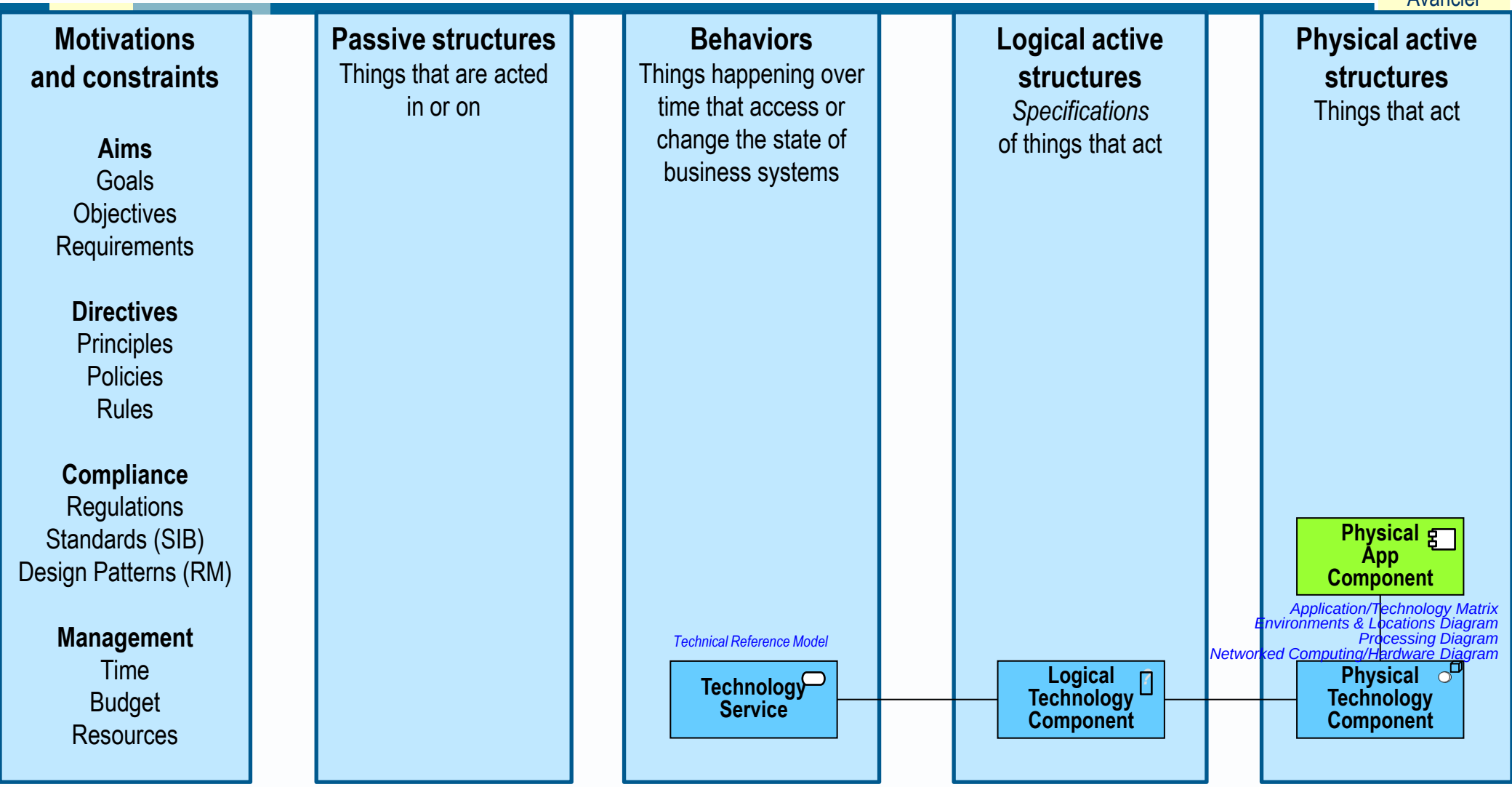
Avancier Methods (AM)

Infrastructure technology architecture diagrams

TECHNOLOGY ARCHITECTURE

Avancier



Technology Standards catalogue: illustration

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- May mandate choice of servers
- May show product life cycle or roadmap

Emerging	E
Standard	S
Contain	C
Retire	R
Unsupported	U
Archived	A

Tech Category	TAF Product	2010				2011				2012				2013			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
"Application Servers"	"Application Servers"																
	RedHat x.y		S														
	Tomcat		S														
	WebLogic App Server 10.x	S															
	WebLogic App Server 9.x	S							C								R
	WebLogic App Server 8.x	C						R									
"Web Servers"	"Web Servers"																
	Apache 1.x		S														
	Apache 2.0	S				C											
	Apache 2.2x		S														
Portals	Portals																
	Accordant Media Management System																

Technology Portfolio catalogue: a structure

Avancier

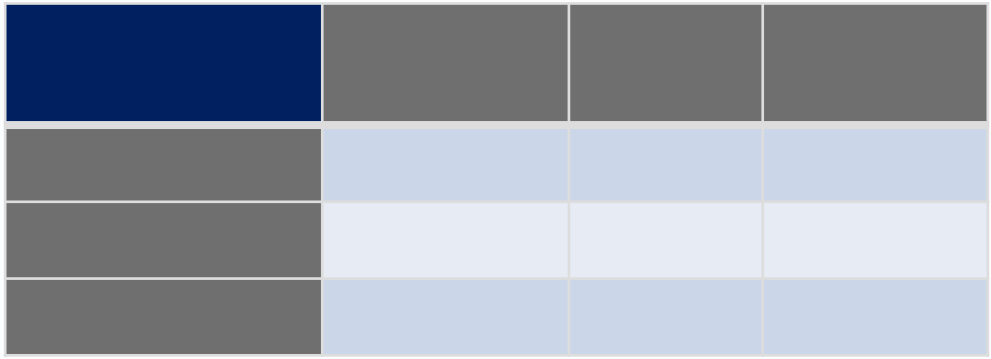
- Middleware
  - Point to Point Middleware
  - Message Broker Middleware
  - ETL
  - Workflow and BPM
- Data management
  - DBMS
  - Data Manipulation and Report
- Knowledge/content management
  - Document Management
  - Document Archiving
  - Content Management
- Application development
  - IDEs
  - Languages
  - Software build tools
  - Software configuration tools
  - Testing tools
- Client devices
  - Operating Systems
  - Static and mobile devices
  - Email, Browser, Office tools
  - Drawing and GIS
  - Terminal emulators
  - Device managers
  - I/O devices
    - barcode readers
    - scanners
    - printers
    - fax machines
- Data server devices
  - Operating Systems
  - Server types
    - Entry level
    - Blade
    - Midrange
    - Enterprise
    - Fault tolerant
  - Clustering
  - Data storage
    - DAS, NAS and SAN
    - Back and archiving
    - Tape devices and libraries
- Intermediate servers
  - Web servers
  - App servers
  - Thin client servers
- Security
  - Firewall
  - Audit tools
  - Anti-virus
  - Directory services
  - Intrusion detection and prevention
  - PKI and digital certificates
  - Smart cards
- Network
  - LAN, MAN, WAN
  - Wireless
  - Protocols
  - Switches, Routers, Bridges
  - Video and conferencing
- Systems management
  - Software distribution
  - Fault monitoring
  - Performance monitoring
  - Configuration management
- Network management
  - Remote access and takeover

Technology Service Catalogue (TRM)

User Interface Services	Transaction Processing Services	Operating System Services	Software Engineering Services
Graphical Client/Server services	Starting a transaction	Kernel Operations	Programming Language services
Display Objects services	Co-ordination of recoverable resources in a transaction	Command Interpreter and Utility services	Object Code Linking services
Window Management services	Committing or rolling back transactions	Batch Processing services	CASE Environment and Tools services
Dialogue Support services	Controlling timeouts on transactions	File and Directory Synchronization	Graphical User Interface (GUI) Building services
Printing services	Chaining transactions together		Scripting Language services
Computer-Based Training and Online Help services	Monitoring transaction status		Language Binding services
Character-Based services			Run-Time Environment services
			Application Binary Interface services
Graphics and Imaging Services	**Data Management Services**	**Network Services**	**OO Provision of Services**
Graphics services	Data Dictionary/Repository services	Electronic Mail services	Object Request Broker (ORB) services
Graphical Object Management services	Database Management System (DBMS) services	Distributed Data services	Implementation Repository services
Drawing services	OO Database Management System (OODBMS) services	Distributed File services	Installation and Activation services
Imaging functions	File Management services	Distributed Name services	Interface Repository services
	Query Processing functions	Distributed Time services	Replication services
International Operation Services	Screen Generation functions	Remote Process (Access) services	Common Object services
Character Sets and Data Representation services	Report Generation functions	Remote Print Spooling and Output Distribution services	Change Management services
Cultural Convention services	Networking/Concurrent Access functions	Enhanced Telephony functions	Collections services
Local Language Support services	Warehousing functions	Shared Screen functions	Concurrency Control services
		Video-Conferencing functions	Data Interchange services
		Broadcast functions	Event Management services
		Mailing List functions	Externalization services
Data interchange services	**Location and Directory Services**	**System and Network Management Services**	Licensing services
Document Generic Data Typing and Conversion services	Directory services	User Management services	Lifecycle services
Graphics Data Interchange services	Special-Purpose Naming services	Configuration Management (CM) services	Naming services
Specialized Data Interchange services	Service Location services	Performance Management services	Persistent Object services
Electronic Data Interchange services	Registration services	Availability and Fault Management services	Properties services
Fax services	Filtering services	Accounting Management services	Query services
Raw Graphics Interface functions	Accounting services	Security Management services	Relationship services
Text Processing functions		Print Management services	Security services
Document Processing functions	**Security Services**	Network Management services	Start-Up services
Publishing functions	System Entry Control services	Backup and Restore services	Time services
Video Processing functions	Security Management services	Online Disk Management services	Trading services
Audio Processing functions	Audit services	License Management services	
Media Synchronization functions	Access Control services	Capacity Management services	
Multimedia Processing functions	Non-Repudiation services	Software Installation services	
Information Presentation and Distribution functions	Trusted Recovery services	Trouble Ticketing services	
Hypertext functions	Encryption services		
	Trusted Communication services		

TOGAF says: Application/Technology Matrix

- The Application/Technology Matrix documents the mapping of applications to technology platform



ArchiMate???

