

Study of the IEEE Corporate Infrastructure

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1. Executive Summary

In June 2002, BDO Seidman, LLP was engaged to perform a study of the efficiency and effectiveness of the IEEE corporate infrastructure. As part of that study we were also tasked with evaluating the process and methodology used to allocate corporate infrastructure costs to the various IEEE Organizational Units.

As the study progressed, the BDO project team expanded its analysis beyond the narrow scope of corporate infrastructure. This was done because the nature of the IEEE's business model, and the interrelationships between corporate infrastructure and the Organizational Units, demanded we do so.

In expanding our interviews and analysis, we developed an understanding of the relationships between volunteer leaders, society executive directors, and the IEEE corporate staff. We also developed a keen sense of their common and divergent perspectives.

We accomplished this through a series of interviews and document analyses. In all, we interviewed over 60 people and analyzed over 1,000 pages of documentation. All of this was accomplished in the 8 weeks provided to complete this study.

Before and during the time period in which this study was performed, the IEEE was undertaking its own cost cutting initiatives. As a result of these internal initiatives, much of the "low hanging fruit" has been identified, evaluated and actioned.

To support these initiatives, BDO identified nearly 20 opportunities to improve the efficiency and effectiveness of the IEEE's corporate infrastructure. These opportunities are based on perspectives we received from you, the Operations Review Committee, and from all other volunteers and staff who supported this effort. We have also provided several recommendations to improve the efficiency and effectiveness of the IEEE's cost allocation process.

Yet even with the identification of these opportunities, as the refinement of our report has progressed, many have asked the question whether or not the IEEE Corporate Infrastructure costs are too high. Given the fact that our consultants, in only an 8 week study, were able to identify or affirm over \$6.8M in potential cost savings, our response is 'yes.' Further, since we were able to quantify potential savings for only 8 of the opportunities, it is clear that the total potential savings are significantly higher.

We cannot currently offer you a precise answer as to how the IEEE Corporate Infrastructure costs compare to similar organizations. The IEEE is one of the largest professional, membership-based organizations in the world. To compare the IEEE to a uniquely defined group of nonprofits is a difficult task; one that could not be accomplished in the limited time available. Consequently, it was feasible to use only readily available benchmarks.

Rather than focusing efforts on finding and benchmarking against a narrow group of similar organizations, we suggest a different approach. We recommend the IEEE focus its resources on pursuing the opportunities at hand; ones that can be acted upon immediately. While the results of industry benchmarks can be vague, it is clear that there are currently over \$6.8M of potential cost saving opportunities to be evaluated. And, as stated above, we believe the potential savings are significantly

higher. To focus on benchmarks tells you where you are. To focus on opportunities moves you forward.

In our final analysis we believe the IEEE has identified and documented well the strengths and weaknesses of its various processes. Incremental improvements in efficiency have been achieved. Many other, more macro level recommendations have been *identified*. We believe these macro level issues provide opportunities for significant improvements in efficiency and significant reductions in costs. Yet, to a large extent, they have not been *implemented*.

The question we put back to you and, more specifically, to the IEEE Board of Directors is whether the organization is prepared to address these macro level issues and move from a position of *identifying opportunities* to one of *implementing recommendations*. This includes not only those recommendations that everyone agrees on, but also the less popular recommendations that will improve the effectiveness of the organization as a whole.

If this transition can be accomplished, if regaining *trust* can be made a priority, the IEEE can achieve quantum leaps in efficiency and firmly position itself as the leading professional technical society for years to come.

2. Background on this Study

The Institute of Electrical and Electronics Engineers, Inc. (the IEEE) is a non-profit, professional technical society of more than 370,000 individual members in 150 countries. The membership of IEEE represents the leading authorities in technical areas ranging from computer engineering, biomedical technology and telecommunications, to electric power, aerospace and consumer electronics, among others.

Through its technical publishing, conferences and consensus-based standards activities, the IEEE:

- ◆ produces thirty percent of the world's published literature in electrical engineering, computers and control technology,
- ◆ annually holds more than 300 major conferences, and
- ◆ has nearly 900 active standards with an additional 700 under development.

The delivery of these products and services is supported by a set of systems, processes and policies that make up Corporate Infrastructure (CI).

Prior to 2001, the costs of CI had been absorbed by, and subsidized through, returns on the IEEE investment portfolio. Consequently, these costs had never been allocated to any of the Organizational Units (OU) that were utilizing CI resources. However, events in recent years changed all of this.

First, returns on the IEEE investment portfolio have declined. Second, the IEEE has been losing money from operations¹ since at least 1998.

The combination of these has resulted in the inability of the IEEE to continue its subsidy of CI costs with investment returns. As a result, a determination was made to allocate CI costs to the OUs who would, in turn, "pay" for their allocated portion of total CI costs.

The Societies and Technical Advisory Councils (Societies/Councils) received the largest portion of allocated costs. Total allocations amounted to \$3.6 million in 2001, and were budgeted for \$18.7 million in 2002. The size of the 2002 budgeted allocation led the Societies/Councils to question whether improvements could be made in CI that would result in decreased costs and, ultimately, diminished or eliminated allocations.

As a result, the Societies/Councils requested that an independent firm of consultants study the IEEE's corporate infrastructure to assess:

- ◆ The efficiency and effectiveness of operations
- ◆ The management and control of those operations
- ◆ The methodology and assumptions used to allocate costs from those operations to the Organizational Units that utilize those costs

¹ Operating income does not include investment returns.

In response, the IEEE President (in 2001) appointed an ad hoc committee, the Organizational Review Committee (ORC), to commission and oversee a study of CI. The ORC prepared an RFP to solicit proposals from reputable consultancies to perform this study. After completing its due diligence, the ORC selected BDO Seidman in June 2002 to complete this study based upon the following timeline.

Study of the IEEE Corporate Infrastructure Project	
Timetable	
June 29	Study begins
September 3	Draft report due ORC
September 13	Responses from involved volunteers and staff
September 17	Final draft report due ORC
October 15	ORC to meet with BDO to finalize comments and corrective actions
November 17	ORC to present recommendations to the Board of Directors

3. Our Approach and Supporting Processes

To achieve the objectives set forth for this project, within the timeline provided, BDO developed a very targeted approach. We organized a team of nine consultants who were subject matter experts in association operations and finances. The team quickly developed a project plan designed to:

- ◆ Gain a broad level understanding of the organization, its operations, and its governance structure
- ◆ Gain a detailed understanding of the processes and cost structure related to each business unit and cost center comprising CI
- ◆ Identify opportunities for improvements in the efficiency and effectiveness of CI
- ◆ Assess the methodology and assumptions used to allocate CI costs to the OUs

Our progress towards these goals was dependant on successfully employing a variety of processes and tools. A brief overview of each is provided below.

Business Objective Matching - We compared the IEEE's business objectives to the individual business units within CI to ensure each of the business units clearly supported a business objective.

Process Analysis - We obtained and analyzed the documented workflow for each business unit, where applicable, within CI.

Output Analysis - We identified the desired outputs from internal/external customers of each business unit to ensure desired outputs were being produced.

Core Competency Analysis - We ascertained the level of competency in each business unit through discussions and interviews with staff.

Interviews – We interviewed over 60 volunteers and staff: 22 volunteers, 9 society executive directors, and 30 other IEEE staff. A complete interview list is included as Appendix 9.3.

Go Back Interview – We followed-up with over 35 of the individuals interviewed to get additional information and/or clarification.

Document Review – We requested, obtained and reviewed over 1,000 pages of documentation including financial statements, metrics, narratives of the allocation process, reports, PowerPoint presentations, organizational documents, process flow maps, and other relevant documents.

Benchmarking – We benchmarked key IEEE data against readily available industry information, when possible.

4. Structure of This Report

The results of our work have been organized into four key sections. The first section, *Perspectives from Volunteer and Staff Interviews*, provides insight about a variety of topics related to the efficiency of CI. During the interviews, several themes emerged. Interviewees shared common perspectives on some themes and significantly divergent perspectives on others. We have provided you with a summary of both.

We used these perspectives to help guide us as we drilled down into the core processes and cost structures of each CI business unit. As a result of our analysis, we were able to identify several *Opportunities for Improved Efficiency*. These opportunities are discussed in detail in the second section of the report. Some are new; others are not. All, we believe, are valid for consideration.

We were delighted to learn that the IEEE has ongoing initiatives to improve efficiency and reduce costs throughout the organization. In more than one instance, we learned that an improvement opportunity we identified independently was actually already being considered and/or being implemented. We see this as a validation of those opportunities and have included them in this report as well.

The third section of the report, *Analysis of the IEEE's Cost Allocation Process*, provides our analysis of the IEEE's CI allocation process and compares it to best practices throughout the association industry. We have several suggestions for improving the effectiveness of the process and the efficiency with which it is implemented.

As the IEEE is well aware, many volunteer-led committees have performed efficiency studies and have offered recommendations that were not implemented. Actioning this report *is* a concern of ours. To that end, we have suggested an approach to discussing, evaluating and actioning this study in our *Call to Action* section. This section also provides insight as to whom we believe should act as “Change Champions” to ensure positive change occurs throughout the organization.

5. Perspectives from Volunteer and Staff Interviews

During the two months of this study, we interviewed 61 individuals who fell into three broad groups: Society Volunteer Leadership and Staff; IEEE Volunteer Leadership; and IEEE Corporate Staff. (A complete listing of interviewees is included in [Appendix 9.3](#).)

The insight and perspective we gleaned from these interviews was critical in guiding our analysis. As the interviews progressed, and as our consultants compared notes, several themes emerged, though not always with the same perspective.

5.1 Themes with Common Perspectives

Several themes emerged for which each group shared a common perspective. While all individual members of a group may not have agreed, most did. The six themes that fall into this category are: trust, governance, complexity, change, volunteers and staff.

5.1.1 On Trust....

Trust came up as *the* most common theme in all of our interviews. There was widespread agreement that there is a general lack of trust throughout the entire organization. This has fostered an “us vs. them” mentality among and between volunteers, leadership and staff. This mentality, in turn, has created significant impediments to getting things done.

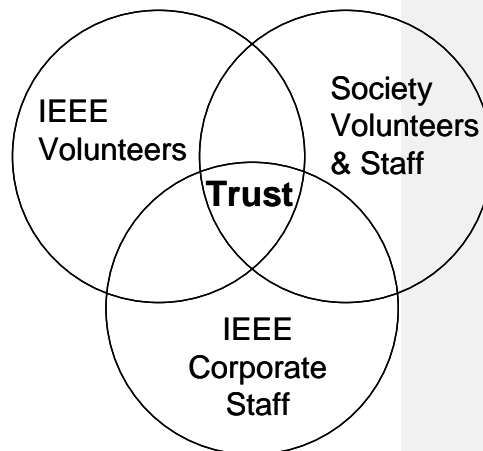
The reasons given by interviewees for the lack of trust were many:

- ◆ Lack of disclosure of useful information (financial and non-financial)
- ◆ Long memories over past history
- ◆ Battle over ownership of money
- ◆ Constituency based factions
- ◆ Governance not understanding their role

Interviewees with historical perspective agreed that the lack of trust is not new. It has been an issue for years. Some felt trust was getting slightly better; most felt it was getting worse.

5.1.2 On Governance....

All agreed that governance is very important and volunteers dedicate a significant amount of time and energy to the process. At the same time, despite the desire to “do good,” most agreed that the governance structure is highly inefficient and ineffective.



Many interviewees felt that real change at the board level would be incredibly difficult to achieve. Past attempts had been tried, and failed. They cited several issues that have been impediments to governance effectiveness:

- ◆ Focus on minutia instead of policy/strategy issues
- ◆ Constituency based versus competency based governance
- ◆ Shortness in the length and number of terms
- ◆ The governance structure (i.e. the number of boards and committees) is unwieldy and spends significant energy politicking and competing with itself
- ◆ There are more meetings and/or more people at meetings than there needs to be
- ◆ There are a number of volunteers in Governance, especially retirees, who are not productive, but simply there to enjoy the benefits.

5.1.3 On Complexity....

There was general agreement that the IEEE is a complex organization and that some complexity is necessary. However, most also agreed that some areas are “complex without purpose.” A result of silo-based decisions versus holistic-based decisions.

