Designing the Infrastructure for an Enterprise IT System

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Agenda

Set the context for the Enterprise IT System

Focus on five themes common to this and other Enterprise IT Systems

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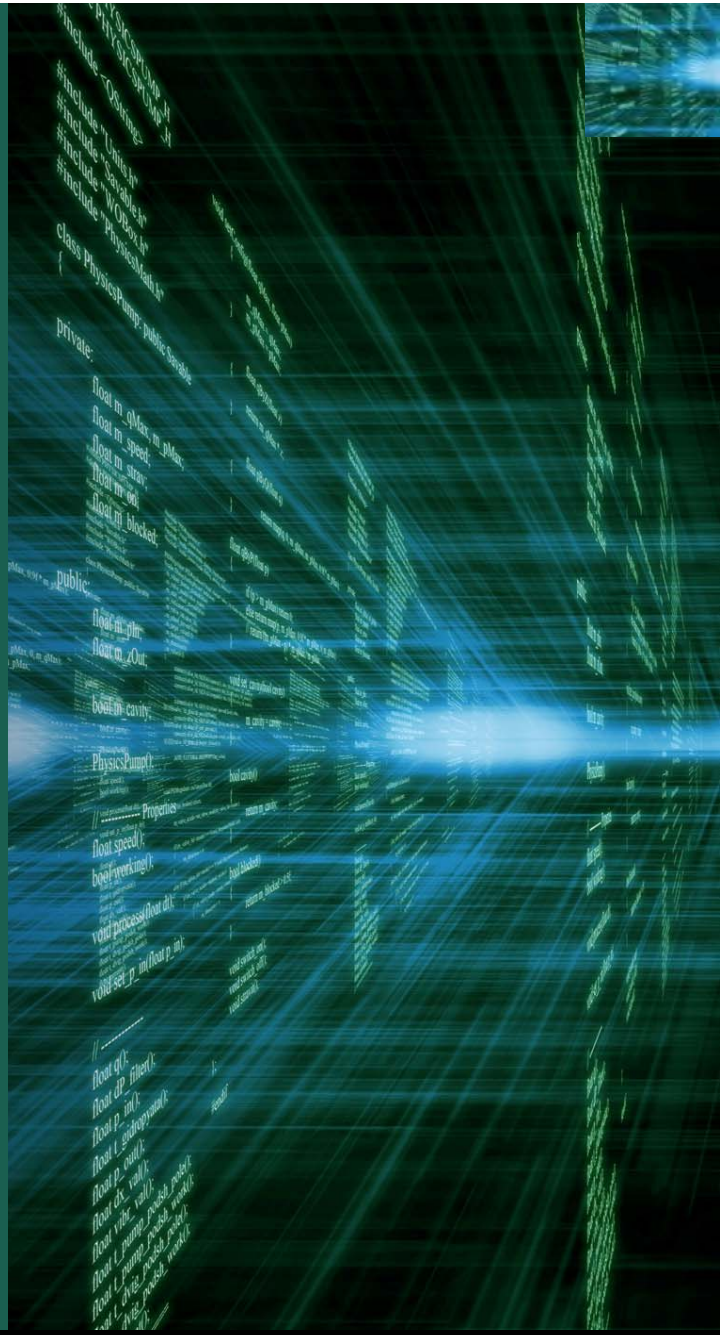
Context



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System Context

Provide an electronic environment for the creation and management of records comprising complex documents or document sets (e.g., law suits, contracts, and patient records) and related information

- Contains both structured and unstructured data
- Intended for broad use throughout the organization (approximately 10,000 users)

System is being developed incrementally

- Record creation is the first increment
- Even creation requires interactions between the system and other supporting systems

Architecturally, the system comprises infrastructure and a collection of applications to create and manage records

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Infrastructure

Expected to be built from COTS software components drawn from these technology enabler areas:

