



Good practice guideline: Solution design

ICT Investment Approval Process

Lean business case

Version 1.0

Digital Transformation Agency



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Purpose

The DTA has created this good practice guide with built-in examples to assist agencies in developing the [solution architecture design section of the business case template](#). Business cases are a common artefact part of the ICT Investment Approval Process (IIAP). This document provides both guidance and a template so that business cases can be prepared efficiently, and authors have a clear understanding of the proposed solutions.

Who this document is for

This document is for people authoring or developing business cases. It has been developed for solution architects, business analysts, and project practitioners with moderate to significant experience in designing solutions for ICT projects.

Supporting documents

This document is part of a broader [toolkit](#) developed for entities in developing business cases. Other documents may assist you in understanding the IIAP and the business case process.

Using these guidelines

The purpose of these guidance materials is to explain the requirements for solution design documents that are used to support the business case. Some simplified examples have been provided for reference. Agencies can use their preferred formats provided they meet the obligations outlined in this document. In its oversight role, the DTA is provided with visibility of the technical architecture of many agencies.

The DTA does not prescribe specific project or architecture methodologies or formats. Agencies should use whatever is fit for their purpose in accordance with their internal ICT policies and frameworks. The DTA encourages use of common industry standards where possible for architecture (TOGAF, Zachman, DoDAF, etc) that are best suited to the agency and its practitioners. For those programs intending to follow an Agile or hybrid Waterfall/Agile approach, while the approach may differ to a Waterfall SDLC program, the obligation regarding effective management of budget risk remains the same.

Agile programs generally have a higher degree of scope and design fluidity and will likely have less maturity regarding detailed aspects of solution design at the point of submission of the business case. However, the DTA requires evidence of how implementation risks will be effectively managed. To solve for this, the DTA recommends following the 'just enough' principle when modelling and determining how to satisfy these governance obligations. This may include taking a top-down approach to solution design where high level components are baselined in the early stages of the project along with demonstration of good governance and risk management principles that show effective procedures for managing scope and/or design deviation when designing detailed architectures.

Agencies must provide a solution design artefact that meets the above obligations. Agencies are free to provide this information using their standard architecture methodology and templates so long as these requirements are met.

"The audience for an architecture model determines if it is sufficient, not the creators of it." ¹ - Holt Hackney

¹ How Much Architecture Modeling Should You Do? Just Enough - Part 1 - Architecture & Governance Magazine (architectureandgovernance.com)

Obligations

Digital and ICT programs must provide clear and unambiguous solution design artefacts that explicitly state how the user requirements will be delivered. The solution design must demonstrate:

- For 1st pass business cases: a conceptual architecture is provided for each solution option put forward plus any additional known information outlined below at the time of submission of the business case.
- For 2nd pass business cases: that the target state architecture is in a mature state with nominated technical solutions in place in addition to the items below.
- How the user requirements will be delivered at a component or capability level.
- How re-use has been considered both in terms of reusing existing government capabilities and new capabilities being developed to be offered for reuse
- Any integration requirements and level of complexity of integration
- Both the current and target state architecture directly impacted by the proposed investment
- Assumptions and dependencies related to the technical architecture, including mitigation and/or contingency strategies.

Solution design artefacts can often be insufficient in two distinct ways. When developing your solution architecture design, remember to ensure your documents addresses these.

- The solution architecture is not yet in a mature state with a large portion of the technical solution components not yet defined. The standard contingency allocation is 10% for digital and ICT investments. To effectively manage budget risk, the target architecture must be sufficiently mature with a reasonable degree of cost validation for those programs seeking funding for implementation (i.e., 2nd Pass Business Case).
- The solution design does not clearly state how the user or business requirements are to be met. In some cases, the solution design appears to be baselined *before* detailed requirements are complete or have been subject to technical validation. The Digital Service Standards mandates that a user-centric design approach is taken.

Solution Architecture Design

In this section of the document, examples and guidance is provided for information you could include in developing your requirements section. Guidance and examples are clearly labelled.

Design approach summary

Guidance

Please specify the approach taken to produce the solution design. Include details of methodologies used, stakeholder engagement, and other relevant information that summaries the effort to date, and how design is to be managed throughout the implementation phase of the program.

