

Google™



Scripting Google Apps for Business Process Automation

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May 20th 2010

Google Apps Script

- View live notes and ask questions about this session on Google Wave:

<http://bit.ly/9R3O4D>

Google Apps Script?

- Business process automation
- Extends Google Apps
- Cloud scripting language
 - *all code runs server-side*

Agenda

- *The Book of Bob*
 - Introductions
 - Fundamentals of Apps Script
 - Making use of Events
 - Interoperability with non-native services
 - Custom UI for Scripts
 - Script invocation
- Motorola's POGO

Meet ACME Corp



...and Bob (the help desk)



Bob started with a spreadsheet...

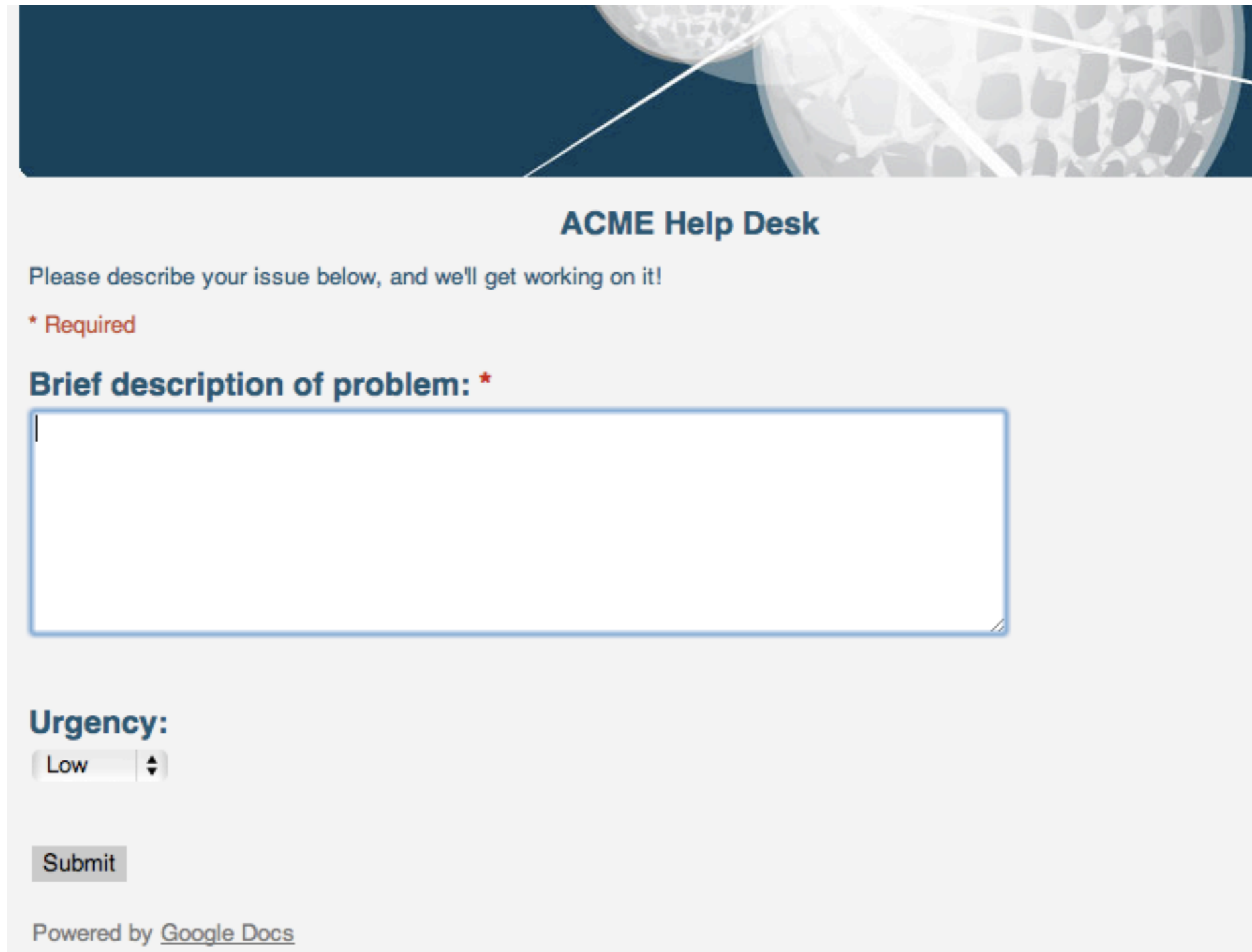
Google docs ACME Help Desk Saved seconds ago

File Edit View Insert Format Form (11) Tools Help No other users viewing.

