

Innovative Maintenance Strategies to Improve ITS Financing Capabilities

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Overview

- ITS maintenance in rural areas poses different challenges than in more urbanized areas
- Strategies exist to BOTH improve device health AND gain more budget certainty; improving ROI
- Performance-based contracting allows DOTs to meet both goals; healthier systems, more control over maintenance budget resources

Rural ITS Maintenance Challenges



Challenging Geography

Rural ITS Maintenance Challenges



Vast Distances Between Devices

Rural ITS Maintenance Challenges



Limited Availability of A/C Power

Rural ITS Maintenance Challenges



Limited Communications Options

Rural ITS Maintenance Challenges



Unique Safety Challenges

Rural ITS Maintenance Challenges



Unique Systems

Rural ITS Maintenance Challenges



Roadway Design

Innovative Rural ITS Maintenance Strategies

“So how do I design a maintenance program that improves the overall health of my ITS assets and provides better control over my maintenance budget?”

– Rural ITS Maintenance Engineer

The Golden Rule

“If you are going to invest in and procure ITS systems then you must *maintain* those systems to maximize your return on investment.”

– Wise old consultant

“Tell me more.”

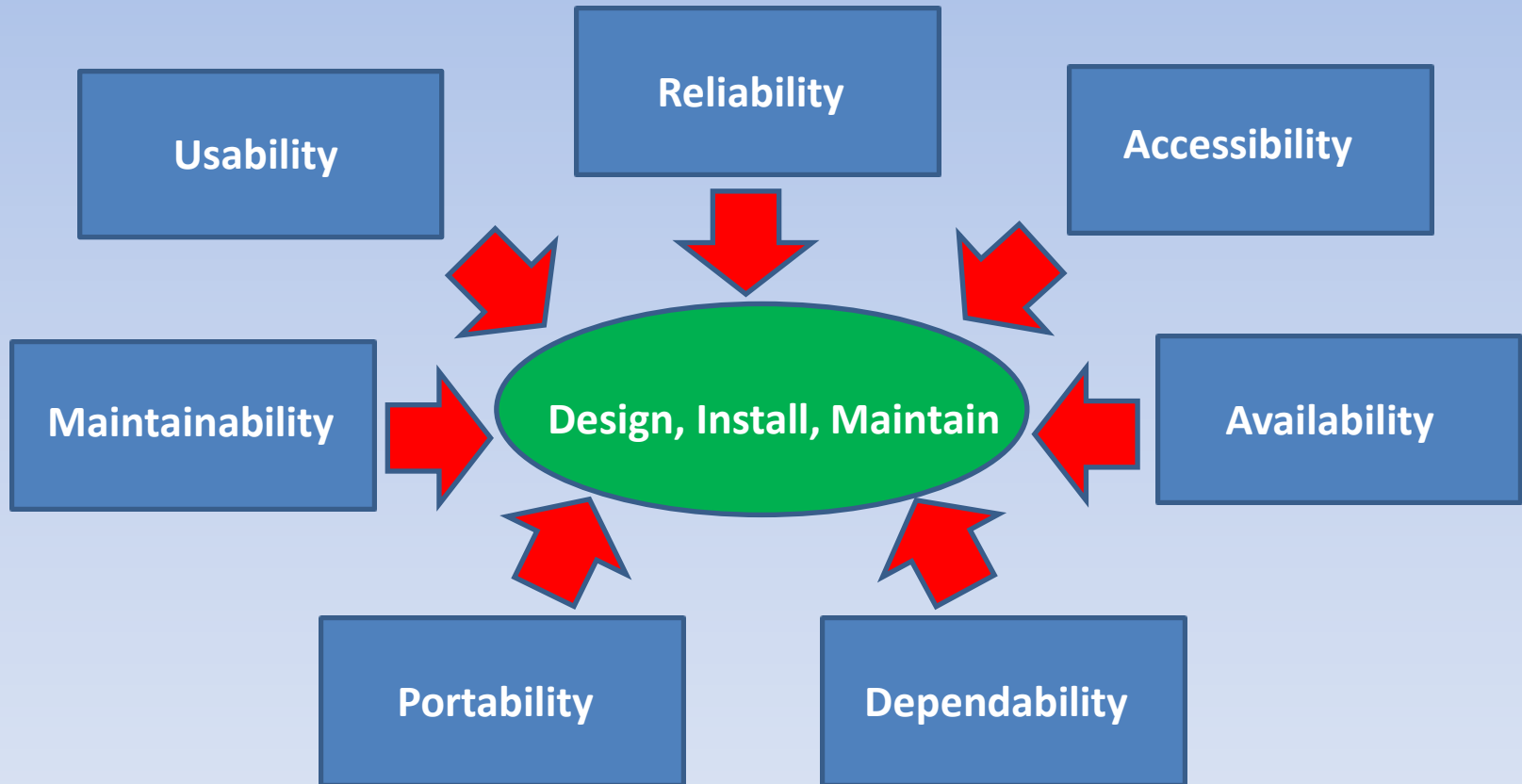
– Rural ITS Maintenance Engineer

Traditional Hierarchy of Needs

- Operational Requirements
- Systems Needs
- Performance Specification
- Installation
- Operation
- Maintenance

Unfortunately, maintenance should not be at the bottom but rather throughout the process to ensure the highest potential for long term ROI

Step One: Design for Maintenance



Step Two:

Develop a Maintenance Plan

- Document maintenance activities
- Develop and maintain a cost database
- Maintain Design/Install as-builts
- Analyze Maintenance Requirements
- Analyze Staffing Requirements
- Prioritize Maintenance Needs
- Develop Maintenance Plan

Step Three:

Develop An Outsourcing Strategy

Outsource contract types:

- Low bid
- Time & materials
- Performance-based contract

In all cases, uniform performance standards must be established and maintained

Outsource Options

- **Low bid**
 - You get what you pay for
- **Time & Materials**
 - I'll keep fixing it because you keep paying me to do so
- **Performance-based**
 - RFP-based; qualifications & price
 - Pay for results
 - Many options, up to and including full turn-key service

P-based Contract Considerations

- **Operational Factors**
 - Critical systems
 - Response times v. down times
 - Time of year
 - Emergency response
- **Management**
 - Asset Management
 - Inventory & Configuration
 - Service database
 - Reliability data
- **Preventative Maintenance**
