

New Product Commercialization Improvement

Topic : Product Lifecycle Management-
Implementing Successful Transformational Changes

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*I am a PLM simple license
model advocate*

Carestream

Topic Outline- The PLM Journey

- Quick Snapshot of Carestream
- Globalization –The forcing function
- Insights for setting up a successful transformation
- Carestream Case Study



Take - A – Ways

- This presentation (I will not cover everything in it!)
- When to consider a PLM system implementation
- Things to think about when you are starting a PLM journey
- Some benchmark data for estimation purposes
- An opportunity to add a PLM friend to your network

Carestream Health – Who We Are

An independent company with a proven track record and \$2.5 billion in revenue

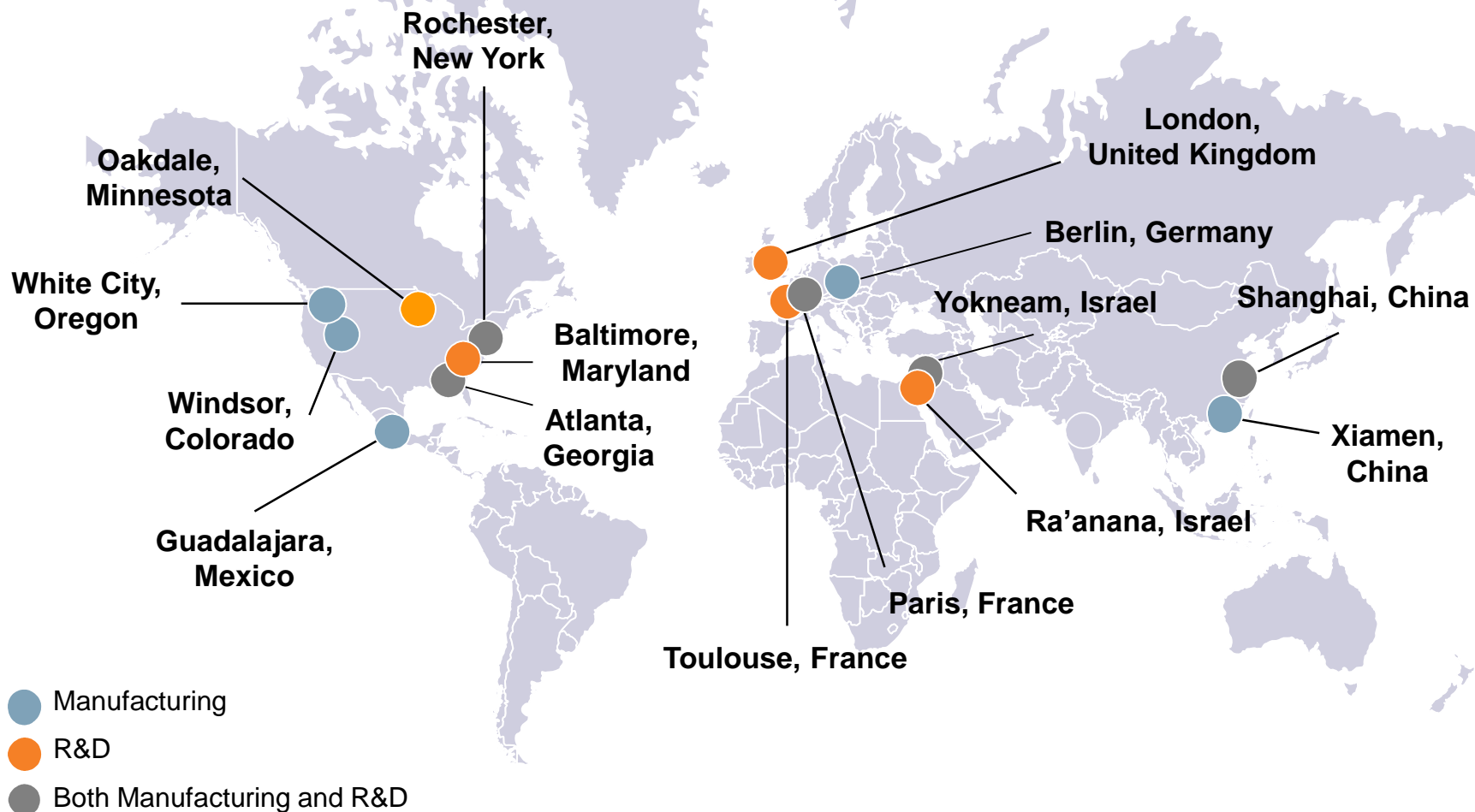
A world leader in:

- Medical imaging ... digital imaging solutions and traditional film
- Healthcare information solutions
- Dental ...media, digital imaging solutions and practice management software
- Non-destructive testing.. media, imaging solutions



Global R&D and Manufacturing

A **global company** with Manufacturing and R&D locations around the world



The Business Challenges

Globalization was required to meet our business needs

- Desired access to talent
- Needed a balanced cost structure
- Desired a presence in emerging markets
- Needed to leverage design talent globally



