

# CONTROL-M Presentation

# Introducing CONTROL-M

- CONTROL-M is an interoperable solution for the integration of production control from a focal point of management across diverse environments

- Challenges

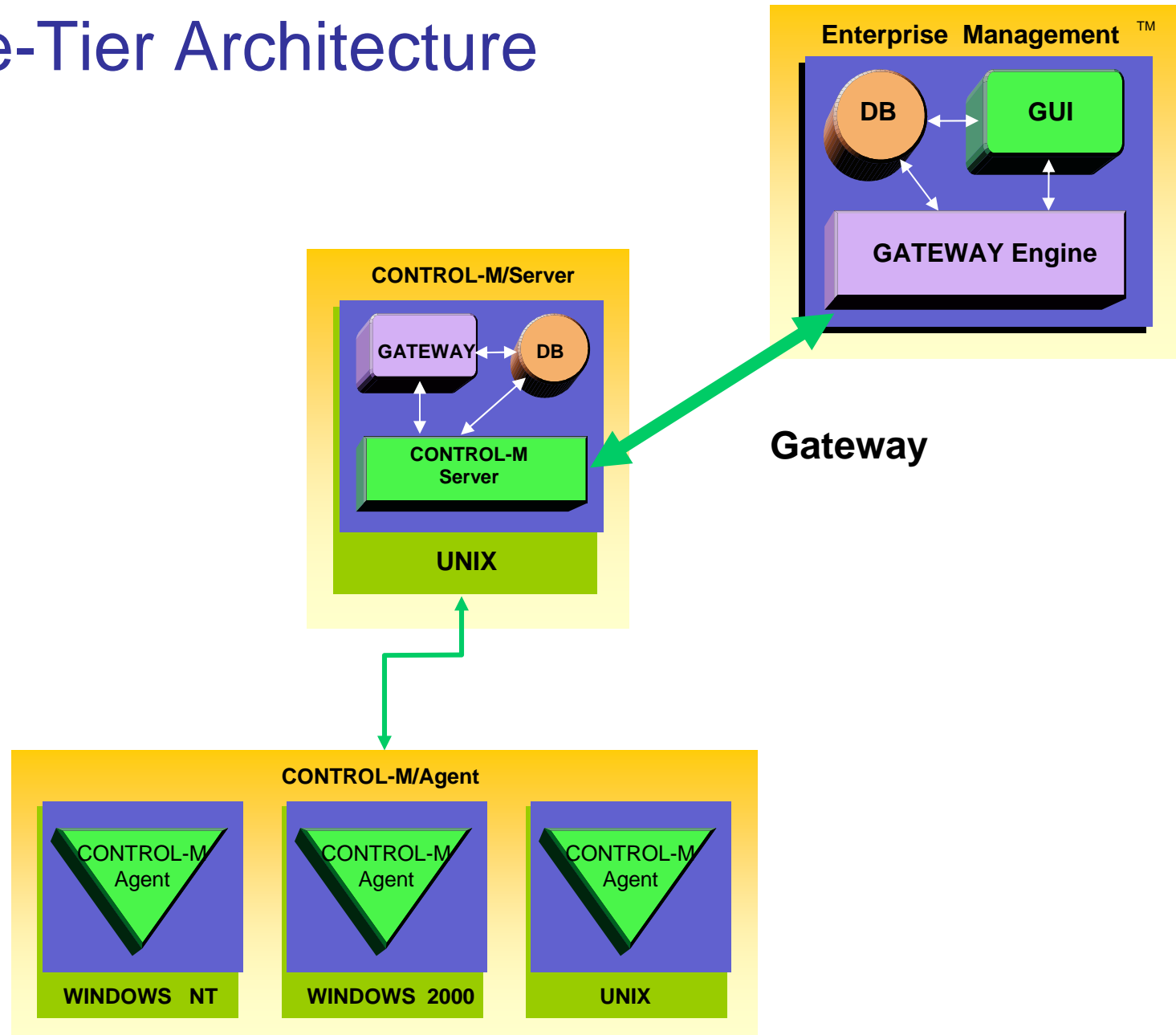
Managing the enterprise vs. Platforms

Controlling the Business Process

Alert reactivity

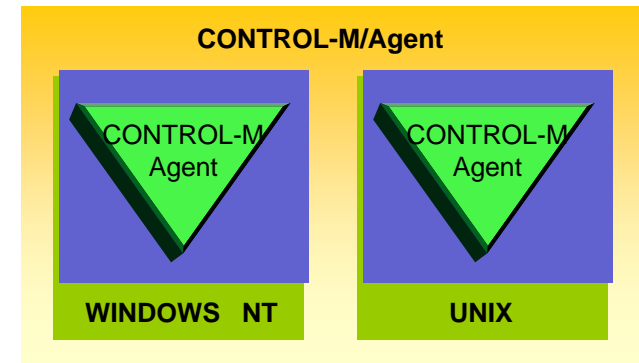
# Control-m Architecture

# Three-Tier Architecture



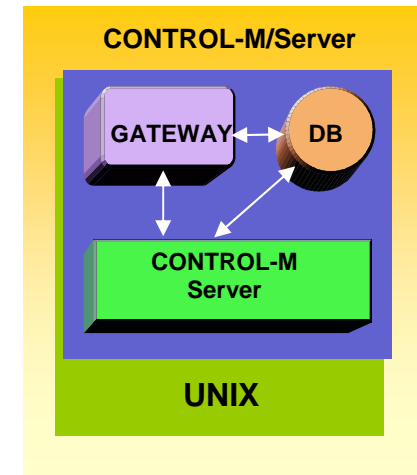
Gateway

# Control-M Agent



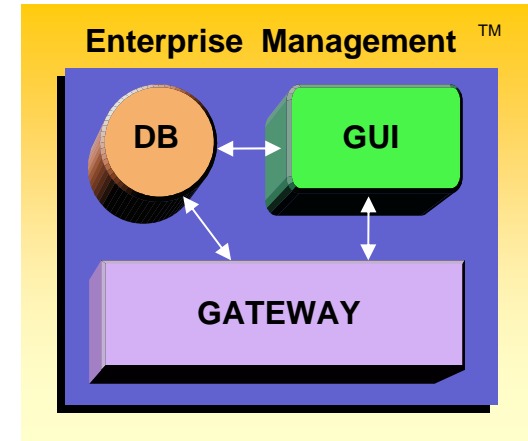
- Run under Windows NT/200, Unix, etc ...
- Submit, monitor, control and manage jobs
- Receive order from Control-M Server
- Send result to Control-M Server

# Control-M Server



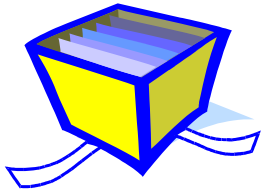
- It's the engine of Control-M
- Contain all job definitions
- Contain all calendars
- Activate and Control the « up to plan »