 - Periodic schedules by site by field device
 - Periodic definition
- **Performance Factors**
 - Incentive-based
 - Operation-based
 - Penalties
 - Risk/Rewards
- **Warranties**
 - Field device in warranty management
- **Repairs**
 - Stocking/inventory requirements
 - Repair times

Step Four:

Use Technology to Your Advantage

- The road-trip not taken saves money
- Automated system monitoring
- Remote access, diagnostic and reset capabilities
- Alternatives to copper-based telco lines
- IP accessibility

What about that budget certainty?

- **Preventative Maintenance**
 - Based on asset type and manufacturer's recommendations
 - Once or twice per year
 - Be prepared to conduct routine maintenance during PM cycle
 - *Fixed fee per year based on number and type of devices*

What about that budget certainty?

- **On-Call/Routine Maintenance**
 - Unlimited number of call-outs per year
 - Remote access and diagnostics reduces call-outs
 - No need to track or bill at FLHRs
 - No mobilization payments
 - *Fixed fee per year based on number and type of devices*
 - *Incentive-based payment approach aligns the contractor's interests with your own*

Example: Incentive-based Program

Criteria	Method of Measurement	Maximum Points
Service Call Acknowledgement	# of call responses within spec / # of total calls: <ul style="list-style-type: none"> • 1 = 100% of • Less than 1 to 0.50 = 30% of • Less than 0.50 = 0% 	10
Priority Group One Equipment (8 Hour Repair Time)	# of repair actions within spec / # of repair actions requested: <ul style="list-style-type: none"> • 1 = 100% of • Less than 1 = 0% of 	30
Priority Group Two Equipment (72 Hour* Repair Time)	# of call responses within spec / # of total calls: <ul style="list-style-type: none"> • 1 = 100% of • Less than 1 to 0.50 = 30% of • Less than 0.50 = 0% 	15
Priority Group Three Equipment (5 Business Day Repair Time)	# of call responses within spec / # of total calls: <ul style="list-style-type: none"> • 1 = 100% of • Less than 1 to 0.50 = 30% of • Less than 0.50 = 0% 	5
Adherence to PM schedule	# of PM actions completed within spec and PM schedule / # of PM actions scheduled: <ul style="list-style-type: none"> • 1 = 100% of • Less than 1 = 0% 	40
Total Maximum Points		100

Results of Performance-based Contract Approach

- Known fixed cost to DOT
- Known risk to DOT – contractor assumes all risk
- Guaranteed maximum price to DOT
- Fixed fee with incentive-based payment schedule incentivizes contractor to meet DOT performance goals as efficiently as possible and maximize overall system health
- Task order capability for device replacements / upgrades
- Higher system availability
- Improved operational capabilities



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