Electronic Time Keeping and Scheduling
S A N M A T E O C O U N T Y

Investment Analysis Report

August 19, 2003

Office of County Controller
Tom Huening, Controller

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I. Summary

The purpose of this analysis is to evaluate San Mateo County's (the County) current manual time keeping processes and costs, research the potential use of an electronic time entry system, and prepare a cost-benefit and investment analysis of an electronic time system implementation.

Current manual processing of paper time cards costs the County approximately $1,900,000 per year. These costs include: payroll overpayments due to miscoded time; distribution of time cards; review, approval, correction and processing of time cards; and processing of retroactive adjustments which result from early submission of time cards.

Costs are significant due to the high annual volume of: time cards (150,000), earning code transactions (485,000), relevant retroactive adjustments (10,000), and individual daily time entries (4 million). Time keeping can be complex with many opportunities for errors especially if manual, paper-intensive processes are utilized. Implementing an electronic system will save the County an estimated $1M of the $1.9M in annual payroll and processing costs. These projected payroll savings and productivity efficiencies will result from eliminating, automating and streamlining current manual processes.

About $548,000 of the estimated annual saving is attributed to productivity efficiencies, while an additional $513,000, using conservative assumptions, is attributed to reduced payroll costs. Payroll savings will result from reducing time entry errors, and improved labor scheduling and monitoring capabilities. The estimated payroll savings rate equals approximately 0.15%, or less than 1/6th of 1%, of the County's annual gross payroll costs of $342,000,000. Estimated annual payroll savings would be eight times higher ($4,100,000) if the industry standard benchmark savings rate of 1.2% of total payroll costs, for organizations that change from manual to electronic time systems, were used. Our analysis, however, uses the more conservative estimates.

Per best-to-worst-case cost-benefit analyses, the following summarizes the median case analysis:

5-Year Present Value Analysis:	
Estimated Savings	$4,813,000
Implementation and Operation Costs	2,543,000
Net Five Year Savings	$2,270,000

Implementing an automated time system will result in on-going *annual **net** savings* of approximately $861,000, based on the median case cost-benefit estimates. This includes $200,000 in additional annual software and system maintenance costs. Based on projected benefits in reduced labor costs and increased productivity, an initial investment of up to $1,539,000 will pay for itself in about 2.4 years.

We recommend that the County approve the selection and implementation of an electronic time keeping and scheduling system, and allocate $1,539,000 for Phase 1 and 2 project activities.

Phase 1 (Business Requirements Analysis, RFP Preparation and Issuance, and System and Implementer Selection)	174,000
Phase 2 (Software, Hardware, Implementation and Training)	1,365,000
Total Implementation Costs	$1,539,000

II. Analysis

Business Requirements

Time keeping and labor cost monitoring requirements of County departments vary significantly from one department to another.

24/7 operations, like the San Mateo Medical Center and Sheriff's Office, have unique labor scheduling requirements and utilize various differential/premium earning pay codes to compensate their employees. Determining the proper use of differential pay codes is at times difficult, even for experienced employees, supervisors and payroll clerks. This is especially true if the pay period includes a holiday and the employee is on an alternative work schedule.

As many as 3 or 4 different earnings codes may apply to a single hour of work. Overall, the County currently uses close to 70 different earning pay codes.

Departments that operate on a 24/7 schedule and track where their employees spend time require sophisticated time keeping processes/systems. Conversely, departments whose employees work the same weekly schedule, Monday through Friday, and do not track their time by job/activity type require less complex time keeping and reporting capabilities. Based on an analysis of one recent pay period's time allocation data, the County used 653 different job/activity costing codes out of several thousand active "job orgs" (costing codes).

Departments that charge internal or external parties for services provided must track their labor costs. Some departments, including the Human Services Agency, must track their labor costs in order for the County to file cost reimbursement claims for providing state-mandated services. Both the Departments of Public Works (DPW) and Information Services (ISD) currently use their own time keeping systems because of their unique activity costing and billing requirements. The employees' time data, required for payroll purposes, is passed electronically from their time keeping/costing system to the County's PIPS (payroll) system for processing.

