

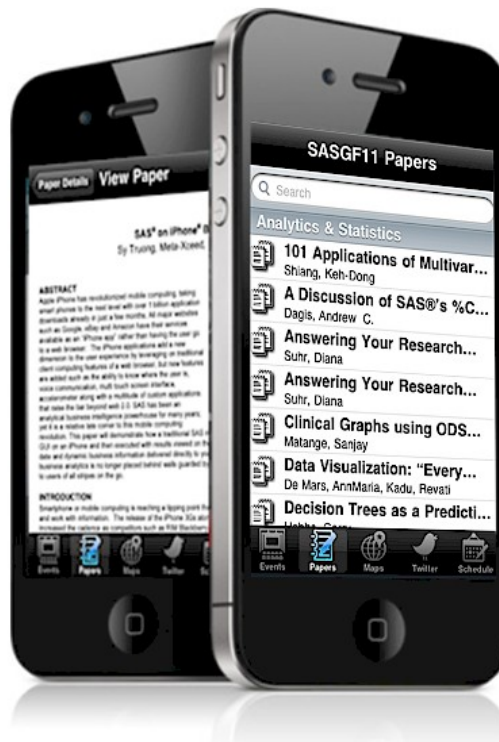
Paper 316-2011

SAS® Global Forum Conference iPhone App
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ABSTRACT

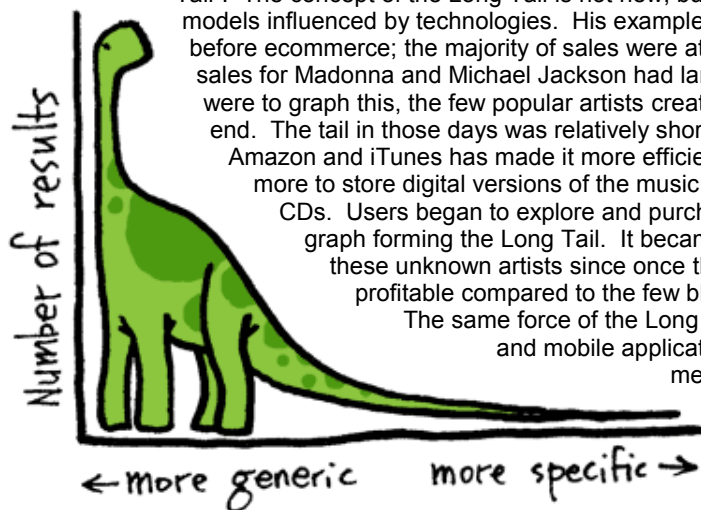
As information transitions from hidden databases and obscure networks into mainstream social networks like Twitter, Facebook and Youtube, users leverage the social aspects of communication to make sense out of the deluge of data. Social media can provide extra context and more meaningful information when it is recommended from a trusted friend as compared to spam. Attending SUGI in the past used to involve carrying a thick proceedings and a program book while deciphering what presentation is most relevant and useful for each attendee. As SAS conferences grow and the number of sections and papers become more diverse, this process becomes overwhelming. Since SAS Global Forum by its own nature is a social event, it lends itself to social networks as it helps individuals make sense and bring context to the presentations that they attend. An example is how Twitter is becoming more pervasive since it gives a new voice to express opinions and provide instant information to collectively capture the ethos of the conference as a community and records it for perpetuity.

Smart phones such as the iPhone and tablet computers such as the iPad empower users to obtain information when they are mobile. This information can be more meaningful when utilized in conjunction with Social Media tools. This paper presents a quintessential use of these technologies for SAS users as they navigate SAS conference with the SAS Global Forum 2011 iPhone and iPad App.

**SOCIAL MOBILE APP**

We are witnessing a unique moment in the evolution of software as it is becoming mobile and socially driven by external forces. When I first started to use SAS, the software was on a mainframe and the JCL was not very user-friendly. This changed as personal computers running the Windows operating system was connected to the Internet. Windows and the Internet were steps in the evolution as we are moving towards yet new platform for software or “apps” which are even easier to use and convenient on mobile devices. There are many forces at play, but I will expand upon a couple that I will refer to as the “Wise Tail” affect.

