Curriculum Development
Centers Program

Awardee of The Office of the National Coordinator for
Health Information Technology

# Component 8
# Installation and Maintenance
of Health IT Systems

Unit 3

System Selection – Functional
and Technical Requirements

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# What We'll Cover…

- Developing a plan for gathering functional requirements from your institution and its users for your EHR and evaluating EHRs using a twelve-step approach
- Documenting use-cases and relating them to functional requirements
- Prioritizing functional requirements, including grouping as essential versus desired
- Identifying minimum and recommended software and hardware requirements

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# Evaluating EHR Systems:
# 12 Steps

"How to Select an Electronic Health Record System" lists 12 recommended steps:

1. Identify decision makers
2. Clarify goals
3. Determine functional requirements & write Request For Proposals (RFP)
4. Determine RFP recipients
5. Review RFP responses
6. Attend vendor demonstrations

## Evaluating EHR Systems: 12 Steps (cont'd)

7. Check references
8. Rank vendors
9. Conduct site visits
10. Select finalist
11. Solidify organizational "buy-in"
12. Negotiate contract

## #1: Identify Your Decision Makers

- People and institutions are resistant to change. Create a committee to assist in the selection process.
- Make selection process a physician-led effort.
- Invite "movers and shakers" onboard in the decision-making process.
- Keep your committee diverse.

## #2: Clarify Your Goals

- What are your current limitations?

- Think about what technology should achieve in your setting.

- Be sure EHR selection aligns with overall business strategy.

## #3: Determine Functional Requirements & Write RFP

- Identify functional & "non-functional" requirements:
  1. Understand the marketplace.
  2. Understand existing standards.
  3. Apply "use cases".
- Write Request for Proposals (RFP)

## Functional Requirements

- Tasks/functions/processes the system needs to perform
- Identify problems and issues to be solved by the system, e.g.:
  – Results reporting
  – Remote access
  – Many, many more

## Functional Requirements: Assessing Needs

- Conduct needs assessment and prioritize needs.
- Identify must-haves, want-to-haves, and not-criticals.
- Map identified needs to the features and functionality which will address them.

## Functional Requirements: Scan the Marketplace

- Browse the internet for ideas.

- Consult trade publications.

- Read specs and vendor guides.

## Functional Requirements: HL7 Standard

- Health Level Seven (HL7) functional model
  - Functional statements describing an ideal EHR for all types of providers
    - Does not distinguish functions by specific type of care delivery organization
  - Conformance criteria for each functional statement

## Functional Requirements: HL7 Standard (cont'd)

- Learn the HL7 language describing EHR functions relative to the standard.
  - "Shall": mandatory
  - "Should": optional, recommended
  - "May": optional or permissible
- Learn to read the model.
  - Three sections: direct care, supportive, & information infrastructure
  - Hierarchical list
- Review and select relevant sections.

## Functional Requirements: HL7 Standard (cont'd)

• Example (from library.AHIMA.org)

| Statement | Conformance Criteria |
|-----------|---------------------|
| Provide patient data in a manner that meets local requirements for deidentification | 1. The system **shall** provide de-identified data according to realm-specific law or custom when requested by an authorized internal or external party.<br>2. The system **should** comply with I.2.4, Extraction of health record information (conformance criteria 2). (The system should provide de-identification functionality for extracted information.)<br>3. The system **may** provide the ability to export de-identified data to authorized recipients.<br>4. The system **may** provide a key with de-identified data to enable re-identification of the data or the contact of primary care provider. |

## "Non-Functional" Requirements

• Attributes of system as a whole (rather than specific user tasks), such as:
  – Usability
    • Ease with which system can be learned and used
  – Reliability
    • Degree of uptime system must provide for users
  – Performance
    • How well system works; e.g., response time, capacity
  – Supportability
    • Ability to easily modify or maintain system

## "Non-Functional" Requirements (cont'd)

  – Scalability
    • Ability to increase number of users or applications
  – System requirements
    • Operating systems, specific hardware or platform requirements, any special environmental requirements
  – Legal and regulatory requirements
    • Telecommunication requirements, compliance with Health Information Portability and Accountability Act (HIPAA), etc.
  – Security
    • Ability to provide confidentiality, data integrity, and data availability; e.g., HIPAA

# Use Cases

- Documented scenarios that explain how system should interact with end user or another system component to achieve specific goal or function
- Written in simple terms
- Focus on correspondence between workflow and system processes

