Tips and Techniques
to Manage
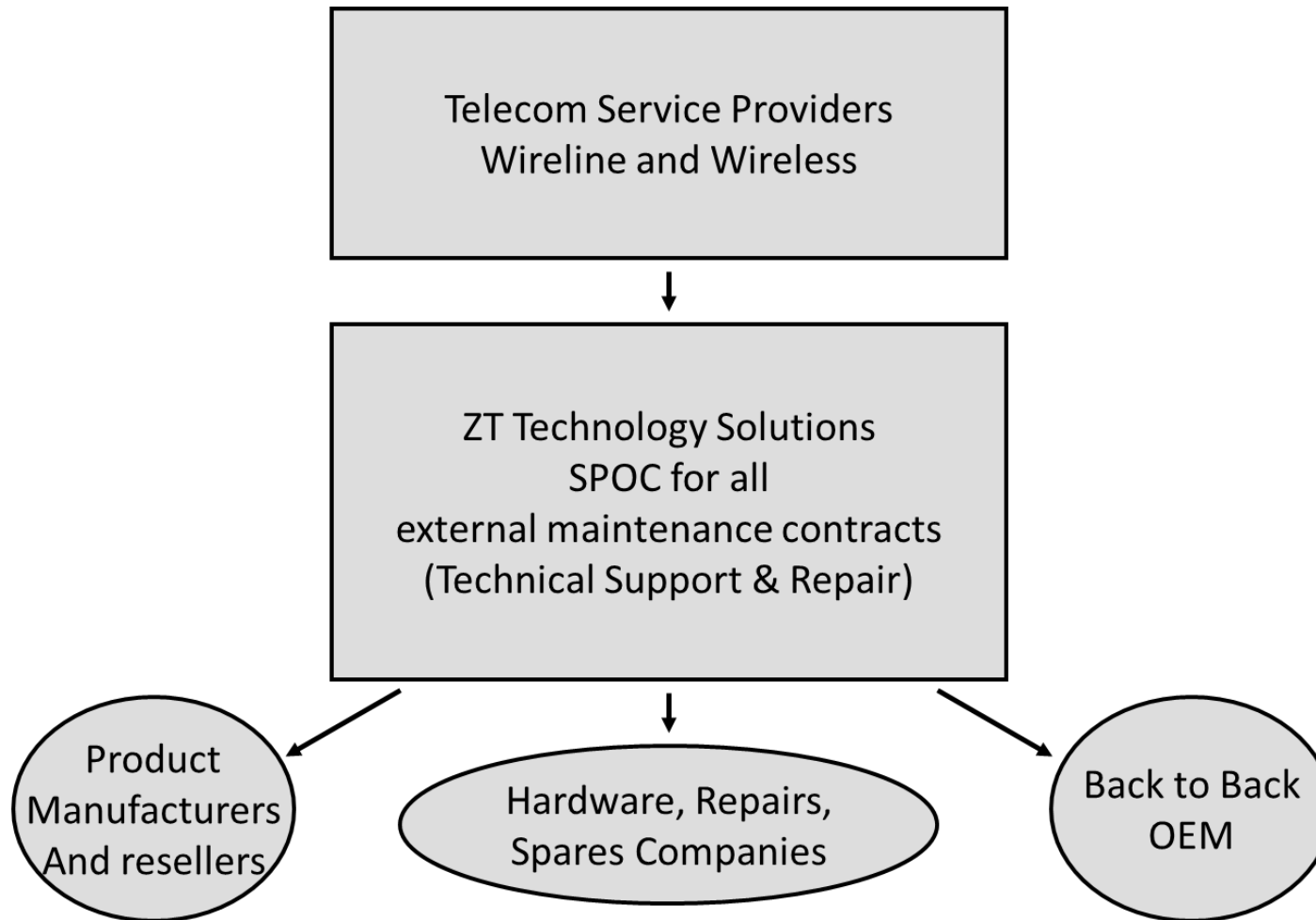# End of Product Life Cycle

ZT History

Since 2010, ZT has established a core competence in supporting legacy telecom products. Our charter has been to focus solely on supporting our customers by extending the life of legacy systems. ZT has worked with existing phone companies to develop the capability to in-source legacy OEM products to significantly reduce maintenance costs and provide superior technical support and repair services.

