



## BOARD MONITORING REPORT - INFORMATION TECHNOLOGY EXECUTIVE SUMMARY

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### Purpose

The Houston Independent School District (HISD) exists to strengthen the social and economic foundation of Houston by assuring its youth the highest-quality elementary and secondary education available anywhere. In fulfilling this goal, HISD's Board of Education has designed a program to systematically monitor the district's goals and core values. The Board Monitoring System will report on each goal and core value on a routine basis. The goal currently under review is **District Goal 4: Increase Management Efficiency and Effectiveness**. What follows is the summary and results of the review of the HISD Information Technology department.

### Information Technology Mission and Goals

The Information Technology Department's mission is to provide quality customer-centric services to the stakeholders of the Houston Independent School District in order to foster the primary goal of the Board of Education to advance student achievement and facilitate decision making with accurate and timely information.

The main objectives of the IT teams are to provide information and technology solutions that directly or indirectly affect student achievement, the effectiveness of teachers and principals, and presents accurate information for data-driven accountability to optimize district performance. Additionally, program evaluations, student and teacher performance reports, and analysis of student outcome data are provided to schools, district administrators, and board members for data-driven decision making.

The department is also responsible for providing service and support to schools, departments and field offices in the acquisition and use of technology to enhance student performance, ensure timely and accurate information to users, and provide quality support services.

A major goal of the Information Technology Department's plan is to ensure that technology strategies and operations support the overall learning process. The department supports all five of the Board of Education's goals through critical outcomes and key strategies.

#### Goal 1. Increase Student Achievement

- a. Data Analysis and Reporting – Accurately analyze and report performance and effectiveness data to facilitate data-driven decision making.
- b. Management of Assessment Programs – Manage rigorous standardized assessment procedures districtwide with the support necessary to produce valid and reliable assessment results.
- c. Technology Integration in Classrooms – Provide applications and support for integrating technology into the blended learning environment.



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### **Goal 2. Develop Human Capital**

- a. Staff Quality – Retain a high quality workforce and attract top talent by providing a positive work climate and ongoing support and training.
- b. IT Management Support – Provide Business and Education Supporting solutions for Human Capital Management.

### **Goal 3. Provide a Safe Environment**

- a. Foster an environment that protects and preserves the confidentiality, availability and integrity of HISD data resources while maintaining compliance with state and federal requirements.

### **Goal 4. Increase Management Effectiveness and Efficiency:**

- a. IT Governance – Employ IT best practices, establish and promote the use of standardized processes, procedures, and data governance.
- b. Provide business and education supporting solutions.

### **Goal 5. Improve Public Support and Confidence in Schools:**

- a. Transparency/Accountability – Provide easily accessible and accurate information about the extent to which actual performance compares to targeted performance.

