Top-level Schedules and the IMS

(A Review of Processes and Recommendations for Improvement)

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Date: April 2017

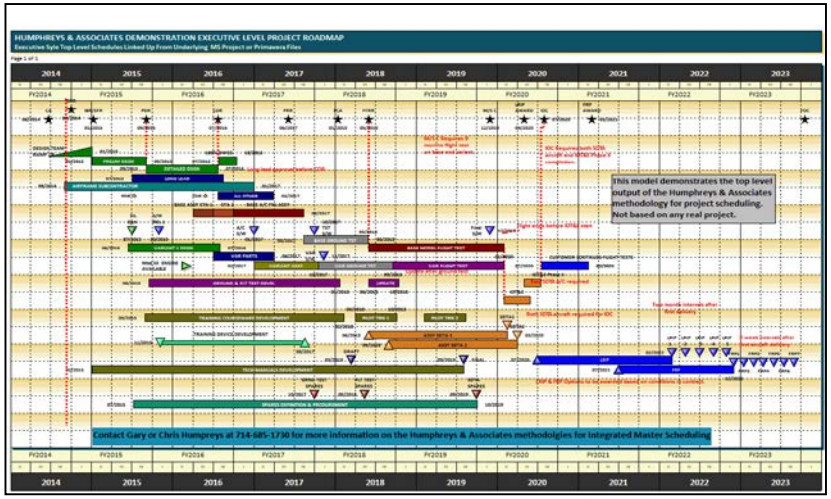
Report

- Recap of the results of work following 8/16 NDIA PMSC Meeting
- Review of volunteer-generated Top-level IMS exhibits using different tools
- Conclusions and Next Steps

Genesis of Topic

- **There is a story I must tell to make the point about Top-level schedules.**
- **This story has a satisfactory outcome; others do not.**

What Motivated This Effort?



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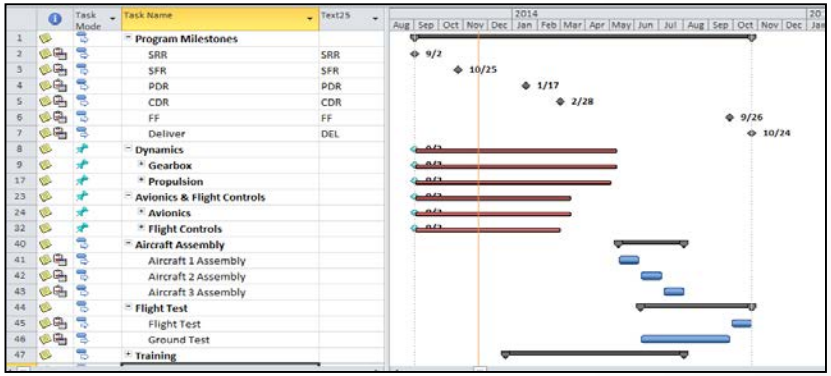

This is the schedule that tells your story.

Limited tool functionality and restrictions in Data Item Description do not support the best portrayal of project IMS information.

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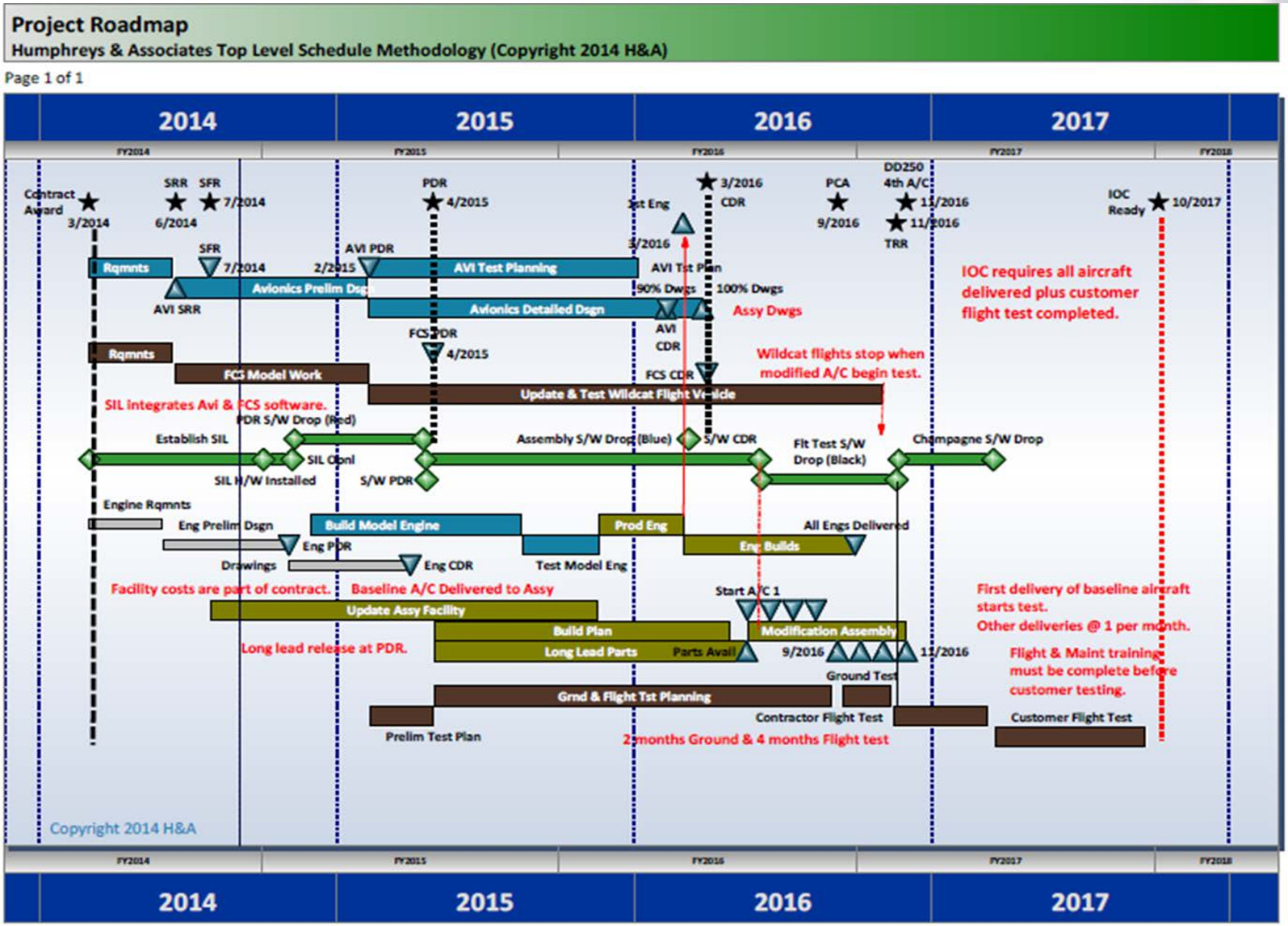
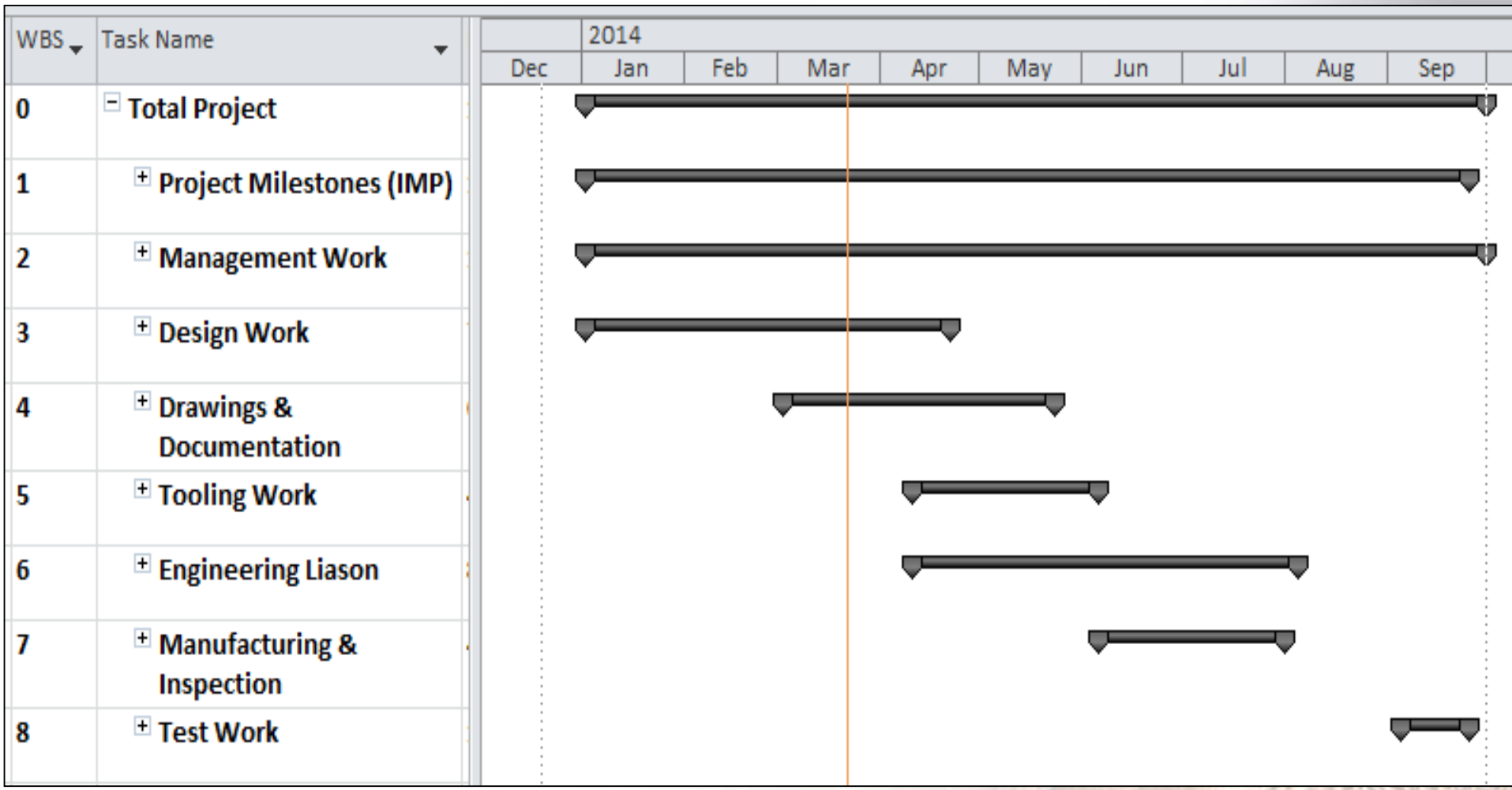
YOU WANT THIS



National Defense Industrial Association

YOU GET THIS



What are we doing?

- **Before award – we need a roadmap for top-down planning.**
- **After award - Millions spent on the IMS**
- **Can’t we get a more useful output?**

DI-MGMT-81861 IMS DID

Summary Master Schedule

A top-level schedule of key tasks/activities and milestones at the summary level which can be sorted by either the WBS or IMP structure (if applicable). It shall be a vertically integrated roll up of the intermediate and detailed levels within the IMS.

PREMISE 1

- **The Data Item Description (IPMR) for the top-level of the IMS is weak, restrictive, and does not promote useful readable top-level schedules for our projects**

Why?