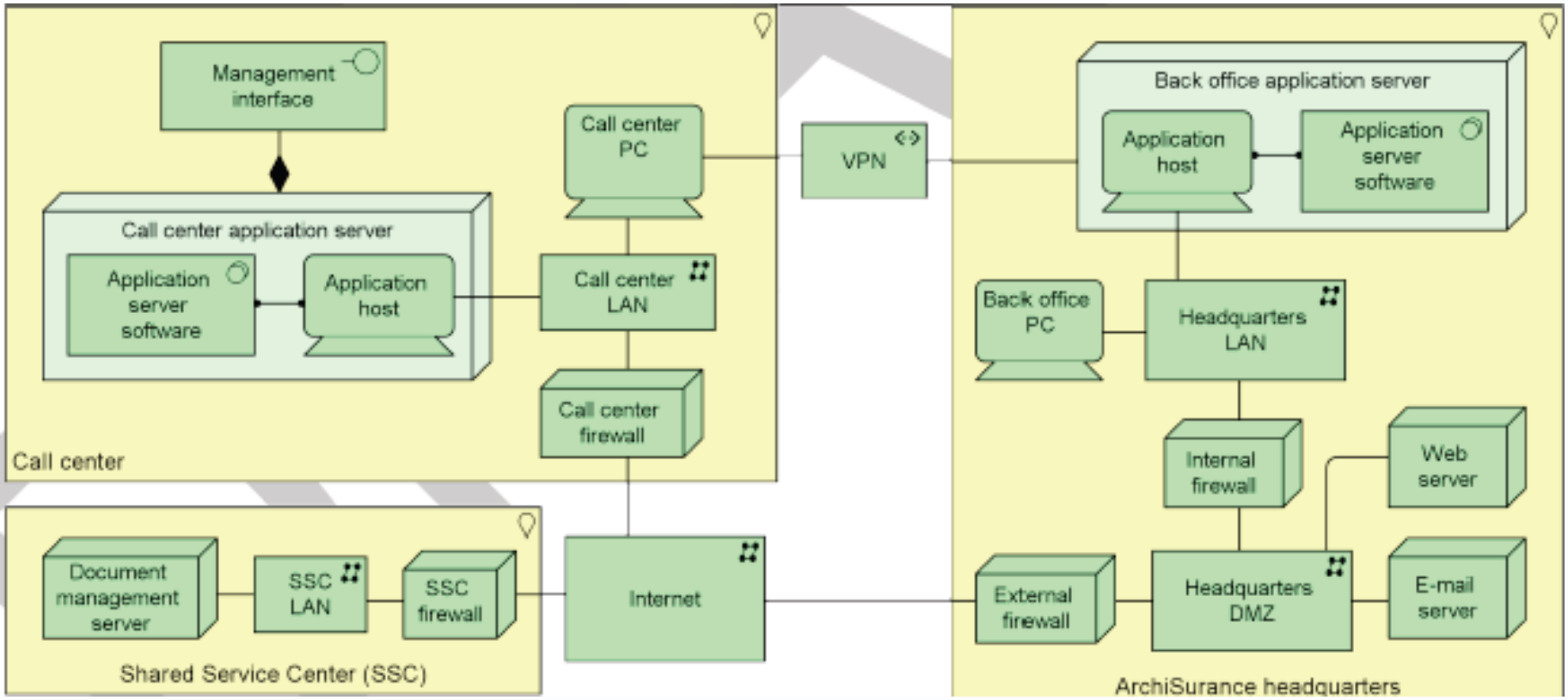
TOGAF says: Environments and Locations Diagram

- … depicts which locations host which applications, identifies what technologies and/or applications are used at which locations, and finally identifies the locations from which business users typically interact with the applications.
- … should also show the existence and location of different deployment environments, including non-production environments, such as development and pre production.

Reasonable match in ArchiMate

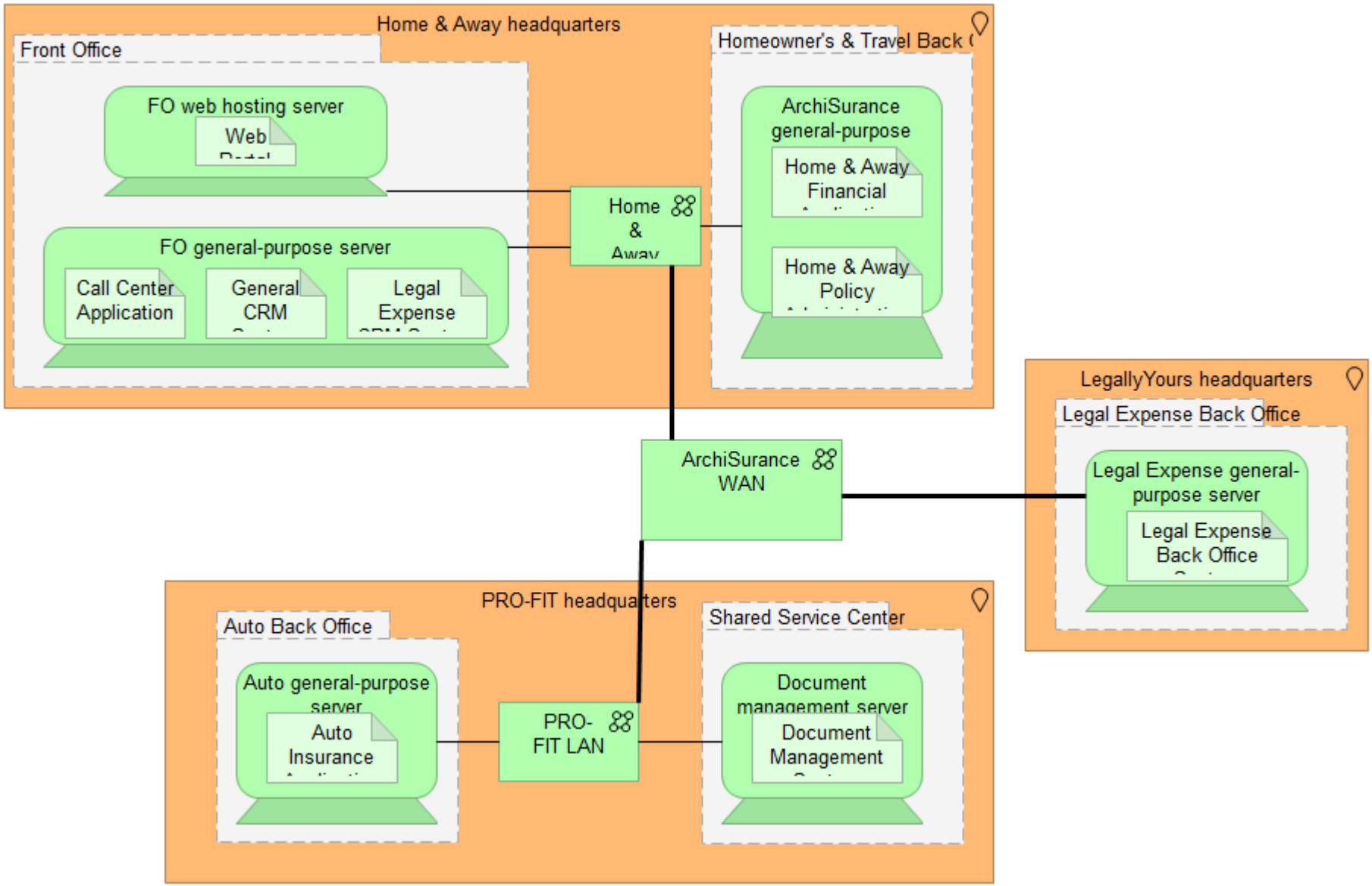
Avancier

- A Technology view



Reasonable match in ArchiMate

Avancier



Environments and Locations diagram: as a catalogue

- Remember s/w licence costs can rise with each real CPU and each virtual machine or LPAR

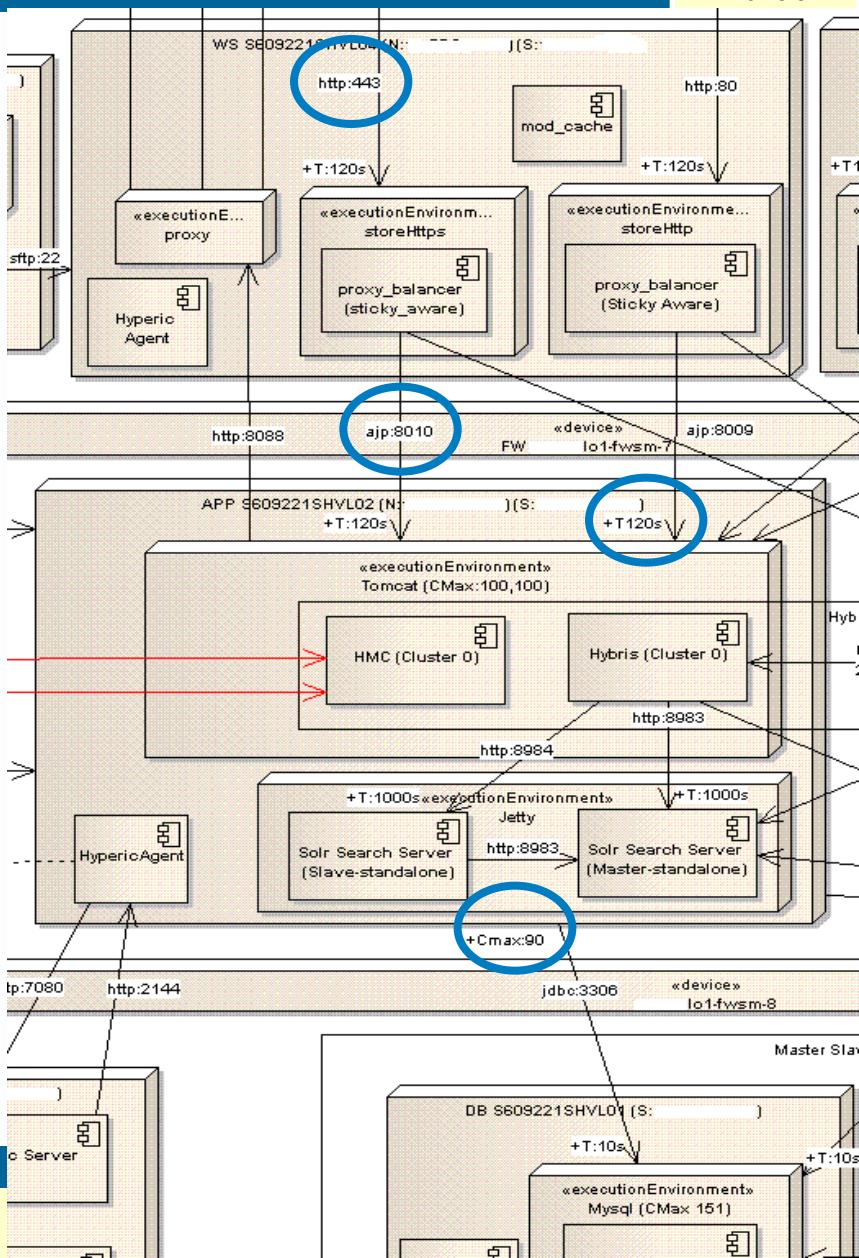
Environment type	Purpose	Physical platform	Hosted at Location	Contains Application Components	Contains Technology Components
Prototyping	To test/demonstrate a specific technology or design concept	1			
Development	To enable developers to write code	1			
System test	To enable system testers to the product	1			
Integration test	To test how the system integrates with others	2			
Performance test	To test how the system performs when fully loaded	2			
Data migration	To enable cleansing and migration of data	3			
User acceptance test	To enable user representatives to test to the product	4			
Production	To enable live operation of the system(s)	4			
Production support	To enable fault replication and investigation, and minor changes	5			

