A Deliverable for
Iowa Department of Revenue

IDR Tax Modernization Business Case

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Engagement: 330051949

Gartner

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1.0 Introduction

1.1 Gartner Overview

Gartner, Inc. (Gartner) is the world's leading authority on the business of information technology (IT). With a 39-year history, more than 13,000 Gartner associates support the critical business initiatives of more than 11,000 organizations. Our organization has a particular strength in the government and public sector from which a full 9% of our client base originates. Specifically, Gartner Consulting's value proposition is that we provide key differentiators to increase the probability of large-scale program success. As the world's leading technology research firm, Gartner Consulting's advisory services for tax capabilities are powered by the latest industry best practices, trends and benchmarks. For example, Gartner has helped federal, state and local government clients increase the probability of success for Tax Modernization initiatives.

Figure 1. Gartner's Differentiation and Impact to IDR's Goals

Gartner Differentiation	Proof Points	Impact for IDR
IDR Goals Guiding IDR to make informed decisions on increasing their ability to meet rising demands	▪ Project approach designed to produce supporting consensus ▪ Project approach designed to link recommendations to objectives which matter to institutional leadership	▪ Increased likelihood of success for a challenging, potentially high-risk initiative
Solution Methodologies based on independent insight in a digital age	▪ Tools embody best practices developed across thousands of similar projects ▪ Reflects Gartner Research's up-to the minute knowledge of the tax processing system market and tax revenue agency trends	▪ Faster, more effective project execution ▪ Rigor and transparency of analyses facilitate IDR consensus
People Seasoned experts that have mitigated risks and driven success for your peers	▪ 20+ Years working with global tax revenue agencies ▪ 10+ Years working with tax processing systems ▪ Project team members who understand the unique processes and culture of tax revenue agencies	▪ Access to the experience and lessons learned from multiple similar efforts at peer institutions ▪ Effective IDR participation and consensus-building
Brand Power of Gartner research, independence and objectivity	▪ Largest IT research database (110,000+ reports) ▪ Global community of 1,000+ research analysts, 60% of who are hired with 20+ years of experience ▪ Only IT and business Consulting firm with an Office of the Ombudsman to ensure independence	▪ Insight based on cutting-edge research ▪ Credible advice that leads to defensible business decisions
Benchmarking Ability to measure, optimize and transform	▪ The industry's largest IT repository, drawn from 5,000 benchmarks annually	▪ Most accurate comparison to peers helps drive measurable savings

Gartner Consulting has an extensive number of experienced technology and public sector professionals around the globe, supported by incomparable sources of proprietary data. Gartner deploys these assets within each client's specific scenario in order to reduce cost, improve organizational efficiency, mitigate risk and improve outcomes. Our services leverage the power of Gartner Research insight to benefit our clients' key initiatives.

Overall, our Consultants draw on a wealth of data available to Gartner as the world's No. 1 IT research and advisory organization. We base our methodologies and deliverables on Gartner insight and our project team has access to other specialized Gartner analysts to review and contribute to our work.

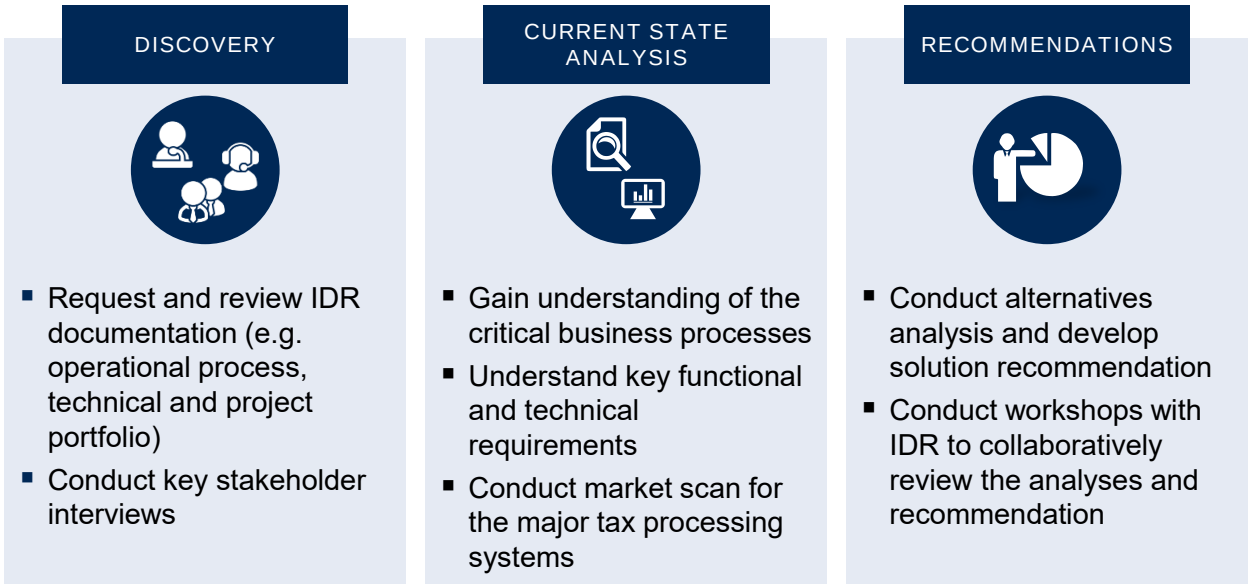
Our dedicated project team utilizes our proprietary data to recommend needed technical, organizational and process changes through a business case with estimated financial impacts. Gartner has no economic interests in any hardware, software, or system integration vendors. Gartner provides unparalleled objectivity in its analyses and eliminates the biases found in other consultancies. For the Iowa Department of Revenue (IDR), Gartner reviewed the increasing

demands from taxpayers, tax professionals, local governments and other constituents, and analyzed the impacts to IDR's technology and business processes. To support our project for IDR, we leveraged the resources of the Gartner Research branch of the company which provided detailed facts on large government modernization projects, their success criteria and potential risks.

1.2 How is Gartner Supporting IDR?

IDR asked Gartner to analyze the increasing public demands for existing and new capabilities and develop recommendations to meet these expectations. Gartner's proven approach started with interviewing key IDR stakeholders to determine the current state of its operations. By conversing with key personnel, Gartner analyzed the reasons behind the increasing public demands and identified whether IDR has the capabilities to meet these demands. In addition, Gartner conducted a market scan to understand best practices in tax collection/processing and also provided an internal best practices options analysis.

Figure 2. Gartner Approach



1.3 Increasing Demands for Services from IDR Constituents

Today's tax professionals, taxpayers and other IDR constituents live in an environment marked by technological innovation and development. On a regular basis, IDR's constituents interact with the latest information technology platforms from vendors such as Amazon, Google and their financial institutions. All of these platforms provide extensive capabilities to allow them to manage their relationships with these providers *(for more details please see the Appendix Section 7.1)*.

Gartner recommends that IDR close the gap with Amazon, Google, etc. and acquire more agile and innovative capabilities. These new capabilities will facilitate easier access to data and support faster processing and timely responses to taxpayers. Until then, IDR relies heavily on older, outdated systems, which are difficult and costly to maintain. This poses growing costs,

operational risks, and slows the pace of digital innovation. The gap between public expectations and the ability of IDR to meet these expectations is ever-widening.

Figure 3. What do IDR Constituents Expect from Tax Revenue Agencies?

The rapid transition to a digital society requires tax revenue agencies to provide greater data availability. IDR constituents expect faster access to their services from increasingly divergent points and devices. To keep up, IDR leaders must produce tangible value to constituents and public officials in cycles that are far shorter than in the past. In this environment, traditional approaches to managing the work are no longer viable. Bimodal practices: one focused on predictability; the other on agility, are required to support the typical primary IT application portfolio.

Gartner research shows taxpayers and other constituents expect greater ability to manage their tax information and transactions; want greater transparency into the status of their accounts and balances; want the ability to perform transactions online such as registering for a permit, making tax payments, or submitting requested information; demand self-service tools that will help them manage their tax accounts.

Additionally, taxpayers and other constituents expect tax revenue agencies to manage all their tax information as a consolidated whole. They want a full understanding of all the permits they have registered for, tax returns they have filed, payments they have made, and outstanding debt.

Gartner analyzed IDR constituents and identified them in the following categories: tax professionals, business taxpayers, bulk filers (a subset of tax professionals with unique needs), individual taxpayers, local governments, other government agencies, elected officials and their staff, as well as IDR staff. These constituents interact with IDR in different manners and require tailored services for their respective needs with different time frames. See the following figure to understand the entities that interact with IDR on a regular basis.

Figure 4. IDR Constituents

The following table describes in detail the key differences among IDR constituents and how they interact with IDR:

Table 1. How Does IDR Interact with Its Constituents?

IDR Constituent	How do they currently interact with IDR?
Tax Professionals	Tax professionals must register through a power of attorney to act as a taxpayer's representatives. At that point, they act on behalf of the taxpayer in all possible situations from tax return submission through compliance, payment and requests for review.
Business Taxpayers	In addition to the typical requirements for an Iowa taxpayer, businesses need to apply for one or more IDR permits and arrange for the appropriate frequency of payment. This frequency may occur yearly, quarterly, or with even greater regularity.

IDR Constituent	How do they currently interact with IDR?
Bulk Filers	Bulk filers are also tax professionals but they have unique needs due to the volume of submissions, payments and other activities. A bulk filer can control another employer's funds for the purpose of filing returns and depositing withholding tax for multiple businesses.
Individual Taxpayers	People who pay taxes on income derived from Iowa. The following are typical interactions with IDR: • File paper/electronic return. • Make a paper/electronic payment. • Check return status. • File appeal. • Respond to compliance and collection activities.
Local Governments	Local governments work with IDR to collaborate on tax administration. IDR administers certain taxes and distributes funds for local governments.
Other Government Agencies (State and Federal)	Other government agencies work with IDR to collaborate on tax administration depending on their specific responsibility.
Elected Officials and Their Staff	Elected officials interact with IDR for the purposes of constituent services, analytical reports, as well as oversight for financial and compliance issues.
IDR Staff	IDR staff must utilize current systems and processes to process returns, manage compliance programs, and respond quickly to requests for support from taxpayers, tax professionals, local governments, other government agencies, and the legislature.

To meet the needs of taxpayers and other constituents IDR needs a customer-centric system. The structure of a modern integrated tax processing systems must reflect the taxpayer demands and tax codes. In addition, IDR will benefit from having one current source for all its data. Although transactional and historical data will always be important in decision making, new and differentiated insights appear when extracting value from data in real-time as it flows through the operations.

2.0 Best Practices for a Modern Integrated Tax Processing System

2.1 Purpose of a Modern Integrated Tax Processing System

The primary purpose of a modern integrated tax processing system is to allow revenue agencies to administer taxes, as required by law, with the speed, efficiency and effectiveness the public expects by keeping pace with the demands of a digital society.

Modernization is important to the public because it improves revenue agencies' interactions with taxpayers and other organizations by increasing their capabilities and productivity. Specifically,

new modern applications enhance the taxpayer experience and lessen manual or inefficient processing, improve analytics, and expedite taxpayer communications.

Figure 5. Modern Integrated Tax Processing System

2.2 Functional Capabilities of a Modern Integrated Tax Processing System

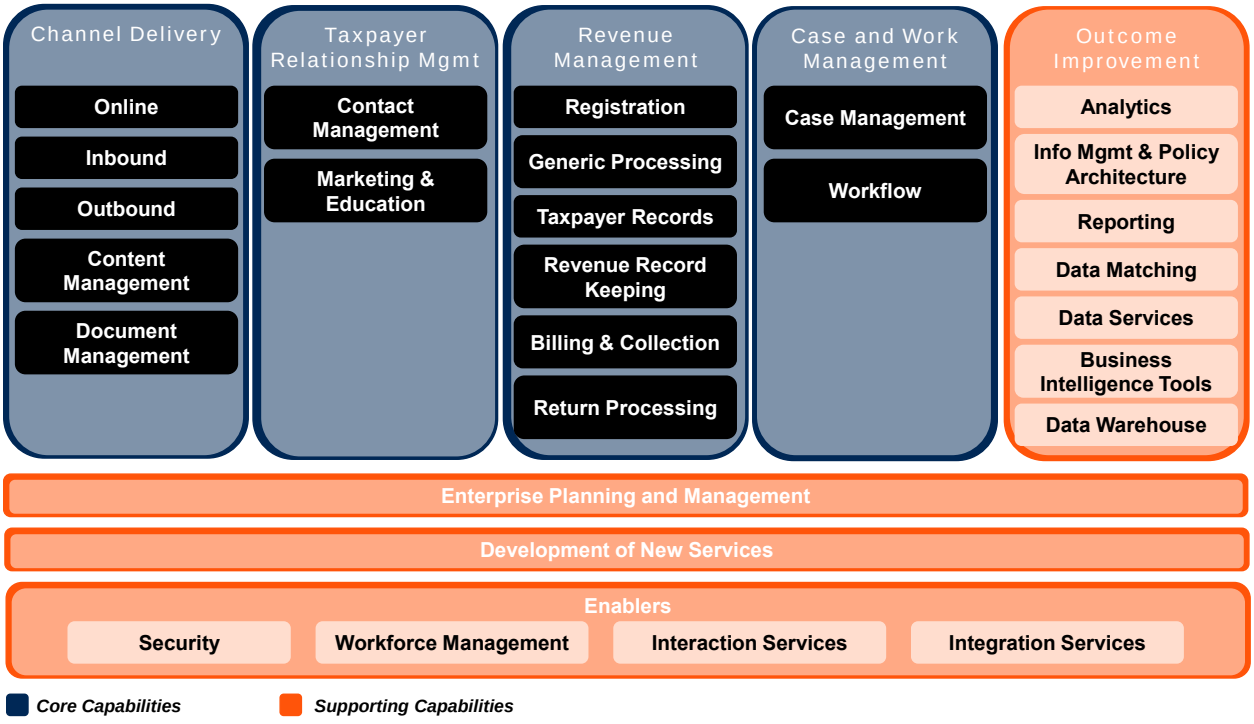
Based on Gartner's experience there are common capabilities that a modern integrated tax processing system must possess in order to fulfill tax agencies' missions. We have seen consistency in the high-level strategies of most tax and revenue agencies:

- **Grow customer satisfaction**. Agencies can ensure their services are easy to use (e.g. through online self-service or the use of intermediaries), are accurate and timely (e.g. through efficient and accurate processing of payments), and are customized to taxpayer needs.
- **Increase fairness**. Agencies can consistently apply policies and issue understandable notices and educational bulletins that facilitate voluntary compliance. Agencies can also increase the speed of case auditing and appeal (for example, through proactive risk analysis).
- **Foster continuous operational improvements**. Agencies can streamline return and collection processes, increase productivity and agility, encourage innovation, empower employees, and replace or improve primary information systems.
- **Ensure transparency and accountability**. Taxpayers and employees can have secure access to error-free information.

- **Protect the privacy of taxpayer data**. The security of taxpayer data is a leading concern and top priority in modern systems.

To deliver these goals, tax and revenue agencies must establish and manage capabilities that combine people, processes and technologies. Tax and revenue agencies' capabilities are divided into core capabilities and supporting capabilities.

Figure 6. Core and Supporting Capabilities



Core tax and revenue agencies' capabilities include:

- **Channel Delivery**. This capability supports interactive channels for constituents by providing both static informational pages and online transactions. It includes inbound and outbound processing of paper and electronic correspondence (forms, letters, brochures and so on). It also can encompass content management (for initiating, approving, storing, maintaining and publishing informational, transactional, interpretative, marketing and educational material) and document management (for storing, retrieving, retaining and disposing of client records).
- **Taxpayer Relationship Management**. This capability provides taxpayer contact management services such as an integrated view of the taxpayer, tracking, recording, escalation and monitoring of contacts, and campaign or education management. The purpose is to deliver the best experience through the most appropriate channel.
- **Revenue Management**. This capability includes the domain-specific functionalities to efficiently and effectively register taxpayers and intermediaries; process returns and payments; account for taxpayer liabilities, interest, refunds and disbursements; reconcile

and report revenues; and discover, create and process cases in which a taxpayer has failed to report or to pay.

- **Case and Work Management**. This capability provides enterprise-wide case and work management functionalities to support active compliance, friendly outbound reminders and information, debt collection, handling of inbound correspondence and exception processing, and collaboration across offices and different government departments.

Supporting tax and revenue capabilities include:

- **Outcome Improvement**. This capability provides input to case and revenue management by gathering and interpreting data for risk, case and taxpayer segment analysis; developing information models and architectures; generating and distributing reports; matching, converting and interpreting data; and integrating data access and storage.
- **Enterprise Planning and Management**. This capability provides management of day-to-day operations, such as procurement, payroll and accounting.
- **Development of New Services**. This capability provides the processes and structure for developing new services, updating existing ones in response to legislative change and taxpayer demand, and releasing them to the workforce and the public.
- **Security**. This capability ensures that agency systems and data are safe from unauthorized access.
- **Workforce Management**. This capability helps the agency acquire and nurture the right skills.
- **Interaction Services**. This capability helps the agency develop consistent user interfaces.
- **Integration Services**. This capability helps the agency ensure all applications supporting the various capabilities are able to interoperate.

It is important to note that this map of capabilities and the related descriptions indicate the overall business structure of tax and revenue agencies' activities *(for more technical details please see Appendix Section 7.2)*.

