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Planning, budgeting, financing and managing EMR-related construction

Tuesday, December 15, 2009



What we won't cover today

- Vendor selection
- Device and hardware selection
- Process mapping and optimization
- Physician involvement
- Integration with third-party vendors
- Network architecture
- Cable management

What we will cover today

- The permanent infrastructure that ties it all together
- The strategic relationship between master planning, EMR implementation and major construction
- The critical path for EMR-related construction from needs assessment through go-live
- Jump starting your planning: Common (and commonly-overlooked) construction needs and opportunities
- Controlling your budget: Estimating costs for engineering, network infrastructure and general construction, and preventing change orders
- Strategies to secure funding
- The costs of getting it wrong

The need is clear

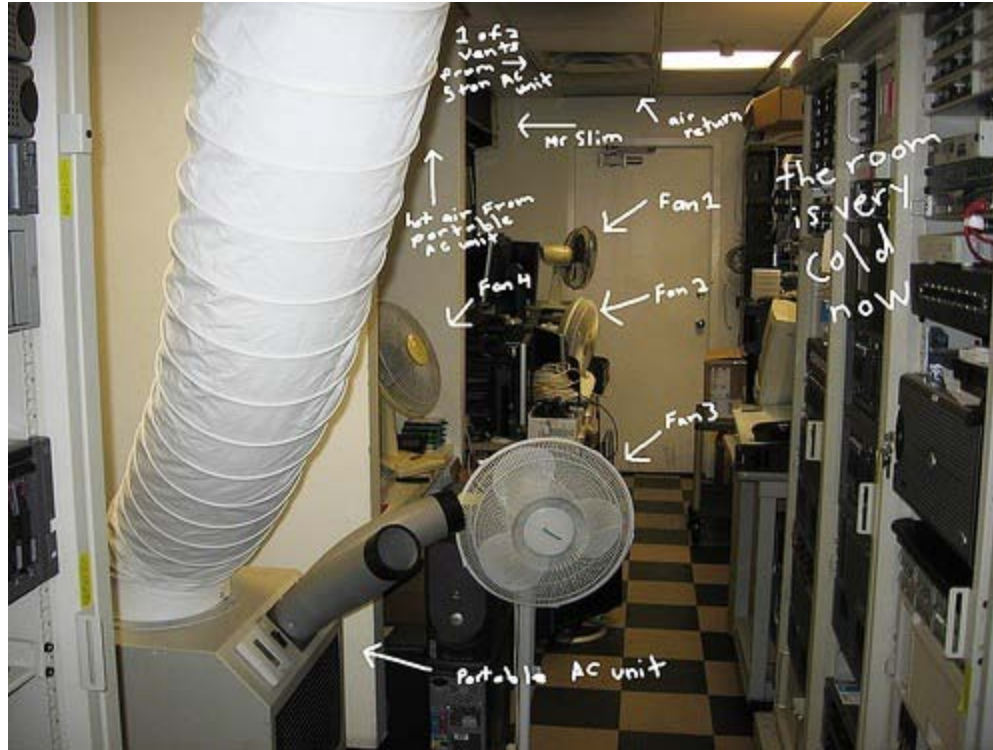
- To entrust patient care to an EMR, your infrastructure must be
 - 100% reliable
 - Flexible and scalable
 - Fast
- Rural America's infrastructure is not
 - Programmatic changes have placed your systems under stress
 - Deferred maintenance and upgrades
 - Inappropriate/inadequate IDF locations and sizes

Deferred Maintenance and Upgrades

- Lack of IDF/Phone Closet Ventilation
- “Solved” by relief vent cut in 20-minute fire-rated door



Deferred Maintenance and Upgrades



- Lack of MDF/Server Room Cooling
- “Solved” by rented portable AC unit and fans brought from home

Deferred Maintenance and Upgrades



- Inadequate MDF/Server Room Fire Protection
- “Solved” by good lawyers and insurance

Inappropriate/inadequate IDF locations and sizes

- A true Phone Closet
- Located in a clinic



Inappropriate/inadequate IDF locations and sizes

- Above a ceiling



Inappropriate/inadequate IDF locations and sizes



- In a former broom closet in the hallway outside ER and ICU in a rural hospital
- Note the gear mounted on back of operable door

Chicken or Egg?

