A Report for

State of Oregon DAS

ENTERPRISE information services

Transparency Program Benchmark Assessment Final Report

8 June 2020

Engagement: 330057665

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Executive Summary

Digital government is government designed and operated to take advantage of digital data and digital technology in optimizing, transforming, and creating government services. As the journey toward digital government continues in various forms around the world, the transformational challenges for government CIOs and technology leaders are growing rapidly.

Figure 1. Government Digital Transformation and Innovation

Source: Gartner (March 2020)

Similarly, the State of Oregon – amid its journey towards digital maturity – has historically struggled with legacy technology that, while continuing to meet the needs of the State, is increasingly difficult to support and maintain. Modernization of the State's critical technology infrastructure and improvement of the State's overall digital maturity are high priorities for the State of Oregon, the Governor, the Office of the State CIO, and the Department of Administrative Services – with various initiatives in place or in-flight.

One of these initiatives is the creation of a new Data Governance and Transparency Office. The State of Oregon recently hired its first Chief Data Officer (CDO) in early 2019 to run this new office which pulled two existing programs — the Transparency Program and the Geospatial Enterprise Office — under the CDO, along with Oregon's nascent Open Data Initiative.

One of these existing programs, Oregon's Transparency Program has been frequently cited as a leader in government transparency in prior years, but the program and associated transparency portal have started to fall behind the curve of technological advancements, market trends, and best practices.

The Oregon CDO engaged Gartner Consulting to conduct an independent benchmark evaluation of the existing Transparency Program. This benchmark is driven by the Oregon CDO's desire to gain additional insights into the ways other states manage transparency programs and the opportunities Oregon should focus on to attain its future vision — particularly as the State of Oregon continues its path toward digital maturity.

The objective of this benchmark is to provide a detailed evaluation of the existing Transparency Program, which currently focuses primarily on financial data transparency, inform in-flight efforts to develop a strategy for maturing the existing program, and recommend a path forward for incorporating transparency-related initiatives into an overall vision for building out the Data Governance and Transparency Office.

This benchmark final report illuminates answers to four key questions:

1. ***How does Oregon's program compare to similar programs in other states (including scope, statutory authority, budget, staffing, and operational approach)?***

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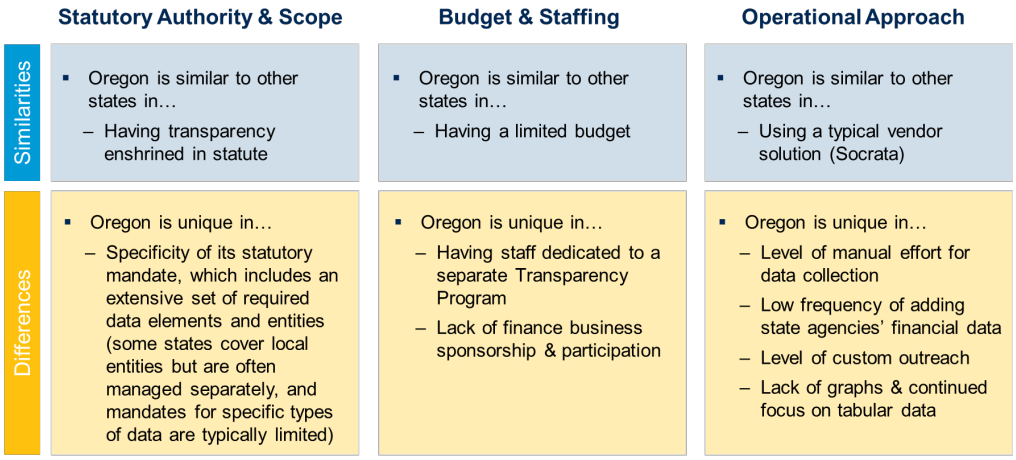
Oregon's Transparency Program was created around the same time as similar programs in other states. Over time though, Oregon has continued to legislate prescriptive guidelines to drive the program while some other states broadened focus and engineered the flexibility needed to more effectively tackle broader data related challenges in government.

Figure 2. Oregon Comparison Versus Peer States

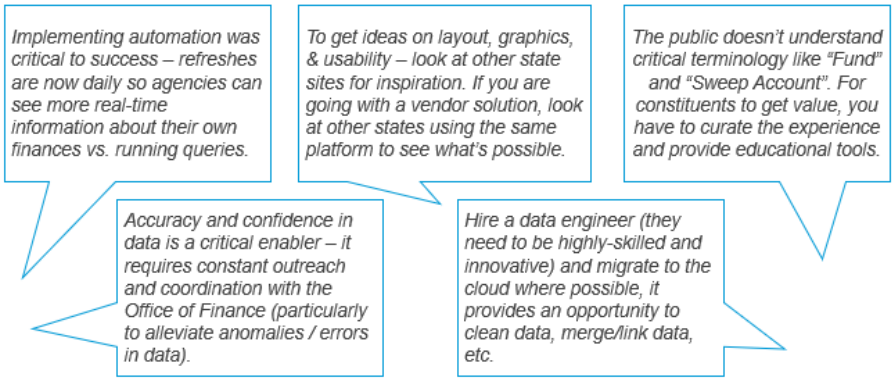


Source: Gartner Consulting (February 2020)

2. *What are the lessons learned from peer organization efforts to build transparency programs in their states?*

Peer program staff most often provided guidance and recommendations related to portal automation and usability, as well as programming staffing and stakeholder management. The figure below illustrates some of the key lessons learned from peer organization efforts to build Transparency Programs in their states.

Figure 3. Peer State Lessons Learned



Source: Peer state interviews conducted in January 2020.

3. *What are the key trends and best practices in public sector transparency programs?*

As Gartner completed peer interviews and additional market research around transparency programs and related initiatives that drive organizations toward greater digital government maturity, four themes crystalized as the most important for Oregon consideration.

An overall focus on building out a sustainable, automated data architecture/program structure is needed for the program to work. While it will require investment for Oregon to make progress, improvement can be made incrementally with modest investments over time.

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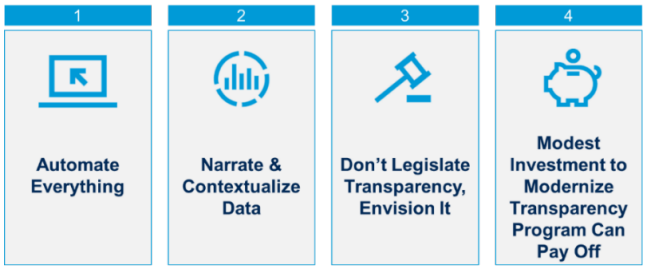
Figure 4. Four Key Themes for Transparency Trends and Best Practices



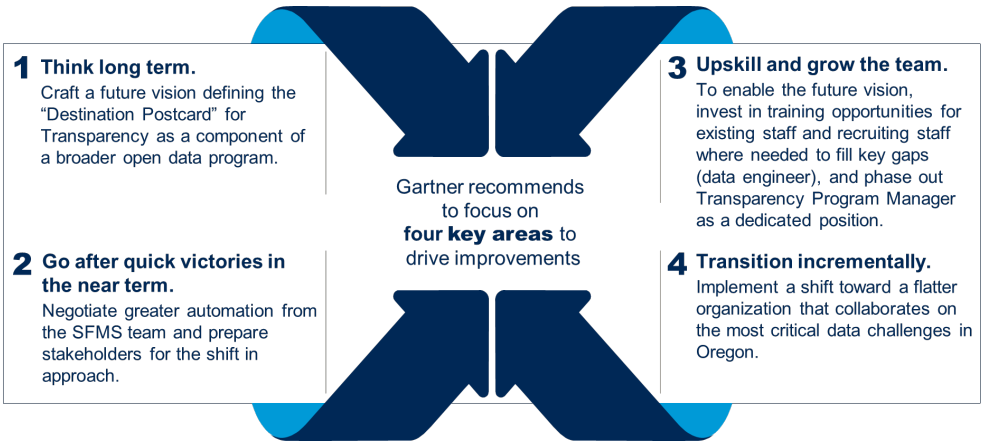
Source: Gartner Consulting (February 2020)

4. Where are the highest value opportunities to advance government transparency in Oregon in the near term, and the longer term?

Government portals and open data platforms often lack flexibility and fail to meet the needs of a digital society. Government leaders must rethink their portal strategy and evolve their approach to delivery by engaging new skills, technologies, and partners to deliver the next generation of multichannel, citizen-centric portals. Citizens' digital interactions with their government continue to evolve as new approaches and channels raise expectations.

Oregon's CDO initiated this benchmark study to help identify opportunities to improve the State's ability to deliver a citizen-centric Transparency Program and portal that drives high-quality and efficient government interactions – while further enabling the State's overall modernization and digital government maturity efforts. These opportunities have been distilled down into four key recommendations for Oregon to pursue.

Figure 5. Gartner Future State Recommendations for Oregon Transparency



Source: Gartner Consulting (February 2020)

Oregon's approach to transparency as a separate Transparency Program that's heavily dependent on manual processes is not sustainable. It's clear that eventually transparency should become a self-sustaining, mostly automated data pipeline that's enabled as a bi-product of broader efforts to address data-related challenges in government.

Oregon should pivot to an approach that prioritizes the overall growth of the CDO's office that's needed to make these recommendations a reality. Organizational redesign of the CDO's office will be a critical enabler. It will be important to break down siloes (eliminate the stand-alone Transparency Program and dedicated Program Manager position), and invest in upskilling current staff and recruiting to fill gaps. While investment can be made incrementally, progress will be dependent on making the needed investments.

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Transparency Program Benchmark Assessment Final Report

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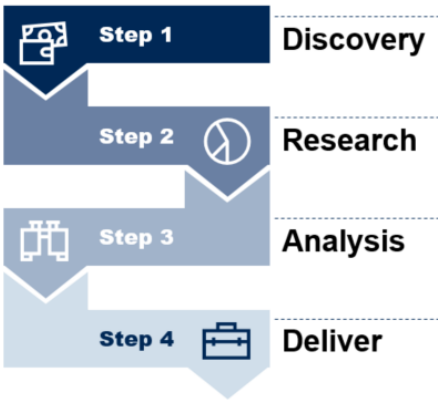
Background

Overview of Project Approach

Figure 6. Project Approach



Gartner followed a structured four-step approach for this benchmark assessment.

The first step in the process was completing initial discovery, the second step was conducting research, the third step was completing a detailed analysis, and the final step of the four-step process was delivering the results and recommendations to program stakeholders and executives.

Step 1

During the discovery step, Gartner first interviewed the Oregon CDO to get a high-level understanding of the history and current state of the Transparency Program, as well as the future program vision. Gartner also reviewed relevant program documentation and interviewed program staff to understand the program scope and statutory authority, the available budget and staffing, and the operational approach. In addition, Gartner conducted initial reviews of other state programs and defined criteria for benchmark peer selection.

Step 2

During the research step, Gartner conducted a deep dive review of benchmark peer programs, and conducted benchmark interviews with five peer programs across five states: Arizona, California, Indiana, Utah, and Washington.

Step 3

During the analysis step, Gartner compared Oregon's program to the peer programs across multiple dimensions to create insights into key opportunities in Oregon, and conducted workshops with the CDO to validate findings and calibrate recommendations to address unique considerations for Oregon.

Step 4

During the final step to deliver the project results, Gartner finalized briefing materials and conducted a final briefing session with the Oregon Office of the CIO (OCIO) leadership team, and another with Data Governance and Transparency Office and E-Government program staff. Following these briefings, Gartner accommodated stakeholder input and submitted the final written report to the CDO to close out the project.

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Approach to Peer State Selection

Figure 7. Peer State Selection Criteria

1. Transparency Rating
2. IT Centralization
3. State Credit Rating
4. Size of State Population
5. Size of State Budget
6. Per Capita Gov't Spend
7. Geographical Proximity

Gartner collaborated with the CDO to define benchmark peer state selection criteria that would provide insights on a variety of similar programs. The intention was to create opportunities to collect informative lessons learned (both missteps to avoid and effective actions to replicate) as well as best practices for the CDO and relevant stakeholders to consider when moving forward with strategic program planning and organizational design.

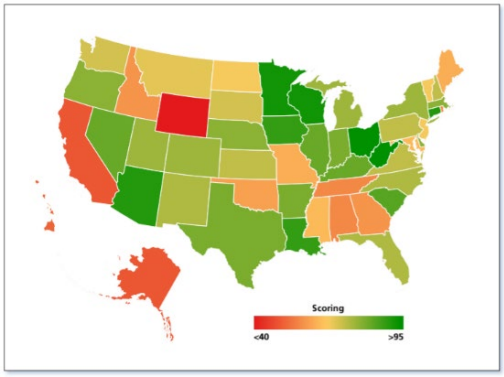
Gartner reviewed multiple criteria to identify peer states worth examining more closely. Seven criteria were used to select peers for the benchmark. The rationale for using the selection criteria and the approach for assessing the states against each of the selection criteria are provided below.

1 Transparency Rating

How do the 50 states rate in providing online access to government spending data?

The transparency rating was used to help ensure that peer states would offer insights into approaches that are working in other high performing states.

Figure 8. Heat map of 50 states rated for Transparency by U.S. PIRG



To compare the states by transparency rating, Gartner reviewed ratings documented by third-party rating organizations, including the U.S. PIRG "Following the Money" report. Gartner examined the ratings documentation to dig into specific assessment topics where Oregon had room for improvement to identify peer programs where Oregon would have the greatest opportunity to learn about best practices from peers.

Source: U.S. PIRG Following the Money 2018 Annual Report

2 IT Centralization

How do the 50 states compare in degree of IT centralization?

Review of the IT centralization criterion was used to drive inclusion of peer states with similar constraints around decentralized access and control of relevant data, and similar constraints on access and control of relevant IT systems.

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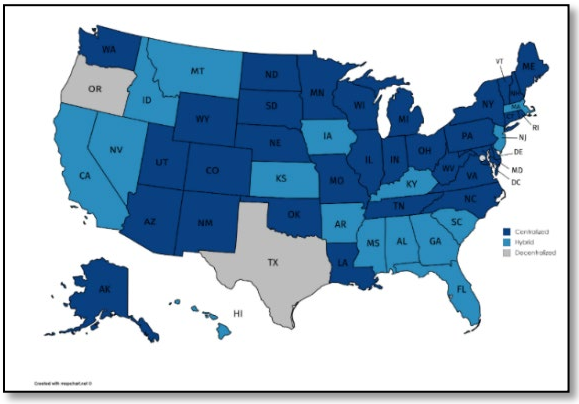
Figure 9. Heat map of 50 states rated for IT Centralization by GovTech

To compare potential peer states on this criterion, Gartner reviewed a recent GovTech assessment on IT centralization across the fifty states, and adjusted based on additional available data, including Gartner's extensive set of proprietary market information.



Source: GovTech, 2019

3 State Credit Rating

How do the 50 states compare in terms of credit worthiness?

Review of the state credit rating criterion was used to drive inclusion of peer states with similar degrees of financial transparency, and other risk rating similarities as judged by third-party rating agencies.

To compare potential peer states on this criterion, Gartner reviewed financial credit ratings across the three leading credit rating agencies (Standard & Poor's, Fitch and Moody's) as aggregated on Wikipedia in December of 2019.

4 Size of State Population

How do the 50 states compare in size of population?

Review of the state population size criterion was used to drive inclusion of peer states with similar complexity. Larger states have unique challenges as compared to smaller states like Oregon.

To compare potential peer states on this criterion, Gartner reviewed state population data as aggregated on Wikipedia in December of 2019.

5 Size of State Budget

How do the 50 states compare in the size of their government budget?

Review of the state budget size criterion was used to drive inclusion of peer states with similar investment constraints to Oregon. Big spending states can often drive greater levels of investment in specific solutions given access to a greater amount of investment funds.

To compare potential peer states on this criterion, Gartner reviewed the size of state budgets as aggregated on Wikipedia in December of 2019.

6 Per Capita Gov't Spend

How do the 50 states compare in government spend per capita?

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Review of the per capita government budget criterion was used to drive inclusion of peer states with similar preference for making investments in better state government.

To compare potential peer states on this criterion, Gartner reviewed data on per capita government spend as aggregated on Wikipedia in December of 2019.

7 Geographical Proximity

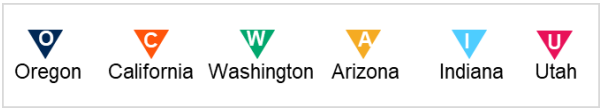
How do the 49 states beyond Oregon, compare in their proximity to Oregon?

Review of geographical proximity was used to drive inclusion of peer states with similar cultural constraints and ways of working.

To compare potential peer states on this criterion, Gartner reviewed physical proximity to the pacific northwest.

Preliminary Comparison of Selected Peer States

Figure 10. Five Selected Peer States



Peers were selected in a way that guaranteed inclusion of programs like Oregon, as well as programs distinct from Oregon. This approach sought to maximize both opportunities to learn about best practices in high performing programs, and effective approaches that have been executed under a similar set of constraints that Oregon faces to ensure applicability of lessons learned.