- **Why sorted by either WBS or IMP?**
- **Why a “roll-up”?**
- **Why not the best portrayal of the project roadmap using whatever task and milestone in whatever grouping needed to make the point?**

PREMISE 2

- **Many companies are hand-drawing useful top-level schedules so that managers/customers can easily see the project plans**

PREMISE 3

- **There are some tools that exist to help with this function – let's find them and see what they can do**

TIMELINE

- **8/16 – Original presentation at NDIA meeting to determine if there was interest in the topic**
- **9/16 – List of 75+ people interested in the topic**
- **10/16 – Survey results from 23 participants**

TIMELINE

- **1/17 – Test files challenge sent out to list of hands-on operator/volunteers**
- **3/17 – Collection & Recap of examples Top-level Schedules**

SURVEY

- More than 80 surveys sent out
- 23 Responses received
- 27 questions with 5 choices
  - –Strongly Agree - Agree – Neutral –Disagree - Strongly Disagree

TOP AGREEMENTS

- **# 1: *There should be one top-level schedule with other high level schedules supporting if needed (e.g. Test Schedule, Manufacturing Schedule).***
- **# 18: *Top-level Schedule should be complete, easy to read, and self-explanatory.***

TOP AGREEMENTS

- **# 21: *Should come from the IMS tool or at least be electronically linked to the tool.***
- **# 27: *Presenting the project to customers and other stakeholders is a high priority management task.***

Top Disagreements

#11 The Summary Master Schedule is a top-level schedule of key tasks/activities and milestones at the summary level which can be sorted by either WBS or event structure

- ***Want more flexibility on structure of top level***

TOP DISAGREEMENTS

- *#7 Developed from requirements during the proposal phase.*

- *Some objected to "proposal phase" – can exist at any time*

TOP DISAGREEMENTS

- ***#23 May contain work not-yet-authorized in the contract (i.e. Options).***

- ***Some did not want anything but contract work***

THE CHALLENGE

- **Provided a Microsoft Project file and a roadmap of what was wanted on the Top-level Schedule**
- **The challenge was that the hand-drawn schedule was not in WBS order and had multiple tasks per line**

THE CHALLENGE

- **The participants used their own choice of tool to create a Top-level Schedule that satisfied the need and was based on the MS Project data.**

TEST PROJECT

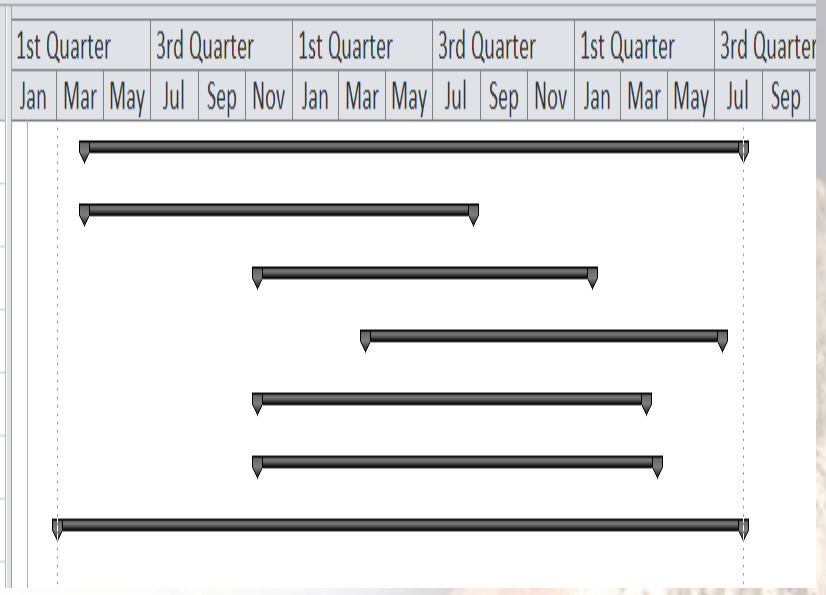
- 3/2/17 to 8/7/19
- 109 Rows in the MS project File
- Built with MSP 2010
- Project represents modification of aircraft, build of 3 aircraft, ground test, flight test, and all supportability requirements.

INSTRUCTIONS

- **PM wants a top level schedule to sit above the MS Project schedule/has provided sketch**
- **The view in the top level will be different than the collapsed structural view in MSP.**
- **Build top level - keep it linked to the MSP file provided.**

TEST FILE

	Task Mode	Duration	Task Name	Text25	Duration	% Complete
1		610 days	Program Milestones		610 days	0%
10		360 days	Engineering		360 days	0%
56		310 days	Aircraft Assembly Operations		310 days	0%
67		330 days	Flight Test		330 days	0%
74		360 days	Training		360 days	0%
92		370 days	Supportability		370 days	0%
106		635 days	System Engineering		635 days	0%



This is the structure that was called out in the RFP. The view PM team wants is different – it mirrors the way your company "normally" schedules.

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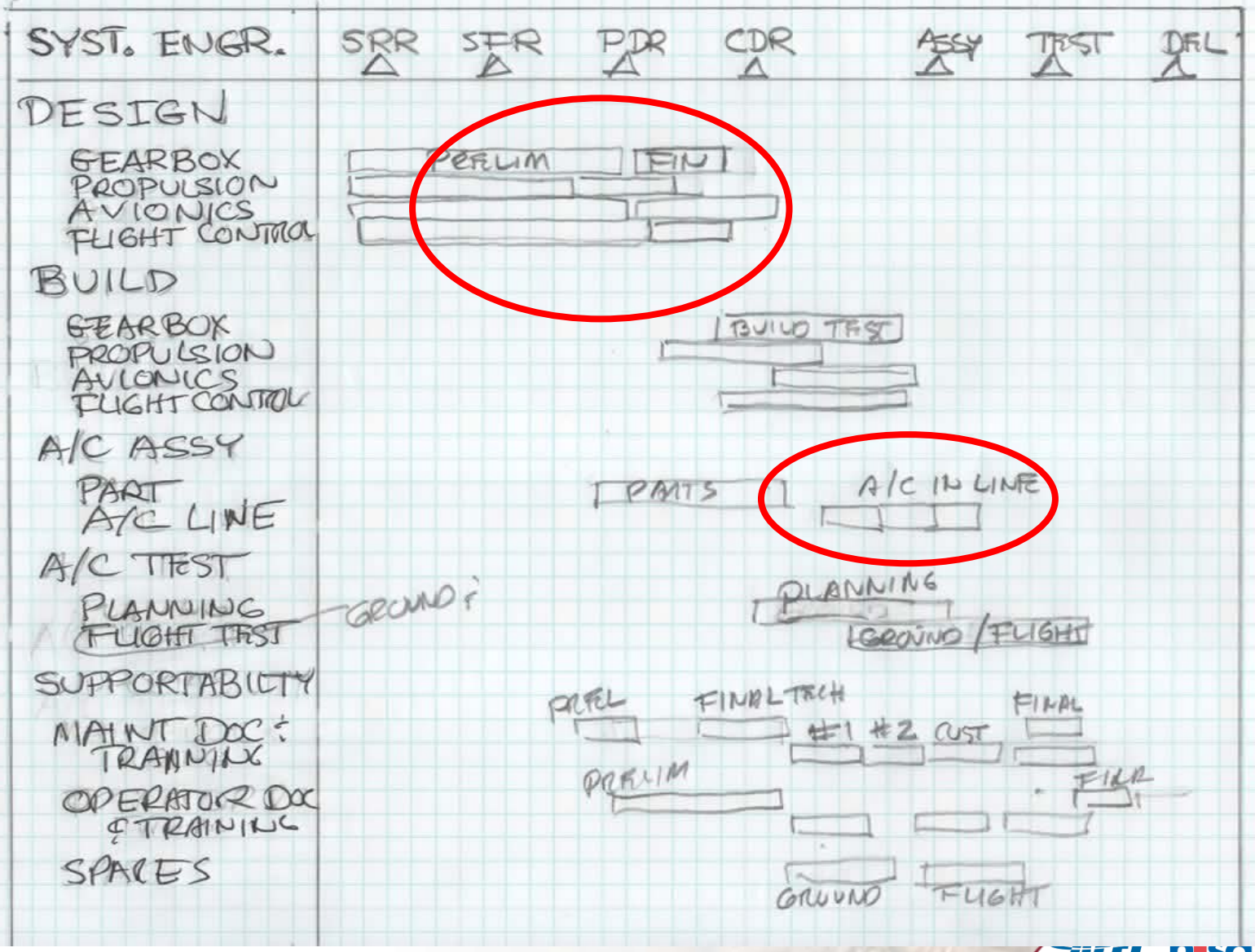
TEST FILE



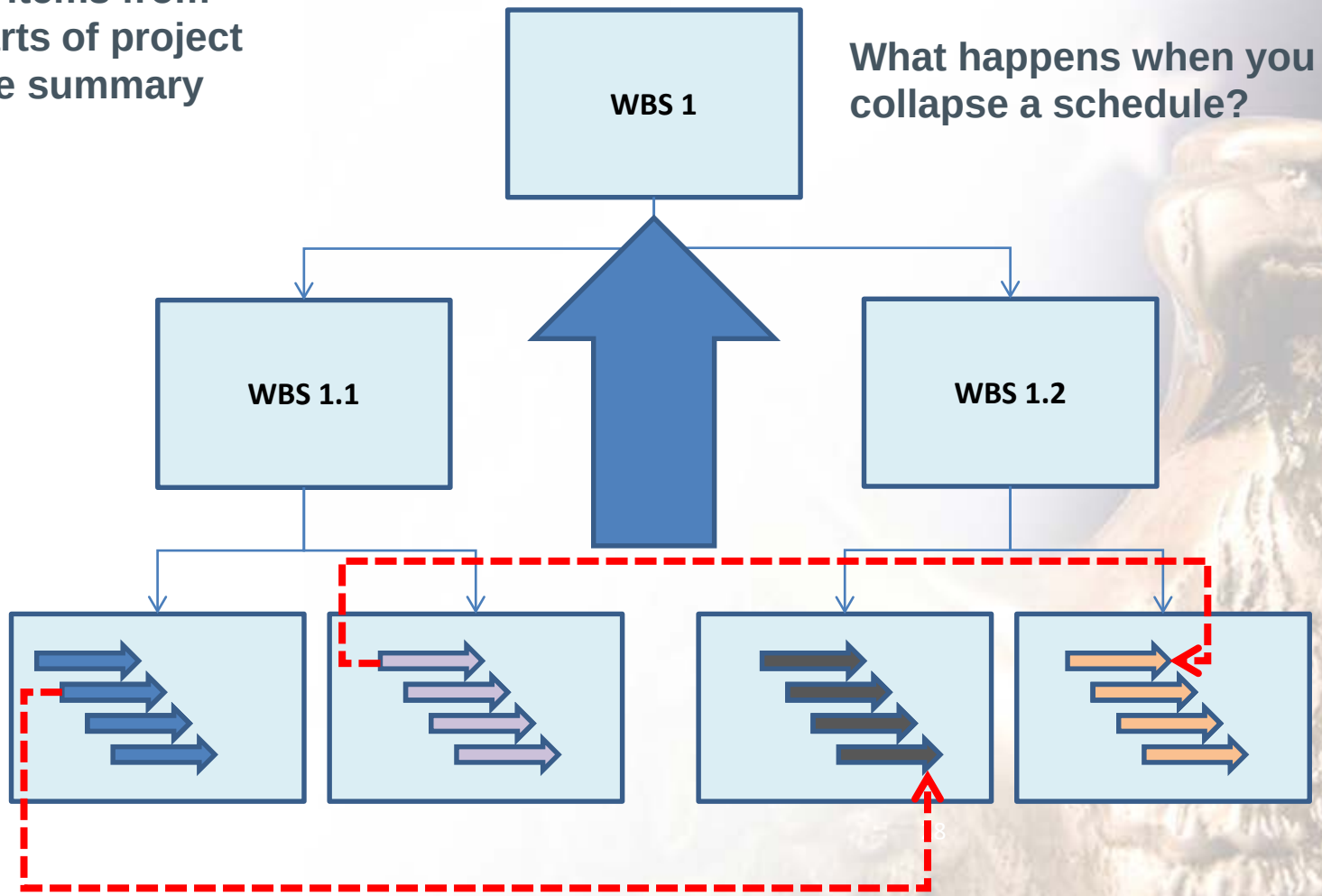
VOLUNTEERS USED

- **Milestones Professional**
- **Onepager Pro**
- **Microsoft Project Itself**
- **Primavera (no result submitted)**
- **Open Plan**
- **Asta Power Project**

DIFFICULTY

Summarize items from different parts of project into a single summary task

What happens when you collapse a schedule?