Mid Sized Company with a broad product Portfolio

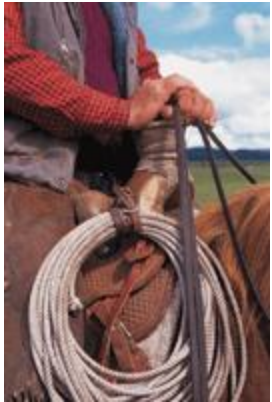
- Large up front investments in PLM were not practical
- Broad range of products made “big bang” PLM implementation impossible

Result > decentralized teams, complex environment, more demands on knowledge workers

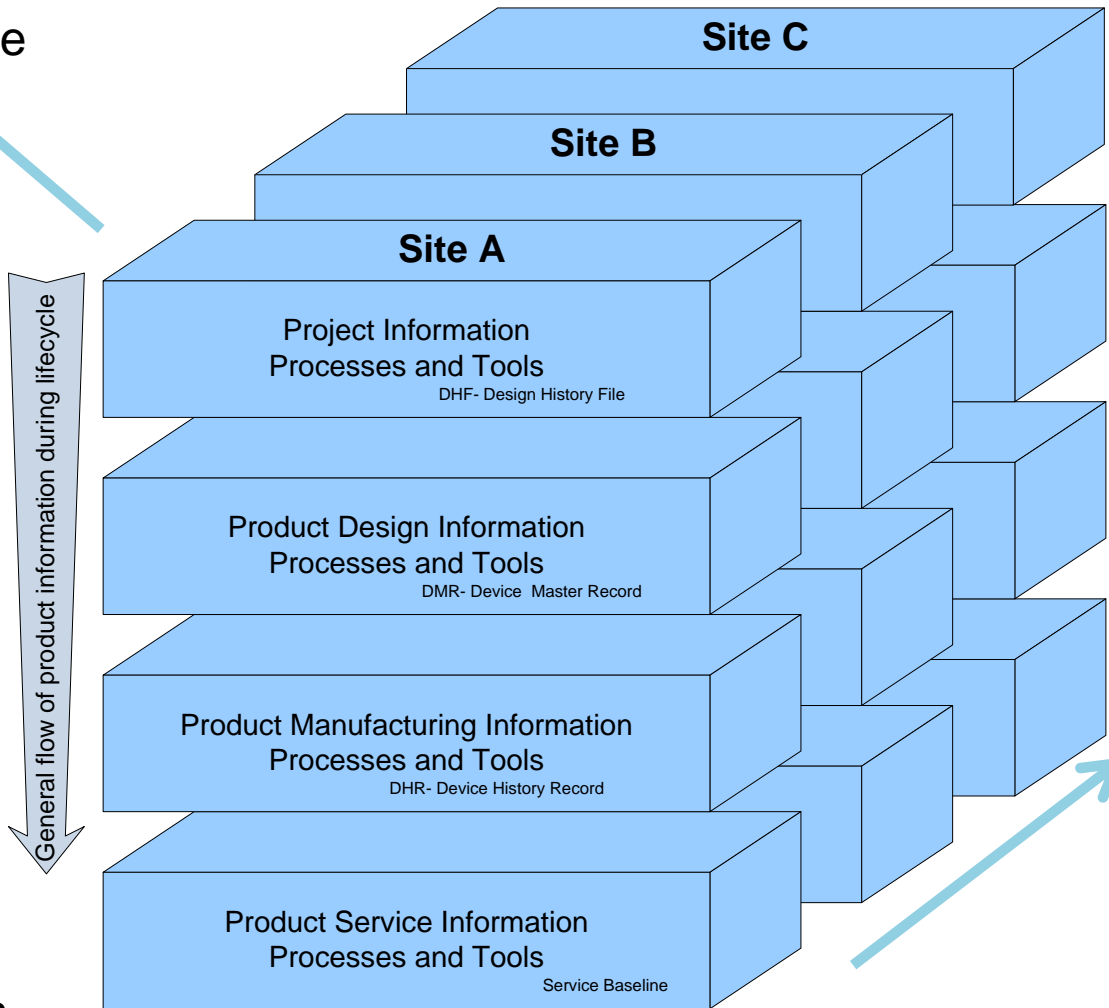
- Collaboration was more time consuming
- Complexity in the organization increased
- Knowledge-workers’ time was drained impacting innovation cycles
- Productivity of new product development remained flat

Evolution of Non- Standard Commercialization Process

Innovative people innovate many local processes to assemble and baseline information



Local resources focus on local product families



Gaps between blocks represent manual sharing of information

Key Point- Complexity increases as work begins to flow between sites.

A PLM System is the foundation from which to build from...



Build it based on the right principles.....