In some of the assessed criteria Oregon is an outlier, but for the most part it was possible to flag both similar and divergent peers for inclusion in the study.

Figure 11. Comparison of IT Centralization Across Peer States

Oregon has unusually decentralized IT. However, all states have some level of decentralization in IT.

Selected peers offered some variety on this criterion.

Figure 12. Comparison of Transparency Rating Across Peer States

Oregon scores well for breadth of transparency, but lags in usability.

Peers rated higher overall and within specific key areas were included in the assessment.

While Washington is rated lower overall, it was viewed as a useful peer for this benchmark given its higher usability rating, an area Oregon did not rate as highly.

Also, please note that California implemented a new transparency site since the 2018 U.S. PIRG report was published; therefore, the 2018 U.S. PIRG rating does not apply to the research conducted for review in this report.

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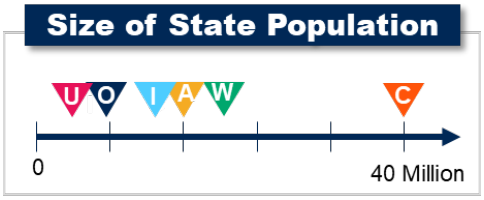
Figure 13. Comparison of State Credit Ratings Across Peer States

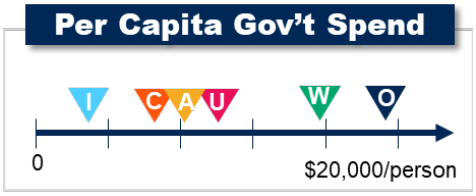
Included peers provided variety on the state credit rating criterion. Oregon is viewed as a relatively credit worthy state, although both Utah and Indiana score better.

Figure 14. Comparison of Population Size Across Peer States



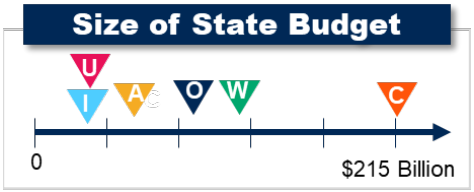
Oregon is a relatively small state by population, though not the smallest. Selected peers were primarily close in size to Oregon, with California providing some variety.

Figure 15. Comparison of Government Expenditure Per Capita Across Peer States



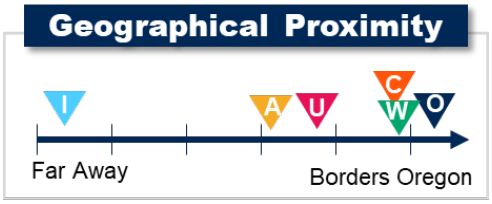
Overall government spending per capita is high compared to other states. However, selected peers provided variety on this criterion, with both relatively low spending and high spending states included.

Figure 16. Comparison State Budget Size Across Peer States



A small population but high per capita spending makes Oregon middle of the road for overall size of the state budget. Included peers largely have similarly sized state budgets, but some variety was provided through the inclusion of California.

Figure 17. Comparison Peer State Geographical Proximity to Oregon



Two neighboring states (Washington and California) were included as peers. Arizona, Utah, and Indiana provided geographic variety in the selected peer group.

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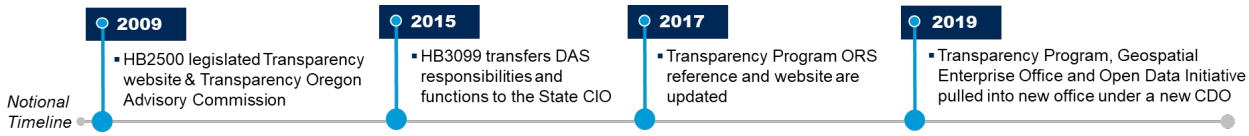
Oregon Transparency Program Current State

Background & History

Oregon's Transparency website first launched in 2009, after House Bill (HB) 2500 passed which mandated the creation and maintenance of a transparency website under the jurisdiction of the Department of Administrative Services (DAS).

Figure 18. Oregon Transparency Program Notional Timeline



Oregon's Transparency Program was established with a difficult edict to operate on a "zero cost basis" without a program budget. The program's enabling statutes are prescriptive to the level of data element requirements, and statutory changes have dictated new complexities over time, such as the addition of quasi-governmental entities (a new scope that implicitly included the requirement to identify the entities, as no one is responsible for maintaining a list of quasi-governmental entities in Oregon).

Despite these challenges, Oregon has frequently been recognized as an early adopter of transparency, and has received multiple awards for its transparency efforts and the level of data made available to the public.

Statutory & Scope Authority

The program's enabling statutes includes (ORS 276A.250 – 276A.262), and the primary audience for Oregon's Transparency Portal includes citizens, constituents, the state legislature, and state agencies.

The scope of the program covers expenditure, revenue, workforce, budget, and contract information; tax credits, strategic plans, performance reports, lottery use of funds, economic development funds, admin rules, public records requests, public meetings, commission's legislative and resource links.

Data posted on the portal is provided by the following entities:

- All State Agencies
- Counties (36)
- Legislative Branch
- Education Service Districts (19)
- Enterprise Zones
- Judicial Branch
- Secretary of State
- Oregon Business Development Department (Business Oregon)
- Some Higher Ed (All Community Colleges, Universities, and Programs) and Quasi-Public Entities (note: these organizations are statutorily required to provide relevant data, but not all contribute given differences of interpretation of the statute)

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Currently, the State of Oregon has two related initiatives that fall outside the scope of the Transparency Program, one for open data (the State Open Data Portal) and another for GIS (the Geospatial Data Library).

The introduction of the new CDO Statute (ORS 276A.350-374) may make the existing Transparency Statute redundant, given the new CDO statute includes a mandate that all state agencies publish open data to a centralized portal, rendering a separate transparency statute requiring specific data elements irrelevant.

Operational Approach

A Socrata Data Platform underpins the current transparency portal. The portal is implemented with tabular machine-readable formats, static visualizations, and limited APIs (Socrata automatically provides APIs on the backend to support data mining for public accessibility; however, Oregon is not leveraging automation to its full capacity, and some datasets are not published as fully machine-readable datasets, but rather aggregated PDF reports.)

The Statewide Financial Management Application (SFMA) is the State of Oregon's primary financial system. There is currently no automation established to pull data from SFMA into the transparency portal.

Data on Oregon's transparency website is updated on an annual basis (unless noted otherwise) basis and is largely a manual process for most entity data.

Different types of entities are treated differently. Agencies and participating entities sometimes provide data and information – in Excel, Word, PDFs, etc. – via email, online forms, or direct uploads to Socrata.

Data submissions are managed and tracked in different ways depending on the entity (managing and tracking includes multiple email accounts, file Sharing tools, SharePoint, and directly within Socrata data portal).

The current process for stakeholder engagement includes numerous manual efforts, such as:

- Preliminary planning/discussions with data stewards on changes to data reporting per legislative changes or system updates.
- Sending data requests via email – in addition to 2-3 reminders in some cases – to designated data stewards/contacts between July and December of the current year, with varied target submission dates, between September and the spring of the following year
- Providing most entities with unique communications: data dictionary, time line expectations, and resource links on transparency website, to previous years' data and information
- Additional follow-up: some entities may also receive personal calls and reminders, in addition to format email requests

Budget & Staffing

The Oregon Transparency Program is managed by the Data Governance & Transparency Office, which serves as the key steward of the program and its related initiatives (as illustrated in the figure below).

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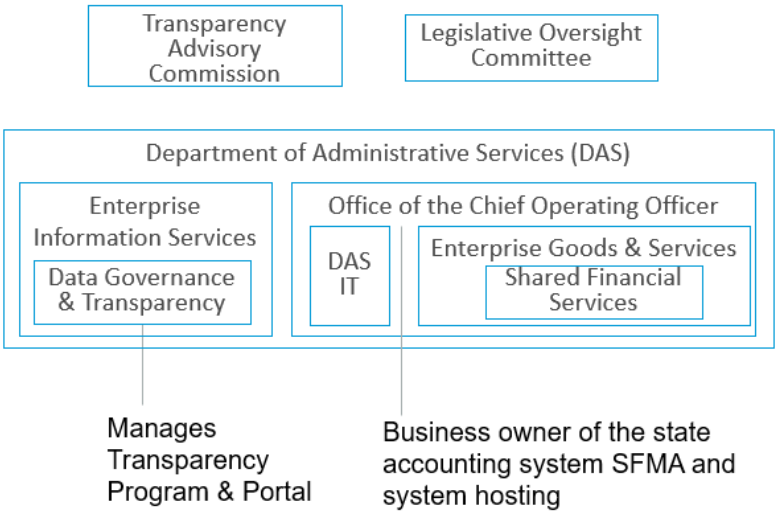
Figure 19. Oregon Transparency Staffing & Reporting Structure



The CDO supports the Transparency Program on a part-time basis. In addition to the CDO, there is one staff member — the Oregon Transparency Program Manager & Website Administrator — who is fully dedicated to the program. A significant portion of the manager's time is dedicated to the following activities:

- Tracking potential legislative changes that may impact the Oregon Transparency Program and website,
- Continuously monitoring and managing the process of requesting data,
- Conducting outreach to content providers,
- Reviewing/QA/QC of various types of data from all stakeholder organizations,
- Manipulating/transforming data manually; and,
- Uploading data to the Socrata Data Portal (note both the Transparency Website & the Socrata Portal are used for posting of datasets today)

The examples activities provided in the listing above for this position are complete but not comprehensive, and therefore cover less than quarter of the actual responsibilities of the staff member. A more detailed listing of the activities associated with program management of transparency (per ORS 276A.250 – 276A.262) and website administration, are provided in the Appendix.

The Oregon Transparency Program leverages the state's existing contract with NICUSA for its transparency website and hosting of data. Web development capabilities enabled through this contract are limited, and in-flight improvements to the transparency site are focused on building out "accordion" views that fold and unfold content.

Envisioned Future State

The Oregon Transparency Program has envisioned a future that "opens state government to everyone." Achieving the following two goals will help move the needle towards a more open government in the State of Oregon, as shown in the figure below.

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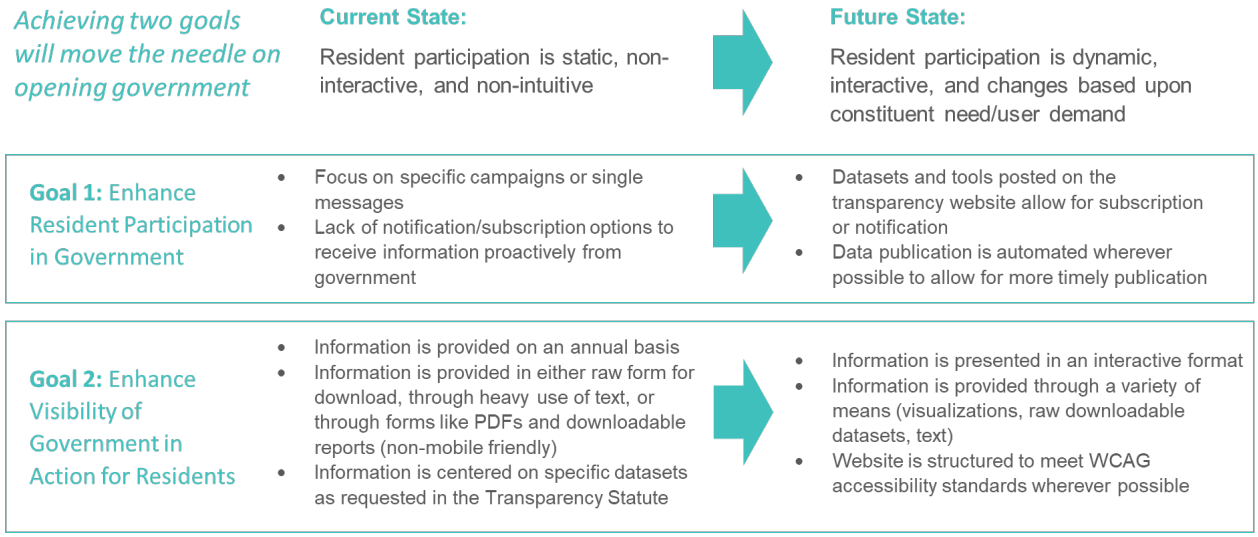
Figure 20. Oregon's Goals to Help Drive Toward Open Government



Source: Oregon Data Governance and Transparency Office, January 2020.

Getting to this target future state will require adjustments to the Oregon Transparency Program's approach and operations given existing pain points. While Oregon continues to receive good marks for transparency, the dependency on manual intervention is not sustainable.

Existing Data Governance and Transparency Office staff are spread thin, and struggle with keeping up versus dedicating the time required to build and improve the program. Oregon's Transparency Program is heavily legislated and managed via prescriptive statutes, and existing statutes and legislation include outdated requirements (e.g., operating on a "zero cost basis"), and the nature of the legislation means it becomes outdated quickly (as an example there are several requirements to link to other websites maintained by state agencies).

The current approach is simply not sustainable, with these challenges taken together. This benchmark was undertaken to help provide insight into the ways Transparency is done in other states, to see what opportunities Oregon should focus on to help enable attainment of the future vision.

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Summary Research Findings by Peer State

Critical peer program details around 1) delegated statutory authority and program scope, 2) approach to program operations (including people, process, and technology considerations), and 3) approach to program budget and staffing, are provided in the three peer comparison tables below. Additional peer program details are provided in the appendix.

Statutory Authority & Scope[1]

Peer	Program Information
Arizona	▪ Arizona Department of Administration (ADOA) is statutorily required to publish state financial data [ARS 41-725, 2013] ▪ Local entities must report their financial data but have flexibility on how they report it (some publish to their own website, some publish to the State's OpenGov site, etc.)
California	▪ Transparency included in purpose of ERP modernization [§11854, 2014] ▪ FI$Cal project expanded to cover transparency component [§11862, 2016] ▪ Transparency reporting expanded (special, federal funds); new data elements (e.g., expenditure purpose) [§12025, 2019]
Utah	▪ Public transparency site established; Utah Transparency Advisory Board established to oversee [63A-3-401-403, 2008] ▪ Refocused on constituents, expanded open data lens [63A-3-403-404, 2014] ▪ Provided Auditor authority to withhold funds from entities not in compliance. LtGov required to maintain registry of entities [67-3-3, 2018]
Indiana	▪ Indiana Transparency Portal (ITP) established [IC 5-14-3.5-2, 2009] ▪ Indiana Gateway grew from a 2010 initiative, *Information for Indiana* ▪ Management Performance Hub (MPH) was created under OMB, managed by a new Chief Data Officer (Governor appointed position) reporting directly to the Governor [4-3-26, 2017]
Washington	▪ Legislative Evaluation & Accountability Program Committee (LEAP) collaborated with OFM to create transparency site using existing databases/structure, with legislative focus on public access and usability [RCW 44.48.150, 2008] ▪ Site grows to include geo data [44.48, 2013] ▪ OFM creates agency fee inventory, LEAP publishes on site [44.48, 2013] ▪ OFM must post collective bargaining agreements (LEAP must include on site) [43.88 RCW, 2017]

[1] Data collected by Gartner Consulting in January 2020, through a combination of peer state interviews and online research.

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Operational Approach[1]

Peer	Program Information
Arizona	ARIZONA FINANCIAL TRANSPARENCY PORTAL ▪ OpenGov ▪ Updated monthly with state-level prior month, some local entities submit thru portal ▪ AFIS extract auto-generated and sent ▪ Reporting team pulls file, saves & uploads to OpenGov. Designated local users upload
California	Open FI$Cal ▪ OpenGov ▪ Updated monthly (60-day lag) from 149 state agencies ▪ Mix of manual/automated processing (Oracle PeopleSoft ERP/ Hyperion enabled) ▪ BI Unit staff extract data from FI$Cal system and upload onto temporary Power BI dashboard for department QA review
Utah	TRANSPARENT UTAH ▪ OpenGov ▪ Agency stewards (1,000+) submit data to the portal. Vendor (Utah Interactive) uploads data on behalf of participating entities following QA State of Utah Spending ▪ Socrata ▪ Data Coordinator pulls agency financial data from warehouse monthly, partially scripted

[1] Data collected by Gartner Consulting in January 2020, through a combination of peer state interviews and online research.

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Peer	Program Information
Indiana	 ▪ Custom Solution ▪ SQL data pipelines pull data from data warehouse daily, and ▪ connected Tableau visualizations refresh automatically  ▪ Custom Solution ▪ Local entities submit data/documents thru Gateway. Collected data is made available to constituents thru a web-based portal ▪ State oversight agencies communicate deadlines to local entities who must upload to Gateway
Washington	 ▪ Custom Solution ▪ Report on expenditure, fund balances, state-owned real estate (State agencies, legislature, K-12 & Higher Ed) ▪ Some automation thru integration with LEAP financial systems (fiscal reporting, budgeting) ▪ Upload timing varies, but data updates occur regularly (budget proposals once public; revenue, expenditure, and staffing, monthly following month-close; audits, workload, etc. when linked sites refresh)

Budget & Staffing[1]

Peer	Program Information
Arizona	▪ General Accounting Office (GAO), under ADOA, responsible for FI systems/reporting ▪ Transparency staff are not dedicated – GAO Reporting team (2-3 for ¼ time)
California	▪ FI$Cal team manages statewide ERP ▪ Agencies are responsible for entering data into FI$Cal correctly ▪ Transparency staff are not dedicated – part- time from FI$Cal BI team (4-5 +1 Manager), team work with OpenGov vendor, and OpenFI$Cal product owner supports ½ time

[1] Data collected by Gartner Consulting in January 2020, through a combination of peer state interviews and online research.

