

# Project FlightSchool

Lev Popov, Brian Glidewell

## Overview

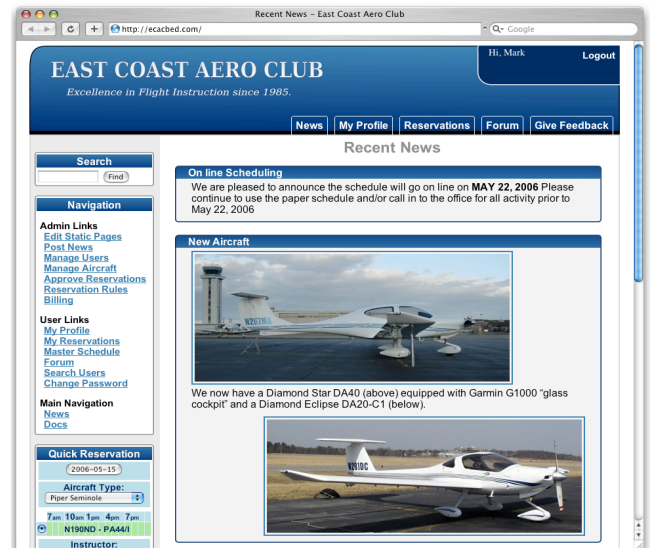
**FlightSchool** is a web application aimed at air clubs and flight schools, providing online community features integrated with scheduling and accounting systems. Developed for East Coast Aero Club, a flight school with three locations, 400 active members, over 30 aircraft and over 20 instructors, **FlightSchool** was able to meet all of the organization's needs for an online system. For club members, the system enables making reservations online as well as socializing and finding pilots interested in sharing flights, while for club staff it reduces the workload associated with reservations processing and accounting data entry. The entire system was designed, built, and launched in 12 weeks.

Several things set **FlightSchool** apart from existing scheduling solutions:

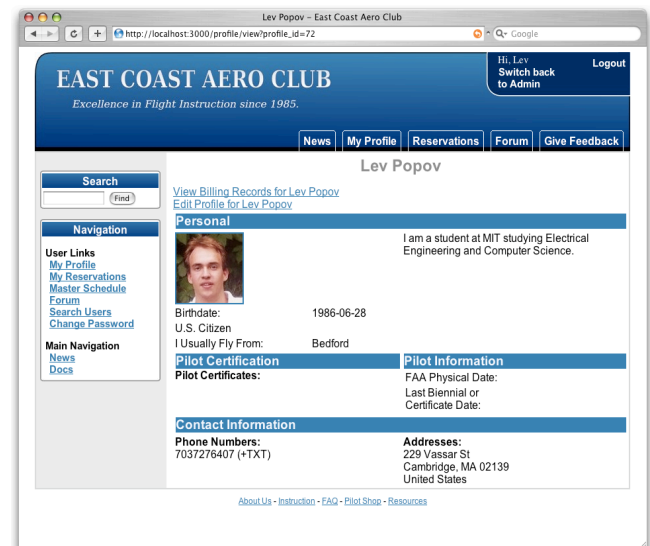
- Elegant and efficient Javascript-powered UI saves users time and mouseclicks
- Advanced Content Management System for handling site content and managing news makes **FlightSchool** a complete system for online presence
- Online Community Features - user profiles, and discussion forums designed with ride-sharing in mind
- Mobile Phone Interface - pilots can check their reservations through a WAP-enabled cell phone browser
- Ability to handle multiple offices, unifying separate scheduling systems for different locations under common community and accounting systems

## Online Community

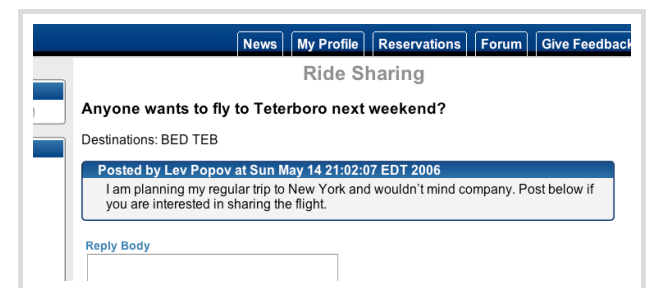
One of the large goals of **FlightSchool** is to give pilots a way to communicate with each other, and in particular to find other pilots to share flights with. To address this, our application provides a lot of the functionality found in classical online communities. All users have **profile pages** where they can share information about themselves, and there are forum boards open for discussion.



