

Our system decision –should we upgrade or replace?

Background

Following the water industry's reform in the mid 1990s, businesses faced significant decisions when building their organisational structures and purchasing the IT systems to support them. At the time, enterprise-wide systems were biased towards finance and accounting solutions, with limited capacity in asset management and operational functions. Water utilities typically adopted core enterprise-wide systems, supported by further systems with asset management and operations functionality. Ultimately, the plethora of systems – for all their individual virtues – challenged the IT architects integrating them and the IT managers maintaining them.

Fifteen years on, system administrators now need to make considerable decisions about their legacy systems: upgrade to the next version of these systems; or retire current systems and invest in new ones?

Marchment Hill has studied the experiences of a number of Australian water businesses and their approach to system investment decisions, specifically looking at:

- Drivers of system upgrade or replacement
- Considerations for a system upgrade or replacement
- Approach to making it work, and
- Benefits to be realised.

Drivers of system upgrade or replacement

“To allow our managers to share knowledge and make effective, auditable decisions.”

“The primary driver was being able to move the business forward in terms of process consistency, improved data and reporting, and data integrity.”

The challenges facing water businesses have changed since the deployment of legacy systems. In some instances, the business' information requirements have changed significantly since their legacy systems were introduced. In such cases, their system review may be driven by:

- Optimising and improving core asset management processes through better information flows
- Increasing the accessibility and usability of data and information
- Providing consistent information that supports effective reporting and business decision-making
- Supporting the sharing of information within the organisation, and
- Encouraging data ownership and responsibility.

For other businesses, industry reform or acquisition may result in the business inheriting a number of legacy systems with inadequate functionality. In such cases, adopting an entirely new system may be the necessary path for these businesses to underpin future organisational change and improvement initiatives.

Considerations for a system upgrade or replacement

We need the ability to improve and optimise core processes, and improve integration with our other systems.

We pursue a vision to be the most admired water business in Australia, but this does not entail pursuit of emerging technology for its own sake.

Considerations for a system upgrade or replacement decision include:

- Core functionality requirements and the impact on staff productivity
- Software and hardware vendor support
- Changing stakeholder requirements, and
- Future proofing to support emerging technologies.

Core functionality requirements and the impact on staff productivity

Given the era of the technology, it is safe to assume that the functionality of many water business' legacy systems is not fully leveraged, nor fully utilised.

Marchment Hill has observed some water businesses using in excess of 50 tools or applications in addition to their legacy systems. This can give rise to the development of multiple system architectures and complex interfaces which often become part of core business processes. These developments often require high levels of manual intervention and incur additional costs through decreased staff productivity, sub-optimal system configurations, data incompleteness and data inconsistency.

For one water business studied by Marchment Hill, staff developed their own spreadsheet and database tools as work-arounds to perceived shortcomings in the functionality of their legacy systems. For this business, a system upgrade or replacement decision will be based on system functionality requirements and the impact on staff productivity.

Software and hardware vendor support

Given their age, some legacy systems are no longer fully supported by their system vendors. This often translates into escalating maintenance costs as water businesses attempt to maintain system reliability. Failing systems which are no longer properly supported by the vendor can mean critical delays in delivering key services – and in some cases, can attract penalties that need to be paid to the government or community. In these circumstances, the system upgrade or replacement decision will need to consider the availability of ongoing software and hardware vendor support.

Changing stakeholder requirements

With increased economic and technical regulations, water businesses are demanding more real time and accurate information to support their daily asset management and operational decisions. One water business studied by Marchment Hill felt that as water reform progresses and community needs evolve, customers will expect more streamlined interactions with all their utility's customer channels (e.g. call centres, internet, SMS or billing). Water businesses tend to agree that a decision to upgrade or replace a legacy system needs to give due consideration to the current and future requirements of government, community and the individual customer.

Future proofing to support emerging technologies

Emerging technologies, such as field workforce automation and smart metering, were never envisaged in the original deployment of legacy systems, and thus test the functional capabilities of these systems. For example, with water smart metering, the need for data collection, analysis, validation and reporting will stretch the functionality of the current legacy system capabilities. Other meter technologies, such as in-home displays, may also place similar pressure on the use of these legacy systems.

Increasing compliance requirements can drive emerging technology decisions with significant demands on reporting likely to be imposed in the near future. Many water businesses have accepted that field force automation and smart metering will become an important factor in their ability to comply with their future reporting requirements.

For one water business studied by Marchment Hill, the opportunity to significantly leverage field workforce automation, smart metering and enhanced billing functionality is pivotal to meeting their future business strategy and a key consideration in their system decision.

The impact of emerging technologies on current legacy systems, and their potential to assist in meeting increasing compliance requirements and a future business strategy must all be considered during a system upgrade or replacement decision.

Approach to making it work

“Our decision-making process demands we look at our industry compatriots ... the assessment of business readiness is also a key to our system implementation approach.”

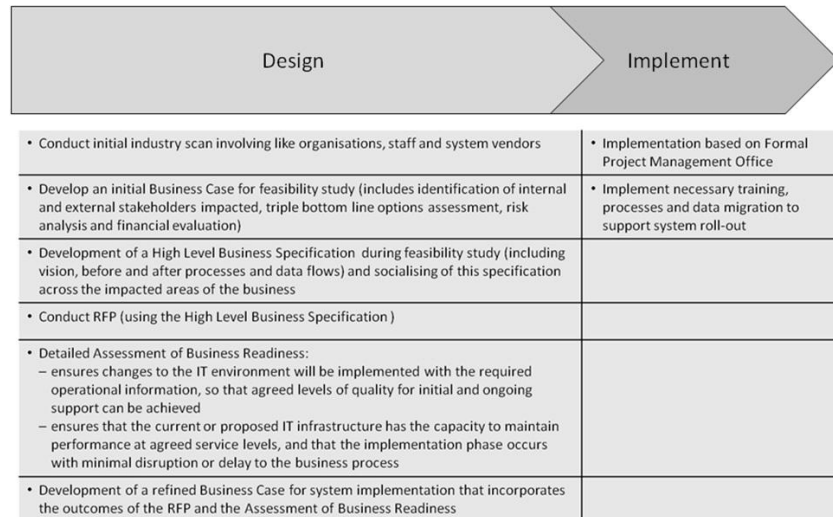
“The comparative organisations are a little irrelevant to our unique situation ... with business readiness being a secondary issue.”

