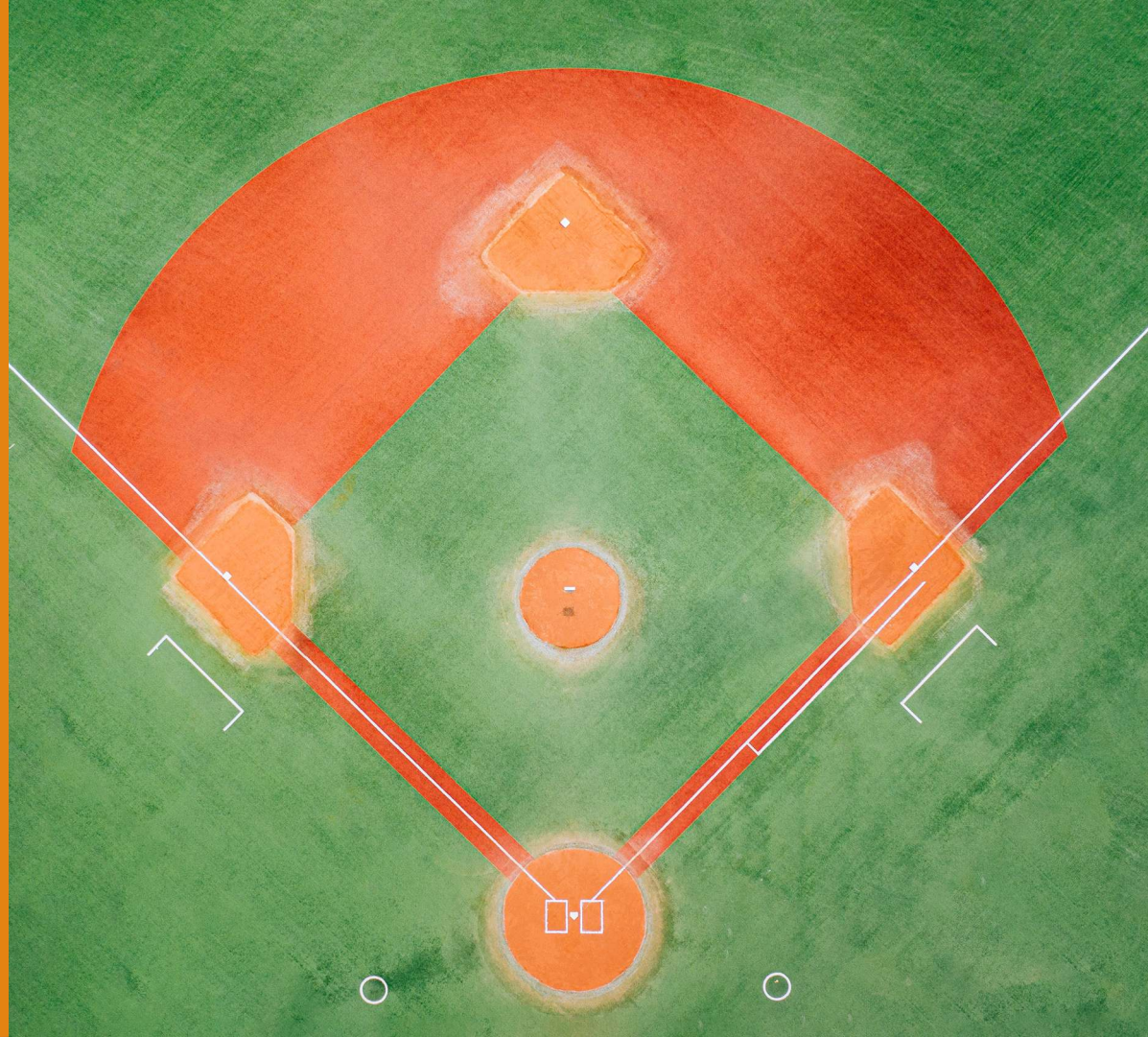


The Return On Investment for Clinical Engineers

This is about fielding the right team

THIS ISN'T ABOUT
JUSTIFYING YOUR
DEPARTMENT



This is about augmenting your team

THIS ISN'T ABOUT
REPLACING YOUR
TECHNICIANS

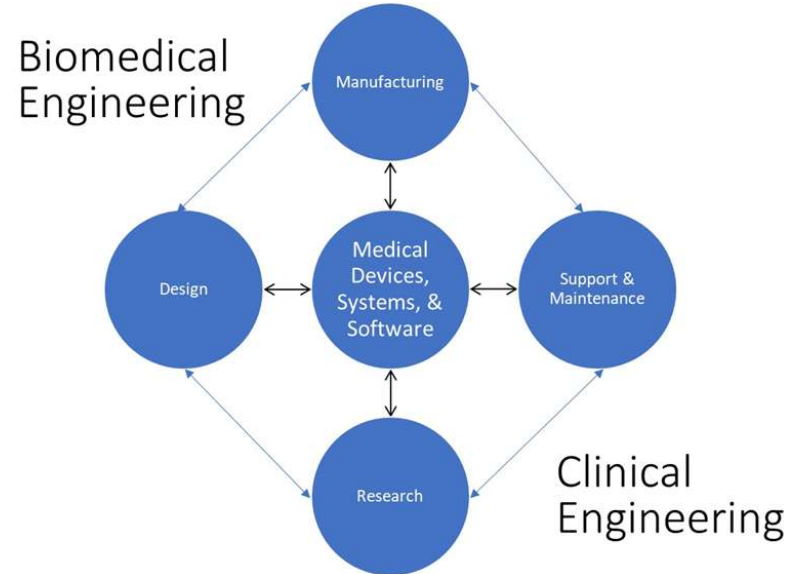


How is a Clinical Engineer different?

Applied biomedical engineering

Implementation and management
rather than design and/or manufacture
of medical devices

Source of **real-world feedback** to
influence future designs and/or
manufacturing processes.



What does a Clinical Engineer do?

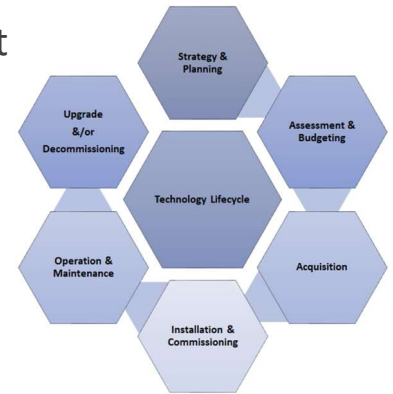
ENGINEERING

- Technical design analysis
- Human Factors design analysis
- Hazards analysis
- Reliability analysis
- Forensic analysis
- Interface & integration design
- Care delivery environment design



TECHNOLOGY MANAGEMENT

- Lifecycle Management
- Risk Management
- Project Management
- Financial Management
- Data Analytics



VISION

HTM will deliver the right technology, at the right location and right time with the right support to ensure the right clinical outcomes.

MISSION

HTM enables safe patient care through medical technologies, operational excellence, and value.

People

GOAL

Recruit, hire, and retain top talent to minimize the number of open positions and thereby reduce the negative impact on HTM and clinical operations.

INITIATIVES

Immediate

1. Engage HTM recruiter

Near Term (1-2 yrs)

2. Create or adopt additional job families - technical, engineering, management, business analytics.
3. Reassess service areas (geographies) and workload distribution.

Technology

GOAL

Optimally acquire the medical equipment necessary for clinical care delivery and the management system required to manage and maintain it.

INITIATIVES

Immediate

1. Implement more robust project management of the CMMS implementation and optimization
2. Standardize BME work processes and documentation in the CMMS

Near Term (1-2 yrs)

3. Establish a 5-year forecast of medical equipment replacement requirements.

Governance

GOAL

Establish and maintain a forward-looking Medical Equipment Management Program (MEMP).

INITIATIVES

Immediate

1. Draft (revise) the MEMP including all HTM policies, processes, and procedures.

Near Term (1-2 yrs)

2. Create a formal BME project delivery & management program

Financial Stewardship

GOAL

Optimize the financial resources allocated to HTM for the health system's benefit.

