SYNCROMATICS
tracking innovation

Proposal

REAL TIME PASSENGER INFORMATION SYSTEM

February 21, 2008
Revision 1.0

Submitted by:
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To:
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City of Key West Department of Transportation
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REVISION HISTORY

Revision	Date	By	Purpose
1.0	February 21, 2008	Josh Bigelow	Initial Release.

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1.0 DEFINITIONS

"Client"	City of Key West, Department of Transportation
"AVL"	Automated Vehicle Location
"Real Time"	Data received within 10 seconds of its genesis
"GPS"	Global Positioning System, operated by the US Military
"GPRS"	General Packet Radio Service for cellular data transmissions

2.0 RFP ADMINISTRATIVE INFORMATION

2.1 Exhibit 1: Pricing Schedule

Please find the pricing schedule below.

More detailed pricing information can be found in 4.0 INVESTMENT DETAIL, and Syncromatics encourages KWDoT to refer to that section to fully understand pricing structure.

Pricing Schedule			
Communication System	# of Units	Unit Price	Extended Price
Fixed-End Hardware	TBD	--	--
Vehicle Hardware (Total VLU+APC)	17	$4,125	$70,125
Data Communications Costs			
Automatic Vehicle Location, per bus, per year	17	$1,020	$17,340
Automated Passenger Counting, per bus, per year	17	$120	$2,040
LED Sign, per sign, per year	12	$660	$7,920
Year 1 Cost (Proposed usage of unlimited)	17	$1,140	$19,380
Year 2 Cost (Proposed usage of unlimited)	17	$1,140	$19,380
Year 3 Cost (Proposed usage of unlimited)	17	$1,140	$19,380
Year 4 Cost (Proposed usage of unlimited)	17	$1,140	$19,380
Year 5 Cost (Proposed usage of unlimited)	17	$1,140	$19,380
Vehicle Logic Unit	17	$1,625	$27,625
Automated Passenger Counter, 2 door, per bus	17	$2,500	$42,500
Fixed-End Computer - Servers		$0, hosted	$0, hosted
Fixed-End Computer - Software		$0, included	$0, included
License Fees		$0, included	$0, included
Real-Time on Internet		$0, included	$0, included
Training (on-site)		$0, included	$0, included
Sign Platforms (require survey of site)	4	TBD	TBD
Dynamic Message Signs			
Sign #1:	1	$4,250	$4,250
Sign #2:	1	$4,250	$4,250

Sign #3:	1	$4,250	$4,250
Sign #4:	1	$4,250	$4,250
Sign #5:	1	$4,250	$4,250
Sign #6:	1	$4,250	$4,250
Sign #7:	1	$4,250	$4,250
Sign #8:	1	$4,250	$4,250
Sign #9:	1	$4,250	$4,250
Sign #10:	1	$4,250	$4,250
Sign #11:	1	$4,250	$4,250
Sign #12:	1	$4,250	$4,250
Maintenance / Operating Fees			
Year 1		See Y1 Cost Above	
Year 2		See Y2 Cost Above	
Year 3		See Y2 Cost Above	
Year 4		See Y4 Cost Above	
Year 5		See Y5 Cost Above	
Options			
Cell Phone Interface		$0, included	
PDA Interface		$0, included	
Single Log In		$0, included	
Hourly Labor Rate (Customer-negligence only, see warranty)		$65	
Totals			
		Initial	Annually
Total Investment		$121,125	$27,300

2.1.1 *Automated Passenger Counting*

Syncromatics has provided separate pricing in the schedule of pricing above for automated passenger counting. All aspects of the APC service outlined in **5.10 Passenger Counting** are included in the above fees. Syncromatics' fees are also outlined in more detail in **4.0 INVESTMENT DETAIL.** There are no fees beyond installation and **monthly** service fees; all web-based software is included.

2.1.2 *Integration*

Syncromatics is prepared to integrate data systems with the Interfleet product that KWDoT is presently running. Where possible, Syncromatics will endeavor to make use of existing hardware including but not limited to automated passenger counters, MDTs, and digital signs. Server-to-server integration is also possible based on XML feeds Interfleet advertises on its website as being available; this includes but is not limited to GPS data, historical data, reporting information, passenger data, route and stop information and statistical information. In order to properly quote the integration costs for the Interfleet product, KWDoT will need to facilitate sharing of technical

information between Interfleet and Syncromatics and specify functionality to be integrated. This can be quoted in an expedient manner as soon as KWDoT can facilitate this exchange.

See also: **4.5: Custom Integration.**

2.1.3 180 Day Validity

As requested by KWDoT, Syncromatics will honor the pricing in this proposal for 180 days from the submission date.

2.1.4 Spare Parts

Syncromatics will provide Client with (2) VLU units to be kept on-site as spares for no additional charge, as part of our permanent and complete warranty as described in **7.3 Hardware.** It is standard practice for Syncromatics to keep these with Client's maintenance personnel and coordinate with them in the event of equipment failure. On-site contractors are also available for more complicated maintenance work; this is included in the warranty.

Syncromatics will also provide spare APC devices at the costs outlined in the pricing schedule.

2.1.5 Software License Model

KWDoT has requested information regarding software licensing. Syncromatics is a hosted service **(3.2 Hosted Service)**; further, all software is web-based **(7.2 Software and 7.4 Browser Support).** As such, Syncromatics does not charge any software licensing fees either initially or on an ongoing basis; all usage is included with monthly fees paid per-vehicle to use the service.

2.2 Exhibit 2: Form of Proposal

See Appendix A: Signature Pages.

2.3 Exhibit 3: Firm Profile

Syncromatics is located at 547 N Martel Ave, Los Angeles CA 90036. Syncromatics has 3 regular employees: Josh Bigelow (CEO), David Pell (National Sales Director) and Andrew Kwok (Director, Field Engineering).

Josh Bigelow will be the designated project manager and can be reached by email at josh@syncromatics.com, by phone at (310)728-6997 and by facsimile at (310)734-6831.

Josh Bigelow is primarily responsible for project management, technical integration and other miscellaneous responsibilities related to the project. Josh has successfully deployed 4 fully operable AVL/APC systems **(2.3.1 References)** and has 7 years experience working in the transit industry in a technical and managerial capacity.

Andrew Kwok is primarily responsible for installation coordination and testing, and will work closely with Josh in this capacity. Andrew has 6 years experience in mobile and intricate electronics installation and support, 2 of which relate specifically to Syncromatics and transit buses. He has worked on Gillig buses of the type used by KWDoT before as has Josh; Andrew has personally overseen the installation of every bus Syncromatics is on.

Syncromatics was started in August 2006. Syncromatics won the California Clean Tech Open in October 2007, a $100,000 clean-tech award, for demonstrating a 10x return on investment at UCSD with our schedule adherence and passenger traffic reports (http://cacleantech.com/), see **5.4 Excel Reports** for details.

2.3.1 References

The following institutions are using our service.

University of California at San Diego
Business Type: Public University
Number of Vehicles: 55 total, (39) 40-foot buses, (8) 15-passenger vans, (6) cutaways, (2) ADA minivans
APC Installed: Yes
Project Start: October 2006
Go-Live Date: December 2006
Initial Investment: $120,000
Present Customer: Yes
Public Syncromatics-run Site: http://ucsdbus.com/
Contact:
Mr. Brian d'Autremont
Director, Parking & Transportation Services
858.534.9762
bdautremont@ucsd.edu

University of Miami
Business Type: Private University
Number of Vehicles: 23 total, (12) 40-foot buses, 11 cutaways
APC Installed: Yes
Project Start: June 2007
Go-Live Date: September 2007
Initial Investment: $62,000
Present Customer: Yes
Public Syncromatics-run Site: Not released by University yet
Contact:
Mr. Andre Spaulding
Parking & Transportation
954.673.1515
aspaulding@miami.edu

University of California at Riverside

Business Type: Public University
Number of Vehicles: 6 total, (6) 40-foot buses
APC Installed: Yes
Project Start: November 2007
Go-Live Date: February 2008
Initial Investment: $25,000
Present Customer: Yes
Public Syncromatics-run Site: Not released by University yet
Contact:
Mr. Lance Danks
Manager, Transit Services
Transportation & Parking Services
951.827.1281
lance.danks@ucr.edu

2.4 Exhibit 4: Proposed RTPI System Description

2.4.1 Summary

Syncromatics has endeavored to be as thorough as possible in responding to the KWDoT's RFP. Much of the information requested by KWDoT is included in other sections of this proposal; as such, requests from the RFP that refer to other sections will be briefly explained with a reference to the appropriate section for more information. The structure of Exhibit 4 will be as requested.

2.4.2 Hardware

2.4.2.1 In-vehicle Equipment

Hardware components of Syncromatics' system include the following. Please see the appropriate section for a description of each, where referenced.

- **Modems / VLUs**: Syncromatics uses Windows-CE based devices with RS232, J1708, CAN and USB interfaces on-board. The modems are industrial grade, fully and permanently warrantied, extensible, programmable and are rated for extreme temperatures common to KWDoT's service area (they are deployed successfully at the University of Miami). The modems measure approximately 7" x 3" x 2" and run off standard bus power supplies. The modems have a time to first fix of less than 1 minute and can track all 13 GPS satellites at once, in addition to making use of terrestrial SBAS fix-enhancing technology.
- **Automated passenger counters (APC)**: Syncromatics uses industrial grade, transit-specific passenger counters. The counters employ the IBIS protocol which is fully implemented on the modem/VLU and interchangeable with multiple APC devices from various manufacturers. APC information passes from the APC controller to the modem, where it passes immediately to the bus. The door sensors are overhead, infrared, two-beam systems that are only active when the hard-wired door open signal is active. The devices are rated for the same environmental conditions as the modems. See **5.10 Passenger Counting** for functionality related to this hardware.

- **Mobile data terminals (MDTs):** Syncromatics has two types of MDTs, both transit-specific and rated for the same environmental conditions as the modems. See **5.11 In-vehicle Dispatch** for hardware pictures.

2.4.2.2 *Operational and Dispatch Hardware*

Syncromatics does not require any particular hardware or software to run dispatch operations. All tools are web-based, and Client can begin using them immediately after the install with nothing but a standard web browser. At UCSD they use a 52" LCD screen to monitor positions of all the buses at once, and we provide custom views for them to use in that respect.

2.4.2.3 *LED and LCD Signage*

Syncromatics offers both standard, two-line LED signs that show arrival predictions for routes as well as full-color LCD-screens for both indoor and outdoor installations. See **6.1 Text-only LED** and **6.2 Full-color LCD**.

2.4.2.4 *Communications Network*

Syncromatics uses a cellular-based GPRS communications network. Our service provider is not a major carrier; they are a specialized data-only machine-to-machine communications provider that buys service from all major GSM carriers, including AT&T. This maximizes coverage availability. Coverage maps indicate full coverage for the City of Key West all the way back into mainland Florida; Syncromatics is happy to validate this with a drive-test on our first visit to KWDoT.

All data that passes between Syncromatics' in-vehicle equipment and internet servers passes over this network. All sign communications will also be powered by this network in the absence of hard-wired Ethernet communications at the stops. Syncromatics' in-vehicle equipment supports over the air upgrade of both operating system and application software, and Syncromatics engages in this on a regular basis with all field equipment.

2.4.2.5 *Future Expansion*

As outlined in **2.4.3.1 Standards Compliance** and **2.4.3.10 Development and Improvement Procedure**, the Syncromatics system is a custom-built, 100% feedback-generated system. In 2007 alone, the Syncromatics system went through 9 versions each accomplishing major new features like arrival predictions, passenger counting, Excel reporting, LED and LCD signage, MDTs, and many other new features. These were all responses to direct customer feedback and it is our intent to continue this development cycle with KWDoT.