Department managers also need to plan, create, monitor and adjust employee work schedules. The system should tie employee scheduling, productivity reporting and utilization management. Electronic scheduling capabilities will help managers, with challenging scheduling requirements (workload demands change frequently, 24/7 operations), to more easily develop effective work schedules that meet operational demands while minimizing the need for overtime, extra-help and other special pay. Online access to planned schedules (current and long-term) and real-time actual labor utilization information, by employee and work unit, will enable managers to better balance workers' vacation, sick leave, training, and other time off with available personnel. Utilizing an electronic time entry system along with an integrated scheduling module will: 1) lower labor costs by reducing potential over-staffing and overtime associated with under-staffing, 2) improve productivity by automating manual scheduling processes, 3) improve management decision-making by providing accurate and current labor data, and 4) improve employee satisfaction by increasing scheduling flexibility and visibility.

A new automated system should provide the flexibility to define employee-specific schedules as well as template work schedules, which can easily be assigned to employees. Using work schedules that are electronically integrated with an automated time system will allow managers and employees, who work the same schedule every week, to use "exception reporting". With

exception reporting, employees only need to enter data in the system when they do not work their regular schedule (when they use vacation or time other than regular pay), thus, reducing the amount of effort required to input and review time information.

The two main time information reporting requirements are; 1) monitoring capabilities required by managers to manage labor and approve time, 2) and time reporting capabilities required by payroll personnel to issue payments. Labor management reporting requirements include: employee work schedules, comparisons of scheduled versus actual use of labor, employee time split information, reporting of hours/costs by employee and program, and historical labor utilization data for trending analysis. Payroll processing reporting requirements include: confirmation of approved time, summary of employee/department time information, data exception/edit/error reports, and employees' historical time information.

System Must-Haves

Based on this initial analysis, to realize expected cost reductions an electronic time system must have the following capabilities:

- **Browser-based** user interface to ensure operability with legacy systems
- **Automated validation** of **accrued leave balances** (sick leave, vacation, etc.) at the time an employee enters data to reduce errors
- Automated validation of **differential/premium pay** codes consistent with employee's classification, job assignment, day of week, and time of day worked to reduce errors
- Allows for **object-oriented rules,** defined by departments, to increase system's flexibility
- **Job/activity costing** functionality, with automated job code validation, to track hours/FTEs used and reduce errors
- Electronic **planning, monitoring and modification** of staff **work schedules** to reduce potential over-staffing and overtime associated with under-staffing.
- **Exception reporting capabilities**, when applicable, **to reduce effort required** to enter and review time entries
- Electronic **access to timely** standard and ad-hoc **reports** (hours by employee; labor costs/FTEs by program; use of overtime, extra-help, differential, and contractor labor) to provide managers with information for labor utilization decision-making
- Complete **audit trail** of when and who entered time or made changes in system
- System data **interfaces with PIPS** (payroll system)**, IFAS** (accounting system) **and other** systems (badge-swipe readers, phone dial-in applications, etc.)
- Flexible **hierarchical approval and review** of time information entered by employees to streamline supervisors and payroll personnel's review activities

A complete analysis of County-wide business needs will be performed in Phase 1.

Business Processes

See *Appendix B – Paper Processes (As-Is)* for a visual representation of how the County currently processes paper time cards. See *Appendix C – Electronic Processes (To-Be)* for a diagram of how the County would collect and process employees' time information using an electronic system. A comparison of the As-Is to the potential To-Be diagrams shows the elimination of several manual processes and automation or streamlining of other processes.

