



WHITE PAPER

Data Entry in Excel

The use of Excel for data entry: Inherent issues and possible solutions

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Contents



Introduction

Overview of the inherent issues related to using Excel for data entry

2



Key Concerns

Key concerns of using Excel for data entry

3



Alternatives

Alternatives to Excel for data entry

4



Conclusion

General characteristics and attributes of Low/No-Code approaches

5



Example Efforts

Efforts to remove the use of Excel for data entry

6

Introduction

In the digital era, federal agencies are increasingly reliant on data to drive decisions, inform policy, and manage operations. Data integrity and security are paramount in federal operations. Currently, decisions that affect millions are often based on datasets managed and manipulated in Excel.

While Excel's accessibility and ease of use has made it a staple tool for data entry and analysis, its limitations and risks - including its propensity for errors, security vulnerabilities, scalability challenges, lack of audit trails, and compliance risks - have become more apparent with the growing complexity and scale of federal data needs.

Acknowledging these issues against the federal government's unique requirements for accuracy, security, and compliance, Northramp proposes a more sophisticated approach to data management with a transition towards more robust, secure, and compliant alternatives.

This paper not only serves to outline the critical role of data in federal operations, the historical reliance on Excel, and the pressing need to reevaluate this dependency considering modern challenges, it also puts forward a roadmap for federal agencies to enhance their data management practices.

Key Concerns

As federal agencies increasingly rely on Excel for critical data entry and analysis, several key concerns emerge that challenge the integrity, security, and efficiency of governmental operations. This section delves into the fundamental issues associated with Excel's use in federal contexts, including its susceptibility to errors, security vulnerabilities, scalability limitations, lack of comprehensive audit trails, and potential compliance risks. Each of these concerns not only compromise the quality and reliability of vital data, but they also pose significant operational, financial, and reputational risks to federal agencies. Understanding these drawbacks is the first step toward mitigating potential disasters and transitioning to more robust and secure data management solutions.

ERROR PRONE

Studies have shown that up to 90% of all spreadsheets contain errors, and even a single miscalculation can have monumental consequences in the federal context. For instance, an erroneous fiscal projection could misguide budget allocations, affecting millions of citizens.

SECURITY RISKS

Excel files are vulnerable to breaches and unauthorized access. It is also very difficult to control user level access to specific data.

SCALABILITY

As organizational data grows, databases can efficiently scale to handle increased loads, a key advantage over individual Excel reports which can become cumbersome and slow as data accumulates.

LACK OF AUDIT TRAILS

Excel does not provide comprehensive audit trails, making it nearly impossible to track changes, identify errors, or maintain a clear chain of custody for data — a critical shortfall in federal operations where accountability is crucial.

COMPLIANCE CHALLENGES

Federal data often needs to adhere to stringent standards and regulations. Excel's limited controls and features can make compliance a challenging, if not impossible, task.

SUMMARY

In summarizing the key concerns associated with the use of Excel for data entry in federal agencies, it's clear that while Excel is a versatile and widely accessible tool, its limitations pose significant risks that cannot be overlooked. The tool's error-prone nature, security vulnerabilities, scalability issues, lack of audit trails, and compliance challenges pose significant risks to data integrity and operational efficiency. These concerns underscore the urgent need for federal agencies to transition to more robust, secure, and compliant data management alternatives.

Alternatives to Excel

In the quest to enhance data management and overcome the inherent limitations of Excel, federal agencies have at their disposal a range of sophisticated alternatives. This section introduces four distinct approaches: Modular Development, Low/No-Code Platforms, Specialized Federal Solutions, and Custom Development. Each of these methodologies offers unique benefits, from scalability and security to customization and compliance, catering to the diverse needs and challenges of federal data management. Explore these alternatives to identify the most suitable pathway for your agency's transition to a more efficient, secure, and compliant data management system.

EXISTING APPLICATIONS

While federal agencies should be open to exploring new alternatives, they should first consider the potential of leveraging and optimizing existing systems. Many agencies already possess a foundational infrastructure that, with the right modifications and integrations, can be enhanced to overcome the limitations of Excel. By conducting a thorough assessment of current systems, agencies can identify opportunities for upgrades, integration of modular components, or the implementation of additional layers of security and compliance. This approach not only capitalizes on existing investments but also ensures a smoother transition and continuity of operations, providing a balanced pathway between familiar legacy systems and new, innovative solutions.

