Side A

PTC Value Roadmap Version 6.1

Identifying and Realizing Value in Product Development

Discrete Manufacturing

Business Initiatives

		GOVERNANCE				QUALITY/INNOVATION				COLLABORATION									EFFICIENCY (LEAN)						IT CONSOLIDA					
	Value Opportunities	Adopt consistent product portfolio managem.	Standardize Product da	Improve management of product	Reduce risk of	Design for Environmental Compliance Steen Product development	Improve :	Improve aesthetic appeal/dex:	Adopt systems engineering methods Cabin for a control of products	Design for reliability	Design for serviceabillity and i	Improve quality of product A	Incorporate voice of	Use social computing tools in product development)	concurrent engineering collaboration/ MCAD, and soft, cipline c.,	Improve collaboration with distributed designal	I'prove supply chain collaboration Improve manufact.	Standardize working.	Institutionalize systematic knowles	Increase design reuse	Design for mo.	Enhance ability to configure.	Reduce the time to generate custome.	"Tiplement model-based definition methods	Reduce tooling co. 1	Design for manufacturet	Reduce number of late engine	Reduce production scrap and re	Consolidate locations of product	Optimize multi-CAD environment Consolidate/eliminate
	Grow Market Share with Customer-Focused Products Improve market share within existing markets through the delivery of customer- demanded solution set delivered through an expanded portfolio of products, an enhanced feature set within existing product suite, and/or through a higher frequency of revised product iterations.	•		•			•	•	•		•	•	•	•					•	• •	•	•								
	Protect Product Position Secure market position and revenue through techniques designed to maximize competitive barriers to entry, or to increase customer switching costs.	•			•	•		•	•	•	•	•																		
Groveth	Improve Ability to Fulfill Demand Enhance revenue capture opportunities by achieving a higher level of customer responsiveness via greater in-house design and manufacturing flexibility, or through more nimble supply chain operations.	•		•		•								•	•	• •	•	•	•	• •	•	•	• •			•	•	•	•	•
Growth	Design for Ongoing Revenue Streams Expand revenue streams with follow-on selling opportunities such as services, consumables, and solutions upgrades.	•								•	•		•								•					•				
JE)	Develop/Define New Markets Capture incremental revenue opportunities by establishing novel markets with the development of innovative products and through early market entry.	•			•	•	•	•					•	• •	•	•			•	• •				•		•				
	Design to Realize a Price Premium Secure high-margin contributions to profit by delivering products with highly- valued combinations of performance, features, and aesthetics, and by fostering strong brand loyalty. Deliver innovative offerings which provide value-based cost paradigms to lower customers' total cost of product ownership.						•	•	•	•	•	•	•	•																
Profitability	Lower Product Cost Achieve lower direct product cost through reduction in cost contributors such as manufacturing expense, raw material cost, and purchased materials cost.			•		•			•					•	•	•	•	•		• •	•		•		•	•		•		
	Lower Lifecycle Cost Achieve lower indirect lifecycle cost through improvement of team productivity across functional areas including design/engineering, operations/manufacturing, sales/marketing, and service.	•	•	•	•	•			•	•	•	•		•	•	•	•	•	•	•	•	•	•	•		•	•		•	•
	Improve Asset Utilization Maintain or reduce capital expenditures through more productive use of current property, plant, and equipment assets.					•											•			•			•		•	•			•	•
▼ Organization	Processes Part 1: Business Processes																													
	Program Management Project Management	•	•	•					• •				•			• •											•			
Management	Regulatory Compliance Quality and Reliability Management				•	•			• •	•	•							•	•	• •										
	Change and Configuration Management Proposal Response		•	•							•	•		•	•						•	•					•			
Sales and Marketing	Requirements Capture and Management												•	•						•						•	•		•	•
	Concept Development System Design Detailed Design			•		•	•	•		•	•		•	•	•			•	•	•	•	•	•	•		•	•	•		
Engineering	Verification and Validation Variant Design and Generation								•	•	•			•		•			•	•	•	•	•	•		•	•	•	•	
	Design Outsourcing Early Sourcing			•		•				•						•														
Sourcing							(•						•													•	•
Sourcing	Component and Supplier Management Manufacturing Process Management																													
Manufacturing	Component and Supplier Management Manufacturing Process Management Tooling Design and Manufacture Manufacturing Outsourcing																•	•					•	•	•	•		•	•	•
	Manufacturing Process Management Tooling Design and Manufacture Manufacturing Outsourcing Product Support Analysis and Planning Technical Information Creation and Delivery				•							•						•	•	• •		•	•		•	•	•	•		
Manufacturing	Manufacturing Process Management Tooling Design and Manufacture Manufacturing Outsourcing Product Support Analysis and Planning Technical Information Creation and Delivery Performance Analysis and Feedback	'Yement' 'Yacking	Ocesses No.	duct ces ment	ηνce	oliance, opment 'poliers	Зветен	Droducts Thethou	Sigma, APQP,	doilure)	logistics • • •	entarion	Process	Johnent Doment Pation/ Peering	lECAD, design)	oration of the state of the sta	Soration	• • • • • • • • • • • • • • • • • • •	dreuse	opment (Valuarity	Products	Tooles nethods	"nd time	lent cost	· hrability	nges	• • • • • • • • • • • • • • • • • • •	obuct ttion Ment	\$/001
Manufacturing	Manufacturing Process Management Tooling Design and Manufacture Manufacturing Outsourcing Product Support Analysis and Planning Technical Information Creation and Delivery Performance Analysis and Feedback	"olio management ram/oroject tracking	stelopment processes logement of prod	duct ces ment	ηνce	oduct development number of suppliers	ure and management	engineering method	\$09000, Six Sigma, CAPA, APQPI	or acceptable failure)	oduct documentes.	• nenhation	Product devel	Gevelopment Pering collaboration/	collaboration (ECAD, and software design) ith distributed a	revelopmenty V chain collaboration	octuring collaboration	tize working methods showledgere	nortease design re	Product development	Design for modularity	Tate customer and	sd definition methods	Pe expense and time	For m.	engineering (nges	locations of	obuct ttion Ment	\$/001
Manufacturing	Manufacturing Process Management Tooling Design and Manufacture Manufacturing Outsourcing Product Support Analysis and Planning Technical Information Creation and Delivery Performance Analysis and Feedback	nt visual program/project tracking	Imbrove management of processes	duct ces ment	ηνce	Rationalize number of suppliers	shelic appeal.	dopt systems engineering metho.	or quality 11509000, Six Sigma, CAPA, APQP)	sign for serviceability.	a quality of product documenta.	ce of customer int	uting tools in Product devel	nternal engineering collaboration/ sseliscie.	MCAD, and software design) laboration with distributed design)	inprove supply chain collaboration	St.	ize systematic knowledge c	Increase design in	Front load product development	Design for modularity **Tonce ability to	Filme to generate customer and	ant modelbased definition methods	ooling and foot	Design for m.	Imber of late engineering	nges	Consolidate locations of	obuct ttion Ment	\$/001



