

WHITE PAPER

Planning for Success

How to implement successful CAD projects



Planning for Success

Overview

How do we successfully implement projects and how do we measure how successful they have been? Whether it's first implementation, upgrades or development projects, this paper will cover some of the key planning elements that can give your current and future projects the best chance of success.

Introduction

"I keep six honest serving men; They taught me all I knew; Their names are What and Why and When and How and Where and Who" - Rudyard Kipling

Looking at our work processes and our company's business, most of us can generally identify areas that can be improved. In the design office a number of these process improvements are CAD related and fall into the lap of the CAD Manager or Engineering Manager. The constant bombardment of marketing materials from the CAD vendors leads us to believe a solution is available out of the box and on too many occasions we jump straight into implementing our idea without due consideration of Why we are doing it, What it is we need to do, How it needs to be done, When it can be done, Who will do it and who it affects, and even Where it needs to be done.

We may have a vision of what we want to achieve but we need to develop a plan to ensure we can achieve that vision, and to understand if it is worthwhile.

Failing to Plan is Planning to Fail

"I have always thought that one man of tolerable abilities may work great changes, and accomplish great affairs among mankind, if he first forms a good plan" - Benjamin Franklin

Before we look at what we need to plan to make a CAD related project successful, it is first worth noting some of the typical responses to past failed projects.

You may recognise some of these familiar scenarios:

'We implemented ACME CAD but it never really worked for us.'

'We could see how moving to ACME EDM could improve what we are doing, but we're too busy.'

'We want to implement the solution you proposed, but I can't get approval for budget.'

'We had training, but we were too busy to start using it, now we've forgotten how.'

'We've always done it this way, we couldn't change.'

All of these situations could be improved with better planning and at the very least avoided wasted time and resources.

What is Planning

Let's start by being clear on the difference between scheduling and planning. A plan is a method for achieving an end whereas scheduling is about diarising and appropriating tasks. A schedule will form part of your plan but there is more to a plan than the schedule.

How much planning is required will depend on the complexity of what we are trying to achieve, but there are generally common elements.

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The Basic Elements

In simple terms our planning must include:

Vision - What is the idea and why?

Goals and Objectives - What is it that we are trying to achieve?

Strategy - What do we need to do to achieve it, who will it involve and when?

Measurement - How do we know if we've achieved our goals? What constitutes success?

Risk Analysis - What are the risks and barriers, what contingency do we need to put in place in case of failure?

There are simple questions we should be asking continually during our planning process and ensuring we have the answers to ensure our plan is successful:

- Where are we now?
- Where do we want to be?
- Why do we want to be there?
- What will happen if we don't get there?
- How do we get there?
- When do we want to get there?
- Who will get us there?
- What will it cost?
- What are the expected results and how do we measure them?

Before we go into a little more detail about each of the areas, let us first point out that these are not hard and fast definitions. The definition is not important when it comes to your plan, it is the content within it that is important and should be your focus.

Vision

What's the idea - the 'Big Picture'.

If you come from an engineering background, by nature, you're likely to be analytical and have a drive for problem solving. A great advantage in identifying areas for improvement and generating ideas. Unfortunately, the bigger the idea the more difficult it is to plan and implement, and the more important planning is.

At this stage of your 'Vision', it pays to carry out a situational analysis:

- What's the current position?
- Why are we where we are?
- What is the current cost? What is the expected cost over time?
- What are the barriers that will need to be overcome?

Don't be afraid to discuss your ideas with others, and take on board all feedback, good and bad. Good feedback will help you develop your plan. Bad feedback will identify barriers to overcome and may identify something you have overlooked or were unaware of, which may not make it worthwhile continuing your plan beyond this stage. At least it will have prevented wasting your time further.

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Goals and Objectives

What is a goal and what is an objective? A good example of two often interchangeable terms that refer to aims, long range or short term. What you understand from them and whether there are differences between the two is up to you to decide, however make sure whoever is looking at your plan also has the same understanding of terms. Often a goal is a longer-term aim whereas an objective is commonly used to refer to a short-term aim.

Be clear on defining your goals and develop them with your plan. The best goals are SMART goals:

Specific

For example: Don't 'cut down manufacturing errors' but 'reduce manufacturing errors from out of date designs by ensuring we manufacture to the latest design information, by introducing managed release control and communication processes'.

Use this test: Does it tell me precisely what has to be done in order to succeed?

Measurable

For example: Reduce errors by at least 50% - from x to x.

To be able to measure a situation, you need to fully understand the current position. Unfortunately, some things aren't easy to measure so don't over complicate them. It may be as simple as, we do it or we don't, e.g. producing electronic bill of materials to ERP.

Use this test: What will success look like?

Agreed

Part of conveying your plan is to get agreement on the goals from all stakeholders. This will come later but consider what you will need, to achieve agreement when formulating your goals.

Realistic

Is it possible?

For example: 'We will share data in real time with our external manufacturer' when the external manufacturer has limited network connectivity that can't be improved without relocating. This is not a realistic target.

