



## ACTIVITY BASED COSTING: A CONCEPT WHOSE TIME HAS COME

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### Introduction

Activity Based Costing (ABC) addresses internal operating concerns and is an augmentation to the traditional General Ledger based cost management system. It is not a replacement for traditional accounting, but makes use of the source documents provided from standard job costing systems. Instead of being heavily labor based, ABC looks at a business unit's events as cost drivers and ascribes all company resources and accumulated costs against those events in a time-phased sequence. Revenue tracking provides management with a different perspective on the profitability of products and services, providing insight into pricing. Middle management and technical performing organizations are involved in the line item reporting provided within the ABC system, enabling management to achieve more responsibility of reported information throughout all levels of the organization. ABC is being professed by the accounting industry as the wave of the future and is gaining broad acceptance within larger organizations. This system is intended to serve performing entities and management alike. The key ingredient is integration: that is true integration, of scheduling and cost management systems.

### Review of ABC

When attributing costs, it is assumed that an organization has defined discrete output processes as events that drive costs. These events are then categorized as either First or Second Stage Event Cost Drivers. A First Stage Event Cost Driver is one that is measured by its consumption of resources. The consumption of resources determines the event's costs as each resource will typically have a cost per unit. These events are only tracked by what they consume.

A Second Stage Event Cost Driver is one that is tracked by the event's output. Each piece or item produced within a process of events can have a per unit cost. The "per-unit cost" includes resource consumption and the event is tracked via each piece produced as a result of the task. The ideal ABC system approach is to provide reporting capability on events or processes for both cost drivers. The key point here is that all costs are incurred based upon the event. Each event is linked in some way to the General Ledger so as not to conflict with the official book of record reported to owners, creditors and government tax agencies. Thus, ABC is an extension of the traditional accounting system.

As events and resource consumption are time phased, costs are also time phased. It is important to note that the ABC system provides a methodology to allocate costs on the basis of actuals and their projections into the future. ABC provides the ability to track and forecast both expenses and revenues.

### ABC Example

To review the differences between more traditional overhead cost allocations and the ABC

approach, lets look at a simplified example.

## Traditional Approach

(machine hours used for allocation of overhead)

Budgeted support costs	\$500,000
<u>Predetermined cost driver rate</u>	<u>\$10 per machine hour</u>
Direct materials costs	\$20,000
Direct labor costs	18,000
Support costs (\$10 x 1800)	<u>18,000</u>
Total manufacturing costs	<u>\$56,000</u>
<u>Number of units</u>	1,000
<u>Unit cost</u>	<u>\$56.00</u>

## The ABC Approach

(instead of machine hours used for allocation of overhead)

<u>Activity</u>	<u>Costs</u>	<u>Driver</u>	<u>Capacity</u>		<u>Rates</u>
Electricity	\$80,000	KW hrs	40000	kwh	\$ 2.00
Material handling	180,000	# moves	10000	moves	\$18.00
Setups	160,000	# setups	2000	setups	\$80.00
Inspections	<u>80,000</u>	# inspections	4000	inspections	\$20.00
Budgeted support costs	<u>\$500,000</u>				
Direct materials				\$20,000	
Direct labor				18,000	
Support:					
Electricity	\$2		4000	\$8,000	
Materials handling	\$18		80	1,440	
Setups	\$80		10	800	
Inspections	\$20		40	800	<u>11,040</u>
					1000
					<u>\$49.04</u>

## Results

While the results of this example show a significant difference in the costing of a product, the more important aspect is the fact that additional information is made available through the introduction of more than one driver. By carefully analyzing the support for the overhead, multiple drivers may be found for a multitude of "activities." Key to this additional information attained is a careful, objective review to determine if any non-value added activities exist. This is done through Process Value Analysis (PVA) to reduce or eliminate the non-value added activities. Even the potential for discovery of non-value added activities means an acceptance of ABC analysis in the organization and most importantly the total support of its chief executives.

