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State of Maine: A Year in the Cloud

Lessons learned while adopting Platform as a Service

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October 1–5, 2017
SAN FRANCISCO, CA

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Oct 2nd, 2017

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Safe Harbor Statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle's products remains at the sole discretion of Oracle.

Overview

- Project will replace functionality of three legacy BI applications:
  - Hummingbird BI – “GQL”
  - MS SQL Server Analysis Service Cube – “The Cube”
  - MS SQL Server Reporting Services – “Report Manager”
- Provide a single point of entry
- Improve availability of data
- Improve performance
- Improve security and governance

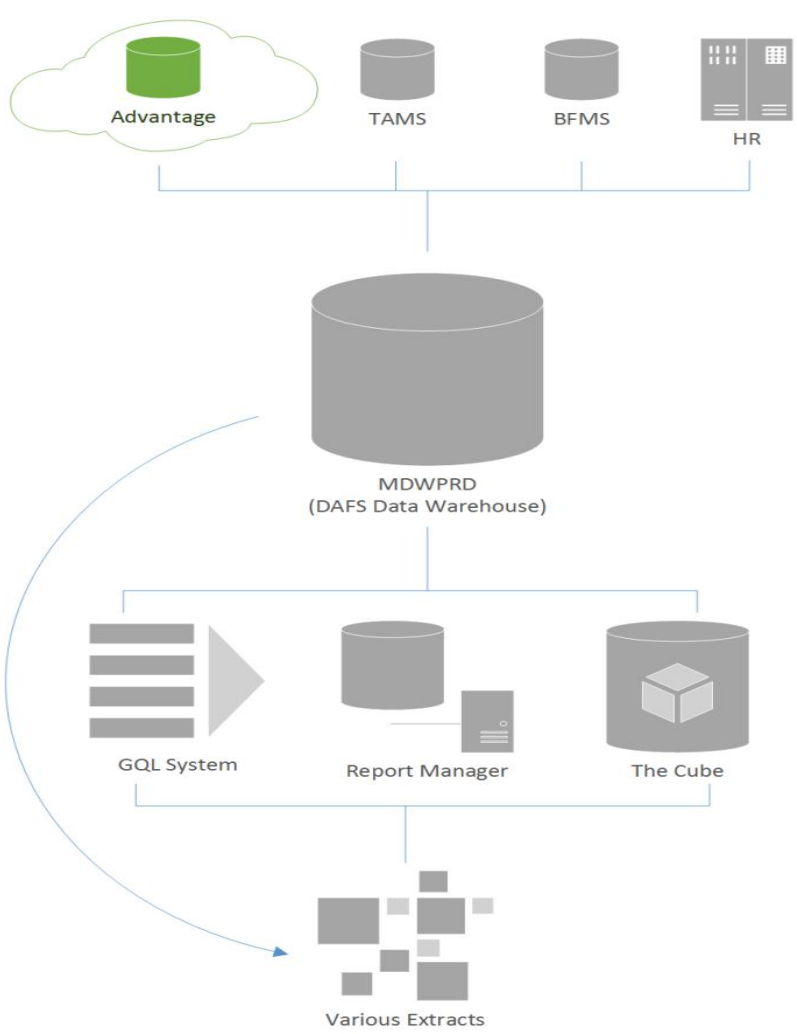
The Oracle BI Platform

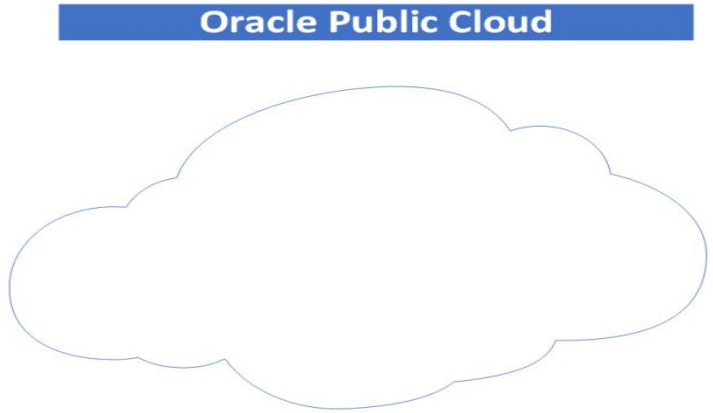
- Best in class analytics platform
  - Friendly and interactive interfaces
