



Product Manual

**Features and
functions of the
AvidaMetrics
system.**

June 2010





INTRODUCTION

This manual describes the features and functions of the AvidaMetrics system. Avidasports has developed a breakthrough technology using athletic telemetry for coaches and swimmers. With our product, AvidaMetrics, coaches have the ultimate planning and training edge, connecting audio technology with performance. For the first time, a coach can track the performance of multiple swimmers during practice. Swimmers are equipped with small devices which help maximize daily training, allowing faster improvement than ever before.

General operation of AvidaMetrics system consists of four major applications:

System Console * PLAN * TRAIN * REVIEW

First, the System Console enables system administrator(s) to establish overall system operating constraints. From the System Console, facility and team information is accessible by the administrator, and acts as the foundation of the system. In PLAN, pre or post training operating conditions can be managed by the coach and swimmer. In TRAIN, coaches observe and swimmers hear real time performance information. After the practice, in REVIEW, complete recorded performance data may be analyzed and compared against previous performances or other swimmers. Based on TRAIN and REVIEW observations, swimmers and coaches may adjust training conditions/planning and repeat this cycle enabling ongoing performance improvement.

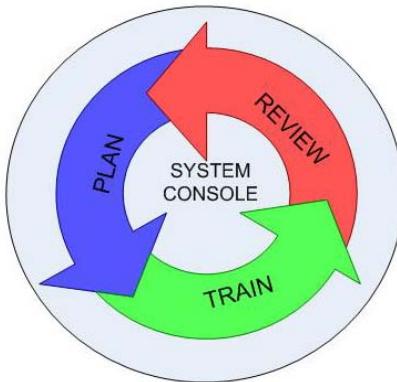


TABLE OF CONTENTS

1. COMPONENTS	4
1.1 SYSTEM ARCHITECTURE	4
1.2 SWIMMER'S GEAR	4
1.3 FACILITY GEAR	5
1.4 COACH'S GEAR	5
1.5 WEB BASED SERVER	5
2. GRAPHICAL USER INTERFACE (GUI) DESCRIPTION	6
2.1 SYSTEM CONSOLE	6
2.1.1 SYSTEM CONSOLE OVERVIEW.....	7
2.1.2 SYSTEM CONSOLE – WHAT CAN BE DONE WITH IT?.....	8
TABLE 1 – SYSCON SUMMARY CONTENT.....	10
2.2 PLAN	12
2.2.1 PLAN - COACH PERSPECTIVE	12
2.2.2 PLAN - SWIMMER PERSPECTIVE	13
2.3 TRAIN	15
2.3.1 TRAIN – COACH PERSPECTIVE	15
2.3.2 TRAIN – METRICS	16
2.3.3 TRAIN – COACH CALL/MESSAGE	17
2.3.4 TRAIN – SWIMMER PERSPECTIVE	18
2.3.5 TRAIN – LEDs	19
TABLE 2 – BUTTON PRESS BEHAVIORS.....	19
2.3.6 TRAIN – LED BEHAVIOR SUMMARY	21
2.3.7 TRAIN – ACCEPTANCE	21
TABLE 3 – LED BEHAVIORS.....	21
2.3.8 TRAIN – OUTDATED FIRMWARE	22
2.3.9 TRAIN – CATEGORY SELECTION	22
2.3.10 TRAIN – USER INTERFACE	23
2.3.11 TRAIN – PERSISTENCE	24
2.3.12 TRAIN – AUDIBLE MESSAGES.....	24
2.3.13 TRAIN – EXITING/SD POWER DOWN.....	25
2.4 CHARGING	26
2.5 REVIEW	26
2.5.1 REVIEW – TIMEOUT	26
3. SYSTEM CONSTRAINTS	34
3.1 POOL LENGTH.....	34
3.2 SYSTEM CAPACITY	34
3.3 DATA CAPACITY	34
3.4 NUMBER OF PROGRAMS AND TEAMS	34
4. HOW TO ESTABLISH AN AVIDASPORTS ACCOUNT	35
4.1 DATA COLLECTION/TEAM APPROVAL.....	35
4.2 PAYMENT FREQUENCY	35
APPENDIX 1 – METRIC EXPLANATIONS	37
APPENDIX 2 – DEFINITIONS.....	38

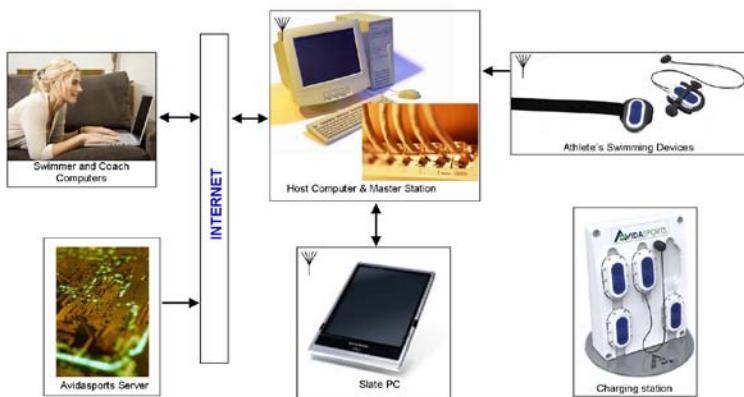
Comment [sh1]: missing roster maintenance



1. COMPONENTS

1.1 SYSTEM ARCHITECTURE

In order to accomplish all the functions mentioned in this product manual, a sophisticated set of technologies has been created to collect data, process the data and save it for Web-based interactive review.



1.2 SWIMMER'S GEAR



This device complies with Part 15 of FCC rules.
Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received,
including interference that may cause undesired operation.

Limb Devices (Swimmer Device) **

Limb devices are mounted with straps to the swimmers wrists and ankles and monitor performance data. Each Limb device has buttons for power, category selection and LEDs to indicate status.



Head Device (Swimmer Device) **

Each Head device is mounted under a swim to monitor performance data and provide audio communication to the swimmer. Head devices have buttons for power, volume up/down and LEDs to indicate status. Head devices additionally have audio capability via an earbud.



Individual Charging Station

Each swimmer device will have a rechargeable battery. An athlete's charging station will reside at their home and accommodate a single set of devices. Swim programs may elect to purchase a team charging station that will reside at the pool facility.



**Devices may only be associated with one swimmer at a time. The devices may be reissued or sold to another athlete. If the devices are purchased by a facility, the facility will have the capability to release and assign all devices associated with their swimmers.

1.3 FACILITY GEAR

Master Station Modules

The master station is a multifaceted, dedicated radio base station. The master station transmits control and auditory information on the appropriate radio channels to be received by the swimmer devices. In addition, all swimmer device data is routed through the master station and then to the host computer for processing. Optimum radio transmission is critical to successful master station operation and should therefore be placed within the pool deck boundaries. **Min/Max height off pool deck, Min/Max distance from pool edge needs to be defined. General public access inside of a 10ft radius of the master station is not recommended.**

Mounting Bracket

The master station mounting bracket holds the master station modules in place. The customer is responsible to securely place this in an appropriate location, **see above for location requirements.**

WIFI Node

A unique WIFI node enables the coach's tablet/slate/laptop to be wirelessly connected to the AvidaMetrics intranet around the pool.

Host Computer

The host computer is the brains of the AvidaMetric system. It needs to live in an **add requirements here.** The host computer equipment must be housed in a dry, non-chlorinated environment to preserve longevity.

Cabling

This is standard [CAT 5](#) cabling. The customer is responsible to run this between the host computer and master station mounting bracket. It is the customer's responsibility to adhere to local and state regulated codes and to comply with Ethernet and CAT5 distance requirements.

Team Charging Station (*picture to come*)

1.4 COACHES' GEAR

Tablet/Slate/Laptop

Coaches may use a standard, off-the-shelf tablet, slate, or laptop to access the TRAIN application. This piece of hardware is also the tool a coach uses to communicate with swimmers and record voice messages for swimmers. Coaches may use the built-in microphone or any other interface microphone compatible with the selected hardware. This may also be a desktop personal computer (PC). **Put requirements here.**



1.5 WEB BASED SERVER

The Avidasports remote server accessible via the internet will provide high bandwidth accessibility and storage space for metric and audio data on all swimmers in the PLAN and REVIEW modes of the product interaction. This information is accessible by all participating swimmers and coaches. The data is backed up regularly to ensure integrity.

- **Swimmer and Coach PC**

These PCs are standard PCs owned and operated by either coaches or swimmers. These are not required to possess any custom Avidasports applications to view AvidaMetrics information. All AvidaMetrics applications are "pushed" down from the Web based server.