Also: Platform Decomposition Diagram

Avancier

TOGAF says: Processing Diagram

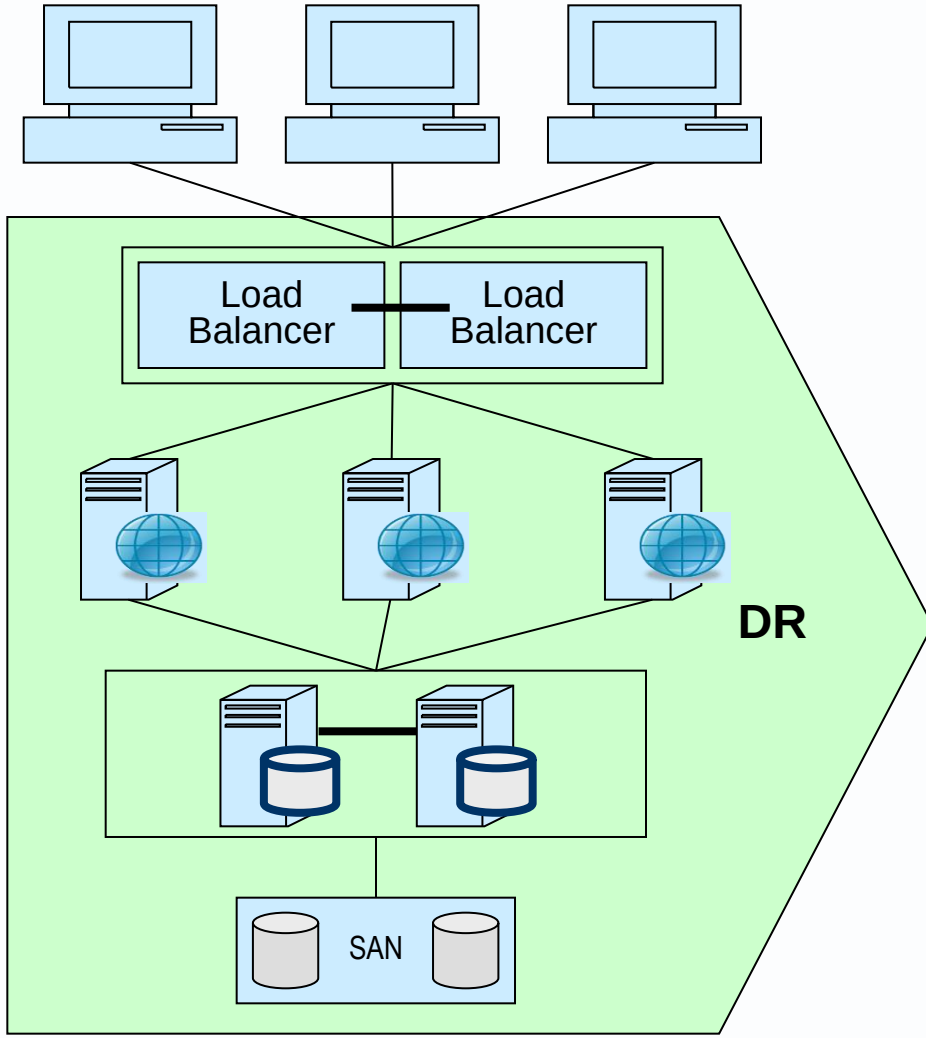
- … focuses on deployable units of code/configuration and how these are deployed onto the technology platform.
- A deployment unit represents grouping of business function, service, or application components.
- … addresses the following:
  - Which set of application components need to be grouped to for m a deployment unit
  - How one deployment unit connects/interacts with another (LAN, WAN, and the applicable protocols)
  - How application configuration and usage patterns generate load or capacity requirements for different technology components
  - The organization and grouping of deployment units depends on separation concerns of the presentation, business logic, and data store layers and service-level requirements of the components.



TOGAF says: Platform Decomposition Diagram

Avancier

- depicts the technology platform that supports the operations of the IS Architecture.
- covers all aspects of the infrastructure platform
- an overview of the enterprise's technology platform [OR]
- can be expanded to map the technology platform to appropriate application components within a specific functional or process area.
- may show details such as product versions, number of CPUs, etc.
- or simply an informal "eye-chart" - an overview of the technical environment.

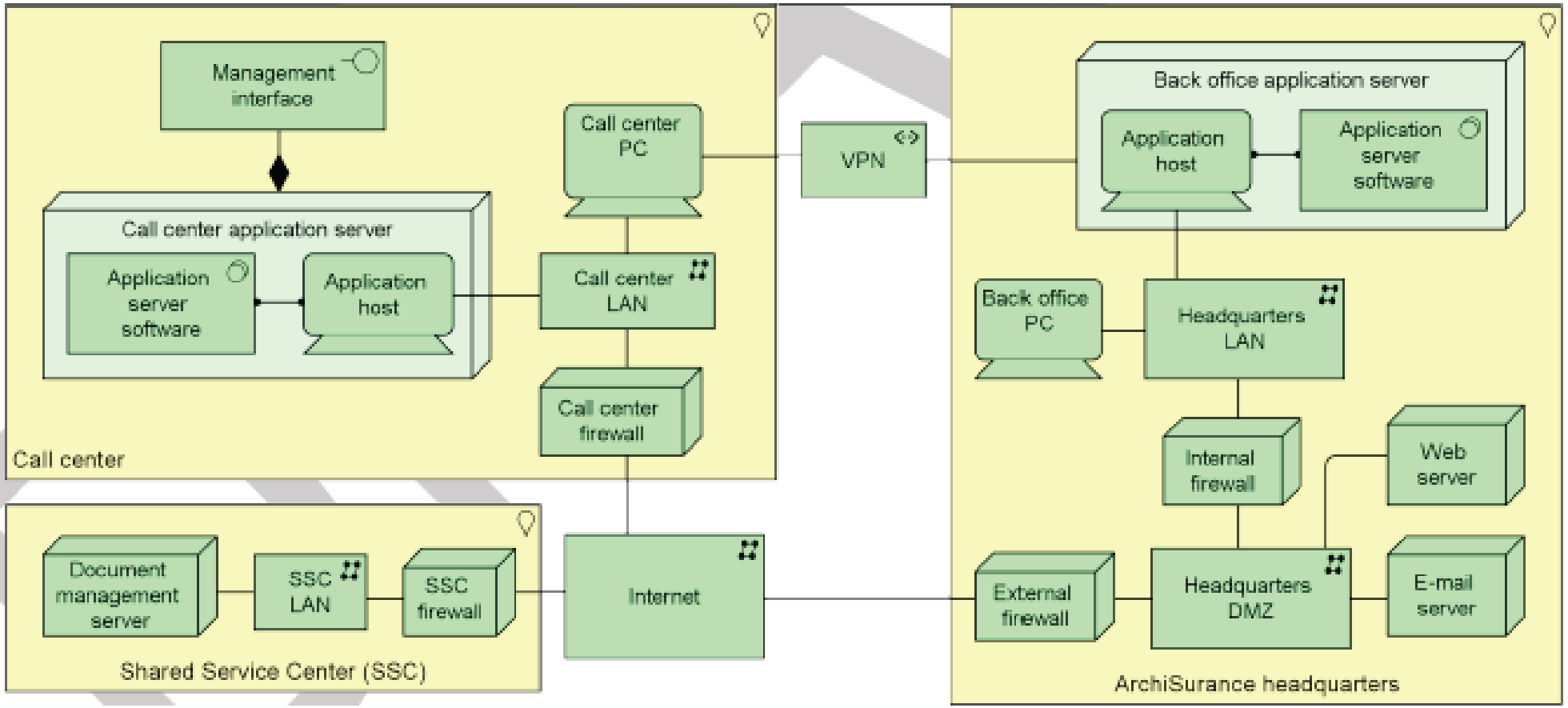


TOGAF Platform Decomposition Diagram

ArchiMate 3.0 Technology Viewpoint

Avancier

- contains the software and hardware technology elements supporting the Application Layer, such as physical devices, networks, or system software (e.g., operating systems, databases, and middleware).



