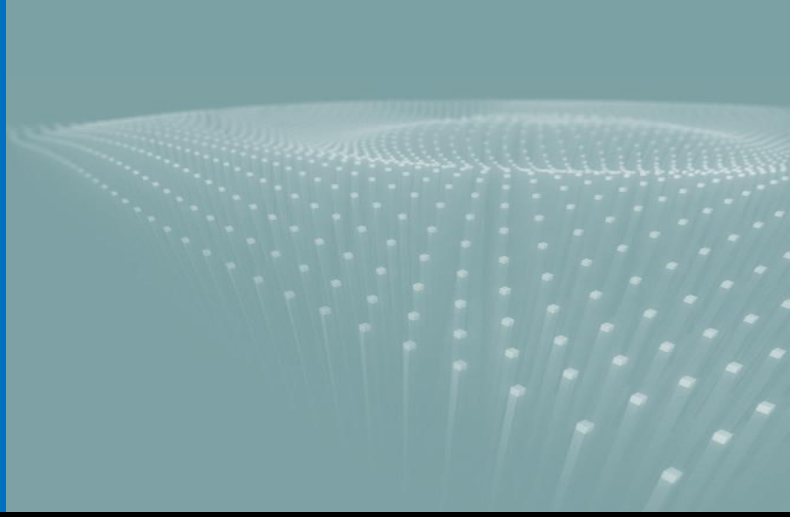
I LEAN PROJECT MANAGEMENT FORUM '10



Aurora-CCPM

Critical Chain Project Management
with Intelligent Scheduling

LEAN PROJECT SOLUTIONS By SYSTEM

SYSTEM® Value&Innovation

Stottler Henke Smarter Software Solutions

UAB

ALSTOM

About Stottler Henke

Stottler Henke
Smarter Software Solutions

Applies artificial intelligence and other advanced software technologies to solve problems that defy solution using traditional approaches.

- Planning & Scheduling, e.g., *Aurora-CCPM*
- Education & Training
- Decision Support
- Knowledge Management & Discovery

Founded in 1988

www.StottlerHenke.com

Aurora-CCPM History

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1990 1st Intelligent Scheduling Project – NASA's Kennedy Space Center (KSC)

1990's Several IS projects independent of each other (most at NASA)

1999 Aurora conceived to subsume all

2000 Aurora designed and prototyped

2001 – 2003 Main Aurora implementation

2002 1st Aurora application delivered

2005 Critical Chain enhancement: Boeing & others

- Driven by need for Critical Chain capabilities that no one else had

Aurora-CCPM Critical Chain Summary

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Enterprise Level Critical Chain Project Management Software

Multi Project

Completely stand-alone

- Does NOT depend on any other product

However, designed to interface with other project management software and exchange information with databases

Aurora Unique Capabilities

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Enterprise level Critical Chain

Multiple-pass intelligent resource-constrained scheduling

Mixed-mode scheduling providing both forward and backward scheduling, available on a task-by-task basis.

Schedule Rationale – Aurora includes the rationale for each task on why it was schedule where it was schedule.

Designed to interface with other tools

Flexible Deployment

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- Completely stand-alone application on Windows, Linux & Mac
- Standalone Aurora with Database access
- Aurora Server version with Web access
- Flexible deployments
  - Windows XP to Windows Server
  - Linux
  - Mac
  - 32 or 64-bit

Potential Workflow w/ Current Project Mgmt. Software: E.g., Primavera P6

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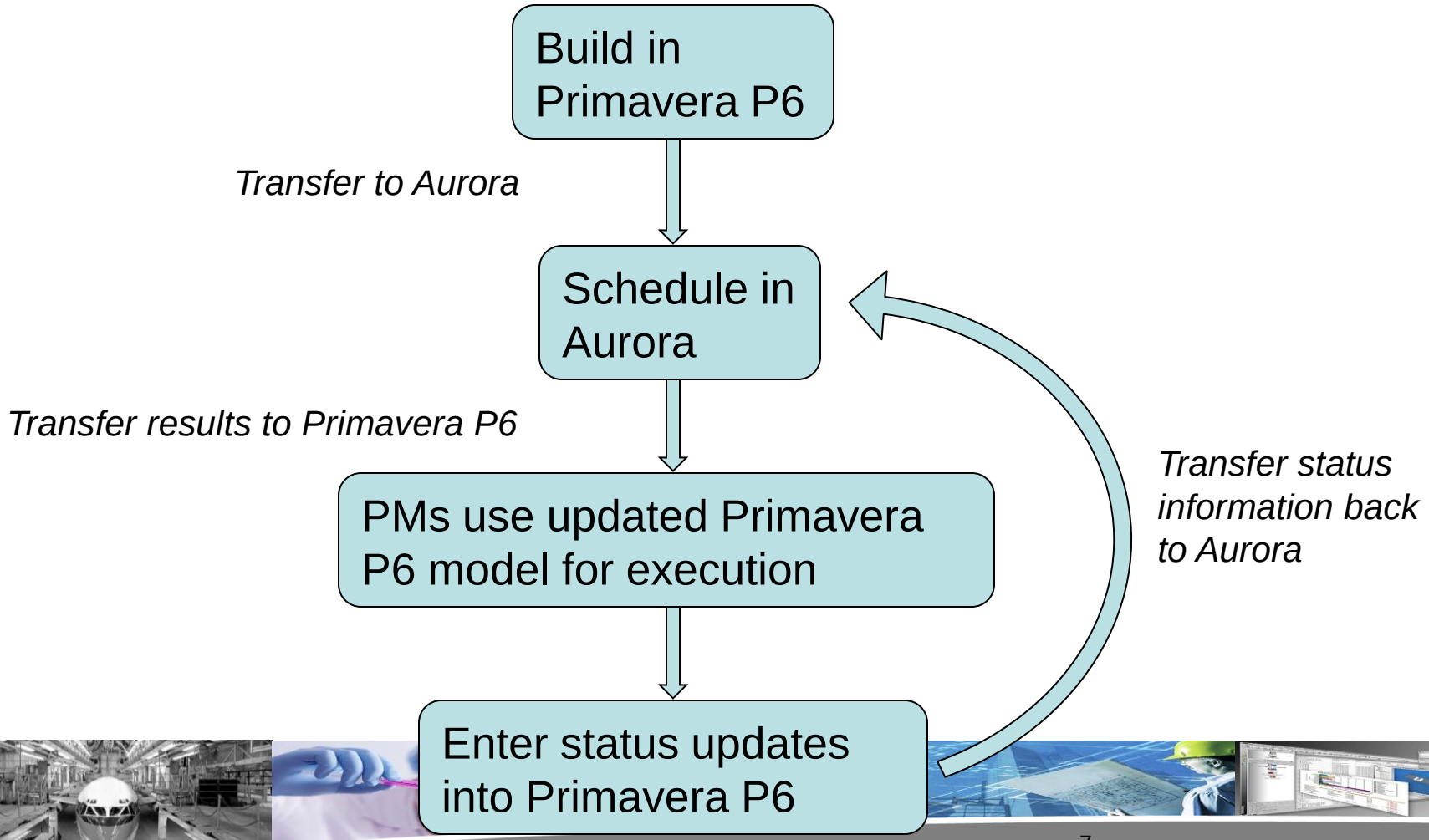
Smarter Software Solutions



Aurora 3rd Party Interface
For example: Primavera P6 & DB / SAP

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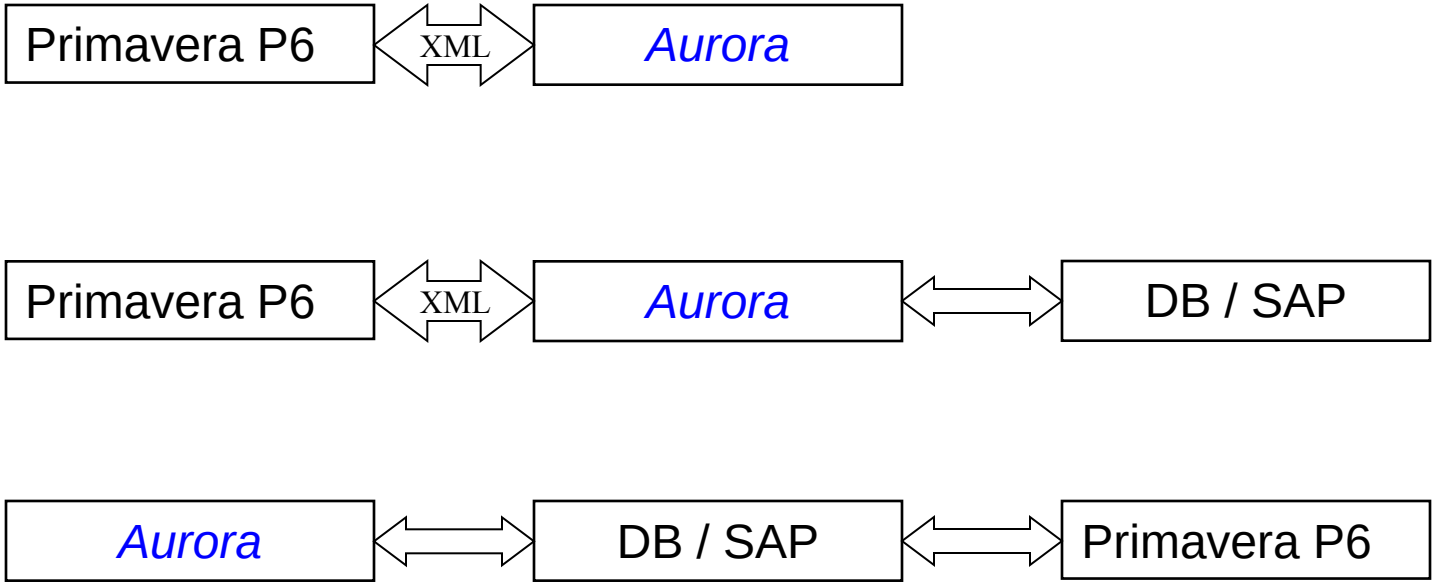

Aurora-CCPM Screenshots: Overview

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A Small Critical Chain Project (Critical Chain in Yellow w/ Bold Outline)

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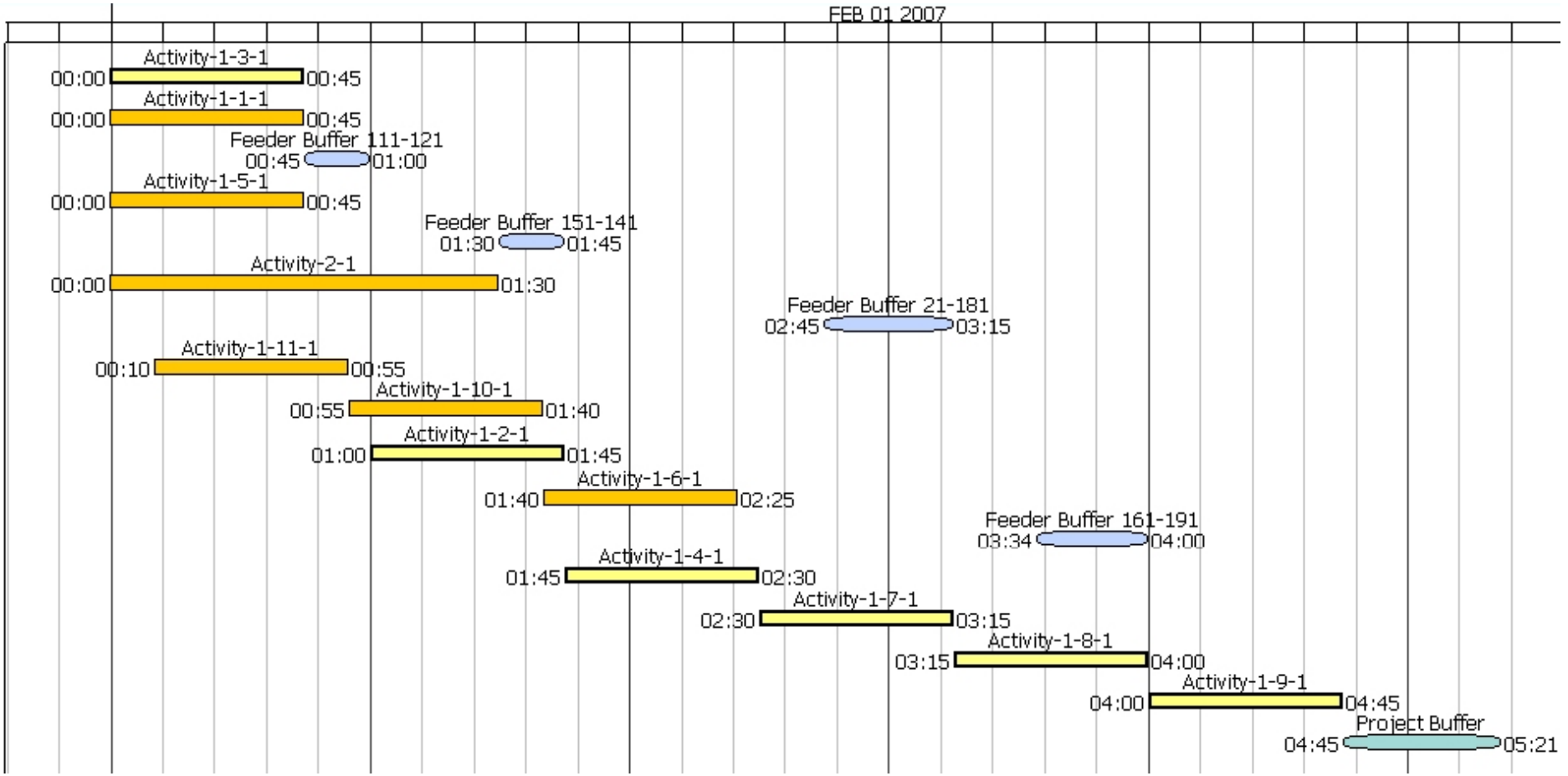
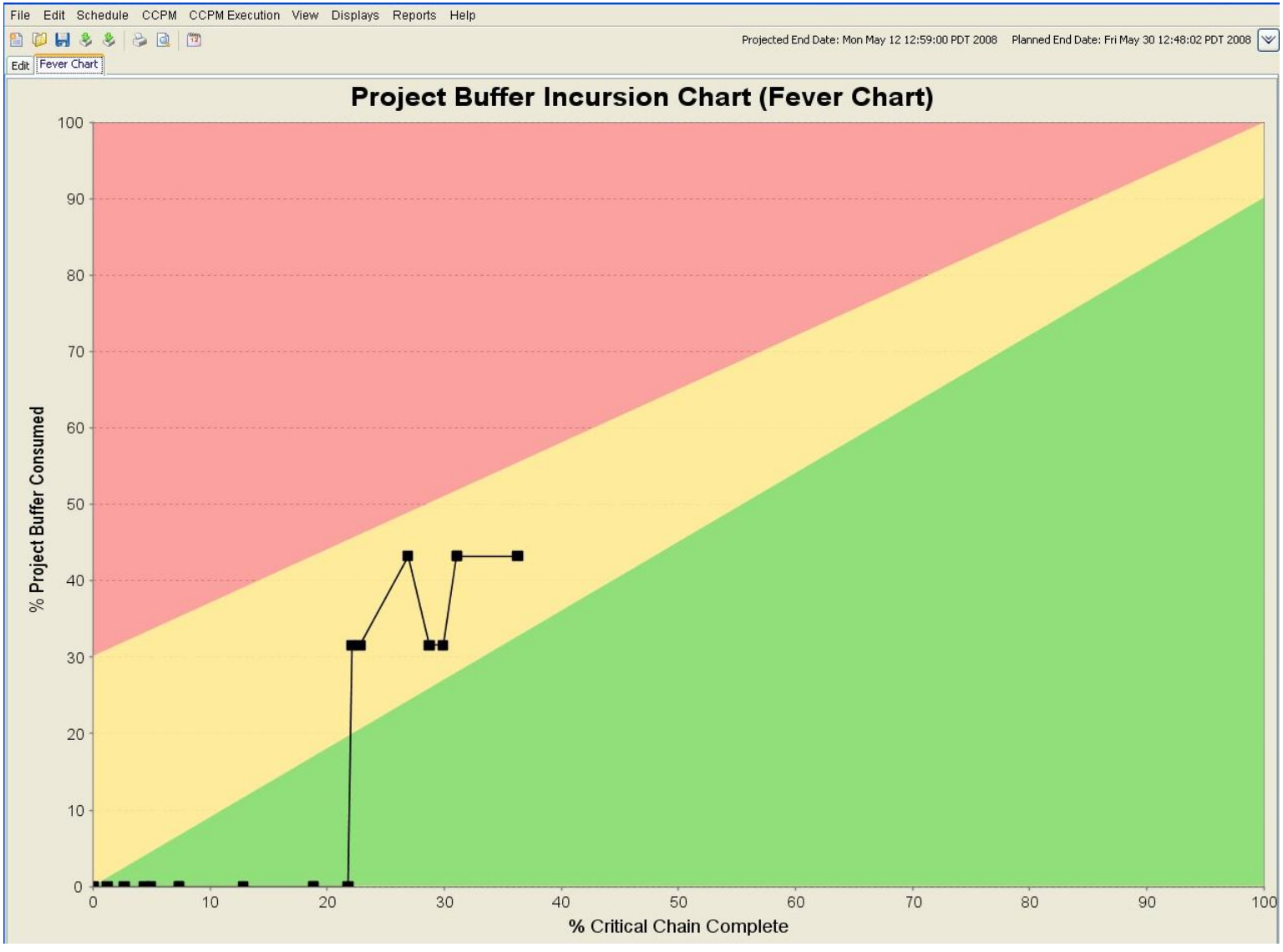
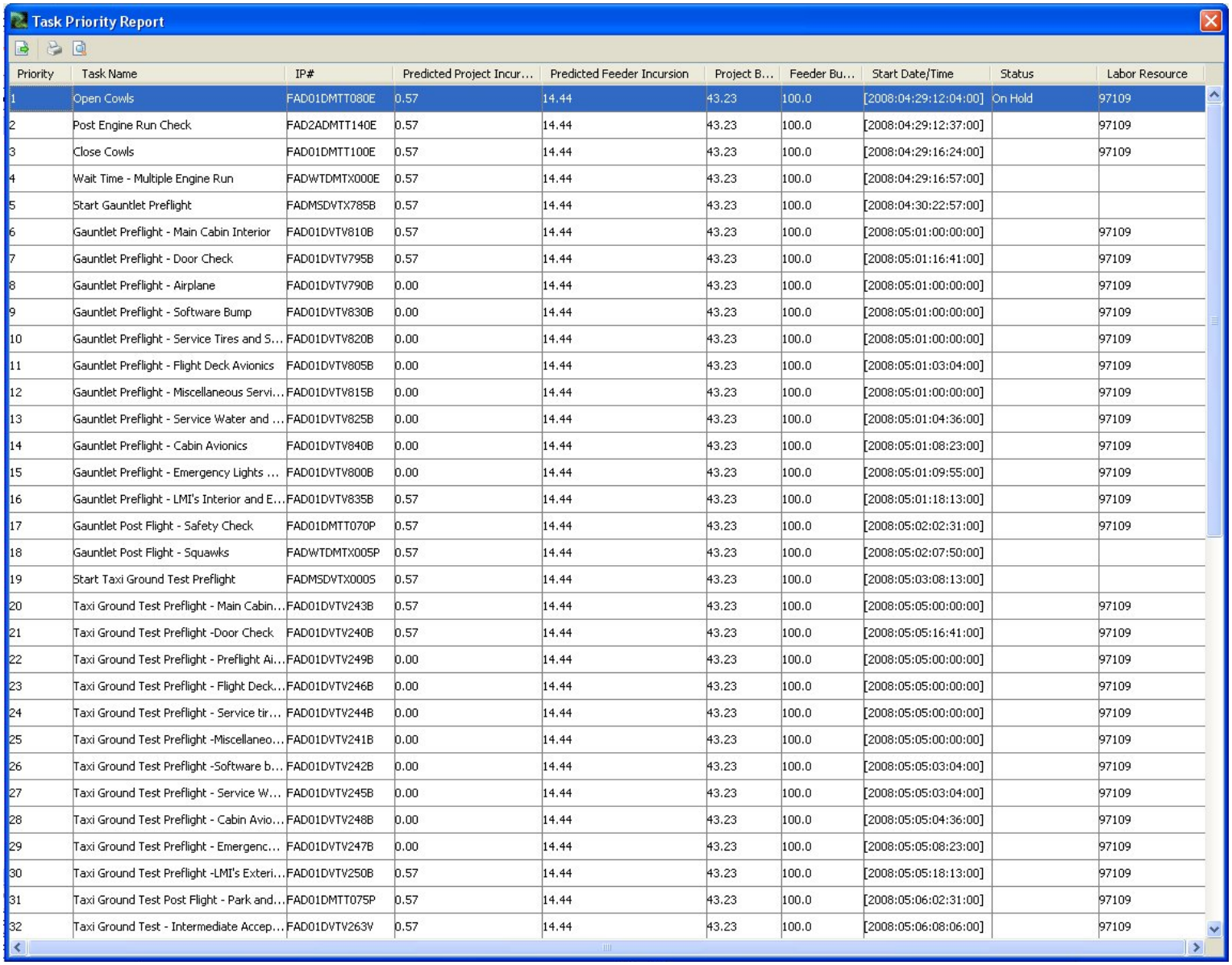