### **Goal 6. Create a Positive District Culture:**

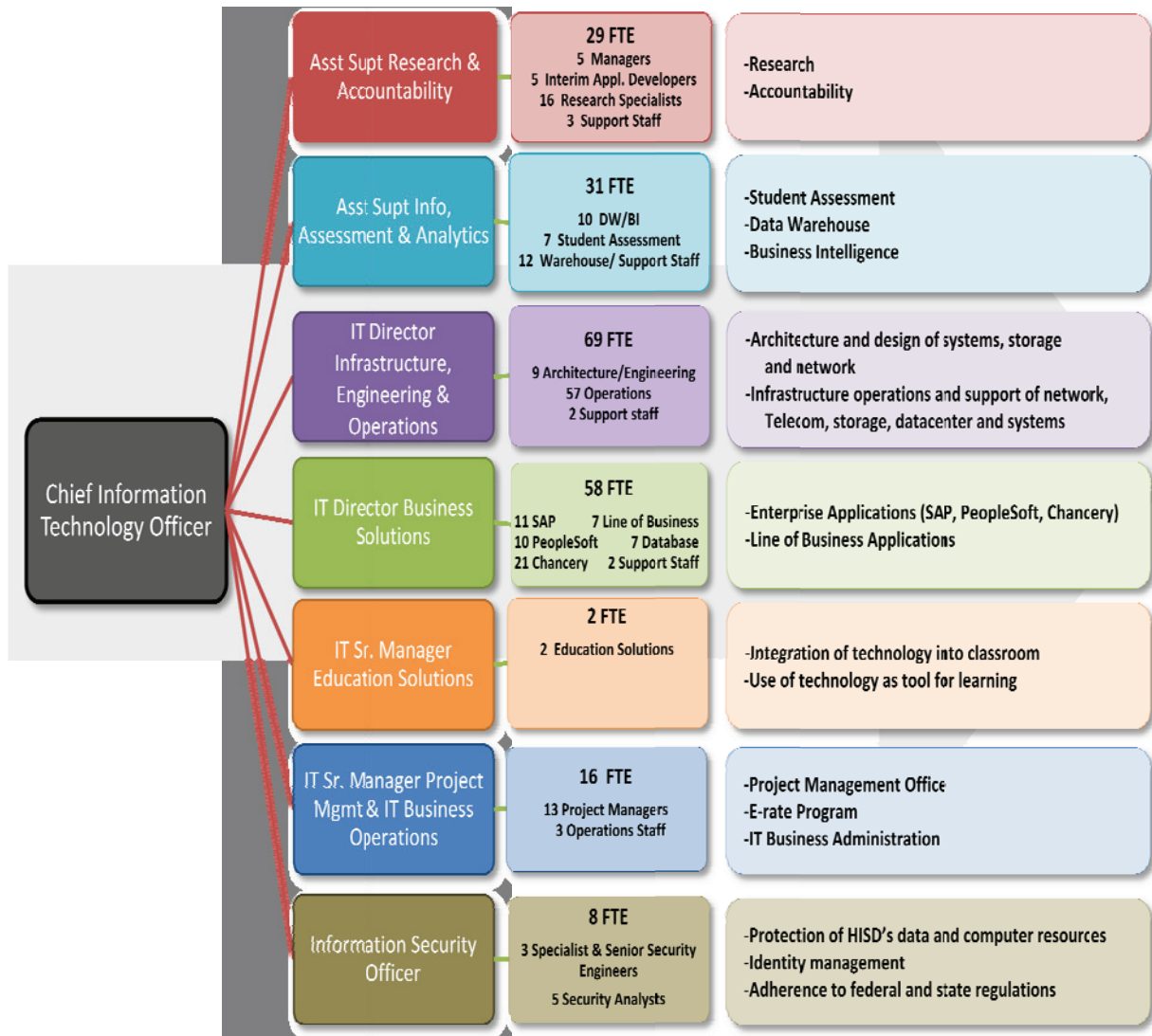
- a. Create customer-centric culture by providing the highest level of service to our internal and external customers.

Facts & Figures	
Number of Campuses with Direct Connection to the Internet	291
Percentage of Campuses with Direct Connection to the Internet	100%
Number of Classrooms with Direct Connection to the Internet	11,390
Percentage of Classrooms with Direct Connection to the Internet	100%
Computer to Student Ratio	1:4
Computer to Teacher Ratio	1:2
Number of Computers Supported	65,000
Number of Network Devices	6,000
Number of Daily Emails in the District	1,000,000
Number of SPAM Daily Emails Blocked	850,000



