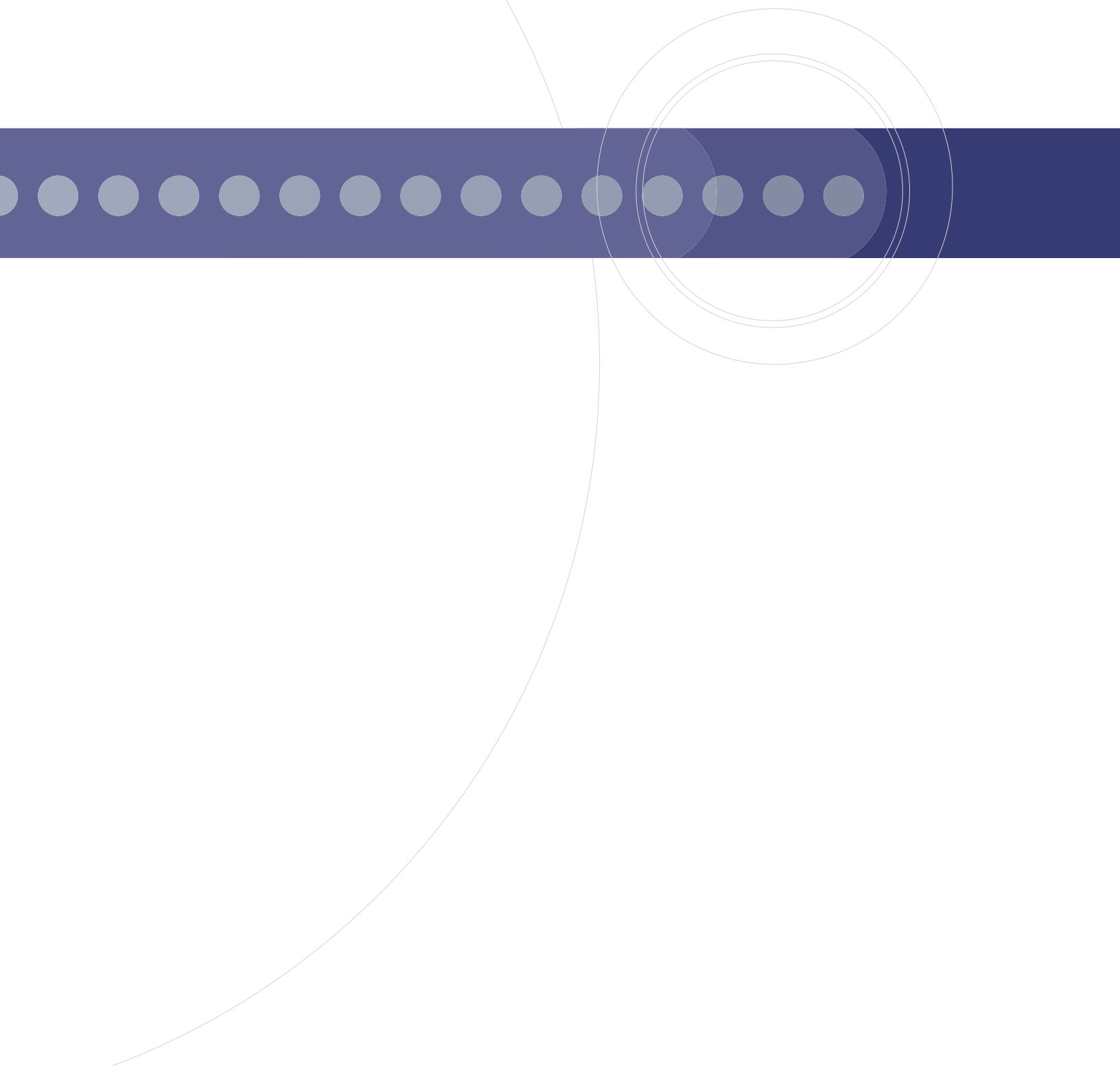


# The Economics of Integration Competency Centers



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## Foreword (by John Schmidt)

Integration is difficult but there is tremendous value in connecting people and systems across an organization in seamless processes that optimize the business and serve the customer. These two forces—difficult to do but beneficial when done well—make integration competency centers (ICCs) such a compelling approach.

There is a host of reasons why integration is important, including technology issues such as incompatible data definitions from different applications or inconsistent interfaces between vendors that make the promise of “plug and play” more like a “square peg in a round hole.” When the long list of technical reasons is exhausted, we can add political and social factors such as conflicting motivations driven by inconsistent incentives, lack of trust between organizational groups, and the “not invented here” syndrome.

At the heart of the integration challenge is complexity and change. If we didn’t have layer upon layer of technology with massive amounts of data and if things just stopped changing, we wouldn’t have this problem.

Out of this challenge comes an opportunity: the possibility to differentiate your business. After all, if integration were easy, if it was a commodity, everyone would do it and there would be no competitive advantage. The organizations that develop a 360-degree view of their customers and are therefore able to serve them better and sell to them more effectively will be rewarded with increased market share. Organizations that have “one version of the truth” for business operations and finances will operate more efficiently and with the right data to make wise decisions. Organizations that govern their data have an advantage in protecting their intellectual property, securing their customers’ data, and satisfying costly regulatory obligations.

More than three years ago, David Lyle and I wrote the first book on this topic, *Integration Competency Center: An Implementation Methodology*. Since then, I have been rewarded to see it adopted by thousands of individuals and hundreds of organizations using it to help establish an ICC. The vast majority of feedback from readers is positive such as these excerpts from amazon.com reader comments:

“I think this book is a fantastic help for anybody from starter to more experienced managers. It gives a very good and structural approach on Competency Centers, and I successfully used it to create a Business Intelligence CC.”

“Pages of well-developed thoughts and practical concepts presented for consumption by novice or architect on what to most is still an evolving discipline. Master these competencies and unlock the benefits of agility inside your enterprise. I just bought four more copies and consider it a must read for my managers.”

“Their [Schmidt and Lyle] insistence that integration is a separate layer and not simply a component or API to an application is a very important point, and one that is not always appreciated. Think of this layer as the structure that makes possible emergent value for an organization.”

The one criticism of the book from some readers is that it's not enough. The ICC book has helped many successfully down the integration path, but now they are hungry for more. As one reader put it:

“It would have been nice if the authors could have provided more information on certain advanced topics. Treatment of Web services, business processes and orchestration is very thin, and these are the emerging value centers for integration. Semantic integration, the future paradigm, receives only cursory treatment. Complex event processing and content integration (which poses separate problems from data integration) are not covered.”

So I am happy to report that an extended edition of the ICC book is in the works. It may take a year or so before it is published, but in the interests of serving loyal readers, we are not waiting to release some of the new content. This paper is one of several new chapters planned for the next edition. Note that it is not necessary to read the ICC book first. This paper provides sufficient context that it can be read on its own.

Questions from organizations about the best way to structure a chargeback model, how to create incentives to encourage enterprise-wide adoption, and best practices for justifying investments in shared infrastructure led us to tackle the issue of economics first in this new series of papers.

This paper addresses these and other related questions, but does more than provide answers. It starts by exploring and elucidating the underlying dynamics that drive organizational and individual behaviors: namely, the challenges associated with making trade-offs among limited resources such as time, money, people, and management attention.

I would like to also take this time to give a special “thank you” to Don Heiser, for his time and contributions to this paper.

My hope is that this paper will equip you to answer not just these specific questions but a broad range of other questions as well. And if it helps you to achieve the benefits of integration a little more easily, then it will have done its job.



## Introduction

Economics is the social science that studies the production, distribution, and consumption of goods and services. More importantly, economic concepts are applicable to integration competency centers. ICCs are shared service functions that operate in an internal economy where they serve multiple groups. ICCs need to compete for the attention of internal consumers who often have alternative choices that allow them to avoid using the shared service if it isn't perceived as providing value. ICCs must also compete internally for investment capital in order to improve service delivery capabilities and must make regular decisions about how to best allocate limited resources.