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Peer	Program Information
Utah	TRANSPARENT UTAH ▪ Finance manages FI systems/reporting ▪ Auditor took responsibility for Transparent Utah in 2019, and collaborated on upgrade ▪ Auditor recruited for an IT Manager position, State Transparency Coordinator in 2019 State of Utah Spending ▪ Finance/DTS created Utah Open Spending, visuals and interactive approach was focus ▪ Socrata & Data Coordinator covered by SB70
Indiana	INDIANA TRANSPARENCY PORTAL ▪ Auditor (Accounting and Reporting) maintains general ledger and centralized accounting system (PeopleSoft 9.2) ▪ Recent upgrade primarily cost Auditor time, MPH data engineers built pipelines ▪ Transparency staff are not dedicated, and now that site is automated, time is near zero (covering break/fix) INDIANA Gateway ▪ Partner agencies (Auditor & 4 others) administer separate gateway apps ▪ Indiana Business Research Center maintains Gateway Platform
Washington	▪ OFM manages statewide accounting, working with agencies to ensure financial data is accurate and up-to-date ▪ LEAP manages financial reporting systems, primarily for legislature ▪ Transparency staff are not dedicated, 2-3 LEAP software developers spend a small portion of their time supporting Transparency

Comparison Key Program Similarities and Differences

The following graphic provides an at-a-glance view into the ways Oregon's program compares to similar programs in other states.

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Figure 21. Oregon Comparison Versus Peer States

	Statutory Authority & Scope	Budget & Staffing	Operational Approach
Similarities	▪ Oregon is similar to other states in… – Having transparency enshrined in statute	▪ Oregon is similar to other states in… – Having a limited budget	▪ Oregon is similar to other states in… – Using a typical vendor solution (Socrata)
Differences	▪ Oregon is unique in… – Specificity of its statutory mandate, which includes an extensive set of required data elements and entities (some states cover local entities but are often managed separately, and mandates for specific types of data are typically limited)	▪ Oregon is unique in… – Having staff dedicated to a separate Transparency Program – Lack of finance business sponsorship & participation	▪ Oregon is unique in… – Level of manual effort for data collection – Low frequency of adding state agencies' financial data – Level of custom outreach – Lack of graphs & continued focus on tabular data

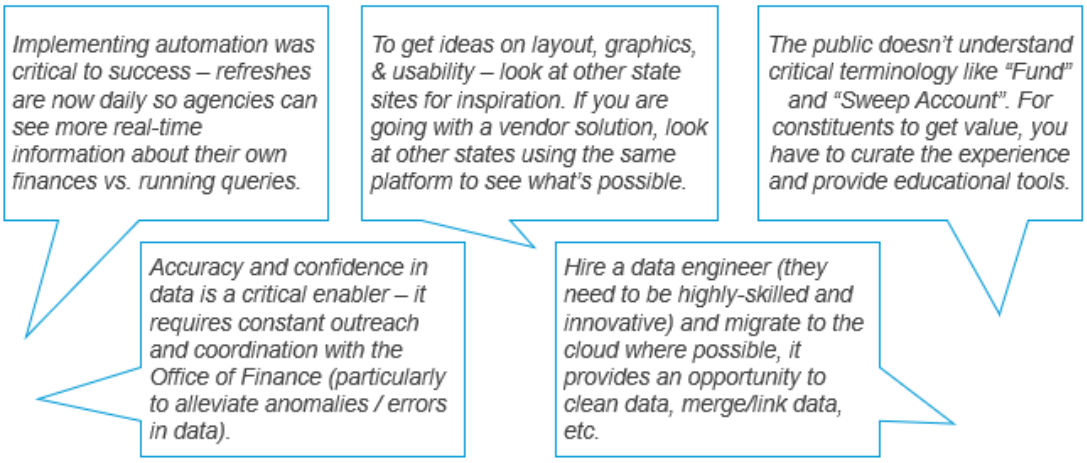
Source: Gartner Consulting (February 2020)

Peer State Lessons Learned

As other states have built up their government transparency capabilities, they have both struggled and exceled. Peer program staff interviewed during this benchmark assessment were able to share both effective strategies that Oregon may want to consider replicating, and pitfalls to be avoided.

Peer program staff most often provided guidance and recommendations related to portal automation and usability, as well as programming staffing and stakeholder management. The figure below illustrates some of the key lessons learned from peer organization efforts to build Transparency Programs in their states.

Figure 22. Lessons Learned from Peer Organizations



Source: Gartner Consulting (February 2020)

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Themes & Market Direction

As Gartner completed peer interviews and additional market research around transparency programs and the broader set of initiatives that drive organizations toward greater digital government maturity, four themes crystalized as the most important for Oregon consideration.

Figure 23. Four Key Themes for Transparency Trends and Best Practices

Source: Gartner Consulting (February 2020)

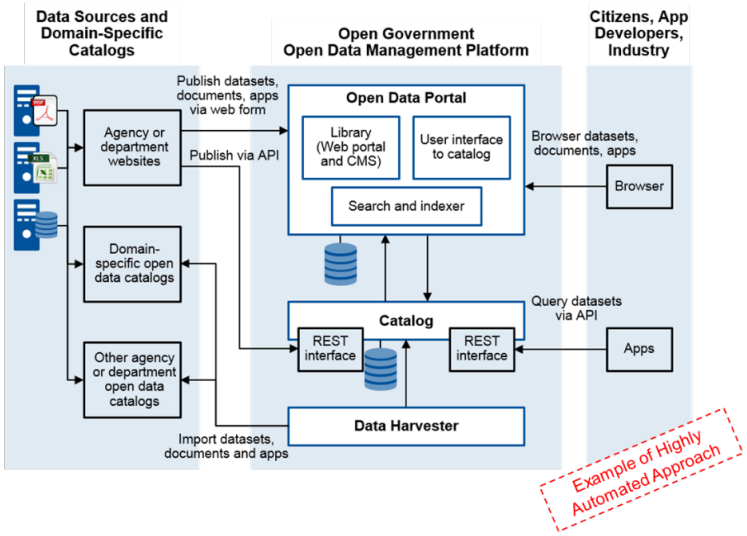
1 Automate Everything

Labor intensive manual processing is a suboptimal way to solve an integration challenge. Often, just a few technical tools and the right skillsets – such as data engineering – can solve a lot. Oregon can mature its transparency approach by retooling and automating datasets. These automated data pipelines can be used to enable real-time dashboards and reports, as well as exposing data sets through API's.

Some degree of automation is achievable no matter what solutions are used (financial, transparency portal, etc.) – i.e., it's solution agnostic. Transparency can be automated to the point that the focus can shift to more difficult data problems.

As Oregon moves to automate more, it may consider collaborating with the solution vendor (today that's Socrata) to start building out a solution engineering capability.

Figure 24. Example of Highly Automated Approach to Open Data Management Architecture



Source: Gartner (December 2016)

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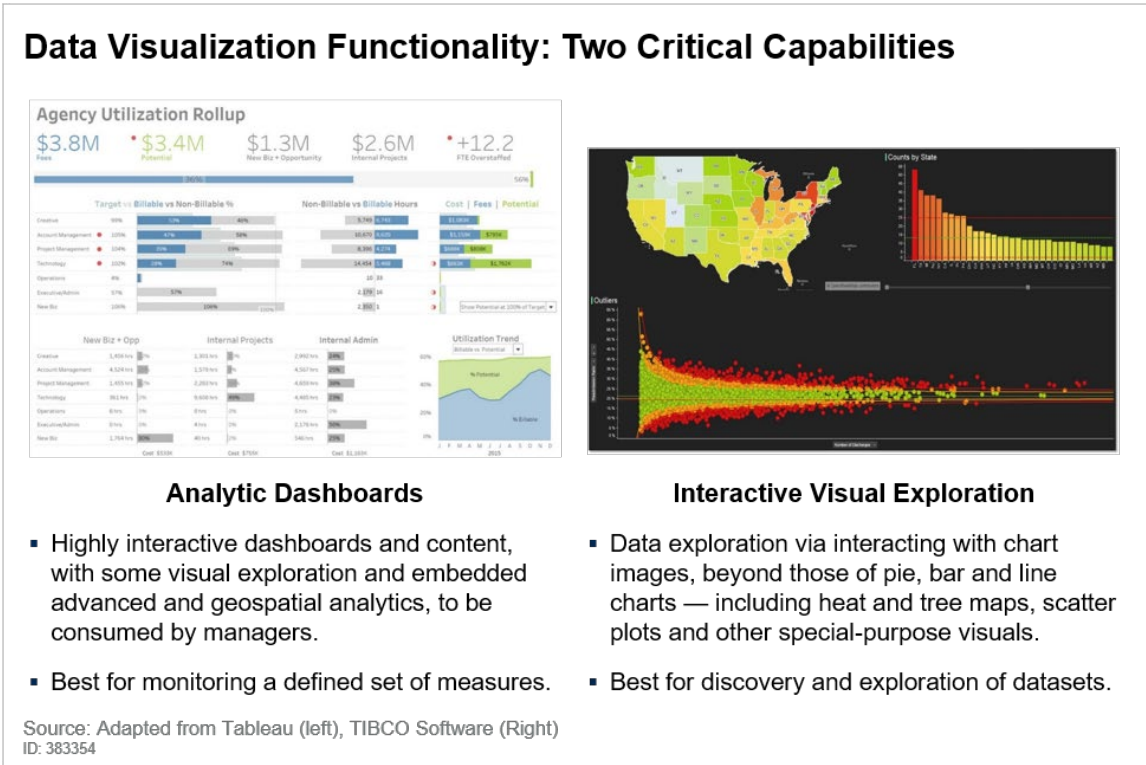
2 Narrate & Contextualize Data

We know it is not enough to just provide data. Gartner identified long ago that the idea, "If you build it, they will come," has not worked for government web portals. Most organizations adopt data visualization but struggle to visually represent the data in a way that maximizes its business value.

GovTech also notes a tendency for sites to become “data dumps” where “the average legislator or citizen finds it nearly impossible to find specific, useful information.”

Figure 25. Data Visualization Functionality: Two Critical Capabilities



Source: Gartner (April 2019)

A largely unrealized benefit of government open data is its ability to make the information understandable and useful to the casual website visitor.

Making sense of data through the art of interpretive narrative, advances public policy and adds a level of accountability to the transparency and engagement that programs are intended to promote.

Data and analytics leaders should apply new thinking and approaches to data visualization so that it is seen as the destination of a visual analytics journey:

- Expand the usage of data visualization for self-service users by tasking data and analytics teams with building training programs for them.
- Encourage data collaboration by using large-format displays.
- Pilot high-impact business use cases by storytelling with infographics.
- Automate the process of visualizing and analyzing data by using augmented analytics.

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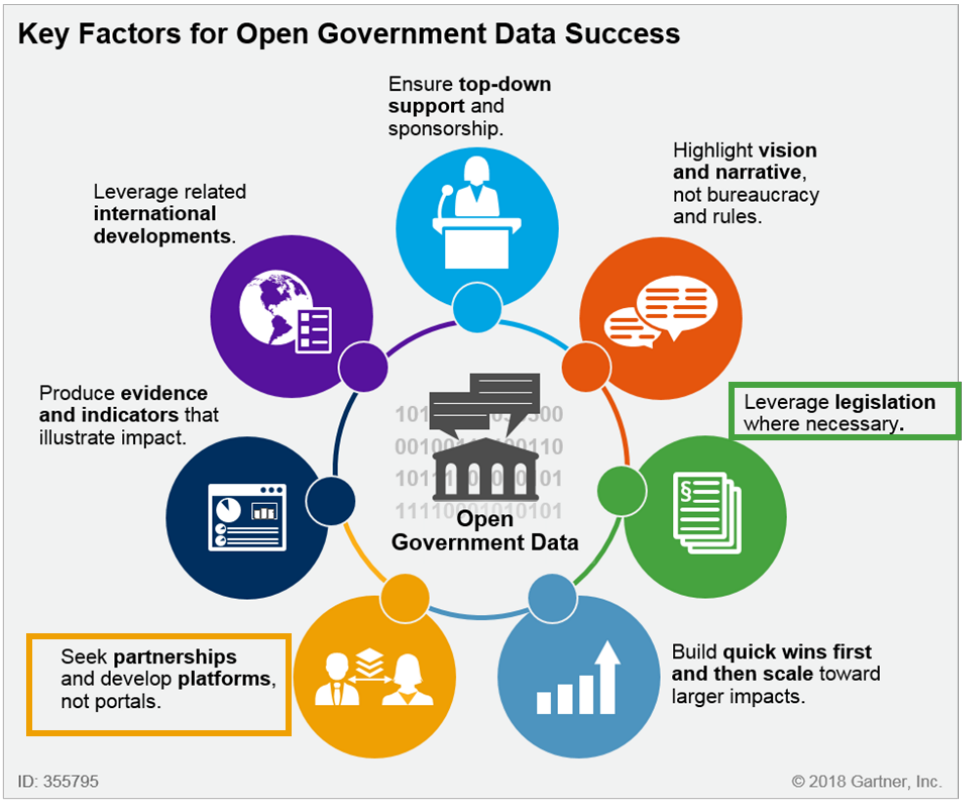
3 Don’t Legislate Transparency, Envision It

Legislating a laundry list of data elements to dump on the site unfortunately misses the mark and creates more challenges than it solves.

Platforms are an ideal vehicle to overcome the “data dump” challenge – they enable gathering stakeholders and scaling initiatives (e.g., by building reusable components for data sharing, access, analysis and visualization).

Platforms of communities help governments evolve from being an exclusive provider of information, data and services to becoming part of a dynamic ecosystem. Websites and digital services should go beyond allowing access to and downloading of datasets. Reuse and value creation must be facilitated through APIs and modern tools for collaborative analysis and visualization.

Figure 26. Key Factors for Open Government Data Success



Source: Gartner (April 2018)

Government technology leaders responsible for transitioning to digital government can increase the value of their open data program by following these good principles:

- Ensure top-down support and sponsorship by insisting on an explicit statement or announcement from the most senior individual or governing body for your organization.
- Create a compelling open data agenda by highlighting vision and narrative, not only obligations.
- Apply soft pressure on reluctant government partners by leveraging existing legislation such as freedom of information acts.

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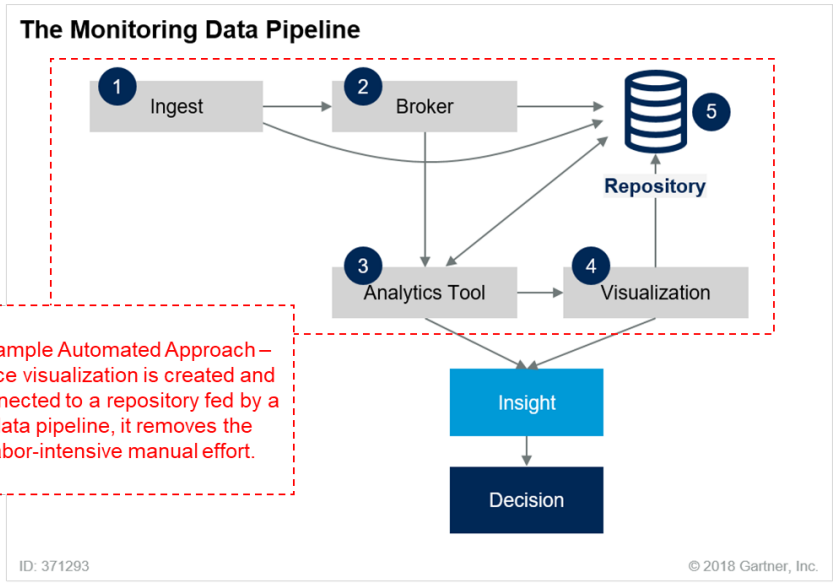
- Gradually increase open data reach by getting quick wins first — for example, piercing through internal data silos — and later scaling toward larger impacts, such as collaboration with external partners.
- Facilitate partnerships with potential reusers by developing platforms, not portals.
- Ensure sustainable supply of resources by producing evidence that illustrates real impact.
- Mobilize additional resources for open data by leveraging related international developments.

4 A Modest Investment to Modernize the Transparency Program Can Pay Off

It is initially more important to create quick wins, agree on a roadmap of activities and iterate on prototypes than to devise a grand strategy at first, define a multiannual action plan, and set up a complex institutional governance.

- Modernization can start out as an agile project.
- It is initially more important to create quick wins, agree on a roadmap of activities and iterate on prototypes than to devise a grand strategy.
- Once a higher level of maturity is achieved, it makes sense to consolidate and institutionalize accomplishments.
- Design for interoperability and reuse and strive for greater automation.

