

UC Larry L. Sautter Award Application: My Time Entry

UC San Diego's Time and Attendance Application

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Project

Project Title**My Time Entry**

UC San Diego's online time and attendance application

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Summary

The My Time Entry (MTE) project delivers a web based time and attendance reporting tool that provides significant cost savings, increased efficiencies and improved accuracies for the University of California San Diego. The MTE application replaces a time intensive paper based manual method of time reporting with a streamlined automated electronic reporting process. The value propositions are achieved at all levels of the time reporting hierarchy. The hierarchy levels include employee, supervisor, timekeeper and central payroll. MTE allows **employees** to report and route time and attendance electronically; **Supervisors** to approve and deny time reported electronically; **Timekeepers** to bypass manual calculations associated with holiday, overtime and the allocation of labor; and **Central Payroll** to automate the validation of transactions.

Project Description

Background

The University of California, San Diego employs over 35,000 employees. The process to ensure the accurate and timely payments to these employees is predicated on a successful timekeeping process. Given the criticality of the University's timekeeping process and the intense manual labor associated with the success of the process, the MTE project was launched. The charge of the project was to develop a time and attendance application with specific requirements that translated to key value propositions identified by campus representatives. These being to:

- Eliminate paper timesheets and dependencies associated with paper based forms
- Provide a user friendly interface for employee self service/entry of time and attendance

- Provide for electronic time approval
- Provide a single reference for integrated employee timekeeping data
- Create an enterprise repository for supervisory and employee relationships related to appointment information
- Automate the manual calculations and spreading performed by timekeepers to determine holiday pay, overtime, premium overtime, base earnings and distribution of labor using current distributions
- Interface data directly from MTE to the Payroll compute

The requirements along with the associated value propositions and benefits/cost savings are summarized below:

Requirements	Value Proposition	Benefit /Cost Savings
Elimination of Paper Timesheets	<ul style="list-style-type: none"> • Eliminates the distribution and collection of paper timesheets • Reduces delays and eliminates “lost” timesheets • Protects/secures sensitive appointment/job information 	<ul style="list-style-type: none"> • Eliminates the need to print paper timesheets (100% reduction in costs associated with printing of timesheets on paper) • Elimination of the manual distribution and collection of paper timesheets (15% reduction in process time. 5% supervisors ; 10% timekeepers)
Employee Self Service	<ul style="list-style-type: none"> • Authenticates employee • Provides audit trail • Standard On-line entry process • Provides users with immediate on-demand access to timesheet data and historical information • Maximize efficiencies by capturing the time entry at source • Provides for a standard UI • Aggregates employee data in a simple single screen • Automates retroactivity for date sensitive time reporting • Built in entry edits to improve compliance, implement policy, enforce labor laws and validate data 	<ul style="list-style-type: none"> • Standardize entry will allow for the use of a self-service online training model that will minimize time away for office. • Edits and electronic verification will improve the quality of the data and reduce missing or “unsubmitted” time (17% reduction in workload for central payroll) • Increased user satisfaction with the process via intuitive UI and single screen information • Eliminates the need for creating manual reversal of retroactive time by employees
Electronic Time Approval	<ul style="list-style-type: none"> • Authenticates supervisor • Immediate notification of pending 	<ul style="list-style-type: none"> • Eliminates retention and verification of signature

	<p>action</p> <ul style="list-style-type: none"> • On-line approval/denial • Single touch point 	<p>facsimiles.</p> <ul style="list-style-type: none"> • Ability to track status of time • Timely approvals of employee time • Eliminates the physical routing of forms to obtain signatures (5% reduction in process time)
Timekeeping and Supervisory Roles Repository	<ul style="list-style-type: none"> • Enterprise roles repository allows for the use of relationship in other applications • Supervisory relationships tied to appointments in Payroll Personnel System • Ability to assign multiple “sub” supervisors or time approvers • Email notifications for pending approvals 	<ul style="list-style-type: none"> • Up to date supervisor association for other applications • Flexible to allow for “approver” roles.
Automated Calculations and Spreading against current distributions	<ul style="list-style-type: none"> • Automated calculation of overtime, premium overtime and holiday pay. • Automated classification of overtime as payment or compensatory time based on employee election • Implements spreading based on most current distribution • Override capabilities for automated calculations for exceptions or exclusions 	<ul style="list-style-type: none"> • Automation of calculations (25% reduction in process time for timekeepers) • Automation of spreading (15% reduction in process time for timekeepers)
Compute Interface	<ul style="list-style-type: none"> • Interface eliminates key entry to facilitate timekeeper review and analysis 	<ul style="list-style-type: none"> • Elimination of key entry into TAR/PPS compute (15% reduction in process time for timekeepers)

Role	Workload/ Process Time Reduction using MTE
Supervisor	5%
Timekeeper	65%
Central Payroll Processing	17%

Current vs. New Workflow

Current Workflow	New Workflow
1) Timekeeper/Employee - On the day before	1) Employee - enters time and attendance in

