

Three Challenges Using SAS® Customer Intelligence Studio for Effective Campaigning

Pratyush Gupta, Qualex Consulting Services;
Al Cordoba, Qualex Consulting Services

ABSTRACT

In this paper, we describe how to use SAS Customer Intelligence (SAS CI) for campaign execution, post-campaign reporting and how to avoid three most commonly found campaign execution hurdles. SAS CI is an integrated Marketing Management Suite. It combines Multichannel Campaign Management, Marketing Resource Management and Marketing Performance Management with strong Data Management and a wide range of analytic capabilities. Using an example of a monthly summary campaign, this paper helps understand SAS CI, what it is, what its possibilities are, and where it can be used. We present three challenges to address using SAS CI in the hospitality industry: 1. Generating an output file with one row per guest with more than one offer, 2. Creation of unique Marketing History ID with respect to the offer and the language of the email at the time of execution of the diagram and 3. Creation of customer output file containing the order information for a specific order. We also describe what are the SAS CI main benefits in campaign execution, how it can be implemented and how to cope with systems issues.

INTRODUCTION

Hotels & resorts have different brands all over the world. Hotel marketing campaigns can be mainly divided into three channels -

1. Email
2. Direct Mail
3. Digital

The biggest and the largest profit maker is usually the Email channel, the reason being that the email cost is almost negligible compared to Direct Mail. Digital channel is new compared to the other two.

Hotels and resorts have loyalty tiers of customers which are usually based on the numbers of nights they stayed in different properties of the hotel. There are different types of communications which are made with guests, which can be mainly divided into the five categories below -

1. Monthly Summary Campaign - This is an email which goes every month to all the guests. It gives a complete summary of the customer with the number of points they have earned, how much more points they need to change their tier status. It may also include different kinds of offers as per their purchasing behavior
2. Global Promotion- It goes to all the loyalty tier members and drives new members to register for a particular program.
3. Transactional- It goes to those members who haven't had a qualifying stay in last 24+ months. It is to state that their account will be closed in a given period of time if they do not make a purchase.
4. General Promotions- These emails contain promotional offers for specific target audience - email reminder

5. Regional/RSVP Events- When there is any event organized by the hotel, it sends an email invite to all the customers in that area.

PROCESS OF CAMPAIGN EXECUTION

The campaign execution starts when the execution team gets a request of data from the planning team for selected customers. There is an audience criterion which is decided by the planning team and given to Execution team to pull the data. For instance, a Project Initiation Form (PIF) is issued and provided, which states the objective of the campaign and the audience they are going to target. Below is a screenshot of a sample PIF document.

PROJECT INITIATION FORM

Campaign Name	Black Friday Sale	Initiation Date	11.11.2018
Project Lead	Sheila O'Sullivan	Deploy Date	11.18.2018

VERSION HISTORY

Version	Date	Author	Description
1			

ASSIGNMENT OVERVIEW

Send email for Holiday Rate to members: save 25% from 11/18-29

MARKETING OBJECTIVE

Offer members Holiday discount to increase revenue in flash sale

COMMUNICATION CHANNEL

Solo Email
 Trigger Email
 Direct Mail

COMMUNICATION TYPE

Promotional
 Transactional
 Announcement/News
 Other _____

TARGET AUDIENCE

Please describe the audience for this communication, including any segments of interest, target regions/countries, and expected or needed audience sizes (if known).

- Reside in United States, Canada, or Latin
- Emailable
- English only
- Have at least 1 stay in the past 24 months
- Not "N" to promo email

COMMUNICATION LANGUAGE

English
 Spanish
 French
 German
 Korean
 Japanese
 Chinese (Simplified)
 Chinese (Traditional)

LIST RECIPIENT

Overall list
 Other (Please specify transfer method - e.g. SPY)

CREATIVE REQUIREMENTS/ASSETS

Including timing for assets, if available.

Figure 1. Sample of Project Initiation Form (PIF)

Let's suppose the objective of the campaign is to offer a holiday discount to increase revenue. We will assume the customers should be the residents of the U.S., Canada or Latin America, should speak English only and have at least 1 stay in the last 24 months.

To pull the required data, we will use database queries and prepare a list. We will then create a Data Work Plan (DWP) which will be sent back to the planning team for review. Figure 2. shows how the PIF would be filled up.