Many agreed that processes and business rules could be greatly simplified and, as a result, operate more effectively with more effective communication and resultant high levels of trust. Overly complex areas which were mentioned most often include:

- ◆ Governance
- ◆ Business rules
- ◆ Cost allocation process
- ◆ Chart of accounts
- ◆ Pricing

5.1.4 On Change....

Most agreed that change is good and is necessary at the IEEE. Most also agreed that change at the IEEE has not been easy.

The IEEE has been very successful at incremental change. Opportunities that are isolated and have little impact on a particular constituency get approved. However, any sweeping, strategic changes almost never get approved. There were several reasons cited for this (though not necessarily agreed to by each group):

- ◆ Turnover in governance and committees
- ◆ People don't do a good job of developing a consensus for change
- ◆ People “vote with their constituency” when it may not be best for the organization as a whole
- ◆ Committees are ineffective as they don't get ample buy-in from those that must approve/implement change.

5.1.5 On Volunteers....

Almost every person we interviewed spoke about the importance of volunteers to the current and continued success of the IEEE. The volunteers develop the intellectual property (IP) that drives IEEE revenue. One quote we heard again and again was “Without the volunteers, the IEEE would not exist.”

There was general agreement that “more” volunteers doesn’t necessarily equal better IP. Many interviewees referenced common traits of volunteers which have characterized into three categories:

- ◆ Die Hards – These volunteers give everything they have to helping the IEEE successfully achieve its mission.
- ◆ Hangers On – These volunteers are involved in IEEE governance but do not actively participate. They are there in body but not in mind.
- ◆ Rabble Rousers – These volunteers cause dissension among various groups. They take up precious meeting time focusing on off-topic issues and pushing red herrings.

There was also general agreement that supporting such a large and diverse group of volunteers was unnecessarily resource intensive.

5.1.6 On IEEE Staff....

There was general consensus by all groups that the IEEE has good staff (i.e. employees below the manager level²). While there were some isolated complaints, feedback was mostly positive. Common comments we heard from many were that staff:

- ◆ Want to do a good job
- ◆ Are willing to please
- ◆ Focus on supporting governance
- ◆ Genuinely care about the IEEE

² There were divergent perspectives on IEEE management, which are summarized in Section 5.2.

5.2 Themes with a Dichotomy in Perspectives

In contrast to the themes with common perspectives, there were several themes that emerged for which interview groups had different perspectives. Again, while each individual member of a group may not have shared the same perspective, most did. The three themes that fall into this category are: corporate infrastructure, management, and financial health.

5.2.1 On the Role and Size of Corporate Infrastructure....

The IEEE corporate infrastructure (CI), being the topic of this study, was discussed with every person interviewed. There were significant differences in perspectives regarding the role of CI and its relative size.

Perspectives – Society Volunteer Leaders and Society Staff, and OU/ Board Volunteer Leaders

The common view from this group was that CI is currently too large and has not done a good job of reducing costs. Many interviewees wanted to know if they were getting appropriate value from the costs being allocated to them, or whether the costs were just out of control. They questioned whether new services were being added that justified increased costs. For example, many of the interviewees questioned whether the significant investment in building such a large IT shop was appropriate, and whether the organization could run fine on a much scaled down version.

There were also a number of interviewees that felt certain cost centers with significant growth should be cut back. Some voiced concern that the increase in staffing in several cost centers was due to an effort to increase management control. There was also a general viewpoint that Societies are “feeling pain” while CI is not.

Perspectives – IEEE Staff

The perspective from this group was quite different. There was general agreement that CI is actually about the right size to handle the complex business rules and manage the overall risk of the organization. Many interviewees mentioned that while some responsibilities have shifted from the Societies to CI, they were done to mitigate risk and not to increase control.

This group felt that recent expenditures in IT were necessary to handle the shift towards electronic publishing and to develop scalable infrastructure for the entire organization. They felt the role of CI is to build/leverage a scalable infrastructure to eliminate duplication and reduce costs throughout the entire organization. Many examples were given to highlight where costs have remained in check or been reduced as part of budget cuts.

5.2.2 On IEEE Management....

The trust issue discussed earlier in this section was clearly evident when discussing IEEE management (IEEE management refers to the top-line directors within Corporate Infrastructure. It does not refer to directors of TAD, RAD, EAD, USA, etc.).

Perspectives – Society Volunteer Leaders and Society Staff, and OU/Board Volunteer Leaders

While this group agreed that management is smart and does many good things for the IEEE, they also shared a common viewpoint that management has been consolidating power and continues to do so. The organization is becoming less decentralized and more control is being shifted to management.

Many felt that there might be too many levels of management. Several also commented that management's pay scale may not be in line with industry norms.

Perspectives –IEEE Staff

In contrast to the viewpoint above, this group generally agreed that management works hard, is willing to please, and is effective within the framework it is allowed to operate in. Many agreed that there have been significant improvements in the last 6-7 years in the competency of management.

There was general consensus that management has many impediments to progress. This group felt that conflicting objectives throughout the IEEE, and the lack of a common vision/strategy, made it incredibly difficult to manage towards a common strategy. Consequently, much effort is spent on managing the divergent expectations of multiple constituencies versus managing to the common vision of one organization.

5.2.3 On IEEE's Financial Health....

Again, given the nature of this project, a topic discussed by all interviewees was the IEEE's overall financial health. While all recognized that the market downturn was the catalyst for this study, there were differences of opinion as to whether this was a short or long term problem. There was also quite a bit of discussion, and disagreement, about who created the current financial problem.

Perspectives – Society Volunteer Leaders and Society Staff

This group collectively voiced concern over the financial health of the IEEE. While very few called it a crisis situation, most noted that significant efforts to contain costs were warranted. Many pointed out that cost growth from 1996 to 2001 was fueled by unrealistic expectations surrounding investment income, and that IEEE management should be accountable for poorly managing resources.

Most people interviewed felt strongly that the IEEE should have been creating balanced budgets (without investment income) in the past, and should always do so in the future. Many voiced concern over how deficit spending would impact the continued viability of Societies.

Perspectives – OU/Board Volunteer Leaders

This group voiced concern over financial health, but to a lesser degree than the group above. The general perspective was that the IEEE is suffering through some difficult times but would soon be back on the right track. There was general agreement that the IEEE should maintain a balanced budget.

Perspectives – IEEE Management

This group gave a more upbeat perspective. While there was agreement that the downturn in the market created some short-term problems, the IEEE's overall financial health was fine. The combination of spending adjustments, and expansion of revenue streams will enable the IEEE to maintain its strong financial position.

This group did point to significant cost growth in the Societies from 1996 to 2001, and noted that new revenues had not kept pace with the corresponding increases in costs. The group agreed that ongoing costs were being contained at corporate. They pointed to new governance-led initiatives, and the support thereof, as the cause of certain increased costs. All of management agreed that volunteers drive initiatives and it is staff's role to support those initiatives.

5.3 BDO Perspectives

The following provides an independent perspective from BDO's consultants on the common themes discussed in this section. These perspectives are presented merely as an independent point-of-view on these common themes; they are not presented to be actionable recommendations. Rather, actionable opportunities are provided in sections six and seven of this report.

Trust - As noted in our Executive Summary, there is a substantial lack of trust throughout the organization. This mistrust is creating significant problems which we have mentioned throughout this report.

Governance - The IEEE governance structure is unwieldy and not nearly as effective as it could be. We provide opportunities to improve effectiveness in section 6.1.1.

Complexity - The IEEE is certainly a very complex organization. Some of the complexity is required. That is, complexity is needed to achieve a desired outcome. Some of the complexity actually makes it significantly more difficult to achieve desired outcomes.

We believe that the IEEE would benefit from simplifying certain areas of its operation. While the short time-frame allowed for this study did not enable us to identify all areas, we were able to introduce (in sections 6.1.3 and 6.1.4) concepts of simplification, as well as note two areas that appear to be significant opportunities.

Change - As addressed in our Executive Summary, the IEEE is very good at incremental change, but struggles with larger scale change. Section 8 provides a framework for implementing larger scale change as a result of the opportunities identified in this report.

Volunteers - It is clear to us that volunteers are a tremendous asset to the IEEE, and that their continued recruitment and participation is a requirement for ongoing success. Given the volume of volunteers, a significant amount of resources is necessary to provide support.

Non-Managerial Staff - Our perspective on non-managerial staff is similar to that of those we interviewed. Dedicated and willing to please, they genuinely care about the success of the IEEE.

Role and Size of Corporate Infrastructure - We suggest that corporate infrastructure is too big and that its size should be diminished and its role should be more clearly defined. In section 6, we have provided nearly 20 opportunities to improve the cost effectiveness of corporate infrastructure. And, specifically in section 6.1.3, we have provided insight as to the importance of clarifying the role of corporate infrastructure which will, in our opinion, ultimately result in significantly reduced costs.

IEEE Management - In section 6.2.5, we have noted that the IEEE staff to manager ratio is larger than ratios in similar, flatter organizations. In that section, we suggest there are opportunities to improve the IEEE staff to manager ratio and, at the same time, retain effectiveness.

IEEE Financial Health - Despite operating losses in several consecutive years, the IEEE has a strong foundation of assets it can draw upon. Even with the volatile swings in the stock market.

We are concerned, though, that continued losses from operations and/or the stock market could create financial problems in the long run. In addition to cost saving measures outlined in this study, the IEEE must succeed in achieving a balanced budget from operations and in better aligning its product pricing with the value these products provide.

6. Opportunities for Improvements in Efficiency and Cost Savings

In the following sections, we will describe the opportunities for improvements in cost and performance that we have identified in this study. These potential actions have been grouped into three sections: long-term, short-term, and intermediate. The long-term improvements focus on those activities that require the participation of both governance and staff using a communication model that cultivates IEEE community acceptance. Intermediate improvements require board and staff participation and may take more than one fiscal year to implement. Short-term improvements may require both board and staff participation and are actions that could be achieved within the next fiscal year.

When possible, we have included estimates of potential savings for specific opportunities. Note that these are merely estimates and not precise calculations. Also note that estimates were not included for opportunities when data was limited or the outcome could not be readily quantified. A summary of these opportunities is included at Appendix 9.5.

6.1 Long-term Opportunities

In the paragraphs below we have identified six long-term opportunities:

- ◆ Improving the efficiency and effectiveness of governance
- ◆ Adopting a life-cycle costing model
- ◆ Increasing the effectiveness of IEEE's decentralized business model
- ◆ Simplifying business rules
- ◆ Revitalizing the strategic focus
- ◆ Gaining clarity and consensus on digital divide thinking

These actions, if adopted, would significantly improve the cultural and economic health of the IEEE.

6.1.1 Improve the Efficiency and Effectiveness of Governance

Maximizing the efficiency and effectiveness of governance has been a hot issue with nonprofits for the last several years. Many organizations are evaluating their entire structure, not just the Board of Directors. The logic is that streamlined governance can only occur by looking at it from a historic point of view.

In a new study on governance supported by the ASAE³ Foundation, researchers uncovered the key strengths that associations must possess to govern effectively and enable the organizations they serve to successfully adapt to rapid and unpredictable change.

³ American Society of Association Executives

“First, associations must have leaders who exhibit the *will* to govern well – the strong desire to create flexible structures and processes of governance and to change governance as needed to meet changing environments.

Second, in order to develop and sustain the will to govern well, associations will need to focus on three primary areas in governance:

- ◆ The ability to make decisions based on knowledge rather than opinion
- ◆ The need to create a culture of trust for staff and volunteers, with common agreement on what will define success; and
- ◆ A nimble infrastructure, with work and decision-making systems that can respond efficiently and effectively to the increasingly complex marketplace represented by the association.”

The study goes on to say that governance cannot be reinvented, it must evolve. What truly needs to change about association governance is not its functions and roles, but the process for getting work accomplished and the underlying culture necessary to support more effective mechanisms. An effective governance structure is critical for organizations to sustain success in increasingly complex environments.

We agree, and see this as a major opportunity for the IEEE.