SAD diagrams

Guidance

Provide a Context Diagram for the solution (mandatory). This should clearly articulate how users interact with the proposed solutions and the critical components of the architecture. This should be intentionally drafted in simple and clear way so non-technical stakeholder can understand the proposed solution:

Example

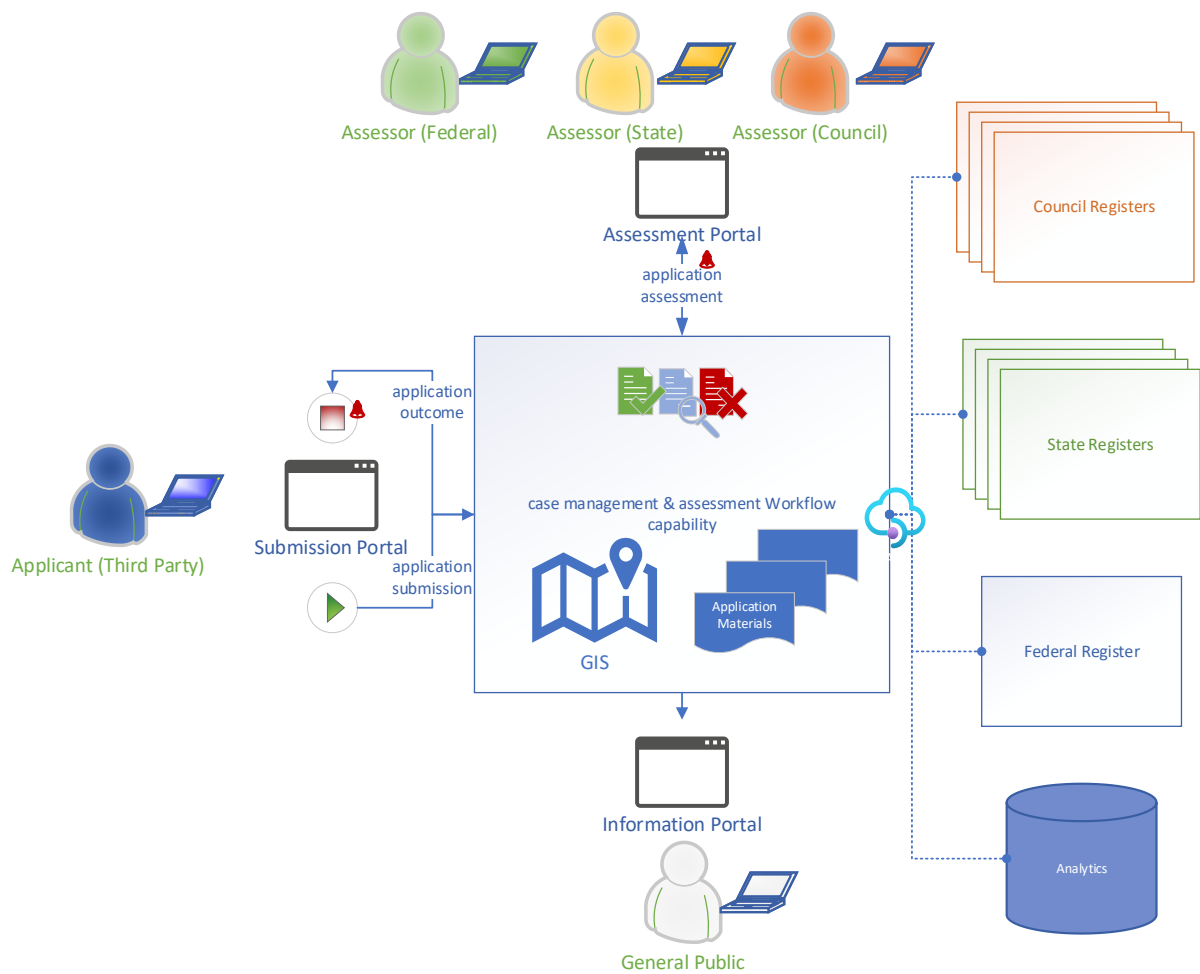


Figure 1 Example Context Diagram

Guidance

Provide additional architecture diagrams that sufficiently demonstrate the capability sought. This should include current and target state models, application, data integration, infrastructure, or other relevant artefacts.

