

**Pacific Consulting  
Group, Inc.**

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**OREGON DEPARTMENT OF EDUCATION**

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**DATA INTEGRITY ASSURANCE  
FEASIBILITY STUDY REPORT**

*March 2002*

# Pacific Consulting Group, Inc.

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March 27, 2002

Mr. David Rike  
Director of Technology  
Department of Education  
255 Capitol Street NE  
Salem, OR 97310-0203

Dear Mr. Rike:

Attached is the Feasibility Study Report to evaluate the feasibility of alternative student and business information system solutions for Oregon public schools. The report has been prepared in conformance with the state of Oregon's standards for information system feasibility studies.

We appreciate the efforts and cooperation of the Oregon Department of Education, education service districts and school districts that participated in the study.

Sincerely,

PACIFIC CONSULTING GROUP, INC.

Timothy C. Easton, CMC  
President

## TABLE OF CONTENTS

<b>SECTION</b>	<b>PAGE</b>
I. EXECUTIVE SUMMARY .....	1
II. REQUIREMENTS .....	6
A. Introduction .....	6
B. Background.....	6
C. Problem and Opportunity Statement .....	10
D. Objectives .....	12
E. Functional Requirements.....	15
III. ALTERNATIVES ANALYSIS.....	33
A. Current Operations .....	33
B. Summary Description of Alternatives .....	33
C. Baseline Analysis .....	35
D. Alternatives Analysis.....	38
IV. RECOMMENDED ALTERNATIVE .....	74
A. Evaluation Summary .....	74
V. PROJECT PLAN .....	80
APPENDIX A – Survey Results.....	81
APPENDIX B – Detailed Cost Analyses of Alternatives.....	82
APPENDIX C – Project Work Plan.....	83

## I. EXECUTIVE SUMMARY

The responsibility for Oregon school funding shifted from local government to the state with the passage of Measure 5 in 1990. State funding of K-12 education has since shifted from less than 30 percent in 1990-91 to approximately 70 percent in 2000-01. Through the implementation of House Bill 3636, the Oregon Department of Education (ODE) adopted a uniform definition of accounts for financial reporting by school and education service districts (ESD). In January 2001, the Department also implemented a standard data collection system to make information accessible to the public through the Internet. The use of school district data has changed and expanded with the shift in funding from the local to the state level. The data is now used by the legislature and ODE to assess the performance of educational programs and to help direct \$5 billion in budget decisions where before, those decisions were strictly a local district option.

The implementation of statewide reporting highlighted a growing problem in many of the districts' business and student information systems. Today, there are over 20 different automated business systems and 29 different student systems in use around the state. In addition, 12 districts still use manual business systems, and 41 districts have manual student information systems. The general functions of student and business systems are outlined below:

➤ *Student Information System Functions:*

- ✓ Attendance Accounting
- ✓ Grade Reporting
- ✓ Student Graduation Plan
- ✓ Student Health Record Keeping
- ✓ Student Historical Data
- ✓ Individual Student Education Plan and Profile
- ✓ Student Maintenance
- ✓ Scheduling
- ✓ Special Education
- ✓ Behavior

➤ *Business Information System Functions:*

- ✓ General Ledger
- ✓ Accounts Payable
- ✓ Purchasing/Inventory
- ✓ Project Cost Accounting
- ✓ Accounts Receivable
- ✓ Fixed Assets
- ✓ Payroll
- ✓ Personnel
- ✓ Budget Preparation

In addition, the districts are faced with developing or purchasing systems to meet the student information requirements related to the Certificate of Initial Mastery (CIM) and the Certificate of Advanced Mastery (CAM).

Until last year, 48 districts used a computerized business and student information system known as OTIS, which is being discontinued. In addition to the 48 districts that changed from OTIS, an additional 18 districts are using business and student systems supplied by a vendor who may soon exit the school district market.

Over the next several years, more than 50 school districts may have to replace their business and student information systems because software vendors will no longer provide support or it will no longer be economical to modify the systems (i.e., over seven years old) to meet the information requirements of the districts and the ODE.

A recent audit conducted by the Secretary of State's Audit Division pointed out the risk associated with the closure of OTIS and the need for school districts to obtain better data management tools to improve data quality.

The Oregon Legislature has not directed or mandated that districts use common or certified systems for the collection, validation or use of student and business information. The current process whereby each school district operates its own independent student and business information systems, while maintaining central reporting requirements, has resulted in inconsistent data quality among the districts, which adversely affects ODE efforts to collect and analyze data from a statewide perspective. Local school districts have been left to their own devices to effectively and efficiently develop, operate and maintain the student and business systems needed by their districts. Standardization and economies of scale from common operations have been left to individual school and educational service districts.

The current process of individual school and educational service district management of student and business systems has presented the following problems and opportunities for improvement:

- Economies of scale in common processes, solutions, systems have not been fully realized.
- The quality and consistency of information, as required and defined by the state, have been left to the individual school and educational service districts.
- Schools and districts have encountered problems in procuring, developing and implementing technology systems required to support classroom-level data for decision-making and instructional improvement.

Modifying the way in which the state financially supports or assists in the management of district student and business systems could result in the following benefits:

- Provide a consistent process for collecting, maintaining and reporting on both student progress and overall financial operations.
- Facilitate improved budget decision-making by providing more timely, consistent, dependable and accurate data with which to make decisions.
- Reduce the effort of local districts to comply with state mandates for information. Currently, districts must individually modify business processes and systems to provide information to the state for new reporting requirements.

- Reduce the costs, from a statewide perspective, of selecting, implementing and operating multiple systems.
- Provide guidance and technical assistance to school districts as they implement computer systems in the future.
- Improve the quality and timeliness of information at both the local and state levels.
- Improved quality information can lead to more effective and efficient operations.

Five alternatives, including the current environment, were evaluated for this feasibility study. The range of costs and technical complexity varies significantly among the five alternatives.

- ***Alternative 1 – Common Student and Business Systems Operated Centrally.*** This alternative would employ a common student system and a common business system for mandated use by **all** districts in the state at a new centralized data center.
- ***Alternative 2 -- Common Student and Business Systems Operated by 5 Regional Centers.*** This alternative would also employ a common student system and a common business system for mandated use by **all** districts in the state at 5 new regional data centers.
- ***Alternative 3 – “Certified” Systems.*** This alternative would involve ODE, ESDs and the districts agreeing on an approved “certified” list of student and business systems for use in the state. The districts would voluntarily use these systems and would make their own market-driven decisions for using data centers from a variety of choices including individual districts, ESDs, third-party data centers.
- ***Alternative 4 – “Certified” Systems at 12 Regional Data Centers.*** This alternative, as with Alternative 3, would involve ODE, ESDs and the districts agreeing on an “approved” list of student and business systems for use in the state that would, based on incentives, voluntarily transition to one of 12 regional ESDs or other data centers.

- **Alternative 5 – Status Quo.** This alternative would continue the current practice of individual districts determining how best to meet their needs – either by operating their own systems or contracting with ESDs or others to provide the service.

The advantages, disadvantages, risks, benefits and life-cycle costs of each of these alternatives were evaluated and compared. *Alternative 4, “Certified” Systems at 12 Regional Data Centers,* is recommended as the most feasible alternative. One of the advantages of this alternative is that it does not preclude eventual evolution to the more centralized data center alternatives. In fact, Alternative 4 would be a logical and careful first step to centralization, as it would allow the state to test the concept of consolidation without making a wholesale move.

Over the next ten years, Oregon school districts will spend an estimated \$548 million operating and supporting their student and business Systems. By adopting a limited number of systems to meet the needs of all districts and transferring operations of these systems from individual districts to a limited number of regional data centers, it is estimated the state can reduce the cost of operating and supporting their student and business systems by approximately \$75 million over the next ten years. An incremental investment by the state of approximately \$18.2 million will be required over the next ten years to achieve the \$75 million in cost avoidance. The evolution to a limited number of systems within the state is happening already. ODE should take a leadership role in transforming the systems used in the state’s school districts and certify a limited number of systems for all districts.

## II. REQUIREMENTS

### **A. Introduction**

The Oregon Department of Education contracted with Pacific Consulting Group, Inc. (PCG) to conduct a feasibility study to evaluate alternative methods of providing student and business information system solutions to all Oregon public schools. This report documents the results of the feasibility study.

### **B. Background**

The responsibility for school funding shifted from local governments to the state with the passage of Measure 5 in 1990. State funding of K-12 education has since shifted from less than 30 percent in 1990-91 to approximately 70 percent in 2000-01. Through the implementation of House Bill 3636, the ODE adopted a uniform definition of accounts for financial reporting by school and education service districts. In January 2001, the Department also implemented a standard data collection system to make information accessible to the public through the Internet. The use of school district data has changed and expanded with the shift in funding from the local to the state level. The data is now used by the legislature and ODE to assess the performance of educational programs and to help direct \$5 billion in budget decisions where before, those decisions were strictly a local district option.

The implementation of statewide reporting highlighted a growing problem in many of the districts' business and student information systems. Today, there are over 20 different automated business systems and 29 different student systems in use around the state. In addition, 12 districts still use manual business systems, and 41 districts have manual student information systems. The primary functions of school district business and student information systems include:

➤ *Student Information System Functions:*

- ✓ Attendance Accounting

- ✓ Grade Reporting
- ✓ Student Graduation Plan
- ✓ Student Health Record Keeping
- ✓ Student Historical Data
- ✓ Individual Student Education Plan and Profile
- ✓ Student Maintenance
- ✓ Scheduling
- ✓ Special Education
- ✓ Behavior

➤ *Business Information System Functions:*

- ✓ General Ledger
- ✓ Accounts Payable
- ✓ Purchasing/Inventory
- ✓ Project Cost Accounting
- ✓ Accounts Receivable
- ✓ Fixed Assets
- ✓ Payroll
- ✓ Personnel
- ✓ Budget Preparation

Exhibit II-1 below depicts the different types of student information systems used by the state's school districts and the educational service districts that serve some of the smaller districts. These include manual systems, custom-developed software, vendor packages and software developed by the ESDs.

**Exhibit II - 1**  
**Oregon School Student Information Systems**

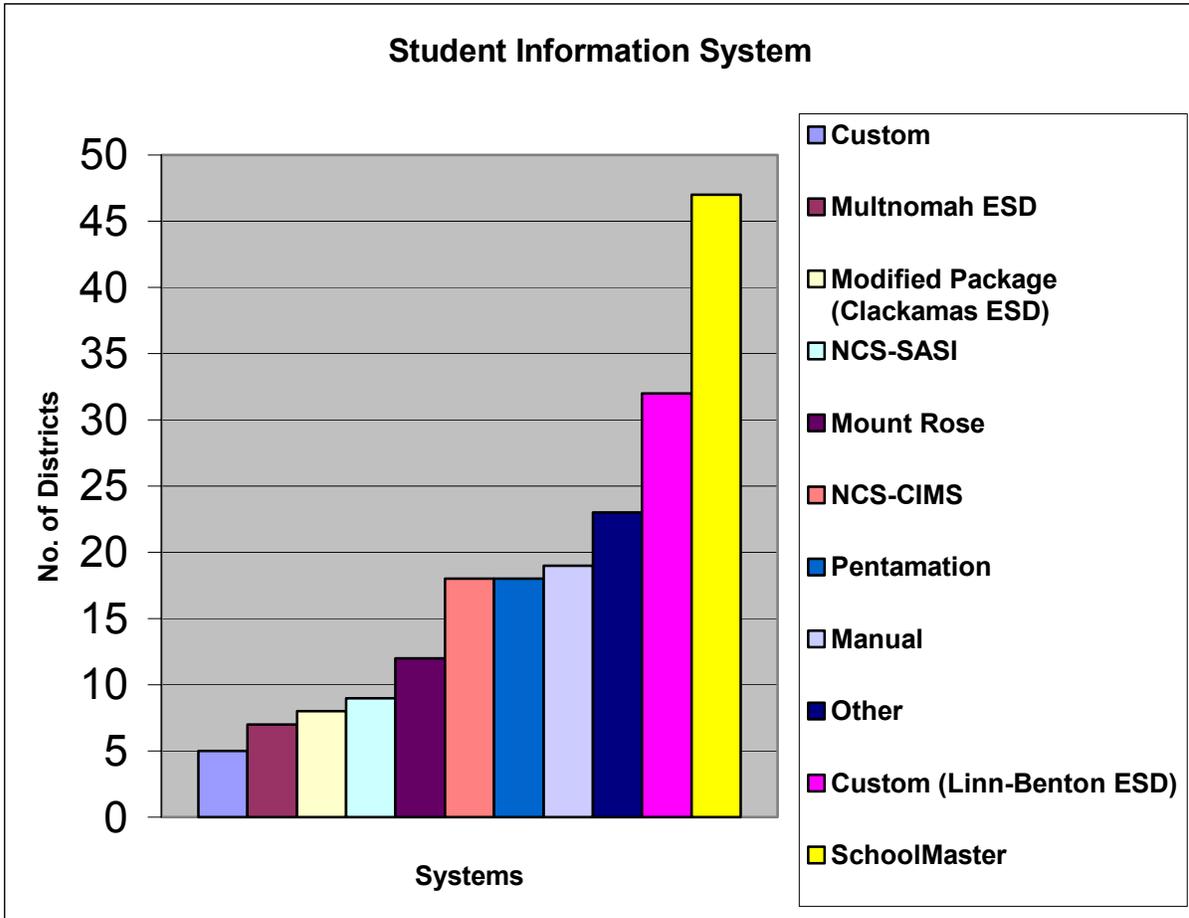
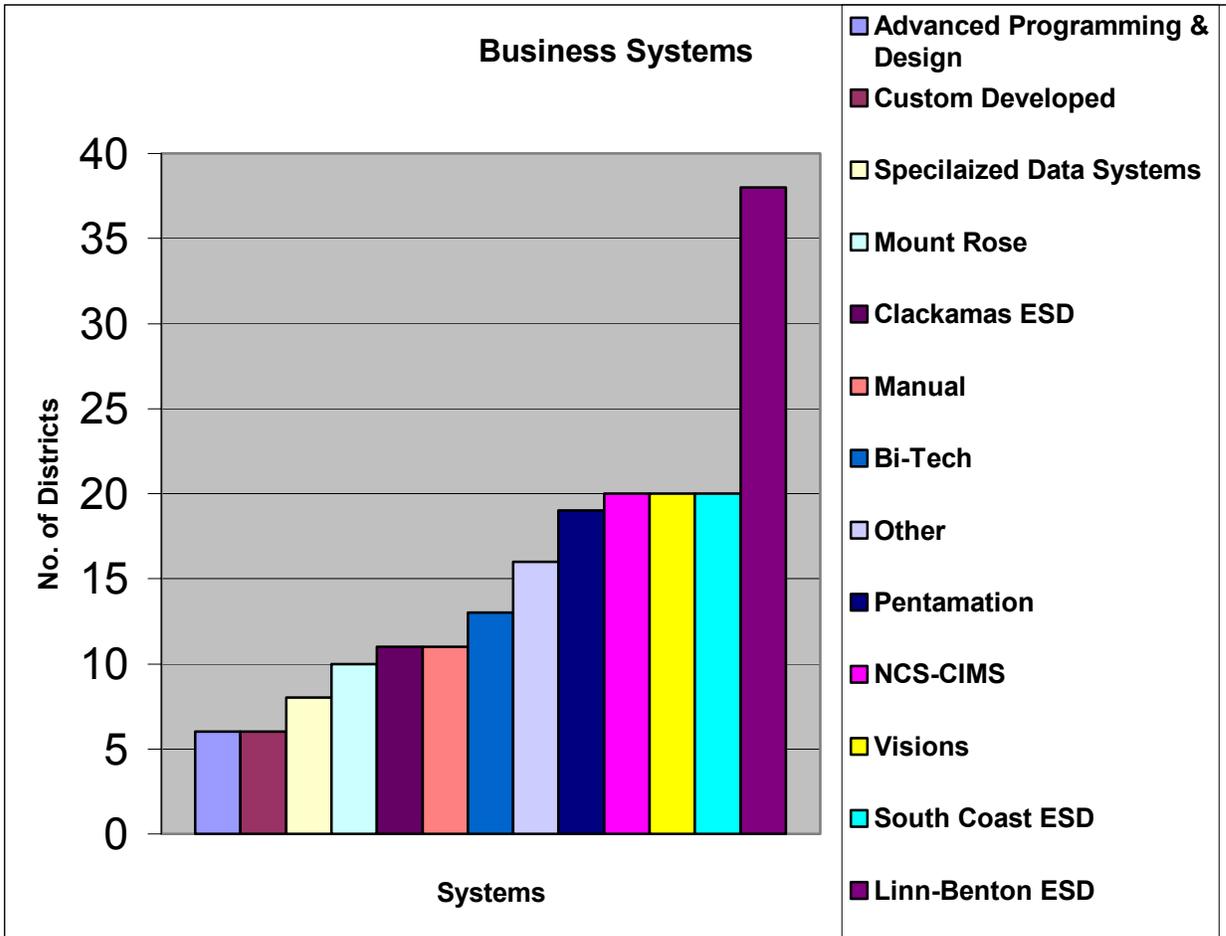


Exhibit II-2 on the next page depicts the different business information systems in use in 2001.

Until last year, 48 districts used a computerized business and student information system known as OTIS, which is being discontinued. In addition to the 48 districts that changed from OTIS, an additional 18 districts are using business and student systems supplied by a vendor who may soon exit the school district market.

**Exhibit II - 2  
Oregon School Business Information Systems**



Detailed information on the specific business and student systems used by each of the state’s school districts is included in the Appendix A.

