and projects to enable the chief information officer to assess the needs and capabilities of state agencies as well as streamline and consolidate systems to ensure that the state delivers essential public services to its citizens in the most efficient manner at the lowest possible cost to taxpayers.

References

- [OMES Reference Architecture](#).
- [Cross-Industry Standard Process for Data Mining \(CRISP-DM\)](#).
- [Team Data Science Process \(TDSP\)](#).
- [Key Performance Indicators](#).

Revision history

This standard is subject to periodic review to ensure relevancy.

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Approved by: Joe McIntosh, Chief Information Officer	