TOGAF Platform Decomposition Diagram

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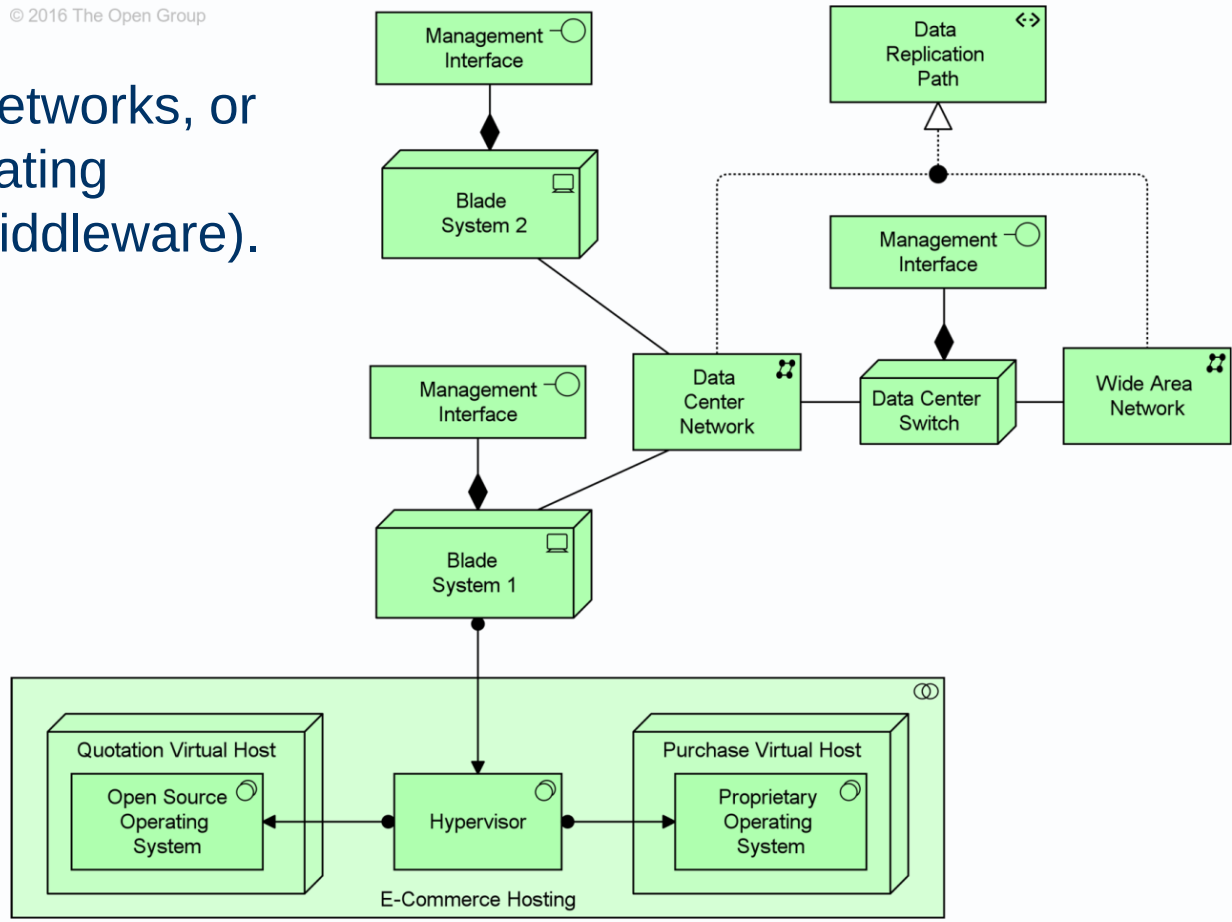
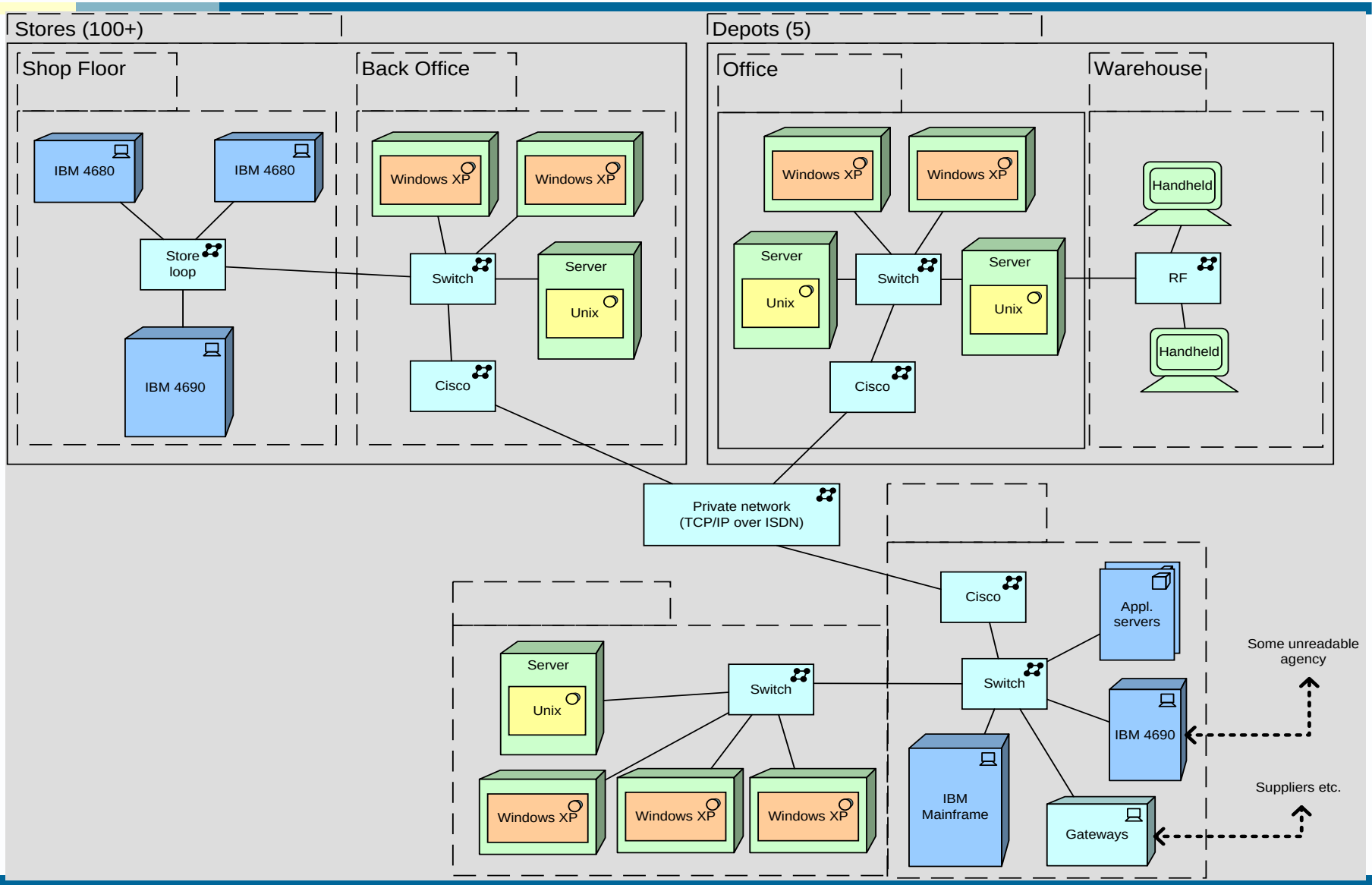