2.3 What do IDR Constituents Gain from a Modern Integrated Tax Processing System?

IDR constituents have different needs and the following table describes the specific benefits of a modern tax processing system for each of them.

Table 2. What Do IDR Constituents Gain from a Modern Integrated Tax System?

IDR Constituent	What do they gain from an integrated tax system?
Tax Professionals	• Consolidated data and history for each taxpayer client would allow tax professionals an easier way to analyze and review all data in one place to gain a comprehensive understanding of each client's tax situation. • Single tax portal would increase efficiency in gathering and working with client data and submitting information to IDR. • Real-time data would diminish the number of questions and validations requested from IDR. • Taxpayers could more easily provide authorization to share information with and authorize decision making by tax professionals, reducing processing and correspondence delays.
Business Taxpayers	• Consolidated data and history would allow business taxpayers to see in one place all of their permits, obligations, timelines for payments, correspondence and answers to questions. • This consolidated view would make it easier for business taxpayers to conduct their interactions with IDR and be in compliance. • Single tax portal would increase efficiency for business taxpayers with multiple permits and or companies that they manage. • Real-time data would diminish the number of questions and validations requested from IDR.
Bulk Filers	• Modernization could provide a separate portal entry for bulk filers, which would be customized for their unique needs. • Special forms with pre-determined schema and electronic filing instructions would support quicker uploading and more efficient interactions with IDR.
Individual Taxpayers	• Consolidated data and history would allow individual taxpayers to see in one place all of their obligations, timelines for payments, correspondence, and answers to questions. • More efficient communication with IDR is a key benefit for them. • Correspondence management would enable IDR to better track and manage interactions.

IDR Constituent	What do they gain from an integrated tax system?
Local Governments	• More precise, timely collaboration for the administration of various taxes.
Other Government Agencies (State and Federal)	• More precise, timely collaboration for the administration of various taxes.
Elected Officials and Their Staff	• Faster reporting and consolidation of payment and liability data would allow IDR staff access to better quality data for analysis purposes. This will facilitate timelier input into budget or other discussions with the legislature. • More efficient communication with IDR to ensure timely answers to inquiries by elected officials and their staff.
IDR Staff	• Consolidated data and history for each taxpayer would allow IDR staff an easier way to analyze and review all data in one place to improve case reviews, answer taxpayer and tax professional questions, and observe trends. • IDR staff would minimize manual processes and focus more of their time on more valuable tasks such as supporting taxpayers by responding to their questions or evaluating whether taxpayers and other IDR constituents are in compliance. • Allow for additional enhanced tools to detect and stop refund fraud and taxpayer identity theft schemes.

3.0 IDR Current State Assessment

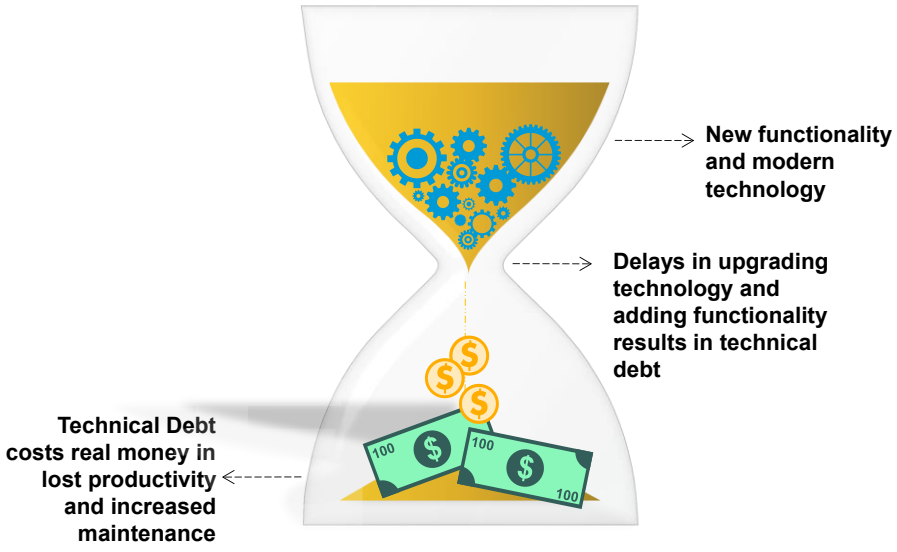
What led to the increased importance of a Modern Integrated Tax Processing System?

Gartner knows that tax and revenue agencies around the globe face increasing pressure to replace their 40+ year old primary, mainframe-based applications. Some of these applications are cobbled together with difficult to maintain integration between the processing function, and common functions, such as billing and collection, across different tax types.

In the past, many states have faced crises resulting from accounting errors comprised of hundreds of millions of dollars exacerbated by the antiquated piecemeal technology. The causes for these errors were systems that focused solely on efficient tax processing but that lacked integrated controls and processes to manage taxpayer funds. These crises highlighted the technical support issues of the antiquated, piecemeal systems. Only after discovering the crises did state governments agree to invest in more modern tools to prevent any future errors. Many of these states found that modern integrated tax systems prevent accounting errors, help the agency staff boost their ability to identify trends in fraud, and perform timelier collections management. In more than one state, this increased efficiency has added millions of dollars of unpaid or overdue taxes in a single fiscal year.

Currently, IDR is collecting revenue, adhering to changes in state and local laws, providing customer service, and delivering forecasts to support the state budget process. All of these demands require significant technical support, and thus far, IDR has risen to the challenge to support the citizens and elected officials of Iowa. But, as the desire for additional or improved services has increased in pace, IDR's technical architecture is being strained and requires investment to keep up with the important new demands that are being placed on the agency and its technical support systems. All of these challenges create technical debt.

Figure 7. What Does It Mean for Iowa to Accrue Technical Debt?



The current IDR systems cannot easily add new functionality or streamline existing processes. Outdated technology hinders IDR's ability to meet its two goals: to provide clear and accurate information, and to deliver customer-focused tax administration. This is not to say that the current architecture is incapable of being transformed to eventually fulfill the new demands. Instead, it is likely that the investment, time and resources required for this transformation will be so significant that this option would not compare favorably to others. Iowa should not wait until a crisis occurs before making an investment to improve IDR's primary systems. At some point Iowa will need to pay its technical debt in order to—update its technology and use more modern architecture—fulfill taxpayer and government officials' demands. Gartner believes that the longer any organization takes to pay its technical debt the worse the eventual crisis will be.

Gartner also believes that adding new capabilities under the current system environment is forcing Iowa to make technical investment decisions that are heavily influenced by short-term cost and timing decisions that would not be optimal for increasing productivity or adding new technology solutions. In doing so, Iowa has continued to increase the pace of accruing and compounding technical debt.

As IT software and infrastructure has aged, and as more features are added to primary systems, technical debt has grown and has increased additional fixed operating costs to Iowa. This situation has also diverted investment away from innovation and new integrated capabilities. Over time, the challenge of connecting and updating these systems with the new demands will continue

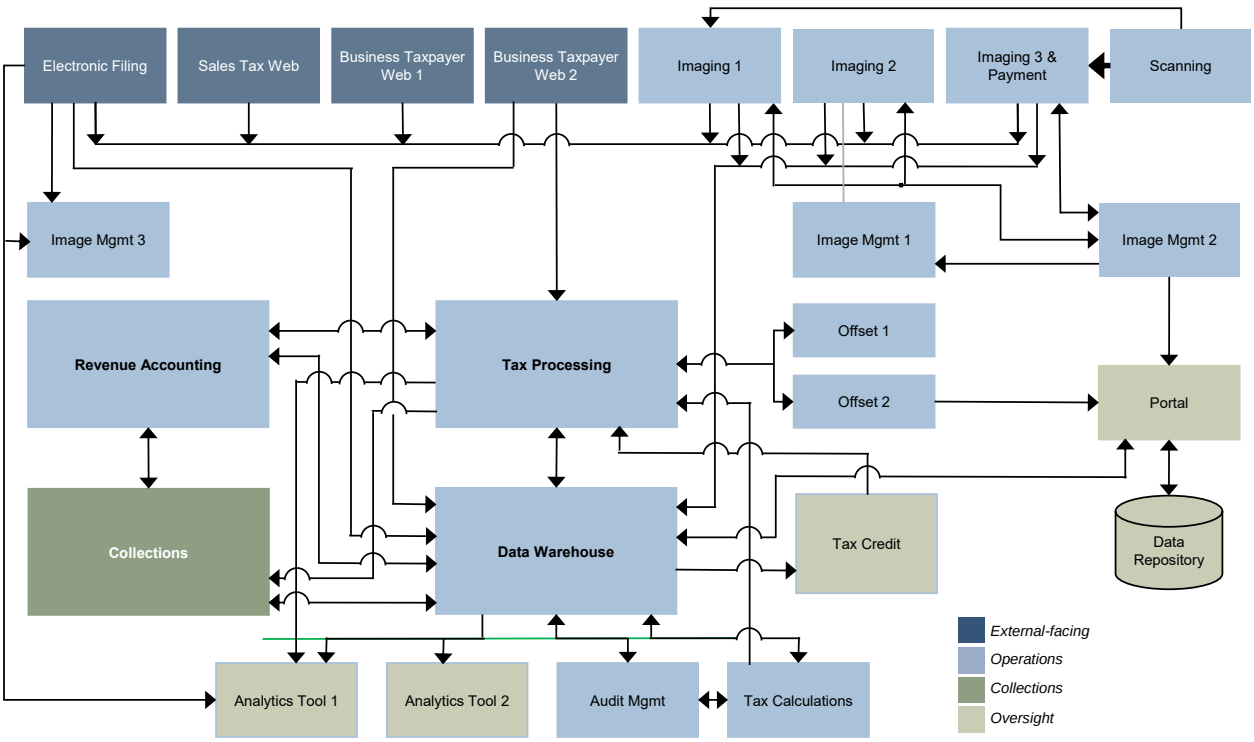
to be difficult and overtax IDR. These decisions are making strategic digital transformations even more difficult.

Failure to modernize Iowa's primary systems will allow technical debt to accumulate, and ultimately lead to business paralysis and a crisis. However, if Iowa transforms its applications to be more flexible and modern, it can prevent technical debt growth and reduce the potential for a technical or operational crisis.

3.1 Technology Environment

There are over 24 systems that support IDR's processing of taxes. The primary tax processing system began its custom development over 30 years ago. There are a variety of technologies and staff (including IDR, Office of the Chief Information Officer (OCIO) and various vendor resources) that support IDR's tax systems which are categorized based on key agency functions. With the help of IDR staff, Gartner has identified the complex interrelationships of operational processes and the systems that support them.

Figure 8. IDR Primary Tax Processing Systems



The primary systems in the IDR technology environment include:

- **Tax Processing System**—it is a custom-developed [redacted] mainframe system used to manage tax transactions. It is at the core of IDR's tax processing systems.
- **Revenue and Taxpayer Accounting**—this system maintains the accounting on tax credits and debits. It is a [redacted] custom-developed application hosted on the mainframe.

- **Collections System**—IDR's collection system is used to collect both tax debt and other state non-tax debt. It is an implementation of a vendor-managed software product. Current installed version is nearing end of life.
- **Data Warehouse**—this is IDR's enterprise data warehouse and it houses accounting and collections data to support compliance activities and tax policy analysis. Additionally, it houses the auditing case management tool, developed by a vendor, and the custom-built fraud detection system.

Additional systems in the IDR technology infrastructure include:

- Three systems to manage the receipt of paper returns and payments–a variety of custom built and vendor systems are used to receive paper, scan it, capture data, store images and retrieve images. Not all tax types are supported by these systems, resulting in manual workarounds and data entry.

Miscellaneous other systems exist to manage a variety of tax functions, including two systems to manage receipt of electronic returns and payments from the IRS (modernized eFile) and a system to manage tax credits. These systems leverage a variety of technologies and custom web development.

3.2 Organization

IDR has aging primary systems and faces a workforce challenge as the technical experts who support these solutions reach retirement age. Although IDR continues to add functionality with more modern technology, such as the data warehouse, it must continue to support the older technology; and therefore, feels the pinch of scarce resources.

IDR will face a workforce challenge whether or not it replaces its systems as long as the primary components are retained. Gartner has supported other organizations in similar situations and the longer modernization is delayed the more difficult the workforce challenge becomes. Another Gartner client has said that its company is in a race to finish its modernization initiative before the support team retires.

Growing demand to staff digital projects and the need for digital talent within IDR's operational groups are worsening the skills shortage by creating new competition for the best IT resources. Gartner has observed that the IT initiatives that provide IDR new capabilities overlap or are interdependent with the primary systems. This situation places even more pressure on the primary system experts since they must continue "lights-on" activities while supporting the integration of new functionality. In addition, reassigning other IT staff to learn new digital skills exacerbates the skills drain created by the primary system experts retiring. There are also challenges with the long learning curve for newly-acquired business resources due to the age and complexity of IDR's systems. It takes a long time before they become fully efficient in conducting their work.

Replacing mainframe and aging IT skills is not as simple as it was 10 years ago, because the pool of external candidates with this kind of expertise is shrinking. Additionally, the strategy of hiring or reassigning staff and then training them on these aging products is less effective than before. In general, IT experts want to move away from what is perceived as old technology and work with newer technologies, such as cloud-based and AI-enabled solutions.

In addition, OCIO provides centralized services for Iowa and supports most of IDR's technology needs, specifically application development and IT security. IDR and OCIO have a positive and collaborative relationship. The OCIO is focused on providing enterprise level services,

standardization and access to the wider technology vendor marketplace while supporting local concerns as well. IDR and OCIO are working to create a multivendor relationship that is beneficial to the state and the agency.

3.3 Operations

IDR is the agency primarily responsible for tax administration in the State of Iowa. The mission of the Department is to serve Iowans and support State government by collecting all taxes required by law, but no more. In FY 2017, IDR collected over $10.1B in taxes and issued $1.2B in refunds to taxpayers resulting in net deposits of $8.9B to the State. In FY 2017, IDR processed over 2.5M tax returns. The core responsibilities of IDR include:

- **Revenue Compliance and Collection**—this function includes educating taxpayers on tax laws and regulations, processing tax returns, and collecting taxes and other amounts due. It is in compliance with Iowa's tax laws that the Department conducts its taxpayer examination and audit programs and resolves disputed tax issues.
- **Local Government Assistance**—the Department provides support to local governments in administering just and uniform property assessments across the state. This function also administers programs for property tax relief, including administration of the business property tax credit, local option taxes, school infrastructure taxes, and sales tax increment programs.
- **Research, Analysis and Information Management**—the Department performs tax policy analysis, fiscal impact estimation, statistical research, and economic analysis to help stakeholders understand the impact of Iowa tax laws, and make informed decisions.

IDR collects and administers over 20 taxes and fees including: Individual Income Tax / Withholding, Consumer's Use Tax, Fuel Taxes, Corporation Income Tax, Retailer's Use Tax, Franchise Tax, Hotel / Motel Tax, Inheritance Tax / Fiduciary Tax, Sales Tax, Local Option Sales Tax, Cigarette / Tobacco Tax, Replacement Tax, E911 Surcharge Fee, Hazardous Materials Permit Fee, Property Tax, Insurance Premium Tax, Real Estate Transfer Tax, One-Time Fees for New Vehicle Registrations, Car Rental Tax & Vehicle Title Surcharge and miscellaneous other Taxes.

Gartner observed that IDR has relatively complex processes that include substantial manual intervention. This is caused by the presence of independently developed systems. Due to the ad-hoc nature of application development over the past 40 years, IDR now has an environment where there are redundant, overlapping and, at times, inconsistent versions of the same data. For example, due to the timing of updates to the core processing system, data is handled independently by the ancillary and supporting systems which leads to inconsistency.

Updates to some of the primary applications can be performed independently of the update to the source application where the change originally was captured. Therefore, the updates to the source and secondary applications are often asynchronous and are not part of the same overall transaction. IDR uses traditional multistep processes because of these technical limitations. This means that processes rely on a person to manually reenter the data between steps in the overall tax process. IDR also uses batch file transfers to keep information current and up-to-date across its systems. Because the systems are not tightly integrated, manual processes and workarounds often supplement business practices.

Gartner observed significant challenges in integrating new capabilities to the existing primary systems. When IDR created its core solution, the architecture was appropriate for the business need and the processes of that time. But today, the speed of operations is accelerating, yet the

architecture of traditionally-built systems is relatively rigid and static. The fundamental problem in this regard is embedding business rules within the systems themselves. If you hard-code business rules into application logic, they will be hard to find, hard to understand, and even harder to change. Gartner research indicates that today, business and tax laws and rules change constantly and on a short timeline. Consequently, IDR developers must contend with the core processing code every time new capabilities are added.

In addition, because business rules are programmed within the core processing code, high cost and long timelines accompany any updates to system functionality to meet operational needs. There have been situations where minor changes to work elements such as correspondence updates can cost hundreds of thousands of dollars and take months to complete.