- business intelligence
- business logic/rules engine
- workflow and orchestration
- knowledge management
- common data standards/ontology
- rendering
- collaboration
- security services
- workload management
- data services
- discovery services
- messaging services
- electronic records management
- archiving
- presentation layer

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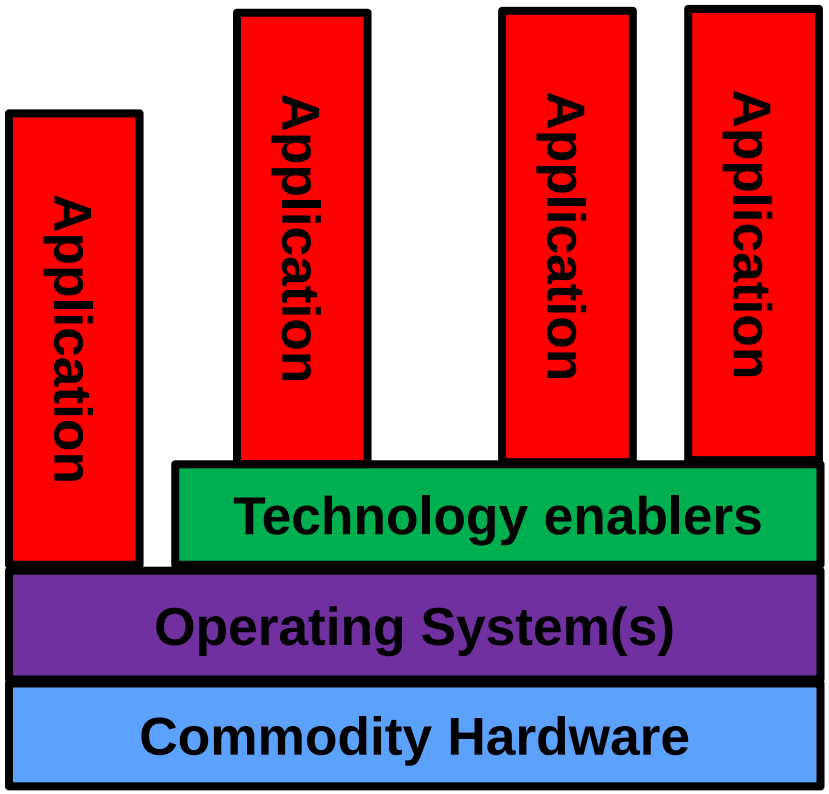

- Operating System(s) and hardware might be provided in a cloud context
- COTS products preferred for technology enablers
- Preference for applications to use technology enablers

