

Concept Selection

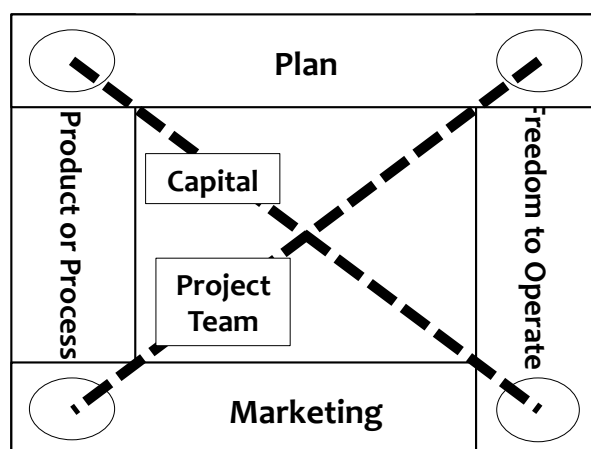


Bob Barnes and Marilyn Lombardi

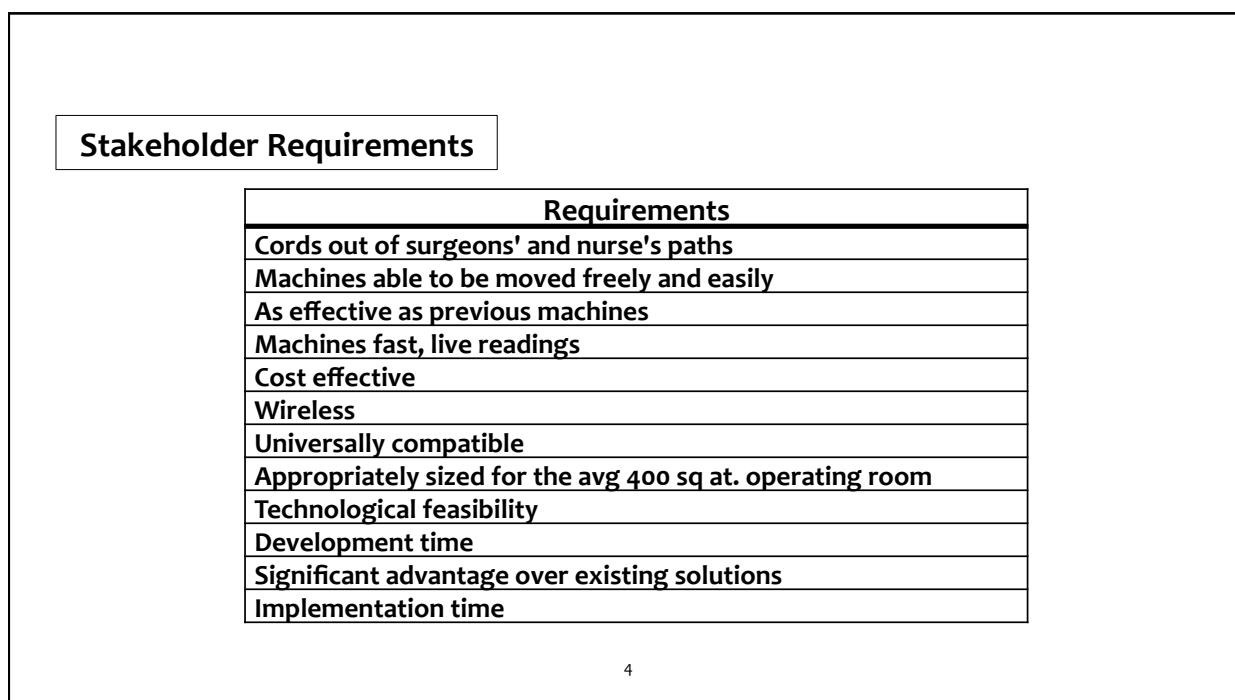
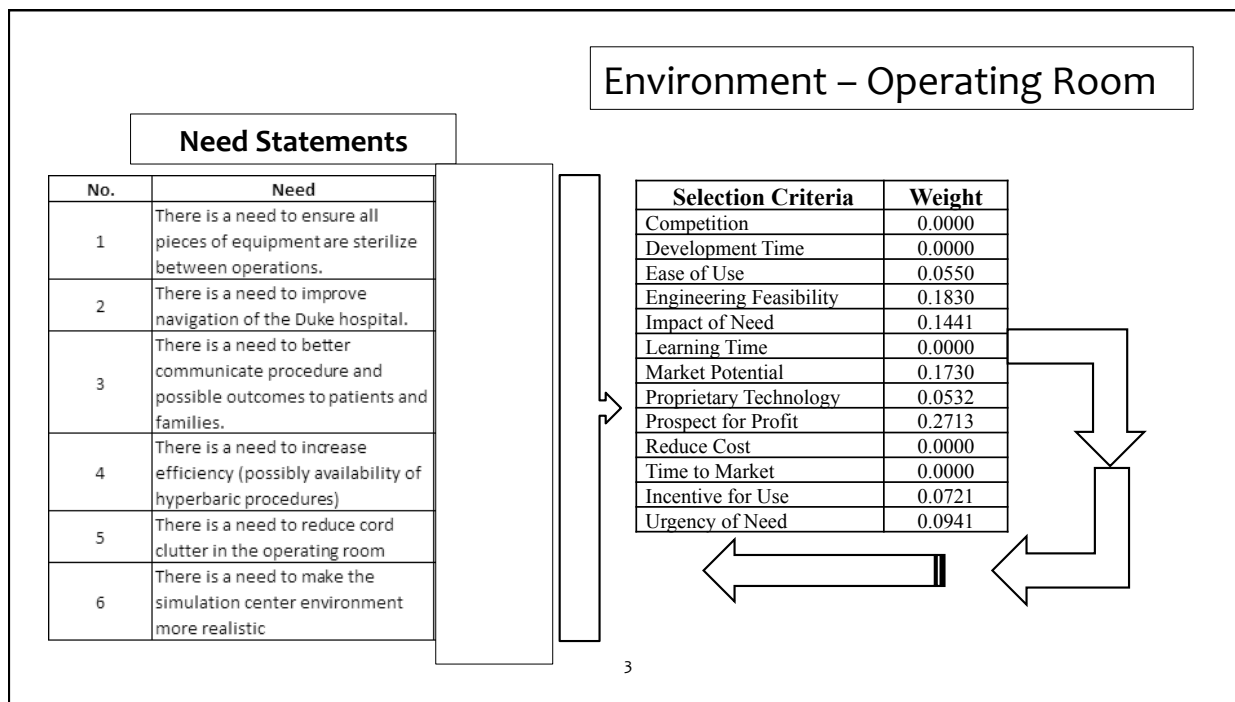


