

# SCIENTISTS VS. ARTISTS: THE QUEST FOR REPLICATING SUCCESS

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Do you sometimes wonder how it is possible that with so much chaos and ever-changing requirements on the job site, most of the jobs still make money? And then, on the other hand, wonder why a great job ‘all of a sudden’ loses all its profit at the last 20% of completion?

The traditional way of managing a job is almost an art – our project managers and general foremen are the artists, who somehow manage to get the whole circus on the road and with their tricks, and years of experience can achieve a positive outcome most of the time.

The problem with this approach is the lack of scalability, reliability, and projectability. The knowledge that the successful ‘Artists’/Project Managers have stays with them, versus staying with the company. If this Project Manager leaves, all the learned knowledge leaves with him.

This is a problem for the construction company since:

1. The industry is changing and the Industrialization of Construction® is well on its way.
2. Schedules are getting tighter and there is less time available to pass on the knowledge with the one-by-one and ‘learn as you go’ approach.
3. There is a growing skilled labor shortage, which also reduces the percentage of Project Managers that have field experience.

With the ever-changing conditions in the construction industry, it becomes riskier and riskier to not be able to know where a job will end up before it is too late. This drives us to need more Scientists (those

working with structure and data) than Artists (those working with gut feel or tribal knowledge). The larger the job and/or the more jobs you take on increases the risks (Business Risk, Technical Risk, Integration Risk) and can easily lead to “Killer-jobs,” which can potentially threaten the company’s existence.

To avoid these extreme situations, and ensure your profits stay consistent and positive, the knowledge of the ‘Artist’ as well as the different variables of the job site need to be captured and structured in a scientific approach, to be able to analyze and use the information.

Most companies are not set up to retain any learning and knowledge that the ‘Artists’ / Project Managers gain, and therefore the knowledge is lost when this individual leaves the company. Only a learning organization can provide you with the infrastructure to bridge the gap between the well-experienced individual(s) and the rest of the company.

The Agile Construction® approach allows you to become a data-driven, learning organization, by including the knowledge from your experienced project managers, collecting field-driven data, and converting it to information, which can be used by the whole project team. The Agile Construction® approach focuses on data-driven feedback and connection from the field to the rest of the organization.

In the next section, it will be explained how the data-driven, Agile Construction® approach works and how it can be implemented.

The management of a project can be separated into four main phases:

1. Planning
2. Procurement
3. Installation
4. Closure

Each of these phases can be broken down into different activities and each of these activities can be supported with data.

### The Planning Phase:

As shown in Figure 1 the planning phase includes all the base elements to ensure a project is set up successfully. One example for the data-driven financial part is the cash-flow projection schedule and the plan for how an accurate observed % complete and gross profit reporting can be. In Figure 2 you can see when this job became cash-positive, far after the completion of the job, which means you are financing this project. Until then you're losing additional profit just from financing the project. If you choose a data-driven approach and start monitoring your cash-flow progress from the beginning, together with a true observed % complete from the field by using the Work Breakdown Structure (WBS™) and Job Productivity and Control (JPAC®) as a tool, you can become cash-positive sooner, which will make you more profitable.