- Put the following in order:
 - EMR implementation
 - Facility master planning
 - Major construction
 - Strategic planning

Concrete is forever

1. Strategic planning – Identification of the services needed to support the health of your communities
2. Facility master planning – Planning of the facilities needed to support the strategic plan
3. EMR implementation – This will dramatically change the way you deliver care
4. Major construction – Construction locks you into a care delivery model for 20 – 40 years

Who does what when

1. Needs assessment by IT, Telecommunications and Plant Operations
 - Size, capacity and location of facilities
 - Redundancy
 - Cabling
 - Fire protection
 - Emergency power and UPS
 - Ventilation and cooling
2. Preliminary budget established for EMR-related construction
3. Solicitation and selection of engineers
4. Architectural and Electrical and Low-voltage drawings and permits
 - Conceptual wireless assessment
5. Bidding of EMR-related construction scope of work
6. Performance of EMR-related scope of work
7. Quality control and testing
 - Final wireless assessment
8. Go live

What the needs assessment will tell you

- IDF's must be relocated, expanded and added
- MDF's and Server Rooms must be relocated if in the way of the Master Plan
- Patient care areas need revisions to nurse stations
- Charging, docking and storage are required
- Redundancy upstream from the MDF may be desired
- All comm/data facilities need ventilation, cooling, fire protection and Epower or UPS protection
- Other non-comm/data facilities must be relocated to make way for relocated, expanded or added IDF's

High-level budget multipliers

- \$.15 - \$.25 Per square foot for low voltage engineering
- \$1 - \$2 Per square foot for cabling
- \$.25 - \$.75 Per square foot for general construction
- **\$1.40 - \$3.00 TOTAL PER SQUARE FOOT**

Hypothetical Construction Costs

- **Assumed: 25-bed, 75,000 SF CAH**
- \$11,250 - \$18,750 Low voltage engineering
- \$75,000 - \$150,000 Cabling
- \$18,750 - \$56,250 General construction
- **\$105,000 - \$225,000 TOTAL**

What is General Construction?

- Construction of new IDF's to replace deficient phone boards
- Fire protection changes and additions
- HVAC changes and additions
- Casework revisions
- Charging stations
- Device storage

Typical Fire Protection Costs

- Existing wet system extended into non-sprinkled IDF/Phone Closet: \$500 each
- Existing Server Room wet system converted into a pre-action system: \$6,000 - \$10,000 each
- Existing wet system replaced by FM-200: \$25.00 - \$31.25/*Cubic* Foot. Cost and volume are inversely proportional.
 - Large IDF example:
 - Room dimensions: 8x10x8' high = 640 CuFt
 - 640 CuFt x \$31.25/CuFt = \$16,000 - \$20,000

Typical IDF Ventilation Costs

- \$2,000 Supply and return ducts
- \$5,000 Fire-smoke dampers on both supply and return ducts
- \$2,000 VAV box, controls and thermostat
- **\$9,000** **TOTAL PER IDF**

Notes to using budget multipliers

- Actual costs vary widely, and are affected by:
 - Geographic region
 - Vendor, device and hardware selections
 - Permitting requirements
 - Existing conditions
 - Number, type and size of MDF's and IDF's
 - Building construction type
 - Requirements for plenum-rated cable
 - Hospital ICRA and access policies
 - Hospital building and technology standards
- Until you have a bid from subcontractors off engineered drawings, the budget isn't real

The bright side

- With the implementation of an EMR, the need for onsite medical records storage can be eliminated, creating the opportunity to capture space for revenue generating services

Securing Funding

- Not-for-profit affordable housing advocacy groups see an overlap in mission, and will support your needs assessments and engineering work
- Many of these same groups can advise you on how to access bond markets
- Some telecommunications utilities – especially fiber optic providers – will pay for some or all of the cost to bring a redundant service to your site

The cost of getting it wrong, Part 1

- Single sourcing engineering or construction can add between 5 and 15% to the cost
- Accelerating either scope of work will add between 25 and 50% to the cost
- Rushing the needs assessment or engineering phases increases the likelihood of bad design
- Starting the process late will leave you with less time for QA prior to go live

The cost of getting it wrong, Part 2

Petition given to [REDACTED] administrators | | The [REDACTED] Page 1 of 2

Petition given to [REDACTED] administrators

560 nurses voice concern over future of patient care, hospital management

By [REDACTED]

Published: [REDACTED], 200[REDACTED]

Nearly 560 employees of [REDACTED], parent company of [REDACTED] in [REDACTED] and [REDACTED], recently signed a petition saying they are concerned the hospital has lost sight of its mission and is making decisions that will harm patient care.

The petition was hand delivered to administrators Wednesday and mailed to [REDACTED] board directors Tuesday, said [REDACTED] of the [REDACTED]. [REDACTED] is the labor representative for [REDACTED] registered nurses and has been helping nurses negotiate with the hospital recently on a variety of labor issues.

"I was amazed at the depth of feeling of many of the nurses," [REDACTED] said. "We were able to distribute this and got more than 500 signatures in about two weeks. That tells me [REDACTED] has alienated its nurses and that is not a good position to be in."

[REDACTED], chairman of the [REDACTED] board, said he had not yet received his copy of the petition Wednesday morning but he is aware of issues that have been raised by the staff.

"The board has delegated addressing those concerns to management," [REDACTED] said. "The board has delegated to management and holds management accountable for relations with all caregivers and the public."



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Seattle, WA
Portland, OR
Los Angeles, CA
www.jrabbott.com



Matt Paine

Senior Project Manager

15171 SW Bangy Road, Suite 116

Lake Oswego, OR 97035

mpaine@jrabbott.com

C 503.757.3562

O 503.213.4033

F 503.210.6557

Please contact me with any questions.