

The Project Factory: A Better Way to Run Projects¹

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All organisations have projects. Lots of them. Small ones, big ones (usually with a designate program name which means 'CEO cares'), medium ones too. They're sitting there in the business plans of each area. They're sitting there in the individual performance plans of many people. And they're really sitting there in whatever you call your IT area, because that's our era.

All starting around whatever the first month of your financial year is...and all finishing around the last.

Familiar?

You'll also be familiar with the common pain - the pain of having multiple projects on the go, the pain of scrambling resources from one project to the next, the pain of other areas and vendors who don't respond then respond all too quickly and forcefully, and the ever-present pain of 'this is taking too long, someone's going to notice sooner or later'.

Responses to this pain also take on a common flavour - 'lets look at the way we do projects'. Most businesses will respond with a review of project documentation and process which results initially in better templates and tracking, unfortunately gradually heading back to the current situation as 'special needs' projects ignore the new-

found templates in the name of profit and expediency.

A deeper level of solution involves significant investment in new enterprise-wide technology for the better monitoring of project performance among other things. This investment is capable of reaping high rewards when used with focus to generate leverage, the risk is that it is used in any and all areas, seeing a sharp increase in required discipline without an associated improvement in business performance or ease of work. End result is another circle-back to where we started.

So using the Einstein idea about not being able to solve problems with the same thinking that got us into them²... our way out here is to approach this problem from a **higher level**. We need here is some systems thinking, or in more normal terms...let's take a step back.

Here's the analogy. We have a bus that keeps arriving late. And not the same amount of late every day. Sometimes 1 minute late, but sometimes 55 minutes late. Never on time. Ask yourself this - what do you look at?

First you'll check off the driver (if it's the same person every day). Then you'll check off the bus (if it's the same bus every day). Pretty soon, however,

¹ This article is a way of explaining the brilliant concepts of Eli Goldratt known as *Critical Chain*. They can be found in the book of the same name. Other materials are: *Hanging Fire* by Jeff Cox, *The Project Manifesto* by Bill Lynch and Rob Newbold, and *The Phoenix Project* by Gene Kim, George Spafford and Kevin Behr. Kanban concepts are the other part of the ideas in this article.

² By the way, the definition of insanity is NOT, and has NEVER BEEN trying the same thing over and over again and expecting a different outcome - what's wrong with perseverance in, say, trying to eat healthy!!!

you're going to start looking at wider factors. What's the route exactly? What's the traffic? What time of day? What other buses are in play? How many people on each bus? You get the idea.

All of this is taking a step back and looking at your **bus system**.

The same is needed for the projects in your business. Of course, we need each project in the system working OK as much as we need each bus and each driver to be OK. But the big gains come when we look at the whole project system. So here's how.

Step One (the hardest step) - Make the Mental Shift to The Project Factory

You probably hate factories (unless you're designing or marketing one). To you they represent boring, repetitive, uncolourful, non-creative work involving people who sweat. And if this is what you think...then you haven't been in one for a long, long time, if at all. But that's beside the point.

Here's the key: make the **choice** to see your business as a project-shipping factory. Whether the final product is a new process, a set of drawings, a technology upgrade, a finished building...whatever the moment that allows you to send your theoretical final invoice...that's what your business is there to ship.

And...there's no way around the fact that there is repetition involved here. Every marketing campaign might be different...but they all go through similar stages, and they all involve a moment when we can now say 'lets send the final invoice'. Seeing that this is what your business 'ships' is the mental model change that will allow you to do that thing they call working 'on the business, not in the business'.

Now that you've made the shift, imagine standing on one of those gantries above the factory floor giving you a birds eye view of orders moving through the production line. Raw materials getting converted into an actual thing by actual machines staffed and controlled by actual people. You can visualise the work right? You can actually see it. This is what looking at the full system means.

Now..let's think about air traffic – what's their full system? This takes us to Step Two.

Step Two - Visualise the Work (All of it. ALL OF IT!)

Imagine stepping out of the lift into Air Traffic Control at O'Hare Airport - what do you think you'll see? Radars right? With images that show aircraft near the airport. You know what else you'll see? In front of each operator will be a vertical list of aircraft, either electronically or literally thin blocks with writing on them on an inclining board. This represents the aircraft under the control of that operator, **in the order they intend to land them**.

Why? Because when thousands of people's lives are in your hands, it's nice to keep track of things and know what's going on.

You're probably not landing aircraft. And things aren't moving as fast. But we learn important principles about work from crisis situations or situations where failure means catastrophe. And what we're seeing here is a **visualisation of the work**. It's how air-traffic controllers get up on the gantry above the factory.

This is what we need to do. And this is how you go about it in your business.