Campaign Name	Black Friday Sale	Request Date	11/16/2016
Campaign Code	BFR16	QC Date	11/17/2016
Project Lead		List Date	11/17/2016
Campaign Manager	Pratyush Gupta	Deploy Date	11/17/2016

VERSION HISTORY			
Version #	Date	Author	Description
1	11/17/2016	Pratyush Gupta	

ASSIGNMENT OVERVIEW

Send email to: Holiday Rate to members: save 25% from 11/18-29

COMMUNICATION CHANNEL

Solo Email Trigger Email Direct Mail

COMMUNICATION TYPE

Promotional Transactional Announcement/News Other: _____

TARGET AUDIENCE		
Description	Database Field	Notes
emailable	=*?*	
Promo_emailable	1=1*	
Global_Region	In ('USCAC', 'LATIN')	
Latest_activity_dt	Between '11/1/2014' and '11/17/2016'	
Pref_language_code	'ENG'	

SUMMARY			
Description	Marketing History ID	Notes	Count
Black Friday Control			261983
Total			

COMMUNICATION MESSAGE DETAILS (DISPLAYED FOR GCC)

Marketing Code	Message

LIST EXPORT

File Name	GPLBFR16_20161716.txt
Share Drive Location	X:\Advanced Analytics\Campaign Management\Solo\Black Friday 2016
SAS Drive Location	\ASOData\CIData\CampExp\

APPROVAL



Project Lead	  Signature: _____
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Figure 2. Sample of Project Initiation Form Filled

USING SAS CI

SAS Information Map Studio provides a graphical user interface that enables the user to create and manage SAS Information Maps. SAS Information Maps provide a simplified layer between nontechnical business users and the complexities of databases and query languages. A SAS Information Map is a business metadata layer that is applied on top of the data sources in your data warehouse. Metadata is the information about the structure and content of data. An information map does not contain any physical data. Information maps provide business users with a user-friendly way to query data and get results.

An information map contains data items and filters, which are used to build queries. A data item can refer to a data field or a calculation. Filters contain criteria for sub setting the data that is returned for a query. Folders can be used to organize the data items and filters so that business users can easily locate information within the information map. Figure 3. shows a screenshot of a SAS Information Map