Figure 27. The Monitoring Data Pipeline



Source: Gartner (December 2018)

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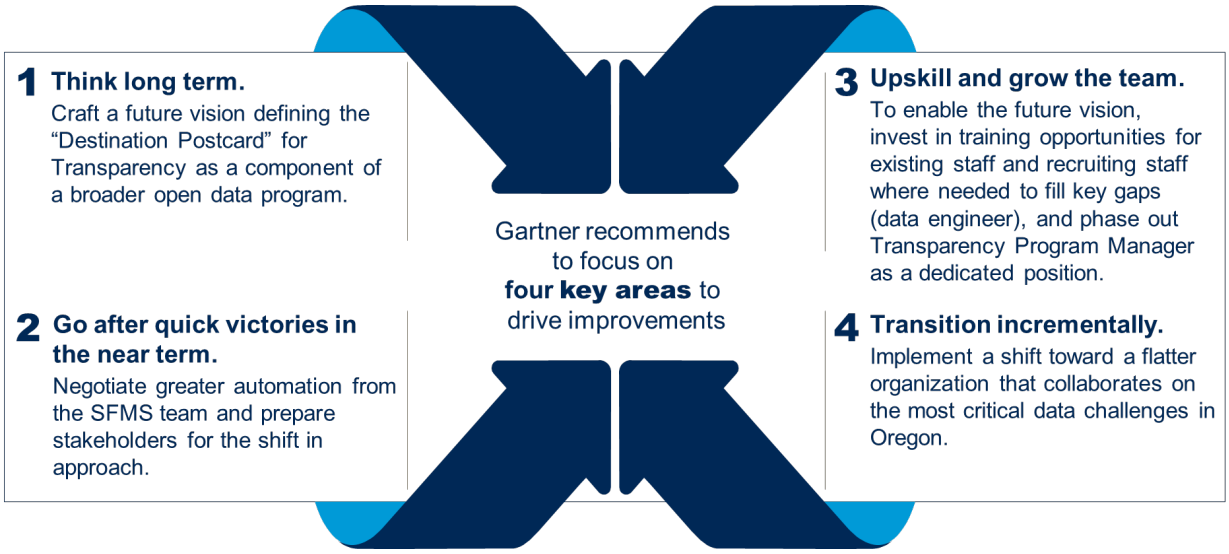
Future State Recommendations for Oregon Transparency Program

There is no one right way to design a data office organization. An effective organizational structure today may need to change next year to adapt to business, technological, regulatory or market changes. Organizations must lead the development of the correct competencies and rebalance work to be consistent with enterprise ambitions for generating information value.

Based on market trends, best practices, and peer lessons learned, Gartner believes the following are the highest value opportunities to advance government transparency in Oregon:

Figure 28. Gartner Future State Recommendations for Oregon Transparency



Financial transparency portals have been an area of great emphasis over the last decade. However, as Transparency Programs have matured, modernized, and become automated, many states – like Oregon – have shifted focus to Open Data Programs.

In leading government organizations, Open Data Programs have started to dovetail with broader Digital Government Programs. Given new laws in Oregon (including 3361), the state is now on the cusp of a shift, with transparency likely to become more of a byproduct rather than a focus.

It is time for Oregon to revisit the vision for the Transparency Program given that context.

Gartner has defined a Digital Government Maturity Model that consists of five levels, starting with an initial level where individual organizations or entire jurisdictions can operate within the traditional e-government paradigm. At its most fully mature level, digital transformation becomes a continuous process capable of being sustained indefinitely. Intermediate levels bring increasing organizational recognition of, and commitment to, the value of data as a tangible business asset and analytics as a critical capability.

The shift from e-government to digital occurs along a continuum. At lower levels of maturity, government services simply consume and produce transactional data with limited use of its analytic value. This service-centric orientation is upended when organizations adopt data-driven practices that apply advanced analytics to achieve the greatest potential for business optimization. E-government metrics primary focus on operational efficiency for workflows within

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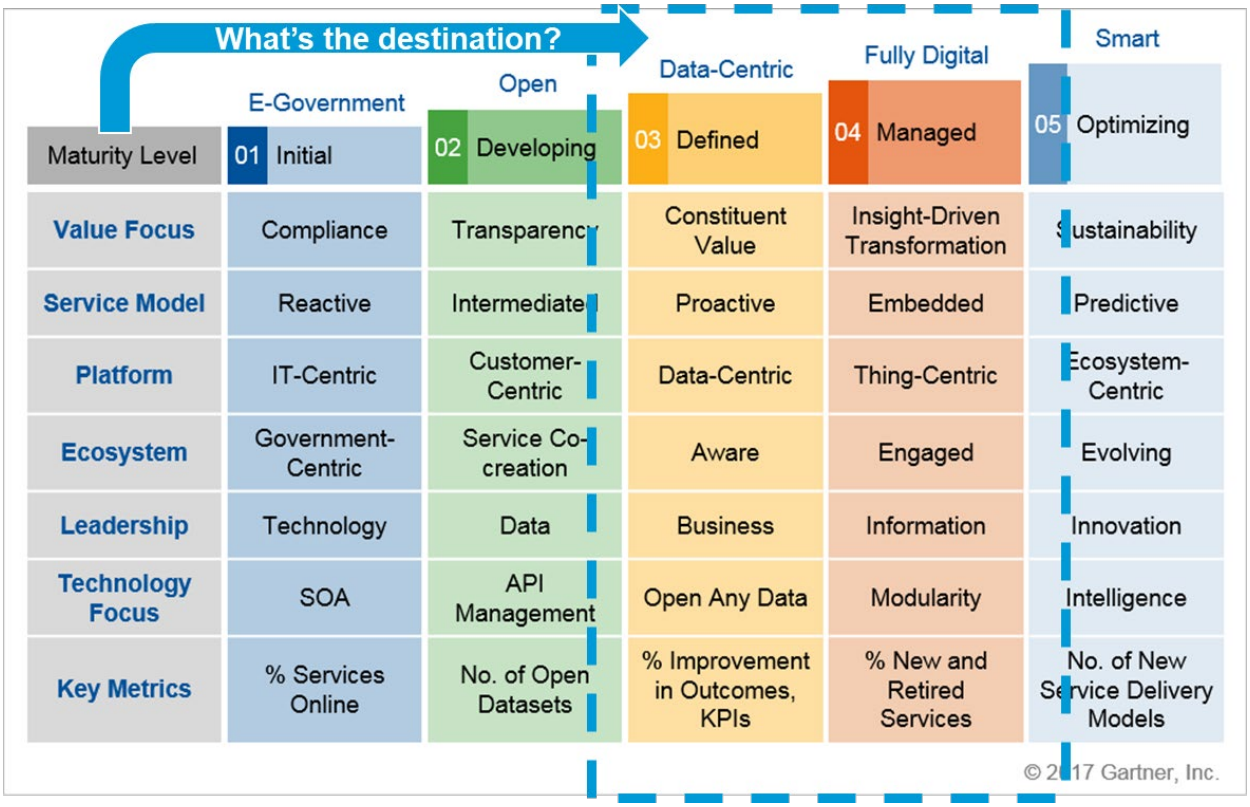
a vertical, such as business registration and licensing. In contrast, key performance indicators (KPIs) at higher levels of digital maturity measure the performance of entirely new service and business models made possible by data and analytics. Improved performance is the result of data flowing throughout an ecosystem that anticipates the best outcome for any interaction. Examples include connecting a new business with other government agencies, education programs, prospective employees, local suppliers and the like.

Gartner's Digital Government Maturity Model can help confirm current organizational priorities are setting up a sustainable path for long-range digital transformation.

Figure 29. Gartner's Digital Government Maturity Model with Oregon's Destination Highlighted



Source: Gartner (November 2018)

Making steady progress in transforming public services requires government technology leaders to assess where their organization stands in relation to its goals and take strategic steps to increase digital maturity.

A sustained digital government strategy allows government organizations to systematically transform public services and operations that are adaptable, affordable, and sustainable. The key to digital government maturity is a focus on the effective and innovative use of data in redesigning and delivering government services and in transforming and managing operations.

The transition to digital government – particularly for the State of Oregon – will be a long-term journey characterized by opportunistic innovations that serve as the building blocks for large-scale transformation.

To achieve a more open government, the State of Oregon should aim for the following goals:

Information landscape is clear and navigable:

Enterprise data inventory allows for full picture into State's information marketplace.

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Information is a community resource:

- Agencies collaborate and share information to better manage programs throughout the State, de-duplicate effort, and build collaboration.

Information is governed:

- Policies and standards exist at the enterprise and Agency level to ensure effective communication and collaboration.

Information is provided through a variety of means:

- Dynamic visualizations, raw downloadable datasets, text, et

To help drive toward a more open government in the future, Oregon has defined a “Destination Postcard” in the figure below.

Oregon’s approach to transparency as a separate Transparency Program that’s heavily dependent on manual processes is not sustainable. It’s clear that eventually transparency should become a self-sustaining, mostly automated data pipeline that’s enabled as a bi-product of broader efforts to address data-related challenges in government.

Oregon should pivot to an approach that prioritizes the overall growth of the CDO’s office that’s needed to make these recommendations a reality. Organizational redesign of the CDO’s office will be a critical enabler. It will be important to break down siloes (eliminate the stand-alone Transparency Program and dedicated Program Manager position), and invest in upskilling current staff and recruiting to fill gaps. While investment can be made incrementally, progress will be dependent on making the needed investments.

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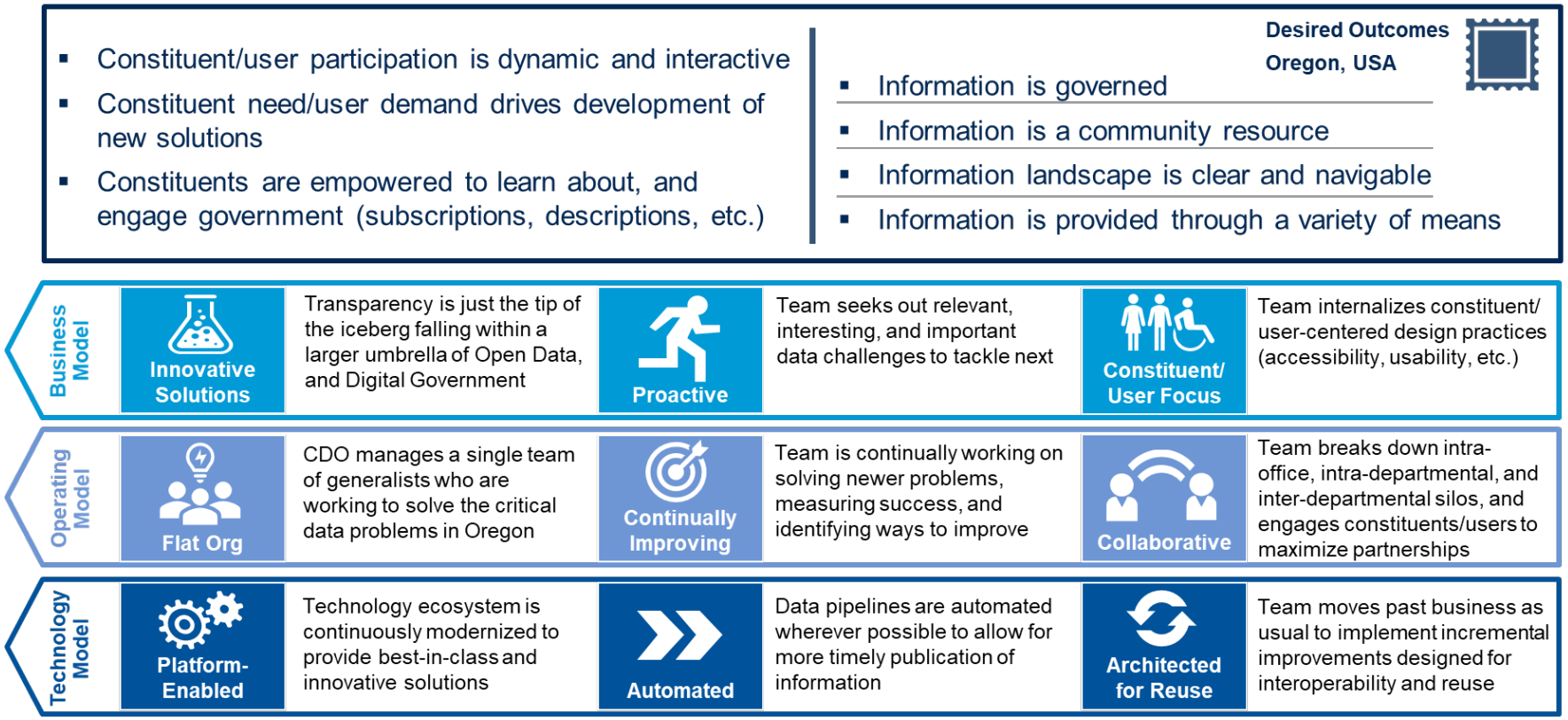
Figure 30. Oregon's "Destination Postcard" for a More Open Government



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Appendix – Peer State Details

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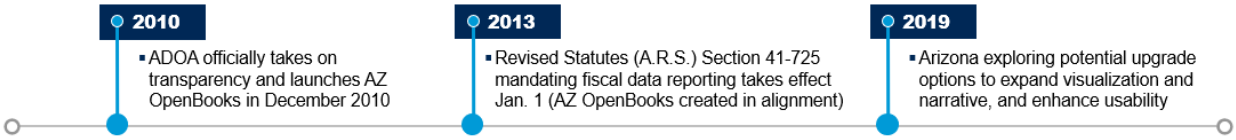
Arizona: Summary Research Findings

Background & History

Arizona's Transparency Program and website – AZ OpenBooks – falls under the jurisdiction of the Department of Administration (ADOA). The notional timeline below provides a high-level overview of Arizona's transparency initiative and program.

Figure 31. Arizona Transparency Notional Timeline



Statutory Authority & Scope

Statutory Authority

The ADOA is required to publish state financial data according to Arizona Revised Statute (ARS) 41-725, 2013. Local entities must report financial data as well but have the flexibility to choose how this data is provided (i.e., their own website, AZ OpenBooks, etc.).

Scope

The primary consumers of AZ OpenBooks are state employees. The scope of data covers General Fund Revenues, Expenditures, and Ending Balance data from the Arizona Financial Information System (AFIS) – the official accounting system and record of the State for fiscal information. AZ OpenBooks currently displays all AFIS financial info from FY2009 – current. Revenue and expenditure data is available by category, fund, organization, and vendor.

Certain data is excluded from AZ OpenBooks:

- Tax payment or refund data that include confidential taxpayer information;
- Data relating to payments of state assistance to individual recipients;
- Payees' addresses or telephone numbers, but the department may allow public access in the database to information identifying the county in which the payee is located;
- Work product in anticipation of litigation or information subject to attorney-client privilege; and,
- Any other information that is designated by law as confidential or preapproved as confidential by the department pursuant to rule.

Data is provided by the following entities:

- All state agencies
- AZ Commerce Authority
- 16 Cities and Towns
- 7 Counties
- 1 Higher Education Entity

Local government entities may host their own financial transparency data – 8 Cities, 2 Community Colleges, and 12 Schools currently do so.

Related Open Data & GIS Initiatives

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AZGeo Open Data is Arizona's primary open data and geospatial initiative. It is provided by the Arizona Geographic Information Council.

There are no geospatial specialists within Arizona's Transparency Program, as geospatial specialists typically reside within individual state agencies.

Operational Approach

Technology & Automation

Arizona's OpenGov solution – AZ OpenBooks – is updated monthly with the prior month's state-level financial information. There is a mix of manual and automated processing; AFIS, the state's enterprise accounting system, enables some of this automation.

State agencies are responsible for entering their own data into AFIS, the frequency of which varies based on data type and entity.

Operations

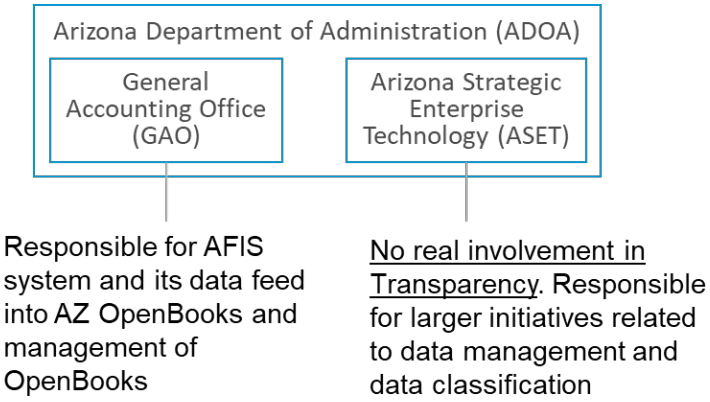
Data extract files are automatically generated from AFIS after monthly closing of books, then transferred to a server folder via a Secure FTP site. Once extract files are securely transferred, a reporting team manually pulls files from these secure server folders, saves locally, and uploads to the AZ OpenBooks site.

Reporting team staff also maintain links to the statewide procurement portal.

