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Defeating Constraints of Legacy Technologies

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Eagle Technology Group, LLC

- Information technology engineering and integration
- Enterprise architecture, virtualization, data center solutions
- System and application design, development, deployment and maintenance; agile/scrum practice
- WSO2 Preferred Partner
- Microsoft Gold Partner
- Average of 18+ years of technology experience per employee
- Eagle TG is owned by the Native American Modoc Tribe of Miami, Oklahoma -- SBA Certified 8(a) entity

A Few Things Have Changed…

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What do you see changing?

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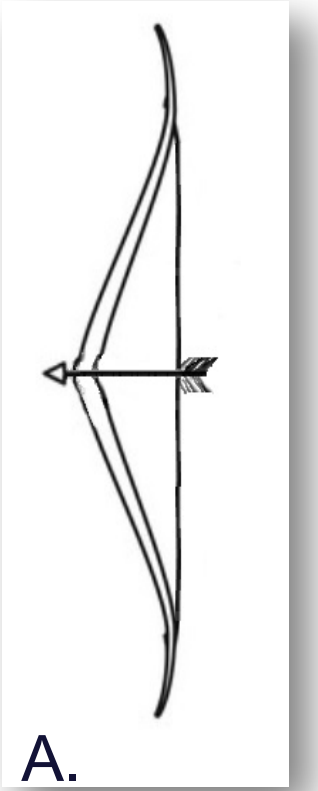
Which of these images represents a "technology"?



A.

B.

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- Don’t confuse “tools” for “technology”
- No tool, regardless how much success it has brought to some other organization, can necessarily bring that same success to YOUR organization
- It takes people and processes, to make technology work

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“Legacy Technologies”

- Monolithic stovepipe systems
- Client-Server / multi-layered solutions
- Centrally “governed" systems
- Specialized hardware or software frameworks

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“Constraints”

- Has the potential to share data or functionality with other systems
- Designed independently at almost every level
- Little to no interoperability – existing/known interfaces only
- Incompatible terminology, development approaches and implementation methods
- Developed with focus on specific vertical business functions rather than delivering enterprise value
- Components tightly coupled to vendors’ proprietary tech or their proprietary implementation of recognized standards

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Current Method Results

- **Absorb Majority of Funding: Maintenance and ‘Upgrades’**

- **Stifle Innovation and Adoption of New Technologies**

- **Contribute HEAVILY to Deficit in Developer Assets**

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GOAL: Build an architecture capable of infusion of new integration technologies

- **Methodology implemented incrementally w/o causing disruption**
- **Objectives of the methodology are independent steppingstones**
- **Most DoD programs' systems no further than Stages 1 to 2**

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Methodology: Integration Technology/Agile Maturity Model*

- **For both people and process, the foundation is the culture of an organization**
- **For technology, the foundation is the architecture designed and implemented by the organization**

* Maturity Model is a part of the WSO2 Integration Agile Reference Architecture

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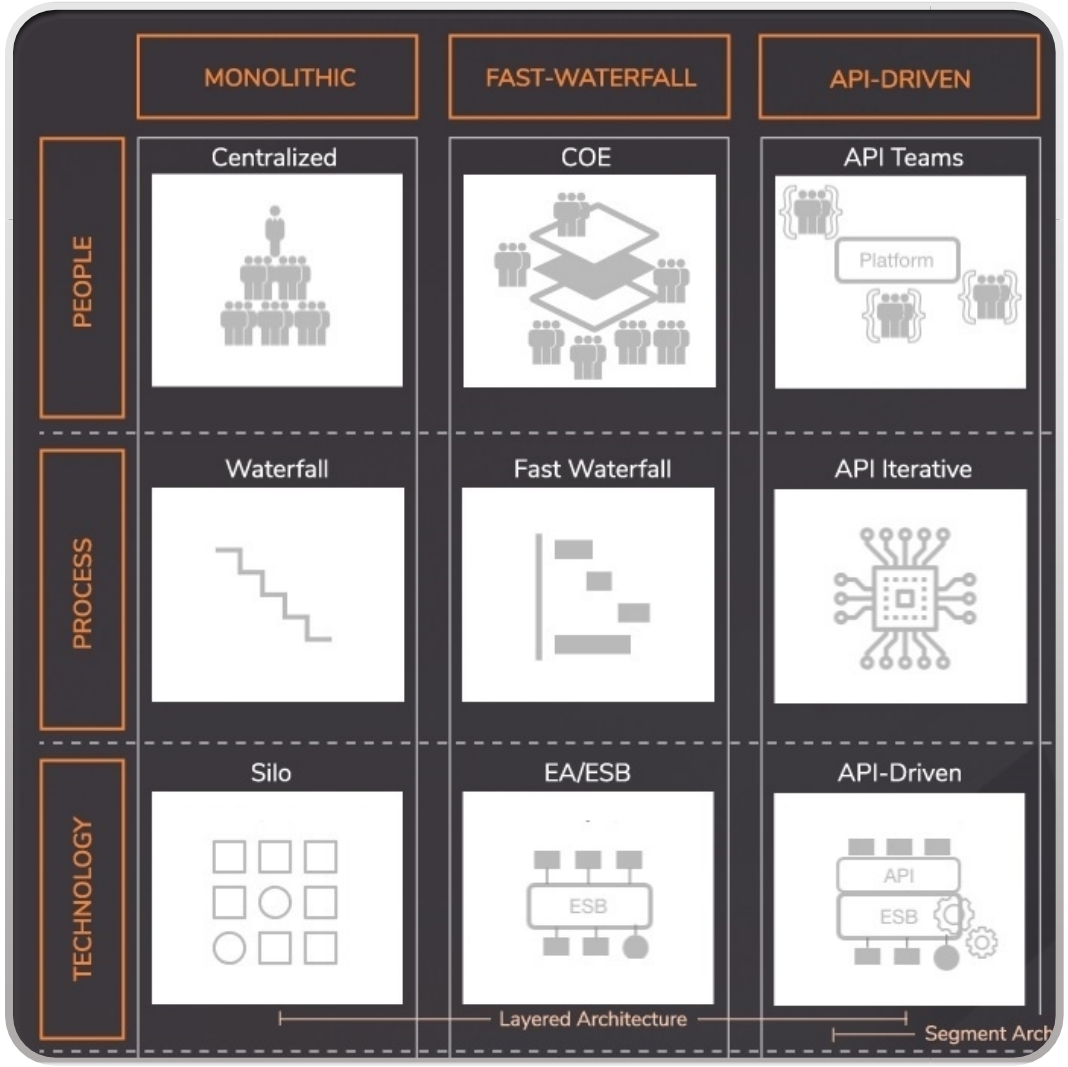
Integration Technology/Agile Maturity Model