## Information Technology

### Organizational Chart





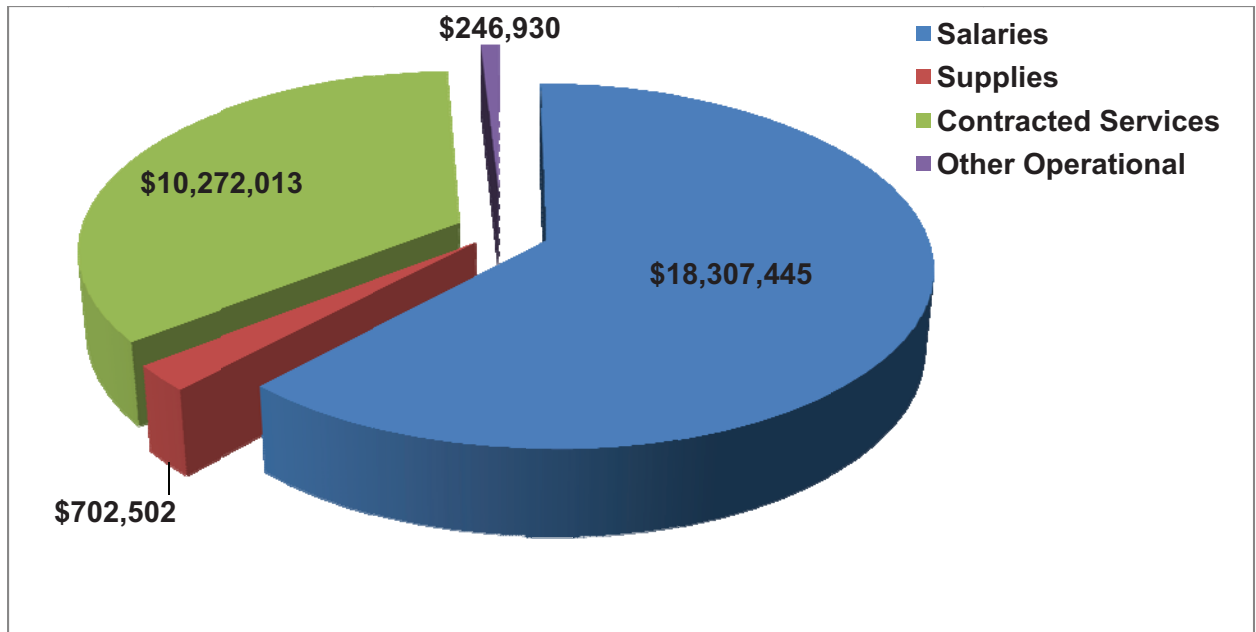
## Information Technology

### Budget

#### Current Annual Budget - \$ 29,528,890

Salaries - \$18.3 M

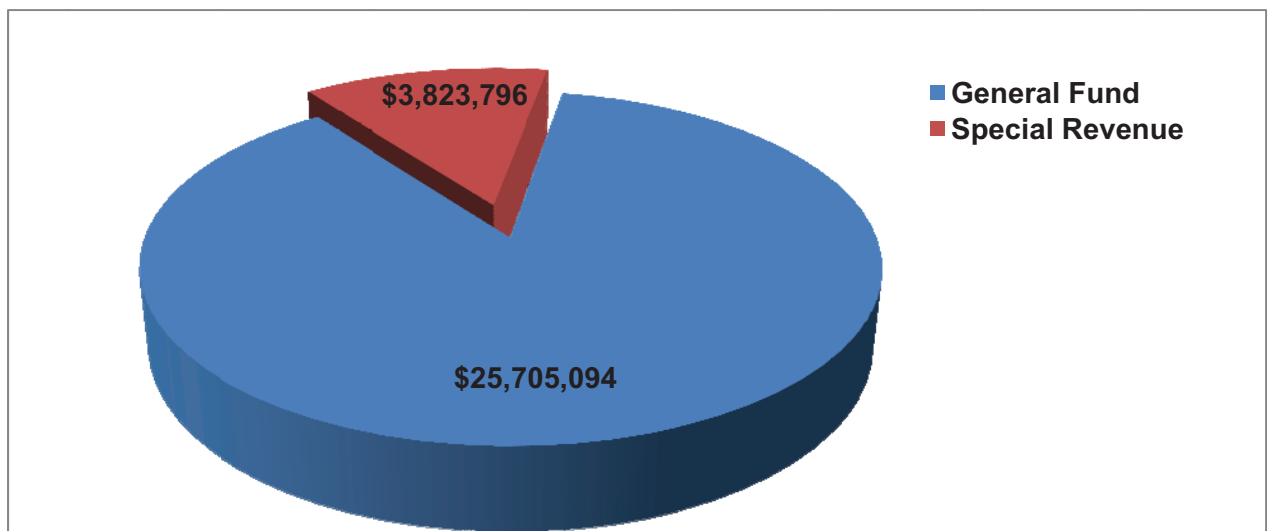
Operational Cost - \$11.2 M



#### Funding Sources

General Fund - \$25.7 M

Special Revenue - \$3.8 M





### Technology Plan

Currently, the Center for Educational Leadership and Technology (CELT) is conducting a technology review for the *Comprehensive Long-Range Information Technology Blueprint 2012-2017*. The five-year *Blueprint* is based on the guiding principle and strategic design decision that technology is a tool to be used by teachers, principals and other professional staff in a manner that enables students to achieve a level of success that:

1. Provides high-quality education for all children
2. Closes all achievement gaps
3. Meets and exceeds the high academic standards established by the HISD Board of Trustees

The goals set forth by the Technology Plan 2012-2017 are categorized into four areas and Key Performance Indicators (KPIs) will be established to these goals.