This paper explores the effective use of integration competency centers in medium-size and large organizations and how economic concepts can be applied to achieve breakthrough business results. These results include improved bottom-line profits, effective management of risks and regulatory compliance, consistent customer experience across products and channels, and enhanced quality of work-life for employees. As a side benefit of applying these concepts, a sustainable model is established for the ICC in a way that is highly engaging and rewarding for the people that work in it.

This paper is divided into five sections:

1. **What Are Integration Competency Centers?** This section provides a definition of ICCs and the various operating models they come in. It also discusses the motivation for establishing ICCs and why they are a critical aspect of a modern corporation.
2. **Challenges and Root Cause Analysis.** This section explores the inherent difficulties in establishing, operating, and sustaining an ICC. In particular, it illuminates some of the forces behind the business-IT divide and why it is so hard to achieve alignment between business and IT needs.
3. **Economic Framework and Incentives.** This section introduces a framework for evaluating funding alternatives. It also explores how social and moral incentives can be used to drive changes in an organization and influence the behavior of individuals and groups.
4. **Financial Models.** This section presents various chargeback options and investment strategies and how different ICC organizational models can best use them to encourage positive organizational behavior.
5. **Case Studies.** The final section explores several real-world case studies related to ICC shared infrastructure investment justifications and chargeback accounting methods. The lessons learned and insights are highlighted.

## What Are Integration Competency Centers?

Integration competency centers come in a variety of forms and go by many different names. This section describes their defining characteristics and the range of organizational models commonly found in medium-size and large enterprises.


An integration competency center (or ICC) is a shared service within an organization. A shared service refers to the provision of a service by one part of an organization or group to another. The funding and resourcing of the service is shared and the providing department becomes an internal service provider.

Here are some of the many reasons that organizations may want to establish an ICC:

- Optimize use of scarce resources by combining staff and tools into one group
- Gain tighter governance and control over a critical aspect of the business or infrastructure
- Improve customers' experience by integrating information and establishing consistent processes across channels and products
- Reduce project delivery times and development and maintenance costs
- Improve ROI through reuse of low-level building blocks, application components, and codified business rules
- Decrease duplication of data integration and data quality efforts by promoting the concept of reuse within projects and the enterprise
- Build on past successes instead of reinventing the wheel with each project
- Lower total technology cost of ownership by leveraging technology investments across multiple projects
- Capture best practices and lessons learned from one project to the next to build on a knowledge base to secure the objectives cited in this list

In short, an ICC is anything that has perceived value if two or more functional groups need to collaborate, and sustain that collaboration, across multiple projects or on an ongoing basis. The business value of capturing lessons learned through experience and knowledge management of common patterns and procedures to achieve true integration of data benefits the organization.

An ICC is an organizational unit with a specific delivery capability (competency). It consists of people with special skills, defined processes and methods, and technology and tools to support the capabilities it offers. Although the ICC may be a temporary unit focused on a specific project, it generally describes a permanent part of an organization that is responsible for maintaining repeatable methods for a defined capability.



Enterprises are generally -subdivided into a number of functions such as marketing, sales, distribution, finance, and human resources that are commonly referred to as “silos” or “stovepipes”. Shared service groups operate across the silos and are often referred to as Centers of Expertise (COEs) or by adding “Enterprise” as a qualifier to the defined capability. Some examples include:

- Call Center COE
- Enterprise Architecture
- Enterprise Customer Portal
- Business Process Management COE

An ICC is a specific type of shared service function with a mission to achieve an outcome that requires coordination across functional areas on an ongoing basis. In other words, its mission is to facilitate collaboration across organizational functions and thereby enable processes or solutions that cut across traditional silos. This goal frequently includes responsibility for managing and operating integration systems or shared infrastructure elements. Some examples include:

- Business Intelligence COE
- Data Integration Competency Center
- Service-Oriented Architecture (SOA) COE
- Enterprise Data Warehouse

A further characteristic that defines an ICC is the degree to which it takes a holistic perspective of the functional groups it serves and strives to synthesize their needs (which may be conflicting) by driving business process changes and investments. The following sample ICC charters highlight two options. The first one focuses on integration as a competency that leverages staff and common processes in an efficient manner. The second example focuses on synthesizing potentially conflicting motivations in the interest of optimizing the enterprise and acting as an organizational change agent.

- Scenario 1: Sample charter for a competency-focused ICC  
Manage data integration pilots and projects across the company; develop and maintain data feeds for a data warehouse; lead and support data integration projects with the cooperation of subject matter experts; develop staff specialists in integration processes and operations and leverage their expertise company-wide.
- Scenario 2: Sample charter for a change-focused ICC  
Establish a data governance program; gain agreement across functional areas for common business definitions; lead organizational changes to establish stewardship among business leaders for defined information subjects; develop business cases and drive investments for a data integration infrastructure shared across the enterprise; promote data integration as a formal discipline across the enterprise, including data warehousing, data migration, data quality management, and data integration for SOA.

Both scenarios need competent individuals with specialized skills, offer well-defined services, are customer-driven, constantly improve their processes, and have the necessary tools to operate efficiently. In addition, the ICC in scenario 2 serves as a leader to drive change through the organization in line with the corporate mission, negotiate resolution to competing ideas, and build compromises for silos to work together in the interests of optimizing the enterprise.

## ICC Operating Models

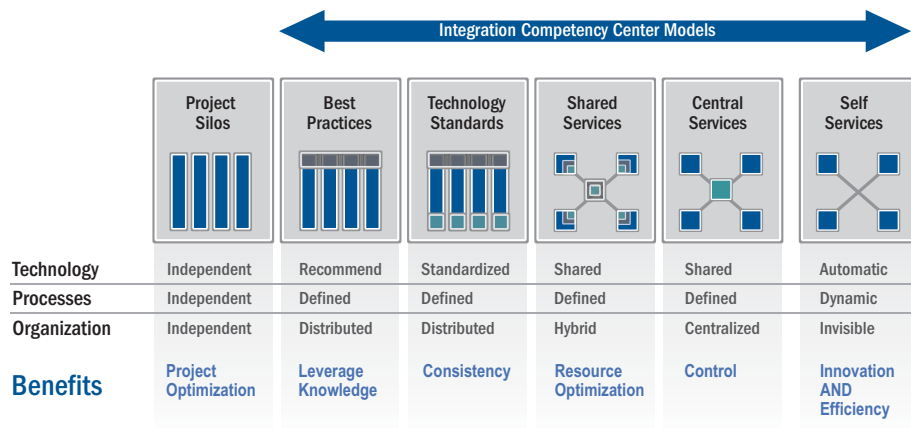



Figure 1: ICC organizational models

There are a number of ways an ICC can be organized and a wide range of responsibilities with which it can be chartered. According to the 2005 book *Integration Competency Center: An Implementation Methodology* by John Schmidt and David Lyle, there are five ICC organizational models:

1. **Best Practices ICC:** The primary function of this ICC model is to drive adoption of best practices by documenting and promoting them. It does not include a central support or development team to implement those standards across projects. To implement a Best Practices ICC, companies need a flexible development environment that supports diverse group and enables a team to enhance and extend existing systems and processes. Such a team might be a subset of an existing enterprise architecture capability and generally consists of a small number of staff.
2. **Standard Services ICC:** A Standard Services ICC provides the same knowledge leverage as a Best Practices ICC, but enforces technical consistency in software development and hardware choices. A Standard Services ICC focuses on processes, including standardizing and enforcing naming conventions, establishing metadata standards, instituting change management procedures, and providing standards training. This type of ICC also reviews emerging technologies, selects vendors, and manages hardware and software systems. Such an ICC is often tightly linked with the enterprise architecture team and may be slightly larger than a typical Best Practices ICC.
3. **Shared Services ICC:** A Shared Services ICC furnishes a supported technical environment and services ranging from development support to a help desk for projects in production. This type of ICC is significantly more complex than a Best Practices or Standard Services model. It establishes processes for knowledge management, including product training, standards enforcement, technology benchmarking, and metadata management, and it facilitates impact analysis, software quality, and effective use of developer resources across projects. The organizational structure of a Shared Services ICC is sometimes referred to as a hybrid or federated model, which often includes a small central coordinating team plus dotted-line reporting relationships with multiple distributed teams.