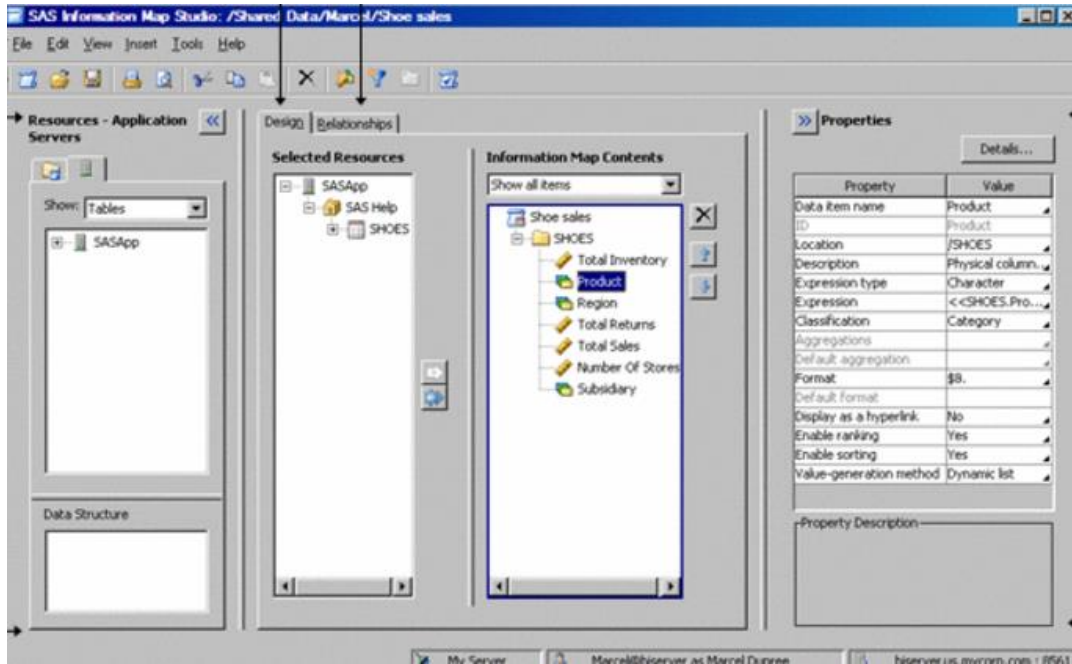


Figure 3. Information Map Studio Screenshot

The data from Information Map is used in SAS Customer Intelligence Studio to pull the records. Customer Intelligence Studio uses the select node to pull the data and then uses the split or prioritize nodes to split or suppress the data. The result is then connected to a communication node to assign treatments/offers to the customers. It is then connected via the export node to generate the list file. **Error! Reference source not found..** shows an example of the resulting diagram.

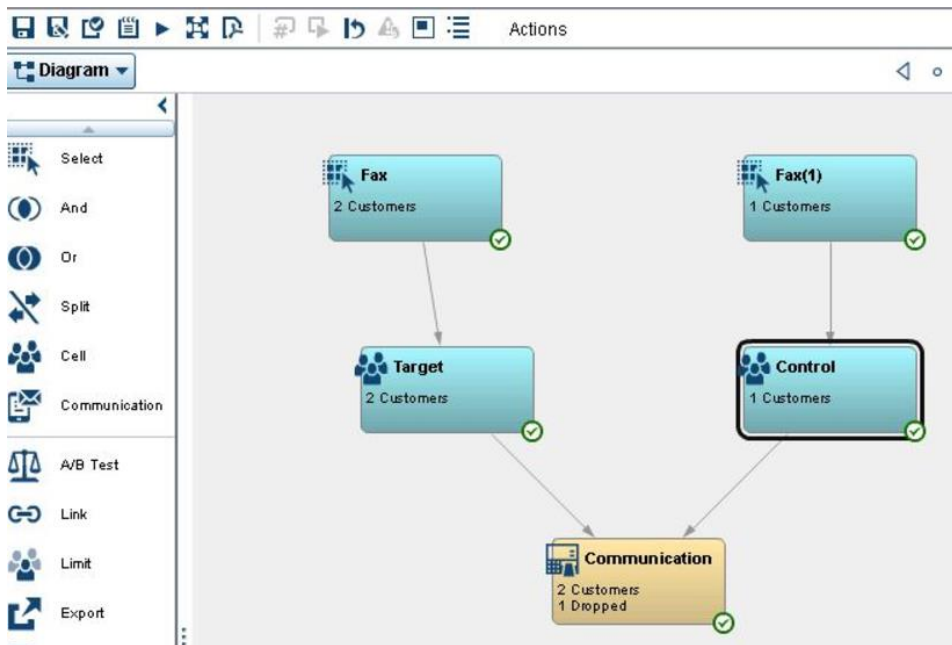


Figure 4. An example of a Diagram in SAS CI

The final data can also be divided in Control and Test groups in the communication node itself where it upholds a percentage of records randomly selected which is not included in the list file. This data can be used in the TrialFire application to analyze and evaluate campaign result. (1)

EXAMPLE MONTHLY SUMMARY CAMPAIGN

Typically, the biggest and the most profitable campaign is the Monthly Summary campaign. As described before, this campaign is sent every month to all the customers. This campaign has several different slots as different offers. A customer gets one offer from one slot and he can get up to all the offers from different slots combined. The number of offers which are planned in the monthly summary can be large. With large number of customers and with every customer getting different kinds of offers, the campaign may become difficult to design.

Before the introduction of CI, SQL queries were written which could take 4-5 days to develop. A lot of time was also wasted in executing these queries separately. The counts were tested for every slot and if they did not match, the analyst had to spend a lot of time resolving it.

With the introduction of Customer Intelligence Studio and SAS Information Map, the process became a lot easier to execute. Instead of writing the queries, the job now is a mere drag and drop of nodes. Building the diagram takes 1-2 days now.