#### 1. Teaching and Learning

- Identify the knowledge/skills teachers must have to help students acquire information, solve problems, and communicate effectively using technology.
- Refine and align curriculum content standards to integrate technology knowledge and skills throughout the PK-12 curriculum.
- Provide equitable access to technology-enhanced curriculum and technology tools district-wide.

#### 2. Educator Preparation and Development

- Specify a foundational level of professional development of best practices and innovative and effective strategies for integrating technology into curriculum and
- Provide proficiency-based staff development opportunities for teachers on creating technology-rich learning environments and the effective use of classroom technology tools.
- Include technology proficiency-based professional development in the yearly teacher goal setting process.
- Assess proficiency-based professional development and technology application in teacher evaluation processes.

#### 3. Leadership, Administration and Instructional Support

- Identify and provide education opportunities for all students using technology to extend teaching and learning beyond the traditional classroom setting.
- Use technology to increase community interaction and to improve public support and confidence in HISD's educational programs and schools.



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### 4. Infrastructure for Technology

- Provide an integrated technology infrastructure that supports the teaching/ learning environment, decision-making, and staff productivity.
- Implement an integrated infrastructure that provides equitable information technology capabilities and resources to all HISD sites.
- Design and implement updated centralized information technology infrastructure.

### Cost Reduction Efforts

In January 2011, the Information Technology department began assessing its budget for cost reduction. Information Technology re-structured to better align with the District's Strategic Initiatives while cutting operational costs resulting in a budget savings of 7.3% for the 2011–2012 school year. This budget reduction consisted of cuts in the telecom budget by 53% and the operations budget by \$800,000.

In looking forward, the newly-established Project Management Office will explore new ways to reduce costs, improve processes and increase productivity. The PMO strives to establish consistent performance measures and reduce duplication of efforts across projects.

Additionally, E-rate applications enable discounts for services and infrastructure products for the district. The recent E-rate award will allow updating of the infrastructure at eligible schools at a discounted rate.

State and federal grants are being utilized to fund four research specialists and consultants as well as services that support Research and IT work on the Effective Teacher Initiative.

### Critical Governing Policies

TASB Policy Code	TASB Title: Subtitle	Division Impact	Last Board Action
<a href="#">CQ(LEGAL)</a>	TECHNOLOGY RESOURCES	Governing State & Federal laws such as CIPA	Not applicable
<a href="#">CQA(LEGAL)</a>	TECHNOLOGY RESOURCES - DISTRICT, CAMPUS, AND CLASSROOM WEB SITES	Required website content	Not applicable
<a href="#">CQ(LOCAL)</a>	ELECTRONIC COMMUNICATION AND DATA MANAGEMENT	Overall district governance of technology resources include information security	Sept. 2011 approval for the addition of expanded language to address security concerns and set the stage for one-to-one computing
<a href="#">CAA(LOCAL)</a>	FISCAL MANAGEMENT GOALS AND OBJECTIVES - FINANCIAL ETHICS	Governs ethics and E-Rate	Nov. 2011 revised language to more closely align overall procurement quiet period and disclosures with E-Rate requirements.
<a href="#">EKB(LEGAL)</a>	TESTING PROGRAMS - STATE ASSESSMENT	Governs state assessment process	Not applicable
<a href="#">CQ(LEGAL)</a>	UNIFORM ELECTRONIC TRANSACTIONS ACT	Governs transactions conducted by electronic means. Business and Commerce Code Chapter 322	Not applicable



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<a href="#">FL(LEGAL)</a>	STUDENT RECORDS	Health Insurance Portability & Accountability Act.	Not applicable
<a href="#">FL(LEGAL)</a>	STUDENT RECORDS	Family Educational Rights & Privacy Act	Not applicable