It is also Syncromatics' intent to comply with all standards and integration requests from KWDoT and support the broadest range of hardware possible.

2.4.3 *Software*

2.4.3.1 *Standards Compliance*

Syncromatics is aware of the standards compliance requested by the RFP, and is prepared to make data systems provided to Client compliant where requested. Portions of the Syncromatics system are already compliant with NTCIP and SAE standards, such as:

- NCTIP 2202:2001 TCP and UDP communications
- Hardware compatibility: J1708, J1939 and IBIS protocols are already in use for automated passenger counters, MDTs and modems
- XML data feeds are used throughout the Syncromatics system and can be customized and formatted for Client

2.4.3.2 *Database Architecture*

Syncromatics' database is Microsoft SQL Server 2005. The database architecture supports direct export of XML, and is ODBC compliant. Because Syncromatics is an entirely hosted service, Syncromatics will not need to assess Client any licensing fees nor can it make use of any licenses KWDoT may have. Syncromatics is happy to work with KWDoT on database integration with existing SQL databases it may have.

2.4.3.3 *Tracking and Mapping*

Syncromatics modems report position **every 6 seconds** (see it live at http://ucsdbus.com/). Although this is a large volume of information, it is stored in perpetuity for each vehicle and route active on the system, of which there is no limit. This information is plotted on Google Maps along with stops, routes and other icons. Vehicle icons can be customized as Client sees fit and mouse-over hovers give more information about vehicles such as speed, arrival times, current route, etc. See **5.1 Real-Time Tracking** for pictures and further information.

2.4.3.4 *Data History*

Syncromatics keeps a full history of all vehicle activity including speed, ignition, door events, and passenger entry/exists for every update the modem sends, which is every 6 seconds. This information can be viewed by-vehicle in a breadcrumb fashion (**5.5.1 By Vehicle**) or by-route in video playback mode (**5.5.2 By Route**).

2.4.3.5 *Data Collection and Update Procedure*

Syncromatics provides Client with full route-management tools to create, edit, and delete routes and stops at any time. Buses automatically assign and un-assign themselves to routes as they drive them, and data collection is automatic and requires no human interaction once the routes are drawn in and made active. See **5.8 Route and Stop Management,** and **5.3 Stop History** for details.

2.4.3.6 *Route Management*

Syncromatics' route management tools are outlined in **5.8 Route and Stop Management**, and are entirely graphically based for ease of plotting routes. Syncromatics can import and export route information in formats of KWDoT's choosing, and is prepared to work with the DIF formats specified in the RFP.

2.4.3.7 *Mobile and Handheld Features*

Syncromatics has several features related to mobile cell phones and PDAs. Syncromatics' arrival prediction model is described in **2.4.3.9 Arrival Prediction Model** and **5.2 Arrival Predictions**. The real-time arrival predictions are accessible by the following mobile-related methods:

- Mobile Web Browser: Arrival predictions are displayed on phone-based browsers. See **5.2.1 Via Handheld PDA/Browser.**
- Text Message (SMS): Arrival predictions are communicated to user upon request via text message by sending an SMS message to a Syncromatics-run phone number. See **5.2.2 Via Text-Message (SMS).**

There is no extra charge for this service.

2.4.3.8 *Public Access*

Syncromatics provides a customized .com portal to each Client, free of charge (i.e. http://keywestshuttles.com or similar). This portal can be embedded or linked into the existing KWDoT webpage. See **5.9 Public Portal** for more information.

2.4.3.9 *Arrival Prediction Model*

Syncromatics' arrival prediction model is based on actual vehicle path on the existing route it is driving. The system will automatically assign and remove buses from routes as soon as they uniquely match in the system, and begin calculating arrival predictions immediately. Here are the steps involved in calculating the arrival prediction:

- Step 1: System uses a ranking algorithm based on previous 5-10 points, proximity to point and time between points to choose a point on the route that is most likely to be the one the bus is currently on top of. Using the previous 5-10 ensures that it chooses the right sequential point when there may be points that are 15-20 min apart but very close to each other.
- Step 2: System detects the first point at which it was locked onto stop (as per criteria in Step 1) and calls that "arrival".
    - This includes sanity checks. For example: if a bus's first arrival time at a stop had 2 minutes of time between it and the previous position update, the previous position update (if close enough) may outrank the closer one due to less time between positions. So consider an example where you had update A, then 6 seconds later update B, then 2 minutes later update C, getting progressively closer to the stop A->C. The 2 minute delay is caused by a stationary bus (i.e. at the stop), and although C is closer to the stop than B, B will win because it has a much shorter (6 second) delay from its last update, and is more true to the actual arrival time than the 2 minute one that came in after it had been sitting.
- The algorithm for determining time spent at a stop works like this:
    - When a bus is within 3-5 route points of a stop, it starts recording data, call that point A.
    - When a bus passes the stop and is now 3-5 points past it, it stops recording data. Call that point B.
    - All points between A and B are then ranked based on specifically tuned weighted percentages of the following criteria:
        - 1. Distance, closer = better
        - 2. Time from previous point, for arrival, shorter=better, and departure longer=better. **This is the most important factor**

- 3. Speed: arrival, slower=slightly better, departure, faster=slightly better
  - Using this criteria, an arriving point is chosen, and then a departing point is chosen. The departing point must be after the arriving one, and is sanity checked for limits on each criteria above. If a departing point cannot be chosen within limits, it forces choosing an earlier arrival point and calculating from there.
  - The time at stop is simply (departing time minus arrived time)

2.4.3.10 *Development and Improvement Procedure*

Syncromatics is committed to the continuous improvement of our product. One of the primary reasons all our systems are web-based is to give Syncromatics the ability to constantly release new features and roll them out immediately. In response to customer feedback, there were 9 revisions in 2007, incorporating new features like arrival predictions, passenger counting, Excel reporting, stop history, schedule adherence alerts, public portals.

Syncromatics **strongly encourages** KWDoT to contact our references specifically about response to their feedback and continuous implementation and improvement.

2.4.4 *Warranty*

2.4.4.1 *Hosted Service*

Syncromatics is a hosted service. KWDoT will not need to host any servers or client application software; only a web browser is required. See **3.2 Hosted Service**.

2.4.4.2 *Hardware Warranty*

Syncromatics warranties all hardware installed in perpetuity; this is included in monthly fees and includes travel costs if necessary. Syncromatics uses local contractors and maintenance personnel to handle local service visits, and we already have contractors retained in the south Florida area for the University of Miami. See **7.3 Hardware** for details.

2.4.4.3 *Internal Monitoring Tools*

Syncromatics uses proactive monitoring tools to monitor Client's vehicle status. This includes GPS, passenger counting, door signals, constant bidirectional heartbeats to the server, and advanced over-the-air upgrade and diagnostic functionality. This ensures a minimum of hardware failures, and early detection.

2.4.4.4 *Service Level Agreement*

See **7.5 Service Level Agreement.**

2.4.4.5 *Server Conditions*

Syncromatics' servers are hosted in a fully redundant, diesel generator backed state of the art facility directly connected to One Wilshire, the largest communications hub in Los Angeles. See **7.5 Service Level Agreement** for more details.

2.4.4.6 *Security*

Syncromatics' servers are secured by Cisco® firewalls and monitored by a 24x7 NOC at our datacenter.

2.4.5 *Reporting*

2.4.5.1 *Schedule and Headway Adherence Reports*

Syncromatics provides schedule and headway adherence reports that calculate statistics based on the stop history buses collect over time. Reports can be broken down by route, stop and time of day, and extended over periods from 1 day to years. See **5.4 Excel Reports.**

2.4.5.2 *Passenger Traffic Reports*

Syncromatics provides automated passenger count traffic reports that calculate statistics based on the stop history buses collect over time. Reports can be broken down by route, stop and time of day, and extended over periods from 1 day to years. The reports will also display percentages and actual average counts for each stop on a route during particular times of day. See **5.4 Excel Reports.**

2.4.5.3 *Individual Stop Reports*

Syncromatics records the following at each stop:

- Arrival time
- Departure time
- Passengers on
- Passengers off
- Other statistics like time between buses, time since last stop, etc.

This information can be seen on the web-based system or downloaded into Microsoft Excel. See **5.3 Stop History.**

2.4.5.4 *Exporting to CSV*

All MS-Excel reports discussed above are also available in CSV.

2.4.6 *Training and Support*

Syncromatics provides continuous training of existing and new employees.

Initial Training
Syncromatics will conduct a one-day initial training session, on-site, free of charge at the completion of installation. This will cover all aspects of the system including:

- Dispatch and tracking features
- Alerts

- Reporting and history functions
- Sign management
- Route and schedule creation and management

It will be demonstrated live with KWDoT's buses and route systems.

Ongoing Training
Ongoing is also available **free of charge** for KWDoT's employees upon request. Remote training is conducted via a remote view of the trainer's desktop, and is functionally equivalent to the initial training.

2.4.7 *Meeting the Implementation Plan*

Syncromatics has successfully deployed AVL systems over 50 vehicles with award-winning results. See 2.3.1 references, specifically UCSD.

Syncromatics will conduct installation and implementation in accordance with KWDoT's requests:

- Initial installation of 8 trial vehicles will be conducted following issuance of contract documents and a purchase order.
- Functional testing on-site will continue with Syncromatics personnel present for 1 business day following installation.
- Internet interface will be immediately available following installation of 1 or more vehicles.
- Every route will have a bus collecting data for comparison to actual.
- Syncromatics and KWDoT will document any problems encountered and work to resolve them to KWDoT's satistfaction.
- Once acceptance testing (see below) is completed, Syncromatics will complete the second phase of installation.
- Message signs will follow complete vehicle deployment, with separate acceptance testing.
- System can be operational by April 30, 2008 if KWDoT executes contract documents and purchase orders expeditiously. **Note:** Automated passenger counting and dynamic message signs may take longer, up to 8 weeks from purchase order. Testing devices can be provided earlier, but full deployment will take longer.

See also: **8.0 INSTALLATION.**

2.4.7.1 *Acceptance Testing*

The following test plan is submitted for KWDoT's approval:

- Vehicle Logic Unit Acceptance Testing
  - Does the device report position to any web browser within 1 minute of vehicle start?
  - Does the device report position every 6 seconds at lower speeds, and every 10-15 seconds at medium and high speeds?
  - Does the device acknowledge operation to the server once per minute when on?
  - Does the device report door open and close events to the server reliably?

- Does the device assign itself to routes as they are driven, and remove itself from routes as they are deviated substantially from?
- Does the device predict arrival reliably?

- Automated Passenger Counter Acceptance Testing
  - Does the device report door open and close events reliably for both doors?
  - Does the device count people boarding the bus accurately, including those that enter quickly or are back to back?
  - Does the device count people exiting the bus accurately, including those that exit quickly or are back to back?
  - Does the device achieve 95% or better statistical accuracy with actual counts on a daily basis?
- Dynamic Message Sign Testing
  - Does the sign turn on and off according to specified schedule?
  - Does the sign alternate between routes according to specified interval?
  - Does the sign display arrival predictions in a timely fashion, updated at least every 30 seconds?
  - Does the sign display informational and emergency messages immediately when they are specified on the web-based interface?

2.5 Exhibit 5: Anticipated Project Timeline

The following estimated implementation timeline is submitted for KWDoT's acceptance and is in accordance with the requested time frame.

Day 0 is considered the date of receipt of a purchase order. Days are calendar days.

- Day 0: Automated Passenger Counter (APC) order is placed according to KWDoT's request. AVL modems are stocked and can be available within 5 business days.
- Day 7: Installation of initial equipment occurs, with at least (8) buses equipped with AVL modems and (1) automated passenger counter.
- Day 8: On-site acceptance testing with KWDoT.
- Day 12: KWDoT approves acceptance testing. Dynamic message signs are ordered.
- Day 21: Installation of remaining AVL equipment. On-site training occurs.
- Day 30-60: Dynamic message signs installed as available.
- Day 40-60: Remaining APC equipment installed as available.