400381.P01.CS4.indd 1

1/19/10 12:17 PM

Processes Part 2: Process Landscape

PRODUCT DEVELOPMENT LIFECYCLI ▶ Production ▶ Support ▶ Plan ▶ Validate ▼ Organization ▶ Concept Design **Portfolio Management Program Management** Project Management Management Regulatory Compliance **Quality and Reliability Management Change and Configuration Management Proposal Response** Sales and Marketing **Requirements Capture and Management Concept Development System Design Detailed Design** Engineering **Verification and Validation Variant Design and Generation Design Outsourcing Early Sourcing** Sourcing **Component and Supplier Management Manufacturing Process Management** Tooling Design and Manufacture Manufacturing Manufacturing Outsourcing **Product Support Analysis and Planning** Service **Technical Information Creation and Delivery Performance Analysis and Feedback**

Best Practices

Industry-leading Processes and Capabilities

Management

Portfolio Management

Drive innovation, optimize collective value, manage risk, and make trade-off decisions across a set of

Program process standardization Standardize on a phase-gate new product development process using project templates. Impart consistent project success criteria and regular governance. Improve the ability to make Go/No Go/Hold decisions and resource trade-offs. Portfolio dashboards Provide portfolio managers with visibility to portfolio pipelines and

Program Management

Govern and coordinate development projects to mitigate risk, maintain focus on objectives, and facilitate consistent, high-quality execution.

cross-program performance to ensure optimal, strategic allocation of resources.