Budget & Staffing

Arizona's transparency portal is managed collaboratively by the General Accounting Office (GAO) and the Arizona Strategic Enterprise Technology (ASET) Office, both of which fall under ADOA.

Figure 32. Arizona Transparency Staffing & Reporting Structure



The GAO is responsible for the AFIS system and its data feed into AZ OpenBooks – including the management of OpenBooks.

There is no real involvement of ASET in transparency. ASET is responsible for larger initiatives related to data management and data classification.

Staffing

Unlike Oregon's Transparency Program, no staff are solely dedicated to the maintenance of Arizona's transparency program and related initiatives.

There is a core team that reports to Executive Sponsorship, while several staff are dedicated to various maintenance and management tasks:

- AFIS Statewide Accounting Administrator: 1 FTE

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- BI Reporting Team: 2-3 FTEs

BI Reporting Team staff manage the data warehouse for statewide reporting. Roughly 25% of this team's time is spent on transparency, including manual data uploads to OpenBooks, monitoring shared email, and contacting agencies as needed for AFIS data-related questions.

Cost

The primary cost of Arizona OpenBooks is $148,000 – which covers the annual OpenBooks vendor fee.

Funding Source(s)

The Arizona GAO receives $120,000 in appropriation funding for AZ OpenBooks. Additionally, the GAO collects $28,000 from the 27 local government entities participating on AZ OpenBooks.

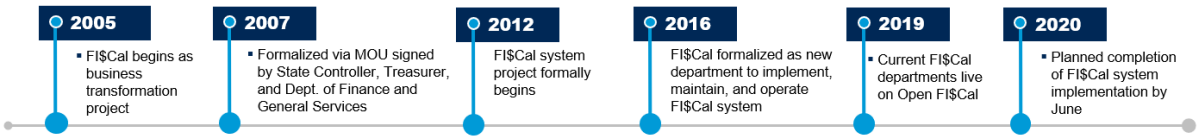
California: Summary Research Findings

Background & History

While initially beginning as an enterprise business transformation effort in 2005, FI$Cal is both California's new statewide ERP system, as well as the primary mechanism for California fiscal transparency site. Currently nearing completion of its implementation, FI$Cal is California's new unified, statewide accounting, budget, case management, and procurement system. FI$Cal is the primary data source for Open FI$Cal – California's transparency portal.

FI$Cal – now an independent agency – is also charged with overseeing Open FI$Cal. The notional timeline below provides a high-level overview of California's transparency initiative and program.

Figure 33. California Transparency Notional Timeline



Statutory Authority & Scope

Statutory Authority

Transparency is included in the purpose of California's current ERP modernization effort (§11854, 2014). In 2016, the FI$Cal project expanded to cover a transparency component (§11862). In 2019, additional statutory mandates were passed that expanded transparency reporting (e.g., special and federal funds), as well as new data elements such as expenditure purpose (§12025).

While California differs from Oregon in a varitey of ways, California represents a critical peer state in terms of recent successful efforts to augment previously prescriptive statutes and legisltaiton to allow for greater flexibility as fiscal transparency evolves and modernizes through the state. Cailfornia may be an ideal benchmark for Oregon, as the CDO and DAS look to envision and enable transparency, not legislate it.

Scope

The primary consumers of Open FI$Cal are the California Legislature and state employees. The scope of FI$Cal data covers non-confidential spending data (i.e., every expenditure

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journal line from the FI$Cal modified accrual general ledger) and vendor information from the FI$Cal accounts payable module.

Certain data is excluded from Open FI$Cal:

- Transactions recorded outside the FI$Cal system;
- Non-expenditure transactions, such as revenues, most transfers, fund balances, assets, etc.;
- Budgetary information;
- Contract information;
- Confidential information; and,
- Transactions for state entities that have not yet reviewed their transactions for inclusion in Open FI$Cal.

Data is provided by 149 state government agencies using FI$Cal, which currently accounts for 65% of state expenditures and is expected to expand upon completion of system implementation.

Once fully implemented, more than 150 entities and 15,000 end users will conduct the financial business of California within the FI$Cal system, expanding the availability of data currently provided on Open FI$Cal.

Cities and counties are excluded from FI$Cal. There are currently state agencies with implementation deferrals or partial exemptions.

Related Open Data & GIS Initiatives

California has two primary open data and GIS initiatives related to transparency: CA OpenGov and the California Geospatial Data Portal.

Operational Approach

Technology & Automation

Open FI$Cal is updated monthly (with data lag of 60 days). There is a mix of manual and automated processing – FI$Cal (Oracle PeopleSoft ERP / Hyperion) enables automation. State agencies are responsible for entering data into FI$Cal.

Power BI is used to enable agencies to review and QA their data prior to submission onto Open FI$Cal.

Operations

FI$Cal data is manually extracted by BI Unit staff and uploaded onto a temporary Power BI dashboard for review. There is a data lag of at least 60 days to allow state agencies to review all information before publication.

Agencies may go back and request adjustments for recent months' expenditures at any time.

Staffing & Budget

FI$Cal staff manage, maintain, and operate the statewide ERP system – including current implementation. State agencies are responsible for entering data into FI$Cal correctly.

Maintenance of Open FI$Cal is a collaboration between the FI$Cal Business Intelligence (BI) Team, OpenGov (the vendor), and the Open FI$Cal product owner.

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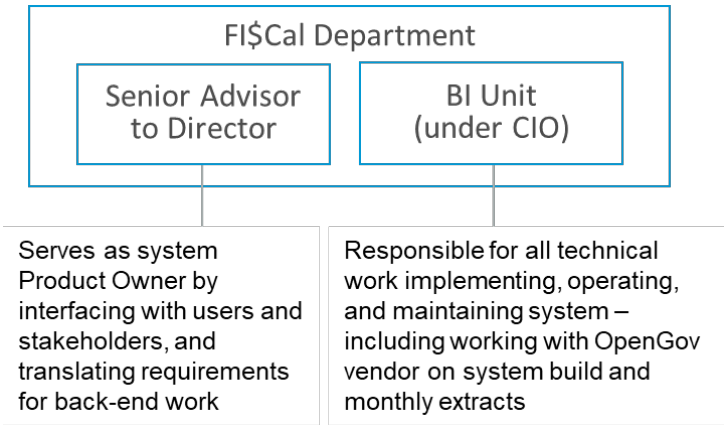
Figure 34. California Transparency Staffing & Reporting Structure



The Senior Advisor to the FI$Cal Director serves as the system Product Owner by interfacing with users and stakeholders and translating requirements for back-end work.

The BI Unit is responsible for all technical work implementing, operating, and maintaining the system – including working with OpenGov vendor resources on system build and monthly extracts.

Staffing

Unlike Oregon's Transparency Program, no FI$Cal staff are not solely dedicated to Open FI$Cal or related transparency initiatives.

The BI Unit is composed of the following staff:

- Manager – 1 FTE
- BI Unit Staff – 4-5 FTEs

The BI Unit sits under the State CIO, and works with OpenGov to build basic system functionality and complete monthly extracts from FI$Cal.

The Senior Advisor to the FI$Cal Director serves as the system Product Owner). The Product Owner receives an additional ½ FTE support as needed.

Cost

There is a 3 year, 6-figure contract with OpenGov for the Open FI$Cal portal (pricing based on data complexity and size of state).

Funding Source(s)

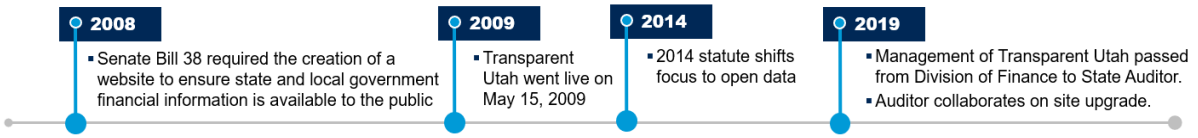
FI$Cal is an independent, central service agency. Non-general funds are recovered from special and non-governmental cost funds via a Central Service Cost Recovery Fund.

Utah: Summary Research Findings

Background & History

The notional timeline below provides a high-level overview of Utah's transparency initiative and program.

Figure 35. Utah Transparency Notional Timeline



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Statutory Authority & Scope

Statutory Authority

In 2008, a public transparency site was established under the management of the Utah Transparency Advisory Board (Utah Code 63A-3-401-403). In 2014, transparency refocused on constituents by expanding to include a broader open data lens (63A-3-403-404).

The Office of the State Auditor has statutory authority to withhold funds from entities not in compliance regarding data submissions. As of 2018, the Lieutenant Governor is mandated to maintain registry of all entities (Utah Code 67-3-3).

Scope of Transparent Utah

The primary consumers of Utah's transparency site are:

- Utah Legislature;
- Legislative Auditors;
- Policymakers;
- Office of the State Auditor; and,
- External Research Organizations (Pew Research Center, Casey Foundation, etc.).

The transparency site provides the following data:

- Employee Pay;
- Vendor Payments; and,
- Detailed Checkbook (expenditures and revenue).

Data is provided from most of Utah's 1,000+ public entities – including state and local governments, school districts, and special service districts.

Scope of State of Utah Spending Site

Utah's state spending site provides guided, interactive visualizations – such as charts, graphs, and tables – of government spending for state agencies in Utah.

Data is provided by all Utah state agencies.

Related Open Data & GIS Initiatives

Open Data Catalog is the State of Utah's primary Open Data site. It includes 5-micro portals and all geospatial mapping data (federated, not duplicated).

Operational Approach

Technology & Automation for Transparent Utah

Transparent Utah (an OpenGov site) is managed by the Office of the State Auditor, with limited automation.

Technology & Automation for State of Utah Spending Site

FINET – Utah's centralized accounting system – feeds the Spending Site, a Socrata portal (via a NICUSA contract). The spending site is automated – with some manual intervention – and is updated weekly to monthly based on data type; all data is mandated to be updated at least quarterly.

Operations for Transparent Utah

Data stewards (1,000+) from state agencies submit data to the portal. The Vendor (Utah Interactive) then uploads data on behalf of participating local government entities following QA protocols and requirements. All data goes through a QA process.

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The Transparency Advisory Board has directed that the website be updated at least quarterly for Expense and Revenue data and annually for Employee Compensation data. The State of Utah and some local entities update data monthly.

Operations for State of Utah Spending Site

The State Data Coordinator pulls agency FINET (financial) data from a data warehouse on a monthly basis for executive agencies; this process is partially scripted.

Underlying data is updated quarterly, and data generally reflects all payments made up through the previous quarter.

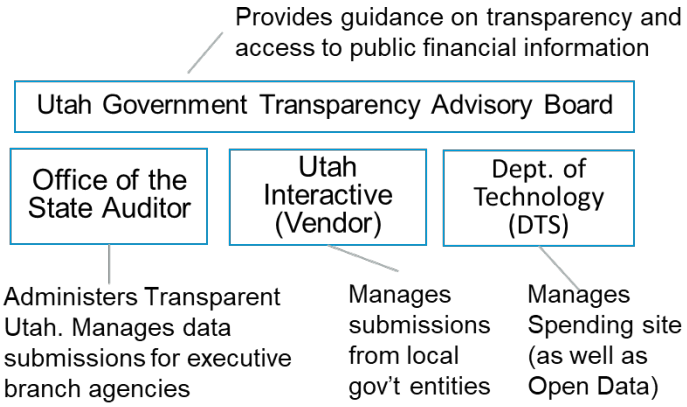
Budget & Staffing

The Utah Government Transparency Advisory Board provides guidance on transparency and access to public financial information. The Office of the State Auditor administers Transparent Utah, under the direction of the Transparency Advisory Board. The Board is comprised of thirteen members knowledgeable about public finance or providing public access to financial information.

The Department of Technology (DTS) – 1 of 25 executive agencies in the state – manages the spending site (as well as Open Data).

Utah Interactive (vendor) manages submissions from local government entities.

Figure 36. Utah Transparency Staffing & Reporting Structure



Staffing

Unlike Oregon's Transparency Program, no staff within the Office of the State Auditor or DTS are solely dedicated to Utah's transparency program or related initiatives.

The State Data Coordinator (1 FTE) – who sits within DTS – is the primary point of contact for financial data transparency and maintains the Open Data Portal and data catalog.

Utah's State Data Coordinator is 60% Data Engineer, 40% Data Scientist. The State Data Coordinator reports to the Chief Technology Officer (CTO) within DTS, who reports to the CIO.

The CTO and CIO are very hands-off with the State Data Coordinator.

Cost

25% of SB 70 funding covers Socrata license and 75% covers salary/benefits for the State Data Coordinator. The other 75% of SB 70 goes to State Archiving.

Utah Interactive (NICUSA) is a separate contract.

Funding Source(s)

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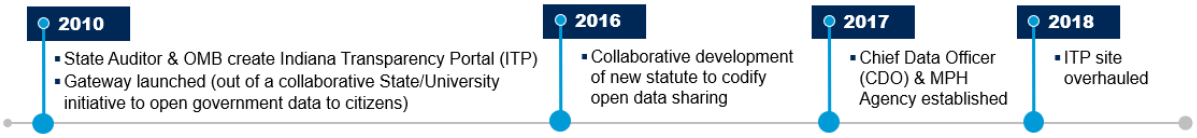
DTS is 100% fee-for-service (hosting websites, networks, databases). Both the State CIO and Data Coordinator funded through SB 70.

Indiana: Summary Research Findings

Background & History

The notional timeline below provides a high-level overview of Indiana's transparency initiative and program.

Figure 37. Indiana Transparency Notional Timeline



Statutory Authority & Scope

Statutory Authority

The Indiana Transparency Portal (ITP) was established in 2009 via statute (IC 5-14-3.5-2). Indian Gateway grew from a 2010 initiative – Information for Indiana.

In 2017, the Indiana Management Performance Hub (MPH) was created under the Indiana Office of Management & Budget (OMB), managed by a new Chief Data Officer (a Governor appointed position) reporting directly to the Governor (IC 4-3-26). This codified interagency data sharing, formally incorporating data-driven decision making into state government culture.

Scope of ITP

The primary consumers of the ITP site are executive branch state agencies. The scope of ITP data covers state government fiscal transparency – expenditures, reserves, liabilities, assets, contracts, employees, and vendors.

Data is provided by all state agencies.

Scope of Indiana Gateway

The scope of Indiana Gateway includes the following: budgets, annual financial reports, employee compensation reports, debt issuances, local development agreements, TIF district summaries, and school district collective bargaining reports, etc.

Data is provided by the following entities:

- Local Government Units
- Schools
- State Agencies (responsible for local government oversight)
- Casino Operators

Related Open Data & GIS Initiatives

Indiana has two key open data and GIS initiatives related to transparency: the Indiana Data Hub and IndianaMAP.

Indiana Data Hub is the state open data portal that aims to promote analysis, collaboration, and innovation. IndianaMAP is the largest publicly available collection of Indiana geographic information in the state.

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Operational Approach

Technology & Automation

Statewide ERP tools (PeopleSoft 9.2 Finance, and HR) enable fully automated daily updates. The new ITP portal uses data pipelines developed in SQL, and provides dynamic Tableau visualizations – one of several custom analytics solutions created by MPH.

Operational Approach for ITP

ITP data collection, preparation, and publishing is fully automated. State agencies use Indiana's statewide ERP systems which feed data to the ITP portal.

SQL data pipelines pull enterprise ERP data from a data warehouse daily, and connected Tableau visualizations and another portal data refresh automatically.

Operational Approach for Indiana Gateway

Participating local government entities submit data (and transmit related documents) directly onto Indiana Gateway. Collected data is made available to constituents via a web-based portal. Updates are automatically pulled into the portal daily

State oversight agencies communicate deadlines to local entities who must upload to the Gateway by designated timelines. Updates are automatically pulled in the portal daily.

Budget & Staffing

Budget and Staffing for ITP

The Indiana State Auditor's Office (Accounting and Reporting) maintains the general ledger and the state's centralized accounting system (PeopleSoft 9.2). The State Auditor also serves as the Chief Financial Officer (CFO) and the ITP Business Owner.

Development of the ITP site is a collaboration between MPH, the State Budget Agency, and the Office of Technology – though ITP is primarily supported by MPH regarding site bugs and fixes.

IOT manages all ITP tech hosting support; the Indiana CIO resides within IOT. The Chief Data Officer resides within MPH, which serves as the statewide provider of data analytics solutions. The State Budget Agency advises on ITP portal design for data accuracy.

Recent upgrades to the statewide accounting system primarily cost State Auditor time; however, MPH data engineers built pipelines for these updates.

Transparency staff are not dedicated, as the ITP site is fully automated.

Budget and Staffing for Indiana Gateway

Indiana Gateway was originally designed and implemented by the Indiana Business Research Center (IBRC) at Indiana University and is supported today by a collaboration of team members from the IBRC and four participating state agencies. Those state agencies are responsible, by Indiana statute, for a variety of local government financial oversight tasks.