Once the final file is provided to the email vendor, they would send the emails to the target audience. Figure 5 is a sample of an email for a monthly summary campaign

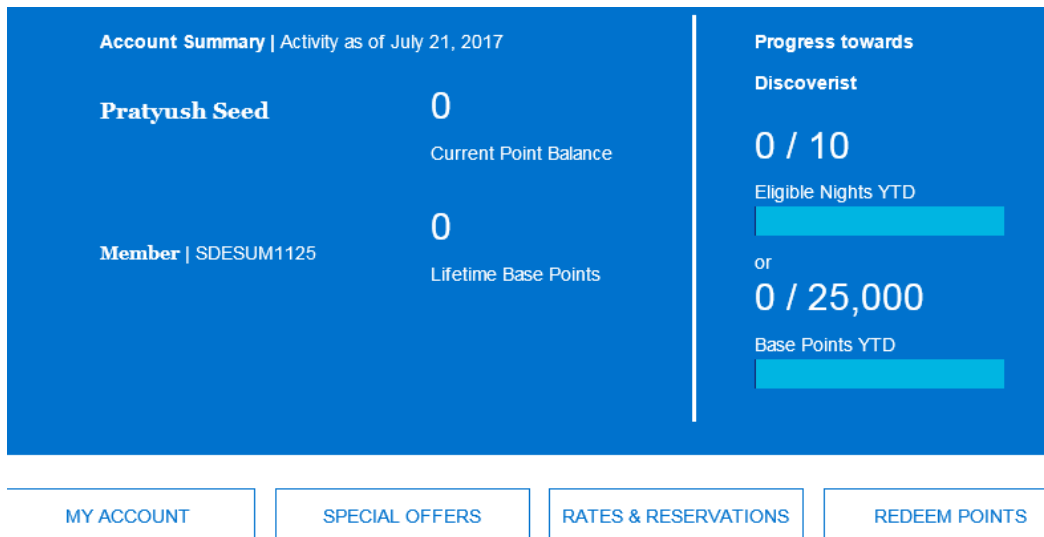


Figure 5. Example of a Monthly Summary Email Campaign

POST CAMPAIGN REPORTING

It is very important to know how your communications are going and how much revenue are they generating. With different communications, different reports are made so that upper management can take a quick glance on the campaign performance. These post-campaign reports are also used by the planning team to decide if the offers are working or not working to plan the next communication.

One example of post campaign reporting is provided in the Figure 6 below

RLL Toronto									
	recipients	open	click	unsub	open: recipients	click: recipients	click:open	unsub: recipients	
RLL Toronto	1,050	555	16	0	52.86%	1.52%	2.88%	0.00%	
Total	1,050	555	16	0	52.86%	1.52%	2.88%	0.00%	
Fast Company HR Jersey City									
	recipients	open	click	unsub	open: recipients	click: recipients	click:open	unsub: recipients	
Fast Company HR Jersey City	507	472	65	0	93.10%	12.82%	13.77%	0.00%	
Total	507	472	65	0	93.10%	12.82%	13.77%	0.00%	
Andaz London EM									
	recipients	open	click	unsub	open: recipients	click: recipients	click:open	unsub: recipients	
Andaz London EM	79,130	26,620	1,713	12	33.64%	2.16%	6.44%	0.02%	
Total	79,130	26,620	1,713	12	33.64%	2.16%	6.44%	0.02%	
GH Mumbai RSVP Event									
	recipients	open	click	unsub	open: recipients	click: recipients	click:open	unsub: recipients	
GH Mumbai RSVP Event	904	570	32	0	63.05%	3.54%	5.61%	0.00%	
Total	904	570	32	0	63.05%	3.54%	5.61%	0.00%	

Figure 6. Post Campaign Report

The report gives the post campaign analysis of the RSVP emails which were sent in a given year. There were different events which were organized, and different number of people were contacted. This report provides the number of people who opened the email, who clicked on it and who unsubscribed.

ADDRESSING PERFORMANCE ISSUES

System issues, when happen, may take a lot of time to resolve. An example is an excessive time for diagram execution. You may want to monitor what your team is doing in terms of CPU, memory, or workspace, and that could greatly improve the way you work. You could do this without having technical knowledge of what's going on. SAS applications can help reduce the number of performance issues, the number of outages and the amount of time that your marketing people spend solving issues with your IT department.

THREE CHALLENGES

1. GENERATING ONE ROW PER CUSTOMER WITH DIFFERENT OFFERS

E-summary campaign output file required one record per person associated with different offer. But when we connect one person to communication node from 10 different cell nodes it produces 10 rows per person with 10 different offers. To resolve these kinds of issues, SAS CI provides the option of Stored Process nodes which are customized nodes created by the user to produce a customized file.

