

Project Analysis: Cable Management System 7/19/95

PROJECT SUMMARY	AUDIENCE PROFILE	EDUCATIONAL GOALS
ENVIRONMENTAL VARIABLES	PLATFORM CONSIDERATIONS	PRODUCTION TEAM IDENTIFICATION

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Date of Review: 7/20/95

Subject Matter Expert: Scott Munden

Multimedia Producer: Peter Feighner

Approved By: P.F.

PROJECT SUMMARY:

This project will focus on the "The Connected World" and how Accugraph fits into this picture. Accugraph divides this world into three major pieces: 1) Private (Enterprise management), 2) Public (Telco management), and 3) Outside Plant Cable Management. The following elements will be included in the presentation:

- Trends, directions, and state of the market
- Accugraph's work flow (Methodology) concept
- Case Studies of successful solutions to problems in the network management and telecommunications markets.

The following media types will be used with varying scopes detailed below:

- **Video:** Several short video presentations (5-7 minutes) will be prepared that overview Accugraph's position in the market place and the software solutions that it provides. The emphasis of these presentations will be to present Accugraph Corporation as a world leader in the network management and telecommunications market places that firmly understands the problems facing managers and has software solutions ready to solve those problems.
- **CDROM:** The CDROM will provide both an overview and a more in depth discussion of who Accugraph is and how their software solutions are designed to solve problems. Detailed product demonstrations, answers to key questions and a glossary of industry terms will all be included in this presentation.
- **Interactive Floppy Disc:** The floppy disc mailer will be designed to ^{PIQUE} peek prospective customers interest in Accugraph software solutions by providing: 1) A corporate image of Accugraph as a world leader in network management and telecommunications markets, 2) A description of problems facing managers in these markets, and 3) A short demonstration of Accugraph's solutions to these problems.

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AUDIENCE PROFILE:

This presentation will focus on three distinct audiences:

1. Upper management from prospective companies in the market for network management or telecommunications software solutions.
 - The overview video material will be aimed at upper management
2. Technical users of network management or telecommunications software.
 - The CDROM will contain both an overview layer and a more in-depth layer aimed at the technical user with the intent of answering the most common questions asked that lead to a buying decision.
3. Accugraph employees

EDUCATIONAL GOALS:

This presentation will teach the fundamentals of Accugraph's software solutions. The following scenarios will be discussed in detail:

Private (Enterprise Management)

1. Department is moving
2. Department is receiving new hardware, LAN or software upgrades
3. Sales force needs pipeline information
4. A printer error has occurred

Public (Telco Management)

1. Provisioning of a new central office
2. Move add or change equipment in an existing central office
3. Customer service provisioning

Outside Plant Cable Management

1. Replacement of copper with fiber
2. Upgrade switches from analog to digital
3. Adding capacity to existing infrastructure

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ENVIRONMENTAL VARIABLES:

This presentation will be flexible enough to accommodate a variety of viewing environments.

1. Video playback on a conference room television, big screen projector for Accugraph sales and marketing presentations, or in a home environment.
2. CDROM playback on a standard IBM PC 386 or higher with the following minimum configuration: Windows 3.1, 4 Mb RAM, 10 Mb free disc space, Sound Blaster or compatible sound card, Double Speed CDROM player with a minimum access speed of 300 NS.
3. Interactive floppy disc playback on a standard IBM PC 386 or higher with the minimum configuration listed above.

PLATFORM CONSIDERATIONS

What delivery platform(s) are being considered?

Linear Video	CD-i	CDROM	Interactive Floppy	Other	Please Specify _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

PRODUCTION TEAM IDENTIFICATION:

What components of the production process will your organization perform?

None	Application Design	SME	Writer	Graphic Design	Control Program	A/V Production	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

What components of the process do you expect the production company to perform?

All	Application Design	SME	Writer	Graphic Design	Control Program	A/V Production	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Notes:

Accugraph to provide qualified subject matter expertise and demonstrable software including any scenario construction that may be required dictated by the final storyboard.

In addition, Accugraph to provide a qualified software operator (s) during the screen capture process of scenarios dictated by the final storyboard.