1

Project Constraints Further Limit Selection

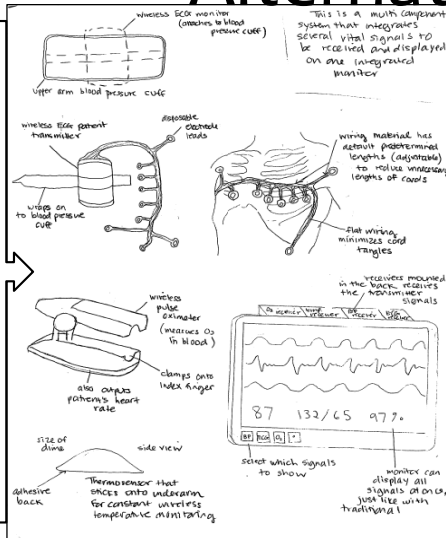


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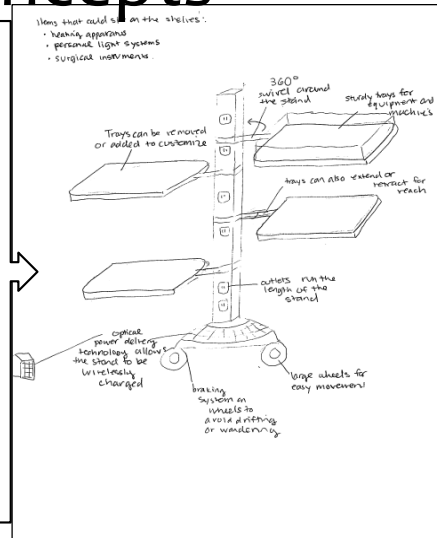
Alternative Concepts

1. Multi vital signal wireless monitor



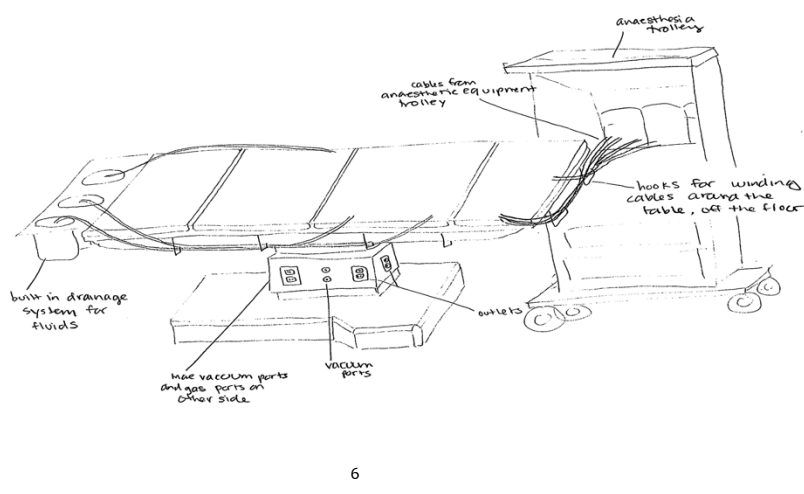
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2. Wheeled cart