Fever Chart


File Edit Schedule CCPM CCPM Execution View Displays Reports Help
Projected End Date: Mon May 12 12:59:00 PDT 2008
Planned End Date: Fri May 30 12:48:02 PDT 2008
Edit
Fever Chart
Project Buffer Incursion Chart (Fever Chart)
% Project Buffer Consumed
% Critical Chain Complete
0
10
20
30
40
50
60
70
80
90
100

Task Priority Report



Task Priority Report

Priority	Task Name	IP#	Predicted Project Incur...	Predicted Feeder Incursion	Project B...	Feeder Bu...	Start Date/Time	Status	Labor Resource
1	Open Cowls	FAD01DMTT080E	0.57	14.44	43.23	100.0	[2008:04:29:12:04:00]	On Hold	97109
2	Post Engine Run Check	FAD2ADMTT140E	0.57	14.44	43.23	100.0	[2008:04:29:12:37:00]		97109
3	Close Cowls	FAD01DMTT100E	0.57	14.44	43.23	100.0	[2008:04:29:16:24:00]		97109
4	Wait Time - Multiple Engine Run	FADWTDMTX000E	0.57	14.44	43.23	100.0	[2008:04:29:16:57:00]		
5	Start Gauntlet Preflight	FADMSDVTX785B	0.57	14.44	43.23	100.0	[2008:04:30:22:57:00]		
6	Gauntlet Preflight - Main Cabin Interior	FAD01DVTV810B	0.57	14.44	43.23	100.0	[2008:05:01:00:00:00]		97109
7	Gauntlet Preflight - Door Check	FAD01DVTV795B	0.57	14.44	43.23	100.0	[2008:05:01:16:41:00]		97109
8	Gauntlet Preflight - Airplane	FAD01DVTV790B	0.00	14.44	43.23	100.0	[2008:05:01:00:00:00]		97109
9	Gauntlet Preflight - Software Bump	FAD01DVTV830B	0.00	14.44	43.23	100.0	[2008:05:01:00:00:00]		97109
10	Gauntlet Preflight - Service Tires and S...	FAD01DVTV820B	0.00	14.44	43.23	100.0	[2008:05:01:00:00:00]		97109
11	Gauntlet Preflight - Flight Deck Avionics	FAD01DVTV805B	0.00	14.44	43.23	100.0	[2008:05:01:03:04:00]		97109
12	Gauntlet Preflight - Miscellaneous Servi...	FAD01DVTV815B	0.00	14.44	43.23	100.0	[2008:05:01:00:00:00]		97109
13	Gauntlet Preflight - Service Water and ...	FAD01DVTV825B	0.00	14.44	43.23	100.0	[2008:05:01:04:36:00]		97109
14	Gauntlet Preflight - Cabin Avionics	FAD01DVTV840B	0.00	14.44	43.23	100.0	[2008:05:01:08:23:00]		97109
15	Gauntlet Preflight - Emergency Lights ...	FAD01DVTV800B	0.00	14.44	43.23	100.0	[2008:05:01:09:55:00]		97109
16	Gauntlet Preflight - LMI's Interior and E...	FAD01DVTV835B	0.57	14.44	43.23	100.0	[2008:05:01:18:13:00]		97109
17	Gauntlet Post Flight - Safety Check	FAD01DMTT070P	0.57	14.44	43.23	100.0	[2008:05:02:02:31:00]		97109
18	Gauntlet Post Flight - Squawks	FADWTDMTX005P	0.57	14.44	43.23	100.0	[2008:05:02:07:50:00]		
19	Start Taxi Ground Test Preflight	FADMSDVTX000S	0.57	14.44	43.23	100.0	[2008:05:03:08:13:00]		
20	Taxi Ground Test Preflight - Main Cabin...	FAD01DVTV243B	0.57	14.44	43.23	100.0	[2008:05:05:00:00:00]		97109
21	Taxi Ground Test Preflight -Door Check	FAD01DVTV240B	0.57	14.44	43.23	100.0	[2008:05:05:16:41:00]		97109
22	Taxi Ground Test Preflight - Preflight Ai...	FAD01DVTV249B	0.00	14.44	43.23	100.0	[2008:05:05:00:00:00]		97109
23	Taxi Ground Test Preflight - Flight Deck...	FAD01DVTV246B	0.00	14.44	43.23	100.0	[2008:05:05:00:00:00]		97109
24	Taxi Ground Test Preflight - Service tir...	FAD01DVTV244B	0.00	14.44	43.23	100.0	[2008:05:05:00:00:00]		97109
25	Taxi Ground Test Preflight -Miscellaneo...	FAD01DVTV241B	0.00	14.44	43.23	100.0	[2008:05:05:00:00:00]		97109
26	Taxi Ground Test Preflight -Software b...	FAD01DVTV242B	0.00	14.44	43.23	100.0	[2008:05:05:03:04:00]		97109
27	Taxi Ground Test Preflight - Service W...	FAD01DVTV245B	0.00	14.44	43.23	100.0	[2008:05:05:03:04:00]		97109
28	Taxi Ground Test Preflight - Cabin Avio...	FAD01DVTV248B	0.00	14.44	43.23	100.0	[2008:05:05:04:36:00]		97109
29	Taxi Ground Test Preflight - Emergenc...	FAD01DVTV247B	0.00	14.44	43.23	100.0	[2008:05:05:08:23:00]		97109
30	Taxi Ground Test Preflight -LMI's Exteri...	FAD01DVTV250B	0.57	14.44	43.23	100.0	[2008:05:05:18:13:00]		97109
31	Taxi Ground Test Post Flight - Park and...	FAD01DMTT075P	0.57	14.44	43.23	100.0	[2008:05:06:02:31:00]		97109
32	Taxi Ground Test - Intermediate Accep...	FAD01DVTV263V	0.57	14.44	43.23	100.0	[2008:05:06:08:06:00]		97109

Aurora / Aurora-CCPM Applications

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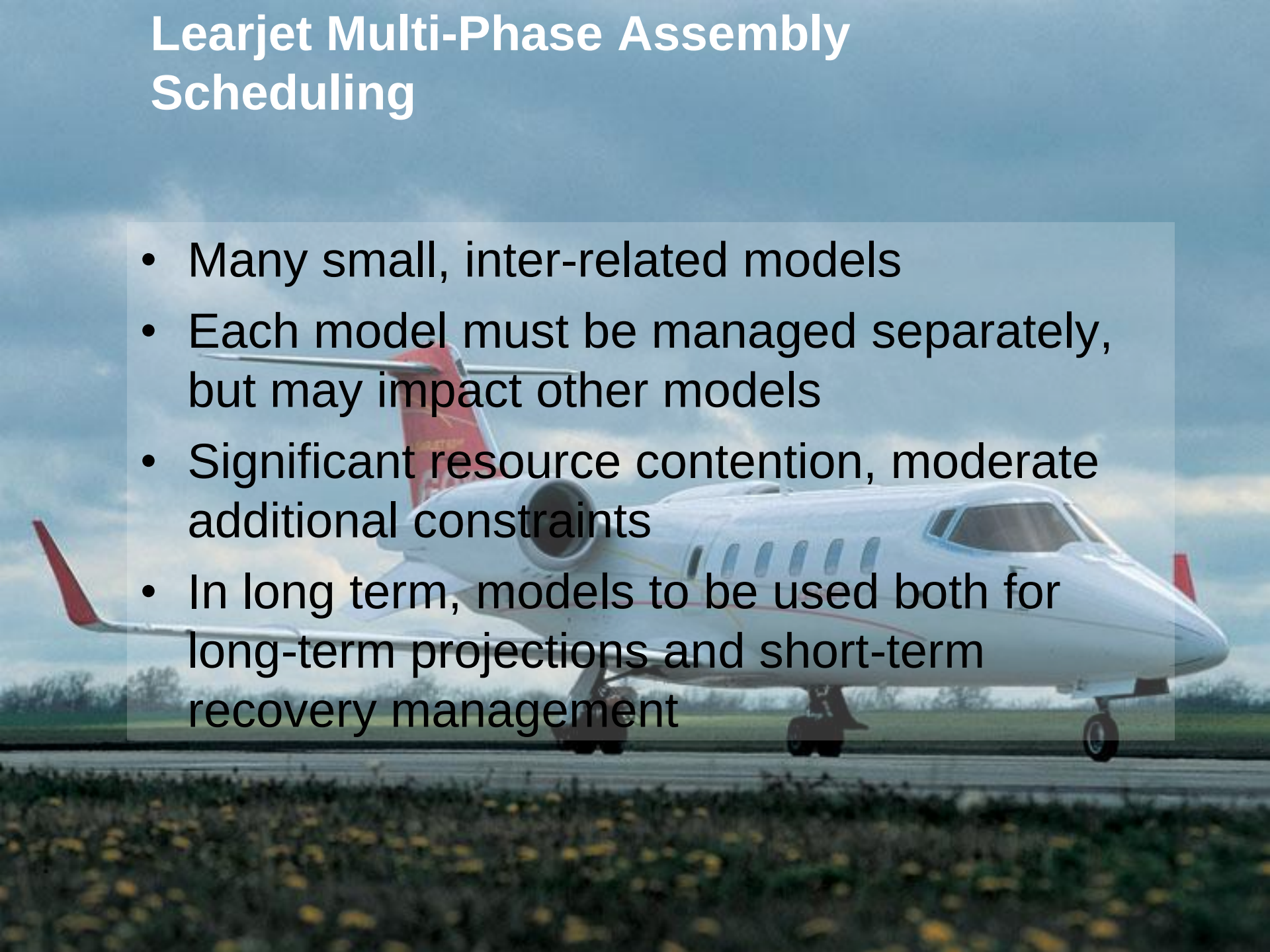
- Boeing 787 Aircraft Assembly (replaced 20 year, in-house Timepiece product)
- Space Shuttle Processing
- Space Station Processing Facility (SSPF) floor space and resources
- Navy Ship System Upgrades
- Crew Exploration Vehicle (CEV) In-space crew/resource
- Ballistic missile intercepts
- Electronic Intelligence (ELINT) aircraft/sensors