Robert Mead

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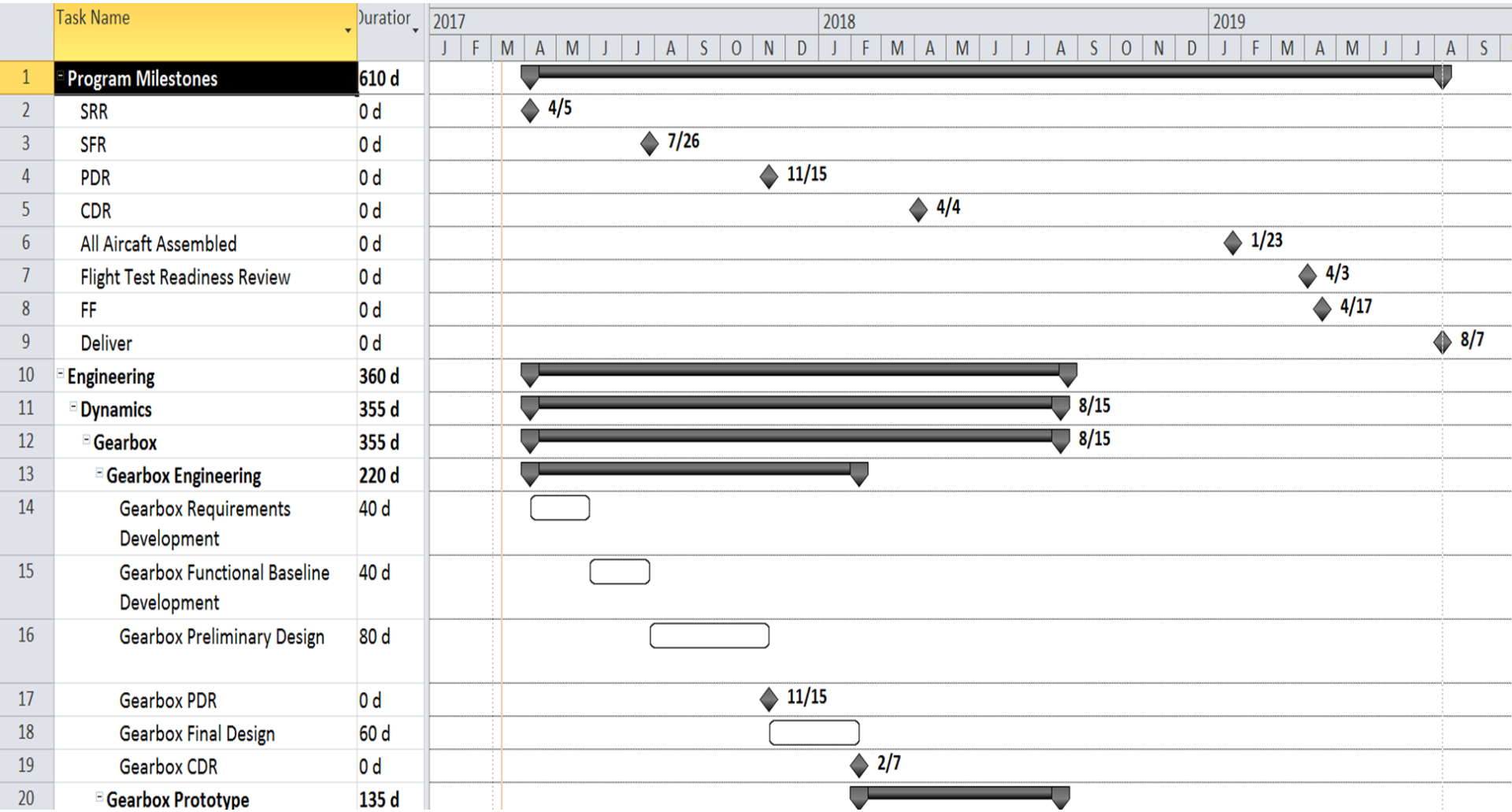
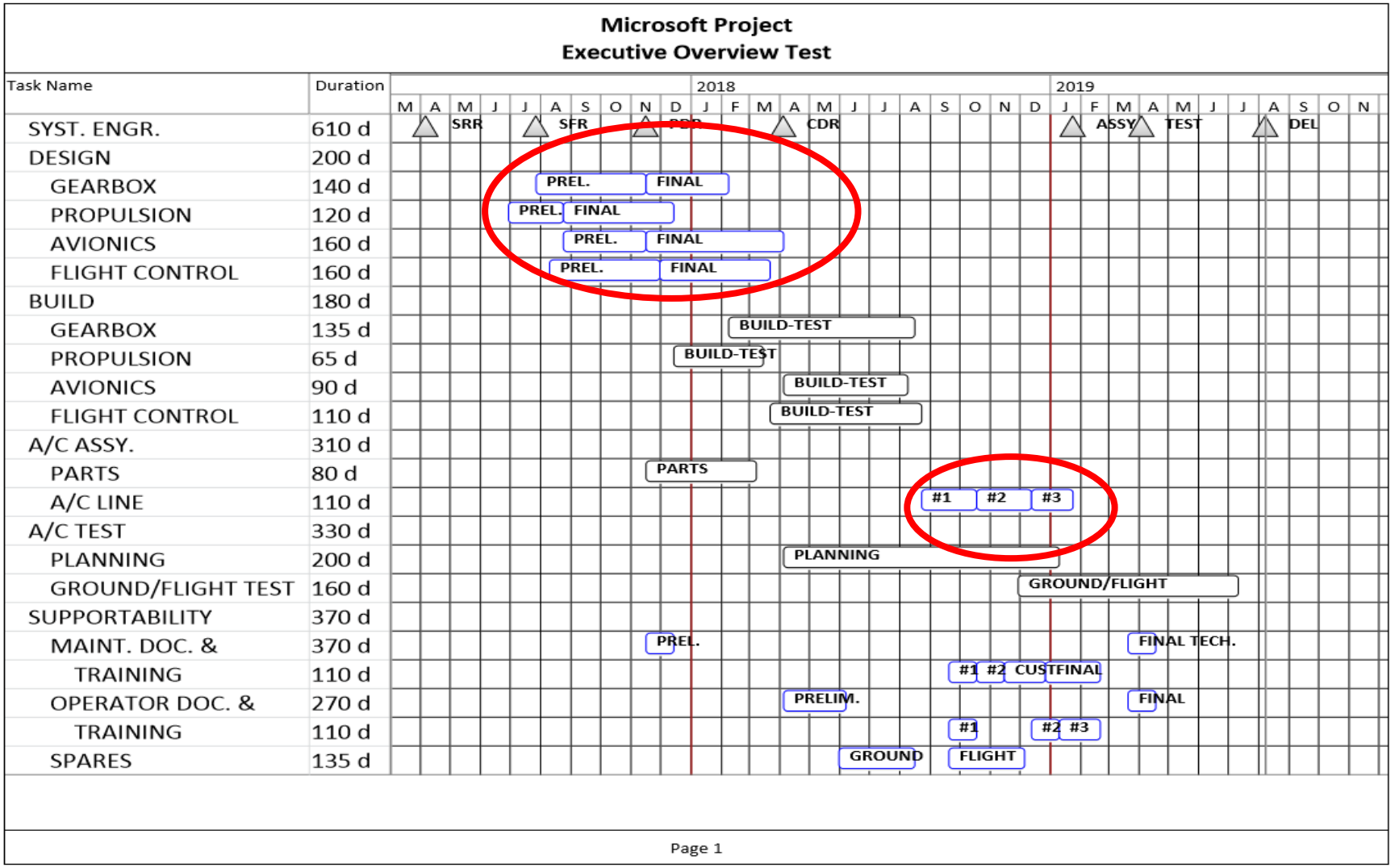
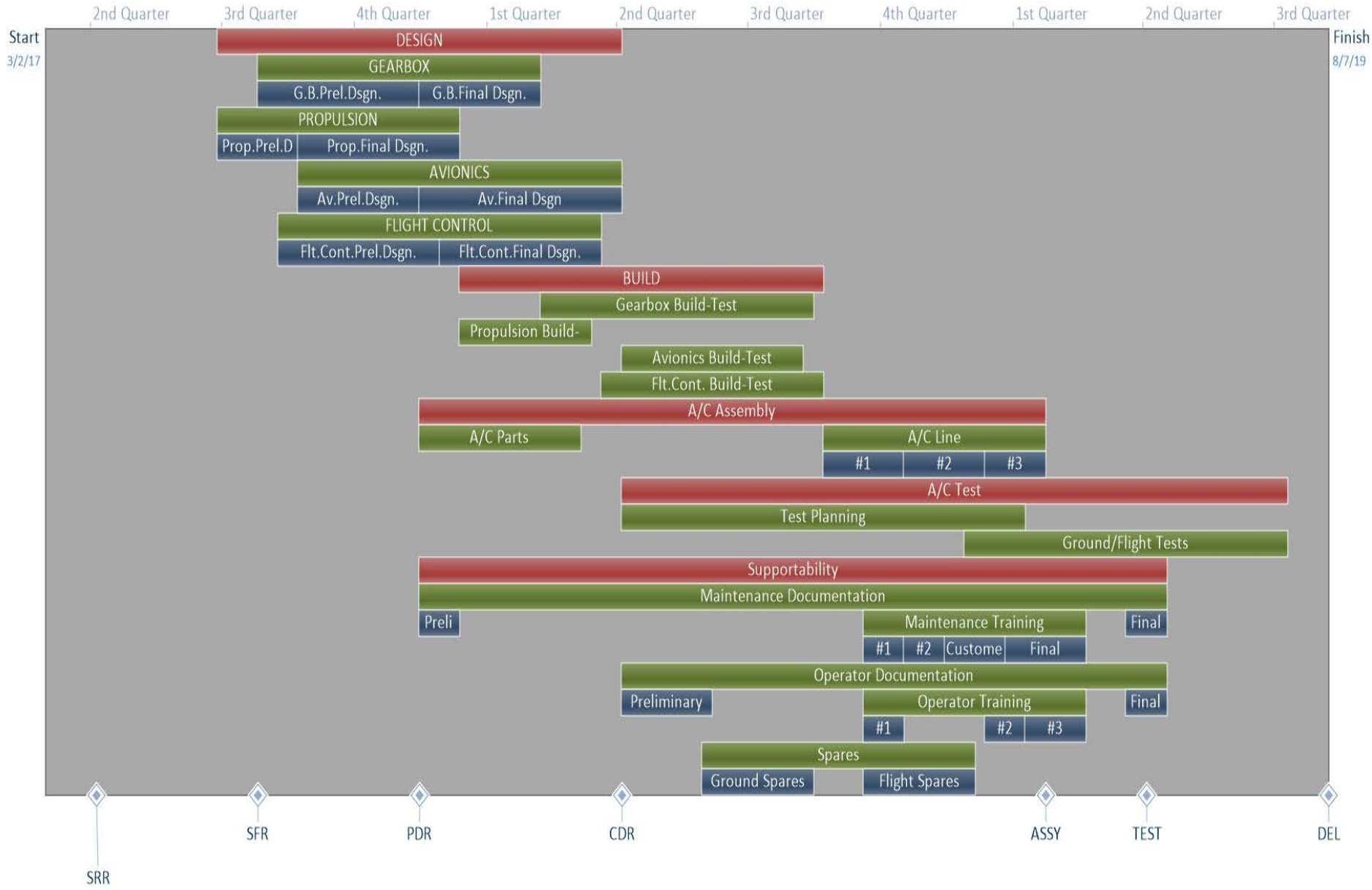
BUILT A MODIFIED STRUCTURE



CREATED EXECUTIVE VIEW



Using the TIMELINE Function in MS Project



Brian Valenti (Elizabeth Schaapveld)