Timed

Is it clear when we are aiming to achieve this by?

It is likely that it won't be possible to initially define the objectives as SMART without working through the plan and strategy elements further. Some elements may have to be adjusted to be realistic, for example timescales.

When it comes to putting your plan together you should identify each goal individually. Don't overload everything into one goal. Break your goals down into sub goals where appropriate. Identify what goals are dependent on other goals being achieved and which goals could be achieved in parallel. Even if you can't get approval for the whole project, there may be sub elements within there that are valid and worthwhile on their own and will work towards achieving the larger longer-term goal.

Strategy

"It pays to plan ahead. It wasn't raining when Noah built the ark." - Richard Cushing

Once you've identified the goals, you then build a strategy to achieve those goals. Tackle each goal individually and break that down into the individual tasks that are going to be required to achieve that goal. If necessary, break down those tasks further into the sub tasks required to identify 'the scope of work' required.

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The level of detail you need to go down to is going to be dependent on what stage you are in the project. If it is yet to be approved, you will need to break it down to a level sufficient to identify costs and resources required. Once implementing the project, you will need to go down to the level where the tasks can be assigned clearly and accurately and put into a project plan.

Some tasks can seem immense, so it helps if you 'eat your elephant in bite size pieces'.

At the strategy stage of planning you need to be assessing what is required to complete the tasks, for example:

- Do you have the resource available or will extra resource be required?
- Do the resources have the tools necessary to complete the task? It is at this stage where any additional CAD Solution and software requirements should be exposed.
- Does the resource available have the required competency? Will training address this?
- How long will it take?
- What will it cost? Include all costs, not just purchase costs - i.e. cost of internal resource and cost for any lost productivity.

How much detail you go into will depend on the size and scope of the project. A project that primarily involves only one person may not require as much detail as a project involving many team members.

Measurement

We need to include measurement in our plans to track how successful our project is and if it is on track towards achieving target.

The easiest place to start is the final measure of goal success. The goal should identify what final milestone we need to measure against to judge success. However, on all but the smallest of projects, we need additional milestones throughout the project to ensure we are on target to achieve our goals rather than finding out at the final measurement.

Where our measurements are subjective rather than definitive, we should also seek the opinions of others. Subjective measuring is best done by individuals who are objective and most accurate when carried out by more than one person.

Setting milestones and measurements against each task completion, working backwards from project completion, is a common method to follow. Our task milestones should also be measuring timelines to ensure our project stays on track. Where timelines are slipping, you need to understand why and address them if it's possible for you to do so, but also understand any knock on effect for other project tasks and goals and readjust those as necessary.

Risk Analysis

Every project has risks and potential pitfalls. Understanding what the risks could possibly be and building in contingency to allow for those should not be overlooked. A common analysis method to use is the SWOT analysis to examine the strengths, weaknesses, opportunities, and threats of our project goals.

Strengths and weaknesses relate to the internal elements of our business which we can influence and allow for, whereas opportunity and threats are external and outside of our control.

For our internal analysis we should consider some if not all of the following elements:

Finances, People, Production and Productivity and Company Culture.

For our external analysis, this is far more subjective to the project and areas we are working within, but could include analysing for potential developments in:

Economy, Regulation, Technology and the Business Market.

"A good plan today is better than a perfect plan tomorrow" - General George S. Patton

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We should not over analyse where it is not necessary, every project has some element of risk that is unforeseen and outside of our control.

As big a risk to our project as not carrying out a plan, is to over plan to finite detail and envisage every possible scenario, however remote, and with built in contingencies. The risk of spending too much time putting together the perfect plan, is the original scenario changes and you get stuck in the loop of continually reassessing the plan, reconsidering the various elements and never actually getting to the stage where you're ready to implement.

Of course, one element of risk analysis we should always consider is what if we don't implement the project at all?

Presenting and Selling Our Plan

However good we may feel our idea is, it will be useless if we can't communicate it to the users it affects and sell it to whoever needs to authorise it.

Often our plan doesn't get off the ground because we don't get the buy in of those involved. This is normally as result of failing to communicate our ideas sufficiently to overcome the two major obstacles to acceptance:

Is it worthwhile?

Is it achievable?

For our plan to have any value it must be reported and communicated to its intended audience. There is no right or wrong form of presenting the plan. It will depend on who you will be presenting the plan to, who will be using it, and what you want the plan to accomplish. If the plan is for a small working group, you may have a simple straightforward approach. On the other hand, if the plan is for approval of the board of directors, you will need to have a very complete and well thought out written document. You may also need a visual presentation along with detailed backup material to support your plan's presentations.

Form should follow function. Once you know what you want your plan to achieve you can choose the best form to accomplish it. For our CAD Projects there are typically 2 different stakeholders in our project:

- The users - our users are mostly concerned about how the changes will personally affect them i.e. 'What's in it for me?' Reactions are very much on an emotional level - what do they like/dislike, will it cause me issues?
- Whoever is going to sign it off - typically they will place much less emphasis on personal feeling. Their decision will be based on factual information - What will it cost, what will the return on investment be, how long will it take? Generally, they have only 3 areas of interest: Will it increase profit? Will it increase productivity? Will it increase quality? Any plan outside of these areas is a far less compelling proposition to sign off.