How would this electronic time keeping system work? Most employees, those with access to a County network/intranet connected PC, would use an online system to enter their time. Employees who can use exception reporting only need to enter data when they do not work their regular schedule (when using vacation or time other than regular pay). This will reduce the effort required to input and review time information. Some employees, with no readily available access to a County PC, may use a badge-swipe reader, remote access method, or other "collection application" to record/enter their time. Given these various available tools, departments can define how their employees will enter their time data. The system will have the flexibility to address early arrivals to work relative to the employee's scheduled time. The system would check the validity of the time entered, at the time of entry, to reduce errors. These collection applications would be linked electronically to the online system.

Supervisors/managers would review their employees' time via the online system. In addition, they could access daily time and labor utilization reports from it to plan, monitor, and adjust employee work schedules. Once supervisors have electronically approved the employees' time information, department payroll clerks would review and release the data to the Controller's Payroll Division. The Payroll Division would review and process the data via the PIPS payroll system to issue payments.

Benefits

Benefits to be achieved from using an electronic time keeping and scheduling system include: decrease in reporting and processing errors, reduction in processing costs due to increased automation, and decrease in labor costs resulting from improved scheduling and monitoring capabilities.

Cost savings from reduced overpayments, due to fewer payroll errors, will result from: automating data entry, automating cross-addition of hours by earnings type, and by more accurately and consistently applying payroll earning codes/rules. Automated time entry systems that use cardkey readers reduce inflated payroll costs by validating scheduled work hours/locations with recorded work hours/locations. Payroll errors that can be eliminated if an automated system is used include: 1) cross-addition of hours by earning type errors; 2) misuse, misreading or miskeying of similar looking earning codes, 3) use of differential/premium pay codes (rest period, weekend, nightshift) when ineligible or when using non-working earning codes, and 4) accidental approval of inaccurate time due to the difficulty in reviewing handwritten time cards. For example, misapplication of similar looking earning code 066 (paid at time and one-half) instead of 006 (paid at regular pay) or misusing 075 (overtime plus night-shift premium) instead of 015 (premium pay) will result in overpayments. Larger organizations with multiple sites, complex pay rules, and 24/7 operations will generally realize greater savings from reducing these types of errors.

An automated time system will eliminate the current need for employees to estimate their time (which may include up to 4 work days). Currently, paper time cards must be turned in early to

allow supervisors and payroll personnel sufficient time to review, approve, correct and process them. This allows the County to issue payroll payments 6 days after the end of the pay period. Furthermore, eliminating the need to estimate time will also eliminate the need to process retroactive adjustments to correct prior estimated time information.

Automated system validation of employees' proper use of leave hours and valid costing codes will also reduce time reporting errors. Supervisors' and payroll clerks' review will be simplified by reducing errors due to improper or invalid use of codes or leave hours. Questions/errors resulting from illegible handwriting will also be eliminated.

An electronic system will allow managers to plan and create staffing work schedules. It will also provide managers with timely access to labor/FTE utilization information (by program, activity, and employee). This will help to manage and reduce labor costs.

The 5-year present value of estimated savings, using the median case cost-benefit amounts, are summarized in the table below. Refer to *Appendix A – Estimated Costs and Savings* for further details. Additional cost savings related to the reduction of paper storage costs are not included in this analysis. An automated system will also reduce the cost of retrieving historical information by allowing electronic access to it.

Estimated Savings	
Payroll and Processing Savings	5-Year Present Value Amount
Reduce payroll error and cost inflation – H	$1,551,000
Reduce labor costs due to improved monitoring and scheduling – H	776,000
Reduce department's retroactive adjustments processing time – H & S	203,000
Reduce department's supervisor time card review time – S	612,000
Reduce payroll division time card printing costs – H	27,000
Reduce payroll division time card review time – H & S	95,000
Reduce payroll division time card data entry time – H	172,000
Reduce payroll division retroactive adjustments processing time – H & S	51,000
Reduce department's time card distribution time – H & S	408,000
Reduce department's payroll clerk time card processing time – H & S	918,000
Total Savings (5-yr. Present value) H = hard savings, S = soft savings, H & S = 50% hard + 50% soft	**$4,813,000**

Estimated amounts were categorized into "hard dollar" savings, which are expected to result in actual cost savings, and "soft dollar" savings which are expected to improve productivity and free-up time to perform other activities (enables County to do more with existing personnel). Some savings consist of both types. The total 5-year present value of $4.8M consists of approximately $3.4M (71%) in hard dollar savings and $1.4M (29%) in soft dollar savings. Our analysis conservatively assumes that only 50% of the annual cost savings will be realized during the first year of implementation (see Appendix A).

