

Project Planning

8 Oct 2019

Greg Hawley & Ben Jasperson



About Ben



Work History

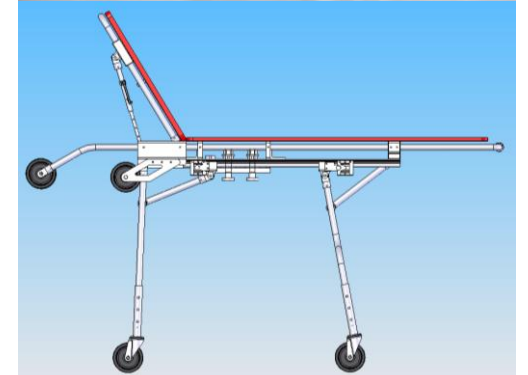
- Plexus, 2010 - 2017
- Phoenix, 2017 - Present
- Co-Op, Briggs and Stratton Corp., 2006 - 2008
- Sod farmer, ??? - 2006

Associations

- Professional Engineer, State of Wisconsin, since 2016
- Tau Beta Pi
- ASME

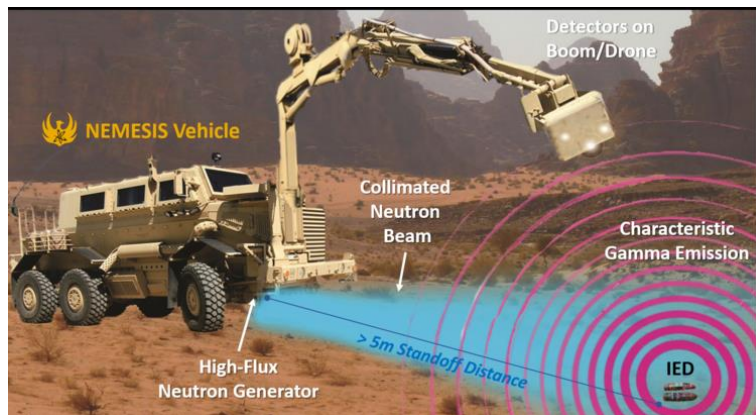
Education

- BSME UW-Madison, 2008
Senior Design: Redesign of a Med-Flight Gurney For Improved Field and In-Flight Use
- MSME UW-Madison, 2010



Phoenix, LLC Background

- Founded in 2005, manufacturer of compact neutron generators
- Headquartered near Madison, WI
- Key markets served
 - Neutron Imaging
 - Nuclear Fuel Scanning
 - Explosives Detection
 - Medical Isotope Production



- NEMESIS: Army funded project to deliver Phase 1 Prototype

<https://phoenixwi.com/>

About Greg



Work History

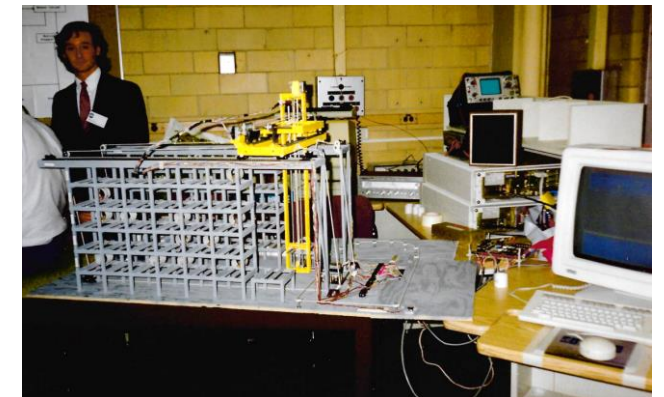
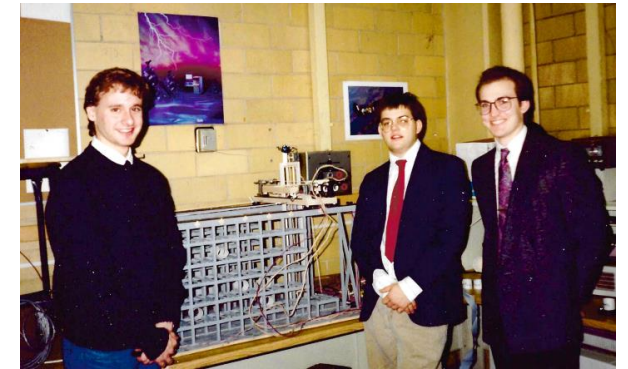
- Plexus, 1992 - Present
- Intern, Fisher Controls Marshalltown, Iowa, 1991
- Consultant & Systems Administrator
UW-Madison, College of Engineering, 1988-1991
- DJ. WBCR (Beloit College Radio), Summer 1988 (only).