- First, go out and get some **magnetic whiteboard strips** that you can write on and move around.
- Now, **list every project** you've currently got on in your business. One per strip. Yes, this might take a whole day. If this seems excessive, remember that if you don't do something different, then nothing will be different. So schedule the day, with your top team and anyone else you need to get all the projects in the room, and start filling in those strips.
- On each strip, write down the **public due-date** of the project. This means the date by which you said to the client you'd have that thing done.
- If you have other basic info readily available, such as total fee expected....write that down too. We're going to be making surprisingly difficult decisions next about which project is 'next', so information relevant to that is welcome. Unless it's not readily obtainable in one minute. In which case, leave it.

What you now have is a list of all the aircraft that are under your control. Just for fun, make two headings on the wall....Tarmac and In Flight. Any project that has actually commenced, meaning someone has already started producing a deliverable....put under the In Flight list.

I'm guessing there's quite a few in there. **That's where the pain is coming from.** Now put them all under Tarmac. ALL OF THEM!

Step Three - Identify 'The Pacesetter'.

Eli Goldratt pointed out that all systems have a constraint. How do we know that? Because if they didn't, they could all produce an infinite number of deliverables. So there's something in

there that constrains, that limits the show. He used the analogy of a group of kids on a hike - if the goal is to finish together, they can only go at the speed of the slowest kid (that kid's name was Herbie in the brilliant book *The Goal*). If the group can do whatever it can to lessen Herbie's load...the whole group goes faster. If a kid in front of Herbie goes faster - it doesn't help the goal. And if kids behind Herbie try to go faster...they trip over and slow down the whole show.

Herbie sets the pace. Of everyone.

So your job is to find the Herbie in your projects factory. What is the person / team / department (we'll use the generic term 'work centre') that sets the pace of the whole show? Finding it is easier than you think - what is the work centre that people complain about the most? **That's probably your Herbie.** If most projects are required to go through that work centre (even if for different reasons), definitely your Herbie.

In many organisations, Herbie is the IT department. In creative project firms, it can be one or two key people that are seen to be the 'gurus' that everyone checks in with. If your projects involve a point where different streams come together...look there for your Herbie. And just remember the complaining rule - everyone complains about Herbie because without a full view of the system - it looks like Herbie just isn't helping you!

Here's why we're bothering: **you can't ship projects any faster than they can be moved through Herbie.** No matter what incentives, reporting information, technology changes and project template improvement you make...**the speed of Herbie is your shipping speed.**

Which is why Herbie is our Pacesetter - and so gets our attention.

NOTE: stop using expressions like 'blocker' and 'obstacle' and the like for Herbie. You're just using that word for political leverage to make your thing next. Why wouldn't you? It works! For you. Not all of us though.

Step Four - Sequence Your Projects Into the Pacesetter

If the Pacesetter sets our pace of project shipping, therefore our pace of invoicing (and therefore our cashflow), then we need that Pacesetter working at 100%. And what's the best way to make sure that something **doesn't** work at 100%? Multi-task. Then make sure all of those wanting tasks done by the Pacesetter keep shouting so there is constant pressure and confusion, and we can pretty much guarantee output of well below 100%.

Sound familiar?

The reason we get overwhelmed is not knowing what to focus on. That's why identifying the Pacesetter work centre is the key - now we know what we're sequencing for. Air traffic control sequences to land planes onto their Pacesetter - runway space. You can do the same thing.

So how do you choose your sequence? Start with order of due date. And before you freak out and think 'but we've got so much to do, we need to start everything NOW', remember, the fastest and *highest quality* way to read 10 books is one at a time. Not 10% of one, then 10% of the next. Doing them in sequence, and the 10th book is still finished at the same time it was going to be. (In fact, a lot earlier as there are less 'switching costs'). And the reading is a lot less stressful.

Take the projects under the Tarmac list and put them in order of delivery date. That's a good enough starting point. Now review the list and make

any obvious changes based on, for example, particular customers deserving earlier service. The goal here is to get some sort of 'good enough' sequence. That's all for now.

And one more thing. Put a red dot in the top-right corner of all projects that need to go through the Pacesetter. We need to know which ones these are.

Step Five - Change The Mental Model of 'How We Work'

This is another big one. You might have picked up the hint in the last section in the reading of books analogy - we are going to change to working on projects from start-to-finish. Sound impossible? Here me out.

Goldratt points out that we usually try to manage projects by making each task meet its deadline. So, in an effort to be a reliable, decent human, we all naturally promise deadlines that are possible given everything we have on. Then, because we are still human, we either work on other stuff until the deadline looms so we can get more things done, or we keep working up on the project task until the deadline to make it even better.

