Deliverable Six: Technology Selection for AWP

Revision 0

O3 SOLUTIONS

O3 is a modern web-based platform that leverages Advanced Work Packaging and Agile best practices to disrupt the status quo for companies in industrial construction who want to improve productivity, safety, quality, and predictability.

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1 OVERVIEW

This deliverable will focus on the identification and selection of technology for AWP implementation.

Modern construction projects are typically very intricate, with a vast array of moving parts and supporting data. Using technology can provide a solid foundation for your AWP implementation, and help to manage this complex data structure.

The old wisdom within AWP circles used to be that you needed to get your process well defined first, and then think about technology. But the latest AWP software platforms can be implemented concurrently with the development of your process, by leveraging the Best Practice model.

Finding the right AWP technology for your organization or project can be difficult, as there are a number of providers out there who support AWP. In this deliverable, we will look at some of the areas you need to consider.

2 KEY CONCEPTS

There are three key elements to this deliverable:

- Understand your plan and scope for AWP implementation. Know what you want to achieve, even if you haven't finished detailing how it will be achieved.
- Visualize your AWP solution in the context of your other project technology. AWP technology, as with the AWP process itself, will typically sit at the center of the other departments and applications, and will need to communicate with other platforms.
- Assess the available products on the market to understand which ones will support your needs for AWP.

The intent of this exercise is to understand some of the considerations when choosing the AWP technology.

3 UNDERSTANDING YOUR AWP REQUIREMENTS

Your AWP technology needs to support your planned approach to implementation and execution. So the first thing to identify is what your requirements are.

For example, if your plan for AWP implementation is limited to the field scope, you may not need functionality for managing AWP during the engineering stages of a project, which means you don't need to list creation and management of EWPs as a requirement for your software.

Similarly, if you plan to use graphical workface planning on site, you need to make sure that the software you choose has the capability to support a virtual construction model, with all of the associated functionality.

Each element of work package management will likely create several specific requirements. For example, the need to do graphical workface planning can lead to requirements including:

- Ability to support all 3D model file types used by your Engineering contractors.
- Basic model navigation functionality such as zoom, rotate, pan etc.
- Progress visualization represented by coloring the model.
- Capability to highlight or isolate CWP or IWP scope in the model view.

This is just a small snapshot of what you will need to include for graphical workface planning.

The more detailed you make your requirements, the more likely you are to find a software platform that will support your needs. To help with this requirement, we have included an attachment that can be used as the basis for your Work Packaging Software Requirements. This is a list of hundreds of aspects of functionality, which should combine to provide you with an excellent AWP / Workface Planning software product.

When looking at this list, consider the following:

1) This won't be the final list. You might have other things you want to include, or you might have elements that you want to remove because they don't suit your needs. But you can use this as a starting point, and modify each category to meet your needs.

2) This list can be used to help you find a suitable technology supplier as part of a software bidding process, or it can be used by an Owner to show the expected level of technology to be provided by a construction contractor. The text in the header section is written for the latter scenario, so if you are using this for software bidding with suppliers, just remove or replace this text.

3) This list focuses primarily on the construction phase requirements (Workface planning). A similar list of functionality can be compiled to support AWP efforts during the engineering stages of a project, if you are applying full lifecycle AWP.

Some other things to bear in mind when finalizing your functionality requirements:

1) Don’t be afraid to be pedantic. It might seem obvious to say that the software must be available in English, for example. But don’t assume that all the providers will give you the elements that you think would be standard.

2) Don’t just think about today. Consider where your AWP implementation will go in one year, three years, or five years. It is important to understand your needs, but it is also useful to recognize your future potential, and find a product that supports that growth. You don’t want to outgrow your AWP solution and be forced to transition after a year.

3) Consult your IT team. They will typically have certain requirements on a technical level that you, as a user or AWP practitioner, would not consider. Make sure that all such requirements are included in your specification.

3.1 MUST HAVE CHECKLISTS

Also attached as an appendix to this deliverable are a series of “Must Have Checklists” for technology functionality to support various elements of Advanced Work Packaging and Project Management.