In every domain attempted, Aurora has surpassed all existing scheduling systems

Boeing Airplane Assembly Scheduling

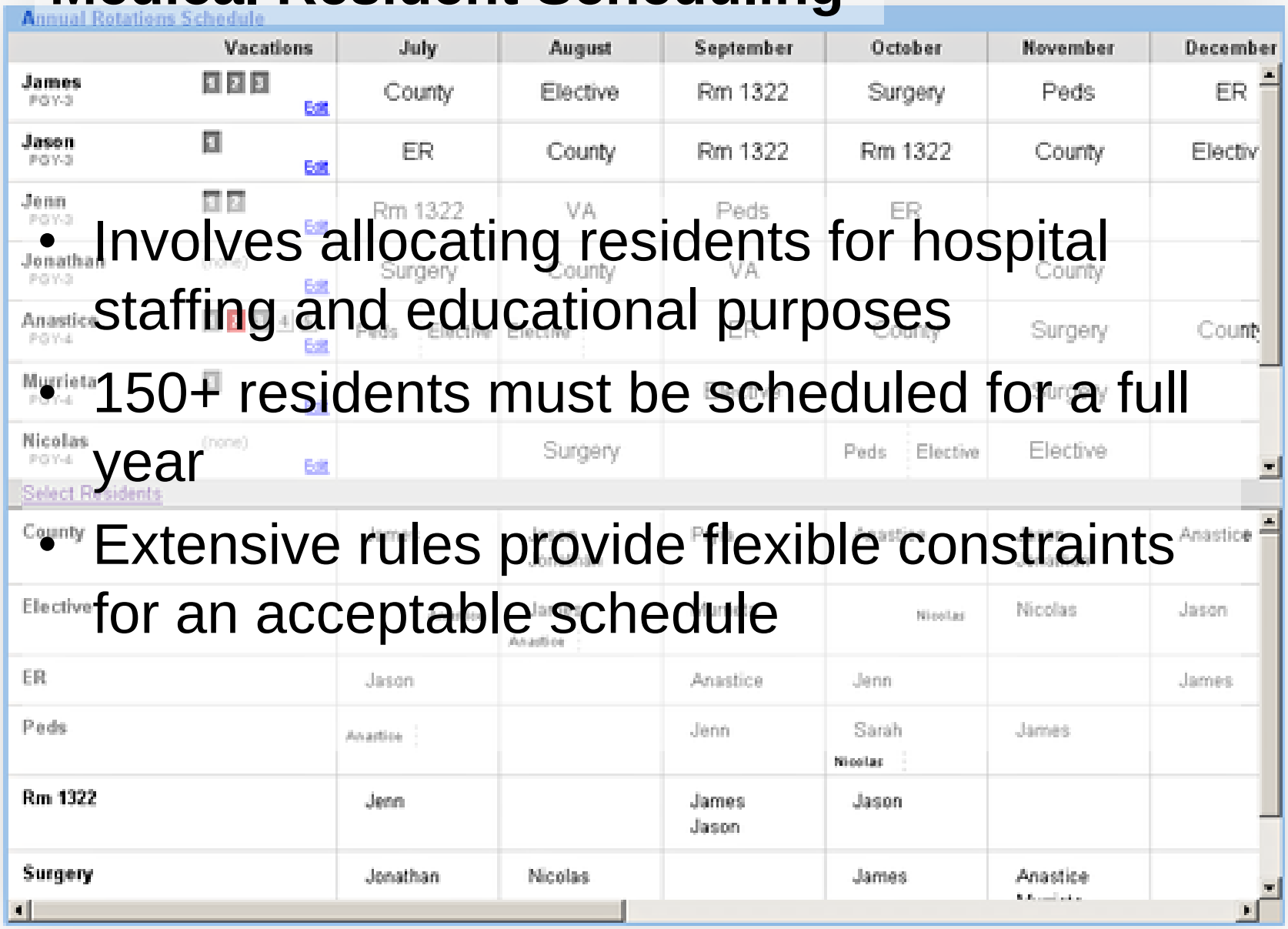
- Very large, complex models
  - Large numbers of resource contentions, constraints
- Widely distributed users working on different projects
- Part of integrated management system
  - Accepts inputs from corporate modeling system, sends outputs to shop floor management system

Learjet Multi-Phase Assembly Scheduling



- Many small, inter-related models
- Each model must be managed separately, but may impact other models
- Significant resource contention, moderate additional constraints
- In long term, models to be used both for long-term projections and short-term recovery management

Medical Resident Scheduling



- Involves allocating residents for hospital staffing and educational purposes
- 150+ residents must be scheduled for a full year
- Extensive rules provide flexible constraints for an acceptable schedule

Space Station Processing Facility Scheduling

At NASA's Kennedy Space Center, Aurora schedules the use of floor space and other resources at the **Space Station Processing Facility**, the world's largest low-particle clean room where International Space Station components are prepared for flight.

The Value of Aurora: NASA

"Aurora is used daily to support major processing and space shuttle launch decisions; to coordinate our launches with those of Russia, Japan, and the European Space Agency; and to determine NASA's launch requirements and flight rates," says NASA Shuttle Processing Manager ***Tom Overton***. "It enables us to generate complex schedules in a few hours, compared to days or weeks required by our previous scheduling systems."

Acquisition Decision Expert Planning Tool (ADEPT)

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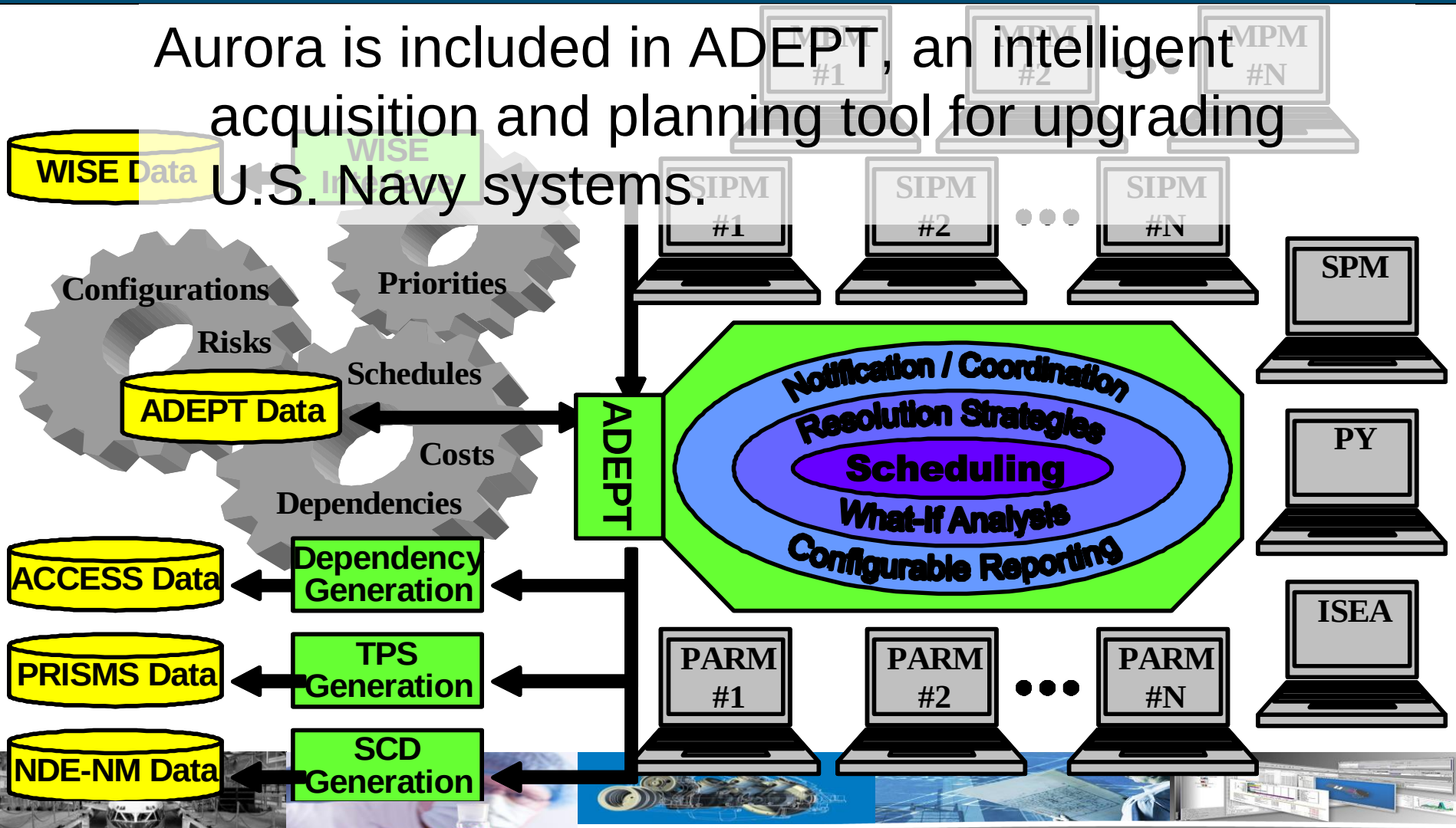
Smarter Software Solutions

Aurora is included in ADEPT, an intelligent acquisition and planning tool for upgrading U.S. Navy systems.



Temporis

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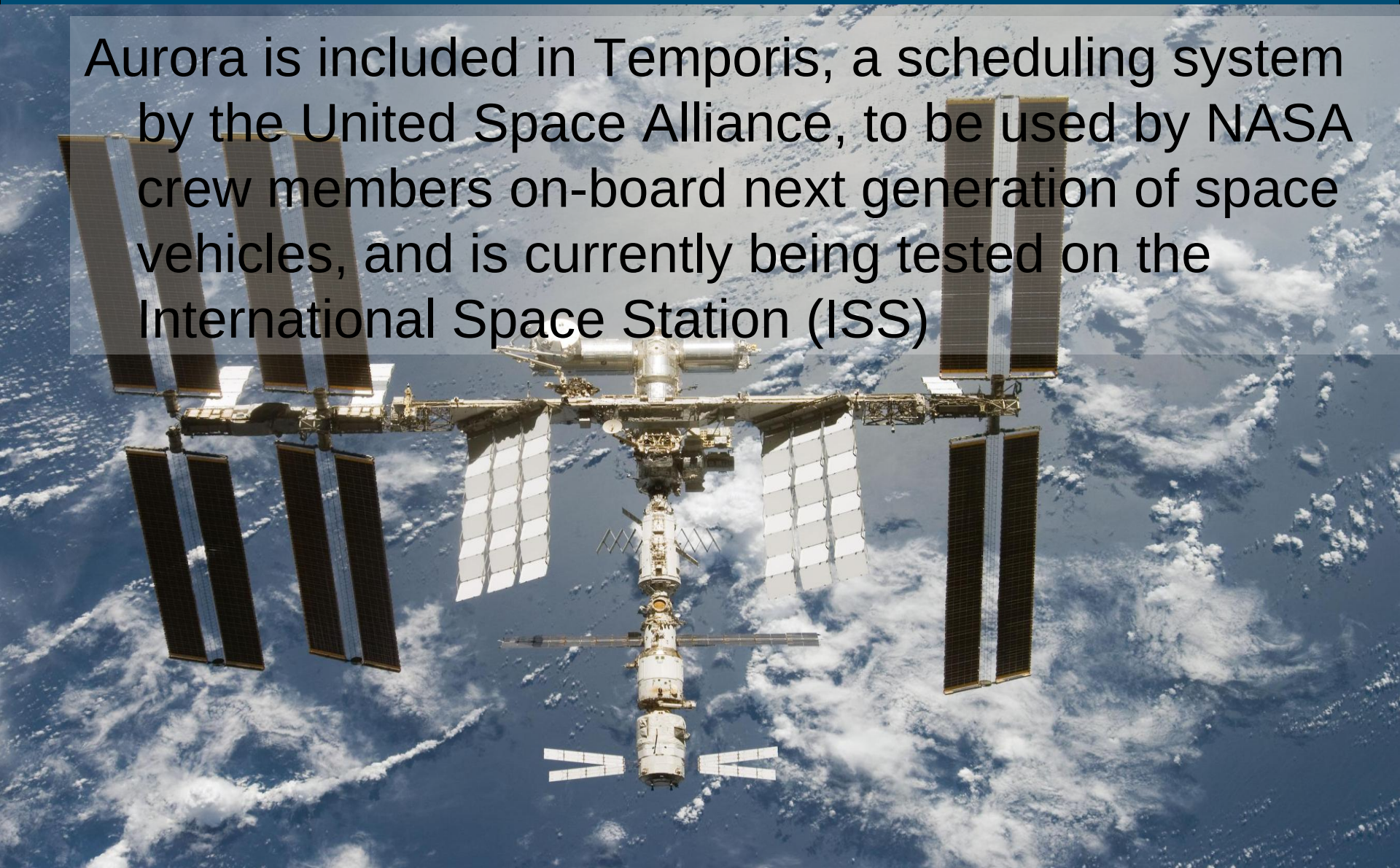
Smarter Software Solutions

Aurora is included in Temporis, a scheduling system by the United Space Alliance, to be used by NASA crew members on-board next generation of space vehicles, and is currently being tested on the International Space Station (ISS)



Phased Array Smart Allocation and Planning (PASAP)

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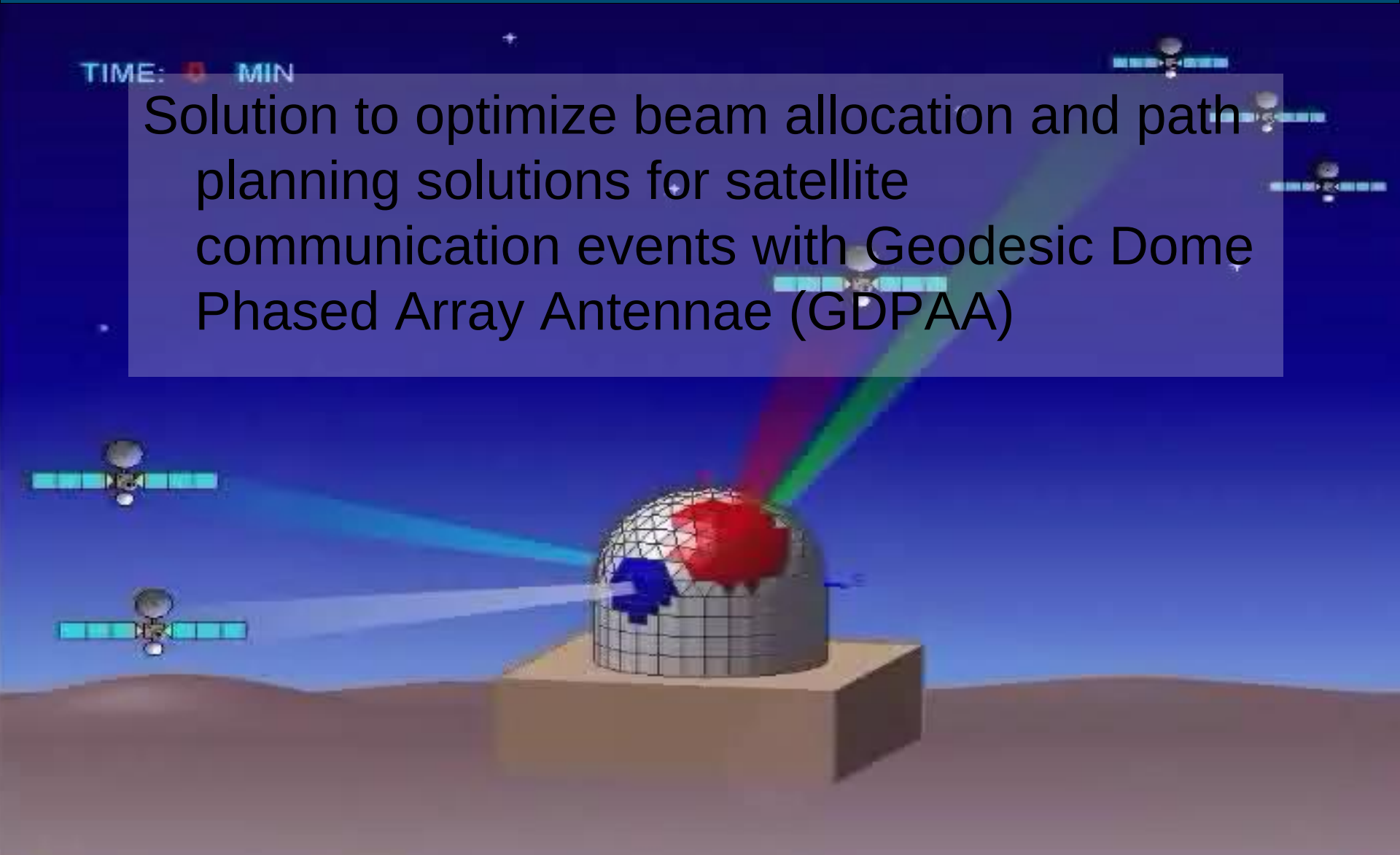

Solution to optimize beam allocation and path planning solutions for satellite communication events with Geodesic Dome Phased Array Antennae (GDPAA)