Technical User Section

I. Overview

A. Benefits

1. Infrastructure Inventory Management

- a) Know what cable is installed
- b) Know what the capacity really is
- c) Reduction in labor costs

2. Trouble Shooting

- a) Outage Assessment
- b) Diasaster Recovery

B. Application of Existing Technology

1. Equipment Bay Management (EBM)

2. Cross Connect Management (CCM)

3. Motif Libraries (XVT)

4. Graphics Engine (MountainTop)

C. CMS Users

1. Help Desk

2. Technicians

3. Engineers

4. Management

D. Cable Process Flow

1. Adding Infrastructure

2. Adding New Service

3. Changing Infrastructure

4. Changing Service

E. Data Model

1. EBM 3.0 Object Model

2. CCM

3. 568/606 Standard Attributes

4. Catalogs

F. User Interface

1. Uses Industry Standard GUI

2. Graphical
3. Forms Based Input

G. Reporting

1. Standard Queries
2. Standard Reports
3. Label Generation

H. Section Review

1. Built on existing technology
2. EIA 568/606 Compliant
3. Provides the Glue
4. Industry Standard Interface

II. A Guided Tour

III. Data Model

A. Holders Technology

1. Method of mapping user defined data into the EBM environment without EBM having prior knowledge of data.
2. Provides a flexible vehicle to extend the capabilities of the EBM application without programming.
3. Easy to establish inter-relationships via Parent-Child Rules.

B. Libraries

1. Store complex equipment definitions "as-built"
2. Reuse stored definitions
3. Share definitions between users
4. Library Vs Instance

C. Required Tables

1. Object Types
 - a) Defines the Objects to EBM
 - b) Relates Type to DBNAME Map
 - (1) Specify Instance Table
 - (2) Specify Library Table
 - c) Define Key Column List
 - d) Define User Column List
 - e) Define default Symbol Color and File Name

Content Outline: Cable Management System 7/21/95

2. DB Name Map

- a) Establishes link between application and “real” world
- b) Relates internal table name to external name
- c) Relate internal column names to external column names
- d) Build Column Lists
 - (1) Defines column content of forms
 - (2) Defines key columns

3. Parts Table

- a) Raw parts are stored here
- b) Provides definition of a part by Vendor and Part Number
- c) Define basic part geometry

4. Child Rules

- a) Establishes Parent-Child relationships
- b) Uses types from Object Type Table
- c) High Level Objects are:
 - (1) Bay
 - (a) Chassis
 - 1) Card
 - a) Port
 - 2) Port
 - a) Termination Position
 - 3) Power Supply
 - (b) Patch Panel
 - 1) Port
 - (c) Power Supply
 - (2) Frame
 - (a) Block
 - (3) Cable
 - (a) Media
 - (4) Wall Plate
 - (a) Port

D. Required Columns

1. Object ID

2. Object Type

3. Within Child Tables

- a) Parent Object ID

b) Parent Object Type

E. CMS Table Relationships (ORD)

F. Section Review

1. Extensible
2. Flexible
3. Ability to store and reuse definitions

IV. CMS-The Application

A. Main Window

1. Menu Items

- a) Infrastructure
 - (1) Devices
 - (a) Racks
 - (b) Chassis
 - (c) Card
 - (d) Frame
 - (e) Block
 - (f) Patch Panel
 - (g) Wall Plate
 - (2) Cable
 - (3) Pathways
 - (4) Spaces
 - (5) Power & Grounding
 - (a) TGB
 - (b) TMGB
 - (c) BC
 - (d) Power Supply
 - (6) Connections
 - (7) Exit
 - (8) Add
 - (9) Delete
 - (10) Edit
 - (11) Single
 - (12) Bulk
- b) Output

Content Outline: Cable Management System 7/21/95

- (1) Reports
- (2) Queries
- (3) Labels
- c) Provisioning
 - (1) Setup
 - (a) Bulk Runs
 - (b) Service Presentation Points
 - (2) Provision
 - (a) Single/Bulk Add
 - (b) Single/Bulk Edit
 - (c) Single/Bulk Delete
- d) Options
 - (1) Settings
 - (2) Printer
- e) Help

2. Speed Buttons

- a) Entry Mode
 - (1) Add
 - (2) Delete
 - (3) Change
- b) Single vs. Multiple
- c) Connections
- d) Exit

B. Section Review

- 1. Forms based entry vs. graphic**
- 2. Pull down Menu Structure**
- 3. Makes use of Speed Buttons**
 - a) Eases transition between modes
 - b) Most commonly used functions

V. CMS-How To

A. Define the Process

- 1. CMS requires the use of EBM libraries**
- 2. Libraries are created by building an instance of the desired component**
- 3. Components are made up of “raw” parts and/or other stored components**

or rules that are needed in order to insure that we're populating the database in the fashion that the user desires.