### Critical Challenges

#### New Assessment Transition from TAKS to STAAR

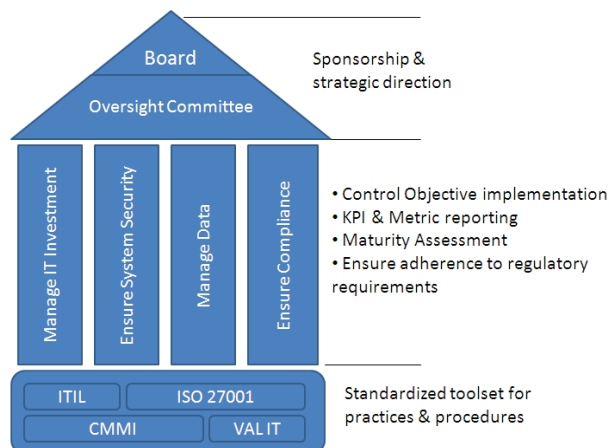
The State of Texas Assessments of Academic Readiness (STAAR) will replace the Texas Assessment of Knowledge and Skills (TAKS). These exams are the foundation of the state's new accountability system which will roll out in 2012–2013. Beginning with 2011–2012 ninth-graders, students must pass STAAR end-of-course exams to graduate from high school, and these exams are included in the calculation of students' final grades.

The transition to STAAR will require HISD to re-engineer and rebuild a large number of electronic and manual processes at a time when human resources are in short supply and fully occupied with other high priority tasks.

#### Implementation of an IT Governance Framework

The primary purpose for information technology governance is to direct IT endeavors to ensure that IT's performance meets the following objectives:

- Assure that IT is aligned with business goals
- Investments in IT map to business goals and generate value
- IT resources are used responsibly
- Appropriate oversight is given to risks that are associated with IT



#### Institutionalization of Data Governance Awareness

Data governance serves to eliminate ambiguity and provide consistency to gain accurate insight and increase efficiency. Like most large companies, HISD has many applications and



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databases that can't easily share information. A well-understood and accepted data governance process will:

- Facilitate sharing information across the district's systems, minimizing inconsistent and redundant data and processes by elimination of redundant data repositories.
- Help HISD comply with data privacy regulations (such as FERPA, HIPAA, and other state and federal rules and regulations) that dictate the formal data management processes:
  - Personal information: (i.e., social security number, date of birth, driver's license number, etc.)
  - Financial information: (i.e., credit card number, banking information, etc.)
  - Health record: (i.e., health insurance ID number, medical record, etc.)
- Help insure proper access to data and mitigate security risks:
  - Publicly: Information generally available to public
  - Internally: Available only to internal HISD employees
  - Sensitive: Available to users based on roles or written approval from data owner

### Actions Going Forward

Based on the recommendations of the Council of Great City Schools, the immediate focus for Information Technology is on six major areas:

- **Organization**
  - Customer focused
  - Effective functional alignment
- **Data and Systems Integration and Data Warehouse**
  - Data governance and integration across systems and accountability
  - Put data in the hands of the decision makers
  - Create strong and secure interfaces in alignment with integration best practices to accurately exchange data across systems
  - Consolidate data across systems through secure interfaces in alignment with industry's standards to support decisions makers in achieving data driven accountability
- **Network Infrastructure**
  - Foundation for secure accessibility
  - IBM analysis
  - Modernize the network
- **Migration Strategy**
  - Total cost of ownership



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- Plan move to the next standard
- **IT Security**
  - Protection of computer infrastructure and data
  - Ensure adherence to federal and state regulations
  - Identity management
- **Research and Accountability**
  - Support the educational process by providing timely and useful information to schools, government agencies, and the community to support performance and accountability in public education
  - Systematically assess the district's information needs by obtaining, analyzing, and disseminating information in a timely manner

### **Organization**

HISD has clearly defined the roles and responsibilities of the Chief Technology Information Officer (CTIO) position, which is now a direct report to the superintendent. The IT division was reorganized at the highest level to more effectively address the growing needs of HISD. Seven IT departments are dedicated to support different areas of information and technology services including Research and Accountability, IT Security, Information Assessment and Analytics, IT Business Solutions, IT Infrastructure Engineering and Operations, IT Education Solutions, and IT Project Management Office.