TOGAF Platform Decomposition Diagram

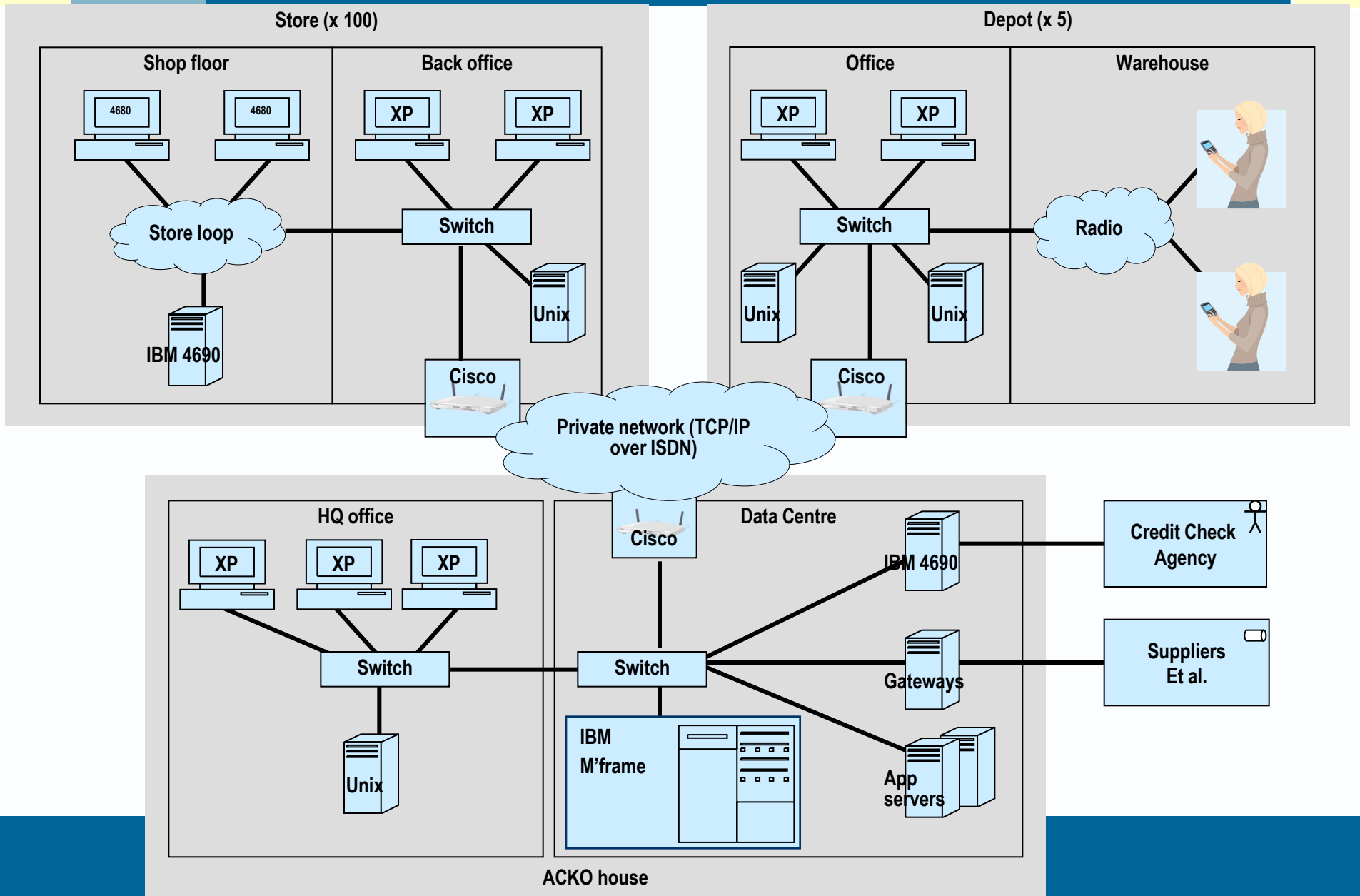
ArchiMate 3.0 Technology Viewpoint

Avancier



ArchiMate Technology Viewpoint drawn using Visio instead

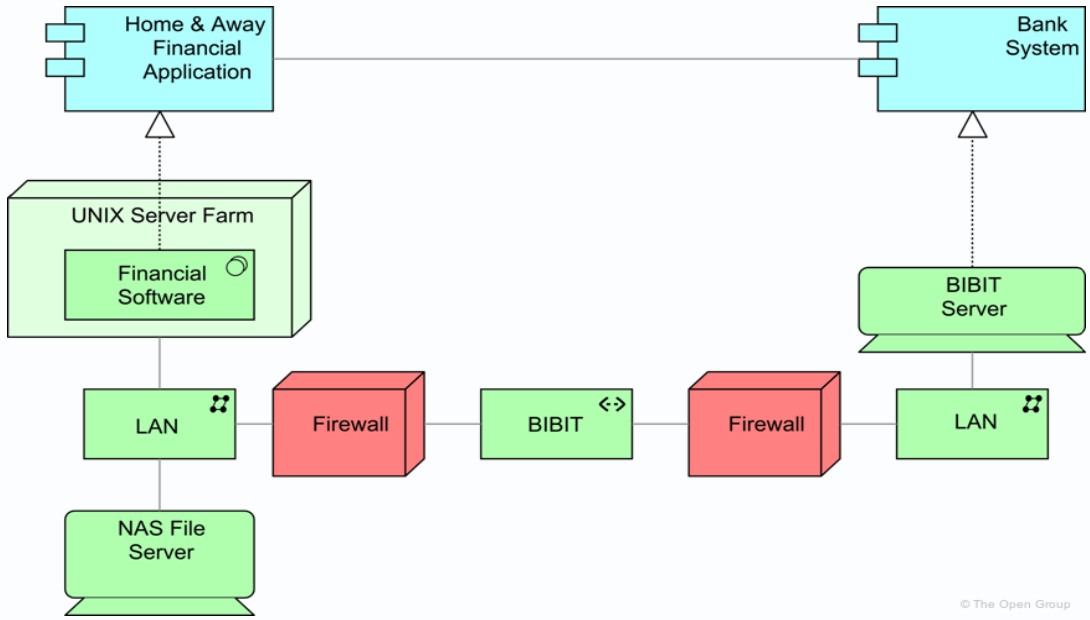
Avancier



ArchiMate: Technology Usage Viewpoint

- shows how applications are supported by the software and hardware technology: the technology services are delivered by the devices; system software and networks are provided to the applications.
- Plays an important role in the analysis of performance and scalability, since it relates the physical infrastructure to the logical world of applications.
- Useful in determining the performance and quality requirements on the infrastructure based on the demands of the various applications that use it.

Dodgy v 2.1 diagram



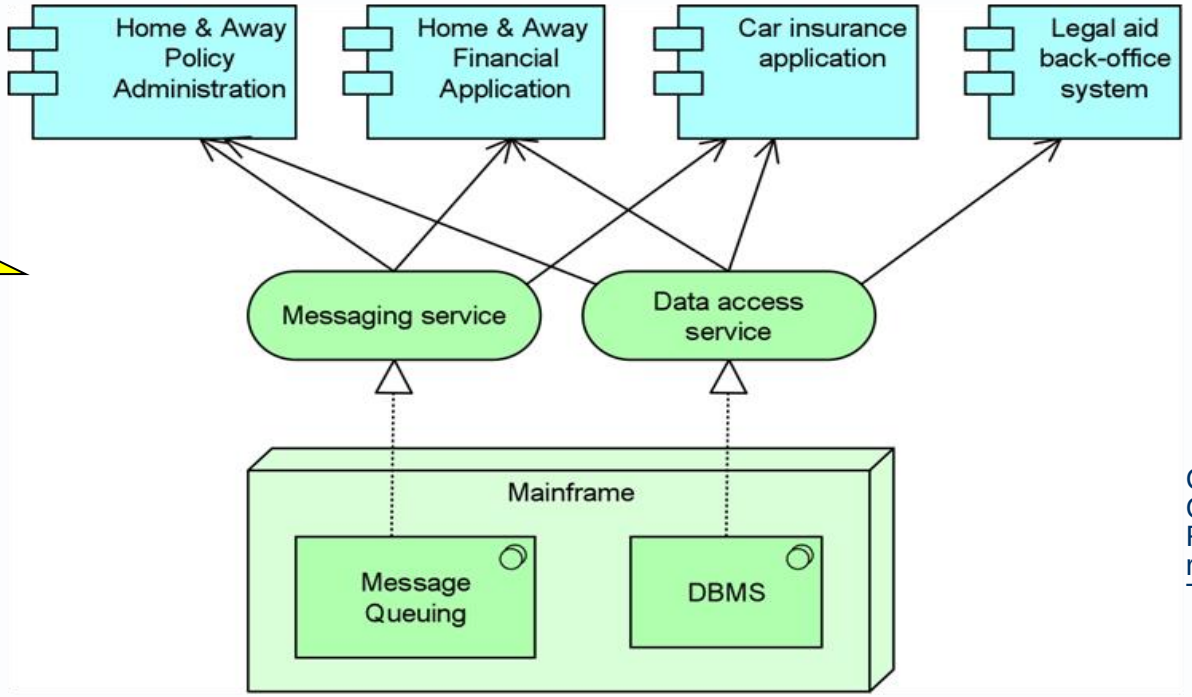
TOGAF says: Networked Computing/Hardware Diagram

- Currently, most of the applications have a web front-end and, looking at the deployment architecture of these applications, it is very common to find three distinct layers in the network landscape; namely a web presentation layer, an business logic or application layer, and a backend data store layer.
- It is a common practice for applications to be deployed and hosted in a shared and common infrastructure environment.

Possible match in ArchiMate

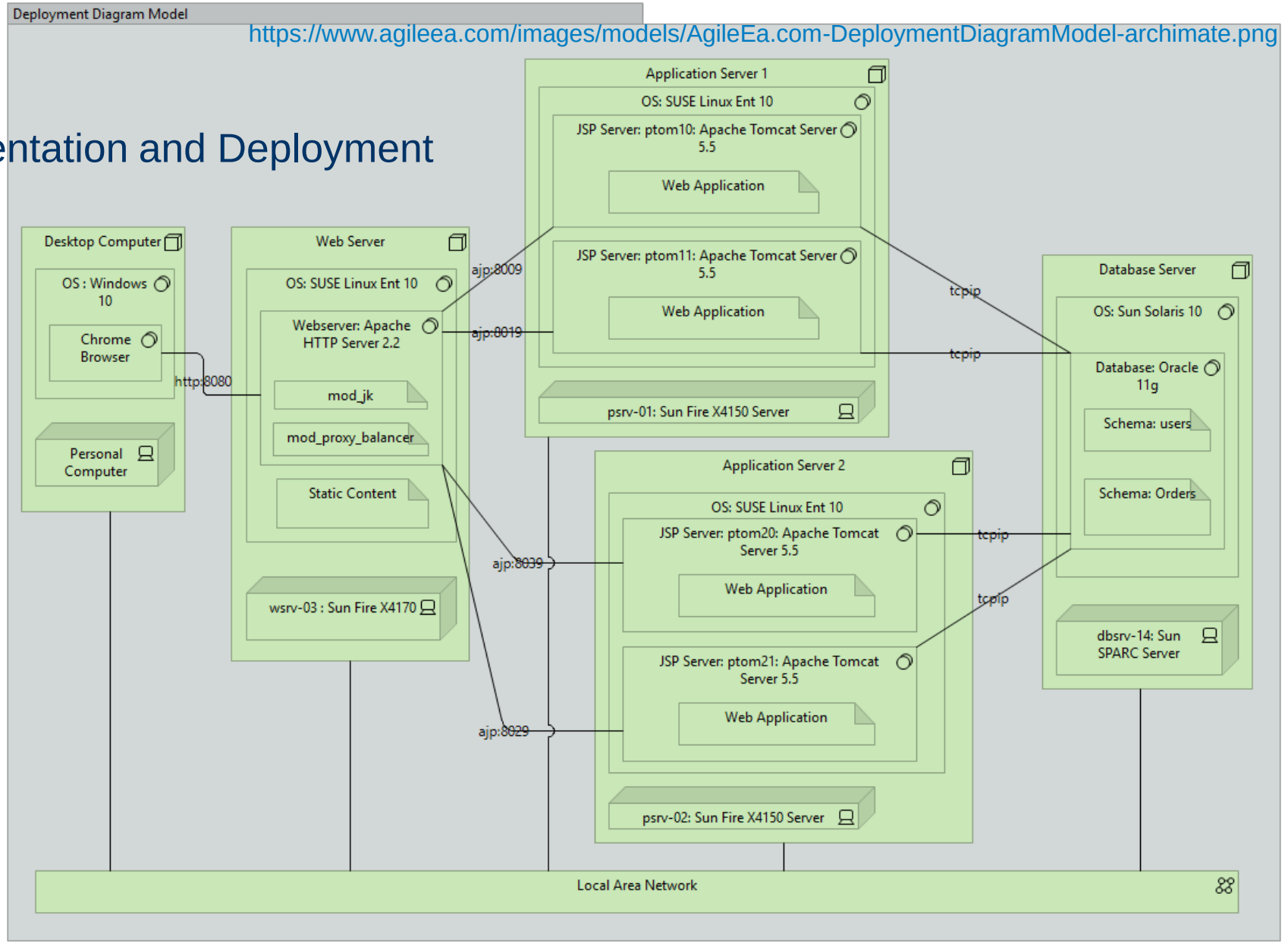
- **An Implementation and Deployment View**
- shows how one or more applications are realized on the infrastructure. This comprises the mapping of applications and components onto artifacts, and the mapping of the information used by these applications and components onto the underlying storage infrastructure.