There is a drawback to this in CMS whereas EBM is very extensible, CMS requires a set structure for CMS version 1 in terms of the objects that can be placed into the infrastructure. We have a set number of objects that we can interact with. Every effort has been made to put up objects that probably in most cases cover 99 percent of the type of equipment that will be found in an enterprise solution.

Holders technology refers to the way in which the system holds the data.

to make a flexible link between an existing data structure and CMS. We can tell the data model exactly what form a piece of data takes, it's real name in the database that is related to a name that CMS uses to tie the two together.

V. CMS - How To

AA. Overview

In this section we'll discuss how to use the library editor and CMS to build out a cable infrastructure. We'll divide this discussion into four sections:

- Define the process - What will it take to use these tools to build an infrastructure
- A detailed look at how required components are built in CMS
- Placing equipment into our infrastructure and inventory
- and finally we'll apply what we've learned by using a real world example

A. Define the Process

CMS requires the use of EBM libraries.

What does this mean? Well, we discussed earlier in the material we looked at

The data model definition has two large sections to it, the inventory section of tables and the libraries.

The libraries are where we go out and actually build the components that are used by CMS. We store the definitions out there and we can then reuse them to build our infrastructure out.

Libraries are created by building a model of a component.

If we have to build a new block then we have to build an inventory image of it and then copy that image into a library.

Components can be made up of raw parts and other stored components.

I We are going to have to define to EBM a set of parts that will be used to build up our components.

For example, let's take a network card equipped with RJ-45 ports. we would then define the parts as components that make up that card. This would include the actual RJ-45 jacks on the front of

the card and then the shell of the card itself.

Building the components. We have to ask ourselves several questions when we're building out the components for use in inventory management.

The first question we ask ourselves, "Does the component exist?" If it does exist then we can use it immediately in CMS to place something in inventory.

If it doesn't exist we have to tear it apart a little further, we have to ask ourselves, "Do the necessary parts exist? If the parts exist then we can use those parts to build up a higher level object which is referred to as a component.

If they don't exist then we have to add those parts to the library editor.

Once everything has been built up and stored in the library editor we can build desired components as an instance and save the definition in the library to be used in CMS.

B. Building Components in EBM (Library Editor)

Using the administration function we will look at the parts that we need to add into the system. We use the Parts Table maintenance to create the raw parts.

The next step in building a component is to create a footprint in the MountainTop graphic environment. This footprint is used to launch the EBM display function which allows us to build up this component graphically.

Then we have to add additional parts or components to this high level object that we are building and then once we build it out properly and it meets our satisfaction we can place that component into the EBM library.

C. Place the Equipment

Once that component has been built and saved to the library we can then add that component into CMS and actually place it into inventory.

To do this we will select the infrastructure type in Add mode in CMS, specify some search criteria and select the component from the library.

At this point a detail screen will open up and we will be allowed to refine the default field values that were stored in the library. From this point we can assign unique identifiers, if there is any naming convention to be used in the infrastructure it can be applied at this time. We can identify that component's location, a description of the component, and any other user added fields. Once we're satisfied with our selections simply accept the modifications and make them permanent in the inventory.

D. A 'Real' World Example

For the purposes of demonstrating the process to build up an infrastructure we'll be using a real world example.

For this purpose we will use a four story building with voice and data network using standard category 5 utp for premise wiring.

Each floor has an equipment closet that will be the termination point for horizontal and riser cables. Standard M-66 blocks will be used to terminate cables in the closets.

Each user station will be equipped with a 2 jack RJ-45 face plate. Each jack will be wired with a 4-pair category 5 utp cable.

Voice and data riser cables run from each floor's wiring closet to the main equipment room on the first floor. Each riser cable is capable of handling three 4-pair circuits. The cables are terminated on the back of a PDS-110 patch panel. One patch panel set for voice and one for data.

