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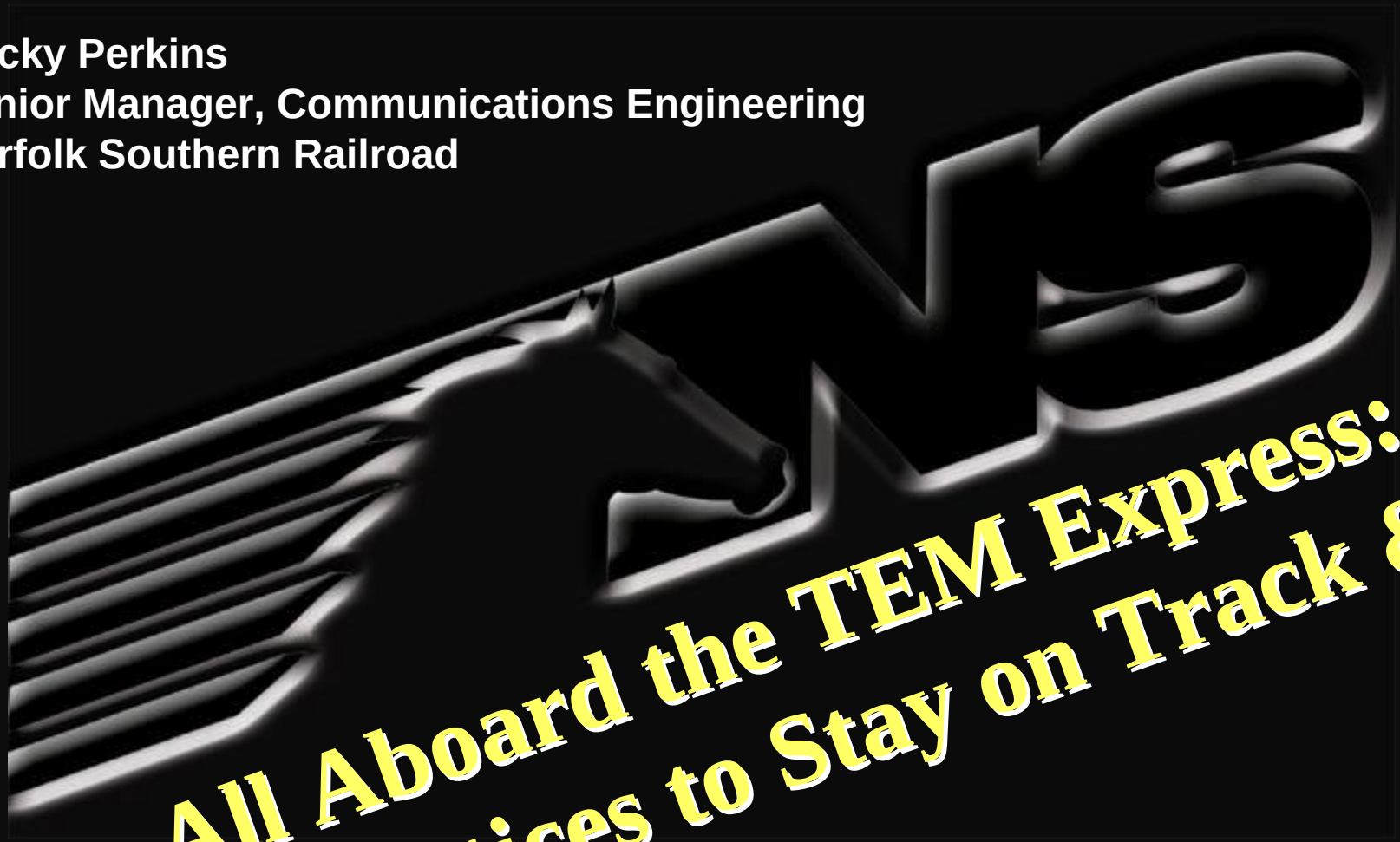


All Aboard the TEM Express: 5 Practices to Stay on Track & Save Money

Agenda

1. Norfolk Southern Network Environment
2. Drivers for TEM Success
    1. Importance of electronic data
    2. System centralization
3. Core Best Practices Defined
4. Survey Findings
5. Best Practices in Action: Implementation of a Large-Scale Network Inventory
6. Recommendations

The Need: Communications to Wayside Locations

- Typical class-1 railroad has more than 16,000 control points, radio bases and other wayside equipment locations
- Communication for the wayside location:
  - Throw a switch
  - Signal a train
  - Supply hot-box and hot-wheel information