See also: **8.1 Service Activation Timeline.**

2.6 Exhibit 6: DBE Compliance

See Appendix A: Signature Pages.

2.7 Exhibit 7: Debarment Certification

See Appendix A: Signature Pages.

2.8 Exhibit 8: Lobbying Certification

See Appendix A: Signature Pages.

3.0 EXECUTIVE SUMMARY

Syncromatics will provide AVL and transit management services to Client. AVL is offered as a fee-based service to track the geographic location and related information of vehicles. This includes, but is not limited to: latitude, longitude, heading, speed and ignition state, as well as optional passenger counting and dispatching services. There are many included features that allow Client to analyze, display, and distribute the data once it has been collected. For a full description of included feature sets, please see **5.0 SUMMARY OF SERVICES.**

All services provided will be available through a standard web browser; there is no additional software necessary.

3.1 Intended Use

Syncromatics provides AVL services for the purposes of tracking, managing and monitoring vehicle usage with respect to location and speed for maintaining schedules, vehicular break-down assistance, and vehicle location purposes. Syncromatics grants Client rights to distribute their data through their customer portal to the public (see **5.9 Public Portal**), and the further grants Client rights to assign user accounts on their system to their employees as deemed necessary by Client.

3.2 Hosted Service

All of Syncromatics' services and implementations are managed by Syncromatics. This includes, but is not limited to web-based systems, internet servers, mapping software, cellular data networks, and managed outdoor signage. Syncromatics will not ask for or allow use of client's resources for the hosting of AVL services provided by Syncromatics. The one exception to this rule is on-location LCD / LED signs. Syncromatics will ask only for network (optionally) and power access for these screens; everything else will be managed and provided by Syncromatics.

All features provided to Client and riders of Client's transit system will be delivered in a web-based fashion. There is no desktop-based software and all our implementations are cross-platform, cross-browser compatible.

Client's data will be backed up in a multiply redundant fashion on a daily basis, and will remain on Syncromatics' servers inside Syncromatics' data center, a secure facility in Los Angeles, for the duration of not less than 1 year. Archived data older than one year will be retained indefinitely on backup media.

4.0 INVESTMENT DETAIL

Syncromatics bills for installation, monthly service, and custom integration. Our fees are all inclusive; only things set out in **4.0 INVESTMENT DETAIL** will be billed for.

4.1 Installation

Syncromatics manages procurement and installation of all hardware that supports our system. Hardware prices detailed below are inclusive of installation labor; Syncromatics performs all installation work and only uses contractors managed by Syncromatics.

AVL modem, per vehicle, installed *Includes all features except those below*	$1,625
In-vehicle Mobile Data Terminal, Simple	$475
In-vehicle Mobile Data Terminal, Advanced w/ Touchscreen *See 5.11: In-vehicle Dispatch*	$1,650
Per vehicle, passenger counting, installed *See 5.10: Passenger Counting*	$2,100 / single door bus $2,500 / double door bus
Per LCD screen, installed *See 6.2: Full-color LCD*	Specific to site, requires survey
Per text-only LED sign, installed, wireless	$4,250
Per text-only LED sign, installed, wired *See 6.1: Text-only LED*	$3,750

4.2 Monthly Fees

Syncromatics bills once per month for each vehicle installed. This includes cellular airtime, server hosting and bandwidth costs, as well as support and maintenance.

Per vehicle, per month, tracking only	$85.00
Per vehicle, per month, passenger counting (add on) *See 5.10: Passenger Counting*	$10.00
Per vehicle, per month, in-vehicle dispatch terminals *See 5.11: In-vehicle Dispatch*	$15.00
Per sign, per month, LED sign, if wireless	$55.00
Per sign, per month, LED sign, if wired Ethernet *See 6.1: Text-only LED*	$30.00
Per screen, per month, LCD screen, if wireless	$95.00
Per screen, per month, LCD screen, if wired *See 6.2: Full-color LCD*	$65.00

4.3 Evaluation

Syncromatics will provide (1) vehicle tracking unit to Client for evaluation purposes. This unit will be installed by Syncromatics, free of charge, for Client to evaluate the service in a live environment. Syncromatics does not require a maximum service period for the evaluation, but does ask that Client reach an expedient decision with their evaluation so evaluation units can be available for other parties.

Syncromatics may also provide a demonstration passenger counting installation, but this is subject to availability, as Syncromatics does not typically stock these devices.

4.4 Service Term

Syncromatics does not have any minimum service commitments. Client's service is month to month, and termination is possible at any time with 30 days' written notice.

Syncromatics also offers a 60-day money back guarantee. If Client is unsatisfied for any reason with the purchase, we will accept our equipment back at the original purchase price provided it has been 60 days since the date of install.

4.5 Custom Integration

Client may ask Syncromatics to perform custom integration to existing or planned systems like dispatch software, phone systems, etc. This will be quoted on a per-project basis as a flat fee.

4.6 Total Expenditure

Included with this document is a pricing schedule that can provide fee calculation of all our features including tracking, passenger counting, in-vehicle MDT dispatching, and LED signs.

5 SUMMARY OF SERVICES

Syncromatics provides both actual AVL services to collect and report data about Client's vehicles, as well as feature sets that process and display data for Client's use, distribution, and display.

5.1 Real-time Tracking

Real time tracking means that a vehicle's location is reported to an internet server with a delay of not more than 10 seconds; at slower speeds it is 6 seconds, at higher speeds, like on highways, it is closer to 10. When Client engages Syncromatics to install the service, an AVL device will be installed in Client's vehicles and programmed to report to Syncromatics' internet servers. This is accomplished through the use of GPS for pinpointing the location and cellular GPRS for transmission to Syncromatics' internet servers. Syncromatics will collect and store the following data on a

continuous basis: **latitude, longitude, speed, heading** (North, South, etc), **door status, and ignition state.**

Once the vehicle's position has been reported, it will be stored in the vehicle's history and will also be available to be plotted, in real time, through a web interface. A sample of what the located vehicle will look like when plotted in a web browser is shown in Figure 5.1.A below.

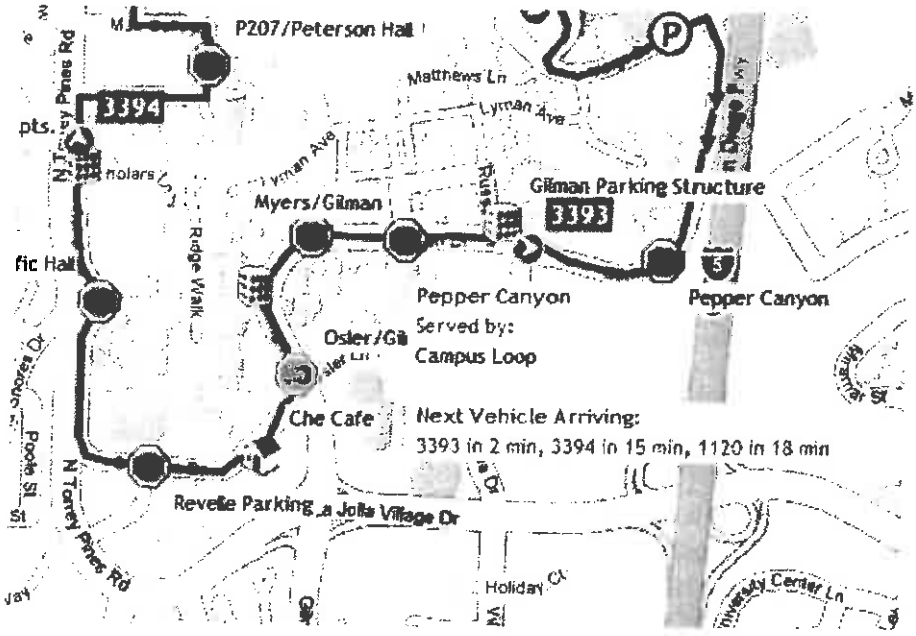


FIGURE 5.1.A. Real-time Tracking

5.2 Arrival Predictions

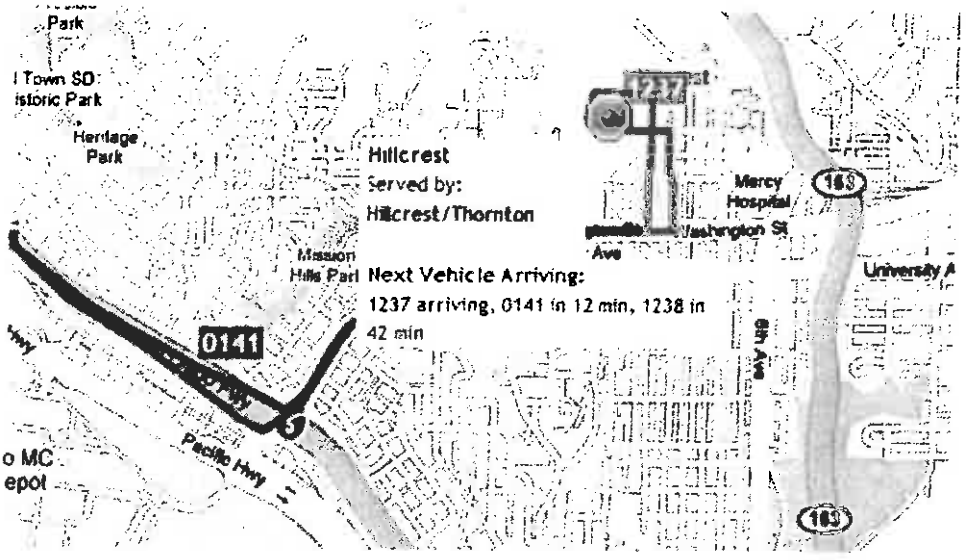


FIGURE 5.2.A. Arrival Predictions

Syncromatics will use statistical realtime data to predict the arrival of Client's vehicles at each stop for each route they have defined, with no limit on stops or routes. Further, vehicles will automatically assign themselves to routes as they drive them. Statistical stop times will be available on a query-based interface so Client can see how accurate their schedule is on a particular day, as a trend during a period of time, etc. (see **5.4 EXCEL REPORTS**).

Syncromatics will provide a public facing portal that can either be of the format http://client.syncromatics.com or a .com domain of Client's choosing, like http://univbus.com. Syncromatics does not charge for registration or hosting of a custom portal; this is a standard feature included with one or more buses active on the service. This portal will display text arrival predictions for people wishing to get the data quickly; on desktops it will update without refreshing the page.

5.2.1 Via Mobile Web Browser

The public interface will be available to mobile users in a simplified version from any cell phone, as pictured below. To access this in real-time, visit http://ucsdbus.com/ from any web-enabled handheld.

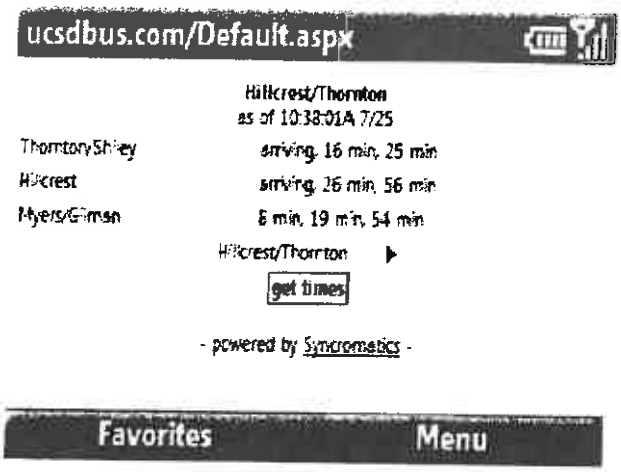


FIGURE 5.2.B. Arrival predictions on a handheld/cell phone

5.2.2 Via Text-Message (SMS)

For users that do not have a mobile web browser or a data plan on their cell phone, Syncromatics provides arrival predictions via text-message (SMS). To see how the text message function works, text "ucsd" to (213) 400-3484 and instructions will follow.