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4. **Central Services ICC:** A Central Services ICC controls integration across the enterprise. It carries out the same processes as the other models, but in addition usually has its own budget and a charge-back methodology. It also offers more support for development projects, providing management, development resources, data profiling, data quality, and unit testing. Because a Central Services ICC is more involved in development activities than the other models, it requires production operators and integration developers. The Central Services ICC staff do not need to be in a central location and may be distributed geographically; the important distinction is that the staff have a solid-line reporting relationship to the ICC director. The size of these teams can vary and may be as large as 10 to 15 percent of the IT staff in an organization.
  5. **Self-Service ICC:** The Self-Service ICC represents the highest level of maturity in an organization. The ICC itself may be almost invisible in that its functions are ingrained in the day-to-day systems development life cycle and its operations are tightly integrated with the infrastructure so users can serve themselves. The ICC staff work behind the scenes to maintain the automated tools and may not be directly visible to the service consumer. This ICC model achieves both a highly efficient operation and provides an environment where independent development and innovation can flourish. This involves enforcement of integration standards and automated processes enabled by tools and systems. An example of an ICC is the salesforce.com software-as-a-service (SaaS) offering by Informatica, which allows users to quickly and easily migrate data between internal corporate applications and the salesforce.com hosted environment.

To summarize, ICCs can be established at various levels: within a division of a company, at the enterprise level, or across multiple companies in a supply chain. ICCs may also go by different names and come in different organizational models, but they all aim to enhance the value and effectiveness of the enterprise.

## Challenges and Root Cause Analysis

It is particularly crucial for ICCs to be able to influence functional silos and change organizational behavior. The desired changes may simply be to have certain activities performed by a shared service function rather than individually by each silo or they may involve aligning customer processes and business metrics across lines of business. In any event, leading change in a large organization is not easy, but it can be accomplished with an appropriate campaign. This section explores the underlying forces that fuel an organization's culture and the root causes of roadblocks to change.

ICCs, by definition, exist in a matrix structure with indirect responsibility for activities that cut across organizational silos. This indirect responsibility is the source of a number of fundamental challenges that can prevent the effective operation of an ICC. Is there a success pattern that we can copy? Although there may not be a "silver bullet" solution to the challenges, if we can find an example of a successful way to sustain a shared service function that has worked in the real world, then we may be able to apply the lessons to our enterprise ICC.

Medium-size and large organizations, especially if they are highly distributed or operate globally in multiple legal jurisdictions, have a number of operating characteristics that are similar to market economies. The size, scale, and distribution of many enterprises result in behavior that is more like loosely coupled federations of teams rather than autocratic command-driven management structures.

Any business, no matter how large, will have some form of management hierarchy to provide the basis for command-and-control operations. But unlike a sole proprietor who literally knows all aspects of the business and controls all relevant details, an organization with thousands (or tens of thousands) of staff in multiple geographies is simply too complex for one person to handle.

To deal with the scale and complexity, organizations are divided into multiple lines of business or functional units that are individually more manageable. And as much as senior executives might like to understand all the details of their business and make all the relevant decisions, it simply is not practical or humanly possible.


To put it more loosely, large corporations behave more like market economies than like well-oiled machines. This is just as true for public sector as well as private sector enterprises. Even military organizations, which are based on a strong management hierarchy, when they grow as large as the U.S. Armed Forces behave more like markets. Based on this premise, we can learn some valuable lessons from the large body of knowledge and research in macroeconomics and apply them to similar patterns of behavior in organizations. Finally, we will use the insights from the analysis as guidance for how to best organize an ICC, motivate desired behavior, and create sustainable shared service groups.

The challenge with large organizations relates to their scale and how to effectively govern them. There is extensive research on issues related to the negative or intractable problems that result from an overly centralist management approach. This paper won't go into that research in detail, but perhaps one example will be illustrative. The central planning practices of the Soviet Union in the heyday of the communist movement in the 20th century contain many lessons. It became painfully clear that the central management body was overwhelmed by the myriad decisions necessary in a complex, highly distributed economy. The central government agency simply didn't have all the necessary data, or timely information, or the appropriate subject matter expertise, to make all the decisions that were required for the country to function efficiently. As a result, wrong crops were planted in farms resulting in too much of one product and too little of another; distribution of food was inefficient, leaving some parts of the country to starve while food was rotting in storage in another part; and improper levels of inventory were carried in factories, resulting in wasted resources sitting in factory warehouses rather than being used to improve the standard of living. The "intent" of the centralist planning practice was noble: ensure a fair and equitable distribution of goods and services to all. The "effect," however, was very different with severe shortages of basic consumer items, long lines at retail outfits, and a low quality of life for just about everyone.

**Insight:** An ICC needs to guard against becoming too far removed from the front line of business and customer-facing activities. Things to consider include a main integration center with federated departmental centers organizing and integrating different business areas through empowered stewardship.

The free market economy in the Western world was quite different. Despite several setbacks during the Depression in the 1930s and the hardships of the war years, the economy of the free market boomed in the 20th century and the standard of living for everyone, including the poor, improved dramatically (by an order of magnitude in many cases). The difference was that the free market had no central management function—it simply enabled the exchange of goods and services through a common mechanism (money and contract law) and allowed the free market to determine prices through the mechanics of supply and demand. If the demand for a given product was high, or was higher in one region than another, then the price rose. Entrepreneurs quickly recognized the opportunity and jumped to satisfy the demand. If the supply increased too much, then the price dropped and businesses backed out (or failed). But in any event, the free market system was quick to respond, was self-correcting over a relatively short period, and strove constantly to drive down prices through open competition.

**Insight:** ICCs should establish the smallest number of standards needed to empower business functions to innovate and change rapidly in response to market opportunities. In an ICC, the equivalent of "contract law" is standard interface protocols and common data definitions and interchange formats.



So what lessons can we learn from this and how can we apply them in a corporate setting to understand how they might impact the operations of an integration competency center? The remainder of this section explores four opposing pressures that are the root of tension and conflict that ICCs must address:

- Optimizing the whole versus optimizing the parts
- Centralization versus decentralization
- Standardization versus specialization
- Innovation versus stability

By first understanding the underlying dynamics that drive organizational and individual behaviors, we can begin to put in place systematic and repeatable mechanisms to counterbalance them.

### **Optimizing the Whole Versus Optimizing the Parts**

By optimizing the whole (the enterprise), you suboptimize the parts (the business areas or functional groups). In other words, in order to achieve the maximum effectiveness of an enterprise, trade-offs must be made that are not ideal from the perspective of the individual functions. This is a counter-intuitive conclusion; if each function in an organization is working as efficiently as it can, doesn't it automatically follow that the organization overall will be as efficient as possible? A brief example should suffice to make the point. Consider an organization with two functions: widget manufacturing and sales. The most efficient way to manufacture widgets is to set up an assembly line that produces the full range of widgets in one color, with the same set of features, and to not carry any inventory (i.e., don't manufacture until you have the orders and then ship directly to the customer). On the other hand, the most effective way to maximize sales in a competitive market is to carry lots of inventory in multiple colors and a variety of features so you can deliver immediately regardless of the customer needs. It doesn't take long in this environment for conflict to emerge driven by the different motivations of sales and manufacturing to optimize their respective operations.

The scenario gets even more complicated when we add a third function: distribution. The most efficient way to distribute widgets is in full truckloads to major distribution centers. The distribution department is motivated to delay delivery until there are enough orders from a given region of the country to warrant a full truckload. Clearly this scenario, where each group optimizes its own function, is inefficient for the enterprise overall. In a worst case scenario, conflicts among the functions can result in total gridlock where nothing happens.

This is where the CEO comes into the picture to find a balance among manufacturing variation, inventory levels, distribution, and sales to optimize the efficiency of the overall organization. In the process, each of the functional groups makes some compromises and trade-offs. Furthermore, the trade-offs are constantly shifting. At one point in time a broad range of widget colors and features may be the best way to increase market share and profits for the enterprise. At another point in time the market may become more volatile with demand shifting rapidly to different regions making it more important to have flexible distribution facilities that can move the widgets to regions where premium prices can be charged.