## Real World Application of Activity Based Costing:

### What to do with the money that is saved?

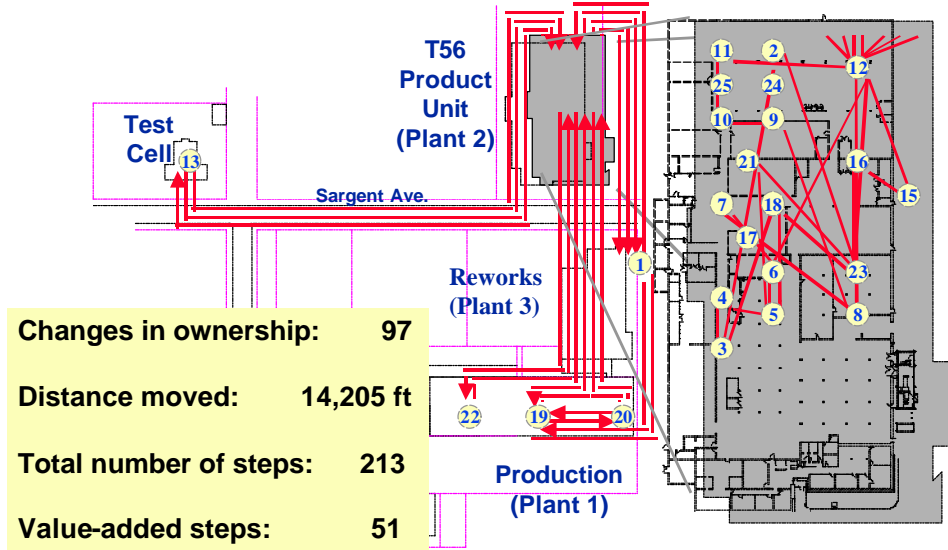
It took approximately six months and \$100,000 to analyze and implement ABC at the Naval Air Depot in Jacksonville, Florida. Simply by incorporating the new cost analysis system in a repair and maintenance depot for airplanes such as the F-14 fighter, the Department of the Navy is able

to save \$200 million annually. In this section we will explore the ways in which the DoD is likely to use the ABC savings and what affect the savings may have on the U.S. economy. By comparing the two diagrams below, before and after implementation of ABC, one can begin to appreciate how the in-depth applications of ABC can lead to significant savings. First, contrast the distance moved through the depot “before” (14,205 feet) versus “after” (2,841 feet – more than two miles saved). Further, there are 89 fewer changes in ownership after application of ABC.