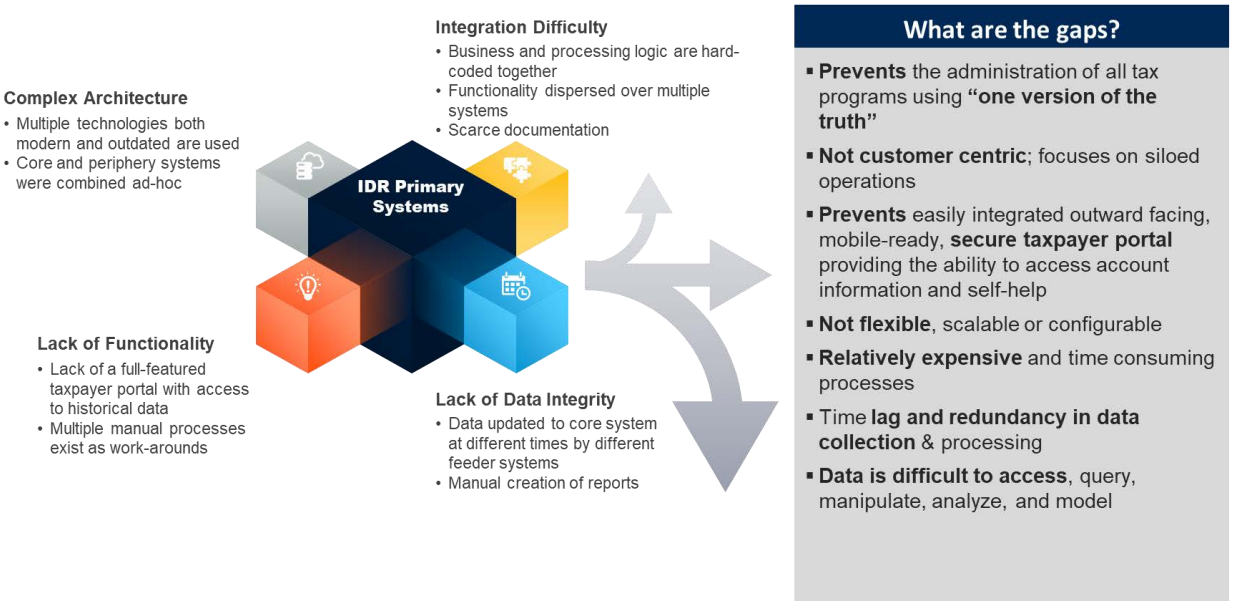
4.0 Gap Analysis

Gartner identified multiple gaps between IDR's current operations and a desired state, defined by the ability of the agency to administer taxes, as required by law, with the speed, efficiency and effectiveness the public expects. Today, many revenue agencies use modern integrated tax processing systems to improve taxpayer experience and lessen manual or inefficient processing, improve analytics, and expedite taxpayer communications.

4.1 Technology Environment

This section summarizes Gartner's understanding of the current state of IDR's primary systems and describes Gartner's analysis of the gaps between IDR's current state and recommended practices for a modern integrated tax processing system. Refer to the following figure for key technical findings.

Figure 9. What is the Impact of Technical Complexity?



Analysis

- **IDR's primary systems are not structured to easily integrate system updates or new functionality which is required by changing business needs.** IDR's technology systems have evolved over a period of 40 years. During this time over 24 technology solutions have been deployed by a number of IDR, OCIO and vendor staff. Some of these solutions have business and processing logic intermingled (i.e. business logic is hard-coded) making it very difficult to make changes to business logic. Additionally, many of the technical details for these systems have scarce documentation which makes it difficult for current IDR and OCIO staff to analyze it when resolving production issues. This situation is made more complex as many of the original technical experts who designed these systems are retired and no longer work with IDR or OCIO. This results in a lack of global understanding of the interdependencies among IDR's primary systems. All of these factors combined create a complex technological environment that limits IDR's ability to address desired system changes and enhancements.

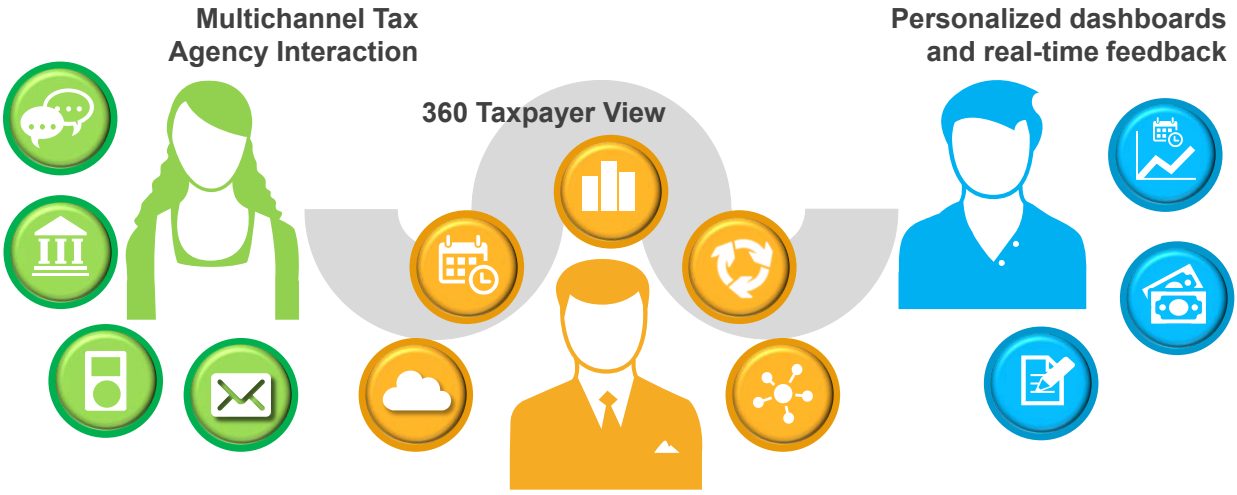
- **IDR's complex technology architecture introduces risk when making changes or additions to operational functionality.** Many of the issues that make it difficult to integrate new functionality into IDR's systems also make it risky to do so. A key factor in the complex architecture is that the core and periphery systems were not originally designed together. The periphery systems were added in an ad-hoc architecture design. Other factors that drive technological risk include: the number of technologies involved, the hard coding of business logic, the limited number of technical staff with expertise in these systems, and the lack of clarity on dependencies between systems. Some systems are considered significantly risky to modify and are not changed unless required by Iowa law.

  Depending on the change contemplated, this technological risk could impact IDR's tax data and tax processing functionality potentially resulting in reputational risk (e.g., incorrect billings, inaccurate refunds, reduced ability to conduct audits, etc.) and the ability to process taxes (e.g., delays in processing, inaccurate reporting due to data inaccuracy, etc.).

- **Current IDR systems lack functionality of modern tax systems.** IDR staff indicate that they use many spreadsheets to manage their work. One division indicated they had up to 75 spreadsheets. Another division shared they rely on "countless" reports to manage their work and exceptions. The use of spreadsheets and reports to manage the tax process indicates there are opportunities to leverage modern tax systems functionality to better support IDR.

  A full-featured taxpayer portal is a key area that is missing from the current IDR systems functionality. IDR does have a number of external-facing systems to support taxpayers but these are old and do not provide the functionality expected by the public, such as user-friendly interfaces and intuitive navigation.

Figure 10. Full-Featured Taxpayer Portal



For example, an IDR survey of taxpayers indicated that 75% of users did not find it easy to use the system utilized to file sales, withholding, and fuel tax returns. Additionally, some of these systems are not fully integrated with the rest of IDR systems resulting in manual data entry and delays when other work takes priority.

This lack of adequate self-service support for taxpayers results in telephone calls to IDR for taxpayer support. Annually, IDR answers over 151,000 taxpayer telephone calls and over 34,000 emails.

- **Data integrity between IDR systems can sometimes be an issue.** IDR staff report that the core processing system is updated with data at different time intervals by other feeder systems. Thus, there is not a single consolidated time for all system components to be updated which then obligates analysts to fully understand the update schedule and reconcile or restate at a later time. Updated data delays can occur for addresses, account statuses, balances, warrant issues and print jobs. Unfortunately, with multiple systems involved, it becomes difficult for analysts to collect the most up-to-date data they need in the time frame required.
- **Current IDR architecture requires that updates to the core processing system (mainframe), be executed through batch processes on a daily, weekly, or quarterly basis.** This update to data, which is not real-time, is typical in technical architectures that utilize mainframe. The primary reason for a lack of data consistency between systems is the necessity of batch jobs. These batch jobs are scheduled for different days. In the event of technical production issues, they may not complete on time, thus causing further delays.

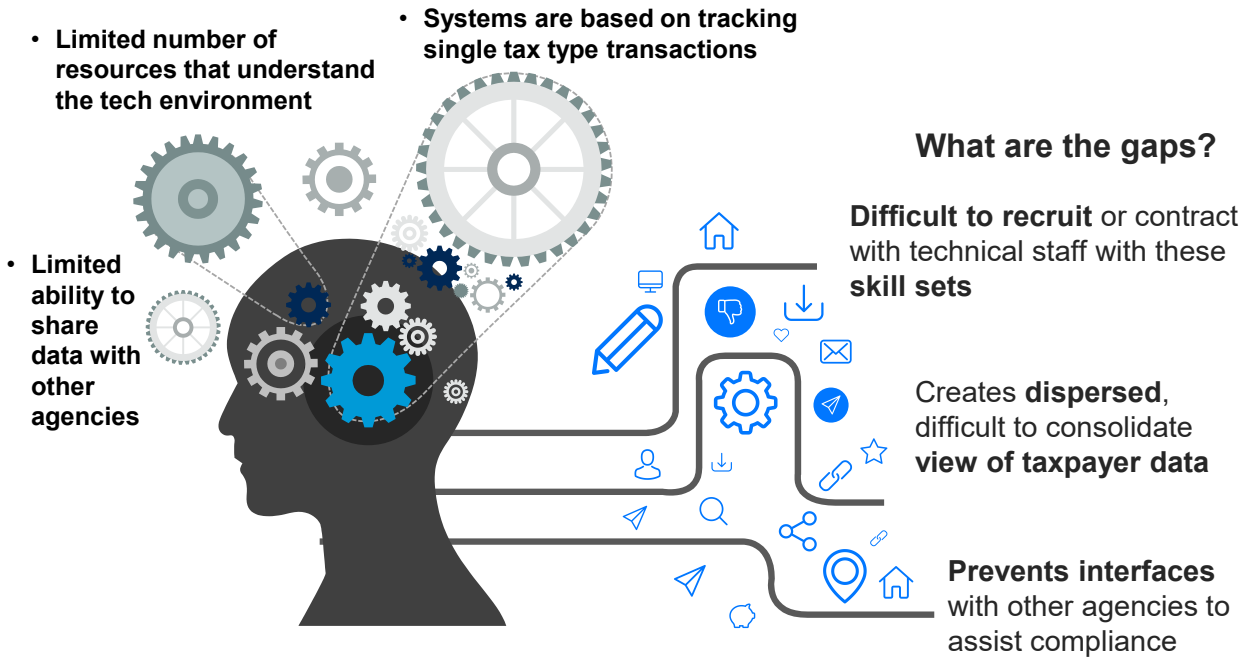
  This lack of timely access to up-to-date data results in staff spending additional time to gather data between multiple systems, which is risky and leads to errors.

4.2 Organization

From an organizational point of view, Gartner has identified that IDR relies on a unique, difficult-to-find set of skills for maintenance and integration of technology capabilities. In addition, due to the complexity of the custom technical architecture, the organization is inhibited from sharing data

internally within IDR and externally with other government agencies. This difficulty in sharing data can delay taxpayer inquiries, overall forecasts and analytics.

Figure 11. What is the Impact of Organizational Complexity?



Analysis

- **There are a limited number of technical experts with an understanding of the IDR technical environment.** IDR's tax processing systems were developed over the last 40 years. Many of the people involved in this custom development have retired or are now nearing retirement age. Since the technology of some of IDR's systems is considered out-of-date, it is difficult to recruit or contract with technical resources with these skill sets.

  The limited number of technical staff that understands IDR's systems is a critical risk that could hinder the ability of the Department to continue operating these systems.

- **Taxpayer information is not managed holistically.** Existing IDR systems are primarily based on the concept of tracking individual tax transactions. This approach has limited the Department's ability to holistically manage all of an individual taxpayer's information. Taxpayer information that is housed and managed in multiple systems includes permit registrations, tax returns, payments, correspondence, collections cases, audit cases, call histories and IDR notes.

  This difficulty in consolidating the pieces of data that belong to an individual taxpayer can cause delays in processing and meeting citizen's expectations. Additionally, this lack of a single view of taxpayer information significantly increases staff work as they sometimes need to poll up to 5 systems to understand the current status of a taxpayer.

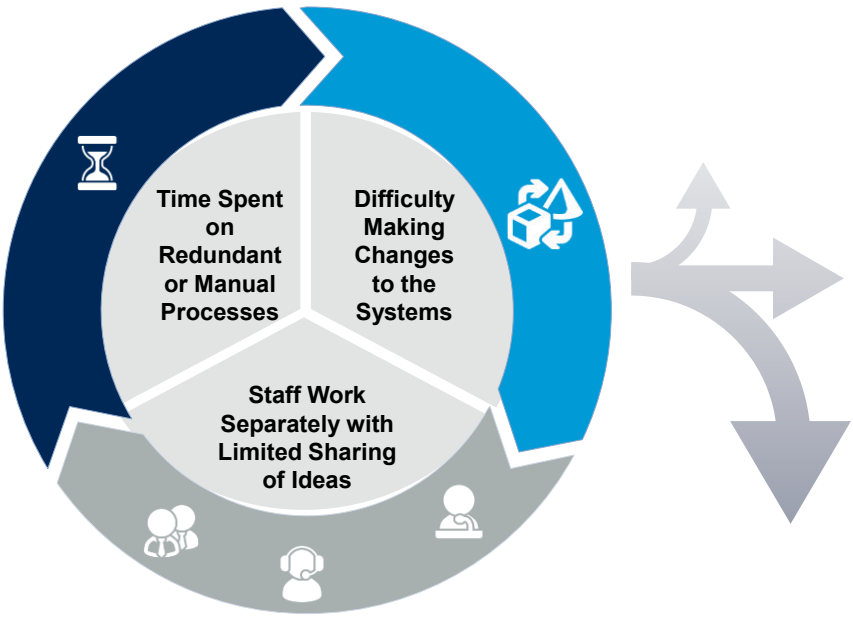
- **IDR is limited in its ability to share data with other agencies to ensure compliance with tax laws.** Given the difficulty in changing and updating IDR systems it is hard to create interfaces with other agencies that might be beneficial to the State as a whole. While IDR has already created interfaces with some agencies, there are more

opportunities to collaborate with others. Sharing legally-permitted data creates synergistic efficiencies across agencies and helps ensure compliance.

4.3 Process

Through its analysis, Gartner has determined that it is difficult for the current primary systems to easily integrate with new capabilities. This limitation encourages manual workarounds. These workarounds, consequently, lengthen operational processes and inhibit the agency's ability to share best practices among its divisions.

Figure 12. What is the Impact of Process Complexity?



What are the Gaps?

- **Manual intervention** and duplicative work-around processes are utilized
- Difficulty in changing existing systems **delay potential improvements** to the tax process
  - Integration is technically difficult within the current legacy systems
  - Business logic is embedded in system code which further encourages manual intervention
- **Best practices** and knowledge **are not easily shared** across the operational and technical groups
  - Operational groups are prevented from reviewing and improving processes from an end-to-end point of view
  - Opportunities to streamline processes are inhibited

Analysis

- **The current IDR systems hinder staff's ability to efficiently manage the tax process.** To work through the tax process IDR staff needs to log into multiple systems to search and analyze data. In frequent cases, this data is consolidated in Excel spreadsheets and processed via manual intervention. Also, when data discrepancies (due to time lag updates) are identified, staff time is required to troubleshoot, identify the most current information and manually manipulate it when time demands an immediate analysis. These situations are very time-consuming and unproductive. Due to process complexity and separate systems, potential technical solutions are not immediately implemented.
- **The difficulty in making system changes impedes IDR's ability to resolve issues that could improve the tax process.** Given the difficulty in integrating existing or new systems many potential improvements to the tax process are delayed. Some changes that could improve the tax process include: changing correspondence language to increase clarity to taxpayers (this activity can be executed currently but it is a slow process), changing the business logic for billing non-filers, adjusting how payments are routed for taxpayers with multiple tax accounts, and adding data validation to prevent

errors. Automating manual tasks, which is desirable, requires significant planning and resources but also involves increased cost and risk.

- **The current technology landscape encourages divisional "silos" that limit the effectiveness of IDR in managing the overall tax process.** The major operational groups in IDR each work primarily with one system. This focus on "divisional" systems encourages divisions to work separately instead of looking at the end-to-end tax process and searching for opportunities to improve it and to streamline it.

4.4 Summary

IDR will have to meet future legislative demands at the expense of increasing efficiency, fraud analysis, and collection of tax obligations. Cumbersome business processes driven by aging, inflexible and siloed technologies negatively affect the capacity of the Department to be smarter, leaner and more taxpayer-focused. Specific constraints include:

- Difficulty in integrating more taxpayer self-service tools, more timely and targeted communications, and a consolidated view of all taxpayer data.
- Continued use of outdated, heavily-customized technology and loss of experienced staff.
- Excessive complexity that must be overcome when adapting to changes such as new laws, tax policy or business process adjustments.
- Limited ability to quickly automate or provide consistent and accurate data and taxpayer correspondence.
- Limits to increasing IDR staff operational productivity through new improved functionality and easier access to relevant data.
- Current IDR systems hinder staff's ability to efficiently manage the tax process.