Aurora-CCPM Screenshots & Videos

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Aurora: Main Project View

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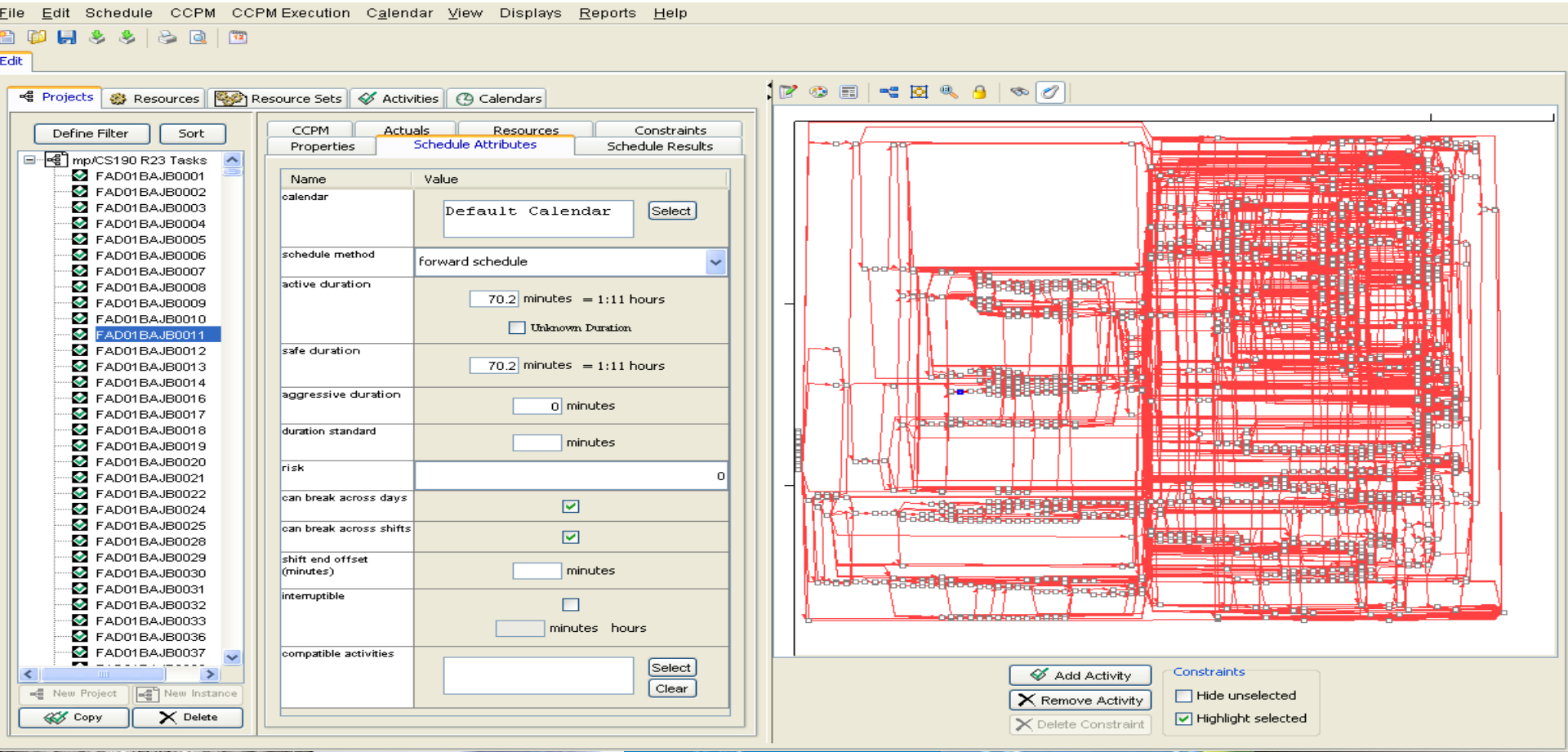
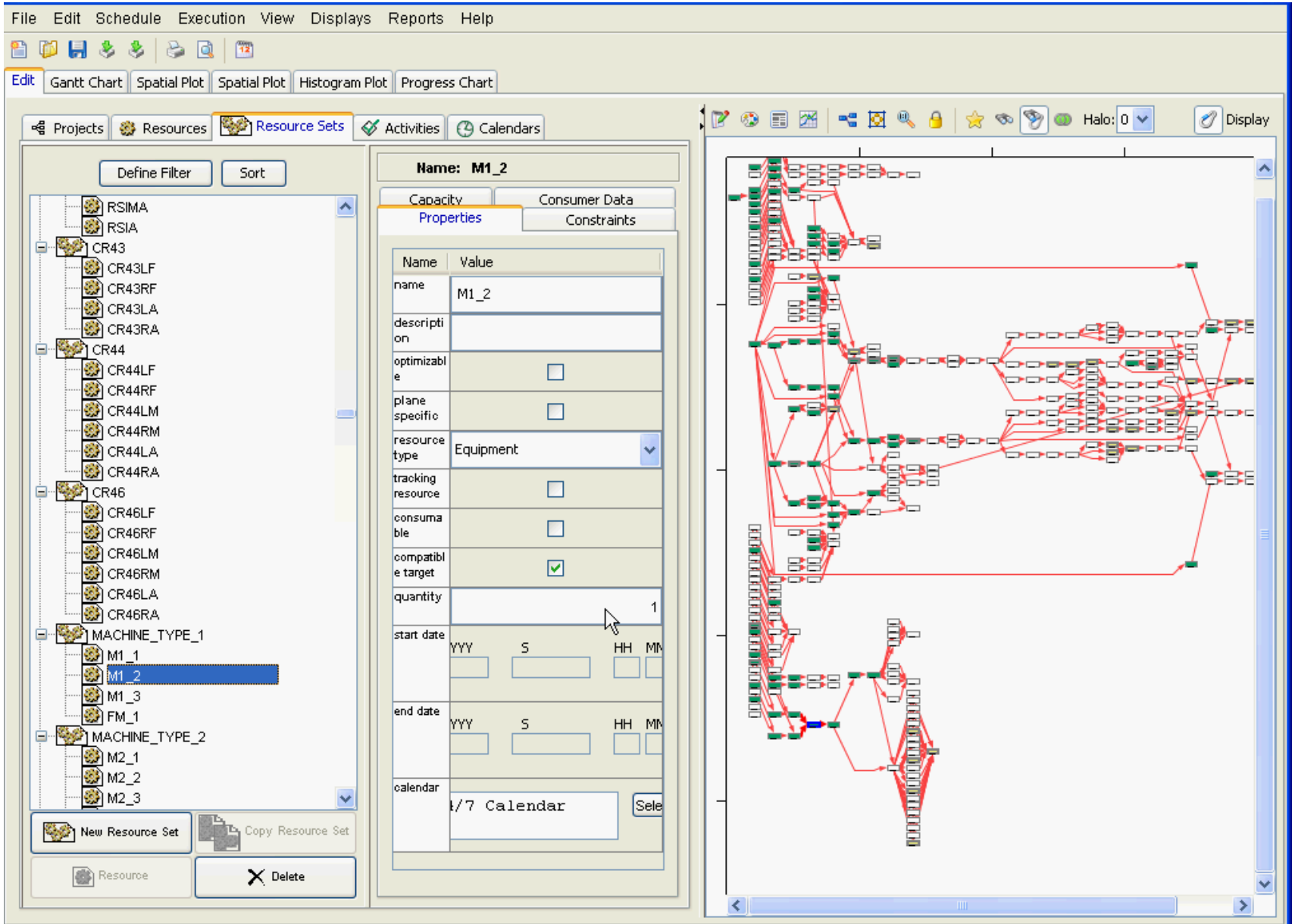


Resource Sets



Tabular Editor

File Edit Schedule CCPM CCPM Execution View Displays Reports Help

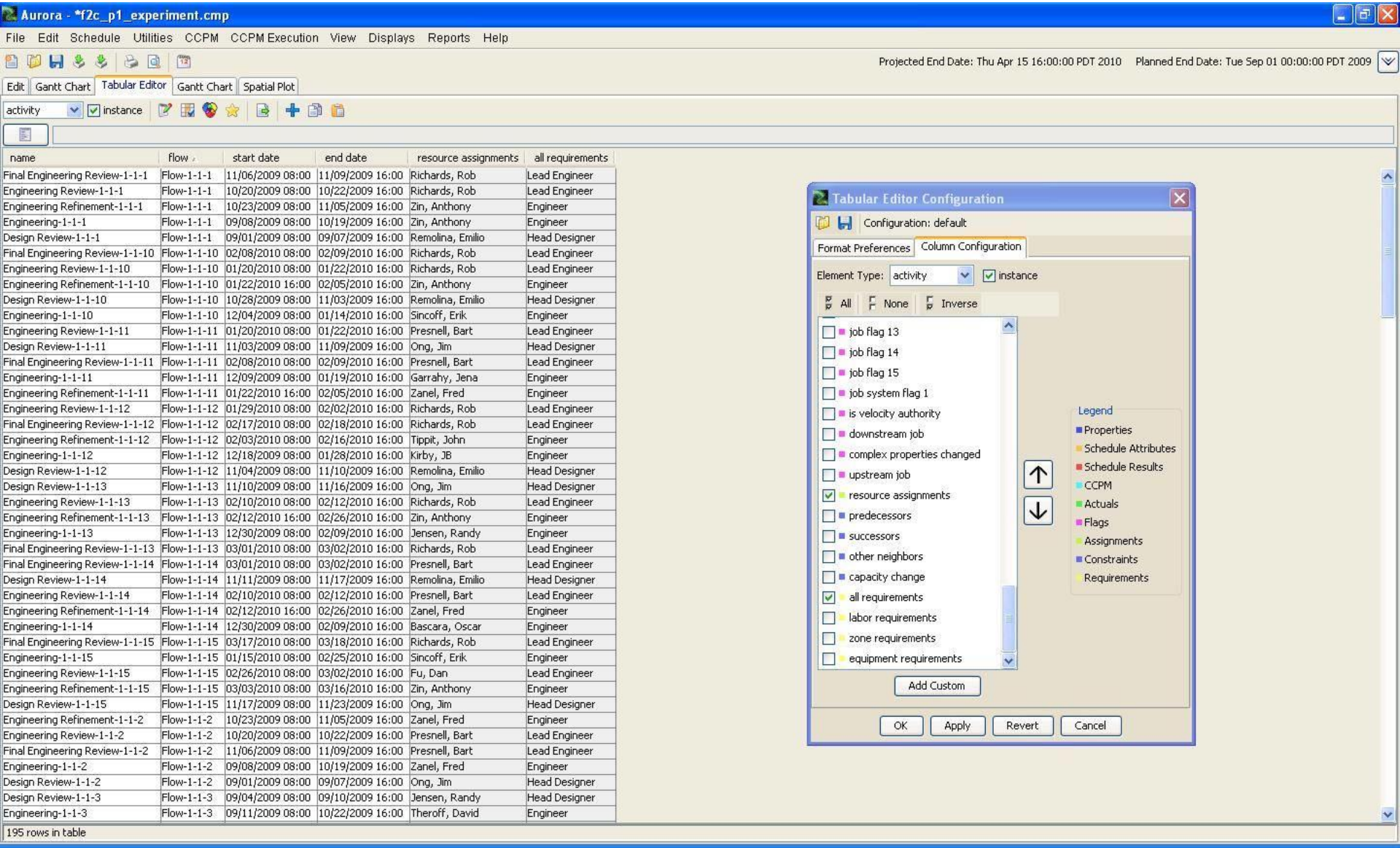
Edit | Gantt Chart | Split Display | Tabular Editor

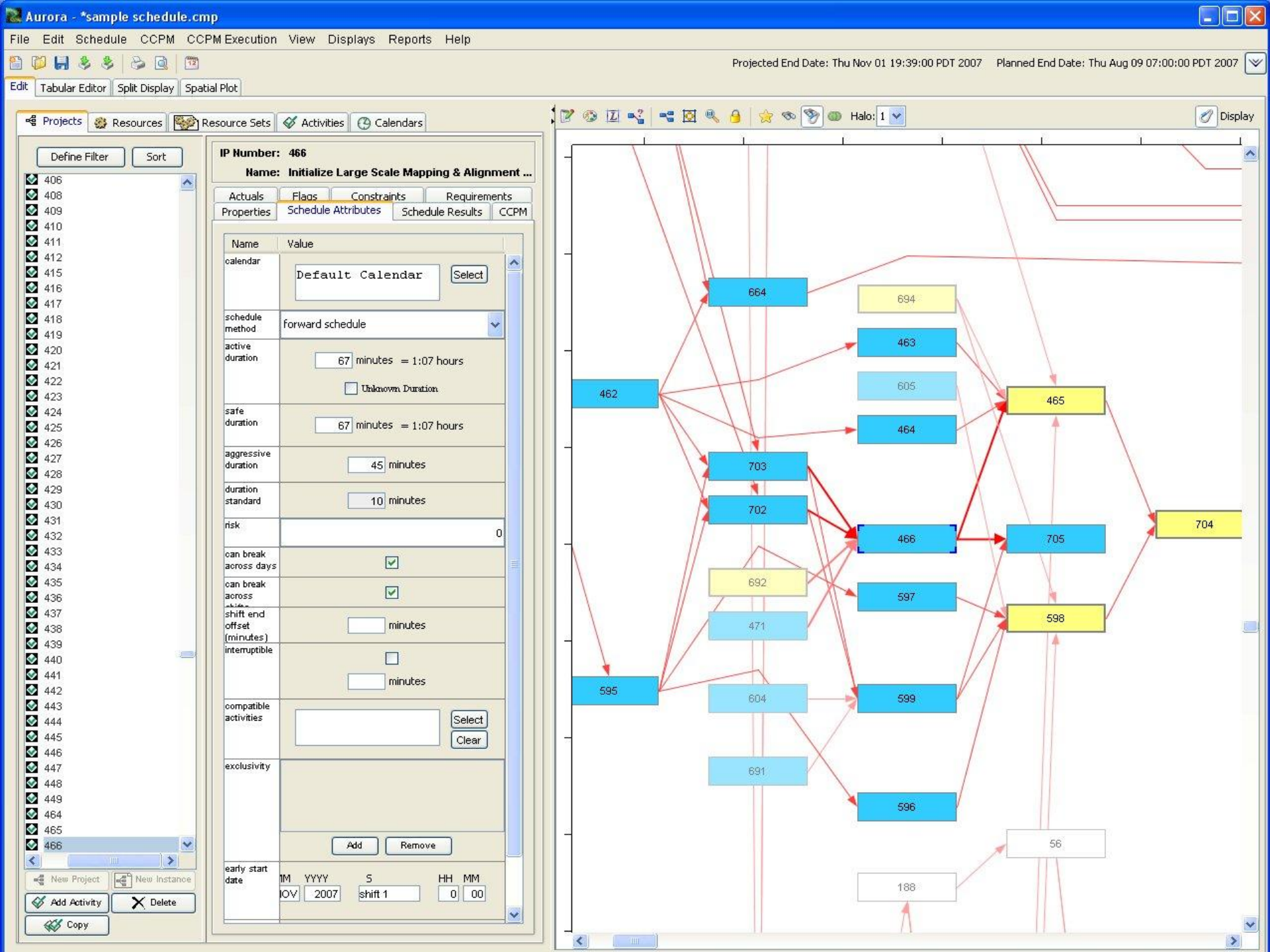
activity ☑ instance

252

name	IP Number	job type	work package ID	user attributes	flag	calendar	schedule method	active duration	safe duration	aggressive duration	duration standard	risk	can break across days	can break across shi
135	135	In Sequence	WBJ.FST		false	Default Calendar	forward schedule	60	60	0			true	true
70	70	In Sequence	WBJ.SHM		false	Default Calendar	forward schedule	120	120	0			true	true
5	5	In Sequence	TLA		false	Default Calendar	forward schedule	15	15	0			true	true
112	112	In Sequence	WBJ.DRL		false	Default Calendar	forward schedule	60	60	0			true	true
252	252	In Sequence	WTS		false	Default Calendar	forward schedule	30	30	0			true	true
202	202	In Sequence	WIT		false	Default Calendar	forward schedule	60	60	0			true	true
95	95	In Sequence	WBJ.SHM		false	Default Calendar	forward schedule	30	30	0			true	true
266	266	In Sequence	WMT		false	Default Calendar	forward schedule	120	120	0			true	true
137	137	In Sequence	WBJ.FST		false	Default Calendar	forward schedule	60	60	0			true	true
30	30	In Sequence	BAL		false	Default Calendar	forward schedule	15	15	0			true	true
177	177	In Sequence	TES		false	Default Calendar	forward schedule	120	120	0			true	true
72	72	In Sequence	WBJ.DRL		false	Default Calendar	forward schedule	30	30	0			true	true
160	160	In Sequence	WTC		false	Default Calendar	forward schedule	120	120	0			true	true
274	274	In Sequence	FAF		false	Default Calendar	forward schedule	60	60	0			true	true
217	217	In Sequence	WFL		false	Default Calendar	forward schedule	60	60	0			true	true
22	22	In Sequence	BAL		false	Default Calendar	forward schedule	15	15	0			true	true
152	152	In Sequence	WBJ.DRL		false	Default Calendar	forward schedule	90	90	0			true	true
15	15	In Sequence	MLA		false	Default Calendar	forward schedule	30	30	0			true	true
225	225	In Sequence	WLS		false	Default Calendar	forward schedule	30	30	0			true	true
87	87	In Sequence	WBJ.SHM		false	Default Calendar	forward schedule	30	30	0			true	true
167	167	In Sequence	WBJ.FST		false	Default Calendar	forward schedule	90	90	0			true	true
144	144	In Sequence	WBJ.DRL		false	Default Calendar	forward schedule	30	30	0			true	true
120	120	In Sequence	WBJ.SHM		false	Default Calendar	forward schedule	120	120	0			true	true
169	169	In Sequence	WBJ.FST		false	Default Calendar	forward schedule	180	180	0			true	true
290	290	In Sequence	WTS		false	Default Calendar	forward schedule	22.5	22.5	0			true	true
209	209	In Sequence	WIT		false	Default Calendar	forward schedule	60	60	0			true	true
80	80	In Sequence	WLA		false	Default Calendar	forward schedule	15	15	0			true	true
102	102	In Sequence	WBJ.FST		false	Default Calendar	forward schedule	30	30	0			true	true
236	236	In Sequence	WLS		false	Default Calendar	forward schedule	30	30	0			true	true
63	63	In Sequence	WLA		false	Default Calendar	forward schedule	60	60	0			true	true
244	244	In Sequence	WLS		false	Default Calendar	forward schedule	60	60	0			true	true
185	185	In Sequence	WBJ		false	Default Calendar	forward schedule	60	60	0			true	true
55	55	In Sequence	WLA		false	Default Calendar	forward schedule	45	45	0			true	true
29	29	In Sequence	TLA		false	Default Calendar	forward schedule	0	0	0			true	true
104	104	In Sequence	WBJ.SHM		false	Default Calendar	forward schedule	60	60	0			true	true
47	47	In Sequence	TLA		false	Default Calendar	forward schedule	18	18	0			true	true
193	193	In Sequence	WIT		false	Default Calendar	forward schedule	90	90	0			true	true
261	261	In Sequence	WFT		false	Default Calendar	forward schedule	60	60	0			true	true
282	282	In Sequence	WTS		false	Default Calendar	forward schedule	30	30	0			true	true

