Appendix A

IT Cost Efficiency Benchmark Study Details

03 MEASUREMENT

PROFICIENCY AND BEYOND

Kentucky Department of Education

Rapid Assessment for Total IT Expenditure
Kentucky Department of Education (KDE)
Benchmark Results
May 4, 2004

research consulting **measurement** community news

Gartner

Project Management - Personnel

- **Client Team**
  - Executive Sponsor: Kevin Noland
- **Project Team**
  - CIO: David Couch
  - Project Manager: Charlotte Chowning
- **Collection Team**
  - Phil Coleman (Help Desk, Distributed, Midrange, Wide Area Data Network)
  - Mike Leadingham (Application Development and Support)
  - Chuck Austin (Project Management Office, IT Strategy)
  - Dottie Raley (Project Administration)

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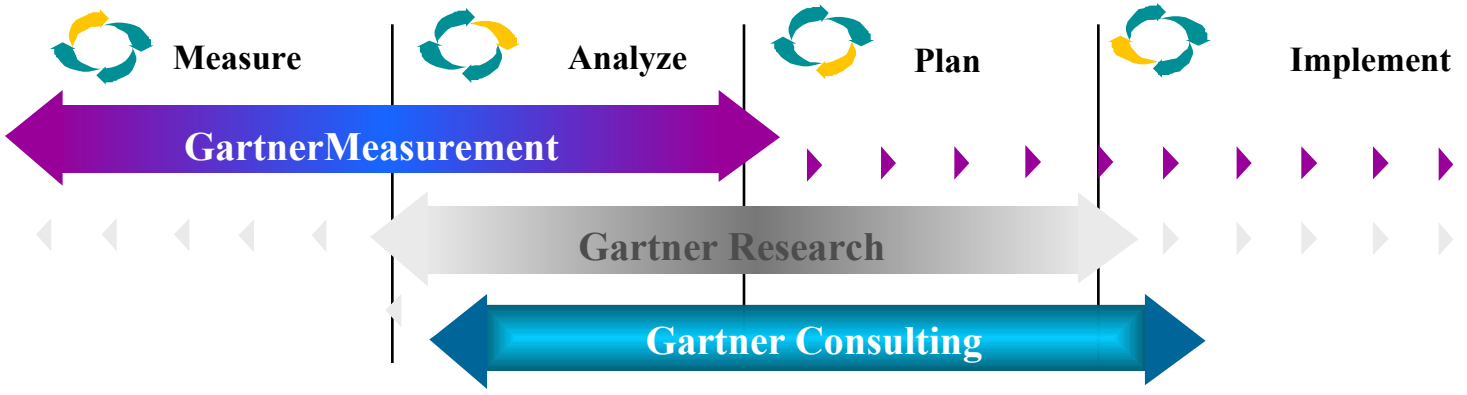
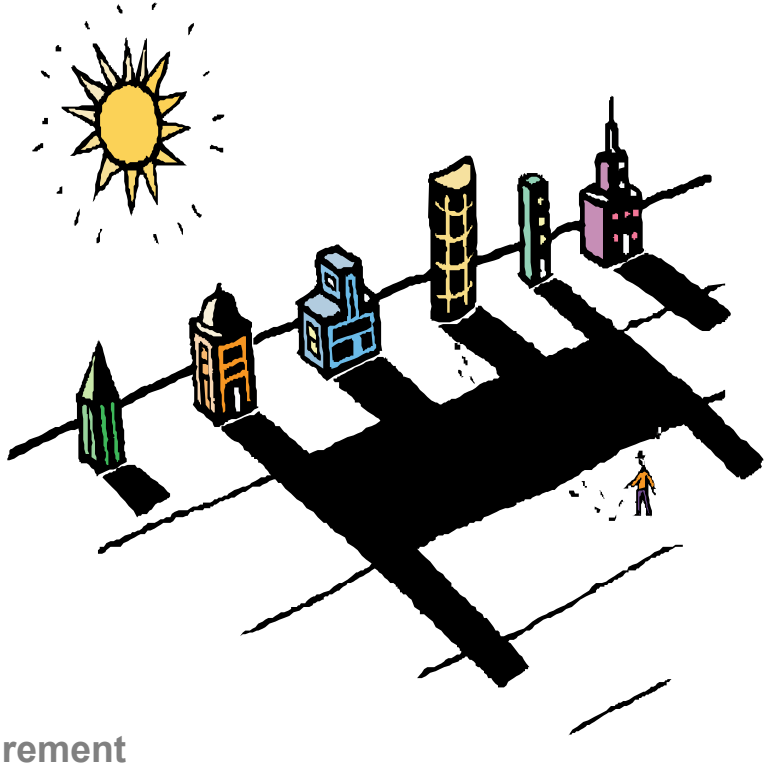
About Gartner Measurement

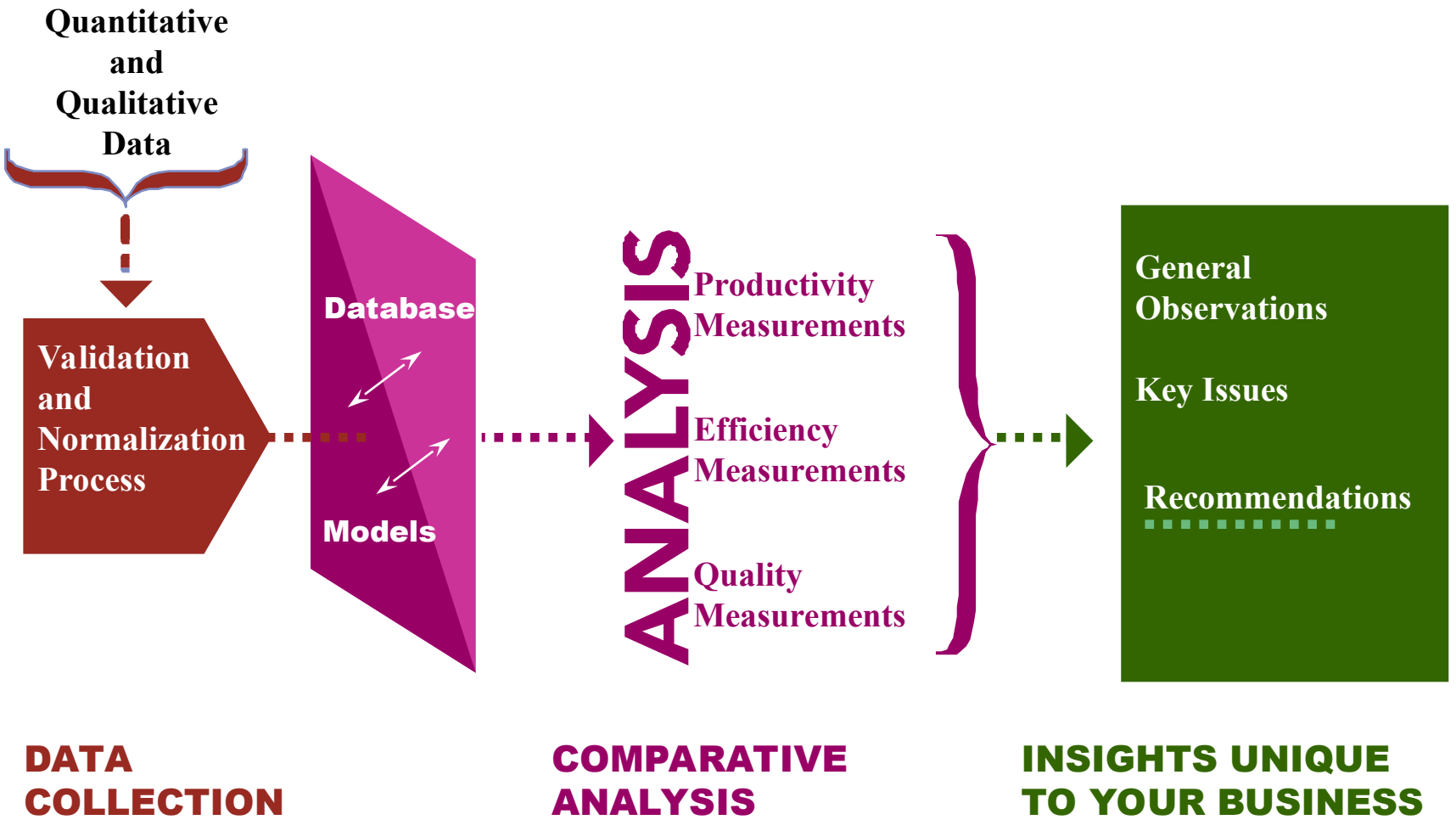




- Over 27 years of experience
- 20,000+ Measurement Engagements
- Robust and timely databases
- Databases contains no benchmarks more than 18 months old
- Rigorous formal methodology
- Multiple analysts with broad range of backgrounds and experience worldwide
- Integrity and confidentiality

Study Methodology

Methodology



About the Total IT Expenditure Assessment

- The Assessment for Total IT Expenditure provides a health check for KDE's IT environment. This is a high level look at the current environment and covers a twelve month time period. A number of functional areas have been evaluated.

- In this analysis, for each functional area selected, a composite peer group is formed for comparison purposes. The organizations selected have key workload characteristics similar to OET. Each functional area has a different selected peer group.

- The selection of the different peer groups enables Gartner Measurement to compare OET and other organizations based on key metrics. These key metrics are used to provide an indication of the cost efficiency of the KDE's Information Systems organization.

Individual Study Consensus Model Concepts

Hardware

Software

Personnel

Transmission

Disaster Recovery

Application Code

Extensions

Calls/Minutes

Gigabytes

Devices

Call Volume

Workstations

Cost

Workload

About the Total IT Expenditure Assessment

- Apart from the cost efficiency of the IS organization, this study also examines the perception of the effectiveness of services provided by IS by analyzing questionnaires completed by Line Of Business (LOB) Managers to understand the level of alignment of the IS services and LOB business requirements.
- Many CIOs and senior IT managers remain unaware of just how well various components of their overall IT operations are performing or what the "real" costs are for providing and delivering services across those functional areas of IT.
- With functional areas ranging from data center operations, applications, distributed computing to networks, CIOs must have barometers to determine areas that are doing well versus those that may require attention.
- Additionally, while various IT costs related to these functional areas are often captured as a total budget number, it is critical that the individual cost components are understood in detail to measure the actual cost efficiency of the products being delivered.

About the Total IT Expenditure Assessment

IS Functional Area	Metric
Applications Development	Cost per Function Point Developed
Applications Support	Cost per Function Point Supported
IT Help Desk	Cost per Call
Distributed	Cost per User*
Midrange Computing	Cost per System
Wide Area Data Network	Cost per Device

* - Users have been normalized to represent client workstations (PC's and Laptops)

Scope

- **Peer Groups**
  - **Breadth >**
    - 20,000+ data points in Gartner's database
    - Gartner has been performing comparative analysis since 1992
    - Our data contains many large public sector organizations and companies the Fortune 500
    - Our data is representative of all major industries including education
  - **Timely >**
    - No peers used for comparison are more than 18 months old
  - **Meaningful >**
    - KDE's Study Peers have the following characteristics:
      - Peers are selected per service area, as such, no one organization possesses KDE's characteristics.
      - Peer averages constructed of organizations with similar business models and characteristics
      - Organizations that are North American only

Objectives and Scope

Objectives of the Study

- Establish a “baseline” for Information Technology expenditures and cost efficiency.
- To provide a comparative analysis of expenditures against other organizations with similar workloads, complexity and performance characteristics.
- To provide a “health check” of the IT services delivered to the IT user community.
- To identify potential opportunities for increased IT efficiency.
- To offer recommendations to increase IT efficiency and effectiveness.
- Create a foundation for continuous measurement program.

KDE Objectives of the Study

- **Assess the Efficiency and Cost Structure of Office of Education Technology (OET) IT Services**
  - The assessment covers services provided within the OET shared services budget of $16.5 M (this includes funding from KDE)
  - The scope of the cost benchmarking study is for IT services provided by OET to schools and KDE
  - IT services being provided by OET to school districts are in scope:
    - Costs were collected based on the scope of OET's responsibilities (both schools and KDE)
      - OET estimates that 97% of its efforts are school based
    - This scope is aligned with how Gartner collects and reviews benchmark data
- **Assess the Alignment of OET's IT Strategy to KDE Business Strategy**
- **Review the Effectiveness of the Following OET IT Management Functions and Processes**
  - IT Governance
  - IT Project Management
  - Management of Third Party Vendors
  - IT Investment Management
- **Develop Recommendations For Optimizing IT Services**

Benchmark Scope

- **Functional Areas Studied**
  - Applications Development and Support
  - IT Help Desk
  - Midrange Computing
  - Distributed Computing
  - Wide Area Data Network
- **Benchmark analysis covers the period from July 03 to June 04 (prorated for analysis)**
- **$80M of KDE's expenditures have been included in the consensus model**
- **Additional breakout of $16.5M budget and spend characteristics by tower will be provided**

Benchmark Scope

- **Service Area Peer groups**
  - Chosen on basis of comparable workload that maps to OET's scope of support, defined differently for each service being benchmarked
- **Each peer group was chosen based on their workload profile:**
  - **Applications Development and Support**
    - Lines of code totals, environments where development and support initiatives are being focused and staff productivity
  - **IT Help Desk**
    - Number of inbound calls, including abandoned, the overall complexity of the environment as defined by the type of calls taken
  - **Midrange Computing**
    - Type of platform, number of systems, and the complexity of the environment as defined by the rate of change and application load
  - **Distributed Computing**
    - Number of end users supported, number of devices in the LAN environment, complexity of environment
  - **Wide Area Network**
    - Type of environment and the number of sites, devices and traffic/GB/month that are supported on the backbone

Assumptions and Special Factors

- **Distributed desktops (users) were "normalized" to reduce the effect of the large student population on the data (workstations instead of users)**
- **Occupancy excluded from all towers**
- **Exclusions from Gartner's Study on Applications (projects)**
  - Project Info. Not Included
    - SCN Application Project
    - JCPS Munis Impl. Project
    - JCPS STI Impl. Project
    - STIState Impl. Project
    - Reading First Application Project
    - Seek & Transportation Application Project
  - Initial purchase cost of Munis & STI applications not included
  - Support staff out in the districts and school assisting with STI & Munis support not included
  - New "lines of code" development annual for Munis is a projection. Munis unable to provide their input to real numbers until 1 to 2 weeks out
  - Server hardware also excluded from Midrange for consistency