The first component of the Wise Tail is a phenomenon which Chris Anderson popularized in his book “The Long Tail”. The concept of the Long Tail is not new, but Anderson applies it to contemporary economic models influenced by technologies. His examples included changes in the music industry where before ecommerce; the majority of sales were attributed to block buster artists. In the eighties, CD sales for Madonna and Michael Jackson had large sales compared to lesser known artists. If you were to graph this, the few popular artists create a large head and the rest of the artist fell in the tail end. The tail in those days was relatively short. Anderson illustrates how online stores like Amazon and iTunes has made it more efficient to stock unknown artist since it did not cost much more to store digital versions of the music compared to the cost of shelf space for records and CDs. Users began to explore and purchase more obscure music extending the tail of the graph forming the Long Tail. It became more profitable for online merchants to include these unknown artists since once the Long Tail was added up; it became more profitable compared to the few block busters which makes up the head of the graph.



The same force of the Long Tail is also having a profound effect on social media and mobile applications. Rather than going to the few “block buster” old media outlet to get information, users are finding information specific to their taste and interest fed to them via social networks. Twitter and

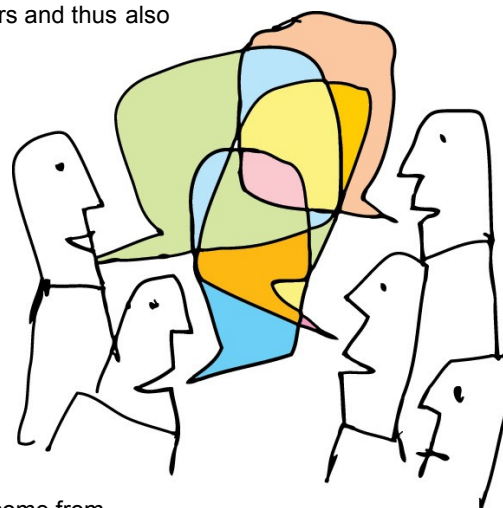
Facebook are augmenting traditional old media from CNN and New York Times. The Long Tail is also affecting how software is being delivered. Rather than getting large complex software systems as shrink-wrap software in a box from a large vendor, the app is a small download to mobile devices. This creates a new ecosystem for the proliferation of many small apps making up the Long Tail compared to the few large systems within the head of software distribution. The effect of the Long Tail is affecting both social media and mobile application simultaneously and is ushering in a new class of software.

The second component to the Wise Tail is the effect of crowds which James Surowiecki wrote in his book "The Wisdom of Crowds". Surowiecki illustrates this in an example where at county fair, a large jar of jelly beans were to be displayed and if each individual passing were to guess how many jelly beans are in the jar; they would not be far off from the exact number. On the other hand, if all the guesses from the crowd were to be aggregated, the average would be closer to the exact number of jelly beans in the jar. This effect is referred to as the "Wisdom of Crowds". The same force is also affecting how information is being used and consumed via social networks. Information prior to the Wisdom of Crowds and the use of social media was disseminated from a small group of producers of the information. An example is how information on a newspaper is consumed, but it is not easily shared with many friends. In the era of Facebook, Twitter and YouTube, not only are users re-tweeting links to interesting articles, but they are also creating their own content and videos. This interactive and participatory nature of social media provides another channel of filtered information allowing for members in the social network to selectively find the information suitable for them. When many users express opinions to confirm that something is good, the result is more meaningful content vis-à-vis the Wisdom of Crowd.