Tabular Editor: Configuration

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File Edit Schedule CCPM CCPM Execution View Displays Reports Help
Projected End Date: Thu Nov 01 19:39:00 PDT 2007
Planned End Date: Thu Aug 09 07:00:00 PDT 2007
Edit Tabular Editor Split Display Spatial Plot
Projects Resources Resource Sets Activities Calendars
Define Filter Sort
406 408 409 410 411 412 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 464 465 466
New Project New Instance
Add Activity Delete
Copy
IP Number: 466
Name: Initialize Large Scale Mapping & Alignment ...
Actuals Flags Constraints Requirements
Properties Schedule Attributes Schedule Results CCPM
Name Value
calendar
Default Calendar
Select
schedule method
forward schedule
active duration
67 minutes = 1:07 hours
Unknown Duration
safe duration
67 minutes = 1:07 hours
aggressive duration
45 minutes
duration standard
10 minutes
risk
0
can break across days
can break across
shift end offset (minutes)
minutes
interruptible
minutes
compatible activities
Select
Clear
exclusivity
Add
Remove
early start date
MM YYYY S HH MM
NOV 2007 shift 1 0 00
Halo: 1
Display
664
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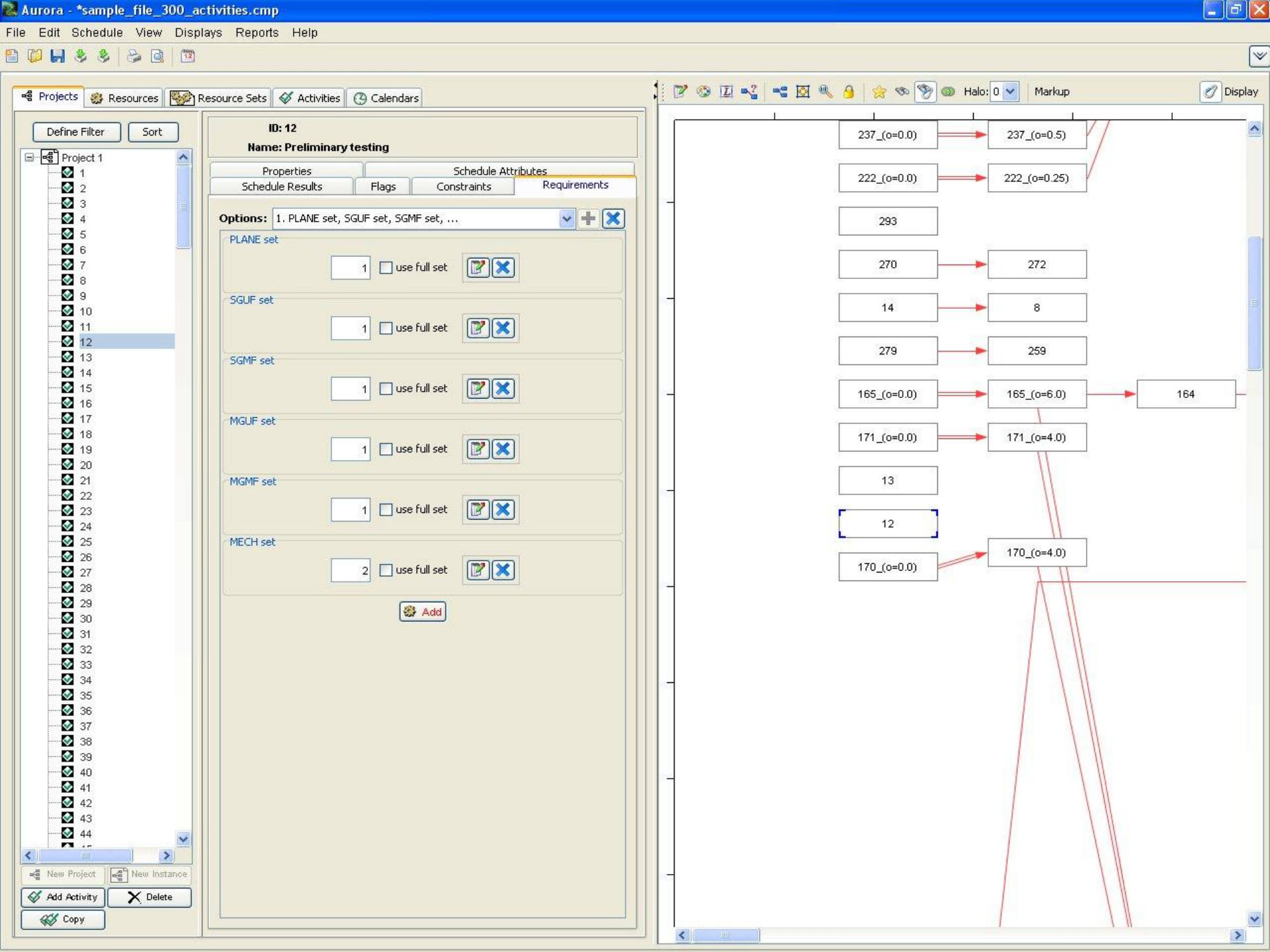

Aurora - *sample_file_300_activities.cmp
File Edit Schedule View Displays Reports Help
Projects Resources Resource Sets Activities Calendars
Define Filter Sort
Project 1
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44
New Project New Instance
Add Activity Delete
Copy
ID: 12
Name: Preliminary testing
Properties Schedule Attributes
Schedule Results Flags Constraints Requirements
Options: 1. PLANE set, SGUF set, SGMF set, ...
PLANE set
1 use full set
SGUF set
1 use full set
SGMF set
1 use full set
MGUF set
1 use full set
MGMF set
1 use full set
MECH set
2 use full set
Add
Halo: 0
Markup
Display
237_(o=0.0)
237_(o=0.5)
222_(o=0.0)
222_(o=0.25)
293
270
272
14
8
279
259
165_(o=0.0)
165_(o=6.0)
164
171_(o=0.0)
171_(o=4.0)
13
12
170_(o=0.0)
170_(o=4.0)

Video:

Stottler Henke
Smarter Software Solutions

Aurora-CCPM Project Overview & Constraints

Resource Contention: Task 6

Stottler Henke
Smarter Software Solutions

The Single Element Display in Aurora helps the user visualize the relationships between tasks:

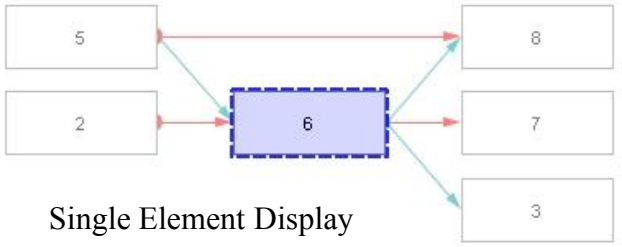
•Blue-grey lines denote a resource-constrained work flow
•Red lines denote temporally-constrained work flow

Referring to the three diagrams to the right:

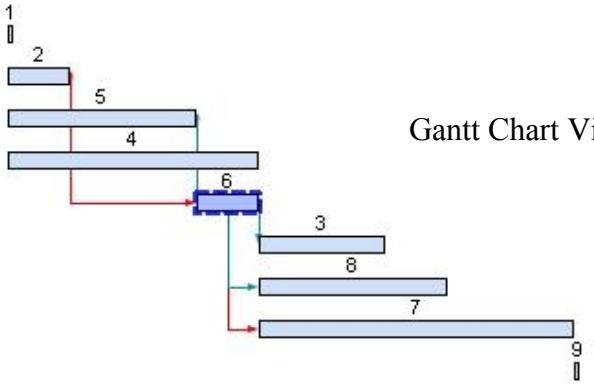
•Task 6 can start any time after Task 2 is completed (red line in Single Element Display), but must wait for Task 5 to release resources (blue-grey line).

•Tasks 3 and 8 must wait for 6 to release resources before they can start, as shown in the Gantt Chart View

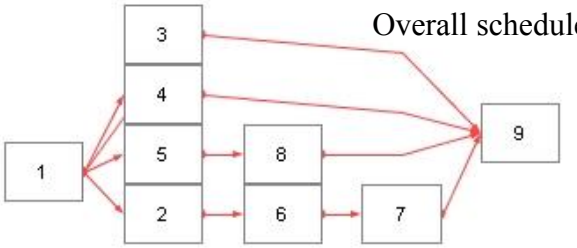
•Task 7 starts after Task 6 completes (red line in Single Element Display)



Single Element Display



Gantt Chart View



Overall schedule flow

Resource Contention: Visual

Stottler Henke
Smarter Software Solutions

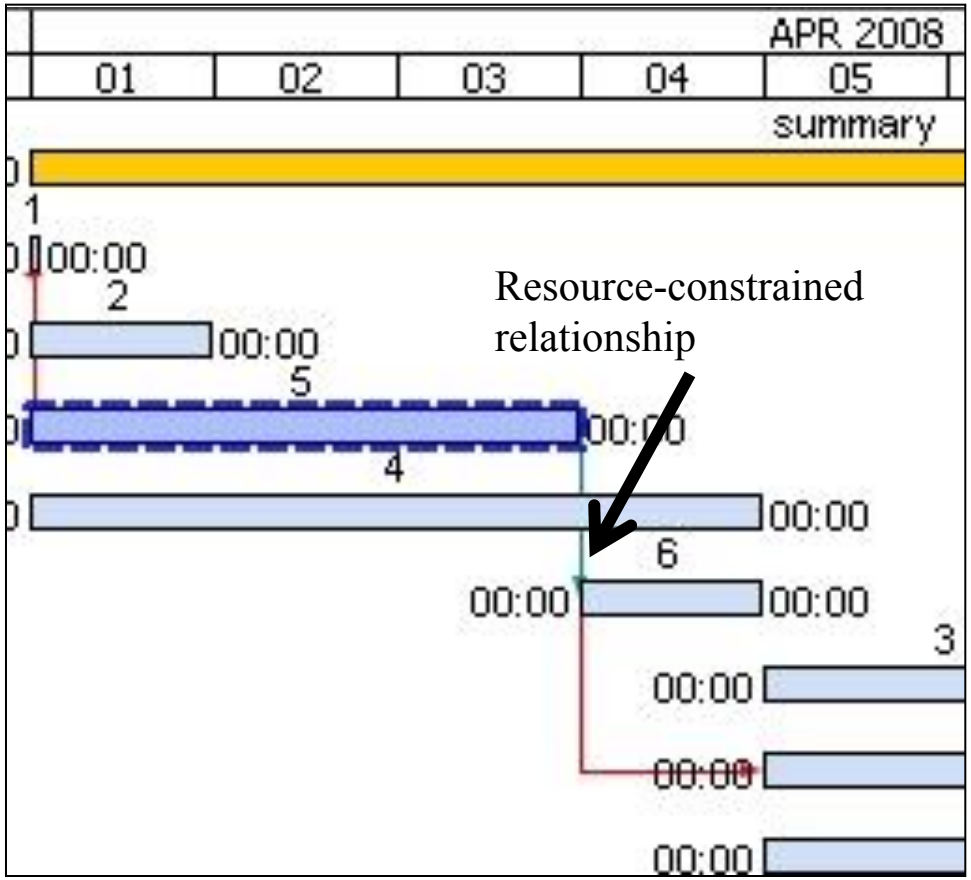
Viewing resource contentions in Aurora

In this sample schedule, each task has a resource requirement attached as follows

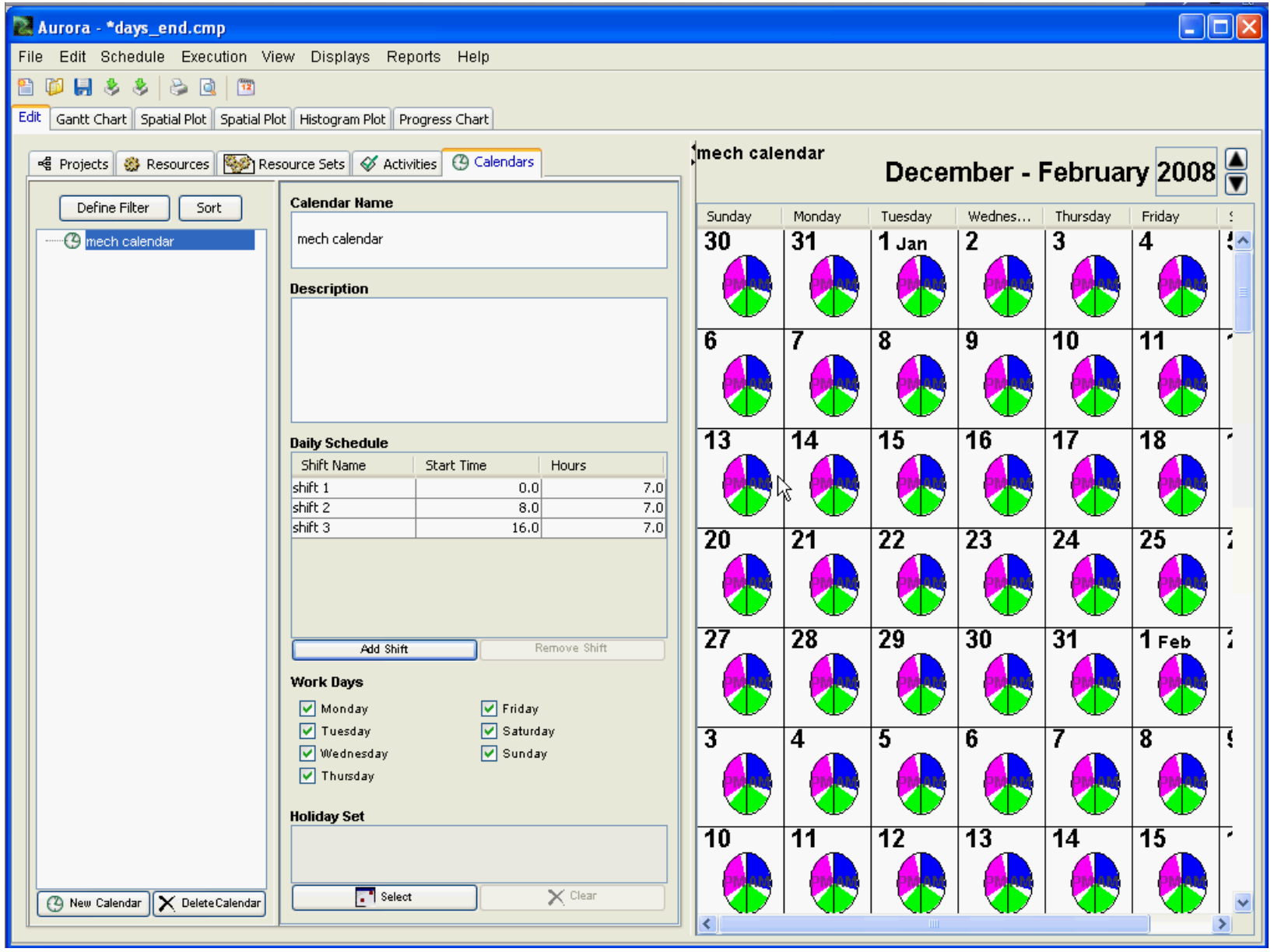
Task #	Resources Needed
2	1
3	2
4	2
5	2

Note that there is a total amount of only 5 resources. Tasks 2, 4, and 5 are started at the same time (5 resources used). Task 2 completes, but there are not enough resources left to start Task 6, so Task 6 must wait until Task 5 is complete.