<p>the payperiod begins print/distribute timesheets to employees</p> <ol style="list-style-type: none"> 2) Employee –Retrieve Leave Activity Summary Report (LASR) to determine available leave balances* 3) Employee -Fill out paper timesheets or ancillary form indicate time and attendance hours 4) Employee – Sign and approve timesheet * 5) Employee – Route Supervisor to Timekeeper* 6) Supervisor – Sign and approve timesheet or deny time and route back to employee (step 3)* 7) Supervisor – Route signed and approved timesheets to timekeeper* 8) Timekeeper – Verify leave balances* 9) Timekeeper – Determine retroactive adjustments* 10) Timekeeper – Calculate holiday pay, overtime and premium overtime* 11) Timekeeper – Determine labor allocation. Verify distribution changes that occurred since the timesheets were printed (usually 15 days for BW and 23 days for monthly)* 12) Timekeeper – Determine spread percentages for each distribution* 13) Timekeeper – Key enter transactions into TAR* 14) Central Payroll – Rework associated with distribution changes and/or missing timesheets.* 	<p>MTE</p> <ol style="list-style-type: none"> 2) Employee -selects “submit” button in MTE to notify supervisor of pending approval hours 3) Supervisor- approves/denies time by selecting appropriate MTE button 4) Timekeeper – Selects calculate and spread button and system performs automated calculation and spreading <u>based on the current distribution information.</u> <ol style="list-style-type: none"> a. Flexibility for timekeeper to override and manually edit calculations and spread. b. Employee information, time approver information, and leave balances available on one screen for verification. c. Alerts and warnings for employees that require additional review. 5) Timekeeper reviews and accepts time and approves time. Time directly interfaces into TAR and Payroll Compute.
<p>*Represent functions or processes automated by MTE – See appendix for MTE functionality</p>	

Collaborative Opportunities

The MTE application was designed to be modular and highly adaptable with a multi-campus use in mind. We understand the commitment and costs associated with introducing a new system and worked to design a solution that is flexible and allows UC campuses to seamlessly integrate MTE with their existing systems, thus leveraging the applications alongside institution specific resources. This approach saves adopting universities both setup and ongoing support costs as well as eliminates retrofit costs associated with a more traditional application approach.

The MTE design team has developed a multi-campus ready application by implementing a service oriented architecture (SOA) approach, considering all integration points needed to be multi-campus ready, allowing for flexible integration with both UCSD and non-UCSD resources.

For example, a key component of a time and attendance system is the supervisor/time approver to employee assignment. UCSD manages these assignments using the UCSD Roles system via an application named AccessLinkTNG (ALTNG). During design, the team identified the needs of the MTE application and created a standard interface. Isolated components were created to read from the ALTNG system and provide the assignment data to the application via this interface. Another campus may store assignment information in an entirely different way using different languages, databases, documents, etc. Regardless of how a campus stores and manages their data, the campus need only create a component and process to communicate with the common interface that has been defined. The UCSD MTE application can consume this information without knowledge of the individual campuses system or its location.

In addition, the flexibility of this design principle allows for system evolution at UCSD as well as other UC campuses: changing databases, changing hardware, changing systems, changing languages, and more.

For example, consider that a campus originally provided directory information from their existing LDAP system. That campus is now in the process of migrating to a new directory service system. During their migration the campus updates the components that share directory information with UCSD's MTE application. No changes are required to the MTE application.

Technology

The My Time Entry application leverages ACT department's technology stack which standardizes architectural practices, design, security, and data access for ACT applications. The application is built on the Java Spring Framework and UCSD's JLink Framework, DB2 database, running in an Apache Tomcat container.