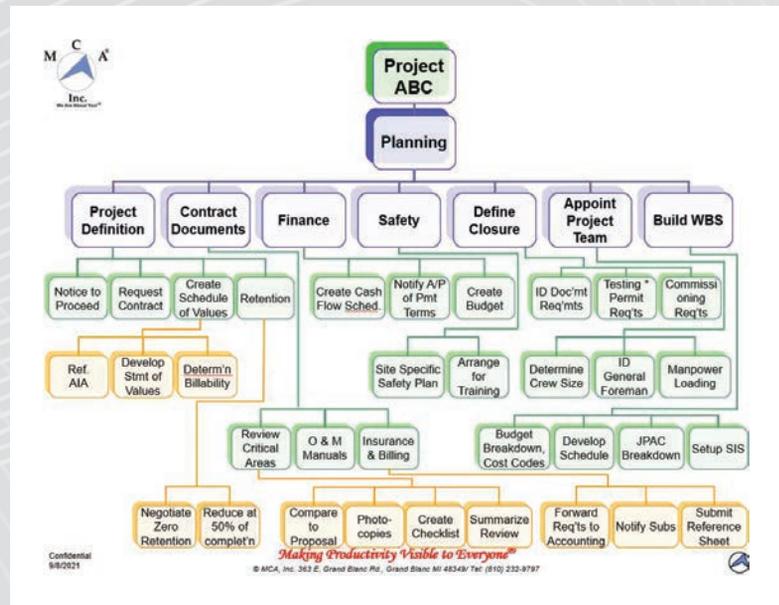


Figure 1: Work Breakdown Structure of the Planning Phase

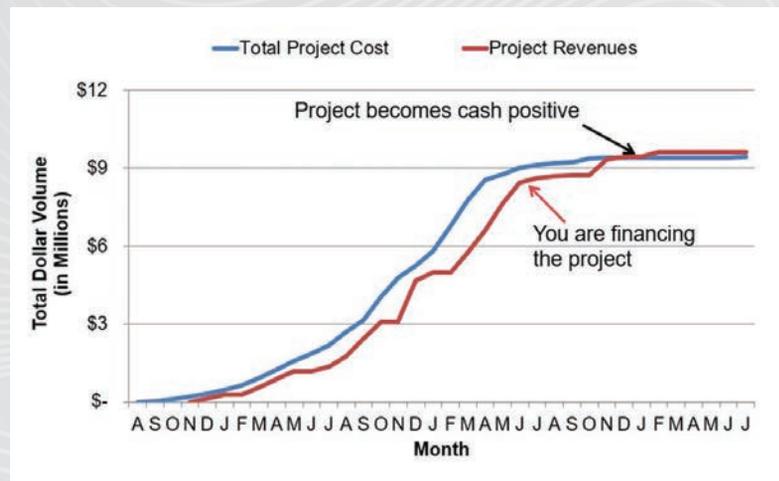


Figure 2: Project Cash-Positive trend

### The Procurement Phase:

The biggest savings you can generate with a well thought through procurement plan is not necessarily the pure dollar on the material, but the material handling reduction you can plan for on the jobsite. How often your jobsite is receiving material will directly impact your labor cost on the jobsite. Using the data-driven Agile Construction® approach the frequency of deliveries can be reduced by planning out the material needs based on

the Work Breakdown Structure (WBS™) from the field. To monitor the success or potential needs for adjustment, the order frequency, and quantity can be measured. Figure 3 shows an example of monitoring how many items per order are ordered, this can give an indication on which jobs need more support on planning and lookahead. If one to five items are ordered with every order, the manpower in the field is spending a lot of time walking back and forth receiving material, which will cost the job money.