Rockwell Collins

Milestones Professional

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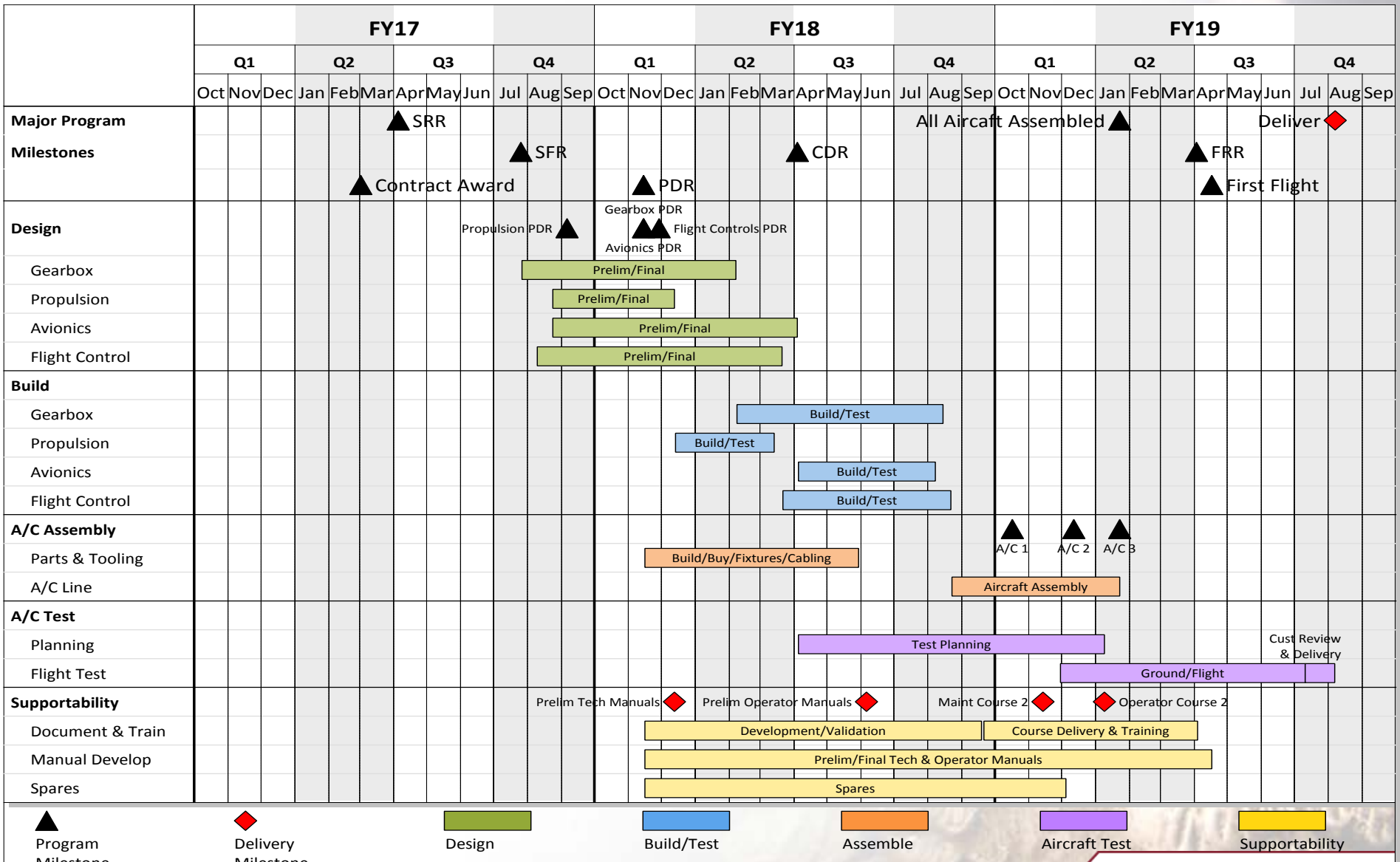
MILESTONES PROFESSIONAL

2/17/17



Lisa Hastings

General Atomics

Milestones Professional

Lisa.hastings@ga-asi.com

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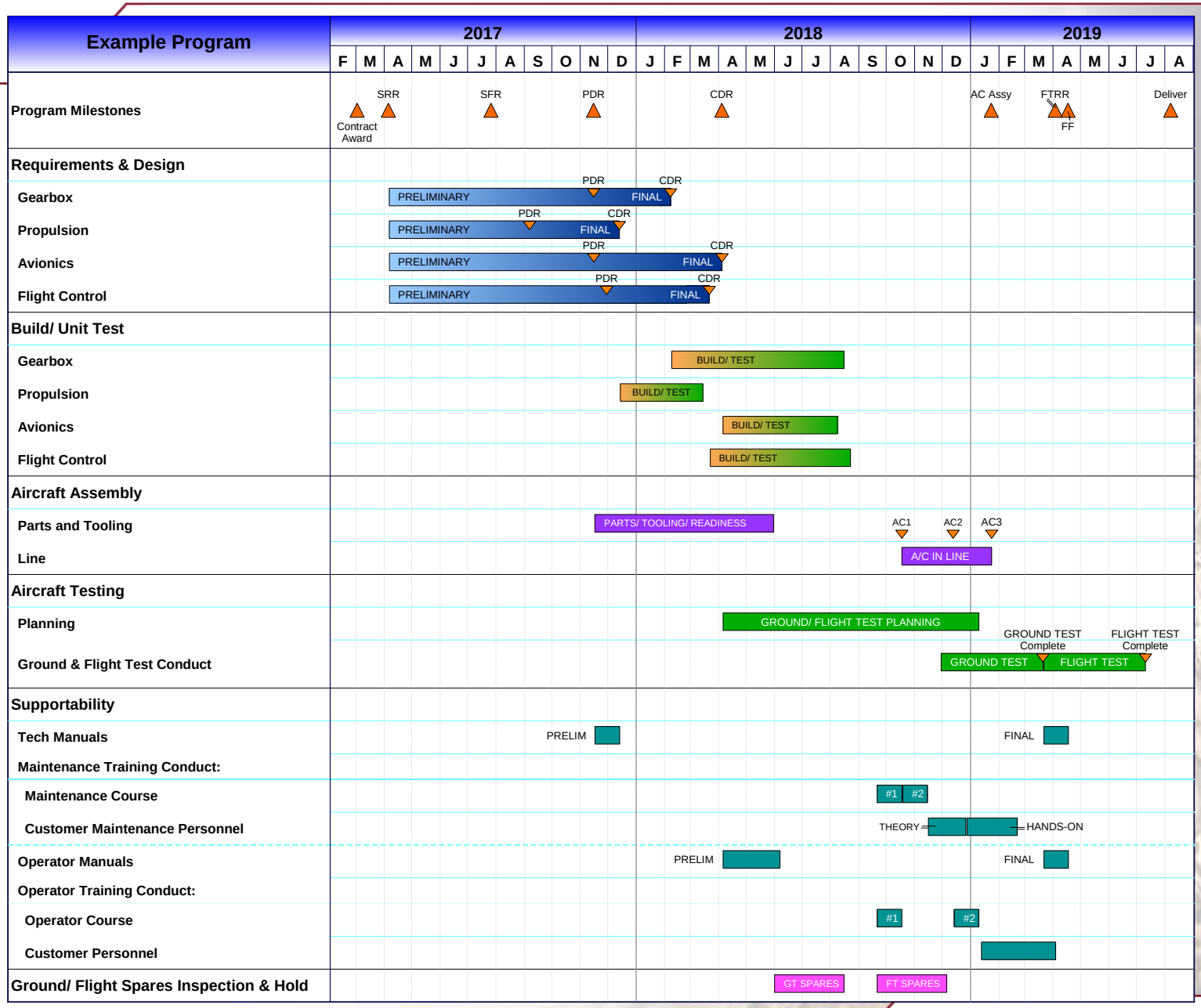

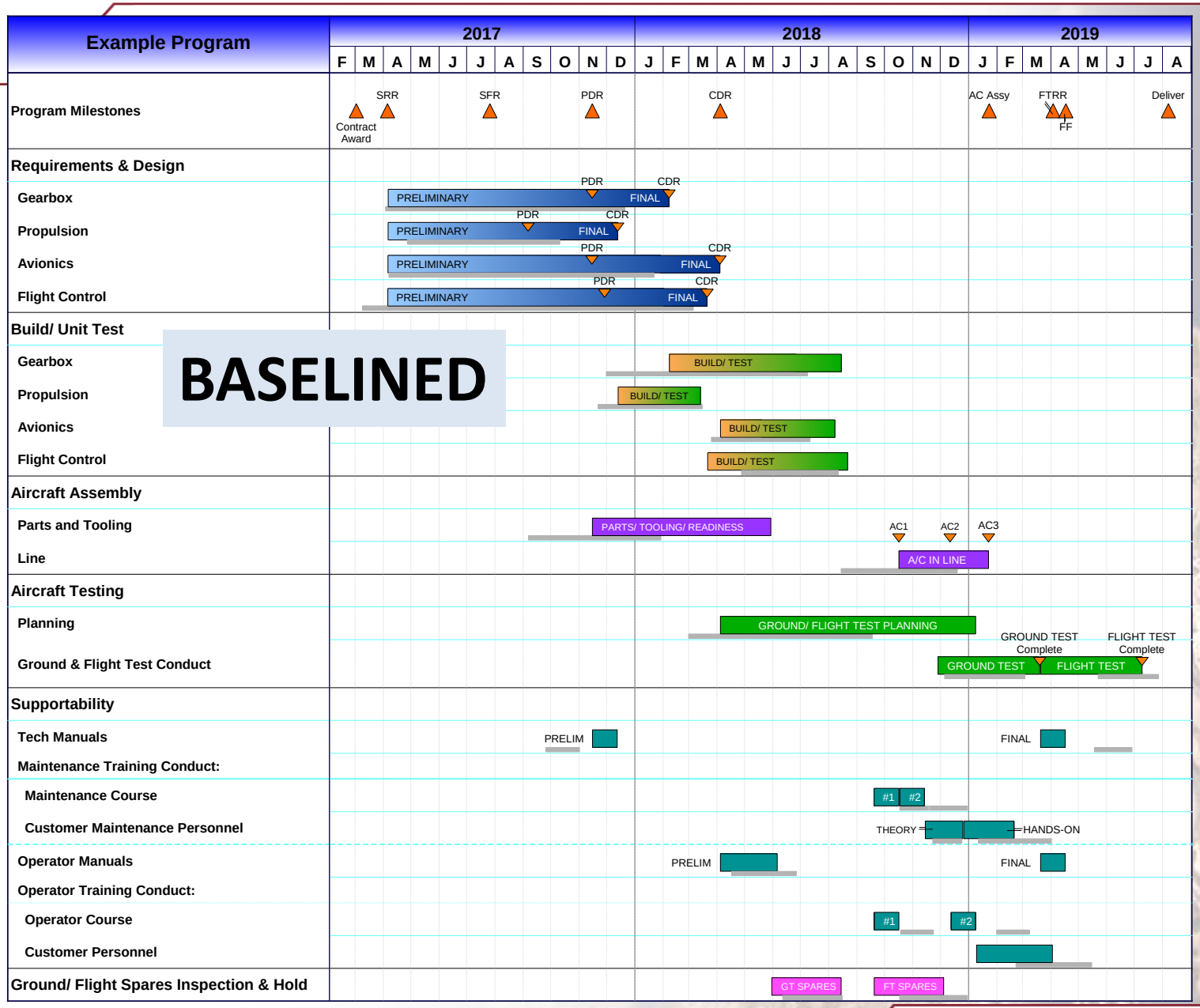
Example Program
2017
2018
2019
F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A
Program Milestones
Contract Award
SRR
SFR
PDR
CDR
AC Assy
FTRR
FF
Deliver
Requirements & Design
Gearbox
PRELIMINARY
PDR
FINAL
CDR
Propulsion
PRELIMINARY
PDR
FINAL
CDR
Avionics
PRELIMINARY
PDR
FINAL
CDR
Flight Control
PRELIMINARY
PDR
FINAL
CDR
BASELINED
Build/ Unit Test
Gearbox
BUILD/ TEST
Propulsion
BUILD/ TEST
Avionics
BUILD/ TEST
Flight Control
BUILD/ TEST
Aircraft Assembly
Parts and Tooling
PARTS/ TOOLING/ READINESS
AC1
AC2
AC3
Line
A/C IN LINE
Aircraft Testing
Planning
GROUND/ FLIGHT TEST PLANNING
Ground & Flight Test Conduct
GROUND TEST Complete
FLIGHT TEST Complete
GROUND TEST
FLIGHT TEST
Supportability
Tech Manuals
PRELIM
FINAL
Maintenance Training Conduct:
Maintenance Course
#1
#2
Customer Maintenance Personnel
THEORY
HANDS-ON
Operator Manuals
PRELIM
FINAL
Operator Training Conduct:
Operator Course
#1
#2
Customer Personnel
Ground/ Flight Spares Inspection & Hold
GT SPARES
FT SPARES