Take a Holistic Approach- Its not just a simple IT solution

1990s PDM was technology driven from CAD, supporting local user needs

Bright People that must

- Lead change management
- Lead Process Re-Engineering
- Communicate /train
- Excel at project management
- Have architectural orientation
- Embrace a continuous improvement mindset

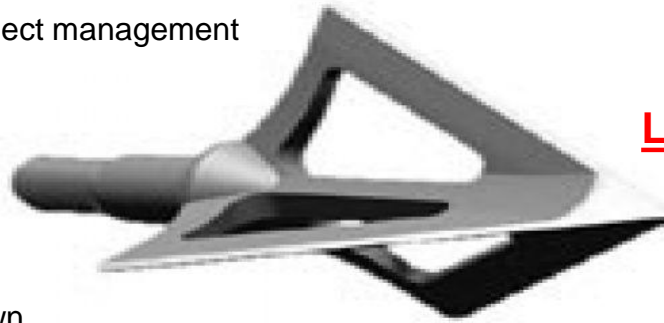
Today PLM must improve operational performance across an enterprise



Process **Re- Engineering**

- Architect top down
- Document vs Adhoc
- Balanced-Structure vs flexibility
- Standardized/Optimized
- Integrated end to end
- Real time
- Provide metrics
- Continuously Improved

People were co-located and focused on technology



Technology, Partners that

- Enable your Business Model
- Have a partner not sales attitude
- Globally scale
- Provide open access to master data
- Deliver a flexible development platform
- Allow collaborative access throughout the chain

Leadership /Governance

- Focuses the organization
- Develop, inspires a vision
- Communicates strategy
- Builds relationships
- Lead multi-cultural change.

PLM must scale to service a global and distributed environment focused on customers

Clear Leadership/ Governance = Decision Flow



CTO Office/
Business Leader

Alignment of Business Functions (R&D,MFG,etc)

- Ensures proper re-engineering of process
- Ensures focus on the business
- Drives focused time to process development and SME involvement
- Provides a home for continuous improvement



CIO Office
IT Leader

Alignment of IT

- Ensures solution scalability
- Enable architectural alignment
- Improves on-going services
- Ensures leverage strengths of both IT and business

Senior Director
Level Leadership

- Ensures leverage strengths of both IT and business

Vertical Business Director Level

- Major stakeholders
- Home for subject matter experts
- Key middle managers
- Finance the work and reap the benefits

What are the key decisions?
Who has the decision rights?



“Is everyone on the train?”

Give Yourself Time -Partner Selection Model

Business Objectives

ID Capabilities
Missing

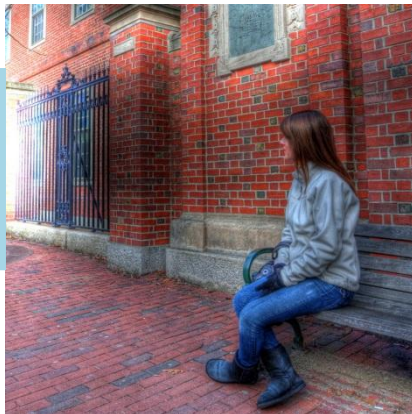
Write Key Use Cases

ROI of New
Capabilities

Develop Business
Requirements

Strategies to Obtain
Capabilities

Final Selection of
Partners



“Your selecting
a partner as
much as a
tool”

Look for a strategic long term relationship (5 years minimum)

- Willingness to share in risk
- Flexible license/implementation terms in line with business ROI
- Partnership mentality during entire implementation lifecycle
- Structured to keep on-going costs in line with benefits



Request for Information

Request for Quote

PLM Partner Dating Time, Effort ~ 9 months, 1½ FTEs

“Partner” Business Models can Limit PLM Value

Models Proposed to Carestream

- Named User
- Module Based
- Creator/Consumer
- Geographic Location Based
- Enterprise – Based on Revenue
- Subscription – Based on Total Users 😊
- Open Source – Free without support
- **No** Concurrent User Models Offered

Many Business Models;