Permanent cross connects will be made between the station blocks and riser blocks on each floor to provide connectivity from the face plate to a patch panel.

The building is equipped with an AT&T PBX whose ports are terminated on standard PDS-110 patch panel.

Network service is provided by an ethernet hub. One card for each floor, providing a subnet per floor. The cards are interconnected on the back plane to provide connectivity between floors.

Voice service is provided by making patch panel cross connects between the PBX 110 patch panel and the voice riser patch panels.

Data service is provided by making patch panel cross connects between ports on the cards and the data riser patch panels.

Needed Components

E. Needed Components: 0) Overview

In order to build out an infrastructure we have to decide what CMS components will be needed to properly track inventory.

In our example we will need spaces, telecom equipment, cables, and between the cables and the telecom equipment we will need to make connections.

We'll also define pathways, and for provisioning we'll have to define bulk runs and service presentation points.

Once these two items are defined we can then provide service to a wall plate.

E. Needed Components: 1) Spaces

Spaces are used to identify areas of interest. Spaces can contain other spaces. Examples of a space are a floor in a building, offices, and equipment rooms.

Spaces can contain other spaces. What this allows you to do is to define a floor and then all of the rooms on the floor can also be spaces. By assigning the office, cubicle or equipment room a parent of the floor you can then track spaces through the parentage or the relationship of the floor and it's

contained rooms and cubicles.

To add a space into CMS we'll begin in CMS add mode. The space detail window then opens, we'll enter field information such as a space identifier, description, the floor that the space is contained on and the attributes of the space, it's height, it's width and it's depth.

At this point you can set the parent for this space by selecting the "Set Parent" button. It opens a select search criteria screen to identify which space that space belongs to. Once we've selected the appropriate parent we return to the space detail screen. At this point if you are satisfied with entries you've made go ahead and select OK and the space will be added to the system.

E. Needed Components: 2) Equipment

Kinds of Equipment

In order to build out the infrastructure we have to equipment to attach cables to. In our four story office building example we have M66 punch down blocks, an AT&T PDS110 patch panel, a PBX chassis, an ethernet hub with 32 RJ-45 ports and face plates with 2 RJ-45 ports apiece.

Equipment Build

In order to build equipment, the equipment needs to be broken down into the lowest level of detail needed to appropriately describe the equipment to CMS. The key will be reducing the component to it's termination positions. This is the level at which physical connectivity is accomplished.

If we examine a piece of equipment such as a 66 punch down block physically it contains two pieces, the block shell which hold the pins. Within the data model we have to define this object a little more definitively.

We have the block which is the block shell or the container for all the components of the block. We have ports, which are represented in a 66 block as a column of pins. Then we have termination positions which will be inside the ports.

Termination positions represents a concept used to define to CMS where cable connections occur or make decisions on cross connects. These objects are used to define to CMS exactly how we're going to attach media to it.

We have to determine for each port that we define the number of termination positions that will be contained and as in a block which side of the device this thing belongs to.

Equipment Parts (EBM)

In order to build equipment parts we have to use the library editor to add raw parts into the database. Inside the library editor we select parts maintenance. We'll add the component parts and for our infrastructure we will add a frame, a block, a part and a termination position.

Now, these component parts are used to define several things to the system. First, we define the vendor and part number for this particular component. The vendor is represented by vendor code and the part number by an equipment manufacturer part number.

Other information contained in the parts table is the basic geometry used to display this particular

	Audio	Video
Script		<div data-bbox="812 252 1412 630" style="border: 1px solid black; padding: 10px;">Asset # TECH04 See control diagram: Overview Slide Show</div>
Script		<div data-bbox="812 672 1412 1050" style="border: 1px solid black; padding: 10px;">Asset # TECH05 See control diagram: Overview Slide Show</div>
Script <i>User selects "Overview."</i>		<div data-bbox="812 1092 1412 1470" style="border: 1px solid black; padding: 10px;"><p style="text-align: center;">Technical Users Section</p><p style="text-align: center;">Overview</p><p style="text-align: center;">A Guided Tour The Data Model The CMS Application CMS - How To</p><p style="text-align: center;">Exit Previous Index Map Help</p><p>Asset # T0. See control diagram T0</p></div>
Script <i>User selects "Benefits."</i>		<div data-bbox="812 1512 1412 1890" style="border: 1px solid black; padding: 10px;"><p style="text-align: center;">Overview Sub Section</p><p style="text-align: center;">Benefits</p><p style="text-align: center;">Application of Existing Technology CMS Users Cable Process Flow Data Model User Interface Reporting</p><p style="text-align: center;">Exit Previous Index Map Help</p><p>Asset # T1. See control diagram T1</p></div>

Audio

Script

Many major corporations are experiencing an explosion in the number of requests for voice, data and video network services.