The combination of the "Long Tail" and the "Wisdom of Crowds" is what I am referring to as the "Wise Tail". These forces are interconnected and the affects are compounded in the context of social mobile apps. As the efficiencies of software distribution are gained through a marketplace like the AppStore, it extends the tail creating a Long Tail affect for software. Social networks such as Twitter and Facebook empower mobile apps benefited from the Wisdom of Crowds so the information on these apps becomes more relevant to each individual user. The Wise Tail is taking shape and is transforming how software is being developed and used as illustrated in the SASGF11 App in this paper.

SAS CONFERENCES MOBILE

Mobile computing is having an impact on social media in recent years and thus also affecting SAS conferences. SAS conferences are closely related to academic conferences with its paper presentations and published proceedings as compared to conventions that are more commercial and vendor based. The SAS Global Forum is the largest conference of its kind and is the model used for smaller regional conferences. SAS Global forum does have some elements of convention style conferences taking over convention centers such as the one in Las Vegas which attracts thousands of attendees. However, SAS conferences are user driven and have its academic roots. This creates a passionate "love fest" atmosphere which creates an aura of a convention taking over large demo room floors. In both types of academic and conventions style of conferences, one thing they both have in common is a social gathering of like minded "Bird of a Feather" or "Meetups" to discuss aspects of SAS.



The logistics of finding the paper presentation rooms, reviewing the paper, and discussing their relative merits in the past, can only come from attending the conference. The use of social media in conjunction of mobile computing on smart phones and tablets is adding a new dimension to the conference experience. Rather than flipping through the program book or navigating through the proceedings CD to decide which paper to attend, this can be done on a mobile device. A discussion of a particular concept or paper can be carried on Twitter as messages are entered in real time. This technology does not replace the face-to-face discussion with the author or actually attending the conference, but it does provide an additional option to carry a conversation even while not physically at the conference. This provides users with additional perspectives on the information coming out of the conference via the mobile device.

The SASGF11 App can also be updated for other regional conferences since they also share some of the same type of paper presentation structure. The use of mobile computing and social media is very suitable to SAS conferences due to its ability to share information in social groups while discussing many distinct topics. It also has the ability to connect users that are attending the conference with those that are joining the conversation via the internet creating a larger community extending beyond the geographic boundaries of the actual conference location.

APPLICATION KEY FUNCTION

This paper describes an iPhone and iPad App which combines aspects of social network along with mobile tools to manage the logistics of reviewing papers and scheduling events. Some of the things that the SAS Global Forum 2011 iPhone App features include:

- **Managing Events** - All events such as opening sessions and paper presentations can be searched and scheduled for attendance.
- **Viewing Paper Presentations** – Paper titles and authors can be searched and the PDF version of the paper can be viewed.
- **Navigating Maps** – A map of the conference presentation rooms can be reviewed to help locate presentation locations.
- **Messaging with Twitter** – A live stream of discussion on the conference can be searched and viewed.
- **Scheduling** – Events and paper presentations can be scheduled and managed for ease of attendance.



MANAGING EVENTS

The SAS Global Forum 2011 (SASGF11) conference has a combination of convention like activities combined with academic presentations. All the activities are scheduled ahead of time at specified locations and are referred to as events. These events are organized chronologically, but sometimes they overlap with multiple paper presentations occurring at the same time. The topics of discussion during the event are diverse so this poses challenges to find the best event to attend. The SASGF11 App in this paper lists out all the events of the conference within the first screen.

You can swipe vertically to scroll through the scheduled event, which is listed chronologically. You can also swipe by day on the vertical scroll bar on the right hand side. This allows for a quick navigation by day to quickly jump to your current event of interest. The interface of an iPhone or iPad is different compared desktop computer with a mouse. These navigational interfaces element are different, but are essential on mobile devices. For example, if the event is a paper presentation, the paper title along with author's name is displayed on the screen. If you were to tap on a particular event, it will drill down to a detail page where more information such as room location and the ability to view the full paper is available.