Executive Summary

Key Observations

Observations vs. K-12 Case Study ranges

Observations vs. Study Peers

Key Issues

Recommendations

Key Summary Observations

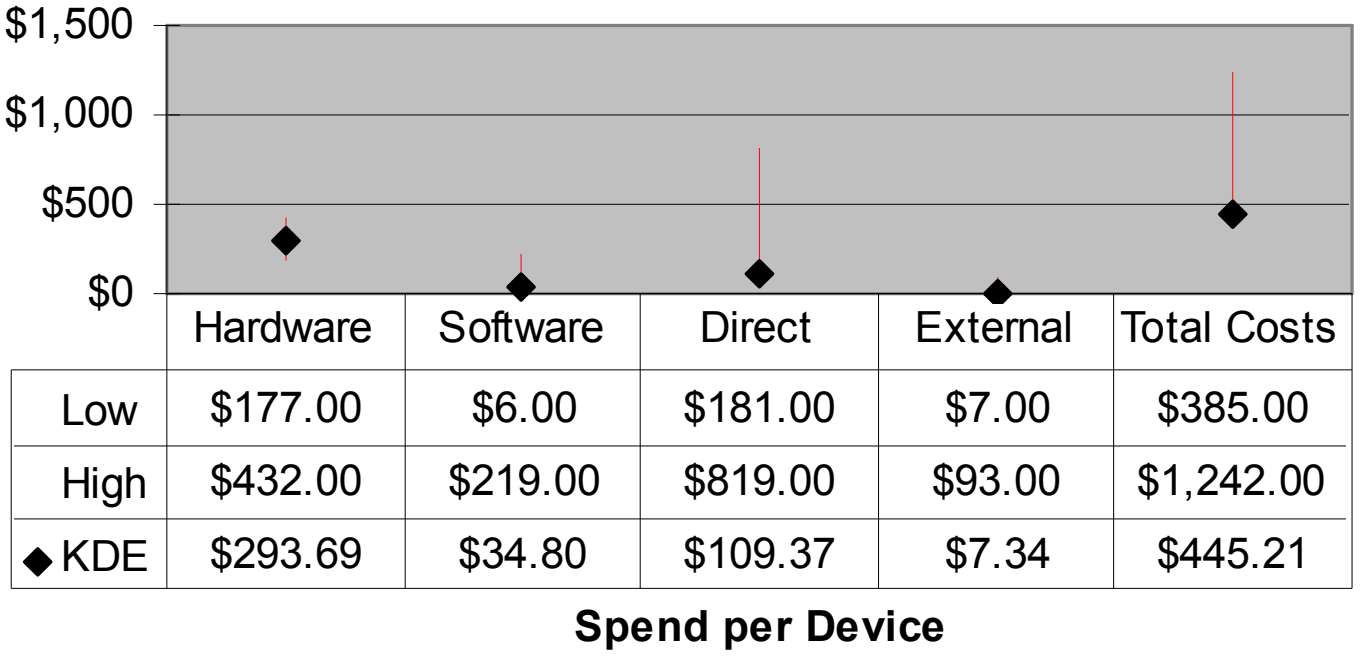
- Overall, costs are consistently lower than those of the peers. This is a position that many organizations would like to achieve. However, costs are so low that Gartner suspects chronic under-funding to be a primary driver. This type of under-funding will manifest itself in antiquated equipment, static change capability and (eventually) a requirement for substantial investment when new technology is adopted.
- As might be expected, personnel counts are low compared to peers. This deficiency will almost certainly cause OET to make critical decisions about what services can be delivered in what appropriate timeframe. These decisions will need to be documented and communicated to KDE and the departments.
- Personnel costs are not remarkable given the industry and the region being studied. However, with the added workload most personnel are shouldering, the personnel costs are low for the level of work being provided.
- A centralized shared service organization (like OET) is a Gartner best practice. OET's difficulty is not one of execution but of governance and investment. In order for OET to be successful in implementing the shared services model, greater control must be given to technology plans, organization structure and process standards.

Key Issues for KDE

- **Lean Headcount**
  - FTE's too low to adequately support all areas
- **Insufficient technology investment**
  - Uneven or spotty investment will cause chronic underfunding problems
- **Antiquated equipment**
  - Poor performance causes staff inefficiencies and frustration
  - Older equipment lacks power to meet business requirements
- **No Disaster Recovery**
  - Big concern in the face of 9/11 (however a plan is underway)
- **High Complexity**
  - Large number of different platforms (16) causes dilution of already lean support
- **Governance structure impedes clear planning and budgeting**
- **Heroic (person-based) processes, communication, and training**
- **Lack of integrated enterprise system management tools to assist staff, particularly:**
  - Desktop management
  - Problem management
  - Asset management

Total Cost by Area
As compared to K-12 case studies (not study peers)

OET's costs are near the bottom of the range for all of the school systems Gartner has evaluated...

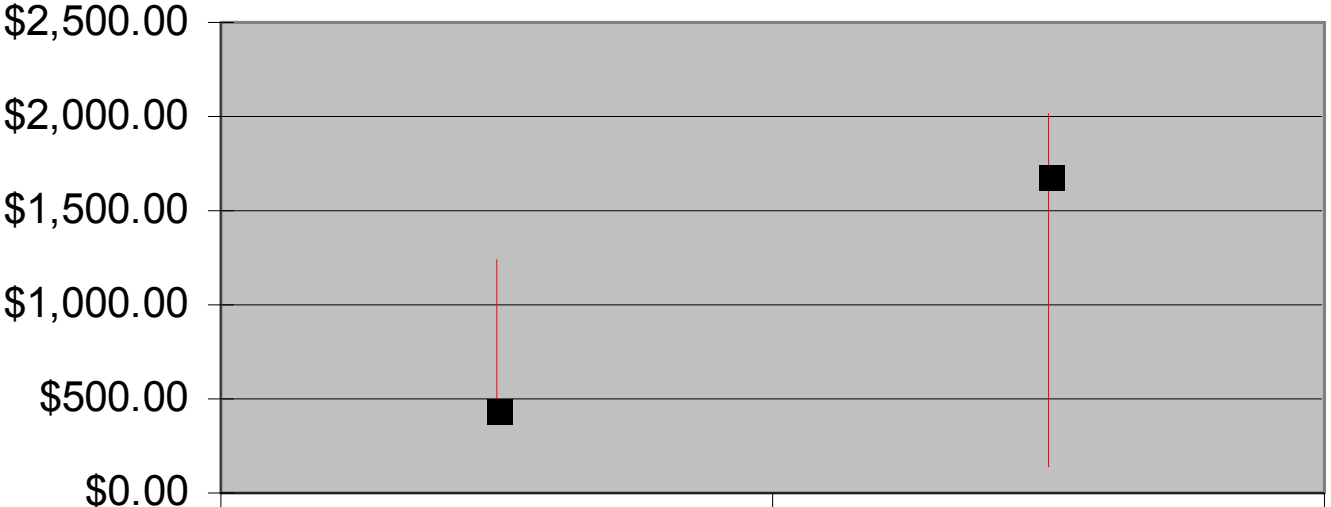


	Hardware	Software	Direct	External	Total Costs
Low	$177.00	$6.00	$181.00	$7.00	$385.00
High	$432.00	$219.00	$819.00	$93.00	$1,242.00
◆ KDE	$293.69	$34.80	$109.37	$7.34	$445.21

...yet KDE has a shared services structure (a Gartner best practice), a robust statewide network and enterprise email that many of their peers desire but have been unsuccessful implementing

Total Cost by Technical Area
As compared to K-12 case studies (not study peers)

TCO is comprised of Direct (budgeted) and Indirect (user efficiency) costs. As discussed, KDE has low direct costs which will increase costs for the end user (in time spent on computing tasks...



	Direct Costs	Indirect Costs
Low	$385.00	$131.00
High	$1,242.00	$2,013.00
KDE	$445.21	$1,690.92

...the low investment in technology shifts the burden of support from OET to field personnel who may not be the best equipped to handle the problem. This results in lost time for teachers, administrators and students (estimated)

The Direct - Indirect "Lever"

+
$

Overall, direct costs have been decreasing, which will bring a corresponding increase in indirect costs...

Indirect costs (and some direct) swing based on the amount of direct cost spending

-D$

Direct Organizational "sweet spot" Indirect

-$

Direct cost spending usually has a inverse relationship with indirect costs

Each organization needs to find it's sweet spot based on its needs

+D$

Total Cost by Technical Area
Study Peer Observations

- **The aggregate IT Consensus Model costs for KDE for those modules included in the study (at $80M versus $175M) are $95M (or 54%) lower than what the composite peer group would spend to perform KDE's workload.**
- **For the services measured, at the summary level, OET *outperforms* the efficiency of the selected composite peer groups in the following areas:**

Midrange NT		72%
Midrange Unix	85%	
Distributed		79%*
Applications Development	35%	
Applications Support		40%
Wide Area Data	75%	

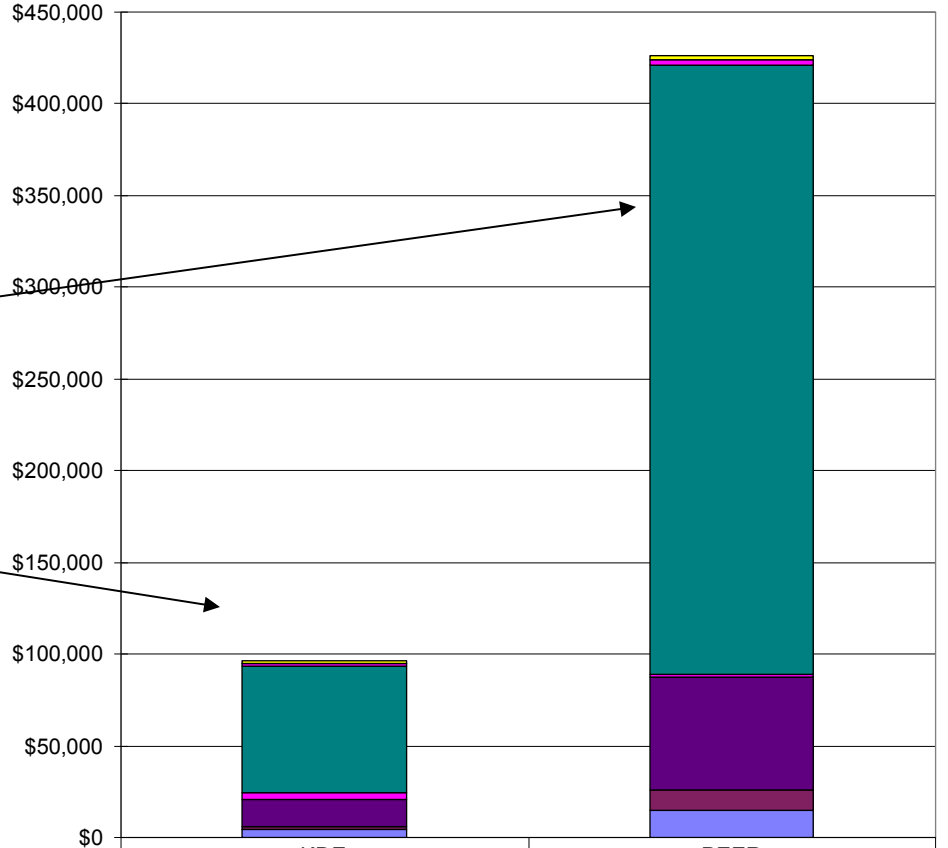
- **OET has costs that are *higher* than the selected composite peer groups in the following areas (in July 2004 it will be similar to peers):**

IT Help Desk	10%

* - normalized to devices not users

Total Cost by Technical Area
Study Peer Observations

As mentioned previously, OET's costs are less than one quarter those of the selected peers...

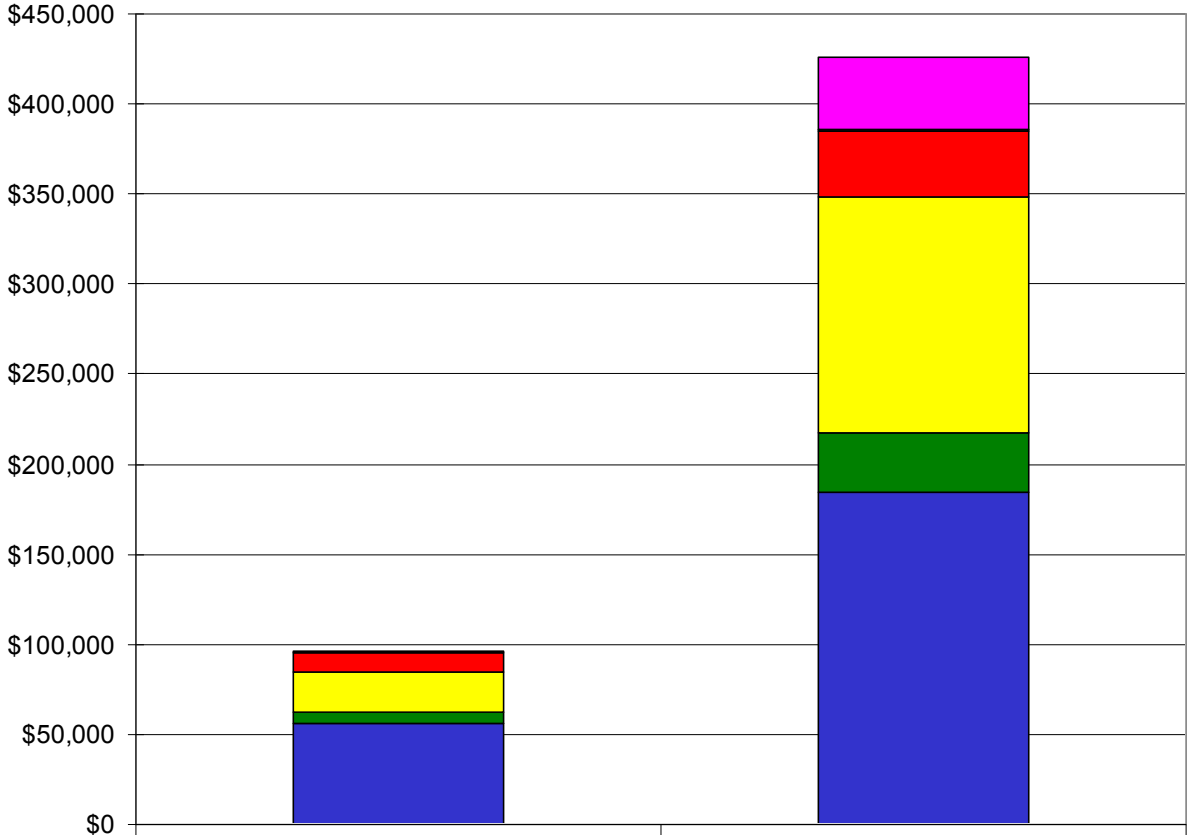


	KDE	PEER
Applications Development	$1,438	$2,205
Applications Support	$1,713	$2,872
Distributed Computing	$68,908	$332,023
IT Help Desk	$3,311	$1,939
Wide Area Data	$14,956	$61,015
Midrange-UNIX	$1,712	$11,096
Midrange-NT	$4,289	$15,120