  - Data visualization tools
  - Mobile compatible with any device
  - Advanced capabilities for calculations and aggregations
- Best of both worlds
  - “Single pane of glass” view of governed data sources
  - Self Service BI functionality for ungoverned data sources
  - Mashup capability to merge the two
- Cloud based
  - Stay current with new features release regularly

Approach

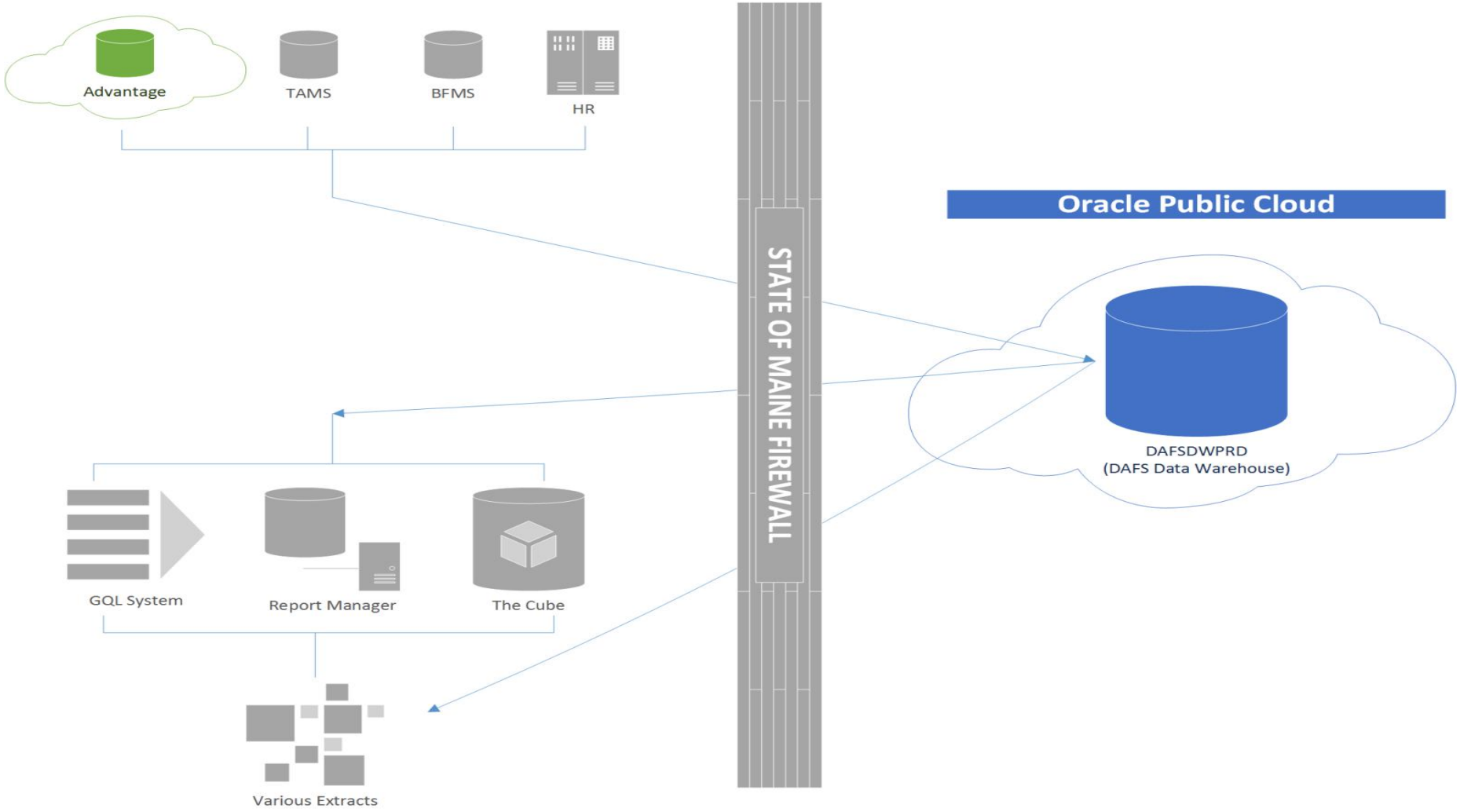
- 3 Phases
  - Lift & Shift
    - Conducted primarily by State of Maine OIT staff
    - Repositions primary data source in the Oracle Public Cloud
    - Success criteria: No Loss of Functionality or Performance
  - Reengineering
    - Conducted primarily by contracted specialists
    - Requires heavy State of Maine Subject Matter Expert input and involvement
    - Moves reporting functionality to Oracle BI Cloud Services
  - Information Portal Build Out
    - Conducted primarily by State of Maine Subject Matter Expert team
    - Expands on the artifacts built by the contracted specialists