This widget company example is a very simple one; real life and real business are much more complicated. In the interests of optimizing the efficiency and bottom-line profits of the enterprise, constant trade-offs are necessary, which demands that each part of the organization does things that are not ideal from its perspective. In an ideal scenario, the incentives to optimize the parts are balanced with incentives to optimize the whole. But even in a perfectly managed organization, the decision to make compromises is not always easy or quick.

This same type of scenario plays itself out in ICCs daily. ICCs, by definition, are charted to optimize the whole, which means the staff will constantly be facing resistance from one functional area or another. Strategies for dealing with this challenge are addressed later in this paper. The point to keep in mind here is that resolving conflicting incentives from different groups is a natural and permanent aspect of operating an ICC.

## Centralization Versus Decentralization

Why does the organizational pendulum swing between centralization and decentralization every five to seven years? Granted, not every aspect of the organization goes through this cycle at the same time or in the same frequency, but the pattern is evident in virtually all large organizations.

One of the reasons for centralization is to gain economies of scale. For example, there may be multiple groups within an organization performing similar activities but doing so with varying degrees of efficiency and consistency. By centralizing the activities, it becomes much easier to standardize and streamline the work, thereby reducing the cost per unit of work while improving the quality and consistency. On the flip side, centralized organizations can lead to diseconomies of scale where the per-unit cost increases as the volume of work increases. The reasons for diseconomies are not as well understood by researchers, but they include factors such as:

- The cost of communication between the central group and the rest of the organization
- Duplication of effort even within the central group if it becomes too large
- Top-heavy management within the central group and isolation of decision makers from the effects of their decisions
- Organization inertia and unwillingness to change entrenched processes


In other words, organizations need to consider diseconomies of scale as well as economies of scale. As a result, these and other factors may cause an organization to decentralize or centralize to gain economies.

**Insight:** Economies of scale are more obvious than diseconomies of scale. ICC management must organize and guard against factors that drive diseconomies.

A second common reason for centralization is to gain control over specific activities— typically to reduce risks or variation in a critical activity. For example, it is common practice to centralize control of certain regulatory compliance processes or security administration activities to ensure that a minimum level of standard is being followed and to simplify reporting and increase management visibility. After a period (usually several years in large organizations), the processes may become so entrenched, well accepted, and automated, that it is no longer necessary for a central group to provide oversight, which may cause an organization to decentralize a function. Or an organization may determine that standardization and control of a particular activity are less important than innovation and may therefore decentralize as a result.

Other reasons for centralization or decentralization include adoption of new technologies or industry best practices and simple restructuring to “shake things up” in an ongoing effort to flush out organizational inefficiencies or to encourage innovation.

The net effect of a pendulum swing can be positive or negative. Positive effects include new challenges and opportunities for individuals to learn and growth for the organization overall. Negative effects include loss of good staff, disruption and low efficiency during the change period, and the risk of permanently lower efficiency if the swing was unwarranted.



It is critical from an ICC perspective to recognize the patterns of organizational behavior and use them to when it is appropriate to optimize the desired outcomes. ICC management must always be on the outlook for opportunities to improve efficiency and quality. Furthermore, it is advisable to constantly look for opportunities to centralize some activities and decentralize others to maintain an appropriate balance of control over critical activities and innovation to achieve competitive advantage. In other words, the swinging pendulum, at some level, is normal and healthy. Accept it and use it proactively to advance the ICC strategy.

## Standardization Versus Specialization

How do we know that things are as efficient as they can be? A large body of evidence demonstrates that a monopoly is the enemy of efficiency in all types of financial models. If your ICC is organized as a centrally funded cost center, it is likely that it is operating as a monopoly in a central planning model.

There is a widely held belief in IT circles that standards are beneficial. And they generally are. But standardization is not free; it comes with a cost (often a hidden cost) that may or may not be justified. While any aspect of IT architecture could be standardized, only those aspects that clearly provide value at the aggregate level should be.

**Insight:** A good standard is one that is followed without resistance. Most good standards evolve through practical application and are promoted and broadly adopted due to their effectiveness. ICCs should provide enabling standards and not dictate standards that cost IT projects more.

A fundamental assertion of this paper is that the natural order in IT is for variation—not standardization. That is, if IT professionals are left to their own devices and are given total freedom to choose tools and design/build systems the way they think best, then they will create a portfolio of “works of art.” The underlying driver is human nature; we will act within the sphere of our influence and generally take the path of least resistance. If I can use the tools I’m already familiar with and don’t need to talk to anyone else to get a task done, why wouldn’t I?

Of course as the problem domain grows more complex, it becomes impossible for one individual to do it all, so cooperation is necessary, which requires structure and constraints. By imposing structure, a complex problem beyond the ability of one individual can be addressed, but the constraints also carry a cost in terms of suboptimizing the parts.

In a central planning organization, competing groups that are performing the same function are viewed as needless duplication. However, the very nature of competition drives innovation and efficiency. If your survival is based on your ability to serve customers in some way better than your competitor, then you will figure out a way to survive.

But what happens if one of two competing functions is so successful that all customers go to it and the unsuccessful group is shut down (or downsized)? Aren’t we right back at the same point with a monopoly, which is the enemy of efficiency?

The answer is yes, but only if there is an artificial barrier to entry for a new competitor. For example, if senior management declared that there shall be one and only one SOA Center of Expertise, then that would create an effective monopoly and reduce the incentives for ongoing efficiency improvements.

Note that in a free market, it is not the competition that motivates the business to be efficient, but rather the threat of what the competition might do to steal customers and impact profits. In the same vein, even if there is only one Enterprise Data Warehouse group, as long as the potential exists for a competitive group to be formed or if the consumers can do the work themselves, then the forces of competition and their inherent incentives remain. Under this scenario, the ICC can maintain a real (as opposed to artificial) barrier to entry simply by being exceptionally efficient. If the cost, risk, and time needed for a competitor to be able to match the incumbent are too high, then there is no incentive to invest.

**Insight:** The ideal economic model is one where a monopoly is sustained not by a top-down dictate, but by the fact that it is so compellingly good at what it does that no one would conceive of competing with it. This demands that the ICC institute a culture of customer service, ongoing process improvements, and continuing innovations to constantly drive down cost and time to deliver while maintaining or improving quality.

## Innovation Versus Stability

Investments are about driving change. Change is the enemy of operations. These two statements are at the root of tension between business groups and the IT department. The business units are motivated to implement rapid and constant change driven by external competitive forces. The IT department, on the other hand, wants to “keep the lights on” and maintain efficient and stable operations that minimize the risk to the business.

Both ends of the spectrum, constant innovation versus stable operations, are valid positions— but they are in conflict. It is important to recognize these two needs are in conflict and a constant source of tension between functional owners.

**Insight:** The ideal position for a growing and dynamic organization is what evolutionary biologists refer to as “the edge of chaos,” that is, constant rapid change while maintaining control.

ICCs generally serve both constituents: business units that are driving investments in innovation and change and operational units that are striving for stability and keeping the lights on. This is why ICC capabilities such as metadata repositories, architecture models, and configuration management databases are so critical. These capabilities provide the foundation for processes that support effective management of change while controlling risks.

## Economic Framework and Incentives

Economics deals with the efficient use of limited resources. An ICC also operates within a larger organization that has the same concerns and needs to make periodic decisions about the top priorities for allocating the limited resources for the enterprise. A central question is how the ICC should be paid for both in terms of any initial or periodic investments and in terms of ongoing operations.

A charge-back model and investment strategy are critical aspects of determining how the ICC will be sustained by defining financial incentives for the organization as well as detailed accounting practices. To that end, this section introduces a framework for evaluating funding alternatives and the organizational behavior that results from them. But financial considerations alone are not sufficient. This section also outlines nonfinancial incentives that are important to an overall ICC program.