Advanced Content Management system makes posting and syndicating news easy



User profiles are just a part of the online community system encouraging member interaction



Pilots can attach "Flight Plans" to their posts, making ride-sharing simple

A unique feature is a **custom ride-sharing forum**. This subforum allows pilots looking for companions to enter a flight plan as a list of airport codes, which are then searchable by pilots looking for a ride. Custom email notifications for ride-sharing offers is a planned feature for the next version.

	2006-05-14					2006-05-15					2006-05-16													
	7	9	11	13	15	17	19	21	7	9	11	13	15	17	19	21	7	9	11	13	15	17	19	21
<b>Piper Warrior</b>																								
[N] N41457				Al	Al	Don			Al	Al							Don							
[N] N75202				Justin													Justin							
<b>Instructors</b>																								
[N] Al Antosca	Al								Al	Al							Al Antosca							
[N] Wadia Boufares				Justin													Justin							
[N] Ross Budd																								
[N] Jeff Deyoe																								
[N] Randy Longchamps																								
[N] Cyndi McLaughlin																								
[N] Jeff Nault																								
[N] Ken Perry				Ken Perry																				
[N] ross budd																								

Full schedule showing aircraft availability

## Online Scheduling

Taking scheduling online is the biggest advantage of using **FlightSchool** for both pilots and dispatchers. Pilots can create reservations online, while dispatchers can approve and manage the reservations. To simplify dispatcher's job, the scheduling system has a **powerful rule-based reservation verification** mechanism that automatically flags reservations that need dispatcher's attention.

Rule-based reservation verification system allows:

- Defining a site-wide set of rules to be checked against all created reservations
- Notifying users when their reservation is flagged for review with an explanation of the rules that have been violated
- Listing all of the reservations that need dispatcher's attention
- Defining per-reservation and per-user exceptions to the rules

Dispatchers can edit and approve reservations

Following features are included in the Reservation system:

- A streamlined reservation UI that fills in smart defaults, and fits on a sidebar
- A full-featured reservation UI for complex multi-day reservations
- Interface for users to view and edit their reservations
- Interface for attaching comments to reservations, enabling pilots and dispatchers to talk about a particular reservation
- Interface for instructors to block time patterns out of their schedules
- Interface for dispatchers to approve and edit reservations pending approval
- Interface for dispatchers to quickly reassign aircraft on a reservation using drag & drop
- Mobile interface for checking user's reservations from a cell-phone
- Email reminders and notifications for reservations

Streamlined reservation UI

Hi, Lev.  
 You have following reservations:

Aircraft: Diamond Katana N303EC  
 On: Fri Jun 30 (07AM - 09AM)

Aircraft: Diamond Katana N505EC  
 Instructor: Jim Henry  
 On: Thu May 18 (06PM - 08PM)

WAP Interface

A set of aircraft management features is also available for the administrators:

- Adding and removing aircraft and aircraft types from the schedule
- Editing aircraft information and descriptions
- Blocking out times from aircraft schedules (for example, making aircraft unavailable when it is undergoing maintenance)
- Flagging aircraft as prioritized for reservations
- Creating aircraft maintenance counters tracking aircraft's hobbs and tachometer readings, indicating when an aircraft needs to be taken out for maintenance

Aircraft Maintenance					
Aircraft	Description	Current	Expires	Remaining	Comments
N41457	Regular Maintenance	0.0	1000	1000.0	<a href="#">Edit</a> <a href="#">Remove</a>
N244ND	Regular Maintenance	0.0	1000	1000.0	<a href="#">Edit</a> <a href="#">Remove</a>
N260ND	Regular Maintenance	80.0	1000	920.0	<a href="#">Edit</a> <a href="#">Remove</a>
N32146	Regular Maintenance	0.0	1000	1000.0	<a href="#">Edit</a> <a href="#">Remove</a>