The Written Plan

To bring the plan together as a whole, the content of the plan should state the following things clearly:

- History and Background - this should provide enough information so that someone not familiar with your subject will understand where you are coming from.
- Your Vision - what you envision your plan will ultimately achieve or support.
- Clear Goals - what you want to achieve.
- Your Strategies - how you want to achieve the goals.
- An explanation of your reasoning - why you want it done.
- Who will do it? - assignment of responsibilities.
- When will it be done? - schedule with milestones.

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- What Will it Cost? - budgets.
- Your expected Results - what you will get for your investment of time and money.
- The method for monitoring and measuring results.

Each plan is different. It is possible that your plan may not need all the topics or sections mentioned above, so if they aren't relevant don't try to force them in.

There are additional elements in the written report that may be required, particularly on larger plans and proposals. For example, an executive summary at the beginning of the report is vital. A key executive may have limited time to judge your plan, so ensure the major elements are included in the summary as that may be the only part of your plan they read.

Also, on a technical proposal there are likely to be acronyms and terms that may be unfamiliar to your audience. Include a list of acronyms and terms at the end of the plan.

Implementing the Plan

A result of a good plan is that you are then in a position to implement the plan according to the strategy detailed. The written plan is the culmination of the planning process. However, once you start implementing, it is as important to review and reappraise regularly, particularly on longer term plans. Even when the project is progressing as planned there still may be outside elements that have an impact. You then must appraise whether readjustment is necessary and as importantly if your project plan is still relevant.

For example, if we are implementing a project that is improving processes on a standard product line and the company has decided to move the majority of the business to design-to-order because of changing market conditions, how does that impact the project? Is it still relevant in its current form, or does it need adapting or mothballing?

Examples. Failures. Reanalysing.

Looking back at the examples we raised earlier of project failures, it is beneficial to understand why they may have failed.

'We implemented ACME CAD but it never really worked for us' - Were the goals of why it was being implemented clear? Were measurements in place against the goals to be able to adjust to?

'We could see how moving to ACME EDM could improve what we are doing, but we're too busy' - Short term goals often get priority over longer term goals. Analysis of the current situation may have identified more clearly what the current issues were and what it is costing. Clear goals and objectives and planning would have identified if it was worthwhile prioritising the implementation of a new solution compared to the issues with continuing with the current status quo. Too busy is not the reason, not having a worthwhile justification for prioritising over the current workload is more likely.

'We want to implement the solution you proposed but I can't get approval for budget' - This may be valid however in many scenarios this is a symptom of poor communication of where the project will deliver a return on the investment. If you can't communicate why your plan is valid and the real, measurable, tangible benefits of implementing it then budget approval is always going to be difficult if not impossible.

'We had training, but we were too busy to start using it, now we've forgotten how' - Unfortunately a symptom of poor strategy and avoidance. Having gone to the effort of getting approval to implement your project, it has floundered. Were suitable measures in place to assess if the goals were being achieved? Was there the 'buy in' from all stakeholders? There may have been unavoidable issues that took priority - was the plan reassessed? Was there contingency for this?

'We've always done it this way, we couldn't change' - This may be an example of poor communication of the vision and goals of the project as to why change would be beneficial. Equally it could be lack of up-front planning to understand that, although the idea may have been valid, the payback wasn't worth the investment to make the change. There is always resistance to change, it's better to understand if that resistance is valid first, rather than dismissing it as personal intransigence.

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Conclusion

Our CAD related projects are no different than any other business projects. Poor planning and communication lead to poor execution and limited 'buy in' ultimately leading to project failure. Getting it down on paper in an easily understood format can ensure key elements are not overlooked and can ensure everyone involved understands what is happening and, as importantly, why.

Having a clear strategy of how you will achieve the goal you have set out, against a planned schedule, can help ensure your project doesn't get pushed down the list of priorities unnecessarily.

The often-overlooked element of checking progress against milestones is critical to understand the progress of your project towards the planned goals, and ultimately its success.

Our plan, once in place, should continue to be reviewed to ensure it is still relevant and if 'goalposts' have shifted and adjusted to reflect the changes. There are always elements outside of our control that can lead to project failure. Analysing our plan can help us to understand why a project has failed and help to avoid it in the future.

It is equally as important to analyse our successful projects to understand why they have been a success so we can repeat it in the future.

Justification for future projects to higher management is so much easier with a proven and demonstrable track record of previous successes.

We hope you found this paper useful.

If you would like assistance with your project plan and help keep them on track, we're here to support you.

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SYMETRI
ADDNODE GROUP

Symetri
Design Technology Centre
8 Kinetic Crescent
Innova Business Park
Enfield
Middlesex
EN3 7XH

T: +44 (0) 345 370 1444

E: info@symetri.co.uk

W: www.symetri.co.uk