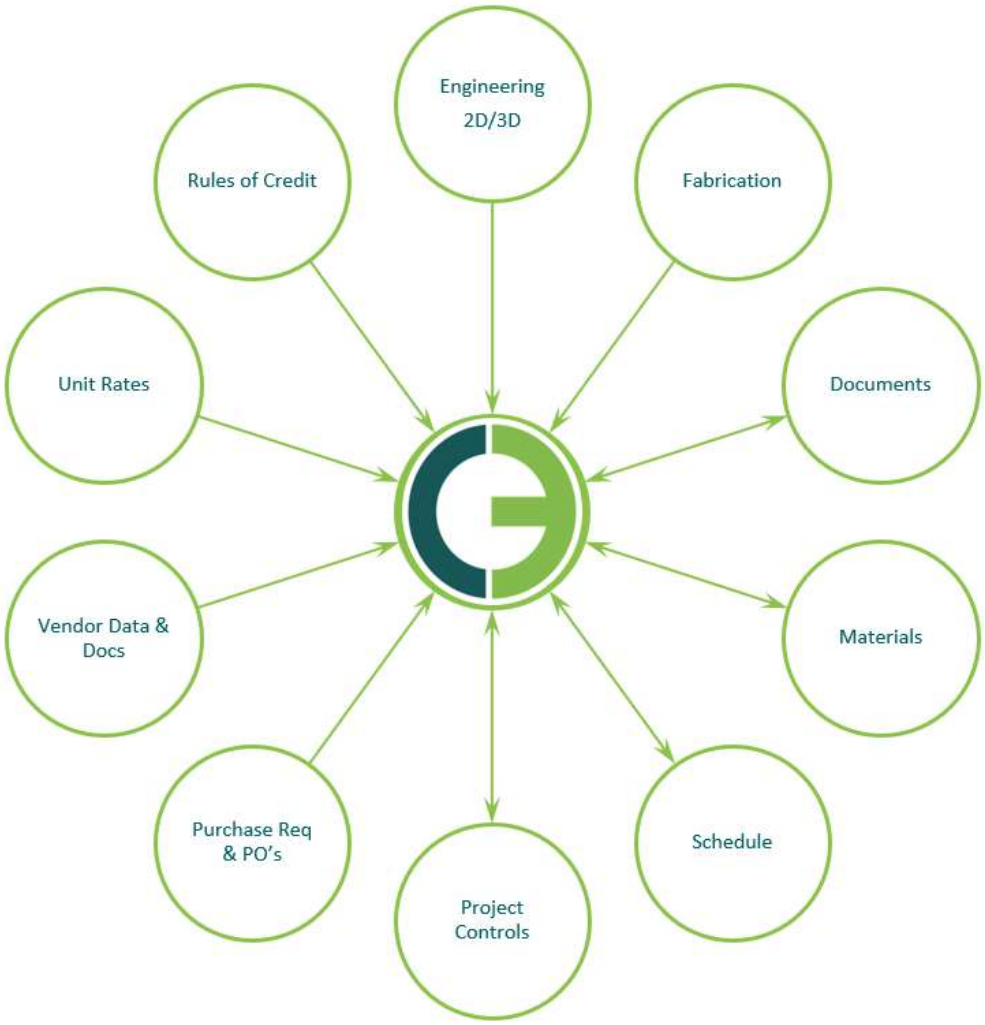
These can be used as additional reference guides, to augment or support your software requirements, and to help you to understand what should be available in a single AWP software solution to support full project lifecycle management.

4 VISUALIZE YOUR PROJECT TECHNOLOGY MAP

This is something that we covered in Deliverable 4 – The AWP Procedure (Section 16).

Any software you choose for AWP implementation will likely have to interact with multiple other tools. AWP software will not replace most of your existing project software – it should act as more of an interface and point of compilation. You will, for example, continue to use dedicated scheduling software to make your schedule, but your AWP software should be able to read the dates from the schedule.

A simplified model will look something like this:



Draw this out for your organization, including all of the tools the AWP will interact with, pull data from, or push data to.
Each system interface should be listed on your requirements document, to ensure that your selected AWP tool can interface with your other project tools.