There is also a search option at the top of this and most screens allowing you to type in the name of the event or author's name. It will then display only items meeting your search criteria. This is applied the moment you type each letter, which is similar to the Google Instant search. For example, if you were to start by typing the letters "Qu", it will narrow down the resulting list below to include the paper on "Query Creation Wizard...." instantly. The instant search that

Google provides saves time when used on the desktop, but this feature becomes even more useful for mobile devices since users are typing on the go with a small keyboard.

Once the user has identified the event they want to attend, they can also tap on the "Attend" button on the upper right. This will add the currently viewed event onto a personal calendar. It does error checking and will inform you if you have a conflict in schedule. This feature will replace the need to carry around a program book and manually noting your schedule on paper.

The events and presentations display quickly on the device since it has been optimized for the iPhone and iPad. This means that the information pertaining to the event is not an HTML page on a web server that needs to be loaded every time you open the application. The information is actually downloaded when you install the application from the AppStore. The one time download captures all the details pertaining to the event's title, author and schedule information is stored locally on flash memory for optimal performance.

Like other iOS applications, this app has been developed using a flavor of the C language from Apple known as "Objective C". Apple provides many libraries with objects that can be used without having to re-invent the wheel. The object used in this case to manage events is stored in the `NSMutableDictionary`. This object has the ability to store attributes which can be referenced on the local device. Here is an example Objective C code to assign a couple of events to the `NSMutableDictionary` object.

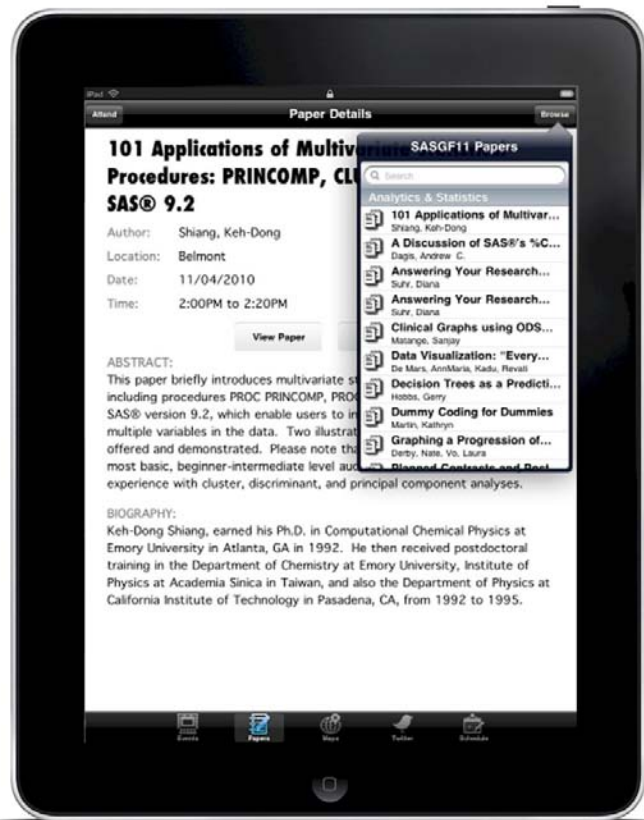
```
NSMutableDictionary *tmpDic;
tmpDic = [[NSMutableDictionary alloc] init];
[tmpDic setObject:@"Query Creation Wizards using SAS INTRNET" forKey:@"Name"];
[tmpDic setObject:@"Matthew Redelings" forKey:@"Author"];
[tmpDic setObject:@"11/02/2010" forKey:@"Date"];
[tmpDic setObject:@"2:00 AM" forKey:@"Time"];
[tmpDic setObject:@"Richardson" forKey:@"Location"];
[finalArr addObject:[tmpDic mutableCopy]];
[tmpDic release];

tmpDic = [[NSMutableDictionary alloc] init];
[tmpDic setObject:@"Point-and-Click Programming Using SAS® Enterprise Guide®"
forKey:@"Name"];
[tmpDic setObject:@"Mira Shapiro,Kirk P. Lafler" forKey:@"Author"];
[tmpDic setObject:@"11/02/2010" forKey:@"Date"];
[tmpDic setObject:@"2:00 AM" forKey:@"Time"];
[tmpDic setObject:@"Fremont" forKey:@"Location"];
[finalArr addObject:[tmpDic
mutableCopy]];
[tmpDic release];
```