# Enterprise Management



- Focal point of control
- Standard GUI for all the Production platforms
- Responsible for cross-platform dependencies
- Give graphic tools to develop jobs

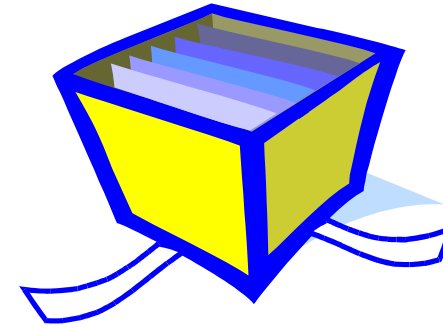
# Job Definitions





# Control-M Job Definition

- What ?
- Where ?
- Who ?
- When ?
- Flow Control ?
- Resource Requirements
- Results Control



# What do we schedule

- Unix shell scripts

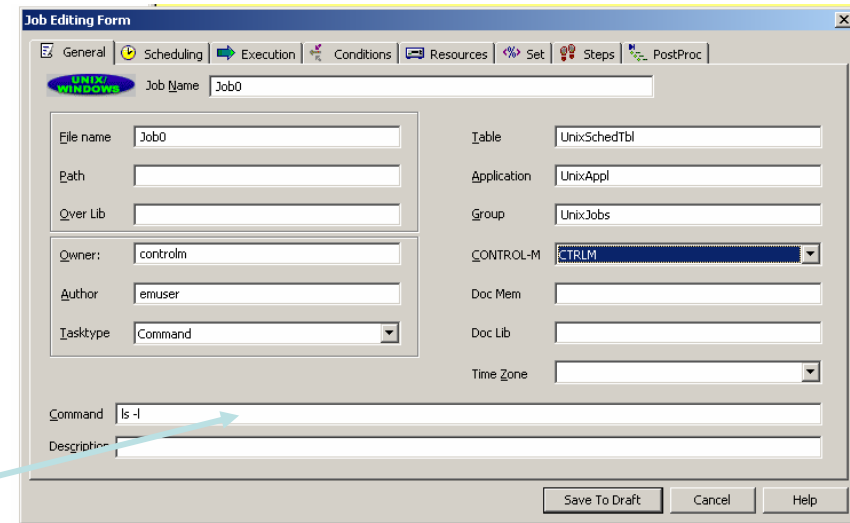
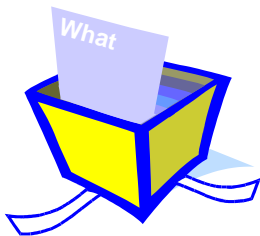
/export/home/hipfeed/interfaces/scripts/ft\_process.pl

- NT Batch Files (.bat .cmd)

d:\prod\Ctm\Copy\_Logs\del\_logs.cmd

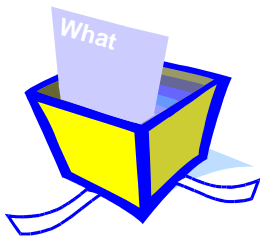
- Executable

- Operator Commands



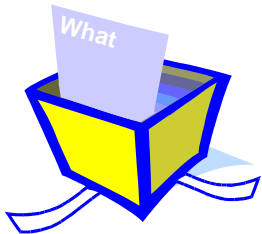
**Execute Command  
ls -l**

# Where do we run

A screenshot of the 'Job Editing Form' window. The window has a title bar 'Job Editing Form' and a menu bar with 'General', 'Scheduling', 'Execution', 'Conditions', 'Resources', 'Set', 'Steps', and 'PostProc'. The 'Execution' tab is selected. The form contains several sections: 'Cyclic' with a checkbox and 'Rerun' section with 'Interval' (00000), 'Units' (Minutes), 'Maximum', and 'From' (Start); 'Critical' with a checkbox and 'Priority' field; 'Confirm' with a checkbox; 'Node ID/Group' with a text field; 'Multi Agent' with a checkbox; 'Maxwait' with a text field; and 'Time' section with '(Format)HH:MM:SS', 'From', and 'Until' fields. At the bottom are 'Save To Draft', 'Cancel', and 'Help' buttons. A red arrow points from the 'Node ID/Group' field to the first bullet point in the list below.

- Which server do we use
- Does it have a Control-M Agent
- Is it a Production or a Uat agent

# Who can execute it

A screenshot of the 'Job Editing Form' window in Control-M. The window has a title bar with 'Job Editing Form' and a close button. Below the title bar is a menu bar with 'General', 'Scheduling', 'Execution', 'Conditions', 'Resources', 'Set', 'Steps', and 'PostProc'. The 'General' tab is selected. The form contains several fields: 'Job Name' (Job0), 'File name' (Job0), 'Path', 'Over Lib', 'Owner' (controlm), 'Author' (enuser), 'Task type' (Command), 'Table' (UnixSchedTbl), 'Application' (UnixAppl), 'Group' (UnixJobs), 'CONTROL-M' (CTRLM), 'Doc Mem', 'Doc Lib', 'Time Zone', 'Command' (ls -l), and 'Description'. At the bottom right, there are buttons for 'Save To Draft', 'Cancel', and 'Help'. A light blue arrow points from the 'Owner' field to the first bullet point in the list below.

- Which user login is needed to run the job
- Does the user login have access right to run the job.

# When : Date & time Scheduling Criteria



- Specific days of the month/week/period
- Automatic holiday processing
- The nth workday
- The nth last workday
- Time window
- Job can be executed in several times in cyclic mode with personal interval

# When : Selecting a Date

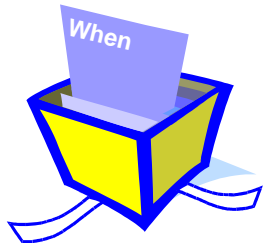


**Run every: 1st, 2nd, 3rd, 4th, 7th and 23rd of the month.**

**Run every: Monday, Wednesday, Friday**

**Depend to working days**

# When : Calendars



CONTROL-M:CTMPFR1 Regular Calendar:WD\_UK

Year: 2002

Description: WORKING DAY UK 2002

Buttons: New..., Delete, Advanced

Months: January, February, March, April, May, June, July, August, September, October, November, December

Grid cells: Y (Working Day), N (Not Working Day), S (Saturday), S (Sunday)

Bank Holiday in June: 4th (circled in blue)

UK Working Days  
Calendar for Year 2002

No Run :  
Bank Holidays

# When : Complex Dates



**Job Editing Form**

General Scheduling Execution Conditions Resources %% Set

Month Days

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Week Days

Sunday  
 Monday  
 Tuesday  
 Wednesday  
 Thursday  
 Friday  
 Saturday

and or

Dates

+4;20,L31

Month Days Calendar: WD

Weekdays Calendar:

JAN  FEB  MAR  APR  MAY  JUN  
 JUL  AUG  SEP  OCT  NOV  DEC

Confcal: Shift: Ignore Job

OK Annuler Aide

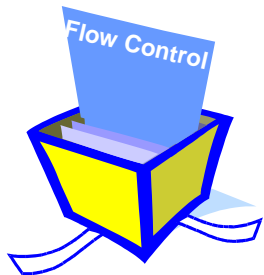
**Run on the 4<sup>th</sup> of the month, in addition to the day in WD Calendar**

**Last Working Day of the month**



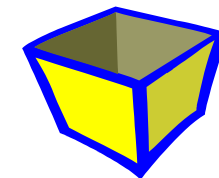
# What is a condition

- Is a Flag sent in PREREQUISITE CONDITIONS BOX under Enterprise ControlStation
- This Flag can be expected by one or several other jobs.
- It is not a « goto » command
- A condition depends to the ODAT (Control-M Systeme Date)

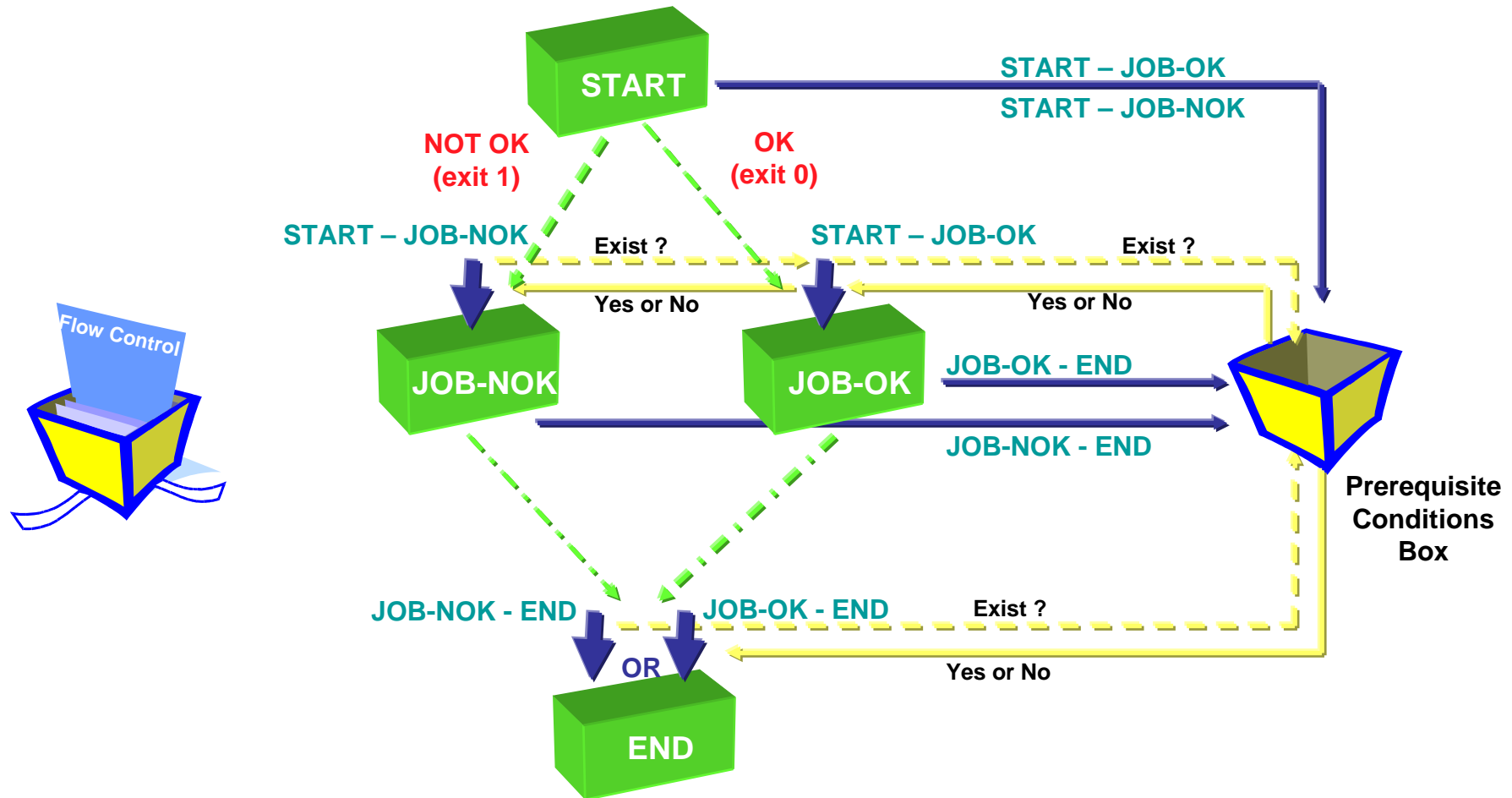


The screenshot shows a dialog box titled 'Prerequisite Conditions'. It has a 'Filter' checkbox and three input fields: 'Condition', 'Order Date', and 'CONTROL-M'. Below the input fields are 'Clear' and 'Apply' buttons. The main area is a table with columns 'Condition', 'Order Date', and 'CONTROL-M'. The table contains 15 rows of data, each with a green checkmark in the first column. To the right of the table are 'New...', 'Delete', 'Refresh', and 'Close' buttons.