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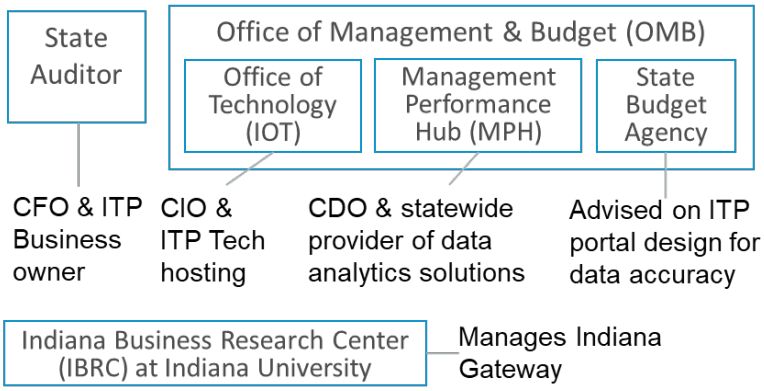
Figure 38. Indiana Transparency Staffing & Reporting Structure



Staffing

Unlike Oregon's Transparency Program, no staff within MPH (or IOT and State Budget Agency) are solely dedicated to Indiana's transparency program or related initiatives.

MPH is an executive-level agency that primarily supports executive agencies on a day-to-day business and operational basis. There are 26 FTEs within MPH in the following roles and positions:

- Administrative Overhead, which includes the Chief of Staff (3)
- Engagement Team (~5)
- Project Management Team (2)
- Data Management Team (5)
- IT Team (6)
- BI Developers (3)
- Data Science Team (2)

The Engagement Team manages a portfolio of agencies and business experts that work with MPH on a variety of projects and initiatives. The Project Management Team focuses on project management related tasks. The Data Management Team serves as the organization's engineers. The IT Team, while co-located with central IT, manage applications.

Cost

The ongoing cost for the ITP site is minimal, as no staff are solely dedicated towards and MPH staff time that is spent on ITP relates to system breaks and/or fixes. The recent ITP overhaul took an investment of $600,000, which primarily covered State Auditor labor and spanned 6 months.

Funding Source(s)

MPH is a central services agency; however, it does not charge customers.

Regarding funding sources, IOT covers the limited ongoing cost for portal hosting. There is limited MPH staff time covered under general fund appropriations – currently at $8.25M in 2020 for larger mission related work.

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Washington: Summary Research Findings

Background & History

The State of Washington Legislative Evaluation & Accountability Program Committee (LEAP) was created in 1977 by the Washington State Legislature to be the Legislature's independent source of information and technology for developing budgets, communicating budget decisions, and tracking revenue, expenditure, and staffing activity.

In 2008, legislation passed which directed that revenue and expenditure data be made as open, transparent, and publicly accessible as is feasible with the goal of making government more accountable – this led to the creation of the state's transparency website.

Today, the development and maintenance of the state transparency site is a collaboration between LEAP and the Office of Financial Management (OFM).

The notional timeline below provides a high-level overview of Washington's transparency initiative and program.

Figure 39. Washington Transparency Notional Timeline

Statutory Authority & Scope

Statutory Authority

In 2008, LEAP collaborated with OFM to create a transparency site using existing databases and structure, with a legislative focus on public access and usability (RCW 44.48.150, 2008).

In 2013, the transparency site grew to include geospatial data (RCW 44.48) and OFM created an agency fee inventory which was published onto the site by LEAP (RCW 44.48).

OFM is mandated to post collective bargaining agreements, which LEAP must publish onto the transparency site per RCW 43.88 (2017).

Scope

The primary consumers of Washington's state transparency site are constituents; however, LEAP focuses on the state legislature.

The transparency site provides data on the following:

- State expenditures by fund, account, agency, program, subprogram, object, and sub-object;
- State revenues by major source;
- State agency workloads, caseloads, performance measures, and recent audits;
- State agency budget data by activity; and,
- Inventory of state agency fees.

Data is provided from the following entities:

- All State Agencies, Boards, and Commissions;
- Governor's Office;
- Washington Legislature;

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- Higher Education and K-12 Institutions; and,
- Schools Districts via the Office of Superintendent of Public Instruction (OSPI).

Cities and counties are excluded from reporting of state fiscal information.

Related Open Data & GIS Initiatives

Washington State has three primary open data and GIS initiatives related to transparency: Washington State Open Data Portal, the Washington Geospatial Open Data Portal, and a Government Performance Management System (Results Washington).

Operational Approach

Technology & Automation

Washington LEAP has highly customized solutions that underpin its transparency site – built with ASPX, HTML, Power BI, and Microsoft SQL Reporting.

There is some automation thru integration with Washington LEAP financial systems (e.g., fiscal reporting and budgeting). Statewide system interfaces include:

- Systems that LEAP has created for fiscal committees are NOT statewide; these are Legislative systems.
- OFM has similar systems – that are customized – to be able to link with state budgetary systems.
- Ship data loads back and forth; LEAP gets a feed from OFM, and vice versa – to populate systems.
- Some access to information is provided through web interfaces (Microsoft SQL Reporting Services).

Upload frequency varies based on data type and source:

- Budgets – update as made public;
- Revenues, Expenditures, and Staffing – update monthly;
- Historical Data – update as data reflects budget format changes; and,
- Workloads, Caseloads, Performance Measures, and Performance Audits – update as websites that display data are updated.

Operations

The Washington State centralized financial system extracts statewide spending and revenue data. OSPI provides school employment salaries and other district data directly to LEAP.

Microsoft SQL Reporting services populates this data and creates reports from select legacy databases.

Throughout the process, Washington LEAP staff contact agencies and other entities as needed regarding data submission and reporting. LEAP frequently seeks feedback from data stakeholders and develops client-requested enhancements. There is a separate process and web team outside of LEAP for delivering website improvements and tracking workload.

Budget & Staffing

OFM serves as the State Comptroller (reports to the Governor) and manages statewide accounting. OFM works closely with state agencies to ensure reported financial data is accurate and up to date. OFM coordinates closely with Washington LEAP on financial system integration.

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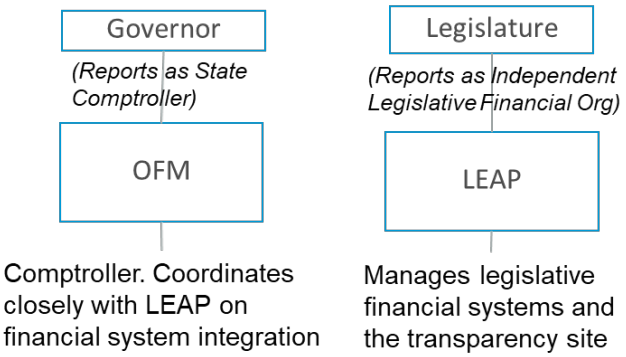
Washington LEAP reports to the Washington Legislature as an independent legislative financial organization. LEAP manages financial reporting systems (primarily for the legislature), and develops and manages the fiscal transparency site.

Transparency staff are not dedicated, as 2-3 LEAP software developers spend a small portion of their time supporting transparency initiatives.

Figure 40. Washington Transparency Staffing & Reporting Structure



In terms of transparency overall, LEAP is the primary owner, while OFM is considered a critical peer and key collaborator.

Staffing

Unlike Oregon's Transparency Program, no staff within Washington LEAP are solely dedicated to transparency.

LEAP is composed of 10 staff, including the following roles:

- IT Developers – 5 FTEs
- Staff who support transparency related work more specifically as needed – 2-3 FTEs

LEAP staff primarily support the Legislature, such as developing budgets, tracking revenue, consulting, analysis, and reporting. During Legislative Sessions, LEAP provides 24/7 support to budget writing committee staff.

Cost

Washington LEAP uses a chargeback process for leg-tech support provided.

Funding Source(s)

Washington LEAP receives around $4.6M – primarily for staff salary and benefits. Not much is used for its fiscal transparency site and related initiatives.

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Appendix – Essential Duties of the Current OR Transparency Program Manager

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Essential Duties of the Current OR Transparency Program Manager

Currently, the top four areas of responsibility for the Oregon Transparency Program Manager (per position description and winter 2018 equity survey)[1] are:

1. Management of Transparency Program, Plan, and Vision.
2. Collaboration, Leadership, and Support to Content Contributors.
3. Leadership and support to Transparency Oregon Advisory Commission (TOAC) and Legislature.
4. Management of Oregon Transparency Website Administration and Technical Systems Support.

Management of Transparency Program, Plan, and Vision:

Achieved through Program Management and planning of current and future goals for all transparency content (i.e., datasets and information) topic areas per ORS 276A.250–276A.262.

- Listen, review, analyze, and act upon feedback from agency-wide and statewide content contributors, legislative and commission members, and the general public.
- Provide meaningful, actionable, and progressive program, process, policy, and statutory improvements.
- Communication Outreach:
    - Oregon Transparency Updates – monthly planning and creation;
    - Transparency Presentations and Conference Calls – responding to wide range of transparency program requests for discussion, collaboration, content and information on local, legislative, statewide, national, and international levels.

Collaboration, Leadership, and Support to Content Contributors:

- Provide leadership and serve as point of contact for all branches of state government, counties, semi-independent entities, public corporations, community colleges, universities, Education Services Districts (ESDs), etc.
- Manage, identify, and create policy, guidelines, processes, forms, templates, instructions, and tools unique to each content provider, reporting as required by statute.
- Manage content for public meetings, administrative rules, public records, workforce/salary, contracts, expenditures, revenues, budget, economic development, enterprise zones, performance measures, county lottery funds, educational and informational resources, etc.

Leadership and Support to Transparency Oregon Advisory Commission (TOAC) & Legislature:

- Serve as point of contact to provide leadership vision, goal setting and support
- Provide presentations and statistical reports to State CIO, TOAC, and LFO.
- Develop and recommend legislative concepts, bills, administrative rules, policy, and performance standards and strategies to achieve program goals.
- Prepare fiscal impact.

[1] Essential duties of the current OR Transparency Program Manager listed in this section reflect the responsibilities of Paula Newsome as self-reported via email in March 2020.

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- Respond to legislature, including providing testimony.
- Develop and implement budget guidelines for management of Transparency Program.
- Review and manage statutes, analyze requirements, and collaborate with content contributors, e-government, tech teams, and TOAC.
- Provide policy direction and representation to executive management, governing bodies, state agencies, stakeholders, and legislature.

Management of Oregon Transparency Website Administration & Technical Systems Support:

- Manage and update website content and navigation, structure, and redesign – per ORS 276A.250–276A.262.
- Conduct QA/review of all contributors' content.
- Create, manage, and update all data dictionaries, user guides, and resources.
- Manage, maintain, and create website, datasets, analysis tools, and applications. This includes:
    - The Oregon Transparency website (both current and historical) – SharePoint;
    - Largest dataset owner on (Data.Oregon.Gov) – Socrata;
    - Transparency analysis – Google Analytics;
    - Email and public records requests – (agency, state, national, or international);
    - OR GovSpace (resources); and,
    - OR Public Meeting Manager.
- Perpetually identify, develop, and implement transparency program and process improvements.

Other Duties:

- Manage and oversee:
    - Creation of the Office of the State CIO (OSCIO) BCP (Business Contingency Plan);
    - Reporting of Quarterly OSCIO QTR KPMs (Key Performance Measures);
    - Reporting of Annual OSCIO KPM (Key Performance Measures);
    - Nominations and submissions to annual OSCIO NASCIO (National Association of State CIOs) Awards Program;
- Represent the state of Oregon by:
    - Participating on the national level as a NASCIO Awards Program judge; and,

Managing program creation and submissions to the (local) Annual Oregon State CIO Awards Program.

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Appendix – Deep Dive Staffing Comparison

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Comparison of Peer State Staffing Approaches

The following table provides staffing details across Oregon's Office of Data Governance and Transparency and interviewed peer organizations.

Table 1. Expanded Comparison of Peer Organization Staffing

	Oregon	Arizona	California	Utah	Indiana	Washington
Peer Organization Interviewed	Office of Data Governance and Transparency	Dept. of Admin. (ADOA), General Accounting Office (GAO)	Dept. of Financial Information System for California (FI$Cal)	Dept. of Technology (DTS)	Management Performance Hub (MPH)	Legislative Evaluation & Accountability Program Committee (LEAP)
Peer Organization Primary Responsibilities	Leads state transparency, geospatial data governance & data management, and the open data initiative.	Drives state policy and procedure, prepares statewide financial reports, manages statewide ERP core financials & HR systems (AFIS & HRIS), and provides technical, management and advisory services.	Manages FI$Cal, the statewide ERP system for accounting, budget, cash management and procurement.	Facilitates information technology management within state government as the state's preferred IT services provider.	Facilitates data-driven decision making in state government as the state's preferred data and analytics services provider.	Supports the Legislature developing budgets, tracking revenue, conducting analysis, developing reports, and consulting.
Peer Organization Degree of Transparency Focus	Manages transparency as a core part of the mission.	Manages Arizona Financial Transparency Portal as a bi-product of core mission.	Manages OpenFI$Cal as a bi-product of core mission.	Manages State of Utah Spending portal as just one initiative within a portfolio of data & analytics projects / solutions.	Manages Indiana Transparency Initiative as just one initiative within a portfolio of data & analytics projects / solutions.	Manages Washington State Fiscal Information site as a bi-product of core mission.

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	Oregon	Arizona	California	Utah	Indiana	Washington
Notes on Staffing Details	Staffing details were provided for entire organization, along with an estimate of their time dedicated to transparency.	Staffing details were provided for a sub-set of the organization. Only staff supporting transparency-related efforts, along with an estimate of their time dedicated to transparency was provided.	Staffing details were provided for a sub-set of the FI$Cal organization. Only staff supporting transparency-related efforts, along with an estimate of their time dedicated to transparency was provided.	Staffing details were provided for a sub-set of the organization. Only staff supporting transparency-related efforts, along with an estimate of their time dedicated to transparency was provided.	Staffing details were provided for entire organization, along with an estimate of their time dedicated to transparency.	Staffing details were provided for entire organization, along with an estimate of their time dedicated to transparency.
Staffing Details	*Details listed below include **all** staff within Office of Data Governance and Transparency.*	*Details listed below include **part of** the staff within GAO.*	*Details listed below include **part of** the staff within Dept. of FI$Cal.*	*Details listed below include **part of** the staff within DTS.*	*Details listed below include **all** staff within MPH.*	*Details listed below include **all** staff within LEAP.*
Leadership & Manager Roles	1 – Chief Data Officer 1 – Transparency Manager	1 – Senior Advisor to Director (Product Owner) 1 – BI Manager	1 – Product Manager 1 – BI Manager	1 – Socrata & Data Coordinator	1 – Chief Data Officer 1 – Chief Privacy Officer & General Counsel 1 – Chief Technology Officer 1 – Chief of Staff 1 – Office Manager 2 – Project Managers 1 – Data Mgmt. Manager	1 – Agency Director

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	Oregon	Arizona	California	Utah	Indiana	Washington
Data & Analytics Focused Roles	1 – BI Architect 3 – Geospatial Analysts	~3 – BI Reporting Teams	~5 – BI Unit	*(multi-hatted staff, listed in leadership section above)*	2 – Data Scientist 3 – Data Engineers 1 – Data Architect 3 – BI Team	*(multi-hatted staff, listed in IT section below)*
Information Technology Focused Roles	0	1 – Application Administrator	0	*(multi-hatted staff, listed in leadership section above)*	2 – Application Administrators 1 – Database Administrator	10 – IT/ Web Dev., Fiscal Analysts (all are experts in statewide accounting, budget development, and systems development)
Customer Relationship Focused Roles	0	0	*(multi-hatted staff, listed in leadership section above)*	*(multi-hatted staff, listed in leadership section above)*	~5 – Business Engagement Managers	0
Total Staff (where reported)	6	*Not provided* *(6 with part-time transparency responsibilities)*	*Not provided* *(6 with part-time transparency responsibilities)*	*Not provided* *(1 with part-time transparency responsibilities)*	~25	11

Gartner analyzed differences in staffing and workload given information documented. While it's not possible to fully adjust workload quantitatively, the combination of the quantitative staffing and qualitative workload analysis provided may be considered a useful reference point to inform strategic planning.

The following table shows that for the narrow focus of transparency, Oregon could be considered relatively in-line to slightly overstaffed compared to peers. However, Oregon's approach of staffing a single dedicated manager full-time is not in-line with approaches taken in other states. As the staffing numbers for Indiana show in the table above, if Oregon were to invest in adding much needed skillsets to a more integrated Office of Data Governance and Transparency team, transparency could be enhanced as a bi-product and Oregon, and the team would be able to unlock additional value from maturation and expansion of data and analytics capabilities in the state.