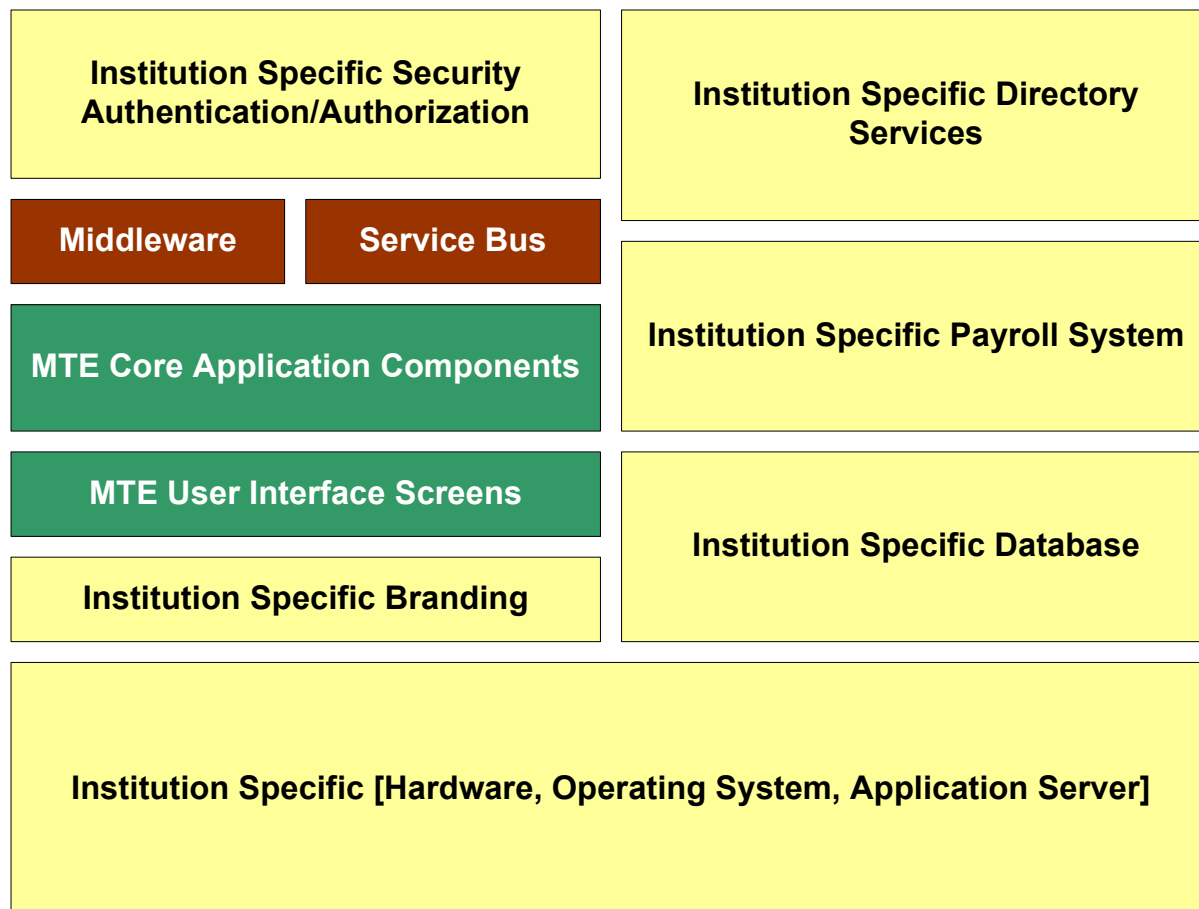
The data access design methodology for the MTE application leverages a Service Oriented Architecture (SOA). SOA architecture is a flexible set of design principles which allows an application to integrate with multiple separate systems from different business domains. This design choice allows for

- effective management of change
- data integrity, designed isolation of campus data
- communication with other technologies
- independent management of data by each campus

The flexible architectural approach for this application lays the foundation to provide this application as software as a service (SaaS).

The following diagram shows the high level design strategy used in development of the MTE application to integrate autonomous campus systems.

MTE Application Architectural Distribution Diagram



Breakdown of Architectural Elements and Implementation Options

- Institution Specific Architecture (Changes with Deployment)
- Middleware (Delivered)
- Application Core Components (Delivered)

Branding: UCSD’s UXT stack and Spring Localization

The UXT stack allows for configurable decorators, navigation, and styles. Using Spring’s localization these configurations can be more easily managed in a multi-campus environment.

Authentication: Shibboleth Single Sign-On

Shibboleth provides a standard interface for authentication.

Authorization: UCSD’s Roles Engine

Centralized reusable location. Existing workflow and audit built in.

Interoperability: Pluggable Services

Consumed data is accessed through the service layer. Source, location, structure, and technology may all change over time without modification to the application as long as the service interface is not modified. My Time Entry pluggable services include PPS, directory Information, LASR balances, and authorization information

Rich User Interface Design

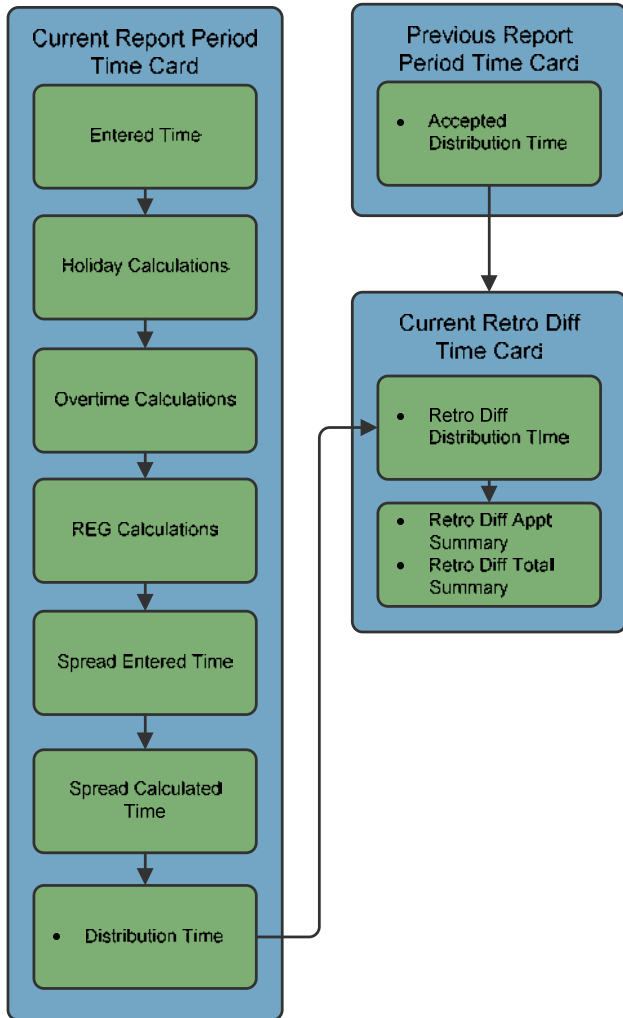
Using Ajax, Cascade Style Sheets, jQuery/YUI (JavaScript rendering and dynamic tables) technologies results in faster response times and reduced web requests and responses to and from the server.