The ability of internal organizations to deal with these requests is quickly becoming unmanageable.

Script

By implementing Accugraph's cable management system there are a number of benefits that can be realized to address this management problem:

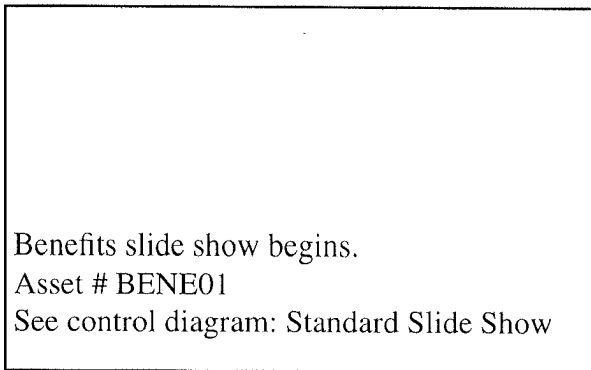
Script

Use CMS to get and maintain a clear picture of the capacity you currently have and where it is installed.

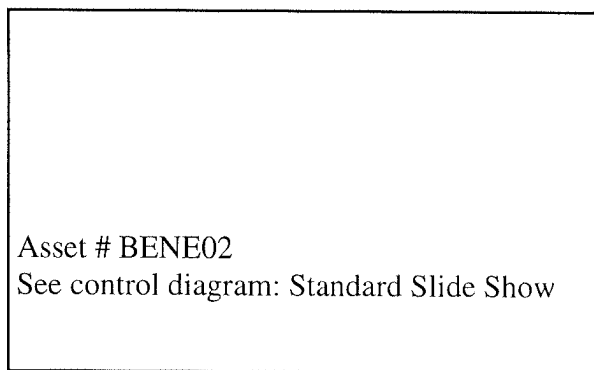
Script

Increase the efficiency of your bandwidth capacity planning and management.

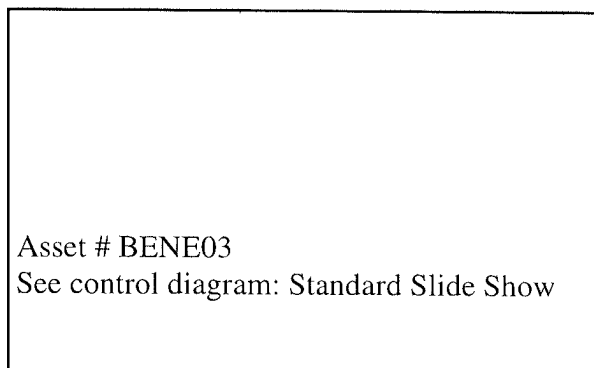
Video



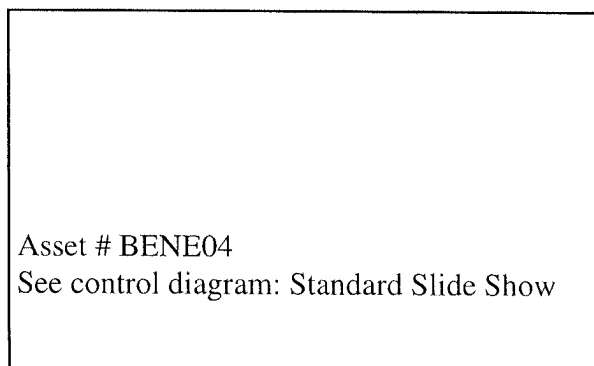
Benefits slide show begins.
Asset # BENE01
See control diagram: Standard Slide Show



Asset # BENE02
See control diagram: Standard Slide Show



Asset # BENE03
See control diagram: Standard Slide Show



Asset # BENE04
See control diagram: Standard Slide Show



Audio

Script

Utilize your existing infrastructure to it's maximum availability before adding new infrastructure.