From a SAS programmer's perspective, this construct is a little different. You can think of it as a SAS dataset with two columns. One column stores the actual information such as event title and author's name. The other column describes the type of field such as name, author, date, etc. To avoid typos, a separate SAS program was developed to read the information from an Excel file, which is provided by conference organizers. The SAS program then generates the Objective C through DATA step PUT statements. This technique prevents error prone typos and can allow for efficient updates when the application is applied to another SAS conference besides this one in Las Vegas.

VIEWING PAPER PRENTATIONS

There are some events at the conference such as the opening session or things that occur in the demo area which are not part of a paper presentation. The majority of events, however, are predominantly paper presentations. Traditionally, the user would flip through the program book and look at the abstract or perhaps read through the proceedings to see which paper is relevant to their interest. During the conference, this process is cumbersome since attendees are moving between conference



rooms. The SASGF11 App presents this information conveniently on mobile devices.

There is a banner separating each academic section within the conference and the papers listed within each of these sections will be alphabetized. The instant search feature is similar to that of the event screen allowing the user to find any particular paper by typing the paper title or author's name. Once the paper has been identified, the user can tap on the paper to drill down to the details screen for more options.



The paper detail screen presents the full title as compared to the list view which only list the title on one line and thus is often truncated. In addition to the full title, the author's name, biography, location and time is fully displayed on the detail screen. The user has the ability to click on the "View Paper" button to load the PDF version of the paper if it has been made available. In this case, it does load the paper through the Internet. This means that you have to have a 3G data service or Wi-Fi access in order to view the full paper.

There is also an option to anonymously rate papers. Although this was not implemented on this version of the SASGF11 application, it has been developed for future releases. The success of ecommerce such as eBay and Amazon.com relies heavily on user reviews of their products. Before a customer purchase the book on Amazon, they rely on reviews from other readers leveraging on the wisdom of crowds to guide them to the best book. In the case of SAS conferences, it can also guide attendees to the best paper to attend. This democratizing ability to have many users rate papers may in the future replace the traditional judges that currently vote on papers for the best paper awards.

Although the display of the paper details is implemented in Objective C on the device, the rating is actually collected and managed by a SAS program on the server. Each time a user applies a rating, the review comments and star rating is sent to the server where the following SAS code segment is executed.

```
INIT:
  control asis;
  libname1 = 'confdat';
  papername = symget('papername');
  type = symget('type');
```

```
declare char(20000) body line3;
nickname= symget("nickname");
title= symget("title");
updateno= symget('body0');
if updateno eq "" then do;
  body =trim(left(symget("body")));
end;
else
  do i = 1 to updateno;
    body = body||symget("body"||i);
  end;
count = symgetn("count");
star1 = symgetn("star1");
star2 = symgetn("star2");
star3 = symgetn("star3");
star4 = symgetn("star4");
star5 = symgetn("star5");
star = star1 + star2+star3+star4+star5;
averstar=0;

datname=libname1 || '.' || 'paper_conference';

if compress(type) = 'write' then do;
if exist(datname) = 0 then do;
  when = trim(put(date(), worddate.));
```

```

when = trim(left(when));
submit continue;
data &datname;
  attrib papername length=$2000 label="Paper Name";
  attrib nickname length=$400 label="Nick Name";
  attrib title length=$200 label="Title of Message";
  attrib body length=$200 label="Body of Message";
  attrib date length=$200 label="Date comment";
  attrib star length=8 label="Star rating";

  papername = "&papername" ;
  nickname = "&nickname" ; title = "&title" ;
  body = "&body" ; date = "&when" ; star = &star ;
  output;
run;
endsubmit;
...