Over the next several years, more than 50 school districts may have to replace their business and student information systems because outside software vendors will no longer provide support or it will no longer be economical to modify the systems (i.e., over seven years old) to meet the information requirements of the districts and the ODE.

A recent audit conducted by the Secretary of State's Audit Division pointed out the risk associated with the closure of OTIS and the need for school districts to obtain better data management tools to improve data quality.<sup>1</sup>

Authority for ODE to collect and maintain district financial information is contained in the Oregon Revised Statutes:

**327.137 Audit statements filed with department; effect of failure to file or insufficiency of statement.** Every common or union high school district shall file a copy of its audit statement with the Department of Education within six months of the end of the fiscal year for which the audit is required. If the audit report, as submitted to the district, fails to provide the detail necessary for the computation required in the administration of ORS 327.006 to 327.133, 327.731, 328.542, 334.270, 530.115 and this section, the district shall submit the necessary information on forms provided by the department within the time prescribed for filing the audit in this section. Any district failing to file a copy of its report under this section or ORS 327.133 shall not receive any payments from the State School Fund until such reports are filed. [1965 c.199 s.1; 1977 c.840 s.9; 1989 c.491 s.7; 1991 c.780 s.18]

### **C. Problem and Opportunity Statement**

The Problem/Opportunity Statement provides an overview of program and cost issues that create or support the rationale for developing a new approach for supporting Oregon school districts' information systems.

The Oregon Legislature has not directed or mandated that districts use common or certified systems for the collection, validation or use of student and business information. The current process whereby each school district operates its own independent student and business information systems, while maintaining central reporting requirements, has resulted in inconsistent data quality among the districts, which adversely affects ODE efforts to collect and analyze data from a statewide perspective. Local school districts have been left to their own devices to effectively and efficiently develop, operate and maintain the student and business

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<sup>1</sup> Secretary of State Audit Report, Department of Education: Database Initiative Project, Report No. 2000-39, November 27, 2000.

systems needed by their districts. Standardization and economies of scale from common operations have been left to individual school and educational service districts.

The current process of individual school and educational service district management of student and business systems has presented the following problems and opportunities for improvement:

- Economies of scale in common processes, solutions, systems have not been fully realized. Decisions to use common solutions have been left to the local districts to evaluate and implement.
- The quality and consistency of information, as required and defined by the state, have been left to the individual school and educational service districts. While all districts must have external audits of their financial operations, these audits normally focus on the adequacy and accuracy of financial statements and do not fully address data management, integrity or system performance issues.
- Schools and districts have encountered problems in procuring, developing and implementing technology systems required to provide classroom-level data for decision-making and instructional improvement.

Modifying the way in which the state financially supports or assists in the management of district student and business systems could result in the following benefits:

- Provide a consistent process for collecting, maintaining and reporting on both student progress and overall financial operations.
- Facilitate improved budget decision-making by providing more timely, consistent, dependable and accurate data with which to make decisions.
- Reduce the effort of local districts to comply with state mandates for information. Currently, districts must individually modify business processes and systems to provide information to the state for new reporting requirements.
- Reduce the costs, from a statewide perspective, of selecting, implementing and operating multiple systems.

- Provide guidance and technical assistance to school districts as they implement computer systems in the future.
- Improve the quality and timeliness of information at both the local and state levels. Improved quality information can lead to more effective and efficient operations.

Benefits to the districts and ODE will depend, in part, upon which of the feasible alternatives is selected to improve the quality of the information systems. System development, implementation and operational costs for alternative solutions can vary significantly. There is a range of alternatives to be considered from the current “baseline” system (*status quo*) to sophisticated statewide systems requiring several years to become operational.

**D. Objectives**

PCG worked with an ODE Data Integrity Assurance Project Steering Committee, school and educational service districts, and outside service organizations and reviewed internal documents, processes and external reports from other educational entities to define the system objectives. In addition, surveys of other states and Oregon school and educational service districts were conducted. The survey documents and the summarized results are included in Appendix A. The survey was used in part to develop the baseline costs used in the alternatives analysis. The cost data is presented on a per student basis known as Average Daily Membership (ADM). The results of the Oregon survey for the student information systems are summarized below:

**Exhibit II - 3  
Cost per ADM of Operating Student Information System**

	Annual Average per Average Daily Membership (ADM)					
	Software Maintenance	IT Support	Non-IT Support	ESD Charges	IT Staff	Non-IT Staff
<b>Districts &lt; 1,000</b>	<b>\$12.08</b>	<b>\$10.55</b>	<b>\$99.55</b>	<b>\$14.07</b>	<b>0.0005</b>	<b>0.0036</b>
<b>Districts 1,000 - 9,999</b>	<b>\$8.51</b>	<b>\$8.14</b>	<b>\$37.25</b>	<b>\$14.88</b>	<b>0.0000</b>	<b>0.0000</b>
<b>Districts &gt; 10,000</b>	<b>\$4.82</b>	<b>\$12.18</b>	<b>\$42.52</b>	<b>\$18.36</b>	<b>0.0002</b>	<b>0.0013</b>

The results of the Oregon survey for the business systems are identified summarized below:

**Exhibit II - 4  
Cost per ADM of Operating Business Information System**

	Annual Average per Average Daily Membership (ADM)					
	Software Maintenance	IT Support	Non-IT Support	ESD Charges	IT Staff	Non-IT Staff
Districts < 1,000	\$7.45	\$10.09	\$69.19	\$9.10	0.0005	0.0000
Districts 1,000 - 9,999	\$6.30	\$6.96	\$36.99	\$9.76	0.0001	0.0011
Districts > 10,000	\$3.98	\$12.42	\$2.80	\$13.79	0.0001	0.0002

The objectives defined in this sub-section outline the desired capabilities and outcomes of new student and business information systems without regard to current fiscal, technical or political limitations. The *Alternatives Analysis* section will define feasible alternatives to achieve the stated objectives. The analyses of alternatives may determine that not all objectives may be feasible or cost effective.

The following outlines the detailed objectives for student and business information systems.

***Technical***

- The system’s technical architecture should adhere to existing district, state and ODE technology standards, directions and infrastructures and should integrate with other districts’ and ODE systems.
- The system should be designed to operate with existing and planned communications infrastructures.
- The system’s design should be flexible so that software modifications, database changes and reporting requirements can be made efficiently and cost effectively.
- The system should be scalable to accommodate the needs of all Oregon school districts.

### *Data*

- The system should provide accurate, timely results of student and business operations to schools, students, the state and the public. Information on the results of business/school operations and student activity should be available within 24 hours after the source transaction was recorded in the system.
- Security of student data must be maintained. Individual student data must be restricted to the student's parent/guardian, school district, and ODE authorized personnel.

### *Specific Uses*

- Access to the systems must be provided to each school for the purposes of local operations.
- Reduce the amount of manual data collection, processing and reporting.
- Provide students with timely and accurate information on fulfilling the requirements for the Certificate of Initial Mastery.
- Provide classroom-level data for decision-making and instructional improvement.

### *System Reports and Outputs*

- Reports must be produced for each school district and the state.
- Reports should be available for a wide audience via the Internet with appropriate security.
- School districts should have the ability to generate their own custom reports.

### *System Interfaces*

The systems must be able to interface with specialized district operational systems (e.g., transportation, food service, student accounting, etc.) and ODE systems (e.g., Assessment Database, DBI, Oregon Student Record, Enterprise Database, Special Education Database, Migrant Education Database, etc.) and other state systems with shared missions and goals.

### *Training and Support*

- Ongoing on-site training to the school districts on how to use the systems should be provided.
- ODE technical and user staff will also require training in the systems.

### **E. Functional Requirements**

This section describes the specific functional requirements of a common student and business information systems for Oregon schools.

#### **STUDENT INFORMATION SYSTEM REQUIREMENTS**

The student information system maintains information on each student for use by schools, districts and the Oregon Department of Education. Reporting capabilities, including all state and federal reporting requirements, should be provided in each of the individual functional modules.

The student information system should generally include the following functional modules:

- ***Attendance Accounting Module*** – The Attendance Accounting module should be designed to incorporate specific Oregon state regulations that apply to school attendance, as well as individual district operational philosophies and methodologies. The module should be updated and maintained via on-line screens, electronic interface from individual district systems, or scanned documents. The module should provide the capability to specify an official attendance accounting period and to maintain additional attendance periods as required by local policy and practices. It should provide for Oregon required program tracking and contact hour reporting, prevent duplicate enrollments, and allow for district-wide reporting and analysis. The module should provide the following capabilities:
  - ✓ Daily attendance list
  - ✓ Daily attendance summary
  - ✓ Daily attendance recap report
  - ✓ Student absence permits

- ✓ Daily attendance number of absences report
  - ✓ Cycle attendance summary for one day
  - ✓ Attendance reports:
    - Cycle daily attendance
    - Cycle attendance summary
  - ✓ Cycle attendance interim report
  - ✓ Cycle attendance proof-listing
  - ✓ Principal's period report
  - ✓ Superintendent's annual report
  - ✓ Semester attendance and contact hours report
  - ✓ End-of-year attendance report
  - ✓ Excessive absence letters
  - ✓ Cumulative absence report
  - ✓ Perfect attendance report
  - ✓ Attendance computation for grade reporting
  - ✓ District end-of-year attendance
  - ✓ Credit loss due to excessive absences
  - ✓ Quarterly administrative reports
- 
- **Grade Reporting Module** – The Grade Reporting module should provide the ability for both elementary and secondary schools to maintain and report information on student academic grades. Districts may perform grade averaging, adjust grades by type of courses (honors/basic), and produce student report cards, grade labels, and labels. Districts may also combine and print credits and grades earned at multiple schools for a student. Grades may be posted by scan sheets, on-line entry screens by class and by individual student, and electronic file uploads from personal computers. Individual teacher grade books are to be maintained in the module. The module should provide alternative methods of attendance interface to grade reporting. The module should permit a variety of grade reporting methodologies (e.g., two semester grade reporting--six and nine week cycles), four semester reporting, generic secondary reporting, summer/night school grade reporting, etc.). The module should provide the following capabilities:

- ✓ Class rosters
  - ✓ Grade sheets
  - ✓ Scan and post
  - ✓ Teachers grade listing
  - ✓ Error listing
  - ✓ Principal's report card list
  - ✓ Report cards (multiple formats)
  - ✓ Analysis reports:
    - Ineligible report
    - Incomplete report
    - Blank grades report
    - Honor roll report
    - Grade distribution report
    - Failure report
  - ✓ Group change
  - ✓ Master Schedule listings
  - ✓ Pass/fail credit indicator code computation
  - ✓ Year-end status update
  - ✓ Projected failure lists
  - ✓ Yearly and cumulative grade average, class ranking and credits to date
- ***Student Graduation Plan Module*** – The Student Graduation Plan module should allow individual districts to define multiple valid graduation plans and the courses associated with them. The districts will need to be able to assign a specific plan to an individual student.
  - ***Student Health Record Keeping Module*** – The Student Health Record Keeping module should provide school nurses with the ability to maintain accurate, up-to-date student health records for various components of student health records such as immunization history, incidence of disease, and accidents. The module should give school nurses the tools required to manage school health data in an efficient, cost-effective manner, and an ability to easily react to state/federal reporting requirements. Standard features of the module should include:

- ✓ Annual immunization report
  - ✓ Vision screening report
  - ✓ Hearing screening report
  - ✓ Communicable disease report
  - ✓ Immunizations due report
- 
- ***Student Historical Data Module*** – The Student Historical Data module should maintain individual student information, including attendance, grades, basic demographic data, immunizations and related health data, test scores and yearly GPA and credits from previous school years. Longitudinal student data will be maintained in the module. The module should be able to maintain individual student data for Certificate of Initial Mastery and Certificate of Advanced Mastery by proficiency level. The ability to transfer individual students from historical to current year should be provided. Electronic transfer of transcripts from high schools to colleges and universities should also be included in the module. All file transfers are performed using the Oregon Student Record specifications.
  
  - ***Student Maintenance Module*** – The Student Maintenance module should serve as the core to the student information system from which other student modules are accessed and maintained. The module should enable users to only enter demographic information for students once, with assurance that the identical information will be available with any of the other module of the student information system.
  
  - ***Scheduling Module*** – The Scheduling module should include three primary functions: master scheduling, school inventory, individual scheduling. Master scheduling will assist school administrators in building a master schedule. This function would include providing details regarding course conflicts, seating balance and resource utilization. The school inventory function would provide for the classification and storage of school resources of time, rooms and teachers. The function would allocate the resources of time, teachers and rooms to each class that is requested according to specifications submitted by the school administration, and build scheduling information based on these resources. The individual scheduling function would allow schools options for scheduling students after the initial

student scheduling process has been completed. Standard features of the module should include:

- ✓ Master schedule list
  - ✓ Report of course requests
  - ✓ Conflict matrix report
  - ✓ Teacher utilization report
  - ✓ Room utilization report
  - ✓ Insufficient seats report
  - ✓ Reject list
  - ✓ Advisor list
  - ✓ Grade list
  - ✓ Class list
  - ✓ Group change
- ***Special Education Module*** – The Special Education module should allow districts the ability to maintain and report vital information on students receiving special education services within the district. The module should produce required state and federal reports related to special education students. Standard features of the Special Education module should include:
    - ✓ Total students by handicap by school/district
    - ✓ End-of-month summary report by school/district
    - ✓ District count by handicap by age
    - ✓ District count by handicap by grade
    - ✓ Student numeric list
    - ✓ Student alpha list
    - ✓ Student profile
    - ✓ Report of last comprehensive assessment
    - ✓ Report of last annual review
    - ✓ Duplicate student name list report
    - ✓ Student list by primary handicap

- ✓ Student numeric list by school/district
  - ✓ Report of related services
  - ✓ Instructional setting for attendance contact hours
  - ✓ Student name and address list by school/district
  - ✓ Annual statistical report
  - ✓ Report of ethnicity by grade by school/district
  - ✓ Daily contact hours for instructional setting by teacher
  - ✓ List of visually handicapped students
  - ✓ Instructional setting count by grade by school/district
  - ✓ Federal data report
- ***Behavior Module*** – The Behavior module should provide schools the ability to maintain information on student behavior infractions and the actions taken by school personnel in response to these infractions including comment areas for each offense. Standard features of the module should include:
    - ✓ Offense code report by grade level
    - ✓ Action code report by grade level
    - ✓ Offence code report by ethnicity
    - ✓ Action code report by ethnicity
    - ✓ Summary report - percentage
    - ✓ Summary report by teacher
    - ✓ Detail report
    - ✓ Letters to parents
- ***Certificate of Advanced Mastery Module (Future)*** – The CAM module should maintain individual student records for the education plan. The individual plan will incorporate the components of the CIM as well as personal, academic and career interests and goals; career-related learning standards; and career-related learning experiences, knowledge and skills. The CAM module should generally include the following functional sub-modules:

- ✓ ***Education Plan and Profile Sub-module*** – The Education Plan and Profile sub-module should allow students to create and use an education plan and profile charting her/his direction and progress through successful completion of high school and transition to next steps beyond high school. Standard features of the sub-module should include:
  - Individual student’s personal characteristics
  - Individual student’s learning styles
  - Access to educational and occupational information
  - Access to current labor market information
  - Access to postsecondary education and training information
  
- ✓ ***Planning Sub-module*** – The Planning sub-module should provide the ability for student to use personal and occupational information gathered to develop a plan. Students may establish both personal and career goals and identify the knowledge, skills and requirements to successfully implement the desired transition from high school. Students may document all activities, progress and achievements undertaken or accomplished while implementing the plan. Standard features of the sub-module should include:
  - Individual student’s personal and career goals including transition beyond high school
  - Identification of individual student’s knowledge, skills and requirements to implement the desired transition from high school to implement the desired transition from high school
  - Identification of individual student’s problems or challenges
  
- ✓ ***Profile Sub-module*** – The Profile sub-module should document individual student progress and achievement toward: Certificate of Initial Mastery academic standards, career-related learning standards, Certificate of Advanced Mastery extended application standards, graduation requirements, Proficiency for Entry into Programs (PREP) required by Oregon community college programs, and Proficiency-based Admission Standards System (PASS) required for entry to the Oregon University System. Standard features of the sub-module should include:

- Document and track individual’s activities, progress and achievements undertaken or accomplished in implementing their plan
- Document and track individual’s achievements of academic and career-related learning standards, knowledge and technical skills.