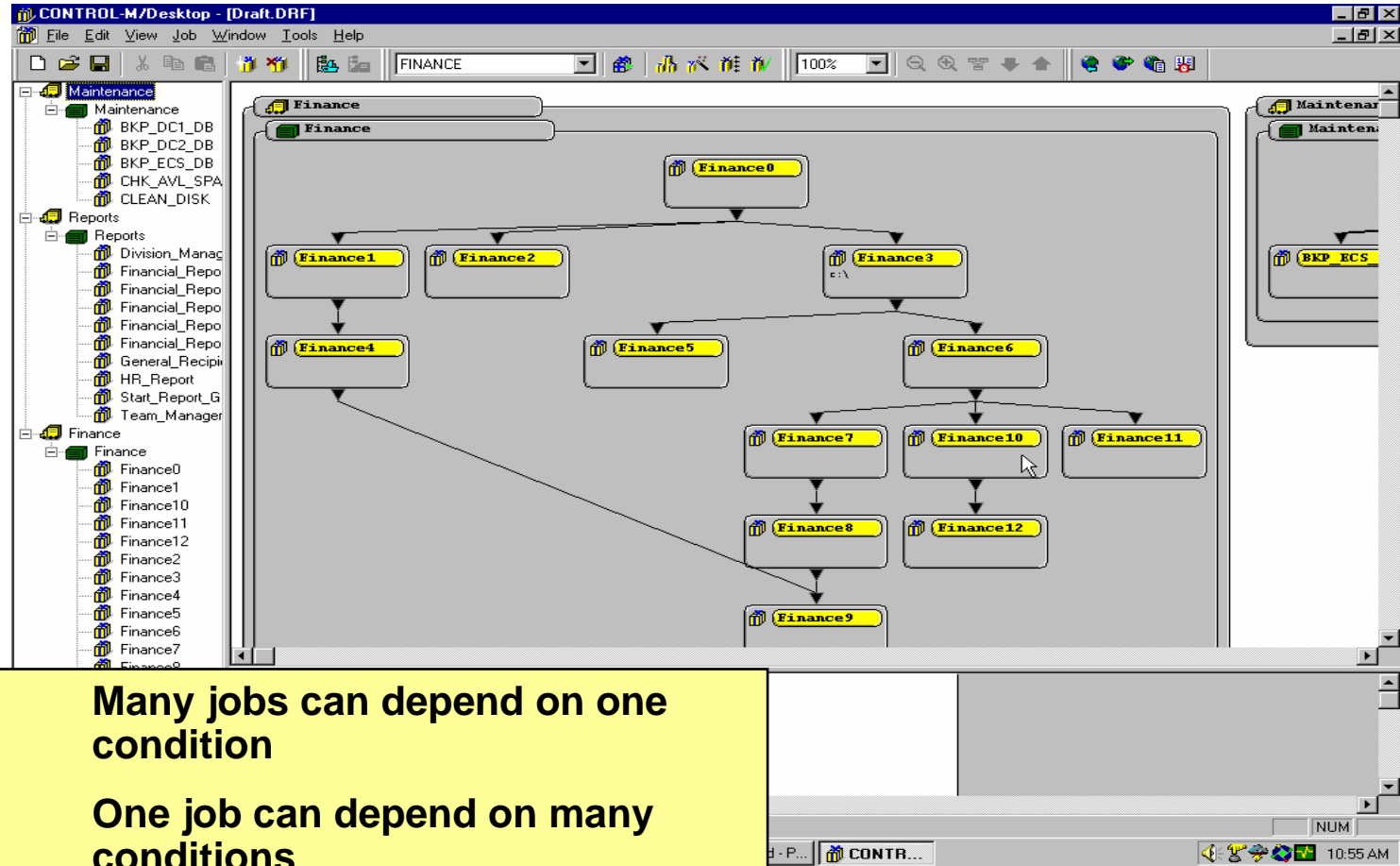
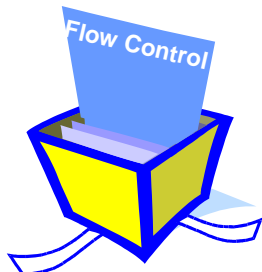
Condition	Order Date	CONTROL-M
✓ BCRPTRT1BCRP...	05/11	CTMPFR1
✓ BCRUSTARTBC...	05/11	CTMPFR1
✓ CLDELVLCLSEN...	04/11	CTMPFR1
✓ CLPRDRM1CLCT...	04/11	CTMPFR1
✓ CTDSHGEN01CT...	04/11	CTMPFR1
✓ CTD_GAU_END	05/11	CTMPFR1
✓ CTD_STARTCHE...	04/11	CTMPFR1
✓ CTMGNLGPR2C...	03/11	CTMPFR1
✓ CTMGNLGPR2C...	04/11	CTMPFR1
✓ CTMGNLGPR2C...	05/11	CTMPFR1
✓ CTMGNLGA2C...	03/11	CTMPFR1
✓ CTMGNLGA2C...	04/11	CTMPFR1
✓ CTMGNLGA2C...	05/11	CTMPFR1
✓ CTMTCTDMPC...	03/11	CTMPFR1
✓ CTMTCTDMPC	04/11	CTMPFR1



# Condition Process

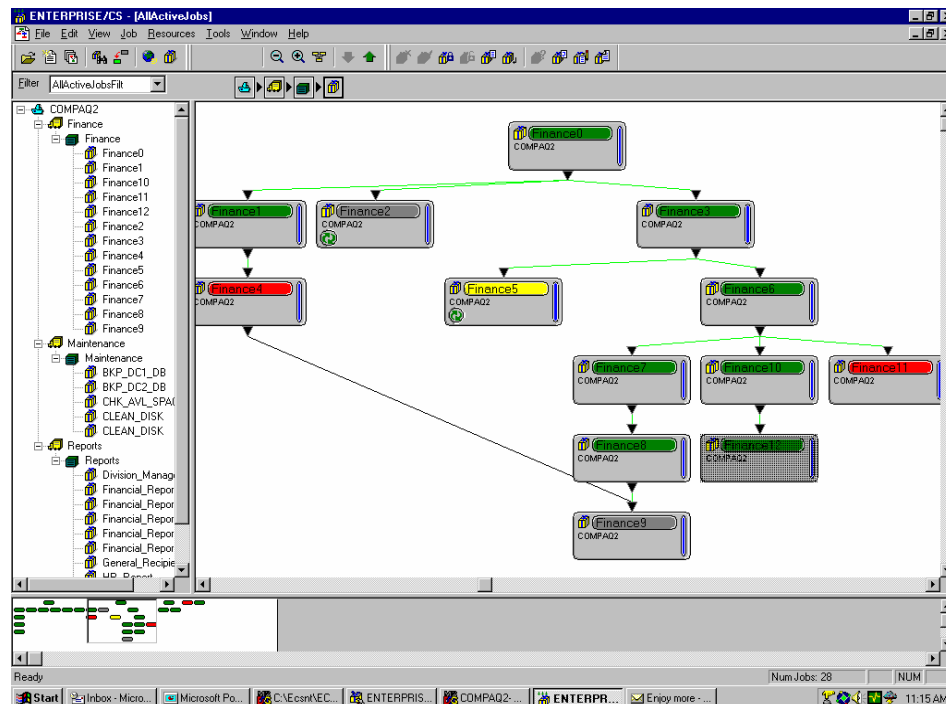
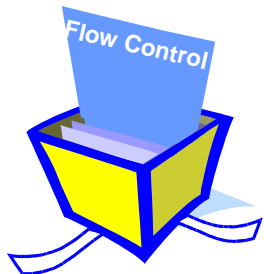


# Complex Dependencies



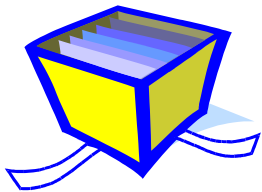
# Benefits

- Cross-platform automation flow
- No need for manual intervention
- Create a Business Process View
- Create a Focal Point of Control



# Resource Requirement

- Prevents resource contentions between jobs
- Provides workload balancing
- Eliminates contention bottlenecks



The screenshot shows the 'Job Editing Form' window with the 'Resources' tab selected. The window is divided into two main sections: 'Quantitative Resources' and 'Control Resources'.

**Quantitative Resources:**

Name	Quantity
SERVER	1

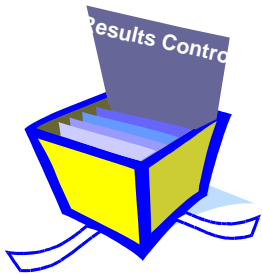
**Control Resources:**

Name	Control

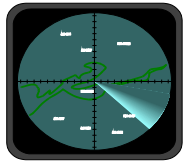
At the bottom of the 'Control Resources' section, there are radio buttons for 'Shared' and 'Exclusive', with 'Exclusive' selected. Below the main form area are three buttons: 'Save To Draft', 'Cancel', and 'Help'.