Design: Encapsulation of Data and Pluggable Objects

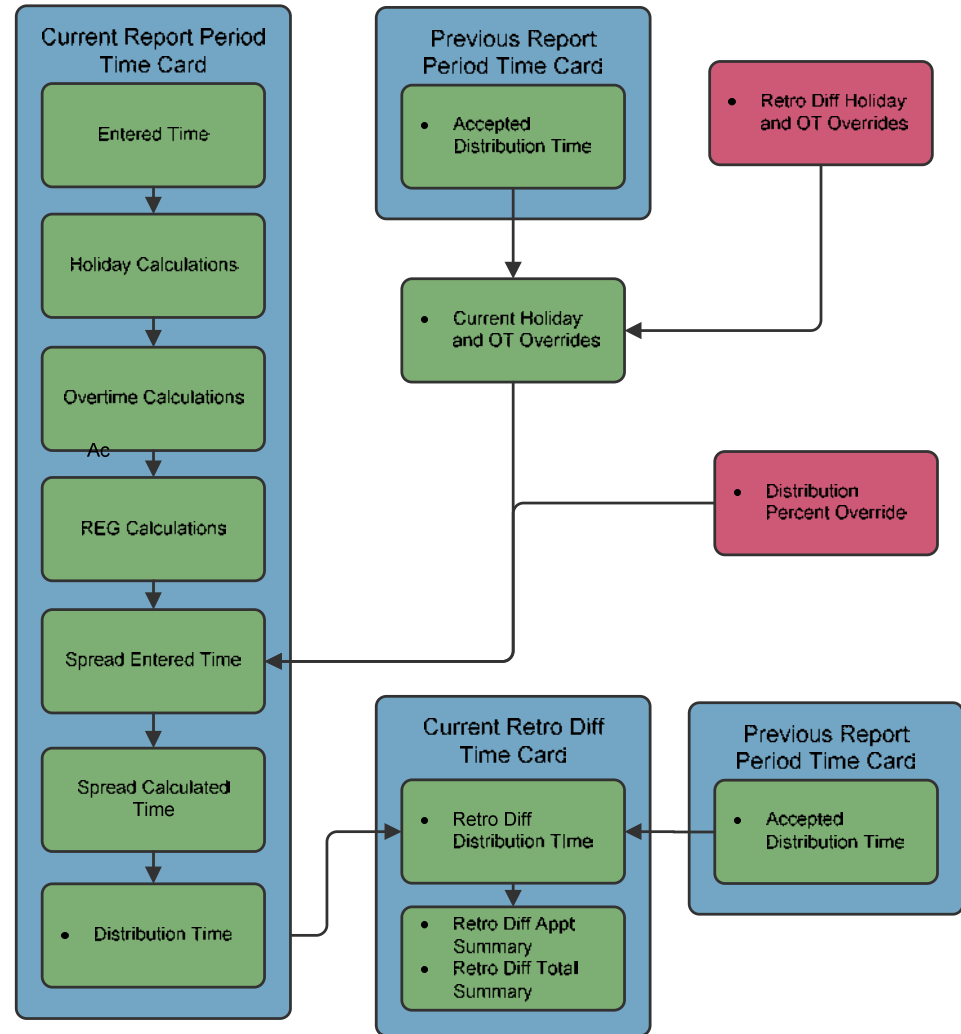
- Time, attendance, and calculated data encapsulated into Timecard objects.
- Pluggable Calculation and Spreading Engine to allow for distinct algorithms for various employee types such as Biweekly or Monthly, Exception or Positive reporting, etc.
- Faster object comparisons. For example, Timecard comparison to determine the retroactive difference between reporting periods.

The following diagram illustrates the high level calculation and spreading algorithms implemented in the MTE application. In depth diagrams are provided in the Appendices.

Calculation and Spreading



Calculation and Spreading Overrides



Timeline

2008: Tiger Team

2009: Project Initiation

June 2009 – June 2010: Project Planning

June 2010 – May 2011: Project Development, QA, UAT

June 2011: My Time Entry Phase 1.0

Project Team

Key members of the project team and contributors

Administrative Computing & Telecommunications	Business & Financial Services – Payroll
Kevin Chou	Tom Pirolli
Emily Deere	William Solomon
Ben Hodson	Pearl Trinidad
Nonie Kimpitak	
Jennifer Kramer	
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- Emily Deere, ACT
- Nonie Kimpitak, ACT
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- Charles (Chuck) Massey, Campus Recreation
- Giles Mullen, Consultant
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- Ray Rodriguez, Compensation/HR
- Dave Simonson, Moores Cancer Center
- Pearl Trinidad, BFS Payroll, Team Leader
- Laurie Ward, Audit & Management Advisory Services

Appendix A: MTE Application Roles/Screens

Employee: Time Entry

Employees use the time entry screen to submit their timecard for supervisor/work director review and approval. They may also view previous timecards.