Issue

The IEEE’s governance structure is not effective, as supported through our interview process and our own independent analysis. Improving the effectiveness and efficiency of the governance structure will have a major, positive impact on the entire organization.

IEEE History/Observation

For several years, the IEEE has recognized the need to redesign its governance structure. Beginning as early as 1992, volunteers held numerous retreats to discuss the issue of governance redesign. In 1996, an Implementation Committee for Structural Reorganization (ICSR) was formed. In 1997, a plan and timetable for the restructuring of the Board was approved in principle and the target completion date was set for 1999.

What happened to that plan? Nothing. The Board turned over, energy declined, and another committee – the Presidential Blue Ribbon Committee on Board and Governance – was formed to revisit the governance roles of the Board, Executive Committee, and the rules by which they operate. In 2001, the PBRC completed a report titled *A Blueprint for the Future Governance of the IEEE: Recommendation of the President’s Blue Ribbon Committee on IEEE Governance*. Significant changes were proposed. None, to date, have been implemented. Yet, overwhelming feedback from volunteer leaders (past and current) and staff suggests that significant change needs to be made.

Opportunities

The effectiveness of the IEEE’s governance structure will play a major part of the future success (or failure) of the organization. Many valid suggestions for improvement have already been made by the PBRC. We agree with those suggestions and support some of them with industry benchmark and best

practice information. We have also identified other opportunities for improvements that, if implemented, may result in increased efficiency, effectiveness and, in some cases, reduced costs. There are five opportunities in all.

1. Transition agendas from operational detail to high level policy and strategy

We heard again and again how board and committee agendas focus on the wrong things. We reviewed the agendas from some recent meetings and we agree.

To be effective, governance needs to move from operational issues and other “minutia” to more strategic and policy based issues. Note – policy does not mean by-law changes. Policy means strategic discussion about organizational framework which guides decision making.

2. Make terms consistent across all boards

Different boards have different terms. This is a significant impediment to collaboration between the various boards. Dialogue just gets started between two boards when, shortly thereafter, 50% of the board rotates off. Having a similar number and length of terms would significantly improve this.

3. Move board members to a term length of three years and allow them to serve for two consecutive terms

Our independent assessment is that the current two year, one term policy for IEEE Board members was an impediment to change. As Table 6.1 shows, the IEEE is significantly outside the industry norm.

While an IEEE board member can serve for only two years, most organizations enable board members (if re-elected) to serve for six years. This enables the board to really understand issues, identify change opportunities, socialize the change, and see the change get implemented. BDO views two, 3-year terms as a best practice in association governance.

4. Consolidate boards and standing committees

The PBRC recommended consolidating governance into three Organizational Units and eleven Standing Committees. Based on our reading of that report, the explanation and arguments for this restructuring make sense. We agree with the committee’s recommendations as written and encourage consolidation.

5. Reduce the size of boards

The PBRC recommended that the IEEE board be reduced from 31 to 20 by 2007. A 20 person board is much more in line with the industry norm. (Table 6.2)

Length of Board Members' Terms	Term Length	Percent
	One year	4
	Two years	18
	Three years	68
	Four years	2
	No Limit	3
	Other	5

Number of Terms Allowed	Terms Allowed	Percent
	One	3
	Two	48
	Three	15
	Fours or more	2
	No Limit	32

Number of Members	Percent Reporting
1-5	2
6-10	14
11-15	29
16-20	21
21-25	16
26-30	9
31-35	3
36-40	3
41-45	18
More than 45	2

⁴ Source: the Nonprofit Governance Index based on responses from 1,347 501(c)(3)-86 organizations across the United States.

While it is very possible to be effective with a 31 person board, it is just as possible with a board comprised of 20 or fewer. Hundreds of associations around the country are doing so right now.

Simply reducing the size of the IEEE board would most likely reduce related travel costs by 1/3, and would also reduce staff resources necessary to support those additional 11 board members. If the same streamlining were done with all IEEE boards, whether a reorganized three or the current eight, substantial cost savings are possible.

6.1.2 Adopt a Life-Cycle Costing Model

Life cycle costs (LCC) are defined as the total costs of any project, program or initiative over the term of its existence. LCC costs apply to labor, materials and any related equipment. They are comprised of two components: 1) costs to acquire and 2) costs to sustain.

Costs to acquire and to sustain are not mutually exclusive. Sometimes the cost of sustaining equipment is two to twenty times the cost of acquisition; sometimes it is a fraction thereof. Using a new IT initiative as an example, costs that are often forgotten include: initial and new-hire training, maintenance staff, upgrades, future integration processes, and disposal costs (e.g., cost of migrating to another tool). However, LCC applies to all programs and initiatives, not just technology.

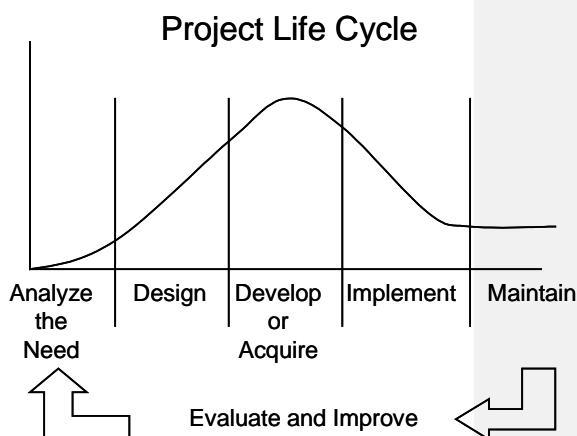
LCC methodology can be used when formulating budgets and forecasts and for completing a cost/benefit analysis. When performed in conjunction with a cost/benefit analysis, the LCC analysis helps staff to choose the most cost-effective approach from a series of alternatives so the lowest long-term cost of ownership is achieved.

Issue

The IEEE undertakes tens to hundreds of new initiatives each year. Some initiatives are big and strategic; others are small and operational. All have a cost impact.

Given the volume of new projects and the ongoing costs of sustaining them, LCC should be a standard component of all cost/benefit analysis. Currently, it appears not to be. Without it, incremental costs, over time, can accumulate and become substantial down the road. This is especially important for those costs that are not covered or subsidized by identifiable revenue streams.

IEEE History/Observation



In the last couple of years, the IEEE has gotten much more formal in its cost/benefit analysis of new initiatives. There is a new committee that evaluates any new initiatives that require significant investment. Staff and volunteers all indicated that cost/benefit analysis was being performed when procurement decisions were made. One of the largest cost centers, IEEE IT, has also gotten more structured in its evaluation of requests for new IT initiatives, whether they are large or small.

Upon reviewing some of the cost/benefit analyses, we noted that costs to sustain were generally not a component of the analysis. We asked staff/volunteers if sustaining costs were captured but just not evident. The answer was often times no.

Opportunities

The IEEE should develop standard rates for use in costing out projects based on average salary and benefits for each level of staff. These rates should be used in the project planning process to provide a more accurate costing of projects and initiatives.

Over a longer term, the IEEE should develop or acquire a tool that will assist business units in estimating the full, life cycle costs of projects and initiatives. Use this tool as part of the cost/benefit analysis, including whether outsourcing is more cost effective in the sustaining cycle. The opportunities that the LCC methodology can afford the IEEE include:

- ◆ Reduced probability for budget creep
- ◆ Increased probability to meet long-term strategic goals
- ◆ Decreased potential for system integration issues and system duplication issues.
- ◆ Increased opportunity to maintain a balanced budget
- ◆ Increased ability to assess the validity of projected revenue streams.

6.1.3 Increase the Effectiveness of the IEEE's Decentralized Business Model

Many organizations, large and small, have employed a decentralized business model. Companies like Hewlett-Packard are famous for their ability to successfully transfer authority for decision making down to the “front lines.” They capitalize on the competitive advantages decentralization gives them like faster decision-making, more personal customer service, and the ability to capitalize on opportunities more quickly.

These organizations also understand that a successful decentralized business model depends on a scalable, cost effective infrastructure. An infrastructure that delivers support services common to all business units and can be leveraged to achieve significant economies of scale. It depends on common business rules to efficiently utilize that infrastructure and eliminate confusion in the marketplace. And it depends on an effective risk management system that ensures the policies and procedures are in place to mitigate and/or eliminate unnecessary risk.

The ultimate goal of a decentralized business model is to move decision making down to employees who interact with customers while also providing a scalable infrastructure that enables each business unit, and thus the organization as a whole, to contain common support and delivery costs.

Issue

While a decentralized business model has been employed throughout the organization, the IEEE is not maximizing the efficiencies the model could provide.

IEEE History/Observations

The IEEE has a long-standing history of using a decentralized business model. With intellectual property (IP) being produced by volunteers in collaboration with Societies/Councils, this model was a natural fit.

As the IEEE has evolved, the two critical components of the model have actually begun to move away from each other. Scalable infrastructure has taken on a negative connotation. It has come to mean, in the minds of many, centralized control.

While the cause of this perception shift is up for debate, the results are evident. The IEEE is not effectively leveraging its corporate infrastructure. This, in turn, has substantially reduced the effectiveness of the model.

Opportunities

BDO agrees that a decentralized model is appropriate at the IEEE. However, significant inefficiencies (and the resulting costs) exist because of the decreased effectiveness of the model. If effectiveness can increase, which it can, the model will be more fluid, will result in decreased costs for all, and be a winning strategy for the organization. To do this, three things must happen:

There must be agreement on which services should be provided by, and delivered through, Corporate Infrastructure.

Common business rules must be simplified to maximize the efficiency of Corporate Infrastructure.

All organizational units must utilize the agreed upon services to maximize utilization, leverage economies of scale, and keep costs low.

While there is some degree of interdependence among these three recommendations, they can each be implemented independently. In fact, there are such significant opportunities for simplifying business rules we have written an additional section just on that topic. However, for major improvements in the entire model, all three of the recommendations above should be implemented.

6.1.4 Simplify Business Rules

Business rules are the principles for governing business operations. They provide guidance and direction for how the business will function. This guidance is provided through strategic goals, process boundaries, quality criteria, and delegated authority.

Business rules impact all levels of a business, from the organizational structure to the data elements that need to be collected in a system. They often have the *largest impact on the systems responsible for supporting those rules*. Some examples include:

If an organization has:	It must have systems/rules to:
Employees	Hire them, evaluate them, pay them, provide benefits to them, and terminate them.
Expenses	Approve them, track them, pay them, analyze them.
Revenue	Generate it, track it, analyze it.

Business rules can be complex or simple. Complex business rules are typical when driven by complex objectives, not necessarily by multiple internal/external customers. That is, complex business rules are driven by complex requirements/output. Otherwise, simple business rules are preferred as they are easier and less costly to manage and support.

Issue

In many instances, the IEEE has very complex business rules. Sometimes the complexity is necessary; other times it is without purpose. These rules create complex systems/ processes which require significant effort to manage and support.

IEEE History/Observation

In February 2000 the IEEE Board formed the Infrastructure Oversight Committee (IOC). The IOC was charged with reviewing the infrastructure units of the IEEE. Between 2000 and 2001, the IOC met several times and reviewed the processes of the infrastructure units of the IEEE. Part of their findings was that the IEEE had complex business rules that could be simplified and this would presumably result in efficiency improvements.

In 2001, the IOC selected the Member Services Department to be the first infrastructure unit to go through a more thorough analysis of business rules. In September 2001, the IOC received a report from Bill Cook, Staff Director Member Services. That report outlined several initiatives that could be taken to simplify business rules which, the IOC was convinced, would result in as much as \$3.0M of cost savings.

Ultimately, there was approval of rule changes that resulted in roughly \$300,000 of savings in the 2003 budget. Approximately \$2.7 million of potential savings are not currently being realized. Further, no such business rule analysis has been done in any other infrastructure units (or other business units).

Opportunities

First, we recommend that the IEEE pursue the remaining business rule simplification recommendations identified within Member Services. We have reviewed those recommendations and agree with the IOC's position that significant reductions in costs could be obtained by simplifying business rules.

Second, given the initial success of identifying simplification opportunities in Member Services, the IEEE should expand its analysis of business rule complexity to other infrastructure and business units. The unit which should be analyzed next, and the one we believe has the best opportunities, is Information Technology.