### BUSINESS INFORMATION SYSTEM

The business information system maintains information about the financial, employees, vendors and external customers aspects of school districts. Reporting capabilities, including all state and federal reporting requirements, are provided in each of the individual functional modules. The business information system should generally include the following functional modules:

- **General Ledger Module** – The General Ledger module should provide a set of self-balancing accounts to permit accounting in accordance with generally accepted governmental accounting standards. The module should include a standard chart of accounts format, transaction entry, disbursement processing, general ledger accounting, encumbrance accounting, budgeting and project and investment tracking. Standard features of the module should include:
  - ✓ Ability to support encumbrance transactions
  - ✓ Support tracking of budgeted positions (position control)
  - ✓ Validate accounting codes against user-defined chart of account
  - ✓ Ability to validate transactions against user-defined rules for valid combinations
  - ✓ Post only balanced journal entries
  - ✓ Control the security of financial transactions through authorized user access
  - ✓ Support pre-defined recurring journal entries
  - ✓ Accept transactions to any open period
  - ✓ Support “shorthand” entries expanded by system
  - ✓ Route transactions for appropriate user-defined approvals prior to posting (workflow)
  - ✓ Maintain separate self-balancing funds
  - ✓ Maintain multiple budget versions including adopted and adjusted budgets

- ✓ Record transactions to specific funds as both receipts and disbursements and revenues and expenditures
  - ✓ Allot budgets to periods
  - ✓ Support multiple open periods and years
  - ✓ Identify input by source, type, and date
  - ✓ Support summarization of detailed accounting information into multiple summary levels
  - ✓ Perform automatic balancing of inter-fund transactions
  - ✓ Provide audit trails for all financial transactions and internal operations
  - ✓ Archive and purge data based on user-defined rules
  - ✓ Selectively carryover budgets and individual encumbrances from one fiscal year to the next
  - ✓ Close revenues and expenditures to fund equity
  - ✓ Close receipts and disbursements to fund equity
  - ✓ Execute year-end processing multiple times for different funds or fund groups
  - ✓ Provide state and federal mandated reports
  - ✓ Detailed general ledger and subsidiary ledgers including: encumbrances, disbursements, cash receipts, cash disbursements, expenditures, revenues, etc.
  - ✓ Year-to-date budget status reports by organization, program, and fund
- ***Purchasing/Inventory Module*** – The Purchasing/Inventory module should provide a central district purchasing and stores inventory management system. A requisition process should enable schools to request items from inventory or forward detailed specifications to buyers to purchase non-inventory items. Requisitions will be sent through the approval stages unique to each district. The module should allow individual schools or districts to enter requisitions, generate purchase orders, receive goods and services, process invoices, issue items from inventory and interface to the General Ledger module. Standard features of the module should include:
    - ✓ Ability to enter requisitions, generate purchase orders, receive goods and services, process invoices, issue items from inventory and transmit transactions to general ledger
    - ✓ Enter detailed purchasing specifications for items

- ✓ Identify recommended vendors, multiple vendor quotes, and required dates
  - ✓ Generate regular purchase orders, blanket orders, confirming orders and change orders
  - ✓ User-defined approval levels for requisitions
  - ✓ Combine appropriate requisition line items into purchase orders
  - ✓ User-defined access to specific expenditure accounts for use on requisitions and orders
  - ✓ Classify items using a common commodity/sub-commodity structure (such as the National Institute of Governmental Purchasing (NIGP) class and item descriptions
  - ✓ Enter inventory items on requisitions
  - ✓ Electronically transmit bids to vendors
  - ✓ Reorder inventory items automatically using minimum, maximum, and economic reorder quantities
  - ✓ Allow current, prior, and future fiscal year processing for requisitions and purchase orders
  - ✓ Generate random inventory audit reports for physical inventory counts
  - ✓ Compare purchase orders by vendor, status, buyer, type, and other user-defined criteria
  - ✓ Obtain goods and services without a formal purchase order
  - ✓ Receive an item on blanket order without an invoice
  - ✓ Track inventory usage and average unit costs for each item at each location
  - ✓ Provide user-defined purchase order formats
- ***Accounts Payable Module*** – The Accounts Payable module should provide for vendor warrant or check writing features and employee expense and travel reimbursement capabilities. The module should also generate accounting entries to the General Ledger module for each payable/disbursement transaction as well as encumbrance liquidation entries. The module should also allow for vouchers to be held from payment, select vouchers for immediate payment, select the payment date for accounts payable, automatically accumulate all payments due a vendor, print one check for the total and automatically liquidate encumbrances during invoice entry. Standard features of the module should include:

- ✓ Ability to record at invoice entry all information needed to record the purchase of goods or services
  - ✓ Controls to prevent duplicate invoice entry
  - ✓ Ability to allocate invoice amount to multiple expense distributions
  - ✓ Validate invoice for payment with vendor code
  - ✓ Import invoices from external sources (subsystems)
  - ✓ Adjust distribution data via reversing transactions at any point in the payment process
  - ✓ Ability to cancel invoices
  - ✓ Ability to post credit memos
  - ✓ Automatically match between order, invoice, and receiving documents
  - ✓ Accommodate multiple payment types
  - ✓ Place invoices on hold that exceed budget or encumbrance amounts
  - ✓ Withhold, void or stop payments
  - ✓ Automatically calculate payment due date based on discount terms
  - ✓ Pay late payment interest penalties
  - ✓ Reference invoice number and summarize invoice totals on remittance advice
  - ✓ Generate warrants or checks centrally
  - ✓ Sort, group and consolidate warrants/checks prior to printing
  - ✓ Prevent printing \$0.00 warrants/checks
  - ✓ Flexible warrant/check formats
  - ✓ Ability to generate 1099 records and reports
  - ✓ Reconcile payments with bank records (warrants/checks redeemed)
  - ✓ Utilize electronic payments with full tracking capabilities
  - ✓ Ability to pay without invoices through contract terms or defined recurring payments
  - ✓ Support one-time vendors
- ***Accounts Receivable Module*** – The Accounts Receivable module should provide the ability for revenue management, billing and processing for all types of receivables. The module should also provide automated customer transaction processing, payment collection, and account adjustments. Standard features of the module should include:

- ✓ Maintain detail of unbilled charges including transaction posting date
- ✓ Generate automatic reversals of accounting entries when invoices are cancelled
- ✓ Print duplicate invoices upon user request
- ✓ Provide for the entry of invoices, credit memos, receipts and other transactions both in batch and on-line
- ✓ Assign specific credit memos to customers, invoices and line item numbers
- ✓ Maintain customer balances on both an open item and balance forward basis
- ✓ Write off invoices based on flexible user-defined criteria
- ✓ At posting time, write off small discrepancies between the amount due and the amount paid
- ✓ Process inter-department transfers of invoices and payments
- ✓ Track receivables by:
  - Invoice
  - Customer
  - Other user-defined criteria
- ✓ Generate an accounts payable transaction for overpayments
- ✓ Perform notification for NSF checks and:
  - Reverse the collection
  - Reestablish the receivable
  - Note the NSF check in the customer record
  - Apply penalties
  - Recalculate interest
- ✓ Automatically adjust the A/R account and generate the appropriate general ledger transaction when the invoice is written off
- ✓ Provide the ability to:
  - Account for revenue earned and billed
  - Account for revenue earned and unbilled
  - Recognize revenue previously deferred
- ✓ Accumulate charges by multiple fiscal years (e.g., state, federal, grant, etc.)
- ✓ Automatically rollover open receivables at fiscal year-end

- ✓ Allow for the direct entry of customer name and address for one-time customers
- ✓ Process revenue refunds
- ✓ Support electronic fund transfers
- ✓ Liquidate accounts receivable based upon cash receipts
- **Fixed Assets Module** – The Fixed Assets module should allow district staff to account for all fixed asset inventory items. Standard features of the module should include:
  - ✓ Fixed assets changes report
  - ✓ Fixed assets master file status report
  - ✓ Transaction listings
  - ✓ Report by serial number, PO and room number
- **Project Cost Accounting Module** – The Project Cost Accounting module should allow districts to account for costs associated with projects and grants. The module would maintain information such as type of work, labor costs, staff-hours spent on job, cost of materials used, employee(s) who worked on order, date of origin and date of completion. Costs and resources would be tracked over the life of the project/grant. Standard features of the module should include:
  - ✓ Ability to allow projects to be funded by multiple sources, each with independent restrictions on types and amounts of expenditures chargeable
  - ✓ Accommodate project duration from one day to multiple years
  - ✓ Associate and carry project identification number and name with project
  - ✓ Support entry of non-financial information
  - ✓ Identify individual as project manager for project
  - ✓ Maintain project templates with specific project types, values, and standards
  - ✓ Associate a project with an organization structure consistent with structure used by other business information system modules
  - ✓ Associate a grant identification number with a project
  - ✓ Provide start/stop dates by work breakdown structure within a project
  - ✓ Classify revenue and expenditure transactions by functional elements
  - ✓ Identify both “direct” and “indirect” costs

- ✓ Edit financial transactions according to project-specific rules
  - ✓ Record estimates costs to complete and compare to project budgets
  - ✓ Record estimated revenues by project
  - ✓ Record encumbrances against a project budget
  - ✓ Provide cost allocation methods for projects
  - ✓ Apply multiple burden rates to costs based on types of expenditures
  - ✓ Transfer project costs between projects with appropriate audit trails
- **Payroll Module** – The Payroll module should incorporate all district tasks associated with encumbering payroll, paying employees, producing mandated reports and expensing all payroll associated costs. The module should produce payroll checks, as well as all necessary reports needed to assist in the payroll operation. Direct deposit, bank reconciliation, year-to-date distribution, employee leave card, TSAs, savings bond options and other deductions for employees should be provided in the module. Standard features of the module should include:
    - ✓ Checks/earnings statement
    - ✓ Payroll transaction error listing
    - ✓ Payroll control listing
    - ✓ Payroll journal
    - ✓ Check register
    - ✓ Leave status report
    - ✓ Payroll transaction proof list
    - ✓ Payroll transmittals
    - ✓ Public Employees Retirement System (PERS) reports
    - ✓ Account distribution journal
    - ✓ Deduction register
    - ✓ Year-to-date reports
    - ✓ Payroll adjustments
    - ✓ Workers compensation insurance report
    - ✓ W-2 forms
    - ✓ Third-party sick pay W-2 forms

- ✓ Calendar YTD FICA/Medicare annual report
  - ✓ Accrual reports
  - ✓ Annual reports
  - ✓ 941E worksheets
  - ✓ Ability to encumber payroll by individual position, classification, organization or program
  - ✓ End-of-year accruals
- **Personnel Module** – The Personnel module should provide an automated method of maintaining employee records and facilitating timely and accurate reporting. Data maintained would include: demographic, certifications, assignment and pay-related and job data such as professional status codes. The module should include employment contracts and salary notices. District controlled functions should allow for customizing various compensation structures, the district calendar and special codes. The module should interface with retirement system reporting requirements. The module should also maintain position control information and interface with the Payroll module. Standard features of the module should include:
    - ✓ Employment contracts
    - ✓ Salary notices
    - ✓ Substitute authorization notices
    - ✓ Employee reports
    - ✓ Personnel staff sheets
    - ✓ List of permits/licenses
    - ✓ Listing of responsibility records
  - **Budget Preparation Module** – The Budget Preparation module should be designed to assist district staff in the preparation of the annual budget(s). The files may be created from the current General Ledger and Payroll/Personnel (for position control data) modules. Payroll salary costs should be forecasted using both average cost as well as actual employee position salary costs. Once the budget is created for the subsequent year, the budget for the next year

may be interfaced into the current general ledger. Standard features of the module should include:

- ✓ Budget worksheet
- ✓ Change funds/year/organization for budget system accounts
- ✓ Create budget file from general ledger file
- ✓ Update budget file from general ledger file
- ✓ Reinitialize budget master for next year
- ✓ Move next year amounts from budget master to general ledger
- ✓ Move next year amounts from budget master to general ledger by organization
- ✓ Move next year amounts to existing general ledger for appropriations

### **FILE VOLUME AND RETENTION REQUIREMENTS**

This section describes current and projected file sizes and retention requirements necessary to support the student and business systems in all districts.

The student and business systems must support the operations of 198 school districts and 21 educational service districts<sup>1</sup> as well as the reporting and record-keeping requirements of ODE. The school districts can be categorized into the following groups based on number of students:

#### **Exhibit II-3 Number of School Districts Based on Enrollment**

<b>Size</b>	<b>No. of Students in District</b>	<b>No. of School Districts</b>	<b>Total No. of Students<sup>2</sup></b>
Large	>10,000	11	219,503
Medium	1,000 – 9,999	70	263,079
Small	<1,000	77	39,243

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<sup>1</sup> Oregon School Directory 2001-2002. Oregon Department of Education.

<sup>2</sup> 2000-2001 Survey: Salaries, Economic Benefit and Selected Policies for Teachers in Oregon School Districts. Oregon School Board Association. December 2000.

### *Application Availability*

This section identifies how school and educational service districts, as well as ODE, will access the systems and when access will be needed during the week.

Users should be able to access the student and business systems using current web browsers or comparable access tools. Access needs to be provided from 6 a.m. to 12:00 a.m. including weekends.

### *Security*

The student system's data needs to be kept confidential to protect individual student's privacy consistent with Oregon's public records laws. The business system's data must also be secured to protect assets (e.g., accounts payable, payroll, etc.) and employee/vendor/customer privacy. Access to the system must be authenticated including password-protected access, secure transmission and secure socket layers for Internet access.

### *Technology*

All hardware and software for the student and business systems should adhere to school districts, educational service districts and ODE technology standards. To the maximum extent possible, client hardware should be compatible with individual school district's technology standards. The selection or development of the application software(s) will dictate, in large part, the final system architecture, consistent with the above standards.

### *Support*

Any new student and business system hardware and software must be covered by at least 12 months of maintenance and technical support. Hardware support should include 24-hour on-site response time for repair or replacement of equipment, 7 days per week. Software maintenance should also provide for 24-hour telephone support, 7 days per week and product upgrades.

School districts and education service districts must also provide staff to operate and maintain the systems following current operational requirements. Internal staffing requirements are further defined in the *Alternatives Analysis* section.

### III. ALTERNATIVES ANALYSIS

#### A. Current Operations

Currently, each district determines its own system and data requirements and then develops automated and manual solutions for student and business systems to meet those requirements. This approach provides little benefit from economies of scale and does not facilitate the collection of district data that meets data standards required from a statewide perspective. Each district must now define their requirements, evaluate solutions, negotiate with vendors, implement, and in many cases, operate their own systems. Approximately 92 (i.e., 47%) of the districts rely on ESDs to operate all or part of their systems rather than operating the systems themselves. By using ESDs, districts are able to obtain some economies of scale by not having to maintain larger computers (servers) themselves. By spreading the operating costs over a larger base, each district should incur a lower cost.

#### B. Summary Description of Alternatives

Five alternatives, including the current processes, were evaluated for this feasibility study. The range of costs and technical complexity varies significantly among the five alternatives.

- ***Alternative 1 – Common Student and Business Systems Operated Centrally.*** This alternative would employ a common student system and a common business system for use by **all** districts in the state. The systems would operate at a central site. Local terminals (clients) would have minimal application and storage requirements with all data residing at the central site. This alternative would allow ODE or some other state agency to administer the application from a central location with minimal technology staff required in the individual districts to support the applications. Updates to the systems, either to meet new district requirements or to meet new ODE reporting requirements, would be administered at the central site. This alternative would reflect a centrally (i.e., statewide) planned and managed operation with all districts mandated to use the central statewide data center.
- ***Alternative 2 – Common Student and Business Systems Operated by 5 Regional Centers.*** This alternative would also employ a common student system and a common business

system for use by **all** districts in the state. However, the systems would operate at regional data centers. These data centers could be existing ESDs, districts or private providers. As with Alternative 1, local terminals (clients) would have minimal application and storage requirements with all data residing at the regional site. Updates to the systems to meet new ODE reporting requirements could be administered centrally. Additional limited modifications to meet local requirements could be made by the regional center. This alternative would reflect a high degree of central planning with a regional approach to service delivery. This alternative assumes that all districts will be mandated to use the services of five regional data centers.

- **Alternative 3 – “Certified” Systems.** This alternative would involve ODE, ESDs and the districts agreeing on an “approved” list of student and business systems for use in the state. The certification process would involve testing of various systems to ensure they satisfied the needs of both the districts and ODE. The systems could be operated at a variety of locations including individual districts, ESDs or third-party data centers. Updates to the “certified” systems to meet new ODE reporting requirements could be administered centrally. Additional modifications to meet local requirements could be made by the local data center. For purposes of analysis this alternative assumes the same number of data centers as exists today. Districts would elect to use the certified software on a voluntary basis.
- **Alternative 4 – “Certified” Systems at 12 Regional Data Centers.** This alternative, as with Alternative 3, would involve ODE, ESDs and the districts agreeing on an “approved” list of student and business systems for use in the state. The certification process would involve testing of various systems to ensure they satisfied the needs of both the districts and ODE. Districts not using “certified systems” would transition voluntarily to certified systems. In this alternative, the systems would be operated at 12 regional ESDs or other data centers to which school districts would voluntarily migrate. Updates to the “certified” systems to meet new ODE reporting requirements could be administered centrally. Additional modifications to meet local requirements could be made by the regional ESDs. This alternative assumes that all districts have migrated to the 12 regional data centers.

- *Alternative 5 – Status Quo.* This alternative would continue the current practice of individual districts determining how best to meet their needs – either by operating their own systems or contracting with ESDs or others to provide the service.

### **C. Baseline Analysis**

This baseline analysis describes the elements of the current operating environment that will be changed or impacted by the implementation of one of the first three alternatives.

#### *Procedures*

Alternatives 1 through 4 would significantly change the current operating procedures involved in both maintaining student and business operations in the state’s districts. The current relatively autonomous process used by school districts to meet their local requirements would be altered by offering a much more limited solution set of application systems. Alternatives 1 and 2 would mandate a single common solution to be used by all districts while Alternatives 3 and 4 would provide a limited menu from which districts could select a “certified” application system.

Under Alternative 1, a state agency would assume responsibility for the development, implementation, operation and maintenance of the student and business information systems. ESDs and districts would no longer be responsible for the technical management of these systems. Under Alternative 2, ODE would be responsible for selecting the software to be used by the regional data centers, but the five regional data centers would be designated by the state to separately manage all service delivery to the districts. Alternatives 3 and 4 would include the application of certified software for business and student information systems. Under Alternative 3, services would be delivered with the current mix of district and ESD data centers. Alternative 5 assumes that all districts have voluntarily migrated to 12 data centers. Alternative 5 would involve districts and ESDs proceeding under the current process of relative autonomy.