Not a good example Dodgy v 2.1 diagram



Reasonable match in ArchiMate

- Implementation and Deployment

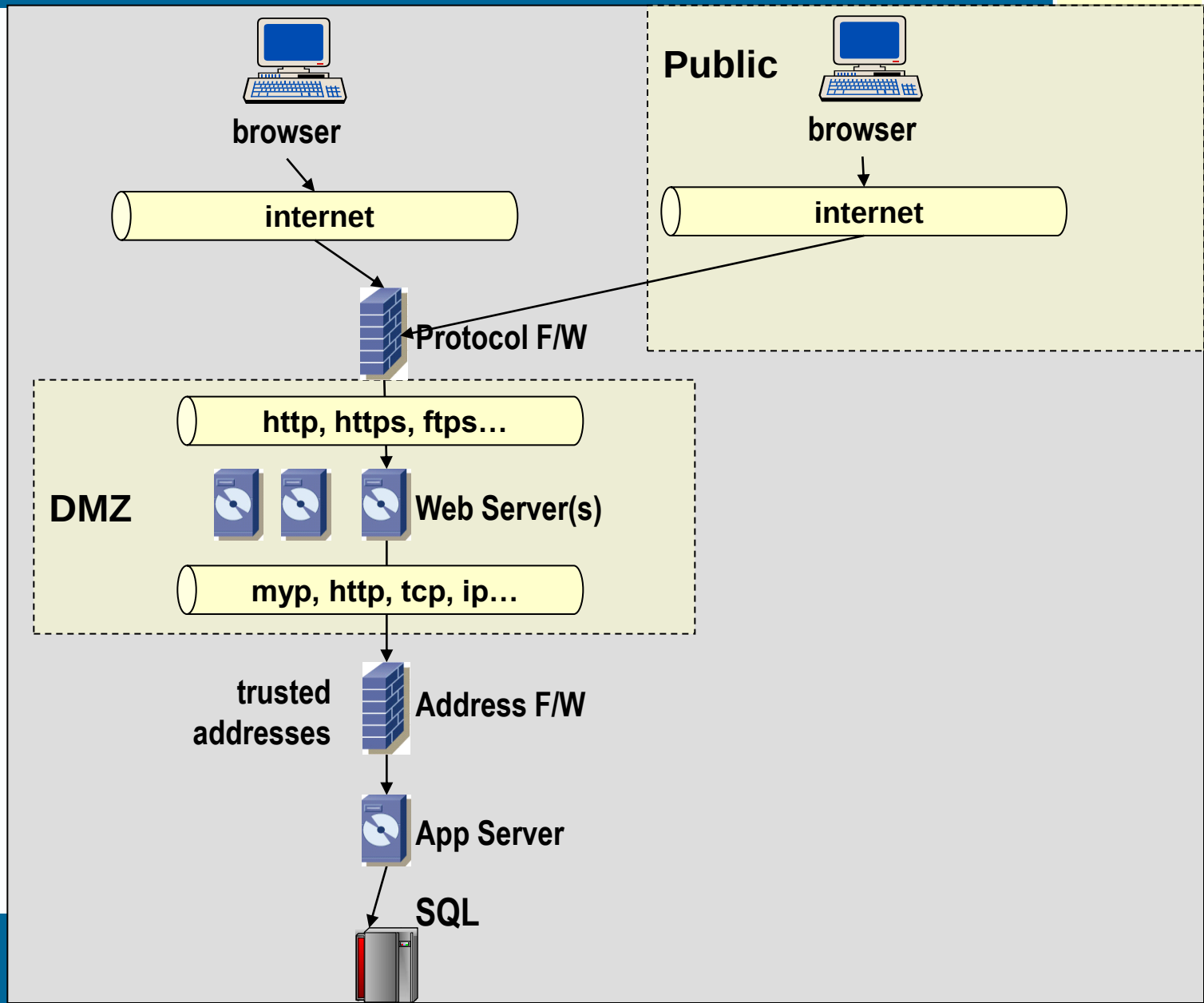


TOGAF says: Communications Engineering Diagram

- describes the means of communication between assets in the Technology Architecture
- takes logical connections between client and server components and identifies network boundaries and network infrastructure required to physically implement those connections.
- does not describe the information format or content,
- but will address protocol and capacity issues.

