

**DRM ASSOCIATES
CAPABILITIES WITH
TARGET COSTING &
DESIGN TO COST**

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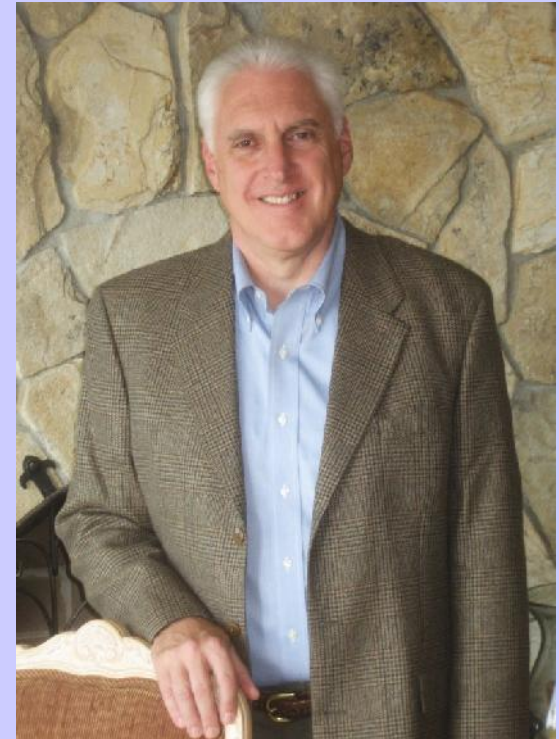
DRM ASSOCIATES

- Firm with recognized expertise in new product development & core focus on value
- Kenneth Crow is the firm's Principal consultant
- Nine highly-experienced consultants
- Extensive client list - Fortune 500 and international clients
- Led consortium to identify 270 best practices
- Extensive training experience and materials - conducted over 200 workshops

For further information on DRM Associates, see
www.npd-solutions.com

KENNETH CROW

- 35+ years consulting in product development & manufacturing
 - Former Director, Manufacturing Consulting, Ernst & Young
 - President, DRM Associates
- Recognized expert in product development, target costing, design to cost, & design for manufacturability
- Certified New Product Development Professional
- Frequent international speaker and author
- Former President & Director of the Society of Concurrent Product Development



For further information on Ken, see www.npd-solutions.com/kcrow.html

DRM CONSULTANTS

Jim Rains

- Expert in value analysis/function analysis, design to cost, and lean manufacturing
- Value analysis projects have averaged 20% cost savings

Pete Cornish

- Expert in design for manufacturability, design to cost and assisting companies to implement initiatives

Jim Ayers

- Expert in supply chain management, design to cost, equipment cost analysis and quality function deployment

DTC EXPERIENCE

We have assisted the following organizations with target costing and design to cost consulting and training

Applied Materials

Barco (3 business units)

CAE

Carl Zeiss

Curtis Wright (3 business units)

DRS Technologies

Edwards Lifesciences

Emerson Network Power (2 business units)

General Dynamics Canada

General Dynamics Land Systems (2 business units)

Gleason

Hewlett Packard (2 business units)

Irkut Corporation

ITT Night Vision

Johnson & Johnson

L-3 Communications

Lord Corporation (3 business units)

Medrad

Northrop Grumman (2 business units)

Rockwell Collins

Siemens

Space Systems/Loral

Westinghouse Electric

REPRESENTATIVE DTC EXPERIENCE

Westinghouse Electric We assisted their nuclear fuel division define a target costing/design to cost process and integrated it into their new product development process. We conducted target cost & design to cost training for key personnel. We help select and implement product cost estimating software to be used early in the development process to provide feedback on the cost implication of design decisions. We further conducted training on quality function deployment and value analysis. We facilitated four major programs define customer needs, develop a product strategy, and plan product requirements using QFD, value analysis, target costing, design to cost, DFM/A and early manufacturing involvement. We also facilitated brainstorming sessions and the development of concept alternatives to meet aggressive cost targets. The product cost model software was used to develop preliminary cost estimates for concept alternatives. On one program, a previous effort to satisfy critical customer needs resulted in a cost increase of over 50% resulting in program cancellation. On this program, the target costing/design to cost process led to a product that provided this additional functionality at a significantly reduced cost from the previous design.