ZT Business Model

ZT will partner with your company to support all OEM vendors as the Single Point of Contact and perform the following life cycle management functions:
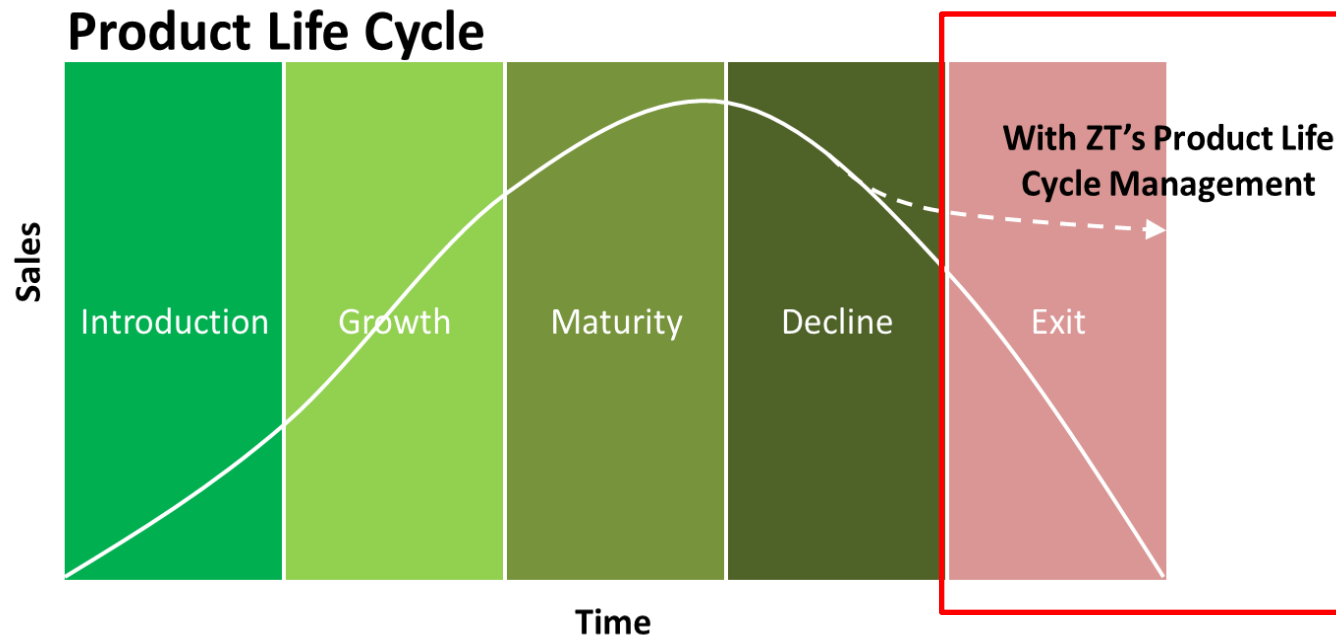
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┌─────────────────────────────────────┐
│   Telecom Service Providers          │
│   Wireline and Wireless              │
└─────────────────────────────────────┘
                  ↓
┌─────────────────────────────────────┐
│   ZT Technology Solutions            │
│   SPOC for all                       │
│   external maintenance contracts     │
│   (Technical Support & Repair)       │
└─────────────────────────────────────┘
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Product Manufacturers And resellers

Hardware, Repairs, Spares Companies

Back to Back OEM

Your Legacy Product Support Partner

❑ Our mission is to extend the life of your substantial investment in legacy equipment by eliminating obsolescence. We offer many customized options to support legacy products by providing advanced technical services ranging from technical support, to sustaining engineering, repair/replace/redesign options for defective and obsolete equipment, or provide a consolidation and migration strategy to newer and more advanced technologies.

❑ We are committed to meeting your high standards of technical support for your legacy products. We will significantly reduce your existing OEM maintenance costs and give you the assurance that an experienced engineer will always be available, even after the OEM stops supporting the product.