Total Cost by IS Cost Category
Study Peer Observations

- **OET is spending less than the peer groups would need to spend in the following areas:**
  - Personnel 70%
  - Hardware 80%
  - Software 84%
  - Outsourcer 97%
  - Transmission 73%
  - Disaster Recovery 100%

Total Cost by IS Component
Study Peer Observations



	KDE	PEER
Outsourcer	$1,403	$40,267
Disaster Recovery	$0	$1,067
Transmission	$10,096	$36,838
Personnel	$22,072	$130,738
Software	$6,649	$33,263
Hardware	$56,107	$184,098

Total FTEs By Area
Study Peer Observations

- **Total Full Time Equivalent (FTE) personnel within the IT areas measured is 85% *lower* than Peer Group Full Time Equivalent staff that would be required to support OET's workload.**

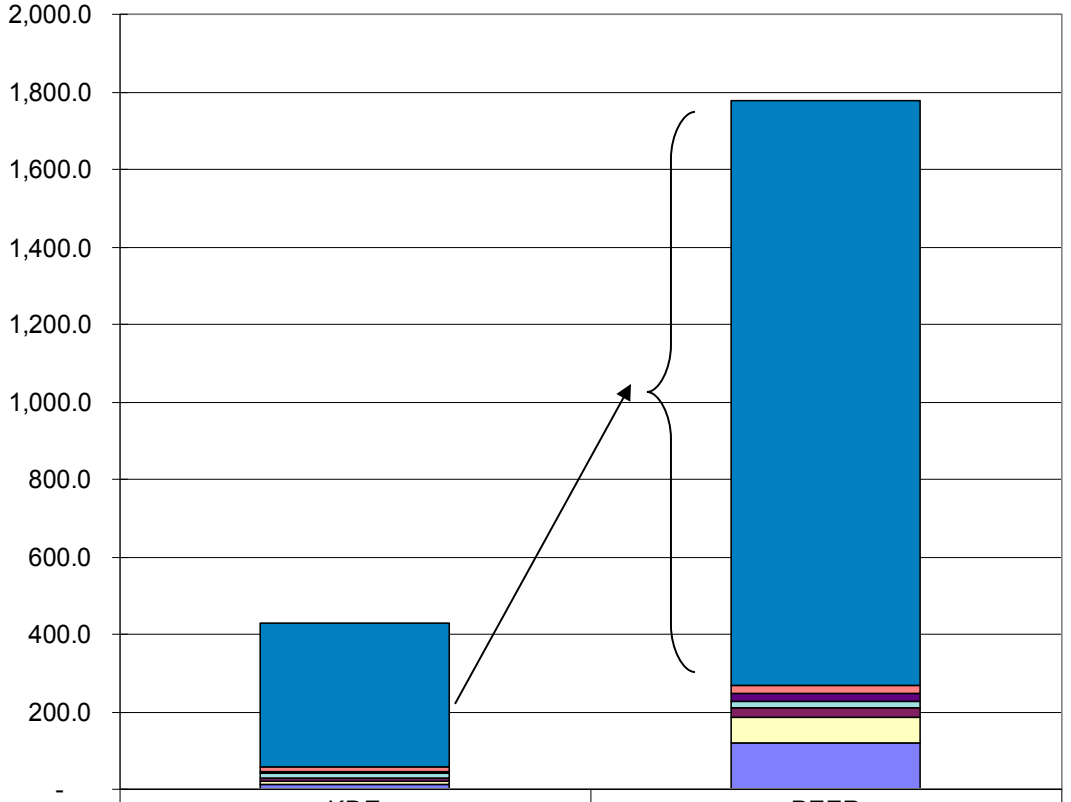
	Schools & OET	PEER
Total FTEs	429.2	1778.5

- **The following functional areas have imputed FTE counts that are *higher* than what the peer group would need to perform OET's workload:**
  - IT Help Desk — 10% higher
  - The above analysis is based on 03-04 costs of $595K for the Munis Help Desk. This cost will reduce to $188K in 04-05.

- **The cost per staff is similar to that of the peer (+/- 5%)**

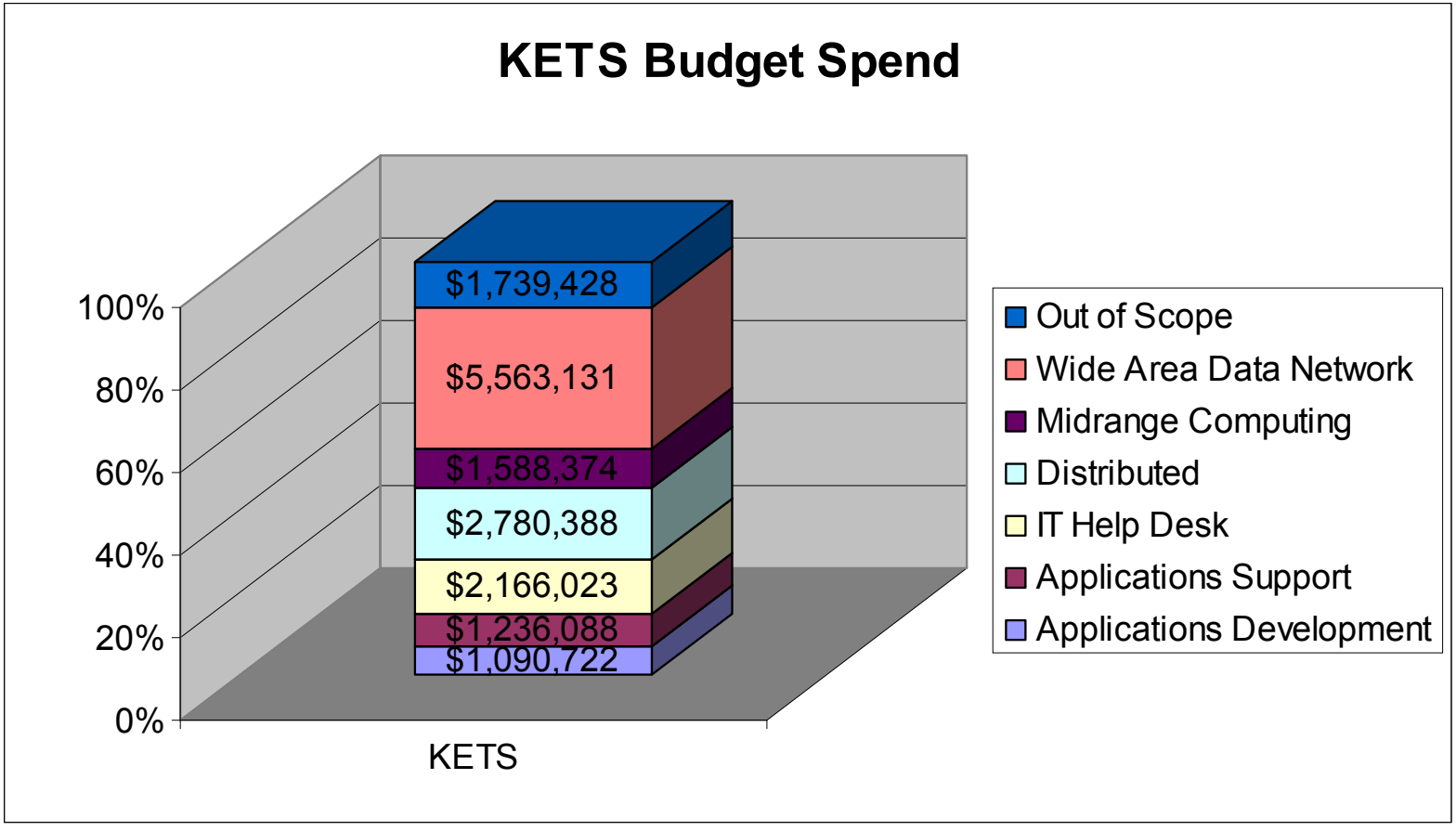
Total FTEs by Area
Study Peer Observations

As discussed previously, OET is understaffed in all areas but especially in Distributed Computing. Two FTEs per district are already included in the estimate of KDE resources in this area. Gartner assumed that much of the gap in this area are bridged by school personnel not typically trained for IT support



	KDE	PEER
Distributed Computing	371.4	1509.50
IT Help Desk	10.8	20.77
Applications Support	6.8	20.21
Applications Development	12.2	15.91
Midrange - UNIX	5.6	27.13
Midrange - NT	10.3	66.38
Wide Area Data	12.2	118.62

OET Budget vs. Gartner Service Area



- **Observations**
  - Existing OET budget is fully accounted for in tower spend and out of scope technology items (telecommunications, audio.visual and one-time projects), Total is **$16.1 M** out of 16.5M. Remaining amount (less than $400K) is non-technology costs (administrative costs and other elements) not included in any Gartner consensus model.

Executive Summary - Recommendations

1) Insufficient IT investment is impairing OET's effectiveness / capabilities

- Capital programs vs. lifecycle costs
- Strategic and tactical use of IT

2) Improve / Align planning and budgeting processes (Strategic Planning, Portfolio Management)

- Strategic Planning must incorporate department needs, architectural needs
- Portfolio Management provides a capability to match applications with the corresponding environment changes
- Consolidating platforms can reduce complexity which will ease support requirements for KDE

3) Provide an ongoing funding source by considering chargeback

- Departments must understand the service levels and products IS can provide for a cost
- There needs to be ongoing dialogue to ensure alignment / satisfaction
- Measurement can aid in demonstrating ability to execute objectives
- Training for end users can ease reliance on IS support, provide more self-sufficiency

Recommendations

1) Insufficient IT investment is impairing OET's effectiveness/capabilities

- In the face of ongoing funding limitations, it is necessary to work closely with various departments to establish priorities. Thus, staffing ratio and delivery quality in the critical areas can be optimized.
- Provide total project costs in cost estimates; for large investments a business case analysis should be provided. Capital programs to fund single events is not enough, all years need to be funded (and tracked).
- Measure critical processes and track service levels to ensure that resource constraints do not decrease effectiveness and service levels. Communicate results and advise of upcoming IT needs and support requirements.
- Explore opportunities to minimize complexity. Also leverage technology and the use of integrated tools to automate support functions, especially in the areas of Help Desk, Distributed Computing, and Database Technology.
- Establish formal structures (committees) to jointly discuss priorities, establish goals, plans and objectives for OET (see item #2)

Recommendations
First priorities...

1) Insufficient IT investment is impairing OET's effectiveness/capabilities

- **Review lifecycle decisions for equipment**
  - Gartner Research has observed that cycles for obsolescence are growing shorter not longer
    - Cycles that are too long impede IS from being responsive to changing customer requirements. Longer cycles also increase support and maintenance costs, increase downtime and customer dissatisfaction
    - Cycles that are too short place a financial burden on both the institution and IS to manage the increased change and justify the additional investment
    - Gartner recommended lifecycles are 3-4 years for desktop (vs. 4-5 years (or longer) for OET) and 2-3 years for laptops (vs. 4-5 years for OET)
  - Investment in newer server and network can ease the shift to more cost effective technologies like thin client and web enabled architectures
  - Software enhancements increase functionality and efficiency of organizations
  - Creating an "evergreen" minimum configuration, coupled with "utility" budgeting can ensure that user efficiency (and satisfaction) can be maintained

Recommendations
First priorities...

1) Insufficient IT investment is impairing OET's effectiveness/capabilities

- Investing in business continuity is critical

BC Components

	Disaster Recovery	Business Recovery	Business Resumption	Contingency Planning
Objective	Mission-critical applications	Mission-critical business processing (workspace	Business process workarounds	External event
Focus	Site or component outage (external)	Site outage (external)	Application outage (internal)	External behavior forcing change to internal
Deliverable	Disaster recovery plan	Business recovery plan	Alternate processing plan	Business contingency plan
Sample Event(s)	Fire at the data center; critical server failure	Electrical outage in the building	Credit authorization system down	Main supplier cannot ship due to its own problem
Sample Solution	Recovery site in a different location	Recovery site in a different power grid	Manual procedure	25% backup of vital products; backup supplier
CRISIS MANAGEMENT				

In the aftermath of recent natural disasters, terrorism, and equipment breakdown, organizations have recognized more than ever the need to be prepared. Institutions are striving to meet the demand for continuous service. With the growth of e-commerce and other factors driving system availability expectations toward 24x365, the average organization's requirement for recovery time from a major system outage now ranges between two and 24 hours. This requirement is pushed by the expectation an organization faces on all sides:

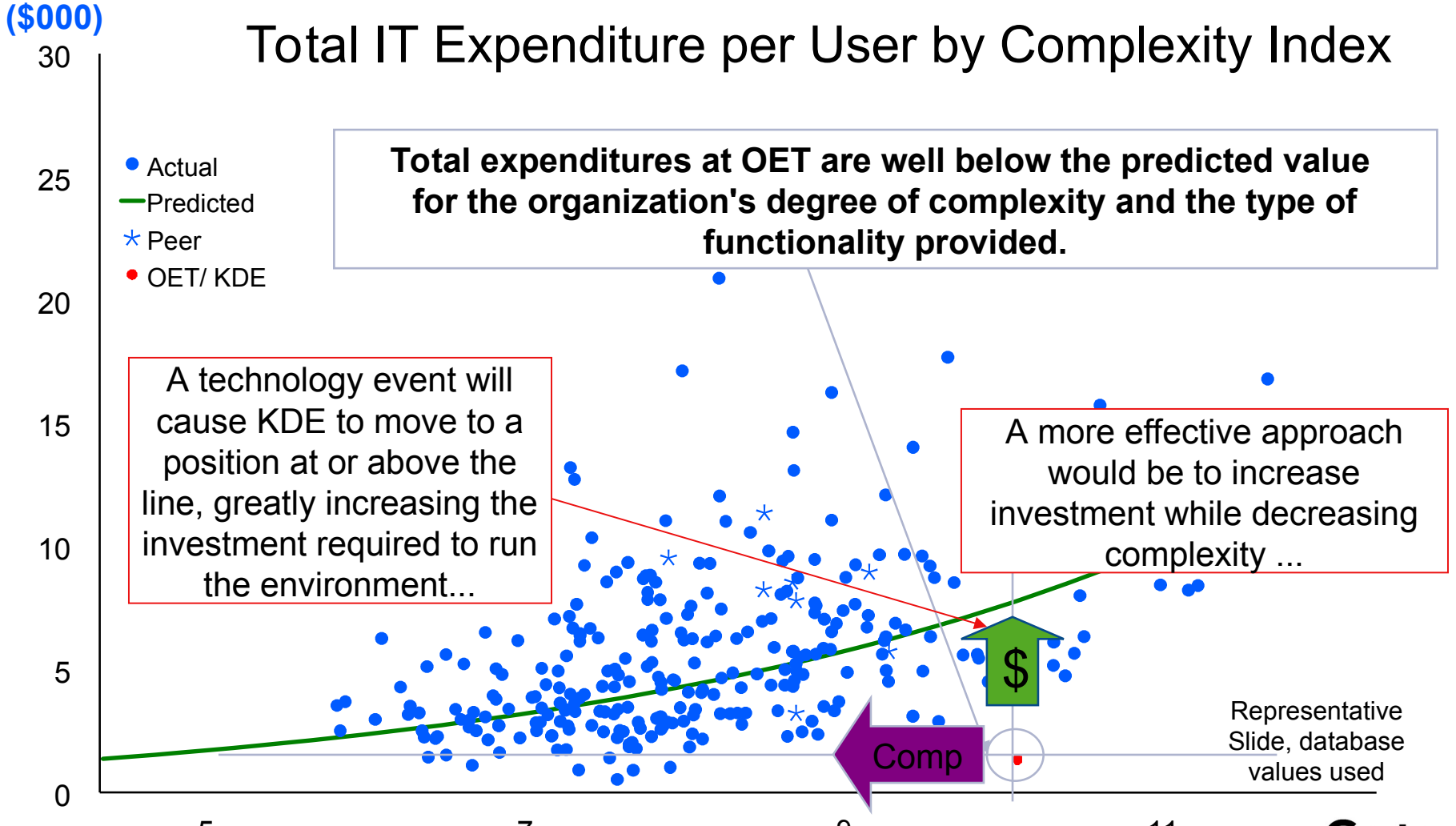
- Students and users expect supplies and services to continue—or resume rapidly— in all situations.
- Employees expect both their lives and livelihoods to be protected.
- Recovery of critical information and research has a price tag to replace
- Insurance companies expect due care to be exercised.