Ultimately, these technological, organizational and process constraints indicate that the current primary systems are limiting IDR's effectiveness in managing the tax process. Addressing them timely will improve the Department's ability to meet its vision of making it easy for Iowa taxpayers to understand and comply with tax obligations.

Recommended Scope

Based on the gap analyses, Gartner recommends that IDR consider the following tax types, fees and processes when determining the scope of the Modernization Program:

- Individual Income Tax / Withholding, Consumer's Use Tax, Fuel Taxes, Corporation Income Tax, Retailer's Use Tax, Franchise Tax, Hotel / Motel Tax, Inheritance Tax / Fiduciary Tax, Sales Tax, Local Option Sales Tax, Cigarette / Tobacco Tax, Replacement Tax, E911 Surcharge Fee, Hazardous Materials Permit Fee, Property Tax, Insurance Premium Tax, Real Estate Transfer Tax, One-Time Fee for New Vehicle Registration, Car Rental Tax & Vehicle Title Surcharge and Miscellaneous other Taxes.
- All tax processes including taxpayer registration, electronic filing (modern eFile and streamlined sales tax), paper filing, receipt and issuance of payments and refunds, taxpayer self-help, processing returns and payments, return resolution, processing refunds and offsets, compliance, appeals, tax credit transfers and claims, local government data exchange, revocations, collections, taxpayer customer service and tax data analysis.
- Collections of debt for other Iowa State Agencies, Counties and Cities.

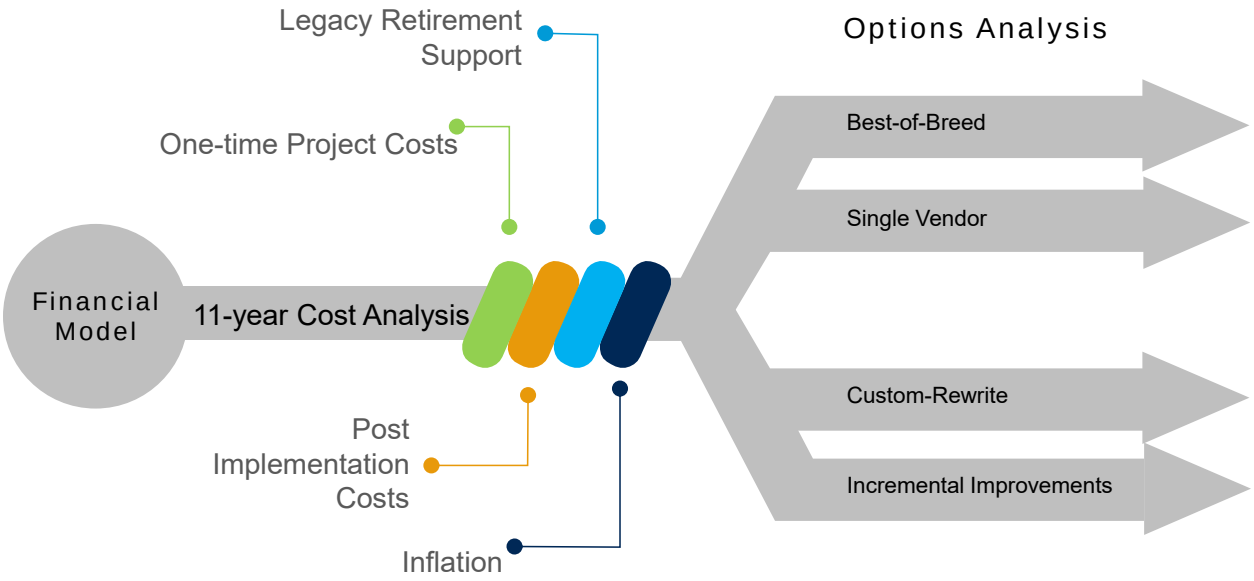
5.0 Options Analysis and Recommendation

Gartner completed an analysis of possible scenarios in order to reduce risks and derive the best possible business outcomes. Gartner created a financial model to review both quantitative and qualitative criteria, which ultimately led to a clear recommendation.

5.1 Financial Model Structure

The financial model allowed Gartner to analyze IDR cash flows over 11 fiscal years for multiple scenarios. All options were structured to show incremental investments (based on an iterative deployment model) in years 2 through 6, full deployment by the end of year 6, and a stable maintenance period for the remainder of the 11-year business case. All options included application retirement costs and inflation. An overview of the scenario analysis is depicted in the following figure:

Figure 13. Gartner's Methodology to Analyze Options



5.2 Options Selected For Review

Gartner's standard practice is to create alternative options and test the financial viability of these options based on each organization's unique situation.

Options Analysis Approach

Gartner analyzed IDR's current budget for operating their primary systems. Gartner also analyzed the ongoing maintenance costs based on the primary system architecture and IDR's anticipated future technical improvements. Gartner assumed a 2.5% year-over-year inflation rate and sorted the costs into the following groups.

- One-Time Project Costs:
  - ❑ Hardware Purchase/Platform as a Service (PaaS) Fees.

- ❑ Software Purchase/License or Software as a Service (SaaS) Fees.
- ❑ IDR Staff (salaries & benefits).
- ❑ OCIO and Vendor IT Contractors.
- ❑ System Integrator.
- ❑ Management Support and Program Assurance/Independent Verification and Validation.
- ❑ Agency Facilities.
- ❑ Training and Outreach.
- ❑ 15% Contingency.

- Post Implementation Costs:
  - ❑ Hardware Purchase/Platform as a Service (PaaS) Fees.
  - ❑ Software Purchase/License or Software as a Service (SaaS) Fees.
  - ❑ IDR Staff (salaries & benefits).
  - ❑ OCIO and Vendor IT Contractors.
  - ❑ OCIO Utility Charges.
  - ❑ Agency Facilities.
  - ❑ Training and other.
- Operations and Maintenance (O&M) Legacy Retirement Support (5-year implementation time frame):
  - ❑ IDR Staff (salaries & benefits).
  - ❑ OCIO and Vendor IT Contractors.
  - ❑ OCIO Utility Charges.
  - ❑ Failover and Staging Hardware.
  - ❑ Agency Facilities.

Gartner carefully reviewed a select series of “best fit” and pragmatic implementation options for IDR. Gartner used its experience, internal case studies and benchmarks on the complexity of the existing architecture, risks, implementation costs, and organizational and technology constraints to select the options for review.

Gartner concluded there are four options available to modernize IDR’s primary systems:

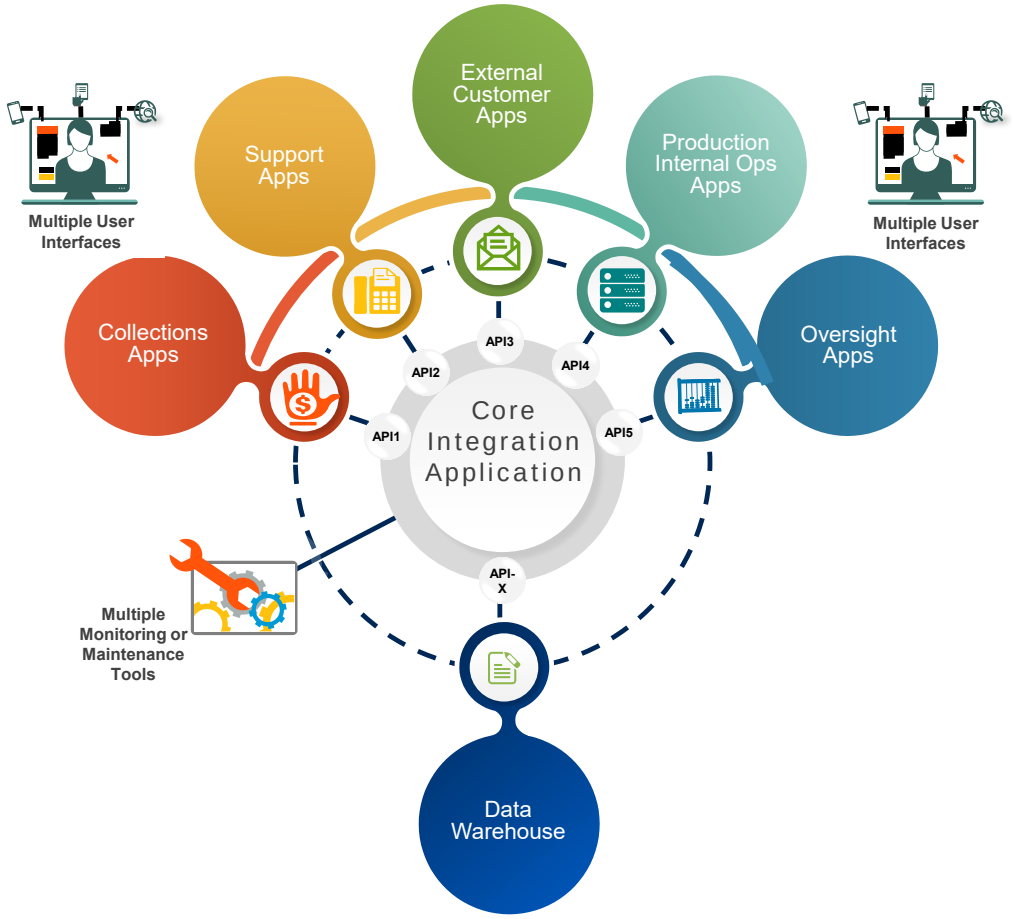
- Best-of-Breed (BoB).
- Single Vendor.
- Custom Re-Write.
- Incremental Improvements.

The following detail provides additional insights into qualitative advantages and disadvantages which supplement the financial review of each option:

Option 1: Best-of-Breed (BoB)

In a classical best-of-breed approach (also commonly called "fit for purpose"), the organization creates an integrated applications model with different technical solutions/vendors for each operational function. BoB solutions provide deeper insight into particular business or IT functionality and theoretically produce the most functionality-rich offering. The BoB option allows an organization to focus on the unique needs of each business segment. A BoB design provides multiple point solutions, thus giving the organization flexibility to customize technical support for each business segment. See the following figure for a representation of a typical BoB design:

Figure 14. Best-of-Breed Design



Although there are sound arguments for selecting the BoB design, there are also many reasons why organizations do not choose the BoB approach. The top three are cost, complexity and lack of built-in integration. As the figure above demonstrates, BoB designs do not prioritize integration, user interface, tools, or monitoring criteria. This sole focus on functionality can lead to challenges

with integration, configuration, consolidation and overlapping features. An uncontrolled adoption of BoB application purchasing could result in any or all of the following issues:

- Diseconomies and operating inefficiencies caused by elimination or decomposition of the core systems of record.
- Increased costs through loss of efficiency, loss of scalability, and the need to connect and manage disparate solutions and technologies.
- Complex IT environments with fragmented business and technical architectures, which themselves may impede the business need for agility and flexibility.
- Poor integration—difficult and expensive to integrate new functionality with the legacy tax processing systems; limited documentation of the business rules and overall technical architecture (e.g. tax processing) leads to lengthy integration efforts.
- Unnecessary and prolific customization, even for the systems of record, stemming from a mentality that "best is best" everywhere without due consideration of the real benefits and lifetime costs of customization.
- Lack of IT skills to support these disparate technologies, with a reduced opportunity for cross-training.
- Data quality and integrity is heavily dependent upon standardized business processes, complex system integration and valid data sources.
- The organization has multiple vendor relationships to manage, thus requiring a greater investment of time and resources.

Option 2: Single Vendor

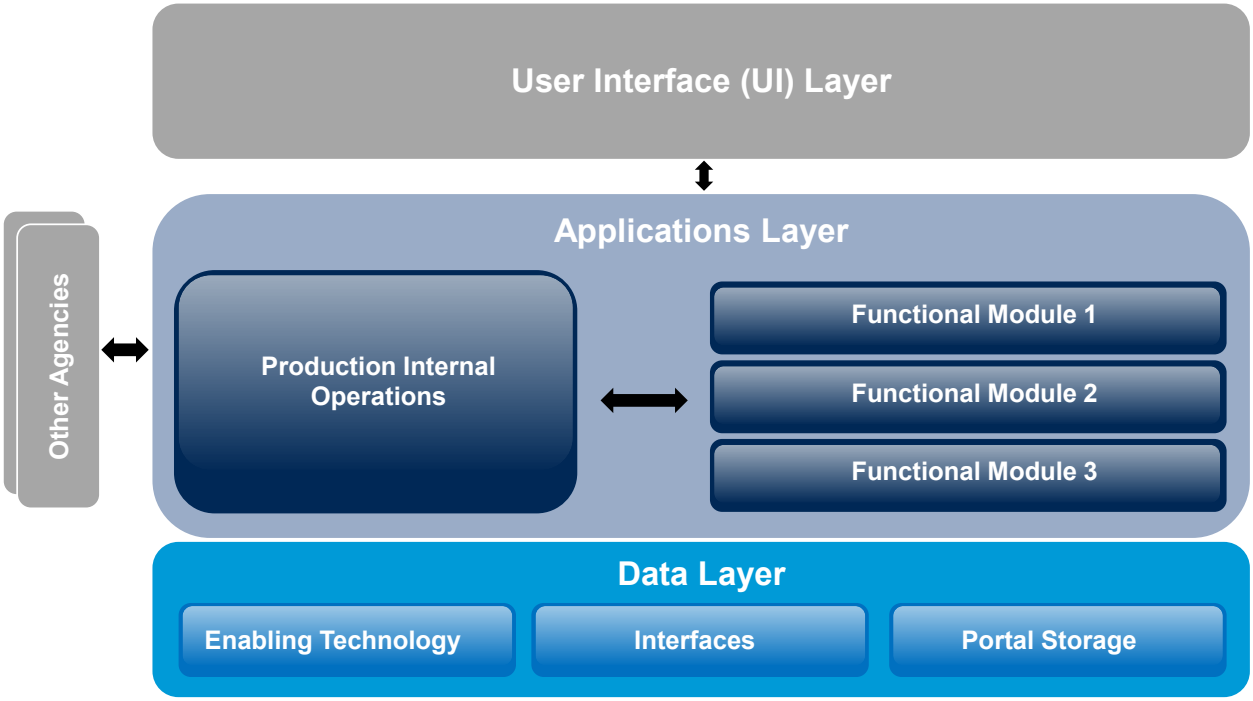
Single vendor solutions are ready-made, available for licensing to any organization, and favorable when the vendor has a suite of standard, commoditized functional features that support and further advance the goals of the IDR Modernization Program. IDR must first be assured that the single vendor solution has features and functionality that are rich and complete enough to satisfy most of its needs. There are three main business benefits expected from a single vendor solution:

- Improved Operational Efficiency
  - Elimination of duplicate and redundant work.
  - Automation of intra-agency processing.
  - Easier access to integrated global information.
  - Higher end-to-end process integrity, upstream and downstream.
  - Reduced IT costs.
- Greater Insight & Agility
  - Improved capability, accuracy, and timeliness of reports and analyses.
  - Improved quality and speed of decision making.
  - Better understanding and insight to customers, suppliers and product profitability.
  - More efficient and faster integration of acquisitions.

- Reduced Risk
  - ❑ Alleviation of risk associated with end of life platforms, averted with minimal capital investment.
  - ❑ Improved platform reliability and security.
  - ❑ Reduced complexity and compliance risk by reducing the number of systems, vendors and interfaces.

The following figure demonstrates a typical single implementation design:

Figure 15. Single Vendor Design



Pre-existing integration of the functional components and usability are also key benefits. Other reasons why organizations consider this option include:

- There are no unique, custom needs that can only be fulfilled by developing the solution in-house or having a third party develop it on the organization's behalf.
- Limited quantities of IT resources and/or software development expertise available both in-house and in the broader marketplace.
- Single vendor software can be acquired and implemented relatively quickly.
- The solution has been thoroughly vetted and tested.
- Frequency, ease and cost of upgrades.
- Reliability and visibility of the vendor's product roadmap.
- Vendor's domain and/or industry expertise.
- Vendor's geographical coverage and/or that of its partners' implementation services.

- Vendor's ability to integrate and consolidate data from various systems to provide a "single version of the truth."

From a cost perspective, an integrated suite of functional modules often provides a lower per unit cost than BoB. Single vendor solutions can also seamlessly manage information processing across all modules. The net result is a reduction in complexity and cost per unit (module) and an increase in operational efficiency.

This option also allows IDR to develop a long-term relationship with the single vendor and its partners. These companies then have an opportunity to better understand IDR's current and future operational needs, better support ongoing maintenance and training, and are incentivized to incorporate IDR functionality demands into their product roadmap.

Although commercial off the shelf (COTS) software may appear relatively easy to implement (especially with cloud offerings), it is not a turnkey solution. The risks associated with a single vendor are primarily focused on lack of IDR control over the future of the solution and organizational change:

- IDR may feel locked into the vendor solution plan and if the single vendor does not offer flexibility with its offering, IDR may have to supplement the functional gaps by creating custom workarounds.
- There is a heavy dependence on effective governance and organizational change leadership to adapt IDR's existing business processes and operations to take full benefit of the single vendor software.
- Any money saved by avoiding custom development could be consumed instead by product licensing and maintenance fees, product research, PaaS development, and vendor relationship management.
- Organizational change costs are likely to be higher as solution's built-in processes are not fully aligned to the current processes.
- Many decisions regarding the delivery of upgrades and other support matters may not be completely within IDR's control.