The IT group utilizes a "buy over build" strategy for software applications. Thus, once a new need is identified, they first look for existing software packages to meet the functional requirements. If an off-the-shelf package cannot meet those needs, they develop a custom application.

The wide variety of business rules within the IEEE has made it very difficult for IT to implement this buy vs. build strategy. Of the 37 applications IT currently supports, 22 of them are custom built. Streamlining business rules may enable IT to consolidate some applications and reduce the costs to modify and support them.

6.1.5 Revitalize the Strategic Focus

Revitalizing the strategic focus encompasses the strategic planning, budgeting, and forecasting processes that the IEEE currently uses. Why is the strategic plan important to this study? Because the absence of clear strategic goals and objectives directly impacts the efficiency and effectiveness of corporate infrastructure.

Issues

How can the IEEE simplify the budgeting and forecasting processes? What will link organizational strategy to budgeting and forecasting now that the five-year strategic process has been abandoned?

IEEE History/Observation

This action originally began as an attempt to describe a budgeting process for the IEEE that was more efficient in its execution and more effective in its delivery. The goal was to reduce the number of resources required to budget and forecast in the units that are the subject of this study.

Initial interviews described a process that required a tremendous amount of resources to prepare the baseline budget. An equally burdensome amount of resources is needed to maintain a 'rolling' forecast against the baseline budget. To complicate matters more, the IEEE does not have a common automated process for moving financial data up, down, and across the organization. Finally, the manner in which data is collected makes it extremely difficult to group similar costs as project or performance objectives. How relevant are numbers generated during the momentum budget cycle 18 months later? If they were relevant, why is it necessary to spend significant time and energy creating a budget for what would appear to be a very predictable set of costs?

The IEEE is applying an industrial budgeting model in an intellectual capital environment. The result is a collection of mind numbing data exercises that are focused on polishing the apple instead of determining whether the apple is rotten or whether an orange is better suited. A 12-month budget process is simply unacceptable for preparing the IEEE to be efficient and effective in executing its strategy.

Another important observation was our initial impression of the IEEE 's continuous improvement activities. We were pleasantly surprised to see the integration of Baldrige criteria in Business Administration. After completing the initial set of interviews, we concluded that continuous improvement was mostly contained within the business units in Business Administration. Very few organizational units outside of Business Administration were utilizing the continuous improvement model. This meant that cross-functional cooperation, the meat of any serious continuous improvement activity, was being ignored.

Finally, we noticed that the current strategic plan was in its final year. When we asked if the new five-year plan had been approved, the response was that the strategic planning process, as it existed, had been changed. A new process had been approved by the Board that will not be fully implemented until the end of 2003. This process will validate strategic objectives on an annual basis. When we expressed our concern about the absence of a strategic plan, we were provided a copy of IEEE strategic issues that are being considered. There is very little difference between these issues and the ones that were approved five years ago. So, it appears, the current five-year plan has become a six-year plan.

The lack of a common strategic focus is evident. While there may be some level of strategic planning/focus within the Societies/Councils, those plans are not necessarily linked to an overall IEEE organizational strategy. We see this as a significant weakness and impediment to determining whether or not resources are being allocated in the most effective manner.

Opportunities

The IEEE should not wait until 2004 to unveil a new set of strategic goals and objectives. It is imperative that some set of objectives be in place for the 2003 budget cycle. The IEEE should suspend all new initiatives until they can be linked to common IEEE strategic objectives.

A possible solution to the current budget process would be to break up the budget cycle into operating and strategic. The operating budget would be approved on the fiscal calendar. The strategic budget would be approved at mid-year. The strategic budget process would begin in March and end with June board meeting approval. The operating budget process would begin in August and end with November board meeting approval.

The strategic budget process would expand the new initiatives process to include all new and on-going activities that improve financial, member, infrastructure, and market objectives. The strategic budget process would also be used to sunset any activities that no longer support the objectives.

Creating an operating budget would be a two-step process. The first step would consist of taking a current set of operating financials (societies, staff, activity boards), validating the numbers as a base to move forward from, and applying an escalation rate approved by staff and the activity boards. The second step would integrate the fiscal component of the strategic budget process into the operational budget.

The forecasting process should focus on monthly variance analysis and quarterly budget re-baselining. Monthly variance reports should be made available to management 5 business days after closing. The quarterly rebaseline should be made available to management 10 business days after closing. On a weekly basis, an exception report should be delivered that identifies cost objectives that exceed variance thresholds. This report would be an important 'quick-look' at potential adverse variances prior to month end.

6.1.6 Gain Clarity and Consensus on Digital Divide Thinking

The IEEE digital divide is defined as electronic and/or internet communications accessibility between and among IEEE staff, governance, volunteers, members, and customers.

Issue

There are divergent viewpoints as to how electronic (i.e. paperless) the IEEE should go when communicating with governance, volunteers, and members?

IEEE History/Observation

Throughout our interviews we heard conflicting strategies on communication used to reach governance, volunteers, and membership. In the membership segmentation study, it is clear that the number one issue with membership is internet access to publications and technical information. Some publications, like Spectrum and conference proceedings, are offered electronically and in paper. Efforts to digitize other costly paper-based processes such as membership cards and annual elections have been met with

stiff resistance from both volunteers and staff. The reason given most often is that digital/internet communications are not available to enough volunteers and members. Yet, at the same time, the IEEE is proposing major initiatives to expand volunteer/member collaboration electronically. Which strategy is correct?

Opportunities

A survey should be conducted during the next renewal process to determine how many members and volunteers have access to the Internet and how often they use it.

Processes that distribute paper products to governance, members, and volunteers should be reviewed for digital opportunities and a clear strategy should be developed and implemented.

6.2 Intermediate Opportunities

Intermediate opportunities include the following:

- ◆ Consolidating conference/meeting management
- ◆ Consolidating printed career resources
- ◆ Evaluating Corporate Infrastructure overhead
- ◆ Evaluating Corporate Infrastructure management
- ◆ Reducing Oracle financial system support
- ◆ Consolidating IT hardware and software
- ◆ Analyzing governance and staff travel costs.

These actions provide significant improvements in operations and reductions in costs over multiyear performance periods. The intermediate opportunities are described in the following paragraphs.

6.2.1 Consolidate Conference/Meeting Management

Conferences/Meeting Management refers to those processes or functions related to supporting and planning conferences, meetings, workshops, tradeshows, and events at all levels of the organization. Many of the processes and tasks associated with coordinating and planning these events are similar to one another. For example, each type of event typically involves:

- ◆ Schedules and agendas
- ◆ Facilities and equipment
- ◆ Accommodations
- ◆ Cost and/or fee processing
- ◆ Transportation (from supplying directions to a location to making travel reservations)

If these same tasks are performed in different parts of the organization, economies of scale are not being maximized. For example, when staff roll over or go on vacation, the consolidated events staff that remains can backfill.

Issue

There are four organizational units in the IEEE performing support and planning for conferences, meetings, educational, and/or internal events at all levels of the organization. There is also the practice of purchasing external services/resources (e.g., conference vendors) to provide events management that can be provided through in-house resources.

IEEE History/Observation

There is currently an internal proposal that supports the appropriateness of consolidation. The proposal suggests that meetings, conferences and trade show management be consolidated.

Short-term Opportunity

Move forward on the proposal.

Long-term Opportunity

Redesign work flow and adjust processes to maximize efficiency. Evaluate similar work done at the Society level to determine if other activities could be consolidated into this unit.

6.2.2 Consolidate Career Print Activities

Printed career resources are either printed or electronic documents that support career achievement within the engineering professions represented by the IEEE.

Issue

Should the groups that create printed resources within the IEEE be combined under one group?

IEEE History/Observation

Printed career resources are created at the IEEE USA, in Publications, through the Educational Activities Board, and by Corporate Strategy and Communications. There may be other IEEE affiliated business units that also provide these resources. Coordination between these groups could be improved. It is not so much the redundancies between the groups, but the absence of a strategy in defining and capturing a customer base for these products that calls into question the efficient and effective use of these resources.

Short-term Opportunity

Create a career resource working group to:

- ◆ Create a strategy for defining and capturing the desired customer base
- ◆ Measure and improve the efficiency and effectiveness of the career resource products
- ◆ Determine the appropriate delivery vehicles for these products.

Long-term Opportunity

Combine the efforts of these areas under one business unit.

6.2.3 Consolidate Facilities

Facilities are defined as the physical locations which house IEEE staff.

Issue

The IEEE has multiple locations across the US and two internationally. A number of interviewees suggested that consolidation of some offices could save money and would not result in a competitive disadvantage (i.e. a competitive advantage is not gained based on the geographic location).

IEEE History/Observation

The IEEE has done some minor consolidating in the past. While there is some space available in Piscataway, many staff are already in tight quarters. Space could be opened, though, with the implementation of a hoteling/home office strategy.

Other opportunities may exist to evaluate combining/sharing facilities in Washington, DC and in California. A few people have also suggested that the Brussels office has been “passed around” and offers no competitive advantage; however, it may be necessary to maintain an international presence.

Opportunities

We recommend the IEEE do a thorough analysis of all facilities to determine whether cost savings are available by combining facilities or moving to less expensive locations. In addition to the financial aspects of combining facilities, the analysis should include determining the impact of such moves on staff.

6.2.4 Evaluate Corporate Infrastructure Overhead

Corporate infrastructure overhead is defined as overhead that can be applied at the business unit level. Business Unit is a description used to define a particular organizational level in the budget book.

Issue

Are administrative and overhead costs in line with other services and 501(c)3 organizations?

IEEE History/Observation

There are many layers and levels of management and administrative overhead within the corporate infrastructure. Until recently, the IEEE has never been required to create, track, and monitor financial ratios that quantify and allocate costs considered to be indirect or overhead costs. One possible result of this is that it does not appear that the relationship between direct and indirect costs has been evaluated.

Based on our experience with other large, membership based organizations, an appropriate overhead allocation for the corporate infrastructure generally ranges between 12 and 20 percent of the direct cost base. The overhead allocation rates for certain IEEE Business Units appear somewhat higher than these percentages. This is supported through an ASAE survey of G&A costs for 501(c)3s over \$10M. That survey resulted in a median rate of 15.9 percent. Compare this to the rates of certain IEEE Business Units below:

IEEE Overhead-Rate for Certain Business Units 2002 Budget ⁵ Table 6.3			
Business Unit	Direct Expenses	Total OH & Admin	OH Rate
Financial Services	\$1,450.6K	\$512.0K	35.3 Percent
Sales and Marketing	\$3,278.6K	\$984.7K	30.0 Percent
Member & Customer Service	\$5,078.3K	\$1,212.8K	23.9 Percent
Corporate Activities	\$5,362.5K	\$1,466.3K	27.3 Percent
Business Unit Total	\$15,170.0K	\$4,175.8K	27.5 Percent

The following guidelines were used to determine the data for the table above.

The Admin/OH cost centers of the business units subject to this analysis are inclusive of indirect costs associated with managing the unit. These business units were selected because they were the only ones that separated overhead and administrative costs in the 2002 budget book.

All 'controllable' business unit costs are identified in the 4XXXX series of cost accounts.

5XXXX and 6XXXX costs are excluded from the analysis.

The Corporate Activities Office Complex cost center excludes the following direct expense 4XXXX costs: depreciation, amortization, rent recovery, interest and loan expense, utility, and property taxes. These costs are considered not to be 'controllable' by the business unit. In addition, lease hold amortization costs are not included from the NY office support cost center.

Opportunity

The IEEE should create a work team to review overhead related cost centers throughout the IEEE beginning with the business units that have been outlined above. For example, it is probably not appropriate to include 16 FTEs dedicated to Governance within the Corporate Activities overhead. The process of bringing indirect costs in line with other services and 501(c)3 organizations will create more opportunities for improving and streamlining business processes.

6.2.5 Evaluate Corporate Infrastructure Management

Management structure is defined as the levels of management including and between the CEO (i.e. executive director) and a first-line supervisor.

Issue

Are there too many levels of management within the IEEE?