Additionally, a governance framework is being developed to ensure information security, data quality, hardware/software standards, and effective management of IT projects to support both administrative and classroom functions. The primary purpose for information technology governance is to direct IT endeavors to ensure that IT's performance meets the following objectives:

- Assure that IT is aligned with business goals
- Investments in IT map to business goals and generate value
- IT resources are used responsibly
- Appropriate oversight is given to risks that are associated with IT

A Project Management Office (PMO) has been created and standardized processes are being developed, which include prioritization and resource allocation.

### **Data and Systems Integration and Data Warehouse**

In September of 2011, the HISD Board approved a \$5.5M budget for the initial phase of the data warehouse development and related business intelligence reporting tools, along with improvement of the technology infrastructure. In December 2011, the IT division completed the procurement process of selecting the tool and service providers for data integration, data warehouse, and business intelligence components.



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The purpose of this Business Intelligence and Data Warehouse (BI/DW) project is to support the District's Core Strategy 4 for Data Driven Accountability by consolidating critical data across systems into role-based management dashboards and reports to:

- Monitor trends and identify areas of strengths and opportunities
- Promote meaningful discussions with teachers and principals
- Unify and align activities with district goals
- Optimize the use of resources and minimize redundancies
- Provide timely access to accurate information for teachers, principals, and other key stakeholders to support informed educational and management decisions

This district-level BI/DW project will be accomplished in three basic phases:

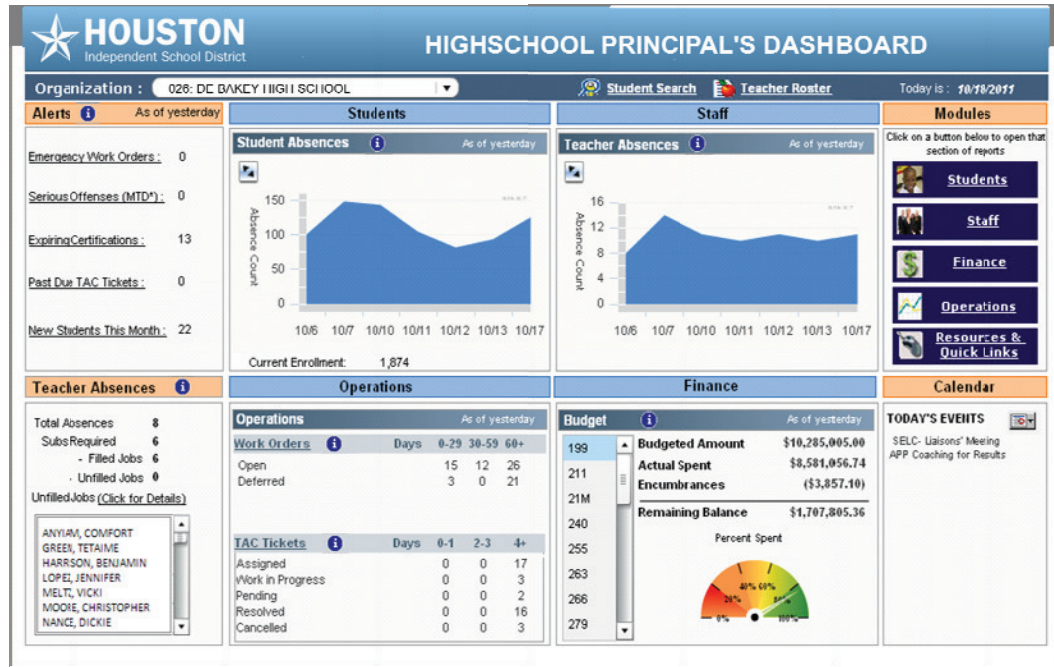
1. Build the data warehouse – integrate data across multiple systems, internal and external to HISD while adhering to the IT/data governance
2. Develop dashboard reports – provide historical, current and predictive views of HISD Key Performance Indicators (KPIs)
3. Use data to inform decisions – support users of data to identify trends and focus on areas of strengths and opportunities based on information from different perspectives

Throughout the process, the IT division will engage cross-functional teams of potential users to inform the work and ensure that the deliverables are aligned to the district's vision and initiatives.