Users will also have the capability to store a favorite stop with a name of their choosing, which can be easily accessed in the future. For example, if the Student Union stop on the Campus Express route is a frequently used stop by a rider, they can give it the name "campus", and then access arrival times immediately via text message by simply sending "to campus" to (213) 400-3484.

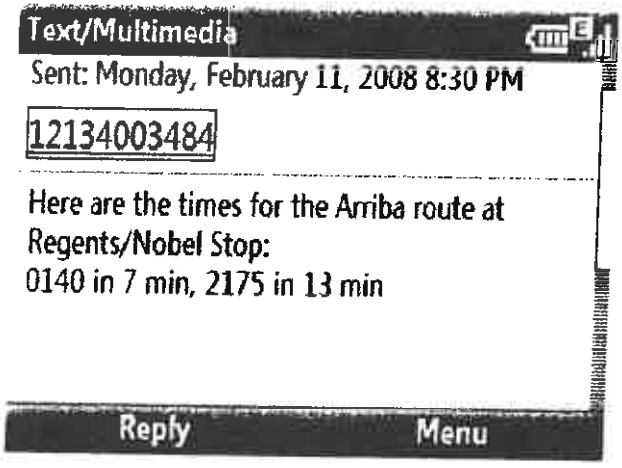


FIGURE 5.2.C. Arrival predictions via text message

5.2.3 Via electronic (LED) sign

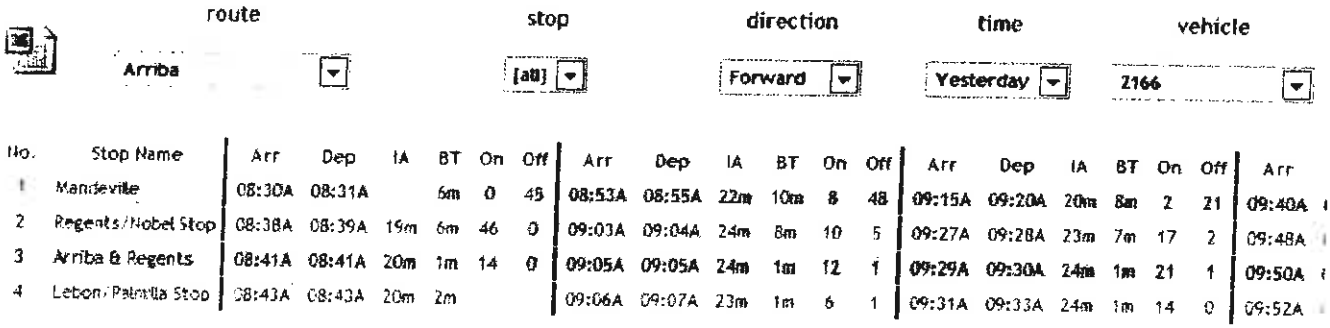
Syncromatics offers outdoor and indoor LED signs that can display arrival predictions to users at the stop. These text-only signs will rotate through routes serving the stop on an interval, displaying arrival times for each route along with the route name. See **6.1 Text-only (LED) Signs** for more information.

5.3 Stop History

Syncromatics will store the following information each time a bus stops at one of the stops defined by Client on a bus route:

- Arrival Time
- Departure Time
- Time at stop
- Time since last bus serviced this stop ("inter-arrival time")
- Time from previous stop on the route to current stop on the route.
- (Optional, with passenger counting installed)
    - Passengers on, passengers off

This will be displayed in the following fashion, with filters for route, stop, direction, time and vehicle:



No.	Stop Name	Arr	Dep	IA	BT	On	Off	Arr	Dep	IA	BT	On	Off	Arr	Dep	IA	BT	On	Off	Arr
1	Mandeville	08:30A	08:31A		6m	0	45	08:53A	08:55A	22m	10m	8	48	09:15A	09:20A	20m	8m	2	21	09:40A
2	Regents/Nobel Stop	08:38A	08:39A	19m	6m	46	0	09:03A	09:04A	24m	8m	10	5	09:27A	09:28A	23m	7m	17	2	09:48A
3	Arriba & Regents	08:41A	08:41A	20m	1m	14	0	09:05A	09:05A	24m	1m	12	1	09:29A	09:30A	24m	1m	21	1	09:50A
4	Lebon/Palmilla Stop	08:43A	08:43A	20m	2m			09:06A	09:07A	23m	1m	6	1	09:31A	09:33A	24m	1m	14	0	09:52A

FIGURE 5.3.A Stop History, web browser

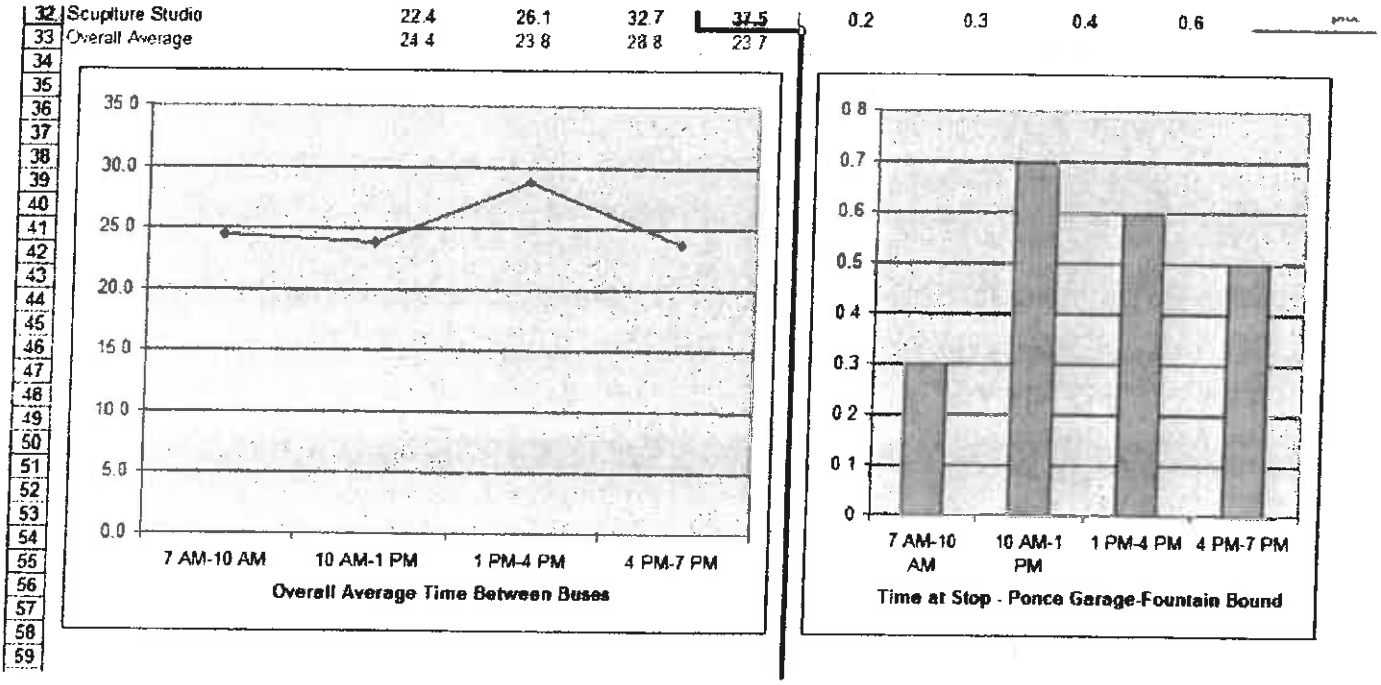
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	
1	No.	Stop Name	Arr	Dep	IA	BT	On	Off	Arr	Dep	IA	BT	On	Off	A
2	1	Mandeville	08:30A	08:31A		6m	0	45	08:53A	08:55A	22m	10m	8	48	09:
3	2	Regents/Nobel Stop	08:38A	08:39A	19m	6m	46	0	09:03A	09:04A	24m	8m	10	5	09:
4	3	Arriba & Regents	08:41A	08:41A	20m	1m	14	0	09:05A	09:05A	24m	1m	12	1	09:
5	4	Lebon/Palmilla Stop	08:43A	08:43A	20m	2m			09:06A	09:07A	23m	1m	6	1	09:

FIGURE 5.3.B Stop History, exported to Excel

Stop data collected can be exported using the button pictured above to Microsoft Excel format documents for distribution and analysis.

5.4 Excel Reports

As explained in **5.3 Stop History**, each time a bus passes a stop on one of Client's routes, Syncromatics stores a timestamp of when it arrived, when it left, how long it spent there, and passengers boarding and exiting. Using that data, Syncromatics can compute statistical averages of how often a bus is arriving at each stop and how long it spends there, over any period of time. For example, client can ask the system to show inter-arrival and at-stop averages for Route X, between 7AM and 6PM, on weekdays, for the last 3 months. It will then break down the arrival and stop times by hour/hours, and graph it. This will be presented in Microsoft Excel format immediately. An example is pictured below.



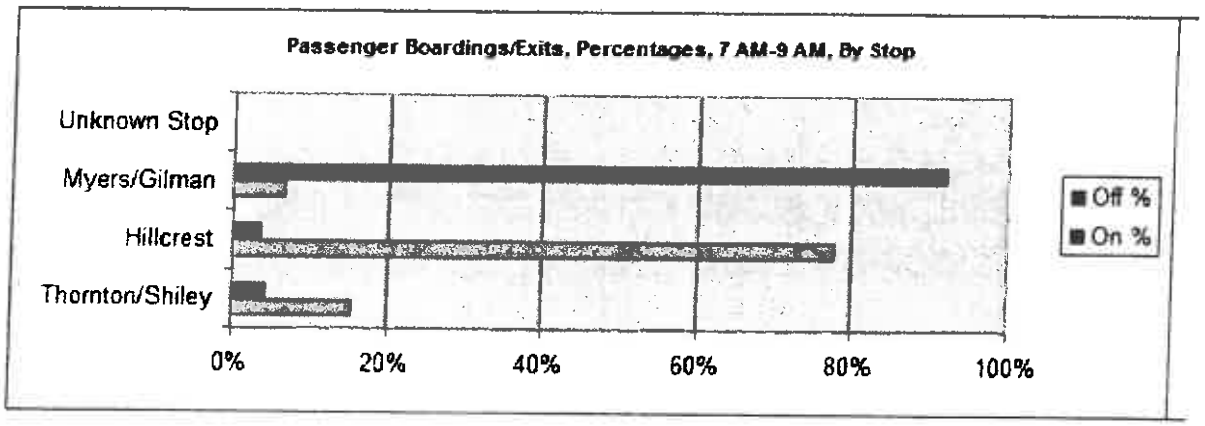


FIGURE 5.4.A. Excel Reports.
In the top figure, the left hand side shows average arrival times for the entire route, by each 3 hour period; the right-hand side shows average time at a particular stop. The bottom graph is percentage of passengers exiting/boarding by stop.

5.5 Searchable History

Syncromatics will store and make available a full history of all AVL data collected for each vehicle. This history will be permanent and be completely available at all times from the time of install for a period of 1 year, at which point it will be archived. The history is available either by-route, or by-vehicle.

5.5.1 By Vehicle

The history will be searchable on a per-vehicle basis such that Client can query based on a start time, duration, and vehicle. For example, the last 15 minutes of data for vehicle CLIENT1, or 1 day of data starting on July 1st, 2007 for vehicle CLIENT1.