Personnel in the 196 districts and 21 ESDs would require extensive training to learn the systems under Alternatives 1 and 2. Training under Alternatives 3 and 4 would also be required but would be phased in as individual districts determine that their needs dictate that they transition to

the “certified systems.” Day-to-day operations of the districts would be changed by the inherent design of the new application systems. Information analysis, now performed at the school, district, and ODE levels would continue. However, the underlying data would be much more consistent by requiring common data definitions, business practices, operations and reports. Individual district requirements would be subserved to meet the overall needs of the state. ODE, the ESDs or third-party providers would have significant responsibilities under Alternatives 1 - 4 to operate and maintain a central (Alternative 1), regional (Alternatives 2 and 4) or a combination of local and regional (Alternative 3) data centers as well as application system support and “Help Desk” services to the end users.

Alternatives 3 and 4 provide a statewide process to review and “certify” selected systems for use by all districts.

### ***Personnel Resource Requirements***

Staffing requirements will vary significantly depending on the alternative selected. Alternatives 1 and 2 require additional resources to operate computer centers at ODE, ESDs or third parties. ODE does not currently have the resources to operate a large data center or applications staff required for Alternative 1. In some cases, these resources may already be partially in place at ESDs to support Alternatives 2 and 4. Alternatives 3 and 4 would require a much smaller central ODE staff than Alternatives 1 or 2; but would require staff resources to operate a central test laboratory to review and certify student and business systems.

### ***Data Characteristics***

The student data and business data would remain similar to today’s data. However, greater consistency of data definitions needed for statewide reporting would be provided in Alternatives 1 – 4 than is the case today. Alternative 1 could provide the greatest data consistency and quality. If Alternative 2 were implemented where no “regional” modifications were permitted, it could provide the same level of data consistency and quality as Alternative 1. However, if regional modifications were permitted, data consistency and quality would be subject to

degradation to the extent data structures were modified. Alternatives 1 - 4 would require varying degrees of mitigating internal controls to ensure data consistency and quality to reflect the different levels of centralized control over data.

### *Equipment, Software, and Communication Architecture*

Alternative 1 would require a significant increase in computing resources either at ODE or a third-party site. In addition, the existing communications infrastructure, which today is used primarily for instructional services, would require significant upgrades from the districts to a central site (i.e., wide-area network). Alternative 2 moves the computing site to ESDs or regional computing centers. Several of the ESDs operate and provide this type of service today. However, the computing resources and communications network may require significant upgrades to support the student and business systems for the additional districts that would be added. The hardware and communications requirements for Alternatives 3 and 4 are subject to the selection of the application software; however, it is assumed that Alternative 4 would require additional computing hardware at some of the 12 ESDs. Based on the design of today's systems, it is assumed that these applications will utilize Internet browser "thin client" architecture. The central or regional computer sites would be replaced with servers either at the individual site, ESDs or third-party computer centers.

Client computer hardware (personal computers or "thin" clients) is assumed a responsibility of the individual school districts and is **not** included in the cost estimates.

Operations costs of local systems (Alternative 3) are assumed to be the responsibility of the individual school district and are **not** included in the cost estimates.

Alternatives 1 - 4 will require interfacing the new systems with existing and planned ODE databases. Alternatives 1 and 2 will require interfaces to be designed, programmed and implemented from a single site. Alternatives 3 and 4 will require these interfaces be designed, programmed and implemented for each of the "certified" systems.

## **D. Alternatives Analysis**

This section provides a detailed assessment of each of the five alternatives. Each alternative is evaluated with respect to its:

- Advantages and Disadvantages
- Risks
- Costs
- Benefits (tangible and intangible)

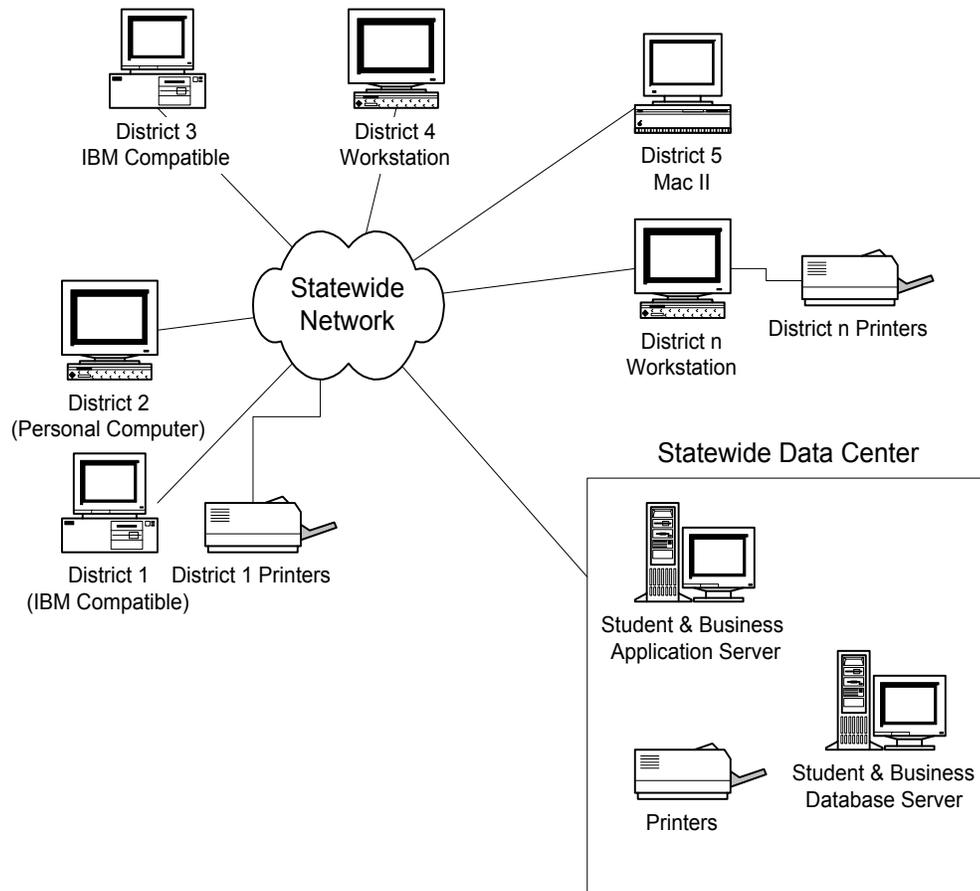
### ***ALTERNATIVE 1 – COMMON STUDENT AND BUSINESS SYSTEMS OPERATED CENTRALLY***

#### **Description**

This alternative would employ a common student system and a common business system for use by **all** districts in the state. The systems would operate at a central site. Local terminals (clients) would have minimal application and storage requirements with all data residing at the central site. This alternative would allow ODE, or another state agency, to administer the application from a central location with minimal technology staff required in the individual districts to support the applications. Updates to the systems, either to meet new district requirements, or to meet new ODE reporting requirements, would be administered at the central site.

Exhibit III – 1 illustrates the operation of Alternative 1.

**Exhibit III – 1**  
**Alternative 1 – Common Student and Business Systems Operated Centrally**



**Advantages**

The advantages for Alternative 1 include:

- The management of a single central application would be easier than many decentralized applications.
- Centralized control and security over data.
- Fewer and less geographical dispersion of data center personnel involved in the implementation effort.
- Consistency and quality of data controlled through a common application solution.

**Disadvantages**

The disadvantages of Alternative 1 include:

- Individual district requirements may not be accommodated increasing the potential for “shadow” systems in each district.
- Requires an enterprise-level computing infrastructure and IT staffing.
- Requires a robust wide-area network.
- ODE management and staff do not have experience in the operation of large statewide enterprise applications.
- Investments by districts and ESDs in applications systems must be considered a sunk cost with no additional use following statewide implementation.
- Significantly affects the current governance structure with loss of local control and flexibility.
- Would require a statewide mandate to migrate districts from their own solutions.
- Would involve a major reduction in force of district and ESD IT employees.

**Risk Analysis**

The following is the risk analysis for the Alternative 1 solution – Common and Centralized Systems. Each alternative was evaluated based on a number of standard risk assessment categories. Each category of risk is evaluated to reflect the risk of the alternative from a perspective of the “State” (i.e., Oregon state government) and from the perspective of the “Districts” (i.e., school districts and ESDs):

**Alternative 1- Common Student and Business Systems Operated Centrally**

The ratings noted from 1 (lowest risk) to 10 (highest risk) indicate the risk associated with this alternative.

**LEVEL OF RISK**

Low                      Medium                      High

**PROJECT MANAGEMENT RISK**

1. *Work Plan Complexity* – The more personnel involved and the more discrete work plan tasks required, the more difficult it is to manage the project and therefore the greater the risk.

	<b>State</b>	1---2---3---4---5---6---7---8---9---10
	<b>District</b>	1---2---3---4---5---6---7---8---9---10

**LEVEL OF RISK**

	<u>Low</u>	<u>Medium</u>	<u>High</u>
2. <i>Project Schedule</i> – The longer the implementation schedule, the more likely objectives, requirements, personnel, stakeholders and technology will change and therefore the greater the risk.			
<b>State</b>	1--2--3--4--5--6--7--8--9--		<b>10</b>
<b>District</b>	1--2--3--4--	<b>5</b> --6--7--8--9--	10
3. <i>Inter-organizational Resource Management</i> – The more the project requires resources and personnel of separate organizations to participate in and coordinate the project, the greater the risk.			
<b>State</b>	1--2--3--4--5--6--7--8--9--		<b>10</b>
<b>District</b>	1--2--3--4--5--6--7--8--9--		<b>10</b>
4. <i>Project Management Best Practices</i> – The more a project manager can rely upon the lessons learned by others on similar projects, the greater the probability of success. The more the project manager is breaking new ground on an innovative project, the greater the risk.			
<b>State</b>	1--2--3--4--5--6--7--8--9--		<b>10</b>
<b>District</b>	1--	<b>2</b> --3--4--5--6--7--8--9--	10

**State Average: 10.00**  
**State Assessment: High Risk**

**District Average: 5.50**  
**District Assessment: Medium Risk**

**ECONOMIC RISK**

1. <i>Project Payback</i> – The shorter the payback, the lower the risk.			
<b>State</b>	1--2--3--4--5--6--7--8--9--		<b>10</b>
<b>District</b>	1--	<b>2</b> --3--4--5--6--7--8--9--	10
2. <i>Funding Certainty</i> – The more certain the funding levels and the fewer the number of funding sources, the greater chance of stable and adequate funding.			
<b>State</b>	1--2--3--4--5--6--7--8--9--		<b>10</b>
<b>District</b>	1--2--	<b>3</b> --4--5--6--7--8--9--	10
3. <i>Scope Clarity</i> – A project with a well-defined scope and measures for project success has a greater probability of success.			
<b>State</b>	1--2--3--4--5--6--7--8--9--		<b>10</b>
<b>District</b>	1--2--3--4--	<b>5</b> --6--7--8--9--	10
4. <i>Financial Estimates</i> – The narrower the range in project cost, benefit and lifecycle estimates, the greater the confidence you will achieve the expected results.			
<b>State</b>	1--2--3--4--5--6--7--8--9--		<b>10</b>
<b>District</b>	1--2--	<b>3</b> --4--5--6--7--8--9--	10

**State Average: 10.00  
State Assessment: High Risk**

**District Average: 3.25  
District Assessment: Low to Medium Risk**

**LEVEL OF RISK**

**OPERATIONAL RISK**

**Low                      Medium                      High**

1. *User Acceptance* – The stronger the users support the project, the less risk of failure.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

2. *Organizational Change Management* – The more a project influences changes to relationships within or across organizations or modifies existing policies, the greater the risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

3. *Business Practice Realignment* – The more a project necessitates major changes or realignment of standard operating procedures and practices in an organization, the greater the risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

4. *Management Control* – The greater the ability management has to exercise control over operations, the less risk. The greater the number of organizations involved, the less influence individual user organizations will have over operations.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

**State Average: 8.50  
District Assessment: High Risk**

**District Average: 10.00  
District Assessment: High Risk**

**TECHNICAL RISK**

1. *Technology Maturity* – Tried and tested hardware, software and communication components and configurations carry lower risk. Projects that are novel or break new ground carry higher risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

**LEVEL OF RISK**

2. *Technical Staff Requirements* – A project or resulting operation that requires a high degree of technical skills and experience will be a higher risk under taking than one that is not as sophisticated and can be handled by less specialized personnel.

	Low	Medium	High
<b>State</b>	1--2--3--4--5--6--7--8--9--10		
<b>District</b>	1--2--3--4--5--6--7--8--9--10		

3. *Technology Trends* – The more consistent the technology architecture is with trends in technology development and deployment, the less likely it will become obsolete and the more easily it can be maintained and supported in operation.

<b>State</b>	1--2--3--4--5--6--7--8--9--10
<b>District</b>	1--2--3--4--5--6--7--8--9--10

4. *Software/Requirements Fit* – The closer the fit between the software and the business requirements of the target organization(s), the less likely software or business processes will have to be modified—high-risk activities.

<b>State</b>	1--2--3--4--5--6--7--8--9--10
<b>District</b>	1--2--3--4--5--6--7--8--9--10

<b>State Average: 8.75</b> <b>State Assessment: High Risk</b>
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<b>District Average: 4.00</b> <b>District Assessment: Low to Medium Risk</b>
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<b>Total State Average: 9.31</b> <b>State Assessment: High Risk</b>
--

<b>Total District Average: 5.69</b> <b>District Assessment: Medium</b>
---

**Conclusion:** *Alternative 1 is rated a high risk from a state perspective because a state agency will have to manage the development, implementation and operation of this alternative. This will be a large, complex project to centralize the systems of nearly 200 independent school districts. Many organizations and a very large number of user and technical personnel will have to participate. The funding requirements will be significant and complicated. Significant project resources including highly qualified project management personnel/consultants will be required if it is to be successful.*

**Cost Analysis**

Exhibit III - 2 are the cost estimates for Alternative 1. See Appendix B for detailed cost analyses.

**Exhibit III – 2  
FY 2002-03 – FY 2011-12  
Alternative 1 Cost Estimates (\$000s)**

<b>Cost Category</b>	<b>Implementation</b>	<b>Operations &amp; Maintenance</b>	<b>TOTAL</b>
Staff (Internal & External)	\$143,071	\$203,188	<b>\$346,259</b>
CIM/CAM Requirements	2,400	0	<b>2,400</b>
Application Software	9,106	5,550	<b>14,656</b>
Hardware	1,730	1,010	<b>2,740</b>
Other	31,261	41,950	<b>73,211</b>
Quality Assurance	9,378	0	<b>9,378</b>
Phase-In Cost of Districts	0	101,078	<b>101,078</b>
Contingency	74,506	62,924	<b>137,430</b>
<b>TOTAL</b>	<b>\$271,453</b>	<b>\$415,699</b>	<b>\$687,152</b>

**Benefits**

The anticipated benefits to be realized from Alternative 1 are described below:

- Staffing
  - Retention of Staff – a central staff to support and operate the student and business systems provides improved opportunity to attract, develop and retain key state-level IT staff over the other alternatives. A central staff would provide an opportunity for career advancement within a larger organization.
  - Lower Staff Support Requirements – a centralized organization would require fewer personnel, from a statewide perspective, to maintain the applications, operate the hardware and network and maintain the databases over the other alternatives. Modifications, enhancements and vendor-supplied application software upgrades could be better supported in a central location than in multiple locations. Operation of the computer servers, printers and network infrastructure could be more efficient in a single location than repeated in multiple locations.

- Vendor Relations
  - Software Licensing – a single application license for the entire state could provide the state with increased leverage in obtaining economical software licenses from the vendors.
  - Software Enhancements – a central operation may provide the state with increased leverage in encouraging the vendor to make system enhancements of benefit to Oregon schools.
- Infrastructure
  - Computer Hardware – a single data center could provide a more efficient hardware environment than multiple dispersed centers. Purchase and maintenance of computer hardware could be more economically managed in a single, central site.
  - Physical Facility – a single data center could be more economical to operate than multiple facilities. Space, utilities and security could be more economically managed in a single, central site.
  - Data Backup and Restoration – the data management and support for an emergency backup site could be more economically managed in a single, central site.
  - “Help Desk” Support – the operation of a single Help Desk could be more economical and could provide extended service hours at a lower cost than multiple locations.
- Business Processes
  - Training – common student and business systems could be more economical to support training of teachers, administrators and the public than multiple applications.
  - Standardized Business Practices – common student and business systems would provide the opportunity for implementing “best practices” in district operations throughout the state.
  - Common Reports -- common student and business systems would provide the opportunity for common reports for all districts.