Scott LaFrance

BAE Systems

Milestones Professional

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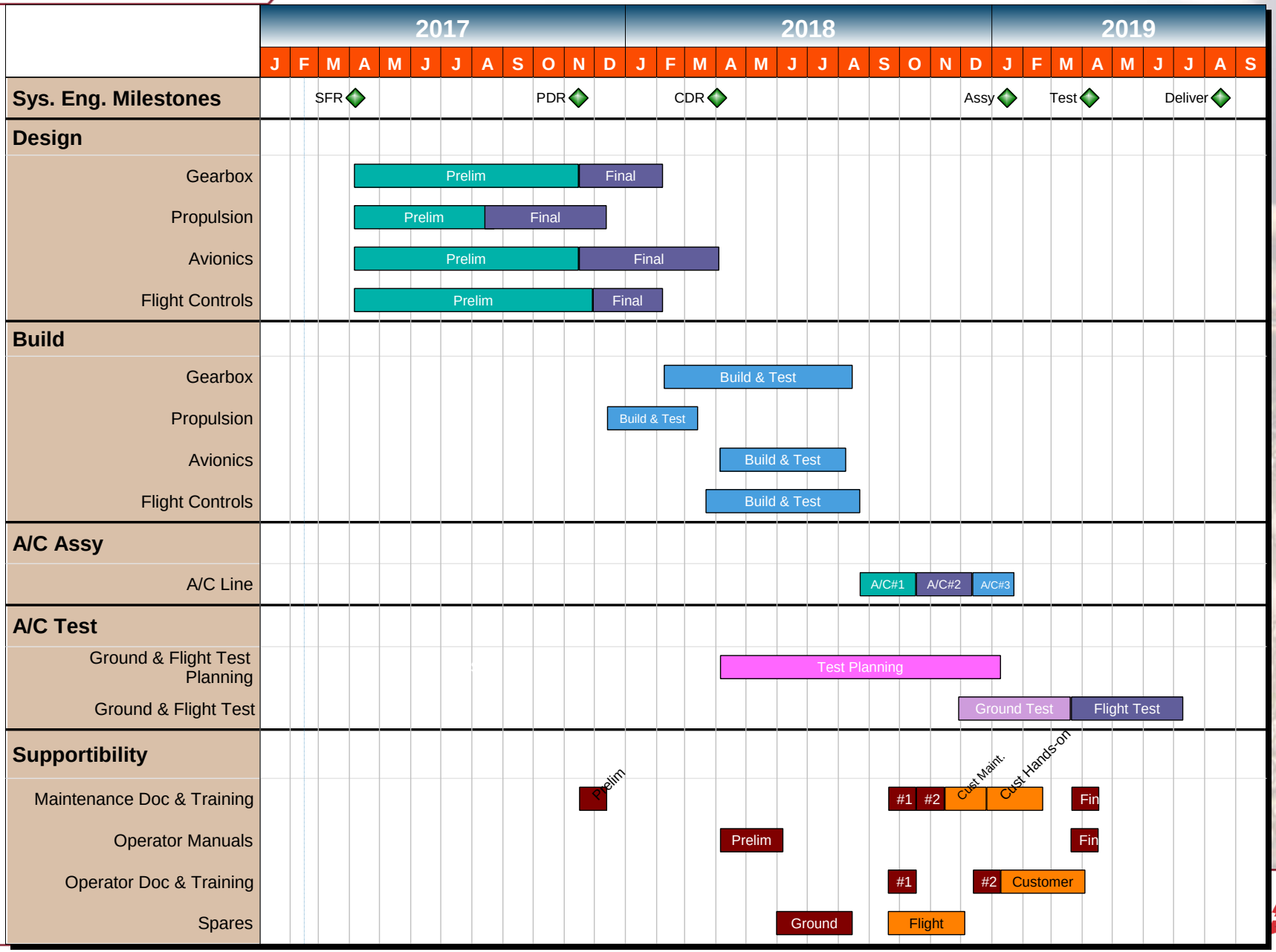
2017
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2019
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Sys. Eng. Milestones
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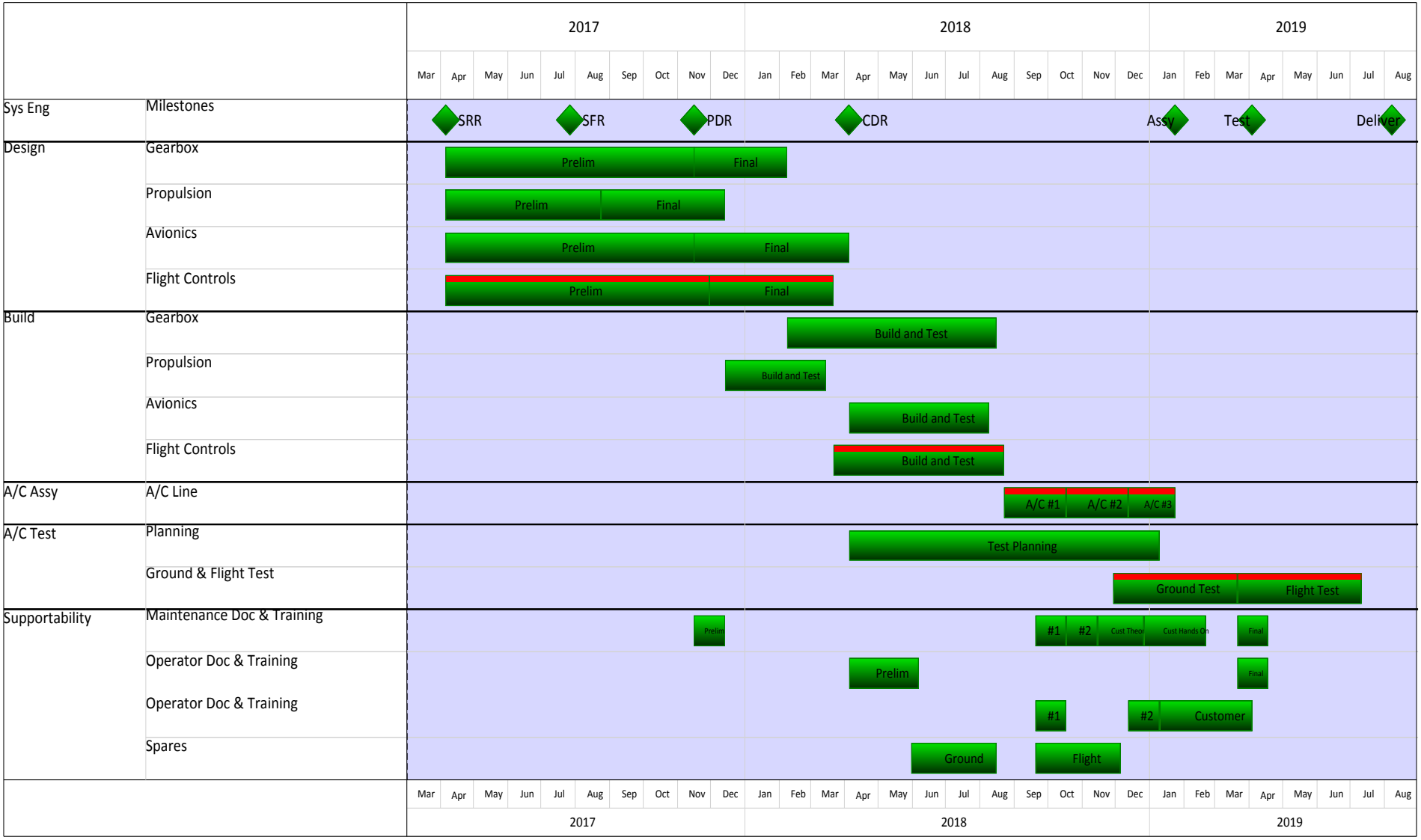
PDR
CDR
Assy
Test
Deliver
Design
Gearbox
Prelim
Final
Propulsion
Prelim
Final
Avionics
Prelim
Final
Flight Controls
Prelim
Final
Build
Gearbox
Build & Test
Propulsion
Build & Test
Avionics
Build & Test
Flight Controls
Build & Test
A/C Assy
A/C Line
A/C#1
A/C#2
A/C#3
A/C Test
Ground & Flight Test Planning
Test Planning
Ground & Flight Test
Ground Test
Flight Test
Supportibility
Maintenance Doc & Training
Prelim
#1
#2
Cust Maint.
Cust Hands-on
Fin
Operator Manuals
Prelim
Fin
Operator Doc & Training
#1
#2
Customer
Spares
Ground
Flight

Rita Kosmin

L3 Technologies

OnePager Pro

Rita.Kosmin@L3T.com


2017
2018
2019
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug
Sys Eng
Milestones
SRR
SFR
PDR
CDR
Assy
Test
Deliver
Design
Gearbox
Prelim
Final
Propulsion
Prelim
Final
Avionics
Prelim
Final
Flight Controls
Prelim
Final
Build
Gearbox
Build and Test
Propulsion
Build and Test
Avionics
Build and Test
Flight Controls
Build and Test
A/C Assy
A/C Line
A/C #1
A/C #2
A/C #3
A/C Test
Planning
Test Planning
Ground & Flight Test
Ground Test
Flight Test
Supportability
Maintenance Doc & Training
Prelim
#1
#2
Cust Theor
Cust Hands On
Final
Operator Doc & Training
Prelim
Final
Operator Doc & Training
#1
#2
Customer
Spares
Ground
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Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug
2017
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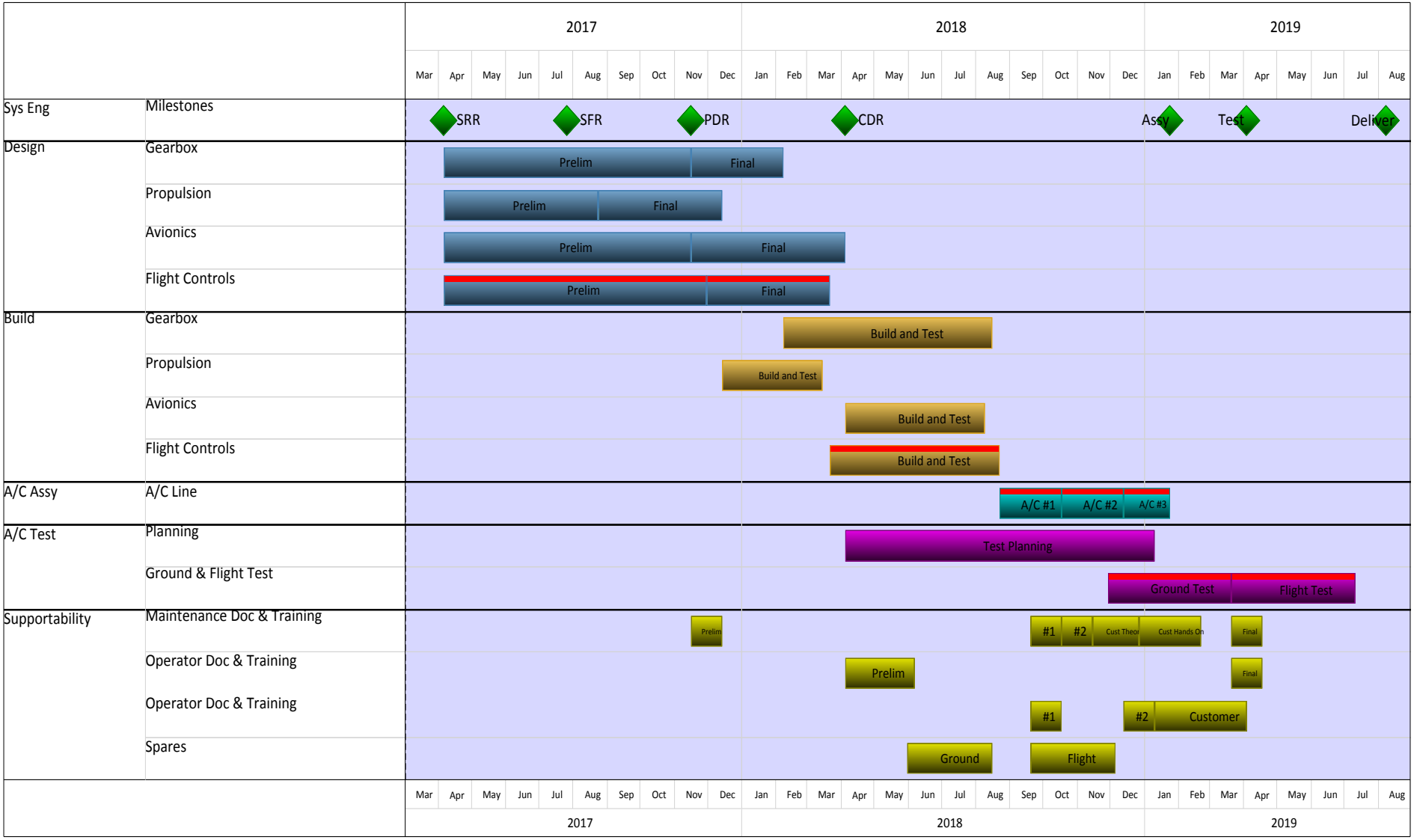