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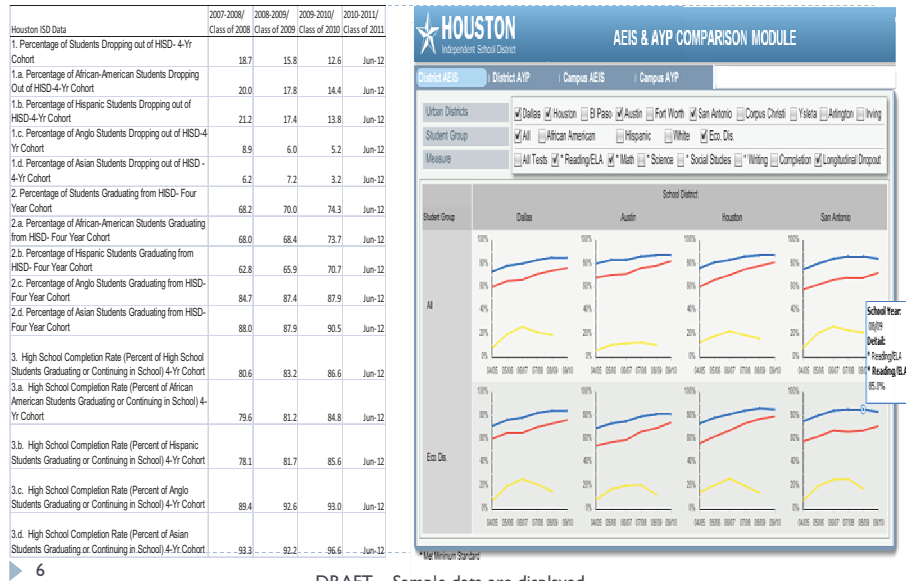
An example of the project deliverables is shown in the figures below.



Example: Prototype of Principal Dashboard



## District Performance Trend





### **Network Infrastructure**

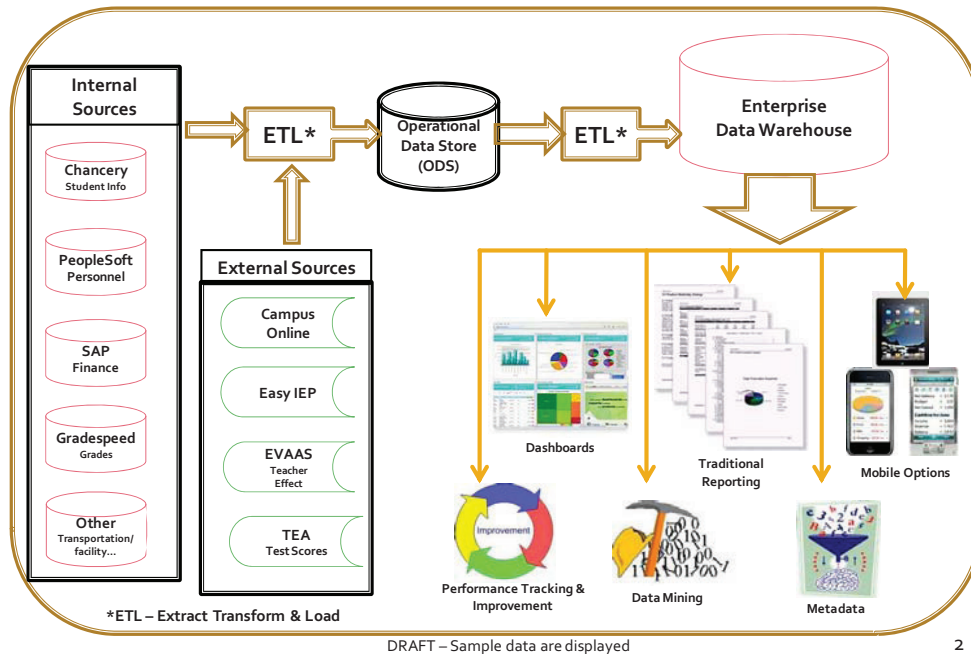
In today's environment, new ways of communicating using video as well as voice and data and new ways of working from anywhere or on the go are placing increasing demands on the district's enterprise network. Aging network equipment is being challenged to meet the new demands of mobile device proliferation and bandwidth-intensive applications. These aging systems are unreliable, expensive to maintain, and lack the features and functionality inherent in more modern equipment.