⁵ Source: 2002 IEEE Budget Book

IEEE History/Observation

We were able to gather some statistics from the 2002 Budget Book and from Human Resources. We focused our analysis specifically on Corporate Infrastructure. From the 2002 data we obtained, we identified 66 management positions and 238 non-management positions. This results in a ratio of staff to managers of 4.6:1. This is actually very close to the entire IEEE ratio (4.4:1).

Opportunities

A management structure with wider span of control (flat) that encourages risk-taking and teamwork within the governance construct is a desirable model for a non-profit organization. A ratio of 7:1 or 8:1 is more in line with how we have seen management leveraged in an effective decentralized business model. This ratio has been achieved by many large organizations that have effectively implemented a decentralized structure. Examples include Xerox and General Electric.

In discussions with staff, the non-manager - manager ratio of 5.9:1 for the American Chemical Society's (ACS) Washington Operations was put forward as a benchmark. Given the benchmark similarities between the ACS and the IEEE, this appears to be an appropriate benchmark to begin an evaluation with. We recommend that the IEEE create a work team with the goal of bringing the Corporate Infrastructure and the IEEE ratio more in line with these ratios.

6.2.6 Reduce Oracle Financial System Support

Potential Annualized Cost Savings: \$400K

Oracle Financial System Support is a group within the IEEE Information Department that supports the design, development, and maintenance of applications and reports for users of Oracle Financial.

Issue

There are 6 FTEs supporting Oracle financial systems. In a maintenance environment this level of effort would appear to be excessive. What is driving this level of support?

IEEE History/Observation

In 1994, Oracle Financial was procured to move the IEEE accounting and membership applications from a COBOL to an SQL environment. The initial implementation was difficult and resulted in a lot of down time and missed revenue opportunities. Once the platform was stabilized, the staff spent much of their time writing custom reports and interfaces for membership and accounting.

There have been many Oracle upgrades to migrate to and support. Finally, the staff has been migrating other accounting systems within the IEEE to the Oracle Financial platform. Currently, the staff is upgrading to Oracle Financial, version 11i. In the upgrade, staff will be decoupling membership from accounting. In conjunction with the upgrade to 11i, the staff is migrating the Computer Society's Solomon IV accounting data to Oracle Financial.

Short-term Opportunity

The Oracle Financial systems staff will be able to eliminate most custom reports for Accounting, thereby reducing maintenance support for reports. In addition, the migration of the membership application from Oracle Financials will free up resources dedicated to this product.

Long-term Opportunity

Potential annualized cost savings - \$400K

Once the upgrade is complete, the IT department should be able to reduce headcount from 6 to 2 by FY 2004. Based on an average IEEE IT labor year of \$100K, this results in an annual savings of \$400K.

6.2.7 Consolidate IT Hardware and Software

Potential Total Annualized Cost Savings: \$670K

53% of the proposed IT budget for 2003 consists of overhead and admin costs.⁶ Of that amount, 23% or \$2,240K, is for depreciation on equipment and 11% or \$1,100K, is for software maintenance agreements. These costs are related to the number of servers that IT is currently supporting and the number of licensed copies of software running on those servers.

⁶ Overhead and Admin costs do not include the cost of resources that are not a part of the admin staff. Also, the 2003 budget does not currently contain any budget line items for 2003 new initiatives.

Issue

The high number of servers that IT hosts and maintains has led to high depreciation costs and high software maintenance costs.

IEEE History/Observation

Over the last few years, the IT department has been aggressive in consolidating IT resources and technology. As a result, IT inherited a large amount of equipment and software that could not be disposed of easily. Many of the servers IT manages are on lease agreements and cannot be eliminated without penalty. Also, some of the software and applications cannot be consolidated due to the requirements of the software or application. The IT department has been evaluating opportunities to eliminate hardware and consolidate applications as hardware lease agreements end. They are currently looking at replacing six existing servers with two new ones.

Short-Term Opportunity

Estimated Annual Cost Savings - \$170K

The IT and Finance staffs should examine all existing lease agreements and determine if the savings from hardware and software consolidation is worth the penalties associated with the early cancellation of lease agreements. The goal should be a 5 percent reduction in servers and server cost.

Long-Term Opportunity

Estimated Annual Cost Savings - \$500K

The IT department needs to reexamine the criteria for determining a lease vs. buy decision for server hardware. IT should also aggressively consolidate the remaining hardware with a three year goal of a 15 to 20 percent reduction in the baseline number of servers.

6.2.8 Analyze Governance and Staff Travel Costs

Travel relates to the various costs associated with meetings, conferences, seminars, and the like. It includes not just transportation (airfare/train), but also all related costs such as lodging, meals, car rental, and staff time.

There are also several processes related to travel. They include booking the travel, coordinating it, preparing/approving expense reports, and making expense reimbursements.

Issue

Though there was not adequate time to thoroughly analyze travel, our macro-level review combined with feedback from our interviews suggests that there are significant opportunities for cost reductions.

IEEE Background/History

Travel is a significant component of the IEEE's annual expenditures. The costs are driven by a variety of activities including board and committee meetings, sales and marketing, to name a few.

IEEE has recently taken steps to decrease the amount of travel by reducing the number of committee meetings and by conducting more meetings via teleconference. These steps have already resulted in some cost savings.

As shown in Table 6.4, the IEEE's ratio of travel expenses to total expenses is above the industry median for nonprofits with international membership. Costs associated with the IEEE's conferences and conventions are not included here.

Industry Benchmark Travel as a % of Total Expenses Table 6.4	
IEEE 2001 Actual	5.5%
Industry Median	3.2% ⁷

Opportunities

We heard many times that the IEEE spends too much on travel. The variance from the industry benchmark, when calculated into dollars (\$5M+)⁸, suggests that significant savings can be obtained by expanding the current efforts to reduce travel costs. We recommend that the IEEE conduct a study of all travel expenses and related processes. The study should include both reducing the amount of travel and improving the efficiencies of the processes related to travel. Examples of elements that should be included in the study are:

- ◆ Number and format of meetings – Additional opportunities to reduce the number of meetings and/or conduct meetings more cost-effectively via video or teleconferencing.
- ◆ Meeting location – Opportunities to conduct meetings at more cost-effective locations.
- ◆ Number of attendees – Opportunities to maintain the effectiveness of meetings yet reduce the number of attendees. This is mainly related to better coordination of staff support for governance meetings.
- ◆ Travel policy compliance – Opportunities to reduce the cost of airfare by complying with the 14 day advanced registration policy. This should also include an evaluation of the impact on the IEEE of new airline policies regarding credits for non-refundable flights.
- ◆ Expense submission and approval - Opportunities to significantly reduce staff time to reconcile and follow-up on expense reports. Examples include evaluating the global use of corporate credit cards and tying them in with a web-based application for expense report submission and approval.

⁷ ASAE Operating Ratio Report, 11th Edition

⁸ 2001 actual total expenses of \$227M x difference of 2.3%.

6.3 Short-term Opportunities

The five opportunities identified:

- ◆ validate in-house 'Fixed-Income Fund' investment management,
- ◆ reducing IEEE Financial Advantage products and services support,
- ◆ consolidating membership processing,
- ◆ economizing publications paper, and
- ◆ evaluating awards activities,

provide short-term opportunities for improvement described in the following paragraphs.

6.3.1 Validate In-House 'Fixed-Income Fund' Investment Management

In-house investments consist of all resources engaged in supporting the management and control of the 'Fixed-Income Fund' within the IEEE.

Issue

What are the protocols in place that validate the fund's operating cost, Investment Policy performance, and peer performance?

IEEE History/Observation

Based on conversations with experts in funds management within BDO, an average risk fixed-income portfolio the size of the IEEE's could be managed for \$165K a year. The current fixed cost of staff supporting the 'Fixed-Income Fund' appears to be \$481K.

A search of all available IEEE documentation did not turn up an IEEE Investment Policy. Instead, we have received documents created by staff that describe fund objectives, operating parameters, and performance evaluation. In addition, staff directed BDO to the following by-laws and charter:

- ◆ I-308.13 Investment Committee
- ◆ I-302 Executive Committee
- ◆ IEEE Investment Committee Charter approved by IEEE Executive Committee 17 August 2002.

Finally, staff provided BDO the document, *Investment Guidelines/Objectives Investment Fund*, approved by the Investment Committee March 2000 and revised March 2001. The revision includes a new in-house fixed fund benchmark.

BDO Seidman utilized its professional funds manager to review the types of transactions that occur in the in-house fixed-income fund. Our funds management professional questioned the use of the phrase 'Fixed-Income Fund' given the portfolio exposure to commercial paper and the use of puts and calls, repurchase agreements and reverse repurchase agreements. The Merrill Lynch 10-year treasury index does not carry the same risk exposure as the IEEE in-house 'fixed-income fund.'

The June 2002 Monthly In-House Fixed Income Report shows the fund returning 12.95 percent and the bench mark returning 3.84 percent. Conversely, the September report shows the Fund returning 5.47 percent and the benchmark returning 12.01 percent. Clearly, the significant variances in performance bring the benchmark into question. In fact, using this fund as the benchmark is acknowledged by the Investment Committee as a poor comparison to the risks that are taken by the in-house fund manager and endorsed by the Committee. At the August 2002 Investment Committee meeting, the topic of finding an appropriate benchmark was discussed with no further action taken.

Fund expenses were recently addressed in a report prepared by the Financial Services Department. This report was created in response to an IEEE board member request for data associated with the cost of managing the in-house fund, the investment fund, and the retirement fund. In the report, Investment Administration Fees & Expenses, are quantified and show the direct labor cost of support staff associated with the management and control of the Fixed-Income Fund.

Opportunities

Investment Policy - The single most important activity that the IEEE should engage in relative to this action is creating a Board-approved investment policy from all of the documents and by-laws that provide investment guidance. The current set of fragmented documents lack clarity, and have contributed to the current skepticism about the way IEEE funds are managed. This skepticism, in turn, contributes to the overall lack of trust. A single, unified policy will help to build trust.

Benchmark - The IEEE Investment Committee and the members of the IEEE ExCom are limited in determining if the investment risk associated with the 'fixed-income fund' supports the returns. Is the real benchmark 10 percent? 15 percent? The IEEE should take the opportunity to validate risk and return for this fund.

Periodic Funds Management Peer Review - The IEEE Investment Committee should perform a periodic review of the costs associated with managing this fund and benchmark those costs with other funds that carry the same level of investment risk. If the investment dollars created by beating the outside managers significantly exceeds the additional cost, then no opportunity for savings exists. If the answer is closer to breakeven, then risk mitigation should be considered as part of capturing this cost savings opportunity.

Full Disclosure - The internal costs associated with managing the in-house fund should be grouped in a cost center to facilitate evaluation and promote trust within the IEEE.

Contingency Planning - If the IEEE chooses to continue operating the 'fixed-income fund' internally, then they should draft a contingency plan that makes allowances for a scenario where the funds manager becomes incapacitated.

6.3.2 Reduce IEEE Financial Advantage Products and Services Support

Potential Annualized Cost Savings: Up to \$130K

Financial Products and Services include those services used to develop and administer non-technical member benefit programs. These programs generate a non-dues revenue stream based on royalties received from the affinity program members. Examples include the insurance program, mortgage realty program, and credit card program.

Issue

The membership segmentation study identified IEEE Financial Advantage programs as low on the service needs list. Yet the Financial Products and Services Group delivers revenues that exceed labor costs by 10 times. Given these data points, would it make sense to reduce staffing levels if the opportunity to do so existed?

IEEE History/Observation

The IEEE has 4 FTEs supporting the financial products and services programs. Most membership-based organizations the size of the IEEE provide financial products and services. Based on our experience, the staff typically associated with managing these services is 0 to 2. What sets the IEEE apart from its peers is the service support of IEEE Financial Advantage. Eight percent of the membership would stop paying IEEE dues if IEEE Advantage was discontinued. The question is whether these members would stop paying and discontinue their service purchases, if service support was reduced.

Long-term Opportunity

Estimated cost savings of up to \$130K

There is an opportunity to lower program costs by reducing service support to the level provided by membership-based organizations. The IEEE could phase in a reduction through attrition to measure the impact of reduced service response on members.