- **Types of Users and their Credentials**

There are several types of users within AvidaMetrics: swimmers, coaches, and administrators. Each type of user is assigned different levels of accessibility to AvidaMetrics within the System Console. For example, a swimmer will be given limited rights to the System Console, PLAN and REVIEW, while coaches will be given more rights to the System Console, PLAN, TRAIN and REVIEW. These credentials are outlined in System Console section below (see chart below).



2. GRAPHICAL USER INTERFACE (GUI) DESCRIPTION

The following GUIs are intended to provide an overview of the user experience for AvidaMetrics; there are numerous additional features and capabilities not presented in this manual.

A user must create an account at www.avidasports.com and go through the payment system to buy a subscription or enter an access code (used when a program has purchased the subscriptions for the swimmers, Avidasports gives the program the access codes) before they can access AvidaMetrics. Each user will sign up and pay separately. There is no capability to allow multiple users to pay as a group and automatically gain access to AvidaMetrics. Avidasports maintains an account status record for every user.

The Avidasports system will keep track of a user's account status. This will enable Avidasports to limit access to only users that have paid for their accounts or limit the features that a user can perform based on the payments the user has made.

Following successful online registration, each user will possess login credentials required to enter AvidaMetrics. To enter AvidaMetrics a user starts by going to www.avidasports.com, select the "Login" button. User will enter their user name and password, if their credentials are approved the user is taken to their System Console Web page.

Comment [sh(6/11)-2]: Jen, we'll need to do this at some point.

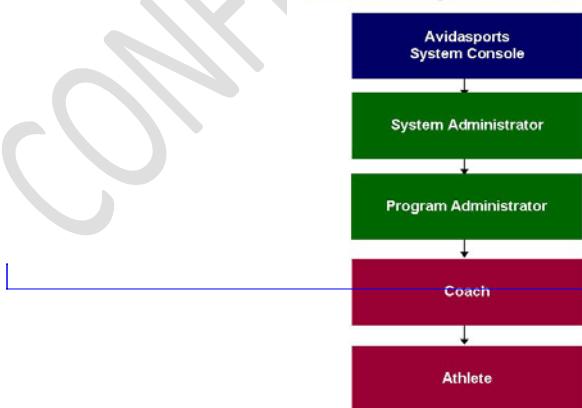
If users credentials are not approved a message popup indicating such is displayed along with a link or information for how to become a registered user of AvidaMetrics.

2.1 SYSTEM CONSOLE

2.1.1 SYSTEM CONSOLE - OVERVIEW

Global parameters specific to each facility installation are established prior to operation. Items such as system configuration (see diagram below), access privileges, installation specific data, etc. are established.

AvidaMetric System Accessibility



Comment [sh(6/18)-3]: We need to change the blue box to be a different shape, perhaps oval.



Console

A participating program needs to be associated with a facility system. Each program may have an **unlimited** number of teams.

The System Console is a hierarchical user interface that provides control over access privileges and features throughout AvidaMetrics. The hierarchy is composed of swimmers, coaches, program administrators, and system administrators each having a higher degree of authority. When a participant logs in to the Web site, they will only see only the features they have access based on their **role**.

System Administrator - System administrators are associated with a facility and are typically responsible for the facility based infrastructure of AvidaMetrics, consider this role as the controller of the facility's system. System administrators control which programs have access to the AvidaMetrics system. Only a single system administrator is associated with each system. System Administrators do NOT have to be associated with a program. They control which programs may have system access. Any number of programs may be associated with a single system. A minimum of at least one program must be associated with a system. Programs are added to a system only one at a time. System administrators approve program usage.

Program Administrator - The Program administrator's role is to manage the creation, modification and privileges of teams, coaches and individuals within their respective program. Program administrators may have multiple program responsibilities. Any number of program administrators may be associated with a single program.

Coaches - Coaches maintain the right to manage the addition, deletion, and modification of members to their respective teams. Coaches may also have multiple program and team affiliations. Coaches are associated with programs not teams. Any coach may start a TRAIN session with any team in the program and have visibility to all teams within the program. No association between coaches and teams exist. There is no limit to the number of coaches in a single program.

A swimmer is associated with a team(s). There is no limit to the number of teams a swimmer may be associated with within a program. Any number of swimmers may be on a team. Of course, only 100 swimmers may be active in a practice at one time.

Comment [sh(6/9)-4]: Title this AviaMetric System Accessibility.
Switch Program and System Admin and put coach under Program and swimmer under coach.

2.1.2 SYSTEM CONSOLE - WHAT CAN BE DONE IN IT?

Need to get the new Funct Spec and edit this section – 6/11/10

Promote Users

By default, all users that register at the Web site will be assumed to be athletes. A coach or administrator can promote the user to a role that gives them additional access and features. The coach or administrator can only promote a user up to their role or lower in access rights. They cannot promote a user to a role that gives that user access to features that they don't have themselves.

Global Device Dissociation

If a program or facility has purchased the swimmer devices, a global device disassociation can be executed on a team by team basis.

Comment [sh(6/9)-5]: Please give each paragraph a bolded title – **System Administrator** for example.



Console

Systems Maintenance

The system maintenance page allows a System Administrator to add, delete or modify a system. The user can modify the program name, program type, city, region, country.

Coach Access Code Generation

The program administrator can generate an access code for a coach. This allows the coach to bypass the subscription step in the registration process.

Program Locations

The program location page allows a user to create a link between a system and the programs that will train there. It also allows them to set the pool configuration for that pool location. The administrator can select five different pool configurations. The pool configuration will include a length and a unit of measure (meters or yards). At the start of a training session, the coach will select a pool configuration from the five defined.

User Program Approval

The user program approval page allows an administrator to approve a user's request to join a program and assign the user to a team. The page will be populated with only the requests to join a team that haven't been approved so that the coach or administrator can quickly process the requests. The coach or administrator will have the option of approving a request or denying a request. If a coach or administrator approves the request, they must also select a team for the user. Users may participate in multiple teams and programs.

User Program Maintenance

The user program maintenance page allows an administrator to remove a user from a program. If the user is removed from a program they will also be removed from any teams within that program.

Category Names

Categories are data tags that uniquely identify activities during TRAIN and REVIEW. Five different categories are provided and persist over an entire program.

Category 1 – Pink (Default)

Category 2 – Red

Category 3 – Purple

Category 4 – Blue

Category 5 – Orange

Each program may uniquely name each category. The colors and category numbers stay are fixed. The names given to each category will appear in TRAIN and REVIEW in connection with the category number and color.

Season Maintenance

The season maintenance page allows an administrator to create, modify, or delete seasons. The administrator can select a name for the season, start date, and end date for the season.

Modifications during the season should be avoided as it will cause a change to the data displayed in review.

Comment [sh(6/11)-6]: What are these ripple effects?

Team Maintenance

The team maintenance page allows a coach or administrator to create, modify, or delete a team.



Console

Roster Maintenance

The roster maintenance page allows a coach or administrator to select the swimmers that are on a team.

Session Maintenance

The session maintenance page allows the administrator to purge an entire session or one athletes training session from the database. This feature will be used to remove bad data from the database. The purge process will remove the data from an individual user's session. Please note, this is a permanent deletion of data.

Comment [sh7]: Is it appropriate to add here explanation as to why we cant just remove selected session data as opposed to the entire session?

Comment [PD8]: I will work on this with Mike

Team Visibility Scope

The team visibility scope page allows the administrator to set whether athletes can see teammates in the review GUI. The visibility scope is set for a team to indicate if athletes on the team can view only themselves or - the selection goes across the team. If this is set to "personal data view," only a swimmer will only be able to view THEIR data in REVIEW. Specifically they will only have visibility to view their own score card, individual practice data and no rankings or group data will be presented.

Comment [sh9]: If this is set to only see your own data please list that all is swimmer will be able to view in REVIEW is their own score card and individual practice data. No rankings or group data.

Date and Time Settings

Calendar date and time shall be local time acquired automatically by AvidaMetrics over the internet.

System Maintenance and Diagnosis

Some level of interrogation tools will be available to knowledgeable Avidasports staff.

Table 3 – Syscon Summary Content

Feature	Description	Coach	Program Admin	Avidasports Admin	Data modified	Optional
Promote Users	Modify the user role. Give user ability to access additional features.				Add or remove records from user role table	
	Promote User to Coach		x	x		
	Promote User to Program Admin		x	x		
	Promote User to Avidasports Admin			x		
Program Maintenance	Create, modify and delete programs			x	Add/ modify program name, program type, city, region, country	
Facility Maintenance	Create, modify and remove facilities			x	Add Facility / modify name, remove if not used	
Global Device Disassociation	Allow program admin to disassociate SDs on team by team basis			x	Allow or Disallow flag on program	
System Maintenance	Create, modify and delete Systems			x	Add/ modify facility name, city region, country	

Comment [sh10]: missing roster maintenance

Comment [PD14]: Need new table from Mike and eliminate optional column, move it to parking lot

Comment [PD11]: Need new table from Mike and eliminate optional column, move it to parking lot

Comment [sh12]: Where is the System Admin?