INITIATIVES

Immediate

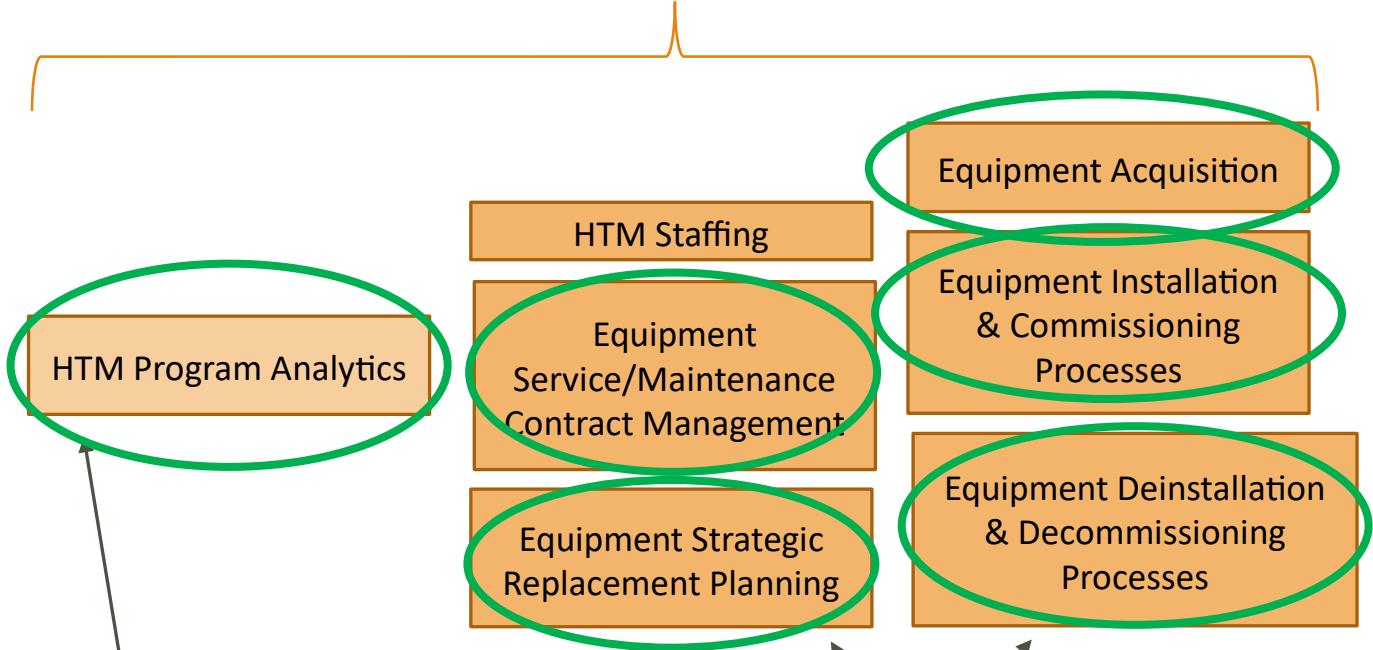
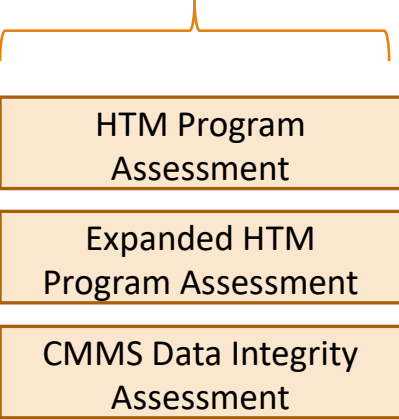
1. Create an HTM Business Management Office

Near Term (1-2 yrs)