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# Use Cases: Example

| PRE-EHR |
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| Joe pulls out his prescription pad and pen. |
| Joe consults with a pocket drug reference to check the usual dosing. |
| Joe glances at Jane's allergy list to make sure she is not allergic to the new medication. |
| Joe handwrites the drug name and "sig" (e.g. dose, route, frequency, quantity, refills). |
| Joe hands the handwritten prescription paper to Jane for her to bring to the pharmacy. |

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# Use Cases: Example
# (cont'd)

| POST-EHR |
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| Joe activates the e-prescribing module within the EHR. |
| Joe searches for and selects the drug he wants to prescribe, and he sees the usual doses, frequencies, etc, presented as options on-screen |
| The e-prescribing system checks behind the scenes to see whether Jane is allergic to the selected medication or whether it has any significant interactions with her other current prescriptions. |
| Joe fills in the required data to complete the prescription. If it is a commonly prescribed medication, he quickly selects a complete prescription (i.e. drug, dose, route, quantity, refills, etc) from a list of common options for that drug. |
| Joe asks Jane from which pharmacy she would prefer to pick up the medication, selects that pharmacy in the system, transmits the e-prescription, and tells Jane it should be available for pickup shortly. |

# Request for Proposals (RFP)

- Cover letter
- Introduction and selection process
- Background information, including organization size, specialty, current systems and hardware
- Desired EHR functionality

- Vendor information
  - Product description
  - Hardware & network components needed
  - Customer maintenance, support, warranties
  - Training available
  - System implementation plan
  - Proposed costs
  - Sample contract
  - References

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# #4: Determine RFP Recipients

- Four questions to ask in reviewing vendors:
  1. Does the software have a history of interfacing with your practice management system?
  2. Is the EHR typically marketed to practices of your size?
     - Small:      1-15 providers
     - Medium:   10-99 providers
     - Large:      100+ providers
  3. Does the EHR have favorable published ratings?
  4. Does the EHR system meet your functionality needs?

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# #5-6: RFP Responses, Vendor Demonstrations

- Committee reviews responses to RFP to choose best candidates.
- Attend vendor demonstrations.
  - Prepare patient scenarios, being sure to be consistent from one vendor to another.
  - Use standardized questions.
  - Prepare a ratings form.

# #7: Check References

- Check 3+ references for every vendor.
  - Good sources: physician user(s), IT staff, senior management
- Ask standardized questions.
- Categories to rank:
  - Background
  - Provider usage
  - Training and support
  - Implementation & hardware
  - Satisfaction

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# #8-10: Rank Vendors, Site Visits, Choose Finalist

- Use simple ranking tool.
- Rank based on:
  - Functionality
  - Total cost
  - Vendor characteristics
- Set up site visits with top 2-3 contenders.
- Select finalist and runner-up.

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# Hardware and Software Requirements

- Choosing the right hardware is an important factor in the EHR's overall performance
- Take a technology inventory as part of the selection process and compare your current hardware/ software with the vendor's recommendations
- Has your organization planned to purchase or upgrade technology to meet the these recommendations?

# Hardware and Software Requirements

- Does the EHR integrate well with your existing record keeping software or will additional software components be required?
- Will the EHR be scalable to foreseeable OS and hardware trends?
- Is the vendor committed over the long haul to ensuring the EHR will integrate with these new medical and computing technologies as they emerge?

# #11-12: Solidify Commitment, Negotiate Contract

- Sell your organization on the EHR.
  - Discuss committee recommendations with stakeholders.
  - Be prepared to "sell" your organization on EHR concept and particular vendor.
- Negotiate contract.
  - Contracts typically span 10 years or more.

# References

- "How to Select an Electronic Health Record System," by Kenneth G. Adler, MD, MMM. *Family Practice Management*. 2005 Feb;12(2):55-62. Retrieved May 9, 2011.
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- "Requirements Analysis," by Stratis Health.
  - http://www.stratishealth.org/documents/HITToolkitNH/1.Adopt/1.3Select/1.3.5Requirements_Analysis.doc
- "Using HL7 Standards to Evaluate an EHR," by AHIMA.
  - http://library.ahima.org/xpedio/groups/public/documents/ahima/bok1_03 1102.hcsp?dDocName=bok1_031102

- Discussion of organizations, with display of their logos, is for educations purposes only and does not imply endorsement of the material by the organization.
  - HL7 International: http://www.hl7.org