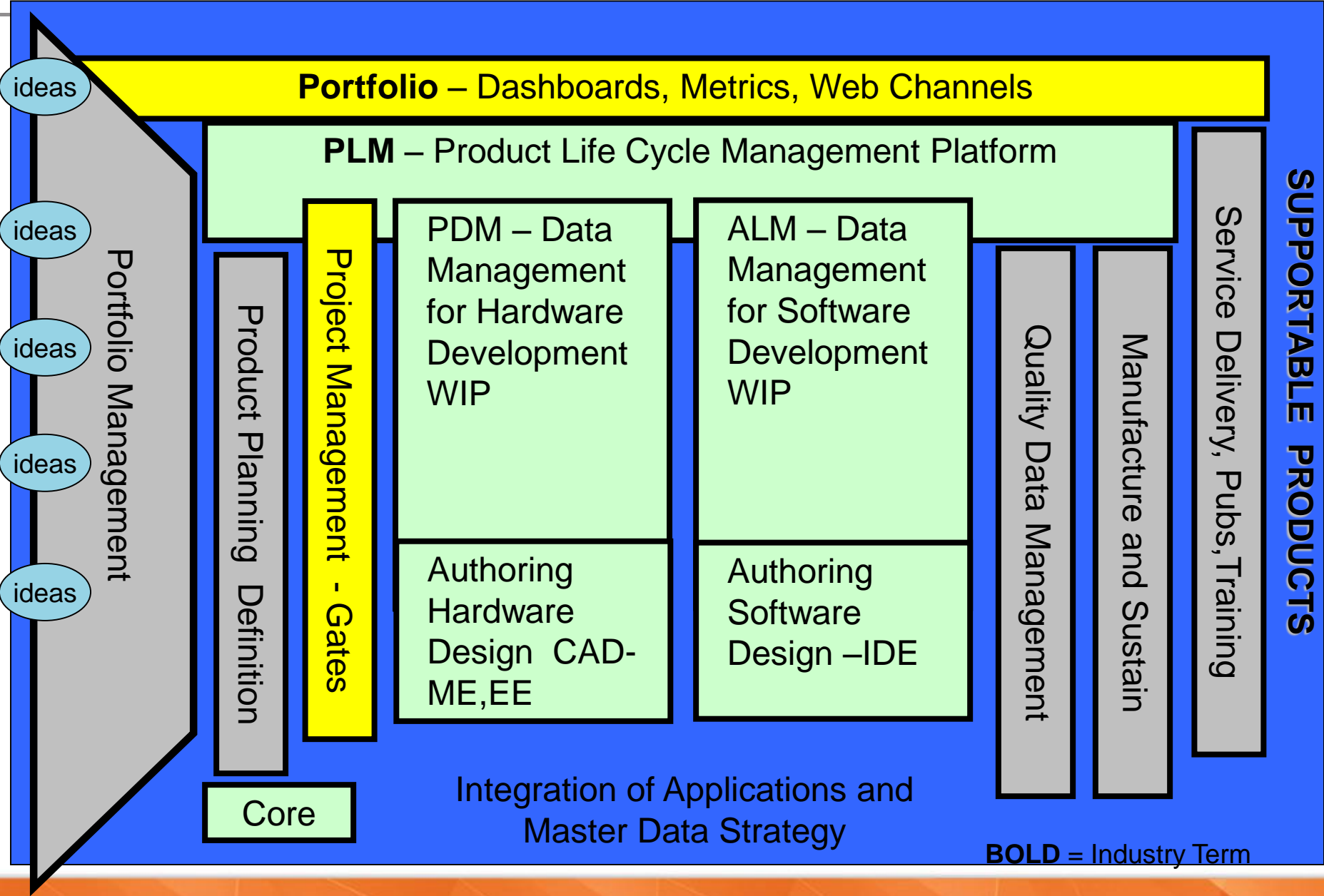
- Discouraged access to data
- Were costly to pilot and test
- Front loaded cost and risk
- Were complex and difficult to predict total cost
- Limited platform scalability
- Placed crazy price tags on document management and simple workflow management
- Tanked the ROI....
- Cause crazy behaviors and waste to work around license models
- May tear the space time continuum and stream cash out of the company

Business Models



Right People
Right Information
Right System
Right Time

Describe your Foundation -High Level Process Architecture



Appreciate Depth- Each block has “Architectural Layers”

Need to drive understanding deep & across the functional groups to mature the enterprise understanding

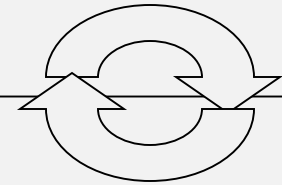
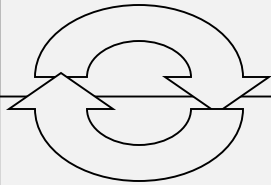
Business Process Maturity

IT Maturity

Increasing Architectural Maturity

Presentation/Data Analysis Layer – Web Channels/Portals for internal and external Consumption, Dashboards, Business Intelligence Analysis, Supplier Portals

Business Process Layer – Optimized Workflow and Roles and Responsibilities
(Engineering Change Control, Production Release Process, Supplier Quote Process, Defect Management Process)