Option 3: Custom Re-Write

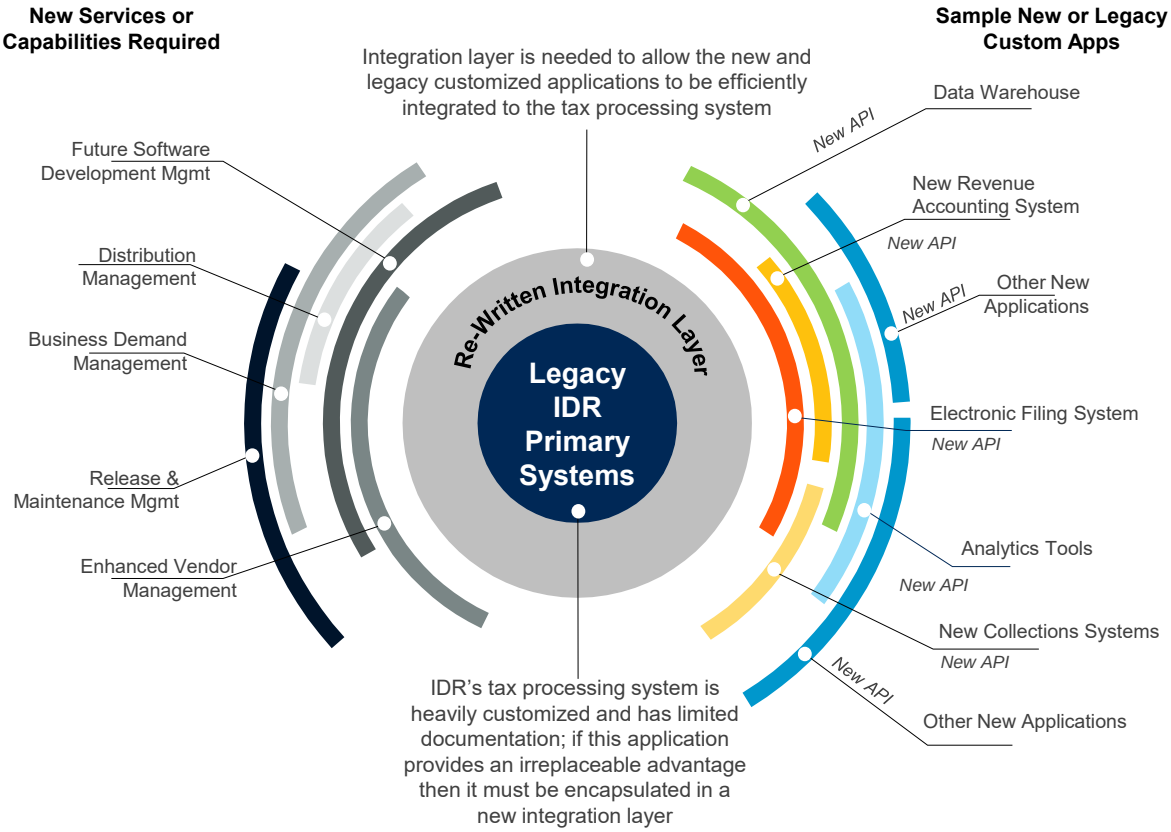
The custom re-write option is driven by the need for an organization to fully control their technical support. In the case of IDR, the current tax processing applications and supporting processes are highly customized and there is limited documentation of the original design. Any incremental improvement to the current application portfolio would be inhibited by this lack of documentation and insight into the detailed system code.

Custom re-write of IDR's current primary systems is a viable approach only if IDR seeks a unique, highly differentiated or innovative solution for the State of Iowa. If IDR analyzes the modern tax system marketplace and concludes that no suitable COTS solution exists that can accommodate its operational processes, then this option could be considered. IDR might gain a competitive advantage by implementing its own software that accommodates its unique processes. This option further presumes that IDR business processes have already been analyzed and reengineered for optimum efficiency and service delivery.

With this custom re-write option, IDR must prepare and augment its organization to obtain the expertise required to successfully design, deliver and maintain the solution. Given the current

OCIO strategy of leveraging vendor expertise for mid-to-large scale software development, IDR will need to obtain services from an external systems integrator to build the custom primary systems. If IDR chooses to re-write the primary systems, then IDR and the OCIO will in essence have chosen to become a software house and must be able to successfully carry out all the functions of one. See the following figure for a view of what is involved in a custom re-write:

Figure 16. Custom Re-Write



In many IT environments, customization introduces new challenges to support vendor integration, accommodate new requirements and continually upgrade the software. IDR must carefully plan to customize or extend capabilities only if the functionality needed is truly unique.

Special attention must also be paid to data and integration issues relating to other legacy and new business systems. IDR would likely need to keep their mainframe tax processing capabilities for the foreseeable future, if not permanently. This is because the limited documentation for the legacy tax processing system does not provide enough structure to easily re-create this application. Gartner would advise that a new integration platform be developed to connect the processing system with new and existing custom applications in order to provide the least risk in a custom re-write option.

Despite the allure of a high degree of control and alignment to existing business processes, IDR must be very cautious with this option since custom re-write models tend to underestimate maintenance and support costs. Using custom-built software will require IDR to:

- Keep up with technology trends and develop a strong product roadmap to avoid technological obsolescence.
- More tightly manage its knowledge capital.
- Mitigate the risk of high costs, delivery issues and longer times to develop and implement the software.
- Address quality problems that may arise and have the potential to disrupt operations and cause outages.

Option 4: Incremental Improvements

By focusing only on incremental improvements, IDR will continue to make only as-needed enhancements. There are no upfront costs associated with this option except for the enhancements necessary to comply with planned tax regulations and reforms. The strategy of incremental improvements means that the cost will initially be equal to the existing appropriation of funding for existing operations and maintenance. But eventually, overall costs will increase due to long-term efficiency losses and challenges with support for legacy systems. Though these costs have not been quantified, Gartner believes they will inflate exponentially over time. If IDR does nothing or nominally maintains its primary systems, then the agency will find itself with an increasingly patchwork architecture of disparate technologies that will continue to slow the pace of integration and innovation. For IDR, the main causes of increased costs from outdated technology include:

- Frequent, customized maintenance.
- Diminished staff productivity.
- Incremental improvements that rely upon manual intervention or complex and expensive modifications to the technical architecture.
- Legacy technologies fail or are deemed unable to accommodate new functionality, integration, or generating unplanned cost spikes.

There are also intangible costs to doing nothing that have real consequences—taxpayer experience, employee morale, and agency reputation. Gartner included a conservative estimate for major projects under this “status quo” option. These projects will have to contend with the technical limitations of existing systems (i.e., hardcoded business rules, limited documentation, limited knowledge of the systems, limited understanding of all dependencies, etc.) which add cost to their implementation prices. Some of the projects considered in the incremental improvements option include:

- Automation to eliminate workarounds.
- Modern taxpayer portal.
- Improved reporting and analytics to support fraud detection and prevention.

5.3 Financial Analysis Detail

Inputs to the Financial Analysis

This analysis assumed an iterative, phased-in implementation model (as opposed to a “big bang”) regardless of option. Implementation is assumed to last 5 years, allowing sufficient time for quality

and process testing. The model then assumed an additional five years of stable maintenance to allow for the full cash flow analysis over the life of the four implementation options.

Gartner analyzed IDR's current budget for operating their primary systems. Gartner also analyzed the ongoing maintenance costs based on the primary system architecture and IDR's required future technical improvements and near term compliance with new tax law changes.

Gartner further identified the project roles that would be required in a modernization effort. These roles were defined in detail and applied to the phased implementation approach. Two example roles were:

- IT Lead:
  - Oversees a team of personnel focused on technical issues, including software development, product releases, and engineering tasks.
  - Hires and trains staff and delegates work assignments.
  - Collaborates with colleagues to identify and repair technical issues.
  - Evaluates team's work processes and best practices, and implements changes to streamline operations.
- Business Analyst:
  - Reviews, analyzes, and evaluates user needs to create systems solutions that support overall business strategies.
  - Documents system requirements, defines scope and objectives, and creates system specifications that drive system development and implementation.
  - Functions as a liaison between IT and users and has both business and technical expertise.
  - Works on advanced, complex technical projects or business issues requiring state of the art technical or industry knowledge.
  - Works autonomously. Communicates goals in solution or project goal terms.

Then Gartner created assumptions for hourly costs per role, inflation, users, trainers, maintenance costs, etc. Finally, all of these components were combined into an interactive model which calculated the costs of each option and compared an 11-year cash flow analysis to determine the overall cost of implementation and ownership for IDR.

With this cost model, Gartner added careful consideration of IDR's technical and business drivers to identify the 'best fit' solution. In addition, Gartner applied secondary criteria such as the complexity of the existing architecture, risks, implementation costs, and existing organizational and technology constraints to the analysis.

Gartner determined that the best solution for IDR modernization is to choose a single vendor COTS, preferably a SaaS managed cloud, solution. We compared this selection to the "status quo" as IDR continues to make enhancements to the existing on-premise tax system. Gartner has also analyzed the benefits and risks to each option based on IDR's specific situation.

To make the best acquisition decision, IDR needs to consider its functional and business requirements along with these evaluation factors:

- **Benefit to stakeholders.** It is the core mission of this administration to deliver quality services and information to Iowa citizens and businesses. A modernized tax system must

ensure timely processing, clear and accurate correspondence, and an optimized user experience.

- **Resource constraints**. Consideration must be given to the cost and availability of the technical and business resources needed to select, test, implement, integrate, maintain and support any of the four options.
- **Unique functional requirements**. This includes the degree to which the integrated tax solutions must meet IDR's unique requirements and whether there is a need to extend or customize the solutions in support of its operational goals. To fully complete this analysis, operational requirements will be compared against the standard features available in the solutions. As requirements are assessed, Gartner advises that IDR challenge itself on any beliefs that particular requirements are indeed unique. Too many organizations believe they are unique when in fact they are simply comfortable with the existing ways of working, and are reluctant to change.
- **Organizational change management**. IDR must communicate the cultural and behavioral changes required in order to improve the implementation's chance of success. The intertwining of technical development with change management efforts increases the likelihood of a successful implementation.
- **Financial considerations**. Each option contributes to costs in different ways. Consider the costs of the following over the useful life of the solution:
  - Software license model.
  - Implementation (including development, integration and training).
  - Maintenance and ongoing development.
  - Support staff and miscellaneous "soft" costs.

Table 3. Financial Analysis of Tax System Modernization

Cost Category	Option 1 Best of Breed	Option 2 Single Vendor	Option 3 IDR Custom Rewrite	Option 4 Incremental Improvements
One-Time Project Costs (1-year prep; 5-year implementation)	**$ 179,435,475**	**$ 89,678,236**	**$ 131,937,727**	**$ 24,590,156**
Hardware Purchase/Platform as a Service (Paas) Fees	$ 387,917	$ 1,037,891	$ 387,917	$ 378,456
Software Purchase/License or Software as a Service (Saas) Fees	$ 7,277,755	$ 2,476,204	$ 1,077,547	$ -
IDR Staff (salaries & benefits)	$ 4,655,005	$ 3,491,253	$ 6,400,631	$ 6,812,202
OCIO and Vendor IT Contractors	$ 12,293,021	$ 3,995,906	$ 15,848,927	$ 13,876,707
System Integrator	$ 123,917,945	$ 59,480,613	$ 83,644,613	$ -
Management Support and Program Assurance/IV&V	$ 6,637,737	$ 6,637,737	$ 6,637,737	$ -
Agency Facilities	$ -	$ -	$ 538,774	$ -
Training and Outreach	$ 906,217	$ 906,217	$ 237,060	$ 315,380
Contingency of 15%	$ 23,359,880	$ 11,652,413	$ 17,164,521	$ 3,207,412
Post Implementation Costs (5 years)	**$ 80,775,339**	**$ 37,957,842**	**$ 81,886,380**	**$ 232,427,325**
Hardware Purchase/Platform as a Service (Paas) Fees	$ -	$ -	$ 6,211,201	$ 16,529,707
Software Purchase/License or Software as a Service (Saas) Fees	$ 63,363,141	$ 21,558,854	$ -	$ 28,736,939
IDR Staff (salaries & benefits)	$ 5,066,049	$ 5,066,049	$ 3,039,629	$ 6,741,072
OCIO and Vendor IT Contractors	$ 10,319,730	$ 10,319,730	$ 20,639,459	$ 110,233,015
OCIO Utility Charges	$ -	$ -	$ 45,241,357	$ 60,199,819
Agency Facilities	$ -	$ -	$ 4,690,786	$ 6,241,733
Training and other	$ 2,026,420	$ 1,013,210	$ 2,063,946	$ 3,745,040
O&M Legacy Retirement Support (5-year implementation)	**$ 95,449,938**	**$ 95,449,938**	**$ 95,449,938**	**N/A**
IDR Staff (salaries & benefits)	$ 3,449,378	$ 3,449,378	$ 3,449,378	
OCIO and Vendor IT Contractors	$ 56,405,766	$ 56,405,766	$ 56,405,766	
OCIO Utility Charges	$ 30,803,992	$ 30,803,992	$ 30,803,992	
Failover and Staging Hardware	$ 1,596,934	$ 1,596,934	$ 1,596,934	
Agency Facilities	$ 3,193,868	$ 3,193,868	$ 3,193,868	
Total Cost (with 2.5% inflation)	**$ 355,660,752**	**$ 223,086,016**	**$ 309,274,045**	**$ 257,017,481**
ROI (cost savings compared to incremental improvements - Option 4)	-28%	15%	-17%	

The financial analysis supports Gartner's recommendation that IDR leverage the single vendor option for its tax modernization effort. Single vendors of an integrated suite typically provide a lower per unit cost than a best-of-breed option. Single vendor solutions can also seamlessly manage information processing across all modules. In addition, managing a single vendor can help IDR utilize fewer resources. In summary, this option provides IDR with the opportunity to lessen complexity, decrease cost per unit (module), and increase efficiency.

The risks associated with a single vendor implementation are technology restrictions and a lack of flexibility. If the vendor does not maintain its solution, inferior technology can increase the total cost of ownership in the long term. Furthermore, IDR forfeits the ability to choose individual solutions that are need-specific. If a single vendor has less favorable technology solutions in a particular business function, IDR may modify its business processes or supplement the gaps by creating "custom" solutions or workarounds.

5.4 Key Assumptions

The following tables list the additional assumptions that were used in this bottom-up estimate:

Table 4. Cost Estimate Assumptions

General Assumptions:
Average Employee Cost Is Constant Over Time
Single Vendor and BoB Solutions Are Off-Premise/Cloud Managed Services
Employee Count Is In FTE's
Not Costing Out Internal Part-time SMEs
Cost of Document Management and Imaging Software Is Negligable

Constants Assumed:		
Average Annual Loaded Cost Of Internal Resource:	$ 108,000	25%
Average Annual Cost Of Contractor Resource	$ 220,000	25%
Work Hours In A Year	2000	5%
Hours Per Simple Interfaces/Conversions/Reports	144	
Hours Per Med Interfaces/Conversions/Reports	280	
Hours Per Complex Interfaces/Conversions/Reports	500	
Post-Implementation Operations Support Period In Years	10	0%
Average Number Of Named Users	557	
Cost Per Named User	$4,000	
Users Per trainer	1000	
Average Degree Of User Overlap On Multiple Systems	0%	
Maintenance/Licence Cost	22%	
Contingency	15%	
OCIO IT Contractor Labor Rate (Blended Rate)	$ 110	per hour
Inflation	2.5%	
Inflation Multipler	1.02500	
FY2017 Exp Code 416 - OCIO IT Reimbursement	$ 13,652,685	
FY2017 Exp Code 416 - OCIO Labor Cost As Part Of Total IT Reimbursement	$ 8,830,321	
FY2017 Exp Code 416 - OCIO Utility Cost	$ 4,822,364	
System Integrator Contract Rate	$ 250	per hour