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In order for the Oregon Office of Data Governance and Transparency to implement change needed to gain efficiencies and bring greater value to constituents, new roles will be needed. The next appendix (Descriptions of Potential Future Roles) provides role descriptions that should be considered as potential enablers of growth of the Office of Data Governance and Transparency

Table 2. Staffing Benchmark Comparison

	Oregon	Arizona	California	Utah	Indiana	Washington
Peer Organization Interviewed	Office of Data Governance and Transparency	Dept. of Admin. (ADOA), General Accounting Office (GAO)	Dept. of Financial Information System for California (FI$Cal)	Dept. of Technology (DTS)	Management Performance Hub (MPH)	Legislative Evaluation & Accountability Program Committee (LEAP)
Estimated Staff Time Spent on Transparency	~1.25 Dedicated manager (1 person) with CDO supporting (Less than ¼ time).	<1 Staff are not dedicated to transparency. Reporting team responsible for FI systems/ reporting also supports transparency (2-3 staff for ¼ time).	<1 Staff are not dedicated to transparency. FI$Cal BI team (4-5 +1 Manager part time at end of month) and OpenFI$Cal product owner (½ time).	<1 Staff are not dedicated to transparency. State Data Coordinator (1 person) – manages financial data transparency, maintains Open Data Portal and data catalog, and has a broad mandate to help solve the state's biggest data challenges.	~0 Staff are not dedicated to transparency. Data Engineer (1 person spends negligible time only on break/fix).	<1 Staff are not dedicated to transparency. Fiscal analysts and IT developers (3 people as needed).
Considerations for comparison – workload differences	While Higher Ed and Quasi-Public Entities are statutorily included in scope, many do not provide data.	Some local governments and schools host their own financial transparency data, but Arizona is a larger state.	California is substantially larger and more complex, but California is only reporting some State agencies' fiscal data.	Work effort to manage Transparent Utah, which includes data from 1,000 public entities is not included.	Work effort to manage Indiana Gateway (which does include some local government and schools), is not included.	Broad data collected (more than fiscal) and broad customer base.

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Appendix – Descriptions of Potential Future Roles

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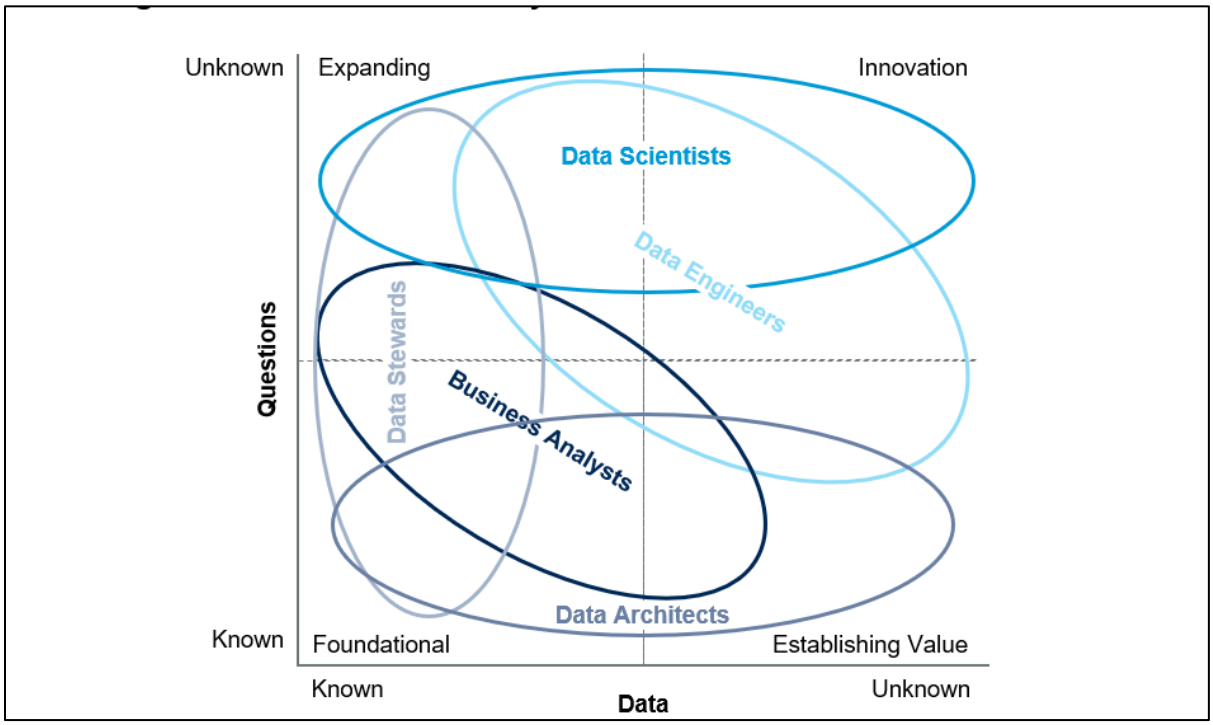
Relevant Roles for Future Consideration

As the Oregon Office of Data Governance and Transparency expands and matures, several new roles should be considered:

- Data Scientist
- Data Engineer
- Data/Information Architect
- Analytics and BI Developer
- Business Relationship Manager
- Business Analyst
- Additional Future Roles

A single person can take on more than one role, and in a budget constrained environment there's often a premium placed on individuals with multiple high value skills and capabilities.

Figure 41. Role Alignment in the Data & Analytics Infrastructure Model



Source: Data Engineering Is Critical to Driving Data and Analytics Success (Gartner, December 2019)

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Role Definition: Data Scientist

Overview

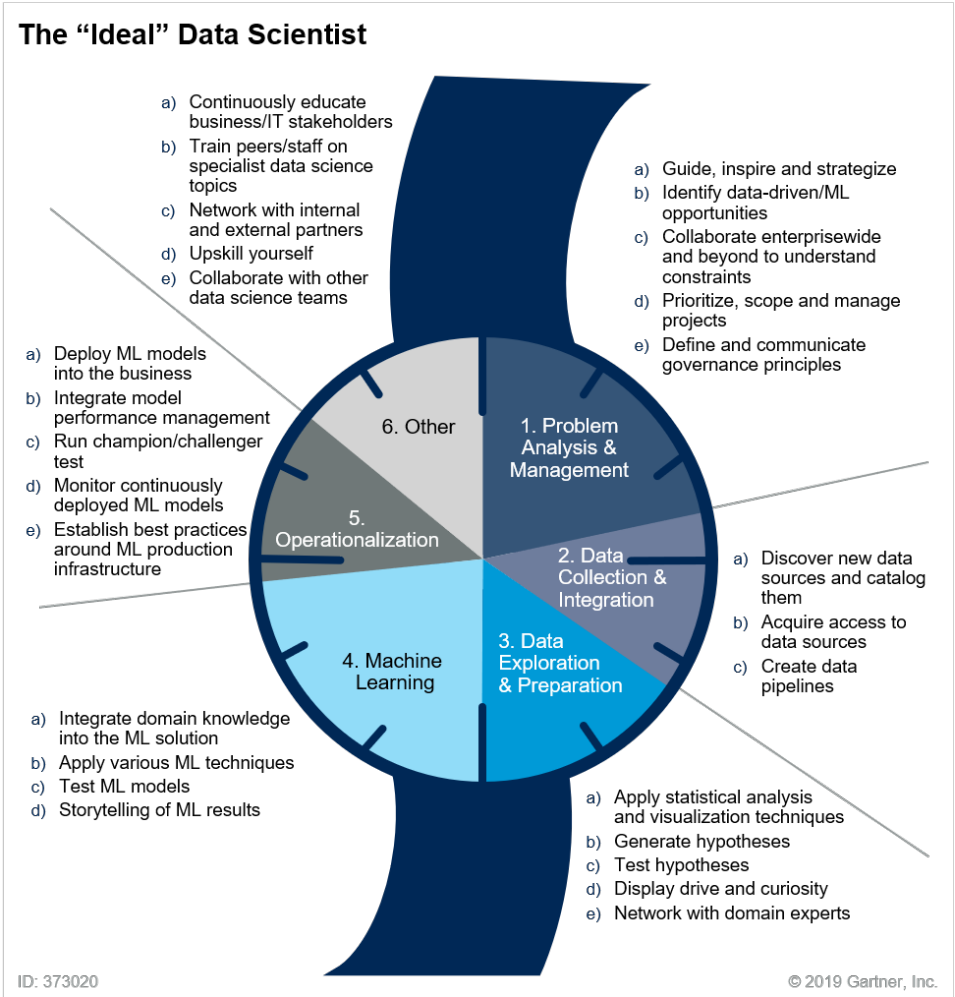
At its core, data science is the practice of utilizing methods from quantitative disciplines (statistics, machine learning, and operations research) to extract knowledge from data. This knowledge can be used to describe situations, predict or classify situations, and to device best-next-action models (prescriptive analytics).

Data scientists are the key role for applying data science principles to solving a range of business problems. Within organizations, data scientists serve as the main characters that drive modern data and analytics projects forward in the enterprise.

The Role of a Data Scientist

Data scientists are responsible for modelling complex business problems and discovering business insights using statistical, algorithmic, mining, and visualization techniques.

Figure 42. The "Ideal" Data Scientist



Source: Toolkit: Job Description for the Role of Data Scientist for Small/Emerging Teams (Gartner, January 2019)

Small and emerging teams typically seek well-rounded Data Scientists who care about the whole data pipeline, including management and training.

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A Data Scientist Does

- ✓ Collaborate with cross-functional stakeholders to understand the business usage of data
- ✓ Architect database and computing environments
- ✓ Communicate recommendations to enable decision-making

A Data Scientist Does Not

- ✘ Necessarily perform data warehousing, data engineering, or traditional BI reporting activities
- ✘ Necessarily have specialized industry knowledge

Role Definition: Data Engineer

The increasing diversity of data, and the need to provide the right data to the right people at the right time, has created demand for the data engineering practice. Data Engineers play a key role in building and managing data pipelines, and promoting data and analytics use cases to production (in line with business processes). Gartner offers data and analytics leaders a sample job description for this emerging role, as part of their data management strategy.

The Role of a Data Engineer

Data engineers play a key role in building and managing data pipelines, and promoting data and analytics use cases to production (in line with business processes).

A Data Engineer Does

- ✓ Perform data integration, preparation, and management
- ✓ Lead complex task of curating datasets and data pipelines created by nontechnical users, data scientists, and IT resources and operationalizing data delivery for production
- ✓ Deploy analytics and data science into existing business processes and applications
- ✓ Develop, construct, test, and maintain architectures, such as databases and large-scale processing systems

A Data Engineer Does Not

- ✘ Necessarily develop models for data science and machine learning
- ✘ Necessarily clean, massage, and organize (big) data

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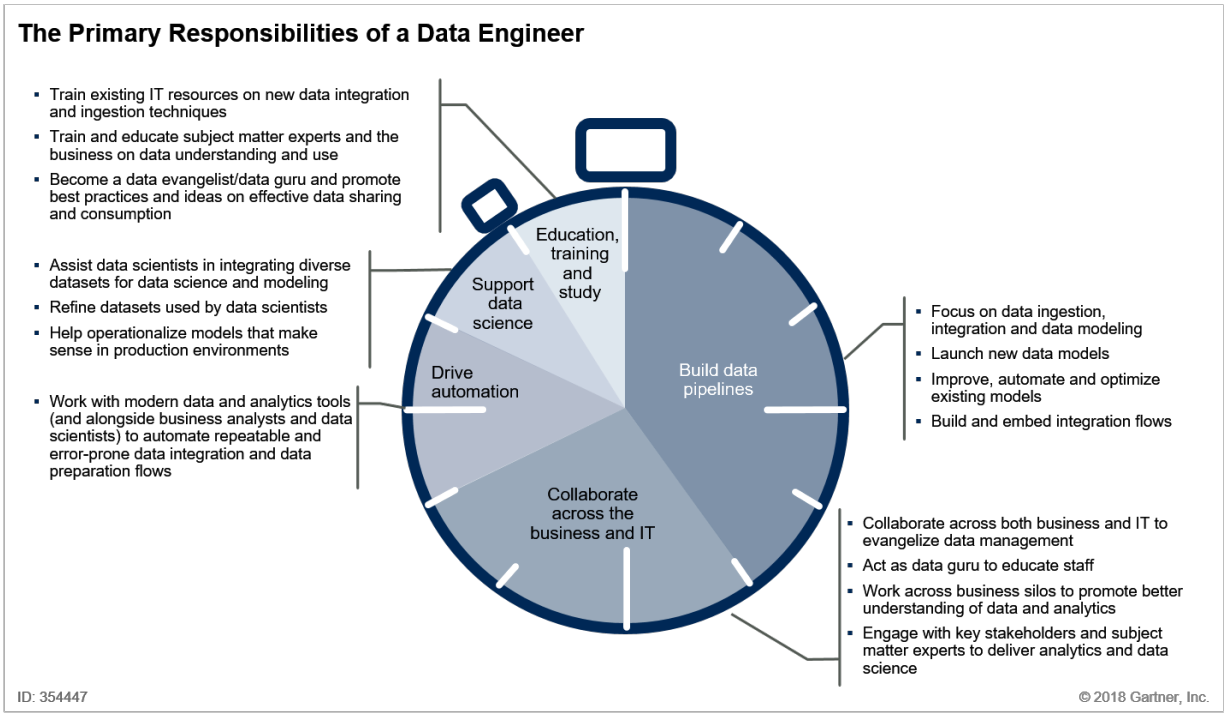
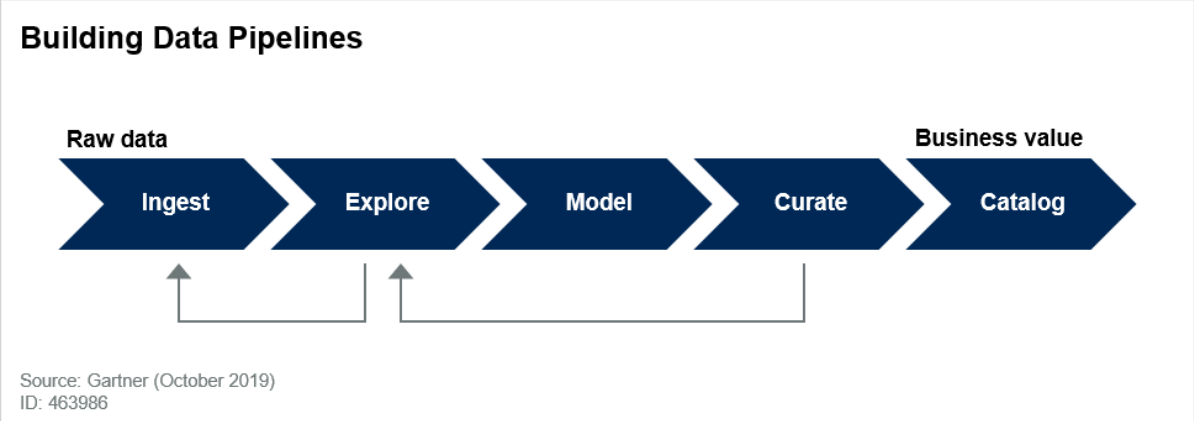
Figure 43. The Primary Responsibilities of a Data Engineer



Source: Toolkit: Job Description for the Role of a Data Engineer (Gartner, September 2018)

The primary responsibility of data engineers is to build data pipelines. It is an iterative and agile process for exploring, combining, cleaning and transforming raw data into curated dataset. It requires a strong focus on data integration, modeling, optimization, quality and governance, and security for reuse.

Figure 44. Building Data Pipelines



Source: Gartner, October 2019

Ingest – Involves various tasks, including deciding whether to connect or collect data, or to build APIs for data access by analyzing source systems for optimal access. It also involves choosing the appropriate target data store to capture data extracts for downstream consumption. This step can require creating new (and reusing or optimizing existing) extract/transform/load (ETL) processes, employing a variety of data integration and data preparation tools, or writing code —

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such as Scala, Python and Java. Data engineers may need to work with IT operations to figure out the best possible source connectivity.

Explore — Involves performing initial data exploration steps, such as profiling, understanding data quality, binning, pivoting, summarizing and finding correlations. At this stage, data engineers might need to work with data stewards to understand and address data quality issues, and ensure data is assured. This might involve, for example, separating outliers from errors.

Model — Involves architecting, building and delivering new data models. At this stage, data engineers might need to work with data architects to formalize the models in accordance with the set organization governance practices.

Curate — Involves cleaning, integrating and transforming data in accordance with the defined target model. At this stage, data engineers might need to confirm the desired data quality with data stewards, and the output of the physical models with data architects.

Catalog — Involves creating an inventory of all related data assets, adding descriptions and making them discoverable for business use. Also involves applying data governance rules in collaboration with information stewards, where applicable.

