



The Road of Liming's PLM



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Main Content



1. Liming Company 's Profile

2. Key business challenges

3. The PLM road of Liming

4. Next-step plan



Liming Company Profile

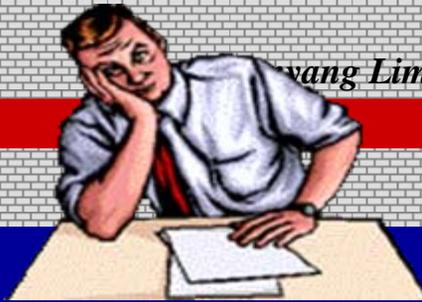
Shenyang Liming Aero-Engine Group Corporation

Location: Shenyang, China

2004 Revenues: RMB 2.1 Billion

Number of Employees: 10000+

It is mainly engaged in production and repairs of aero engine products. Non aero products mainly include subcontracted aero parts, gas turbine, automotive turbine pressure booster, aluminum extruded sections, etc.



- Key business challenges of Liming Corporation are shorten research and production period of new products and achieve batch production.
- Existing facts
 - Rigid workflow of string-like paper business trip
 - Decentralized staff structure
 - Backward technical information system without collaboration
- Strategy to face challenge——establish the brand new lean enterprise
- While product life management (PLM) is the necessary IT system of the lean enterprise.
- The most important objectives of Liming PLM system: achieve collaboration of design and production, optimize business flow and shorten production preparation time period.

Key Business Challenges



The Road of Liming's PLM

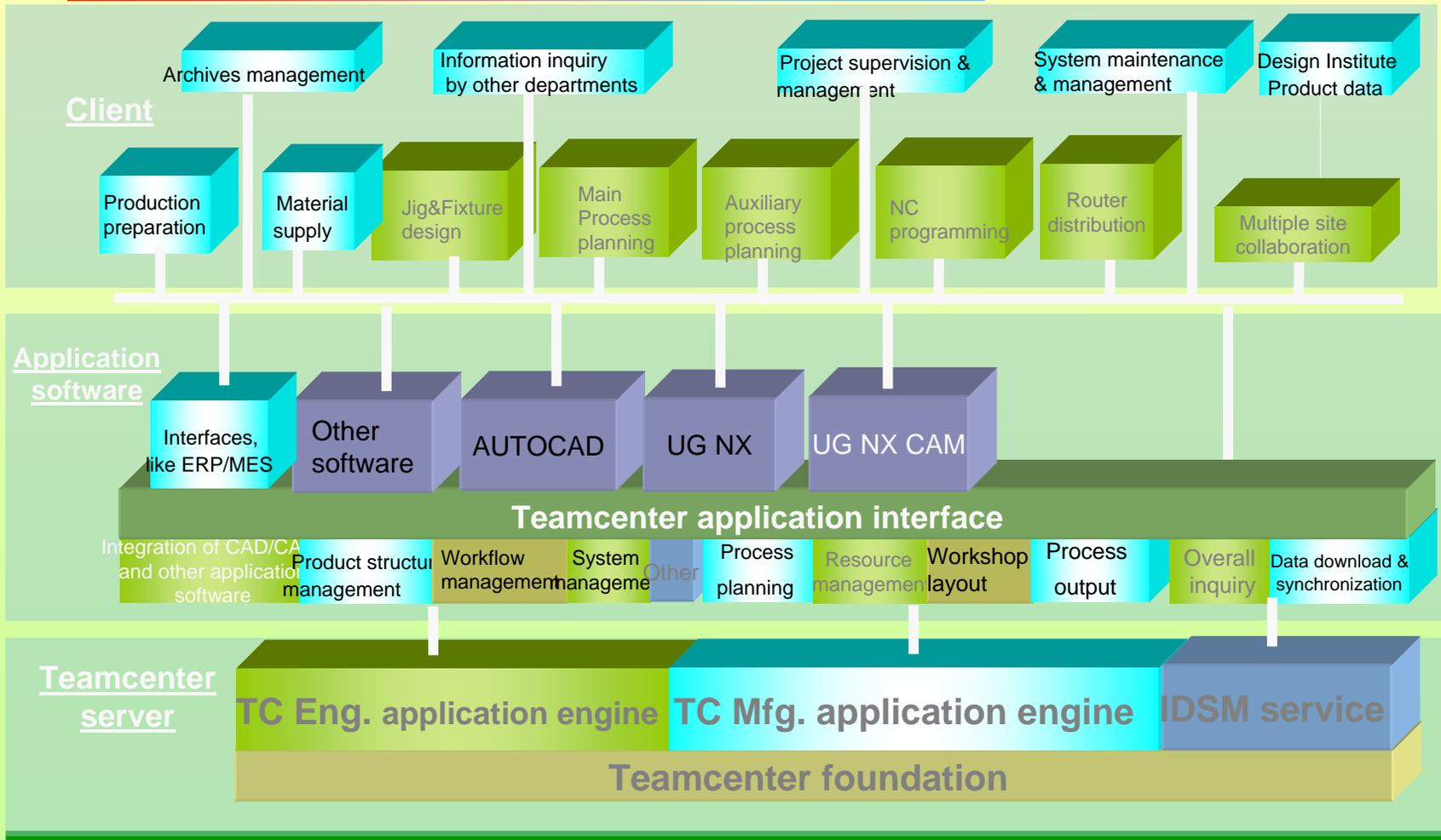
- 1995: started using Unigraphics software
- 2000: bought 100 seats Unigraphics software for on time
- End of 2002: have more than 200 seats Unigraphics SW
- Dec, 2002 to Apr, 2003: implemented Teamcenter Manufacturing pilot project
- Aug, 2003 to Dec, 2003: invited EDS for detailed consultation and evaluation of its production preparation stage and relevant environment
- Feb, 2004: Prototype test of design/production collaboration at separate places
- May, 2004 to Dec, 2004: finished the implementation work of the first stage of Liming PLM system
- Jan, 2005 to Dec, 2005: Implementation of the second stage of Liming PLM system

