
SILVERTON CONSULTING, INC.

System Development Consultant Services Offered:

- Project Review and Management
- Process Improvement
- Set Based Concurrent Engineering
- Intellectual Property Support

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SYSTEM DEVELOPMENT PROJECT REVIEW AND MANAGEMENT SERVICES

Project review and management takes place in four domains: project scheduling, technical assessments, project risk management, and program management. We can provide consulting services in any of these domains.

- **Project Schedule** – More projects fail for lack of time than any other reason. Adequate time can make the difference in an unreliable, ineffective software product, and a successful one. Issues here are systemic.
 - **Technical Feasibility** – The second reason for project failure is taking on too much technical advancement. Appropriate staffing helps, but is not the only issue.
 - **Risk Management** – “If you don’t actively attack the risks, they will attack you”¹. Risk identification, probability assessment, and potential impact all have direct impact on project feasibility and achievability. Evolutionary delivery can help manage risk but seldom eliminates it.
 - **Program Management** – Includes the daily, weekly, monthly, and quarterly activity to provide status and ongoing visibility into your software development projects.
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SYSTEM DEVELOPMENT PROCESS IMPROVEMENT SERVICES

Development and verification processes impact everything you do on a software project. Weak processes lead to highly variable product quality and schedule adherence. Strong processes can minimize variability.

- **Development**– Development process assessments that identify and target high payoff areas for improvements can be conducted. Training and workshops on the targeted process improvement can be provided. Follow-up assessments can be done to insure new activities are being conducted properly.
- **Verification and Validation** – Test has its own unique processes. Assessments to identify weaknesses to be addressed can be provided. Training to improve these areas can be supplied. Follow-on reviews can also be accomplished to verify compliance to new procedures and processes.
- **Change Management** - The third reason projects fail is inadequate requirement oversight. Requirements must be assessed for impact to the technical feasibility, schedule adequacy, and risk. Code change control must be in place to survive. Software design change control, in our experience, has been rarely implemented but when present signifies high engineering maturity. All of these activities can be assessed for needed improvements and training provided where warranted.

¹ T. Gilb, *Principles of Software Engineering Management*, p. 73

SYSTEM DEVELOPMENT SET-BASED CONCURRENT ENGINEERING (SBCE) SERVICES

Toyota and Honda have been using SBCE (also called set based design [SBD]) to develop automobiles for a number of years now. Their processes lead to developing cars in 2/3rd the engineers and 63% the calendar time as Detroit². There are three principles of SBCE as practiced by Toyota³:

- **Map the design terrain** – Multiple designs for a single component can provide fallback positions if the chosen one doesn't work out. Also multiple designs often lead to a better understanding of what a component area can do and hence to better designs.
 - **Intersection Integration** – The problem with maintaining multiple designs is that integrating all of them is an impossible task. The important point to understand is that there is a commonality to all the designs that can be used as an integration point. This allows for global rather than local optimization by having both sides of an interface understand what's best for the system rather than one component or another.
 - **Commitment after feasibility** – Committing to code and validate a design is a high resource activity. Design prototypes are used as much as possible to validate design tradeoffs prior to any commitment of more resources.
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SYSTEM DEVELOPMENT INTELLECTUAL PROPERTY SERVICES

25 years of experience in the storage product business have taught us that technology changes quickly and the development of intellectual property is never straightforward. We can help understand and document your or your competitors development paths to help establish intellectual property rights where warranted.

- **Expert witness services** – We are registered members of Technical Advisory Service for Attorneys (TASA) and are available to help represent you in your intellectual property rights proceedings.
 - **Discovery services** – When faced with mountains of paperwork on how someone has developed intellectual property we can help you sift through the rubble to find the nuggets of information to help make your case.
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RAY LUCCHESI

Professional Summary: Senior manager with extensive experience as a product development leader in the data storage industry. Strengths include team leadership, technical knowledge, product strategy, and verbal communication skills developed over 25 years of dealing with people, products, and customers.

Product Development and Engineering: Developed products that have generated well over \$1B in revenue. Advanced storage product that captured 18% market share in under 30 months. Turned around late program and delivered award winning product to market. Improved subsystem reliability and performance by a factor of ten. Sustained the company's largest OEM contract. Developed nine generations of an enterprise class disk subsystem.

Team Leadership: Managed at the first and second level with from 5-75 engineers and managers. Directed at the second and third level with from 50 to 175 engineers, managers, and directors. Motivated technical team to work long hours for little chance of reward other than successful product introduction. Maintained technical team through massive layoffs, chapter 11, and final emergence from bankruptcy to help create and later dominate the enterprise tape library market.

Technical Knowledge: Lead technical assessor for new technology platform acquisitions. Lead architect on host (server side) control software for tape library. Architect on enterprise class disk subsystem and lead designer and developer for new disk subsystem. Also defined development processes and methodology for a large embedded systems development project.

² A. Ward et al, *The Second Toyota Paradox: How Delaying Decisions Can Make Better Cars Faster*, SMR Spring '95

³ D. Sobek, A. Ward, and J. Liker, *Toyota's Principles Of Set-Based Concurrent Engineering*, SMR Winter '99