6.3.3 Consolidate Membership Processing

Potential Annualized Cost Savings: \$1,680K

Membership Processing includes all staff activities associated with the processing and maintenance of new memberships and renewals for the IEEE. Membership processing does not include the activities associated with maintenance of new memberships and renewals for the Societies.

Issue

Are there efficiencies in combining the new membership and renewal membership staffs under one management structure?

IEEE History/Observation

The IEEE has two work forces with similar skill sets, one to process applications and another to process renewals. This creates duplication in staff at the management and processor level. In 1995, the IT transition to Oracle created a crisis in processing new and renewal memberships. The result of that crisis was the separation of new and renewal membership staffs. Since 1995, there have been improvements in processing that have kept staffing level as new memberships and membership renewals increased. Most of the membership growth since 1995 has come from student membership both within and outside the US.

Short-term Opportunity

Estimated cost savings - \$180K

In June it was determined that the IEEE would fall \$7M short of its fiscal 2003 revenue budget goals. To compensate for the shortfall, IEEE management tasked each functional area to come up with savings for presentation to the Finance Committee in September. One of the cost reduction actions is combining the new membership and renewal membership functions. This action will result in a Short-Term reduction of 1 FTE in 2003. Potential efficiencies could result in an additional 2 FTEs in 2003. Our interviews support the reduction of 3 FTEs in 2003.

Long-term Opportunity

Estimated cost savings - \$1,500K

Our research and interviews support additional reductions in the following areas: Student New Memberships, Student Renewal Memberships, and Admissions and Advancements.

Student New Memberships : Cost savings - \$1,090K

Based on feedback we have received, IEEE has a vibrant, energetic community of student members. There is clearly value in recruiting and retaining passionate, motivated, innovative student members. The current economics, though, result in a significant use of resources which are not being covered by student dues.

Fifty-three percent of all new IEEE memberships processed are student memberships. Most of these student memberships require manual data input. Some key data associated with student membership is:

- ◆ 33% retention rate
- ◆ \$75 to process each new student membership
- ◆ \$19.50 to send out Spectrum (weighted for US and International)
- ◆ \$94.50 total annual cost to support a new student member

Student dues have been raised from \$19.95 to \$30. With unrecovered costs of \$64.50 per student, the IEEE loses a minimum of \$2.58M annually processing new student memberships. A better solution is needed.

There are a variety of alternatives that should be explored, from raising dues to reducing benefits to entirely new service models. One alternative to the current model is to continue to recruit students but make the membership free and move all benefits to an electronic format. The infrastructure for electronic benefits already exists, so added costs of each member would be incremental. IEEE could offer a scaled down version of benefits while the person is a student member, then offer a full complement of benefits when they transition to a full paying member.

We recommend that this alternative, and others, be explored in an effort to significantly close the gap between the excess costs over revenue.

Student Renewal Memberships: Cost savings - \$282K

According to the IEEE All-Hands meeting presentation on 12 March 2002, there are approximately 65,000 student members. If 40,000 of those members are brought in each year, the retention rate is 19 percent for an average 3-year membership. If the renewal process was eliminated for students, 16 percent of the membership renewal staff could be eliminated based on the relationship of student renewals to total IEEE and Society renewals (65K/400K). The full labor cost reduction could be \$282K on a 3 FTE reduction.

Admissions and Advancements: Cost savings - \$124K

By eliminating an extensive review of membership qualifications and focusing on the qualifications of the fellows and senior members program, the IEEE could reduce headcount by 2 in admission and advancements for a cost reduction of \$124K.

6.3.4 Economize Publications Paper

Potential Annualized Cost Savings: \$590K

Paper publications still fill a niche, but electronic versions of the same are making the need for high quality, durable paper publications a thing of the past. More and more publications are finding their way into the fast paced, easy access world of the Internet.

Issue

The costs associated with paper publications can be reduced without impacting the effectiveness of these publications.

IEEE History/Observation

Three measures have been identified (by the Publications Department) to reduce the costs associated with paper publications while continuing to fulfill the need for paper publications:

- ◆ Reduce the paper weight from 40- to 36-pound stock
- ◆ Reduce the trim size from 11" by 8 1/4" to 10 7/8" by 8"
- ◆ Switch the non-North America distribution vendor

According to James M. Tien, "Based on the most recent input from Societies/Councils concerning their 2003 Transaction pages, it is estimated that these three measures would, respectively, result in 2003 paper and postage cost savings of \$240K, \$180K, and \$170K, for a total of \$590K. Note that these savings all go to the Societies/Councils, since paper and mailing expenses are directly charged to Society/Council budgets."

Most of these measures have been evaluated and determined to be good opportunities. However, some Societies/Councils have expressed concern regarding the proposed reduction in trim size, which would yield \$180K of savings per year.

Short-term Opportunity

Take advantage of the \$240K and \$170K costs savings now.

Long-term Opportunity

Perform a cost benefit analysis to determine if the \$180K is worth the convenience it offers the users of historical IEEE publications. Survey the universities receiving IEEE publication packages to determine:

- ◆ If the university will bind the historical publications or rely on the electronic versions (some Libraries no longer have the space to store historical documents).
- ◆ If the university will bind the current publications, and, if so, will their binding operations accommodate trim size issues.

6.3.5 Evaluate Awards Activities

Potential Annualized Cost Savings: \$390K

Awards and recognition include those costs and activities confined to IEEE Corporate Activities.

Issue

Is there another model for distributing awards that is more cost effective?

IEEE History/Observation

There is a perception amongst staff and volunteers that there has been a proliferation of awards. Some staff and volunteers believe that the cost to promote, evaluate, and select candidates is spiraling out of control. The reality is that approximately 10 awards have been added since 1995 for a total of 54. These awards reflect the changing face of technology. Awards are presented at either the annual IEEE awards banquet or at conferences. It is true that no awards have been eliminated. A committee consisting of board and staff has been created to evaluate the value of awards and make recommendations about the future shape of the awards and recognition program.

Short-term Opportunity

Estimated Cost Savings \$65K

The committee should evaluate the current set of awards offered by both IEEE and the Societies to validate their importance and value in the IEEE. The IEEE should take the opportunity to roll back staffing to the 2001 level.

Long-term Opportunity

Estimated Cost Savings \$325K

To reduce the staff cost required to manage these awards, the IEEE awards committee should ask whether the awards could be converted to a biennial schedule. The impact of this opportunity would be to reduce awards and fellows staff from 8 to 4.

7. Analysis of the IEEE’s Cost Allocation Process

The IEEE has a very intricate allocation process. In fact, it is the most complex and complicated process our subject matter experts have ever seen.

The need to allocate costs at IEEE resulted from events described earlier in this report. However, we found it surprising that IEEE had not been using a cost allocation process/model prior to 2001. Cost allocation is a standard practice throughout the nonprofit industry. It enables organizations to properly evaluate the *total costs* of programs, projects and activities and, as a result, make educated business decisions based on that data.

Our review and evaluation of IEEE’s current allocation process resulted in several recommendations for improvements. Due to the sheer complexity of the current model, many of these recommendations will require significant discussion to determine the best method for implementation. Consequently, *quick fixes to this model are not possible*. Instead, the organization must first agree to the conceptual changes outlined in this document and then determine a process for implementation.

Finally, as these conceptual changes are being discussed, IEEE should pursue on overarching objective: simplify, simplify, simplify. Simplification will aid in understanding the cost allocation process. This greater understanding will facilitate an increase in trust and confidence in the overall process.

7.1 The IEEE’s Allocation Process

There are four key steps that comprise the cost allocation process: assigning costs, pooling indirect costs, assigning metrics, and allocating cost pools.

Overview of the IEEE Cost Allocation Process Figure 7.1			
Step 1 Classify Costs	Step 2 Pool Indirect Costs	Step 3 Classify Metrics	Step 4 Allocate Cost Pools
Distinguish between direct and indirect costs.	Group indirect costs into similar pools.	Classify cost drivers to each pool based on usage.	Distribute costs to supported Organizational Units.

Step 1 - Classify Costs

This step is necessary to ensure costs are properly grouped into two main categories – direct and indirect. There are three types of costs that can be grouped into these main categories: 1) salaries and related fringe benefits, 2) vendor costs, and 3) other costs.

Salaries and Fringe Benefits

Salaries are not charged based upon how an employee spends his/her time. Rather, they are charged to a cost center based on the employee's job description and where he/she falls on the organizational chart. The assignment works like this:

- ◆ When an individual is hired he/she is assigned to a cost center (or centers) based on their job description
- ◆ That individual is then set-up in the accounting system so that his salary and related fringe benefits are charged to these pre-assigned cost centers, as incurred.

While timesheets exist, their use is limited. While non-exempt employees are required to complete timesheets, exempt employees need only complete them on an exception basis. Further, even when they are completed, the timesheets are not designed to capture time spent by cost center.

Vendor Costs

These are costs associated with payment to various types of vendors, consultants and independent contractors. They are properly charged based on which cost center incurred the cost.

Other Costs

The IEEE has identified certain other costs that are charged directly to cost centers based upon a unique metric. There are three types of other costs:

- ◆ Rent – charged based on square footage
- ◆ Depreciation - charged directly to each cost center based on the specific assets they own
- ◆ Telephone – charged based on the beginning of the year authorized head count for each cost center

Step 2. Pool Indirect Costs

Pooling indirect costs groups like costs into “buckets,” so the total of those buckets can later be allocated based upon some type of reasonable cost metric. It is also done to separate allocable corporate infrastructure costs from programmatic and fundraising costs. The IEEE utilizes thirteen indirect cost pools.

1. Administration and Payroll	7. IT-Network
2. Application Processing	8. IT-Helpdesk
3. Business Administration and Financial Planning	9. IT-Financial
4. Controllers	10. IT-Other
5. Human Resources	11. IT-Membership
6. In-house Investing & Procurement	12. Member Services
	13. See Figure 7.3

The last indirect cost pool is actually a combination of a) all of the functional areas under Indirect Core Functions and b) select functional areas under Other Corporate Functions.

Composition of 13 th Indirect Cost Pool Figure 7.3		
1. Conference Services	7. Financial Advantage	13. NY Office Supplies
2. Constituent Communications	8. Financial Services	14. Sales and Marketing
3. Corporate Activities	9. History Center	15. Shipping
4. Customer Service	10. IEEE Research	16. Travel
5. Executive	11. Mail Service	17. Warehouse
6. Facilities	12. MPS	

Step 3. Classify Metrics

In this step the IEEE assigns metrics (cost drivers) to each of the indirect cost pools. They have been designed in an effort to measure and allocate costs based on usage.

Cost Allocation Metrics Figure 7.4	
Indirect Cost Pool	Metric
Administration and Payroll	Prior year authorized headcount
Application Processing	Number of transactions
Business Administration and Financial Planning	Prior year budgeted expenses
Controllers	Prior year budgeted expenses
Human Resources	Prior year authorized headcount
In-house Investing & Procurement	Prior year budgeted expenses
IT-Financial	Prior year budgeted expenses
IT-Helpdesk	Prior year authorized headcount
IT-Membership	Number of transactions
IT-Network	Prior year authorized headcount
IT-Other	Charged based on information provided by departments
Member Services	Number of transactions

Metrics used for Pool thirteen are complicated and are discussed in detail under Step 4 – Indirect Infrastructure Charge.