Program process standardization Standardize product development and technology development processes using project templates. Publish, automate, and enforce program management standards. Drive execution to common schedules and milestones.

Program gate deliverable control Identify critical gate deliverables for program milestones. Manage and track completion through automated workflows.

Integrated program data management Collect, organize, and manage program data across multiple projects. Simplify stakeholder access to secure, relevant information; improve

Program dashboards Improve stakeholder's visibility into status, progress, and overall performance through live dashboards and reports.

Project Management

Plan, execute, monitor, and control complex development efforts and dependencies spread across globally distributed project, product, and technology teams.

Project planning and tracking Plan and manage project activities, milestones, deliverables, risks, and resources. Continuously update plans to identify critical path and interdependencies. Automate project task delivery and tracking.

Distributed project collaboration Provide secure and managed collaborative workspace for work in progress, such that project data is easily reconciled with system of record.

Project dashboards Improve project manager's visibility into status and project progress through live dashboards and reports.

Regulatory Compliance

Design, manufacture, dispose of, and recycle products in compliance with global directives. Compliance standards definition and tracking Capture and manage multiple, evolving

regulations. Develop, codify, and maintain a proactive corporate compliance standard. Systematic environmental data acquisition and validation Acquire environmental data directly from suppliers and from other sources. Target a level of disclosure that effectively manages risks and avoids excessive data-acquisition costs. Systematically validate, maintain,

Product environmental compliance dashboards Anticipate future environmental mandates in order to identify sources of risk and potential failure points early and throughout the product lifecycle. Provide dynamic management dashboards to support part, product, and program risk assessments supporting timely corrective action.

Automated compliance documentation and reporting Automatically generate accurate reports that demonstrate product environmental compliance, supporting due diligence for regulatory authorities, and meeting customer requirements. Provide appropriate levels of disclosure for the intended audiences, and systematically build a traceable audit trail.

Compliance data-sharing to enterprise Share compliance statuses and other environmental performance metrics to key stakeholders throughout the enterprise. Build environmental performance management into standard business processes.

Quality and Reliability Management

Conduct systematic planning, prediction, and simulation to ensure designs meet reliability and

lifecycle cost targets. Systematic quality planning and risk assessment Front load failure mode and effect analysis, reusing past experience to identify critical components and plan mitigation. Distribute failure mode definition and analysis across multiple engineers for concurrent development.

Early reliability prediction and simulation Predict component, assembly, and system failure and availability rates early and iteratively, based on standard prediction models, as well as test

Maintainability and lifecycle cost prediction Estimate maintainability costs early and

iteratively, based on predicted availability, repair logistics, and sparing strategies. **Reliability dashboards and tradeoffs*** Allow visibility for program stakeholders into the design's evolving reliability and maintainability performance against targets. Perform tradeoff

analysis against other performance characteristics; assess design alternates. Closed-loop field performance feedback Establish a field product performance feedback loop into engineering. Expose common failure modes. Drive mitigation strategies and systematic improvement in future designs.

Change and Configuration Management

Evolve products in an orderly fashion, from concept through retirement.

Standardized, automated change process Implement a closed-loop standard change process. Adapt routing workflows according to change severity. Automatically capture change history, electronic signatures, and audit trails. Notify affected parties of change effectivity.

Integrated, cross-discipline change management Implement a change process across the complete product definition, and through the common product information repository. Provide stakeholders with access to necessary product data during evaluation, review, approval, and implementation of changes. Capture and associate revision and iteration history of affected digital product information with each change.