Examples

Federal Roadworks Register Architecture

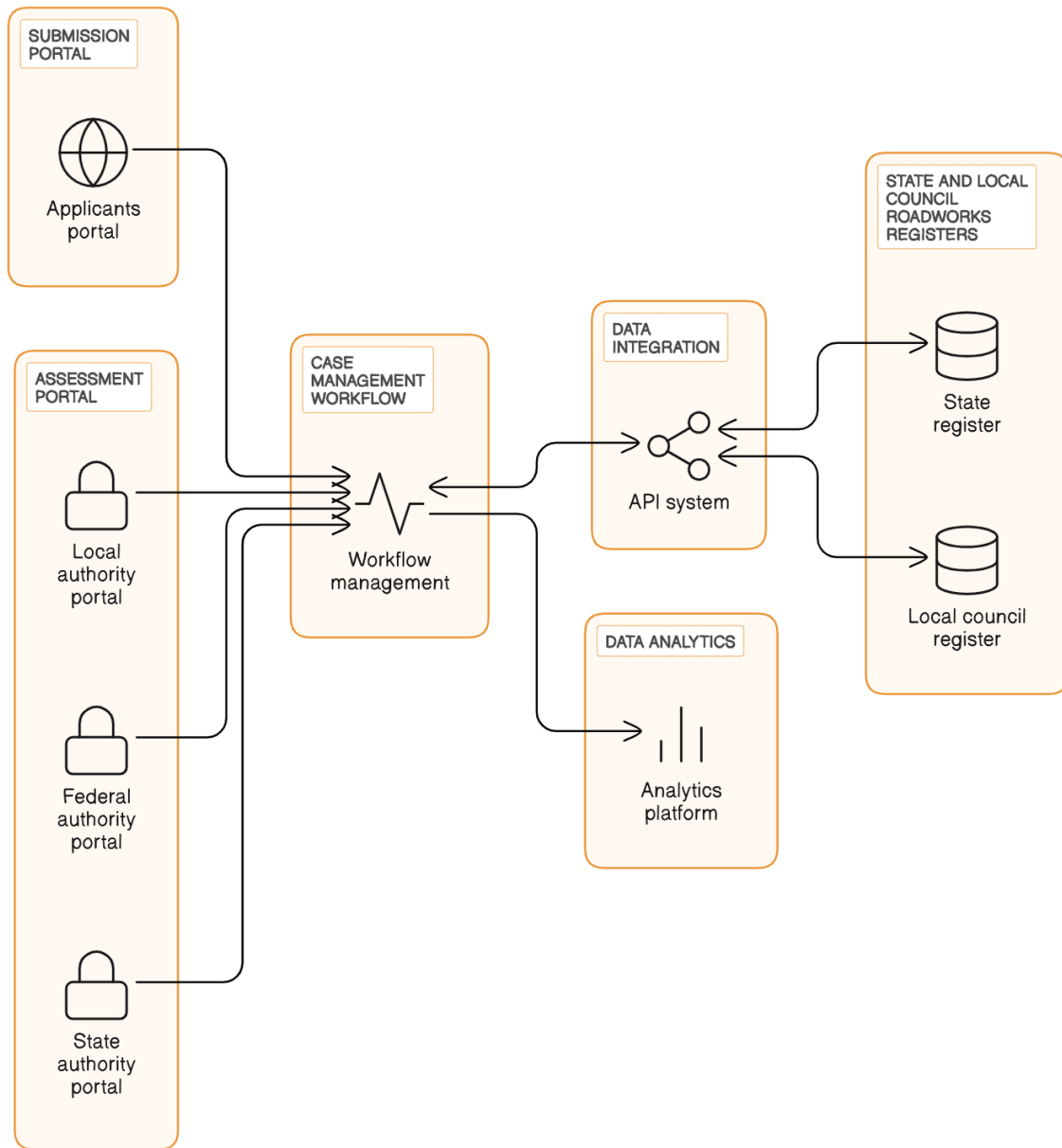


Figure 2 Example Target State Logical Architecture

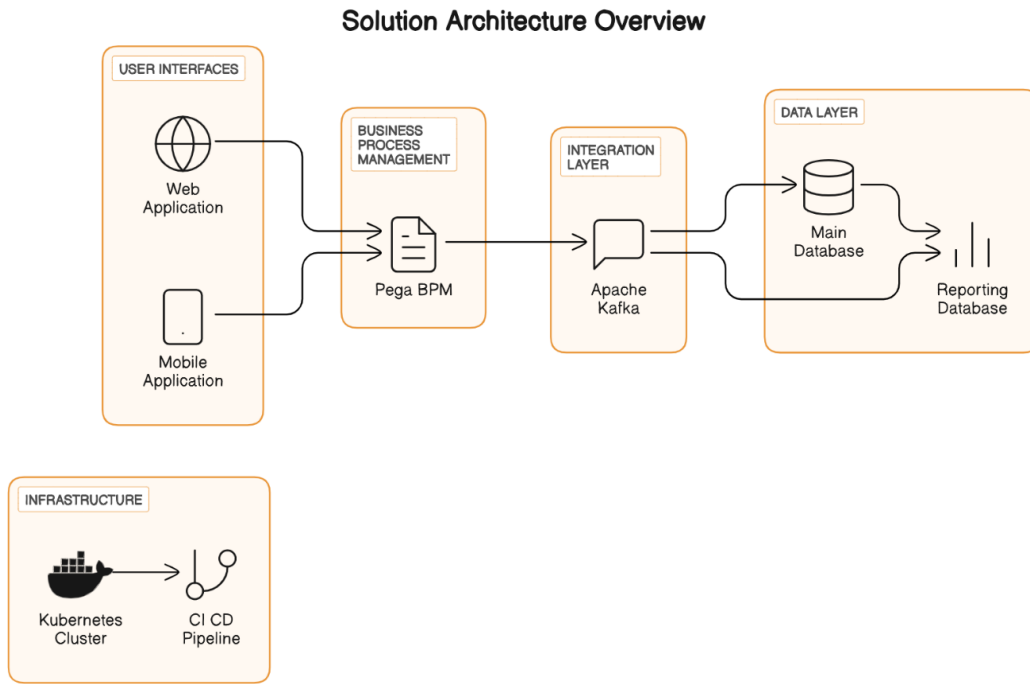