Associations

- IEEE TEMS Project Management
Technical Activities Board, 2017-
- Member MSOE EE IAC, since 2004
- Professional Engineer, State of Wisconsin, since 1996
- Member of IEEE, since 1988
- Tau Beta Pi, Eta Kappa Nu

Education

- BSEE/CS UW-Madison, 1991
- Senior Design Project, *Automated Storage and Retrieval*
- Coursera, 2013-Present



Plexus Background/Introduction

- Global company headquartered in Neenah, WI
- Contract design engineering and manufacturing
- We help customers - we don't have products ourselves.
- Design and manufacture products for other companies like:
 - Trek Bicycle, Honeywell Aerospace, GE Healthcare, Siemens, Micron Technology, Arris, Qiagen, Bombardier
- Market Sectors
 - Networking/Communications
 - Healthcare/Life Sciences
 - Industrial/Commercial
 - Defense/Security/Aerospace



<http://www.plexus.com/>

Humility

In 2013 there were 11,116 business books published[1], management clichés abound.

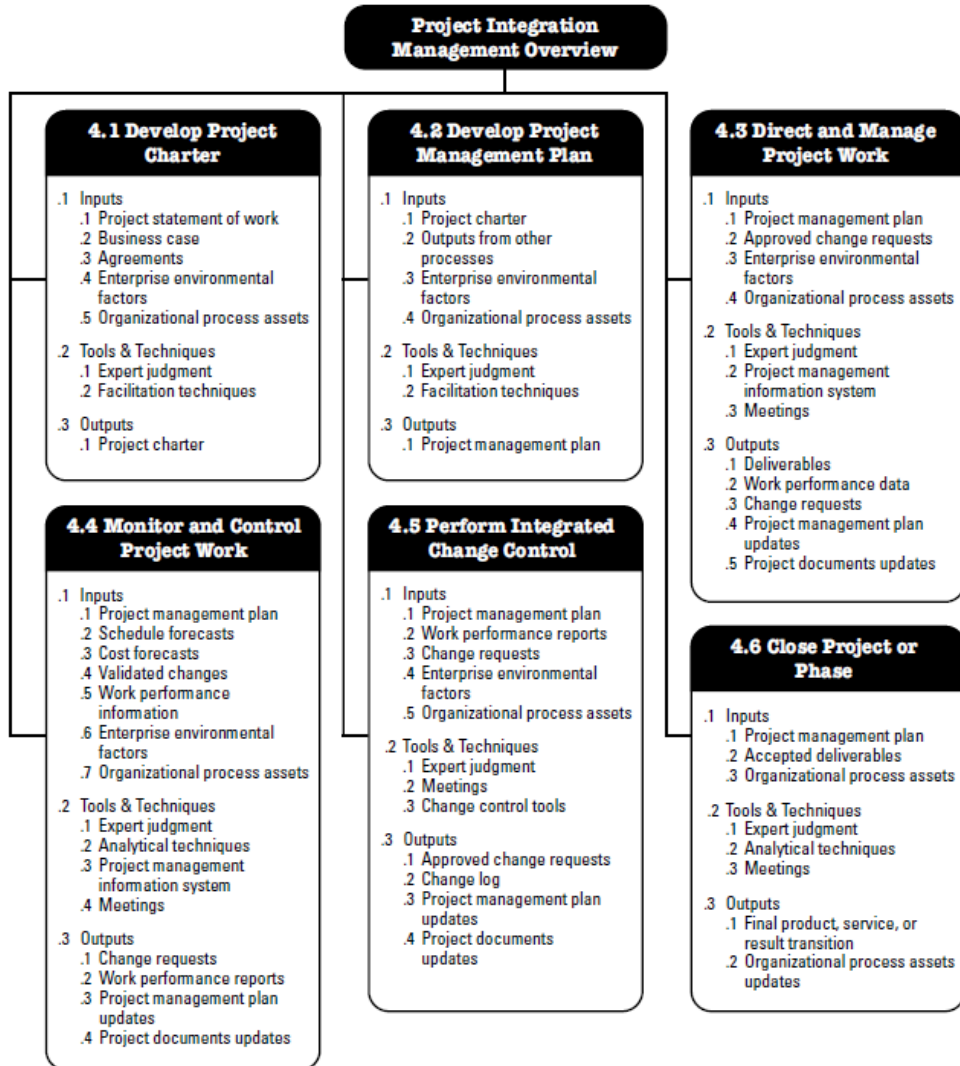


If one does not approach the topic of project management with some humility, there's a large threat of sounding like a know-it-all.