Both of these two scenarios lead to tasks being completed, at best, on the deadline, and much more likely to be completed after the deadline. Add this up across a full project, throw in natural variations caused by your clients also being all over the place with their projects, include the many other projects on at the same time...and the odds of meeting deadlines plummet toward the Mariana Trench.

So here's the change we put in - **when someone is given a project task, they focus and work on the task at their best possible speed until the quantity and quality is met.....then they pass it on.** The trick here is that

deadlines are not relevant, it's all about completion to 'good enough' then shipping it on.

Which project do people work on? That's why we did the previous step of sequencing the projects - the answer is **the next one in sequence**. This is easier said than done, psychological permission will need to be provided from the most senior person involved to let people know it's OK to say "sorry, I can't do that now, I'm working on this". That's why this is as much a cultural thing as a system thing.

How does standard operational work fit in? In two areas. The first is that if something breaks that's going to impact customers...that becomes a priority. The grey area things like that new operational report....that's going to take some judgement, but rather than sneak things through, we now surface them each week for a discussion and decisions as to whether these constitute legitimate production work or are under-the-radar priority busters.

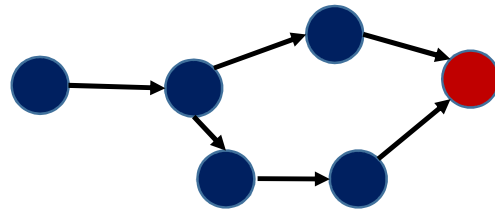
Now Step Two on visualising comes into it's own. Get as much of your group together as can fit into a room and go through each project on the board. Make sure it's clear what each 'aircraft' actually is, what it's supposed to achieve and who is flying it. Then propose three to move to the In Flight list. Discuss, listen to views on which ones should be in and out, in what order...then make a call.

This is a big moment.

Step Six - Set-Up Projects Using Touch-Time PERT Charts, Buffers and Full Kit

Operating with focus and sequencing requires us to plan projects using the same ideas. Here's how we do this practically:

A PERT chart or 'project network diagram' looks something like the below. What can be seen at a glance is how the tasks of the project connect together, and **how long each would take if we had everything we needed and we focussed**. This is called touch-time. Does this seem crazy? Refer back to previous steps - it's a big mental model change.



PERT CHART VERY ROUGH EXAMPLE

One part that is definitely crazy is assuming that things don't go wrong. Uncertainty (or the fancier word 'complexity') is natural, but instead of managing this at the task level, we manage this at the project level. How do we do this? By **putting in a time buffer at the end of the project**. How much? 50% of the critical path.

If this seems like a lot, try it out. Re-do a current project using touch-time for each task instead of 'when I could get it done by with safety do I don't look bad' time. Add up the time on the critical path (remembering the same resource can't work on two things at once) and add 50% on again.

Notice that? It's still significantly shorter than the total project time under the traditional task-level safety method. That's because working with focus and speed-to-ship is such a different way to operate.

Your industry might often deal with unreliable clients who fail to get back to you with approvals and comments in a timely manner. Buffers are your key here too. Where you know from experience and intuition that there is significant uncertainty for a particular task such as this...include a buffer here

too. If the client has agreed to a one-week turnaround...include a three-day buffer at the end of that task.

With your critical path touch-time + 50% buffer in place, we now have a nearly reliable (but not perfect, it never is) total time for the project. Now comes a key: the Project Owner does NOT get to announce 'great, I want it done by the touch-time'. Doing this assumes zero uncertainty. It's not sane. But Project Owners are under pressure too. That's why it's crucial they read this and get the chance to think and talk through it. Remind them that the touch-time + buffer is already a huge improvement. Then remind them that their help is needed in the next bit, which is...

Establish Full Kit. What's full kit? It's whatever is required such that, when we send this aircraft to the runway, it can complete its flight *without interruption*. This means things like fuel (in an actual aircraft!), permissions, IT test environments set up, and most crucially - availability of resources.

Sending up aircraft without Full Kit is one of the major causes for project delays. And when that aircraft is forced to land to refuel, other aircraft quickly take off and we're back to the traditional project mess. This is why a focus on Full Kit is a necessary condition for success, and why the person in charge of the whole project system has the job of not clearing projects for take-off until Full Kit has been demonstrated.

With Full Kit in place, we have created the support systems for the work-fast-and-ship approach. Nothing decreases motivation like getting ready to handle the work that is about to come, then discovering that there's going to be a delay because we never checked whether firewall changes were needed. Full Kit is crucial.

Step Seven - Run Projects By Buffer Management

The buffer concept we introduced in the previous step is our new way of managing overall project delivery. By having a clear sequence of projects into the Pacesetter, by making the change to 'work fast and focused until quantity and quality achieved then ship' then by ensuring Full Kit is in place before we clear for take-off we now have the conditions in place to change our thinking.

