Technology Stack and Standards

Guidance for selecting appropriate tools for different architectural components

Selecting the right technologies and frameworks is crucial to achieving the desired functionality, performance, and maintainability in government software systems:

- **Consider Requirements:** Align technology choices with the system's functional and non-functional requirements, such as scalability, security, and performance.
- **Evaluate Suitability:** Assess how well a technology or framework fits the specific needs of each architectural component. Avoid overengineering or under engineering solutions.
- **Leverage Expertise:** Consider the skills and expertise of the development team. Choose technologies that team members are familiar with to ensure efficient implementation.

Mandated or recommended technology standards

- **Programming Languages:** While choosing programming languages consider factors like community support, performance, and integration capabilities as well as the team’s skills and expertise.
- **Databases:** choose database technologies based on the type of data being stored. Consider relational databases for structured data and NoSQL databases for unstructured or semi-structured data.
- **Communication Protocols:** Recommended communication protocols for integrating components within the architecture are REST APIs, GraphQL, and messaging queues based on their efficiency, community and ease of use.
- **Security Frameworks:** Ensure consistent implementation of security measures, such as authentication, authorization, and encryption.

Considerations for open-source software usage and licensing compliance

- **Open-Source Software:** Open-source software can provide cost-effective solutions, but ensure that selected projects are well-maintained, secure, compliant and aligned with your architecture's needs.
- **Licensing Compliance:** Review and comply with open-source software licenses to avoid legal complications. Keep track of licenses used and ensure proper attribution.

By following technology standards and selecting appropriate frameworks, government agencies can build software systems that are interoperable, secure, and capable of meeting long-term needs.

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