[1] http://media.bowker.com/documents/bowker-isbn_output_2002_2013.pdf

The PMBOK View of Project Management

The PMBOK view of project management is can be pretty hard-nosed.



It's a subset of what Plexus project managers do.

Source: A Guide to the Project Management Body of Knowledge (PMBOK Guide), Fifth Edition, Figure 4-1, Project Integration Management Overview

Project Management at Plexus

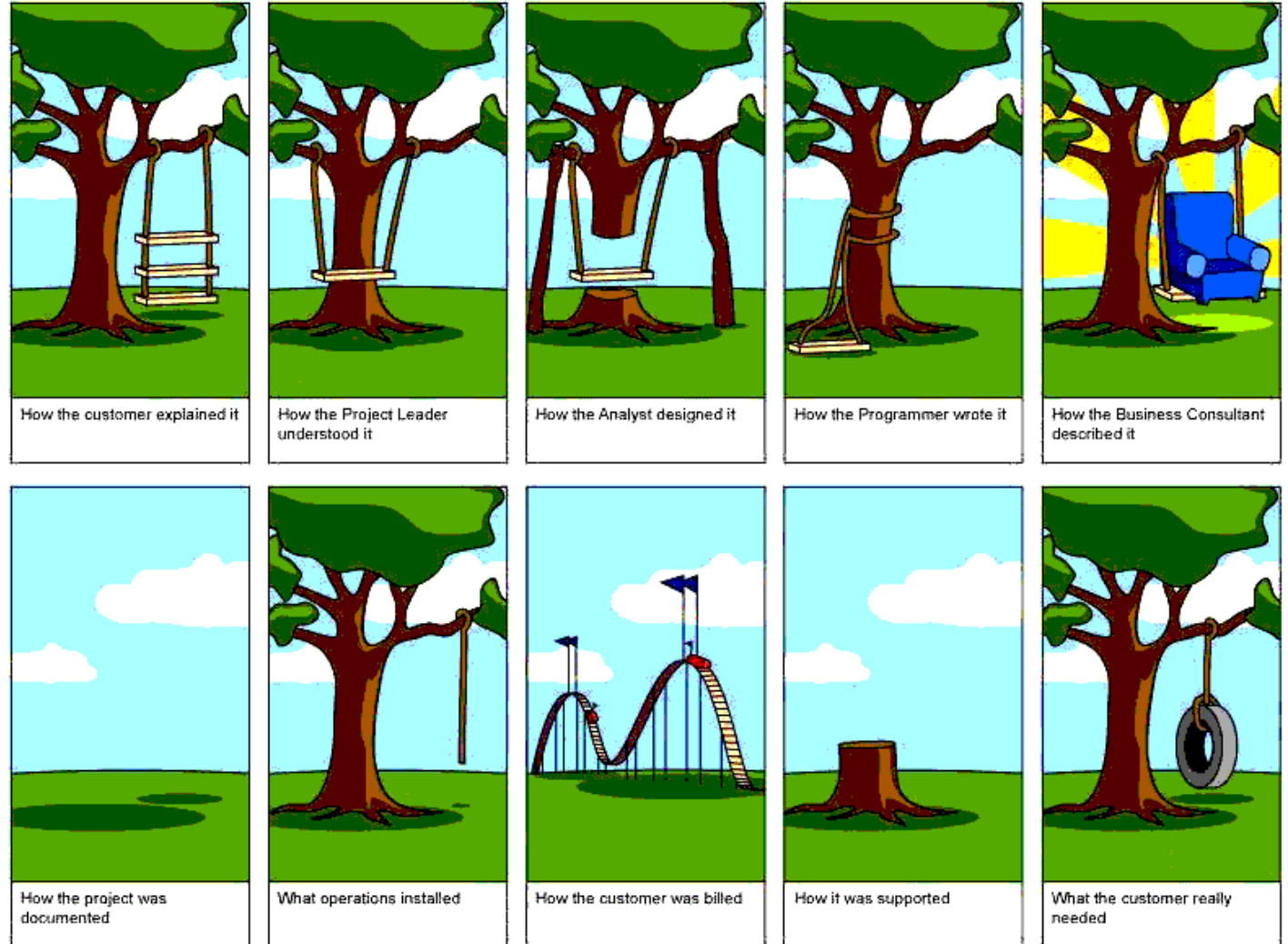


An alternate view, if lighter-hearted, that fits our project management model.

May the odds be ever in your favor.

Project Charter & Requirements

Before you get too far into your project, it's important that you know what done means.

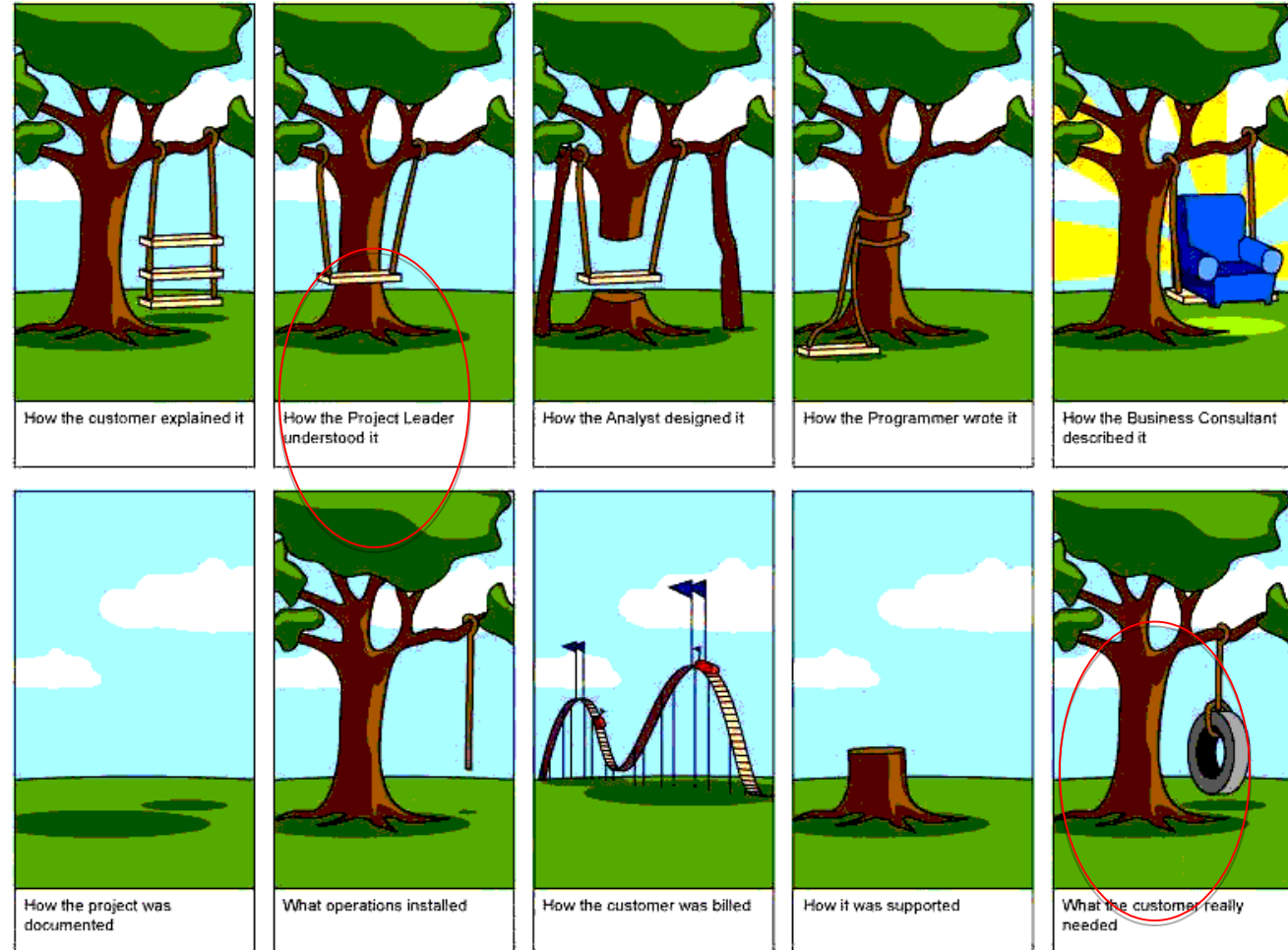


Project Charter & Requirements

Before you get too far into your project, it's important that you know what done means.

