



5400 King James Way, Suite 300  
Madison, WI 53715  
Phone: 608.238.2171 Fax: 608.238.9241  
Email: [info@powerlinesystems.com](mailto:info@powerlinesystems.com)  
URL: <https://www.powerlinesystems.com>

# PLS-GRID - Project Manager

## OVERVIEW

Version 2 of PLS-GRID enables Project Management.

### Summary

The initial release of PLS-GRID publishes PLS-CADD project information to the enterprise via a server accessible to Desktop or Web clients. The second version of PLS-GRID focuses on improving PLS-CADD productivity, manageability, accountability, standardization and resiliency by integrating Project Management throughout the project lifecycle. This is known as PLS-GRID Project Manager.

Project Manager (PM) provides the benefits of a Document Management system that actually understands the contents of PLS-CADD projects and the relationships between the structures, libraries, criteria, standards and other data that are incorporated in a project. In addition, PLS-GRID provides automatic activity reporting, auditing, standards enforcement and a great deal more.

PLS-GRID is the latest iteration of the Digital Twin concept PLS projects have enabled for the past three decades. It not only unifies all of your models, but also provides historical insight to how your grid and its Digital Twin changes over time.

### Project Manager Delivers

1. A secure and efficient repository for all PLS data on your server (not in our cloud)
2. Organization and standardization of project files
3. Access Control List (ACL) for Projects
4. Change management (Check In / Check Out *without Backup and Restore*)
5. Auditing via automated Revision Tracking
6. Data Deduplication

## Secure and Efficient Storage

Projects enrolled in PLS-GRID's Project Manager (PM) are stored on the company's local PLS-GRID server in the PLS data deduplication database. This database encrypts all data with a FIPS-180-2 algorithm to guarantee **secure** file storage. Further, the database uses a NIST SHA-2 hash function to guarantee that any data set is stored only once even if known by multiple file names.

After building the terrain model, 99% of PLS-CADD project work consists of structure editing, conductor stringing/sagging and drafting activities. While this consumes the vast majority of project engineering time, the information that results from this activity accounts for less than 2% of the average project size on disk. Therefore, data deduplication results in a 50x reduction in storage and data transmission requirements while at the same time storing all revisions made to a project. This is **efficient** storage.

Given the prevalence of remote work today it is worth emphasizing that data deduplication not only reduces server storage requirements, but also data transmission to the client. When you start working on a project, PLS-GRID copies all project data to your defined *Workspace* (typically located on your computer). Thereafter only data that has changed needs to be transmitted back to the PLS-GRID server. At any time you choose you may commit the design changes in your *Workspace* to the PLS-GRID server and since only the changes are being uploaded these operations typically complete in a few seconds even over relatively slow VPN connections. The benefits of data deduplication are so great that they need to be experienced to be believed.

Because it is so quick and efficient, PLS-GRID can store all revisions made to a project. Further, the changes made in each revision are described automatically so you don't have to remember and recount all the details. You also have the ability to create free form notes describing the design changes. This audit trail informs you who made what change, when and allows you to return to any previous revision of a project in seconds. **PLS-GRID quite literally extends your 3D PLS-CADD project to the 4th dimension: time.**

With PLS-GRID Project Manager, project changes can include route or alignment changes. When alignment changes occur, the new alignment is simply saved as a new version. New projects can include multiple route options simultaneously.

## Automatic Organization and Standardization

Enrolling a project in PLS-GRID with project management results in it being automatically copied into your workspace and restructured to conform to file management best practices. Conflicts

between multiple component files are automatically resolved and your project is guaranteed to produce the same results as it did prior to enrollment. However, structure files, wire files, component files, vector and raster attachments, and references have all been consolidated and organized into a logical structure that is consistently and automatically enforced by PLS-GRID and easily viewable in the Project Manager Inspector.

New projects are created from PLS-GRID by selecting a company standard (template) project which has the predefined standards for criteria, drafting, structures, cables, etc. Design Rules may be defined on the PLS-GRID server, and if so, these rules must be met before a project can be Checked In to Project Manager. For example, you may require that standard design Criteria and Feature Code files be used without modification. Any project that deviates from these requirements simply will not be accepted by the system without supervisory intervention.

## **Access Control List**

PLS-GRID allows you to assign your PLS-CADD users into different groups and assign each group different permissions. Each group (and user) has explicit permissions for project creation, read access, read-write access, standards creation, activity auditing and administering the PLS-GRID server. You can easily assign projects to one or many groups so that for example, your employees have read-write permission to all projects, but consultants and contractors only have permission for the projects they have been retained to work on.

## **Check In / Check Out Files**

Once a project has been added to PM, it can be Checked Out by any user with ACL Read/Write privileges or copied to a local drive by anyone with ACL Read Only rights. Creating a project instance on a local drive (or even a network share) is a simple matter of clicking on the project in Grid View and selecting "Get Latest Revision". PLS-GRID will then determine what files are needed to create the project locally and will then copy *only files that do not already exist or that have changed* to the local machine. As a result, large XYZ, TIN, raster and vector attachment files will be available instantly as long as they haven't changed since the last time the project was checked out. File transfers intelligently use file compression and file paths are automatically remapped to the local folder in accordance with PLS file management best practices. Similarly checking in a project will be fast as long as no large files have changed.

Note that Project Check Out's are exclusive: in the first version of PM only one engineer can edit a project at a time, but any number of engineers can have local copies of the project to view or research with.

Projects that have been Checked Out may be Checked In to commit their changes to the PLS-GRID repository and make the updated model available to others. When a project is Checked In, PM will compare all files on the local machine to those in PM and will only transmit those files that have changed. In addition, PM only stores the files that changed in that revision of the project. This minimizes storage requirements even while providing the capability to “undo” every edit made to each project.

A Check Out must occur before changes may be made to a project. Only the user who Checked Out a project may perform a Check In. When Checking In a project the project representation in PLS-GRID Map View may also be updated with relevant structure and span information.

## **Data Deduplication**

Extensive use of Data Deduplication (DD) implemented via SHA-2 checksums serves to minimize data transmission and storage requirements. Intelligent data deduplication is the heart of PM and enables PLS-GRID’s remarkable efficiency.

Data deduplication also provides extraordinary organizational capabilities. Many clients have multiple component libraries with the same name and potentially the same contents; however, they do not have a way to determine which is the canonical copy of the component file nor which other copies are identical to the canonical copy. With PLS-GRID’s DD technology you can instantly generate a report of all projects that use a particular component file and how many of those component files actually have the same content. This also applies to conductor models, structure files, etc. that may be copied into multiple projects. A future version of PM will even allow batch updating these files across multiple projects. You can easily audit projects to determine if standards have been followed and remediate those projects that have not.

## **Conclusion**

PLS-GRID Project Manager protects and manages the extensive investment made in modeling overhead lines and structures with PLS software. It provides an easy way to start new PLS projects and ensures that the latest company approved standards and protocols are followed. Specifically, PLS-GRID Project Manager organizes projects you have already completed, enables automated quality control of future work, leverages existing models, promotes standards and improves discoverability. PLS-GRID and Project Manager make project data available to employees, consultants, contractors, and other stakeholders easily and effectively to enable rapid informed decisions.