Comment [sh13]: Why listed as Optional



Console

Feature	Description	Coach	Program Admin	Avidasports Admin	Data modified	Optional
Coach Access Code Generation	Generate unique access codes to provide easy coach registration	x	x		Generate and assign codes to athletes and coaches	
Athlete Access Code Generation	Generate unique access codes for athletes to bypass billing sequence		x		Generate and assign codes to athletes and coaches	
Program Locations	Select facilities for programs. Also allows pool configuration to be set for the program location.	x	x		Add or remove records from program facilities table. Modifies pool configuration.	
User Program Approval	Accept user as part of a program and assigns the user to a team. (allows users to see data in program) Approval is part of registration / sign up process GUI should display users awaiting approval.	x	x	x	Remove a record to user program table / modify flag on user program table, add user to user roster table	
User Program Maintenance	Remove users from a program		x	x	Remove records from user program table	
Chime In Names	Modify the chime in description – five “chime-ins” maximum	x	x	x	Modify names of “chime-ins” for the program / season - Displays colors of Chime-in	
Season Maintenance	Create, modify and delete seasons		x	x	Add / modify season name, start date, end date	
Registration Maintenance	Add, modify, mark as inactive			x	modify email address, first name, middle name, last name, password (reset)	x
Account Status Maintenance	Modify account status			x	modify account disabled, active override, subscription end date, status type	
Session Maintenance	Modify, delete session data		x	x	remove records from pool sessions and user pool sessions	x
Team Visibility Scope	Select if users can see others on team, or only themselves, by team		x	x	team visibility on program table	
Pool Configuration Setup	Set up to 5 custom pool lengths per Program-Facility		x	x	modify pool configuration table (add / remove records and set values)	

Comment [sh15]: Where is the System Admin?**Comment [sh16]:** Why listed as Optional**Comment [sh17]:** I think a coach should have this right**Comment [sh18]:** I think a coach should have this right

2.2 PLAN

PLAN is an application containing pre practice planning information and configurations.

2.2.1 PLAN - COACH PERSPECTIVE

PLAN is a program, not a coach, specific module. All coaches in a program will have access to the same PLAN interface and each program must establish their own protocol for editing/adding the content in PLAN. The following terms and actions are relevant to PLAN. See GUI snapshot below.

Bread Crumb Trail

This indicates the selected Program, Team, Season and Practice and is displayed at the top of the page.

Coach's Journal

The Web-based Coach's Journal is similar to the coaches spiral workout notebook. In the journal coaches may optionally post the daily workout schedule, comments or notes. Journal entries are labeled with a date, time and if entered, a description. Entries for past or future practices may be created or edited. Journal entries will be automatically generated the TRAIN start confirmation pop up. If the coach starting the practice in TRAIN adds a description in the confirmation pop up, this description will also be listed in the title of the journal entry for that practice.

Add and Edit Entry

To add an entry, select the "Add Post" button. It will present the coach with an edit pop-up and a selection button for attaching a PDF document.

There are two means of entering data into a journal entry are available:

Type in the journal notes in a generic comments window.

Attach PDF documents.

Scanned workout/notes from actual spiral notebook and converted to PDF and then attached to a journal entry

Maximum of two (2) PDF documents per entry may be attached. (Scott – is there a file size limit?)

To edit an entry, an "Edit" hyperlink will be available to present the same edit pop up as "Add Post".

Performance Feedback Configuration

Performance feedback is the audible reporting of performance. During TRAIN two (2) selected metrics are audibly reported to the swimmer every length during the next practice. The following constraints will preside:

- Coach's selection will override swimmers.
- Available metrics are the same as those available during TRAIN.
- Selections at TRAIN start will persist throughout that training session even if changed during TRAIN.
- Any coach on the team will have the capability to select metrics. Limited by team protocol only.
- If only one metric or no metrics are selected the descriptor "Open" will be listed, meaning that performance feedback spot is open and not selected.



Groups

Groups are roster filters that allow coaches to focus on a specific set of swimmers in TRAIN and REVIEW. To create or edit groupings, the selection of "Edit Groups" will present an assignment pop-up. Up to nine (9) groups are assignable to a given team.

Assignment Pop-Up

From within the group selection pop-up, group names may be assigned. Once group names are created, swimmers may be assigned to groups via a drop-down menu. A swimmer may only be a part of a single group at any time. Swimmers not assigned to a group, by default, will be assigned to the "unassigned" group. Group membership may be reassigned at anytime either before, during or after TRAIN.

Persistence

Group membership is not consistent, meaning that no history of group assignment is kept in association with a swimmer. In other words, the current definition of groups in PLAN will be used for display filtering and metric calculations even if membership has changed since last viewing of information.

Comment [sh19]: I need to see the GUI spec doc to verify this is correct.

Comment [sh20]: I'd like to talk through this again, for my own continued understanding as to why this has to be.

2.2.2 PLAN - SWIMMER'S PERSPECTIVE

Swimmers will have access to PLAN just as coaches except with the following limitations. See GUI snapshot below.

Bread Crumb Trail: Same as coach.

Coach's Journal: Swimmers may only view the Coaches' Journal, no journal editing or creating capability will be available to the swimmer.

Performance Feedback Configuration: Same as coaches, except swimmers are overridden by coaches. Swimmers cannot see what the coaches have selected. If a coach has not selected any performance feedback metrics then the swimmer's choices will be used in the next practice.

Groups: No group editing capability will be available to the swimmer. Swimmers are able to view group assignments.



P ☹ ☺ ☠

Plan, Train and Review buttons.

Coaches Journal: Swimmers may only view the Coaches' Journal, no journal editing or creating capability will be available to the swimmer.

Breadcrumb trail: Indicates the selected Program, Team and Season - displayed and editable along the top of the page.

Adding a Post
Only coaches may edit posts.
Swimmers may only view this.

Postable PDFs
allow 2 attachments per entry

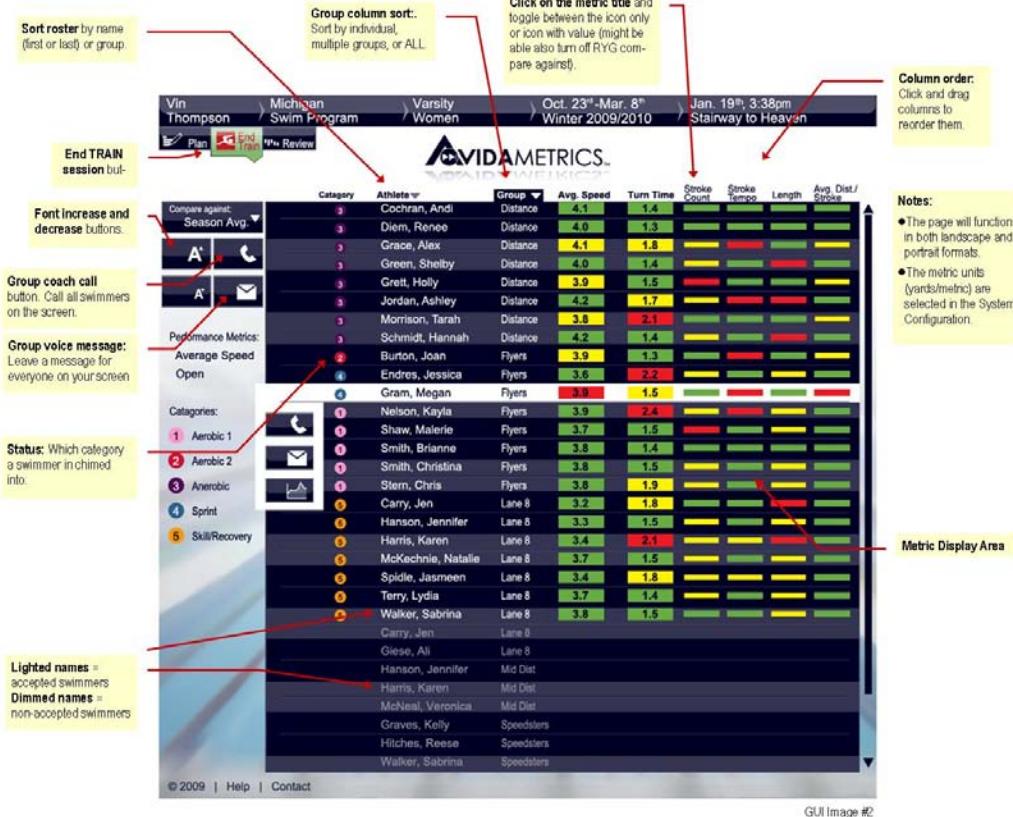
Performance feedback:
select which metrics will be heard in the earbud for the next practice.