# Results Control

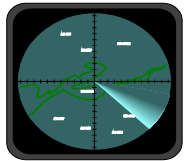
- Capture Standard OUTPUT in Sysout
- Sysout contain and Error Code will be tested
- Shout Message can be sent to User Mail, Distribution List, Console ...
- Rerun Facility
  - Runs same job « n » times
  - Runs another job
  - Stop a Cyclic Job



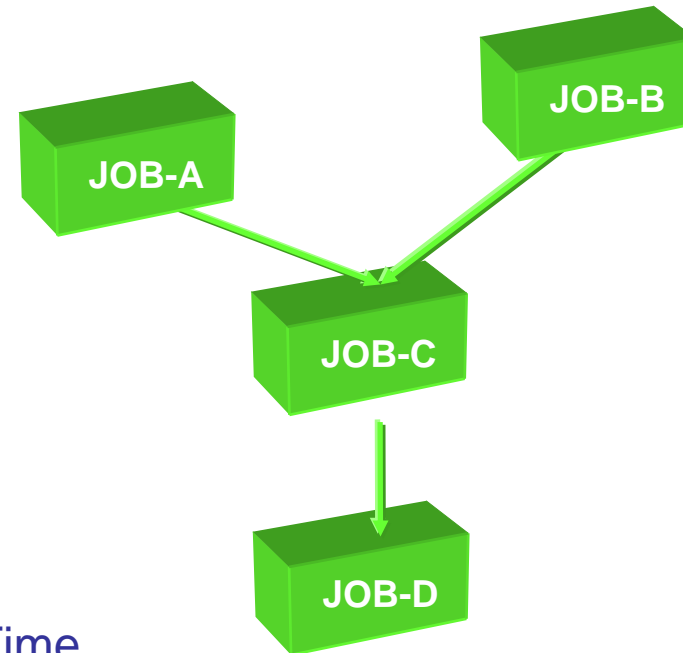
# Job Process



# Dynamic Scheduling



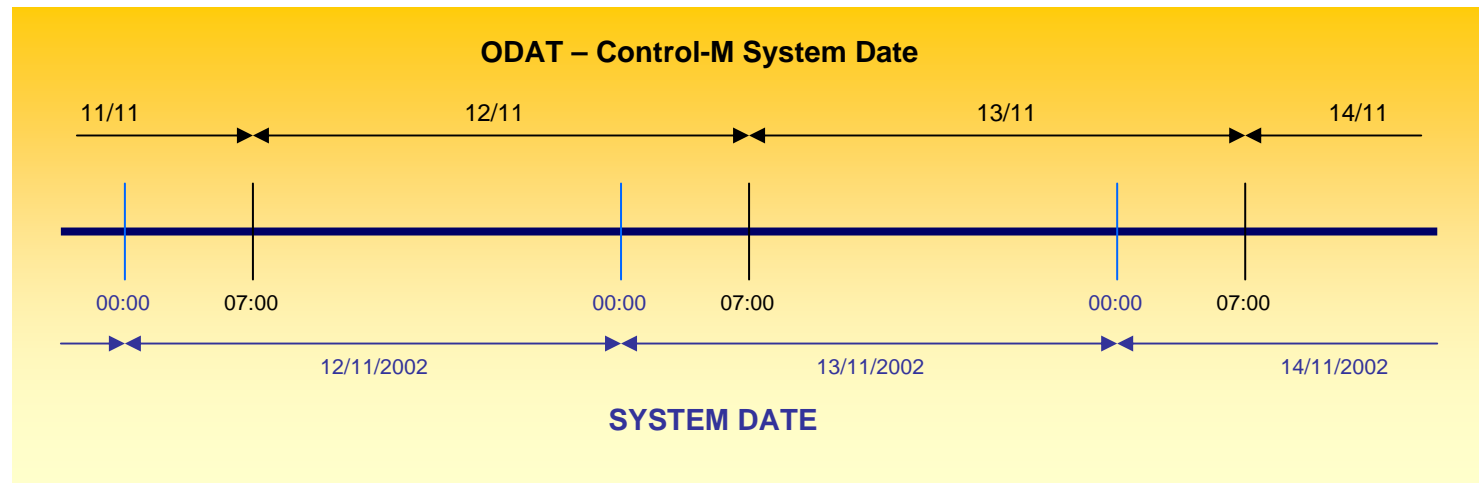
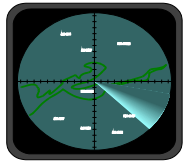
- We can accumulate
  - Conditions
  - Schedule Date and Time
  - Quantitative Resource





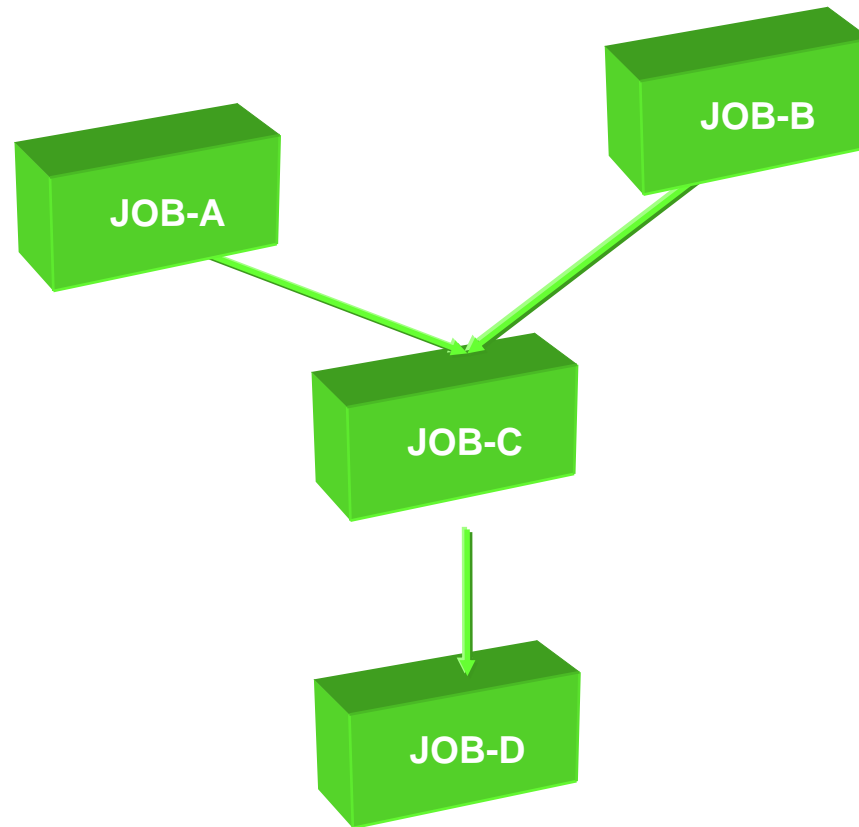
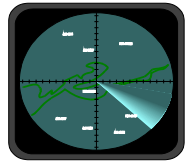
# Schedule PLAN