Step 4. Allocate Cost Pools

The final step in the process is the actual allocation of cost pools based on the metrics assigned to each pool. This is accomplished mainly through a two-tier allocation method. However, there are certain

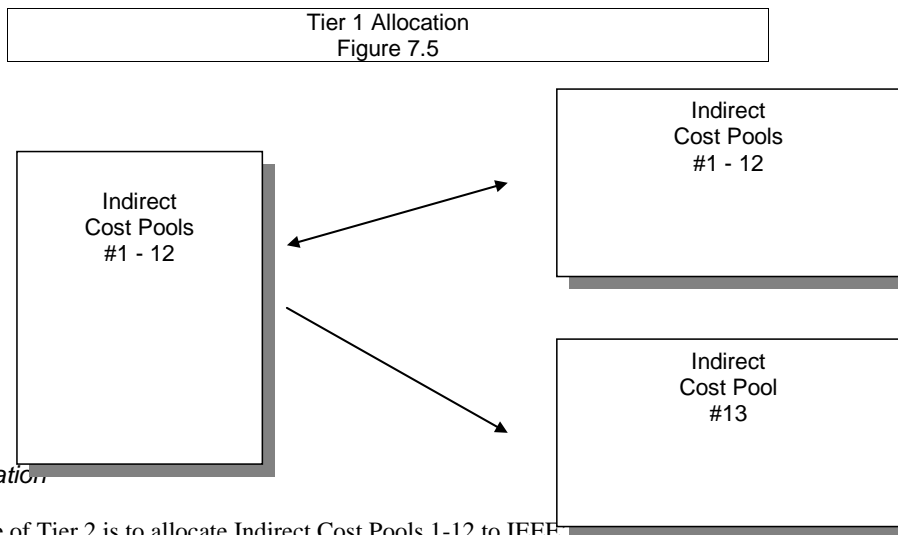
residual indirect costs which are grouped with other corporate revenue/costs and charged out under an entirely different methodology.

Tier 1 Allocation

The objective of the Tier 1 allocation is to ensure each indirect cost pool reflects a realistic pool of costs. This is accomplished by re-distributing costs amongst the pools based on the usage of costs by each pool.

There are reciprocal allocations between pools 1-12, and only one-way allocations from pools 1-12 to pool 13 (see Figure 7.5, Tier 1 Allocation). The rationale behind this is *that the individual cost pools within 1-12 each provide some benefit (via usage) to the other*. For example, payroll services are utilized by the human resources group and, conversely, human resources services are utilized by payroll. Thus, it is appropriate to have a reciprocal allocation.

The individual cost pools within 1-12 provide some benefit to the functions within cost pool 13, but those functions do not provide benefit back to pools 1-12. For example, the IT help desk provides services to conference services, but conference services does not provide services to the IT help desk.



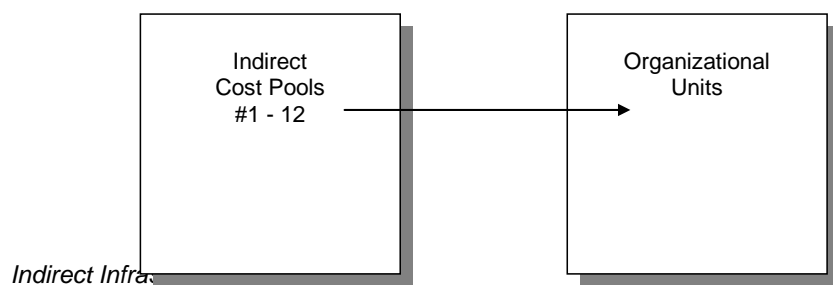
Tier 2 Allocation

The objective of Tier 2 is to allocate Indirect Cost Pools 1-12 to IEEE utilizing those services. The 9 Organizational Units are:

- ◆ Educational Activities
- ◆ IEEE – USA
- ◆ Membership Renewal
- ◆ Publications
- ◆ Regional Activities
- ◆ Societies & Councils
- ◆ Publications - Spectrum
- ◆ Standards Association
- ◆ Technical Activities

Each of the 12 pools is allocated based upon the metrics assigned to each pool (see Figure 7.4)⁹. When the Tier 2 allocation is complete, no costs remain in any of the 12 indirect cost pools. The *only* pool of indirect costs remaining is in pool 13.

Tier 2 Allocation
Figure 7.6



The final allocation is really not an allocation in the true sense. It is merely a shifting of revenues and expenses for the purpose of bringing IEEE Corporate to a breakeven state. It is accomplished as follows:

Once Tier 1 and 2 allocations are performed, and the budgets are finalized, a calculation is performed that aggregates the remaining costs of indirect cost pool 13 with all remaining IEEE Corporate Business Units.

These costs are then netted with all sources of corporate revenue:

- ◆ Financial Advantage Program
- ◆ Member Dues
- ◆ Corporate Recovery
- ◆ Publications

This netted amount, the remaining indirect infrastructure costs, is then allocated to the remaining Organizational Units.

- ◆ IEEE – USA
- ◆ Technical Activities
- ◆ Regional Activities
- ◆ Educational Activities
- ◆ Standards Association

⁹ There are two exceptions. IT-Network and IT-Help Desk are allocated by prior year authorized headcount less the Computer Society's total authorized headcount.

There is one major caveat to this last step. Based on the recommendation of the Adler committee, and approved by the IEEE Board of Directors, the indirect infrastructure costs are ultimately allocated only to those units with *positive* reserves.

Under this method, RAB, EAB and IEEE-USA are allocated a share of indirect infrastructure charges. However, those charges are “paid for” by member dues. Consequently, the charges come back to the Societies/Councils and Standards Association because there is less dues revenue to offset indirect infrastructure costs.

We recognize this was done to ensure the indirect infrastructure charges showed up in the budgets of RAB, EAB and IEEE-USA. Nonetheless, the Societies/Councils and Standards Association ultimately bear the costs.

7.2 Variances in the Allocation Process

In the section above we have described how indirect costs are grouped into pools (Figure 7.2), the metrics assigned to each pool (Figure 7.4), and how those pools get allocated to the supported organizational units.

However, it is important to note that the allocations discussed above are performed at the IEEE Corporate level. The allocation of indirect costs and indirect infrastructure charges as calculated by IEEE Corporate are, instead, determined by TAB.

There are four independent calculations that are performed by TAD as directed by TAB to allocate costs to Societies and Councils. They are done to allocate:

- ◆ TAD Operating Costs
- ◆ TAD Corporate Infrastructure Allocation
- ◆ Societies and Councils' Direct Corporate Infrastructure Allocation
- ◆ Societies and Councils' Indirect Corporate Infrastructure Allocation

Allocation of Costs to Societies and Councils
Figure 7.7

Cost	What's In It	How It Is Allocated
TAD Operating Costs	Basic operating costs of the Technical Activities Department and TAB committees	Algorithm based on each Society and Council's share of the intellectual property package revenue.
TAD Indirect Cost Allocation	Indirect cost pools #1-12	Not allocated. Covered by TAB reserves.
Society and Council Cost Allocation	Indirect cost pools #1-12	2002 – Blended method 2003 – 2/3 blended, 1/3 principles 2004 – 1/3 blended, 2/3 principles 2005 – Principles method
Society and Council Indirect Infrastructure Charges	Indirect infrastructure charges	Final method still being evaluated. 2002 – Hybrid of ASPP, book brokers and reserves. 2003 – Hybrid of ASPP, book brokers and reserves.

7.2.1 Allocation to Societies and Councils - Key Definitions

Blended Method – Costs are allocated to Societies and Councils based on the proportion of their reserves to the total reserves of all Societies and Councils.

Principles Method – Costs are allocated based on a variety of metrics that are more closely linked to usage.

- ◆ Member services, application processing and IT-Membership are allocated in proportion to membership. The applicable metrics used are:
 - Societies – number of members in a Society
 - Co-Publications – number of subscribers
 - Councils – number of subscribers for transactions (since councils do not have members)
- ◆ Human resources, payroll, and IT-Common are allocated in proportion to authorized staff headcount. The applicable metrics used are the number of staff in executive office (an exception is the Computer Society for the IT since they have their own staff)
- ◆ Controllers, business administration, procurement and IT – Financial are allocated in proportion to infrastructure usage. The applicable metric used is expenses. However, conference expenses are exempted since these do not relate to IEEE corporate activities. In addition, if a portion of a Societies or Council's executive office actually reduces IEEE corporate infrastructure expenses then this expense for the executive office is also exempted.

All Society Publications Package – Algorithm used to allocate revenue to societies for sales of the combined publications package.

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7.3 Cost Allocation Best Practices in Nonprofits

Having detailed IEEE's cost allocation process, it is now important to understand the best practices used by nonprofit organizations when allocating their indirect costs.

There is no right or wrong way when it comes to cost allocation. In fact, technical literature on the subject suggests only that cost allocation process be reasonable, consistent and systematically applied. However, when it comes to cost allocation practices at the world's best run nonprofit organizations, there are definite common traits.

Trait #1 – They Assign Costs Directly Whenever Feasible

Best practice organizations strive to charge costs directly as often as they can. They do this in an effort to really understand where costs are being generated. However, when doing this, they also use a materiality threshold to avoid wasting time splitting nickels and dimes.

The types of costs that are charged directly include *vendor costs* paid to outside vendors and consultants, and salaries and fringe benefits paid to staff. Salaries and fringe benefits are often the largest component of any organization's costs. This is the very reason it is necessary to track and charge those costs directly whenever possible.

Trait #2 – They Aggregate Allocable Costs into Fewer than Four Indirect Cost Pools

Best practice organizations recognize the cost/benefit of being exact versus the impact that exactness has on decision-making. They recognize that allocation processes are designed to help an organization understand the total costs of each program/activity to enable it to make better business decisions. There are diminishing returns with preciseness. Best practice organizations manage an effective balance by limiting the number of cost pools used.

Trait #3 – They Assign Cost Metrics That Are Reasonable Measures of Usage

Best practice organizations link allocation metrics to resource usage. After all, if the objective is to see the total costs of a particular program/activity, it is only appropriate that the program bears indirect costs in relation to the usage of those costs.

You will also find that these organizations use metrics that are reasonable on the whole, and have information that is readily available.

Trait #4 – They Apply the Same Process, Consistently, from Year to Year

Think what would happen if you altered an employee's evaluation form every year. You would have no consistent benchmark, no comparative information from which to evaluate progress. Nor would you be able to identify ongoing problems with performance or exceptional trends in performance.

This same logic holds true to the cost allocation process. The best organizations benchmark information and effectively measure performance from year to year. A critical component of that is applying the same measurements, consistently, year after year.

Trait #5 – They Apply the Same Process, Consistently, Throughout the Organization

The final trait ensures that a systematic process is followed and that all units are treated consistently. Best practice organizations realize the importance of a systematic process and ensure that all units are treated the same.

7.4 Comparing Best Practices to the IEEE's Allocation Process

Trait #1 –Charging Costs Directly Whenever Possible

Analysis

Salaries and fringe benefits are not charged to cost centers based on the time spent on those activities on behalf of those cost centers. Rather, they are charged to each person's "home" cost center. While this process works when employees stay within their own cost center, it does not when work supports a variety of projects and/or cost centers. Vendor costs are being directly charged. Other costs – rent, depreciation, and telephone – are also being charged directly to cost centers.

Recommended Actions

Salaries and related fringe benefits should be charged to cost centers based on actual time spent on activities within the cost center. This will enable the IEEE to better manage, at various levels, its largest cost component – salaries and fringes.

Guidelines will need to be established which differentiate the types of activities that should be charged directly to cost centers from those that should be charged to overhead. For example, the time to run month end financial statements for all business units might be a general "overhead" charge, while the time to design a newly requested financial statement from a particular business unit or cost center would be a direct charge.

In order to facilitate this, the IEEE should utilize the new eTime system¹⁰ and require every employee to track and record time by cost center as defined in the guidelines. Fringe benefits should be charged in direct proportion to salaries.

Benefits

Though moving an entire organization to timesheets is a major change effort, it is worth the effort. Requiring employees to directly charge their costs will provide the IEEE with a much better picture of its direct and indirect cost structure. More costs will most likely be shifted from indirect to direct, enabling the organization to make more educated business decisions.

Trait #2 –Aggregating Allocable Costs into Fewer than Four Indirect Cost Pools

Analysis

The IEEE has, in effect, thirteen different cost pools, which are far too many. Also, there are a few cost centers that appear to act more like programmatic activities versus indirect costs.

Recommended Actions

¹⁰ eTime is the new electronic time and attendance software that Business Administration is planning to roll out.

The number of cost pools should be significantly decreased, preferably below four. Many best practice organizations use three standard pools – fringe benefits, overhead, and general & administrative. Steps should be taken to analyze the IEEE’s current set of pools and consolidate them.