Recommendations

1) Insufficient IT investment is impairing OET's effectiveness/capabilities

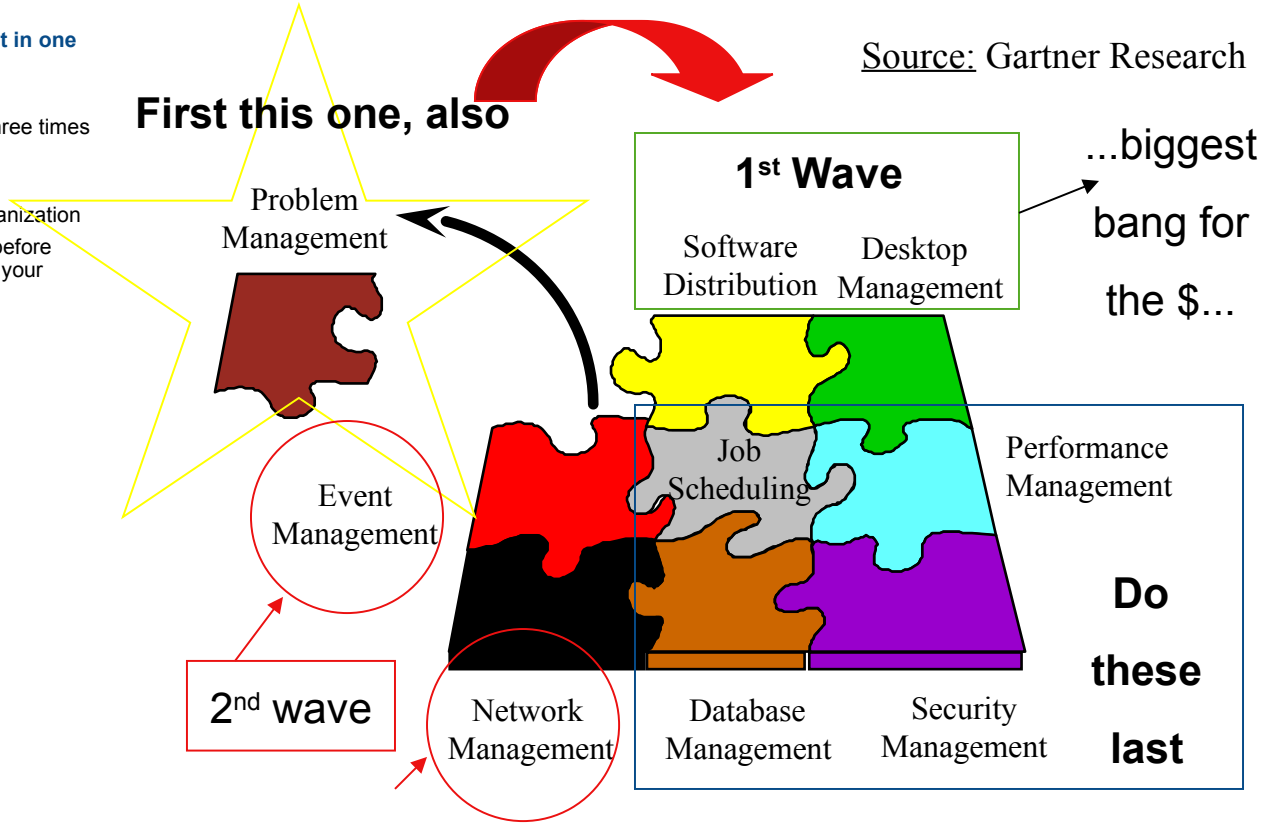
- **Recommendations:**
  - In the face of ongoing funding limitations, it is necessary to work closely with various departments to establish priorities. Thus, staffing ratio and delivery quality in the critical areas can be optimized.
  - Provide total project costs in cost estimates; for large investments a business case analysis should be provided. Capital programs to fund single events is not enough, all years need to be funded (and tracked).
  - Measure critical processes and track service levels to ensure that resource constraints do not decrease effectiveness and service levels. Communicate results and advise of upcoming IT needs and support requirements.
  - Explore opportunities to minimize complexity. Also leverage technology and the use of integrated tools to automate support functions, especially in the areas of Help Desk, Distributed Computing, and Database Technology.
  - Establish formal structures (committees) to jointly discuss priorities, establish goals, plans and objectives for OET (see item #2)

Recommendations
Decrease complexity or increase funding



Recommendations
Systems Management Tools—Take It One Step at a Time

- **OET needs many of the ESM tools, but should implement them based on prioirtized need**
- **It's important to remember that we cannot swallow the elephant in one bite.**
  - Take implementation projects in small incremental chunks
  - Have projects that last six months or less, and clients will be three times more likely to achieve the ROI
  - Focus on ease of implementation as a critical success factor
  - Think tactically in projects and strategically in process and organization
  - Think process before product. Map out your process strategy before you've acquired the product and you will dramatically increase your success rates.

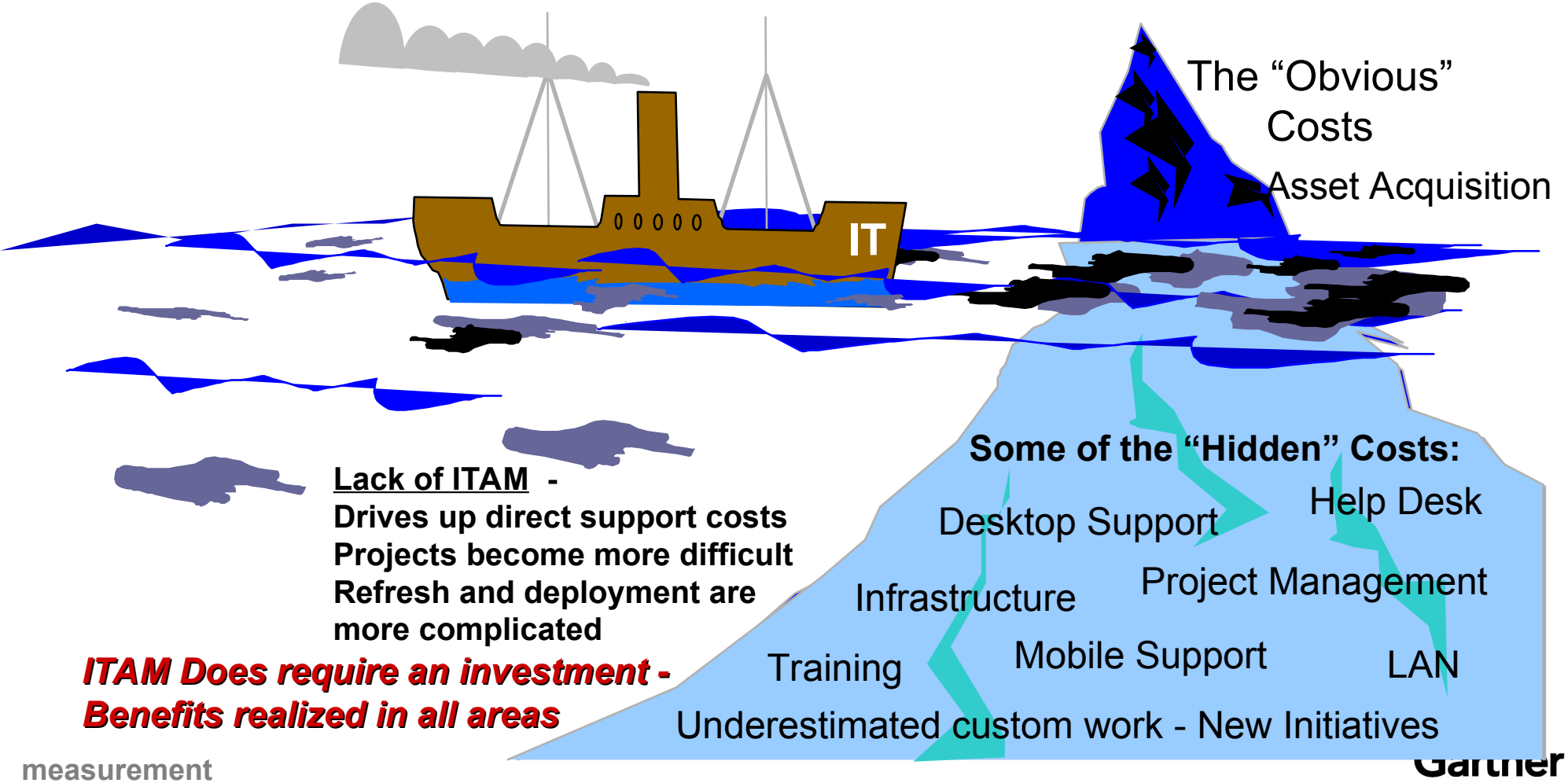


- Estimated costs are $80 / device for software distribution and desktop management (1st wave)
- Network costs can increase between 65 to 141% (to enable remote management)
- One time implementation costs should be budgeted at 50% of the project's cost
  - This covers vendor assistance, staff training and one-time hardware, software and support costs

Recommendations
Invest in technology tools like ITAM (IT Asset Management)

1) Insufficient IT investment is impairing OET's effectiveness/capabilities

Tracking and managing asset investment can save up to 25% of hardware and software costs



Lack of ITAM -
Drives up direct support costs
Projects become more difficult
Refresh and deployment are more complicated

ITAM Does require an investment - Benefits realized in all areas

Recommendations

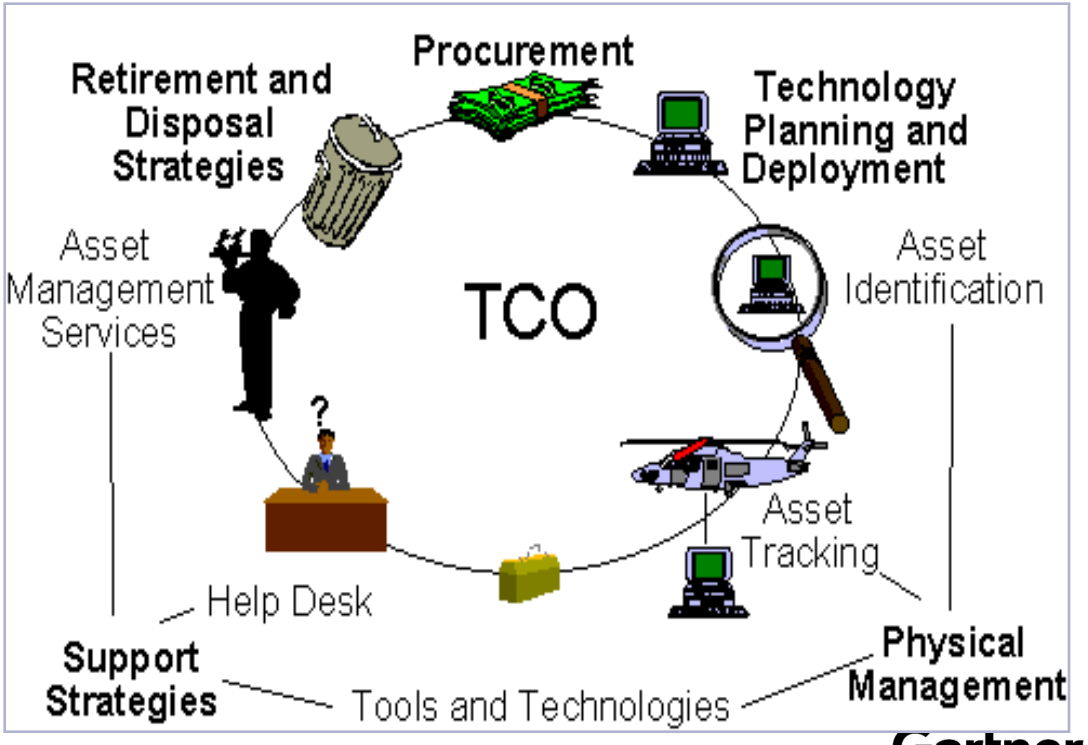
2) Improve / Align planning and budgeting processes

Lack of governance structures to aid discussion of strategy with key stakeholders

Align steering committees with:
- School requirements
- KDE strategies for IT
- Technologies for evaluation

Budgeting / Planning appears to be based on capital investment and not lifecycle costs

Elements of the Managed Life Cycle



Recommendations

2) Improve / Align planning and budgeting processes (Strategic)

- Jointly plan strategic initiatives with partner organizations, thus developing an Enterprise Architecture Plan (EAP) and establish a corresponding approved standards list for development and shrink-wrap
  - Tied to Lifecycle Management, Portfolio Management then marries the infrastructure needs (EAP) with key business requirements
    - Increased awareness will speed implementation, ease prioritization, and more accurately coordinate funding
    - Unintended delays and gaps in project performance will be minimized. Decisions to postpone aspects of key projects will be clearly understood by all parties
- Using the EAP, develop Programs that align projects into key deliverables (chunks)
  - Measure and track progress and share results with key partners
    - "Chunking" will allow for adjustments due to changing requirements or technological advances
  - Establish utility and "at risk" budget components (based on prioritized need)
    - Utility budget encompasses all funding for the existing applications
    - At Risk identifies those dollars available for investment in new technologies