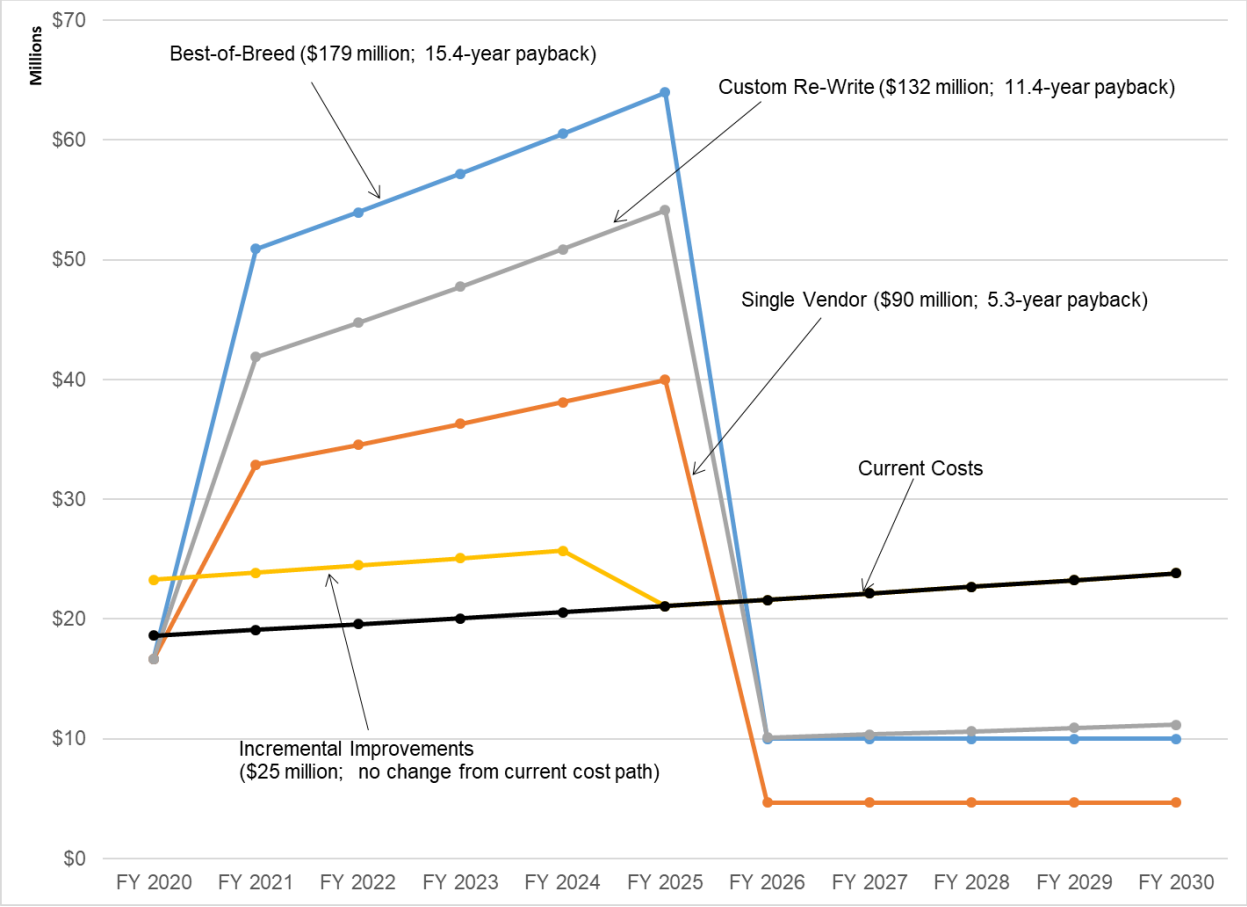
Interfaces/Conversions/Reports Complexity Definitions				
Complexity	Description	Hours	Hourly Rate	Average Cost
Low	Data or business process based on a single table and limited data elements or a single event. Presentation of relevant information does not require translation.	144	$190	$27,360
Medium	Data or business processes based on multiple tables or multi-step events within a single business process. The business process is somewhat complex and may be iterative. Presentation of relevant information requires some translation.	280	$190	$53,200
High	Data or business processes that cross functional boundaries or spans multiple systems. Business processes involved multiple departments or are very complex. Presentation of relevant information requires substantial translation.	500	$190	$95,000

Option	Assumption Description
ALL	OCIO Utility Charges: Servers, Email, Rack Space, Desktop Support, Mainframe Usage
ALL	OCIO IT Labor Rate (Blended Rate With SI Rate)
ALL	System Integrator Rate (Blended Rate Across All Roles)
Best-of-Breed	Approximately 4 Vendors Provide Services
Custom Re-Write	Annual Ongoing Cost For Harware Licenses And Platform Decreases Through Enhancements During Custom Re-Write In Relation to Incremental Improvements Option
Custom Re-Write	Software Purchase/License Or Software as a Service (Saas) Fees Not Applicable Due To Custom Re-Write And Not Managed Service
Custom Re-Write	OCIO And Vendor IT Contractors Estimate For Ongoing Support Staff Of New Software
Custom Re-Write	OCIO Utiliy Cost Consistent Through First 5 years And Considered Operational Cost (No Annual Ongoing Cost Related to Custom Re-Write)
Incremental Improvements	IDR Will Not Hire System Integrator For Incremental Improvments (OCIO Will Augment Staff For Ongoing Improvements)

5.5 Recommendation

Gartner's recommendation is supported by a detailed assessment of the tax system marketplace and a thorough cost analysis. Over an 11-year period, the single vendor option is expected to yield a 15% return on investment as compared to the "stay the course" incremental improvements option. Of all the options considered, this option is also expected to generate the lowest ongoing operations and maintenance costs after project implementation, starting in FY 2026 as shown in Figure 17. Another characteristic of the recommended option is a 5.3-year payback period, the shortest of all options.

Figure 17. Options Cost Comparison: Total Project Cost Over Five Years and Payback Period



An initial investment of approximately $90M over a 5-year period will be required to procure and integrate a modern integrated tax processing system from a single vendor. The estimated investment allocation by fiscal year is depicted in Table 5.

Table 5. Estimated Investment Request for Tax Modernization, by Fiscal Year

Fiscal Year	Amount
FY 2020 (Procurement)	$1.7 M
FY 2021	$16.8M
FY 2022	$17.2M
FY 2023	$17.6M
FY 2024	$18.1M
FY 2025	$18.5M
TOTAL	**$89.9M**

Other benefits that will be realized are:

- Single vendor management.
- Deep industry experience and past performance.
- Less burden on IDR staff resources.
- Managed service provided off-premises.
- Reduced implementation time.
- Controlled and predictive spending/budgeting.
- Lower costs for implementation and operations.
- Access to IT industry experts.
- Shift the focus of existing staff resources from technology to IDR business.

There are limits to this analysis and the figures presented here are estimates. A more refined financial analysis will be completed when IDR has developed functional and technical solution requirements and vendors have submitted pricing proposals aligned to those requirements. Nonetheless, Gartner recommends that IDR make significant changes to its technical architecture and focus on replacing its out-of-date primary applications and request investment for a modernization program.

Gartner recommends that IDR deploy a modern, user-friendly, scalable, robust, secure tax system(s) that meets IDR's current and future needs for tax processing. This new modernized tax system requires a reconfigured enterprise architecture that supports the use of modular technology. This architecture should be able to support a SaaS managed cloud application, if available.

Gartner recommends that IDR work with OCIO to define requirements for the system, develop a request for proposal (RFP) and procure the most appropriate single vendor COTS solution.

5.6 Benefits

Investment Justification

Tax revenue is the lifeblood of every state. IDR is not only self-funding but also the conduit of funding for most government agencies in Iowa. The costs incurred with tax collection and recognition impact not only IDR but also the funds available for other programs that benefit Iowa citizens. In a climate where states are required to balance budgets and offer an environment that continues to attract taxpaying citizens and successful businesses, optimal processing of tax revenue is imperative. "The modern state cannot exist without an effective and permanent process of generating significant public revenue. For nearly all advanced industrialized nation-states, taxation is the one policy area without which nearly all of the other functions and aspects of the state would be impossible."[1]

As Iowa competes with other states for resources and local businesses compete with virtual storefronts that don't exist inside state borders, tax collection and recognition has become more complex. Furthermore, public and private sectors have developed a somewhat symbiotic relationship where businesses are seeking states with business-friendly climates and states are offering tax incentives which private sector businesses use to operate profitably. As businesses build operations in the state and employ Iowa citizens, tax revenues grow organically and fund more programs that serve the public good. This symbiotic relationship becomes one of positive incubation, which ultimately leads to more opportunity for business growth, increased investment in schools, infrastructure improvements, and other statewide government programs.

The goal of any investment in IDR is to improve the ability of the State to collect and recognize wherever taxes are to be collected. The selection of a specialized single vendor tax system will improve the effectiveness and efficiency of the process of tax collection and revenue recognition. By selecting a single vendor SaaS managed cloud solution, IDR will recognize cost savings by improving its ability to:

- Identify areas where tax revenue should be collected.
- Increase revenue collected by the State that can be used by other agencies.
- Provide the scalability to accommodate future tax legislative changes.
- Improve the taxpayer experience (individual and business entities).
- Reduce costs associated with the maintenance and operations of "keeping the lights on."
- Improve data analysis for decision support and performance monitoring.

Overall Benefits

Although there is a quantitative justification for investment, there are multiple qualitative reasons for the modernization project. The overall benefits are increased customer service to all taxpayers, additional efficiency, and reduced operational costs. IDR constituents, such as the eight identified earlier in this document (e.g. tax professionals, business taxpayers, bulk and individual filers, etc.), are requesting additional ease of use and better customer service.

Tax professionals and other constituents are requesting quicker, more precise access to data and additional capabilities such as the ability to view taxpayer history, current permits, and tax

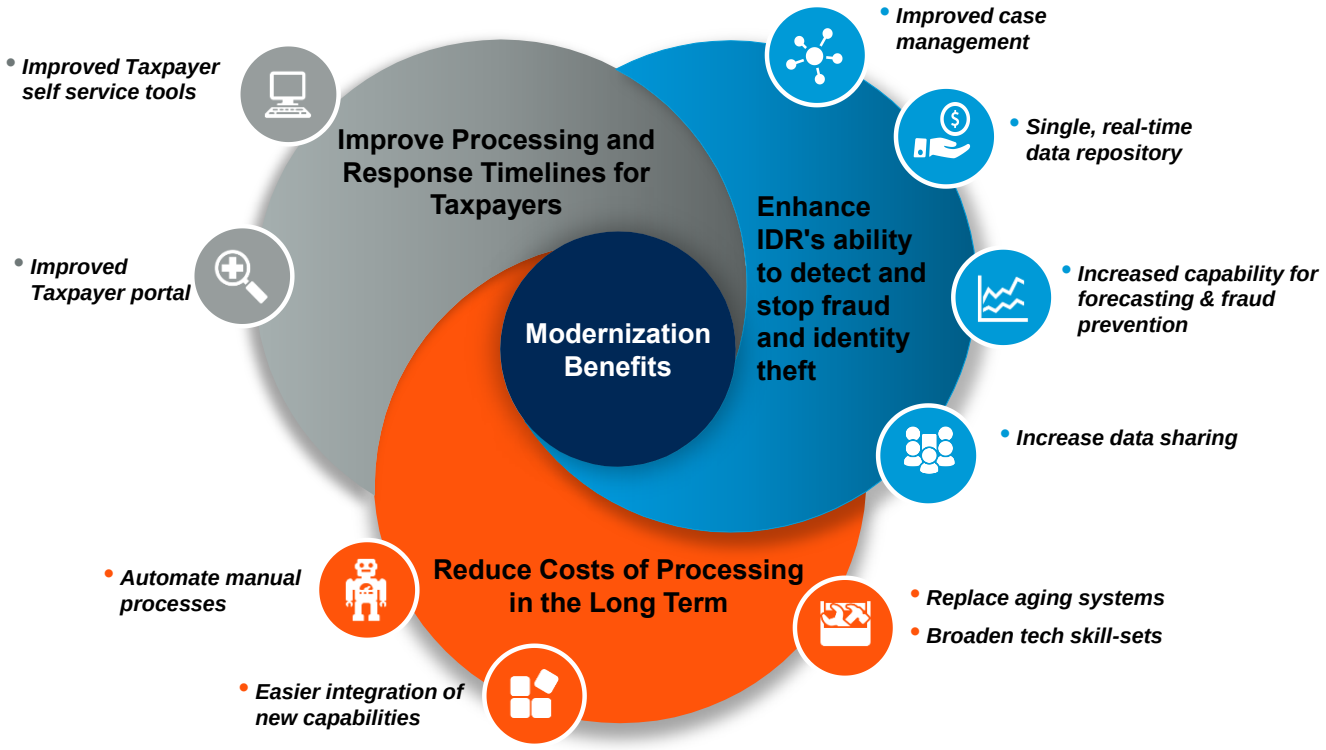
[1] Philip T. Hoffman, "What Do States Do? Politics and Economic History," Journal of Economic History 75, no. 2 (2015): 303–32.

obligations in real-time. The modernization project should take into account all of the IDR constituents and ultimately lead to lower operating cost, which will benefit all Iowa citizens.

Internally, the new system will provide better analytics tools and data that support a "single source of truth" in real-time, which will improve customer service and analytics. Better, more timely data will benefit all constituents by ensuring a high quality experience. The modernization project will also deliver increased and improved security to ensure that all personal data for all constituents are safe and protected. Security principles include an improved method to identify taxpayers, as well as ensuring data security from any device and any endpoint.

The key qualitative benefits of the recommendation are illustrated in the following figure:

Figure 18. Overview of the Qualitative Benefits from Implementing New Technical Solution



Improve Processing and Response Timelines for Taxpayers

- **A full-featured taxpayer portal allows taxpayers to manage their relationship with IDR**

  A full-featured taxpayer portal is expected as part of the IDR Tax Modernization program. This portal will allow taxpayers to manage all aspects of their relationship with IDR. For example, it will allow them to update their name, addresses, and other information. It will also allow them to see the current status of their tax accounts, including balance due and tax returns filed. Additionally, taxpayers will be able to transact easier with IDR when they register for permits, file tax returns, make payments, request payment plans, view the status of a refund, respond to requests for information, and look up all IDR correspondence

sent to them. Many taxpayers rely on tax professionals to help them address their tax obligations. The portal will provide taxpayers the ability to easily and securely manage the access of those third parties to their personal or business tax account.

The portal will provide self-service functionality along with a single location for historical data that will allow IDR constituents to review and update their information without having to enter multiple systems or to contact IDR directly (e.g., changes of address, updates to permits). This will be more effective for both taxpayers and IDR. The portal will also provide greater transparency to Iowa taxpayers that will help improve their overall communication with the agency—resulting in reduced wait times and delays. Taxpayers will be able to easily see the status of their tax accounts and any issues that need to be addressed.

- **Taxpayer information is organized to allow easy management of all taxpayer records**

  The IDR Tax Modernization will ensure that all taxpayer information and data are easily accessible and manageable, providing a complete picture of each taxpayer activity. All taxpayer activities, such as permit registrations, tax returns filed, and payments made, open collections cases, open audit cases, etc., will be organized and managed to allow for a complete understanding of a taxpayer and their related tax status.

  This improved management of taxpayer data is critical to ensure the taxpayer portal provides the expected value to taxpayers in the form of a consolidated view of their account activity. It will also allow IDR to ensure efficient resolution of taxpayer issues and questions. By better managing taxpayer data, the Department will be able to avoid issues where taxpayers provide information to one division but other divisions are not aware of it. Another example of an issue that will be ameliorated by better management of taxpayer data is when one payment is made by a taxpayer with multiple tax accounts but their payment is misallocated among tax accounts resulting in incorrect refunds and collection notices being sent out.

- **More flexible systems facilitate improved service to taxpayers**

  Another area the modern tax system will improve is taxpayer correspondence. A dedicated functionality to manage correspondence will allow for easier modifications to language, formatting, and branding. Taxpayers will have the option of requesting electronic delivery of correspondence if that is their preference. All IDR correspondence will be available in the taxpayer portal for easy access and retrieval. When IDR determines that additional correspondence is needed, it will be created to ensure that taxpayers have a clear understanding of what is required of them. Improved correspondence is a benefit to taxpayers as it represents a key point of interaction between taxpayers and IDR.

  Other opportunities to improve services to taxpayers include streamlining and simplifying business processes to reduce redundant steps, adding tools to allow for the bulk upload and maintenance of tax information (e.g., fleet information, cigarettes sales information, etc.), adding data validation to data entry fields to reduce the need to follow up with taxpayers if they have provided incorrect information, as well as other areas. As IDR works with taxpayers and identifies opportunities to improve customer service, new more agile and flexible systems will allow the agency to implement necessary changes faster.

- **Improved systems functionality allows IDR staff to be more efficient**

  Current IDR systems have a number of limitations that affect the staff's ability to focus on the tax process. Instead, system limitations require staff to focus their time and energy on

completing activities that could be better accomplished systematically. Among these system limitations are:

- Taxpayer information is housed in multiple systems. IDR staff sometimes need to poll up to 5 systems to get a complete picture of taxpayer activity. This results in wasted staff time and increases the chances that IDR miscommunicates in transacting with the public.
- IDR staff needs to reconcile taxpayer information when there are data discrepancies between systems. This can be a time consuming activity as data issues might impact multiple systems.
- IDR staff reports the use of many spreadsheets to manage the tax processes. One IDR division indicated they use up to 75 spreadsheets. The time required to generate and maintain spreadsheets could be significantly reduced creating improved processes.
- IDR staff spends time manually completing tasks that could be automated by the system. Some examples include: processing license revocations, filing liens, initiating offsets, and billing rent reimbursements, among a few.

The cumulative impact of these inefficiencies is hard to quantify. However, a conservative estimate is that approximately 10% of operation staff time is spent on unproductive activity due to IDR systems limitations. This translates to about 36,000 hours/year of activity that could be better deployed. This **staff time translates to a conservative estimate of $1,460,000 in compensation.**

Table 6. Estimated Time/Costs Due to System Limitations That Could Be Better Utilized

Division	Number of Staff	Estimated Share of Time Lost Due to IDR Systems Limitations	Total Time (hours)	Total Costs Spent Due to Systems Limitations
Tax Management Division - Compliance Services	106	10%	19,843	$795,000
Revenue Operations	48	10%	8,986	$360,000
Tax Management Division - Collections	33	10%	6,178	$247,500
Appeals section of the Legal Services and Appeals Division	8	10%	1,498	$60,000
Total	**195**			**$1,462,500**

- **IDR ability to redeploy staff resources away from activities that address system limitations to more value added activities supporting the tax process**

  One example of where resources could be better deployed is the Compliance Services division. If half the time that is spent on tasks related to system limitations could be redeployed to **conducting more audits then there could be a potential increase of**

$2.5M in additional audit revenues per year. This estimate is based on the historical return for each hour spent conducting an audit.

