PLANNING THE PURCHASE OF A RADIATION THERAPY TREATMENT PLANNING SYSTEM

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• Numerous Vendor Conversations

Disclosure

• University of Michigan has research agreements with Varian Medical Systems, a manufacturer of Treatment Planning Systems

Disclosure 2

• We are in the process of evaluating treatment planning systems

Department of Radiation Oncology • University of Michigan Health Systems
Questions to ask before you ‘start’

• How is a new TPS going to impact your current processes for:
  – Imaging?
  – Planning?
  – Delivery?

Questions to ask before you ‘start’

• Network Integration
  – What changes will be necessary in order to import imaging data?
  • Current Needs
  • Anticipated Needs
  – How will treatment delivery information be transferred to the delivery system?
  • Safety Checks
  • Additional Software required at delivery management system?
  – How do you determine inter-system compatibility before you purchase?

Network Integration

Some Possible Answers

• Minimally
  – Generally means same manufacturer and product line, e.g. an upgrade
• More than I know
**Before you ‘start’**

- Too often, all the effort is exerted in identifying the ‘right’ TPS to purchase, and not on how to integrate it into your planning process.
- Although most planning systems have similar feature sets, particular implementations may cause significant changes in your current planning process.
  - Dose Normalization
  - Evaluation Tools
  - Plan Documentation

**Purchase Process**
*(From IAEA-430)*

- Assessment of Need
- Request for Information
- Vendor Demonstrations
- Tender Process
- Selection
- Purchase

**Assessment of Need**
*(From IAEA-430)*

- Technical assessment
- Performance of the TPS
- Benefits of the TPS
- Manufacturer’s sales strategy
- Radiotherapy Department’s needs
- Standards and guidelines
- Standards of recommended practice
- Dosimetry calculations
- Treatment planning verification
- Treatment delivery verification
- Dosimetric commissioning
- Treatment data integrity
- Total investment
- Training needs for the staff
- Overall benefits
- Initial cost

**Some Useful References**

- American Association of Physicists in Medicine (AAPM)
- Radiation Therapy Committee Task Group 92: Quality assurance for clinical radiotherapy treatment planning
- IAEA: International Atomic Energy Agency
Putting Together a Plan

- Necessary TPS Functionality
- Required Infrastructure
- Enterprise Architecture
- Deployment Strategy
  - Acceptance Testing
  - Clinical Commissioning
  - Training
  - Support
- System Evolution
- Business Plan

Information Gathering

 Treatment Planning Across the Enterprise

The Next Step

- Gather input from enterprise
- Access special and similar needs
- Discuss / Evaluate Options
- Single or Multiple Vendor Solutions
- Impact on Clinics and Research
- Investigate research collaboration
- Move research to commercial systems?
How are you going to keep the system up-to-date?

- Service Contracts
- Upgrades vs Updates
- Hardware Obsolescence
- Continued Training
- New Integration Requirements
Making it work

- In general it will take 6-9 months to commission a new planning system and integrate it into routine operation
  - Available resources?
    - Dual Planning System Operation
    - Space (Servers, Desktop, Network)
    - Training
  - Clinic Pressure
    - Roll out the new features that drove the decision
    - Site-by-site transition (prostate, lung, head & neck, ...)

Making it work

- There will be features that prevent doing things "the way we've always done them" that you did not expect
  - No possible way to fully explore all changes resulting from the new TPS
  - Some changes will be subtle and may not become clear until after significant use
    - Dose Algorithms / Calculation Changes
      - Heterogeneity Corrections
      - Dose Grid constraints
    - Optimization / Evaluation Tools
      - Objective Function Building blocks

The End

- The end
  - No optimist, a pessimist & an optimist
    - The glass is half full
    - The glass is half empty
    - Unnamed