



Construction Drawing and Document Management

DrawMGT Executive Summary

1 Introduction

DrawMGT is an Internet-based web application that manages construction drawings, documents and the tasks necessary to create and distribute them. DrawMGT was created specifically for the heavy construction and tunnelling industry, and is ideally suited for projects with participants from multiple organizations, located at multiple sites.

DrawMGT is superior to the content management systems deployed on most projects because it supports design management. In other words, DrawMGT manages the status of your drawings and documents, and makes links to the tasks associated with their production and updating. DrawMGT also helps you coordinate your design tasks with the other activities in your project. This integration is realized using a comprehensive set of standard and project-specific engineering classification criteria (tags) that can be applied to all your drawings, documents and tasks.

A normal web browser is all you need to use DrawMGT. No special software is required beyond the DrawMGT server. In spite of its powerful features, DrawMGT is efficient. It is usable with older PCs and low-speed Internet connections. Engineers have even productively used DrawMGT from remote job sites with nothing more than web-enabled cell phone.

2 DrawMGT Key Features

DrawMGT's main focus is on assisting the collaboration between all members of a project team, including external partners. You can easily provide access to suppliers, partner companies and the owner's organization. This ensures that all parties are working from the same plans, regardless of their physical location or their place in the project's organization.

The following is a list of DrawMGT's major features:

- **Version/Revision Management** – Construction drawings and documents. All file types supported.
- **Design Management** – Tracking planned & complete dates for design, check, approval, submittal.
- **Task Management** – Common construction tasks supported (site queries, punch lists, etc.).
- **Automatic Document Classification** – Based on drawing code values and project specific defaults.
- **Indexing and Searching** – Industry standard and project-specific classification criteria supported.
- **Lists and Reports** – Drawing and task lists. Multiple list formats and sorting.
- **Drawing Submittals** – Automatic delivery of drawings approved for construction.
- **Multi-Language** – English and German versions are currently available. A French version is planned.
- **Data Import/Export** – Bulk upload and download of data.
- **Secure** – Multiple permission levels (user roles) and comprehensive audit trail.

DrawMGT can do much more. Contact SoftXS for detailed information.

3 Document and Task Management Integration

The DrawMGT system is based on two central registers:

- **Document Register** – All revisions of each drawing and document.
- **Task Management Register** – To-do items associated with documents.

You can assign one or more tasks to a drawing or document, or associate sets of documents with a task. Each time you view a document, you see a list of the tasks associated with it, and likewise, each task contains a list of all documents associated with it.

You can assign classification criteria to items in both registers, and DrawMGT can automatically assign classification criteria, based on an item's document code or pre-configured default values.

3.1 Document Register

The DrawMGT document register contains a list of all revisions of all documents, including their classification criteria and any tasks linked to them. The document register also contains design management tracking information, which consists of the planned and actual completion dates associated with the design, checking, approval and submittal of all documents. DrawMGT manages project-produced design documentation, and also tracks the receipt and approval status of vendor supplied documents.

You can configure DrawMGT to understand the meanings of your project's drawing/document codes, and automatically apply classification criteria to drawings/documents based on actual code values.

For example: given the drawing code *X-10-F-00520-C1*, where *X* represents the contract, *10* the work type (excavation), *F* the location (Adit-2 access tunnel), *00520* the starting chainage, and *C1* the revision, DrawMGT can automatically assign all classification criteria derivable from the drawing code. Another drawing, from a different supplier, would have a completely different drawing code, and the drawing code *03245-XY-B-0340-1*, might actually be directly related to the previous one, provided you knew that, for this supplier, *XY* means Adit-2, and *B* means excavation. By pre-configuring DrawMGT with information about all drawing codes used in the project, the association between the drawings will automatically be made when they are registered in the system. This means that you need only specify a well-known set of criteria in order to find all documents related to particular issue, regardless of the document's source or drawing code value.

3.2 Task Management

DrawMGT supports management of the following tasks:

- Site and technical queries
- Requests for new revisions and corrections
- Revision redlining
- Drawing comments
- Design review
- Punch lists
- Site instructions
- Inspections

In addition to status, priority and importance, tasks can be assigned, assigned due dates, and delegated. You can track the budgeted and expected effort necessary to complete a task. Users can subscribe to certain types of tasks, so that they are sent an email each time such a task is created or updated.

Each task can have a series of notes, containing additional questions, discussion points, correspondence, photographs or other supplementary information. Each note is assigned a category, such that a task can be automatically presented in a short-form where the discussion is hidden and only the original issue and the project's official response are displayed.

4 DrawMGT in Action

DrawMGT has been used on both small and very large projects. It is especially easy to use and quick to setup for small to medium sized projects, where you have the need, but not necessarily the time and budget to deploy an enterprise-level drawing/document management system. This means that your project can have the efficiencies and organizational advantages offered by larger systems, but without their overheads.

4.1 Large Project – Kárahnjúkar

- 5-year project to build a 700 MW power plant and 70km of tunnels
- DrawMGT in operation for over four years
- 15,000 documents
- 300 users, from 20 companies

DrawMGT has had a mission critical role on the Kárahnjúkar hydro-project for over four years, and has proven capable of managing the over 15,000 documents they have produced to date. In addition to drawings, the Kárahnjúkar DrawMGT system also manages tunnel profiles, inspection documentation, site instructions, correspondence and even photographs of the raw tunnel excavation. Currently DrawMGT continues to play a key role in the Kárahnjúkar project, managing the checklists for the headrace tunnel finishing work.

Location, work-type, alignment and chainage classify all Kárahnjúkar documents and tasks. You can specify, for example, a chainage range in a particular tunnel to find all pertinent documentation: starting from the original geological studies and design drawings, right through to the tunnel profiles, inspection forms, finishing instructions and as-built documentation. Tunnel inspectors use DrawMGT to generate lists of items to check on their inspection tours.

The savings at Kárahnjúkar due to the use of DrawMGT are considerable. A Kárahnjúkar project manager calculated that merely by using the automated drawing submittals, the direct savings had paid for their investment in less than two years.

4.2 Small Project – Lagarfoss

- 3-year project to refurbish and enlarge a 7500 kW power plant
- DrawMGT in operation for over one year
- 2500 documents
- 50 users, from 10 companies

VST Consulting Engineers of Reykjavik selected DrawMGT for use on the Lagarfoss refurbishment project. DrawMGT was deployed in spite of the project being within one year of completion. VST made the decision based on their calculation, that use of DrawMGT would pay for itself in less than one year. They have achieved both direct savings by using DrawMGT's automatic drawing distribution and organizational efficiencies by using DrawMGT to coordinate activities between the design office and the job site.