Table 7. Estimated Increase in Revenue Generated by Additional Audits

Division	Number of Staff	Additional Time Available to Conduct Audits (hours)	Average Return per Hour Spent Conducting an Audit	Potential Increase in Revenue Generated by Additional Audits
Tax Management Division - Compliance Services	106	9,922	$444	$4,405,368

- **Reduction in maintenance and enhancement costs to IDR tax systems**

  The IDR technical architecture is complex with multiple types of systems supported by staff from multiple organizations and vendors. This complexity directly impacts the cost associated with maintaining and updating IDR systems. A modern integrated tax system will limit the current amount of maintenance costs.

- **IDR Tax Modernization accommodates new functionality that more efficiently supports IDR staff in processing taxes and effectively collecting debt owed to the State of Iowa**

  The future IDR tax system will leverage newer technology and will have improved features and functionality that better support IDR staff in performing their duties. Some of these features include:

  - Improved workflow functionality that will allow IDR to more efficiently and effectively manage the tax process. This should also reduce IDR's reliance on spreadsheets to manage many business processes. Key features of the improved workflow functionality include:
    - Automatic creation of tasks.
    - Creation of task queues and user task inboxes.
    - Reassignment of tasks between users.
    - Enables supervisors to improve management of workload assignments.
    - Identification and management of task aging.
    - Identification of tasks that require immediate attention and associated reporting.
    - Allows workflows to be modified more easily which ensures that process improvements are more easily implemented.
  - Improved case management functionality will allow more efficient management of all cases from creation to completion. The type of cases include collections, audit, bankruptcy, appeals, enforcement, etc. Case functionality will also trigger the creation of work tasks when user intervention is required. It will allow the ability to

easily query and report on case activities to improve management of the tax process and associated cases.

- ❑ Improved document management capabilities will allow for all taxpayer documents to be easily accessible. These documents could include paper tax returns, modernized eFile submissions, IDR correspondence, taxpayer correspondence and similar documentation. The future tax system will allow for the easy storage, retrieval and archival of these documents all of which enhances case management.
- ❑ Configurable mail templates will allow IDR to more easily develop, manage and maintain user-friendly and understandable taxpayer correspondence.
- ❑ Full-featured taxpayer portal will allow taxpayers to look up and manage their tax account information with self-service tools.
- ❑ Improved reporting and data analytics. The future tax systems will allow the easier creation of reports to support the management of the tax process. It will also provide tools to support the analysis of data allowing IDR to make informed decisions regarding tax policy and potential adjustments to the tax process.
- ❑ Single sign-on functionality will reduce the number of systems that IDR staff need to log into to complete their work, as well as the number of taxpayer touchpoints.

- **Improved ability to collaborate with other government agencies resulting in increased compliance with tax requirements**

  The future IDR tax systems will allow for easier integration with the systems of other government agencies. This integration will allow for checks of the taxpayer status before allowing a potentially delinquent taxpayer to access a state service or benefits such as incorporating a business, procuring a professional license, or applying for a driver's license. This integration will augment the State's ability to collect on delinquent tax accounts and increase the fairness of the Iowa tax process by ensuring that all taxpayers contribute their fair share of taxes.

- **Improved ability to provide collections services to other Iowa State agencies, counties and cities**

  As part of the Tax Modernization, IDR will improve its capability to collect debt for other Iowa State agencies, counties and cities. This expansion of the centralized collection of debt will improve the overall ability of the State to collect debt. It is more efficient for one agency to conduct collection activities instead of having multiple agencies collect multiple debts in an uncoordinated fashion, which contributes to overall cost reduction for the state.

  By consolidating collections activities IDR will be able to consolidate the collections infrastructure in one place, including systems, call centers, and staff needed to support statewide collections. This will reduce overall cost for the State as redundant systems and staff will not be needed in each agency collecting debt. Also, by consolidating state collections debt, the Iowa will have more leverage with vendors that support the collections process. This leverage will allow the State to negotiate better service and terms from collection vendors.

Reduce Costs of Processing in the Long Term

- **New IDR systems based on modern technology will ensure technical resources are more readily available to support IDR**

  Future IDR systems will reduce the risk of relying on a limited number of technical staff with expertise in the primary systems. This is a critical risk as many of the technical staff is reaching retirement age. Future IDR systems will leverage modern technologies which will result in the availability of more resources to support them because of the newer architecture. This will include both resources that can be recruited to join the State to support IDR's systems and resources that can be contracted through vendors.

  Additionally, it is Gartner's recommendation that IDR leverage COTS systems to support its Tax Modernization. This will ensure the responsibility for software maintenance of the underlying COTS package is the responsibility of the COTS vendor, reducing the technological risks that IDR needs to manage.

- **New IDR systems based on modern technology allow for more flexible and responsive systems that reduce risk implementing new capabilities**

  New modern system will replace IDR's existing primary systems and transactional databases and will be easier and less risky to maintain going forward. This reduction in risk will be based on the minimization of current practices such as: hard-coding of business logic, use of technical staff with specialized, hard-to-find skills, complex interdependencies between systems and processes.

  Given the increasing number of changes that IDR's systems need resulting from modernization, it is critical that these modifications be addressed without impacting IDR's ability to collect tax revenues for the State. Some of the changes that IDR systems must accommodate include the 2018 Iowa Tax Reform provisions, improvements to better serve taxpayers, regular annual tax changes, potential changes to accommodate taxation of e-commerce transactions, new payment methods preferred by taxpayers (e.g., mobile wallets such as Apple Pay) and other desired process improvements.

- **New IDR systems based on modern technology allow for improved data integrity**

  New IDR systems are expected to include a data repository and data management approach that ensure consistent data across the tax process. The new integrated data repository will be the system of record for tax transactions with data being systematically maintained real-time. The new systems will also ensure data validation is applied to reduce data entry errors at the point of intake. Reducing manual data entry will also improve the reliability of data in the system due to automated and predictable updates.

Taxpayers will benefit as their interactions with IDR will be of higher quality. IDR will benefit as staff will not need to spend as much time addressing data inconsistencies between systems due to the complexity and timing of updates. Additionally, IDR will benefit from an improved understanding of the overall holistic tax process allowing for process improvements and additional streamlining of operations.

6.0 Next Steps

A critical next step for IDR is gathering detailed technical and business requirements, as well as assessing the vendor marketplace via appropriate procurement tools such a technology request for proposal. The RFP should be a comprehensive document that defines what, how, when, who, where, for how much, and the consequences of failure to deliver or perform. It's an evaluation tool that is used to compare supplier offerings, and it should be considered part of the document trail that leads to a legal contract. The purpose of a technology RFP is to provide both parties with a detailed outline of the deal they intend to make. It also helps to ensure that responses will be presented in a comparable manner, making selection easier. A well-constructed RFP will also influence the success of the procurement initiative by building internal consensus and creating a will to succeed. Although preparing an RFP can be time-consuming, this investment in time will more than pay off with a better transaction.

Operations and technology professionals procuring services through the use of an RFP will need to work closely with the disparate business units and divisions—from the development of the business requirements to the ultimate selection of the supplier. The figure below is Gartner's RFP strategic best practices which is based on Gartner's experience with hundreds of RFP reviews, along with a working knowledge of industry best practices. If followed sequentially, this will lead to enhanced RFP that will expedite the evaluation and selection timeline, and will lead to improved and effective responses.

Figure 19. Create a Requirement Package

As Figure 19 shows, there are three key steps with multiple actions to structure an RFP process for vendors to support the Modernization project. These steps and actions are structured to define the details necessary for vendors to architect a solution based on IDR's vision and goals.

Architect a Viable Solution. The first section is focused on providing the RFP recipient with business context and verifying product/service requirements. The requirements section enables the provider to understand the real needs of the client so that they can architect a viable solution. Service providers should not only gain an understanding of services requested in the RFP, but

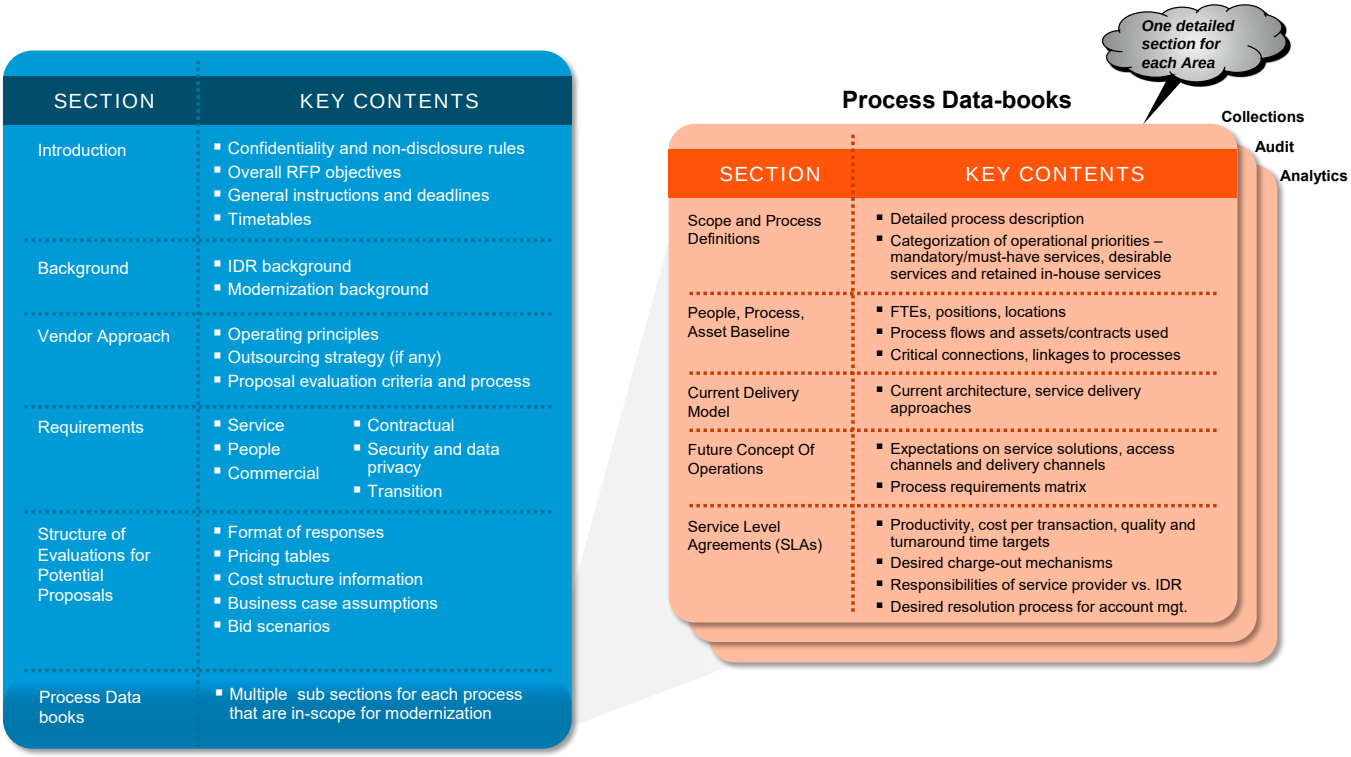
also the shortcomings of the existing system or services in order to design and offer a delivery model that overcomes earlier limitations.

Schedule and Prioritize Activities. The second section is focused on providing a list of activities, anticipated timelines and an evaluation process so that providers can prioritize and assemble their best team to create a response and showcase their best abilities. The RFP should also provide an overview of the evaluation criteria so that the provider can create a response based on customer priorities that highlights its capabilities that match customer needs.

Respond in a Timely and Consistent Manner. The third section examines the RFP structure and guides providers to respond in a timely and consistent manner using the response template to allow for effective comparison of provider proposals. The RFP document structure is designed to create a storyline along with relevant details of functional and nonfunctional requirements of the desired services.

The following figure provides an example of a detailed requirement data book.

Figure 20. Requirements Package



It is imperative that process owners focus on populating process-specific elements—the process data-books which will provide the detailed requirements for the Modernization program. For each process IDR needs to define the overall process scope, which is comprised of the major business process, its supporting technology and any sub-processes that are inter-related. In addition to elaborate data-books, Gartner recommends IDR also gather:

- Process maps
- Organization charts
- Job descriptions

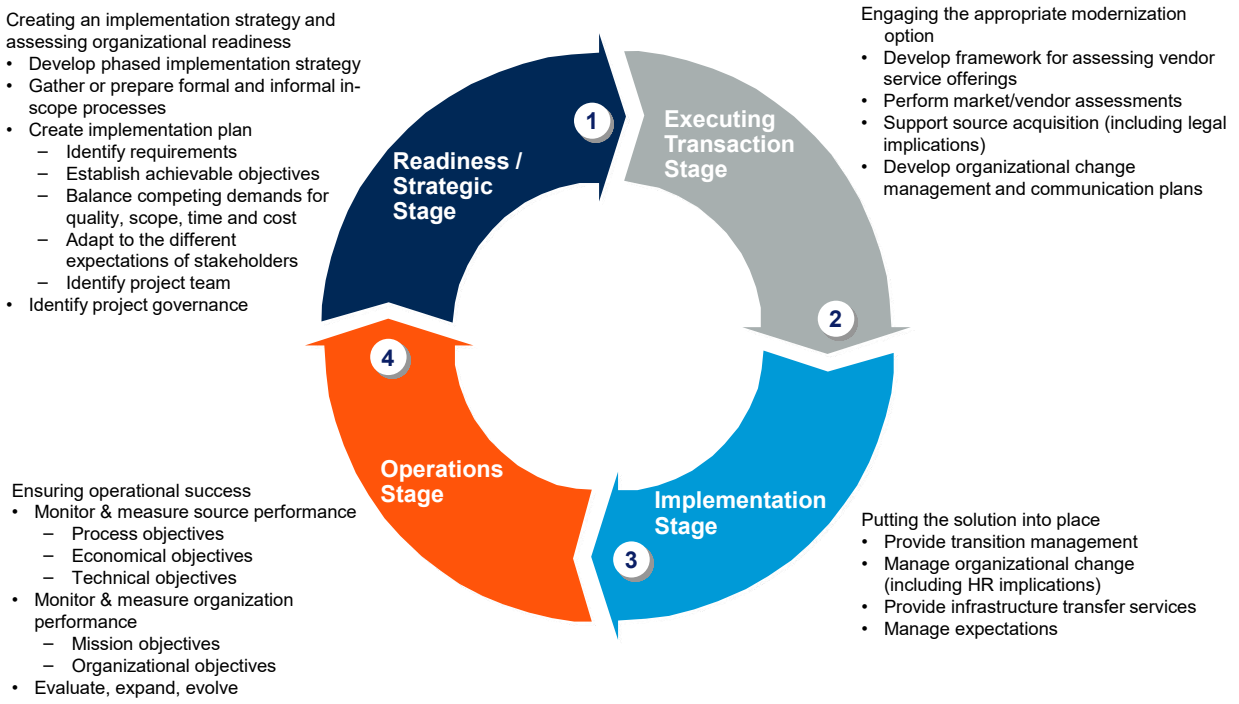
- Performance review templates
- Implications of recent process improvements

The process documentation needs to stress how IDR and OCIO staff members perform the process and why they perform the process; not what the process is. Process maps are a graphic representation of the relationships between steps, inputs, and outputs. However, the information in a process map is not comprehensive — it doesn't capture every aspect of a process. Items the map doesn't cover include any bottlenecks or exceptions, details about ownership responsibility for tasks and activities, the acceptable durations of various activities, and the methods IDR staff members employ to find resources and accomplish tasks. Other tools will be utilized to gather the required documentation such as: value stream maps, process maps, flow charts. The rest of the process documentation fills in these particular gaps. Flow charts which support the process maps are sequential pictures of the workflow steps.

At the same time OCIO and IDR in collaboration should be collecting all technical support documents for each of the in–scope processes and systems. The technical documents include IT architecture diagrams, network topologies, data structures, data sources, key performance indicators and service level agreements.

The following figure provides a view of IDR's next steps.