Partner change integration Integrate partners into engineering change review, approval, and implementation activities. Increase visibility by ensuring problem and impact are fully understood. Improve quality and efficiency of changes.

Integrated product issue management Implement a flexible online issue/change request process. Allow any affected party to indicate and substantiate the need to rectify a problem or improve a design/process. Ensure problems are understood and prioritized effectively.

Change dashboards Provide an online change dashboard to expose trends regarding volume and severity of changes, and change processing cycle time.

Product configuration lifecycle management Manage evolving product configurations over entire lifecycle. Accommodate rule-based configurability (e.g., per revision or maturity), substitute parts, serialized parts, effectivity (e.g., time- or lot-based), and organization-specific BOMs (e.g., as-maintained, as-planned). Provide traceability between upstream design and downstream configurations to ensure change visibility and appropriate change propagation.

Product configuration-sharing to enterprise Automate sharing and synchronization of product configuration information across enterprise systems. Ensure new engineering information is effectively incorporated into other business processes.

Unified hardware-software configuration management Ensure release of the correct version of software with the overall product configuration, eliminating quality problems, late-stage changes, and delays.

Sales and Marketing

Proposal Response

Respond to a customer's request for proposal, pricing, or information by collaboratively creating a timely, accurate, and competitive formal response.

Proposal planning and tracking Plan and manage proposal activities, milestones, deliverables, risks, and resources. Continuously update plan to identify critical path and interdependencies. Automate project task delivery and tracking.

Distributed proposal collaboration Provide a secure and managed collaborative workspace for evolving proposal project data. Ensure the entire proposal team is working with the latest information. Incorporate customer and supply chain into proposal process. Standardize and automate proposal review processes. Reduce time spent searching for

Proposal library management Establish a library of proposal information to facilitate reuse and provide audit history. Include related reference documents, product data, and supply chain feedback generated during proposal response projects.

Requirements Capture and Management

Translate the voices of customers into prioritized requirements, targets, and constraints while establishing bidirectional traceability between requirements, analysis documentation, product designs, BOMs, and verification data.

Requirements lifecycle management and control Manage and control individual requirement definitions and specification approval throughout the lifecycle.

Requirements flowdown Establish traceability between customer needs, market requirements, and their associated technical specifications/designs. Ensure that all requirements are allocated to the product design.

Requirements verification Establish test requirements describing verification methods at each level of decomposition in the system design. Provide systematic means to ensure requirements have been met by the design.

Engineering

Concept Development

Define alternate product concepts, investigate feasibility, and select the best candidates

Distributed collaboration Enable collaboration on work-in-process design data. Share product information throughout enterprise in order to facilitate front-end ideation, concept development, and design refinement.

Associative conceptual engineering* Relate and reuse 2D engineering concepts in 3D designs in order to shorten design cycles.

company and industry-standard engineering calculations across programs. Flexible reverse engineering Automate the transfer of physical prototype surfaces into CAD

Efficient and effective customer review Provide life-like product design review experience using photorealistic digital prototypes for early market feedback.

performance envelopes and tradeoff curves.

without time-consuming rework.

Develop the functional and physical architecture, model of the product, associated specifications, and derived requirements

Requirements flowdown Establish traceability between customer needs, market requirements, and their associated technical specifications/designs. Ensure that all requirements are allocated to the product design.

have been met by the design.

Functional/logical structure management Formalize the definition and management of

Modular architecture definition Design a modular product architecture to enable increased

levels of design reuse, and increase the ability to tailor products for specific markets or customers. Interface definition and management Identify, document, and publish key module interfaces to establish design boundaries and enable concurrent product development. Manage

Generic product platform design Streamline development of a common platform by

Detailed Design

Define the product design completely, such that it meets requirements and is sufficiently documented for manufacturing.