As with the real-time tracking feature, data will be queried and displayed through a web-based interface. The history function records ignition, door open/close and passenger boarding/exiting events. This is displayed visually on the map. A sample of the interface is shown below.

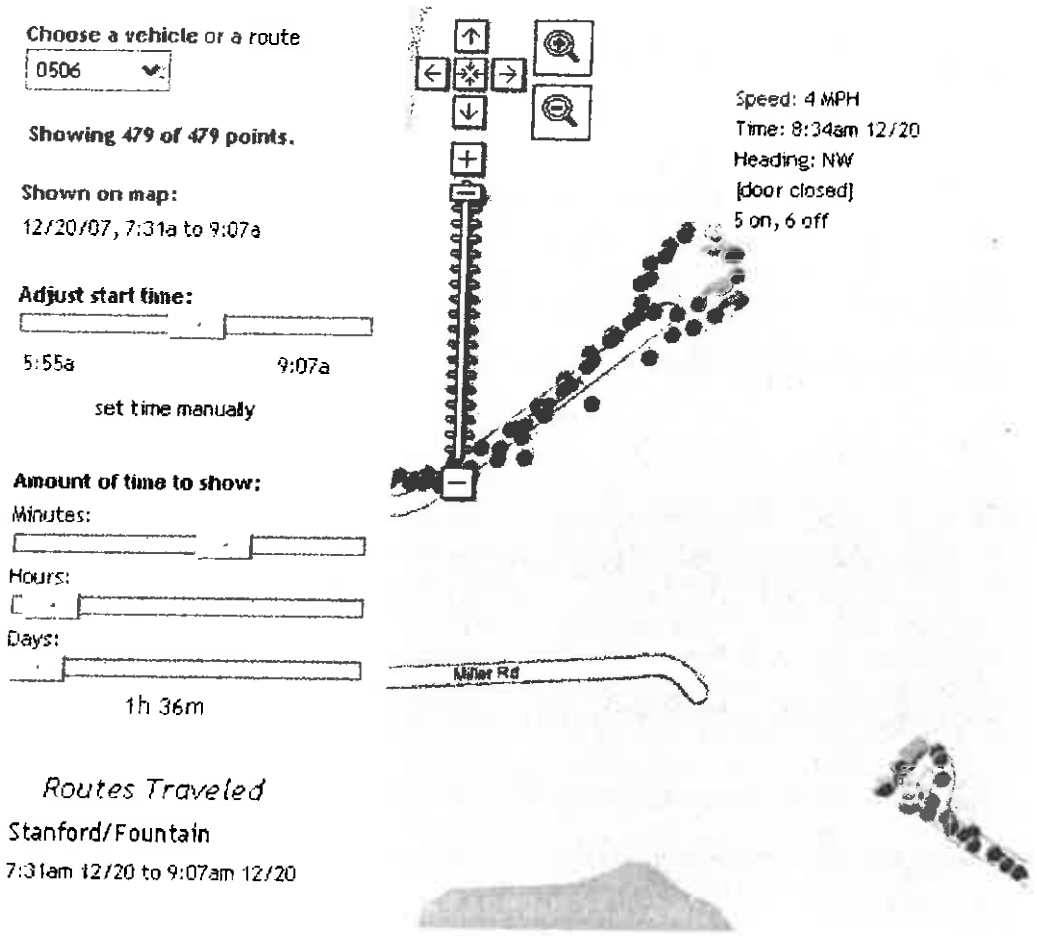


FIGURE 5.5.A. Searchable History

5.5.2 By Route

As buses drive the routes Client defines on the system, they assign and remove themselves automatically from routes as they start driving them. This information is stored in the database along with stops. The history can be displayed in a playback fashion for each route, showing the exact location and activity of each bus during particular points in time. A picture of the history playback function is shown below.

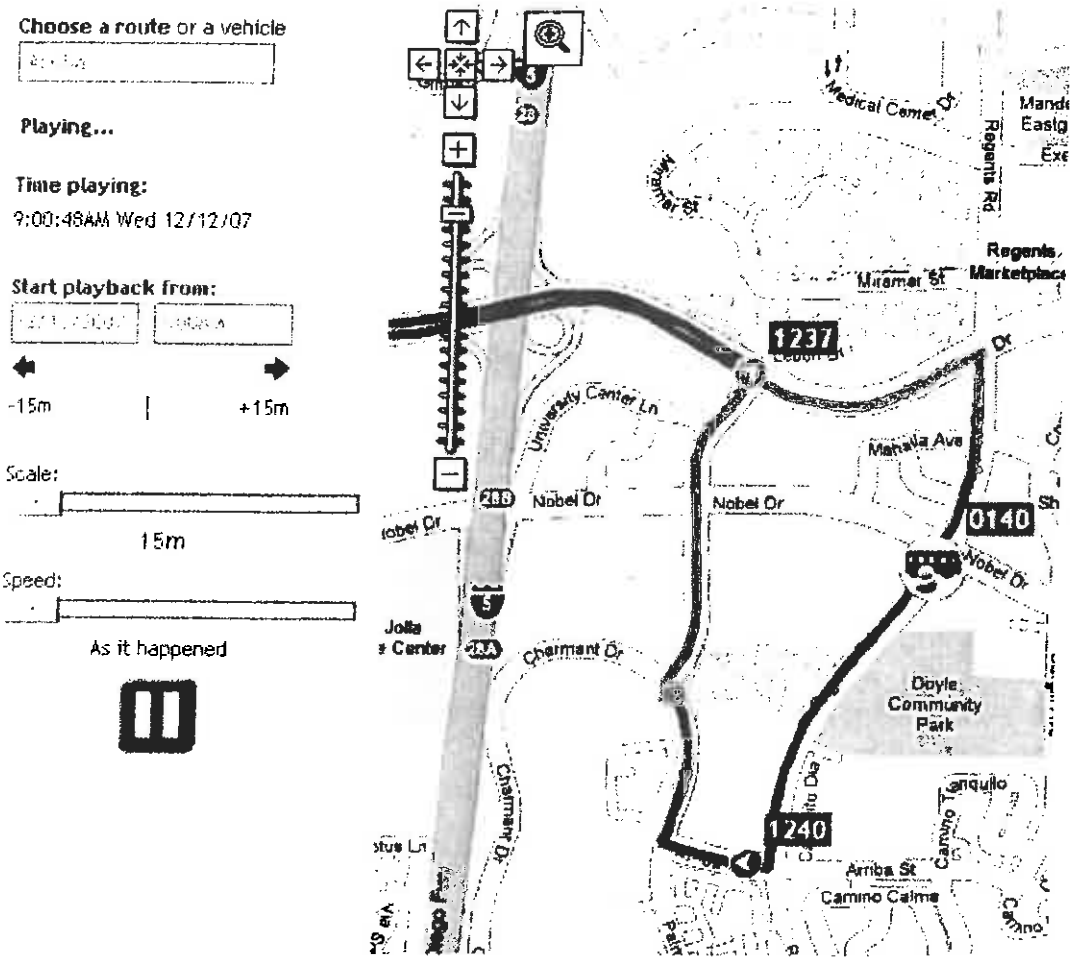


FIGURE 5.5.B. History: Route Playback Function

5.6 Vehicle Status

Client will have access to the following up-to-the-second vehicle status information at all times, for each vehicle.

- Latitude
- Longitude
- Speed
- Last check in - The vehicle checks in periodically, even if it is not moving, to indicate it is still passing data properly.
- Last position - The last time the vehicle updated its position with the server.
- Ignition state - (on, off, battery power loss) The vehicle's power state.

5.7 GeoFence / Alerts

Client will have access to define alerts based on criteria they specify. An alert is based on two pieces of information:

- Speed - How fast is the vehicle presently moving?
- Location - Where is the vehicle relative to Client's defined perimeters?

Alerts can be based on speed only, location only, or both speed and location. Speed criteria is entered as an upper bound; for example, when the vehicle exceeds 50 MPH. Location criteria is based on a perimeter drawn by Client, for example, Client could draw a perimeter around their city, and define an alert to trigger when vehicles leave that city. Combination speed and location alerts make use of both these criteria, each must be true in order for an alert to be generated.

Once the criteria of an alert is defined, Client can apply the alert to any combination of vehicles on their account. When an alert "triggers" (i.e., meets the conditions defined by Client), it will generate a searchable log entry indicating the vehicle in question as well as its speed, time, and location. This data will link to the history for a graphical breadcrumb trail of exactly what happened.

Client also has the choice to have this information immediately e-mailed to anyone in their organization with a Syncromatics login.

Alerts can be enabled and disabled at will, and their criteria, vehicles and users can be edited at any time.

To illustrate perimeter drawing capabilities, the perimeter drawing tool is shown below.

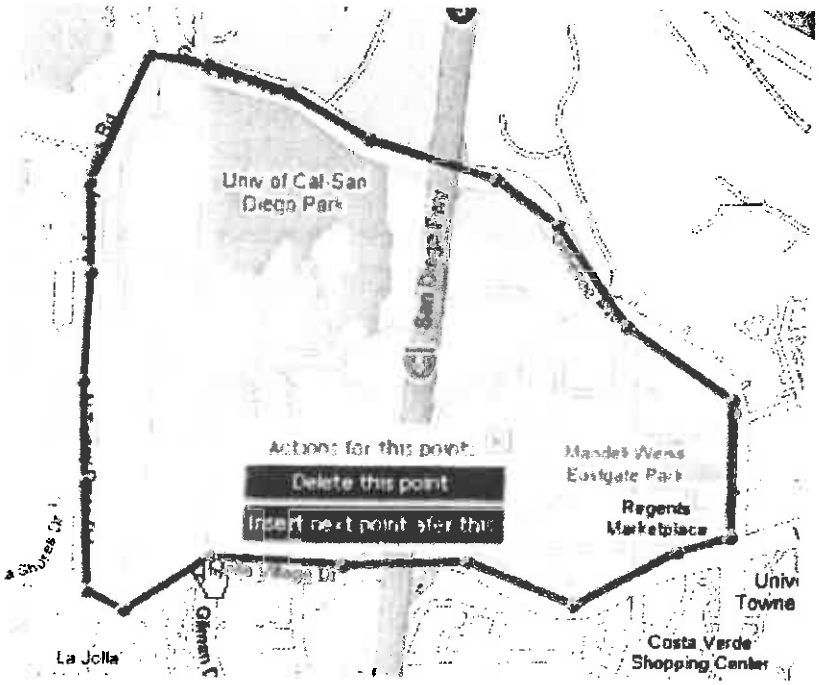


FIGURE 5.7.A. Perimeter Drawing Tool

5.8 Route and Stop Management

Client will have graphical route and stop management tools available to them. At any time, at any location near or far to their home location, client can create new routes and stops, or edit existing ones.

Creating/editing routes

The route manager is shown below; this tool allows Client to create and edit routes. When a new point is added on the route, it can either stay a point or be designated as a stop. If designated as a stop, Client will have to give it a name. Once client elects to make it a stop, if it is in the immediate vicinity of a pre-existing stop defined on any other route, the system will ask the user if s/he would like to use the pre-existing stop. This allows Client to define stops that are shared amongst routes.