Aurora shows you this resource-constrained relationship with a blue-grey line between the two Tasks.

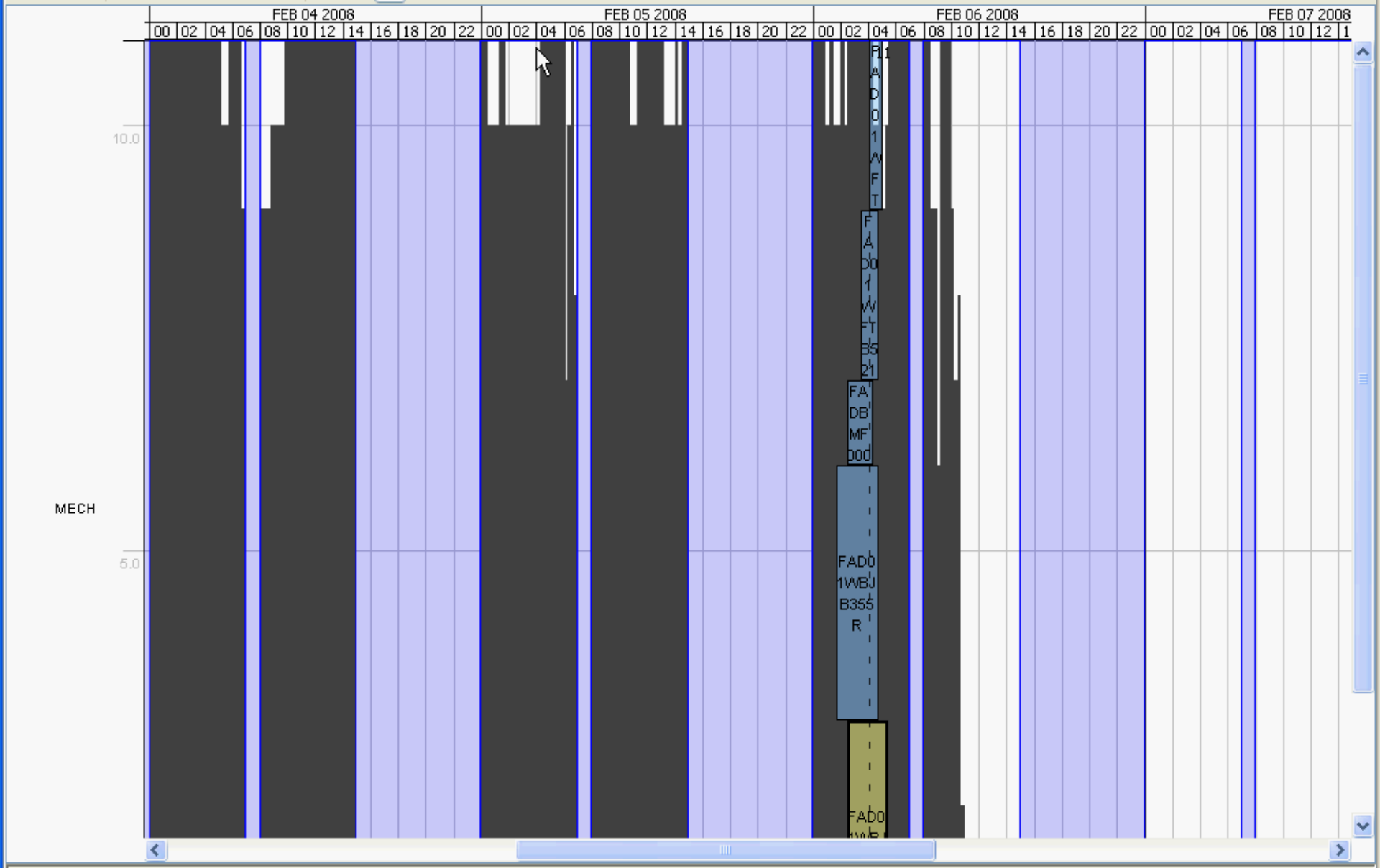


Calendars

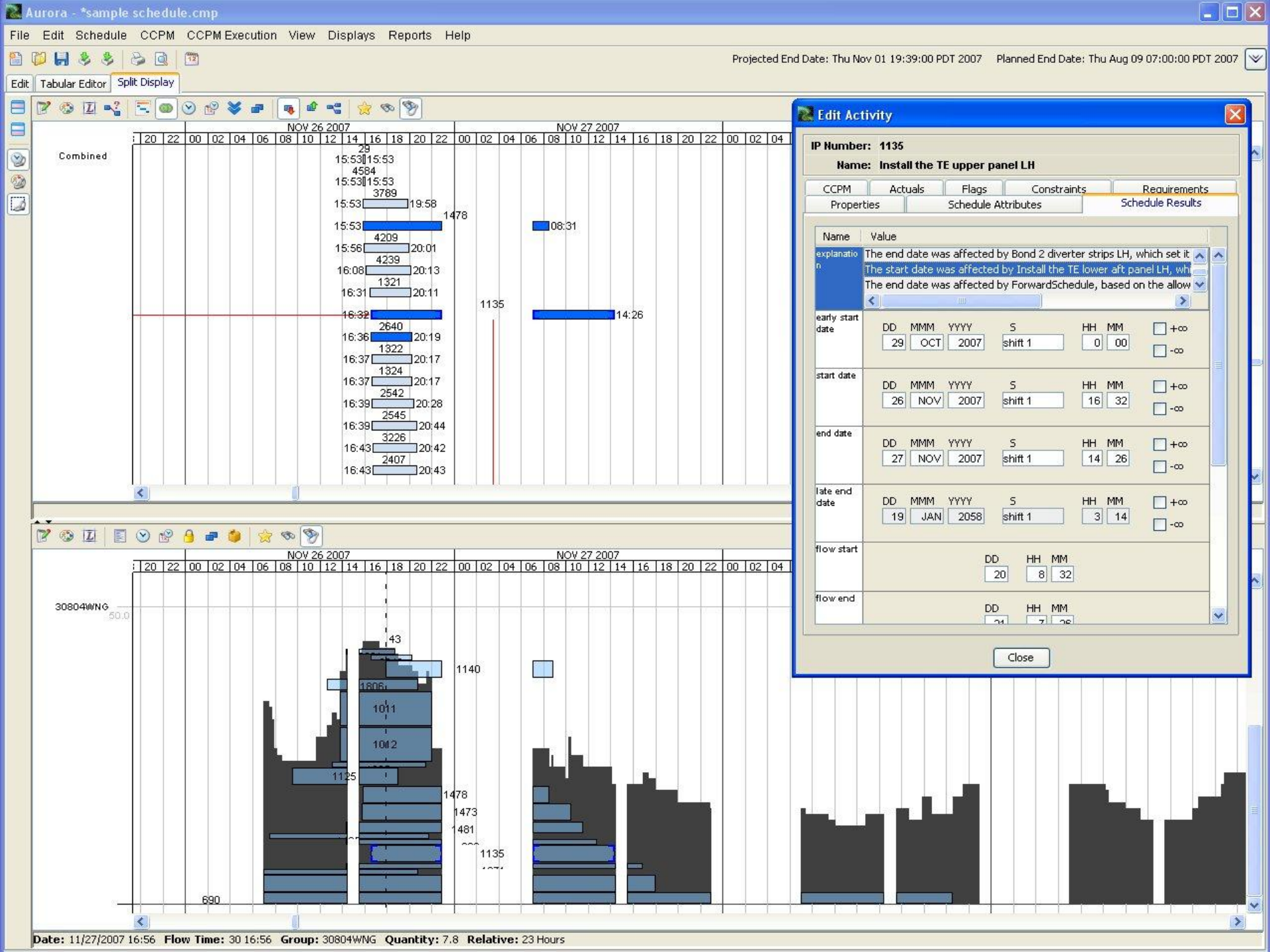

Aurora - *days_end.cmp
File Edit Schedule Execution View Displays Reports Help
Edit Gantt Chart Spatial Plot Spatial Plot Histogram Plot Progress Chart
Projects Resources Resource Sets Activities Calendars
Define Filter Sort
mech calendar
New Calendar Delete Calendar
Calendar Name
mech calendar
Description
Daily Schedule
Shift Name Start Time Hours
shift 1 0.0 7.0
shift 2 8.0 7.0
shift 3 16.0 7.0
Add Shift Remove Shift
Work Days
Monday Tuesday Wednesday Thursday Friday Saturday Sunday
Holiday Set
Select Clear
mech calendar
December - February 2008
Sunday Monday Tuesday Wednes... Thursday Friday
30 31 1 Jan 2 3 4
6 7 8 9 10 11
13 14 15 16 17 18
20 21 22 23 24 25
27 28 29 30 31 1 Feb
3 4 5 6 7 8
10 11 12 13 14 15

File Edit Schedule Execution View Displays Reports Help

Edit | Gantt Chart | Spatial Plot | Spatial Plot | Histogram Plot



Date: 02/05/2008 03:54 **Flow Time:** 05 03:54 **Group:** MECH **Quantity:** 10.9 **Relative:** -1 Days


Aurora - *sample schedule.cmp
File Edit Schedule CCPM CCPM Execution View Displays Reports Help
Projected End Date: Thu Nov 01 19:39:00 PDT 2007 Planned End Date: Thu Aug 09 07:00:00 PDT 2007
Edit Tabular Editor Split Display
NOV 26 2007
NOV 27 2007
Combined
1135
14:26
08:31
30804WNG
1140
1135
Edit Activity
IP Number: 1135
Name: Install the TE upper panel LH
CCPM Actuals Flags Constraints Requirements
Properties Schedule Attributes Schedule Results
Name Value
explanation
The end date was affected by Bond 2 diverter strips LH, which set it
The start date was affected by Install the TE lower aft panel LH, wh
The end date was affected by ForwardSchedule, based on the allow
early start date
DD MMM YYYY S HH MM
29 OCT 2007 shift 1 0 00
start date
26 NOV 2007 shift 1 16 32
end date
27 NOV 2007 shift 1 14 26
late end date
19 JAN 2058 shift 1 3 14
flow start
20 8 32
flow end
Close
Date: 11/27/2007 16:56 Flow Time: 30 16:56 Group: 30804WNG Quantity: 7.8 Relative: 23 Hours

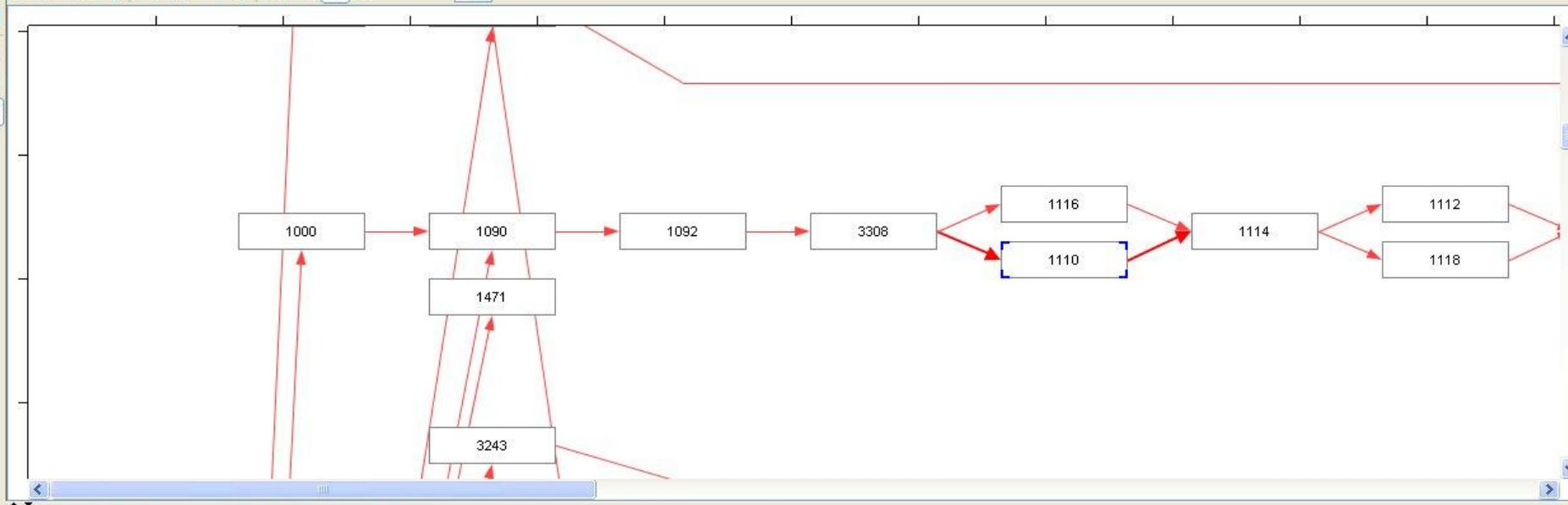
Aurora - *sample schedule.cmp

File Edit Schedule CCPM CCPM Execution View Displays Reports Help

Projected End Date: Thu Nov 01 19:39:00 PDT 2007 Planned End Date: Thu Aug 09 07:00:00 PDT 2007