Group assignments: Coaches may filter the roster for a team by putting swimmers into customized groups.

GUI Image #1



2.3 TRAIN



2.3.1 TRAIN - COACH PERSPECTIVE

Put GUI shots here

Launching

After logging in and selecting TRAIN from the landing page, the first coach to enter TRAIN for the practice will be presented with a confirmation pop-up in which the prerequisites for TRAIN that are configurable. These are:

- Program selection
- Team Selection
- Pool Length selection
- Practice / Journal entry title description

When the first coach is satisfied with selections, pressing "Start" will officially begin the TRAIN session. Every subsequent coach entering TRAIN will be presented with a limited version of the confirmation pop-up where the selections are presented as status and an option to "Join" TRAIN is available.

"Bread Crumb Trail"

As in all the applications, a "Bread Crumb Trail" indicates the selected Program, Team and Season and Practice, this is displayed at the top of the page. Once TRAIN is activated this is not editable.

Swimmer Status

There are three different types of status feedback presented to the coach on each swimmer. They are: category, missed call and low battery.

Category

An icon corresponding to the category the swimmers have selected is displayed in the same row to the left of the roster name. If no category is selected no icon will be displayed.

Missed Call

If a coach call is missed, the call icon (phone symbol) will be displayed in the same row to the left of the roster name for 30 seconds. All missed calls are still recorded and may be listened to in REVIEW.

Low Battery

If a swimmer has an SD with a low battery their name in the roster list will be turned red.

Comment [sh(6/11)-22]: Scott needs to confirm this.

Roster Display

Based on coach's login credentials, the associated roster will be displayed, last name then first name in alphabetical order if the roster column is selected as sort column. Names remain "dimmed" for swimmers not yet accepted into radio network. Names accepted into the radio network will "light" up and be put at the top of list in alphabetical order. An icon at the top of roster list and group columns will allow for choosing which column to sort names by.

Comment [sh(6/11)-23]: Confirm in Funct Spec

Groups Filter

By selecting the group filter icon, a drop down menu is displayed allowing the coach to select a single, multiple or all groups to view. Groups when filtered will always be listed in alphabetical order. Names within a group will be listed in alphabetical order.

2.3.2 TRAIN - METRICS

Metric Display Area

If a swimmer is chimed-in one of the five categories, their metric data will be displayed in the metric display area. Data can be displayed numerically or as icons by clicking on the heading and selecting "text" or "icon". Columns may be arranged by dragging and dropping the headings to the desired order.

Comment [sh(6/11)-24]: Confirm in Funct Spec

Metric Pop-Up for Individual Swimmer

An additional level of metric granularity is available via metric pop-ups. By selecting a name from the roster, a pop-up is presented containing graphical metric detail for the selected swimmer. By default, the metric chosen to occupy the first column in the tabulated data area will be displayed upon initial selection of the metric Pop-up. The graph will display metric performance on a length by length basis over the existing course of the current practice. In addition, the points on the graph



will be colored RYG (Red-Yellow-Green). Once the pop-up is present any of the other TRAIN metrics may be selected and displayed. Selecting "Close" will return to TRAIN roster display.

RYG Compare

Red-Yellow-Green (RYG) Compare is a mechanism for displaying how current TRAIN data coincides with data collected all season. In the "Compare Against" drop-down menu a coach may select one of four comparison references:

- Season average
- Top 5%
- Top 15%
- Top 25%

The metrics will be displayed as red, yellow or green. If current performance is with **TBD%** of the reference the highlight color will be yellow, if more than **TBD%** better then green and if more than **10%** worse than red.

Comment [sh25]: I need to review this 10% +/- for yellow with the metric tolerances table, this might be too much.

2.3.3 TRAIN - COACH CALL/MESSAGE

A Coach Call is the ability for a coach to send a swimmer a near real time phone call during TRAIN and to memory for playback during REVIEW. Coach call is accomplished with a microphone connected to the coach's tablet PC. Coach call messages may be a maximum of 20 seconds in length. Coach calls can only be sent AFTER the voice message has been completely recorded.

Then after **TBD** processing time the message will arrive at the swimmer's earbud.

Comment [sh26]: We need to list the maximum latency here.

A Coach Message is identical to coach call except that the message is not sent to the swimmer during TRAIN, rather it is sent strictly to memory for playback during REVIEW. Coach calls/messages can be sent to either an individual or group of swimmer(s).

By group: By clicking the group call (or group message) icon, recording will immediately begin. When the coach has completed his message, selecting "Send" will trigger AvidaMetrics to send the message to the swimmers and memory or just memory accordingly. All swimmers visible on the coaches screen are included in this group call/message.

By name: By clicking a name in the roster list a pop up selector will present the call (or message) icon, selecting call (or message) will immediately activate recording of the message. When the coach has completed his message, selecting "Send" will trigger AvidaMetrics to send the message to the swimmer and memory or just memory accordingly.

Font Size Adjust

Font size of all text may be adjusted using font size adjust icons. As font size is increased, some columns of data on the right of the display will drop off and only be viewable by means of slide bar at the bottom of the display. Similarly with the length of the roster growing beyond the vertical space available, a vertical slide bar will be available for viewing names beyond the boundaries of the display.

Ending a TRAIN Session

To properly shut down an active TRAIN session the coach should select the "End Train" button on the display. When selected, AvidaMetrics will present an End Train confirmation pop-up from which the shut down process is initiated for all active swimmers in TRAIN whereby all swimmer data is extracted and devices shut down to conserve their battery power. If multiple coaches are logged



in, the End Train confirmation pop-up will provide an option to exit train with initiating the shut down process of all swimmers and other coaches. As each swimmer's data is saved and they are exited from the system's network their names will be "dimmed" and sent to the bottom of the display. If the coach uses some other means to shut down TRAIN (e.g. closing the lid on a laptop) ???

Comment [sh27]: Are you still working this out?

Comment [PD28]: Yes. The exit method is convoluted.

Comment [sh(6/11)-29]: Need to check this with the Funct Spec

2.3.4 TRAIN- SWIMMER PERSPECTIVE

User Interface on the swimmer devices are composed of two buttons and two LEDs.

Buttons

There are two buttons on the Limb Device and Head Device, button 1 and button 2. The following functions are associated with each button:

Button 1: (closest to the hand, foot or face)
 Power on
 Power down
 Button Press Event (LD)
 Volume Increase (HD)

Button 2:
 Button Press Event (LD)
 Volume Decrease (HD)

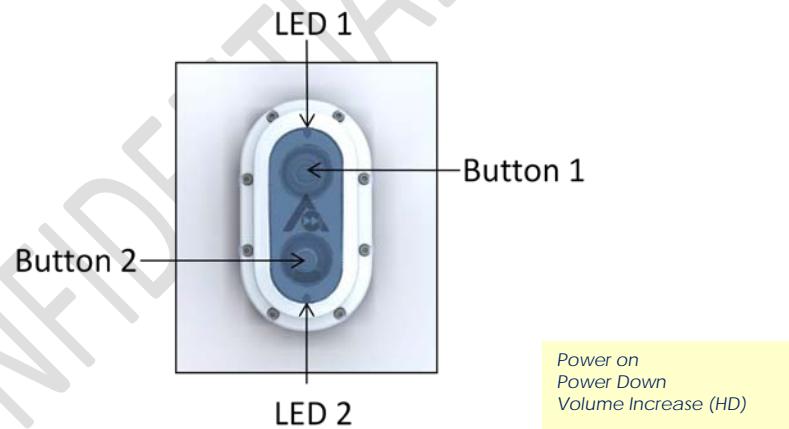


Figure 4.1 - Limb Device – Buttons and LEDs

If button 1 is pressed and released in less than 5 seconds (power down time) the volume will increase by one interval. Once the max volume is reached, volume increases do not have any effect on the volume level. Each time the volume is increased, an audio tone (beep) will play in the ear phone if no other audio is currently playing. If the volume reaches its maximum level, additional volume increase commands will cause a different audio tone (thud) to play if no other audio is currently playing.



Volume Decrease (HD)

Same as volume increase, respectfully but pressing button 2.

Button Press Event (LD)

A button press and release sequence shall be considered a button event and stored in SRAM as such. The amplitude (on time) shall be set to the number of milliseconds (+/-50ms) that the button was pressed.

Button Press Behavioral Summary

We must stress to swimmers not to press and hold button one for five (5) seconds, that will force a manual power down, data not grabbed by system will be lost.