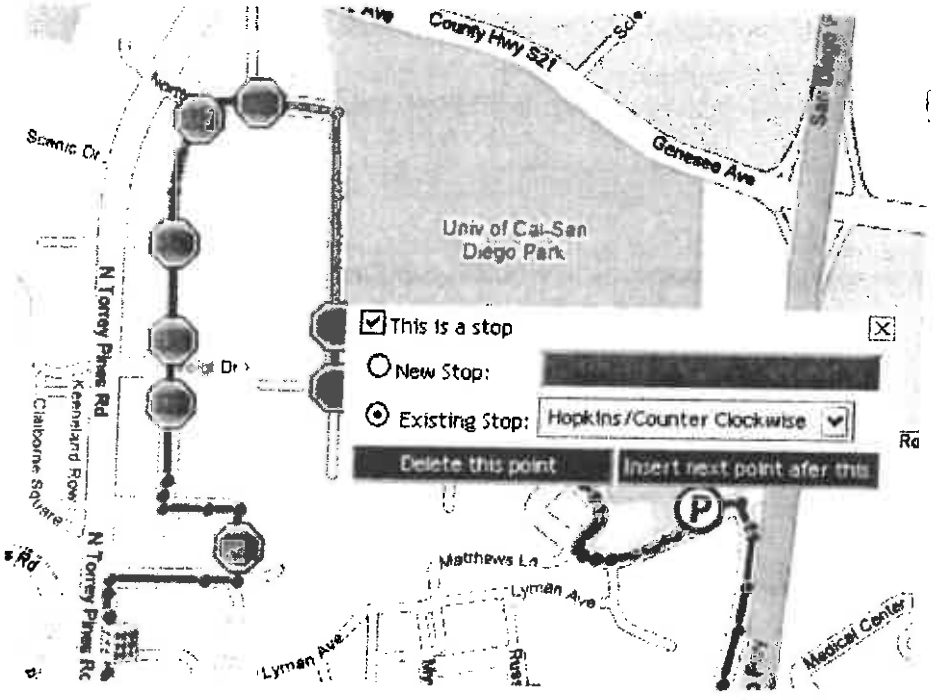


FIGURE 5.8.A Route manager, recommending use of an existing stop.

Routes can be changed at any time, and any changes made are immediately effective and update to all views for public display automatically.

Editing existing stops

Once stops are in the system, they can have dependencies between multiple routes, so they must be managed separately. Client will have access to manage the stops globally and edit information about them such as name, exact position, label position, icon, etc.

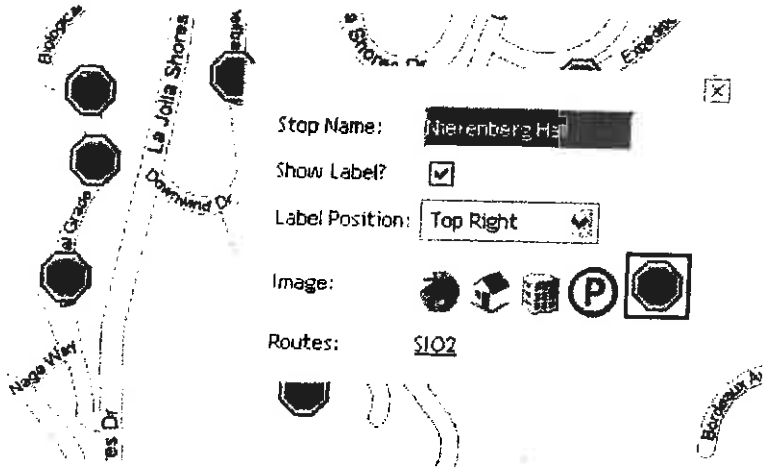


FIGURE 5.8.B. Stop manager editing a particular stop.

5.9 Public portal

Syncromatics will host a public domain name (e.g., http://ucsdbus.com/ , a present customer site) for Client. The registration and upkeep on this website will be managed by Syncromatics for Client at no additional charge.

The public portal will display the following information to anyone who accesses it:

- Real-time map of bus locations and routes
- A route finder, pictured below, that allows users to find a route connection their origin and destination stops.
- Arrival predictions for each stop
- Real-time capacity loads for buses with passenger counting installed
    - E.g. Bus 2120 is 40% full. Changes at each stop as passengers board/exit.
    - See **5.10 PASSENGER COUNTING** , Figure 5.10.A
- Announcements populated by Client through the "manage portal" function.
- Schedule information for each route.

For mobile devices, a "light" version of the site will allow users to pick routes and display arrival predictions for each stop. This light version is pictured previously in **FIGURE 5.2.B.**

Client will have the ability to control the following characteristics of the site:

- Which routes are displayed
- Stops and route paths through the route manager (see **5.8 ROUTE AND STOP MANAGEMENT)**
- Schedule information for each route
- Announcements

- Main title of the page, e.g. ("Shuttles Portal")
- The choice to display/not display passenger loads on passenger counting buses

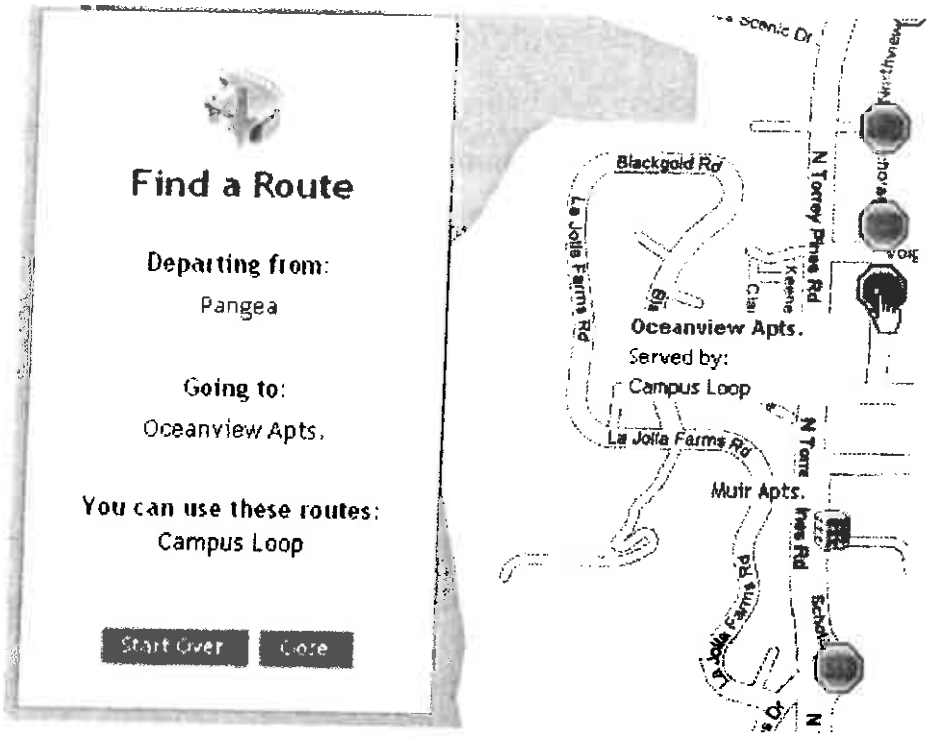


FIGURE 5.9.A. Route Finder
The route finder allows customers to find routes that connect stops they are interested in. Holding the mouse cursor over a stop displays the routes that serve it.

5.10 Passenger Counting

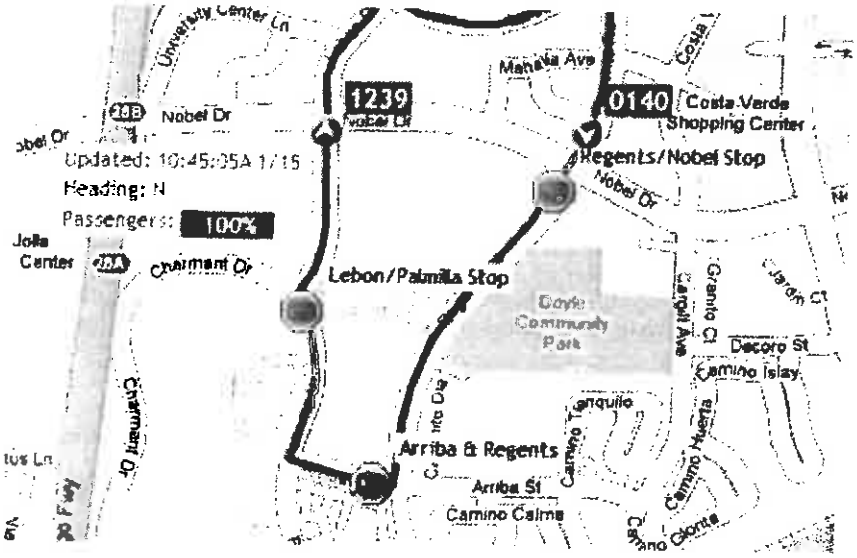


FIGURE 5.10.A. Passenger Counting, Real-Time Capacity

Syncromatics provides passenger counting as an add-on to existing vehicle tracking services. When passenger counting is installed, each doorway on a bus has two invisible beams that detect direction (boarding or deboarding the bus) when broken in sequence. It also has a connection to the door relay which tells the device when the door is open and closed; counts are only registered when the door is open. Using the two beams and the door connection, it can count people with high reliability. This device is connected to the logic unit that handles the tracking, where it is timestamped and associated with a GPS position to determine what stop it is at. The data is then stored on the server as a combination of (route, stop, passengers on, passengers off, total passengers on bus). The number of people currently on the bus is optionally displayed in real time on the public portal (see **5.9 Public Portal**), as a percentage rounded to increments of 25%.

The data instances of (route, stop, passengers on, passengers off, total passengers on bus) can be used at any time after the fact to generate reports (see **5.4 Excel Reports**) that tell Client things like what the most popular stop is, how many people rode a route in a given month, what the peak hour of the day is, etc.

5.11 In-vehicle Dispatch

Syncromatics offers in-vehicle MDT solutions to facilitate wireless data exchange between Client's vehicles and dispatch personnel and systems. Syncromatics typically custom-designs solutions for each Client, which are subject to custom integration fees, quoted on a case-by-case basis (see **4.5 Custom Integration**). Typical functionality includes:

- Driver/shift sign in/out
- Fuel stops and percentage tracking
- Paratransit call dispatch
- Text-based message broadcasting - send and receive

Figure 5.11.A. Simple MDT

Figure 5.11.B. Advanced MDT

6 LED AND LCD SIGNAGE

6.1 Text-only LED

Syncromatics offers text-only LED signs which can be placed at both indoor and outdoor sites. For outdoor sites, the devices are weatherproof and sunlight readable. Signs can accommodate communications via wired Ethernet connections (provided by Client), or wireless cellular data communications.

The purpose of the signs is to display arrival predictions at each stop. These signs will alternate through each route serving that stop, displaying 2 arrival times for each route. For example, route A will display its arrivals for 30 seconds, then 30 seconds for route B, then back to A, etc. The signs require power provided by Client; communications can be handled wirelessly or through wired Ethernet provided by Client.

The signs are approximately 34" wide and 9" high, with two lines each about 3.5" in height. The top line displays the route name, the bottom line displays the predictions. An example is shown below.

Campus Loop
2 min, 9 min

Syncromatics provides capability through the web management interface outlined throughout **5 Features** for Client to override the message on the signs with an emergency message. Client can choose to completely override predictions so the emergency message is always displayed, or add it to the rotation so it rotates along with arrival predictions.

6.2 Full-color LCD

Syncromatics offers full-color LCD mapping displays in both indoor and outdoor displays. Similar to text-only LEDs, these displays will rotate through the routes that serve the location they are installed at; however instead of arrival predictions these screens display a full-color map similar to the one seen on the customer portal - with live locations of the buses, updated every 6 seconds. For example, suppose the Student Union stop was served by the Campus Hospital and Campus Express routes. For 30 seconds, the display would show a map with current positions of the Campus Hospital buses. Then for another 30 seconds, it would display the Campus Express route and buses. This loop repeats.

The screen is programmed to shut off at specified schedule intervals defined by Client. For example, Client could specify that the screen be on from 7AM-5PM, weekdays only. The management software on the screen will manage the power cycling.

These screens require additional controller machines that are ruggedized for industrial use and included in the price of the screen. They are priced on a case-by-case basis because each desired location may have different specifications that affect cost.