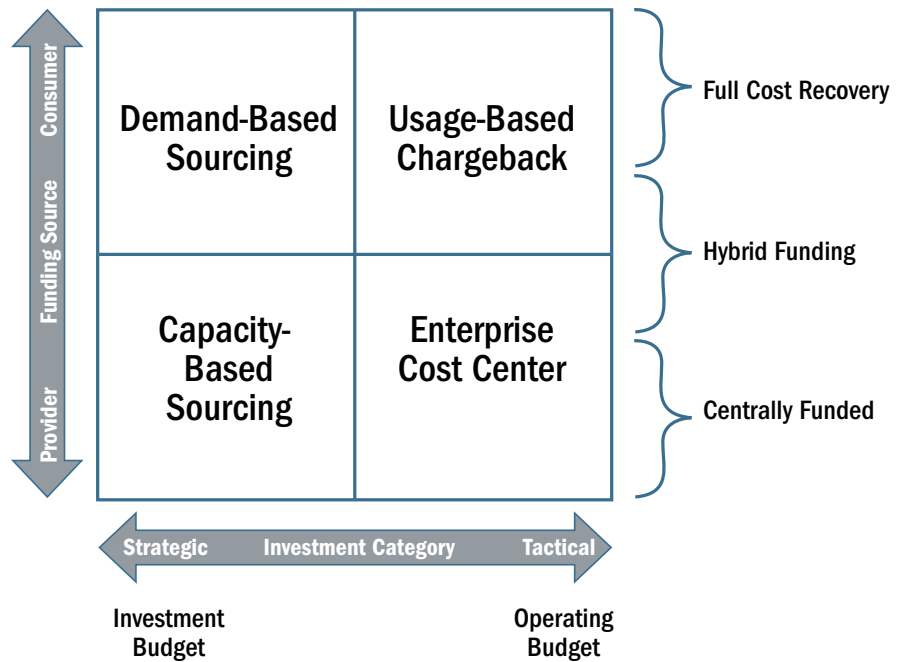


Figure 2. ICC Financial Framework

Figure 2 presents the two dimensions to the framework. The first dimension is the investment category with strategic demands at one end of the spectrum and tactical demands at the other end. Strategic demands typically involve projects that drive business transformations or process changes and usually have a well-defined business case. Tactical demands are associated with day-to-day operations or keeping the lights on. In the middle of the spectrum, some organizations have an additional category for “infrastructure investments”—that is, project-based funding focused on technology refresh or mandatory compliance-related initiatives. These are projects that are generally considered nondiscretionary and hence appear to be maintenance.

The second dimension is the funding source and refers to who pays for the services: the consumer or the provider. In a free market economy, money is used in the exchange of products or services. For internal shared services organizations, rather than exchanging real money, accounting procedures are used to move costs between accounting units. When costs are transferred from an internal service provider to the consumer of the service, it is generally referred to as a chargeback.

If we lay these two dimensions out along the X and Y axis and a dividing line in the middle, we end up with these quadrants:

1. **Demand-Based Sourcing:** This operating model responds to enterprise needs by scaling its deliver resource in response to fluctuating project demands. It seeks to recover all costs through internal accounting allocations to the projects it supports. The general premise is that the ICC can drive down costs and increase value by modeling itself after external service providers and operating as a competitive entity.

2. **Usage-Based Chargeback:** This operating model is similar to the Demand-Based Sourcing model but is generally focused on providing services for ongoing IT operations rather than project work. The emphasis once again is that the ICC operates like a standalone business that is consumer-centric, market-driven, and constantly improving its processes to remain competitive. While the Demand-Based Sourcing model may have a project-based pricing approach, the Usage-based model may use utility-based pricing schemes.
3. **Enterprise Cost Center:** This operating model is a typical centrally funded function. This model views the ICC as a relatively stable support function with predictable costs and limited opportunities for process improvements.
4. **Capacity-Based Sourcing:** This operating model strives to support investment projects using a centrally funded project support function. Centrally funded ICCs that support projects are an excellent model for implementing practices or changes that project teams may resist. Not charging project teams for central services is one way to encourage their use. The challenge with this model is to staff the group with adequate resources to handle peak workloads and to have enough nonproject work to keep the staff busy during nonpeak periods.

The specific charge-back models and accounting processes vary greatly from company to company, but we can group the methods into three general categories.


1. **Full Cost Recovery:** At the consumer end of the spectrum, we see models where 100 percent of the costs of the provider are paid by the consuming business units based on their usage. Exactly how usage is determined can vary greatly and may include measures of resource consumption, number of service requests, or other measures of service provider activity.
2. **Hybrid Funding Model:** A variety of hybrid models can be used. For example, the provider may charge for project work but the ongoing operations may be centrally funded. Or a high-level allocation scheme may be used such as the percentage of staff in the consumer unit.
3. **Centrally Funded:** In this model, there is generally little or no chargeback to the consumer. The costs of the provider are planned and managed as a central cost center.

Charge-back models and investment strategies are discussed further in the “Financial Models” section.

## Nonfinancial Incentives

It is particularly important that the ICC be able to influence organizational silos and change organizational behavior for many of the reasons noted earlier. These objectives include gaining support from silos to suboptimize their operations in the interests of the enterprise or convincing groups to rely on a shared service rather than do the work themselves. This is not easy but can be accomplished with an appropriate strategy. The most successful campaigns are sustained on three fronts: economic incentives, social pressures, and moral values. Here are some of the actions that an ICC can take along these three dimensions:

1. Economic incentives include the following recommendations or best practices:
  - a. Optimize the delivery of services to be fast, inexpensive, and high quality. For example, if you want everyone to use a common software solution rather than each group building or buying its own, then make the common solution so cheap, fast, and good that there is no economic motivation to deviate.
  - b. Make it easy for people to conform to standards. For example, if you want everyone to follow a certain data security standard, rather than publishing a large standards document that requires everyone to read, interpret, and design his or her own solution, simply offer a ready-to-deploy software solution that has the security standards embedded in it. Although it generally requires some investment to make difficult concepts “easy,” the results in terms of acceptance are well worth the effort.



c. Offer financial subsidies to encourage behavior changes. For example, if a company is growing and needs a new building, don't charge the first group that moves into one floor of the building with the cost of the entire building; instead, have the cost of the empty floors carried in a central cost center so that there isn't an economic barrier for acceptance by the silos. As obvious as this is, in the IT arena it is often common practice to charge the full infrastructure cost for a new corporate direction to the first project that intends to use it.

d. Charge a risk reserve or operational premium for nonstandard solutions. For example, rather than mandate that everyone in the company "must" use a certain database vendor, you could structure an IT pricing method that adds a project charge or operational change for those business units that choose to deviate.

2. Social pressures also can encourage compliance and collaboration. In some organizational cultures, these techniques can be more powerful than economic incentives:

a. Empower staff to escalate issues concerning nonconformance. This could include providing coverage for front-line staff who need to maintain a strong working relationship with business partners. For example, you could have a federated enterprise architecture function with some architects reporting in a solid-line relationship to business units to encourage collaboration. When one of these architects needs to take a position on an issue that will be unpopular with the business unit, have the central arm of the enterprise architecture function play the "bad cop" governance role.

b. Empower staff by making information available. For example, if you want to reduce the number of duplicate or redundant technologies or applications, then shine a light on the problem by documenting and broadly communicating the portfolio.

c. Ensure that defined standards you want everyone to comply with are in fact endorsed and communicated by a cross-functional management team.

d. Measure conformance to desired standards by producing periodic reports that are public and visible. The groups or individuals that are not performing will be embarrassed by their peers for being out of compliance, which can be a powerful incentive.

e. Reward compliance to standards and processes by publishing case studies, highlighting successes at team meetings, and recognizing positive behavior in public forums.

3. Moral values also play an important role in encouraging positive behavior.

a. Encourage a commitment to the "greater good" by clearly communicating the value to the overall organization. Reinforcement messages include "We are all part of the same company; we all succeed or fail together" and "We are all serving the same customer. The customer is king."

b. Publish integration principles and print them on posters (or mouse pads or coffee cups, for example) to keep them visible.

c. Ensure fairness and an adequate level of transparency in decisions—especially those that may be unpopular. People will be much more supportive of unpopular directives if they are perceived to affect everyone equally.

## Financial Models

Financial models and charge-back schemes create incentives that impact organizational and individual behavior. Incentives can have positive impacts in terms of encouraging growth of the business, optimizing scarce resources, or controlling risks. Or they can have negative impacts by creating dysfunctional behavior that consumes effort without producing any results. For example, the Demand-based Sourcing and Usage-based Chargeback models are demand driven; this creates a customer orientation that motivates the service provider to react to the requests for service and scale its operations in response on an as-needed basis. The Cost Center and Supply-Side models are supply constrained; this creates a central planning orientation and encourages the service provider to develop portfolio management processes to handle demand and prioritize resource assignment.