- To be executed, a job should be up to plan.
- A plan is a period of 24 hours
- The plan begins at 7:00 AM (for that example)
- The plan stops at 6h59 AM the following day
- The Control-M System Date isn't a System Date



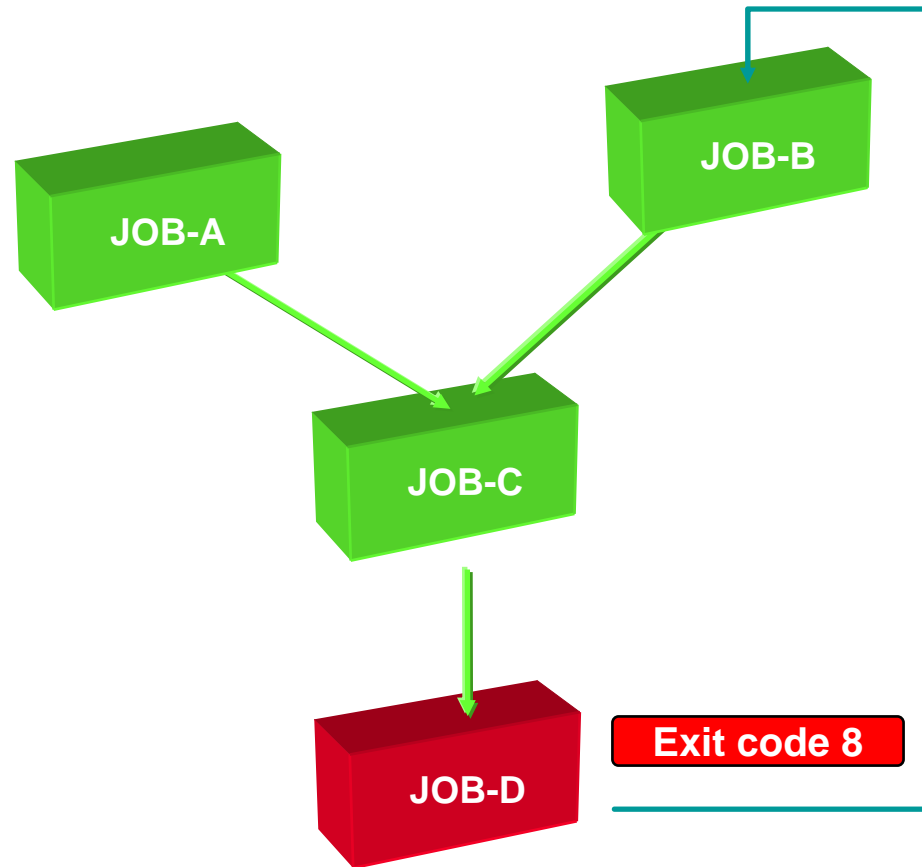
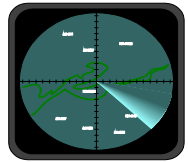
# Dynamic Scheduling