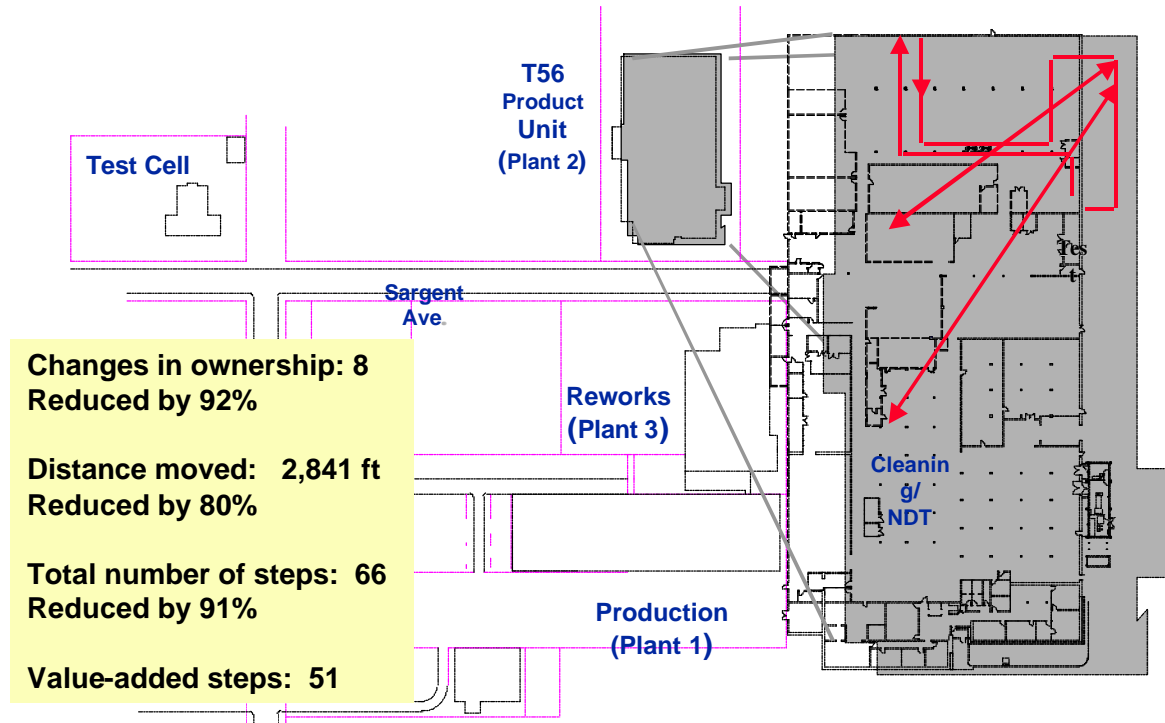
## WORLD BEST RESULTS

### Flow for T56 RGB Prior to Redesign





## T56 RGB WORKFLOW **AFTER** REDESIGN



Of the 213 steps in the repair process, only 51 were value added. After the application of ABC there were only 66 steps in the process with the same 51 value added processes, for a reduction of 91%. Resulting savings totaled more than 200 million dollars!

If ABC were used in all 25 Naval Air Stations<sup>1</sup> in the U.S., the Department of the Navy conceivably could save more than \$5 billion. Currently, the DoD budget of stands at \$291.6<sup>2</sup> billion; the \$5 billion savings constitutes 1.7 % of the budget.

It seems likely that the \$5 billion is saved will go to salary increases for military personnel. Effective January 1, 2000 every military member received a 4.8% pay raise.<sup>3</sup> This raise is the largest since 1981. With a military population of 1,406,830<sup>4</sup> a 4.8% pay increase is substantially larger than the \$5 billion saved by using ABC techniques. If the average salary of military personnel is \$30,000, then a 4.8% increase would yield \$1440 a year additional income.

<sup>1</sup> United States Navy (2000). (World Wide Web) *Navy Bases and Air Stations within the U.S.* Available: <http://www.chinfo.navy.mil/navpalib/bases/navbases.html>

<sup>2</sup> One Hundred Sixth Congress of the United States of America (April 13, 2000) Section 102 Major Functional Categories, *National Defense Fiscal Year 2000* Available: [http://frwebgate.access.gpo.gov/cgi-bin/useftp.ctg?lpadress=162.140.64.21&filename=290enr.txt&directory=/desks/wais/data/106\\_Congress\\_bills](http://frwebgate.access.gpo.gov/cgi-bin/useftp.ctg?lpadress=162.140.64.21&filename=290enr.txt&directory=/desks/wais/data/106_Congress_bills)

<sup>3</sup> Department of Defense (March 1, 1999) *Defense Reform Initiative 1999 Update* Available: [http://www.defenselink.mil/dodreform/1999update/4\\_2.html](http://www.defenselink.mil/dodreform/1999update/4_2.html)

<sup>4</sup> Department of Defense (September 30, 1998) *Active Duty* Available: <http://www.defenselink.mil/pubs/almanac/almanac/people/activeduty.html>

Additional income earned currently has a savings rate of approximately 5%. The additional income saved is referred to as marginal propensity to save (MPS). If each employee were to spend \$1,412 in our economy that money would continue to be spent over and over throughout the economy. These spending rounds are called the expansion multiplier and have a profound effect on the economy. The multiplier is a function of savings and is derived by dividing one by the MPS (1/MPS). If the MPS were 5% the multiplier would be 20. Therefore, the additional income spent, \$1368, is multiplied by 20. The effect on our economy by the additional income is \$27,360 per military member. With an employee population of 1,406,830 the effect would be \$38.490 billion, which would stimulate aggregate demand. Our economy would sell approximately \$38 billion more in goods and services. This pay raise could effectively raise our GDP by four-tenths of one percent. Our GDP was \$9.3 trillion in the second quarter of 2000. In fiscal years 2001 through 2005 the military will again receive a pay increase of 3.9% annually.<sup>5</sup> Although, the increase in salary will compensate for inflation, the inflation rate is only 1.7% giving a net increase of 2.2%. The savings from ABC and other cost reducing measures must continue to fund these pay raises without increasing the budget.