Script

Decrease the time and cost associated with infrastructure additions by providing technicians with more accurate installation information.

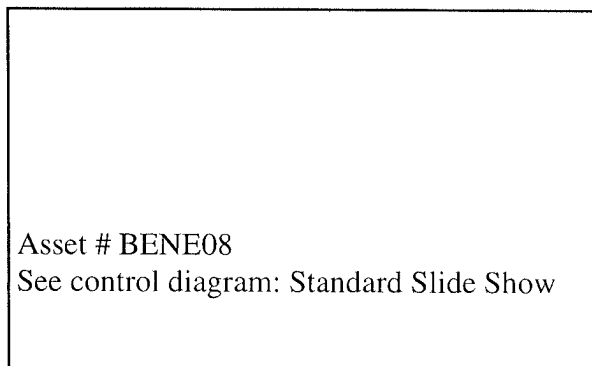
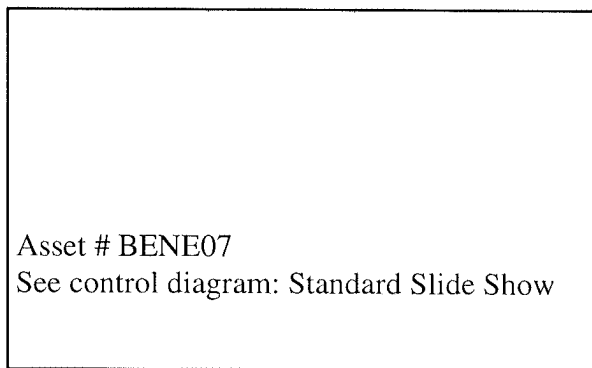
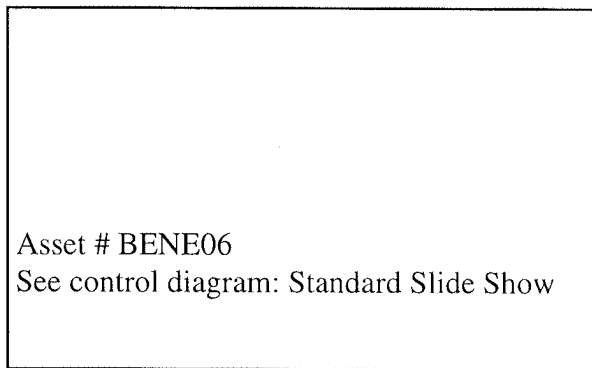
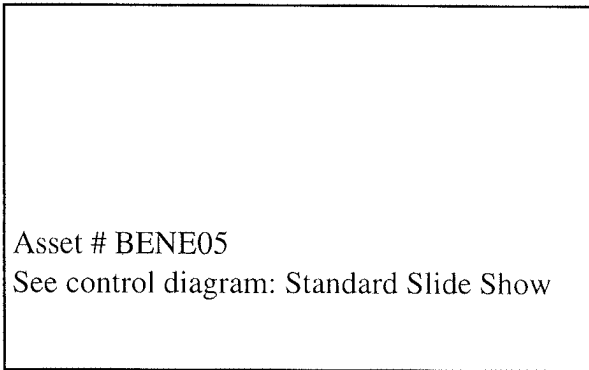
Script

Increase the efficiency of your troubleshooting operation by:

Script

Maintaining accurate network infrastructure documentation to know how cables are run and how devices are connected.

Video



Audio

Script

The average unit cost per move or change is fifteen hundred dollars. By multiplying that out by the number of moves executed per month and calculate your savings.

This figure can be reduced from three to ten times with effective management.

Script

Take a proactive role in the diagnosis of network failure.

What would it be like to be able to notify users of outages possibly before they even realize it and letting them know that the problem is being addressed.

Script

True disaster recovery. If a building is destroyed the equipment can be replaced but without accurate network documentation a specific configuration may take months to redesign.

Script

User selects "Application of Existing Technology."