Figure 3 - Example SA Overview

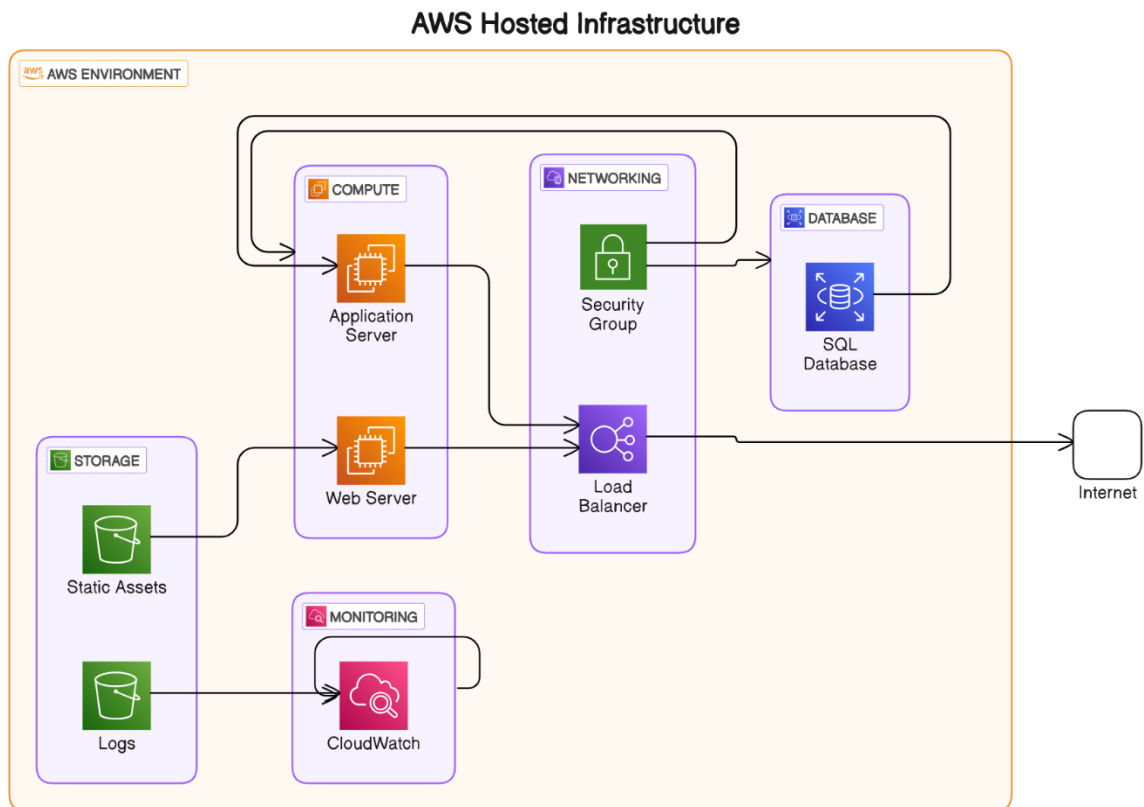


Figure 4 - Example AWS Hosted Infrastructure

Federal Roadworks Register

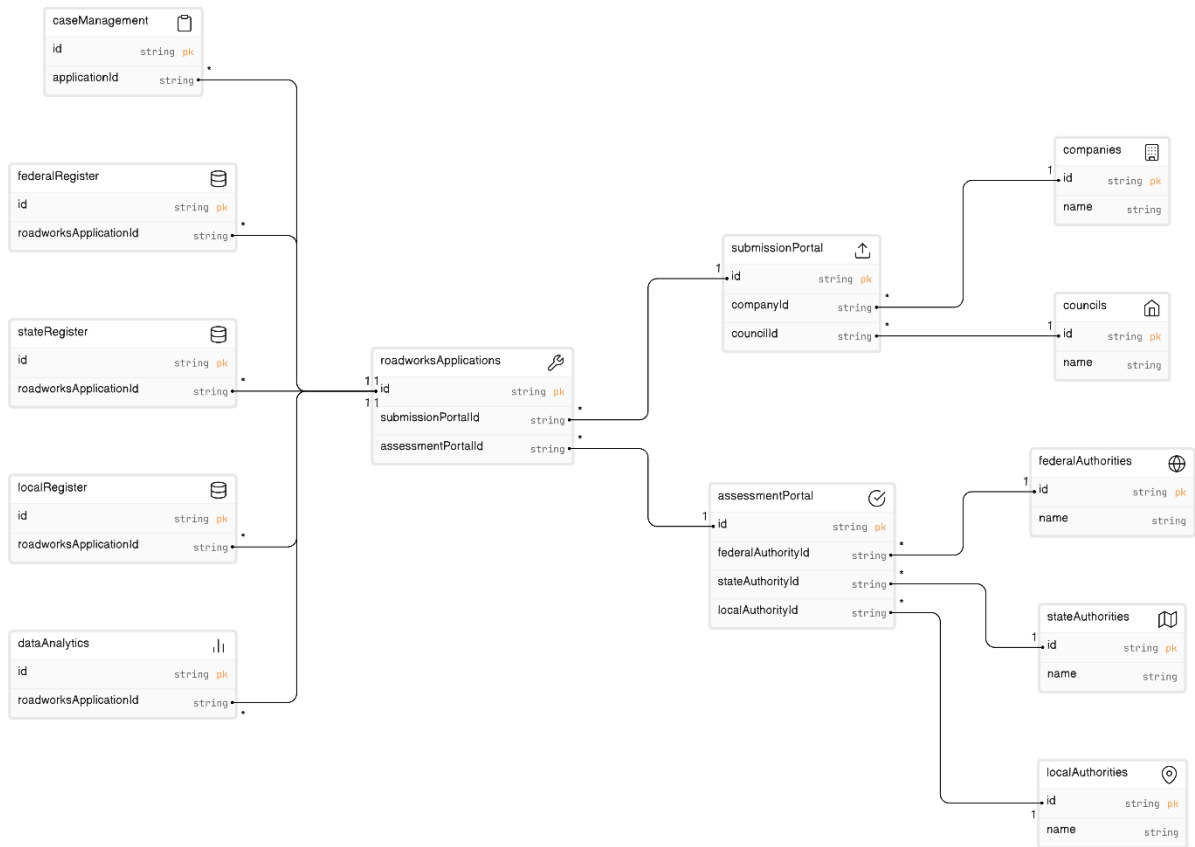