Alternative Concepts

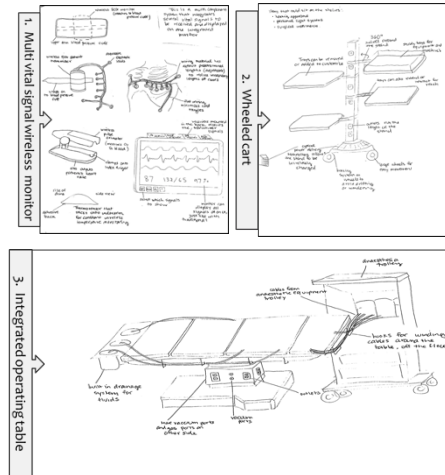
3. Integrated operating table



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Stakeholder Requirements

| Feature | Weight |
|---|------------|
| As effective as previous machines | 23.46 |
| Machines fast, live readings | 17.94 |
| Cords out of surgeons' and nurse's paths | 12.07 |
| Machines able to be moved freely and easily | 10.43 |
| Technological feasibility | 7.64 |
| Wireless | 7.01 |
| Significant advantage over existing solutions | 5.98 |
| Appropriately sized for the avg 400 sq at. operating room | 4.88 |
| Cost effective | 4.83 |
| Implementation time | 2.25 |
| Development time | 1.92 |
| Universally compatible | 1.58 |
| Total | 100 |



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Conceptual Alternatives

| No. | Solution | Total |
|-----|-------------------------------------|-------|
| 1 | Multi vital signal wireless monitor | 72.03 |
| 2 | Wheeled cart | 80.99 |
| 3 | Integrated operating table | 72.23 |

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| Link Requirements to Attributes and Units | | | Specifications: Metrics (Attributes) and Units | | | | | | | | |
|---|---|--|--|----------|-------------------|--------------------|----------|------|-----------|-------|---------------------|
| | | | | A | B | C | D | E | F | G | H |
| | | | Units | % error | seconds | # | ft/min | feet | Y/N | \$ | days |
| No. | Wants and Needs from the Need Specification Section IV and Stakeholder Assessment | Revised Importance: Weighting from AHP (sum to 100 points) | Metrics - Attributes | Accuracy | Speed of Readings | # of cords reduced | Mobility | Size | Wireless? | Price | Implementation Time |
| 1 | Same effectiveness as before | 32.94 | | x | | | | | | | |
| 2 | Machines must give fast, live readings | 21.43 | | | x | | | | | | |
| 3 | Cords must be out of surgeons' and nurse's paths | 15.71 | | | | x | | | | | |
| 4 | Machines must be able to be moved freely and easily | 10.88 | | | | | x | | | | |
| 5 | Appropriately sized | 6.38 | | | | | | x | | | |
| 6 | Wireless | 6.36 | | | | | | | x | | |
| 7 | Cost effective | 4.58 | | | | | | | | x | |
| 8 | Universally compatible | 1.72 | | | | | | | | | x |

Identified through Brainstorming

At least one per row and column

| Link Attributes to Values | | | Existing Product or Source or Provider or Vendor | | | Target | |
|---------------------------|-------------------|---------|--|--|---|--|---|
| | | | GE HealthCare ApexPro Cardiac Monitoring System | LifeSync (ECG monitor) | Draeger Infinity Omega Patient Monitoring System | Ideal | Marginal |
| Metric ID. | Metric | Units | | | | Values | |
| 1 | Accuracy | % error | In one test, identified 3/3 alarms correct, leading competitors identified 1/3 | one study found alarm accuracy to increase from 46% to 92% | "unprecedented degree of accuracy" - in reference to the ECG monitoring segment | 100%, or improved over traditional methods | 95% confidence intervals |
| 2 | Speed of Readings | seconds | implied same as traditional readings | implied same as traditional readings | implied same as traditional readings | instantaneous | <3 seconds (does depend on signal being measured) |

Abbreviated Chart

Design = often misunderstood