Edit | Tabular Editor | Split Display | Spatial Plot | Split Display

Flow Halo: 0

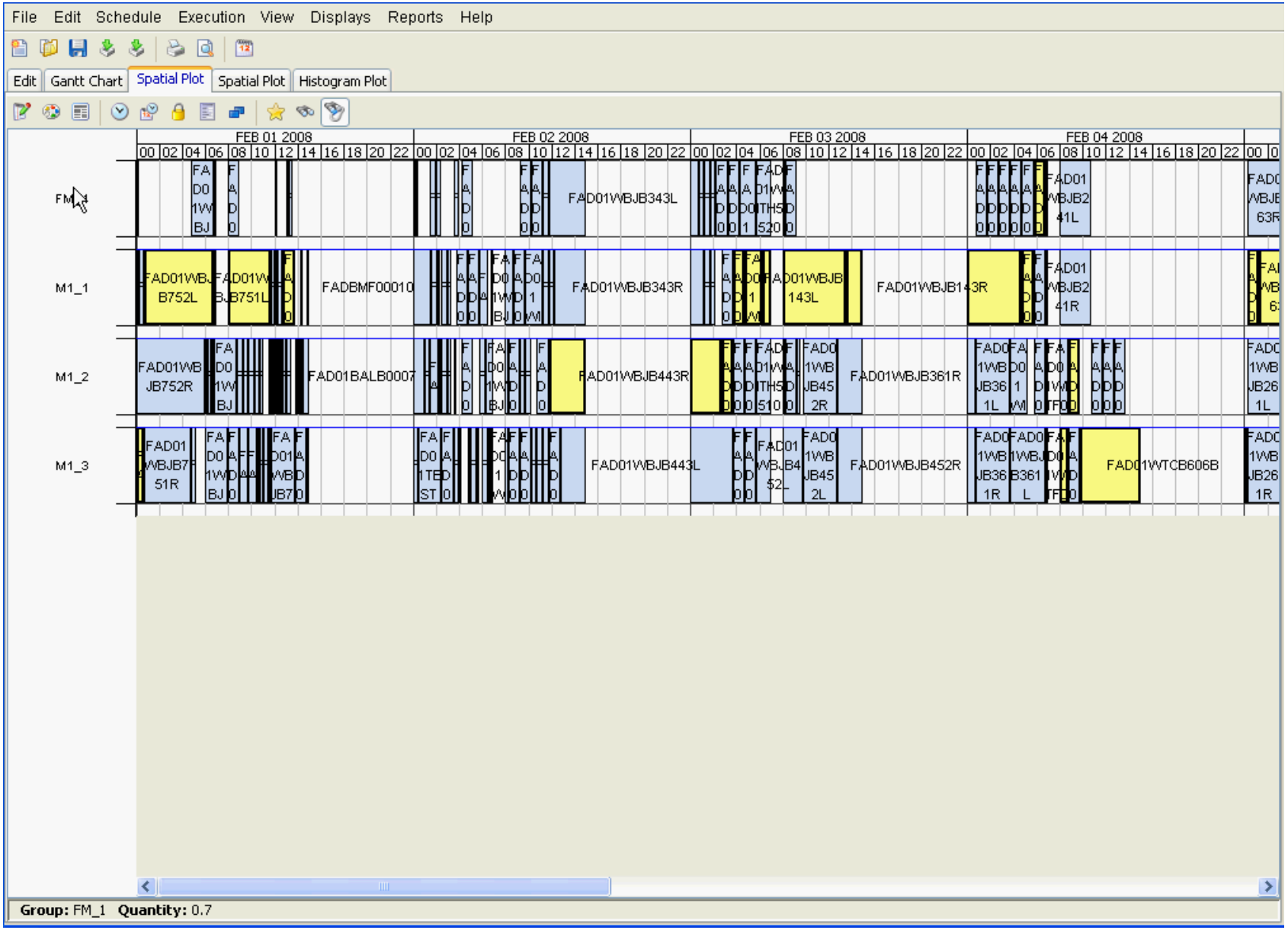


activity instance

Drill Upper panel c/t rib 39, FS upper chord, RS upper chord RH

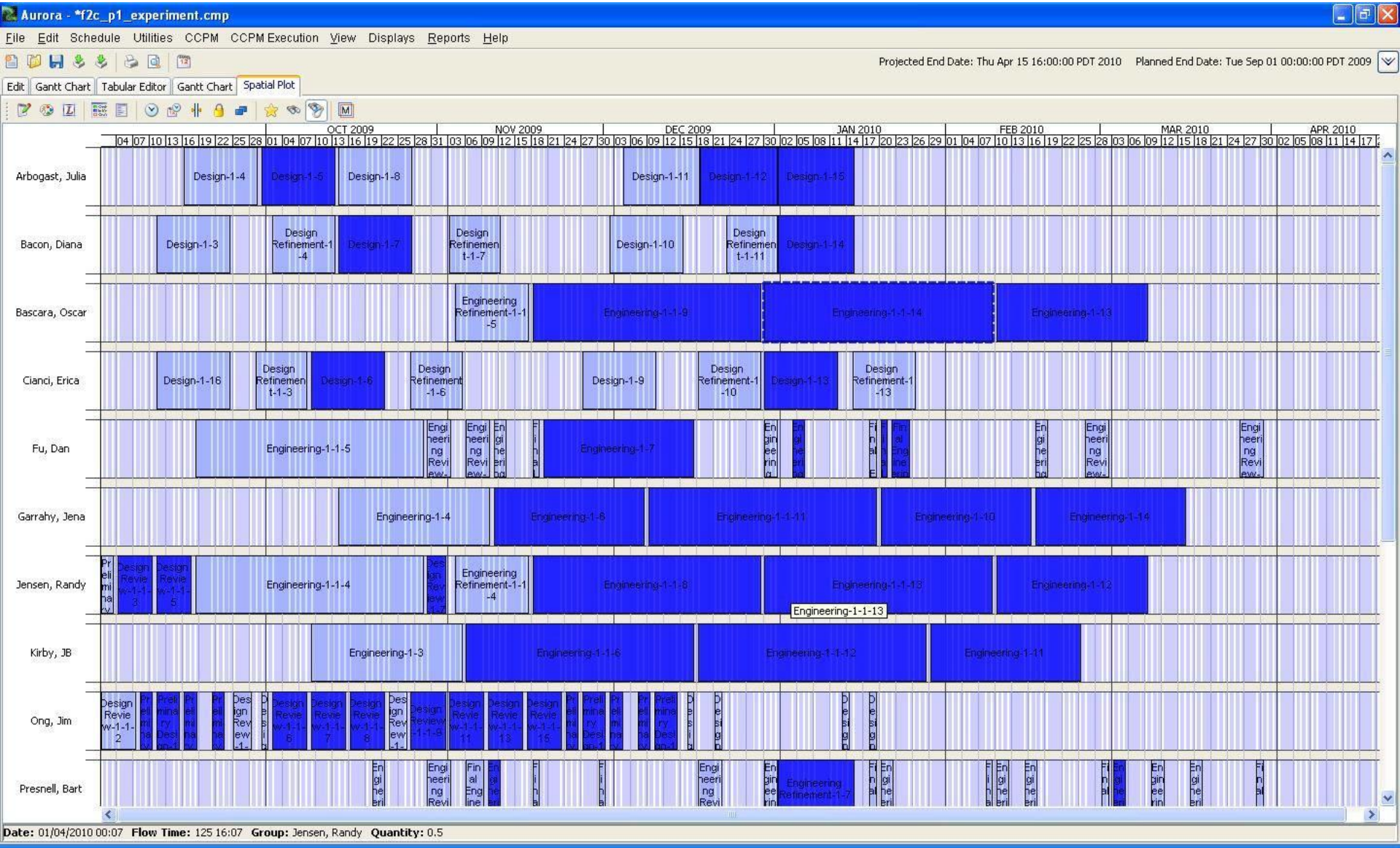
name	IP Number	schedule method	active duration	safe duration	aggressive duration	interruptible	start date	end date	critical chain ele
46 Pax Crown CRN Start	4699	forward schedule	0	0	0	false	2007:11:19:00:00:00	2007:11:19:00:00:00	false
IRM_PNL-DISC_WW-AL11117_CLIP-REWORK	2735	forward schedule	477	477	382	false	2008:01:17:12:48:00	2008:01:17:21:45:00	false
Queue Time for Shim Fabrication	3295	forward schedule	283	283	217	false	2007:11:28:22:47:00	2007:11:29:03:30:00	false
Software Load Start	1535	forward schedule	0	0	0	false	2007:11:16:00:00:00	2007:11:16:00:00:00	false
Position & Engage RH #1 Power Jack Platform to AFT Body - AFT Body	464	forward schedule	142	142	87	false	2007:11:19:08:07:00	2007:11:19:10:29:00	false
ADD PART MARK	4413	forward schedule	40	40	32	false	2007:11:16:21:13:00	2007:11:16:21:53:00	false
Drill Upper panel c/t rib 39, FS upper chord, RS upper chord RH	1110	forward schedule	2544	2544	1688	false	2007:11:01:15:30:00	2007:11:06:11:54:00	false
ADD PART MARK	3536	forward schedule	40	40	32	false	2007:11:16:20:32:00	2007:11:16:21:12:00	false
Paint Bonding/Grounding Fastener Locations FLE, RH	925	forward schedule	400	400	259	false	2007:12:05:20:09:00	2007:12:06:10:49:00	false
INSTALL SHEAR WEB IN SEC 46 EEBAY STA 1257	2463	forward schedule	858	858	707	false	2007:11:20:10:23:00	2007:11:21:09:41:00	false
INSTALL STOW BIN FITTINGS STA 1354 TO 1377 LH	1380	forward schedule	0	0	0	false	2007:12:04:18:26:00	2007:12:04:18:26:00	false
EQC 143048 INCORPORATION	3433	forward schedule	30	30	24	false	2007:11:19:07:30:00	2007:11:19:08:00:00	false
INBD SPOILER AUX HINGE DESIGN CHANGE AND REINFORCEMENT RH	1396	forward schedule	220	220	181	false	2007:11:21:16:47:00	2007:11:21:20:27:00	false
Install Fasteners Wing T/E Outboard Handling Fitting Locations LH	936	forward schedule	812	812	525	false	2007:11:26:14:19:00	2007:11:27:12:51:00	false
Strap Fasten Complete AFT	1559	forward schedule	0	0	0	false	2007:12:07:16:41:00	2007:12:07:16:41:00	false
FR_INTEG_RHS_STA1089_IRM	1768	forward schedule	1910	1910	1530	false	2007:11:16:07:00:00	2007:11:20:08:50:00	false
14 Mid Leading Edge RH Primary Structure Start	5097	forward schedule	0	0	0	false	2007:11:19:00:00:00	2007:11:19:00:00:00	false
INSUFFICIENT SHOT PEEN COVERAGE REPAIR	4480	forward schedule	239	239	191	false	2007:11:20:15:30:00	2007:11:20:19:29:00	false
RIB #16 INSTL LWR PNL RH	3937	forward schedule	237	237	190	false	2007:10:30:17:30:00	2007:10:30:21:27:00	false
SYSTEM_SEC43_BRACKET_STA632_IRM	1699	forward schedule	460	460	379	false	2007:12:05:13:00:00	2007:12:05:21:40:00	false
IRM_125_RIB_14_INSTL-UPR_RH	1972	forward schedule	268	268	221	false	2007:11:20:19:05:00	2007:11:21:07:33:00	false
Apply Aero Seal to Inboard Fixed Leading Edge, LH	918	forward schedule	333	333	223	false	2008:03:31:11:27:00	2008:03:31:18:00:00	false
Position and Install Lower steel drag brace to lower spindle assy LH	3244	forward schedule	306	306	198	false	2007:12:13:18:58:00	2007:12:14:08:04:00	false

Spatial Plot



Personnel View

Activities delayed by resource contention in blue



Schedule Rationale

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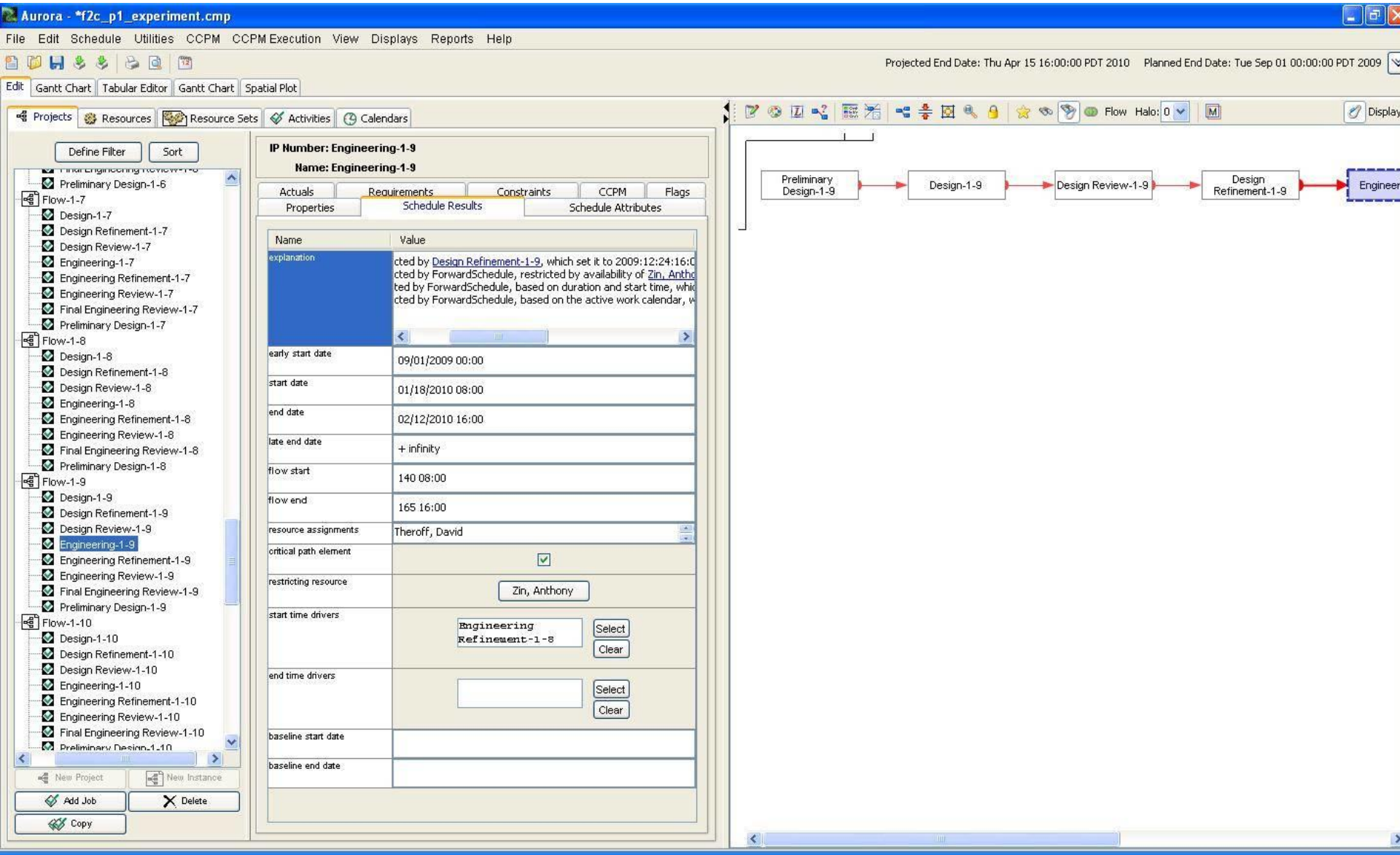
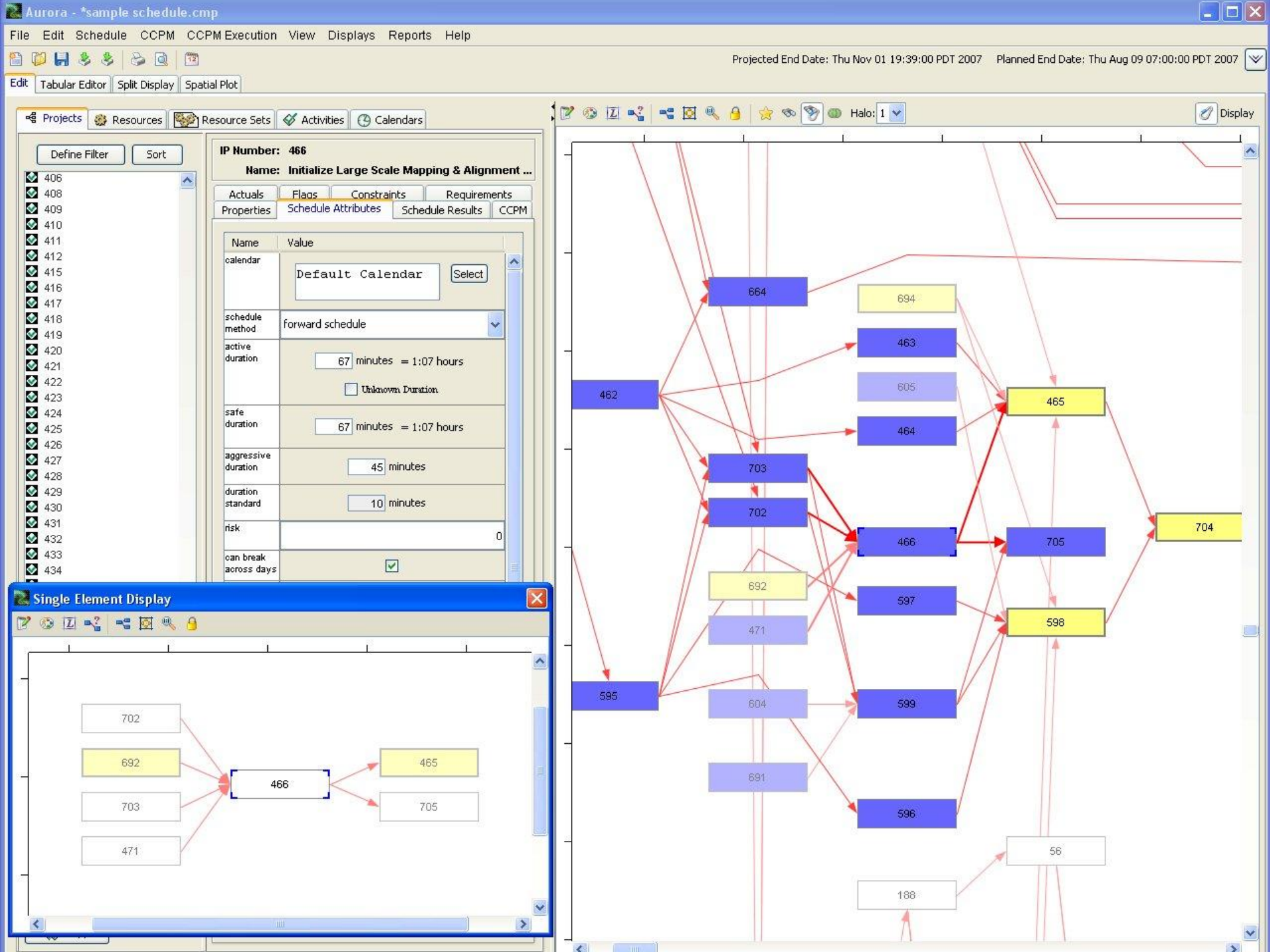
Aurora includes the rationale for each task on why it was scheduled where it was scheduled, so it is easy to determine what changes could be made for a task to occur earlier.