In its study, Marchment Hill discovered significant variations in the approach taken by water businesses when assessing a system upgrade or replacement decision - most markedly in the level of consultation conducted with the industry and within business itself to determine business requirements.

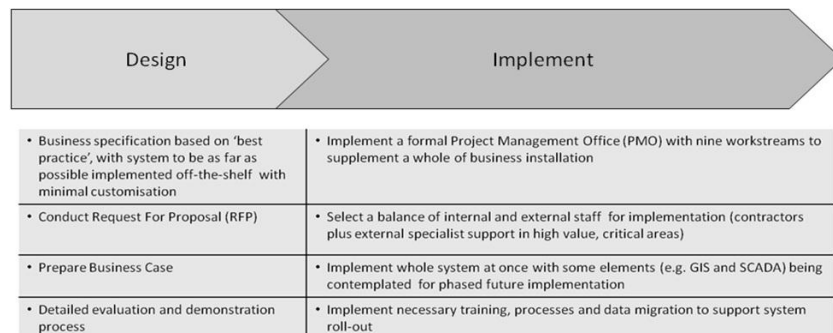
For example, one business is undertaking an extensive consultation approach to determine their business readiness, and ascertain whether the functionality of existing systems (including some work-arounds) can be incorporated in their final system configuration. This approach – which may lead to upgrading their legacy system – identified key business requirements and a number of improved business processes. In contrast, another water business made a system replacement decision to deploy an off-the-shelf solution with minimal customisation.

With regard to the businesses interviewed, the differing approach to making system upgrade or replacement decisions is evident in the design and implementation phases of their system project:

Business Approach 1: System Upgrade



Business Approach 2: System Replacement



Benefits to be realised

“Our system replacement option will be cost neutral in the medium term, but will provide significant long-term efficiency opportunities.”

“An upgrade presents a much cheaper option, so huge benefits will need to be present in the replacement option for us to consider going down this path.”

Both upgrading existing systems and investing in replacement systems present benefits and challenges. Typical considerations are:

Consideration	Upgrade	Replacement
Training	Generally less training required with an upgrade as users are familiar with the legacy system	New system can introduce skills & new means of conducting business
Organisational Change	Upgraded systems are unlikely to drive significant organisational change in process or culture as established processes are likely to be retained	Replacement systems can drive organisational change by redesigning the way business processes are conducted
Data Migration	Data migration paths are often not required or explicitly catered for in upgrades to systems, minimising implementation issues	Considerable data migration may be required as legacy systems may not be able to export data in a format acceptable by replacement systems
Data Consistency	Although less effort is needed for data migration, more effort may be required to ensure data is cleansed and consistent between different modules of the system	Data can be cleansed in a full-scale migration resulting in a consistent set across the business
System Consolidation	Only those modules requiring attention need to be upgraded, leaving some existing systems and tools in use within the organisation	A well-defined statement of requirements for a new system can incorporate and eliminate separate work-arounds
System Maintenance	Upgrading may result in some work-arounds and greater system customisation, leading to significant maintenance as these areas are fixed	A new replacement system generally requires less system maintenance as it is current technology
Future Proofing	As well as many legacy systems losing their long-term vendor support, upgrades may not be able to support future business requirements	With advances in technology and of long-term vendor support, new systems are better positioned to support the evolving business environment of upgraded systems
Vendor Relationships	Existing vendor relationships are maintained resulting in less disruption and less issues with system maintenance	Developing rapport with new system vendors can take time, as vendors may not understand the internal nuances of the current business
Time to Complete	With less data migration and training issues than moving to a new system, businesses upgrading are likely to continue operating as usual through implementation	Depending on new system requirements, replacement is likely to take longer and cause greater disruption to business continuity than upgrading due to developing specifications, migrating data and staff training
Cost	Costs are typically lower than replacement systems (by approximately 50%), however, upgrades generally have less life than replacement systems which can translate to significant additional costs in the medium to long term	The effort and expense of implementing new systems can be significant in the short term, however once operational significant expenditure is unlikely in the medium to long term
Risk	Upgrading can present risks such as declining long-term vendor support, ongoing system maintenance and being unable to manage future business requirements	Using replacement as a means of fundamentally changing the way business is conducted now, reduces the risk of businesses having to adapt to industry change and technological advances at short notice in the future

Conclusions

Businesses are faced with two clear questions: do they tread the path most travelled and upgrade to the next version of their legacy systems, or adopt a more radical position of retiring their systems entirely and invest in replacements? Whatever the decision, there is no one-size-fits-all answer. Both options have significant benefits and challenges.

Water businesses with a high dependency on business continuity and embedded work-arounds may prefer the system upgrade option. Those undergoing significant reforms may be justified in rapidly moving to a system replacement option – using this as the impetus for organisational change.

Ultimately, to make an informed decision, businesses should consider such factors as those discussed, identify current thinking and trends within the industry, and maintain close contact with organisational stakeholders to find the solution that best suits the unique conditions of the business.

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