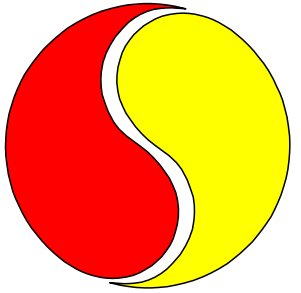
Recommendations

2) Improve / Align planning and budgeting processes (Tactical)

- Must establish Service Level Agreements (SLAs) for critical KDE functions
- In the face of continuing reductions, it is necessary to work closely with various business units to establish priorities. Thus, staffing ratio and delivery quality in the critical areas can be optimized
- Measure critical processes and track service levels to ensure that resource constraints do not decrease effectiveness and service levels. In addition, set up leading indicators to monitor and anticipate upcoming technology needs and support requirements.
- Explore opportunities to leverage technology and use of integrated tools to automate support functions, especially in the areas of software distribution and remote management
- Monitor staff workload and their morale to reduce turnover and prevent burnout

Recommendations

- **Keys to successful SLA implementation :**



  - Ensure that they are agreements, not objectives
    - Agreements require business unit sign up
    - Objectives are set arbitrarily by IS and often lack the consensus needed to effect change
  - Publish the service levels
    - Communicate, communicate, communicate !!!
    - There must also be processes to renegotiate, if desired
  - Publish escalation procedures
  - Adopt/Enhance a client services capability
    - Client communication is the lifeblood of today's technology organizations. Develop a communications and marketing plan geared to KDE IS
    - Identify key client resources that possess technology capabilities, foster focus groups, newsletters and message boards that enable client communication

Recommendations

- **Consider an ongoing measurement discipline**
  - In conjunction with the SLAs (and eventually, chargeback ?), consistently benchmark your environment to ensure compliance
  - Develop agreeable methods to reduce and manage complexity
  - Establish a joint board to evaluate changes, alter standards
  - Measurement provides the financial justification for including infrastructure changes with the projects that drive them (ties nicely with Portfolio Management and the Enterprise Architecture Plan (EAP))

- **Consider an ongoing survey mechanism**
  - Surveys are a key way for your end users to communicate to you !!!
  - Publish the results of the survey and communicate plans going forward
  - Adopt a practice of randomly sampling users after service calls, this ensures customer satisfaction

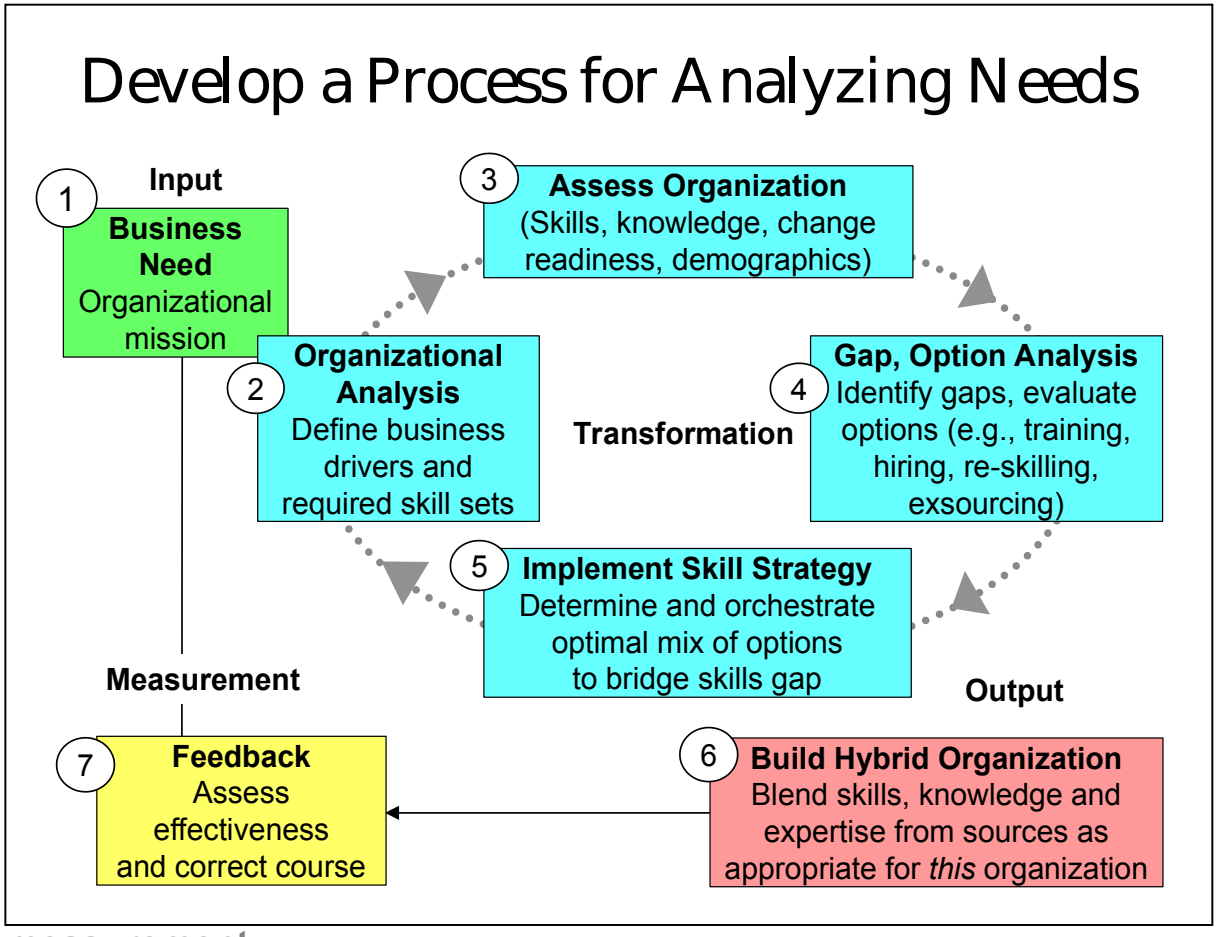
Recommendations

2) Improve / Align planning and budgeting processes

- Jointly plan strategic initiatives with partner organizations, thus developing an Enterprise Architecture Plan (EAP)
  - Tied to Lifecycle Management, Portfolio Management marries the infrastructure needs with key business requirements
    - Increased awareness will speed implementation, ease prioritization, and more accurately coordinate funding
    - Unintended delays and gaps in project performance will be minimized. Decisions to postpone aspects of key projects will be clearly understood by all parties
- Using the EAP, develop Programs that align projects into key deliverables (chunks)
  - Measure and track progress and share results with key partners
    - "Chunking" will allow for adjustments due to changing requirements or technological advances

Recommendation

- **KDE needs to align its staffing with its ongoing strategy. As the first step in maintaining the proper staffing levels to support existing and future operations, Gartner recommends the process outlined in the diagram below in matching needs with IS resources.**



- The diagram to the left represents a suggested process by Gartner for identifying the demand side of the IS Resource Management puzzle.

- The important point is to identify the needs of the individual departments; translate those demands into the skills and resources required to meet those needs and then ensure that those skills are available to the organization. **That list is then compared to provided funding.**

measurement

Source: Gartner Research

Recommendations
Chargeback Overview

3) Provide an ongoing funding source by instituting chargeback

- **An effective chargeback system will:**
  - Apportion costs to areas that use services the most
  - Help managers make more cost-effective decisions
  - Establish accountability for cost overruns with the areas that caused them, reducing the pressure of "Do more with less"
  - Force more customer service focus, if customer satisfaction is measured and used as a performance criterion
  - Develop an entrepreneurial spirit to "sell" your products and services
  - Assist in budgeting by tracking activity volumes and anticipated demand increases that can help financially justify additional resources
  - Employ free enterprise checks and balances to control costs as in a free market economy. Your cost for services should be competitive with that of an outside vendor

3) Provide an ongoing funding source by instituting chargeback

The three "C's" of Chargeback: Cost Recovery, Control, and Communication

- Cost Recovery
  - Recoup full or partial costs of providing IT services and facilities
- Control
  - IT: Influence customer behavior to conform with strategic directions
  - Client: Control costs through resource utilization and allow comparison with outside alternatives.
- Communication
  - IT to client:
    - Value of IT products
    - IT as a professional entity (credibility)
    - Alignment with business goals
  - Client to IT:
    - Basis for cost to benefit (service level) communication
    - Economic priorities and limitations

Recommendations
Items that align with Best Practices

- **Key items that OET has implemented and should continue:**
  - Shared Services structure (savings in tens of millions (hard costs) to hundreds of millions (soft costs)
  - Software Derby (beginnings of Portfolio Management)
  - Client Services capability (Engineers)
  - Legislated funding and compliance

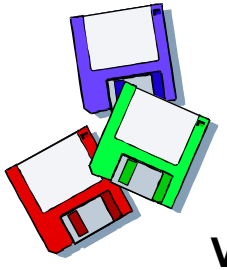
- **Elements that KDE has that other school systems desire:**
  - Statewide network (with good availability)
  - Statewide email (connecting all users)
  - Phone is every classroom (anecdotal)

Analysis By Area

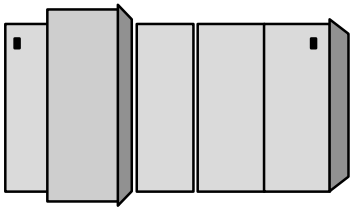
Analysis By Study Area

- Applications Development and Support
- IT Help Desk
- Midrange Computing
- Distributed Computing
- Wide Area Data Network

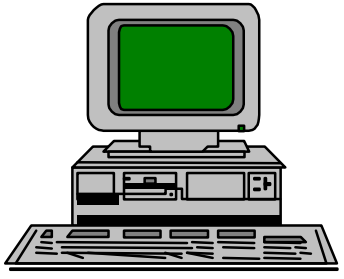
Applications Development



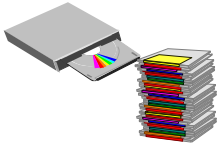
Vendor Software



Operational Infrastructure Usage



Hardware



Software Tools and Processes

Personnel

Development Staff	Research and Development	Administration Management	Quality Consultants

Applications Development includes the labor required to develop new applications or enhancements to existing applications that take more than two person-weeks to complete.

It also includes the costs of any systems and software used by the development staff to do their work.

Excluded from the analysis are activities including:

- Writing user documentation and user training
- Staff involved in strategic planning

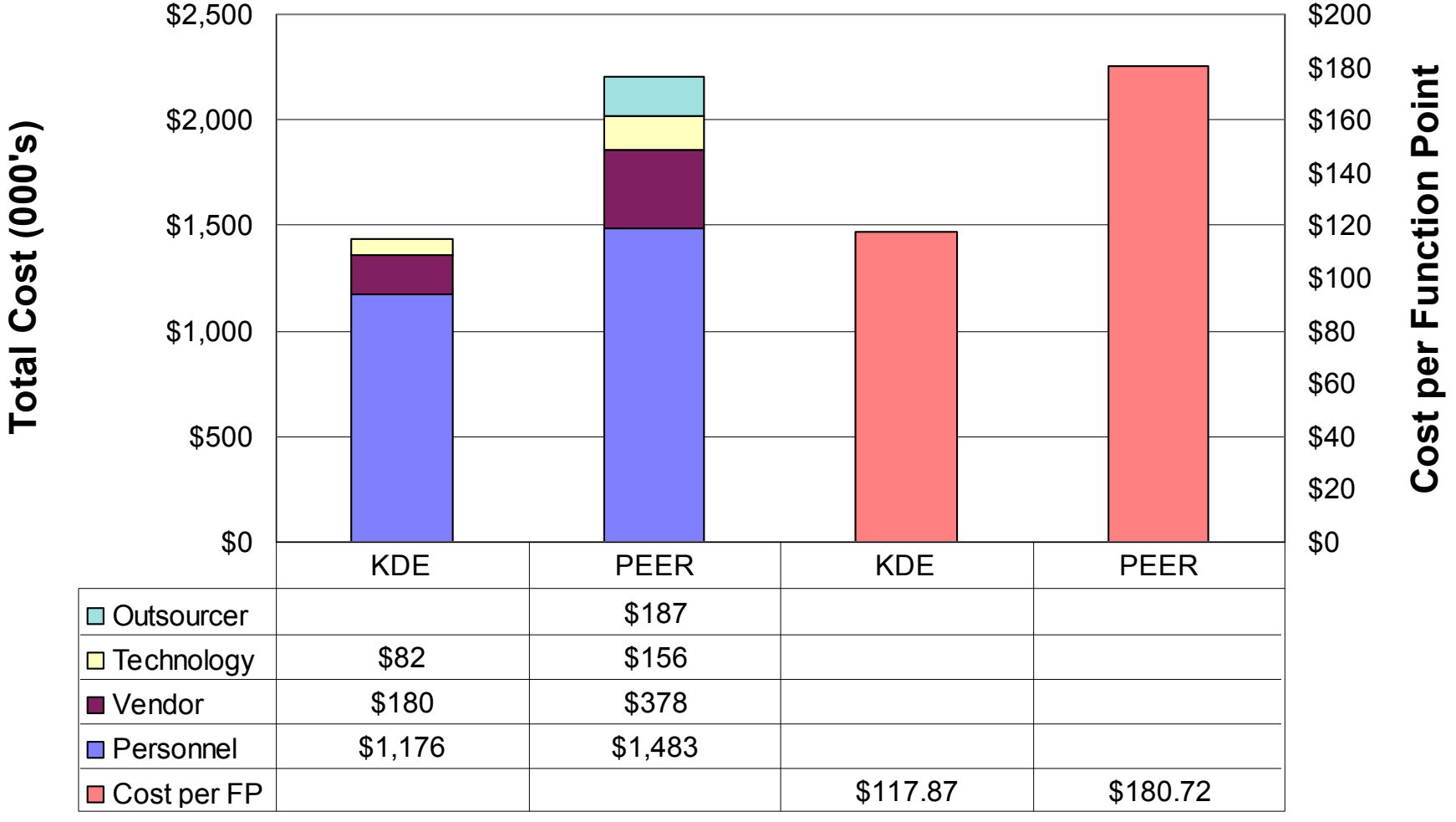
Applications Development

- **Scope of Applications Development**
  - 10,700 function points delivered
  - 16.75 FTEs
  - Budget = $1.87M

- **Peer Profile**
  - 6 companies with a similar range of function points developed
  - 1 Healthcare, 1 Consumer Goods, 2 Utility, 1 Manufacturing, 1 State/Local Government...