Example: take entire team and document:

- Definition of done (Deliverables)
 - What physical things, documents, presentations, reports and/or tests are required. When do they need to be done?
- Inputs as needed (Requirements with owners and expected dates)
- Tasks (with time estimates) to get to each Definition of Done
 - Everyone gives estimate, then come to agreement
- Owners – one owner per item.
 - Don't share ownership. Multiple people can "do" or "help" but to avoid confusion, there's only one "owner."
- Integration dates (non-negotiable items)

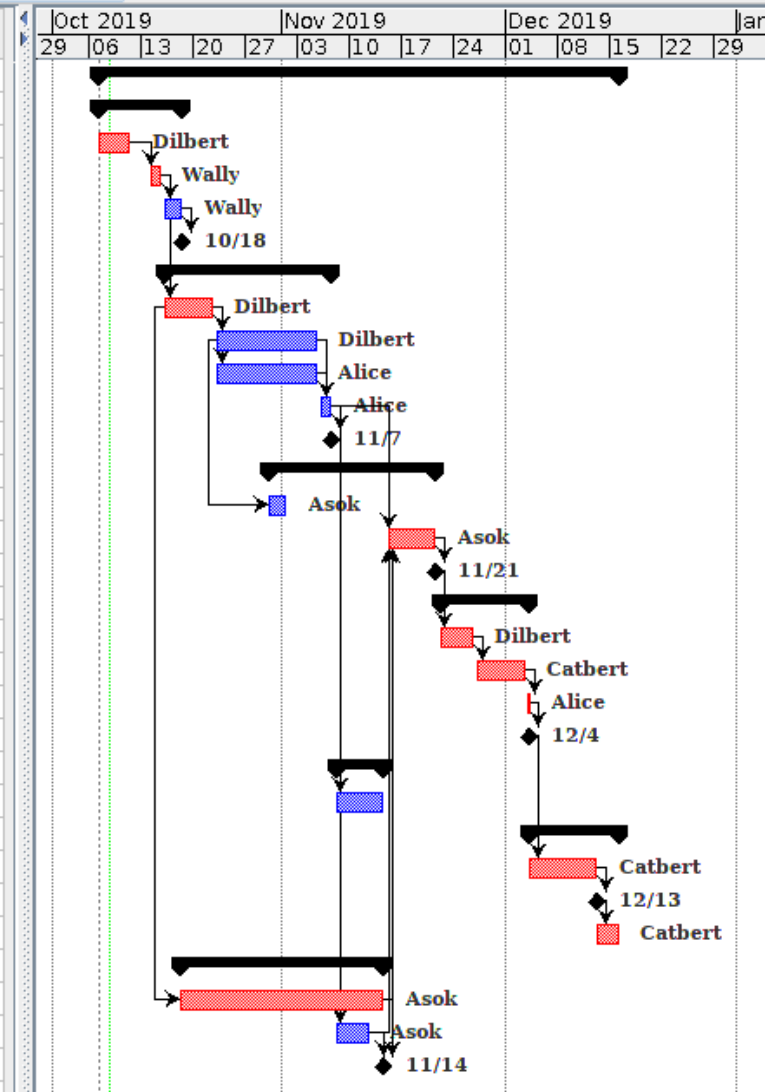


What's the Plan? What's The Risk?

- Use a tool
 - ProjectLibre is one choice (<https://sourceforge.net/projects/projectlibre/>)
- “Stress-test” your project
 - What can go wrong?
 - What might be late?
 - What might take longer than you might expect?
- Reserve Buffer
 - Ideally, you want to *plan to be done* a bit before you need to be done.
 - That gap is the reserve buffer.
 - Real project rarely end with much (if any) of the reserve buffer left.
 - Stuff happens.