Full-color LCD signs also have functionality to completely override the display with an emergency message, or to put it in the rotation of the routes.

Figure 6.2.A. Full-color LCD installation.

7 MAINTENANCE AND SUPPORT

7.1 Help Desk

Syncromatics will provide telephone and e-mail support whereby the following requests can be tracked and responded to. The normal Help Desk hours will be 24 hours a day, 7 days a week, although Syncromatics encourages Client to submit requests during normal business hours. Responses to requests for service will be not more than 48 hours. Resolution of reported problems is not guaranteed at the time of response, but issues will be addressed and responded to within the stated timeframe.

- Software Requests
  - Software errors/problems
  - Feature requests / ideas
- Hardware Requests
  - Modem failures
  - Wiring / antenna problems

7.2 Software

As described in **3.2 Hosted Service**, Syncromatics provides and manages all AVL services on Syncromatics servers. All data and operations are run from these servers and usage is included in the monthly fees paid by Client to Syncromatics.

From time to time, client may experience problems, uncover bugs, or require help with features of the system. As above, such requests will be handled by the Help Desk and will be responded to in a timely fashion by Syncromatics personnel.

Syncromatics has developed all of its software in-house and will continue to do so. **Especially in the early stages of deployment, Syncromatics will be open and receptive to Client's suggestions to improve the web interface and add new features.** Syncromatics will entertain and possibly implement these feature requests. This has occurred on a regular basis and will continue for future customers.

7.3 Hardware

Syncromatics provides a fee-based service to Client which is dependent upon the continuous operation of AVL devices placed in Client's vehicles by Syncromatics. In rare circumstances, devices fail and will require replacement, maintenance, etc.

Syncromatics will assume reasonable responsibility for the failure of AVL devices, and ***will warranty them in perpetuity*** while each vehicle is active on the service and invoices are paid in a timely fashion. Where possible and reasonable, Syncromatics will work with Client's fleet and vehicle maintenance personnel to have devices switched out according to the following procedure:

- Client reports problem via Help Desk to Syncromatics
- Syncromatics will contact maintenance personnel to diagnose problem
- If warranted, Syncromatics will ship client a replacement device to be installed by Client's maintenance personnel. Typically Syncromatics will leave spare modems at Client's site so shipping usually isn't necessary.
    - In most cases, this is a relatively simple process; all it requires is unplugging wires, switching cellular SIM cards, and plugging things back in.
    - Client will be expected to ship faulty device back to Syncromatics immediately, at Syncromatics' expense.
- If problems persist and require further investigation, Syncromatics will dispatch personnel to service the vehicle on-site.
    - Syncromatics will typically retain a contractor in the area for prompt service.
    - Syncromatics will assess travel costs for service visits in excess of 100 miles if Syncromatics personnel are required. This is a rare circumstance as problems can usually be handled easily by our local contractors.
    - If defects are found to be the result of negligence or poor workmanship on the part of Syncromatics, Syncromatics will not assess any fees aside from travel costs.

- If defects are found to be the results of negligence or tampering on the part of Client, Syncromatics will assess labor and equipment fees for the service visit.

7.4 Browser Support

As discussed in **3.2 Hosted Service**, Syncromatics' services run entirely out of standards-complaint web browsers. Syncromatics will support the following browsers as clients to the system:

- Windows
  - Microsoft Internet Explorer 6.0, 7.0
  - Mozilla Firefox 1.5+
- Macintosh
  - Safari 1.2.6+
    - Safari has been known to run slowly on old Macs. Syncromatics supports it but does not guarantee its performance and highly recommend Macintosh users use Mozilla Firefox.
  - Mozilla Firefox 1.5+
- Linux, other operating systems
  - Mozilla Firefox 1.5+

The browsers listed above account for the large majority of the client user base on the internet.

7.5 Service Level Agreement

7.5.1 Downtime

Syncromatics endeavors to keep its servers up and running 24x7x365. However, there are extreme cases which could cause downtime, which are beyond Syncromatics' control. In the case of downtime, the following discounts will apply.

Vehicle Downtime

Vehicle downtime is defined as a service outage that affects only a single vehicle. This is almost always related to a hardware failure. The process for addressing these issues is listed in **7.3 Hardware**. If a vehicle has been out of service for more than 1 calendar week and Syncromatics has not shipped a replacement unit to client, Client shall receive a discount of the monthly fee prorated from the day the vehicle went out of service to the day it goes back in to service. Syncromatics warranties its modems in perpetuity, so discounts are only given if the issue is not addressed as above within 1 week's time.

Brief Downtime

Brief downtime is defined as a service outage of the entire system for less than 8 hours. In the case of brief downtime, Syncromatics will provide a one-time $100.00 discount on monthly fees between 1-8 hours of downtime. For downtime less than 1 hour, a one-time $50.00 discount will apply.

Extended Downtime

Extended downtime may occur if Syncromatics or its datacenters experience a major system failure which involves multiple hard drive and server failures, a city-wide network outage, or a city-wide

power outage. Syncromatics will provide a $300.00 discount for periods between 8 and 24 hours of downtime, as well as a $300.00 discount for each 24 hour period thereafter.

7.5.2 Scheduled Maintenance

Syncromatics may conduct scheduled maintenance on its databases, web applications and live modems. Whenever possible, Syncromatics will conduct this maintenance during the night when Client's vehicles are not in operation; this is defined as all vehicles are parked at designated parking locations.
If Syncromatics must conduct maintenance while vehicles are moving, Syncromatics will give Client at least 1 business day's notice, including the number of vehicles that will be affected. If it is not possible to give this notice, Syncromatics will apply a $25.00 discount for each unscheduled maintenance occurrence during normal operations.

7.5.3 Software Updates

Syncromatics' system is under constant revision. Client has the right to request new features be added to the system, and Syncromatics will implement them at its discretion. Software updates typically occur every 1-2 months and are done in batches. Updates to the system are always done in accordance with **7.5.2 Scheduled Maintenance.**

7.5.4 Hardware Updates

Syncromatics warranties the devices it places in Client's vehicles in perpetuity. If Syncromatics releases new features not included in this document that are optional and require updated hardware, Client shall have the option to assume 50% of the cost for the new devices to obtain the new features. If Syncromatics must upgrade its devices to continue to support the feature set as outlined above, Syncromatics will assume all costs related to the hardware upgrade and there will be no cost to Client.

7.5.5 Datacenter Backups

Syncromatics' servers are housed in a secure server facility in downtown Los Angeles. The facility is home to several thousand servers; it draws power and communications from One Wilshire, the largest network communications hub in greater Los Angeles. The facility is climate controlled by industrial air conditioning units specifically designed for server applications. The facility has multiple redundant power supplies and a 24x7 Network Operations staff. For these reasons, a high degree of confidence is placed on the reliability of the server infrastructure.

Syncromatics' backup schedule is as follows:

- Every 24 hours, the entire structure of the system and all data with the exception of historical position and stop data is backed up inside the data center to at least 2 backup mediums.
- Every 24 hours this backup is transferred over the high-speed network to an online backup repository in Utah.
- Every 72 hours historical data is backed up in the same fashion above (2 local backup mediums, 1 offsite backup) and uploaded offsite. The schedule is longer because this is a

substantially large amount of data to transfer and may take 48-72 hours to complete the offsite upload.

Client may request that Syncromatics restore route or stop data from one of its daily backups in the event that undesired changes are accidentally made.

8.0 INSTALLATION

In order to ensure proper operation, Syncromatics will require that installation be performed by Syncromatics' personnel. This includes wiring, antennas, modems, terminals, passenger counting installations and validation testing to ensure proper operation on our system.

The following is a sequence of events that will occur from the date of written agreement to final installation.

- Master Contract Signature - A governing contract is required to establish terms and conditions of service before installation can proceed. In past cases, this document has served as the master contract, but contracts can be drafted at the discretion of and by Client if necessary. Syncromatics does not require minimum service terms or anything outside the scope of this document; this contract serves as an understanding of the terms of the business relationship. Syncromatics understands that Client may attach Standard Contract Provisions as necessary.
- Purchase Order - Client will need to issue a purchase order for Syncromatics to proceed.
- Equipment Survey - For larger fleets or fleets with nonstandard vehicles, Syncromatics may need to visit Client's site to do an equipment survey prior to ordering parts. This is typically not necessary.
- Equipment Order - Syncromatics will place orders with its partners for data accounts, wiring, antennas, and AVL devices needed to support client's fleet.
- Installation - Syncromatics will perform installations on-site at client's location. This will typically take several days for fleet of more than 15 vehicles; all costs related to travel, personnel and equipment are covered by installation fees regardless of fleet size.
- Training - Syncromatics will provide a full day training session on-site with Client's personnel, to be scheduled at Client's discretion.
    - This training will include live and hands-on demonstration of all functionality exposed by the system.
    - Further training for new personnel or clarifications will be handled by the Help Desk and is free of charge.
- Service Activation - Syncromatics will grant accounts to Client's personnel and certify the service as live, at which point monthly billing will begin.

8.1 Service Activation Timeline

An ***estimated*** timeline for each step of the installation is included below. All times are relative to the date of signature on the Master Contract.

- Equipment Order - within 2 business days of Installation Survey or Master Contract signature, whichever is later

- Installation - (estimated) within 14-30 business days of equipment order
    - This is subject to factors beyond Syncromatics' control, such as manufacturer availability of parts
    - Note: Availability of optional hardware can take longer:
        - Passenger counting - 6-8 weeks from order
        - MDT dispatch terminals 4-6 weeks from order
        - LED signs - 6-6 weeks from order
        - LCD signs - 6-8 weeks from order
- Training - within 2 business days of installation
- Service Activation - same day as training
- Total: 30-60 business days from Master Contract signature

EXHIBIT 2: Form of Proposal & Acknowledgement of Addenda

I understand that the City of Key West Department of Transportation reserves the right to reject this proposal, but that this proposal shall remain open and shall not be withdrawn for a period of sixty (60) days from the date of its submission. Prices submitted in response to the RFP will be valid for a minimum of 180 days from the date of proposal submission.

The price quoted in any proposal shall include all labor, materials, tools, equipment and other costs necessary to fully complete the design, manufacture, delivery and implementation of the system pursuant to the negotiated specifications.

Name of Firm: SYNCROMATICS CORPORATION

Name & Title of Authorized Official: JOSH BIGELOW, CEO

Signature: _____

Date: 2/21/2008

Business Address: 547 N MARTEL
LOS ANGELES CA 90036

Telephone Number: (310) 726 6997

Fax Number: (310) 734 6831

Email Address: josh@syncromatics.com

Acknowledgement Of Addenda Received:

Addendum No.: Date Received: Addendum 1, 2/20/08

Addendum No.: Date Received: Addendum 2, 2/20/08

Addendum No.: Date Received: _____

If no addenda were received, write "N/A" in each "Addendum No." blank. Failure to acknowledge receipt of all addenda may cause the proposal to be considered non-responsive to the solicitation. Acknowledged receipt of each addendum must be clearly established.

Please attach a copy of each addendum received to this Exhibit.

ADDENDUM #ONE

Project: RTIPS

To All Bidders:

The following change is hereby made a part of RFP #2008-008 –
as fully and completely as if the same were fully set forth therein:

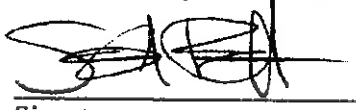
City of Key West DOT would like to add an item into the "Pricing Schedule" category on page 29 of 67 (Exhibit 1: Pricing Schedule)

Item to be added as a priced option:

Automatic Passenger Counter system (APC)

- ☐ *Using infrared/thermal cameras to detect, count, and analyze passenger's boarding/alighting the transit buses.*
- ☐ *Required software necessary to process and organize the data and produce detailed reports on the collected information.*
- ☐ *When combined with RTPI system, the APC should allow the automatic collection of a host of additional information about operations, including maximum and minimum load points, boarding and alighting rates, vehicle dwell times, door cycles, distance traveled, etc.*

All Bidders shall acknowledge receipt and acceptance of this Addendum No. 1 (one) by acknowledging the addendum in their proposal or by submitting the addendum with the bid package submission. Bids submitted without acknowledgement or without this addendum may be considered non-responsive.