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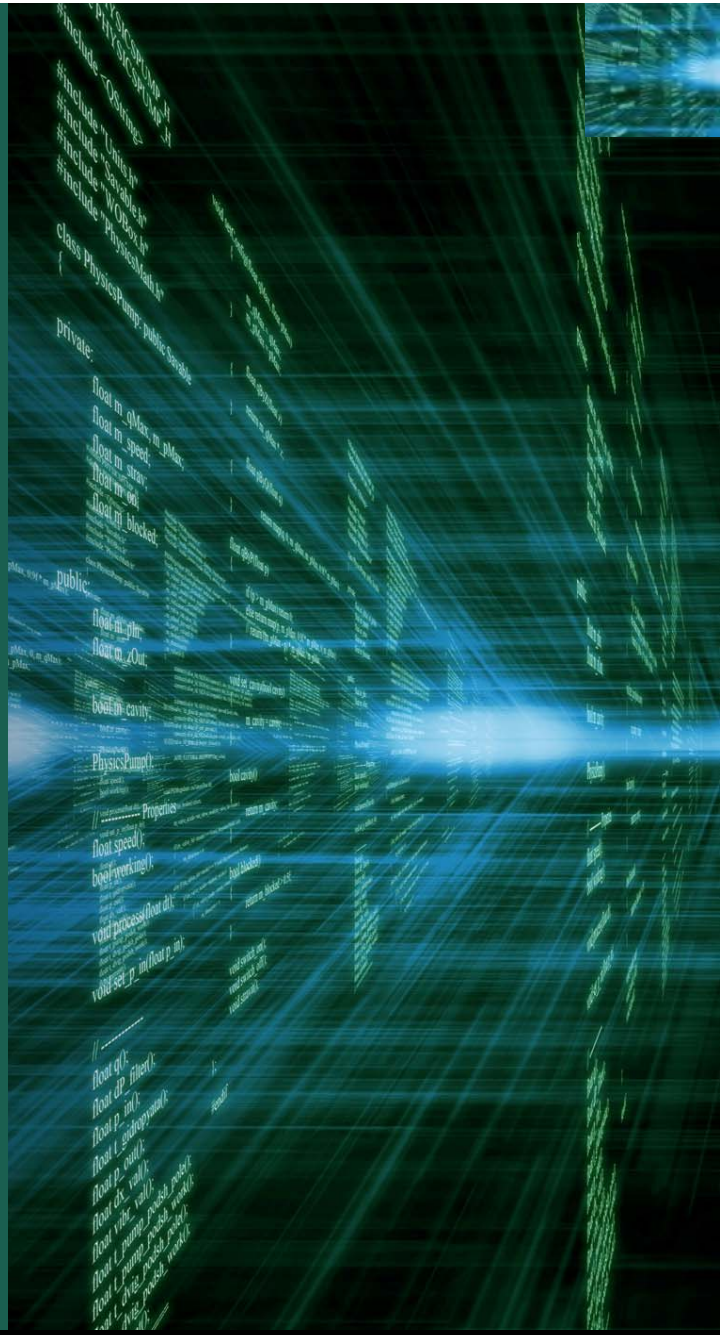
Common Themes



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Themes Arising from Technology Investigation

Study of the different technology enablers led to these themes:

- Integrated COTS product suites and vendor lock-in
- Integrating application components in a Software-as-a-Service context
- Benefits and costs of using loose coupling and web services
- Trade-offs involved in achieving a “common look & feel” across the system
- Different levels of security services across the enterprise

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COTS Product Suites

The technology enabler areas couldn't be considered independently of each other due to:

- Inherent overlap between enabler areas
- Product feature growth
- Corporate mergers

The consequence is the tendency is toward greater dependence on single vendors

- Even if products are initially independent of each other, a long-lived system will eventually depend on a few (maybe as few as one) products or vendors
- The benefit is that the cost of integrating products will tend to go down

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COTS Product Suites

Workflow and Orchestration	Data Ontology	Workload Management
Business Intelligence	Electronic Records Management	Data Services
Business Logic	Collaboration	Discovery Services
Knowledge Management	Security Services	Messaging Services