Certain cost centers should be removed entirely from all of the indirect cost pools as they are programmatic activities and not indirect costs. These cost centers are:

- ◆ Conference Management
- ◆ Corporate Activities and Awards
- ◆ Customer Service
- ◆ History Center
- ◆ IEEE Research
- ◆ Travel Services

These cost centers should be grouped with a more appropriate business unit and receive an allocation of indirect costs, as appropriate.

Benefits

Reducing the cost pools would significantly streamline the allocation process, making it much simpler to administer and understand.

Trait #3 –Assigning Cost Metrics That Are Reasonable Measures of Usage

Analysis

Metrics used by the IEEE have evolved from being based on the ability to pay to being based on usage. This is right in line with best practices.

Metrics are generally based on authorized, budgeted or prior year statistics. This is not a best practice as they only reflect the actual use of resources if the metrics stay constant from year to year. There are several examples that can be cited where this is not the case.

Recommended Actions

Once the cost pools are consolidated, continue to use simple metrics based on usage. Many best practice organizations use metrics that enable them to convert costs into rates. For example, a fringe benefit rate may be established so that cost centers can easily estimate their costs by multiplying the rate by total salaries of that cost center. The same could be said for an “overhead” cost pool or a general and administration cost pool.

Use actual information when applying these metrics. While this need not be done every month, allocations could be adjusted at least quarterly based on actual information.

Benefits

Using actual information will enable cost centers to see and analyze their actual costs that will, in turn, enable them to make better educated business decisions.

Trait #4 –Applying the Same Process, Consistently, from Year to Year

Analysis

TAB has changed its allocation methodology each of the last two years, and has a transition plan that will change the methodology each of the next 3 years through 2005.

Recommended Actions

Modify the cost allocation model as described in this report then continue to implement that model until there is an appropriate reason for modifying it.

Benefits

The organization will be able to make trend comparisons with consistent information.

Trait #5 – Applying the Same Process, Consistently, Throughout the Organization

Analysis

The IEEE is not consistent in its allocation of costs throughout the organization (as discussed in Section 7.2). This is most evident in regard to the Societies and Councils.

Recommended Actions

Use the same allocation process/metrics for all Organizational Units.

Benefits

Significant time will be saved from recalculating, debating and reallocating indirect costs. It is also the best evidence of a “fair” allocation model, and does not benefit any one Organizational Unit more than another.

8. Call to Action

In this report we have identified several opportunities for efficiency improvements and cost savings. They are the result of hours and hours of interviews, document review and analysis. Over 60 IEEE volunteers and staff made this possible by providing documentation we requested and clearing their busy schedules for our interviews (sometimes three and four times).

This participation by staff and volunteers, and their candor in interviews, were the two critical elements enabling this project to be completed on time. We are very encouraged by the openness we received and, as such, are confident that significant, positive change can occur at the IEEE.

In fact, as noted earlier in the report, the IEEE has already had great success with many smaller change initiatives. This is important because we have identified several smaller opportunities which are relatively easy to evaluate/implement and can result in some immediate successes. A series of short-term successes will be important to getting traction for the more significant changes we have also recommended.

In developing a process for evaluating and actioning this report, we recommend that the following two elements be incorporated into the overall process.

Appoint a Standing Committee to Act as Change Champions

To ensure action is taken, we recommend that IEEE appoint a committee to proactively champion and facilitate the evaluation, approval and implementation of recommendations. This committee of “Change Champions” would be responsible for:

- ◆ Establishing a process for evaluating recommendations
- ◆ Prioritizing approved recommendations
- ◆ Setting a timeline for implementation of approved recommendations
- ◆ Facilitating the development of action plans for each approved recommendation
- ◆ Monitoring implementation
- ◆ Reporting on results

The IEEE Board of Directors should be responsible for appointing a committee of change champions. We strongly encourage the Board to include members of the ORC on this committee. The turnover and term limits of ad hoc committees have been major impediments to implementing some of the change recommendations made by those committees. It is important that knowledge be transferred from the ORC to this new committee either through temporary or permanent membership.

Develop an Evaluation and Action Timeline

The IEEE is quite good at developing timelines and transition plans. We saw examples of this in many of the studies we reviewed.

The important point here is that the opportunities outlined in this report can be pursued *concurrently*. There is no sequential order. Short-term opportunities will be easier to evaluate and implement; intermediate slightly harder. Long term opportunities may take significant discussion and consensus

building to action. So, while implementing a long-term initiative may take two to three years, evaluating those opportunities should begin *now*. The same logic holds true for modifications to the cost allocation process.

9. Appendices

9.1 Report: A Blueprint for the Future Governance of IEEE: Recommendation of the President's Blue Ribbon Committee on IEEE Governance

As an example of work done previously by IEEE volunteers, we have included the full text of this report as an attachment. It is one example of many reports that have been prepared which provide recommendations to improve the efficiency and effectiveness of IEEE. It is included only for reference as it is also referred to in the body of this report.

9.2 Schedule: IEEE Fixed Income Fund

Total Returns

1977-2001

<u>YEAR</u>	<u>TOTAL ANNUAL RETURN</u>	<u>2 year</u>	<u>3 year</u>	<u>5 year</u>	<u>10 year</u>	<u>20 year</u>
1977	4.99					
1978	2.81					
1979	4.65					
1980	4.60					
1981	7.90					
1982	29.27					29.27
1983	9.72					9.72
1984	11.77					11.77
1985	20.16					20.16
1986	15.21					15.21
1987	3.51					3.51
1988	9.83					9.83
1989	11.26					11.26
1990	13.70					13.70
1991	19.65					19.65
1992	14.79				14.79	14.79
1993	14.09				14.09	14.09
1994	(4.10)				(4.10)	(4.10)
1995	22.06				22.06	22.06
1996	(0.40)				(0.40)	(0.40)
1997	12.72			12.72	12.72	12.72
1998	9.90			9.90	9.90	9.90
1999	(4.83)		(4.83)	(4.83)	(4.83)	(4.83)
2000	17.10	17.10	17.10	17.10	17.10	17.10
2001	(1.46)	(1.46)	(1.46)	(1.46)	(1.46)	(1.46)
ANNUAL	9.75	7.82	3.60	6.69	7.99	11.20

This schedule was determined from IEEE management via Callan Associates. The data has not been verified or audited by BDO Seidman.

9.3 Interview List

Name	Position	Organization/Business Unit
Adler, Mike	President - Elect	IEEE
Apter, Marc	Director, Region 2	IEEE
Bailey, Bob	Director	Financial Planning
Barber, Sonny	Director, Corp Communications	Corporate Communications
Binder, Michael	Director, A&A	Regional Activities
Bodson, Dennis	President	Engineering Management Society
Carroccia, Kim	Payroll Manager	Controller's Office
Caston, Dale	Treasurer	IEEE
Conner, Dave	Past Chair, Finance Committee	IEEE
Cook, Bill	Staff Director	Member/Customer Services
Cox, Kelly	P/T Business Manager	Information Technology
Curtis, Don	Staff Director	Human Resources
Czapor, Frank	Business Continuity Planning Manager	Controller's Office
Dahl, Jon	Staff Director	Sales & Marketing
de Marca, Roberto	Former President	Communications Society
Dent, Robert	Executive Director	Power Engineering Society
Desmond, Celia	President	Communications Society
Dukes, Donna	Supervisor A&A	Regional Activities
Durniak, Tony	Staff Executive	Publications
Eisenstein, Bruce	Former President	IEEE
Estey, John	President	Power Engineering Society
Fernandez Versteegan, Hugo	Secretary	IEEE
Fleisher, Hal	Treasurer	Technical Activities Board
Galicki, Dave	Manager, Tax Compliance	Tax & Compliance
Gerstmann, Elena	Director, IEEE Research	IEEE Research
Gilbert, Ken	Director, Business Administration	Technical Activities
Hennage, David	Executive Director	Computer Society
Herz, Eric	Director Emeritus	IEEE
Hourican, Donna	Project Manager, Business Administration	Controller's Office
Howard, Jim	Director, Region 3	IEEE
Howell, Jack	Executive Director	Communications Society
Jankowski, Cecelia	Managing Director	Regional Activities
Jones, Rob	Staff Director	Information Technology

Interviewee List (cont.)

Name	Position	Organization/Business Unit
Katronetsky, Fern	Director, Awards, IEEE Foundation & Corporate Administration	Corporate Activities
Kowalczyk, Mercy	Executive Director	Signal Processing Society
Lightner, Mike	Vice President	Technical Activities Board
Loeb, Matt	Staff Director	Corporate Strategy & Communications
Low, Teck-Seng	Director, Region 10	IEEE
Lynch, Tom	Staff Director	Financial Services
Marlotte, Anne	Director, EE Dev and Proc	Human Resources
Masten, Mike	Former TAB Vice President	IEEE
Maze, Ken	Director, Operations Audit	Controller's Office
Oduyela, Stella	Director of Accounting	Controller's Office
O'Neill, Anne	Executive Director	Solid-State Circuits Society
O'Reggio, Olyne	Supervisor Application Processing	Regional Activities
Pabbatireddy, Sudheer	Manager Database Administration	Information Technology
Pitcher, Bonnie	Accounting Manager	Controller's Office
Reeck, Rita	Director	Information Technology
Reed, Wally	Former President	IEEE
Schwartz, Dick	Staff Executive	Business Administration
Senese, Dan	Executive Director	IEEE
Shumate, Paul	Executive Director	Lasers and Electro-Optics Society
Smith, Lyle	Staff Director	Corporate Activities
Snyder, Joel	Past President	IEEE
Sosa, Michael	Staff Director	In-House Investments & Procurement
Terman, Lew	Former President	IEEE
Thiel, Linda	Manager	Financial Planning
Tickman, Marsha	Executive Director	Components, Packaging, and Manufacturing Technology Society
Ulinsky, Sandra	Contracts/Investment Administrator	In-House Investments & Procurement
Van Der Vort, William	Executive Director	Electron Devices Society
Van Der Zyde, John	Director of Electronic Communications	Information Technology

Vig, John Director, Division IX IEEE

Interviewee List (cont.)

Name	Position	Organization/Business Unit
Wah, Ben	Past President	Computer Society
Ward-Callan, Mary	Managing Director	Technical Activities
Weinstein, Steve	Director, Division III	IEEE
Willan, Gary	Manager	Procurement
Witsken, John	Staff Executive and CIO	Information Technology
Wolf, Laura	Executive Director	Engineering in Medicine and Biology Society

9.4 Resource List

Operating Ratio Report, Eleventh Edition, American Society of Association Executives, 2000

Systems Thinking: Managing Chaos and Complexity, Jamshid Gharajedaghi, 1999

The Nonprofit Governance Index, Board Source (formerly National Center for Nonprofit Boards), 2000

The Will to Govern Well: Knowledge, Trust and Nimbleness, ASAE Foundation, 2002

9.5 Summary Opportunities for Improvements in Efficiency and Cost Savings

Opportunity Number	Description	Potential Savings
6.1.1	Improve the Efficiency and Effectiveness of Governance	NQ
6.1.2	Adopt a Life-Cycle Costing Model	NQ
6.1.3	Increase the Effectiveness of the IEEE's Decentralized Business Model	NQ
6.1.4	Simplify Business Rules	\$ 2,700,000
6.1.5	Revitalize the Strategic Focus	NQ
6.1.6	Gain Clarity and Consensus on Digital Divide Thinking	NQ
6.2.1	Consolidate Conference/Meeting Management	NQ
6.2.2	Consolidate Career Print Activities	NQ
6.2.3	Consolidate Facilities	NQ
6.2.4	Evaluate Corporate Infrastructure Overhead	NQ
6.2.5	Evaluate Corporate Infrastructure Management	NQ
6.2.6	Reduce Oracle Financial System Support	\$ 400,000
6.2.7	Consolidate IT Hardware and Software	\$ 670,000
6.2.8	Analyze Governance and Staff Travel Costs	NQ
6.3.1	Validate In-House 'Fixed-Income Fund' Investment Management	\$ 300,000
6.3.2	Reduce IEEE Financial Advantage Products and Services Support	\$ 130,000
6.3.3	Consolidate Membership Processing	\$ 1,680,000
6.3.4	Economize Publication Paper	\$ 590,000
6.3.5	Evaluate Awards Activities	\$ 390,000

NQ = Not Qualified