2. Create a formal BME financial management program inclusive of operational and capital expenses.

High-Level Assessments

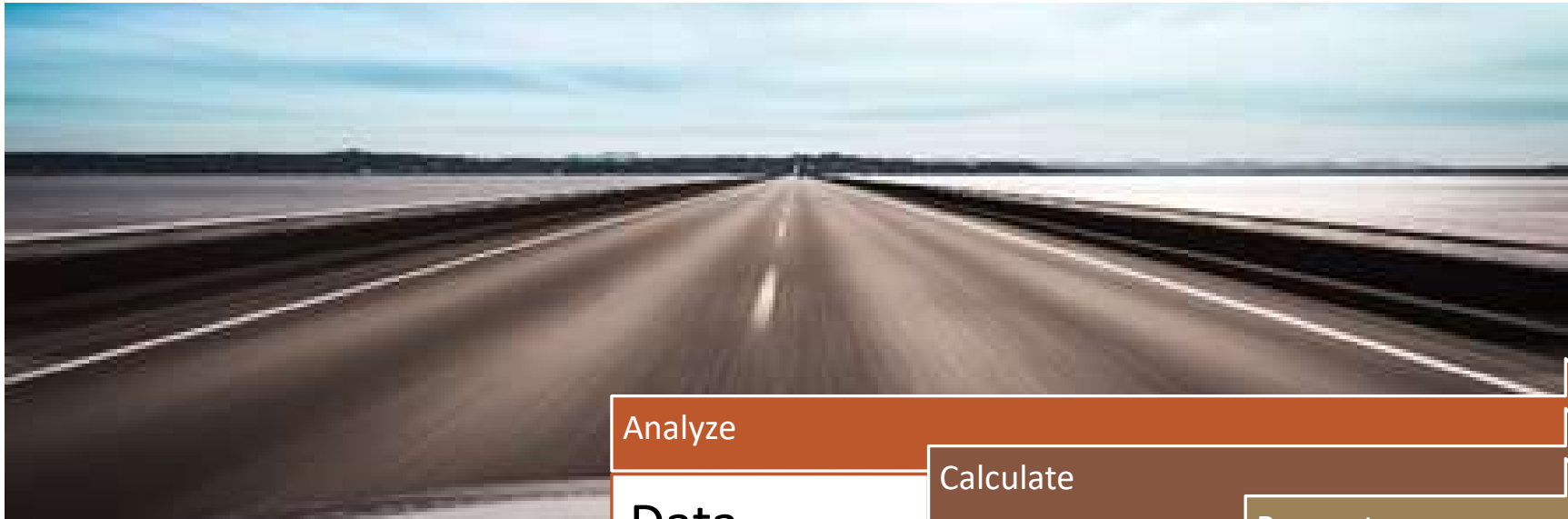
In-Depth Assessments



What needs to be measured?

Design-Build the future state HTM Program





Roadmap ...

Analyze

Data

2020 Clinical Engineers Salary Survey



Calculate

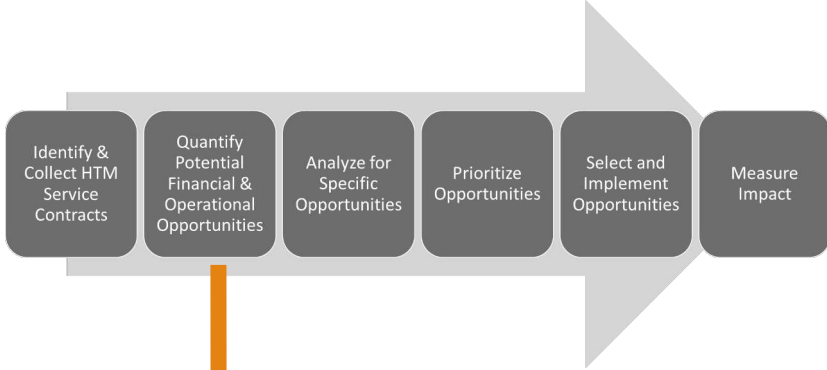
Savings

Request

Allocation

\$60k - \$150k

Data collection and analysis by
McGraw Hill Research Analytics



Equipment Service/Maintenance Contract Management

Fund technician
(familiar)

Benchmark Acquisition Pricing	Modality	Annual Contract Cost	Target Cost	Potential Savings (Target)	% Savings (Target)	Aggressive Cost	Potential Savings (Aggressive)	% Savings (Aggressive)
\$100,000.00	Biomedical	\$14,000.00	\$5,000.00	\$9,000.00	64.29%	\$3,000.00	\$11,000.00	78.57%
\$100,000.00	Imaging	\$27,000.00	\$15,000.00	\$12,000.00	44.44%	\$10,000.00	\$17,000.00	62.96%
\$100,000.00	Laboratory	\$13,000.00	\$15,000.00	(\$2,000.00)	-15.38%	\$10,000.00	\$3,000.00	23.08%

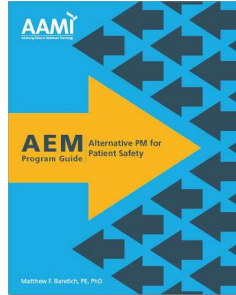
Fund clinical engineer
(proposed)

Assume responsibility for analytics and vendor management

“Return” hours to management staff

Mean Time Between PM-Related Failures

$$\text{MTBF}^{\text{PM}} = \frac{(\# \text{ devices})(\# \text{ years analyzed})}{(\text{PM-related failures only})}$$



Fund clinical engineer
(proposed)

AEM Program Design & Management

Reduce PM Costs
(familiar)