Integrated, cross-discipline BOM Manage and relate cross-discipline product information (e.g., mechanical, electrical, software, product documentation) in a single product structure. Establish a single, synchronized source of product data.

development without concurrency gridlock. Reuse and associate early product structures with

to ensure design accuracy while reducing or eliminating the need for expensive physical prototypes. Use digital part models in downstream manufacturing activities.

Associative drawings Automate the generation of 2D production drawings from the 3D master model design data. Eliminate errors, and enable concurrent design and drawing development.

eliminate or reduce the reliance on 2D drawings. **ECAD-MCAD collaboration** Streamline exchange of incremental design changes between electrical and mechanical domains in PCB design to improve cross-discipline communication and

Work practice standardization Establish best practices for design standards and data reuse. Automate validation of digital product designs for compliance with design standards and lower

costs by early detection of potentially expensive manufacturing problems **Efficient design review** Provide easy and timely access to latest design data to facilitate feedback, and manage formal design review preparation, execution, and follow up.

Large MCAD assembly management Optimize system performance and workability of

Standardized engineering calculations Capture, standardize, and automate the reuse of

Design studies and tradeoff analyses Perform design sensitivity studies to establish

Associative industrial design Use associative modeling techniques to enable product styling concepts and detailed designs to be developed concurrently. Accommodate iterative changes

System Design

Requirements verification Establish test requirements describing verification methods at each level of decomposition in the system design. Provide systematic means to ensure requirements

system functions. Provide traceability, from requirements to design solutions.

and communicate changes to interfaces.

capturing and managing a generic product structure.

Platform CAD structure management Relate product structure and CAD assembly structure to support efficient modular platform development, visualization, and variant generation.

Distributed collaboration Enable collaboration on work-in-process design data. Share product information throughout enterprise in order to facilitate front-end ideation, concept development, and design refinement.

Top-down design Proactively plan and structure larger CAD assemblies to support team-based

Associative 3D part modeling Create 3D models of all mechanical parts and assemblies

Associative routed systems Concurrently develop logical schematic, 3D cabling, and piping design, as well as harness and piping manufacturing instructions.

Drawingless design Document and deliver 3D designs for downstream consumption and

decrease design cycle time.

asynchronous design collaboration, regardless of the data size or type. Encourage continuous

complex CAD assemblies.

Copyright © 2010 Parametric Technology Corporation (PTC). All rights reserved. PTC, the PTC logo, and PTC Value Roadmap are trademarks or registered trademarks of Parametric Technology

The PTC Value Roadmap is a structured collection of rich intellectual property for the purpose of helping product

thousands of customers, by engagements with numerous consultants and leading academics, and by PTC's heritage

development organizations meet their financial objectives. Its content has been shaped by interactions with

The most common way to use the Roadmap is to guide value-oriented discussions and planning. This process begins on Side A with the identification of relevant, corporate-driven value opportunities and the prioritization of

together represent a series of best practices) that enable these initiatives to be realized.

Business Initiatives

corresponding business initiatives. This approach continues by identifying the processes and capabilities (which

It's equally possible to use the Roadmap as a means to align technology funding initiatives with corporate goals. This approach begins on Side B with an identification of desired best practices and process improvement areas, and

continues by working backwards through alignment with associated initiatives and value opportunities on Side A.

in supporting product organizations for more than twenty-five years.

How to Use the PTC Value Roadmap

Value-Oriented Discussion and Planning

Value Opportunities

Heterogeneous design in context Streamline the creation of design contexts comprising lata from multiple MCAD tools, for efficient design review, analysis, and authoring activities.

Manage changes and communicate updates to stakeholders. Standardized engineering calculations Capture, standardize, and automate the reuse of

company and industry-standard engineering calculations across programs.

Requirements verification Establish test requirements describing verification methods at each

Verification and Validation Ensure that designs meet performance requirements and are verified through digital or physical

means, progressing from components to assemblies, systems, and products.

level of decomposition in the system design. Provide systematic means to ensure requirements have been met by the design. Front-loaded simulation Perform digital simulations early and often to accurately predict

real-world behavior and optimize product performance. Associative simulation and design Develop associative simulation models based on design models to ensure synchronization and reduce cycle times.