Figure 21. High level next steps for IDR after the business case



7.0 Appendix

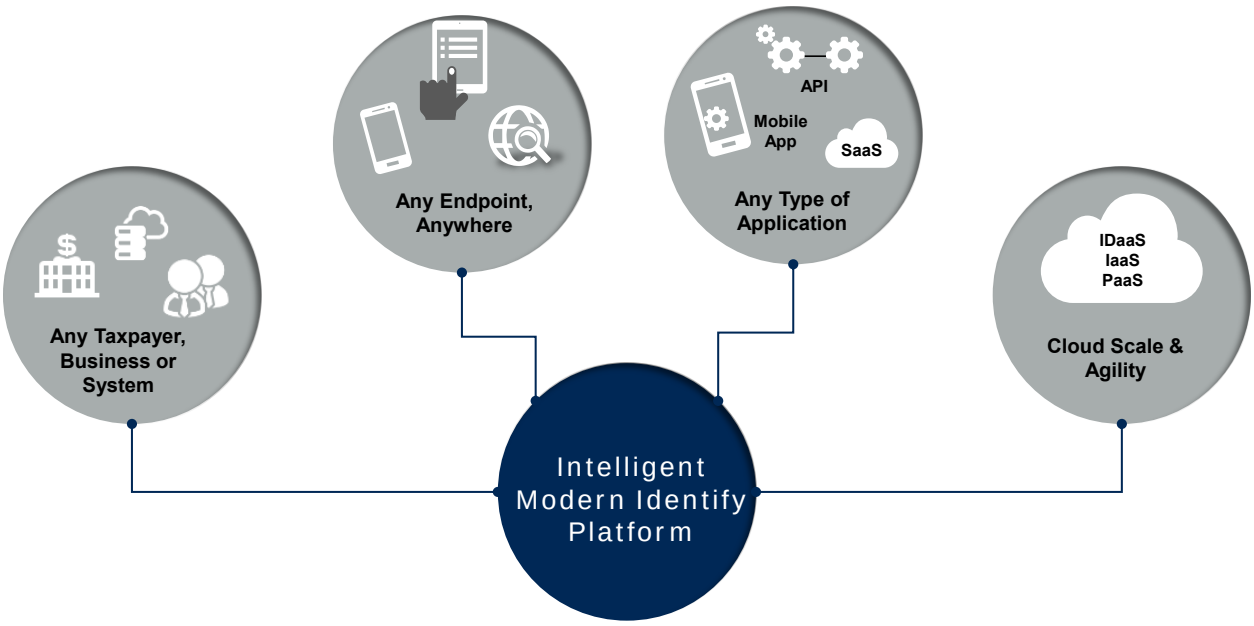
7.1 What are the reasons behind changing taxpayer demands?

Improve Ability to Respond to Fraud, Cyber Security Threats, and Noncompliance

A fundamental problem for IDR's current technical architecture is the lack of relatively easy and cost efficient integration for new capabilities or tools. This difficulty in integrating new capabilities quickly is inhibiting IDR's ability to detect fraud, counter cyber security risks and identify non-compliance. IDR has done an admirable job in manually keeping up with the rapid demand for return trend analysis, identification of unusual return patterns and identifying cyber risks, but the technical support for these activities is not being supplied in the time frames needed.

Besides detection of fraud and noncompliance, IDR must also increase their ability to respond to cyber security issues specifically around data and taxpayer identification. Many traditional assumptions about user authentication and access control are no longer true in all circumstances. IDR is facing an increasingly complex technology ecosystem that must be kept secure from potential security risks. It is now common for taxpayers and IDR employees to have several devices, including mobile phones, tablets and wearables. IDR faces the situation where taxpayers and field staff all need access from locations that are widely dispersed geographically in Iowa and outside the state. As IDR moves to add more types of transactions and interactions with taxpayers online, there is a need to require higher levels of security and/or assurance. For example, IDR constantly faces the issue of identity assurance which is the level of certainty that the current taxpayer or entity actually is the stated authorized user. Furthermore, as more and more valuable transactions move to the internet, fraud has increased, and there is a greater need to improve online identity trust.

Figure 22. Principles of Data and Taxpayer Security

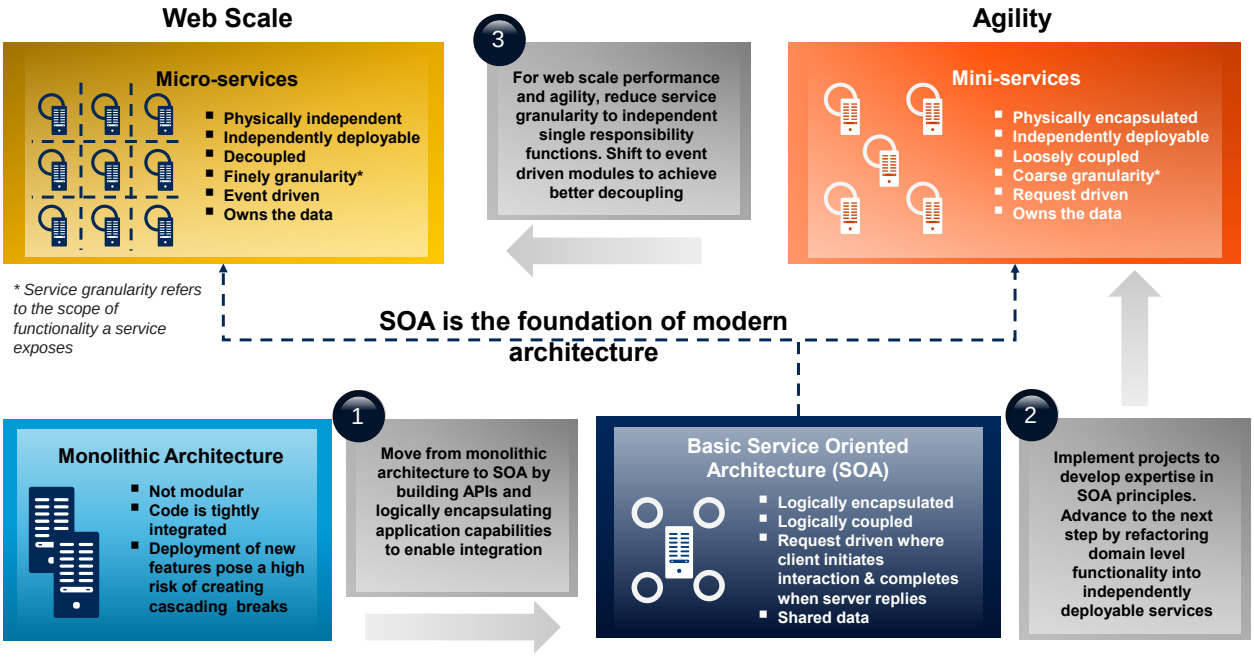


7.2 Technical Architecture of a Modern Integrated Tax Processing System

Gartner recommends that the technical architecture of a modern integrated tax processing system have a modular technical design and a set of shared services which provide flexibility, scalability especially in allowing for integration of other systems and products. A critical element of this type of integrated system is a business rules management system (BRMS). This business rules engine (BRE) provides easier control over how the system can be tailored to changing policies and demands without base-code modifications.

These kinds of systems typically utilize a service-oriented architecture (SOA) that enables flexible integration of modules and services, as well as integration with other agency systems, external systems and third-party software. See the following figure for a detailed explanation of the use of SOA:

Figure 23. Evolution Path from Monolithic to SOA to Modern Architectures



SOA is something you do, not something you buy. You may need some additional infrastructure, but simply buying that infrastructure without changing application design will not deliver SOA benefits. Many organizations adopt SOA as an integration strategy, and while SOA can certainly help modernize integration, a focus solely on integration isn't enough. The focus of a SOA adoption plan should be to modernize the application architecture to achieve agility, manageability and scale, and to enable the core primary systems to support digital business.

User Interface (UI) Layer and Taxpayer Portal

Gartner recommends that the user interface layer's objective should be simplicity of use for taxpayers. A UI layer exists to encompass the technology people use to interact with an application, it must also be supplemented with a functional design layer. The additional layer allows the technology to be used for a specific purpose or function.

In an integrated tax system, a taxpayer portal is a great example of a UI function. Portals are a form of website that marries a set of back-end integration and front-end delivery capabilities that provide information in context, personalized to a taxpayer's needs. Gartner recommends that

the portal be designed to understand taxpayer expectations and to define workflows that align the portal design to those expectations. This will ultimately provide a consistent user experience, as well as a consistent look and feel, for workflows on different devices, so that users can seamlessly switch between each device.

Application Layer

The core application in this layer is the tax processing system which provides the following components: Tax Processing, Taxpayer Accounting and Revenue Accounting. Gartner recommends that this core application focus solely on operations. Any modifications to tax policies or laws will be configured outside the core processing application. This type of architecture will permit more efficient integration of other applications, modules and external software. Gartner recommends that the other tax specific functionality be located in this layer, such as compliance, refunds or collections. All of these systems will be linked via a critical integration middleware, the business rules management system.

The critical component of the application layer is the aforementioned BRMS. The BRMS is a collection of design-time and runtime software that enables an agency to explicitly define, analyze, execute, audit and maintain a wide variety of business rules. BRMS tools work in collaboration with tax processing systems to improve decision performance.

Business rules are implicit and explicit business directives that define and describe guidance for making a business decision. Business rules can collectively be called business logic and should be expressed in a way that makes them easily understood by business people.

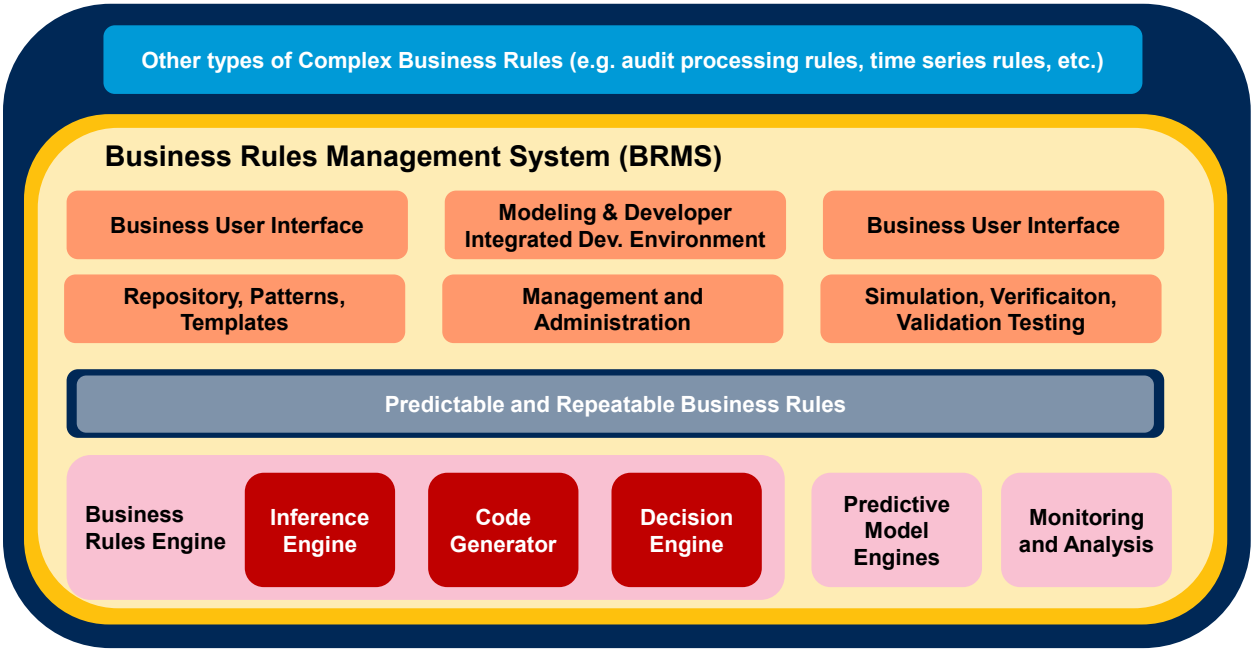
Business rule management is the structured discipline of guiding a declarative business rule's definition, categorization, governance, deployment and use throughout the business life cycle. It is a science for exposing and managing business policies and procedures in explicit form so that they can be treated how business managers intended: as corporate assets and first-class citizens across the business applications that they touch.

Business decisions are similar to business rules in many aspects insofar as both focus on declarative model-based representation that separates and isolates "business logic" from underlying programming "code."

Today's BRMSs have evolved in multiple ways. They commonly utilize a code generator to implement decision logic. Modern BRMSs also enable an enterprise to explicitly define, analyze, execute, audit and maintain a wide variety of business rules—in other words, they add management of rules beyond the underlying execution engine. To do this, they include features such as a rule repository, rule discovery tools, simulation and a management framework. Gartner has defined seven key component areas for a BRMS, see the following figure:

- Execution engine or code generator
- Repository
- Integrated development environment
- Rule-model simulation
- Monitoring and analysis/optimization
- Management and administration
- Rule templates

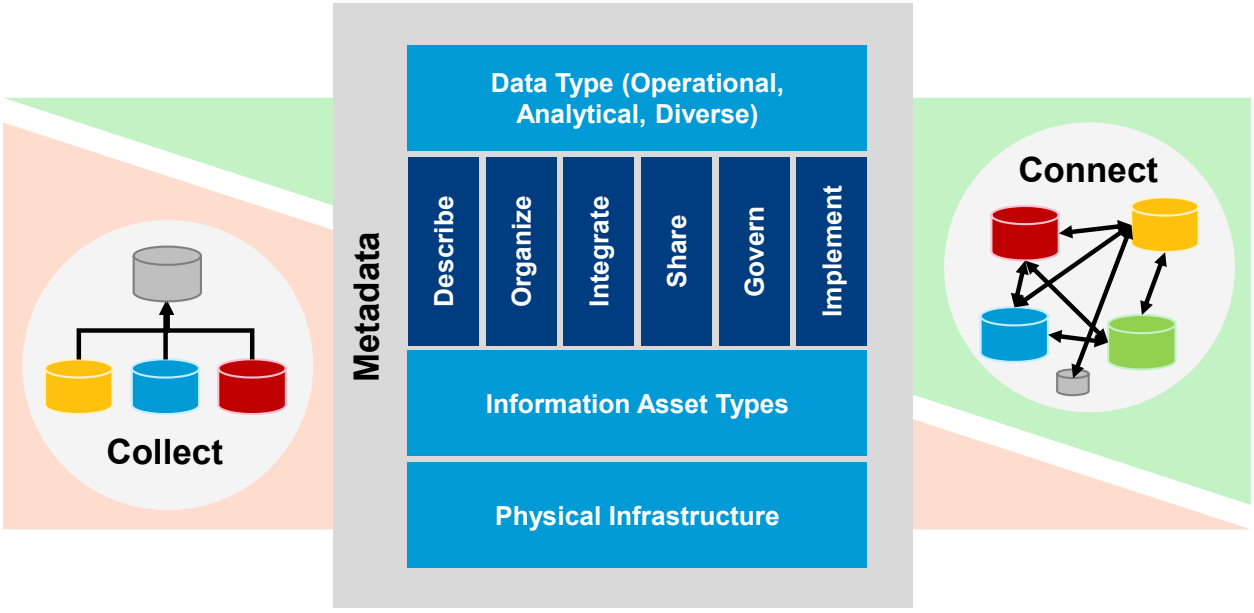
Figure 24. Taxonomy of a BRMS and BRE



Data Layer

Gartner recommends that the data layer be designed to incorporate Master Data Management (MDM). MDM is a comprehensive method of enabling an enterprise to link all of its critical data to a common point of reference. When properly done, MDM improves data quality, while streamlining data sharing across personnel and departments. An MDM helps data and analytics leaders strike the right balance, and support both collecting data and connecting to data, Gartner has introduced the components of a data management infrastructure for flexible deployments seen in the following figure.

Figure 25. Components of a Data Management Infrastructure for Flexible Deployment



Every data and analytics strategy, regardless of the approach and goals, requires the following data management capabilities:

- Describe: Collect knowledge about data assets including where they are, what format they are in, what level of quality they represent and their potential value to the enterprise.
- Organize: Align and structure data assets so that they can be readily found and easily consumed by other use cases. Decide if data should be structured in a way that conforms to the organization's standards of syntax (format), semantics (meaning) and terminology (use of common terms), or whether the use case allows for local standards. Opting to organize data locally may affect the ability to integrate with other sources or support other use cases.
- Integrate: Support accessing and ingesting diverse data types, performing transformations (changing formats and semantics, or combining data, for example) and allow independently designed data structures to be used together toward a common objective.
- Share: Make data available to consumption points. This can mean a single use case or a variety of use cases depending on the tradeoffs made for organizing and integrating data.
- Govern: Provide for risk assessment, control and compliance as it relates to data quality, security, privacy and retention. Data governance will need to take a trust-based approach that is no longer a one-size-fits-all, top-down approach, but an approach that adapts to the situation and the level of central governance required.
- Implement: Support the deployment and execution of the other five capability types. The decision of collecting versus connecting to data only needs to be resolved at implementation. Changes in implementation can also occur over time as the level of usage (or the use case) evolves.

All of these capabilities must ideally operate in both "collect mode" (centralized data and processing) and "connect mode" (distributed data and processing).

Different requirements will dictate the proper balance between collecting and connecting. For example, the "organize" and "integrate" capabilities described above might be optimally deployed via a single physical data warehouse. Likewise, the "describe" capabilities might operate in a mode of prepopulating a metadata store in advance of any analytics.

The data and analytics strategy for the modern integrated tax processing system should consider six data management processes as "common capabilities"—common in the sense that they can be used and reused across any mix of data-related options. This is how tax revenue organizations can achieve a modern data management infrastructure that is more efficient and effective, breaking the model of siloed and initiative-specific deployment of data.

During the past 20 years, many tax agencies completed modernization programs. Some of them approached application modernization by custom-building new tax processing systems, while others by deploying commercial-off-the-shelf (COTS) software packages. In either case SOA principles were applied, which allowed revenue agencies to phase tax types or services at their own pace.

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