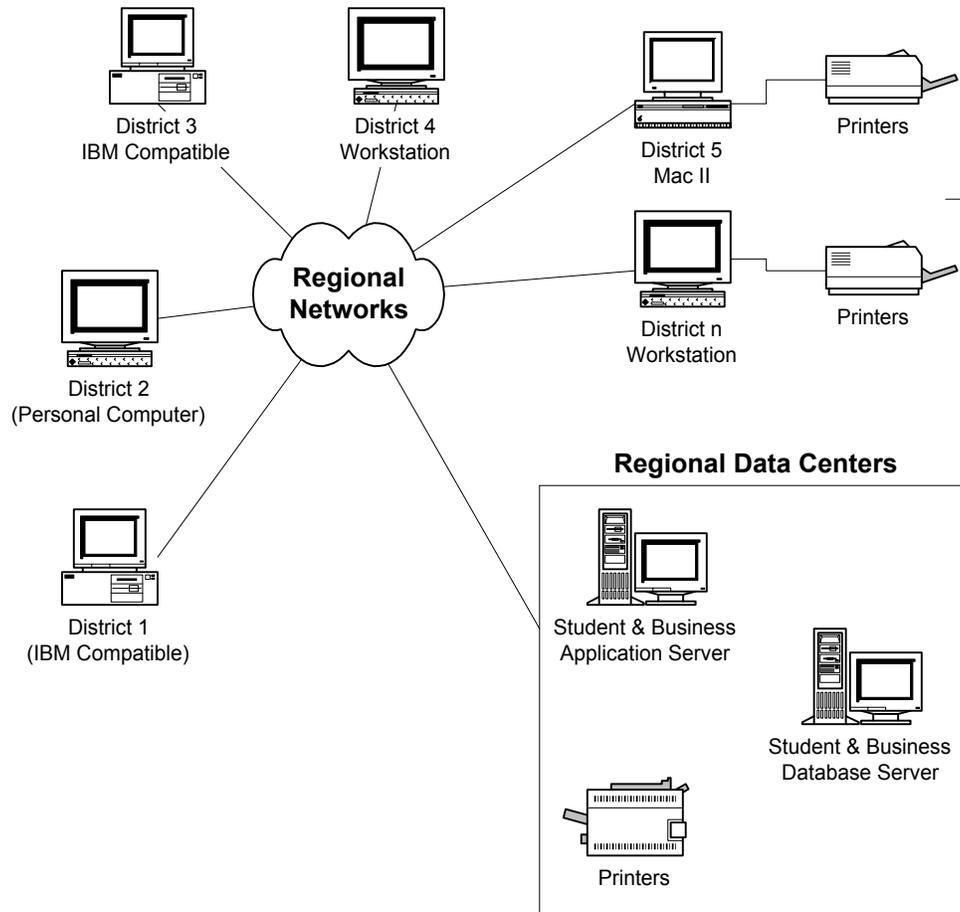
***ALTERNATIVE 2 – COMMON STUDENT AND BUSINESS SYSTEMS OPERATED BY 5 REGIONAL CENTERS***

**Description**

This alternative would also employ a common student system and a common business system for use by **all** districts in the state. However, the systems would operate at regional data centers. These data centers could be existing ESDs, districts or private application service providers. As with Alternative 1, local terminals (clients) would have minimal application and storage requirements with all data residing at the regional site. Updates to the systems to meet new ODE reporting requirements could be administered centrally. Additional modifications to meet local requirements could be made by the regional center.

Exhibit III – 3 illustrates the operation of Alternative 2.

**Exhibit III – 3**  
**Alternative 2 – Common Student and Business Systems Operated by 5 Regional Centers**



**Advantages**

The advantages for Alternative 2 include:

- The management of common applications would be easier than decentralized applications.
- Regional control and security over data.
- Technical personnel at regional centers may be more familiar with local issues and provide more individualized implementation support than a central staff.
- Consistency and quality of data improved through a common application solution.

**Disadvantages**

The disadvantages of Alternative 2 include:

- Individual district requirements may not be easily or economically accommodated.
- Requires a “mid-range” computing infrastructure.
- Requires a robust “regional” wide-area network.
- Some ESDs may have to supplement their staff with new personnel experienced in the operation of large enterprise applications.
- Investments by districts in applications systems must be considered a sunk cost with no additional use following statewide implementation.

**Risk Analysis**

The following is the updated risk analysis for the Alternative 2 solution – Common and Regionalized Systems. Each alternative was evaluated based on a number of standard risk assessment categories. Each category of risk is evaluated to reflect the risk of the alternative from a perspective of the “State” (i.e., Oregon State Government) and from the perspective of the “Districts” (i.e., School districts and ESDs):

**Alternative 2- Common Student and Business Systems Operated by 5 Regional Centers**

The ratings noted from 1 (lowest risk) to 10 (highest risk) indicate the risk associated with this alternative.

**LEVEL OF RISK**

**Low                      Medium                      High**

**PROJECT MANAGEMENT RISK**

1. *Work Plan Complexity* – The more personnel involved and the more discrete work plan tasks required, the more difficult it is to manage the project and therefore the greater the risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**      1---2---3---4---5---6---7---8---9---10

2. *Project Schedule* – The longer the implementation schedule, the more likely objectives, requirements, personnel, stakeholders and technology will change and therefore the greater the risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**      1---2---3---4---5---6---7---8---9---10

**LEVEL OF RISK**

3. *Inter-organizational Resource Management* – The more the project requires resources and personnel of separate organizations to participate in and coordinate the project, the greater the risk.

	Low	Medium	High
<b>State</b>	1--2--3--4--5--6--7--8--9--10		
<b>District</b>	1--2--3--4--5--6--7--8--9--10		

4. *Project Management Best Practices* – The more a project manager can rely upon the lessons learned by others on similar projects, the greater the probability of success. The more the project manager is breaking new ground on an innovative project, the greater the risk.

<b>State</b>	1--2--3--4--5--6--7--8--9--10
<b>District</b>	1--2--3--4--5--6--7--8--9--10

**State Average: 8.75  
State Assessment: High Risk**

**District Average: 4.50  
District Assessment: Medium Risk**

**ECONOMIC RISK**

1. *Project Payback* – The shorter the payback, the lower the risk.

<b>State</b>	1--2--3--4--5--6--7--8--9--10
<b>District</b>	1--2--3--4--5--6--7--8--9--10

2. *Funding Certainty* – The more certain the funding levels and the fewer the number of funding sources, the greater chance of stable and adequate funding.

<b>State</b>	1--2--3--4--5--6--7--8--9--10
<b>District</b>	1--2--3--4--5--6--7--8--9--10

3. *Scope Clarity* – A project with a well-defined scope and measures for project success has a greater probability of success.

<b>State</b>	1--2--3--4--5--6--7--8--9--10
<b>District</b>	1--2--3--4--5--6--7--8--9--10

4. *Financial Estimates* – The narrower the range in project cost, benefit and lifecycle estimates, the greater the confidence you will achieve the expected results.

<b>State</b>	1--2--3--4--5--6--7--8--9--10
<b>District</b>	1--2--3--4--5--6--7--8--9--10

**State Average: 9.00  
State Assessment: High Risk**

**District Average: 3.25  
District Assessment: Low to Medium Risk**

**LEVEL OF RISK**

**OPERATIONAL RISK**

**Low                      Medium                      High**

1. *User Acceptance* – The stronger the users support the project, the less risk of failure.

**State**      1---2---3---4---5---6---7---8---9---10

**District**      1---2---3---4---5---6---7---8---9---10

2. *Organizational Change Management* – The more a project influences changes to relationships within or across organizations or modifies existing policies, the greater the risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**      1---2---3---4---5---6---7---8---9---10

3. *Business Practice Realignment* – The more a project necessitates major changes or realignment of standard operating procedures and practices in an organization, the greater the risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**      1---2---3---4---5---6---7---8---9---10

4. *Management Control* – The greater the ability management has to exercise control over operations, the less risk. The greater the number of organizations involved, the less influence individual user organizations will have over operations.

**State**      1---2---3---4---5---6---7---8---9---10

**District**      1---2---3---4---5---6---7---8---9---10

**State Average: 5.75  
State Assessment: Medium Risk**

**District Average: 8.75  
District Assessment: High Risk**

**TECHNICAL RISK**

1. *Technology Maturity* – Tried and tested hardware, software and communication components carry lower risk. Projects that are novel or break new ground carry higher risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**      1---2---3---4---5---6---7---8---9---10

2. *Technical Staff Requirements* – A project or resulting operation that requires a high degree of technical skills and experience will be a higher risk under taking than one that is not as sophisticated and can be handled by less specialized personnel.

**State**      1---2---3---4---5---6---7---8---9---10

**District**      1---2---3---4---5---6---7---8---9---10

- |  | <b>LEVEL OF RISK</b> |  |             |
|--|----------------------|--|-------------|
|  | <u>Low</u>           | <u>Medium</u>                          | <u>High</u> |
| <p>3. <i>Technology Trends</i> – The more consistent the technology architecture is with trends in technology development and deployment, the less likely it will become obsolete and the more easily it can be maintained and supported in operation.</p> | <b>State</b>         | 1---2---3---4---5---6---7---8---9---10 |             |
|  | <b>District</b>      | 1---2---3---4---5---6---7---8---9---10 |             |
| <p>4. <i>Software/Requirements Fit</i> – The closer the fit between the software and the business requirements of the target organization(s), the less likely software or business processes will have to be modified—high-risk activities.</p>            | <b>State</b>         | 1---2---3---4---5---6---7---8---9---10 |             |
|  | <b>District</b>      | 1---2---3---4---5---6---7---8---9---10 |             |

<b>State Average: 6.00</b> <b>State Assessment: Medium Risk</b>
<b>District Average: 4.00</b> <b>District Assessment: Low to Medium Risk</b>
<b>Total State Average: 7.38</b> <b>State Assessment: Medium to High Risk</b>
<b>Total District Average: 5.13</b> <b>District Assessment: Medium Risk</b>

**Conclusion:** *Alternative 2 is rated a medium to high risk from the state’s perspective. This will be a relatively difficult project to centrally manage but it will be organized into a number of smaller sub-projects for the regional centers. Funding will be significant but may be more manageable and reasonable to secure due to the regional nature of the alternative. This alternative will more likely be accepted by users than a centralized model and will have less impact on operations due to the greater number of choices available from the regional centers.*

**Cost Analysis**

Exhibit III - 4 are the cost estimates for Alternative 2. See Appendix B for detailed cost analyses.

**Exhibit III – 4  
FY 2002-03 – FY 2011-12  
Alternative 2 Cost Estimates (\$000s)**

<b>Cost Category</b>	<b>Implementation</b>	<b>Operations &amp; Maintenance</b>	<b>TOTAL</b>
Staff (Internal & External)	\$144,280	\$206,022	<b>\$350,302</b>
CIM/CAM Requirements	2,400	0	<b>2,400</b>
Application Software	9,106	5,550	<b>14,656</b>
Hardware	1,625	978	<b>2,603</b>
Other	31,482	42,510	<b>73,992</b>
Quality Assurance	9,445	0	<b>9,445</b>
Phase-In Cost of Districts	0	101,078	<b>101,078</b>
Contingency	74,854	63,765	<b>138,619</b>
<b>TOTAL</b>	<b>\$273,192</b>	<b>\$419,903</b>	<b>\$693,095</b>

**Benefits**

The anticipated benefits to be realized from Alternative 2 are described below:

- Staffing
  - Retention of Staff – regional staffs to support and operate the student and business systems provide some improved opportunity to retain key staff over Alternatives 3 and 4. Regional staffs, operating similar applications, would provide opportunities for career advancement and relocation.
  - Lower IT Staff Support Requirements – regional IT staffs could operate similar technical environments providing an opportunity for economies of scale in the maintenance and operation of hardware and operating system software. Modifications, enhancements and vendor-supplied application software upgrades could be supported in regional locations through specialization among the centers.
- Vendor Relations
  - Software Licensing – a single application license for the entire state may provide the state with increased leverage in obtaining economical software licenses from the vendors.

- Software Enhancements – a common operation may provide the state with increased leverage in encouraging the vendor to make system enhancements of benefit to Oregon schools.
- Infrastructure
  - Computer Hardware – regional data centers could provide a more efficient hardware environment than individual district centers. Purchase and maintenance of computer hardware could be economically managed through a common technical environment.
  - Data Backup and Restoration – the data management and support for an emergency backup site could be managed through backup sites at other regional centers.
  - “Help Desk” Support – the operation of a common Help Desk could provide extended service hours through scheduling or by providing regional sites providing services to a larger region.
- Business Processes
  - Training – common student and business systems could be more economical to support training of teachers, administrators and the public than multiple applications.
  - Standardized Business Practices – common student and business systems could provide the opportunity for implementing “best practices” in district operations throughout the state.
  - Common Reports – common student and business systems could provide the opportunity for common reports for all districts.

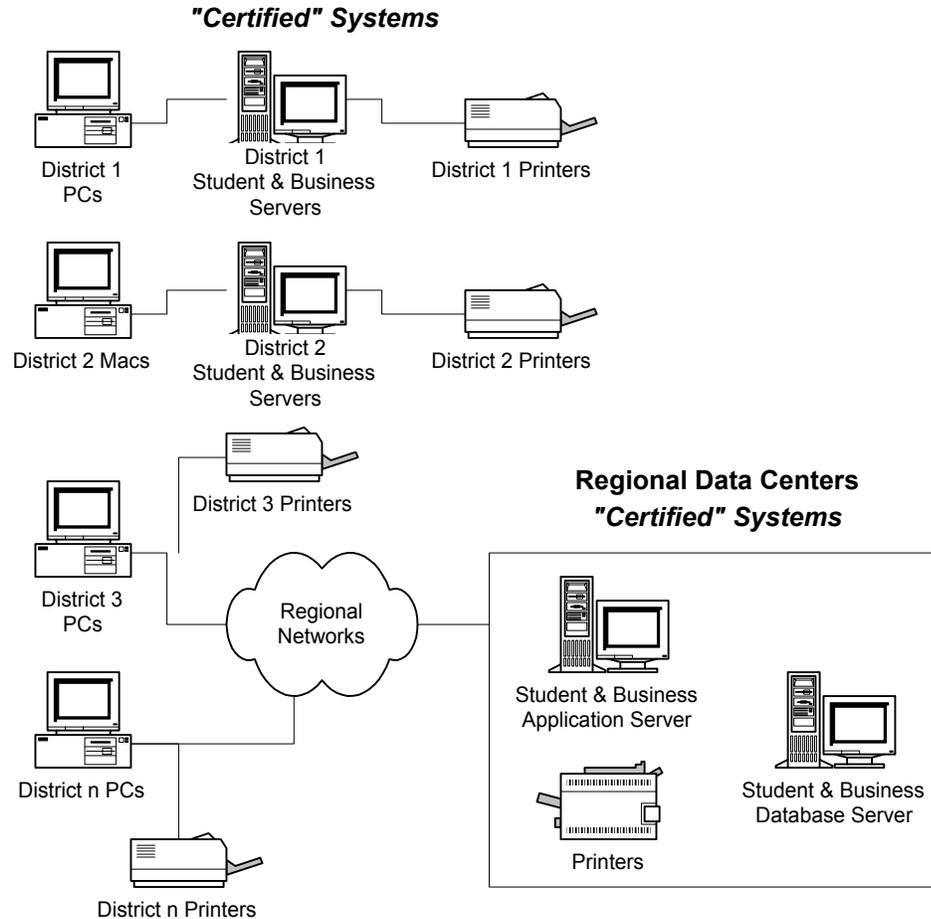
### *ALTERNATIVE 3 – “CERTIFIED” SYSTEMS*

#### **Description**

This alternative would require ODE, ESDs and the districts agreeing on an “approved” list of student and business systems for use in the state. The certification process would involve testing of various systems to ensure they satisfied the needs of both the districts and ODE. The systems could be operated at a variety of locations including individual districts, ESDs or third-party data centers. Updates to the “certified” systems to meet new ODE reporting requirements could be administered centrally. Additional modifications to meet local requirements could be made by the local data center.

Exhibit III – 5 illustrates the operation of Alternative 3.

**Exhibit III – 5  
“Certified” Systems**



**Advantages**

The advantages for Alternative 3 include:

- Individual district requirements may be more easily accommodated.
- Does not require a significant improvement of district, ESD or ODE IT infrastructure and staffing.
- Does not require a robust wide-area network.

- Investments by districts and ESDs in applications systems may be retained depending upon which systems are “certified.”

**Disadvantages**

The disadvantages of Alternative 3 include:

- The management of applications would continue to require local expertise.
- Control and security over data would continue to be made at the local level.
- Local technical personnel familiar with district issues must be available to provide implementation and operations support.
- ODE, ESDs and districts must agree upon both “certification” rules and specific application systems.

**Risk Analysis**

The following is the updated risk analysis for the Alternative 3 solution – “Certified” Systems. Each alternative was evaluated based on a number of standard risk assessment categories. Each category of risk is evaluated to reflect the risk of the alternative from a perspective of the “State” (i.e., Oregon State Government) and from the perspective of the “Districts” (i.e., School districts and ESDs):

**Alternative 3 – “Certified” Systems**

The ratings noted from 1 (lowest risk) to 10 (highest risk) indicate the risk associated with this alternative.

**LEVEL OF RISK**

**Low                      Medium                      High**

**PROJECT MANAGEMENT RISK**

1. *Work Plan Complexity* – The more personnel involved and the more discrete work plan tasks required, the more difficult it is to manage the project and therefore the greater the risk.

<b>State</b>	1---2--- <b>3</b> ---4---5---6---7---8---9---10
<b>District</b>	1--- <b>2</b> ---3---4---5---6---7---8---9---10

**LEVEL OF RISK**

**Low                      Medium                      High**

2. *Project Schedule* – The longer the implementation schedule, the more likely objectives, requirements, personnel, stakeholders and technology will change and therefore the greater the risk.

<b>State</b>	1---2--- <b>3</b> ---4---5---6---7---8---9---10
<b>District</b>	1--- <b>2</b> ---3---4---5---6---7---8---9---10

3. *Inter-organizational Resource Management* – The more the project requires resources and personnel of separate organizations to participate in and coordinate the project, the greater the risk.

**State** 1--2--3--4--5--6--7--8--9--10

**District** 1--2--3--4--5--6--7--8--9--10

4. *Project Management Best Practices* – The more a project manager can rely upon the lessons learned by others on similar projects, the greater the probability of success. The more the project manager is breaking new ground on an innovative project, the greater the risk.