*If all goes well ...*



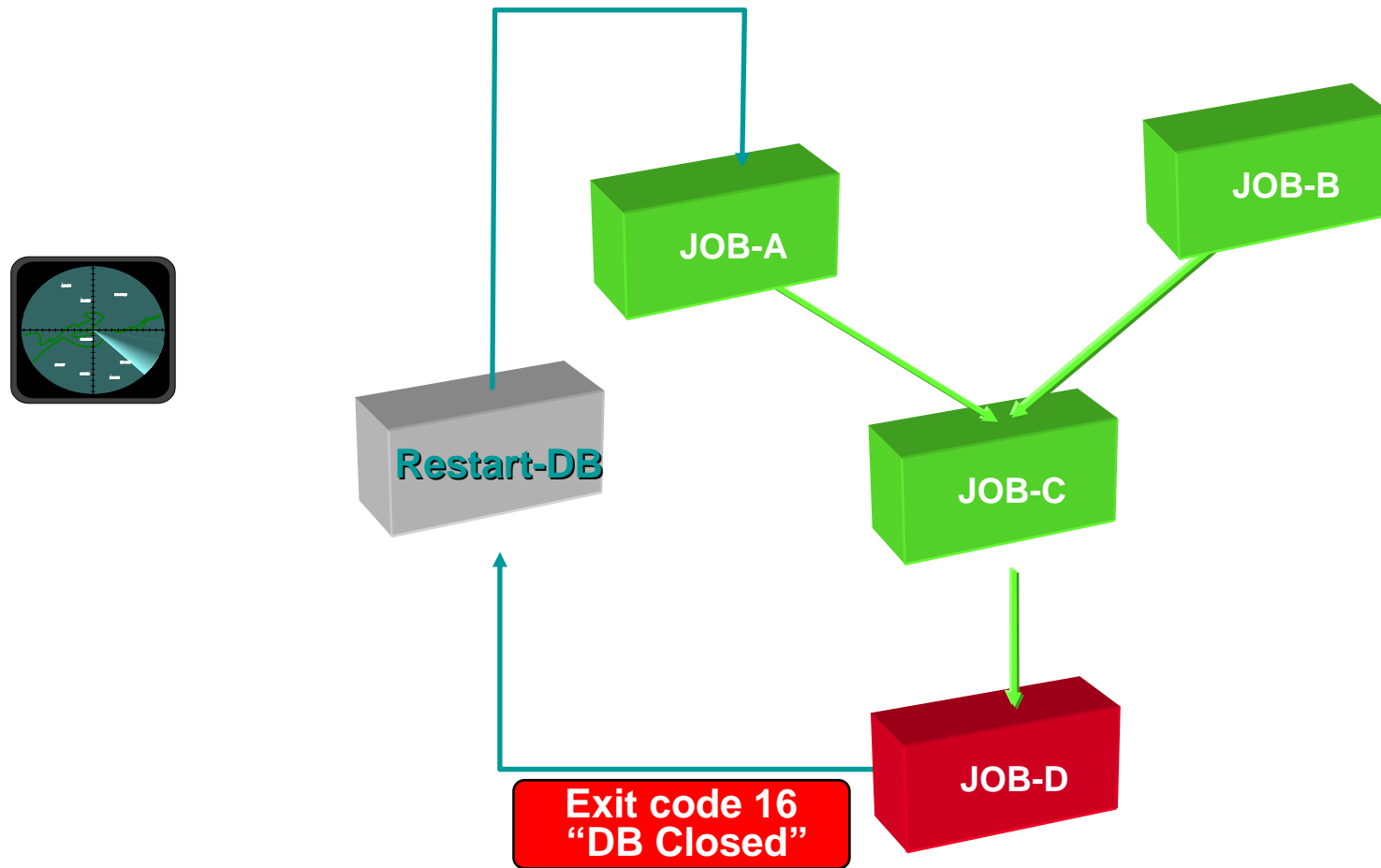
# Dynamic Scheduling

## *Problem ...*



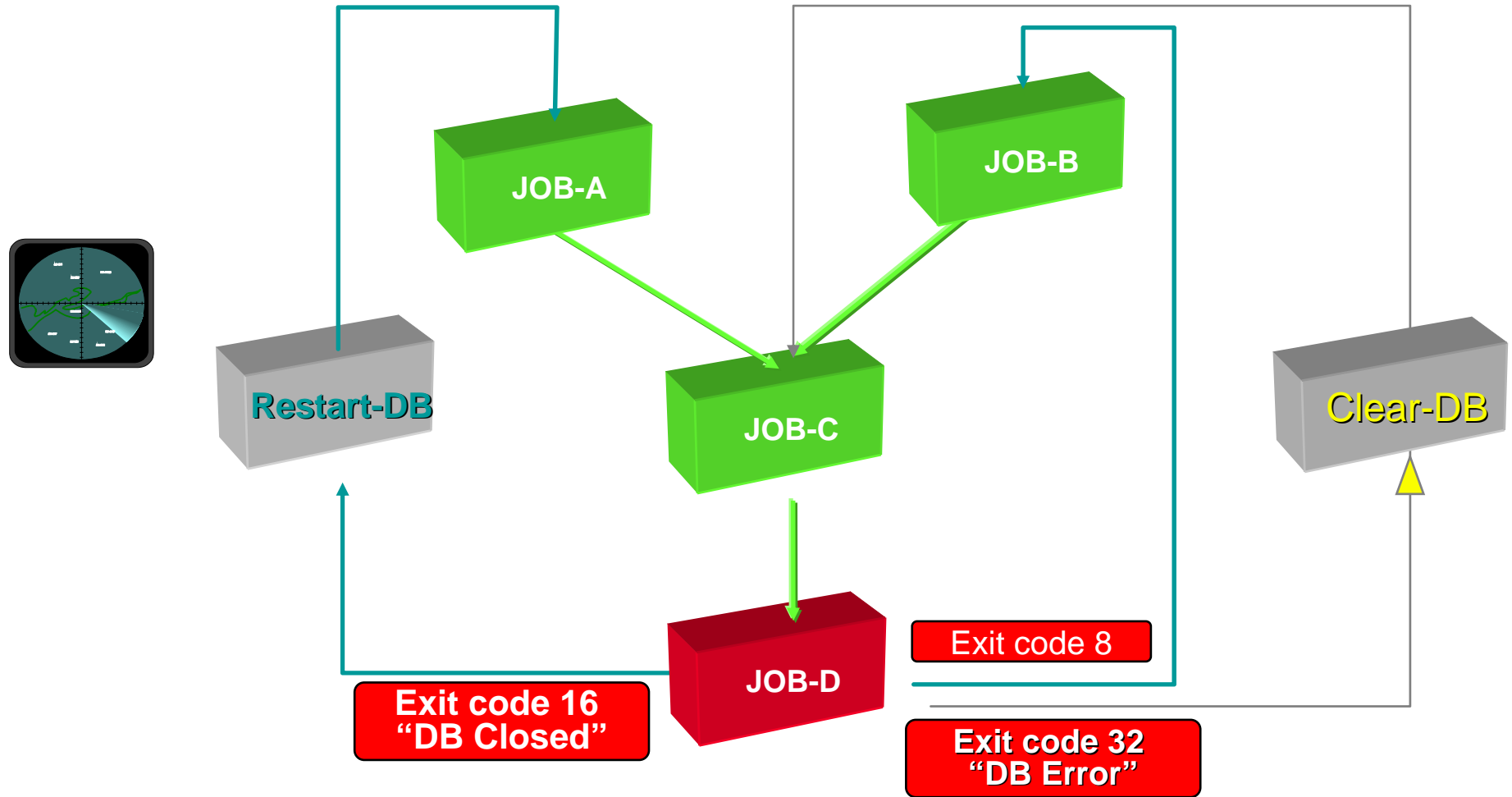
# Dynamic Scheduling

## *Other Problems ...*

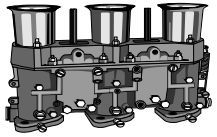


# Dynamic Scheduling

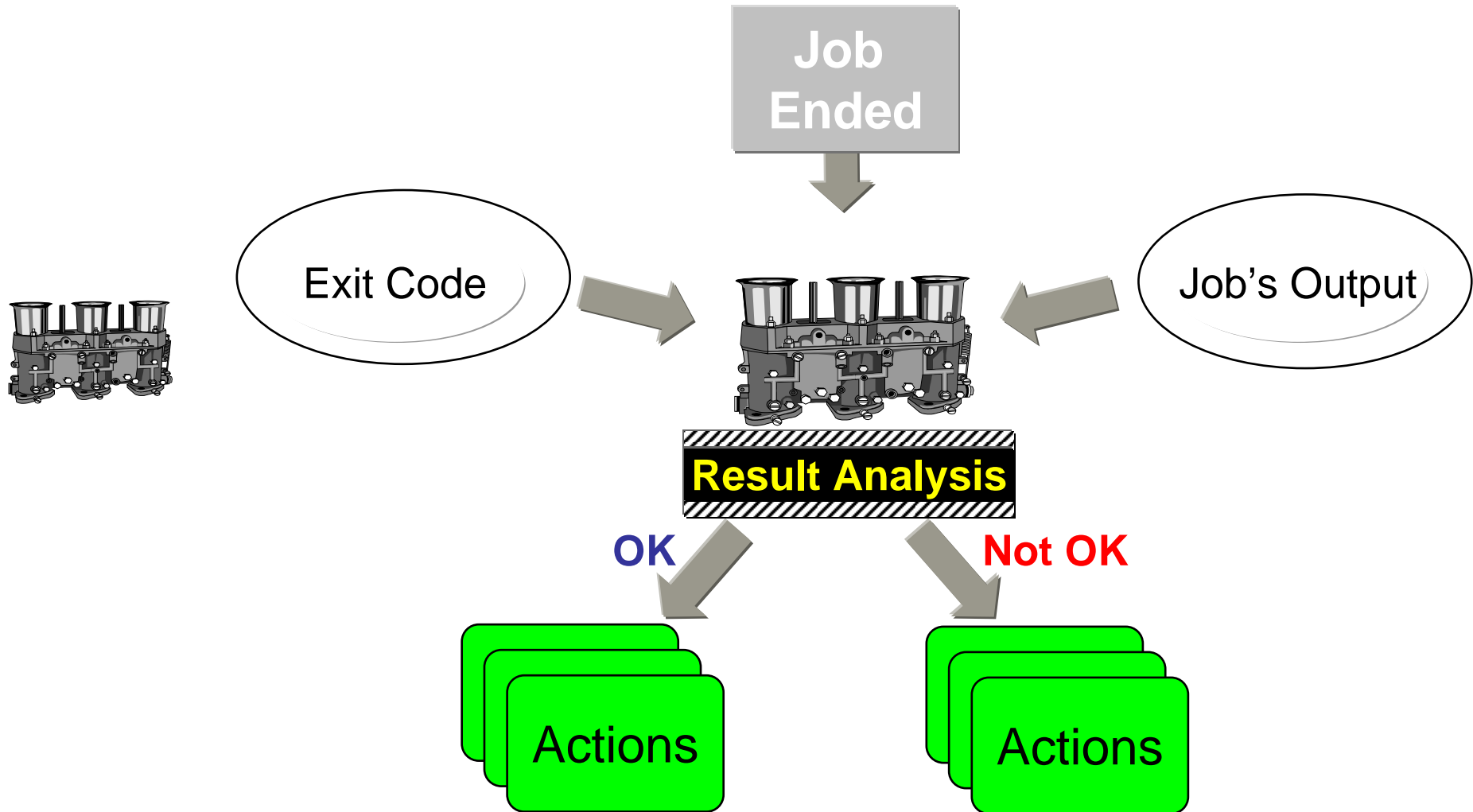
## *Many Problems ...*



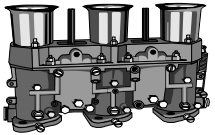
# Result Analysis



# Error Recovery Process



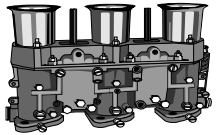
# Result Analysis



- CONTROL-M is capable of detecting errors and react to them dynamically
- Analyze contents of the Job Log
- Match Line of statement with statement output and errors (contain of sysout)
- Actions :
  - Set completion status to Ok or NOTOK
  - Set a parameter value (counter)
  - Create or delete a condition
  - Force a job to run
  - Notify a user or console message
  - Rerun the job
  - Stop Cyclic

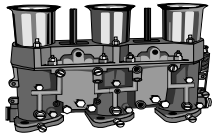


# Result Analysis – Control-M Logs



```
ENTERPRISE/CS
Date      Time      Code   Job Name Job Id  ----- Message -----
11/05/99 19:25:54 CS5065                ORDERED JOB:245; DAILY FORCED, ODATE 19990511
11/05/99 19:26:04 SL5120                JOB STATE CHANGED TO Wait Condition
11/05/99 19:26:47 SL5105                SUBMITTED AT 19990511192647 TO compaq2
11/05/99 19:26:58 TR5080                FAILED TO SUBMIT JOB Finance3. Message from Ag
11/05/99 19:26:58 TR5103                No such file or directory: ""c:\\Finance3""
11/05/99 19:26:58 TR5134                ENDED NOTOK
11/05/99 19:26:59 TR5120                JOB STATE CHANGED TO Analyzed
11/05/99 19:27:03 SL5120                JOB STATE CHANGED TO Post processed
```

# Result Analysis – Job Sysout



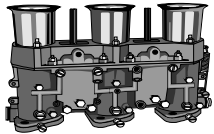
```
ENTERPRISE/CS
C:\CTMAG\EXE>dil
The name specified is not recognized as an
internal or external command, operable program or batch file.
```