REPRESENTATIVE DTC EXPERIENCE

Space Systems / Loral We provided design to cost assistance to SS/L in their pursuit of the next generation Iridium satellite constellation. In this hands-on role, we:

- Helped to establish NRE and RE cost targets for program elements
- Suggested changes in business models & contractual relationships with team members to incentivize a more unified DTC approach
- Helped to define DTC roles and responsibilities within the program and the supporting functional organizations
- Developed cost models and cost reporting
- Defined, analyzed and supported requirements and cost trades
- Introduced DTC methods and techniques as appropriate and facilitated a DTC approach with teams at all levels of the program
- Played the role of the DTC consciousness in the program
- Assisted with the development of the customer proposal
- Working with the customer to negotiate DTC objectives with business requirements, risks, and technical requirements

REPRESENTATIVE DTC EXPERIENCE

ITT Night Vision We reviewed the products, operations and development process in this business unit. We developed and conducted customized a DTC and DFM/A workshop which included recommended process steps to improve their development process.

Lord Corporation We reviewed the products, operations and development process in their aerospace, automotive, commercial and chemical business units and provided recommendations to incorporate DTC in the development process. We developed and conducted customized DTC workshops for personnel in three business units as well as a management workshop to gain management commitment to a DTC program.

Barco We reviewed practices related to DTC at several business units including their aerospace and government contracting BU. Developed a customized workshop to provide a better understanding of DTC principles and practices for the management of these business units.

REPRESENTATIVE DTC EXPERIENCE

Johnson & Johnson Ethicon Endo Surgery We conducted a review of their DTC process and made recommendations for improvement. We developed a customized DTC training module and conducted train-the-trainer training. We defined three project team workshops and tool sets to assist in DTC. We then facilitated workshops for several project teams to help them achieve the DTC target. We also helped assess how effectively they applied DFM/A with the development of their products and assisted with structuring an initiative to put in place better processes and tools to support DFM/A.

Edwards Lifesciences We suggested process steps to better incorporate DTC and design for manufacturability (DFM) into their development process. We developed a customized DFM and DTC workshop. We conducted multiple DFM and DTC training sessions.

Medrad We reviewed their development process and assessed how effectively the organization was applying DTC across their programs. We also reviewed the proposed DTC development process. We provided recommendations on how to develop a more robust DTC process.

REPRESENTATIVE DTC EXPERIENCE

Hewlett Packard, Rockwell Collins and Applied Materials, Siemens, Emerson Network Power, Curtiss Wright, Irkut Corporation, DRS Technologies, Lighting Technologies, L3 Communications, General Dynamics Canada and General Dynamics Land Systems

We reviewed the products, operations and development process in these companies and business units. We developed and conducted customized DTC workshops for each organization. We recommended process steps to improve their development process and provided additional consulting to implement a DTC approach.

Hewlett Packard We provided DTC consulting to their computer BU and conducted DTC training for their industrial printer BU.

Northrop Grumman We reviewed their development process and assessed how effectively the organization was applying DTC across their programs. Based on this, we developed a very customized set of training programs targeted at different levels of management and program personnel and conducted multiple training sessions over a two year period with some longer training sessions being conducted for college credit through UCLA.

RELATED EXPERIENCE

Design for Manufacturability (DFM) is a key aspect of DTC. We have conducted DFM training and led detailed DFM reviews of products such as tractor lawn mower, life science analytical equipment, computer tablet, dialysis equipment, medical device, etc. The following is a partial list of companies that we have provided DFM consulting and training to.

Adaptive Micro Systems

Agilent Technologies

Astronics

Brady Corporation (2 business units)

Edwards Lifesciences (3 business units)

Emerson Electric

Fortinet

Gambro Dasco

Gehl

General Dynamics Land Systems

Hewlett Packard (3 business units)

Hollister (4 business units)

Huawei

Infineon

Invitrogen

ITT Night Vision

John Deere (5 business units)

Johnson & Johnson

Malaysia Telecom

Manatowoc Cranes

Method Electronics

Medtronic

Nokia (2 business units)

Northrop Grumman

OSRAM Opto Semiconductor

Respironics

Snap-On Diagnostics

Sun Microsystems (6 business units)

Toro (5 business units)

Warner Power

RELATED EXPERIENCE

Hewlett Packard We facilitated cost teardown analysis to analyze competitive products in terms of concept and architecture, assembly design, and part design for computer printers. Training in this methodology was provided. Costs were associated with parts and assembly designs to provide insights into approaches to lower costs product design approaches.

Ethicon Endo-Surgery We provided training and facilitation in the use of Value Analysis/Value Engineering (VA/VE) and facilitated value analysis of a new medical device design. The analysis highlighted areas where cost was out of balance with the value of a feature to a customer.