**State** 1--2--3--4--5--6--7--8--9--10

**District** 1--2--3--4--5--6--7--8--9--10

<b>State Average: 3.50</b> <b>State Assessment: Low to Medium Risk</b>
<b>District Average: 2.75</b> <b>District Assessment: Low to Medium Risk</b>

**ECONOMIC RISK**

1. *Project Payback* – The shorter the payback, the lower the risk.

**State** 1--2--3--4--5--6--7--8--9--10

**District** 1--2--3--4--5--6--7--8--9--10

2. *Funding Certainty* – The more certain the funding levels and the fewer the number of funding sources, the greater chance of stable and adequate funding.

**State** 1--2--3--4--5--6--7--8--9--10

**District** 1--2--3--4--5--6--7--8--9--10

3. *Scope Clarity* – A project with a well-defined scope and measures for project success has a greater probability of success.

**State** 1--2--3--4--5--6--7--8--9--10

**District** 1--2--3--4--5--6--7--8--9--10

4. *Financial Estimates* – The narrower the range in project cost, benefit and lifecycle estimates, the greater the confidence you will achieve the expected results.

**State** 1--2--3--4--5--6--7--8--9--10

**District** 1--2--3--4--5--6--7--8--9--10

<b>State Average: 2.75</b> <b>State Assessment: Low Risk</b>
<b>District Average: 3.50</b> <b>District Assessment: Low to Medium Risk</b>

<b>OPERATIONAL RISK</b>	<b>LEVEL OF RISK</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
1. <i>User Acceptance</i> – The stronger the users support the project, the less risk of failure.	<b>State</b>	1---2---3---4---5---6---7---8---9---10	
	<b>District</b>	1---2---3---4---5---6---7---8---9---10	
2. <i>Organizational Change Management</i> – The more a project influences changes to relationships within or across organizations or modifies existing policies, the greater the risk.	<b>State</b>	1---2---3---4---5---6---7---8---9---10	
	<b>District</b>	1---2---3---4---5---6---7---8---9---10	
3. <i>Business Practice Realignment</i> – The more a project necessitates major changes or realignment of standard operating procedures and practices in an organization, the greater the risk.	<b>State</b>	1---2---3---4---5---6---7---8---9---10	
	<b>District</b>	1---2---3---4---5---6---7---8---9---10	
4. <i>Management Control</i> – The greater the ability management has to exercise control over operations, the less risk. The greater the number of organizations involved, the less influence individual user organizations will have over operations.	<b>State</b>	1---2---3---4---5---6---7---8---9---10	
	<b>District</b>	1---2---3---4---5---6---7---8---9---10	

**State Average: 4.00**  
**State Assessment: Low to Medium Risk**

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**District Average: 3.25**  
**District Assessment: Low to Medium Risk**

<b>TECHNICAL RISK</b>	<b>LEVEL OF RISK</b>		
	<u>Low</u>	<u>Medium</u>	<u>High</u>
1. <i>Technology Maturity</i> – Tried and tested hardware, software and communication components carry lower risk. Projects that are novel or break new ground carry higher risk.	<b>State</b>	1---2---3---4---5---6---7---8---9---10	
	<b>District</b>	1---2---3---4---5---6---7---8---9---10	
2. <i>Technical Staff Requirements</i> – A project or resulting operation that requires a high degree of technical skills and experience will be a higher risk under taking than one that is not as sophisticated and can be handled by less specialized personnel.	<b>State</b>	1---2---3---4---5---6---7---8---9---10	
	<b>District</b>	1---2---3---4---5---6---7---8---9---10	
3. <i>Technology Trends</i> – The more consistent the technology architecture is with trends in technology development and deployment, the less likely it will become obsolete and the more easily it can be maintained and supported in operation.	<b>State</b>	1---2---3---4---5---6---7---8---9---10	
	<b>District</b>	1---2---3---4---5---6---7---8---9---10	
4. <i>Software/Requirements Fit</i> – The closer the fit between the software and the business requirements of the target organization(s), the less likely software or business processes will have to be modified—high-risk activities.	<b>State</b>	1---2---3---4---5---6---7---8---9---10	
	<b>District</b>	1---2---3---4---5---6---7---8---9---10	
		<b>State Average: 2.25</b> <b>State Assessment: Low Risk</b>	
		<b>District Average: 3.25</b> <b>District Assessment: Low to Medium Risk</b>	
		<b>Total State Alternative Average: 3.13</b> <b>State Assessment: Low to Medium Risk</b>	
		<b>Total District Alternative Average: 3.19</b> <b>District Assessment: Low to Medium Risk</b>	

**Conclusion:** *Alternative 3 is rated a low to medium risk. The project management activities are reduced to evaluating and certifying candidate software systems to ensure they meet the needs of the districts and ODE. State funding will be required to support the certification process and districts will have to participate in certification activities. The implementation projects will be the responsibility of the individual districts and ESDs. There will be minimal impact on district operations until they voluntarily elect to implement a new certified system.*

**Cost Analysis**

Exhibit III - 6 are the cost estimates for Alternative 3. See Appendix B for detailed cost analyses.

**Exhibit III – 6  
FY 2002-03 – FY 2011-12  
Alternative 3 Cost Estimates (\$000s)**

<b>Cost Category</b>	<b>Implementation</b>	<b>Operations &amp; Maintenance</b>	<b>TOTAL</b>
Staff (Internal & External)	\$71,524	\$205,242	<b>\$276,766</b>
CIM/CAM Requirements	2,400	0	<b>2,400</b>
Application Software	11,528	91,078	<b>102,606</b>
Hardware	0	0	<b>0</b>
Other	17,090	54,479	<b>71,570</b>
Quality Assurance	0	0	<b>0</b>
Phase-In Cost of Districts	0	(23,923)	<b>(23,923)</b>
Contingency	25,636	81,719	<b>107,354</b>
<b>TOTAL</b>	<b>\$128,178</b>	<b>\$408,594</b>	<b>\$536,772</b>

**Benefits**

The anticipated benefits to be realized from Alternative 3 are described below:

- Vendor Relations
  - Software Licensing – by procuring a series of approved, certified systems for the entire state, the state could obtain a lower price than if individual districts procured the software separately.
  - Software Enhancements – a series of common systems could provide the state with increased leverage in encouraging the vendor to make system enhancements of benefit to Oregon schools.
- Business Processes
  - Training – a series of common student and business systems could be more economical to support training of teachers, administrators and the public than individual applications.

- Standardized Business Practices – a series of common student and business systems would provide the opportunity for implementing “best practices” in district operations using the same applications.
- Common Reports – a series of common student and business systems would provide the opportunity for common reports for all districts using the applications.

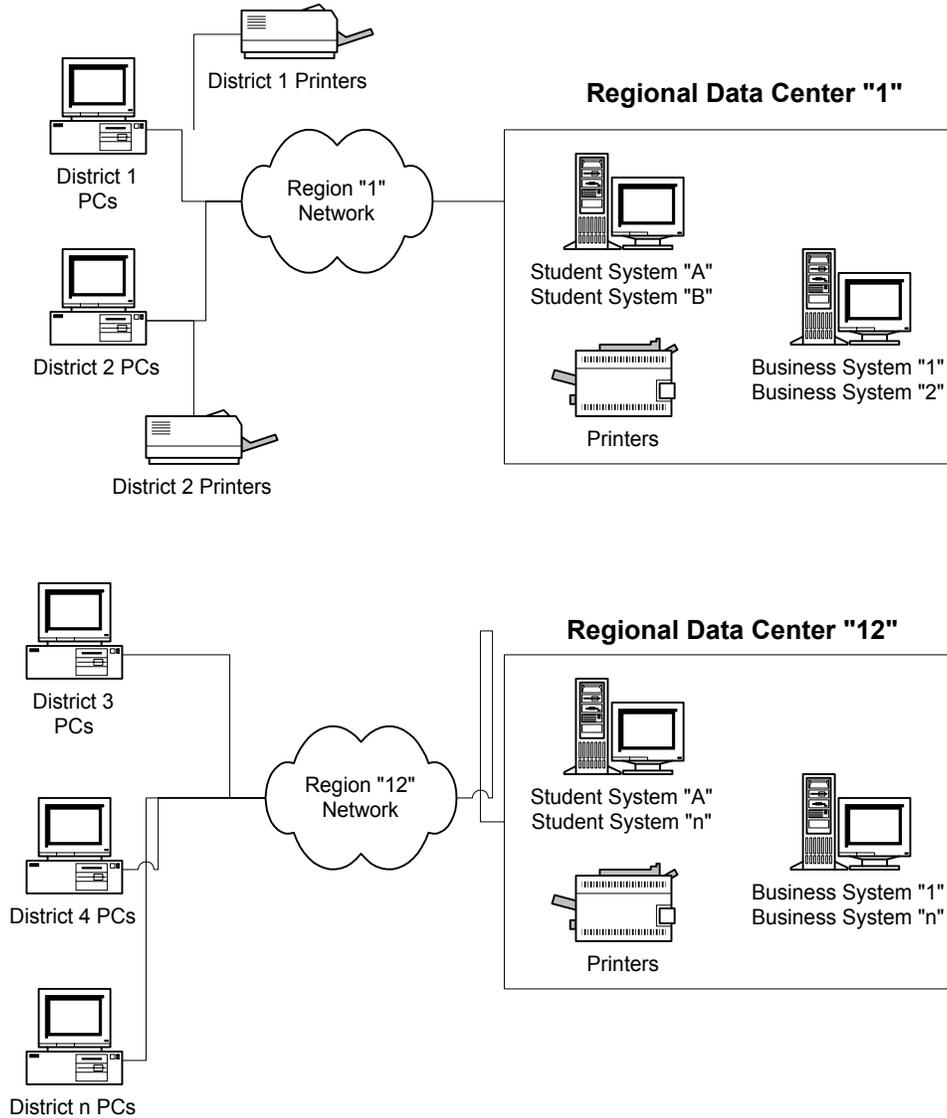
#### *ALTERNATIVE 4 – “CERTIFIED” SYSTEMS AT 12 REGIONAL DATA CENTERS*

##### **Description**

This alternative, as with Alternative 3, would involve ODE, ESDs and the districts agreeing on an “approved” list of student and business systems for use in the state. The certification process would involve testing of various systems to ensure they satisfied the needs of both the districts and ODE. Districts not using “certified systems” would transition voluntarily to certified systems. In this alternative, the systems would be operated at twelve (12) regional ESDs or other data centers to which the districts would voluntarily migrate. Updates to the “certified” systems to meet new ODE reporting requirements could be administered centrally. Additional modifications to meet local requirements could be made by the regional ESDs. This alternative assumes that all districts have migrated to the 12 regional data centers.

Exhibit III – 7 illustrates the operation of Alternative 4.

**Exhibit III – 7**  
**Alternative 4 - “Certified” Systems at 12 Regional Data Centers**



### **Advantages**

The advantages for Alternative 4 include:

- Individual district requirements may be more easily accommodated than under Alternatives 1 and 2.
- Economies of scale may be realized through fewer, larger data centers and fewer application systems than is the case under Alternative 5, Status Quo.
- Does not require a robust statewide network.
- Investments by districts and ESDs in applications systems may be retained depending upon which systems are “certified.”

### **Disadvantages**

The disadvantages of Alternative 4 include:

- The management of applications would continue to require regional expertise.
- Control and security over data would continue to be made at the regional (rather than statewide) level.
- Regional technical personnel familiar with district issues must be available to provide implementation and operations support.
- ODE, ESDs and districts must agree upon both “certification” rules and specific application systems.
- Assumes that districts will voluntarily migrate to one of the 12 regional data centers.

### **Risk Analysis**

The following is the updated risk analysis for the Alternative 4 solution – “Certified” Systems at 12 Regional Data Centers. Each alternative was evaluated based on a number of standard risk assessment categories. Each category of risk is evaluated to reflect the risk of the alternative from a perspective of the “State” (i.e., Oregon State Government) and from the perspective of the “Districts” (i.e., School districts and ESDs):

**Alternative 4- “Certified” Systems at 12 Regional Data Centers**

The ratings noted from 1 (lowest risk) to 10 (highest risk) indicate the risk associated with this alternative.

**LEVEL OF RISK**

**Low                      Medium                      High**

**PROJECT MANAGEMENT RISK**

1. *Work Plan Complexity* – The more personnel involved and the more discrete work plan tasks required, the more difficult it is to manage the project and therefore the greater the risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

2. *Project Schedule* – The longer the implementation schedule, the more likely objectives, requirements, personnel, stakeholders and technology will change and therefore the greater the risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

3. *Inter-organizational Resource Management* – The more the project requires resources and personnel of separate organizations to participate in and coordinate the project, the greater the risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

3. *Project Management Best Practices* – The more a project manager can rely upon the lessons learned by others on similar projects, the greater the probability of success. The more the project manager is breaking new ground on an innovative project, the greater the risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

**State Average: 3.50**  
**State Assessment: Low to Medium Risk**

**District Average: 5.50**  
**District Assessment: Medium Risk**

**ECONOMIC RISK**

1. *Project Payback* – The shorter the payback, the lower the risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

**LEVEL OF RISK**

2. *Funding Certainty* – The more certain the funding levels and the fewer the number of funding sources, the greater chance of stable and adequate funding.

**Low                      Medium                      High**

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

3. *Scope Clarity* – A project with a well-defined scope and measures for project success has a greater probability of success.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

4. *Financial Estimates* – The narrower the range in project cost, benefit and lifecycle estimates, the greater the confidence you will achieve the expected results.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

<b>State Average: 1.75</b> <b>State Assessment: Low Risk</b>
<b>District Average: 3.50</b> <b>District Assessment: Low to Medium Risk</b>

**OPERATIONAL RISK**

1. *User Acceptance* – The stronger the users support the project, the less risk of failure.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

2. *Organizational Change Management* – The more a project influences changes to relationships within or across organizations or modifies existing policies, the greater the risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

3. *Business Practice Realignment* – The more a project necessitates major changes or realignment of standard operating procedures and practices in an organization, the greater the risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

**LEVEL OF RISK**

4. *Management Control* – The greater the ability management has to exercise control over operations, the less risk. The greater the number of organizations involved, the less influence individual user organizations will have over operations.

**Low                      Medium                      High**

**State**      1---2---3---4---5---6---7---8---9---10

**District**      1---2---3---4---5---6---7---8---9---10

**State Average: 2.25  
State Assessment: Low Risk**

**District Average: 4.75  
District Assessment: Medium Risk**

**TECHNICAL RISK**

1. *Technology Maturity* – Tried and tested hardware, software and communication components carry lower risk. Projects that are novel or break new ground carry higher risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**      1---2---3---4---5---6---7---8---9---10

2. *Technical Staff Requirements* – A project or resulting operation that requires a high degree of technical skills and experience will be a higher risk under taking than one that is not as sophisticated and can be handled by less specialized personnel.

**State**      1---2---3---4---5---6---7---8---9---10

**District**      1---2---3---4---5---6---7---8---9---10

3. *Technology Trends* – The more consistent the technology architecture is with trends in technology development and deployment, the less likely it will become obsolete and the more easily it can be maintained and supported in operation.

**State**      1---2---3---4---5---6---7---8---9---10

**District**      1---2---3---4---5---6---7---8---9---10

4. *Software/Requirements Fit* – The closer the fit between the software and the business requirements of the target organization(s), the less likely software or business processes will have to be modified—high-risk activities.

**State**      1---2---3---4---5---6---7---8---9---10

**District**      1---2---3---4---5---6---7---8---9---10

**State Average: 2.00  
State Assessment: Low Risk**

**District Average: 3.50  
District Assessment: Low to Medium Risk**

**Total State Alternative Average: 2.38  
State Assessment: Low Risk**

**Total District Alternative Average: 4.31  
District Assessment: Low to Medium Risk**

**Conclusion:** *Alternative 4 is rated a low risk for the state and a low to medium risk to the local districts. The project management activities for the state are limited primarily to evaluating and certifying candidate software systems to ensure they meet the needs of the districts and ODE. The districts will be responsible for moving to data centers and implementing new systems voluntarily. State funding will be required to support the certification process and districts will have to participate in certification and voluntary implementation activities. The implementation projects will be the voluntary responsibility of the individual districts and ESDs. There will be minimal impact on district operations until they voluntarily elect to implement a new certified system and move to a new data center if required.*

**Cost Analysis**

Exhibit III - 8 are the cost estimates for Alternative 4. See Appendix B for detailed cost analyses.

**Exhibit III – 8  
FY 2002-03 – FY 2011-12  
Alternative 4 Cost Estimates (\$000s)**

Cost Category	Implementation	Operations & Maintenance	TOTAL
Staff (Internal & External)	\$55,054	\$190,922	<b>\$245,976</b>
CIM/CAM Requirements	2,400	0	<b>2,400</b>
Oregon Student Record System	600	0	<b>600</b>
Application Software	5,000	81,263	<b>86,263</b>
Hardware	0	0	<b>0</b>
Other	12,611	50,505	<b>63,116</b>
Quality Assurance	0	0	<b>0</b>
Phase-In Cost of Districts	0	(19,660)	<b>(19,660)</b>
Contingency	18,916	75,757	<b>94,673</b>
<b>TOTAL</b>	<b>\$94,580</b>	<b>\$378,787</b>	<b>\$473,367</b>

**Benefits**

The anticipated benefits to be realized from Alternative 4 are described below:

- Vendor Relations
  - Software Licensing – by procuring a series of approved, certified systems for the entire state, the state could obtain a lower price than if individual districts procured the software separately.