Application Layer –

Aras Innovator, Teamcenter, Doors, Rally, Subversion

Data Layer –

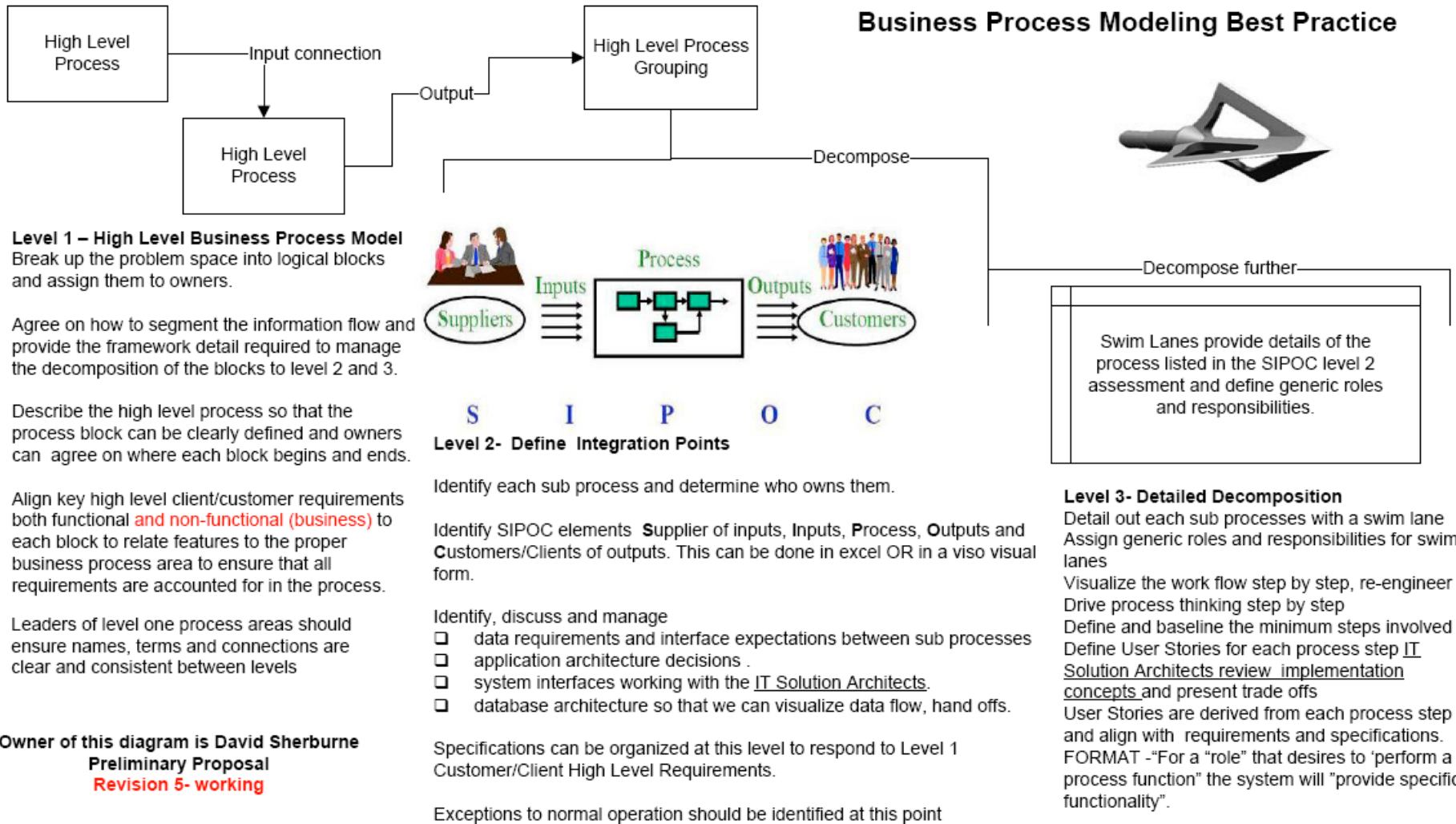
Master Data (System of Record clean-up) , Attributes, Field Mapping to Metrics, Meta Data

IT Infrastructure Layer – Global Networks, Servers, Databases, Storage, Back-Up, Archive