TODAY'S DATE: 05/09/2011 ⚠ DUE DATE: 05/19/2011

< previous Activity Pay Period: 05/03/2011 - 05/31/2011 next >

i This timecard has been submitted and is pending approval.

Summary Appt 70

May 2011

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19 DUE DATE!	20	21
22	23	24	25	26 Vacation - 8 hrs	27 Vacation - 8 hrs	28
29	30 HOLIDAY - Memorial Day	31	1	2	3	4
5	6	7	8	9	10	11

Appt	Type	Totals	Status
70	Vacation	16.00 hrs	Pending

Totals	
■	Vacation 16.00

No Exceptions

Save Progress
Submit for Approval

Comments

Out of town for Memorial Day weekend

Supervisor/Work Director: Time Approval

Supervisors/Work Directors use the Supervisor Time Approval screens to review and approve or deny employee timecards. Once a decision is made, an email is sent to all involved parties.

Timekeeper: Reporting

Reporting provides timecard summary, details, and worksheets to quickly review and process timecards.

Timekeepers may see a complete picture of timecards submitted during different periods and the delta between them.

Reporting Period: 02/01/2011 - 02/28/2011						
Date	Appt	Type	Hours	Comments	Status	
02/01/2011	70	Vacation	8.00		Approved	
02/02/2011	70	Vacation	8.00			
02/03/2011	70	Vacation	8.00			
02/04/2011	70	Vacation	8.00			
02/07/2011	70	Vacation	8.00			
02/15/2011	70	Vacation	8.00			

Reporting Period Retro: 03/01/2011 - 03/31/2011						
Date	Appt	Type	Hours	Comments	Status	
02/07/2011	70	Vacation	<8.00>		Approved	
02/07/2011	70	Sick	8.00	Got sick on vacation		
02/08/2011	70	Sick	8.00	Got sick on vacation		
02/15/2011	70	Vacation	<8.00>			

Reporting Period: 03/01/2011 - 03/31/2011						
Date	Appt	Type	Hours	Comments	Status	
02/01/2011	70	Vacation	8.00		Approved	
02/02/2011	70	Vacation	8.00			
02/03/2011	70	Vacation	8.00			
02/04/2011	70	Vacation	8.00			
02/07/2011	70	Sick	8.00	Got sick on vacation		
02/08/2011	70	Sick	8.00	Got sick on vacation		

Timekeepers use the calculate spreading worksheet to assign hours to each funding source. The application automatically calculates REG, overtime, and holiday hours and spreads hours to the funding sources for most employees. Alert messages aid the timekeeper for exception cases and warn timekeepers for possible invalid data such as time reported in excess of leave balances.

Activity Period: 02/01/2011 - 02/28/2011 (See Pay Period Time Details)

Total Hours	160.00	Hours Worked	0.00	REG	0.00
Total %	1.00	Vacation	40.00	POT/Comp Plus	0.00
		Sick	0.00	SOT/Comp Std	0.00
				Holiday	8.00

Distribution Spreading																
Dist	Begin Date	End Date	Index	Fund	S	Title	DOS	Dist%	Spread%	Sick	Vac	Reg	POT	SOT	Other	O
21	04/01/2010	Indef	TEL5571	66080A	1	0738	REG	0.5000	0.50	0.00	20.00	0.00	0.00	0.00	4.00	H
22	04/01/2010	Indef	NGN2608	66085A	1	0738	REG	0.1500	0.15	0.00	6.00	0.00	0.00	0.00	1.20	H
23	04/01/2010	Indef	NGN5455	66085A	1	0738	REG	0.1000	0.10	0.00	4.00	0.00	0.00	0.00	0.80	H
24	04/01/2010	Indef	NGN7900	66085A	1	0738	REG	0.0500	0.05	0.00	2.00	0.00	0.00	0.00	0.40	H
25	04/01/2010	Indef	TEL2700	66080A	1	0738	REG	0.0500	0.05	0.00	2.00	0.00	0.00	0.00	0.40	H
26	04/01/2010	Indef	TEL2720	66080A	1	0738	REG	0.0500	0.05	0.00	2.00	0.00	0.00	0.00	0.40	H
27	04/01/2010	Indef	TEL7900	66080A	1	0738	REG	0.0500	0.05	0.00	2.00	0.00	0.00	0.00	0.40	H
28	04/01/2010	Indef	TEL7920	66080A	1	0738	REG	0.0500	0.05	0.00	2.00	0.00	0.00	0.00	0.40	H