One of the common practices that can create dysfunctional behavior is inappropriate application of cost transparency. Note that cost transparency does not mean detailed cost accounting; that is a mistake and invites your customer (internal or otherwise) to run your business. A restaurant analogy may help to drive home the point. Transparency in a restaurant would be telling your customers exactly what ingredients are in a menu item and what options they have to change the standard recipe (if any). Transparency does not mean you should allow the customer to wander into the kitchen to see how the food is prepared or to provide details about where the ingredients are purchased.

The consumer-centric models suggest instead that you define services that are perceived as valuable by internal customers, price them in relation to their perceived value, and define transparent levels of service that give the customer control over key service parameters. For example, if one of the ICC services is a “project sizing” that normally has a response time of two weeks, you may offer an expedited service level of one week or less and charge a premium for it.

A common challenge of the cost-recovery model is how to fund work that the service consumer is not likely to pay for. This may include investments that the service provider must make to improve the efficiency of service delivery or certain services that have low value for individual consumers but may be essential for the enterprise (such as compliance reporting). The two most often used strategies to deal with this are to use a hybrid funding model where the shared service group is partially funded centrally (i.e., a subsidy) or to charge an incremental “reserve” on project work or high-value services. An example of a subsidy is when an organization purchases an enterprise software license and doesn’t charge back the full cost to consumers to encourage adoption.

An example of a reserve is to charge each investment project a 20 percent premium over and above the direct costs, which are then pooled and used by the ICC to fund process improvement activities and to keep the staff busy when they are on the bench between projects. Think of a “reserve” as the “fully loaded cost”—that is, the ongoing process improvements are considered an integral part of the service and are factored into the per-unit service charge as an overhead cost.

A service or SLA-based model is also useful for centrally funded groups, even if there is no chargeback associated with the services, because the service definitions help to set consumer expectations and provide the basis for service portfolio management, which can help prioritize work and plan for central resources.



Much of the organizational dysfunction, and dissatisfaction by service consumers, is due to the central funding model. The root of the problem is that prioritization of resources is being made by people who have limited information about consumers' needs. In a free market, consumers have choices and make trade-offs among the choices to optimize their situation; in this context, they control their own destiny. By contrast, in a central planning model, the service provider or high-level governing group (typically senior management) makes decisions about how many resources (headcount or budget dollars) to allocate to different shared service functions. The degree to which those people make good decisions that address the needs of consumers is subject to the quality of information they have. Portfolio management disciplines can help to ensure that senior management has more relevant information, but keep in mind that as information is generalized and summarized for higher-level consumption, important details are lost.

A related challenge in central planning models is the disconnect in timing between resource demand and supply planning. Resource plans (budgets) are usually established on an annual basis. Resource needs, however, fluctuate constantly due to a variety of forces, many of which are not easily controlled or predicted. So if the service consumer has a sudden need for more services from a centrally funded group, there is often not an easy mechanism to satisfy the demand. The service consumer may need to escalate its request to a higher authority or “break the rules” and use an unauthorized method or simply have their needs unmet—all of which are generally unsatisfactory.

## **Aligning ICC Models with the Financial Framework**

How do the five ICC models align with the financial framework and is there an “ideal” approach for each of the ICC organizational models? The short answer is “it depends.” In other words, many organizational constraints that can be linked to accounting rules, corporate culture, or management principles may dictate one approach or another.

The reality is that any combination of the four financial models could be used with any of the five ICC models. That said, there is a common pattern, or recommended “sweet spot” for how to best align the ICC model with the financial accounting models. Figure 3 summarizes that alignment.

The Best Practices ICC is typically focused on promoting integration standards and best practices for new projects or initiatives, which puts it on the strategic end of the budget spectrum. Furthermore, it is often a centrally funded group with little or no chargeback in support of a charter to act as an organizational change agent. Zero charge-back costs encourage project teams to use the ICC and therefore spread the adoption of best practices.

The Standard Services ICC is often a hybrid model encompassing both centrally funded governance technology governance activities (which service consumers are not likely to pay for) as well as training services or shared software development (especially in an SOA COE), typically charged back to projects.

The Shared Services ICC is the most common approach and may involve both project activities and operational activities. Because most Shared Services groups are organized as a federation, it complicates the charge-back accounting to the point where it is too cumbersome or meaningless (for example, people costs are already distributed because the resources reside in different cost centers). If a charge-back scheme is used for a Shared Services ICC, it is typically a hybrid approach based on a combination of project charges and operational allocations.

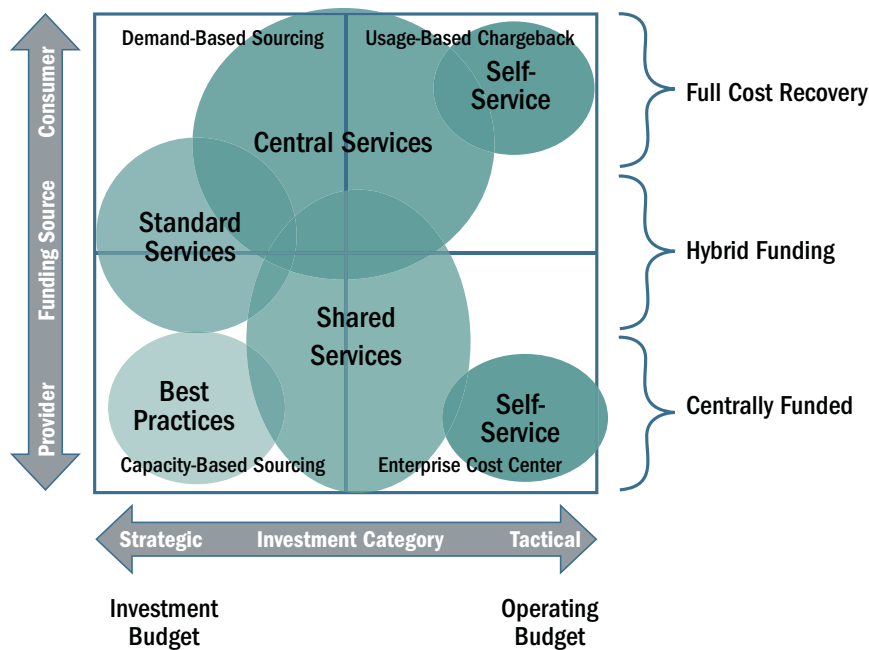


Figure 3. Recommended ICC Organizational Alignment with Financial Framework


The Central Services ICC requires more mature charge-back techniques based on the service levels or usage. This is important because it requires strong consumer orientation and incentives to encourage responsiveness in order to be perceived positively and sustain operations. In most organizations with a Central Services group, if the service consumers do not feel their needs are being met, they will find another alternative and over time the ICC will disappear or morph into a shared services function. In other words, a centrally funded Central Services group is not a sustainable model. It puts too much emphasis on central planning, which will result in dysfunctional behavior and therefore cannot be sustained indefinitely.

The Self-Service ICC is typically either 100 percent centrally funded with no chargeback or 100 percent fully cost recovered. This particular ICC would typically be outsourced, or operate internally on a fully loaded cost basis, or be absorbed into the general network and IT infrastructure. A hybrid funding model for a Self-Service ICC would be unusual.

### Infrastructure Investments

Regardless of which economic model is used, an ICC that relies on shared IT infrastructure will need to make periodic investments to sustain the shared environment. To be clear, we are referring here not to minor enhancements, ongoing maintenance, or minor process improvements, but rather to efforts that require a significant investment in human or financial capital. Examples of significant investments include:

- Rationalization of databases and establishment of an Enterprise Data Warehouse
- Major software upgrade of an existing shared service environment
- Implementation of a high-availability grid computing infrastructure
- Technology refresh of a distributed integration system



These sorts of investments require funding that falls outside the day-to-day operations of an ICC. Although an ICC may operate for a year or more without requiring a significant investment, eventually an investment is necessary. The questions that inevitably arise are how organizations should fund these efforts or even if and when they should undertake them in light of all the other demands on limited capital resources.