NS Environment

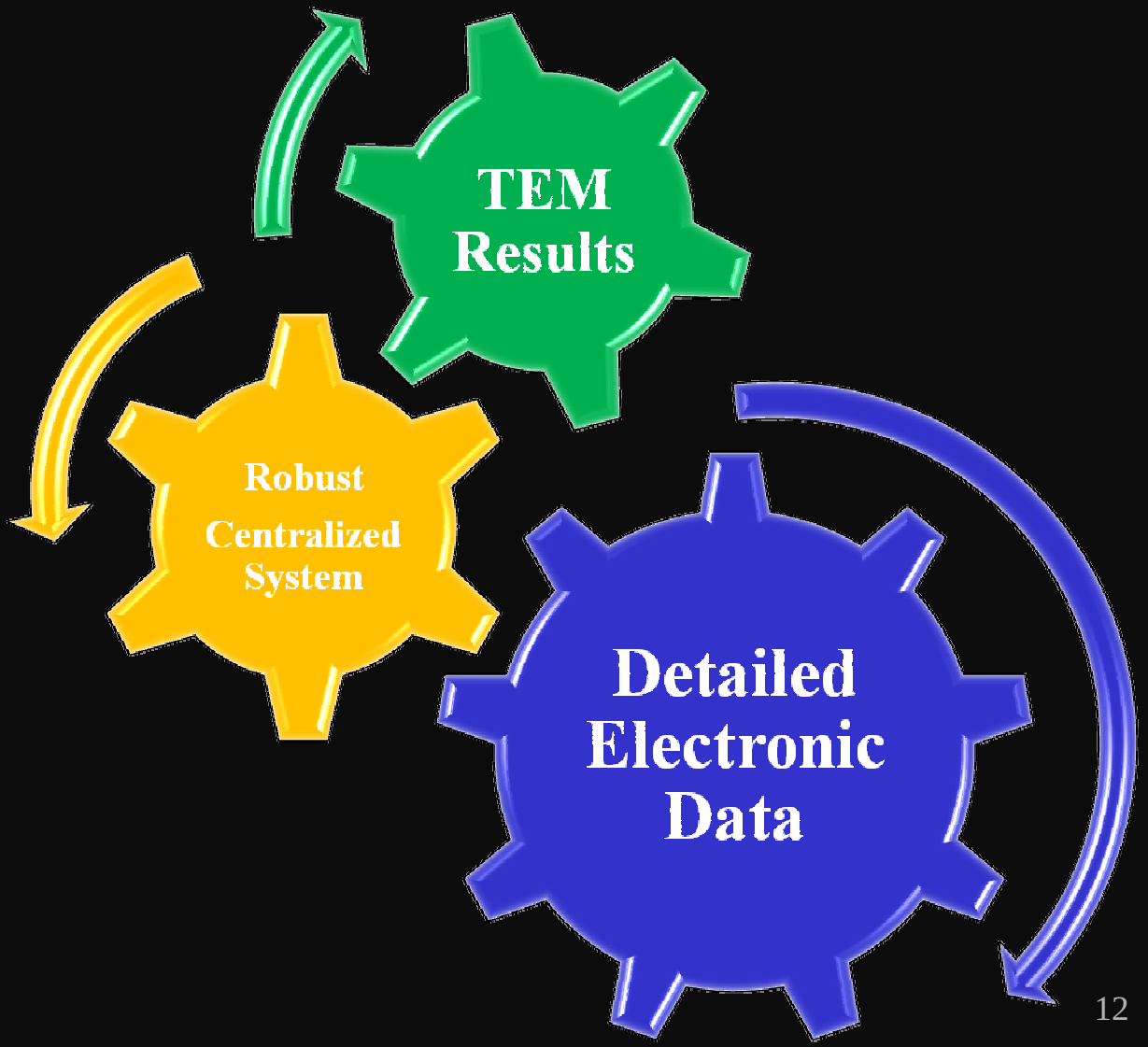
- Privately owned microwave systems
- Privately owned fiber optics
- Privately owned copper wire facilities
- Specifics:
  - Southern Railway microwave – 1962
  - Norfolk and Western microwave – 1978
  - Bandwidth – DS-3 with some 3DS-3 radios
  - Managed circuits – 5280
  - Non-managed circuits – 10,000+

Norfolk Southern Communications

The First Railroad Communications


Drivers for TEM Success:
Review of Best Practices

Drivers of TEM Success



The Importance of Electronic Data

- Electronic data is the catalyst
  - Provides the level of detail necessary to follow best practices
  - Drastically reduces time to analyze telecom spend
  - Enables total visibility of spend

- Electronic data challenges
  - Different file formats – which is the right one to use?
  - Often EDI is not the best
  - Constantly changing files
  - Not every vendor provides an optimized electronic feed

Data Centralization

- Centralization of invoices is the foundation for cutting telecommunications costs
  - View spend across the entire organization
- Allows a company to:
  - Negotiate centrally for multiple units
    - Leverage its size
    - Aggregate usage of services
  - Standardization of services
  - Reduce costs of providing services
  - Maintain diversity of service
- Consistent formatting of data
  - Goes beyond relying on spreadsheets
  - Data is no longer in silos

Core Best Practices Summary

- Uphold a consistent ordering process
- Build and maintain an accurate inventory
- Proactively analyze every invoice for exceptions
- Validate invoices using an accurate inventory
- Allocate costs to dedicated cost centers

Uphold a Consistent Ordering Process

- Telecom activity begins with Moves, Adds, Changes and Disconnects (MACD) to services within the organization
- The majority of billing errors can be traced to the moment when the order was placed
- Not having any consistent process or platform for tracking orders can lead to…
  - The wrong service being ordered
  - Incorrect contract rates being applied
  - Wrong prices entered into the vendor billing system

Build and Maintain an Accurate Inventory

- The inventory process begins by extracting the information from electronic invoices
  - Creating a “billed inventory”
  - Typically takes two months (billing periods)
- Inventory items are typically grouped by:
  - Type of service
  - Vendor
  - Location
- Mature inventory solutions have adapted the ability to track the terms of the vendor contracts and match them against the list of circuits that are billed
- To keep the inventory up to date, it is essential that it integrate with a provisioning system

Proactively Analyze Every Invoice for Exceptions

- By processing large amounts of electronic billing data, an organization can view its invoices as…
  - An aggregate
  - Broken down by each vendor
  - Broken down by dedicated cost center
- Enhanced business intelligence

Validate Invoices Using an Accurate Inventory

- The validation process involves checking every telecom invoice against the inventory to spot billing errors
- Must be able to easily view and drill down into the billing information
- Is an automated process to generate an exceptions report that details any items that do not match the invoice and inventory
- From the exceptions report, the telecom manager can…
  - Identify which charges should be disputed and drill down to see more detail behind the suspected erroneous charges
  - Track disputes in the TEM platform to short-pay invoices

Allocate Costs to Dedicated Cost Centers

- Allocation of costs
  - Defined cost centers
  - Region/geography
- The information obtained through chargeback can also be used to manage the overall consumption of services
- Dashboard reports that enable the finance department insight into…
  - Which departments have the highest telecom costs
  - Which users consume the most wireless services
  - Which countries are the most commonly called