Signature

SYNCROMATICS

Name of Business

2/21/08

Date

ADDENDUM #2

Project: RTIPS

To All Bidders:

The following change is hereby made a part of RFP #2008-008 –
as fully and completely as if the same were fully set forth therein:

The following questions were submitted by vendors within the stated deadline as described in the RFP #2008-008. Answers have been provided below:

1) *(Q) How many vehicles currently have the Interfleet system installed, and what equipment and how many vehicle installations are required to complete? (A) We require that 17 vehicles be outfitted with the required hardware, with the option to expand up to 25 vehicles.*
2) *(Q) What data and in what form is data delivered or extractable from the existing Interfleet system? (A) We currently receive Latitude, Longitude, time of fix, etc., with the ability for some additional on/off data for systems checks etc. The data is stored in a SQL database and is extractable in that format.*
3) *(Q) Database update frequency? Does the database hold all of the City's schedule and route data and how is that data imported/exported? (A) The frequency is currently set to 30 second intervals, and the database does not contain any route/stop data. All stop locations, and route designations would have to be created and input. The information from the AVL boxes onboard the buses, is sent to the database via cellular data cards (currently ATT).*
4) *(Q) Does the city have a complete GIS data set for the routes and bus stops in the transit system? (A) No, the maps currently in use are commercial overlays, such as Microsoft Virtual Earth, and they do not contain any route/stop specific GIS data, this must be created.*
5) *(Q) What is the City's timeline for implementing the other desired technologies? (A) All other described technologies should be included as options, with quoted prices. The City will make determinations on implementation timelines based on cost, availability, etc.*
6) *(Q) Page 4, Paragraph A – This procurement will allow other transit agencies in the State of Florida to procure similar systems over a five year period. Does this mean that the prices have to be firm for five years? (A) Prices should be fixed for 5 years, however, an escalation clause may be added to allow for percentage increases in pricing due to market fluctuations.*
7) *(Q) Page 9 – Contract notification will be on March 21st, and system must be fully tested, accepted and operational by April 30th. That's only a 6 week schedule. That's a very aggressive schedule. How realistic is the schedule? (A) The schedule is aggressive due to aging funds from FTA used to procure the system. However, we are willing to work with the successful bidder to accomplish the listed operational date, or come as close as possible to that date.*

8) **(Q)** *Page 19, Paragraph D.2 – The RFP is asking for a hosted solution. Why is it necessary to have on-site technical assistance for 60 days?* **(A)** *While 60 days is stated for on-site technical support, we expect that an equivalent 24/7 immediate response, remote support may be sufficient, so long as the successful bidder is aware that they must be prepared to respond ON-SITE for technical support during that 60 day period if so requested by DOT staff, and this response will be included as part of the bid package, and not delivered at an additional cost.*

9) **(Q)** *Page 19, Paragraph D.3 – Vendor must provide ongoing user and technical support for five years. Does this mean a five year ASP and hardware maintenance warranty must be priced out?* **(A)** *Yes, and it must include all parts and service.*

10) **(Q)** *Page 20, Paragraph F – On site training is required. Is training via over the internet and telephone an acceptable alternative?* **(A)** *No. Initial on-site training will be provided during system implementation. However, subsequent follow up training may be performed via alternative methods as described in the question above.*

11) **(Q)** *Appendix A, Page 53A, complete service area and both schedules in Appendix B02, Page 59 are corrupted. Please re-provide.* **(A)** *The document will be checked and uploaded again if problematic, if further technical complications continue with the document please contact: Eduardo Herrera eherrera@keywestcity.com Office: 305-809-3915.*

12) **(Q)** *Photos on pages 55 thru 58 and elsewhere in the RFP does not state the size of the LED signs for the particular applications or whether LED signs should be shelter mounted, wall mounted or pole mounted. Please Clarify?* **(A)** *Please price all optional signs/sizes/types. It is our intent to purchase the optimal sign combinations within our funding limitations.*

13) **(Q)** *LED Signs require AC power. Where and how will the power be provided for each sign location?* **(A)** *The signs to be priced should all function on Solar Power, with the exception of LCD/CRT style signs, which generally consume higher amounts of electricity. Please refer to pages 16-17 #5 under "Hardware Requirements & Features".*

14) **(Q)** *Please provide photos of the 2 types of Gillig buses to more accurately estimate APC Costs?* **(A)** *Once all photos are uploaded, a notification will be provided to all prospective vendors.*

15) **(Q)** *Is a customized website required?* **(A)** *Yes, a custom website will be required, and will be linkable from our city website.*

16) **(Q)** *Please provide the manufacturer and model number of the PA systems currently on the Gillig buses.* **(A)** *We have yet to receive response for the exact make/model of the PA system. When this information is received, it will be uploaded.*

17) **(Q)** *Please clarify what is meant by 17/25 in the "# of Units" column of the RFP #2008-008 Exhibit 1, Pricing Schedule?* **(A)** *It describes the minimum/maximum number of units to be purchased by the City of Key West DOT within the 5 year bid period.*

18) **(Q)** *The price schedule of Exhibit 1 has a line item for four (4) Sign Platforms. There is nothing in the text of the RFP that describes what is to be priced out.* **(A)** *That number describes the maximum number of "Large display boards" to be purchased. Please list size/style options.*

19) *(Q) Is your RFP for GPS/AVL systems for your paratransit fleet, for fixed route buses, or both? (A) We do not currently operate paratransit services, only fixed route.*

20) **(Q)** Schedule - Is a one month project schedule mandatory? **(A)** Please refer to Question # 7 above.

21) **(Q)** What budget has the City/KWDoT allocated for this project? **(A)** We do not wish to disclose that information.

22) **(Q)** Please provide additional information about the existing GPS/AVL system. **(A)** Current system is made by Interfleet / Gray Island Systems, please refer to them for detailed system information.

23) **(Q)** Please explain the overall fleet composition relative to what vehicles have existing AVL or CAD equipment. Are all vehicles equipped with the same equipment? **(A)** We have 15 30' Gillig Low Floor Buses, and will be receiving 2 35' Gillig Low Floor Buses by June 2008. All vehicles are equipped with the same hardware.

24) **(Q)** Please identify the size of the signs desired (character height, number of lines, number of characters per line). **(A)** Please price all options.

25) **(Q)** How many buses are to be equipped for the Testing Stage? **(A)** 8 buses should be equipped during testing.

26) **(Q)** What scheduling system is used for the transit systems? **(A)** We do not currently have scheduling software.

27) **(Q)** It appears that the existing CAD/AVL system may provide the necessary Schedule and Route Adherence data, and AVL data. Is this correct? Is this data available in the SQL database? **(A)** Yes, Yes.

28) **(Q)** Are all vehicles currently equipped with Interfleet CAD/AVL equipment? **(A)** Yes.

29) **(Q)** There appear to be requirements to interface the existing CAD/AVL system(s), and also requirements to provide a CAD/AVL system. Please clarify. If only a data interface is required, please provide the data structure of the database. **(A)** The data structure is in SQL.

30) **(Q)** Please describe the existing communications (voice and data) systems. What communications devices are currently on all the vehicles? What communications system is used for data communications? **(A)** Interfleet for AVL Data, and Motorola for radio communications.

31) **(Q)** Please provide any available RF licensing information, radio sites, number of available frequencies, etc. **(A)** We currently have an agreement to share the 800mhz frequency for our Motorola Radio's with MCSO (Monroe County Sherriff's Office) All questions pertaining to licensing etc. of that radio frequency should be directed to their office.

32) **(Q)** Can all existing equipment be reused? **(A)** Yes.

33) **(Q)** Is a performance bond required for this procurement? **(A)** Yes.

34) **(Q)** Is a payment bond required for this procurement? **(A)** Yes.

All bidders shall acknowledge receipt and acceptance of this Addendum No. 2 by acknowledging addendum in their proposal or by submitting the addendum with the bid package. Bids submitted without acknowledgement or without this addendum may be considered non-responsive.

Signature

SYNCROMATICS

Name of Business

2/21/08

Date

EXHIBIT 6: Certification of Compliance with Requirements for the Participation of Disadvantaged Business Enterprises (DBEs)

The bidder hereby certifies that it will comply with the requirements of Section 19 of the FTA, Section 105(f) of the Surface Transportation Assistance Act of 1982, Section 106(c) of the Surface Transportation and Uniform Relocation Assistance Act of 1987, and the DOT implementing regulations of 49 CFR Part 23. The certification must be completed to be eligible for award.

DATE 2/21/08

SIGNATURE [signature]

TITLE CEO

FIRM SYNCROMATICS

State of California

County of San Francisco

Subscribed and sworn to before me this 21st day of February, 2008

Notary Public [signature]

My Appointment Expires April 29, 2011

DOROTHY C. CONCEPCION
Commission # 1742571
Notary Public - California
San Francisco County
My Comm. Expires Apr 29, 2011

EXHIBIT 7: Certification of Primary Participants Regarding Debarment, Suspension, and Other Responsibility Matters

CERTIFICATION REGARDING DEBARMENT, SUSPENSION,
INELIGIBILITY and VOLUNTARY EXCLUSION
LOWER TIER COVERED TRANSACTION

(To be submitted with all bids or offers exceeding $20,000.)

The prospective lower tier participant (Bidder/Contractor) certifies, by submission of this bid or proposal, that neither it nor its "principals" [as defined at 49 C.F.R. §29.105(p)] is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

___If the prospective lower tier participant (Bidder/Contractor) is unable to certify to the statements in this certification, such prospective participant (Bidder/Contractor) shall attach an explanation to this proposal. (Check if applicable)

The lower tier participant (Bidder/Contractor), SYNCROMATICS certifies or affirms the truthfulness and accuracy of this statement of its certification and disclosure, if any.

SIGNATURE _____

TITLE CEO

COMPANY SYNCROMATICS

DATE 2/21/08

State of California ss

County of San Francisco

Subscribed and sworn to before me this 21st day of February, 2008. by JOSHUA M. BIGELOW personally before me.

Notary Public _____

My Appointment Expires April 29, 2011

DOROTHY C. CONCEPCION
Commission # 1742571
Notary Public - California
San Francisco County
My Comm. Expires Apr 29, 2011

EXHIBIT 8: Certification of Restrictions on Lobbying

(To be submitted with all bids or offers exceeding $100,000; must be executed prior to Award)

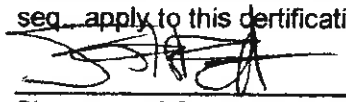
The undersigned SYNCROMATICS certifies, to the best of his or her knowledge and belief, that: (contractor)

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any persons for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding to any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions [as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, et seq.)]
3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance is placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transactions imposed by 31, U.S.C. 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. 1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than $10,000 for each such expenditure or failure.]

The Contractor, SYNCROMATICS, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. Section A 3801 et seq., apply to this certification and disclosure, if any.



Signature of Contractor's Authorized Official

2/21/08

Date

JOSH BIGELOW CEO

Name and Title of Contractors Authorized Official

Subscribed and sworn to before me this 21st day of February, 2008, in the State of California ____; and the County of San Francisco.

Notary Public _____

My Appointment Expires April 29, 2011

DOROTHY C. CONCEPCION
Commission # 1742571
Notary Public - California
San Francisco County
My Comm Expires Apr 29, 2011