Formula:

	A	B	C	D	E	F	G
1	Timestamp	Username	Urgency	Description:	Notes:	Status	Resolution
1074	5/9/2010 13:22:31	frank@example.com	High	My mouse wheel will only scroll up, and won't scroll down - please order a new mouse.		Closed	Replacement purchased
1075	5/4/2010	jane@example.com	High	I dropped my Nexus One cell phone and cracked the screen - help!		Ordered	
1076	5/6/2010	mike@example.com	Low	There appear to be some vermin nesting in the far corner of the car park near the dumpsters - please call the exterminator...	Request sent to catering to ensure that dumpsters are securely closed in the future	Ordered	
1077	5/9/2010 13:25:49	george@example.co	Medium	The TKR team will be visiting our offices next Friday, and we need to provide internet access without giving access to our LAN. Can we set up a secondary 'Guest' network and provide them with keys to it? In addition they will need access to at least one printer. Thanks!		In Progress	
1078	4/6/2010	julia@example.com	Low	The projector in Room 5 is showing an 'end of bulb life approaching' message...	Bulbs in stock - install on Tuesday		
1079	5/9/2010 13:27:35	wayne@example.cor	Low	Bring your kids to work day is happening next month, and we'd like to let the kids use the consoles in the break room - can you please make sure that there are no M-rated games lying around?		Closed	Removed all games for the week.
1080	5/9/2010 13:29:02	joseph@example.cor	High	Every message I send to our VC lead arrives to her Blackberry in triplicate - any ideas on possible causes? The round is close to closing, and this is becoming a recurrent sore point(!)	Ticket #15342123 opened with AT&T	Requires Attention	Suspect... PEBKAC?
1081	5/9/2010 13:27:35	eric@example.com	High	After about an hour using my screen every day, it starts to get progressively blurrier. Can you come by and take a look?		Appointment Scheduled	
1082	5/9/2010 13:27:35	dave@example.com	High	My hard disk seems to have crashed -- or maybe I have a virus? Every time I turn on my laptop I get a few seconds of whirring, and then a really nasty grinding noise.		Appointment Scheduled	
1083	4/29/2010	cheryl@example.com	Low	Is there anything we can do to rescue my vacation photos? Need a new office chair - the janitor spilled coffee onto my seat, and even though he cleaned it really well, the smell of stale coffee is really awful!		Closed	Swapped Cheryl's chair with Dave's - everybody happy as Dave hasn't noticed the smell
1084	5/9/2010 13:41:32	larry@example.com	Low	We need legal sized paper for the main photocopier/printer on the first floor... thanks!		Closed	Paper delivered

Beginnings of automation



The image shows a screenshot of a web form titled "ACME Help Desk". At the top, there is a decorative header with a dark blue background and a pattern of overlapping circles and lines. Below the header, the title "ACME Help Desk" is centered in a bold, dark blue font. Underneath the title, a line of text reads "Please describe your issue below, and we'll get working on it!". This is followed by a red asterisk and the word "Required". The main part of the form is a large, empty text input box with a blue border. Below the text box, the label "Urgency:" is followed by a dropdown menu currently set to "Low". At the bottom left of the form is a "Submit" button. At the bottom right, there is a small text link that says "Powered by Google Docs".

ACME Help Desk

Please describe your issue below, and we'll get working on it!

* Required

Brief description of problem: *

Urgency:

Low

Submit

Powered by [Google Docs](#)

Apps Script can help!