Table 4 – Button Press Behaviors

SD	Prior State	Button 1			Button 2		
		Press Time Min	Press Time Max	Function	Press Time Min	Press Time Max	Function
Head	Powered	500ms	2s	Volume Increase	500ms	2s	Volume Decrease
Head	Off	500ms	--	Power up	500ms	--	No Action
Head	Powered	5s	--	Power Down	5s	--	No Action
Wrist	Off	500ms	--	Power up	500ms	--	No Action
Wrist	Powered	500ms	2s	Category Select	500ms	2s	Parametric FB on/off
Wrist	Powered	2s	5s	Deselect Category	2s	5s	No Action
Wrist	Powered	5s	--	Power Down	5s	--	No Action
Ankle	Off	500ms	--	Power up	500ms	--	No Action
Ankle	Powered	5s	--	Power Down	5s	--	No Action

Comment [sh30]: Should we consider having Cat select on button 1 and De Select on button 2 with a 500ms-2s press range? Then Metric Feedback can be button 1 and 2 with a 2s-5s press range.

2.3.5 TRAIN - LEDs

There are two LEDs on the LD: **LED1** and **LED2**.

LED1 is dual color of green and red, LED2 is green. Each LED has the following functions:

LED1 (green/red):

Powered
Low Battery
Receiving a firmware image (bootloader)
Charging
Fully Charged (while on the charger)
Removed from Charger
Charging Error (while on the charger)

LED2 (green):

Button is Pressed
Accepted into radio network
Receiving a Firmware Image (bootloader)
Raw Data Collection Mode (engineering only)
Hardware Error Detected

Comment [sh(6/11)-31]: Need to check with Funct Spec

Comment [sh32]: Is LED 1 next to button one?

Comment [sh33]: Green only



Powered

If the SD is powered LED1 shall blink green on once every 1 second (+/-50ms) for 50ms (+/-10ms). Accepted into the radio network:

- Once the LD/HD is accepted into radio network, LED2 shall blink green in sync with LED1 (as defined above). What if it has not been accepted yet?
- Button is Pressed
- Each depressed button press shall turn LED2 on solid green for the duration of the depressed button press (+/-50ms), unless the SD is receiving a firmware image.

Low Battery

When the battery is low, LED1 shall blink red on every 1 second (+/-50ms) for 50ms (+/-10ms), unless SD is receiving a firmware image. LED2 shall stay in sync with LED1.

Comment [sh34]: So both LEDs blink in sync?

Receiving a Firmware Image

When the SD is either waiting for a firmware image, or receiving a bootload image, LED1 and LED2 will alternately blink (toggle) green every 500ms (+/-50ms) for 50ms (+/-10ms). No other events will affect the LED behavior.

Comment [sh35]: To minimize the users need to know so many blinking patterns can this be the same as Charging

Charging

When the SD is in the charger and charging, LED2 shall be off and LED1 will blink green every 1 second (+/-50ms) for 400ms (+/-50ms).

Comment [sh36]: Should this be an equal blink....1s on 1s off or even 2s on and 2s off

Fully Charged

When the SD is in the charger and fully charged, LED2 will be off and LED1 will be on solid green.

Removed from Charger

When the SD is removed from the charger, LED1 and LED2 will be turned off.

Charging Error

When the SD is in the charger and is unable to charge due to an error condition, LED2 will be off and LED1 will blink red every 500ms (+/-50ms) for 50ms (+/-10ms).

Comment [sh37]: Is this for development purposes only or will it do this during a normal training session

Raw Data Collection Mode

When in raw data collection mode and data is still being stored from the accelerometer, LED2 will blink red every 500ms (+/-50ms) for 50ms (+/-10ms). Once the raw data storage is full, or the SD is commanded to stop collecting raw data, LED2 will blink red every 250ms (+/-50ms) for 50ms (+/-10ms).

Hardware Error

If a hardware error is detected on the SD, LED2 will turn solid red.



2.3.6 TRAIN - LED BEHAVIOR SUMMARY

Table 5 – LED Behaviors

State	LED1			LED2			Notes
	On	Period	Color	On	Period	Color	
Powered	50ms	1s	Green				
Accepted				50ms	1s	Green	In sync with LED1
Button Press				On		Green	Engineering only
Low Battery	50ms	1s	Red				
Receiving Firmware	50ms	500ms	Green	50ms	500ms	Green	A sync with LED1, Engineering Only
Charging	400ms	1s	Green	Off			
Fully Charged	On		Green	Off			
Removed from Charger	Off			Off			
Raw Data Collection in progress				50ms	500ms	Red	Engineering only
Raw Data Collection complete				50ms	250ms	Red	Engineering only
Hardware / Charge Error				On		Red	

Comment [sh38]: In general, I'm worried about the possible confusion the swimmers/coaches will have with the LED behavior meanings. Let's talk about it.

2.3.7 TRAIN - ACCEPTANCE

Acceptance is the process of connecting SDs to the master station radio network. Acceptance is required for a swimmer's data to be recorded during TRAIN. To become accepted a swimmer must:

- Power up all five SDs – Power LED blinks
- Be within radio range of the master station – Radio LED blinks
- Have the latest revision of firmware
- Be on a roster of an active TRAIN session
- Receive an audible confirmation message indicating their acceptance status
-

Upon power up, the devices will automatically seek acceptance into the master station radio network. If recognized by the master station radio, the master station will verify the requesting HD possesses the correct version of firmware and its ID exists on live roster. If the HD is confirmed, the master station will seek and confirm the existence of the associated LDs in radio network as well. If the LDs are also found, the master station will send an acceptance message to all SDs triggering LED2 to blink and audible feedback message to be played in the HD ear phone.

Once acceptance is completed, regular communication between the master station radio and SDs occurs for the purpose of event data extraction and messaging.



Audible Messages

When a set of SDs has been accepted into the radio network an audible message will be played in the ear phone. The message will say "ACCEPTED, SELECT CATEGORY." When the acceptance process is in progress, a tone will be played in the ear phone at a rate of once per second.

Comment [sh39]: This suggests the swimmer will have the earbud in, what if they don't

Latency*No exceptions*

An amount of time is allotted to accept a set of SDs into the radio network, called latency. If there are no other devices seeking acceptance, a set of SDs will be accepted within TBD seconds. If there are 100 sets of SDs all seeking acceptance simultaneously, the last set SDs will be accepted within TBD seconds.

Comment [sh40]: When will this be determined

With exceptions

If one or more exceptions are present during the acceptance process, the latency to full acceptance will be extended or in some cases impossible to complete.

If a firmware only update is required by a lone set of SDs in the radio network, acceptance will take TBD seconds. If a firmware update is required by 100 sets of SDs simultaneously acceptance time for all SDs will be TBD seconds.

Comment [sh41]: When will this be determined

*Exceptions**Hardware Malfunction*

If one of the SDs has a hardware problem it will be prevented from connecting to the radio network and will blink its LEDs according the user interface specifications. The SD will, after TBD minutes enter the power down state.

Comment [sh42]: When will this be determined

Outside radio range. If the SDs are not in radio range or if the radio is down the SDs will seek acceptance for TBD minutes, after which time they will enter power down state.

Comment [sh43]: When will this be determined

2.3.8 TRAIN - OUTDATED FIRMWARE

If the SD firmware is identified as outdated while seeking acceptance by the master station radio, the master station will automatically update the SD's firmware and continue with the acceptance process provided the firmware update was successful. During the firmware update, LEDs will blink according to user interface specifications. If the firmware update is unsuccessful, acceptance will be denied and after TBD minutes the SD(s) will enter the power down state.

Comment [sh44]: When will this be determined

2.3.9 TRAIN - CATEGORY SELECTION

Category selections are data tags that uniquely identify activities during TRAIN. Category selection marks the beginning and type of important parts of the workout. Five different types of categories can be selected via a button on the wrist SDs. Names of categories are given in the system console by coaches or administrators.

Category 1 – Pink (Default)

Category 2 – Red

Category 3 – Purple

Category 4 – Blue

Category 5 – Orange



Prerequisites

To operate the category selection wrist and head devices the swimmer must be out of the water and have been accepted by the master station radio.

2.3.10 TRAIN - USER INTERFACE

Activation

Selecting a category is required to initiate the recording of metrics and should be done in coordination with beginning of a swimming session. To do so, after powering up, a button press of 500ms to 2s will activate the default category as specified in system console. An audible message will accompany activation.

Deactivation

If a swimmer wishes to not record a particular portion of a practice, they may deactivate a category by pressing and holding the category button for 2s to 5s. An audible message will be given in the ear phone confirming deactivation.

Changing Selection

Changing the category is accomplished by pressing the category select button again for 500ms to 2s. After each press the category is advanced to the next category in the list. After a 2s no press time has expired an audible message will be played indicating final category selected.