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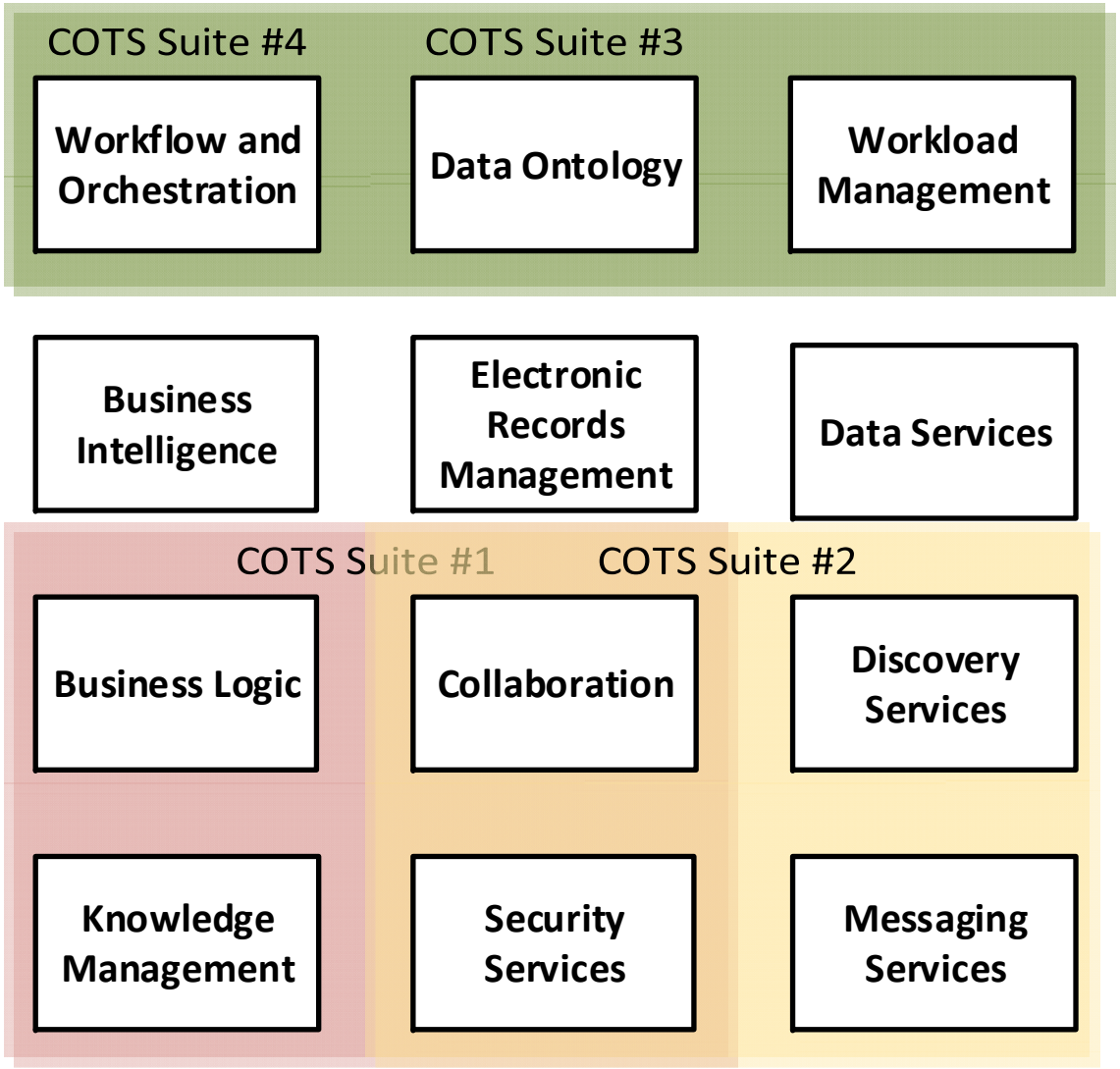
COTS Product Suites