Westinghouse, CAE Corp., Lighting Technologies, PAC, Saft, Sealed Air, Solar Turbines, Spectrum Brands We provided Quality Function Deployment (QFD) training and facilitated its use on many projects for these companies with the objective of maximizing the customer's value proposition. QFD ties product requirements back to the voice of the customer to assure focus on what is most important to the customer, optimizing cost and technical requirements.

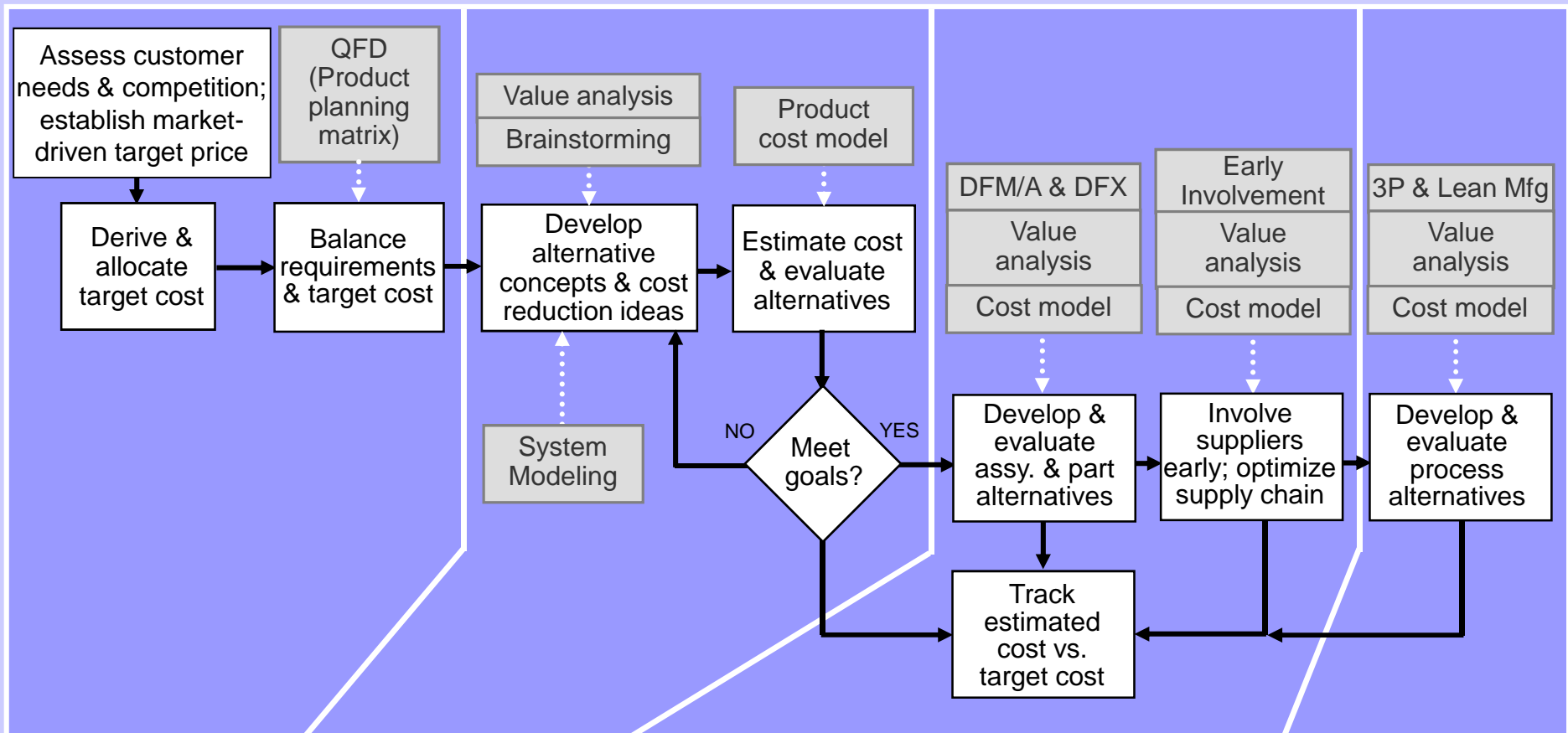
TARGET COSTING & DESIGN TO COST

Our approach to design to cost is based on five stages of design and using the appropriate tools and practices in each stage. We bring knowledge of many of the tools and practices to support design to cost.