Costs

Obtaining formal cost estimates for system software, hardware, implementation, and maintenance costs was outside the scope of this analysis. Cost amounts used in this analysis are based on preliminary research, and informal discussions and estimates. For example, estimated hardware costs assume the use of the County's current infrastructure (network/intranet, PCs), except for the purchase of 200 cardkey readers to be used by employees without access to a County PC (no costs are included for new PCs, phone dial-in system, etc). Validation of more precise cost

information requires that the County first define its business and technical requirements in detail. This will provide system vendors and consultants the necessary information they need to provide better estimates on the costs to meet the County's specific needs.

For purposes of performing the return-on-investment and payback period analyses, different scenarios of estimated costs and savings amounts were used (see Investment Payback Period Analyses matrix on page 7). Refer to the following table for a summary of the median case estimated costs.

Estimated Costs	
Initial and Recurring Costs	Initial Outlays and 5-Yr. Present Value of Recurring Costs
Initial Outlay Costs:	
Business Requirements Definition Services	45,000
Request for Proposal (RFP) Creation Services	45,000
System Vendor Selection Services	84,000
Software Costs	470,000
Hardware Costs	350,000
Hardware/Software Install Services	100,000
Implementation/Project Mgmt Services	345,000
Training Services	100,000
Total Initial Costs	**$1,539,000**
Recurring Costs (5-Year Present Value)	
Software Fee/Maintenance Costs	$502,000
ISD Maintenance/Technical Services	251,000
Controller's Maintenance/Technical Services	251,000
Total Recurring Costs	**$1,004,000**
Total Costs (5-yr. present value)	**$2,543,000**

Risks

While the investment payback period ranges from 1.4 to 5.4 years, using best-to-worst case scenarios, the median case payback period for this project is estimated to be 2.4 years (see page 7). The probability of the worst case payback period of 5 years occurring is minimal. A recent in-depth return-on-investment analysis, conducted by Nucleus Research of 25 installed Kronos (one of several time system vendors) users, found that organizations achieved payback in an average of **five (5) months**. (We have used more conservative estimates in our analysis.)

Other potential risks include those associated with any technology project: excessive customization of a packaged software system, inadequate user training, resistance to change, poor implementation, and use of immature technologies. These potential risks can be reduced by effectively defining the County's business requirements, effectively conducting a software system and system implementer selection process, and by allocating sufficient resources. It is important to recognize and address the typical risks that are associated with any investment in technology.

Discussing the County's potential plan to implement an electronic time keeping and scheduling system with the employees' unions is another important consideration. Specifically, use of "electronic signatures" must be agreed to. The County must meet and confer with union representatives to discuss electronic timecard submission and approval. Many private, public and non-profit organizations are utilizing automated systems in place of paper time cards. They include: Santa Clara County, Sonoma County, Orange County, San Diego County, Stanford

University, and many other local government and healthcare organizations. We would expect a positive outcome for the County as well.

Payback Analyses

The matrix below shows different investment payback periods based on best, median, and worst case scenarios of estimated benefits and costs.