[New Maintenance Counter](#)

Aircraft maintenance counters show when aircraft need to be taken out for maintenance

### New Flight Record

Date:   2006

Pilot:

Instructor:

Aircraft:   
Piper Arrow, N805ND  
Piper Warrior, N80756

Note:

Amount Charged:

Hobb's Start:

Hobb's End:

Tach End:

Aircraft Rate:

Instructor Rate:

Data entry form is optimized for efficient input

### Billing Report for May 2006 to Jun 2006

Start from:   Show:

**Aircraft flight statistics**

Aircraft	Solo hours flown	Dual hours flown	Total hours flown	Total charges
N41457	1.1	0.0	1.1	108.90
N281ND	0.0	2.0	2.0	200.00
N505EC	0.0	0.6	0.6	54.00
N852ND	0.0	2.2	2.2	547.80
N260ND	0.0	0.0	0.0	0.00
N303EC	0.0	0.0	0.0	0.00
N190ND	0.0	0.0	0.0	0.00
N92747	0.0	0.0	0.0	0.00
N12545	0.0	0.0	0.0	0.00
N814ND	0.0	0.0	0.0	0.00

Administrator reports provide per-aircraft usage and revenue statistics

## Accounting System

**FlightSchool** includes a functional accounting system, allowing for great integration with scheduling and online community modules of the application. The system has an interface for entering flight records and associated billing charges, as well as other account transactions, such as deposits, supplies charges, etc.

The data entry UI is **optimized for efficient input** by using smart defaults, autocompletes and autotabbing. In addition, the interface is able to automatically recall the per-hour rates for instructors and aircraft, performing on-the-fly charge amount calculations as the record is being entered.

The accounting system provides reports for pilots and administrators. Pilots can see their transactions with running totals, and administrators can see aircraft usage and revenue information. All of the system data is exportable to CSV format if more advanced processing is desired.

### Billing Charges for Lev Popov

Date	Description	Amount	Balance
2006-05-16	Flight on 2006-05-15. Aircraft: N281ND , w. Randy Longchamps. (Hobb's: 30.3-31.1)	80.00	2198.20
2006-05-16	Flight on 2006-05-14. Aircraft: N281ND , w. Jim Henry. (Hobb's: 64.1-65.3)	120.00	2278.20
2006-05-16	Flight on 2006-05-12. Aircraft: N505EC , w. Wadia Boufares. (Hobb's: 11.1-11.7)	54.00	2398.20
2006-05-16	Flight on 2006-05-11. Aircraft: N852ND , w. Michael Farquharson. (Hobb's: 22.1-24.3)	547.80	2452.20
2006-05-16	Balance Deposit	-3000.00	3000.00

Pilot reports list transactions with running totals

### New Billing Record

Record Type:

Pilot:

Note:

Amount Charged  +  (Tax) =

Amount Charged is always the amount SUBTRACTED from account balance. Therefore Balance Deposits must be entered as negative values.

Data entry form automatically computes tax for supplies charges

# Administrative Features

**FlightSchool** includes a powerful Content Management System (CMS) that gives administrators intuitive control over the site content. Some of its features are textile-based markup, content versioning, and full-text indexed search. The CMS is used both for posting news articles and managing static pages on the site.

The application also has all the expected user management functionality, allowing administrators to assign user roles and manage user accounts. Since a lot of the user profile data, like dates of birth, medical dates, and pilot certificates, must be approved by administrators, the system provides a convenient interface where all of the changes requiring approval are listed, along with links to user profiles where the changes may be approved.

Finally, administrators have access to user activity summary pages, which allow viewing of all user profile information and related activity at once. The page displays profile details, contact information, reservation and billing statistics, list of recent billing entries, and forum posts. The user activity summary page is a useful tool for Customer Relationship Management, allowing a staff member to quickly evaluate role and activity of a member on the site.