Figure 5 - Example Entity Relationship Diagram

Federal Roadworks Register System Flow

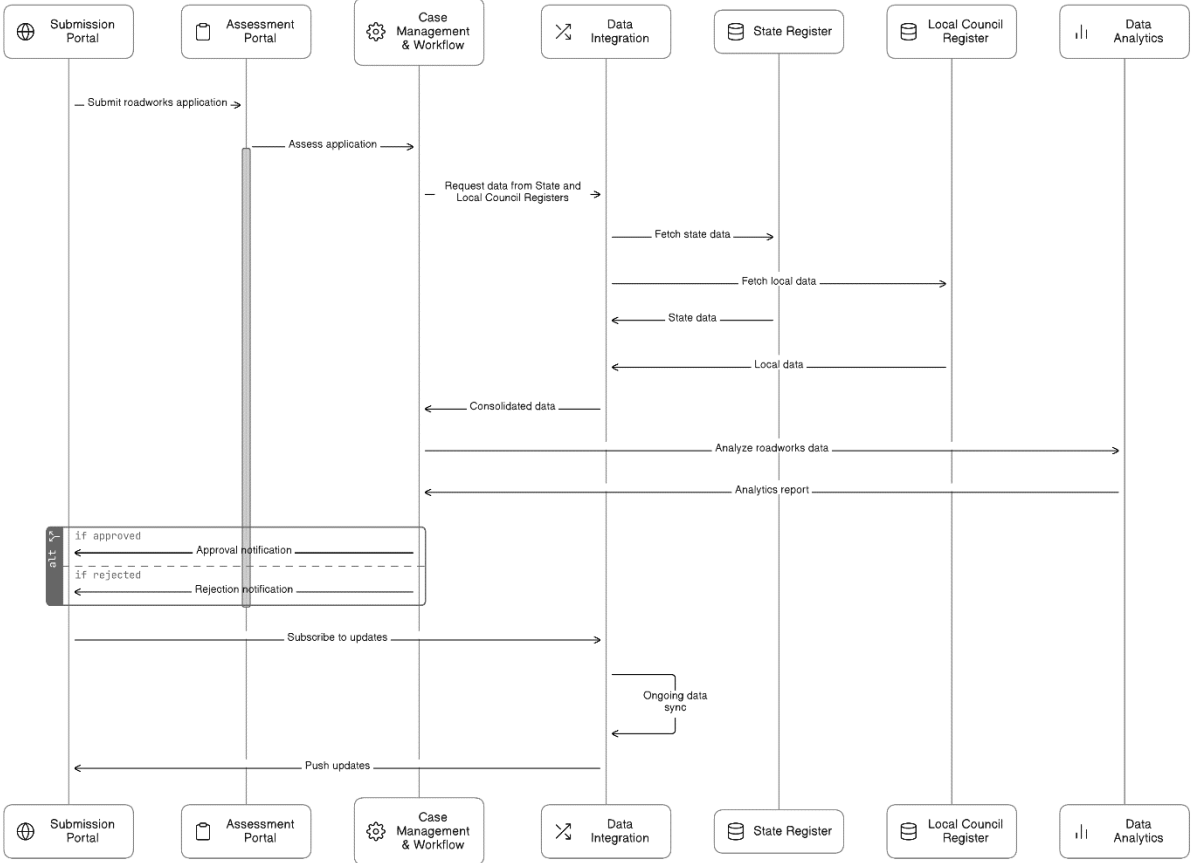


Figure 6 - Example Sequence/System Flow Diagram