Best Practices Summary

- Following best practices requires electronic data and a commitment to centralized management
- Each best practice integrates to provide a compete procure-to-pay solution
- Provides a proven path to achieve consistent cost savings


Review of Telecom Expense Management Survey

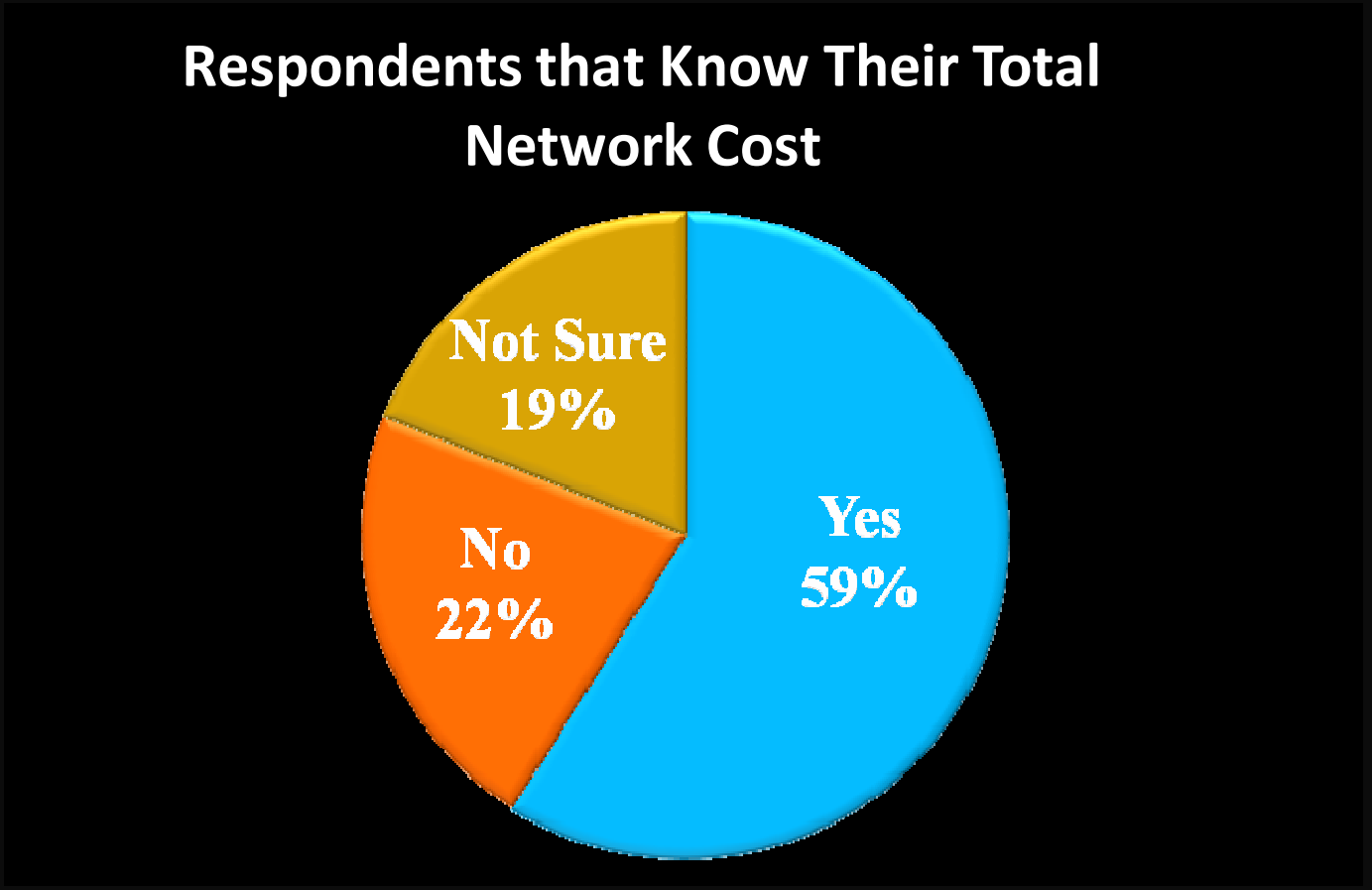
Benchmark Research Methodology

- The goal of the survey was to gauge where the market was with regard to implementing best practices
- An online survey conducted by Edge Research was performed Nov. 6 to Jan. 2 among individuals involved in the management of telecom expenses within their organization
  - 411 surveys were completed
    - 104 from MBG lists
    - 307 from Internet panel
- Respondents had the opportunity to benchmark their responses against the aggregate to see where they stand