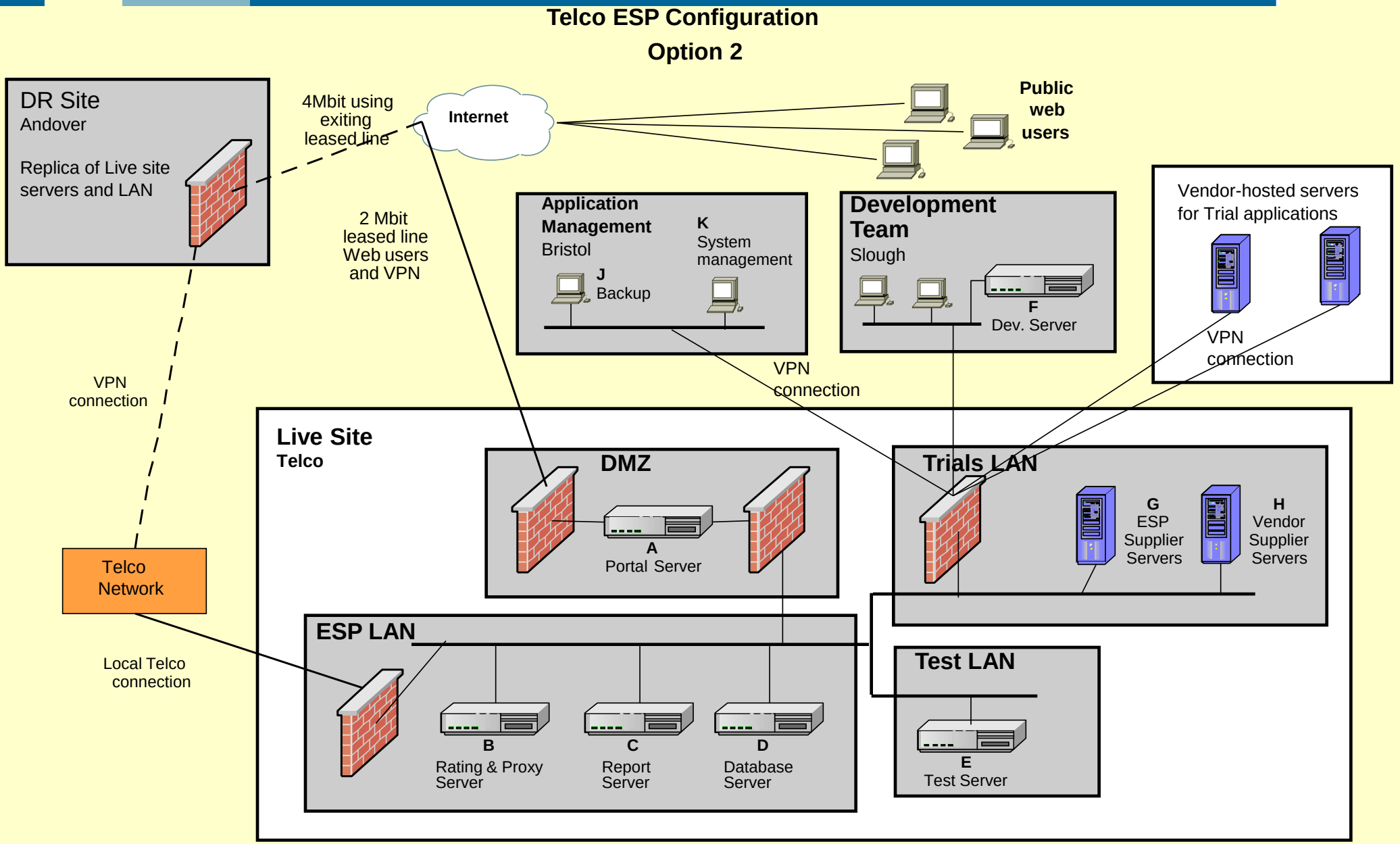
Communication engineering diagram

- Shows client end to server end connection of technologies across a network



Communication engineering diagram: Visio style

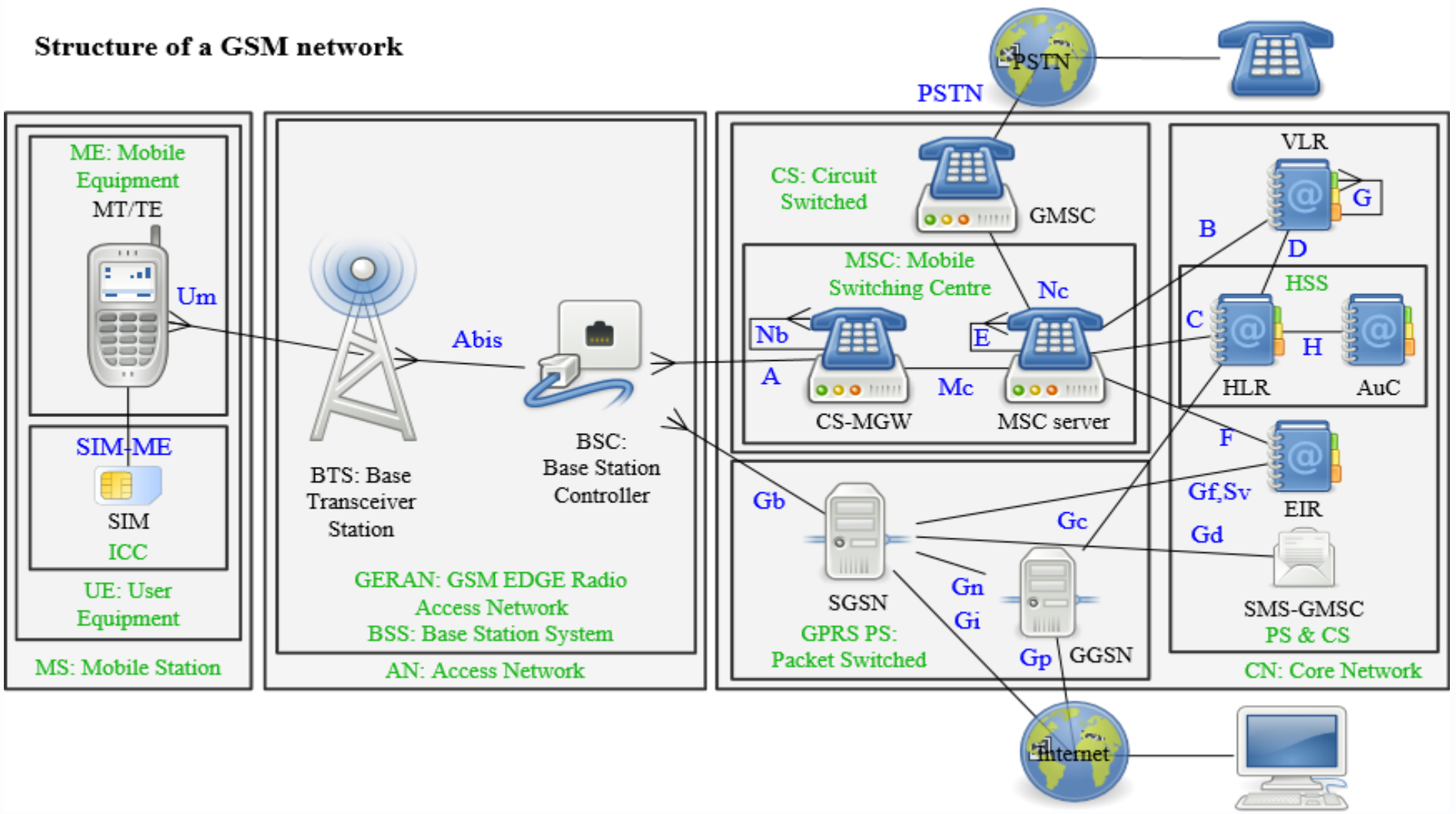
Avancier



A Communications Engineering Diagram (from Wikipedia)

Avancier

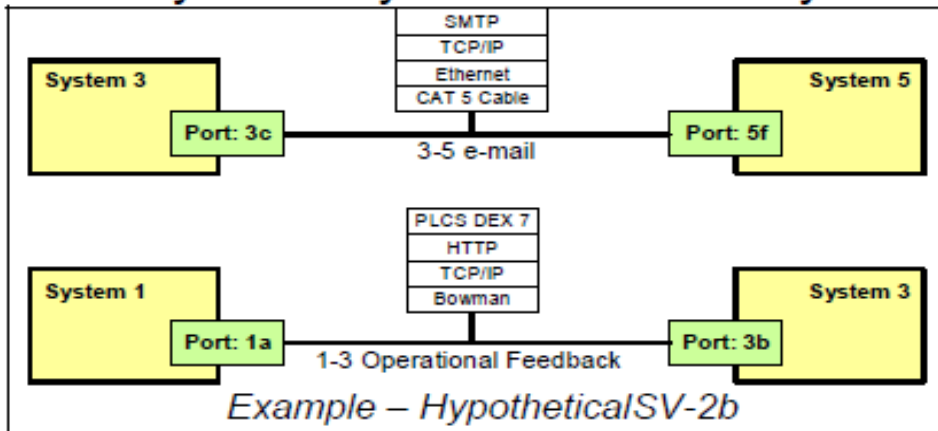
Global System for Mobile communications (2G) (Based on 3GPP TS 23.002)



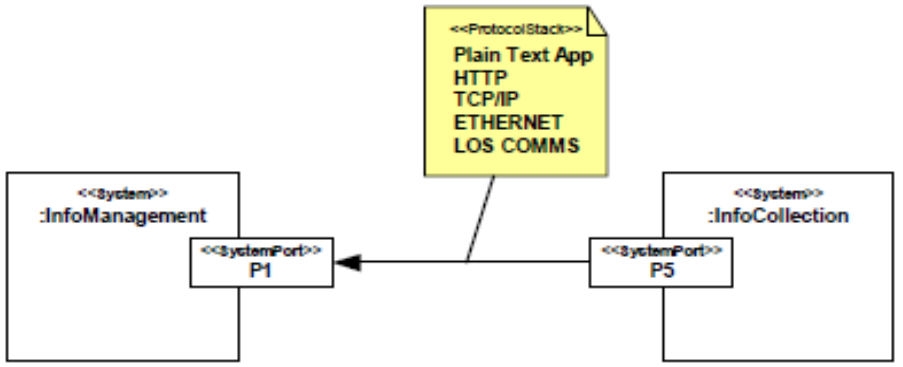
Communication engineering diagram: MODAF style

- A kin to the Channel catalogue

SV-2b System To System Port Connectivity



Example – HypotheticalSV-2b



Example – Hypothetical SV-2b – UML Version

Data objects:
Systems
Ports
Port Connections

Usage:
Interoperability analysis
Articulation of system composition, as the nature of a connection between two systems.
Specification of system interoperability requirement in SRD

Description:
Defines the protocol stack used by a connection between two ports. The ports may be on different systems.

Alternative Views:
UML and possible SysML alternatives

Communication Engineering diagram: tabular style

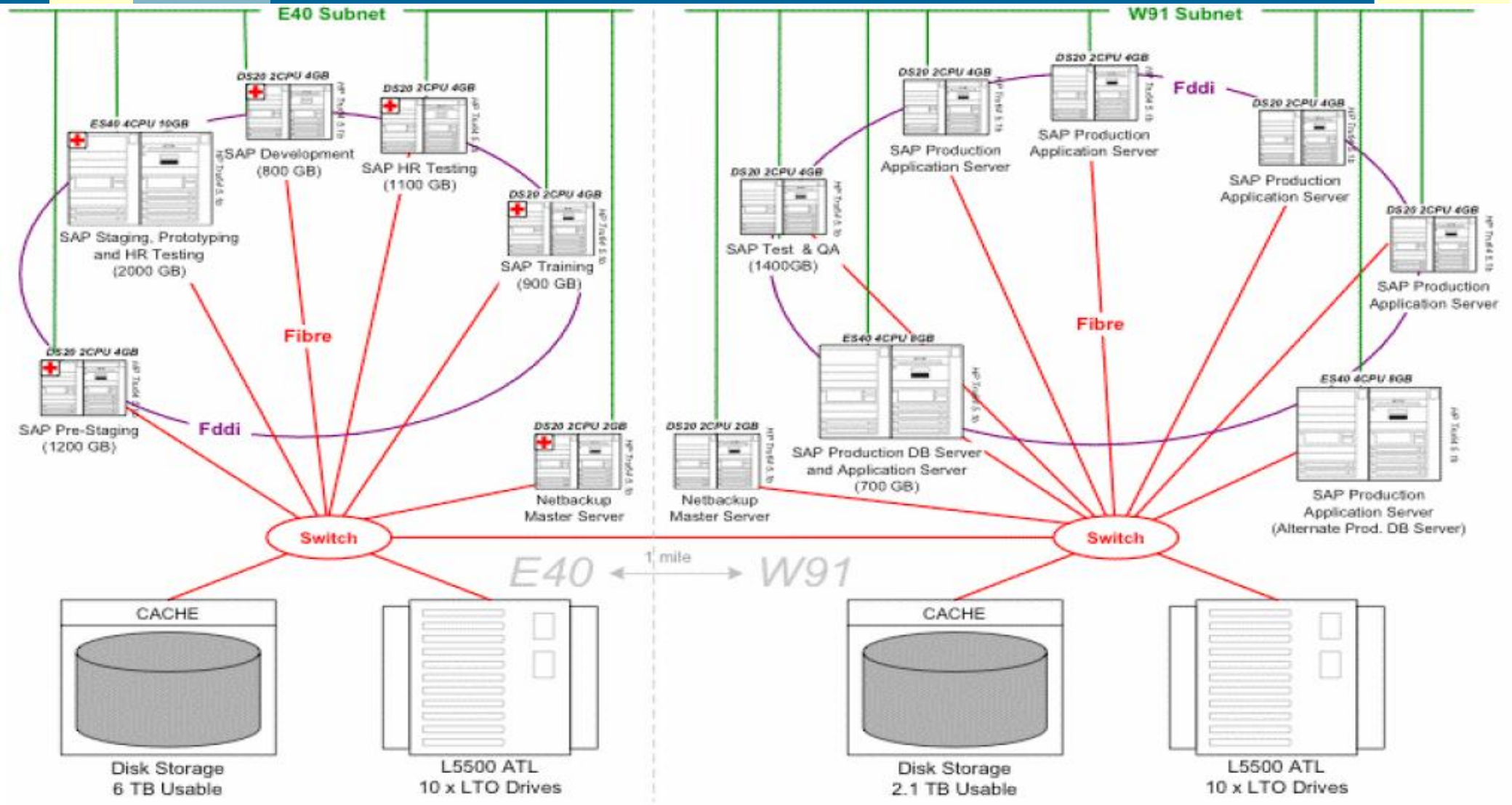
Avancier

- Might be documented on the platform technology diagram or in a supporting table of this kind…

The network between platform nodes				
Platform	**Applications**	**Protocols**	**Network**	**Required Bandwidth**
Work station	**Browser, Ajax**	**http/tcp/ip**	**WAN**	
DMZ Firewall		**http/tcp/ip**	**WAN and LAN**	
Web servers		**http/tcp/ip**	**LAN**	
DMZ Firewall		**http/tcp/ip**	**LAN**	
Application server	**Java App**		**LAN**	
Database server			**LAN**	

SAP Physical Architecture Diagram (MIT)

Avancier



Beware the duplication between TOGAF diagrams

Avancier

- **Application and User Location Diagram**
  - "shows the geographical distribution of applications, where applications are used by the end user; where the host application is executed and/or delivered in thin client scenarios;
  - where applications are developed, tested, and released; etc."