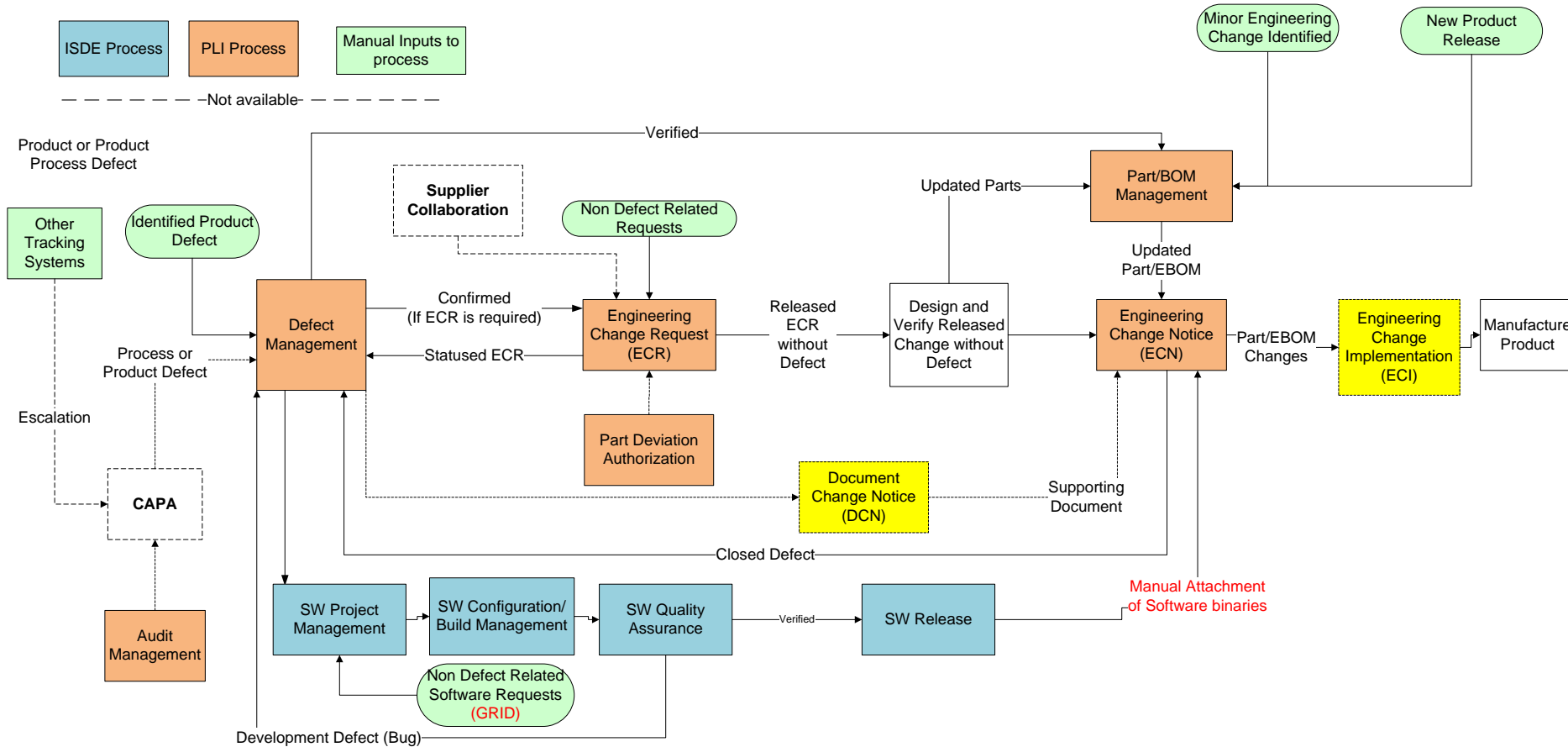


Increasing Functional Groups Maturity + Architectural Awareness = Success

Business Process Layer – A Systematic Approach to Process Modeling

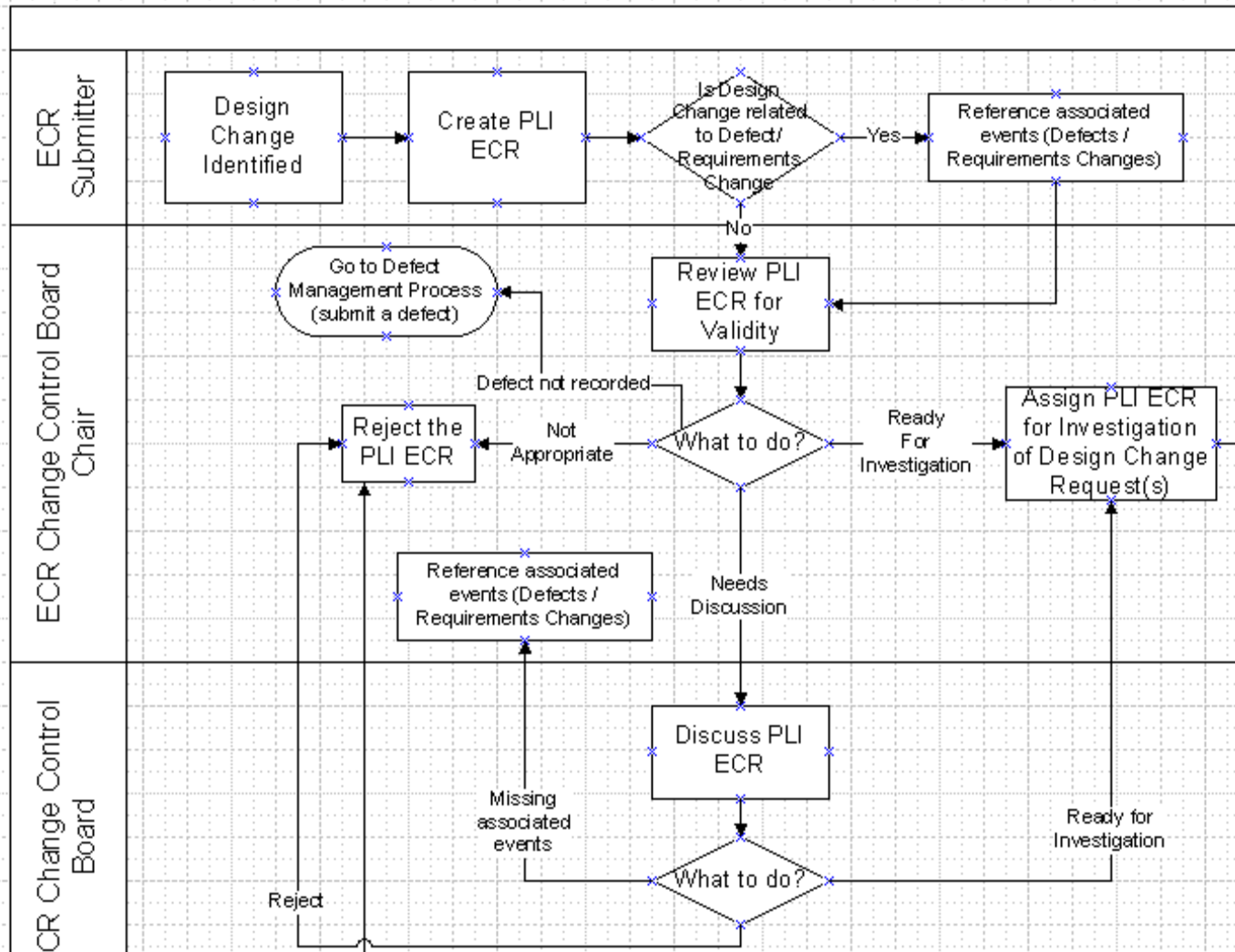


HW and SW Platform Level 1 Process Diagram



Business Process Architecture → Level 3- Swim Lanes

PLI Engineering Change Request (ECR) Process



Process diagrams ;

Swim lanes must be organization independent