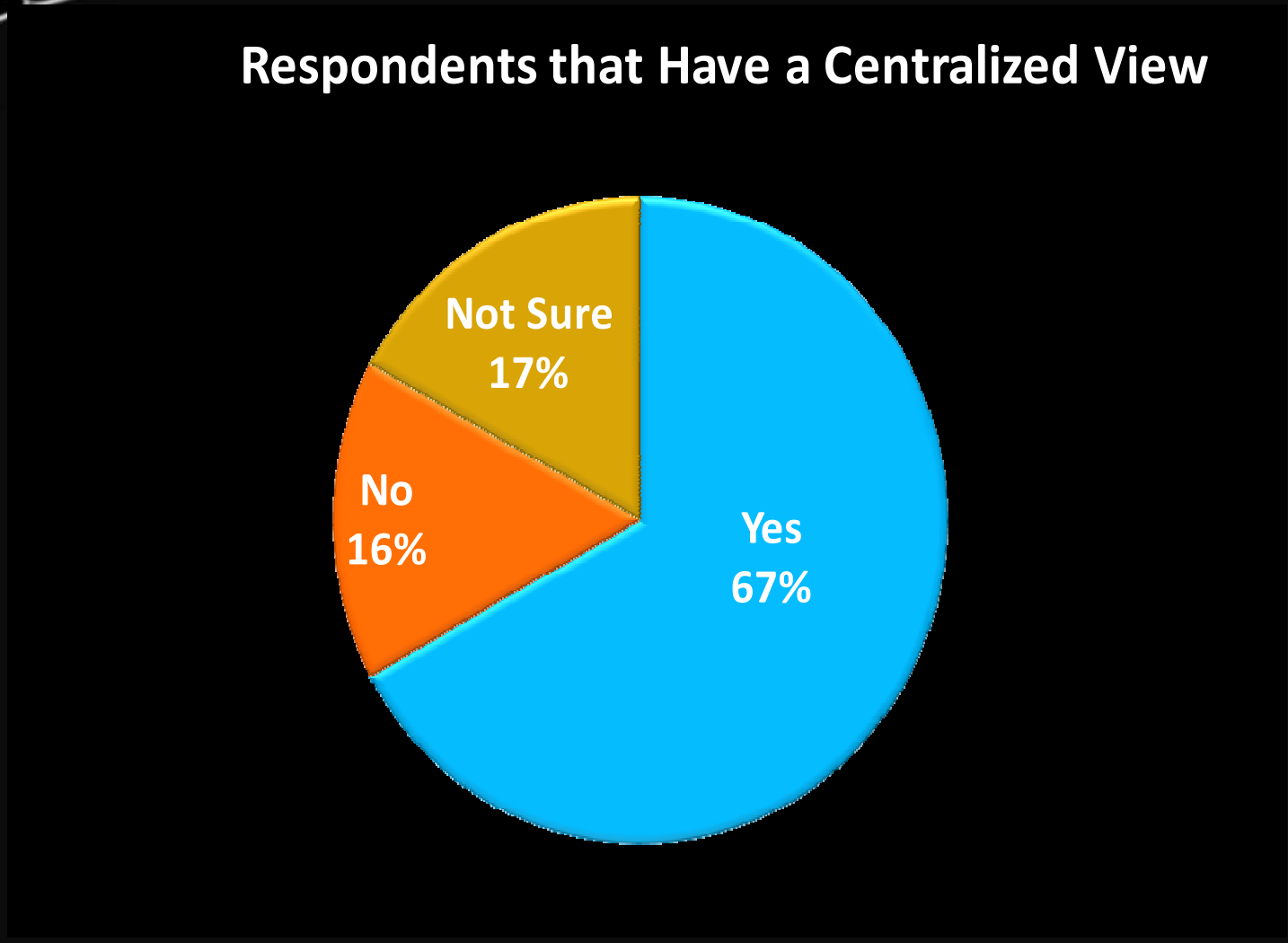
Key Benchmark Findings

- Companies that receive more of their bills electronically…
  - Achieve a greater return on TEM savings
  - Perform more expense management activities
  - Have higher satisfaction levels with their TEM provider in several areas
- Most respondents track their telecommunication inventory assets regularly
- Top priorities for companies include:
  - Reducing and managing telecom expenses
  - Having a centralized view of telecom spend
- Expectations gap exists with following best practices