Investment Payback Period Analyses Matrix			**Estimated Initial and Recurring Costs**		
			-33% (Best-Case)	Median-Case	+33% (Worst-Case)
			$1.0M = initial $133K = recurring (5-yr. present value = $1.7M	$1.5M = initial $200K = recurring (5-yr. present value = $2.5M)	$2.0M = initial $267K = recurring (5-yr. present value = $3.4M)
Estimated Annual Savings	-33% (Worst-Case)	$707K (5-yr. present value = $3.2M)	2.4 Years	3.7 Years	5.4 Years
	Median-Case	$1061K (5-yr. present value = $4.8M)	1.7 Year	2.4 Years	3.3 Years
	+33% (Best-Case)	$1.41M (5-yr. present value = $6.4M)	1.4 Year	1.9 Year	2.4 Years

III. Recommendation

We recommend that the County Manager's Office and Board of Supervisors approve this investment and allocate resources to implement an electronic time keeping and scheduling system. The total funding required is estimated at $1,539,000.

Phase 1 project costs include defining business requirements, creating a Request for Proposal, and assisting County stakeholders to select the most appropriate software system and qualified system implementers. Phase 2 costs include purchasing and installing software and hardware, implementing the electronic time system, and providing training to users/employees.

Utilizing an electronic time keeping and scheduling system will eliminate or automate various current manual processes. It will result in fewer time reporting and processing errors, more efficient processing of employees' time information, and improved labor scheduling and monitoring abilities.

IV. Appendices

Appendix A - Estimated Costs and Savings

		Initial Outlay	Year 1	Year 2	Year 3	Year 4	Year 5	Total
MEDIAN-CASE ESTIMATED COSTS:								
Initial Outlay Costs								
Business Requirements Definitions Services - Note 13		45,000						
Request for Proposal (RFP) Creation Services - Note 14		45,000						
System Vendor Selection Services - Note 15		84,000						
Software Costs - Note 16		470,000						
Hardware Costs - Note 17		350,000						
Hardware/Software Install Services - Note 18		100,000						
Implementation/Project Mgmt Services - Note 19		345,000						
Training Services - Note 20		100,000						
Total costs		$ 1,539,000						$1,539,000
Recurring Costs - Note 1								
Software Fee/Maintenance Costs			100,000	104,000	108,160	112,486	116,986	541,632
ISD System Maintenance/Technical Services			50,000	52,000	54,080	56,243	58,493	270,816
Controller's System Maintenance/Technical Services			50,000	52,000	54,080	56,243	58,493	270,816
Total costs			$ 200,000	$ 208,000	$ 216,320	$ 224,973	$ 233,972	$1,083,265
MEDIAN-CASE ESTIMATED SAVINGS: Note 2								
Reduce payroll error/inflation costs	Note 3		171,000	355,680	369,907	384,703	400,092	1,681,382
Reduce labor costs due to improved monitoring & scheduling	Note 4		85,500	177,840	184,954	192,352	200,046	840,691
Reduce Dept retroactive adjustments processing time	Note 5		22,400	46,592	48,456	50,394	52,410	220,251
Reduce Supervisor time card review time	Note 6		67,500	140,400	146,016	151,857	157,931	663,704
Reduce Payroll Division time card printing costs	Note 7		3,000	6,240	6,490	6,749	7,019	29,498
Reduce Payroll Division time card review time	Note 8		10,500	21,840	22,714	23,622	24,567	103,243
Reduce Payroll Division time card data entry time	Note 9		19,000	39,520	41,101	42,745	44,455	186,820
Reduce Payroll Div. retroactive adjustments processing time	Note 10		5,600	11,648	12,114	12,598	13,102	55,063
Reduce Dept time card distribution time	Note 11		45,000	93,600	97,344	101,238	105,287	442,469
Reduce (net) Dept Payroll Clerk time card processing time	Note 12		101,250	210,600	219,024	227,785	236,896	995,555
Total Savings	Note 21, yr. 1		$ 530,750	$ 1,103,960	$ 1,148,118	$ 1,194,043	$ 1,241,805	$5,218,676
NET SAVINGS:			$ 330,750	$ 895,960	$ 931,798	$ 969,070	$ 1,007,833	$4,135,412