The Original State

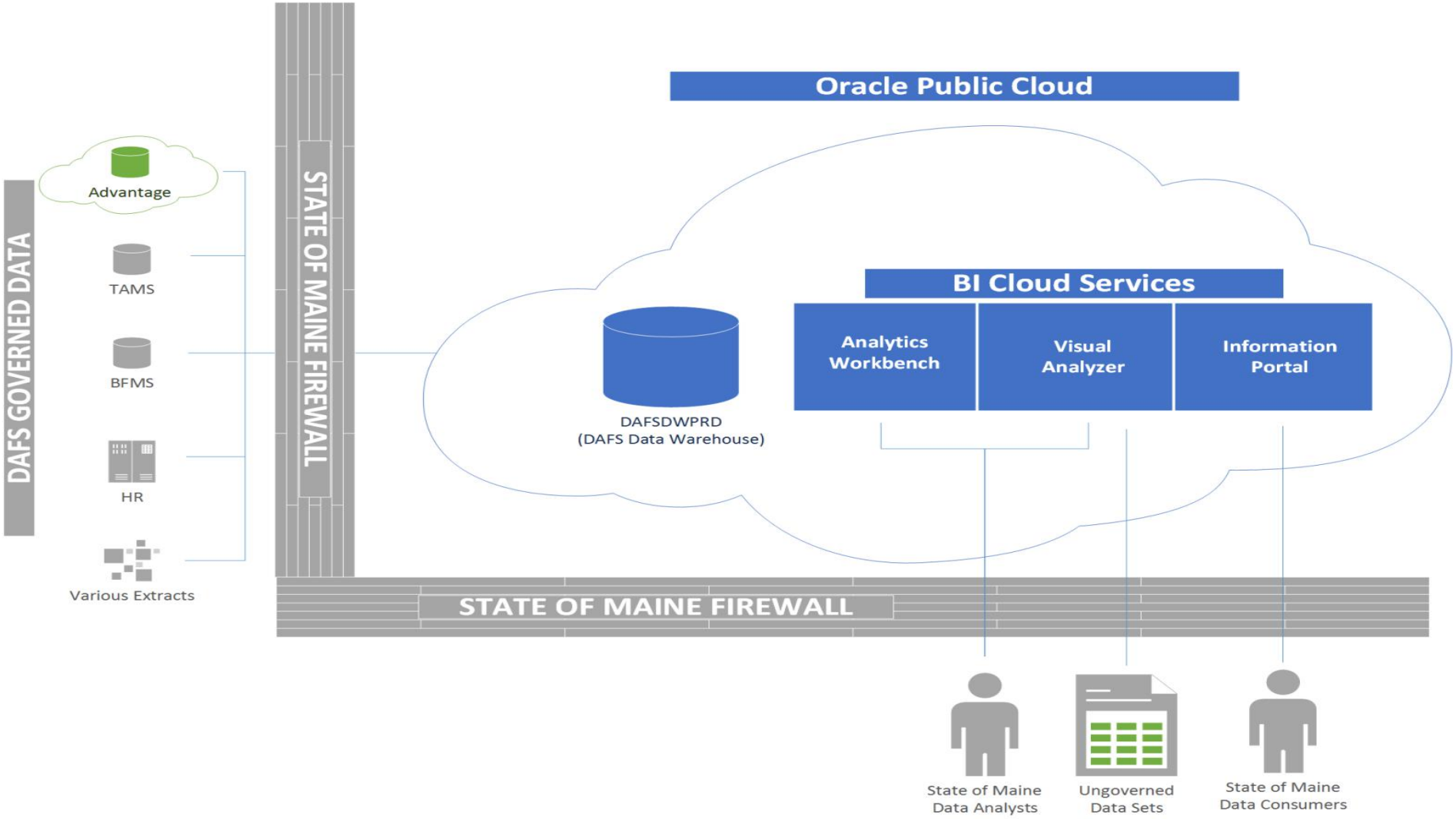




After Lift & Shift (Current State)



After Reengineering



Key Take-Aways -- (We Can Do Cloud)

- **I started this project with the belief that, *"It's just an Oracle Database."* In the long run that statement was proved correct.**
  - Office of Information Technology staff proved they have skills transferable to cloud development.
  - Oracle Platform as a Service offerings are like on premise Oracle technology
  - The PaaS platform has additional web based tooling to manage the platform
    - These products are immature, but promise easier future
  - Daily work required by Cloud parallels work required on premise

Key Take-Aways -- (Security)

- **This project moved a valuable data set beyond the ‘protection’ of the SOM firewall. The legacy application security posture was improved by:**
  - Implementing encryption at rest (AES-256)
  - Implementing encryption in flight (AES-256)
  - Implementing shared logon compensating controls (where necessary)
  - Implementing shared logon removal (where possible)
- **Infrastructure security scanning and scheduled remediation**
  - Simple patching protocols eliminated 95% of platform vulnerabilities found by automated scanning tools
- **Legacy systems have insecure components which need re-engineering on the way to the cloud, plan for them in budget and timeline.**

Key Take-Aways -- (Performance)

- **Performance of the PaaS compute and database platforms exceeded our expectations.**
  - We were able to meet or exceed legacy performance using cloud assets