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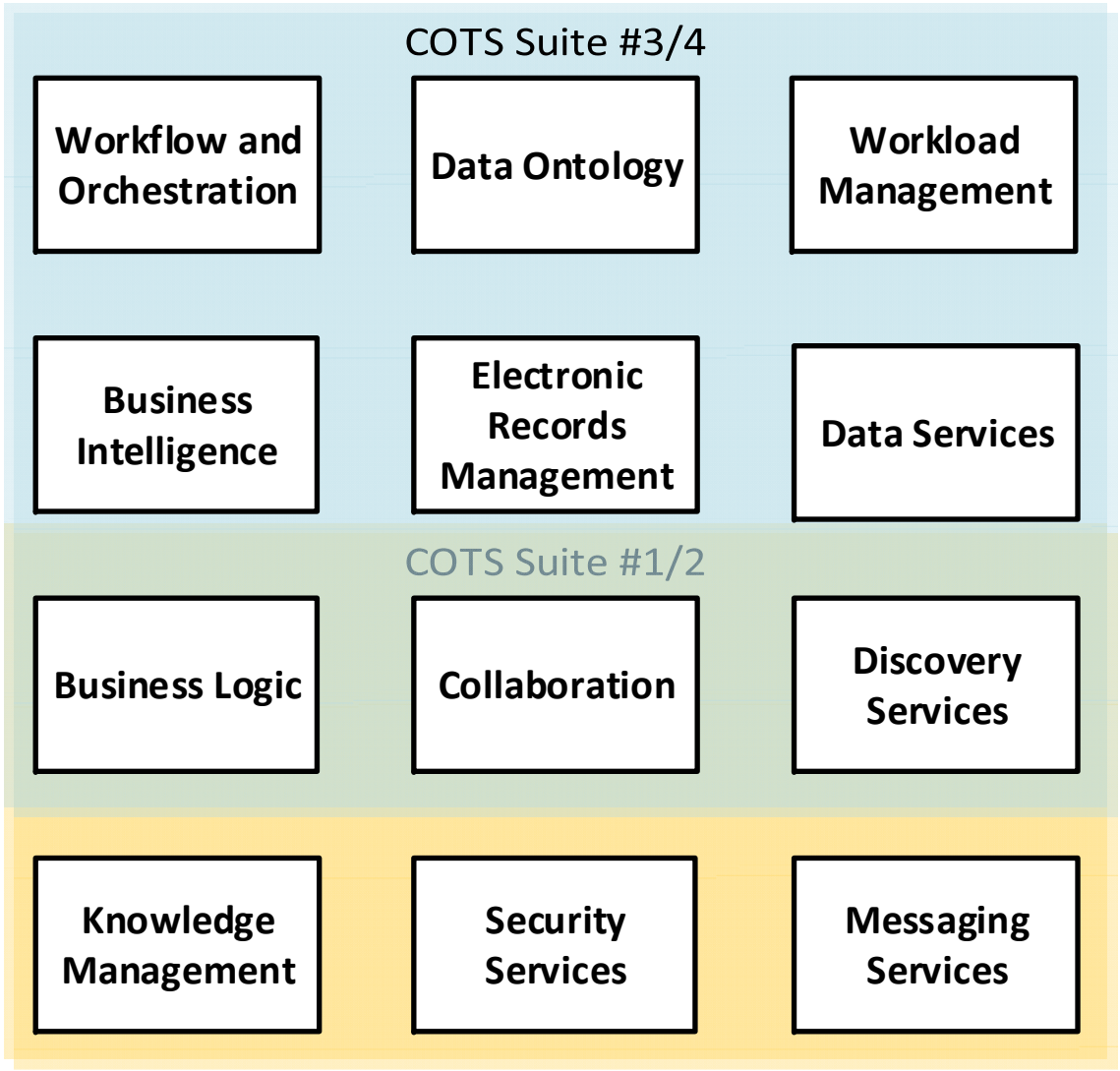
COTS Product Suites



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Software-as-a-Service (SaaS)

Strong preference for a cloud-based Infrastructure-as-a-Service

With common technology enablers can provide Platform-as-a-Service

Software-as-a-Service is the next logical step, but:

- Organizational policy is still changing
- Complexity when different components reside in different clouds
- Complexity of keeping applications synchronized when delivered by different providers
- Sensitivity of records
- Limited control over provider

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Loose Coupling and Web Services

Highly desirable

- Makes it easier to replace components
- Achievable between the applications
- Ideally coupling is only through records (structured data can be a problem)
- Simplifies testing

Counter to the tendency towards product suites

Service orientation through use of web services still seems the best way to achieve loose coupling

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Achieving a Common Look-and-Feel

Common look-and-feel is highly desirable from a user perspective but:

- If a style is chosen will either:
  - Limit the number of available products
  - Or require modification of the products to conform to the style
  - Or develop every component as custom
- If not chosen, then the first product defines the style
- Require everything be built to a custom style

Practically, particularly with an incremental acquisition for a long-lived system, a common look-and-feel is not possible

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Security Services in an Enterprise Context