Cost recovery occurs after 2.4 years when the net savings *exceeds the initial costs of $1,539,000.*

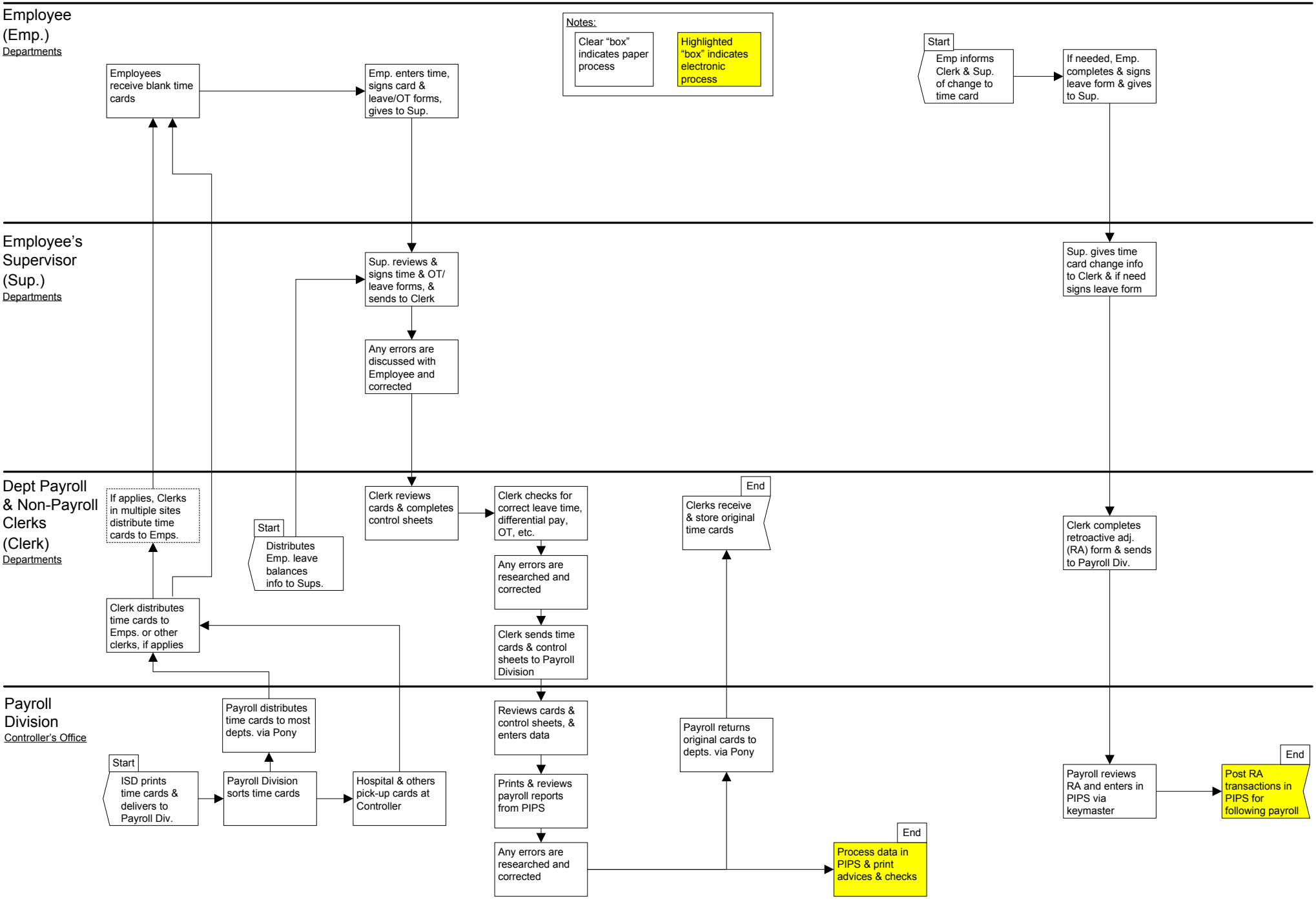
Net Present Value (interest rate of 2.5%)	5-Yr Analysis	3-Yr Analysis
Initial outlay	$ (1,539,000)	(1,539,000)
Year 1	322,683	322,683
Year 2	852,788	852,788
Year 3	865,267	865,267
Year 4	877,930	
Year 5	890,778	
Net Present Value	$ 2,270,446	501,738
Internal Rate of Return	34.46%	13.47%