In these stored processes, the user can write SAS code as per the requirements. Hence, when the file is exported from Communication node, it is picked up by the program to transpose it and produce a final file where every record represents a unique customer and displays the 10 different offers, he will be getting.

Figure 7 below shows the input file on how the customer G-51632111D is assigned 9 different rows having one treatment column with different slots(offers).

recipient_id	marketing_history_id	First_name	middle_na	last_name	name_suff	enroll_dat	tier	tier_descr	Treatments
G-516322111D	A00513005029784871CH					3-Mar-12	M	Member	SLOT1_PRI1
G-516322111D	A00513005029784871CH					3-Mar-12	M	Member	
G-516322111D	A00513005029784871CH					3-Mar-12	M	Member	SLOT3_PRI9
G-516322111D	A00513005029784871CH					3-Mar-12	M	Member	
G-516322111D	A00513005029784871CH					3-Mar-12	M	Member	SLOT3_PRI9
G-516322111D	A00513005029784871CH					3-Mar-12	M	Member	SLOT8_PRI5
G-516322111D	A00513005029784871CH					3-Mar-12	M	Member	SLOT8_PRI5
G-516322111D	A00513005029784871CH					3-Mar-12	M	Member	SLOT10_PRI1
G-508499768H	A00513002593742092EN					1-Oct-08	M	Member	SLOT1_PRI7
G-508499768H	A00513002593742092EN					1-Oct-08	M	Member	
G-508499768H	A00513002593742092EN					1-Oct-08	M	Member	SLOT3_PRI9
G-508499768H	A00513002593742092EN					1-Oct-08	M	Member	SLOT5_PRI1
G-508499768H	A00513002593742092EN					1-Oct-08	M	Member	SLOT6_PRI1
G-535215690T	A00513002593741367FN					18-Jul-17	M	Member	SLOT1_PRI8

Figure 7. Sample Input File

Figure 8 shows the final output file where G-51632111D is one unique record stating all the offers he has been assigned.

A	B	C	D	E	F	G	H	I	J	K	L	M	N
recipient_id	marketing_history_id	First_name	middle_na	last_name	name_suff	enroll_dat	tier	tier_descr	MSG_CODE_ZONE_1	MSG_CODE_ZONE_3	MSG_CODE_ZONE_4	MSG_CODE_ZONE_5	MSG_CODE_ZONE_6
G-516322111D	A00513005029784871CH					3-Mar-12	M	Member	SLOT1_PRI1	SLOT3_PRI9			SLOT6_PRI13
G-53523821S	A00513005029784154CH					18-Jul-17	M	Member	SLOT1_PRI10	SLOT3_PRI3			SLOT6_PRI13
G-507426744E	A00513005029784872CH					6-Oct-09	M	Member	SLOT1_PRI2	SLOT3_PRI9			SLOT6_PRI13
G-507258083Y	A00513005028247566CS					29-Jun-09	M	Member	SLOT1_PRI1	SLOT3_PRI9		SLOTS_PRI5	SLOT6_PRI13
G-518955201X	A00513005028246607CS					6-Apr-14	B	Globalist	SLOT1_PRI10	SLOT3_PRI1		SLOTS_PRI5	SLOT6_PRI13
G-506535810V	A00513005028247567CS					#####	M	Member	SLOT1_PRI2	SLOT3_PRI9		SLOTS_PRI5	SLOT6_PRI13
G-500701805K	A00513002593742086EN					#####	M	Member	SLOT1_PRI1	SLOT3_PRI9		SLOTS_PRI1	SLOT6_PRI1
G-53033026F	A00513002615192491EN					#####	E	Explorer	SLOT1_PRI10	SLOT3_PRI9	SLOT4_PRI1	SLOTS_PRI3	SLOT6_PRI2
G-509205182P	A00513002593742087EN					#####	M	Member	SLOT1_PRI2	SLOT3_PRI9		SLOTS_PRI1	SLOT6_PRI1
G-508494951R	A00513002593744750EN					#####	V	Discoveris	SLOT1_PRI3	SLOT3_PRI9	SLOT4_PRI2	SLOTS_PRI1	SLOT6_PRI1
G-523991855R	A00513002593741121EN					#####	B	Globalist	SLOT1_PRI4	SLOT3_PRI1		SLOTS_PRI1	SLOT6_PRI1

Figure 8. Sample Output file

2. CREATION OF MARKETING HISTORY ID

Marketing History ID is a unique ID in the database for the type of the campaign (i.e. whether it is a promotional campaign, monthly campaign etc.), channel of the

campaign (direct mail or email), the language and offer the customer gets. This Marketing History ID needs to be created for all the campaigns and assigned in the file as a column.