**User Activity for Lev Popov**

**Basic Information**

Portrait:

Member Since: Mon Apr 24, 2006  
Last Login: Tue May 16, 2006  
Default Location: Bedford  
Biography: I am a student at MIT studying Electrical Engineering and Computer Science.  
Birthday: 1985-06-28  
Last Medical Date:  
Currency Date:  
Pilot Certification: Private Airplane SEL

**Contact Information**

Email: levpopov@mit.edu  
Phone Numbers: 7037276407 (+TXT)  
Addresses: 229 Vassar St, Cambridge, MA 02139, United States

**Reservation and Billing Information**

Total Reservations: 8 Current Balance: 2089.3  
Total Non-Canceled Reservations: 6 Average Balance Over Past Month: 2402.68330891927  
Reservations in Last Month: 0 Number of Transactions in Past Month: 6

**Billing Activity**

Date	Description	Amount	Balance
2006-05-16	Flight on 2006-05-16. Aircraft: N41457	108.90	2089.30
2006-05-16	Flight on 2006-05-15. Aircraft: N281ND, w. Randy Longchamps.	80.00	2198.20
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2006-05-16	Balance Deposit	-3000.00	3000.00

**Forum Activity**

Total Forum Posts: 4  
Recent Posts:  
**Login problems**  
Thanks for the comments. We certainly considered security when designing the login system. We felt that the current setup provides a good compromise between simplicity, security, and usability. Sen...  
**web feedback form feedback**  
Thanks for catching this! Should be fixed soon.  
**Reservations**  
Thanks for the feedback. Al. It is true that it is only possible to schedule reservations starting and ending at the hour. As you have said, scheduling to cover the remainings of the hours is proba...  
**Reservations**  
Old reservations stay on "My Reservations" page, so the pilots can see their reservation history, if needed. The page will only show 10 most recent reservations created, so the list will never get ...

User activity summary page provides overview of user's profile details, statistics on their reservations, billing records, and forum posts

**Edit News Article**

**Edit article**

Preview:

**New Helicopter - Mon Apr 17**

We now have a new 2005 Robinson R22 Beta II helicopter. Rate is \$200/hr. plus \$25/hr. for helicopter instructor (\$50 for senior helicopter instructor)

Old versions:

Version	Time submitted	Author
1	Mon Apr 17 05:41:20 EDT 2006	Holzwarth, Mark
2	Mon Apr 17 05:45:30 EDT 2006	Holzwarth, Mark
3	Tue Apr 25 12:52:47 EDT 2006	Holzwarth, Mark
4	Tue Apr 25 12:53:06 EDT 2006	Holzwarth, Mark

insert image

One line summary  
New Helicopter

Body  
We now have a new 2005 Robinson R22 Beta II helicopter. Rate is \$200/hr. plus \$25/hr. for helicopter instructor (\$50 for senior helicopter instructor)

Editing news interface supports textile-based markup, displays a preview, and allows rolling back to an older version of the document

**User Administration**

**Unapproved users and profile changes**

[Back](#)

**Unapproved user groups**

Name	Email	Verified	Unapproved Roles	Created On
Lopes, Agnelo	aplopes@comcast.net	false	instructor(*)	2006-05-15
Williston, Bryon	bwilliston01@yahoo.com	false	instructor(*)	2006-05-15
Borschow, Jason	jason@borschow.com	false	renter(*)	2006-05-14
Jones, Nicholas	nicholas.jones.g@comcast.net	false	student(*)	2006-05-15
Merwin, Russell	russwin247@yahoo.com	false	renter(*)	2006-05-15
Gayshan, Vadim	vgayshan@scintitech.com	false	student(*)	2006-05-15

**No Pending Certificates**

**Unapproved email addresses**

Name	Email	Verified	Created On
Lopes, Agnelo	aplopes@comcast.net	false	2006-05-15
Williston, Bryon	bwilliston01@yahoo.com	false	2006-05-15
O'Connor, Deirdre	flyowd@comcast.net	false	2006-05-14
Borschow, Jason	jason@borschow.com	false	2006-05-14
Jones, Nicholas	nicholas.jones.g@comcast.net	false	2006-05-15
Merwin, Russell	russwin247@yahoo.com	false	2006-05-15
Gayshan, Vadim	vgayshan@scintitech.com	false	2006-05-15

All of the changes requiring administrator approval are aggregated on a single page

# Documentation

The software comes with design overview documents for every module, fully annotated data model, per-file and per-method code comments for all source files, and a **user manual**.