As the network modernization begins to meet current and future requirements, the plans moving forward are to:

- Build network, security and application architectures that enable secure and high-performance access to systems from any endpoint
- Ensure that network monitoring is in place across all use case scenarios
- Consider rich mobile applications for client interfaces to enterprise systems
- Assess network and architecture requirements for the data center, especially the impact of virtualization
- Focus on business use cases for unified communications, and adapt technology platforms accordingly
- Migrate telecom technology from hardware-based platforms to Session Initiation Protocol (SIP)-enabled, software-based platforms



### Integrated Data Systems - Conceptual View



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### Migration

- **Remedy on Demand** – Software upgrade in the cloud intended to align the delivery of information technology (IT) services with needs of the district, emphasizing benefits to customers
- **Active Directory 2008 upgrade** – Upgrading to the latest supported Microsoft Active Directory platform to support user's authentication and authorization to resources
- **Virtualization** – Consolidation of 2,200 servers across the district to allow less hardware to run multiple operating system images at the same time in order to reduce cooling, space and electric costs while better managing systems more efficiently
- **Email upgrade** – Upgrade to the latest supported version of Microsoft Exchange 2010 to get better high availability, multi-layered spam protection, archiving, and larger mailboxes
- **Teacher Appraisal and Development Application to support Student Performance Measures** – Create a robust solution to capture student performance against measures identified by teachers and appraisers which are based on the number of discrete courses and teacher preparations



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- **ePerformance for Teachers** – Create a solution in current PeopleSoft environments that will enable the effective capture of performance evaluations for teachers for the 2012–2013 school year
- **PeopleSoft 9.1 Upgrade** – Perform upgrade activities on PeopleSoft that include an upgrade to current functionality and the launch of new capabilities such as self service, talent (recruiting) management, and learning management.
- **SAP Reimplementation** – Re-implement SAP to enhance the chart of accounts to a more robust structure that will provide capacity to support the growth of the district, as well as consideration for new functionality such as budget control, grants management and accounts payable automation.

### IT Security

- **Protection of critical computer infrastructure and data**  
The Information Security organization is responsible for the technical controls and monitoring processes that will ensure that the district's computing infrastructure and critical data are protected against unauthorized access and/or disclosure. To support this mission, the IT Security Office will:
  - Develop processes, procedures, and policies required for the protection of confidential information
  - Identify risks to the security of information and systems. Mitigate these risks to levels acceptable to the district
  - Define security requirements, establish baselines and measure compliance, based on applicable laws, regulations, and best practices
  - Consult with HISD users and departments to investigate security issues and evaluate products and processes
  - Maintain the district's information security strategy and architecture
  - Ensure incident response plans are developed and implemented
  - Respond to and recover from disruptive and destructive information security events
  - Increase awareness of information security through training and communication
- **Adherence to Federal and State Regulations**  
The safekeeping of student data and the district's computing infrastructure will ensure that the district is compliant with federal and state mandates including the Family Education Rights and Privacy Act (FERPA), the Children's Internet Protection Act (CIPA) and the Health Insurance Portability and Accountability act (HIPAA).
- **Identity Management**  
The implementation of an identity management framework will support sustainable growth and technology enhancement for students, parents and employee to access



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district electronic resources, therefore enabling improved communications between the schools, parents and students.

### **Research and Accountability**

- **Program Evaluation** develops formative and/or summative evaluations of district wide educational programs. For the 2010–2011 school year, Research produced as many as 84 program evaluations in response to district, state, and federal requirements. Additionally, Research, in its role as the district's Internal Review Board (IRB), will continue to review external requests to conduct research in the district.
- **District Data Analyses** develops, publishes, and distributes descriptive and statistical information including school data summaries and special requests and serves as a data resource to the district, local, state, and federal entities.
- **Student Performance and Accountability** analyzes student performance data, produces district accountability system reports and data summaries, and responds to special requests for performance data.
- **Performance Analysis** provides expertise, information, modeling, and performance analysis results to district policy makers to facilitate the decision-making process for locally funded programs. Research is responsible for the implementation of all local, state, and federally funded performance pay models and grants. This includes the Apollo incentive programs, ASPIRE Awards, and the implementation of the federal Teacher Incentive Fund (TIF) and state District Award for Teacher Excellence (DATE) grants.