Appendix B - Notes for Estimated Amounts

Notes for Estimated Amounts:

1. Estimated recurring cost are increased annually by 4% to reflect the growth in prices/wages.
2. Estimated savings amounts are increased annually by 4% to reflect the growth in wages. 1 year = 26 pay periods. 1 year = 80 hrs. x 26 pay periods = 2,080 hrs. (2,080 hrs. = 1 FTE)
3. 1.2% = average payroll error rate (due to inflated OT, differential, and regular pay) cost savings per Nucleus Research ROI survey report
   Nucleau Research is an independent research firm that performs return on investment analysis of technology. Other industry surveys/research that examine
   payroll error rates include: American Payroll Association & Robert Half Associates = 1-3% error rate; Acumen Data Systems, Inc. = 2% error rate
   Using 1.2% as payroll error rate = estimated annual savings of $4,104,000 = (0.012 x $342 million)
   Using conservative error rate of 0.002 (1/5 of 1%), assuming County's rate is lower than industry average; the County's current payroll error costs =
   = ($342,000,000 gross yearly wages) x (0.002, 1/5 of 1%, error rate) = $684,000 = estimated current payroll error/inflation costs
   Using ultra-conservative estimates (i.e., County can reduce error rate by 1/2 of current estimated conservative costs), the County's savings =
   = ($342,000,000 gross yearly wages) x (0.001, 1/10 of 1%, error rate) = $342,000 = estimated payroll error/inflation cost savings
   Estimated annual payroll error savings of $342,000 equals an average of $59.96 per employee, per year ($342,000/5,800).
4. Reduce payroll costs (overtime and extra-help) due to real-time monitoring of time and improved scheduling capabilities.
   Reduced payroll costs, per this conservative analysis = $342,000,000 of salaries x 0.0005 (1/20 of 1%) = $171,000
5. Reduced Depts' time (for Emp., Sup. & Clerk) to process retroactive adjustments (RAs) resulting from submitting early time cards =
   = (382 avg. RAs per prd.) x (26 prds.) x (8 min. avg. total dept. time per RA) = 1,324 hrs. = 0.64 FTE (1,324 hrs./2,080 hrs) = $70k x 0.64 FTE = $44,800
6. Current Supervisors' time card review time = 5,800 timecards x 3 min. avg. x 26 prds. = 7,540 hrs = 3.6 FTE (7,540 hrs./2,080 hrs.) = $90k x 3.6 FTEs = $324,000
   Note: Estimates, driven by time card volume, are based on conservative assumption that 1,000 employees will initially continue to use paper time cards.
   Reduced time card review time savings = 4,800 timecards x 1.5 min. avg. x 26 prds. = 3,120 hrs. = 1.5 FTE (3,120 hrs./2,080 hrs.) = $90k x 1.5 FTEs = $135,000
7. Reduced Payroll Division time card printing costs = 5,800 time cards x 26 prds. x $0.04 = $6,000
   Note: Use of standard time cards will eliminate use of employee-specific forms.
8. Current Payroll Division time card review and processing time = (4 emps. x 4 hrs. x 3 days)+(1 emp. x 4 hrs. x 2 days)+ (8 hrs) = 64 hrs. total
   = 64 hrs. x 26 prds. = 1,664 hrs. = 0.8 FTE (1,664 hrs./2,080 hrs.) = 0.8 FTE = $70,000 x 0.8 = $56,000
   Reduced time card processing time savings = 24 hrs x 26 prds. = 624 hrs. = 0.3 FTE (624 hrs./2,080 hrs.) = $70k x 0.3 FTE = $21,000
9. Reduce Payroll Division current time card data entry costs of $38,000 per year. (est. FY03 costs)