```

In this case, each star rating is translated into a numeric score. Other attributes such as use comments regarding the paper is also collected within a SAS dataset. This information is tabulated using standard data step SAS code wrapped around SCL for efficiency. All the paper review information entered on the iPhone or iPad are translated as macro variables which the SAS program process. The conversion of the iPhone entered values into macro variables is accomplished through another C program which captures the information sent through TCP/IP communications. The details of this process are beyond the scope of this paper, but it illustrates how a SAS program can be used to manage information entered from a mobile iOS device.

MESSAGING WITH TWITTER

Twitter is a social network site has shown a growth of 250% on mobile devices since January of 2010. It is growing at a clip of on average of 370,000 new members every day. This means about 60,000 people sign-up to use Twitter on mobile devices every day. This makes sense since Twitter is designed for short messages capturing the most up-to-date information about an event that people can enter through their mobile device such as an iPhone. SAS conferences are filled with new information relating to SAS which can be effectively communicated to users through Twitter messages. There are many discussions on Twitter containing a wide range of topics. To narrow down the subject, users normally type a keyword into their Twitter message to signify the subject so search engines will only show messages matching your particular subject. In this conference, the key word is:

```
#SASGF11
```

Any message on Twitter with this key word will show up in the Twitter screen within the SASGF11 App. You can also compose new messages if you find something interesting at the conference. In this case, the compose screen will default with the key word #SASGF11 so all you have to do is to type your message in addition to the keyword. This is a convenient way of capturing the most up-to-date news about the conference. For those that are not attending the conference, they can also view and participate.

The Twitter.com website provides an API (Application Programmer's Interface) through its URLs. This means if you issue a command and send the request through a web address. In this example, the command needed to capture messages with the key word #SASGF11 has the address of: <http://search.twitter.com/search.atom?q=%23SASGF11&rpp=20>. The information will then be return to and displayed on the SASGF11 App. The Object C code to perform this task is shown here:



```

NSURLRequest* request = [NSURLRequest requestWithURL:[NSURL
URLWithString:@"http://search.twitter.com/search.atom?q=%23SASGF11&rpp=20"]];
NSHTTPURLResponse* response = nil;
NSError* error = nil;
NSData *responseData = [NSURLConnection sendSynchronousRequest:request
returningResponse:&response error:&error];

```

There are many error checking steps that are performed, but the results will be returned as a string. The application will then parse the text in order to display the result. This is similar to a SAS program with a HTML INFILE statement. The resulting Twitter message will be returned and processed by the program that requested the information.

A big reason for Twitter's popularity is its open structure and universal URL API. This makes it easy for an iPhone Application, SAS or any other application to search easily, post or apply various tasks needed to the Twitter website.

CONCLUSION

Mobile computing combined with social media creates a powerful combination that has the transformative force to change social events. SAS Global Forum is a social event which is driven by technology. It is therefore particularly receptive to social media. This is the first SAS Global Forum to have its own iPhone/iPad App and is a natural next step for SAS conferences. It combines the functionality of finding the paper and presentation within the conference while also allowing users to send Tweets to share information within a devoted community. Conference will come and go, but once it is recorded on Twitter, the information will exist for many years to come. Although some components of the application was developed using SAS, there are many other technologies used including Objective C and XML. This can pose challenges for traditional SAS programmers since it requires a different set of programming skills in order to adapt to this new mobile computing environment. The investment will be worthwhile since mobile computing will be how people access information. Chris Anderson proclaimed in an article that "The Web is Dead". He is being a bit facetious, but the thesis of his article points to the fact that mobile computing such as iPhone Apps is changing how information on the Web is being used. Rather than viewing information through a web browser on a desktop, Andersen argues that specialized mobile application does a better job and thus will be the death to the old web.

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Chris Anderson "Long Tail, The: Why the Future of Business is Selling Less of More" Hyperion; Rev Updated edition July 8, 2008

James Surowiecki "The Wisdom of Crowds" Anchor August 16, 2005