drive deep “use-case” discussions linked to steps

provide context for user stories– for the “Role”, that desires to “do something in a process” the PLM system will “provide functionality”

concentrates people on future state and consistency vs. current state & holding on to it

can be analyzed to reduce waste

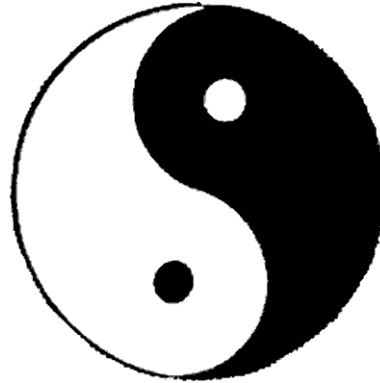
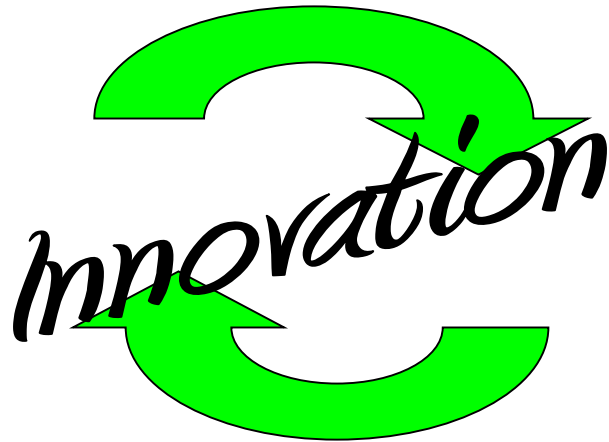
help focus training development on process and not button clicks