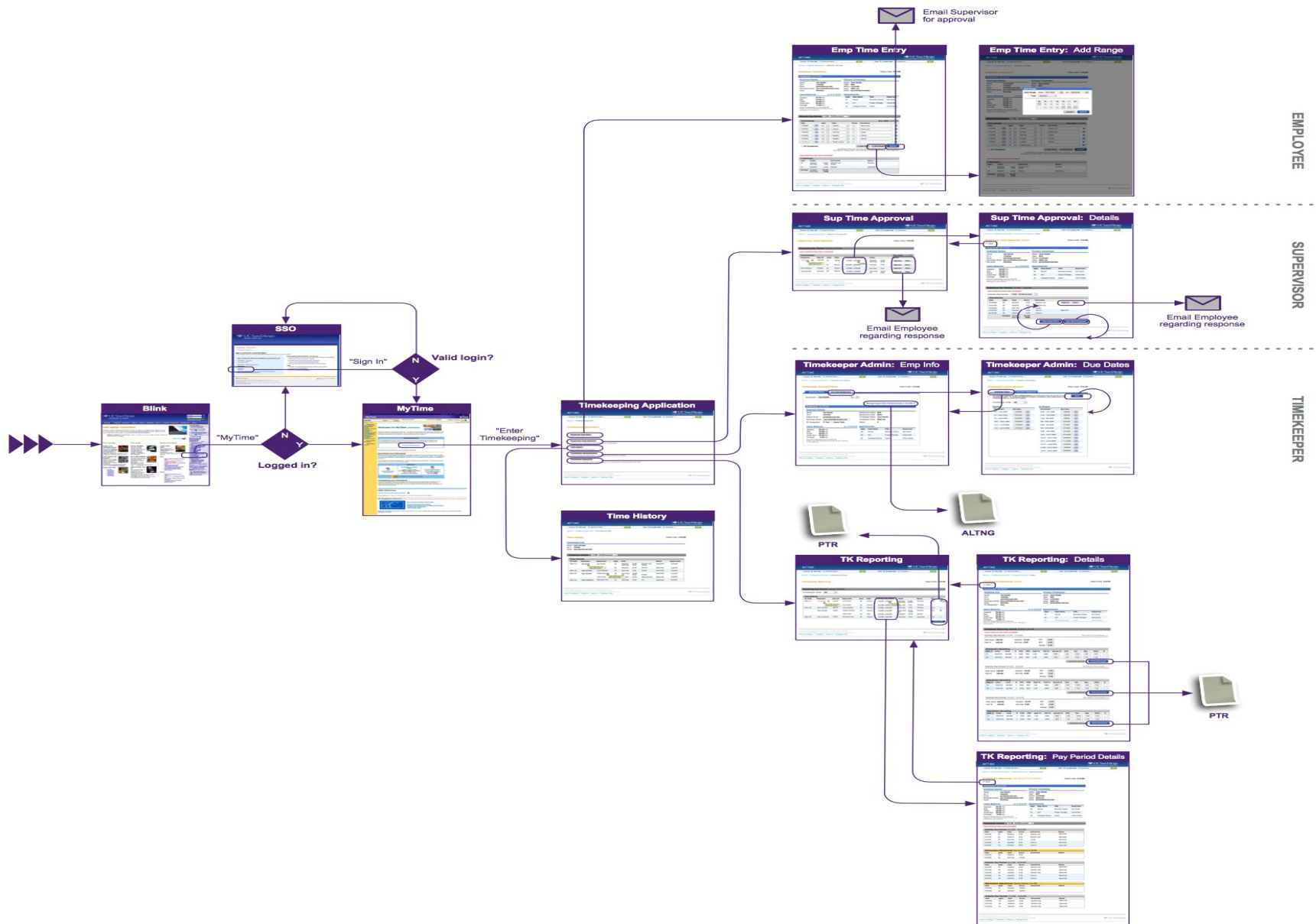
Spread Totals

Timekeeper: History

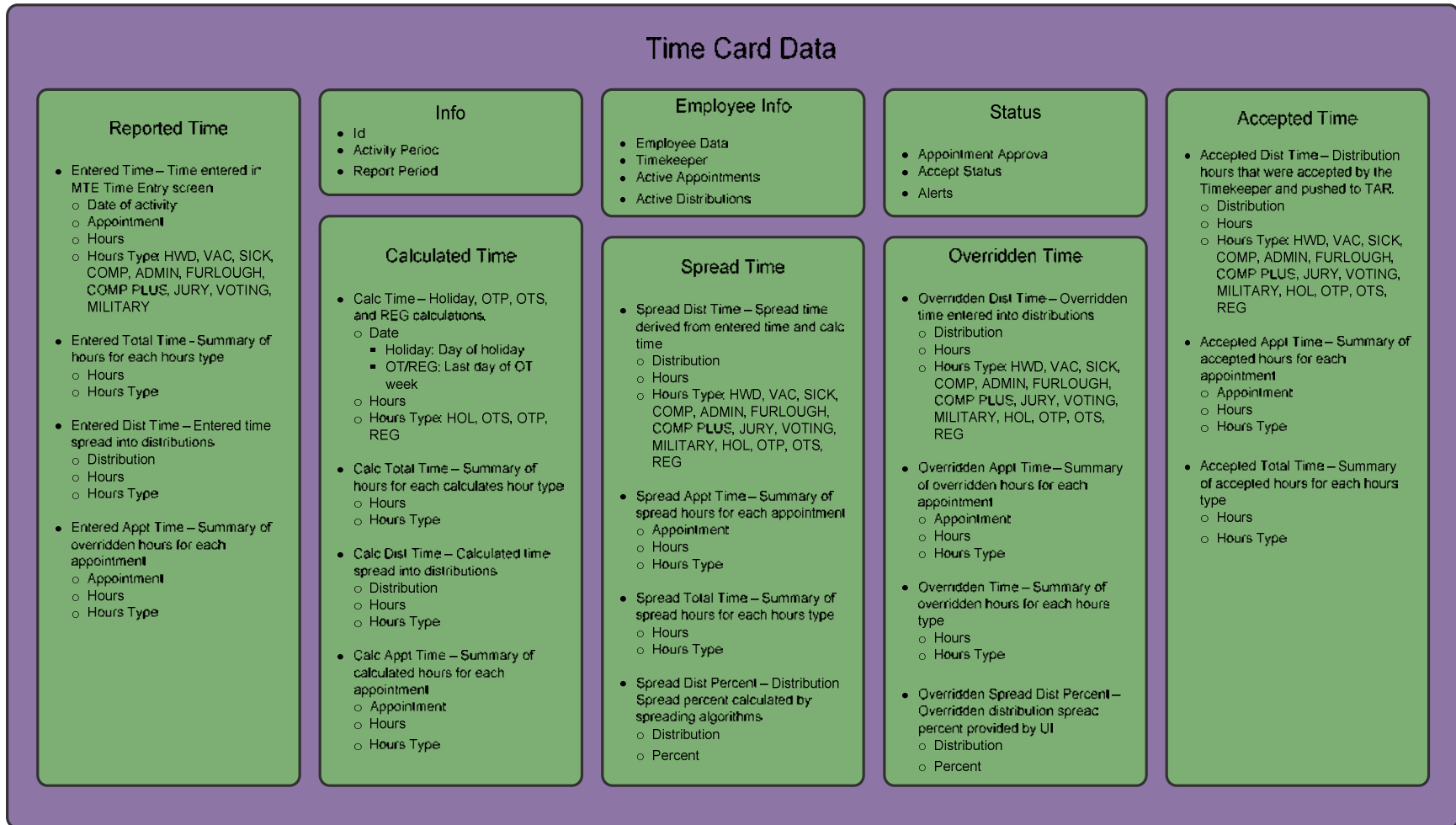
Historical reporting for processed timecards.

Timekeeper: Administration

Modify the default due dates for each pay period. Setup employee's overtime designation, alternate email address. View supervisory and work directory assignments and link to the Roles system to update.