In what Stage is the present version of my program/system?



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API-Driven Stage: API-Focused Integration Technology

- Rather than using web frameworks to produce/invoke services and produce web pages, applications are built by producing/consuming APIs:
  - **Front end -** for connecting to rich clients
  - **Backend -** for integrating with internal systems
  - **Sides -** for enabling applications to access their internal data, process and states
  - **Within -** as applications are composed of a set of component services, linked together / aggregated from multiple APIs

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…people and process, the foundation is the **culture** of an organization

…technology, the foundation is the **architecture** designed and implemented by the organization

An API-Focused Architecture both fosters in and supports an API-Driven Culture

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The API-Focused Architecture - Components

- Independently managed infrastructure
- Afford significant benefits to API-focused development teams:
  - ✓ APIs allow front-end developers to consume business capabilities
  - ✓ Provide the separation and formalization of interfaces that allow teams to work in relative isolation
  - ✓ Incremental nuances without disrupting existing capabilities
  - ✓ Can leverage new enterprise-level capabilities when convenient, instead of waiting for enterprise-wide adoption
  - ✓ Reuse of enterprise capabilities speeds up the security testing and shortens subsequent acceptance/approval processes
  - ✓ Provides variant-speed lifecycle model

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The API-Focused Architecture – One-Upping SOA

- Organization-driven innovation
- New implementations for SOA
- API-Gateway Pattern
  - ✓Exposing business processes, enterprise data and enterprise services as APIs
  - ✓APIs made available to enterprise service consumers and external service partners
  - ✓Using web interface, developers publish and monitor their APIs
  - ✓Uses an API repository, accessible through a user-friendly API store facility
  - ✓Consumers (other developers) use store facility to discover, sample, and subscribe to other teams' APIs
  - ✓Applications access APIs by directly calling them through an enterprise API request gateway

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The API-Focused Architecture – Even More Benefits

- API development is somewhat future-proofed
- Provide incremental replacement of legacy technologies
- APIs provide for quicker adoption of new front-end technologies
- Preserve the business data provided by back-end services
- Applications and APIs can be built, expanded, maintained in true Agile fashion
- Development teams build APIs inside an Agile workflow in increments
- Therefore, subjected to regular customer reviews
- Ensures customer needs addressed during API development
- Issues solved through mocking and automated testing

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Summary

- The cost of legacy systems has kept organizations from employing new technologies
- An API-focused architecture can help these organizations move beyond supporting legacy monoliths and frameworks
- Affords an environment with multiple time-saving benefits for development teams
- Encourages organizations to deploy enterprise-level business capabilities thru an API repository
- Encourages reuse of standard enterprise capabilities, without stifling organization-driven innovation
- An API Gateway pattern fits within a SOA, without disrupting existing technologies
- Creates an environment for development teams to begin focusing their talents on Agile API development they incrementally implement
- Eventually eliminate expensive legacy technology

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References

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- **API Design Guide**
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