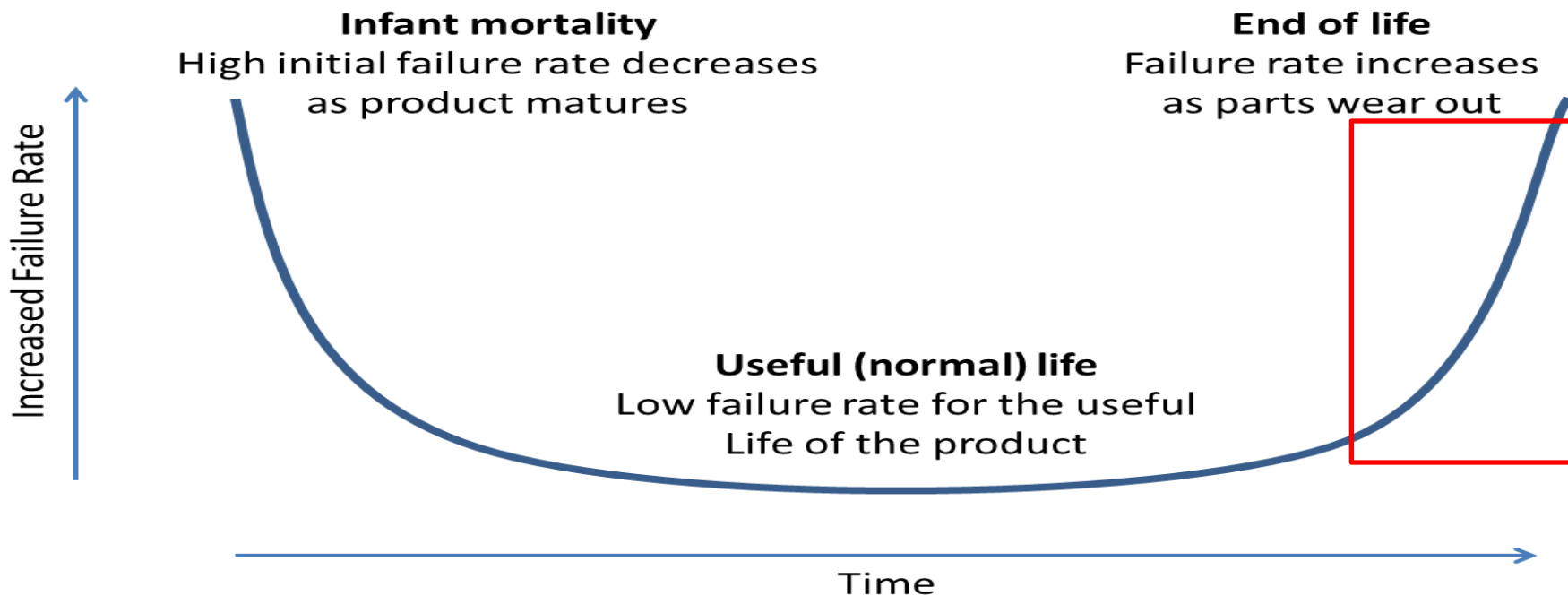# Extend the life of your legacy telecom equipment

In summary, at ZT we are committed to Extend the Life of your Legacy Telecom Equipment

Product Life Cycle

Sales

Introduction | Growth | Maturity | Decline | Exit

With ZT's Product Life Cycle Management

Time

- By providing experienced technical resources
- By developing repair/replace/spare parts strategies
- By developing consolidation and migration strategies

ZT
TECHNOLOGY SOLUTIONS

End of Product Life Cycle

Failure Model (Bathtub Curve)

Infant mortality
High initial failure rate decreases
as product matures

End of life
Failure rate increases
as parts wear out

Increased Failure Rate

Useful (normal) life
Low failure rate for the useful
Life of the product

Time

- Telecom Components are MD-ed (Manufacture Discontinued) or EoL (End-of-Life)
- Repair and Replace strategies are necessary to avoid lack of spare parts and catastrophic network failures

In with the new doesn't mean out with the old

- With fierce competition and changing consumer behavior taking a bite out of traditional revenue, telecommunications service providers are under terrific pressure to find fresh ways to grow their businesses. Some are investing heavily in next-generation networks that use Fiber-to-the premises (FTTP), Voice over Internet Protocol (VoIP) and SDN/NFV solutions.