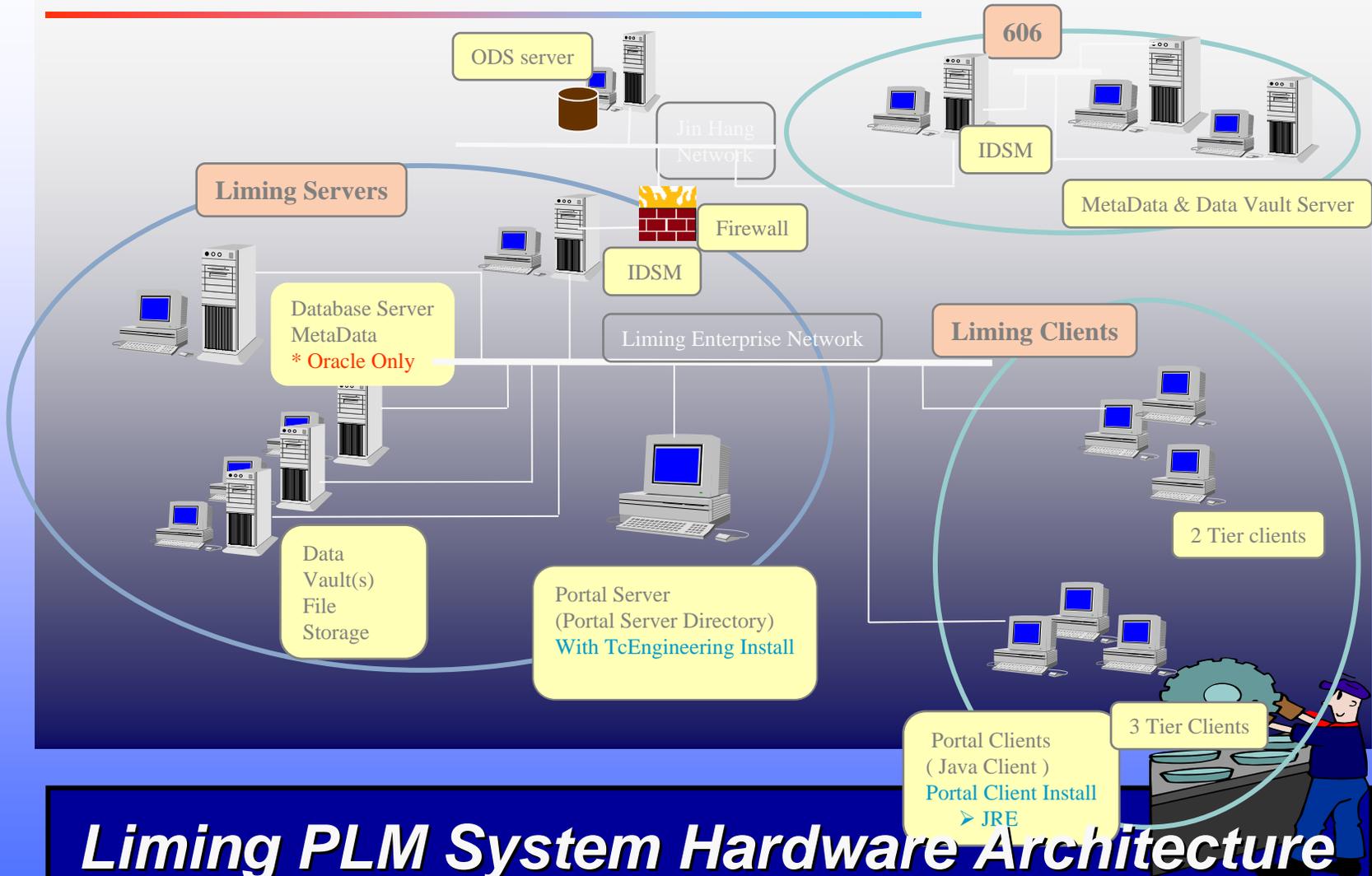


Shenyang Liming Aero-Engine Group Corporation



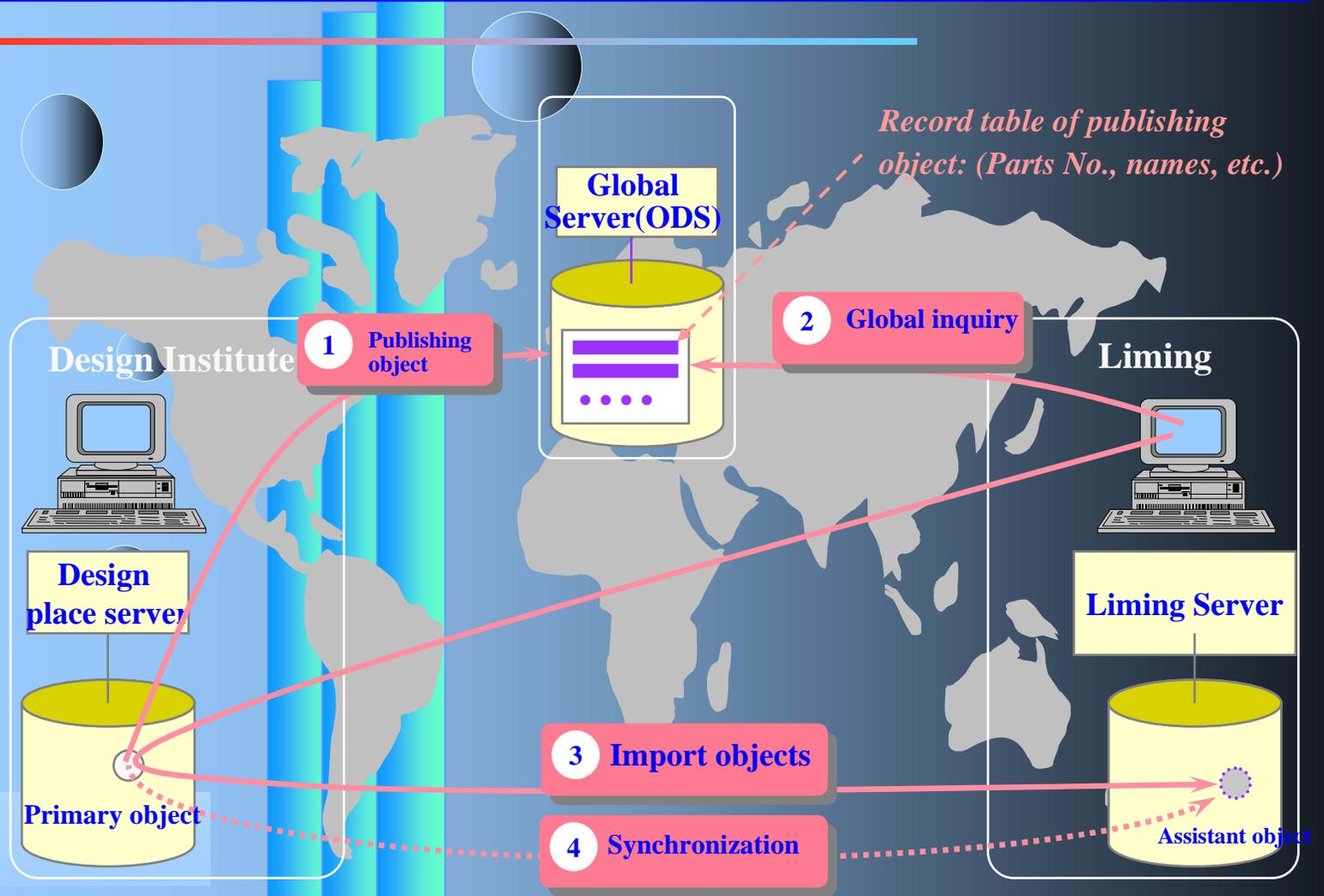
Liming PLM System Architecture





Liming PLM System Hardware Architecture

PLM Phase 1: Built multi-site design/manufacturing collaboration platform



PLM Phase 1: Part process planning and management

The screenshot displays a comprehensive PLM software interface for process planning and management. The main window is titled '黎明航空集团工艺文件浏览界面' (Liming Aero-Engine Group Process Document Browser Interface).