For each node in this diagram, identify:

- The name of each tool / system
- The Owner of each tool / system
- Clear delineation between Owner systems and Contractor systems
- Data transfer between the systems, including details of:
    - What data is transferred
    - How the data is transferred (Manual, CSV upload, or API)
    - The frequency of the data transfer
    - The file type for the data transfer

The size and complexity of the technology setup for the company or project will typically scale with the size and complexity of the portfolio or project itself. Be sure to consider all applicable tools for all phases of the project, from early engineering to commissioning and completions.

4.1 DATA TRANSFER

There will be three main types of data transfer:

- Manual – where a person will read information from one system and type it into another system.
- Excel / CSV – In this version, a spreadsheet or flat file will be exported from one system and imported into another. A person will be required to perform the transfer, but does not need to manually recreate the data.
- API – This is where two programs are “talking” to each other, and is the most advanced version of information transfer. This typically requires the highest effort to set up, but once established, it requires little or no human element to maintain.

4.2 TWO WAY DATA TRANSFER

Part of the mapping process will be the identify of the direction of data flow, which will clarify where the information originates and where it is passed to. Some data can be created in one tool, passed to another, updated in the second tool, and then passed back. Care should be taken with two way transfers, especially when they are API-based. For example, most organizations are happy for the AWP software to pull schedule dates from the scheduling tool, but very few organizations want the AWP software to “push” updated dates back to the schedule, without at least a review from the scheduler.

5 WHO HOLDS THE SOFTWARE?

This is a common question for AWP technology, and the answers can often be varied. Historically, the Owner has been the first to adopt AWP technology because they are usually the primary drivers behind AWP on a project, and have the greatest influence over the whole project lifecycle.

This can, however, cause some difficulties with Owners who try to push their technology selection onto a contractor (Engineering, Procurement or Construction) who already has an established process for managing AWP. In these cases, the best option for the Owner is to stipulate the requirements for AWP standards on their project, and invite the contractors to demonstrate how they will meet those needs. If the contractor has a sophisticated tool, let them use it. If, however, they are trying to manage AWP with Excel or other semi-automated processes, the Owner can offer access to their AWP software for use on the project.

Ultimately, anyone on the project can hold the AWP software, whether they are the Owner, EP, EPC, Construction Management contractor or Construction contractor. The two main considerations for who holds it are:

1) Is the holder of the AWP technology being deployed to the project early enough. (This is a problem if the Construction contractor holds the software, and isn't being brought on until the Execute phase).

2) Willingness to provide access to the software. AWP is meant to be a collaborative environment, which only works efficiently when all project stakeholders have access to the information, both in terms of reading it and providing it.

6 FIND A TECHNOLOGY PROVIDER

The best way to identify your technology provider is to use the technical requirements as the basis for assessment of their tool. Simply put, once you have found the various providers on the market (and there are several), ask them to demonstrate that they can meet your requirements.

Some important considerations when performing this review:

1) Everything looks slick in a demo, because the vendor is typically working with pre-screened data that they know will work on the screen. Don't be afraid to ask for a Proof Of Concept, using your project data, just to prove that the system can handle new information.

2) Beware vapor. These are promises that the software will be able to do that "tomorrow" or "next month". Make sure you get a clear understanding of what it can do today, and what parts of the presentation are incomplete.

3) Don't tell me – show me. When reviewing your requirements, having the presenter simply say "Yes" should not be enough, especially for critical or intricate capabilities. Have them walk you through it and demonstrate it on the screen. Click the button, and see that it does what you are asking.

4) Imply and infer. You might have a different understanding of your requirements than the vendor. They may inadvertently misunderstand your needs, or skip over something that it is important to you. This is your opportunity to understand in detail, so don't be afraid to cover the same ground multiple times, if that's what it takes to be sure that you are all on the same page.

Once the technical assessment is complete, then discuss the commercial model and pricing. There is no point talking about money until you know that the software can meet your needs.

One critical aspect of the commercial phase is to understand the total cost of Ownership. For many providers, the software cost might be low, but it can often be drowned out by the amount of services hours that are needed to implement, configure and get the software working to your standard. Make sure that any numbers you are seeing represent the 'all-in' cost for the software for the full lifetime of your use.

APPENDIX

Exhibit XX – Work Packaging Software Requirements (Word document)

O3 Must Have Checklists (PDF files, for reference)