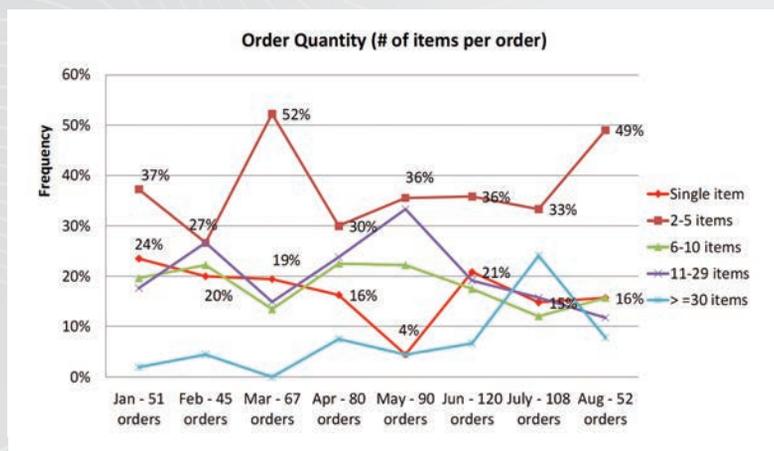


Figure 3 Order Quantity per Order

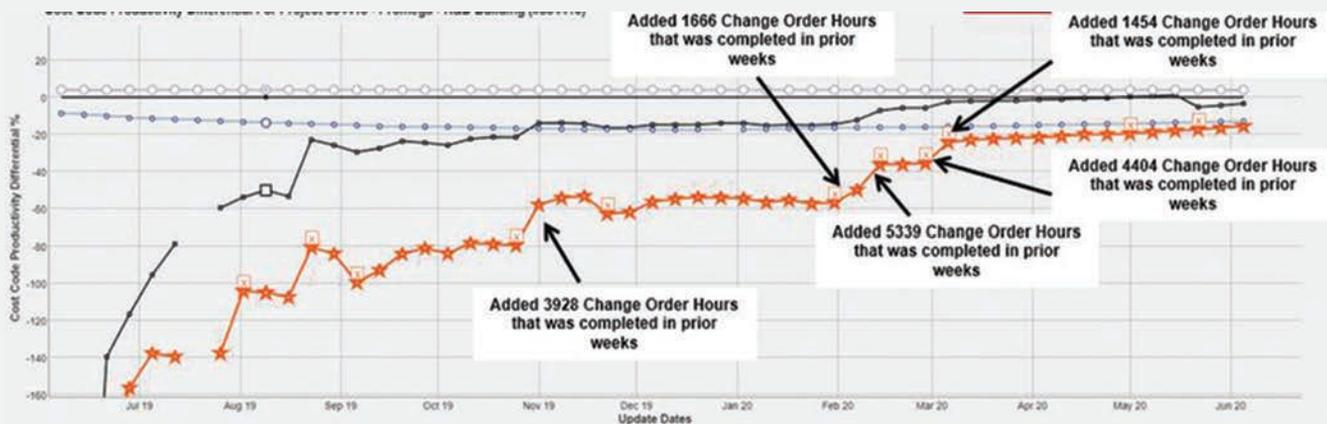


Figure 4: Productivity Chart based on the observed % complete reported in JPAC

## The Installation Phase:

While the jobsites might differ, the actual process of the work in the installation phase stays the same. To be able to see how a job is performing as it is happening is key, therefore, the Agile Construction® Tools: Work Breakdown Structure (WBS™), Job Productivity and Control (JPAC®), as well as Short Interval Scheduling (SIS®) are the key for success. In Figure 4 you can see a job's productivity performance overall as well as one of the cost codes that is not performing very well. By using this scientific approach with the %-complete feedback directly from the field on weekly basis, the job can be helped before it is too late. In this example, the project team realized (based on the data shown) that the problem with this Cost Code is severe and worked together to improve it.

## The Closure Phase:

This phase is probably one of the most undervalued phases of project management, which can be very risky. While the largest portion of the job is completed, there can be several risks that can hurt the job if not managed correctly. At the beginning of this article, we asked if you ever wonder why a 'great job' 'all of a sudden' loses all its profit at the last 20% of completion? In figure 5 you can see an example of actual gross profit reported by the project managers compared to the %-completion of the job. It is clear to see that almost no project manager reports a negative job until the job is 80% complete. It is not that the project manager wants to blind-side the company, he just has no measure to know how the job is performing. With a data-driven approach as shown in Figure 4, JPAC® shows how the job is performing as the weeks go on, giving you a more accurate projection of your gross profit. To monitor the improvements as you are transitioning to a data-driven learning organization, data, as shown in Figure 5, can help.

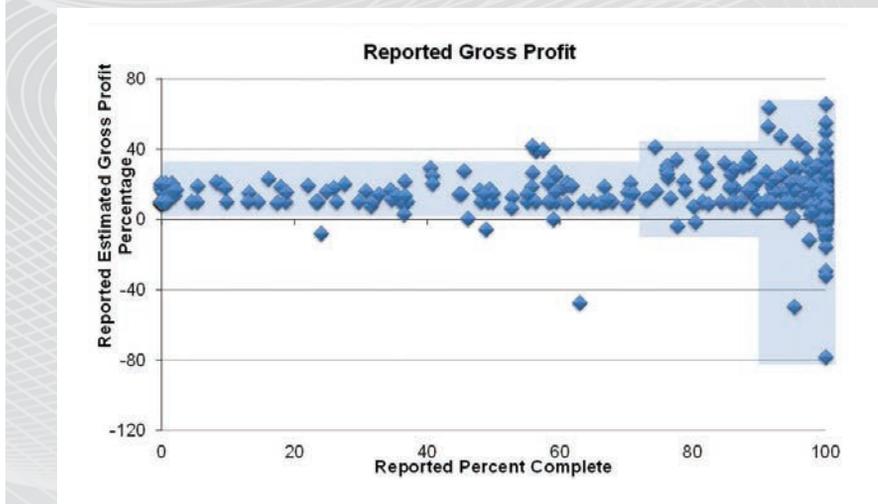


Figure 5 Gross Profit projection compared to % complete of job

In summary, to be successful in this changing construction industry, contractors need to start collecting and relying on data from the field. Data collection however can be very consuming, and expensive, therefore, it is important to evaluate what exactly the company wants to see and define which and how much data needs to be collected. As important as it is to collect the correct data, it is equally important to do something with the information and to create a feedback loop. The data-driven Agile Construction® approach focuses directly on that: data-driven feedback from the field, which can be converted into information that helps to make profitable projects and company decisions. With this approach, the knowledge and information from the artist (project managers and field leaders) can get passed on to the rest of the company and help create a sustainable, profitable learning organization that can grow and expand into the future.

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