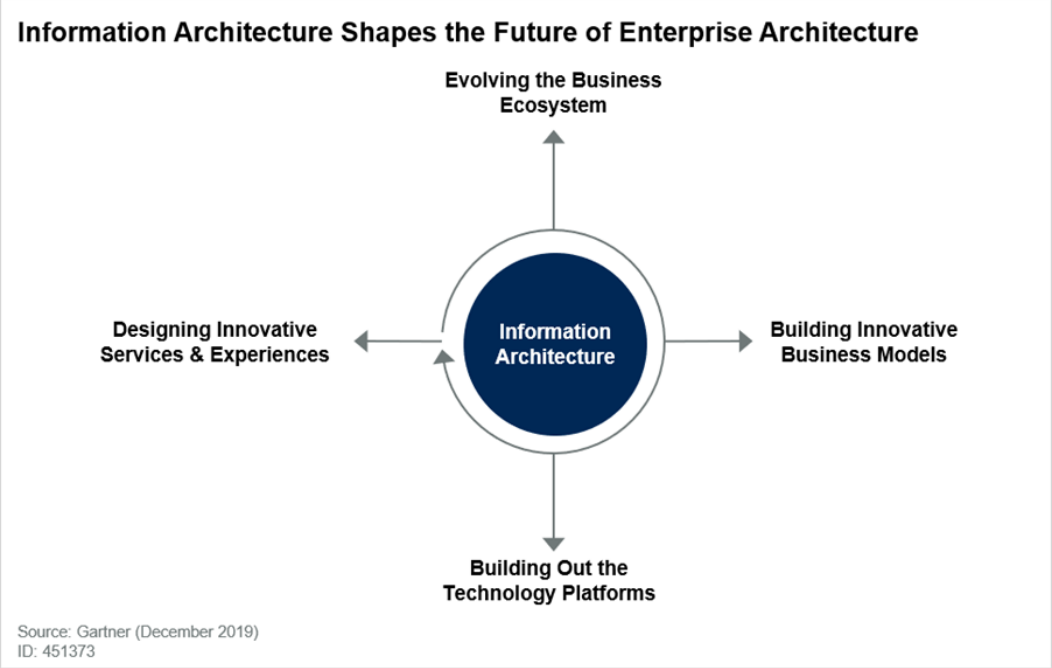
Role Definition: Data/Information Architect

By 2023, 65% of EA programs will refocus on information architecture, making it central to all digitalization initiatives.

The Role of a Data/Information Architect

A Data/Information Architect provides technical leadership and strategic direction for the technologies, standards, processes and architectures for data across the enterprise.

Figure 45. Information Architecture Shapes the Future of Enterprise Architecture



Source: Gartner, December 2019

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A Data/Information Architect Does

- ✓ Contribute to the strategy and architecture for managing the enterprise's data
- ✓ Manage data governance and data quality best practices
- ✓ Work with business and IT stakeholders to ensure data architecture address business and IT objectives

A Data/Information Architect Does Not

- ✗ Necessarily focus on the physical implementation of databases
- ✗ Perform the data analytics or business intelligence for the organization
- ✗ Focus on user experience or functionality

Role Definition: Analytics and Business Intelligence Developer

The analytics and business intelligence developer maintains strong relationships with business partners in order to provide analytical and technical support for analytics and BI activities. They develop reports, dashboards and interactive visualizations, and work with data warehouses, data integration and data modelling to support business decisions, leveraging data to gain key insights into business opportunities. The developer builds analytics and BI capabilities while also ensuring distribution and delivery of high-quality analytics solutions and BI reports.

Role Definition: Business Relationship Manager

A Business Relationship Manager's mission is to increase the business value delivered by the IT organization and its perception among clients in the business areas.

The Role of a Business Relationship Manager

The Business Relationship Manager provides direction and guidance to business partners to enable the best information technology solutions that match strategic business needs.

Alternative titles include Business Liaison, Business Technology Advisor, or Business Consultant.

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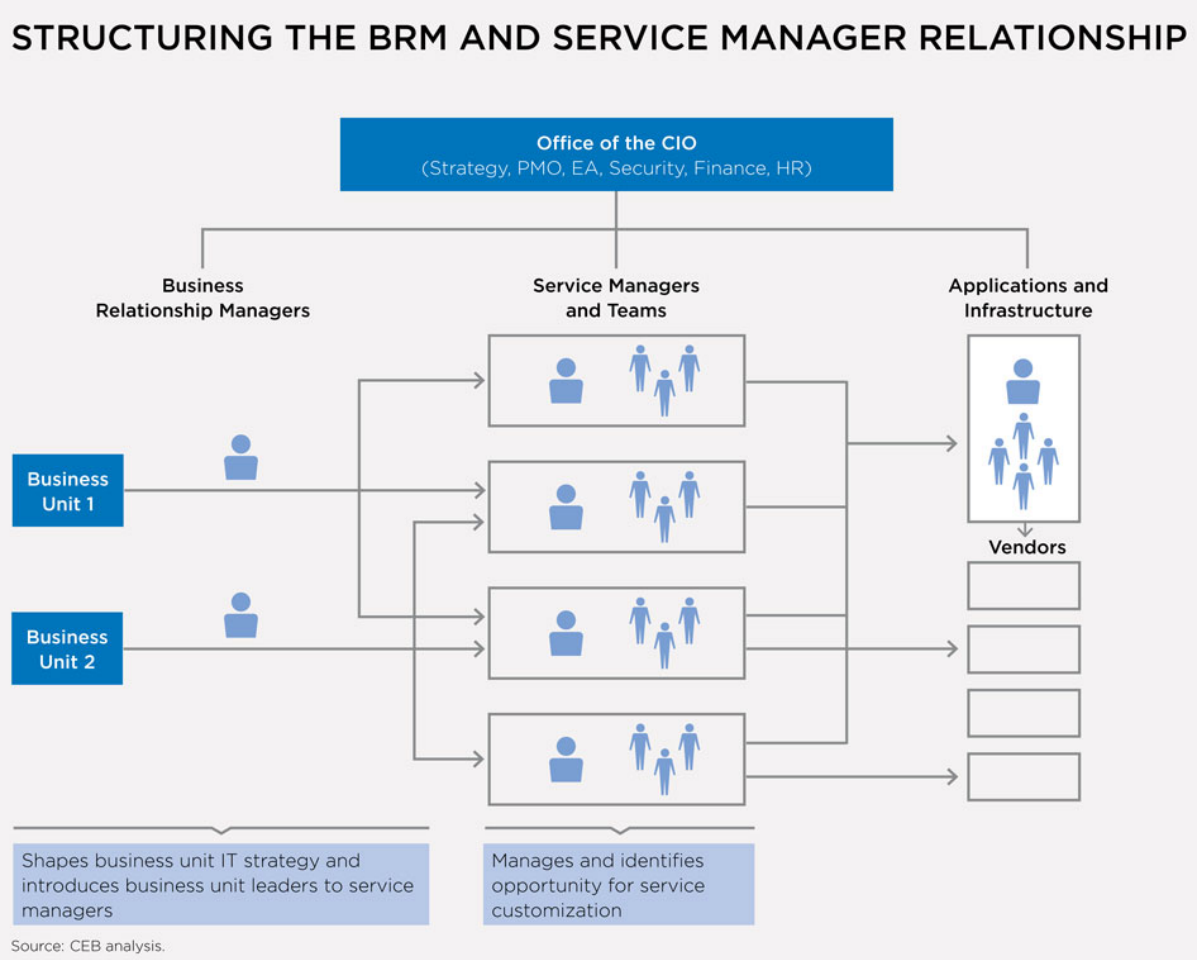
Figure 46. Structuring the BRM and Service Manager Relationship



Source: Gartner, December 2019

A Business Relationship Manager Does

- ✓ Bridge the gap between business partners and technology solution providers
- ✓ Communicate business needs with appropriate IT solution center to gain alignment between business needs and technical capabilities
- ✓ Track ROI for business initiatives including cost, benefits, and risk
- ✓ Define, prioritize, and manage program and project initiatives

A Business Relationship Manager Does Not

- ✗ Determine the enterprise business strategy
- ✗ Necessarily recommend technology solutions
- ✗ Directly engineer technical solutions

Role Definition: Business Analyst

Business Analysts act as the intermediary between IT and the business to help business partners achieve their desired outcomes using technology.

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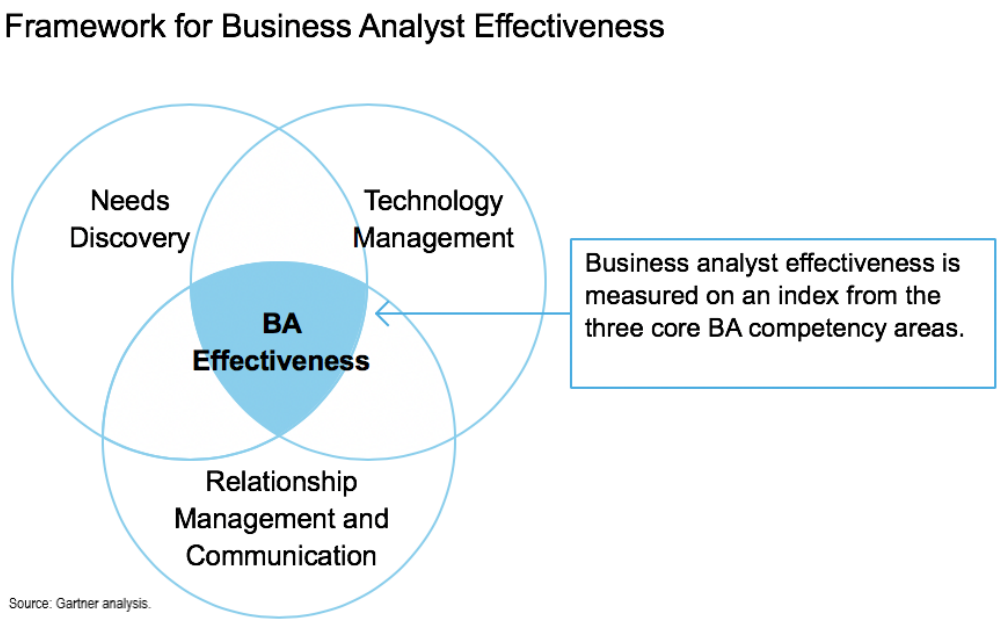
The Role of a Business Analyst

The Business Analyst acts as the intermediary between the business and IT, using a deep understanding of business processes and technology to help business partners achieve their desired outcomes.

Figure 47. Framework for Business Analyst Effectiveness



A Business Analyst Does

- ✓ Identify unarticulated business needs and coordinate between stakeholder groups to address them
- ✓ Provide consultative support on business-led technology initiatives
- ✓ Create prototypes and codesign innovative solutions
- ✓ Proactively monitor industry, functional, and technology trends

A Business Analyst Does Not

- ✗ Design technical and functional aspects of information systems
- ✗ Necessarily need expertise in data analytics or statistical modeling

Role Definition: Additional Future Roles

The growing importance and strategic significance of data and analytics is creating new challenges for organizations and their data and analytics leaders. Some traditional IT roles are being disrupted by “citizen” roles performed by nontechnical business users. Other new hybrid roles are emerging that cut across functions and departments, and blend IT and business skills.

Several key factors are contributing to the emergence of these roles:

- Increased strategic importance of data and analytics calls for the creation of an executive-level data and analytics leader looking for value and monetization.

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- Increased business-domain-led analytics has created part-time and hybrid roles across departments and lines of business.
- Algorithmic business is creating new responsibilities and roles for those managing data and analytics and asks for different, more-complex skills in areas such as artificial intelligence.
- Increased dependence on real-time analytics (using streaming data) requires different skills and a different mindset.
- Traditional data management roles are impacted by the emergence of new users demanding more autonomy in data management activities.
- Data management roles need to evolve to meet new and increasing demand for data access.
- New citizen roles -- such as the citizen data scientist and citizen data engineer -- are complementing traditional roles like the ETL developer and require new approaches to responsibility and accountability for data management activities.
- The need to prototype new data is leading to more-adaptive forms of governance. This, in turn, leads to a need for changes in organization and roles related to data and analytics.

Artificial Intelligence/Machine Learning Developer: AI/ML developers are increasingly responsible for enriching applications in general with machine learning or other AI capabilities such as natural language processing, image recognition or optimization. They should be able to embed, integrate and deploy AI models that are developed by data scientists or other AI experts, offered by (cloud) service providers or developed by themselves using augmented machine learning. In addition, AI/ML developers should be able to collect and prepare data as input for model training and execution, either by themselves or by working together with data engineers.

Key skills include the abilities and technical expertise needed for integration and deployment, such as API management and containerization. Other important skills relate to identifying and connecting to potential data assets, data quality, data preparation and data integration, and how these are used for model training and execution. In addition, to identify potential use cases they need at least a basic understanding of the workings, pros and cons of machine learning and other AI techniques, such as clustering, regression, decision trees and (deep) neural networks.

Continuous intelligence roles: These roles are involved in designing and building continuous intelligence into business processes. Business operations require that business analysts, analytics professionals and software developers acquire new skills and perform new functions. Continuous intelligence spans analytics, business applications, business process optimization and decision automation.

Data/AI ethicist: The ethicist thinks through the unintended consequences of the use of data and determines the risks and opportunities. What value can be generated from new uses of data, and does that match the organization’s values? As not all unintended consequences of data can be predicted, the ethicist monitors for unforeseen consequences that may lead to disproportionate insights into the life of people. Lastly, the ethicist is responsible for making all stakeholders ethically aware. When there is AI involved, and key topics include explainable AI and bias detection, the role of the ethicists becomes very technical and mathematical in nature.

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Appendix – Peer State Interview Questions

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Interview Questions

Gartner developed the following interview guide to provide an advanced look at the questions and topics that were explored during peer state interviews. Each interview focused on the areas that were most pertinent to interviewees; however, the questions helped frame and initiate each discussion.

There was no requirement for interviewees to document answers to questions ahead of time. Several peer state interviewees did provide additional documentation for review.

The topics and questions outlined in this section can be leveraged in future discussions with additional peer states as Oregon's Transparency Program continues to grow.

Table 3. Gartner Interview Questions

Topic	Interview Questions
Introductions, Program History & Current Scope	▪ Please provide a brief description of your role(s) within your organization. ▪ Please describe how your program was created (including any underpinning statutes), implemented and expanded over time. ▪ What is the current focus of your transparency program — government financial transparency, or a broader scope? ▪ How does your program interface with any related initiatives or programs in your state? (e.g., data privacy, open data, geospatial data sharing, etc.) ▪ Who do you view as your key customers and stakeholders? The legislature, citizen developers, constituents?
Program Funding, Staffing & Operations	▪ Describe your program's funding sources and funding level. ▪ What was your initial startup investment? How much investment was needed to complete any recent modernization projects? ▪ How is your operational budget allocated to enable ongoing execution? (% staff, technology, etc.) ▪ What is included in the operational responsibilities of your program? (Partner engagement, policy definition, maintaining a web presence, content management, portal or platform maintenance, etc.) ▪ How many staff currently support your program and what are their specific roles? What do you view as the most critical skillsets by role? ▪ Describe your current operational processes for engaging stakeholders; requesting data; collecting data; aggregating and organizing data; processing, editing and packaging data; marketing and delivering data. ▪ To what extent are your existing processes enabled through automation?
Best Practices & Lessons Learned	▪ How do you measure and report on the success of your program? ▪ To what extent does your program have top down support and sponsorship from key government leaders? ▪ To what extent is the underpinning statute a critical enabler, or a challenge to overcome (e.g., overly restrictive, insufficient delegated authority, etc.)? ▪ How well do you believe you have incorporated the use of human-centered design principles, analytics and a variety of user testing and user feedback methods for continuous improvement of the citizen experience? ▪ How do you believe the program is perceived by participating agencies? (a compliance exercise, an opportunity to connect with constituents, etc.) ▪ How did you overcome any organizational resistance for greater transparency?

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	▪ What are the most critical best practices and lessons learned from your efforts to build out a Transparency Program in your state?
Future Considerations	▪ Briefly describe your future vision for your program, how do you anticipate the program changing? ▪ What do you see as the highest value opportunities to advance your transparency program in the near term, and the longer term?
Wrap Up	▪ Are there other questions we should have asked you, or additional information that would like to share with us? ▪ What additional advice would you provide to the Oregon CDO as she works to expand and enhance Oregon's Transparency Program?

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Appendix – Interview Participants & Other References

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Peer State Interview Participants

Table 4. Peer State Interview Participants

State	Agency	Representative(s)	Interview Date
IN	Management and Performance Hub	▪ Josh Martin – Chief of Staff	13 January 2020
WA	Legislative Evaluation & Accountability Program Committee	▪ Susan Howson – Administrator	15 January 2020
UT	Department of Technology Services	▪ Drew Mingl – State Data Coordinator	16 January 2020
AZ	Department of Administration	▪ Jeff Wolkove – State Data Management Architect ▪ Angela Dillard – AFIS Statewide Accounting System Administrator	17 January 2020
CA	FI$Cal	▪ Joel Riphagen – Senior Advisor to FI$Cal Director	24 January 2020

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- Business Relationship Manager Role Profile
- Data Engineering is Critical to Driving Data and Analytics Success
- Data Scientist Job Description Template
- Government Digital Transformation and Innovation Primer for 2020
- Hiring Guide and Job Description for Business Analyst
- Hiring Guide for Data/Information Architect
- Hiring Guide and Job Description for Data Scientist
- How to Get More Value From Data Visualization
- Interview Guide for Hiring Developers in the Digital Era
- Market Guide for Government Open Data Management Platforms
- Rethink Network Monitoring for the Cloud Era
- Structuring the Business Relationship Manager Role
- Toolkit: Sample Job Description for a Business Process Analyst
- Toolkit: Job Description for the Role of a Data Engineer
- Toolkit: Job Description for the Role of Data Scientist for Small/Emerging Teams
- What Are the Must-Have Roles for Data and Analytics?

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