Many ICC teams struggle with the issue of securing funding for infrastructure investments that seem intuitively obvious to them. For a number of valid reasons, it is difficult to create a business justification for shared IT infrastructure. Here are some of the chief challenges:

- **Inability to value long-term benefits:** Most business case methods are biased toward tactical decisions and do not prescribe methods to express long-term benefits of infrastructure qualities such as flexibility, scalability, or maintainability as numerical values that can be plugged into a spreadsheet. While the “-ilities” are intuitively beneficial, the difficulty in quantifying their benefits in a way that nontechnical business leaders and financial managers can appreciate can prevent funding approval. The challenge is coming up with outcome-based metrics that demonstrate value to the stakeholders.
- **Inability to communicate value to stakeholders:** Establishing the value of strategic investments is not enough. The value needs to be communicated to the stakeholders (IT and/or business) in terms understandable and appreciated by them. This is particularly true when the proposed solutions require articulating technology and business value risks or surfacing presenting the need to reduce complexity.
- **Difficulty of obtaining “good” data for metrics and value proposition:** Regarding metrics, the key is not how many, but their quality in demonstrating value to stakeholders. Low-level measurable metrics, often activity based, will need to be aggregated to the more compelling outcome-based ones. Another significant hurdle is the unwillingness of the data sources to share the data needed for the value proposition.
- **Functionally-focused decision making:** While organizations may have large annual investment budgets, generally budgets are allocated in much smaller amounts to managers responsible for specific business units or functional areas; such managers are not motivated to spend their constrained investments on strategic infrastructure projects.
- **Mismatch of budget horizon and project cycle:** Investment budgets are generally allocated on an annual basis, which means that projects spanning fiscal-year boundaries need to be rejustified each year. Because corporate priorities and market pressures commonly shift from year to year, the original business case may no longer be relevant or compelling.
- **Organizational support diffusion:** ICC infrastructure initiatives are by definition cross-functional; they require broad-based support from many stakeholders. Strong support from an executive sponsor is necessary but is often not sufficient. Support from multiple stakeholders can dissipate over time due to normal organizational churn and staff changes, so it is a major challenge to first build sufficient support long enough to gain approval and then to sustain support over the life the initiative.

To secure funds in support of ICC infrastructure investments, a number of broad-based strategies and detailed methods can be used. Here are the four primary strategies that can address many of the funding challenges:

1. **Recurring quick wins.** This strategy involves making a series of small incremental investments as separate projects, each of which provides demonstrable evidence of progress. This strategy works best when the work can be segmented.

2. **Ride on a wave.** This strategy involves tying the infrastructure investment to a large project with definite ROI and implementing the foundational elements to serve future projects and the enterprise overall rather than just the large project's needs. Examples include purchasing the hardware and software for an enterprise data integration hub in conjunction with a corporate merger/acquisition program or building an enterprise hub as part of a large ERP system implementation. This strategy may make it easier to secure the funds for an infrastructure that is hard to justify on its own merits, but has the risk of becoming too project-specific and not as reuseable by the rest of the enterprise.
3. **Create the wave.** This strategy involves developing a clear business case with defined benefits and a revenue/cost sharing model that are agreed to in advance by all stakeholders who will use the shared infrastructure. This is one of the most difficult strategies to execute because it requires a substantial up-front investment in building the business case and gaining broad-based organizational support. But it can also be one of the most rewarding because all the hard work to build support and address the “political” issues is done early.
4. **Executive vision.** This strategy relies on ownership being driven by a top level (CEO, CFO, CIO, etc.) executive who has control over a certain amount of discretionary funding. In this scenario, a business case may not be required because the investment is being driven by a belief in core principles and a top-down vision. This is often the path of least resistance if you have the fortune to have an executive with the appropriate vision that aligns with the ICC charter/mission. The downside is that if the executive leaves the organization or is promoted into another role, the ICC momentum and any associated investment may fade away if insufficient cross-functional support has been developed.

The detailed methods in support of these strategies are beyond the scope of this paper, but are available separately through the Informatica ICC Master Class training series – register now at [www.informatica.com/solutions/icc/master\\_class](http://www.informatica.com/solutions/icc/master_class)


## Case Studies

This section provides four ICC economic case studies based on real-world examples. The case studies have been disguised to allow us to be as specific as possible about the details. The first two are related to infrastructure investments and the final two are related to charge-back models.

### Case Study 1: Shared Services ICC—an Executive Vision Investment Strategy

In case study 1, several senior IT executives of GENCO had a strong belief that the organization would benefit from a shared services integration team. An ICC was established including a team of software developers with the expectation that the group would develop some highly reusable software and would recover most of the staff costs by charging their time out to projects. After almost one year, it became clear that the line-of-business (LOB) project teams were not accepting the ICC, so some changes were made to the team to turn it around.

The turnaround began with the introduction of a new ICC director and the development of a business case: specifically, a financial justification to create a framework of reuseable components such that the traditional data integration effort could be transformed from a custom development effort into a more efficient assembly process. The business case took three months



to develop and resulted in approval of an investment of \$3 million. The underlying premise of the business case was simple: GENCO was building more than 100 batch and real-time interfaces per year at an average cost of \$30,000 per interface and an average development time of 30 days. And because there were no enterprise-wide standards, each interface was a “work of art” that presented challenges to maintain and support; the proposal was to invest \$3 million to produce a standard framework to reduce the cost per interface to \$10,000 and shorten the development life cycle to 10 days; the hard savings would be \$2 million in the first year plus soft benefits of reducing the time-to-market window and standardizing the integration software to reduce software maintenance.

While the business case was compelling, it was not easy to come up with the numbers. For example, some project teams did not want to share any information about their cost or time to build integrations. On the surface, their excuse was that they didn’t have metrics and their staff were all so busy that they didn’t have time to do analysis on past projects. The underlying reason may have been that they didn’t believe in the value of an ICC and were fearful of losing control over some aspect of their work to a centralized group. In another example, data from a large project was uncovered that showed that the average cost to build an interface was \$50,000 but the IT executive in charge refused to acknowledge the numbers on the basis that it was an “apples to oranges” comparison and that the numbers therefore weren’t relevant (the real reason may have been more political). In the end, it required a negotiation with the executive to agree on the \$30,000 baseline metric. Although the actual baseline cost was higher, the negotiated baseline was still sufficient to make a strong business case.

The \$3-million investment was approved even though only one-third of it was needed to fund the reusable software. The rest was used for implementing a metadata repository and a semiautomated process to effectively manage and control the development of interfaces by a distributed team (including team members in India), educating and training the LOB project teams on how to use the new capability, and creating a subsidy to allow the ICC to sell the initial integration project work at a lower rate than the actual cost in the first few months until the cost efficiencies took hold.

Note that the funding request did not split the \$3 million into the various components. It used the quantifiable cost reduction opportunity that had significant hard benefits to justify a broader investment, which included elements that were more difficult to quantify and justify.

What were the results? In the 18 months after the business case was approved, the ICC delivered 300 integrations in line with the projected cost reductions, which meant that the financial results significantly exceeded the approved plan. Furthermore, a typical integration was being built in five days or less, which also exceeded the time-to-market goal. The ICC made an effort to communicate progress on a quarterly basis to the CIO and the executive team with particular emphasis on the measurable benefits.

Finally, the metadata repository to track and report progress of all integration requests was in place with an easy-to-use interface for project managers to have visibility into the process. This turned out to be one of the major factors in breaking down the “not invented here” syndrome by providing transparency to the project teams and following through on delivery commitments. This was another key factor in sustaining cross-functional support after the initial funding approval.

## Case Study 2: Integration Hub Consolidation—a “Creating the Wave” Investment Strategy

A CIO was once heard to exclaim, “I have a billion-dollar budget and no money to spend.” This wasn’t the CIO of BIGCO (the pseudonym for this case study), but it could have been. The problem at BIGCO was that an ever increasing portion of the annual IT budget was being spent just to keep the lights on for items such as ongoing maintenance of applications, regulatory changes demanded by the federal government, disaster recovery capabilities mandated by the board, and ongoing operations.