Applicants Portal Architecture with GIS

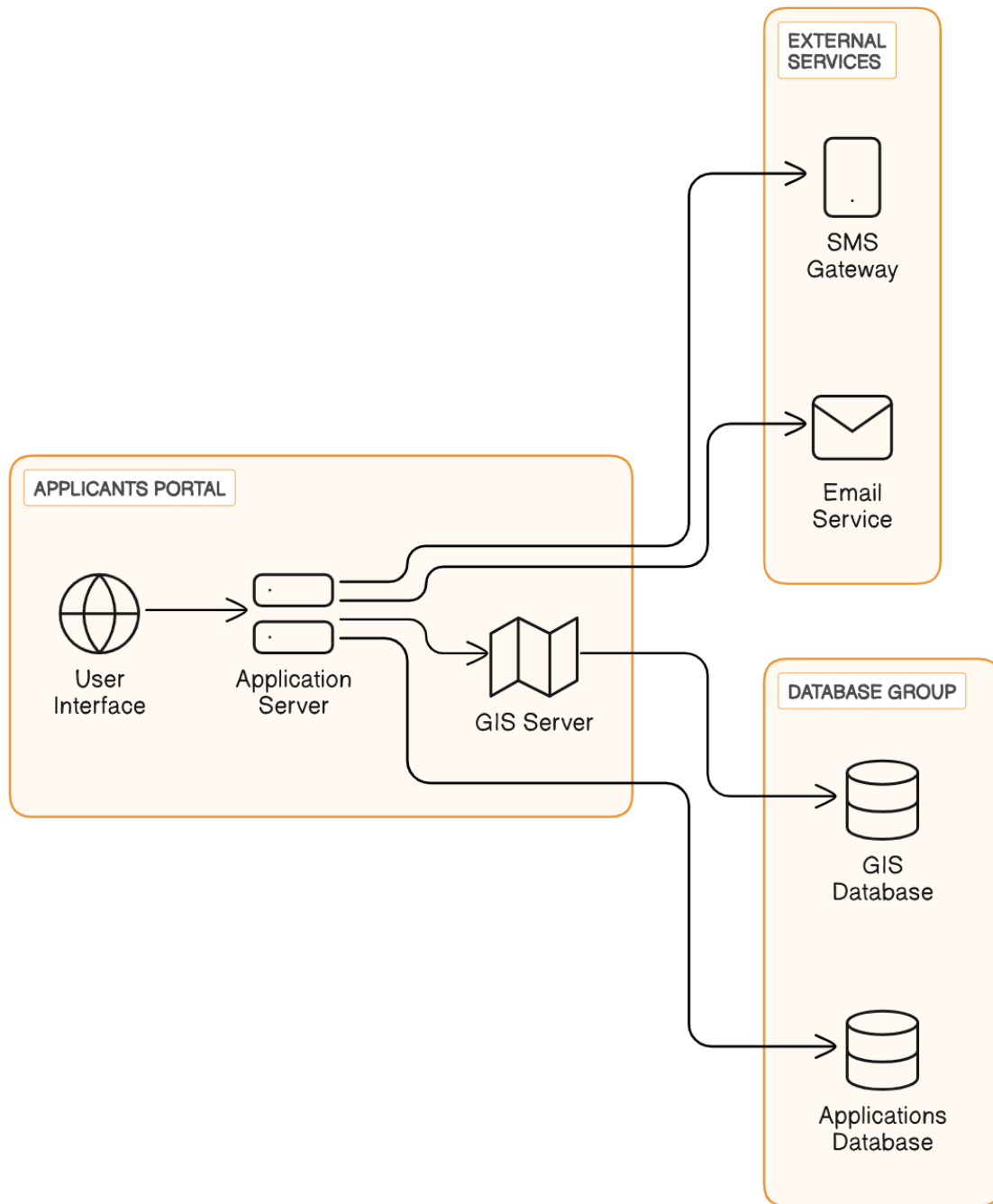


Figure 7 - Example User Interface Architecture Model

Requirements mapping

Guidance

Provide a map of the functional requirements to solution components. Where possible, relational benefits should be specified. Table formats such as the example provided or logic map diagrams should suffice.