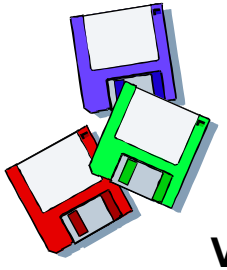
- **Observations**
  - Cost per function point developed is slightly less than peer average
  - Software derby is providing value by listing projects, however prioritization and funding must limit projects
  - Multiple projects are impeding ability for staff to focus on priorities
  - Project management office (PMO) needed to increase delivery capabilities, communicate status

Applications Development

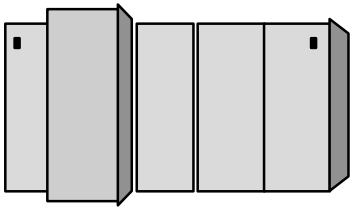


	KDE	PEER	KDE	PEER
Outsourcer		$187		
Technology	$82	$156		
Vendor	$180	$378		
Personnel	$1,176	$1,483		
Cost per FP			$117.87	$180.72

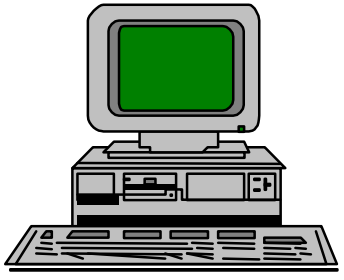
Applications Support



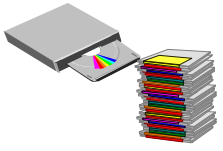
Vendor Software



Operational Infrastructure Usage



Hardware



Software Tools and Processes

Personnel			
Support Staff	Research and Development	Administration Management	Quality Consultants

Applications Support includes the labor required to support existing applications, including bug fixes of any size or duration, maintenance of hard-coded data or tables embedded in programs, and any project that produces no new functionality for the user.

Functional enhancements to existing applications that take less than two person-weeks to complete are also included.

Applications Support also includes the costs of any systems and software used by the staff to do their work.

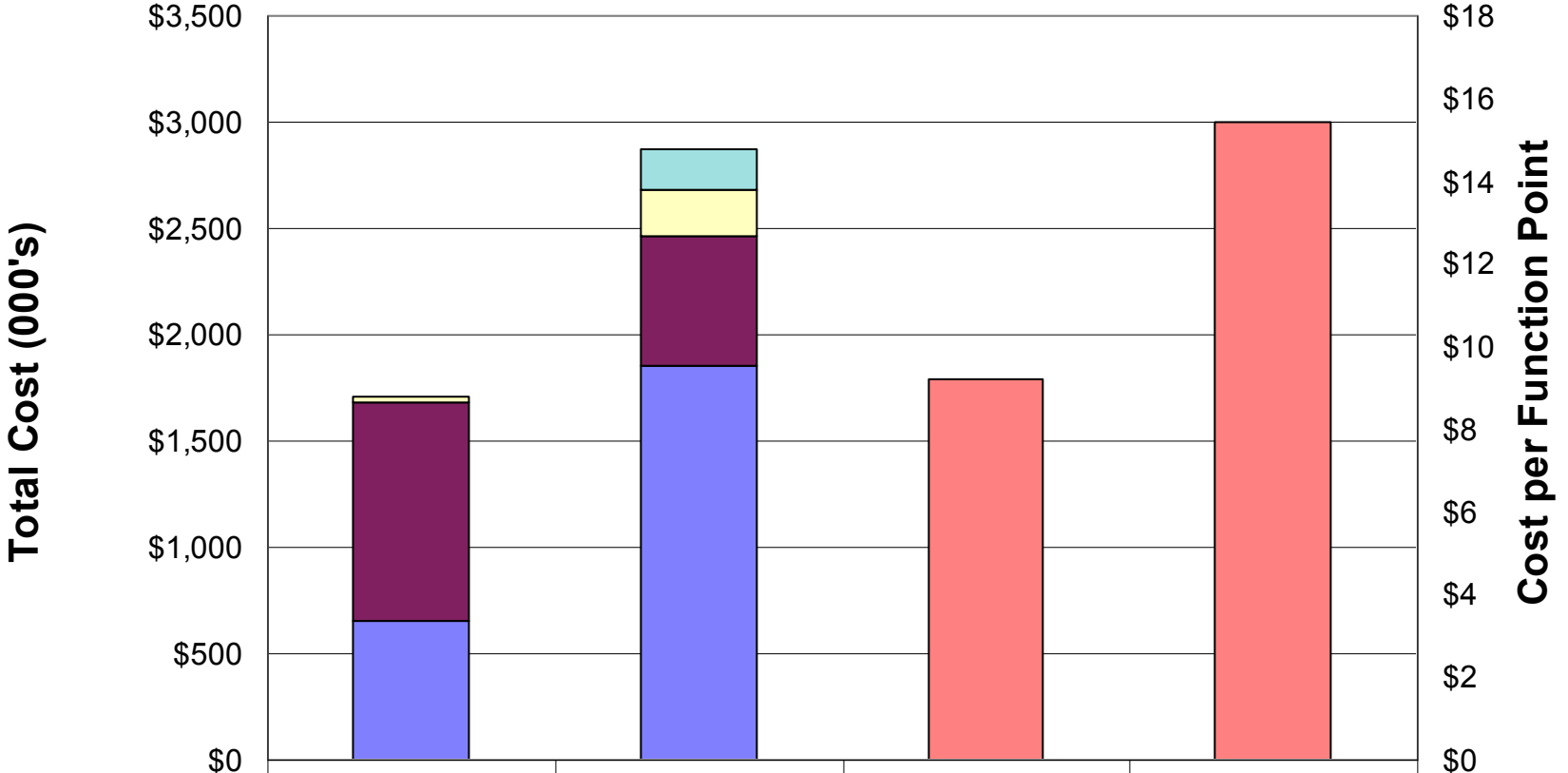
Applications Support

- **Scope of Applications Support**
  - 186,150 function points supported
  - 6.8 FTEs
  - Spending = $1.68M

- **Peer Profile**
  - 7 companies with a similar portfolio size
  - Includes 3 Manufacturing, 1 State / Local Government, 1 Utility, 1 Services, 1 Consumer Goods

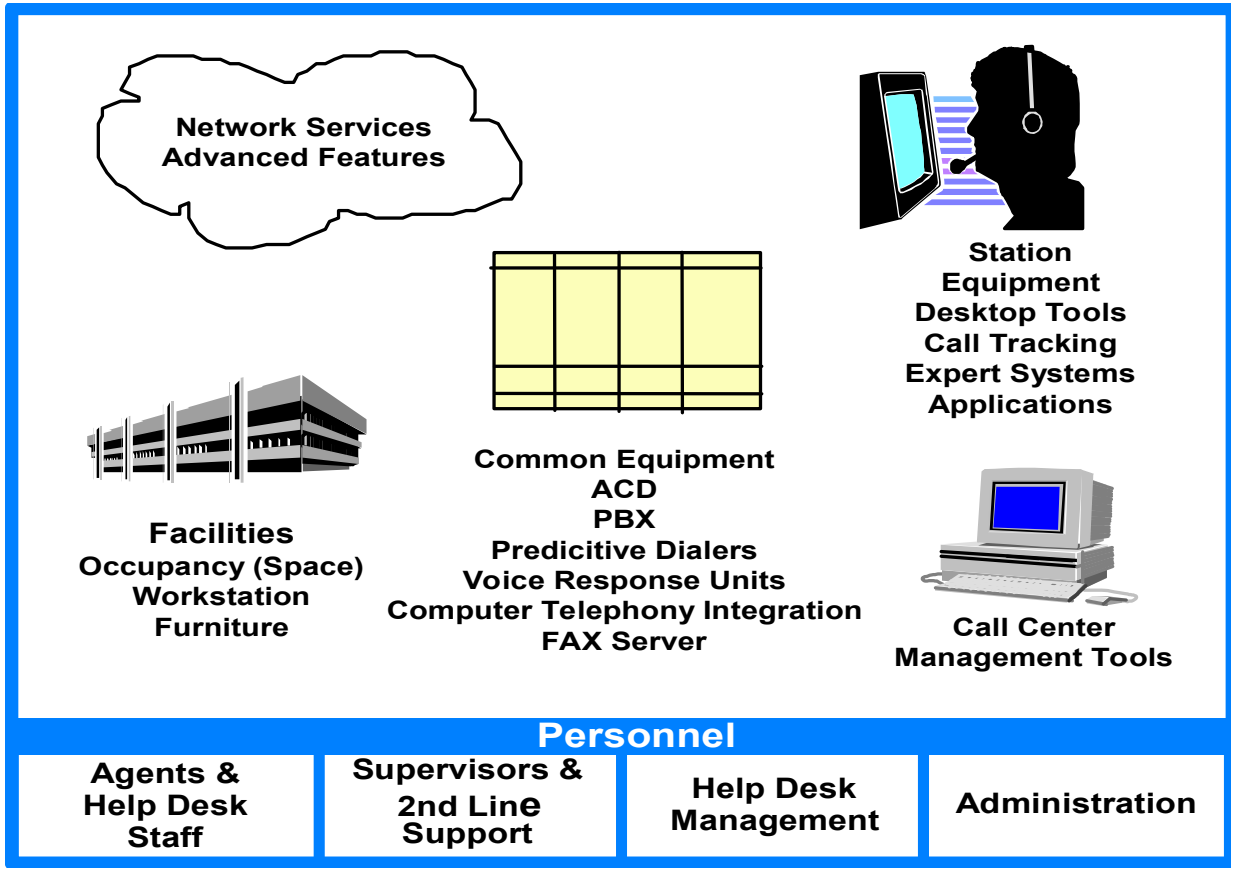
- **Observations**
  - Cost per function point supported is 40% less than peer average
  - “Capital” outlook impedes funding to fully support programs after introduction
  - Buy vs. build strategy is good, need to ensure that vendor will continue to maintain product. Also vendor management discipline must be enhanced to validate that vendors are meeting their requirements
  - IS needs to be involved from the beginning, provide lifecycle cost estimates to existing process

Applications Support



	KDE	PEER	KDE	PEER
Outsourcer		$194		
Technology	$35	$216		
Vendor	$1,020	$605		
Personnel	$658	$1,857		
Cost per FP			$9.20	$15.43

IT Help Desk



IT Help Desk encompasses the services of a call center to support an end user computing environment. Systems to support help desk agents such as problem management systems as well as the telephone systems used are included. First line agents and second line support are both included within the scope of the study.

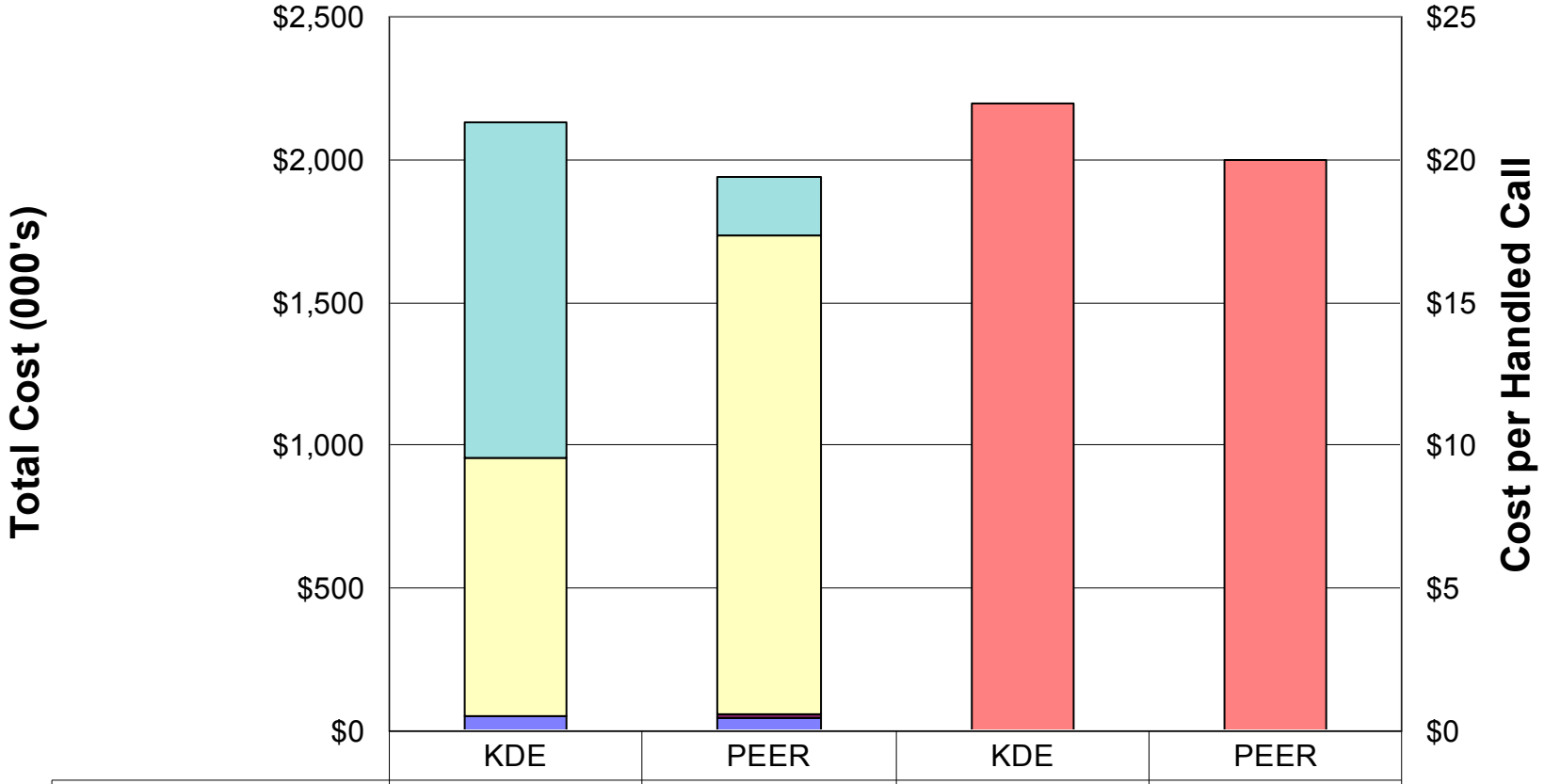
IT Help Desk

- **Scope of IT Help Desk**
  - 25,629 total calls per year
  - 93% completed by agents
  - Call complexity = 5.7
  - Total FTEs = 10.8
  - Spending = $880K

- **Peer Profile**
  - 7 companies with a similar call volume and complexity
  - Call complexity = 5.7
  - Includes 1 Education, 2 State/Local Government, 1 Utility, 1 Federal Government, 1 Healthcare and 1 Manufacturing

