Whitepaper
Boosting Performance using
"Next Generation" PLM from Aras

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White Paper

Performance of an enterprise-wide system is a critical aspect of software. Large scale systems may have extensive functionality, however, without sufficient performance those capabilities become unusable. Without a fast and responsive level of performance there is little chance of achieving user acceptance and productivity gains which ultimately undermine the Return On Investment (ROI).

Performance in a corporate PLM environment is an all too common challenge that international companies face and are forced to spend significant time and additional unplanned expense to fix.

As many global companies have experience firsthand, the issue of PLM performance is dependent on numerous factors that are interdependent including – hardware, middleware, storage, databases and network configurations, along with the nature of specific customizations within the company's PLM system itself. Once an existing performance issue has been solved it is not uncommon for another, different issue to arise.

Looking at the high-end of the PLM market – a large proportion of global corporations that have embraced a worldwide PLM strategy continue to struggle with PLM performance. These PLM performance issues are particularly acute when the company has complex processes and is using the PLM system for CAD Data Management as the total size of Files and Metadata continue to increase exponentially.

Over the past ten years, innovative new PLM technologies have come to market which address these PLM performance pain points, however, there has been reluctance to migrate and move away from the prior technologies. People tend to hold onto preconceived notions from the past regarding systems and databases particularly regarding performance in large scale implementation scenarios – even though technological advancement is moving so quickly that new, more modern architectures demonstrate verifiable advantages.

This White Paper documents the validated performance improvements achieved through the replacement of an operationally proven and well maintained PLM system based on high end database technology and UNIX hardware which had been optimized over more than a 10 year period.

The performance enhancements documented in this paper were measured on an actual PLM replacement project conducted in 2012.

Project Scope:

From a technical perspective the customer's requirements were straightforward and clear.

- Migrate 2.8 million records from the existing PLM System into Aras Innovator
- Export / Import 350.000 CATIA V5 CAD documents representing 650 GB of structured CAD data (2D and 3D)
- Deliver comparable or better performance than the existing PLM system
- The entire functional scope of the previous PLM system had to be covered by Aras Innovator and the CAD Connector for CATIA V5 – PDM Workbench provided by T-Systems

Hardware Comparison:

	Previous PLM System	Aras Innovator
# of Servers	3 (database / application / file)	1
OS	UNIX (AIX)	Windows Server 2008
Memory (GB)	32 / 16 / 2 (db/app/file)	20
# of CPU's	8 / 4 / 2 (db/app/file)	4
Database Size (GB) (with identical data)	32	7

The previous PLM System was well established at the company and had deep integration within the existing CAD system, however, it had significant resource demands and operational complexity which resulted in performance issues. Compared to the existing PLM system, Aras Innovator required less than 1/3 of the resources.

One of the major KPIs for the project was Performance. Numerous performance scenarios were identified, and performance measurements were conducted and well documented on the existing PLM system to ensure that the appropriate targets were achieved.

The most significant scenario within the new environment was the loading procedure of a large assembly structure (with over 1000 CAD objects) into the design mode of the CAD System. This scenario was a primary focus during the performance tests. Six different real assembly structures were identified, analyzed and used as reference cases. Each structure's load time was measured at least twice – to avoid local memory effects on the client machines. All measurements were conducted with the same client and CAD environment.

Empty values / null values (load number five and six) on Chart 1 represent the fact that the previous PLM system was unable to load the amount of data into the CAD system – the CAD application crashed (KO) – even after several repetitive attempts.

The file size of the CAD data varied between 50 and 450 MB – depending on the volume and complexity of the CAD structure.

Chart 1: Performance Measurement - Existing PLM System vs. Aras Innovator
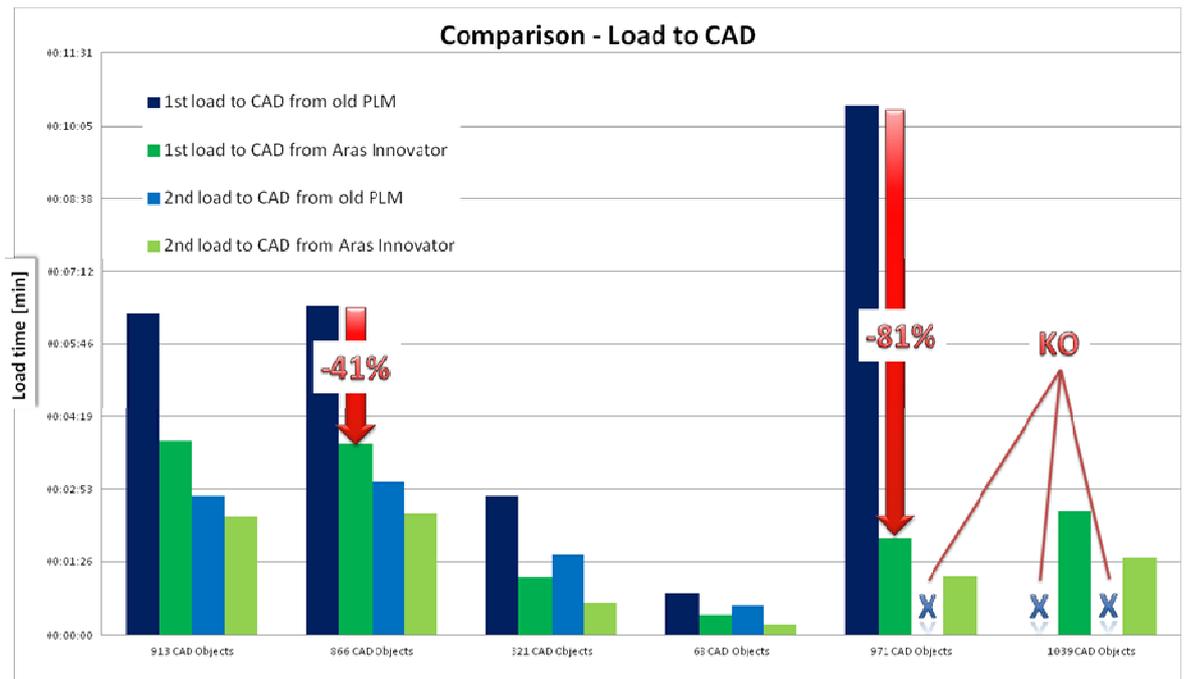
The validated outcome of the performance comparison was that Aras Innovator was always faster than the replaced PLM System; from 14% to 81% faster or more for very large CAD assemblies (NOTE: Aras Innovator was using a significantly smaller server configuration).

The amount of data in the database was identical and had been completely migrated with all files and meta information from the previous PLM system.

Conclusion:

Regarding performance, Aras Innovator proved measurably superior to the previous PLM system. In the scenarios where very large CAD data sets were required, the Aras environment was capable of loading the assemblies whereas the previous PLM system repeatedly crashed and was therefore unable to even load the assembly.

The results of this project validate that Aras achieved significant performance increases, in some cases 81% or more, over the global PLM system replaced. This customer project was successfully completed by T-Systems International and has been in production use since August 2012.

Based on the documented performance measurements of this project, global companies should consider the performance characteristics of Aras comparable or better than other PLM software solutions currently available on the market, particularly for large complex CAD data management workloads. Of course, PLM performance has many influential factors and results may vary for each customer implementation. Therefore, it is highly recommended that PLM performance testing be conducted to verify sufficient performance in your corporate environment.