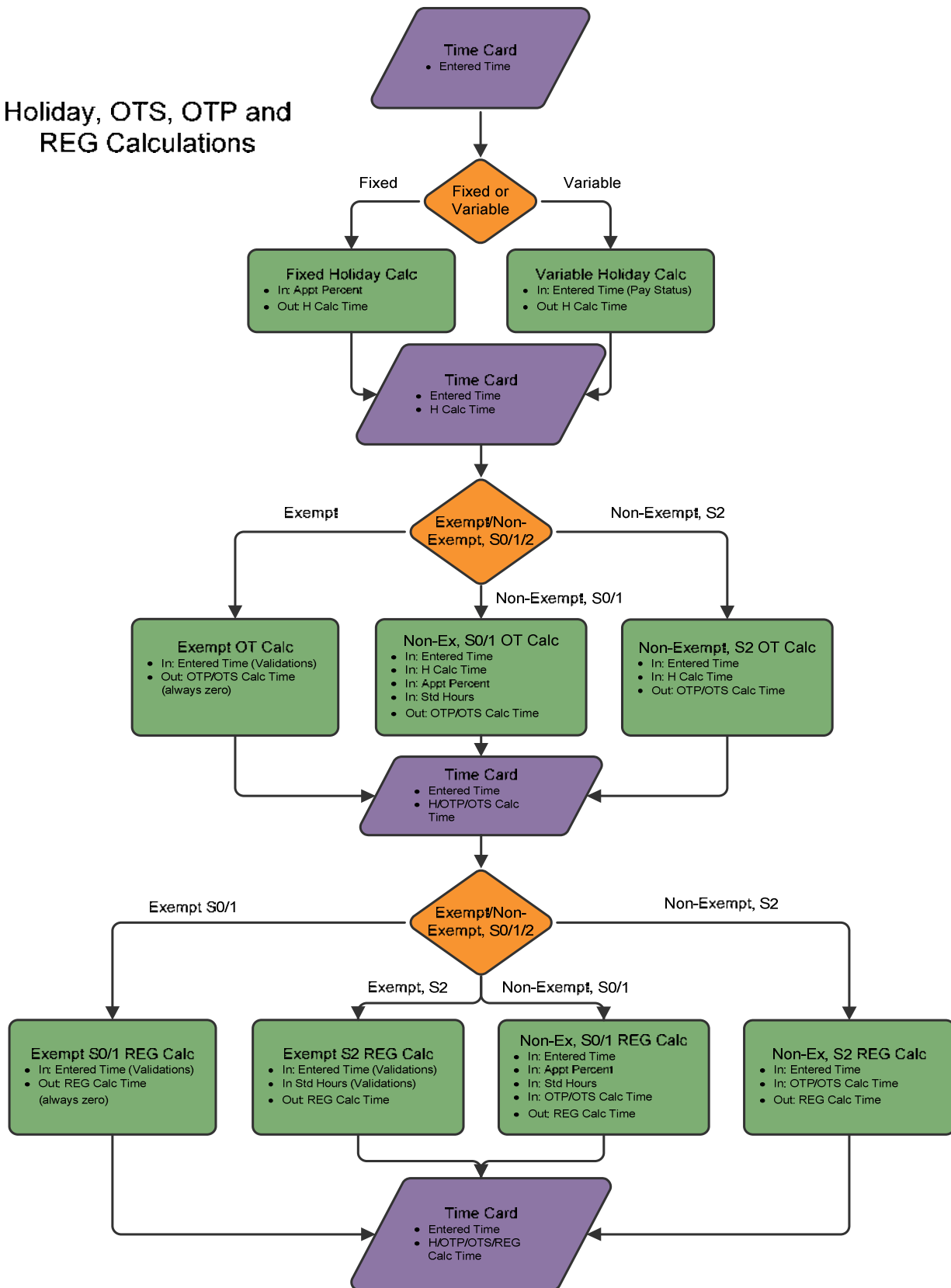


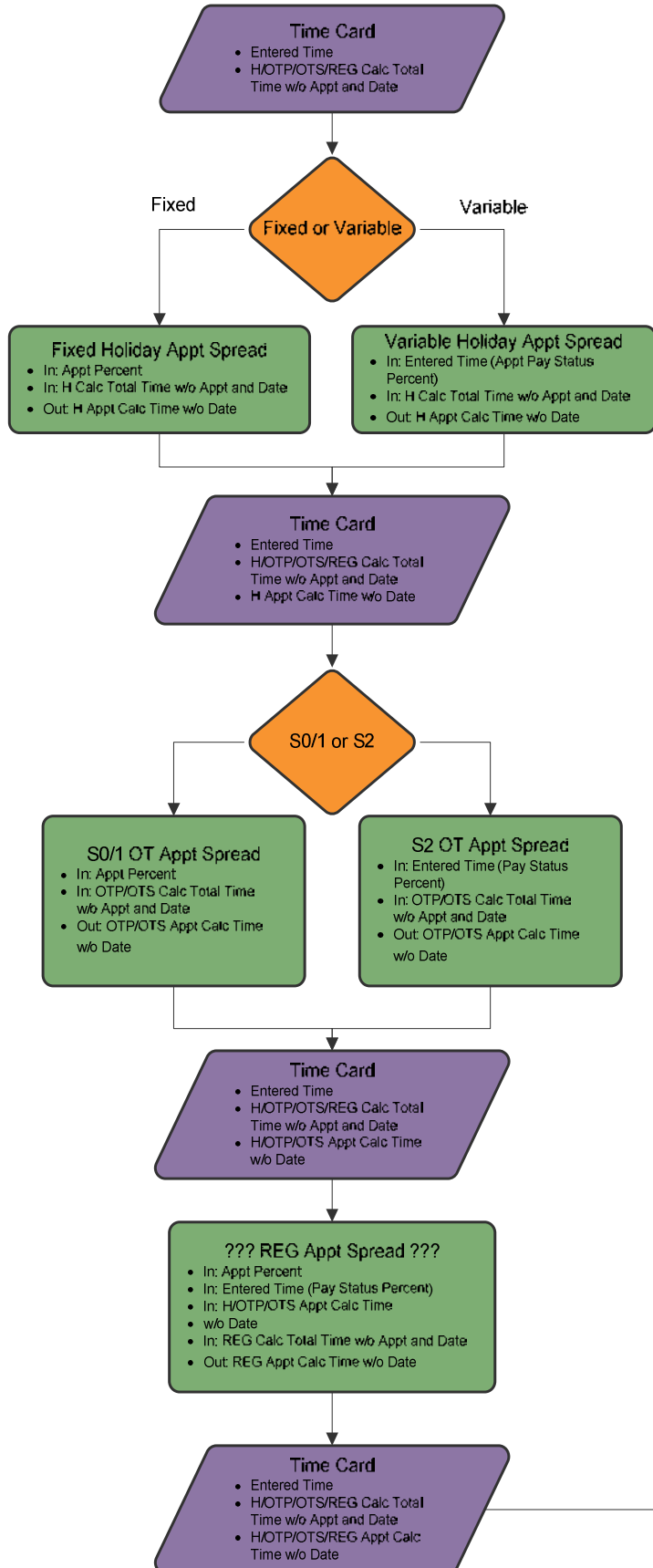
Appendix B: Timecard Data



Appendix C: Calculation, Spreading and Overrides

Holiday, OTS, OTP and REG Calculations





Appointment and Distribution Spread and Retro Diff Calculations