It won't be easy to change the standard approach to project management of 'ensure on-time delivery through ensuring each task is on-time'. While this makes sense if you say it fast, it misses the point that we need to manage the overall project, not each task. Buffer management is how this is done.

The key changes are:

- Each task on the PERT chart is assigned a 'Task Manager'. Whether this person does the task themselves or leads others to complete the task - they are accountable
- The approach of 'work fast and focused until quantity and quality achieved then ship' is continually emphasised, with deviations from this pointed out
- Project Managers now track the on-time delivery of their projects through monitoring percent of buffer consumed and percent of project completed.
- The Project Manager asks each Task Manager at the end of each day '**how much longer will your task take?**' This is then compared to the touch-time identified when the Project Network Diagram was made along with looking at the critical path to see if any of the buffer is used or

reclaimed. It's simple - if it will now take one day longer than expected - we eat into a day of the buffer. One day less than expected - we get back a day of buffer.

- Those 'next in line' for tasks once the current ones are complete are given updated warnings as to when it will be shipped to them. Remember the sequencing process from earlier? With this in place, there is no excuse for not being ready because the obvious question is 'what else are you working on?'

What the above provides is clarity on where help is required so Executive resources can be leveraged for best use. We use the ratio of critical path completed to buffer consumed to see how things are going. 50% of critical path done with 25% of the buffer consumed gives us a ratio of 2. Great! 50% of the critical path done and 75% of the buffer consumed gives a ratio of 0.66. Not great.

Rule of thumb to start with – ratio of 2 or more....green. Between 1 and 2...amber. And below 1....red. Adjust these as you learn more, as the purpose is to ensure serious focus and problem-solving across the full business to decide what needs to change and how to do it.

Plot all active projects on a graph with percent buffer consumed on the vertical and percent project complete on the horizontal axes and you'll get a great picture. Then Project Steering Committee or Boards actually become useful, and full portfolio management overseen by Executives becomes a genuine value-adding activity instead of an anxiety and disappointment session.

Step Eight - In-Flight Changes

Aircraft sometimes have issues mid-flight. When this happens, air traffic control is notified and quickly rearranges sequencing to get that plane down fast. Here's the key - everyone receives communication as to what is happening and what to do in order to prevent two planes heading to the same runway at the same time.

This is what the above way of running your project system allows you to do. Example of aircraft with issues are:

- A major production issue (for example a security breach or unforeseen weather incident) that requires full-scale immediate addressing to ensure viability
- A current project not near completion has an incident that immediately threatens the full buffer
- A competitor surprises the industry by introducing and offer so good that it could immediately threaten significant market share
- 'Head office' or 'corporate' inform all of the new organisational-wide priority that will impact your Division (surely not!)

All of these issues require addressing should they occur. The visible projects list and managing buffers provides the equivalent of air traffic control being able to immediately see what's in the air, and decides what to do in order to bring everyone in the air to ground safely.

What this means is that you call together as many as can fit into the room that are involved in projects. The issue that has appeared is given a magnetic strip just like all the other projects, and the group discusses what this means in the context of the full body of work. Executive presence is valuable as final decisions require good

information as to the organisational-wide impacts and expectations.

And...in the end, all that happens is that the In Flight list is adjusted. If the change is a new project on the list, it gets sequenced appropriately (perhaps at the top), and the new project goes through a rapid set-up phase - Project Network Diagram, buffer and Full Kit. Then...it's business as usual.

Does this seem too simple? You would be correct if you think about your current projects situation which is a well-meaning drive for each project to get priority and continual haranguing of the Pacesetter work centre leading to anxiety and overwhelm. Add this to little visibility of the full system and we have the natural situation of changes being full of anguish.

The reason the above method can be handled in a rapid, professional manner starts from the visibility of the full system and getting everyone into the room. This not only has the practical, or external effect of everyone being able to have more information, it also leads to the felt or internal effect of people thinking for the whole rather than their own piece.

All of which leads to rapid responses to changing situations with less stress and better results.

About

Since 2012, Adam has been hired by CEOs, Owners, Executives and Managers to help them put in the structure, culture and leadership practices needed to set their people up to do great work.

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Which is what designing and leading work is all about.

Summary

There is really only one step to significantly improving your project delivery - the changing of the mental model to 'the projects factory'. Once this shift is made and you see your projects as moving through the various work centres of your business, the other changes move quickly from feeling radical to being logical. All other steps are actually a sub-set of this first one.

Which means the real question is a personal one - are you up for changing your system of managing projects? The answer to this lies in two more questions:

1. Is your current system, even if it worked optimally...really going to work well for your people and your clients?
2. Could it be that the thought of success is what really scares you?

Deep hey?

Real change always is.