Another way that the savings from ABC could be spent is on training. A goal of the DoD is to raise the quality of civilian training and professional development. The civilian population who work for DoD is 756,290.<sup>6</sup> This is a costly endeavor because a continuous learning policy has been instituted mandating that each member of the workforce receive at least 80 hours of continuous learning every two years.<sup>7</sup>

Savings also could be applied to technological research and development. The DoD recognizes, however, that it can no longer independently research for new ideas but must rely on the private sector. Technology changes much too quickly and the DoD cannot compete. The Department will seek to incorporate commercial technology and products in its new systems to improve reliability and maintainability through continuous technology refreshment.<sup>8</sup>

Other costly endeavors include providing modern, high performance weapon systems. Obviously the main job of the DoD is to protect our country. It must have the best possible weapons in order to be prepared in an unpredictable world. The focus is on a "wide array of rogue nations and transnational actors, regional instability, and unprecedented threats from chemical and biological weapons in addition to the continued threat of nuclear warfare."<sup>9</sup>

Government agencies are notorious for spending too much money. The \$100 hammer and \$500 toilet seat quickly come to mind. However, in November 1997 a reform on defense spending was established as the Defense Reform Initiative Office (DRI) and is currently involved in reforming over 50 directives within the department. Activity Based Costing is just one way to save money within the DoD. The Department is overhauling its financial management business practices to

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<sup>5</sup> Department of Defense (March 1, 1999) *Defense Reform Initiative 1999 Update* Available: [http://www.defenselink.mil/dodreform/1999update/4\\_2.html](http://www.defenselink.mil/dodreform/1999update/4_2.html)

<sup>6</sup> One Hundred Sixth Congress of the United States of America (April 13, 2000) Section 102 Major Functional Categories, *National Defense Fiscal Year 2000* Available: [http://frwebgate.access.gpo.gov/cgi-bin/useftp.ctg?ipaddress=162.140.64.21&filename=290enr.txt&directory=/desks/wais/data/106\\_Congress\\_bills](http://frwebgate.access.gpo.gov/cgi-bin/useftp.ctg?ipaddress=162.140.64.21&filename=290enr.txt&directory=/desks/wais/data/106_Congress_bills)

<sup>7</sup> Department of Defense (March 1, 1999) *Defense Reform Initiative 1999 Update* Available: [http://www.defenselink.mil/dodreform/1999update/2\\_3.html](http://www.defenselink.mil/dodreform/1999update/2_3.html)

<sup>8</sup> Department of Defense (March 1, 1999) *Defense Reform Initiative: The Road Ahead* (Page 6) Available: <http://www.defenselink.mil/dodreform/Overview.html>

<sup>9</sup> Department of Defense (March 1, 1999) *Defense Reform Initiative: The Road Ahead* (Page 2) Available: <http://www.defenselink.mil/dodreform/Overview.html>

save money and ensure prudent decision-making and superb customer service. "Outdated finance and accounting systems are being consolidated and modernized."<sup>10</sup>

Competition, elimination of outdated equipment, and reengineering are some important ways to increase efficiency and build savings within the DoD. Stated within the DRI directives is the following: "Savings that result from competition are being reallocated to meet the needs of the war fighter."<sup>11</sup> The reader can rest assured that any money saved by becoming more efficient would go back to the agency to support its main goal, the defense of our country.

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<sup>10</sup> Department of Defense (March 1, 1999) *Defense Reform Initiative: Defense Reform 2000 Financial Management* (Page 2) Available: <http://www.defenselink.mil/dodreform//Overview/Overview.html>

<sup>11</sup> Department of Defense (March 1, 1999) *Defense Reform Initiative: Defense Reform 2000 Competition* (Page 3) Available: <http://www.defenselink.mil/dodreform//Overview.html>