PB Example for MP Rita Kosmin.mpp

Snapshot Date: 3/2/2017

Created in OnePager® Pro

Mark Nebeker

The Project Man

MS Project

mark@theprojectman.com

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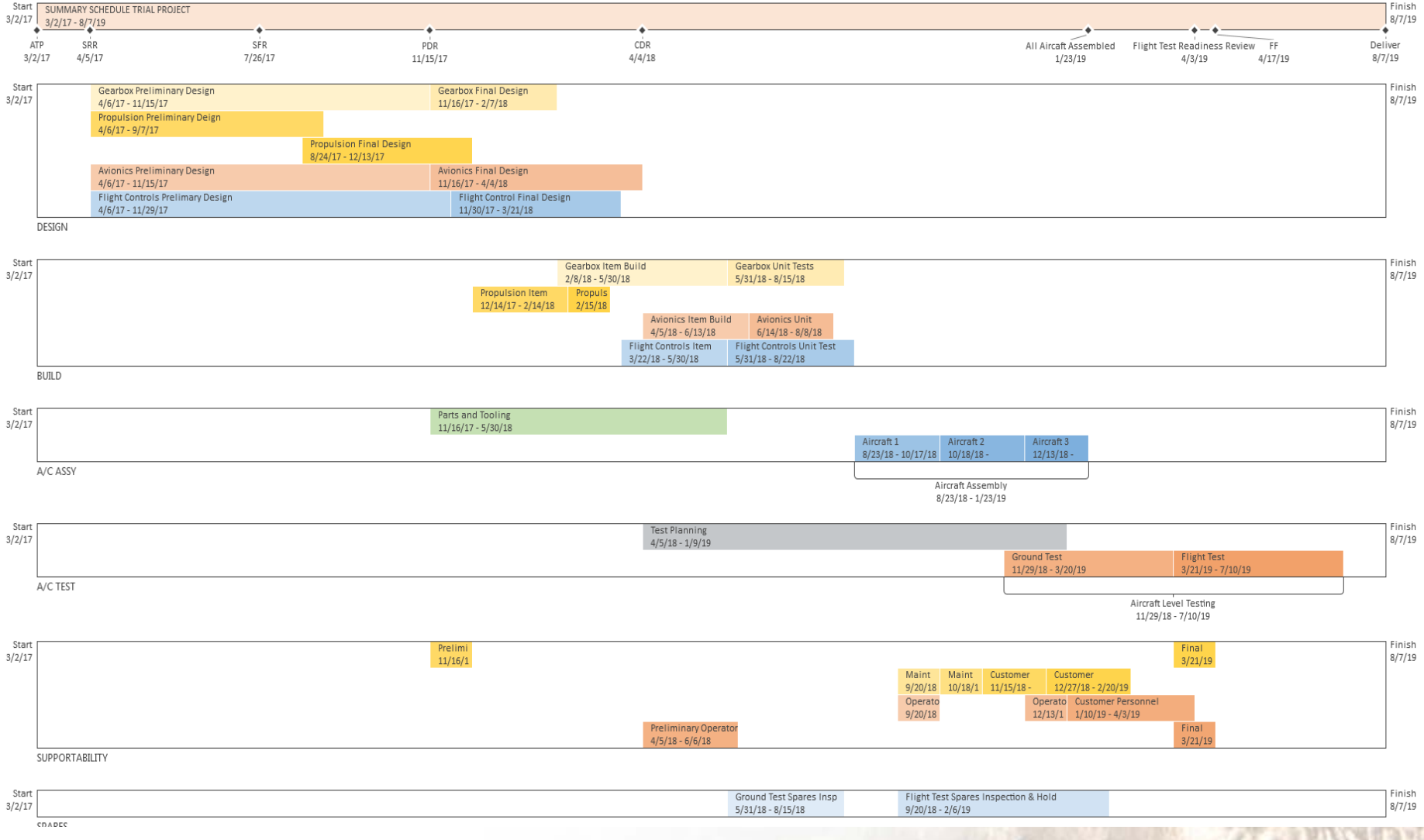
NO TIMESCALE BUT DATES ON SCHEDULE ITEMS



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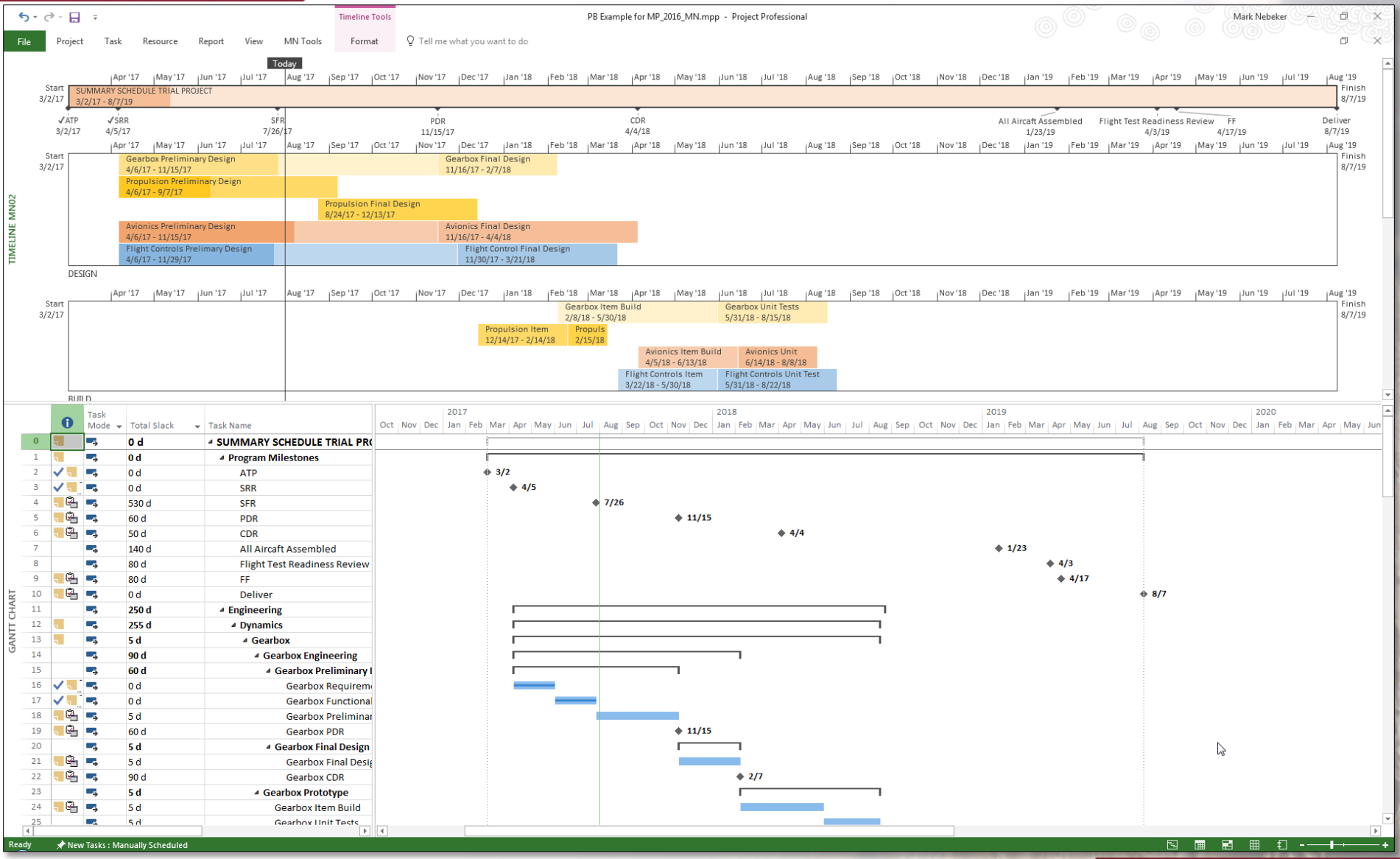
HOW IT DISPLAYS IN MS PROJECT



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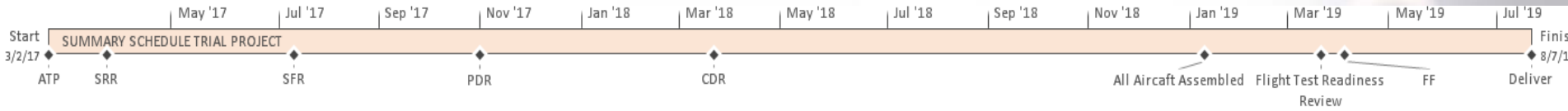
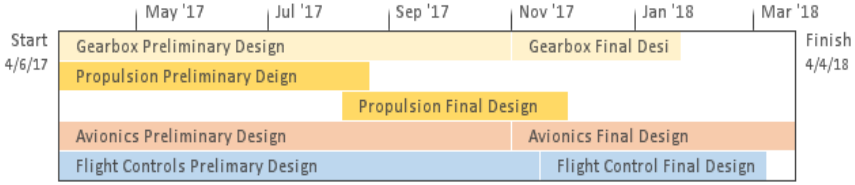
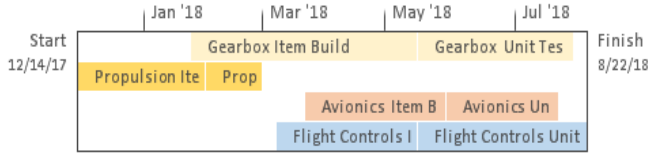
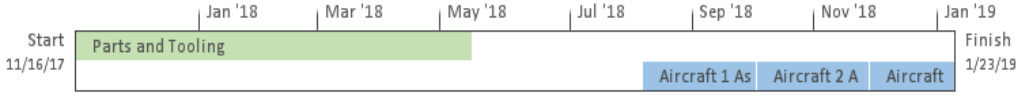
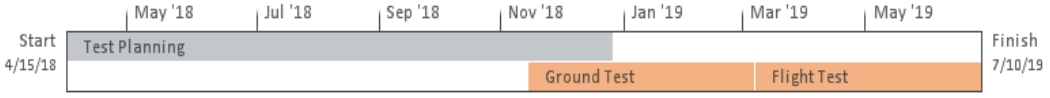
DIFFERENT LOOK