If multiple presses occur inside the 2s press time period the category will advance the number of counts equal to the number of presses holding any audible feedback until a full 2s no press time is observed. After the 2s no press time is expired an audible message will be played indicating final category selected.

Each time the selected category is changed an audible message indicating the new category will be played into the swimmer's earbud. For example: "CATEGORY ONE - PINK ACTIVE."

Audible Messages

The following is a summary of all audible messages to be generated in connection with category selections.

- "Cat one Pink"
- "Cat TWO Red"
- "Cat three Purple"
- "Cat four BLUE"
- "Cat five Orange"
- "CAT DEACTIVATED"



2.3.11 TRAIN - PERSISTENCE

Unlike groups, categories are persistent over the life of the data. Each piece of data saved in the database will have a category under which it was recorded associated with it.

Latency

A time lag between when a button is pressed and the audible message is played is anticipated. A maximum of 2 seconds of latency due to the radio and 2 seconds of intentional pause for a total 4 seconds.

Comment [sh45]: What's causing this to have to be 2 seconds

To provide performance feedback, AvidaMetrics needs some time after the completion of a length to extract the data from the SDs, compute metrics and trigger the audible messaging in the HD ear phone. During TRAIN, the start of each metric message will be received by each swimmer immediately after the metric has been computed, but no more than 3 seconds after final event required for complete computation is received.

Performance Feedback

Performance feedback is the audible reporting of performance on the most recently completed length. During TRAIN the two (2) metrics selected in PLAN are audibly reported to the swimmer. Performance feedback is provided on a length by length basis.

User Interface

Use of metric feedback during TRAIN is anticipated to be very dynamic and therefore must have on/off capability in the pool area. By pressing button 2 for 500ms to 2s performance feedback is toggled from off to on and vice versa.

Each time the state of performance feedback changes an audible message will be played indicating the presiding state of performance feedback.

2.3.12 TRAIN - AUDIBLE MESSAGES

Performance feedback messages will contain the metric name and value (XX.X) of last length performance. Number of digits of resolution will follow metric specifications in Table 6.

Coach Call/Message

Coach call is the ability for a swimmer to hear a near real time voice message from coach during TRAIN. A coach call is accomplished with the master station radio and the ear phone connected to the swimmers HD. Due to the length and live nature of coach calls, they will take priority over all other pending audible messages, such as metric feedback and category selection. Pending messages will not wait to be delayed played. They will be dropped. The swimmer will have no control over the message other than volume level.

Comment [sh46]: Can we list the other audible messages – metric feedback, category selection, etc...

Pending Calls

Due to lack of water penetration of the AvidaMetrics radio, calls will not reach swimmers when they are underwater. If a swimmer is underwater when the coach call is being delivered, the call will wait up to 30 seconds for the swimmer to surface and a completion of the call. If after 30 seconds the call has not reached the intended recipient, the pending call will be dropped. If the call was unsuccessful the master station will indicate such to the middleware and provide appropriate status indicator on the coach's TRAIN GUI.

Comment [sh47]: And provide appropriate status indicator on the coach's TRAIN GUI



2.3.13 TRAIN - EXITING/SD POWER DOWN

Due to stored data within the SDs exiting TRAIN and powering down, the SDs must follow a regiment. Ankle devices in particular, may contain a significant amount of stored data since they rarely break the surface of the water during TRAIN. Four ways to exit TRAIN and power down SDs are:

- SD power down command
- Coach TRAIN exit command
- No events timeout
- No radio timeout

SD power down command

By pressing button 1 on a wrist SD, a power down request is sent to the master station initiating a focused data extraction effort. The master station will extract all SD data up to the time the power down request was received. LEDs will indicate the extraction is in progress. When all data has been received, the master station will send a power down message to the SDs powering them down and turning off their LEDs.

Coach TRAIN exit command

When the last coach has exited TRAIN either by button press or shutting down his GUI, a power down request is sent from the host PC to the master station initiating a focused data extraction effort. The master station will extract all SD data up to the time the power down request was received. LEDs will indicate the extraction is in progress. When all data has been received, the master station will send a power down message to the SDs powering them down and turning off their LEDs.

No events timeout

If an SD is in the radio network and no events are being detected or recorded and all data buffers are empty, after a period of time, the SD will power down. Each type of SD has different timeout:

- Head – 10 minutes
- Wrist – 10 minutes
- Ankle – 2 hours

Comment [sh48]: What are these?

No radio timeout

If a head or wrist SD has not received a master station radio message for a period of 30 minutes the SD will power down. If event data is left the SD's event buffer it will be lost. In the case of the ankle device, the time out will be 3 hours.

Comment [sh49]: After an ankle SD is accepted and goes under water for 2 hours it will still be detecting events, correct? YES

Comment [sh50]: How does this work with the ankles?

Audible Messages

Prior to sending the power down message, the master station will play an audible message indicating that data collection is complete and that the SDs are about to be powered down. If the audible message is not heard by the swimmer, the LEDs will indicate power down by turning off "SESSION COMPLETE POWERING DOWN DEVICES"

Comment [sh51]: Just like the Acceptance procedure, what if the earbud isn't in?



2.4 CHARGING

All SDs have an internal lithium ion battery that provides power to the SD electronics during TRAIN. The battery must be fully charged prior to each practice in order for the SDs data collection and radio communication over the course of a 4 hour practice.

Charging is accomplished by simply placing the SDs in the custom charging station for approximately equal to the amount of time the SD was just active. Spring loaded contacts on the charger mate with SD contact points to provide electrical connection and power to the SD batteries. See user interface section for details and LED status and meaning during charging.

2.5 REVIEW

REVIEW is the AvidaMetrics mode of operation whereby swimmers and coaches may view detailed metric and audio information. Just like PLAN, REVIEW is a Web -based application, swimmers and coaches may access it anywhere! REVIEW provides the ability to view:

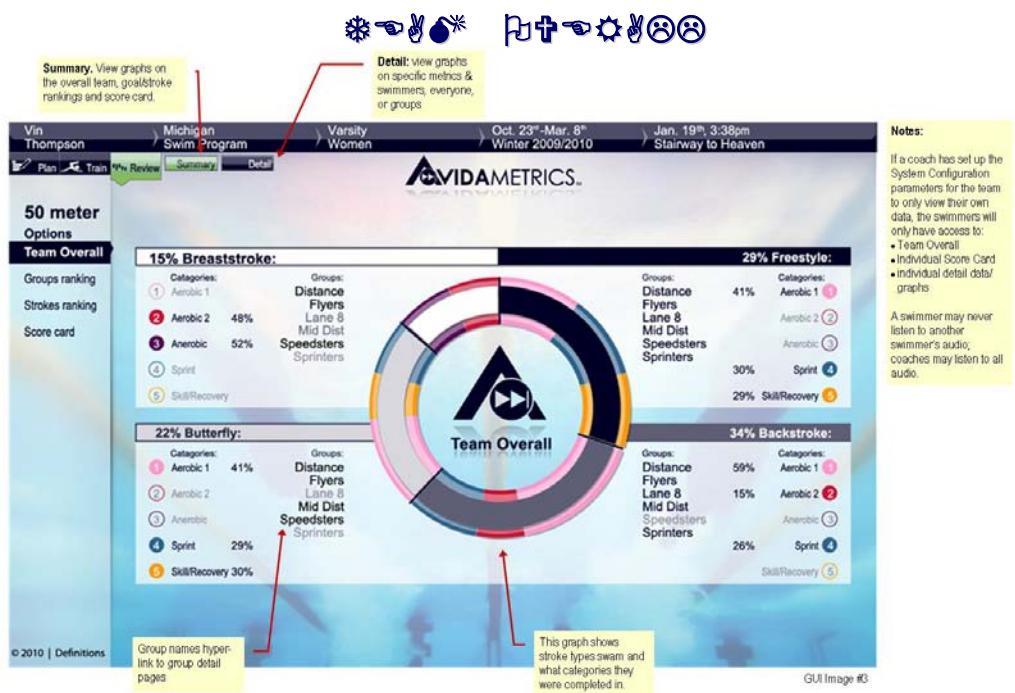
- comparisons between groups
- comparisons by stroke types (Back, Breast, Fly, and Free)
- individual "score cards" on performance
- detailed, length by length, data on every swimmer
- compare multiple metrics
- compare multiple practices
- put GUI shot here

2.5.1 REVIEW - TIMEOUT

If there has been no activity for 15 minutes, AvidaMetrics will automatically log the user off. No activity is defined as no user initiated requests of the server and all requested information has completed its cycle.

Comment [sh52]: Will there be a Timeout Warning that will pop up prior? It's going to be easy for a coach/swimmer to be reviewing data (ex Score Cards) and consume 15 minutes very easily. But I don't want to get rid of this Timeout.