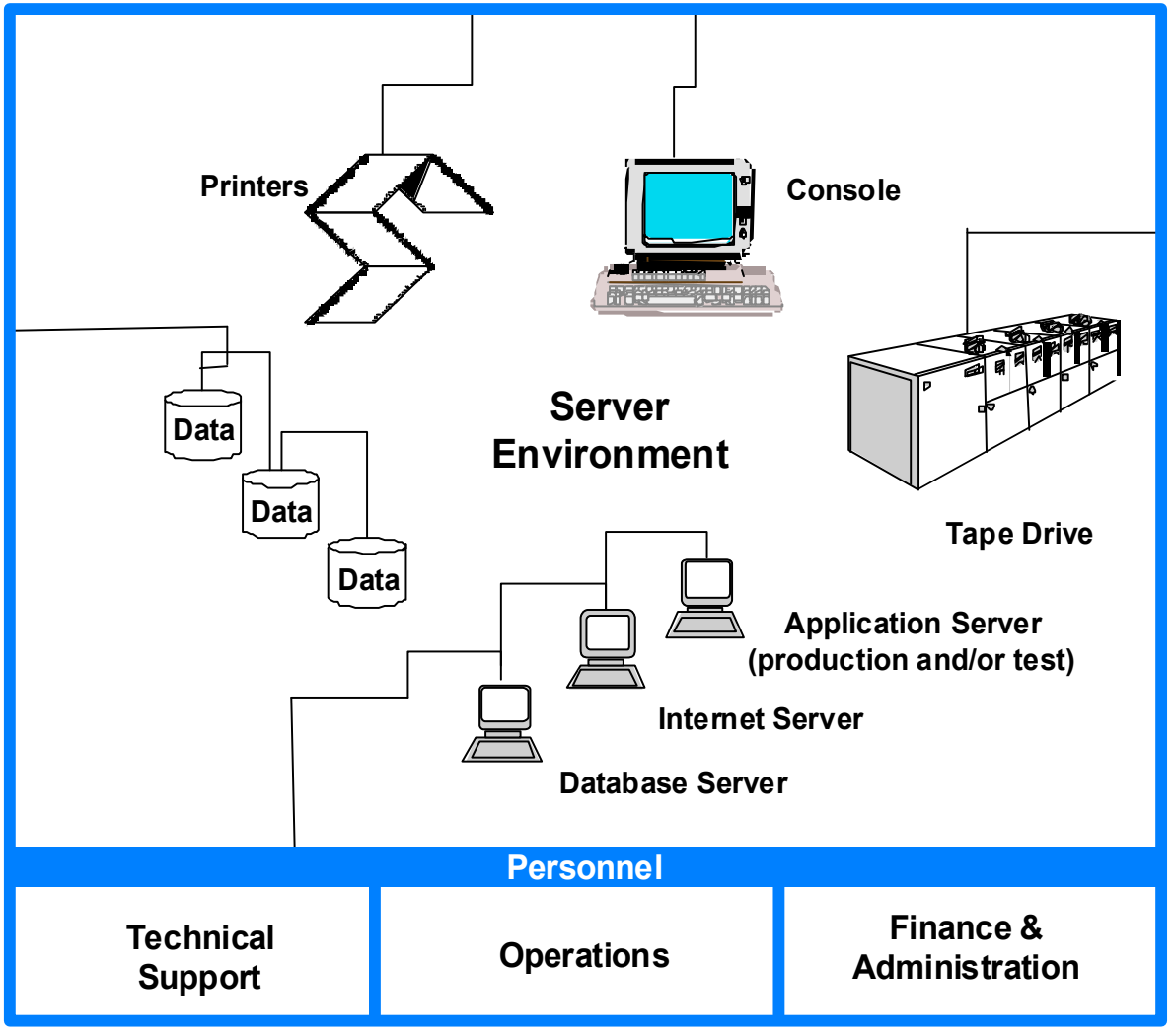
- **Observations**
  - Cost per call is marginally higher than peers, will be lower next year after renegotiating MUNIS contract ($18 per call – if same volume holds)
  - MUNIS charges are largely responsible for the increased costs, however, any outsourced service desk will have a higher price point than internal resources
  - Help desk is really the last line of defense, all SME calls are answered by OET
  - To further reduce cost per call, tools must be implemented (Remote control, help desk software, ACD, etc..) that will enable desk to truly function as a call center

IT Help Desk



	KDE	PEER	KDE	PEER
Outsourcer	$1,178	$206		
Personnel	$903	$1,676		
Network		$9		
Equipment	$52	$48		
Cost per Handled Call			$21.96	19.97

Midrange Computing



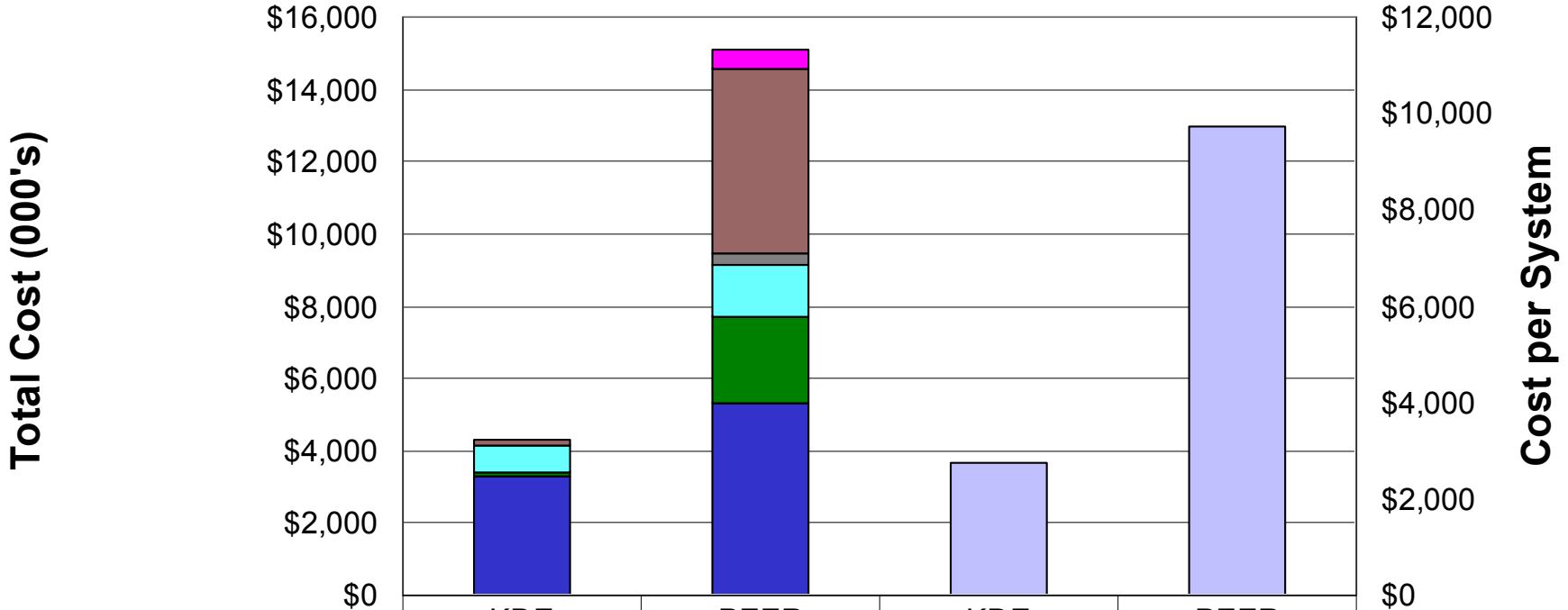
Midrange Computing includes servers running end user applications. Servers as well as any associated peripherals are included within the scope of the analysis. Software is limited to the operating system and tools and utilities. Labor support includes traditional systems administration and systems management functions.

End-user applications software and support is excluded.

Midrange Computing - NT Platform

- **Scope of Midrange Computing NT Platform**
  - 1554 servers
  - 10.3 FTE
  - Spending = $4.29M
- **Peer Profile**
  - 7 number of companies with same platform and similar power rating
  - 3 Utility, 1 Insurance, 1 Banking, 1 Chemicals / Pharmaceuticals, 1 Healthcare
- **Observations**
  - Server farm is aging, this is the primary reason for low costs
  - Ratio of server to tech is 151:1, way too high for effective service
  - Need configuration data for this area
  - Gartner would presume that OET is receiving underground (field) help in supporting the server farm
  - A lack of redundancy and disaster recovery could seriously impact KDE operations

Midrange Computing - NT Platform



	KDE	PEER	KDE	PEER
Outsourcer		$562		
Personnel - Tech. Services	$160	$5,105		
Disaster Recovery		$300		
Personnel - Operations	$715	$1,422		
Software	$122	$2,402		
Hardware	$3,292	$5,329		
Cost per System			$2,760	$9,730

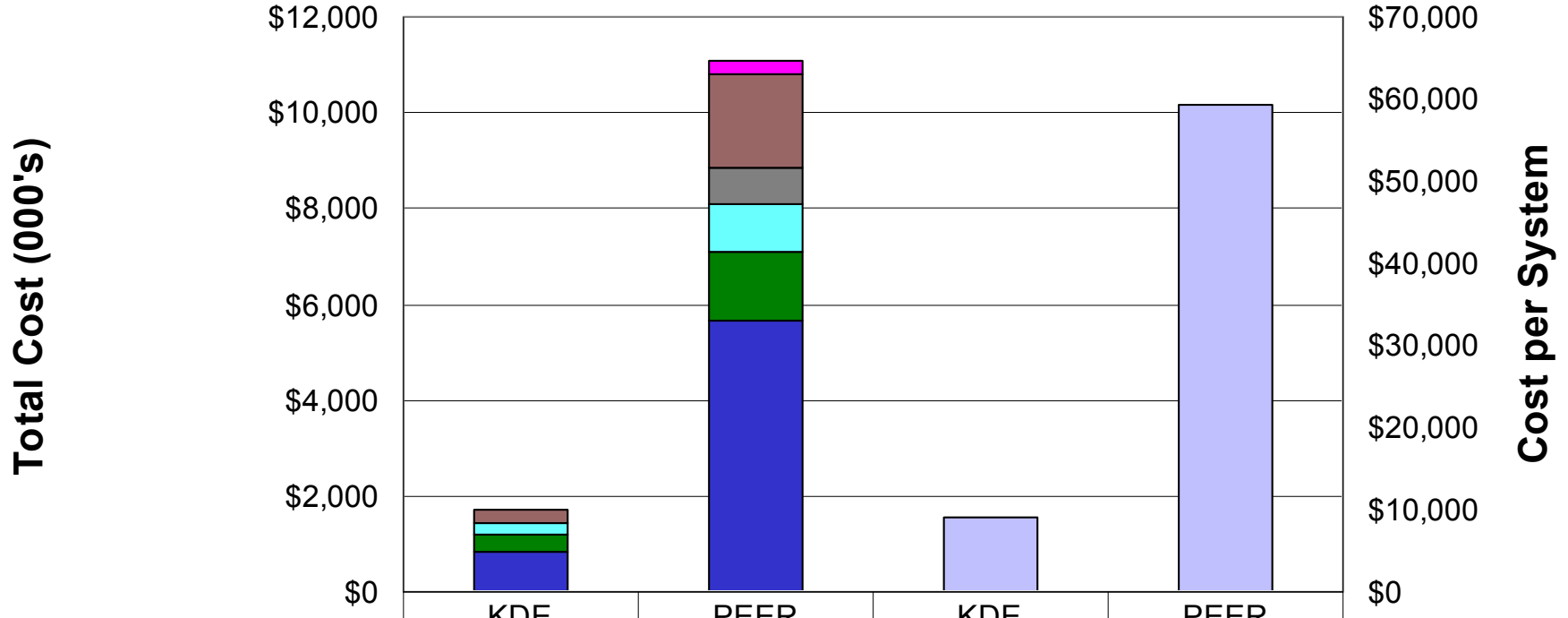
Midrange Computing - UNIX Platform

- **Scope of Midrange Computing UNIX Platform**
  - 187 servers
  - Platform = AIX ? HP ?
  - 3.4 FTE
  - Spending = $1.49M

- **Peer Profile**
  - 7 number of companies with same platform and similar power rating
  - 3 Utility, 3 Manufacturing, 1 Insurance

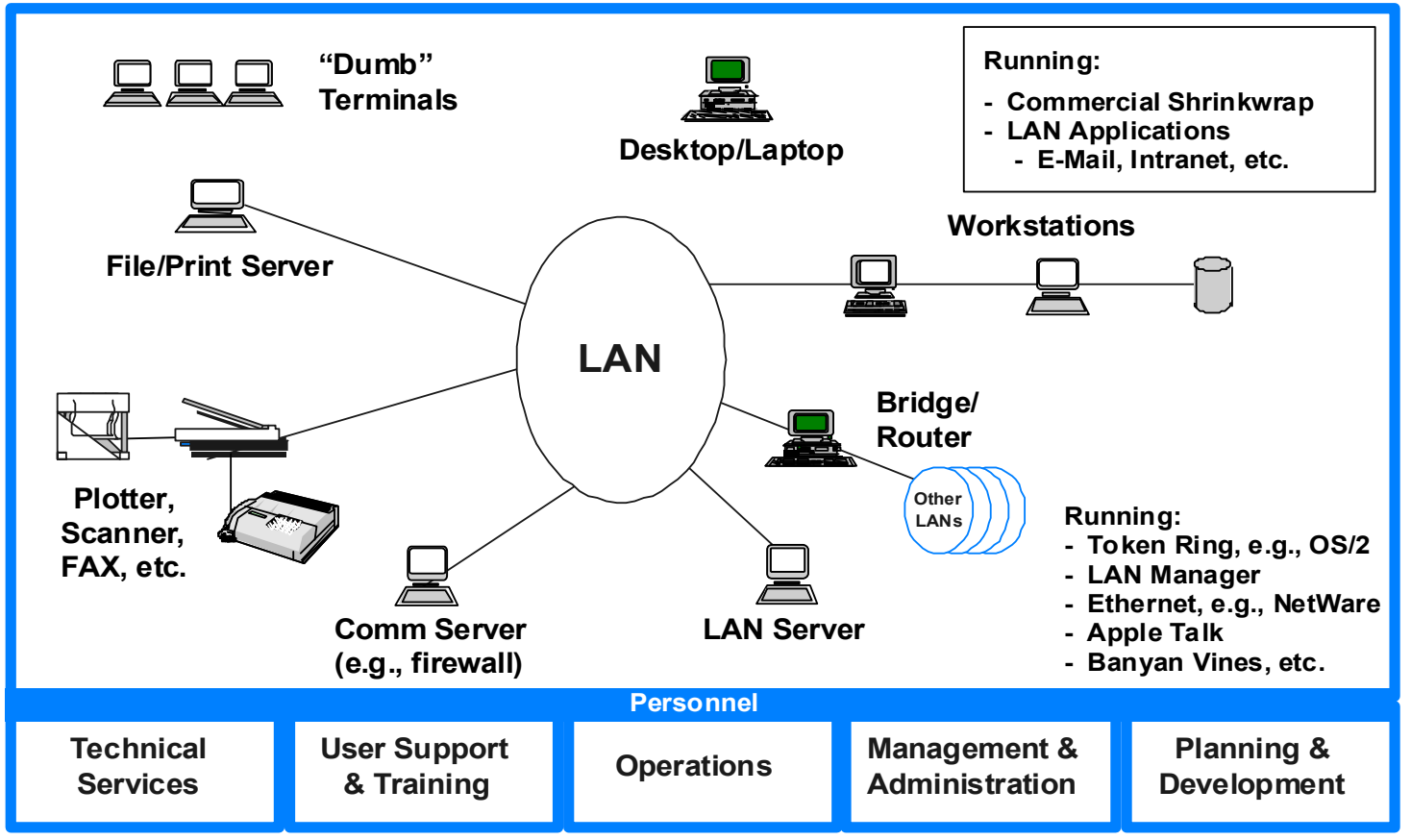
- **Observations**
  - Server farm is aging, this is the primary reason for low costs
  - Servers are experiencing changes higher than average, coupled with lower support staff signals problems for availability
  - Need configuration data for this area
  - Gartner would presume that OET is receiving underground (field) help in supporting the server farm
  - A lack of redundancy and disaster recovery could seriously impact KDE operations

Midrange Computing - UNIX Platform



	KDE	PEER	KDE	PEER
Outsourcer		$299		
Personnel - Tech. Services	$279	$1,953		
Disaster Recovery		$767		
Personnel - Operations	$239	$986		
Software	$348	$1,445		
Hardware	$846	$5,646		
Cost per System			$9,156	$59,337

Distributed Computing



Distributed Computing spans the desktop, local area network, and infrastructure servers.

