Med Inf 405
Session 3 - Study Questions and Answers

1. **What influences the development of an architecture for an organization's information systems?**
   By the organization's objectives (EMR that span multiple hospitals) and the systems' desired properties (efficient to support and having a high degree of application integration)

2. **What are two approaches or frames of reference that organizations use to approach the topic of architecture?**
   1) By characteristics and capabilities. Remote access, high availability (fault tolerant network redundancy)
   2) Application Integration. Best of Breed (best app it can find and integrate applications by means of interface engine that manages the transfer of data between them); Monolithic or Visual.

3. **What are best of breed, monolithic, and visual integration architectures?**
   Best of Breed considers best app it can find and integrates applications by interface engine); Monolithic describes the architecture of a set of applications that all come from one vendor and that all use a common database management system and common user interface. Visual integration wraps a common browser user interface around a set of diverse applications such as a dashboard approach that allows a doctor to access information from different applications in one spot.

4. **How does SOA define a service?**
   An independent unit of work that is self-contained and has well-defined, understood capabilities. A unit of work may be an entire process, a function supporting a process, or a step of a business process.

5. **Which healthcare delivery functions are likely to contain substantial redundancy and are used across systems, departments, and organizations?**
   Register patient; Admit, discharge, and transfer patient; Document problem and diagnosis; Capture and document charges; and Create Clinical note

6. **What tasks may be included in the function of registering a patient?**
   - Find and view patient record
   - Create and update patient record
   - Verify insurance eligibility
   - Document history
     (New or Update)

7. **What is a health information network?**
   HIN is a collaboration among the government, hospitals, specialty labs and pharmacies, as well as insurance agencies (payers) to provide a network of data exchange that builds a

shred information pathway, data repositories, and application interfaces to rapidly and accurately exchange key health information across a system of healthcare.

8. **What are the main usage models are health information networks used to support?**
   Exchange of patients' EMR records between providers to get medical history, allergies, persistent medical problems, and current medications and active treatments; Exchange of referrals between primary and secondary care providers or labs as well as medical results of those referral visits; Pre-Auth of treatment for treatment or prescriptions; Claims filing and payment; electronically order and monitor consumption of prescriptions; data repository and biosurveillance activities; PHR

9. **What percentage of a health information network's initial startup costs does systems integration represent when bringing the first hospitals and insurance companies on the network?**
   More than 70 percent

10. **What must the service architecture do in order to significantly reduce the cost of integration when using SOA for HIN integration architectures?**
    Simplify and reduce the number of interface points to create data interoperability; address the architecture, infrastructure, software and related business services as a cohesive unit; Be deployable with the hospital, lab, pharmacy, and insurance company as well as within the shared HIN network support legacy systems, including current and evolving standards in healthcare data representation; Be scalable from small to large scale healthcare organizations in terms of cost, complexity, utility and adaptability.

11. **What key tasks / milestones can be used to pursue a SOA maturity model in healthcare?**
    Early learning (pilot in one department on a targeted set of highly shared data and functions); Re-Engineering (Extend technology to other departments and start planning for HIN); Integration (Implement HIN integration); and Maturity (SOA tech and organizational infrastructure permeates all major business processes, systems and departments and supports the organizations HIN initiatives.

    Start focused, then snowball.

12. **What are the top data integration issues according to the report on data integration by Colin White?**
    Data Quality and security issues (55%), Lack of Business case and Funding (45%), Poor data integration infrastructure (38%), metadata management issues (36%)., Lack of IT integration skills (33%)

13. **What levels in an information technology system can enterprise business integration occur at?**
    Data, application, business process, and user interaction.

14. **What are the three main techniques used for integrating data?**
    Consolidation (ETL, ECM), federation (virtual business view), propagation (distributed data)

15. **What are the disadvantages of using the data consolidation technique?**
    Large volume, need for computing resources, disc space, storage, cpu.

16. **What is the main data integration technique used to build and maintain an enterprise data warehouse?**
    Consolidation

17. **What technologies support the data consolidation technique**?
    ETL, & enterprise content management focused on unstructured data such as documents & web pages

18. **What is an example of a technology that supports a federated approach to data integration?**
    EII

19. **What may be used to document semantic relationships between data elements when using a federated approach?**
    Metadata

20. **What are the advantages of using a federated approach?**
    Access to real time data & no need to create new repository/additional data store. Supports security because copies are not made & owning authority retains control.

21. **What are the disadvantages of using a federated approach?**
    Not well suited for retrieving large volumes of data & if the data has data quality issues (poor data quality)

22. **What technologies support the data propagation technique?**
    EAI, RT-ETL, EDR

23. **What are the advantages of using the data propagation technique?**
    Real-time or near real-time delivery of data, Delivery of data is guaranteed, 2-way exchange of data in synchronous mode.

24. **What two aspects of data quality need to be considered in a data integration project**?
    Quality of source data; Poor quality data needs to be cleansed

25. **What is the objective of enterprise information integration?**
    Allow applications to see dispersed data as though it resides in a single database. Also, real time transaction processing (access to real time data) & no need to create additional data store.

26. **What circumstances make it more appropriate to using extract, transfer, and load technology as opposed to enterprise information integration technology?**
    Read only access to reasonably stable data is needed; Users need historical or trend data; Data transformation is very complex; Data access performance and availability are key requirements.

27. **What is one of the more significant differences between enterprise data replication and enterprise application integration?**
    EDR is used for transfer of data between databases rather than applications. EAI is designed for transfer of messages and transactions between applications.

28. **What are the main types of source data used in integration projects according to the report on data integration by Colin White?**

    Structured data files (since most of the data comes from data in databases); Spreadsheets; Unstructured data files; XML; Web pages; ECM data stores; Web logs; Multi-media.