- **The challenge is application layer network optimization.**
  - Network optimization at the application layer needs to become a focus
  - Cloud migrations may require fine tuning of the network to maximize performance
- **To do this more efficiently we:**
  - Established a baseline latency threshold and monitored performance with providers
  - Need to obtain better tools for network profile testing
    - Are you efficiently stuffing your packets? 'Use the carpool lane'

Key Take-Aways -- (Cautionary Tales)

- **Let the buyer beware**
  - Despite extensive due diligence we ended up in a situation where OIT had to take on unexpected responsibilities for Firewall and Unix administration.
  - Document a RACI chart by organization (Vendor & SOM) for all aspects of system maintenance for inclusion in the contract

- **Inclusive Planning**
  - The project faced delays due to staffing constraints and enterprise prioritization early in the schedule.

Key Take-Aways -- (Cautionary Tales, cont.)

- **Culture Shock**
  - Cloud represents a change in operational norms. This can cause insecurity for the status-quo. Cloud can represent a perceived loss of importance or power. To offset fear OIT should:
  - Leverage transferrable skills for PaaS implementations
  - Embrace a change to DEVOPS culture and bifurcate the workforce, allowing:
    - Resources unable or unwilling to change to continue to maintain the legacy
    - Resources ready for change to lead us to the future state
    - Create a fundamental partnership between Ops and Development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