Video

formula graphic

Asset # BENE09
See control diagram: Standard Slide Show



Asset # BENE10
See control diagram: Standard Slide Show



Asset # BENE11
See control diagram: Standard Slide Show



Overview Sub Section

Benefits

Application of Existing Technology

CMS Users
Cable Process Flow
Data Model
User Interface
Reporting

Exit Previous Index Map Help

Asset # T1. See control diagram T1



Audio

Script

Accugraph's Cable Management System integrates with a complete application suite of products designed for specific needs in the communications market.

All of these products leverage existing technology that is tried and true.

Script

For example, our Equipment Bay Management product (EBM), is a tool used for designing and provisioning equipment.

This has evolved into an object model that really lets the user model and design almost anything. This is the primary equipment engine used by CMS.

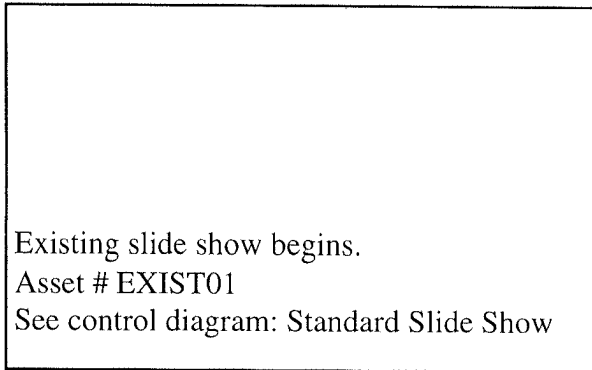
Script

The Cross Connect Management product, CCM, is used for cross connect management and automatic service assignments.

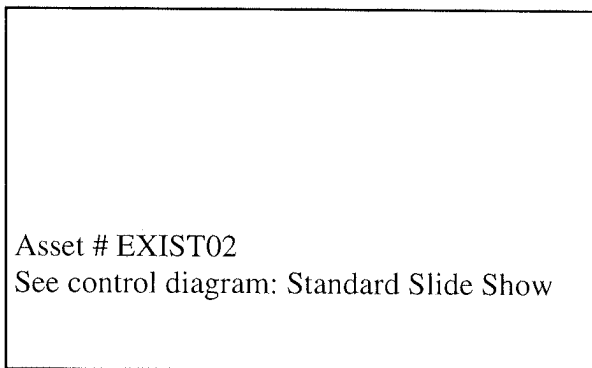
Script

This is the underlying engine that determines the best path to route infrastructure or service for assignment.

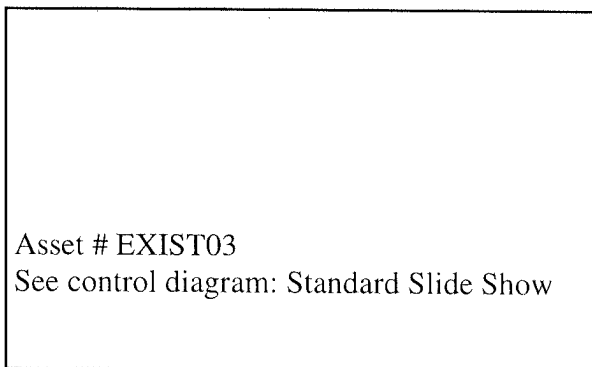
Video



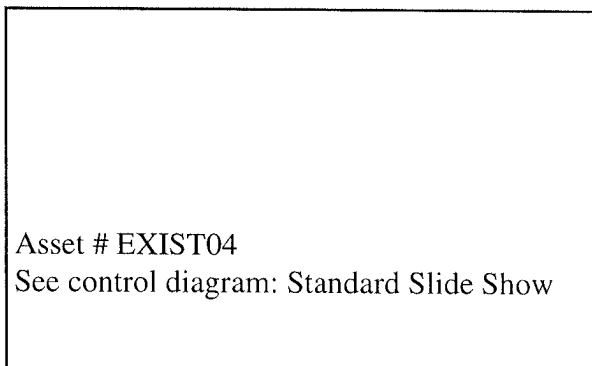
Existing slide show begins.
Asset # EXIST01
See control diagram: Standard Slide Show



Asset # EXIST02
See control diagram: Standard Slide Show



Asset # EXIST03
See control diagram: Standard Slide Show



Asset # EXIST04
See control diagram: Standard Slide Show