SPECIALIZED FEDERAL SOLUTIONS

Several off-the-shelf products are available on the market today and are designed to meet the specific needs of federal agencies. These solutions come equipped with advanced security features, comprehensive audit trails, and compliance with federal data standards.

LOW/NO-CODE PLATFORMS

The recent advancements in Low/No-code platforms have enabled federal agencies to create bespoke applications for data entry and management without extensive programming knowledge. These platforms offer improved security, better integration capabilities, and more robust data validation features.

CUSTOM DEVELOPMENT

For agencies requiring tailored data management solutions, the traditional approach of custom development offers precision, security, and functionality specifically designed for an agency's unique needs.

SUMMARY

There exist several Excel alternatives which can bolster federal data management through adaptability, ease of use, robust security, and tailored customization. This section encourages federal agencies to not only adopt new technologies, but also to lean into the strategic enhancement of current systems, ensuring seamless integration and continuity. These alternatives represent a significant shift towards a future-proof, compliant data management infrastructure, aligning with modern federal standards and operational demands.

Conclusion: Rethinking Data Entry in Federal Agencies

The use of Excel as the default tool for data entry in federal agencies is nearing its end. The application's shortcomings are not just minor inconveniences; they represent significant barriers to efficiency, accuracy, and security—three pillars that are non-negotiable in federal operations. With the increasing complexity of data and the need for real-time, error-free data processing, Excel's propensity for inaccuracies, its lack of robust security protocols, and its challenges with scalability make it obsolete for contemporary data management needs.

In this whitepaper, we have explored a series of more sophisticated alternatives that can replace Excel. These scalable, secure, and user-friendly options are not only more aligned with the current technological landscape but are also specifically tailored to meet the stringent requirements of federal data standards. Modular Development, Low/No-Code Platforms, Specialized Federal Solutions, and Custom Development all offer viable pathways to enhanced data management and serve to provide the flexibility and robustness needed for federal agencies to function effectively in the digital age.

We argue that it is more than just adopting new technologies; it is about a transformative shift in how data is handled. Enhancing existing systems and infrastructure to meet their full potential can mitigate the transition away from Excel, ensuring that the change is evolutionary rather than revolutionary. This approach minimizes disruption, maximizes existing investments, and ensures that staff are not alienated by sudden changes in their work processes.

The cumulative case against the continued use of Excel for data entry in federal agencies is overwhelming. The risks it poses—whether from human error, cyber threats, or compliance failures—can have dire consequences and can impact everything from national security to public trust, resulting in financial loss and reputational damage.

As we conclude, it is imperative to acknowledge that the transition away from Excel is not merely a recommendation; it is a necessity. The federal government must lead by example in adopting modern data management practices that are secure, reliable, and capable of supporting the decision-making processes that affect the lives of millions. The time for change is now, and it is through informed choices, strategic planning, and the embracing of innovation that federal agencies will forge a path to a more secure, efficient, and accountable future.

Example Efforts



LOW/NO-CODE APPROACH EXAMPLE



FEMA

FEMA lacked visibility into real-time budget data in usable formats due to the time and complexity of retrieving and transforming information sets. To help FEMA address this issue, Northramp used Microsoft’s Power Platform to automate the highly manual processes associated with retrieving, transforming and submitting information for various functional, tracking, and reporting purposes.

Requirements Characteristics

- Small user community
- Automating single set of manual tasks
- Did not act as a data source or system of record
- Did not require a material level of security or other controls
- Needed simple Data Modeling done



Approach and Outcome

- Used Power Apps and Power Automate to retrieve and transform data
- Used PowerBI to provide improved information visibility
- ✓ Substantially improved user productivity and freed resource time to enable deeper, higher value analysis



CUSTOM DEVELOPMENT APPROACH EXAMPLE



U.S.NRC

The U.S. Nuclear Regulatory Commission (NRC) historically used Excel to formulate its budget and attempt to connect that to commitment and obligation data. To help improve data quality, security, user experience, auditability, and compliance Northramp built a custom formulation system.

Requirements Characteristics

- Integrate with SSO and implement Branch-level security
- Create approval workflows
- Connect to other applications via APIs
- Develop views and dashboards for management to use during budget prioritization



Approach and Outcome

- Used MS .NET and SQL Server to develop solution
- Used modular approach to accelerate delivery and minimize investments
- ✓ Improved the budget process by reducing the time to formulate and improving the data quality immensely.