Top Navigation:

Group names at top of each column hyperlink to group's detail page with filter pre loaded.

The distance value of x/y means: x=total distance swam with the selected filter configuration; y=total distance swam for entire practice.

The icon arrow at the top of metric and distance columns give the option to sort by that parameter.

Left Sidebar:

- Team Overall
- Groups ranking
- Strokes ranking** (highlighted)
- Metric
 - Strokes
 - Transition
 - Tempo
 - Length
 - Pace** (highlighted)
 - DPS
 - Kicks
 - Kick Tempo
 - Score card

© 2010 | Definitions

Central Data Grid:

50 meter		Season avg.		All strokes		Sprint		Roster		Open	
Freestyle:		Backstroke:		Breaststroke:		Butterfly:					
Diem, Renee	4.1	Cochran, Andi	3.9	Jordan, Ashley	3.6	Schmidt, Hannah	3.3	Burton, Joan	3.2	Endres, Jessica	3.2
Grace, Alex	4.0	Shaw, Malerie	3.8	Morrison, Tarah	3.5	Schmidt, Hannah	3.5	Stern, Chris	3.4	Stern, Christina	3.5
Green, Shelby	4.0	Smith, Brianne	3.8	Smith, Tarah	3.5	Smith, Christina	3.5	Giese, Ali	3.1	Harris, Karen	3.3
Grett, Holly	3.8	Smith, Christina	3.7	Carry, Jen	3.7	McKechnie, Nat...	3.3	Hanson, Jennifer	3.1	Harris, Karen	3.0
Jordan, Ashley	3.8	Stern, Chris	3.7	Hanson, Jennifer	3.6	Spidle, Jasmeen	3.2	Graves, Kelly	2.9	McNeal, Veronica	3.0
Morrison, Tarah	3.7	Carry, Jen	3.7	Harris, Karen	3.6	Hanson, Jennifer	3.1	Hitches, Reese	2.9	Walker, Sabrina	2.7
Schmidt, Hannah	3.6	Hanson, Jennifer	3.6	Walker, Sabrina	3.1	Walker, Sabrina	2.7				
Burton, Joan	3.6	Harris, Karen	3.6								
Endres, Jessica	3.6	McKechnie, Nat...	3.5								
Gram, Megan	3.3	Spidle, Jasmeen	3.5								
Nelson, Kayla	3.3	Terry, Lydia	3.4								

Individual names hyperlink to individual detail page with the filter pre loaded as selected on this page.

Groups Rankings and Detail buttons: go to the details graph with the selected/filtered data you're viewing.

Filtering - all strokes or all categories but not both.

Bottom Grid:

50 meter		Season avg.		All strokes		Stroke		Roster		Groups	
Options		Corr. agent		Stroke		Category		Roster		Distance	
Team Overall		Season avg.		Top 25%		1 Aerobic		Hanson, Jennifer		Sprinters	
Groups ranking		Top 25%		Top 15%		2 Aerobic		Harris, Karen		Flyers	
Strokes ranking		Top 15%		Top 05%		3 Aerobic		Burton, Joan		Lane 8	
Metric		Top 05%				4 Sprint		Endres, Jessica		Mid Dist	
Strokes						5 Skill Recovery		Hanson, Jennifer		Unassigned	
Transition								Harris, Karen			
Tempo								Walker, Sabrina			
Length								Walker, Sabrina			
Pace											
DPS											
Kicks											
Kick Tempo											
Score card											

© 2010 | Definitions

GUI Image #4





Each swimmer's name is a hyperlink to that swimmer's Detail data/graphs based on the selected filter criteria.

Length (split time): Avg. time for one length of the pool for

Length #: The length in practice where the occurrence

Filter: Select how you want the Score Card to store & pull the

Vin Thompson

Michigan Swim Program

Varsity Women

Oct. 23rd-Mar. 8th Winter 2009/2010

Jan. 19th 3:38pm Stairway to Heaven

Plan Train Review

Summary Detail

AVIDAMETRICS™

50 meter

Options

Team Overall

Groups ranking

Strokes ranking

Score card

Season avg.		Freestyle			Sprint			Roster			Open
Burton, Joan		17.3 season avg.			3.6 season avg.						
		Length	Length #	PSI	Pace	Length #	PSI				
50 m	15.9	22	0		4.3	22	0				
100	16.2	22,23	2		4.2	22,23	3				
200	16.9	22-26	1		3.8	22-26	3				
300	17.1	32-40	4		3.8	32-40	4				
400	17.6	2-14	6		3.7	2-14	4				
500	18.1	2-18	5		3.6	2-18	5				
		17.2 practice avg.			3.8 practice avg.						
Odometer:		Practice information:			Season information:						
		3:38- 6:41 pm	Freestyle:	3050 m	38/40 practices logged	Freestyle:	45,000 m				
		2 hrs. 3 min.	Back:	1550	65/120 days of the season	Backstroke:	15050				
		1 hrs. 15 min. swim time	Breast:	2350	86 hrs. 19 min. total swim time	Breaststroke:	12,000				
		6,950 meters	Butterfly:		73,900 m total distance	Butterfly:	1,850				
Endres, Jessica		17.3 season avg.			3.6 season avg.						
		Best consecutive length(s):			Length			Pace			
					Length	Length #	PSI	Pace	Length #	PSI	
50 m	15.9	22	0		4.3	22	0				
100	16.2	22,23	2		4.2	22,23	3				
200	16.9	22-26	1		3.8	22-26	3				
300	17.1	32-40	4		3.8	32-40	4				
400	17.6	2-14	6		3.7	2-14	4				
500	18.1	2-18	5		3.6	2-18	5				
		17.2 practice avg.			3.8 practice avg.						
Odometer:		Practice information:			Season information:						

© 2010 | Definitions

Practice Odometer: Summary information for each swimmer's practice.

Practice start/stop times are from coaches' start and end in TRAIN.

Pace (Avg Speed) metric: Each number on the Score Card is a hyperlink to a Detail graph.

GUI Image #5

Notes:

- Short and long course data are kept separate except in Season Information, here they are combined
- Each swimmer receives their own score card.

Length # - define here
Length - Length time metric

Practice Since Improvement: The number of practices that have taken place since the swimmer has improved at that particular swim length.

Season Odometer: Summary information for the swimmer's entire season.