- **Application/Technology Matrix**
  - "documents the mapping of business systems [i.e applications] to technology platform."

- **Processing Diagram**
  - "focuses on deployable units of code/configuration and
  - how these are deployed onto the technology platform."

- **Software Distribution Diagram**
  - "shows how application software is structured and distributed across the estate…
  - shows how physical applications are distributed across physical technology and the location of that technology…
  - enables a clear view of how the software is hosted"

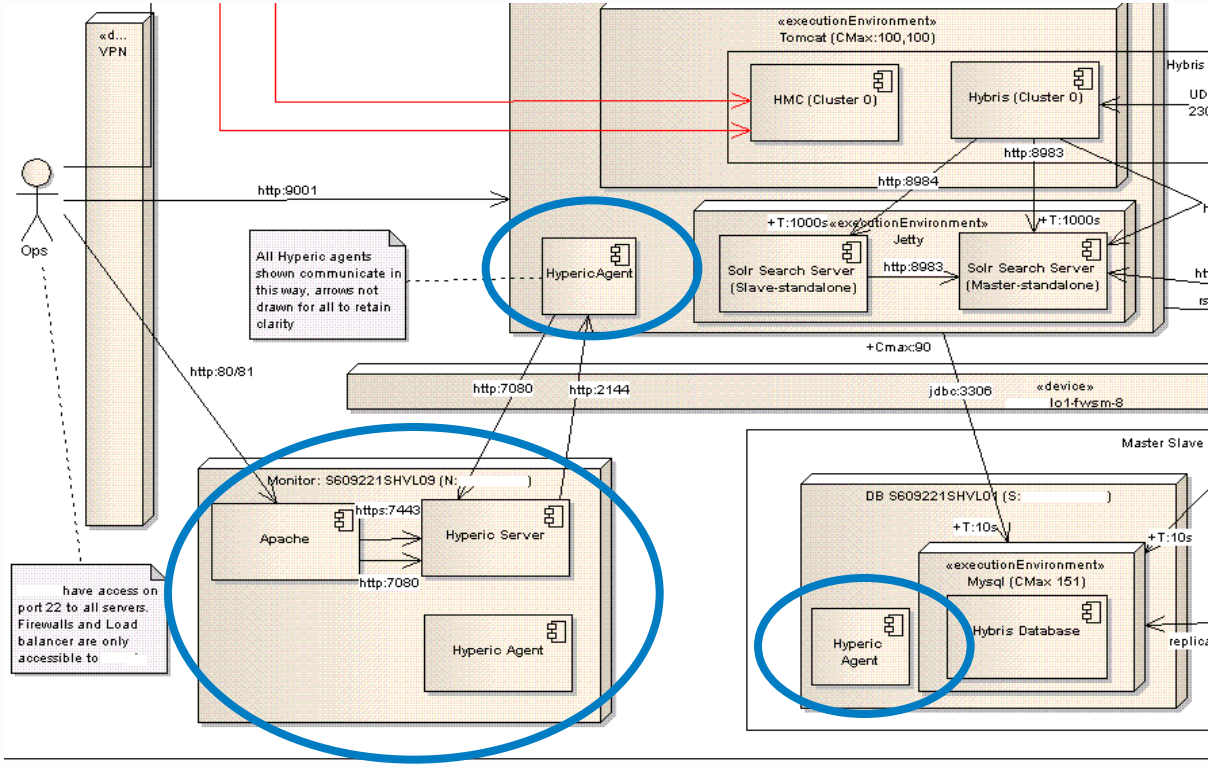
- **Environments and Locations Diagram**
  - "depicts which locations host which applications…
  - what technologies and/or applications are at which locations"

- **Networked Computing/Hardware Diagram**
  - "to document the mapping between logical applications and the technology components (e.g., server) that supports the application both in the development and production environments…
  - "to show the "as deployed" logical view of logical application components in a distributed network computing environment…
  - "Enable understanding of which application is deployed where in the distributed network computing environment."

TOGAF says: Enterprise Manageability Diagram

Avancier

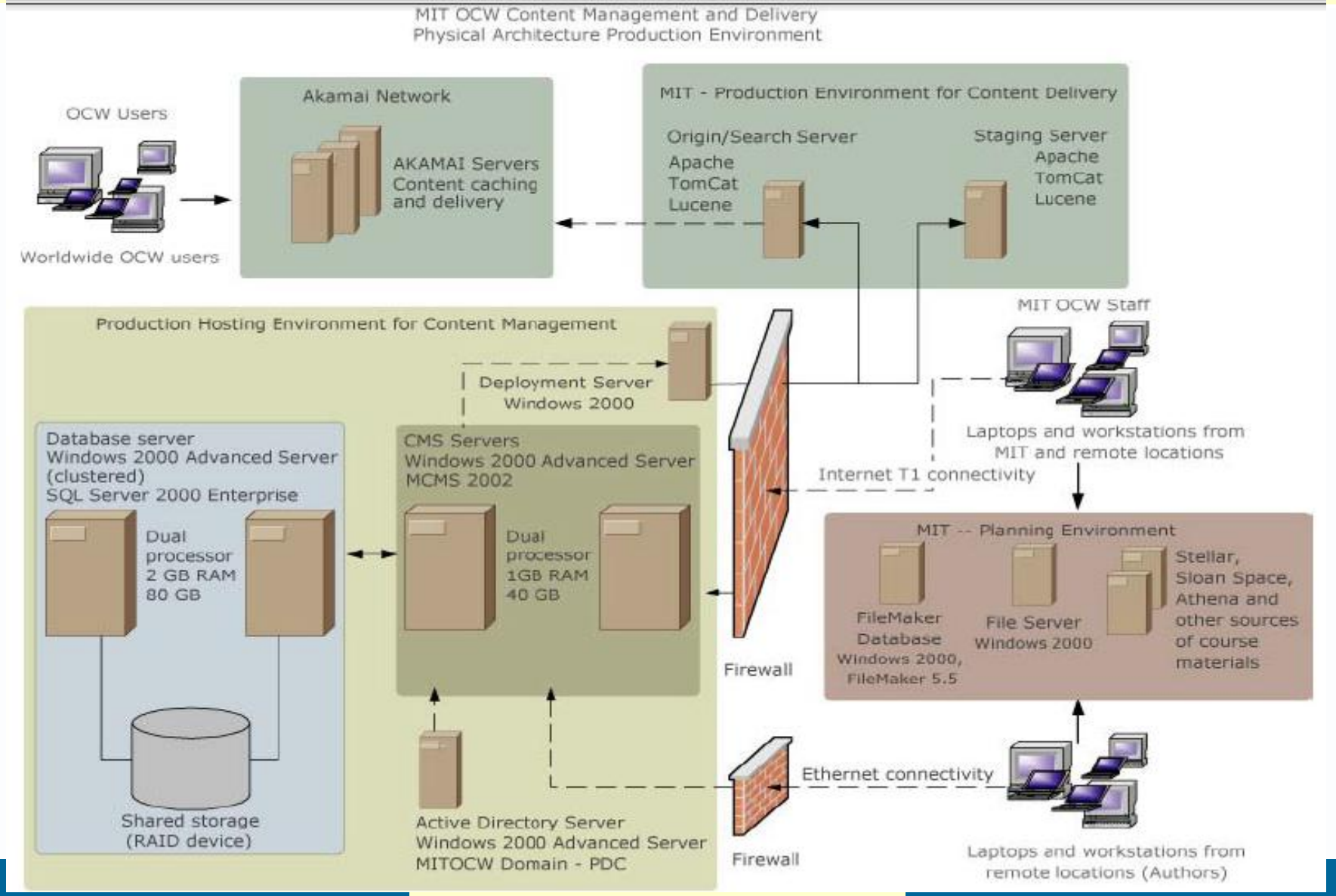
- shows how one or more applications interact with application and technology components that support operational management of a solution.
- a filter on the Application Communication diagram, specifically for enterprise management class software.
- Analysis can reveal
- duplication and gaps,
- and opportunities in the
- IT service management
- operation of an organization.



MORE…

Physical Architecture (MIT)

Avancier

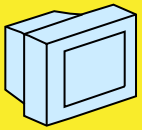


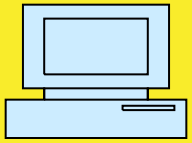
Client and Server Devices

- What physical client devices are used or needed?
- What are their physical characteristics?

User components


User


Desktop App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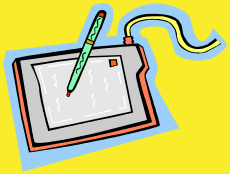
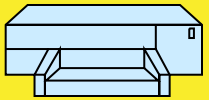
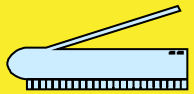

PDA

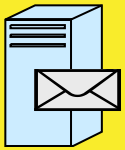

Printer

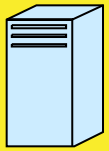

Scanner

- What physical server devices are used or needed?
- What are their physical characteristics?

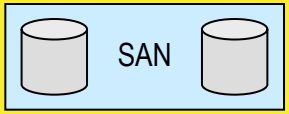
Server Components

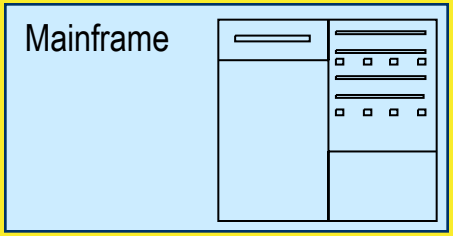

Web Server


Email Server


App Server


Data Server





Platform Decomposition diagram: possible style