Identity and Access Management are still areas of development

- Name & password pairs not strong enough
- PKI technology is still being adopted

Choices for the system:

- Every application has own security capability
  - Least usable
- One application provides security for others
  - Can provide single sign on (SSO)
  - Have to find an application that can serve up security services
  - Have to adapt other applications to use it
- Provide separate security service
  - Neutral with respect to applications
  - Can provide SSO
  - More readily adapted when organization policy changes
  - More effort to develop
  - All applications need to be adapted to use the service

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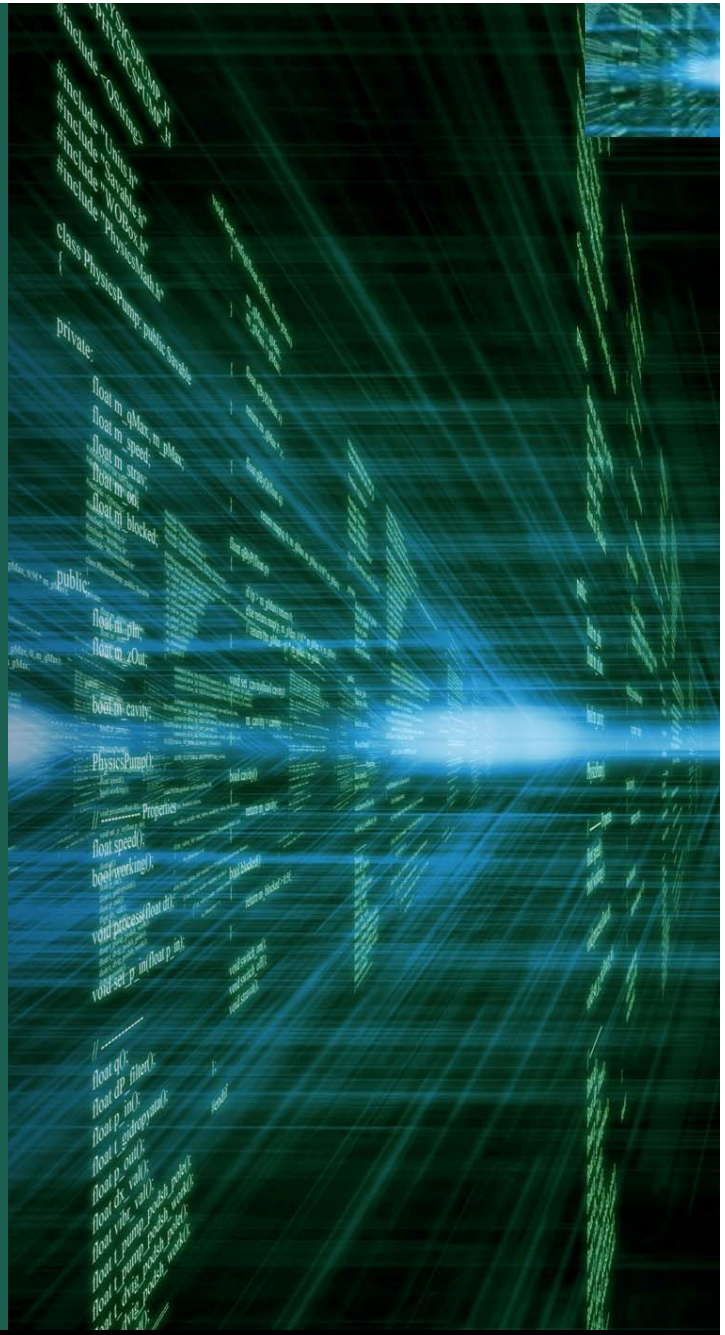
Conclusions



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Conclusions

No theme is really new

- There are new aspects of them
- Their continued recurrence suggests there is still work to do

Smaller, more incremental, acquisitions will exacerbate issues

- May be unavoidable
- Predictions of the future are rarely accurate

Program Offices need to have realistic expectations

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