	Quality Function Deployment	Systems Modeling & Requirements Trades	Value Analysis / Function Analysis	Innovation & Creativity Techniques	Analysis of Alternatives	Cost Models/Cost Estimating Systems	Design for Assembly & Test	Design for Manufacturability	Early Subcontractor/Supplier Involvement	Mistake-Proofing	Process Automation and Integration	Process Re-engineering / Lean Manufacturing	Defined DTC Roles and Responsibilities
Requirements Definition													
Concept Development													
Assembly Design													
Part Design													
Process Design													

DESIGN TO COST PROCESS

We bring a well-defined process and set of tools



DTC PERFORMANCE REPORTING

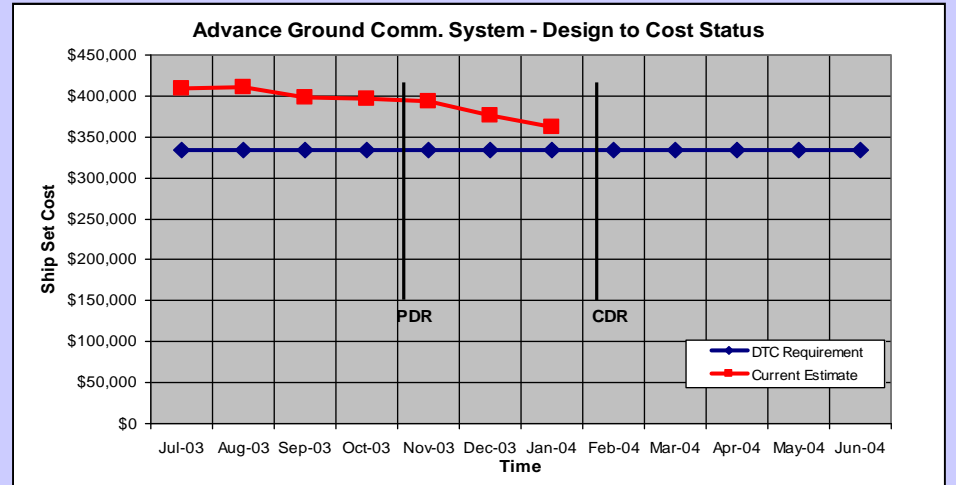
We bring practical knowledge of how to track & manage programs.

Recommended DTC reports:

1. Current estimated or actual cost product, subsystem, assembly or part compared to target cost
2. Trend of cost estimates vs. target cost over time
3. DTC initiatives to achieve target cost
4. Cost risks

ADVANCED GROUND COMMUNICATIONS SYSTEM DESIGN TO COST STATUS PERIOD 4 FY04								
Qty per Ship Set	Description	Responsible IPT Lead	Current Estimate per unit	DTC Target per unit	Delta per unit	DTC Target per Ship Set	Curr. Est./Ship Set	Delta per Ship Set
1	Communications Rack	J. Miller	\$232,398	\$222,505	\$9,893	\$222,505	\$232,398	\$9,893
1	ICP Rack #1	T. Jones	\$11,982	\$8,480	\$3,502	\$8,480	\$11,982	\$3,502
1	ICP Rack #2	B. Herter	\$8,707	\$6,100	\$2,607	\$6,100	\$8,707	\$2,607
15	ICP Left Module	R. Williams	\$2,293	\$2,689	-\$396	\$40,335	\$34,395	-\$5,940
3	ICP Right Module	R. Williams	\$1,969	\$3,577	-\$1,608	\$10,731	\$5,907	-\$4,824
29	Quad Transceiver	S. Cole	\$3,561	\$1,593	\$1,968	\$46,197	\$103,269	\$57,072
Summary						\$334,348	\$396,658	\$62,310

All numbers displayed are for a build. Quantity of 36 in FY05 dollars. Delivery from Sept. 04 to April 05.



COMMUNICATIONS RACK IPT PERIOD 4 FY04					
Action Item Number	Description	Problem Impacts	Status	Remarks	Respons.
1	Internal design on the Digital board has 2 high cost Xilinx FPGAs.	Board costs are above DTC requirement by 23%	IPT is exploring conversion to ASIC to reduce RE costs.	IPT exploring NRE RE trade-off and the correct time to implement cut-over. Report due Dec. 15, 2003.	M. Miller
2	C-Tech, sub-contractor on Switch Hop Upconverter, still presents a RE price outside of acceptable limits	Specific item is \$2.8K over requirement	RF team visiting C-Tech to see what specification relief can be given.	Visit completed and revised number from C-Tech expected Nov. 28, 2003.	S. Hetter
3	Soldering problem on RF board large ground plane must be solved. Current situation leads to excessive rework and damaged product.	Mfg. Assembly, Test, Product Assurance labor and material costs	Internally funded study underway. Changes to bare PWB via holes being explored	Study scheduled to complete Dec. 1, 2003.	D. Jones