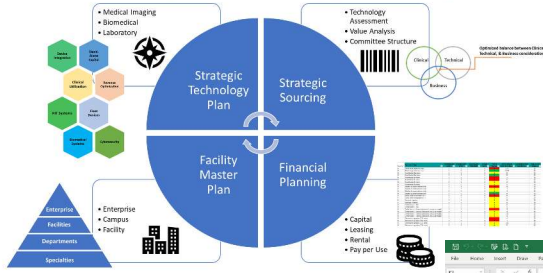
Safety Equivalency to OEM

Regulatory Compliance

Assume responsibility for analytics and compliance

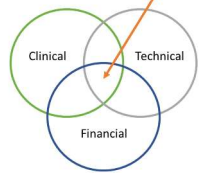
“Return” hours to management staff

Strategic Technology Planning



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Optimal balance between Clinical, Technical, & Financial considerations



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Equipment Strategic Replacement Planning

Influence the prioritization of capital spending

Communicate with executives

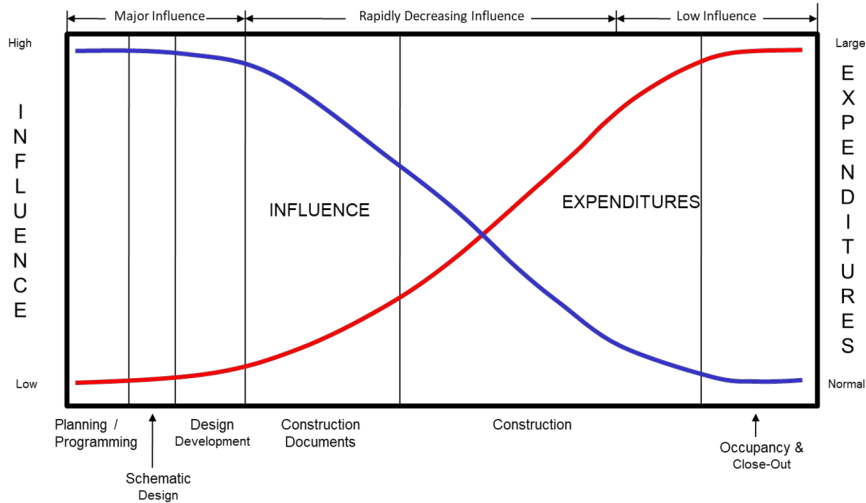
Align HTM resources

Fund clinical engineer
(proposed)

Assume responsibility for analytics and stakeholder engagement

“Return” hours to management staff

Influence vs. Expenditures



The ability to control cost on a project diminishes as the project moves from design through construction. Changes should be made as early as possible during the process. Decisions regarding scope of work made during the design phase are easier to implement than during the construction phase. This concept is summarized by these curves.



Fund clinical engineer
(proposed)

Construction/Renovation Equipment Planning

“Change Orders”

Develop equipment lists

Review infrastructure requirements and project plans

Make decisions early on major modality equipment

Assume responsibility for project management and stakeholder engagement

“Return” hours to management staff

Clinical Engineers Bring it all Together



Fund clinical engineer

(proposed)

Assume responsibility for “handling all things” related to health technology. Be invaluable to clinical services.

“Return” hours to Medical staff

Facilitate on behalf of
Clinical Departments

Understand Clinical Applications & Workflows

Liaison to:

IT; Info Security

Quality & Safety; Procurement; Finance;
Equipment Suppliers; Vendors;
Site Readiness; Construction Team; FMS;
Other Clinical Services

Brief Executive Leadership

Celebrate Successes!

Critique Processes, Capture Lessons Learned,
Continuous Improvement

Front line staff are ESSENTIAL to team success

THIS ISN'T ABOUT NEEDING
MORE ON-FIELD TALENT

OR REPLACING YOUR
TECHNICIANS

OR YOU WORKING HARDER



This is about
augmenting the
team with
complementary
skills sets



THIS ISN'T ABOUT YOU
OBTAINING AN ENGINEER
DEGREE

OR GETTING WAY MORE
TRAINING

OR ALTERING HOW YOU
APPROACH YOUR WORK



This is about
getting the right
people doing
the right work

ROUND OUT THE TEAM

MAXIMIZE VALUE TO YOUR
INSTITUTION

ACHIEVE PERPETUAL
EXCELLENCE



Questions?

THIS IS ABOUT YOU WORKING
SMARTER



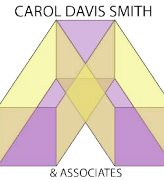


Kurt Finke
Coach

Finke Clinical Engineering LLC

Kurt@FinkeCE.com 651.443.6929

FinkeCE.com



Carol Davis-Smith, MS CCE

President

Carol Davis-Smith & Associates, LLC

Carol@CDSAssoc.com



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