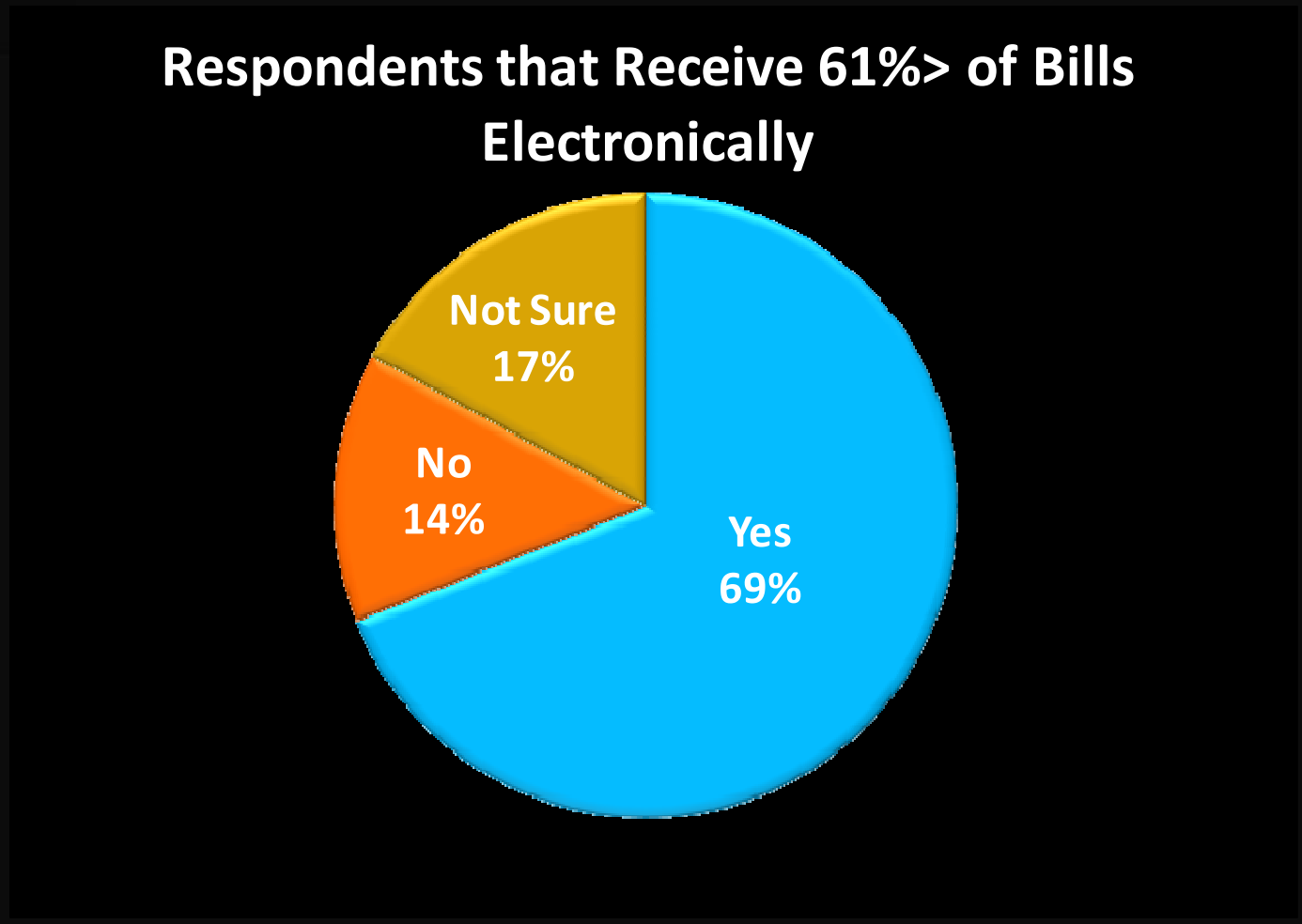
Total Network Cost



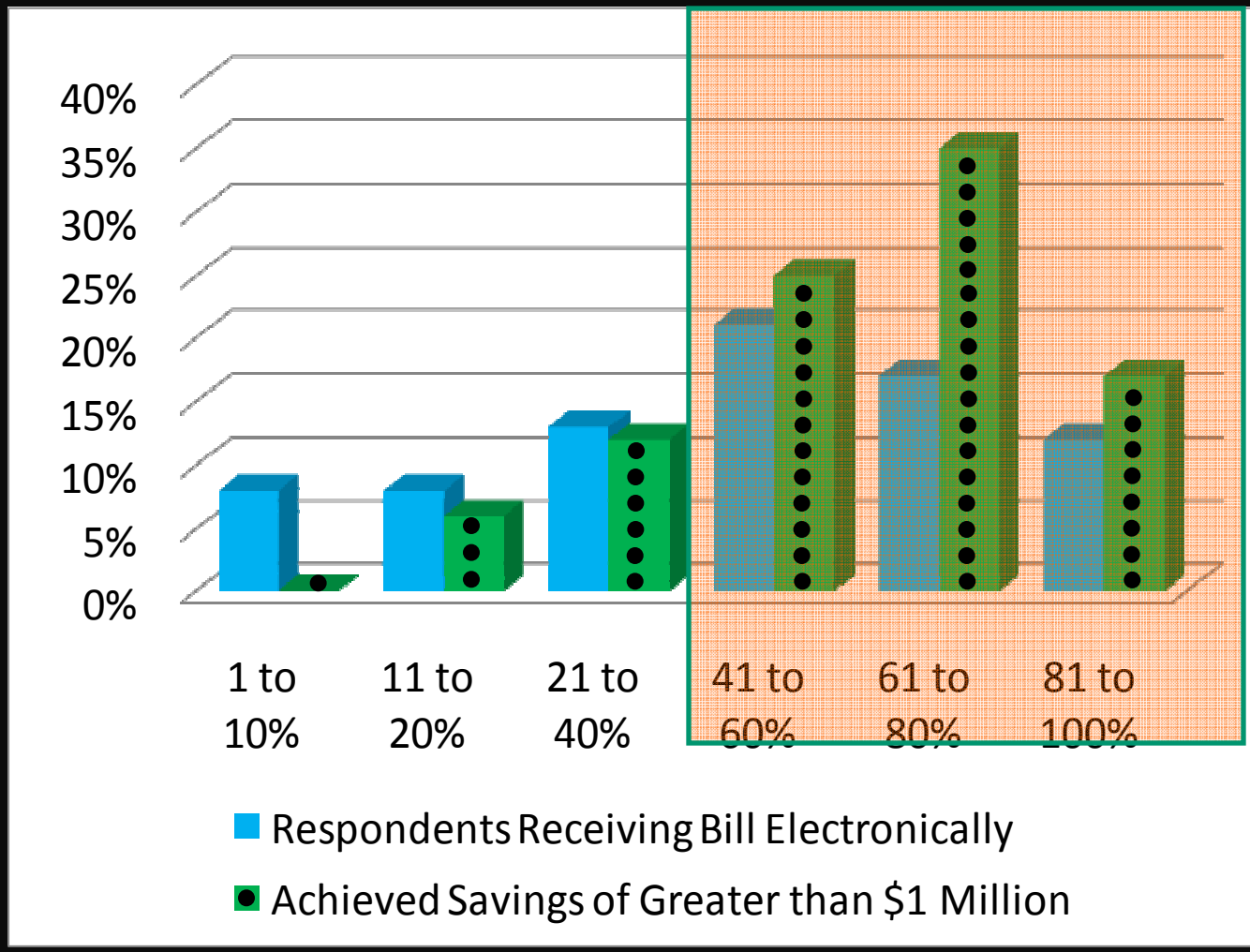
Total Network Cost



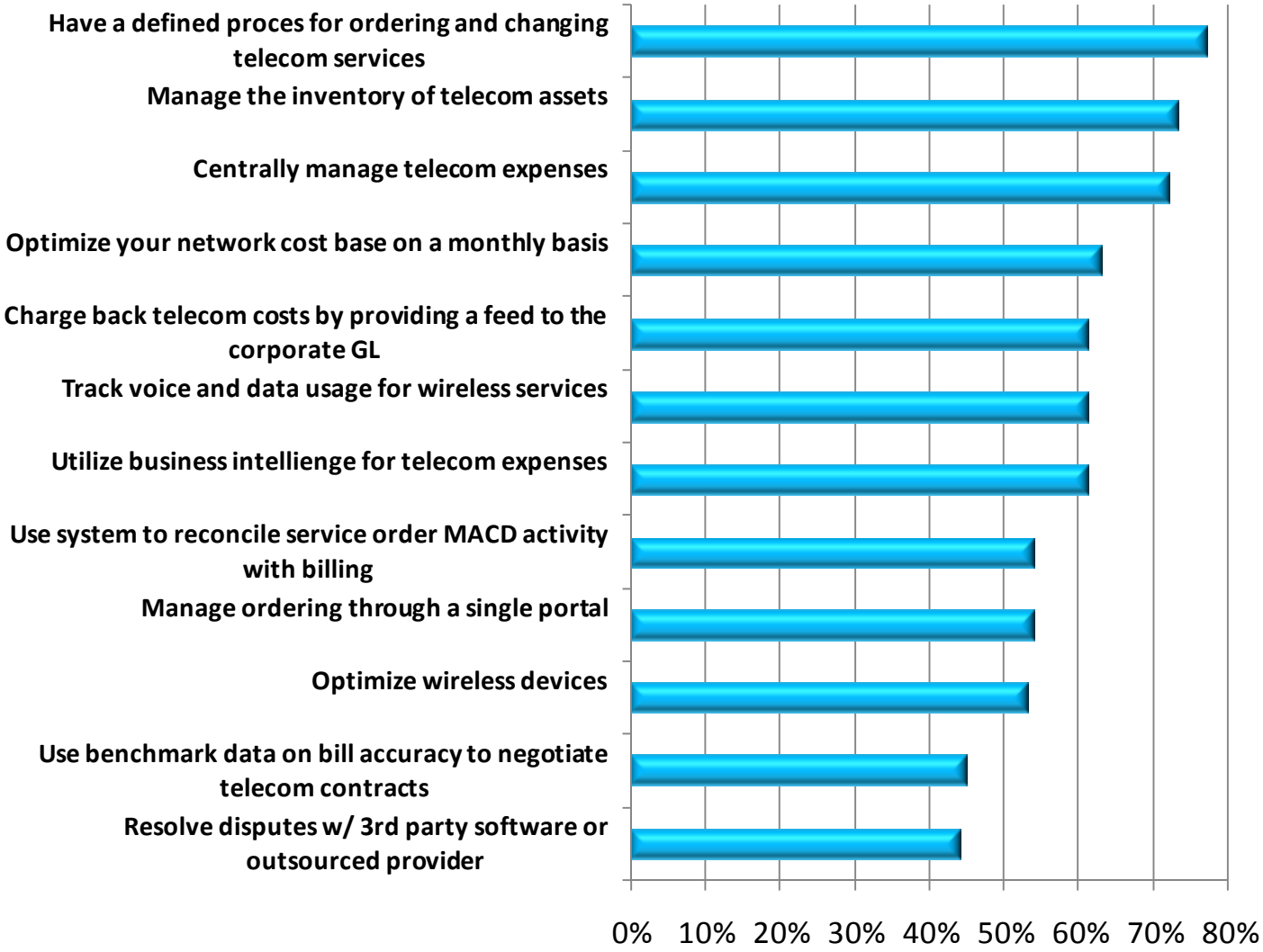
Total Network Cost



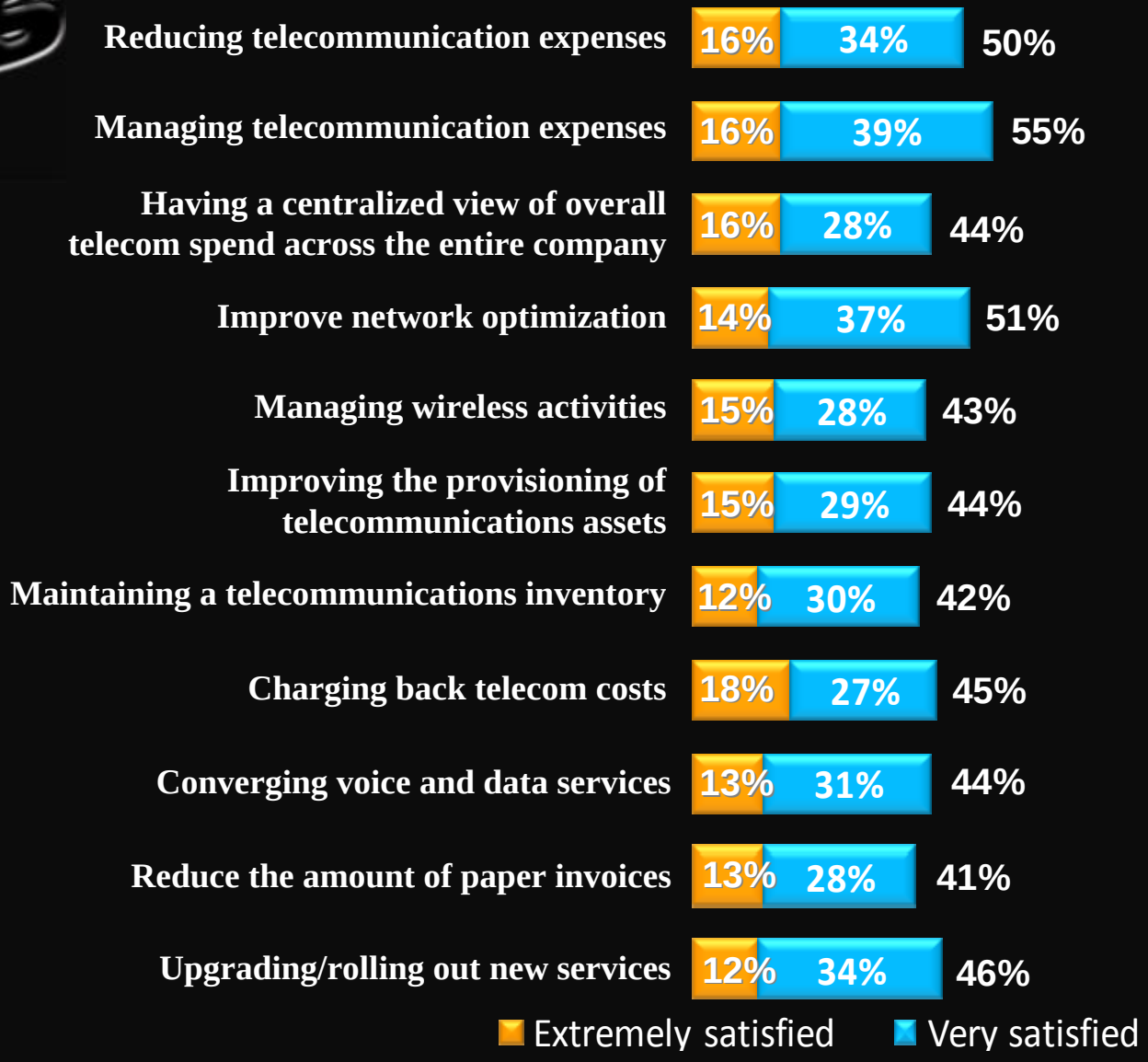
Electronic Data Impact on Savings



Adhering to Best Practices



Satisfaction with Best Practice Adoption

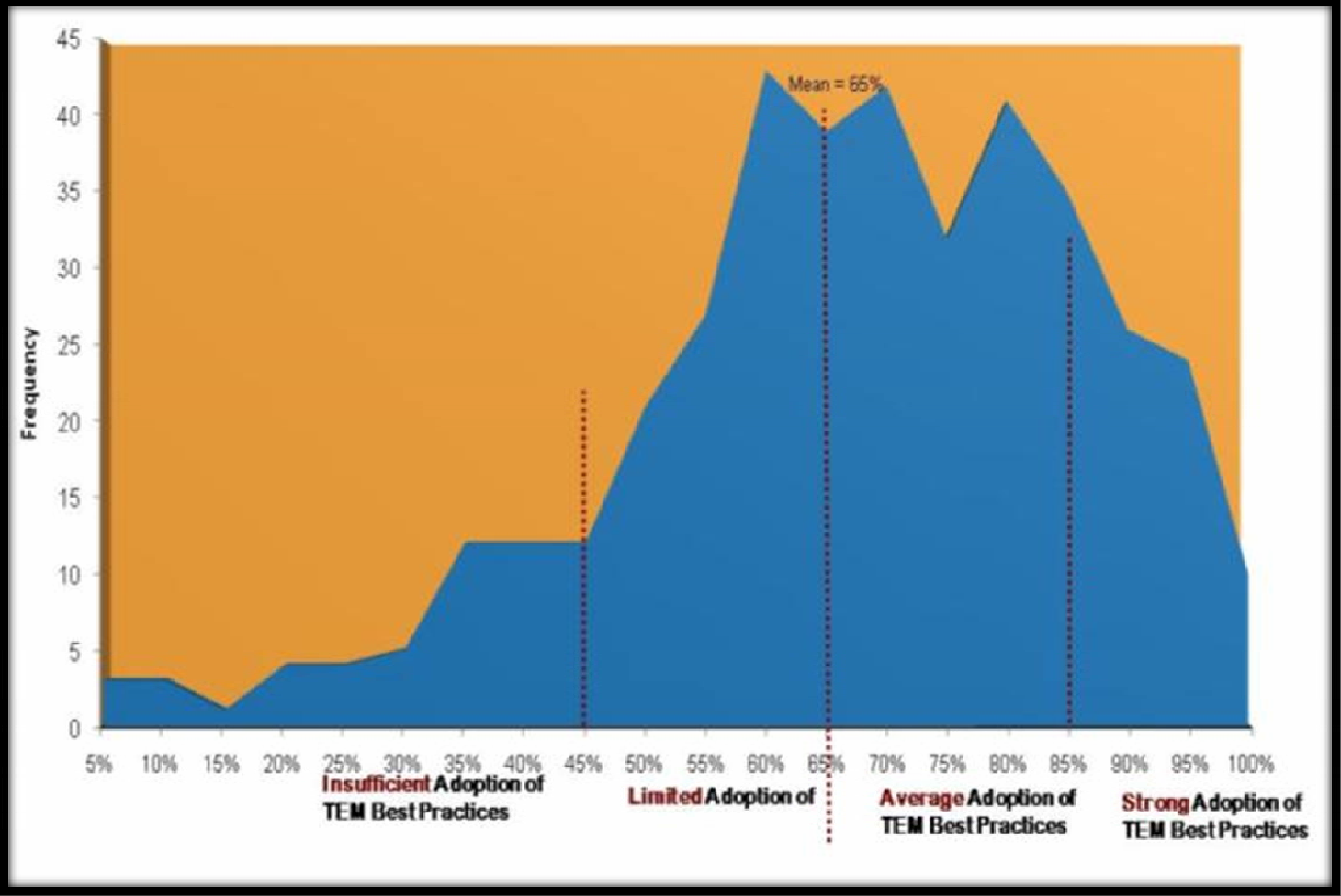


The Benchmark Score

- For benchmarking metrics, each answer was assigned a weighted score based on the question being asked
- The scores for each question were added to provide a cumulative score to determine an overall rating
- To calculate the benchmark percentage score, individual scores were divided by 295 (the highest possible score)
- Respondents can fall into four categories:
  1. Strong Adopter
  2. Average Adopter
  3. Limited Adopter
  4. Insufficient Adopter

The Benchmark Average

- Average benchmark score was 191 (65%)



Key Benchmark Score Indicators

- What percentage of bills are you receiving electronically?
- What percentage of assets do you have in inventory?
  - How frequently updated…
    - Daily, weekly, monthly, etc.?
- How closely are you following best practices?