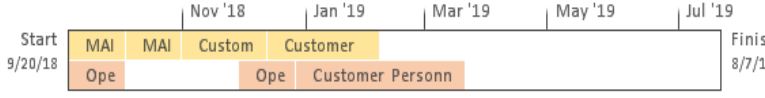












Rob Edwards

Deltek

Deltek Open Plan

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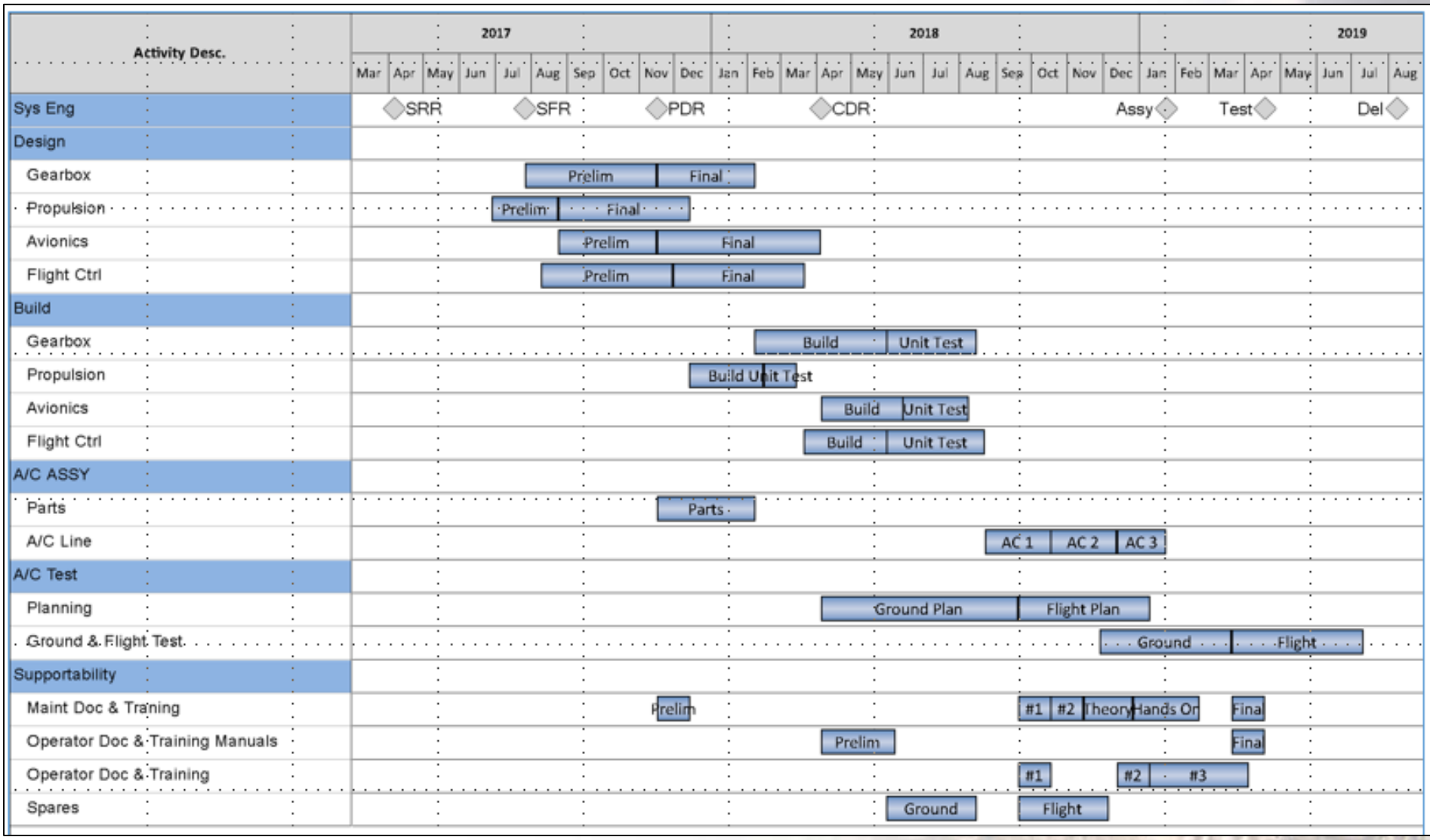
TEXT CENTERED IN BAR



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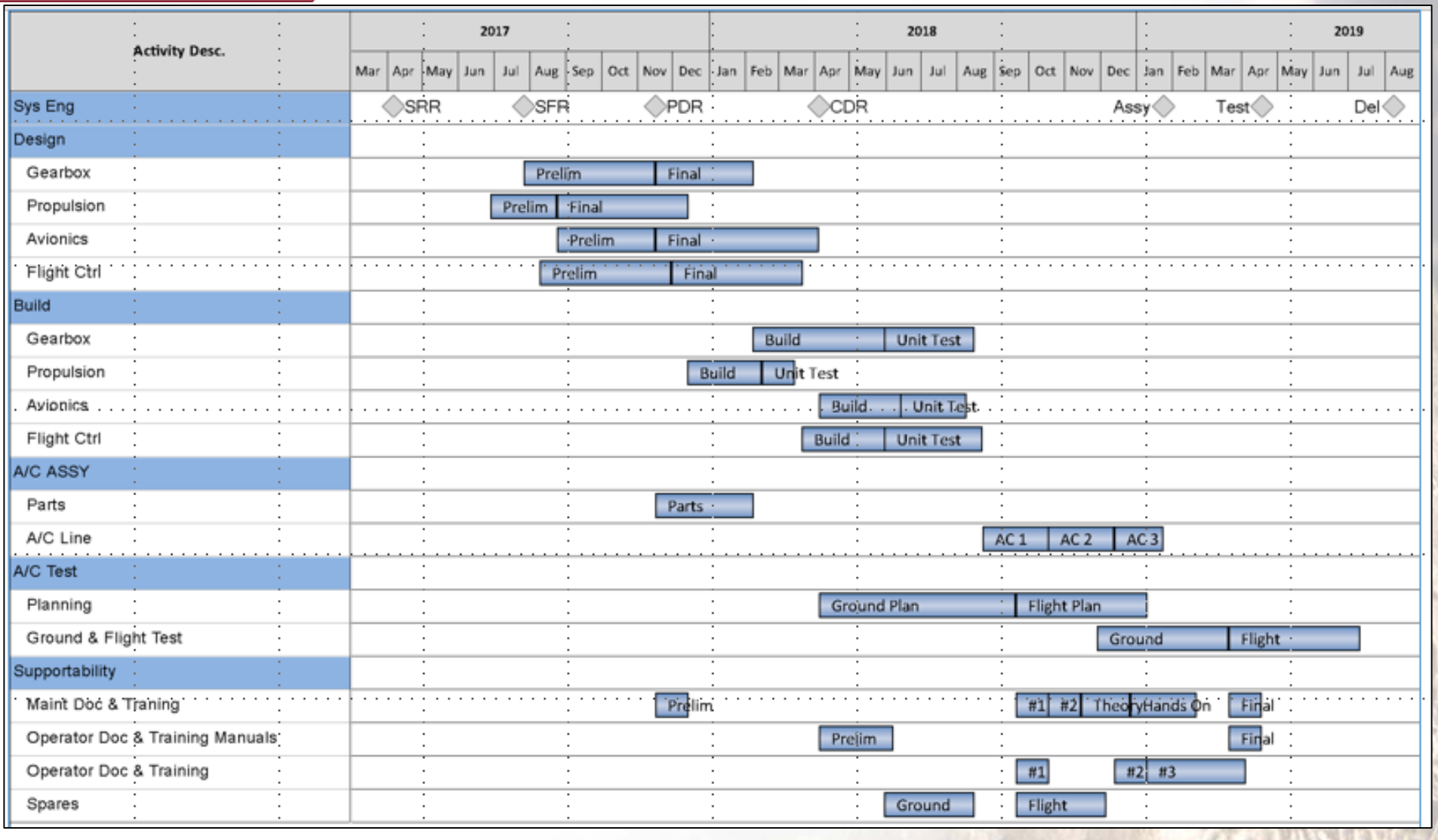
TEXT LEFT JUSTIFIED IN BAR

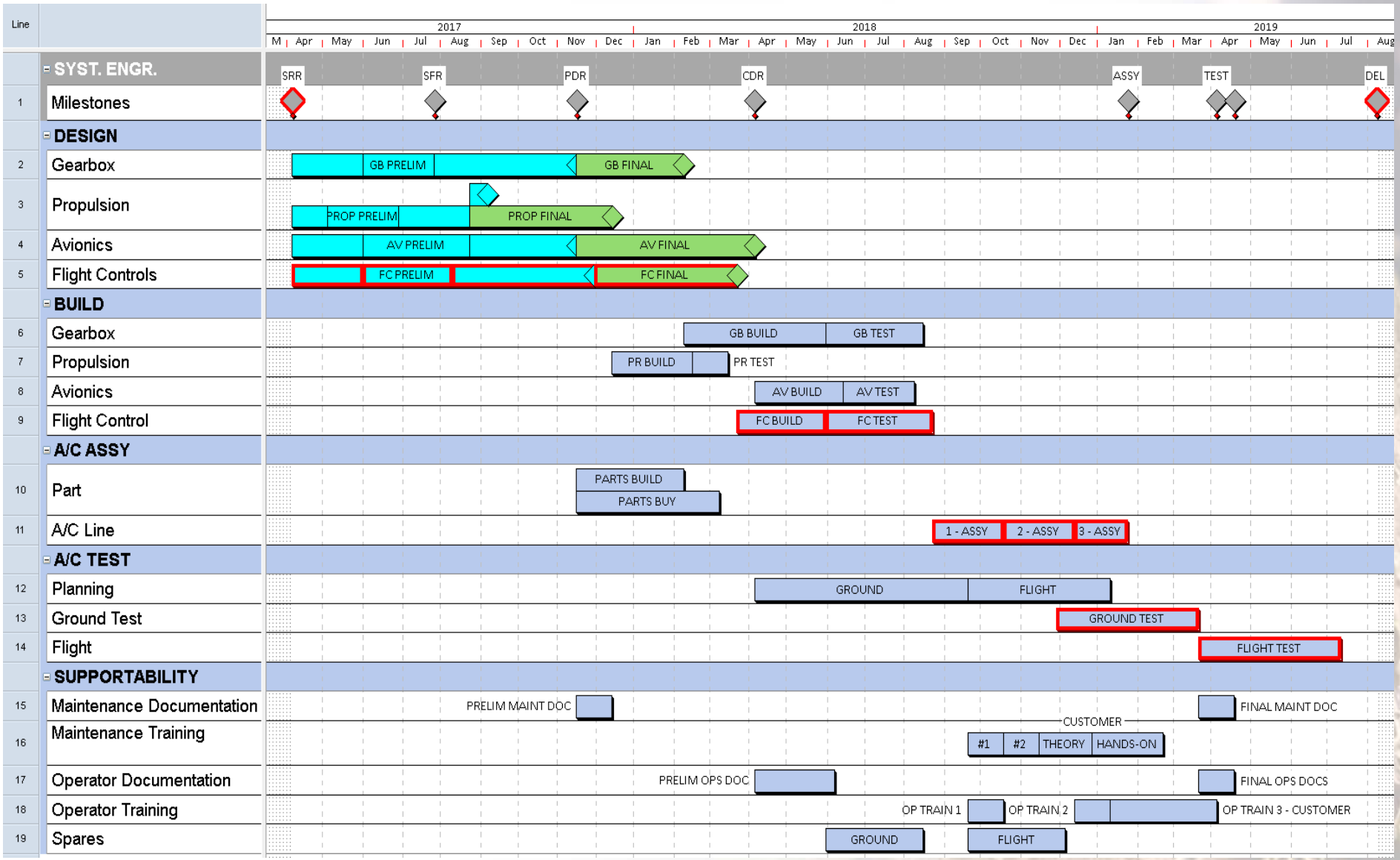


Ken Tomeo

Project Performance Inc.