One of the biggest perceived drivers of this trend was unnecessary complexity in the IT environment. First, we should acknowledge that a large part of the complexity in a modern IT environment is necessary due to the inherent intricacy of a multinational business operating in many legal jurisdictions, with millions of customers, 100,000-plus employees, hundreds of products, and dozens of channels for customers and suppliers to interact. However, a tremendous amount of unnecessary complexity at BIGCO was self-imposed by past practices such as acquiring other companies without fully consolidating the systems, implementation of application systems in silos resulting in duplicate and overlapping data and functions across the enterprise, lack of governance resulting in incremental growth of systems to address only tactical needs, and integration as an afterthought without an enterprise standard framework.

No one at BIGCO disagreed with the problem all the way from the CEO (who discussed it regularly in public forums) to the CIO to the software developer. Metaphorically, much of the low-hanging fruit had already been picked but the really “juicy” fruit was still at the top of the tree. It was hard to pick because of the challenges mentioned at the introduction of this paper.

This case explores how these challenges were addressed in a specific scenario: consolidating 30 legacy integration systems and transforming them into an efficient enterprise hub using the latest technologies. The 30 systems had been built up incrementally over 10 years through thousands of projects without a master architectural blueprint. Each change was rational on its own, but the result had multiple instances of middleware in a complex integration situation that clearly cost too much to maintain, was difficult to change, and was susceptible to chaotic behavior in day-to-day operations.

There was a lot of money at stake in this case. The 30 systems had an annual run-rate operating cost of \$50 million, and an initial back-of-the-envelope analysis showed that it could be cut in half. While there was some top-down executive support, much broader cross-organizational support was necessary, so the ICC team decided to use the “Creating the Wave” strategy. The first step was to build a business case. This turned out to be a 6-month exercise involving a core team of 4 staff, who engaged more than 100 stakeholders from multiple functions across the enterprise. They started out by gathering 18 months of historical cost information about each of the 30 systems. Some stakeholders didn’t think 18 months was sufficient, so the team went to 3 years of history and for many of the systems eventually tracked down 5 years of history.

At the core of the business case, the ICC team wanted to show what would happen to the \$50-million run-rate cost over the next 3 years under the status quo scenario and compare it to the run-rate cost in a simplified environment. They used MS Excel to construct the financial business model. It started as a couple of worksheets that grew over time. The final version was 13 MB and had 48 worksheets showing 5 years of history and 3 years of projections for various scenarios, plus month-by-month project costs for 2 years. All of it was sliced and diced to show various views for different organizational groups.



What were the results of this case study? The final business model showed that an investment of \$20 million would result in a net ongoing operational saving of \$25 million per year. The gross savings relative to the baseline \$50 million per year cost was actually projected to reduce by \$30 million, but because the project was also introducing new capabilities for building an enterprise hub, the new capabilities were projected to add \$5 million per year to the run-rate operating cost. The net savings were \$25 million annually. The lesson here once again is to include some hard-to-justify elements in a larger project that can be justified.

### **Case Study 3: Charge-Back Model—ETL COE Production Support Chargebacks**

A large U.S.-based financial institution, BIGBANK, was looking for a way to reduce the cost of loading its Teradata-based data warehouse. The extract, transfer, load (ETL) process was mainframe based with an annual internal cost of over \$10 Million per year, which was charged back to end users through an allocation process based on the percentage of data stored on the warehouse by each line of business (LOB). Daily load volume into the warehouse was 20 Tera-bytes/month and demand for new loads was growing steadily. BIGBANK decided to implement a mid-range solution for all new ETL processes and eventually retire the more expensive mainframe-based solution.

Initial implementation costs of a highly scalable mid-range solution, including licensing, hardware, storage, and labor were approximately \$2.2 million annually. This solution consisted of an 11-node, grid computing based Sun solution with a shared Oracle-RAC data repository. Three nodes were dedicated for production with two nodes each for development, system integration test, user acceptance test, and contingency. Estimated daily ETL load capacity for this solution was greater than 40 TB/month.

Management wanted to implement the new solution using a self-funding mechanism, specifically a charge-back model whereby the projects and business units using the shared infrastructure would fund it. To achieve this goal, the cost recovery model had to be developed and it had to be compelling. Furthermore, given that the ETL capacity of the new mid-range environment exceeded the daily load volumes of the existing Teradata warehouse, there was significant opportunity for expanding how many applications could to use the new infrastructure.

The initial thought was to use load volumes measured in GB/month to determine charge-back costs based on the total monthly cost of the environment, which included the nonproduction elements. There would be an allocation to each LOB based upon data moved in support of a named application using the environment. Load volumes were measured daily using internal mid-range measurement tools and costs were assigned based upon GB/month moved. The problem with this approach is that early adopters would be penalized, so instead a fixed price cap was set on the cost/GB/month. Initially, the cost cap for the first four consumers was set at \$800/GB to find the right balance between covering much of the cost but at a price-point that was still tolerable. The plan was to further reduce the cost/GB as time went on and more groups used the new system.

After 18 months, with over 30 applications onboard and loading over 6 TB/month, the GB/month cost had been reduced to less than \$50/GB. Load volumes and the associated costs were tracked monthly. Every six months, the costs were adjusted based upon the previous six months' data and assigned to the appropriate named applications.

Over time, the charge-back methodology of GB/month proved to be incomplete. Required labor was driven more by the number of load jobs per supported application and less by total volumes. The charge-back model was adjusted to tie labor costs to the total number of jobs per application per month. Hardware and software costs remained tied to GB loaded per month.

All in all, the charge-back approach was an effective way to use projects to fund a shared infrastructure. At the time of this writing, use of the new mid-range solution continues to grow. There is no set date when the legacy mainframe ETL jobs will be fully retired, but with all the new ETL work being deployed on the mid-range infrastructure, the legacy jobs will gradually shrink due to attrition; eventually, it will be an easy decision to invest in migrating the remaining ones to the new environment.

#### **Case Study 4: Charge-Back Model—ETL COE Initiative-Driven Capacity Chargebacks**

Building further upon case study 3 at BIGBANK, funding for incremental production support personnel was identified as a serious risk in the early in the stages of deployment of the new shared infrastructure. The new Data Integration environment and its associated processes were internally marketed as highly available and immediately ready for any application that needed the service. Over time, however, it became increasingly obvious that as more applications moved from project status to production status, incremental production support staff would be required. Forecasting that incremental production support labor and having the funds available to source the labor became increasingly challenging in an organization that planned base support budgets annually. In short, demand for production support resources were driven by projects, which was out of sync with the annual operating budget planning cycle.

As stated in case study 3, the environment was self-funded by the applications using it through a fairly simple charge-back methodology. The charge-back methodology assumed that sufficient production support staff would be available to support all consuming applications. However, the data used to calculate a monthly application chargeback was based upon actual throughput metrics after several months in production. In other words, the metrics that showed that additional staff would be required became apparent months after the workload had already increased. When an application came aboard that required extensive support but did not have incremental labor forecast, the production support staff in place was forced to resort to heroic efforts to maintain the application. The resultant staff angst and internal customer dissatisfaction were significant.

To solve this issue, the concept of an operational surcharge to support the project before moving the application into production was instituted based upon estimated data and job volumes. Called Operational Capacity from New Initiatives (OCNI), this cost was added to the project estimate before initial funding was allocated to the project. Once the project was approved and funds transferred between cost centers, the OCNI funds were pooled in a separate cost center (held in “escrow”), often from multiple projects until the work volume in the environment exceeded prescribed limits (usually average hours worked by the production support staff during four weeks). When work volume limits were exceeded, incremental staff was sourced and paid for with the escrowed OCNI dollars. At the end of the budget year, the incremental staff were moved to the base operating budget and the cycle started over again with the new budget year. This allowed the flexibility to rapidly add production support staff as well as effectively plan for base staff in the following budget year forecast.

The result was that operational support resources more closely aligned with the actual support workload. The operational staff were not as stressed, the internal consumers were happier because their costs were included upfront in the planning cycle, the finance staff were pleased to make the model work within the constraints of the company’s accounting rules, and IT management had increased confidence in making decisions related to the annual operating budget planning. In summary, it was a win-win for everyone.



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