Key Process Directory Table:

序号	零件号	零件名称	工序号	工序ID	工序名称	单
1	000199	测试零件-xyz	3	000219	通用加工工序	123ABC123ABC
2	000887	测试零件-xyz2	3	000895	op1	输出功能测试! 输出功能测试! 输出功能测试! 输出功能测试! 输出功能测试! 输出功能测试! 输出功能测试! 输出功能测试!
			20	000261	电加工工序	123
			3	000895	op1	输出功能测试! 输出功能测试! 输出功能测试! 输出功能测试! 输出功能测试! 输出功能测试! 输出功能测试! 输出功能测试!
			15	000898	op3	输出功能测试! 输出功能测试! 输出功能测试! 输出功能测试! 输出功能测试! 输出功能测试! 输出功能测试! 输出功能测试!

Resource Management Tree:

- ICM 分类根节点
 - Resource Management
 - 切削参数数据库
 - Fixture
 - 2 辅助工具 [0]
 - 3 夹具 [10]
 - 30 钻床和镗床夹具 [2]
 - 303 镗床夹具 [2]
 - 31 车床、六角车床、自动车床夹具 [7]
 - 32 镗床夹具 [1]
 - 33 磨床夹具 [0]
 - 34 飞机装备工艺 [0]
 - 35 铰工装配和焊接夹具 [0]
 - 36 检验夹具及试验设备 [0]
 - 37 其它夹具和夹具的气动、液动装置 [0]
 - 38 地面设备 [0]
 - 39 标准工艺设备 [0]
 - 0 量具 [109]
 - 设备
 - New Resources [0]
 - Robots [0]
 - 工艺模板
 - 1 切削器具
 - Weld Guns

3D Model View: The bottom right window shows a 3D model of a part (对象 ID: LM_GZ_JJ_000001) with fixtures. The model is labeled '303 镗床夹具' and 'LM_GZ_JJ_000001/A:303-303-0362'.

- After the prototype system being tested, specialists and users gave some modifying and optimizing requirements after they did assessment to it.
- Through many assessments and testing, we were gradually optimizing the system.
- Speed up the system hardware construction and generalize it within certain area.



PLM Phase 2: System Optimization and Implementation



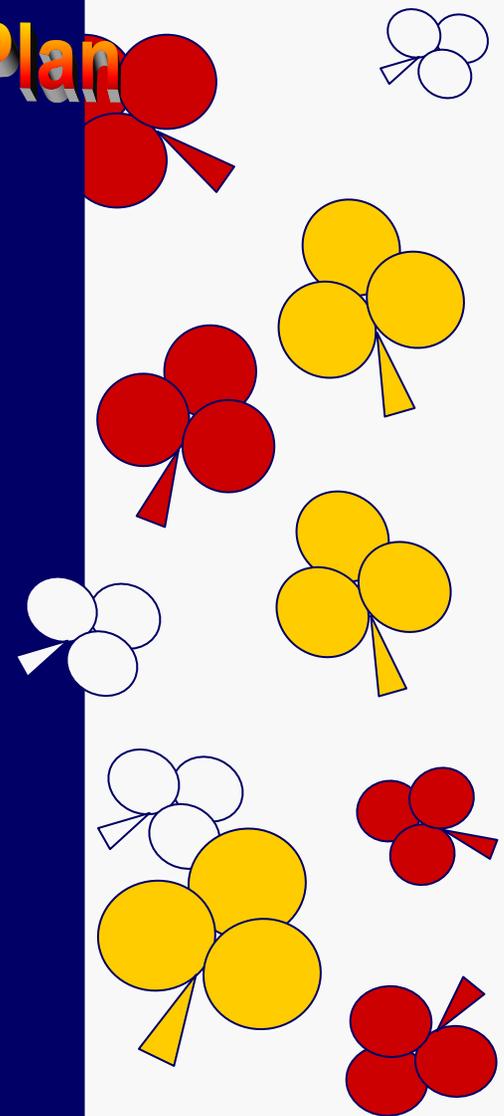
- **9% decrease of product design data receiving time**
- **51% decrease of tooling applying time**
- **48% decrease of design modification time**
- **50% decrease of process establishment (including examination and approval) time**
- **.....**

PLM Benefits



Next-step Plan

- Currently it is implementing Jigs&Fixtures PDM and generalizing process planning system
- It is about to do PLM & MES system Integration in the next step
- Implementation of assembly process planning and management in PLM system
- Gradually implement and generalize it on each line
- PLM & ERP system integration
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Thank You