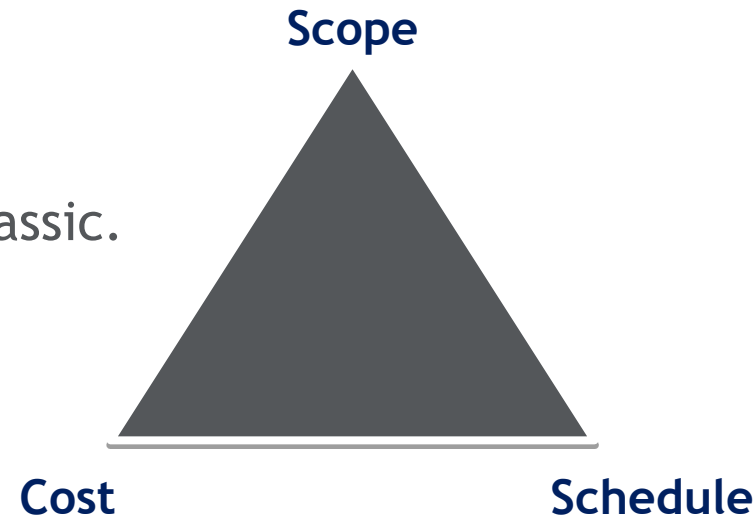
A ProjectLibre Sample

	Name	Duration	Start	Finish	Resource Names	Predecessors
1	Design Project	50.125 ...	10/7/19, 8:00 AM	12/16/19, 9:00 AM		
2	Specifications	10 days	10/7/19, 8:00 AM	10/18/19, 5:00 PM		
3	Write Draft Requirements	5 days	10/7/19, 8:00 AM	10/11/19, 5:00 PM	Dilbert	
4	Review With Customer	2 days	10/14/19, 8:00 AM	10/15/19, 5:00 PM	Wally	3
5	Update Following Review	3 days	10/16/19, 8:00 AM	10/18/19, 5:00 PM	Wally	4
6	Approve Requirements	0 days	10/18/19, 5:00 PM	10/18/19, 5:00 PM		5
7	Design	17 days	10/16/19, 8:00 AM	11/7/19, 5:00 PM		
8	Initial Design and Architecture	5 days	10/16/19, 8:00 AM	10/22/19, 5:00 PM	Dilbert	4
9	Detailed Mech Design	10 days	10/23/19, 8:00 AM	11/5/19, 5:00 PM	Dilbert	8
10	Detailed Software Design	10 days	10/23/19, 8:00 AM	11/5/19, 5:00 PM	Alice	8
11	Design Review	2 days	11/6/19, 8:00 AM	11/7/19, 5:00 PM	Alice	9;10
12	Design Complete	0 days	11/7/19, 5:00 PM	11/7/19, 5:00 PM		11
13	Build	17 days	10/30/19, 8:00 AM	11/21/19, 5:00 PM		
14	Build Risky Subsystem	3 days	10/30/19, 8:00 AM	11/1/19, 5:00 PM	Asok	9SS+5 days
15	Build Prototype	5 days	11/15/19, 8:00 AM	11/21/19, 5:00 PM	Asok	11;29;30
16	Build Complete	0 days	11/21/19, 5:00 PM	11/21/19, 5:00 PM		15
17	Integration	8.125 d...	11/22/19, 8:00 AM	12/4/19, 9:00 AM		
18	Test Things	3 days	11/22/19, 8:00 AM	11/26/19, 5:00 PM	Dilbert	16
19	Find The Ugly Mistake	5 days	11/27/19, 8:00 AM	12/3/19, 5:00 PM	Catbert	18
20	Fix it	0.125 days	12/4/19, 8:00 AM	12/4/19, 9:00 AM	Alice	19
21	Ready	0 days	12/4/19, 9:00 AM	12/4/19, 9:00 AM		20
22	Prepare Presentation	5 days	11/8/19, 8:00 AM	11/14/19, 5:00 PM		
23	Prepare Presentation	5 days	11/8/19, 8:00 AM	11/14/19, 5:00 PM		12
24	Contingency	8 days	12/4/19, 9:00 AM	12/16/19, 9:00 AM		
25	Risk Reserve	7 days	12/4/19, 9:00 AM	12/13/19, 9:00 AM	Catbert	21
26	Deadline	0 days	12/13/19, 9:00 AM	12/13/19, 9:00 AM		25
27	Demo Day	1 day	12/13/19, 9:00 AM	12/16/19, 9:00 AM	Catbert	26
28	Order Things	20 days	10/18/19, 8:00 AM	11/14/19, 5:00 PM		
29	Order The Expensive Long-Lead T	20 days	10/18/19, 8:00 AM	11/14/19, 5:00 PM	Asok	8SS+2 days
30	Buy Easy to Get Stuff	3 days	11/8/19, 8:00 AM	11/12/19, 5:00 PM	Asok	11
31	All Parts Available	0 days	11/14/19, 5:00 PM	11/14/19, 5:00 PM		29;30