Collaborative simulation environment Manage the simulation activities within an

enterprise. Provide traceability between requirements, test cases, design configurations, test **Digital mockup** Rapidly visualize and identify design issues in a digital mockup; track and

Variant Design and Generation

Overview

Define and manage multiple product configurations to satisfy customer, regional, and market-specific needs, and accommodate design alternatives and improvements.

Generic product platform design Capture and manage a generic product structure representing the superset of required and optional modules, streamlining development of

Platform CAD structure management Relate product structure and CAD assembly structure to support efficient modular platform development, visualization, and variant generation. Platform analysis and validation Automate the creation of key design configurations to analyze and validate. Rapidly visualize and identify design issues in a digital mockup; track and resolve interferences.

Design Outsourcing

Engage with a third party to deliver a system, sub-system, component design, or design services. Traceable product data-sharing Share product data with design partners to enable effective

collaboration. Provide different methods tailored to effectively support the needs of alternative business relationships. Provide traceability to what was delivered, received, and accepted. IP protection support Control access to sensitive intellectual property by securely compartmentalizing data within the system (e.g., role-based and policy-based access, digital signatures, export control and classification) and by controlling data once it has left the system

(e.g., low-fidelity representations, watermarking, digital rights management). Work practice standardization Standardize execution of outsourcing projects, aligning

business processes and work methods between OEM and suppliers. Partner change integration Integrate partners into engineering change review, approval, and implementation activities. Increase visibility by ensuring problem and impact are fully understood. Improve quality and efficiency of changes.

Sourcing

Best Practices

Technology Funding Aligned to Corporate Goals

Processes

Capabilities

• Early Sourcing Involve sourcing teams early by leveraging strategic supplier relationships to achieve target product

O Distributed supplier collaboration Proactively partner with suppliers to identify cost drivers and enable early mitigation strategies for critical components. Provide a secure and managed collaborative workspace for relevant design data. Ensure the entire team is working with the

Target cost dashboards Establish cost targets for components. Provide program stakeholders

Component and Supplier Management

with visibility into target costs and cost estimates.

Enable global organizations to effectively find, select, and incorporate preferred parts and suppliers during product development and sourcing.

O Part search and classification Rapidly locate parts and components based on key

attributes. Organize part libraries to enable efficient and effective search and navigation; reduce part duplication. **Supplier qualification management** Provide a standardized process for qualifying and maintaining preferred suppliers. Identify important sourcing/selection scenarios and define

supplier preferences by part classification. Enable effective finding, selection, and incorporation of preferred suppliers during product development and sourcing activities. New part introduction standardization Implement a lean and controlled new part introduction process. Facilitate reuse of existing parts, lowering associated costs for duplicating

parts. Ensure Design-for-X (e.g., environmental, assembly) methods are considered early. ECAD/MCAD library integration Integrate and synchronize ECAD component libraries with

MCAD libraries in PLM/ERP to eliminate redundancies and errors. Supplier change management Provide a standard, predictable change process to integrate changes to supplier parts. Increase visibility by ensuring problem and impact are fully understood. Improve quality and efficiency of changes.

Approved manufacturer and vendor lists Create and manage approved manufacturer and vendor lists (AML/AVL) for supplier parts. Ensure consistency of utilization of suppliers for multiple product lines across multiple geographies.

Manutacturing

Manufacturing Process Management

Define and manage the manufacturing processes to be used to fabricate parts, to assemble final

products, and to perform inspection. Automated NC process planning Embed manufacturing process data into design features to

enforce the automatic reuse of proven and standardized manufacturing methods. Integral manufacturing data management Enable enterprise management of manufacturing data and deliverables. Provide a common, central repository with a

comprehensive data model supporting product, process, and resources. **Associative eBOM/mBOM** Transform engineering bill of materials (eBOMs) into multiple

Digitally defined process plans Digitally define, manage, and analyze process plans describing how parts are manufactured, assembled, inspected, and maintained. **Dynamically generated manufacturing documentation** Dynamically generate accurate

plant-specific manufacturing bill of materials (mBOMs) while maintaining bidirectional traceability.