ASTA Powerproject

kt@P2corp.com


Line
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SYST. ENGR.
SRR
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ASSY
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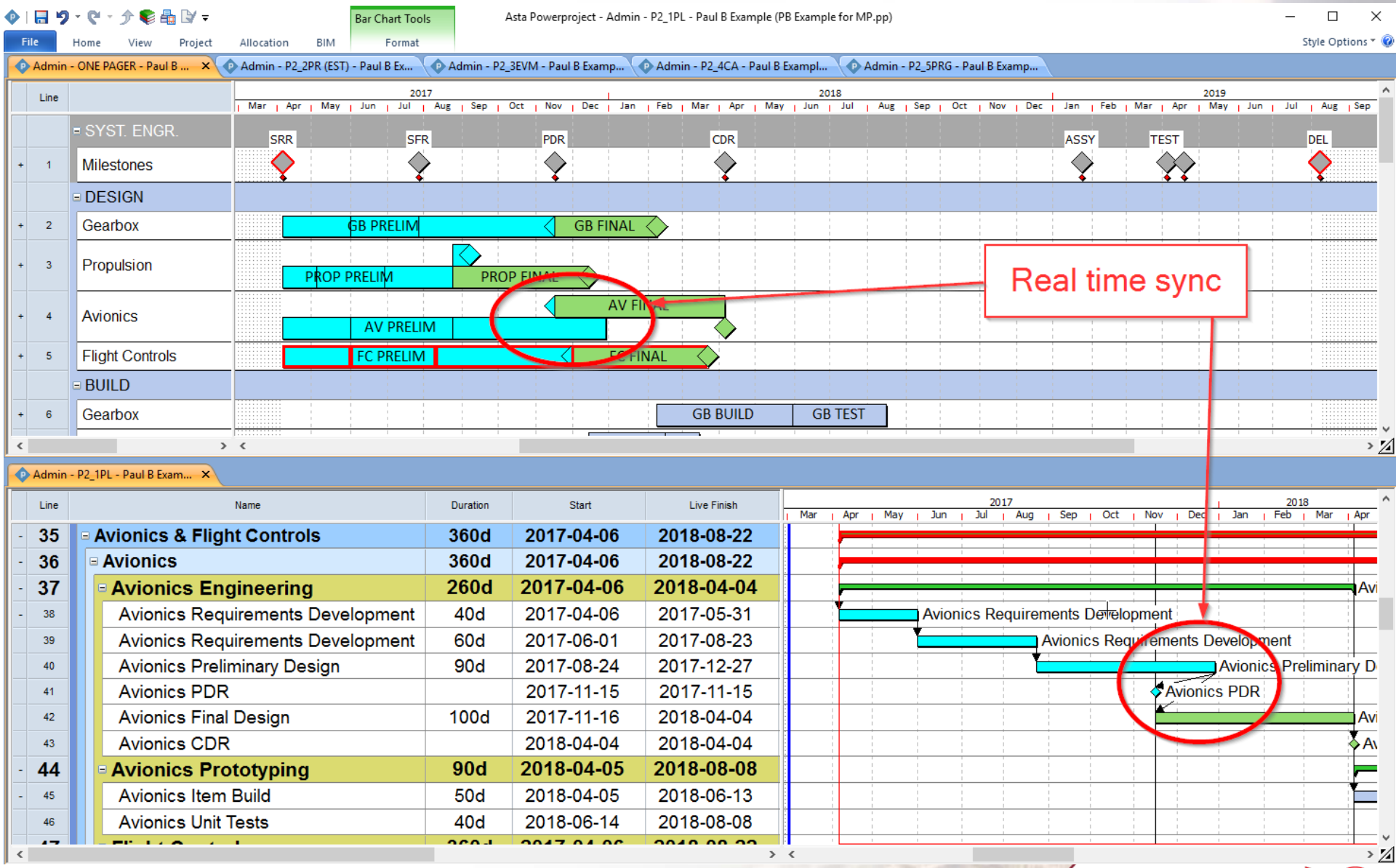
DEL
1 Milestones
DESIGN
2 Gearbox
GB PRELIM
GB FINAL
3 Propulsion
PROP PRELIM
PROP FINAL
4 Avionics
AV PRELIM
AV FINAL
5 Flight Controls
FC PRELIM
FC FINAL
BUILD
6 Gearbox
GB BUILD
GB TEST
7 Propulsion
PR BUILD
PR TEST
8 Avionics
AV BUILD
AV TEST
9 Flight Control
FC BUILD
FC TEST
A/C ASSY
10 Part
PARTS BUILD
PARTS BUY
11 A/C Line
1 - ASSY
2 - ASSY
3 - ASSY
A/C TEST
12 Planning
GROUND
FLIGHT
13 Ground Test
GROUND TEST
14 Flight
FLIGHT TEST
SUPPORTABILITY
15 Maintenance Documentation
PRELIM MAINT DOC
FINAL MAINT DOC
16 Maintenance Training
CUSTOMER
#1
#2
THEORY
HANDS-ON
17 Operator Documentation
PRELIM OPS DOC
FINAL OPS DOCS
18 Operator Training
OP TRAIN 1
OP TRAIN 2
OP TRAIN 3 - CUSTOMER
19 Spares
GROUND
FLIGHT


Bar Chart Tools
Asta Powerproject - Admin - P2_1PL - Paul B Example (PB Example for MP.pp)
File
Home
View
Project
Allocation
BIM
Format
Style Options
Admin - ONE PAGER - Paul B ...
Admin - P2_2PR (EST) - Paul B Ex...
Admin - P2_3EVM - Paul B Examp...
Admin - P2_4CA - Paul B Exampl...
Admin - P2_5PRG - Paul B Examp...
Line
2017
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SYST. ENGR.
SRR
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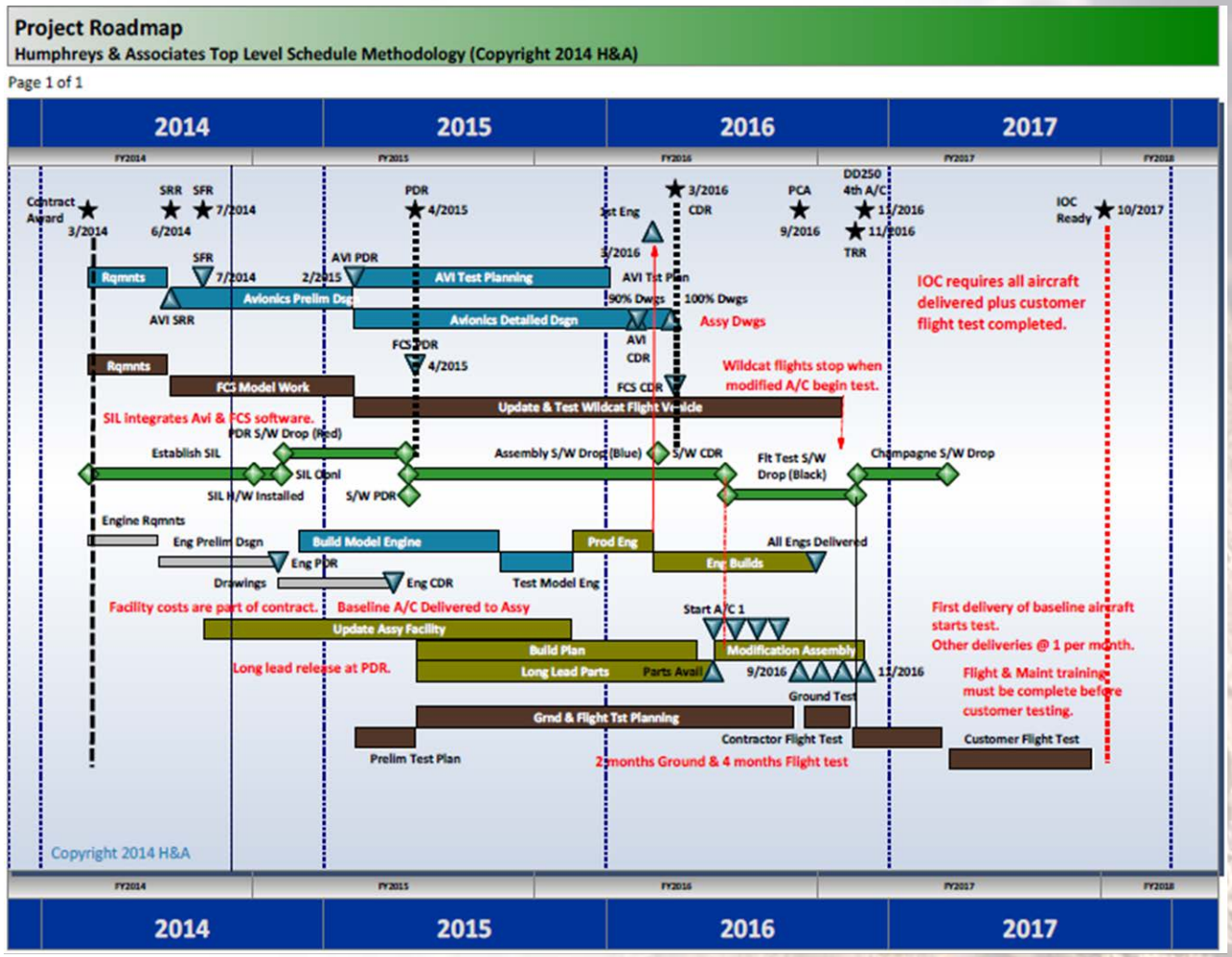
CDR
ASSY
TEST
DEL
1 Milestones
DESIGN
2 Gearbox
GB PRELIM
GB FINAL
3 Propulsion
PROP PRELIM
PROP FINAL
4 Avionics
AV FINAL
AV PRELIM
5 Flight Controls
FC PRELIM
FC FINAL
BUILD
6 Gearbox
GB BUILD
GB TEST
Real time sync
Admin - P2_1PL - Paul B Exam...
Line
Name
Duration
Start
Live Finish
35 Avionics & Flight Controls 360d 2017-04-06 2018-08-22
36 Avionics 360d 2017-04-06 2018-08-22
37 Avionics Engineering 260d 2017-04-06 2018-04-04
38 Avionics Requirements Development 40d 2017-04-06 2017-05-31
39 Avionics Requirements Development 60d 2017-06-01 2017-08-23
40 Avionics Preliminary Design 90d 2017-08-24 2017-12-27
41 Avionics PDR 2017-11-15 2017-11-15
42 Avionics Final Design 100d 2017-11-16 2018-04-04
43 Avionics CDR 2018-04-04 2018-04-04
44 Avionics Prototyping 90d 2018-04-05 2018-08-08
45 Avionics Item Build 50d 2018-04-05 2018-06-13
46 Avionics Unit Tests 40d 2018-06-14 2018-08-08
2017
2018
Avionics Requirements Development
Avionics Requirements Development
Avionics Preliminary D
Avionics PDR

SUMMARY & CONCLUSIONS

Thanks to those whose efforts yielded examples for this discussion.



SUMMARY

- **More than one tool exists that can make the IMS more visible and more useful to project members and customers**
- **Talented people, using existing tools, can make the information in our IMS much more visible and useful**

SUMMARY

- **There is much room for improvement in the way we use the information in our very expensive IMS efforts**
- **There are some methodologies and tools to be able to make better “sense” out of the IMS**

Dissent

- **Most thought the DID and Requirements for the IMS should be modified to encourage more readable useful Top-level Schedules**
- **Some feared the end result would be restrictive and force regular top-level reporting in fixed formats**

NEXT STEPS

- **Turn over results and recommendations of ad hoc effort to the NDIA Subcommittee on the IMS for action**

DESIRED OUTCOME

- **Recommend changes to DI-MGMT-81861 (IMS)**
- **Make future updates to PASEG**
- **Enhance the general adoption and use of Top-level Schedule in our industry**