Examples

| Requirement ID | Requirement Name | Component ID | Component Name | Benefits |
|----------------|--|--------------|-------------------|---|
| FR-01 | The solution shall allow users to submit roadworks applications through a web-based portal | SD-001 | Applicants Portal | <ul style="list-style-type: none">• Application Processing Time• Streamlined interoperability |
| FR-05 | The solution shall display a map indicating the roadworks locations, and provide the option to view the details of each roadwork | SD-007 | GIS | <ul style="list-style-type: none">• Application Processing Time• Streamlined interoperability |
| FR-06 | The solution shall provide the capability for federal, local, and state authorities to share roadworks data and information in real-time | SD-015 | Integration API | <ul style="list-style-type: none">• Application Processing Time• Streamlined interoperability• Improved Collaboration between authorities |

Solution components

Guidance

Provide a description of each component of the architecture, its purpose, and the proposed technical solution.

Example

| Component Name | Description | Type | Technology |
|------------------------------------|--|--|-----------------|
| Application Case Management | Case management and workflow capability to manage the approvals process. | Business Process Management and workflow automation | Pega Platform |
| GIS/Map Display | GIS Capability for the web portal | GIS | Google Maps API |
| Reporting & Analytics | Reporting and analytics capability | Business Intelligence with Dashboard and Custom Reports capability | Power BI |

Integration requirements

Guidance

Provide a list of Integration Requirements (internal and external).

Note: Any critical technology dependencies and contingencies specifically those involving external stakeholders should be outlined in the RAID register for the program and included with the business case submission.

Example

| Integration Requirement ID | Integration Requirement Description | Source Component | Destination Component |
|----------------------------|--|-------------------------------------|--|
| IR-01 | Roadworks case data object. | Roadworks application module | State and local roadworks registers (External) |
| IR-02 | Summary roadworks case data objects. | State and local roadworks registers | Roadworks dashboard module |
| IR-03 | GIS service to display roadworks locations on a map. | GIS service | Roadworks map module |
| IR-04 | Supporting documentation for applications | Document management system | Roadworks application module |
| IR-05 | Notification services (Email, SMS) | Notification service | Notification module |

Reuse and AGA alignment

Guidance

Outline the AGA Domain and Capability alignment for the program. Include all relevant capabilities.

Example

| AGA Domain | AGA Capability | Description |
|-----------------------------|-----------------|--|
| Government Service Delivery | Case Management | Case management and workflow capability to manage the submission and approval of works on Federal Roads. |

Guidance

Outline what existing capabilities have been considered for reuse and the outcomes of the analysis activities.

Example

| Solution | Outcome | Exclusion/Exemption Basis |
|-------------------|--|---------------------------|
| EPM Pega Platform | Reuse of Functional Requirements, Design Patterns, limited functional capability (workflows) | |

Guidance

Outline capabilities delivered by the Investment that have the potential for reuse.
Include diagrams to demonstrate reusable technologies or patterns where relevant.

Example

| Solution Component | Description | AGA Domain | AGA Capability |
|--------------------|--|-------------|---------------------------|
| API | API service between local, state, and federal authorities for roadworks management | Integration | Interoperability and APIs |

Digital Access Standard alignment

Guidance

Provide a list of *existing* government digital services (e.g. URL's, Apps, etc) that are impacted by this ICT Investment.

Example

| Service | Description |
|--|---|
| www.nswroadworks.gov.au (dummy) www.vicroadworks.gov.au (dummy) | Web-based portals for roadworks information that include details of federal roadworks in each designed state. |

Guidance

Provide a list of *new* government digital services that will be created by this ICT investment.

Example

| Service | Description |
|--|---|
| www.fedroadworks.gov.au (dummy) | Web portal providing holistic view of all federal, state, and local authority approved roadworks. Provides ability for companies, states, or councils to apply for approval to complete roadworks. |

Technical debt

Guidance

Outline the impact on existing levels of technical debt at the agency/entity. Technical debt can be incurred in many ways from a resourcing and support standpoint, codebase, capacity, bandwidth, or many other ways.

Indicate whether the impact will result in an increase or decrease to levels of technical debt.

Example

| Description | Impact |
|--|--|
| IT Operations/Support, DBA, Product Configuration, Support | Estimated increase in 10 FTE (ongoing) |
| Infrastructure – Bandwidth & Storage | Bandwidth utilisation +5% Storage capacity +10% |