Labor to manage and support PCs, laptops and other terminals, as well as the LAN and infrastructure servers (print, file, e-mail), is included.

Help Desk support for these services is also included.

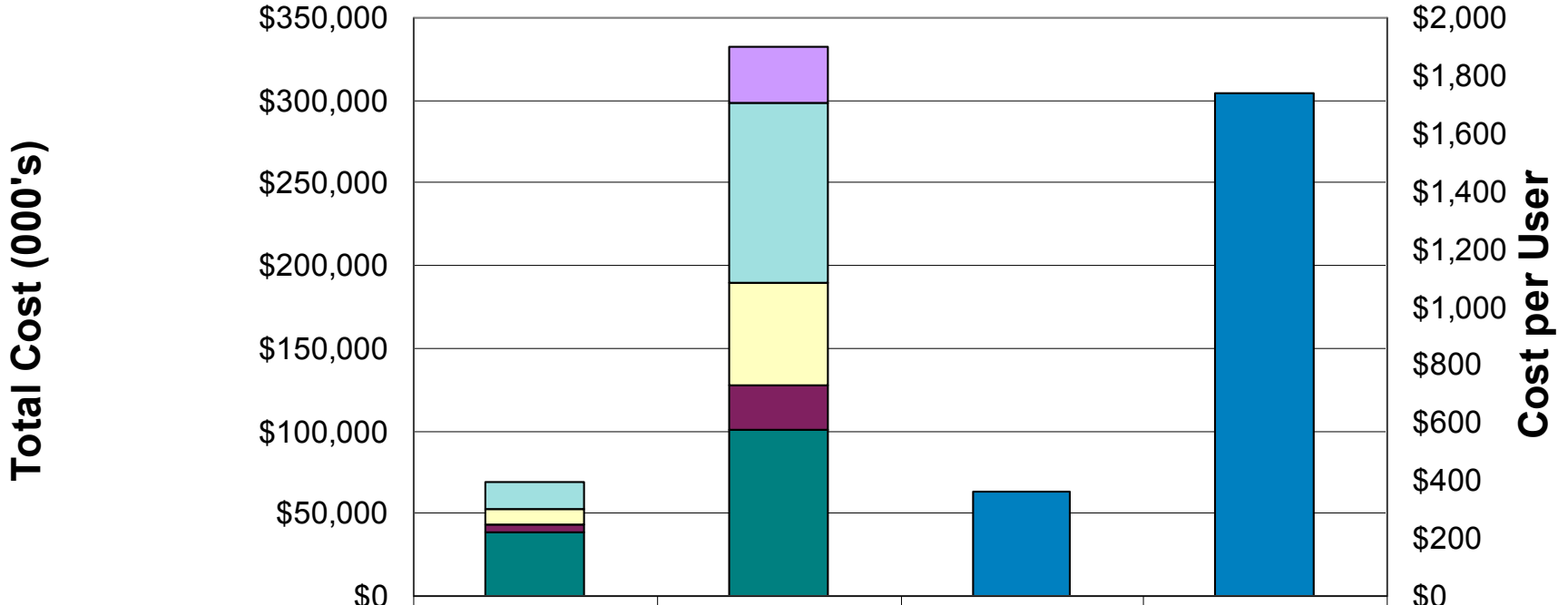
Distributed Computing

- **Scope of Distributed Computing**
  - 1501 sites
  - 746,247 users
  - Complexity index = 10.7
  - 20 FTEs
  - Spending = $55M

- **Peer Profile**
  - 6 companies with similar complexity and user population (normalized)
  - Includes 3 Banking, 1 Insurance, 1 Transportation, 1 Consumer Goods
  - Peer group complexity index = 9.2

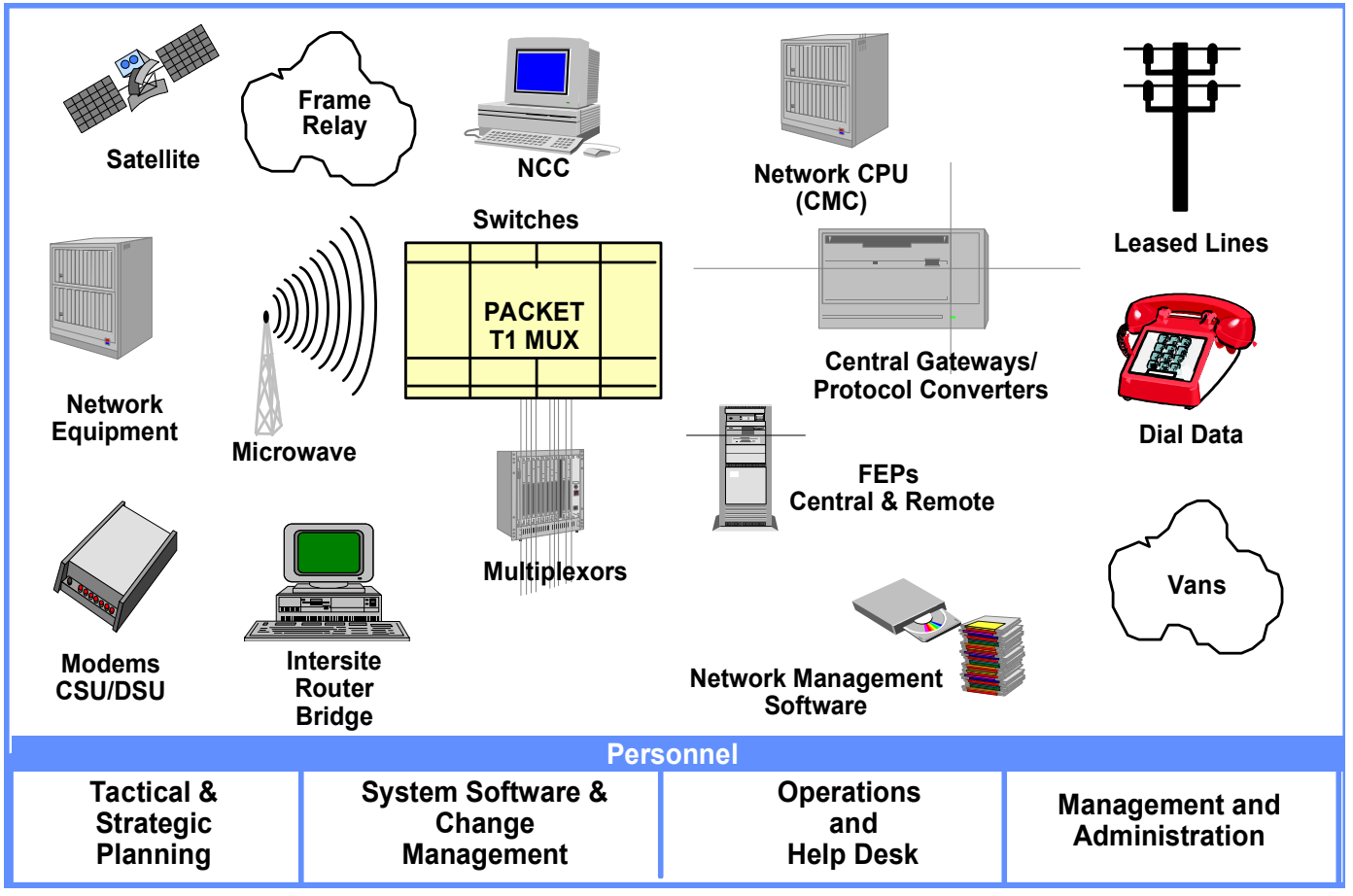
- **Observations**
  - Cost per user is very low ($74) with high user volume (764K users); adjusted to just the number of devices (191K) to provide some meaningful measure
  - Underground support must be present to manage true volume
  - Very difficult to manage an environment this big without :
    - Centralized Help Desk (with remote control and software distribution)
    - Standards (gold disk)
    - Field personnel (beyond 2 per district)
  - While I've seen larger complexity scores, it will be difficult (impossible?) to manage environment without fewer platforms. Also hard to find an environment as large as yours with your complexity score

Distributed Computing



	KDE	PEER	KDE	PEER
Outsourcer	$225	$33,051		
Personnel	$15,515	$109,147		
LAN / Shared Services	$10,238	$62,370		
Software	$4,074	$26,769		
Hardware	$38,857	$100,687		
Cost per User			$361	1738

Wide Area Data Networks



Wide Area Data Networks includes hardware, software, transmission and labor support for wide area networks, defined as a network that crosses a public thoroughfare.

Local area network costs and work are excluded from the Wide Area Data Network analysis. A device (the unit for the cost metric) is defined as anything that can originate or terminate wide area network traffic.

Wide Area Data Network

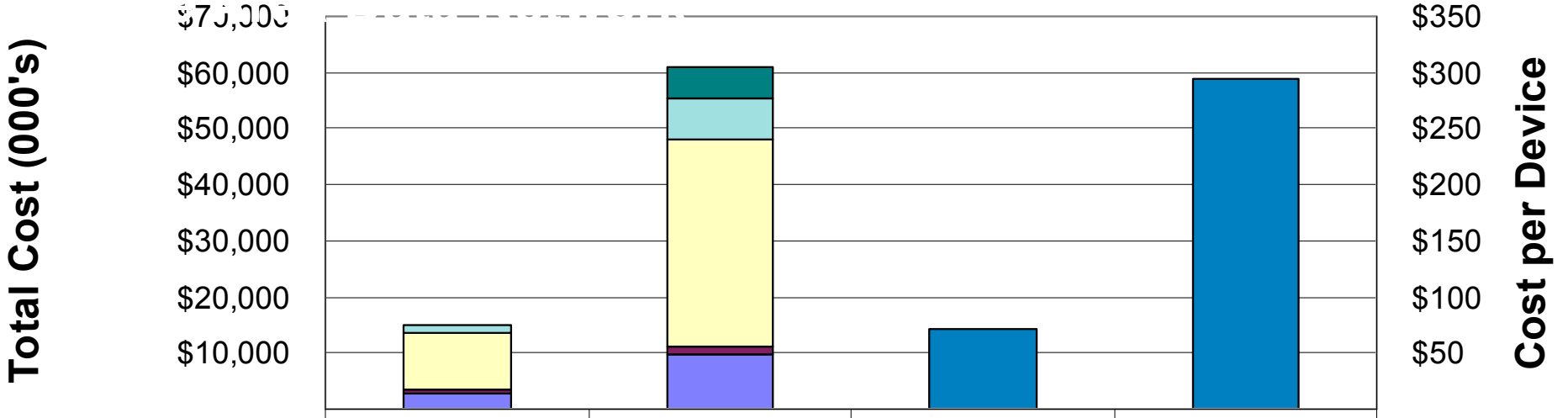
- **Scope of Wide Area Data Networks**
  - Type of Network = MPN
  - Workload distribution: 34% sites, 39% devices, 27% traffic
  - 207,131 Devices
  - 12.3 FTEs
  - Spending = $14.97M

- **Peer Profile**
  - 5 number of companies with workload distribution: 39% sites, 29% devices, 32% traffic
  - Includes 1 Banking, 1 Healthcare, 1 Transportation, 1 Manufacturing and 1Petroleum / Chemical

Observations

- Cost per device is low due to large volume of devices, leveraging of costs across the state
- Concern that further reduction in budget will impact the effectiveness of the network (and email)

Wide Area Data Network



	KDE	PEER	KDE	PEER
Outsourcer		$5,768		
Personnel	$1,249	$7,107		
Transmission	$10,096	$36,829		
Software	$895	$1,564		
Hardware	$2,716	$9,747		
Cost per Device			$72.21	$294.57

Appendix A

Cost Component Definitions

Cost Component Definitions

- **Hardware -** Includes hardware from Wide Area Data, Data Center, Midrange Computing, equipment costs from IT Help Desk, hardware and LAN/Shared Services costs from Distributed Computing, hardware and software from Voice Network and Voice Technology and percentage of technology costs from Applications Development and Support.

- **Software -** This includes software costs from Wide Area Data, Data Center, Midrange Computing, Distributed Computing desktop software, vendor costs from Applications Development and Support, percentage of Applications Aupport and Development technology costs and Purchased Enterprise Applications software.

- **Personnel -** This includes all labor costs for each functional area including internal staff and contractors, staff managed internally.

Cost Component Definitions

- **Outsourcer -** Fee for service activity, supplemental staff not managed on a day to day basis. Control is given to a third party.
- **Disaster Recovery -** Contingency planning including hot site backup and off site tape storage in the Data Center and Midrange Computing environments.
- **Transmission -** This includes circuit costs from Voice Technology, usage and access costs from Network Voice, circuit costs from Wide Area Data and network costs from the IT Help Desk.
- **Occupancy -** Includes facilities charges (electricity, office space etc.) from the Data Center, Midrange, IT Help Desk, and Applications Development and Support environments.

Gartner

research consulting measurement community news