Priorities & Trade-offs

- Every project has constraints.
- Senior design projects are no exception.
- The scope/cost/schedule constraint is classic.
- Others often exist.
 - Reliability versus cost or schedule?
 - Risk versus schedule?
 - Perfect versus good enough?



“Science discerns the laws of nature. Industry applies them to the needs of man.”

Museum of Science and Industry rotunda, author unknown

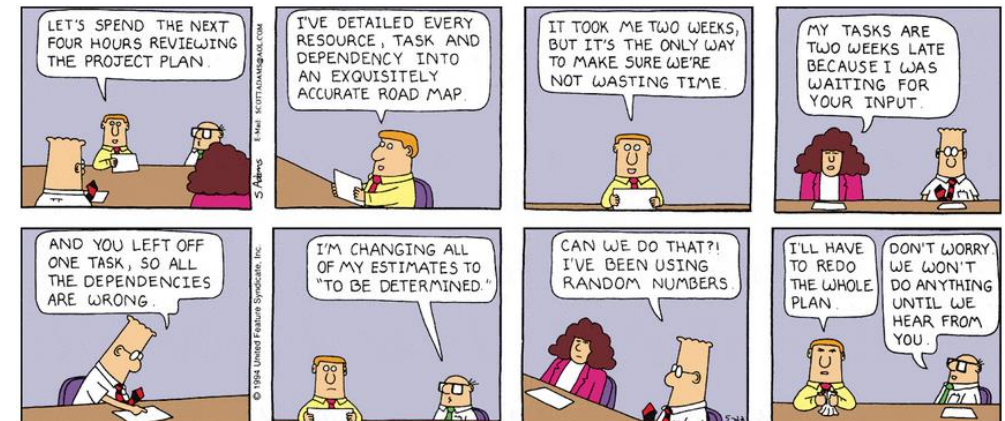


Plans Need to Be Flexible

Plans are worthless, but planning is everything.
---Dwight D. Eisenhower, 14 Nov 1957



Kein Plan überlebt die erste Feindberührung.
(translated: No plan survives first contact with the enemy**.)
--- Field Marshal Helmuth Karl Bernhard Graf von Moltke, 1871



**Out of respect for those in the audience from Lübeck, I will not (again) attempt to pronounce this and subject you to meine schlechte deutsche Aussprache.

Iterate, Where you can.

Agile development -

- Early and continuous delivery of product
 - Fail early, fail often
- Focused sprints, product backlog
 - Timeboxing
- Build the most important thing first
 - Reduce technical risk
- Prototype/proof-of-concept
 - 3D printing

Concept Assessment

- “Continuous integration”

Can adopt “Agile” methods for other projects

Open Issues List, Budget, Teamwork and Conflict

- One open issues list (Google Doc, Shared file, etc) and budget
 - Your time vs. cost to purchase
- How do you deal with conflict?
 - Talk about this among your group.
 - It's important to know how you're going to deal with differences of opinion.



<http://dilbert.com/stip/1995-08-10>

The Cult of Done Manifesto

There are three states of being.

Not knowing, action and completion

Accept that everything is a draft. It helps to get it done

There is no editing stage

Pretending you know what you're doing is almost the same as knowing what you are doing, so just accept that you know what you're doing even if you don't and do it

Banish procrastination

If you wait more than a week to get an idea done, abandon it

The point of being done is not to finish but to get other things done

Once you're done you can throw it away

Laugh at perfection. It's boring

and keeps you from being done

People without dirty hands are wrong

Doing something makes you right

Failure counts as done. So do mistakes

Destruction is a variant of done

If you have an idea and publish it on the internet, that counts as a ghost of done

**Done is the engine
of more**

Thanks

Further questions:

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