Integral engineering to manufacturing change management Enable end-to-end change process automation and control services. Streamline changes from engineering to manufacturing; ensure accuracy of manufacturing deliverables.

Automated release-to-production Automate release of engineering, manufacturing, and

change information to production systems (ERP/MES).

• Tooling Design and Manufacture

and on-demand rich, visual shop-floor work instructions.

Design and manufacture necessary tooling (e.g., molds, dies, electrodes, mold bases) required to

Associative tool design Use associative modeling techniques to enable concurrent development of product designs and tooling designs. Automate design change propagation and

eliminate time-consuming rework. **Dynamically generated manufacturing documentation** Dynamically generate accurate

and on-demand rich, visual shop-floor work instructions. Integral manufacturing data management Enable enterprise management of manufacturing data and deliverables. Provide a common, central repository with a

Automated engineering-to-manufacturing change propagation Enable end-to-end

change process automation and control services. Streamline changes, from engineering to

comprehensive data model supporting product, process, and resources.

manufacturing; ensure accuracy of manufacturing deliverables.

Manufacturing Outsourcing

Engage a third-party manufacturer to produce a part, component, or product

Traceable product data sharing Enable effective collaboration with manufacturing partners by sharing product data. Provide different methods tailored to support the needs of alternative business relationships. Provide traceability to what was delivered, received, and accepted.

IP protection support Control access to sensitive IP by securely compartmentalizing data within the system (e.g., role-based and policy-based access, digital signatures, export control and classification) and by controlling data once it has left the system (e.g., low-fidelity

representations, watermarking, digital rights management). Work practice standardization Standardize execution of outsourcing projects, aligning business processes and work methods between OEM and suppliers

Partner change integration Integrate partners into engineering change review, approval, and implementation activities. Increase visibility by ensuring problem and impact are fully understood. Improve quality and efficiency of changes.

Service

Product Support Analysis and Planning

PTC Value Roadmap Version 6.1

Identifying and Realizing Value in Product Development

Discrete Manufacturing

Define the service activities and intervals necessary to meet the targeted operating performance

Early reliability prediction and simulation Perform early, iterative prediction of component, assembly, and system failure and availability rates based on standard prediction models, test,

Maintainability and lifecycle cost prediction Estimate maintainability costs early and

iteratively, based on predicted availability, repair logistics, and sparing strategies. O Systems-based supportability planning* Define and manage supportability plans based

on systems and sub-systems to ensure consistency and enable reuse across products. Applicability-driven supportability planning* Define supportability plans to address all product and utilization variations and enable the delivery of equipment-specific service information.

Technical Information Creation and Delivery

Leverage, author, publish, and deliver product information that describes the capabilities, operation,

repair, maintenance, and support of a product. O Structured authoring and automated assembly and publishing Provide structured authoring of reusable information for template-based automated publishing of personalized product- and language-specific content.

CAD-based 2D and 3D technical illustrations Automate the creation of high-quality, intelligent 2D and 3D illustrations and animations from 3D CAD models. Single-source content and workflow management Enable centralized management of

be translated; create, route, and manage translation work packages for language service providers (LSP) or translation systems*, and ensure integrity of links between localized components and source documents. Associative change management for product information Intelligently link technical

Translation outsourcing management Identify document components that need to

product information to real-time product design data and streamline change propagation for illustrations and product information outputs as engineering designs change. Interactive product information delivery Deliver interactive, task-based product information

structured document components and automated access/review/approval/change workflows.

to consumers, improving the usability, relevance, and timeliness of the content.

Performance Analysis and Feedback

Collect and evaluate historical product and service information to recommend continual product and

service improvements. Closed-loop field performance feedback Provide field product performance feedback loop into engineering to identify common failure modes and drive mitigation strategies and systematic improvement in future designs.

*Support contingent upon future software releases; plans subject to change at PTC's discretion.

1/19/10 12:18 PM