Best Practices in Action:
Implementation of a
Large-Scale Network

Today: Norfolk Southern's Leased Communications System

- Cost: $26m per year
- More than 60 telecommunications companies
- Paying for more than 30,000 leased circuits
- These 30,000 circuits are spread to more than 16,000 locations

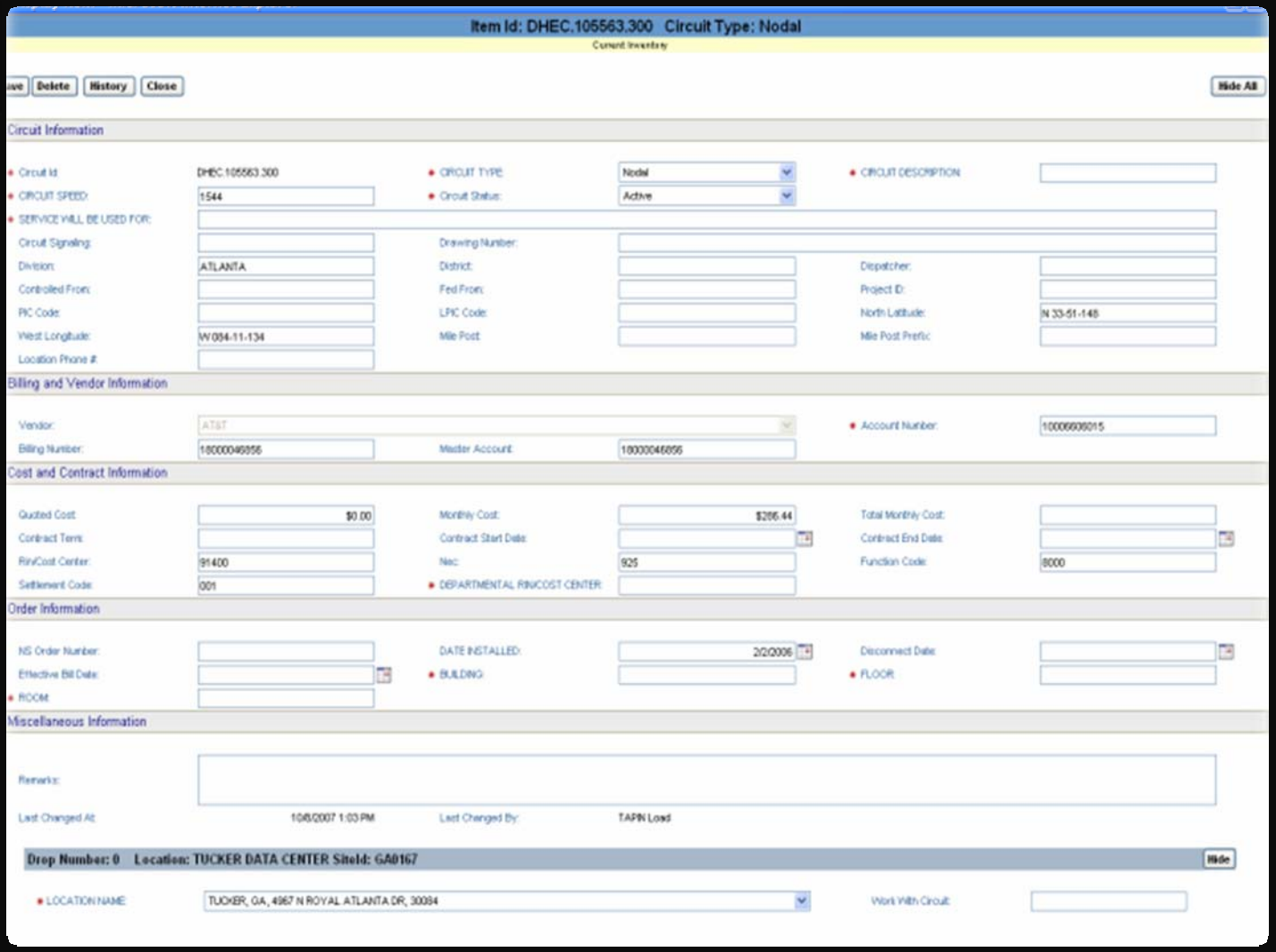
What Needed to be Done

- Manage a complete and accurate inventory
  - Having a robust database was a must
  - Need to address 16,000 field locations
    - 80+ fields of information for each location
      - Mile Post location
      - Longitude and Latitude
      - Dispatcher District
      - Local Employee Contact Information
    - Designed to all departmental uses
- Must be able to pay bills
- Improve the MACD process
  - The Moves, Adds, Changes, Deletes process was unbearable

Building the Inventory

- Pulled initial inventory build from electronic invoices
- Scrubbed data of items not required in inventory
- Added NSRR-specific information that was not on the invoice (Site IDs, GL codes, Mile Post, Dispatcher, etc.)
- Built load program to map invoice and client information to inventory fields
- Loaded inventory system

NFS Inventory



Integrating Provisioning

- Provisioning tool objectives:
  - Obtain quotes
  - Order circuits
  - Manage these orders to completion
  - Make effective use of a telecom engineer's time
- Incorporate eBonding to streamline the process

Recommendations

- This has been an immense effort for NS
- We have learned that in any TEM project…
  - Expertise in understanding the data is a must
  - Have a defined plan and set goals for getting from Point A to Point B
  - Exercise patience – does not happen overnight
- When building the inventory...

It's all about moving our trains...