- Software Enhancements – a series of common systems could provide the state with increased leverage in encouraging the vendor to make system enhancements of benefit to Oregon schools.
- Infrastructure
  - Computer Hardware – regional data centers could provide a more efficient hardware environment than individual district data centers. Purchase and maintenance of computer hardware could be economically managed through a common technical environment.
  - Data Backup and Restoration – the data management and support for an emergency backup site could be managed through backup sites at other regional centers.
  - “Help Desk” Support – the operation of a common Help Desk could provide extended service hours through scheduling or by providing regional sites providing services to a larger region.
- Business Processes
  - Training – a series of common student and business systems could be more economical to support training of teachers, administrators and the public than individual applications.
  - Standardized Business Practices – a series of common student and business systems would provide the opportunity for implementing “best practices” in district operations using the same applications.
  - Common Reports – a series of common student and business systems would provide the opportunity for common reports for all districts using the applications.

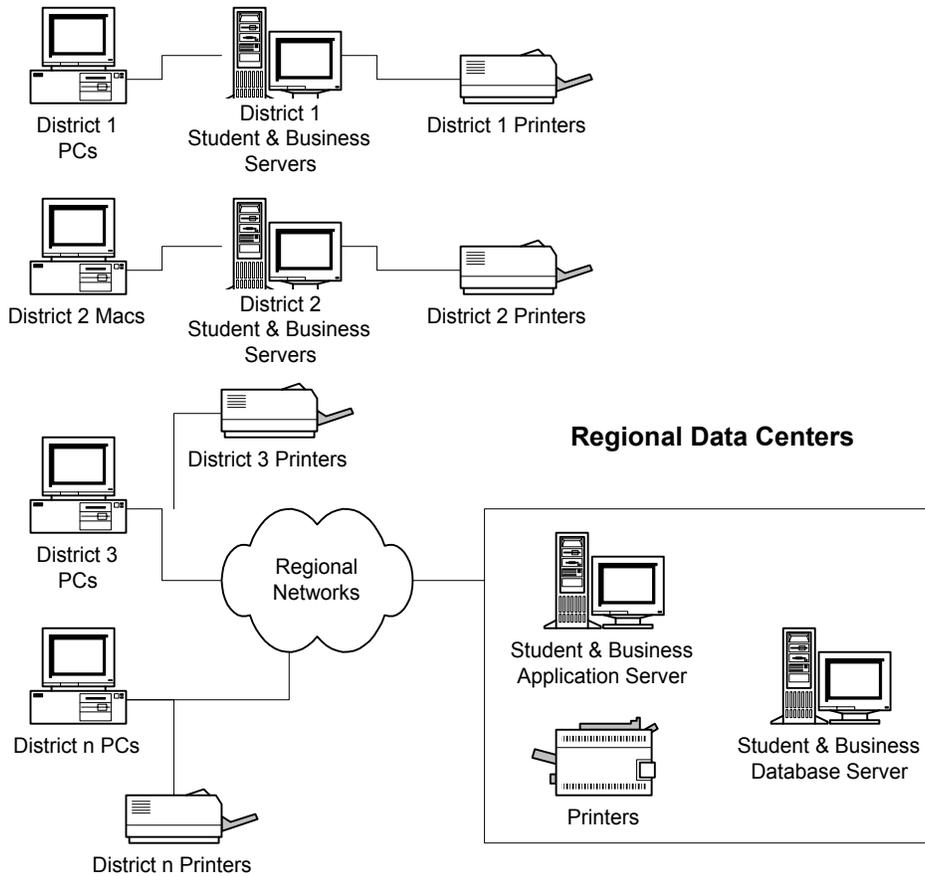
### *ALTERNATIVE 5 – “STATUS QUO”*

#### **Description**

This alternative would continue the current practice of individual districts determining how best to meet their needs – either by operating their own systems or contracting with ESDs to provide the service.

Exhibit III – 9 illustrates the operation of Alternative 5.

**Exhibit III – 9**  
**Alternative 5 – “Status Quo”**



**Advantages**

The following are the advantages for Alternative 5:

- Individual district requirements would be addressed at the local level.
- Requires only a local computing and communications infrastructure.
- Local district investments in technology would not be replaced.

**Disadvantages**

The following are the disadvantages for Alternative 5:

- The selection and management of applications will require local expertise.
- Control and security over data must be made at the local level.

- Local technical personnel must be more familiar with district issues and provide implementation and operations support.
- Consistency and quality of data will not be significantly improved.
- No economies of scale from operating common applications in many districts.

**Risk Analysis**

The following is the updated risk analysis for the Alternative 5 solution – “Status Quo.” Each alternative was evaluated based on a number of standard risk assessment categories. Each category of risk is evaluated to reflect the risk of the alternative from a perspective of the “state” (i.e., Oregon state government) and from the perspective of the “Districts” (i.e., School districts and ESDs):

**Alternative 5 – “Status Quo”**

The ratings noted from 1 (lowest risk) to 10 (highest risk) indicate the risk associated with this alternative.

**LEVEL OF RISK**

Low                      Medium                      High

**PROJECT MANAGEMENT RISK**

1. *Work Plan Complexity* – The more personnel involved and the more discrete work plan tasks required, the more difficult it is to manage the project and therefore the greater the risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

2. *Project Schedule* – The longer the implementation schedule, the more likely objectives, requirements, personnel, stakeholders and technology will change and therefore the greater the risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

**LEVEL OF RISK**

3. *Inter-organizational Resource Management* – The more the project requires resources and personnel of separate organizations to participate in and coordinate the project, the greater the risk.

**Low                      Medium                      High**

**State**     1---2---3---4---5---6---7---8---9---10

**District**   1---2---3---4---5---6---7---8---9---10

4. *Project Management Best Practices* – The more a project manager can rely upon the lessons learned by others on similar projects, the greater the probability of success. The more the project manager is breaking new ground on an innovative project, the greater the risk.

**State**     1---2---3---4---5---6---7---8---9---10

**District**   1---2---3---4---5---6---7---8---9---10

**State Average: 1.00  
State Assessment: Low Risk**

**District Average: 5.00  
District Assessment: Medium Risk**

**ECONOMIC RISK**

1. *Project Payback* – The shorter the payback, the lower the risk.

**State**     1---2---3---4---5---6---7---8---9---10

**District**   1---2---3---4---5---6---7---8---9---10

2. *Funding Certainty* – The more certain the funding levels and the fewer the number of funding sources, the greater chance of stable and adequate funding.

**State**     1---2---3---4---5---6---7---8---9---10

**District**   1---2---3---4---5---6---7---8---9---10

3. *Scope Clarity* – A project with a well-defined scope and measures for project success has a greater probability of success.

**State**     1---2---3---4---5---6---7---8---9---10

**District**   1---2---3---4---5---6---7---8---9---10

4. *Financial Estimates* – The narrower the range in project cost, benefit and lifecycle estimates, the greater the confidence you will achieve the expected results.

**State**     1---2---3---4---5---6---7---8---9---10

**District**   1---2---3---4---5---6---7---8---9---10

**State Average: 1.00  
State Assessment: Low Risk**

**District Average: 6.25  
District Assessment: Medium Risk**

**LEVEL OF RISK**

**OPERATIONAL RISK**

**Low                      Medium                      High**

1. *User Acceptance* – The stronger the users support the project, the less risk of failure.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

2. *Organizational Change Management* – The more a project influences changes to relationships within or across organizations or modifies existing policies, the greater the risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

3. *Business Practice Realignment* – The more a project necessitates major changes or realignment of standard operating procedures and practices in an organization, the greater the risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

4. *Management Control* – The greater the ability management has to exercise control over operations, the less risk. The greater the number of organizations involved, the less influence individual user organizations will have over operations.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

**State Average: 5.00**  
**State Assessment: Medium Risk**

**District Average: 3.50**  
**District Assessment: Low to Medium Risk**

**TECHNICAL RISK**

1. *Technology Maturity* – Tried and tested hardware, software and communication components carry lower risk. Projects that are novel or break new ground carry higher risk.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

2. *Technical Staff Requirements* – A project or resulting operation that requires a high degree of technical skills and experience will be a higher risk under taking than one that is not as sophisticated and can be handled by less specialized personnel.

**State**      1---2---3---4---5---6---7---8---9---10

**District**    1---2---3---4---5---6---7---8---9---10

**LEVEL OF RISK**

3. *Technology Trends* – The more consistent the technology architecture is with trends in technology development and deployment, the less likely it will become obsolete and the more easily it can be maintained and supported in operation.

**Low                      Medium                      High**

**State**      1--2--3--4--**5**--6--7--8--9--10

**District**      1--2--3--4--5--6--7--**8**--9--10

4. *Software/Requirements Fit* – The closer the fit between the software and the business requirements of the target organization(s), the less likely software or business processes will have to be modified—high-risk activities.

**State**      **1**--2--3--4--5--6--7--8--9--10

**District**      1--2--3--**4**--5--6--7--8--9--10

**State Average: 2.25**  
**State Assessment: Low Risk**

**District Average: 6.25**  
**District Assessment: Medium Risk**

**Total State Average: 4.00**  
**State Assessment: Low to Medium Risk**

**Total District Average: 5.25**  
**District Assessment: Medium Risk**

**Conclusion:** *Alternative 5 is rated a medium to high risk. Individual districts are responsible for their own projects, operations and technical environments. Therefore, from a statewide perspective the project and economic risks are diversified across the districts and ESDs. The operational and technology risks of the status quo are relatively significant.*

**Cost Analysis**

Exhibit III - 10 are the cost estimates for Alternative 5. See Appendix B for detailed cost analyses.

**Exhibit III – 10  
FY 2002-03 – FY 2011-12  
Alternative 5 Cost Estimates (\$000s)**

<b>Cost Category</b>	<b>Implementation</b>	<b>Operations &amp; Maintenance</b>	<b>TOTAL</b>
Staff (Internal & External)	\$76,105	\$205,242	<b>\$281,346</b>
CIM/CAM Requirements	2,400	0	<b>2,400</b>
Application Software	12,809	92,826	<b>105,635</b>
Hardware	0	0	<b>0</b>
Other	18,263	54,829	<b>73,092</b>
Quality Assurance	0	0	<b>0</b>
Phase-In Cost of Districts	0	(23,923)	<b>(23,923)</b>
Contingency	27,394	82,243	<b>109,637</b>
<b>TOTAL</b>	<b>\$136,971</b>	<b>\$411,216</b>	<b>\$548,187</b>

**Benefits**

The anticipated benefits to be realized from Alternative 5 are described below:

- Vendor Relations
  - Software Licensing – by procuring a series of approved, certified systems for the entire state, the state could obtain a lower price than if individual districts procured the software separately.
- Business Processes
  - Training – end users would not be required to learn a new application until their district chose to replace their existing systems.
  - Standardized Business Practices – districts would not be required to revise their existing business practices until they chose to replace their existing systems.
  - Reports – existing report formats and content would not need to be revised until the district chose to replace their existing systems.

## IV. RECOMMENDED ALTERNATIVE

### A. Evaluation Summary

This section provides information concerning the recommended alternative for the Data Integrity Assurance Feasibility Study.

We recommend that ODE proceed with Alternative 4 – “Certified” Systems at 12 Regional Data Centers. The selection and implementation of “certified” systems is a lower risk alternative for the state’s school districts than proceeding on their own without the benefit of common software or implementation and operations “best practices”. In addition, the implementation of a single common software system (Alternatives 1 and 2) eliminates local control, would require a very large state investment to build new data centers and assumes a mandated solution for the state’s school districts. Exhibit IV – 1 on the following page compares all five alternatives with respect to their advantages, disadvantages, risk and life-cycle cost.

## Exhibit IV – 1 Alternatives Comparison

ALTERNATIVE #1 COMMON SOFTWARE – MANDATED CENTRAL DATA CENTER	ALTERNATIVE #2 COMMON SOFTWARE 5 MANDATED REGIONAL DATA CENTERS	ALTERNATIVE #3 CERTIFIED SOFTWARE – CURRENT DATA CENTERS	ALTERNATIVE #4 CERTIFIED SOFTWARE – 12 VOLUNTARILY CONSOLIDATED DATA CENTERS	ALTERNATIVE #5 STATUS QUO – SOFTWARE AND DATA CENTERS
<i>CENTRAL PLANNING DRIVEN MODEL</i>	<i>REGIONAL PLANNING DRIVEN MODEL</i>	<i>STANDARDS AND MARKET DRIVEN MODEL</i>	<i>STANDARDS AND INCENTIVE DRIVEN MODEL</i>	<i>MARKET DRIVEN MODEL</i>
<ul style="list-style-type: none"> <li>• <b>Advantages:</b> <ul style="list-style-type: none"> <li>✓ Opportunity for efficient data center management.</li> <li>✓ Excellent Data Integrity Assurance (DIA) potential.</li> <li>✓ HR advantages of a large sophisticated IT operation.</li> <li>✓ Excellent security and control over data and services from a state government perspective.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Advantages:</b> <ul style="list-style-type: none"> <li>✓ More efficient management of data centers than status quo.</li> <li>✓ Very good DIA potential.</li> <li>✓ Some HR advantages of regional IT operation.</li> <li>✓ No changes in state IT facilities/networks and staffing.</li> <li>✓ Regionalization of support may be more responsive to local needs than centralized model.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Advantages:</b> <ul style="list-style-type: none"> <li>✓ Reduced number of software procurements and implementations.</li> <li>✓ Certification process provides opportunity for improved DIA.</li> <li>✓ Individual district requirements more easily accommodated than under Alternatives 1 &amp; 2.</li> <li>✓ No project driven changes in IT facilities, networks or staffing.</li> <li>✓ Local investment in IT infrastructure is retained.</li> <li>✓ No district or ESD reduction of IT personnel.</li> <li>✓ Standards govern and facilitate software procurement.</li> <li>✓ Does not require any major change to the existing governance structure.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Advantages:</b> <ul style="list-style-type: none"> <li>✓ Reduced number of software procurements and implementations.</li> <li>✓ Certification process and consolidation provides opportunity for improved DIA.</li> <li>✓ Individual district requirements more easily accommodated than under Alternatives 1 &amp; 2.</li> <li>✓ Opportunities for efficiencies through voluntary data center consolidation.</li> <li>✓ Local investment in IT infrastructure is retained although there will be transfers/consolidation.</li> <li>✓ Standards govern and facilitate software procurement.</li> <li>✓ Does not require any major change to the existing governance structure.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Advantages:</b> <ul style="list-style-type: none"> <li>✓ Individual district requirements more easily accommodated than under Alternatives 1 &amp; 2.</li> <li>✓ No project driven changes in IT facilities, networks or staffing.</li> <li>✓ Local district investment in IT infrastructure is retained.</li> <li>✓ No district or ESD reduction of IT personnel.</li> </ul> </li> </ul>

<p style="text-align: center;"><b>ALTERNATIVE #1</b> <b>COMMON SOFTWARE – MANDATED</b> <b>CENTRAL DATA CENTER</b></p> <p style="text-align: center;"><i>CENTRAL PLANNING DRIVEN</i> <i>MODEL</i></p>	<p style="text-align: center;"><b>ALTERNATIVE #2</b> <b>COMMON SOFTWARE</b> <b>5 MANDATED REGIONAL DATA</b> <b>CENTERS</b></p> <p style="text-align: center;"><i>REGIONAL PLANNING DRIVEN</i> <i>MODEL</i></p>	<p style="text-align: center;"><b>ALTERNATIVE #3</b> <b>CERTIFIED SOFTWARE –</b> <b>CURRENT DATA CENTERS</b></p> <p style="text-align: center;"><i>STANDARDS AND MARKET DRIVEN</i> <i>MODEL</i></p>	<p style="text-align: center;"><b>ALTERNATIVE #4</b> <b>CERTIFIED SOFTWARE – 12</b> <b>VOLUNTARILY</b> <b>CONSOLIDATED DATA CENTERS</b></p> <p style="text-align: center;"><i>STANDARDS AND INCENTIVE DRIVEN</i> <i>MODEL</i></p>	<p style="text-align: center;"><b>ALTERNATIVE #5</b> <b>STATUS QUO – SOFTWARE AND</b> <b>DATA CENTERS</b></p> <p style="text-align: center;"><i>MARKET DRIVEN</i> <i>MODEL</i></p>
<ul style="list-style-type: none"> <li>• <b>Disadvantages:</b> <ul style="list-style-type: none"> <li>✓ Centralization of support may result in less responsiveness to local needs.</li> <li>✓ Assumes new state level mandated ownership and governance of district IT operations.</li> <li>✓ Requires development of new central IT facility.</li> <li>✓ Requires development of new IT organization and staff.</li> <li>✓ Requires expanded WAN.</li> <li>✓ Individual district requirements may be “lost.”</li> <li>✓ Very indirect control over data and services from school district perspective.</li> <li>✓ Involves disbanding and reducing staff of district and ESD IT operations.</li> <li>✓ Long implementation schedule.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Disadvantages</b> <ul style="list-style-type: none"> <li>✓ Requires modification of current district and ESD governance structure.</li> <li>✓ Requires modification and/or building new regional IT (state mandated) organizations and facilities.</li> <li>✓ Requires supplementing existing ESD and district IT staff with specialists.</li> <li>✓ Requires a robust regional WAN.</li> <li>✓ Individual district requirements may not be easily accommodated.</li> <li>✓ Indirect control over data and services from school district perspective.</li> <li>✓ Involves disbanding, reorganizing and reducing staff of some ESD and district IT organizations.</li> <li>✓ Long implementation schedule.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Disadvantages</b> <ul style="list-style-type: none"> <li>✓ Continues to require local resources to staff and manage existing data centers.</li> <li>✓ ODE and districts must agree with certification rules and process.</li> <li>✓ ODE and districts must provide staff to participate in certification and testing process.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Disadvantages</b> <ul style="list-style-type: none"> <li>✓ Relies on voluntary consolidation of data centers.</li> <li>✓ ODEs and districts must agree with certification rules and process.</li> <li>✓ ODE and districts must provide staff to participate in certification and testing process.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Disadvantages</b> <ul style="list-style-type: none"> <li>✓ Poor DIA.</li> <li>✓ No economies of scale of consolidated data centers or improvement in software procurement process.</li> <li>✓ Continues to require local resources to staff and manage existing data centers as well as software procurement, implementation and application support.</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Cost</b> <ul style="list-style-type: none"> <li>✓ Requires 10-year life-cycle cost of \$686 million.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Cost</b> <ul style="list-style-type: none"> <li>✓ Requires 10-year life-cycle cost of \$692 million.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Cost:</b> <ul style="list-style-type: none"> <li>✓ Requires 10-year life-cycle cost of \$537 million.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Cost:</b> <ul style="list-style-type: none"> <li>✓ Requires 10-year life-cycle cost of \$473 million.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Cost</b> <ul style="list-style-type: none"> <li>✓ Requires 10-year life-cycle cost of \$548 million.</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Risk Assessment:</b> <ul style="list-style-type: none"> <li>✓ State – Very High (9.31)</li> <li>✓ District – Medium (5.69)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Risk Assessment:</b> <ul style="list-style-type: none"> <li>✓ State – Medium to High (7.38)</li> <li>✓ District – Medium (5.13)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Risk Assessment:</b> <ul style="list-style-type: none"> <li>✓ State: Low to Medium (3.13)</li> <li>✓ District: Low to Medium (3.19)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Risk Assessment:</b> <ul style="list-style-type: none"> <li>✓ State: Low (2.38)</li> <li>✓ District: Low to Medium (4.31)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Risk Assessment:</b> <ul style="list-style-type: none"> <li>✓ State: Low to Medium (4.00)</li> <li>✓ District: Medium (5.25)</li> </ul> </li> </ul>

**B. Comparison of Objectives and Alternatives**

Exhibit IV – 2 illustrates how well each of the alternatives meets the system objectives as described in *Section II, Requirements*.