Edit Tab: Schedule Results




Aurora - *sample schedule.cmp
File Edit Schedule CCPM CCPM Execution View Displays Reports Help
Projected End Date: Thu Nov 01 19:39:00 PDT 2007
Planned End Date: Thu Aug 09 07:00:00 PDT 2007
Edit
Tabular Editor
Split Display
Spatial Plot
Projects
Resources
Resource Sets
Activities
Calendars
Define Filter
Sort
406
408
409
410
411
412
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
IP Number: 466
Name: Initialize Large Scale Mapping & Alignment ...
Actuals
Flags
Constraints
Requirements
Properties
Schedule Attributes
Schedule Results
CCPM
Name
Value
calendar
Default Calendar
Select
schedule method
forward schedule
active duration
67 minutes = 1:07 hours
Unknown Duration
safe duration
67 minutes = 1:07 hours
aggressive duration
45 minutes
duration standard
10 minutes
risk
0
can break across days
Halo: 1
Display
664
694
463
605
462
465
464
703
702
704
466
705
692
597
598
471
595
604
599
691
596
56
188
Single Element Display
702
692
703
471
466
465
705

Video

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Spatial Plot,
Single Element Display &
Explanation Facility

Gantt Chart in Execution

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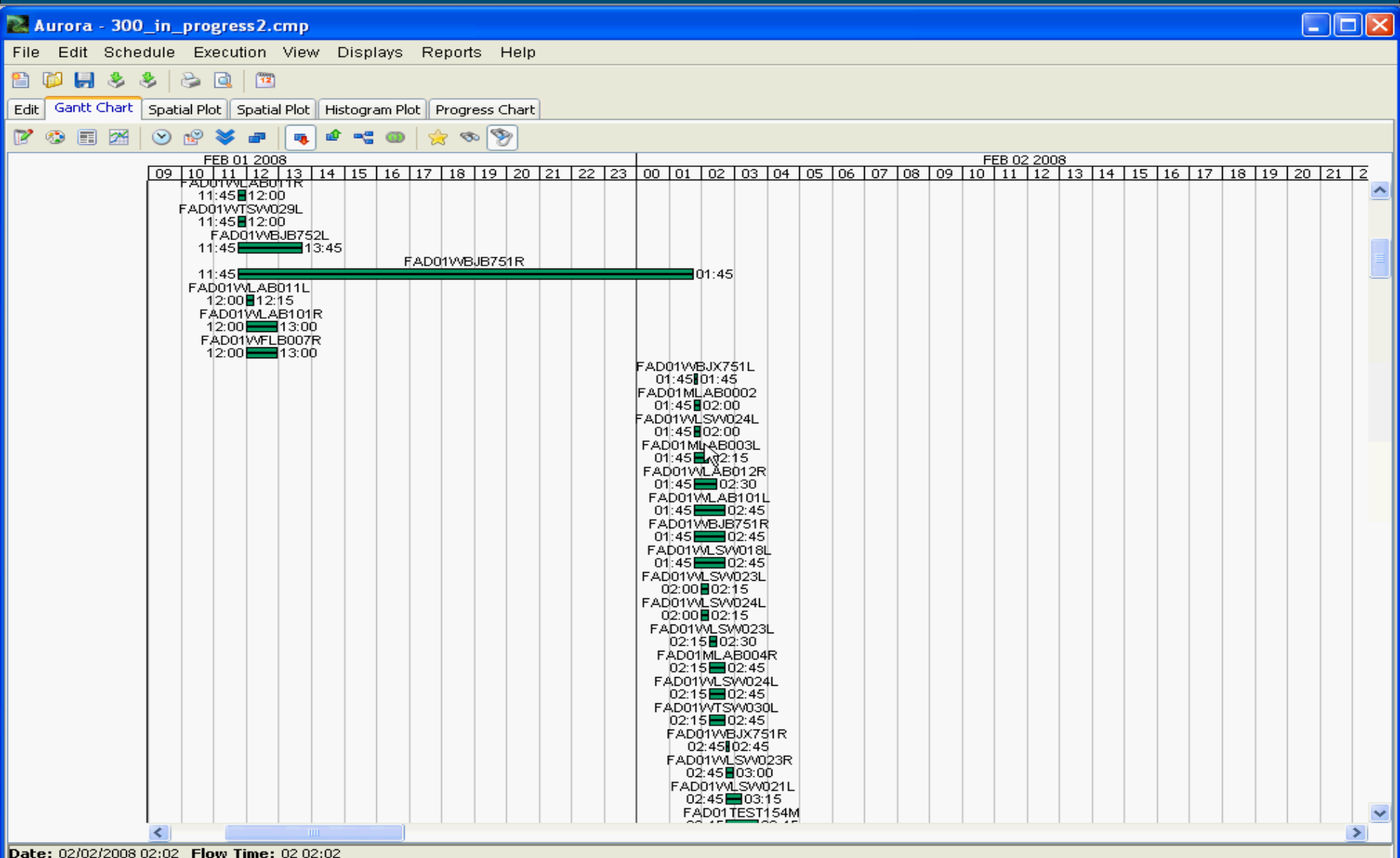

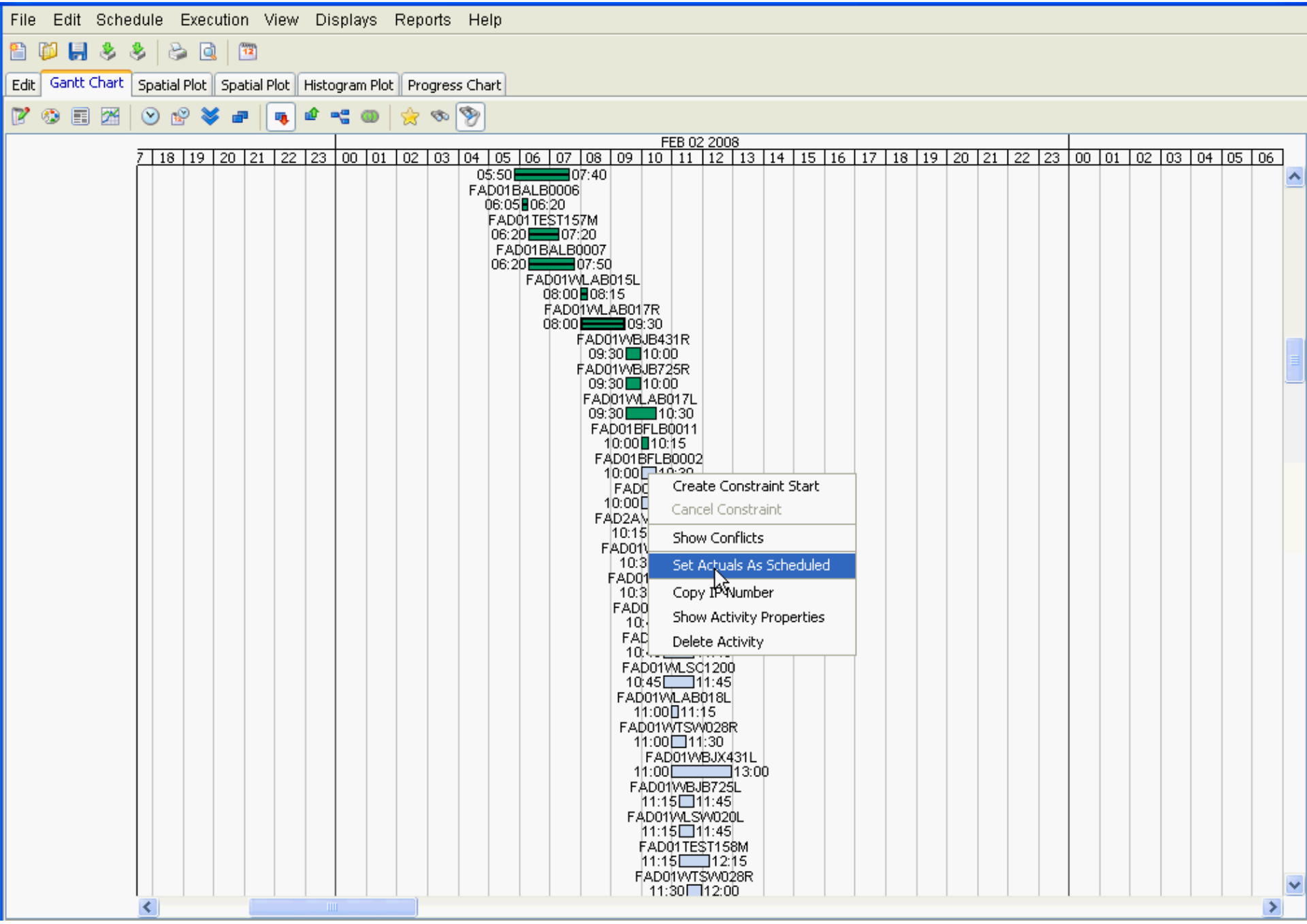
File Edit Schedule Execution View Displays Reports Help
Edit
Gantt Chart
Spatial Plot
Spatial Plot
Histogram Plot
Progress Chart
FEB 02 2008
05:50 07:40
FAD01BALB0006
06:05 06:20
FAD01TEST157M
06:20 07:20
FAD01BALB0007
06:20 07:50
FAD01WLAB015L
08:00 08:15
FAD01WLAB017R
08:00 09:30
FAD01WBJB431R
09:30 10:00
FAD01WBJB725R
09:30 10:00
FAD01WLAB017L
09:30 10:30
FAD01BFLB0011
10:00 10:15
FAD01BFLB0002
Create Constraint Start
Cancel Constraint
Show Conflicts
Set Actuals As Scheduled
Copy IP Number
Show Activity Properties
Delete Activity
FAD01WLSC1200
10:45 11:45
FAD01WLAB018L
11:00 11:15
FAD01WTSW028R
11:00 11:30
FAD01WBJX431L
11:00 13:00
FAD01WBJB725L
11:15 11:45
FAD01WLSW020L
11:15 11:45
FAD01TEST158M
11:15 12:15
FAD01WTSW028R
11:30 12:00

Video

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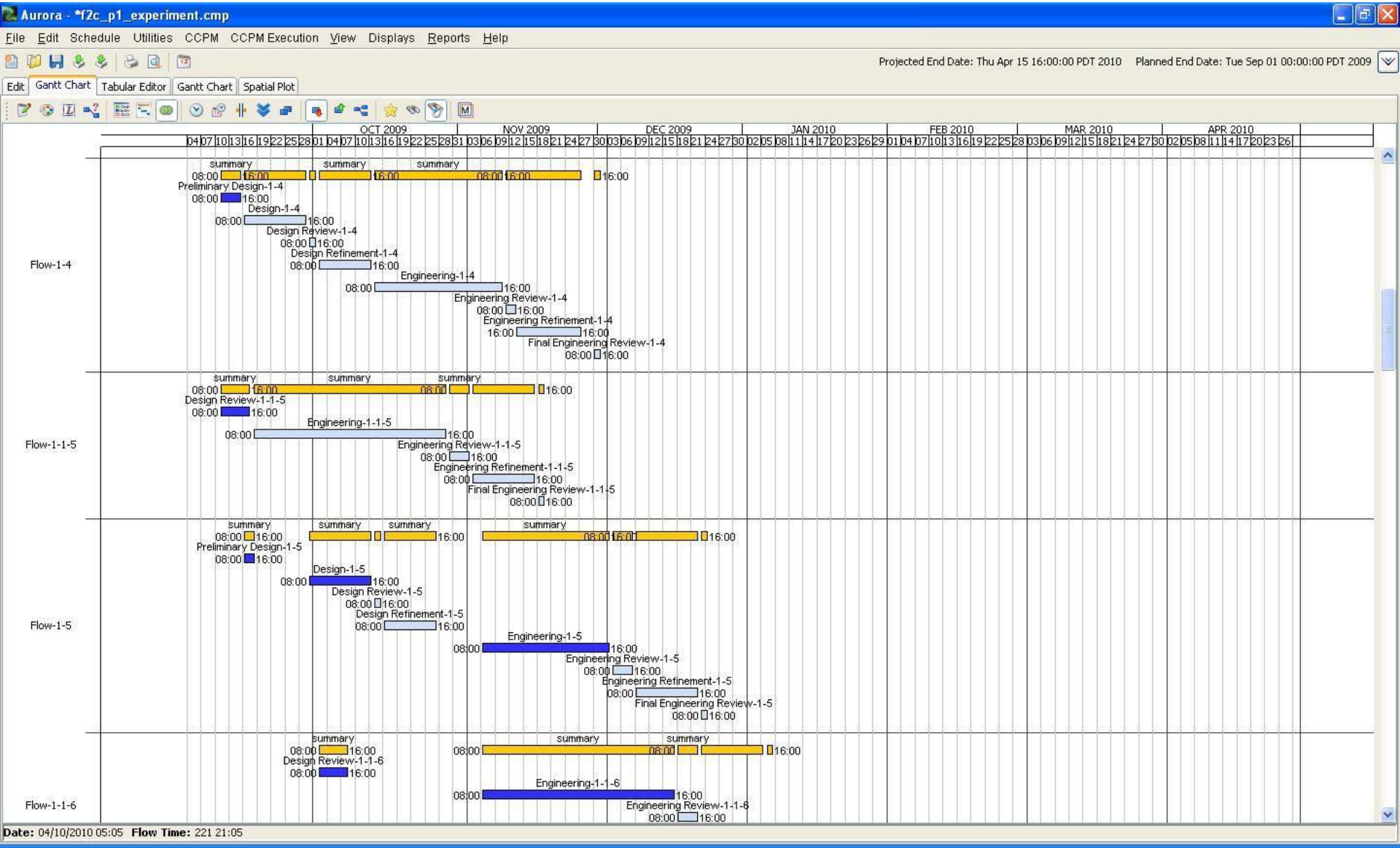
Execution Mode

Fever Chart

Task Priority List

Gantt Chart: Multiple Projects

Activities delayed by resource contention in blue




Aurora - *demo2_1_start_dates_set_col.cmp
File Edit Schedule Utilities CCPM CCPM Execution View Displays Reports Help
Projected End Date: Wed Mar 02 09:02:00 PST 2011
Planned End Date: Wed Apr 01 09:00:00 PDT 2009
Edit
Tabular Editor
Gantt Chart
Histogram Plot
2010
2011
APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB
5.0
ELEC
MECH
1
2
Date: 02/17/2010 03:47 Flow Time: 323 03:47 Group: ELEC Quantity: 3.3 Relative: 252.4 Days

GRACIAS POR SU ATENCIÓN

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The world's most advanced scheduling software?

Well, you decide. Boeing uses *Aurora*™ to build their new 787 Dreamliner. *Aurora* has a proven track record of reducing schedules by up to 33%. This could translate into millions of dollars worth of additionial productivity within your organization. *Aurora* works with most popular project management tools including Primavera™ and Microsoft Project.

With Aurora, is the sky the limit?

Well, no actually. *Aurora* has been used to send missions to outer space. NASA uses *Aurora* to solve some of their most challenging scheduling problems. *Aurora* is currently in use for the Space Shuttle, Space Station, and several more NASA projects. *Aurora* has also been chosen by the United Space Alliance for the next generation Crew Exploration Vehicle.

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