After understanding all the requirements of the client, we came on a consensus that a marketing history id has to be created at the time the diagram is run. The Marketing History ID will be a combination of campaign number (campaign code which also signifies the type of the campaign) + what communication a person is receiving (communication code) + Offer (cell code) + Language (EN, CS etc.). SAS CI gives the access to create calculated variables in the diagram, but it is limited to the data from the Information Map only. We cannot use diagram level information like campaign code, communication code and cell code in building a calculated variable. An easy solution was to output the file after diagram execution and then work with that file in SQL to add Marketing History ID column. Instead of an additional manual step, which the analyst has to do every time, we wanted CI to automatically create marketing history ID when the diagram is executed.

We created a stored procedure as a custom node which was attached after the communication node, so that we can get all the required fields for creating marketing history id. This custom node had a UI based platform which had a drop down where the analyst could select the type of campaign and file to be produced. After selection, the input value is then taken by the program to create marketing history id in the output file. The custom node also acts as the export node to produce the final output file in the FTP folder.

3. CREATION OF OUTPUT FILE WITH ORDER INFORMATION

In information map we may create different subject ids as per the business. We have subject id at the customer level which tells us personal information about a customer and we have subject id at Order level which tells us the order information about a customer. We can work at both levels in a diagram using map node. However, if we want to export a file using the export node, we can get columns only from one subject level at a time i.e. if the export is happening at customer level, we cannot get order level information in the final file.

We had one campaign which needed information from both, customer as well as order level in the final file. This became a challenge for us as we knew we cannot produce the final file at order level because we might have duplicate customers. Also, our CDM data has been maintained at customer level, so the final file must be produced at customer level

To avoid this issue, we had to get rid of the export node. We brought process node in the diagram and wrote code to get the remaining order level columns in the final file. As a result, the diagram had communication and process node in the end, where the communication node was used to update the contact history at customer level and the process node was used to export the final mail file at order level.

FEW OTHER CHALLENGES

- 1.** The client wishes to have a waterfall report created when a diagram is executed which tells us the counts dropped after every suppression in the diagram. We can create a manual report by seeing the diagram, but SAS CI does not provide an option for creating an automatic waterfall report of the diagram.

2. The CDM is only limited to store the subject level information in the database, but if the client wants to store other variables from the final file into CDM, we have to change the whole architecture of the CDM tables which SAS does not recommend.

CONCLUSION

In this paper, we described how to use SAS Customer Intelligence (SAS CI) for campaign execution, post-campaign reporting and how to avoid three most commonly found campaign execution hurdles. SAS CI is an integrated Marketing Management Suite. It combines Multichannel Campaign Management, Marketing Resource Management and Marketing Performance Management with strong Data Management and a wide range of analytic capabilities.

Using an example of a monthly summary campaign, this paper helps understand SAS CI, what it is, what its possibilities are, and where it can be used.

We presented three challenges to address using SAS CI : 1. Generating an output file with one row per guest with more than one offer, 2. Creation of unique Marketing History ID with respect to the offer and the language of the email at the time of execution of the diagram and 3. Creation of customer output file containing information from different subject levels.

We also described what are the SAS CI main benefits in campaign execution, how it can be implemented and how to cope with systems issues

In conclusion, we confer that:

- SAS CI is a great tool for campaign execution
- There are ways to cope with performance issues
- One needs to be creative to address certain issues

Please note that all recommendations included in this paper are intended to complement, not supersede, the overall organization's IT policies and security regulations.

REFERENCES

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<http://www.datagovernance.com/defining-data-governance/>

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CONTACT INFORMATION

Your comments and questions are valued and encouraged. Contact the authors at:

Pratyush Gupta
405-837-4001
Pratyush.gupta@qlx.com

Al Cordoba
954-980-5992
Al.cordoba@qlx.com