help testing for validation on key workflows and performance

Understand Process Balance & Increase Your Productivity

Managed for fast
idea cycles and
feedback

Managed for
repeatability, safety
and consistency



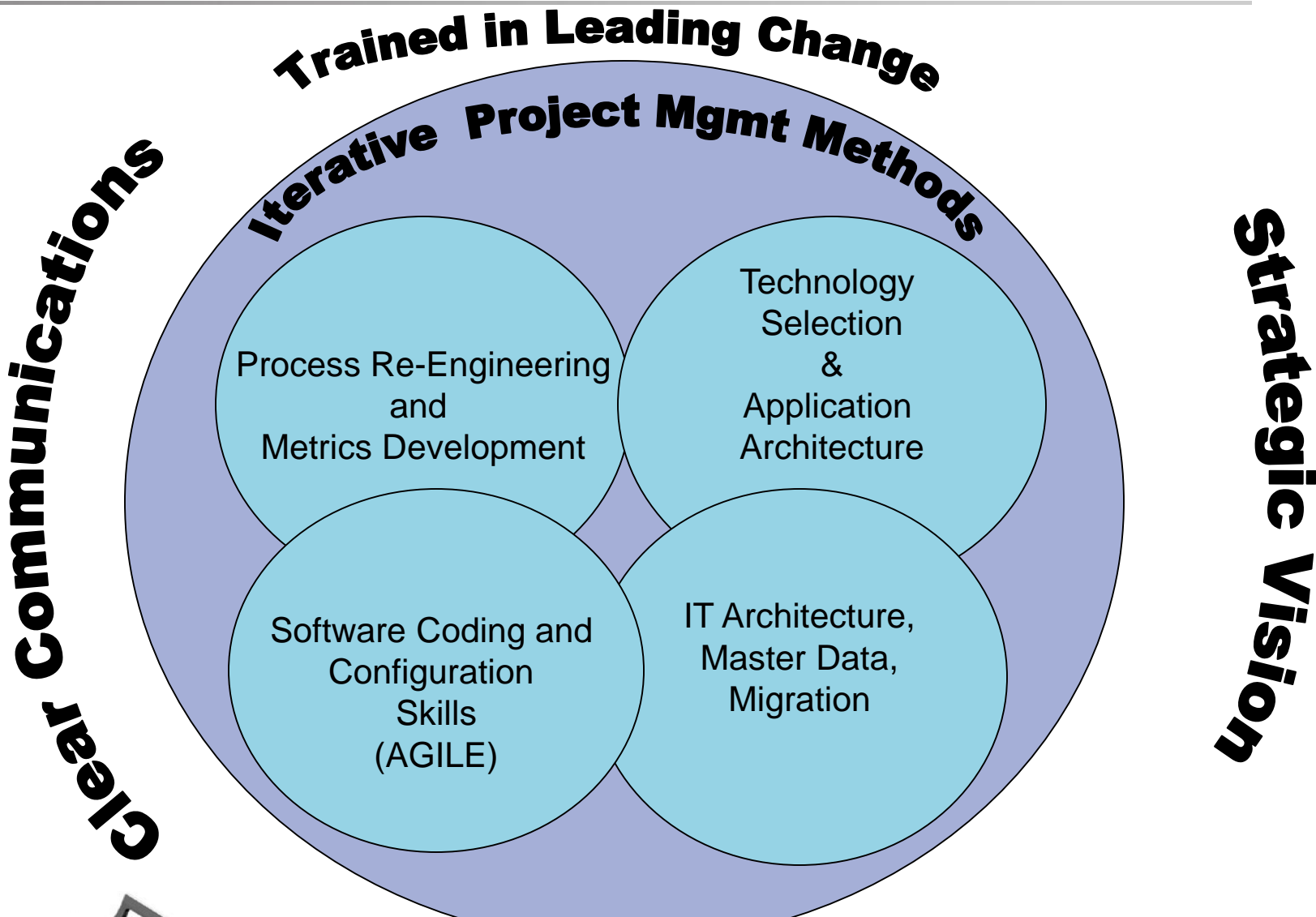
Structure

Research and
Development

Manufacturing and
Regulatory

Key Point: Carefully architect business processes with balanced SME input (MFG,R&D,Quality, Regulatory) with careful consideration as to what points in the lifecycle require increased structure and sign-off and which points require speed and flexibility.

Properly Skilled Teams = Successful PLM Results



Build a complete team and set them up for success

Carestream Case Study

- Open Source and Aras Innovator Platform
- Scope and Scale
- Benchmark with Industry Expert
- Findings Summary

“A”ras Innovator = “A”ttitude & “A”dvantages

- Cost model allowed global scale that’s not tied to modules, geographic locations, or named users - key to ubiquitous internal and external access and enabling proper ROI
- Flexible architecture supports rapid development ~50% easier than other platforms to configure
- Upgrades... Guaranteed... when you subscribe
- Open access to ALL data elements, simple migrations, master data access
- Solid Partnership – anti-virus performance, e-signature Help, visualization strategy, search functionality
- Some risk (early adopter) but balanced with higher value
- Community solution concept, which we are beginning to leverage
- Single company provides the PLM Core
- it’s not traditional “Open Source”

Aras Innovator
Rocks...

Baseline Comparison with industry expert



Key Points

- Solutions for medical device companies take longer than average to implement, as more effort is required to meet regulatory requirements for verification and validation and align all functions
- Most PLM solutions typically require configuration/customization, as the OOB solutions do not fully meet the business needs
- Aras architecture is impressive; flexible and modular, effective and scalable, but may take more effort to implement than other solutions but once implemented on going costs are optimized.

User = Core engineering process worker that contributes to Part Creations, BOM management, Engineering Change

	Industry Expert (Typical PLM)	Carestream PLI- ARAS
Schedule <i>(Implement & Deploy)</i>	18-24 months	19 months deliver features 24 months stabilize and deploy most modules
Initial Implementation Cost (Core engineering change users- total number of engineers is measured in hundreds)	\$4000/user	\$3300/user – Initial release Including optimization cycle - \$4,500/user
License Maintenance/Subscription Cost per user	\$360/user	\$300 > \$165
Functionality for a Phase 1	Engineering Change Configuration/Revision Control BOM Management Supplier Collaboration Product/Portfolio Management	Closed-Loop Engineering Change Configuration/Revision Control BOM Management Deviation Authorization Product Defect Management Audit Management SAP Integration for Engineering Change Implementation
# of Sites for Deployment	3	4 Development Sites
Internal Resources to coordinate (in addition to implementation)	5.5 FTE	5.5 FTE
Subject Matter Involvement	60	75

***When suppliers access the system >\$75/user**

Some Take Aways

Globalization without process standardization and optimization will lead to reduced innovation time, complexity and flat or declines in productivity

Local focus has to give way to a global PLM vision to be successful

IT cost center mentality delivers little enterprise architecture or process efficiency. Need a strategic CIO and IT can be a strategic partner!

PLM Implementations require a holistic approach that includes;



- Leadership
- Strong senior leadership backing
- Well crafted governance=decision flow, solid execution
- A great partner selection and a good license model
- A team with strong skills in change management and leadership
- Architectural awareness and skill
- Progressive and flexible technology

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