The screenshot shows a standard Windows command prompt window. The title bar reads 'ENTERPRISE/CS'. The command prompt shows the current directory as 'C:\CTMAG\EXE' and the command 'dil' has been entered. The output is an error message: 'The name specified is not recognized as an internal or external command, operable program or batch file.' The window includes standard scrollbars and 'OK' and 'Fonts...' buttons at the bottom.

# Result Analysis - Unix

- Unix

```
$ cp /etc/passwd /tmp
$ cp /etc/passwdx /tmp
cp /etc/passwdx: No such file or directory
$ cp /etc/passwd /usr/kvm/xyzzzy
cp: /usr/kvm/xyzzzy: Permission denied
$ exit 12
```



## On Statement/Code examples for this job:

On Stmt	<code>cp /etc/passwdx/tmp</code>
Code	No such file or directory (the string 'no*file' will also work - see wild card characters above)
On Stmt	<code>cp /etc/passwd/usr/kvm/xyzzzy</code>
Code	<code>cp *: Permission denied</code>

# Result Analysis - NT/2000

- NT

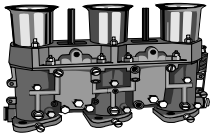
```
E:\fcopy -recover -context_file="fccf_00007"
```

```
FCOPY-I-CMD_LINE - Original command was :
```

```
fcopy "E:\\fastcopy\\*.doc" "\\nt-tlv2\\tmp" -report -user="fctest" -  
password=PASSWORD -replace -context_file="fccf_00007"
```

```
FCOPY-E-CONNECTREF, could not connect to node nt-tlv2
```

```
-SYS-E-ERRMSG, Connection refused
```

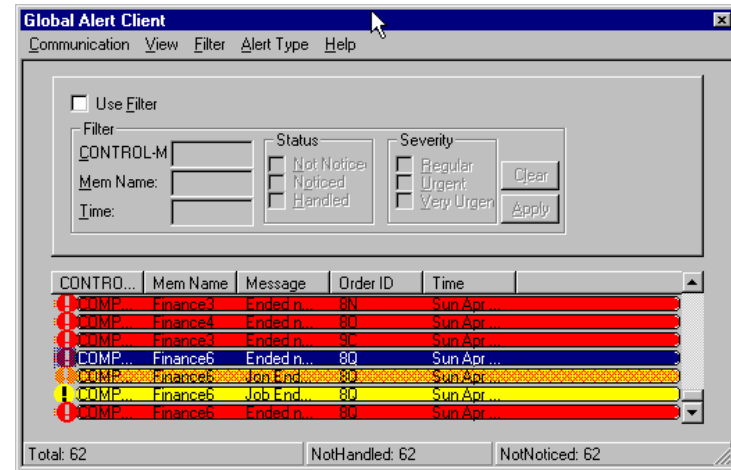
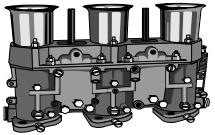


## On Statement/Code examples for this job:

On Stmt	fcopy*
Code	*could not connect to node nt-tlv2*

# Error Message

- Regular (Green)  
Message for information  
Use to keep log information  
No Pilote Action
- Urgent (Orange)  
Warning Message  
Need Pilote acknowledgement  
Not a Critical Problem
- Very Urgent (Red)  
Critical Message  
Need Pilote acknowledgement  
Critical Problem, need immediate action



# What do we need

- For the Control-M Diagram
  - A Organization Chart of the treatments
  - An Application Architecture Diagram
- For Each Job Definitions
  - External parameters and processes
  - Command Line or Executable
  - User Login
  - Scheduling Criteria (Date, Time, Calendar...)
  - Error code and Error Message Received and To be Sent
  - Actions List, Order for each error