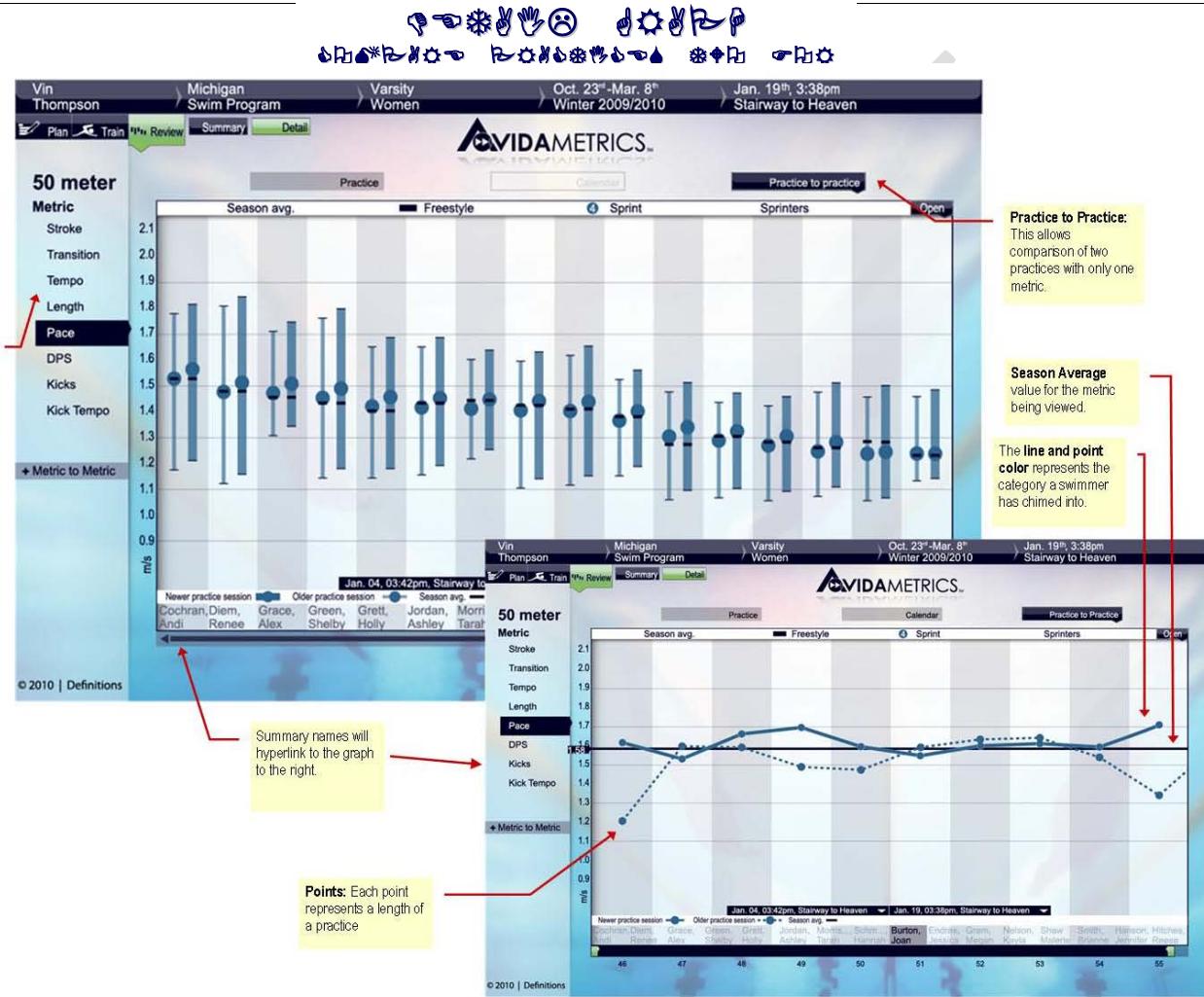






GUI Image #7





GUI Image #8





- Click a call or message icon to play. Only in the individual's Detail graphs can a swimmer or coach listen to calls and messages while in REVIEW.



3. SYSTEM CONSTRAINTS

3.1 POOL LENGTH

Pools may vary in size and lane configuration. Maximum pool size is 50 meters long and 75 feet wide. The length of pool to be used will be a specifiable parameter in the System Console. Minimum length TBD yds(at least 20).

3.2 SYSTEM CAPACITY

The AvidaMetrics system will be able to support all functions for a maximum of 100 swimmers and six coaches in a pool facility at one time.

3.3 DATA CAPACITY

Storage capacity is designed to archive metric and audio data from the pool facility with the following conditions:

50m X 25yd pool

Weekly schedule of:

M-F: 5am -9am, 2pm-10pm

Sat, Sun: 6am – 5pm

100 swimmers at every practice

Season length of 50 weeks

Need to run in calculator to double check. We need to establish what our data removal plan is, how long will we archive it, at what cost, who will manage this

3.4 NUMBER OF PROGRAMS AND TEAMS

Any number of programs may be associated to a single system. A minimum of at least one program must be associated with a system. Programs are added to a system only one at a time. System administrators approve program associations. Teams are associated with a single program. There is no limit to the number of teams within a single program.



4. HOW TO ESTABLISH AN AVIDASPORTS ACCOUNT

Need a flow chart here showing the process to create an account and joining a program.

Comment [sh(6/11)-53]: Jen let's talk about this one so you can develop the flowchart.

4.1 DATA COLLECTION / TEAM APPROVAL

If a user has requested to join a program, but hasn't been assigned to a team they will show up in the user program approval page in AvidaMetrics console section of the Web site. Until an athlete has been assigned to a team they will not become active in a training session and therefore their data will not be recording.

For every coach log if there are any athletes that have requested membership to his team that have not yet been accepted, a hyperlink indicating this will be displayed. The coach can either follow the hyperlink to the User Program Approval page where acceptance will be executed, or declined. Confirmation directly returns the coach to the login process. Declination would take the coach to the landing page. A coach may make partial acceptance of a swimmer's request.

4.2 PAYMENT FREQUENCY

Subscription payments will be made on an annual basis independent from program seasons.
Month by month payments not allowed.



APPENDIX 1

METRIC EXPLANATIONS

Metrics

Metrics are defined as measurable events/actions/behaviors performed by a swimmer. Metric data is kept for each individual swimmer.

Stroke ID

The four stroke types (freestyle, backstroke, breaststroke and butterfly) are automatically determined for each length. If the stroke type will be miscalculated if a swimmer changes strokes during a length or performs actions outside of the normal stroke technique.

Comment [sh(6/11)-54]: Need to see if any other reasons from Paul

DPS

Average Distance per Stroke (DPS) is the length of the pool divided by number of strokes taken between two consecutive EOL markers.

Comment [sh55]: Let's discuss this.... Can we account for removing Transition time out of this?

Pace

Pace is the average speed over a pool length and is computed as the ratio of length of the pool divided by the length time swam. AKA - Average Speed

Comment [sh56]: Can we account for removing Transition out of this, making it truly Swimming Pace not whole length?

Strokes

Freestyle and Backstroke

The total number of strokes taken by BOTH the left and right arms in a length.

Comment [sh(6/11)-57]: Bill, do we want this?

Breaststroke and Butterfly

The total number of strokes taken by simultaneous left and right arms. The breaststroke pull out (one full pull and kick) is not calculated into the stroke count.

Kicks

Freestyle and Backstroke

Total number of kicks by BOTH the right and left ankles in a length. No kicks are to be counted during transition/streamlining off the wall. If kicks are too weak/intense they will not be registered in the kick count.

Comment [sh(6/11)-58]: Need to confirm with Paul.

Breaststroke and Butterfly

The number of kicks taken by simultaneous right and left ankles in a length. No kicks are to be counted during transition/streamlining off the wall. If kicks are too weak/intense they will not be registered in the kick count.

Comment [sh(6/11)-59]: Need to confirm with Paul.

Stroke and Kick Tempo (All strokes)

Stroke and kick tempo is the average duration of time taken to execute one complete stroke or kick. Tempo is computed as the time between 1st stroke and last stroke in a length, divided by number of strokes or kicks in that length.

Transition (Freestyle & Backstroke)



The duration of time from the head dip (initiation of turn) to the initiation of the first stroke (end of break out) of the following length. AKA - Turn and Breakout Time

Comment [sh(6/11)-60]: Confirm with Paul
Comment [sh(6/11)-61]: Bill do we want this

Transition (Breaststroke and Butterfly)

The duration of time from the arm swing event to the initiation of the first stroke (end of break out) of the following length. AKA - Turn and Breakout Time

Comment [sh(6/11)-62]: Confirm with Paul
Comment [sh(6/11)-63]: Bill, do we want this
Comment [sh(6/11)-64]: Bill, do we want this

Length

Length is the total elapsed time to swim one length of the pool. AKA - split time

Comment [sh(6/11)-65]: Confirm with Paul

Freestyle and Backstroke

1st length time will be measured from the first EOL event to head dip event.

Middle length times will be measured from head dip to head dip events.

Last length time will be measured from head dip of second to last length to last length EOL event.

Comment [sh(6/11)-66]: Arm swing to arm swing
Comment [sh(6/11)-67]: Confirm with Paul

Breaststroke and Butterfly

1st length time will be measured from the first EOL event to arm swing event.

Middle length times will be measured from head dip to arm swing events.

Last length time will be measured from arm swing of second to last length to last length EOL event.

Comment [sh(6/11)-68]: Get new table from next release of Funct Spec and alter as needed. Some columns wont need to be in here.

Comment [sh69]: 0? What if they are only kicking?
Comment [sh70]: Switch these
Comment [sh71]: Switch these
Comment [sh72]: Switch these
Comment [sh73]: Switch these

Comment [sh74]: Switch these

Top 5%: Top 5% value is the average of all session 95th percentile values.

Top 15%: Top 15% value is the average of all session 85th percentile values.

Top 25%: Top 25% value is the average of all session 75th percentile values.

Best and Worst: Each metric has a best and worst based on maximum or minimum value for given time period.

Comment [sh75]: 15%

Comment [sh76]: Is this true?



APPENDIX 2

DEFINITIONS

Athletic Telemetry	The act of gathering measureable data on an athlete remotely.
Event	A swimmer motion, independent of other metrics, which represent a particular action performed by the swimmer (stroke, kick, push, touch, turn, etc).
Session	The duration of time in which AvidaMetrics system is actively recording data. At least one swimmer must participate in a session.
LD	The personal electronic device located on the swimmer's wrists and/or ankles.
HD	The personal electronic device mounted inside the swimmer's cap.
SD	Swimmer Device - a generic description for LD or HD.
GUI	Graphical User Interface
Lap	Swimming TWO lengths of the pool
Length	Swimming a single length of the pool.
End of length (EOL)	
Program	An organization of swim teams, or groups within a team, sometimes independent of a facility.
Association	The linking of a swimmer's name, head device ID and limb device IDs. Association of these devices is needed for proper display of metric and video information by swimmer.
LED	

Comment [sh(6/11)-77]: Jen please go through the entire document and make sure we DON'T use these initials, I want the document to say: limb device, head device, and swimmer device.