TARGET COSTING / DTC SERVICES

Target Costing / DTC Process Assessment

- Assess the current development process

Training

- Conduct Target Costing & DTC Workshop

Target Costing / DTC Process Implementation

- Assist defining the DTC process, establishing tools and data, creating metrics, and deploying initiative to the enterprise or business unit

Target Costing / DTC Project Facilitation

- Facilitate project teams establish a target cost, plan product requirements to maximize value with QFD, conduct value analysis, develop and evaluate concept alternatives, evaluate and improve manufacturability, & measure results

OUR DTC-RELATED WORKSHOPS

Target Costing & Design to Cost (3 to 5 days)

1. Target Costing & DTC Introduction
2. Establishing a Target Price, Deriving a Target Cost and Allocating Target Costs
3. Estimating Costs and Tracking Target Cost Achievement
4. DTC During Requirements Definition
5. DTC During Concept Development
6. DTC During Assembly Design
7. DTC During Part Design / Selection
8. DTC During Process & Supply Chain Design
9. Target Costing & DTC Process & Organizational Responsibilities
10. Applying Target Costing and Design to Cost

See www.npd-solutions.com/dtcws.html

Value Analysis/Value Engineering (3 to 5 days)

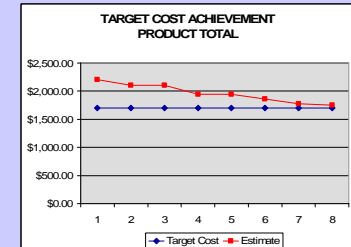
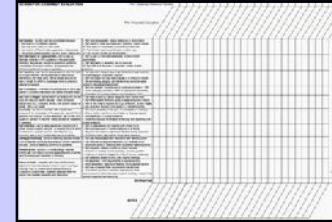
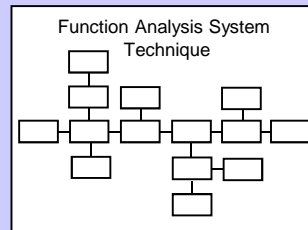
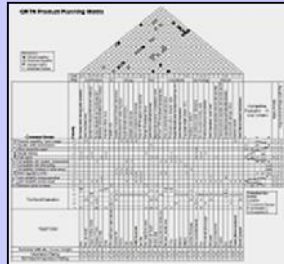
See www.npd-solutions.com/vamod1ws.html

Design for Manufacturability/Assembly (3 days)

See www.npd-solutions.com/dfmws.html

DTC PROJECT FACILITATION

TARGET COST CALCULATION WORKSHEET				
Product	Manufacturer Name	Thru	Prepared By	Date
Example	Manufacturer Name	Thru	Prepared By	Date
Category	Product Name	Estimate	% Factor	Var Time Factor
Manufacturer's Suggested Retail Price				
- Standard Customer Margin				
= Price to Manufacturer				
- Shipping/Production Credits/ Rebates				
= Selling Price to Retailer				
- Distribution Cost/Wholesale				
= Manufacturer's Selling Price				
- Profit Margin				
= Manufacturer's Cost				
- Corporate Allocations				
= Manufacturer's Net Selling, General & Administrative				
- Non-Recurring Development Cost				
= Estimated Production Volume				
- Adjusted Non-Recurring Development Cost				
= Manufacturer's Target Cost				
- Overhead				
= Target Cost (Labor & Material)				



Establish Target Price and Cost

Product Planning With QFD

Value Analysis and Concept Development

DFM Evaluation and Improvement

Measuring and Monitoring Results

- Conduct Voice of the Customer investigation
- Analyze and establish target price or price to win
- Derive target cost
- Allocate target cost

- Prioritize customer needs
- Develop product strategy to maximize the value proposition
- Perform QFD product planning
- Define requirements

- Gather data
- Conduct value analysis
- Develop & analyze concept alternatives
- Evaluate concept alternatives
- Make requirement trades

- Initiate early supplier involvement & feedback
- Investigate lower cost materials
- Conduct DFM evaluation
- Develop more manufacturable design
- Improve production process

- Monitor program
- Develop cost estimates
- Track target cost achievement