**Exhibit IV – 2  
Comparison of System Objectives and Alternatives**

SYSTEM OBJECTIVES	Alternatives				
	1	2	3	4	5
<b><i>Technical</i></b>					
The system’s technical architecture should adhere to existing district, state and ODE technology standards, directions and infrastructures and should integrate with other district and ODE systems.	✓	✓	✓	✓	
The system should be designed to operate with existing and planned communications infrastructures.	✓	✓	✓	✓	✓
The system’s design should be flexible so that software modifications, database changes and reporting requirements can be made efficiently and cost effectively.	✓	✓	✓	✓	
The system should be scalable to accommodate the needs of all Oregon school districts.	✓	✓	✓	✓	✓
<b><i>Data</i></b>					
The system should provide accurate, timely results of student and business operations to schools, students, the state and the public. Information on the results of business/school operations and student activity should be available within 24 hours after the source transaction was recorded in the system.	✓	✓	✓	✓	✓
Security of student data must be maintained. Individual student data must be restricted to the student’s parent/guardian, school district, and ODE authorized personnel.	✓	✓	✓	✓	✓
<b><i>Specific Uses</i></b>					
Access to the systems must be provided to each school for the purposes of local operations.	✓	✓	✓	✓	✓
Reduce the amount of manual data collection, processing and reporting.	✓	✓	✓	✓	
Provide students with timely and accurate information on fulfilling the requirements for the Certificate of Initial Mastery.	✓	✓	✓	✓	✓
Provide classroom-level data for decision-making and instructional improvement.	✓	✓	✓	✓	✓

SYSTEM OBJECTIVES	Alternatives				
	1	2	3	4	5
<b><i>System Reports and Outputs</i></b>	✓	✓	✓	✓	✓
Reports must be produced for each school district and the state.					
Reports should be available for a wide audience via the Internet with appropriate security.	✓	✓	✓	✓	✓
School districts should have the ability to generate their own custom reports.			✓	✓	✓
<b><i>System Interfaces</i></b>					
The systems must be able to interface with specialized district operational systems (e.g., transportation, food service, student accounting, etc.) and ODE systems (e.g., Assessment Database, DBI, Oregon Student Record, Enterprise Database, Special Education Database, Migrant Education Database, etc.) and other state systems with shared missions and goals.	✓	✓	✓	✓	
<b><i>Training and Support</i></b>					
Ongoing on-site training to the school districts on how to use the systems should be provided.	✓	✓	✓	✓	✓
ODE technical and user staff will also require training in the systems.	✓	✓	✓	✓	✓

### C. Cost Analysis

It is projected that Alternative 4 will result in a cost avoidance of approximately \$75 million over the projected project life (FY 2002-03 to 2011-12). The cost avoidance is calculated as the savings of Alternative 4 over Alternative 5, which is the Status Quo. See Appendix B for detailed cost analyses of all alternatives. The following is a summary chart comparing the incremental costs for all alternatives.

**Exhibit IV – 3**  
**FY 2002-03 – FY 2011-12**  
**Incremental Investment**

Cost Category	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Staff (Internal & External)	\$346,259	\$350,302	\$5,114	\$4,331	\$0
CIM/CAM Requirements	2,400	2,400	2,400	2,400	2,400
Oregon Student Record System	600	600	600	600	600
Application Software	14,656	14,656	27,262	10,907	0
Hardware	2,740	2,603	0	0	0
Quality Assurance	9,234	9,301	0	0	0
<b>TOTAL</b>	<b>\$375,289</b>	<b>\$379,862</b>	<b>\$35,376</b>	<b>\$18,238</b>	<b>\$3,000</b>

To achieve the projected cost avoidance, an incremental investment of approximately \$18.2 million will be required over the next ten years by the state. This amount includes the following items:

- *Staff (Internal & External)* – the cost of staffing the *Certification Process*.
- *CIM/CAM Requirements* – the estimated cost in 2003-04 to 2004-05 to develop detailed requirements for the CIM/CAM module.
- *Oregon Student Records System* – the estimated cost in 2003-04 to develop the system.
- *Application Software* – the cost of acquiring the certified software and the cost of annual maintenance of the software are included as a state incremental cost. We recommend the state negotiate, through a competitive procurement, a statewide price for the certified software. We believe the state will obtain a significantly reduced price over individual school districts negotiating with vendors separately.

Due to the current lack of detailed requirements for CIM and CAM, we recommend that ODE initiate a subproject to develop these requirements in sufficient detail that “certified” vendors of student systems may incorporate this functionality into their applications. Cost estimates for this effort are included in the detailed cost analyses in Appendix B.

## **V. PROJECT PLAN**

A work plan has been prepared for Alternative 4 – “Certified” Systems at 12 Regional Data Centers. The work plan is included in Appendix C.

**APPENDIX A  
SURVEY RESULTS**

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**APPENDIX B**  
**DETAILED COST ANALYSES OF ALTERNATIVES**

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OREGON DEPARTMENT OF EDUCATION  
DATA INTEGRITY ASSURANCE  
FEASIBILITY STUDY

COST ASSUMPTIONS

The following assumptions are used in developing the cost analyses for each alternative.

All Alternatives

- *Inflation* – an annual inflation rate of 1.75% is used to project future costs.
- *Expected Life* – all alternatives are forecasted through the 2011-2012 fiscal year.
- *CIM/CAM Requirements* – all alternatives include \$2.4 million in 2002-03 to 2003-04 for ODE to develop detailed requirements for CIM/CAM in sufficient detail that software vendors may either modify their existing modules or develop additional modules to meet these requirements.

Alternative 1

- *Travel Expenses* – an estimate of 15% of the cost of consultants and system integrators hourly rates is included for travel expenses.
- *Applications Support Staff* – an average of 6 support staff for every 100 concurrent users is used based on a recent Gartner Group study of Enterprise Resource Planning (ERP) systems.<sup>1</sup> Applications support includes the following support functions: software support, business process support, new functionality and upgrades, interface programming support, database design and maintenance, training and documentation, and security profiles.
- *Data Center Staff* – includes operators and “Help” desk staff.
- *Application Software* – includes an estimate of \$2.5 million each for the student and business systems based on the recent experiences of North Carolina for a student system and ERP procurements.
- *Development/Test Hardware Platform* – assumes a Sun V880 server configured with 4 – 750 MHz UltraSPARC III processors, 8 GB memory, and 6 – 36 GB disk drives. Retail price of \$49,995 is discounted 20% for government procurement.
- *Production Hardware Platform* – assumes a Sun Enterprise 10000 server configured with 20 – 466 MHz UltraSPARC II processors, 20 GB memory, and 2 – 72 GB disk arrays. Retail price of \$927,210 is discounted 20% for government procurement.
- *Data Center Printer* – assumes an IBM Infoprint 2000 MS1 printer rated at 110 pages per minute with 8,000-sheet paper capacity. Retail price of \$210,000 is discounted 20% for government procurement.
- *Telecommunications* – assumes the existing state network is adequate to support the applications. No additional costs are included in the estimates.

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<sup>1</sup> “Key Metrics for Supporting Enterprise Applications.” Gartner Group. Tactical Guidelines, TG-06-3007. November 13, 1998.

- *Facilities* – assumes the existing state data center facilities can accommodate the servers. No additional costs are included in the estimates.
- *System Implementation* – assumes an initial pilot in 2003-04 for both the student and business system with the remaining districts implemented in the following three years.
- *Concurrent Users* – an average of 1 concurrent user for every 6 named users is used based on a recent Gartner Group study of Enterprise Resource Planning (ERP) systems. Based on information from ODE, 45,000 named users were projected for the student system. Based on information from the Steering Committee, 991 concurrent users were projected for the business system.
- *Consultant 2002-03* – a third-party independent consultant is included in 2002-03 to assist ODE and the districts in defining requirements, and procuring application software and integration services for both the student and business systems.
- *Rates* – existing ODE positions are used for state/district staff. The positions include salary, general administrative overhead, PERS (both employer and employee), FICA, SS-HI and insurance benefits. Consultant/system integrator rates are estimated based on recent large ERP project rates in both the public and private sector.
- *Phase-In Costs* – the costs of operating the current student and business systems are phased out over the planned implementation period for the new systems. Costs of operating the current systems during the phase-in of new systems are additional.

### **Alternative 2**

- *Travel Expenses* – an estimate of 15% of the cost of consultants and system integrators hourly rates is included for travel expenses.
- *Applications Support Staff* – an average of support staff for every 100 concurrent users is used based on a recent Gartner Group study of Enterprise Resource Planning (ERP) systems.<sup>1</sup> Applications support includes the following support functions: software support, business process support, new functionality and upgrades, interface programming support, database design and maintenance, training and documentation, and security profiles.
- *Data Center Staff* – includes operators and “Help” desk staff.
- *Application Software* – includes an estimate of \$2.5 million each for the student and business systems based on the recent experiences of North Carolina for a student system and ERP procurements.
- *Development/Test Hardware Platform* – assumes a Sun V880 server configured with 4 – 750 MHz UltraSPARC III processors, 8 GB memory, and 6 – 36 GB disk drives. Retail price of \$49,995 is discounted 20% for government procurement.
- *Production Hardware Platform* – assumes five (5) Sun Enterprise 6500 servers located in five (5) regional data centers. Each server is configured with 8 – 464 MHz UltraSPARC II processors, and 8 GB memory, disk arrays are not included. Retail price of \$276,200 is discounted 20% for government procurement.
- *Data Center Printers* – assumes two (2) Xerox Docuprint 4525 printers per regional center. Each printer is rated at 45 pages per minute. Estimated price is \$3,000 per printer.

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<sup>1</sup> “Key Metrics for Supporting Enterprise Applications.” Gartner Group. Tactical Guidelines, TG-06-3007. November 13, 1998.

- *Telecommunications* – assumes the existing state network is adequate to support the applications. No additional costs are included in the estimates.
- *Facilities* – assumes the existing state data center facilities can accommodate the servers. No additional costs are included in the estimates.
- *System Implementation* – assumes an initial pilot in 2003-04 for both the student and business system with the remaining districts implemented in the following three years.
- *Concurrent Users* – an average of 1 concurrent user for every 6 named users is used based on a recent Gartner Group study of Enterprise Resource Planning (ERP) systems. Based on information from ODE, 45,000 named users were projected for the student system. Based on information from the Steering Committee, 991 concurrent users were projected for the business system.
- *Consultant 2002-03* – a third-party independent consultant is included in 2002-03 to assist ODE and the districts in defining requirements, and procuring application software and integration services for both the student and business systems.
- *Rates* – existing ODE positions are used for state/district staff. The positions include salary, general administrative overhead, PERS (both employer and employee), FICA, SS-HI and insurance benefits. Consultant/system integrator rates are estimated based on recent large ERP project rates in both the public and private sector.
- *Phase-In Costs* – the costs of operating the current student and business systems are phased out over the planned implementation period for the new systems. Costs of operating the current systems during the phase-in of new systems are additional.

### Alternative 3

- *2001 Cost Detail* – summarized results from the 2001 survey were used to determine a cost per ADM for the following categories of costs: software maintenance, information technology (IT) support and ESD charges. Costs for “non-IT support” were NOT used in developing the total cost of operations in order to have comparable costs with Alternatives 1 and 2. Costs per ADM were extended using adjusted ADM figures so that software maintenance and IT support did not include districts with manual systems.
- *System Replacements* – assumes 25% of the districts will replace their existing business systems by 2011-12. Student system replacement is based on the following information provided by ODE: Large districts – 100% (12 districts), Medium districts – 80% (63 districts), and Small districts – 70% (74 districts).
- *Software License Costs* – assumes a 10% discount from Alternative 4 costs based on a statewide, “certified” procurement.
- *Computer Hardware and Telecommunications* – no additional computer hardware or telecommunications costs are included. The existing infrastructure is assumed adequate.
- *District Staff Costs* – ODE provided the following staff cost estimates: Large and Medium districts are estimated using the current state rate for an Information Systems Specialist 7, which includes salary costs plus 40% overhead; Small districts are estimated at \$45,000 plus 40% overhead (\$63,000) in 2001.
- *State Rates* – existing ODE positions are used for state/district staff. The positions include salary, general administrative overhead, PERS (both employer and employee), FICA, SS-HI and insurance benefits.

- *Certification Consultant* – assumes an external, independent consultant is used in 2002-2004 to assist the state staff in developing a methodology for certifying the systems, conducting the initial certifications, and then performing a program audit function through 2011-12. Consultant rates are estimated based on recent projects in both the public and private sector.
- *Phase-In Reduction for New Software Maintenance* – the application software maintenance costs of operating the current student and business systems are phased out over the planned implementation period for the new systems.

#### **Alternative 4**

- *2001 Cost Detail* – summarized results from the 2001 survey were used to determine a cost per ADM for the following categories of costs: software maintenance, information technology (IT) support and ESD charges. Costs for “non-IT support” were NOT used in developing the total cost of operations in order to have comparable costs with Alternatives 1 and 2. Costs per ADM were extended using adjusted ADM figures so that software maintenance and IT support did not include districts with manual systems.
- *System Replacements* – assumes 25% of the districts will replace their existing business systems by 2011-12. Student system replacement is based on the following information provided by ODE: Large districts - 100% (12 districts), Medium districts – 80% (63 districts), and Small districts – 70% (74 districts).
- *Software License Costs* – assumes a maximum of \$2.5 million each for the student and business systems based on the assumption of a statewide procurement of “certified” systems.
- *Computer Hardware and Telecommunications* – no additional computer hardware or telecommunications costs are included. The existing infrastructure is assumed to be adequate.
- *District Staff Costs* – ODE provided the following staff cost estimates: Large and Medium districts are estimated using the current state rate for an Information Systems Specialist 7 which includes salary costs plus 40% overhead; Small districts are estimated at \$45,000 plus 40% overhead (\$63,000) in 2001.
- *State Rates* – existing ODE positions are used for state/district staff. The positions include salary, general administrative overhead, PERS (both employer and employee), FICA, SS-HI and insurance benefits.
- *Project Start* – assumes the project begins in January 2004.
- *Certification Consultant* – assumes an external, independent consultant is used in 2003-2005 to assist the state staff in developing a methodology for certifying the systems, conducting the initial certifications, and then performing a program audit function through 2011-12. Consultant rates are estimated based on recent projects in both the public and private sector.
- *Phase-In Reduction for New Software Maintenance* – the application software maintenance costs of operating the current student and business systems are phased out over the planned implementation period for the new systems.

#### **Alternative 5**

- *2001 Cost Detail* – summarized results from the 2001 survey were used to determine a cost per ADM for the following categories of costs: software maintenance, information

technology (IT) support and ESD charges. Costs for “non-IT support” were NOT used in developing the total cost of operations in order to have comparable costs with Alternatives 1 and 2. Costs per ADM were extended using adjusted ADM figures so that software maintenance and IT support did not include districts with manual systems.

- *System Replacements* – assumes 25% of the districts will replace their existing student and business systems by 2011-12.
- *Application Software License Costs* – assumes a cost of \$20,000 for small districts, \$75,000 for medium districts, and \$250,000 for large districts.
- *Computer Hardware and Telecommunications* – no additional computer hardware or telecommunications costs are included.
- *District Staff Costs* – ODE provided the following staff cost estimates: Large and Medium districts are estimated using the current state rate for an Information Systems Specialist 7 which includes salary costs plus 40% overhead; small districts are estimated at \$45,000 plus 40% overhead (\$63,000) in 2001.
- *Phase-In Reduction for New Software Maintenance* – the application software maintenance costs of operating the current student and business systems are phased out over the planned implementation period for the new systems.

**APPENDIX C  
PROJECT WORK PLAN**

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