10. Current Payroll Division retroactive adjustment (RA) processing time = 24,000 RA trans. x 2 min. = 800 hrs. = 0.38 FTE (800 hrs./2,080 hrs.) = $70k x 0.38 FTE = $26,600
    Reduced retroactive adjustment (RA) processing time savings = 10,000 RA trans. x 2 min. = 333 hrs. = 0.16 FTE (333 hrs./2,080 hrs.) = $70k x 0.16 FTE = $11,200
11. Current Depts' time card distribution time = 5,800 timecards x 1.5 min. x 26 = 3,770 hrs. = 1.8 FTE (3,770 hrs./2,080 hrs.) = $60k x 1.8 FTEs = $108,000
    Reduced time card distribution time savings = 4,800 timecards x 1.5 min. x 26 = 3,120 hrs. = 1.5 FTE (3,120 hrs./2,080 hrs.) = $60k x 1.5 FTEs = $90,000
12. Current Payroll Clerk time card review and correction time = 5,800 time cards x 6 min. avg. x 26 prds. = 15,080 hrs. = 7.25 FTE (15,080 hrs./2,080 hrs.) = $60k x 7.25 FTEs = $435,000
    Current Payroll Clerk time includes preparation of time card batch control sheets, and time required to review and correct/update time card information
    after time cards are submitted but before paychecks are processed.
    Reduced Payroll Clerk time card review and correction time savings = 4,800 time cards x 4 min. avg. x 26 prds. = 8,320 hrs. = 4.0 FTE (8,320 hrs./2,080 hrs.) = $60k x 4.0 FTEs = $240,000
    Increased Payroll Clerk data entry time = 1,000 paper time cards x 3 min. avg. x 26 = 1,300 hrs. = 0.625 FTE (1,300 hrs./2,080 hrs.) = 0.625 FTE x $60k = $37,500
    Note: The above increased time is based on conservative assumption that 1,000 employees will initially continue to use paper time cards.
    Reduced (net) Payroll Clerk time = ($240,000 - $37,500) = $202,500 net
13. Business Requirements Definition Services = 300 hours x $150 per hour = $45,000
14. Request for Proposal (RFP) Creation Services = 300 hours x $150 per hour = $45,000
15. System Vendor Selection Services = 560 hours x $150 per hour = $84,000
    = 150 hrs. for system demos + 410 hrs. to select vendor/implementers via individual and group discussions with County stakeholders
16. Software Costs (scheduling and timekeeping modules) = 5,800 users x $80 = $464,000 = $470,000
17. Hardware Costs = (200 badge-readers x $1,500 = $300,000) + (4 servers & accessories = $50,000) = $350,000 total
18. Hardware/Software Installation Services = 800 hours x $125 per hours = $100,000
19. Implementation/Project Mgmt Services = (system configuration = 600 hrs x $125 per hr. = $75K) + (system customization = 600 hrs. x $125 = $75K) +
    + (data conversion = 160 hrs. x $125 = $20K) + (interfaces development = 300 hrs. x $125 = $37.5K) +
    + (testing = 700 hrs. x $125 = $87.5K) + (project management = 400 hrs. x $125 = 50K) = $345,000.
20. Training Services (train the trainers) = 5,800 trainees = 5,800 / 25 person per class = 232 classes =
    = 2 trainers x 2 hours x 232 classes = 928 total hours = 928 x $100 = $92,800 = $100,000
21. Per conservative assumptions, estimated annual savings for 1st year were reduced by 50% due to implementation and user learning curve.
    It is assumed that the total annual savings will not be achieved until the second year after the system is implemented.

Appendix C - Paper Processes (As-Is)



Appendix D - Electronic Processes (To-Be)