- At the same time, they need to keep their legacy networking the ones their customers currently depend on up and running.

Solutions to Extend the life of Legacy Systems

❑ Assess the network for legacy products

❑ Manage OEM vendors (Determine End of Life dates)

❑ Assess Technical Support Issues

❑ Assess Repair Issues

Solutions to Extend the life of Legacy Systems

❑ Assess the network for legacy products
❑ Manage OEM vendors (Determine End of Life dates)
❑ Assess Technical Support Issues
- ▪ Most problems are simple in nature and are man-made:
  - ✓ No back-ups of most recent software, documentation or database
  - ✓ Can't locate password of back up servers
- ▪ Basic troubleshooting skills and preventative maintenance techniques need to be addressed
- ▪ Be proactive - monitor the network, look for patterns of failure (e.g. excessive repairs of certain codes)
- ▪ Inexperienced technicians can be trained
- ▪ Technical Support Competence must be maintained
  - ✓ Highly skilled technical people do exist
  - ✓ Tier 1/2/3 can be outsourced

Solutions to Extend the life of Legacy Systems (cont.)

❑ Assess Repair Issues
- Manage spares inventory
- Most repairs are due to heat and electromechanical failures and lack of preventive maintenance (disk drives, power supplies, fans, filters, cables)
- Repair Capability must be maintained
  - ✓ Repair companies that specialize in legacy products do exist
  - ✓ Parts do exist
  - ✓ Migration, consolidation of platforms, harvesting of spares
  - ✓ Replacement parts can be reverse engineered

Checklist

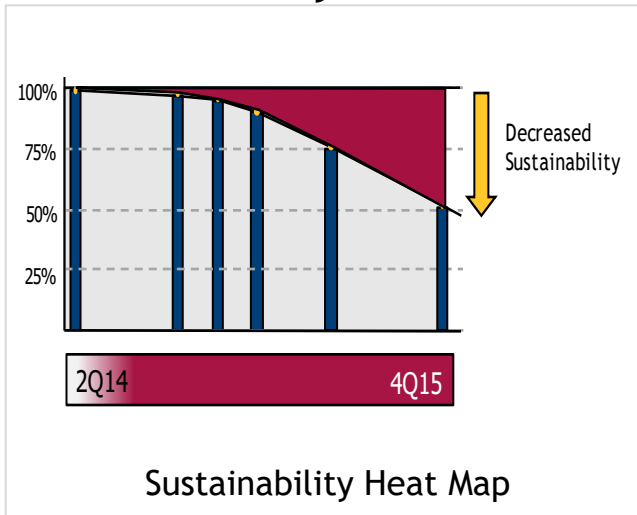| CHECKLIST - Potential Legacy OEM Issues	
✓	OEM has small embedded base
✓	OEM will merge/be acquired by another vendor and subsequent product rationalization
✓	OEM started as a start up in the 1990'sand was later acquired by Ciena, Ericsson, Nokia (ALU), and Genband
✓	OEM Product has inordinate amount of Severity 1s and 2's relative to size of the embedded base
✓	OEM has a very small support staff
✓	OEM is outsourcing technical support to non-US country
✓	OEM Product hardware has higher failure rates relative to similar technologies
✓	OEM can provide repair/replace and technical support services
✓	OEM Product has very little spares available in secondary market
✓	OEM vendors bundle repair/support of legacy products with upgrades to next generation products
✓	OEM vendors use Fear, Uncertainty and Doubt (FUD) to convince you that you can't self-maintain or only OEM can access to certain debugging diagnostics
✓	OEM product does meet originally advertised performance specs; typical technical answer is to reboot system
✓	OEM has long standing relationship with Operations team
✓	OEM cannot provide End of Life/Support/Repair dates
✓	OEM will not provide and end of life /obsolescence life cycle management plan
✓	OEM does not provide repair statistics for disk drives, power supplies, fans, and filters and key hardware

Checklist
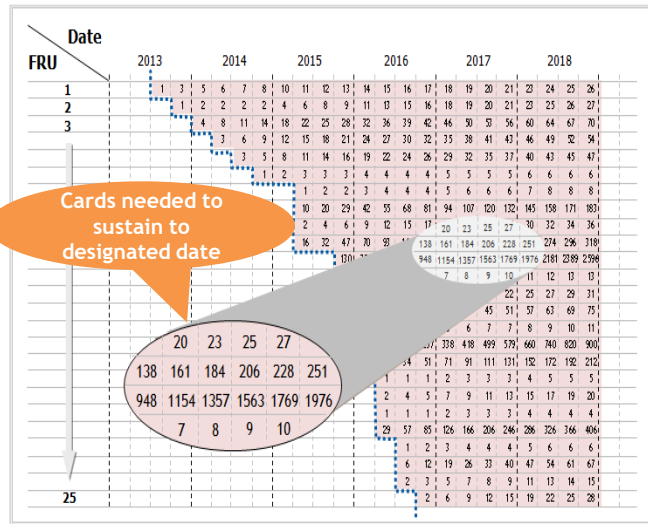
CHECKLIST - MVM Checklist

Done	Activity
✓	Evaluate life cycle parameters for all legacy products in the network (EoL, EoS, MD/DA status) and support and repair impact on your company.
✓	Analyze your internal support capabilities. Work with your Operations Team to review all Maintenance capabilities.
✓	Identify critical legacy products by analyzing historical AR/PR patterns (Pareto analysis of ARs/PRs) and size of embedded base.
✓	Identify OEM vendor responsiveness based on contractual SLA requirements and maintenance contract pricing.
✓	Develop consolidation and migration plans for legacy products and contingency plans. Develop decommissioning plans to assist in cost reduction efforts of all maintenance costs.
✓	Calculate End of Life Date for all products when repair/replace capability will not be sufficient to support product.
✓	Analyze OEM vendors' obsolescence/life-cycle management/component substitution/repair/software support plans. Require OEM vendors to document life cycle repair strategy. Scrutinize repair vendors FMA's, Root Cause Analysis on selected products. Visit and audit vendor repair locations.
✓	Develop comprehensive repair strategies/capabilities with third parties and OEMs to insure supply of refurbished parts/repair capabilities.
✓	Develop Vendor Management report cards to continually monitor vendor performance/quality and life cycle strategies as part of a comprehensive OEM vendor management program and pricing per AR/PR.
✓	Develop maintenance cost reduction proposals through in-sourcing (internal) and outsourcing.
✓	Develop contract strategy to convince OEMs to reduce maintenance pricing and leverage your size and purchasing power.
✓	Analyze your current internal technical support capabilities and make recommendations to improve support readiness and cost effectiveness thru partnership with ZT.
✓	Develop comprehensive SLA agreements that define Remote Technical Support metrics and Repair and Exchange.

WHAT DOES A LIFE CYCLE MANAGEMENT (LCM) ANALYSIS LOOK LIKE?

Per Card Sustainability Analysis

Sustainability Heat Map

- Identifies, based on projected failure rates, when key components will reach an End-of-Stock condition

- Uses a stand-alone, smart data acquisition template which contains historical network data including return counts and installed base

- Prediction module provides failure rate trending information required for network outage prediction modeling.

Spares Gap Analysis – <u>All Cards</u> in a Network

- Applies statistical analyses to capture trending and predict failure rates

- Calculates additional spares required to mitigate any out-of-stock threat

- Additional parameters such as repair contract duration, vendor performance, and on-hand inventory are analyzed

- Capacity to address up to 1000 cards (at a time) and accommodate up to 20 mitigation scenarios.

Warning Flags – <u>All Cards</u> in a Network

- Consistent and proven technique to identify risk across <u>all cards</u> and enable clear, effective and transparent communication

- Algorithms and thresholds proactively identify high risk cards in advance

- Identifies and quantifies risk indicators in multiple dimensions.

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