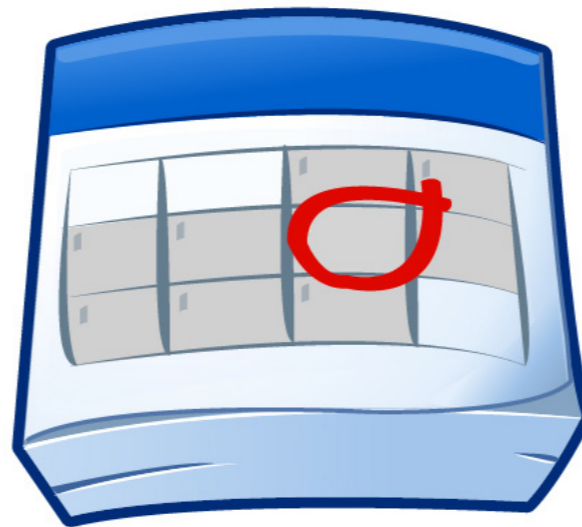
Google docs ACME Help Desk

File Edit View Insert Format Form (1) Tools Help

Bob's Menu

- Send Status Email
- Schedule Appointment
- Push to Sites KB

	A	B	
1	Timestamp	Your name:	Brief description
2	4/22/2010 23:21:52	Jane Kennedy	Rats nesting in g
3			



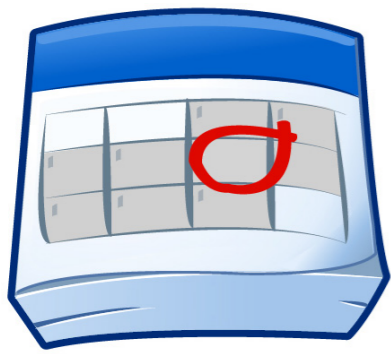
Agenda

- *The Book of Bob*
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 - **Fundamentals of Apps Script**
 - Making use of Events
 - Interoperability with non-native services
 - Custom UI for Scripts
 - Script invocation
- Motorola's POGO



Sending email

```
function onOpen() {  
  var subMenus = [{name:"Send Status Email", functionName: "email"},  
                  {name:"Schedule Appointment", functionName: "calendar"}];  
  SpreadsheetApp.getActiveSpreadsheet().addMenu("Bob's Menu", subMenus);  
}  
  
function email() {  
  var sheet = SpreadsheetApp.getActiveSheet();  
  var row = sheet.getActiveRange().getRowIndex();  
  var address = sheet.getRange("B"+row).getValue();  
  var subject = "Ticket #" + row;  
  var body = "Status: " + sheet.getRange("F"+row).getValue();  
  
  MailApp.sendEmail(address, subject, body);  
}
```



Scheduling appointments

```
function calendar() {  
  var sheet = SpreadsheetApp.getActiveSheet();  
  var row = sheet.getActiveRange().getRowIndex();  
  var address = sheet.getRange("B"+row).getValue();  
  
  var cal = CalendarApp.openByEmailAddress("bob@example.com");  
  var time = findFreeTime("Bob", ...);  
  var event = cal.createEvent("Help Desk Appointment",  
                              time.start, time.end);  
  event.addGuest(address);  
}
```

Bob's system

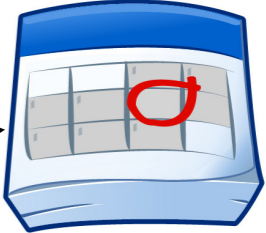
Google docs ACME Help Desk

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1	Timestamp	Your name:	Brief description
2	4/22/2010 23:21:52	Jane Kennedy	Rats nesting in
3			

Bob's Menu

- Send Status Email
- Schedule Appointment
- Push to Sites KB



Bob just got a lot more productive



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Events

- Run script in response to an Event (or *Trigger*)
- Function run is known as Event Handler

```
function onEdit(e) {  
    var r = e.source.getActiveRange();  
    var color = getColor_(r.getValue());  
  
    if (r.getColumnIndex() == 6) // F  
        r.offset(0,-1,1,3).setBackground(color)  
}
```

Event Handlers

- Apps Script has two types of Event Handler
- Simple Event Handler
 - automatically run
 - name of function associates it with an event
 - e.g. onOpen, onEdit
- **NEW!** Installable Event Handler
 - must be explicitly installed to handle an event



Installable Event Handlers

- Small but growing selection of events:
- Spreadsheets:
 - on open
 - on edit
 - on form submit
- Clock
 - hourly, daily, weekly, etc.
 - Friday at 7pm, etc

Bob's system

ACME Help Desk

Please describe your issue below, and we'll get working on it!

* Required

Brief description of problem: *

Urgency:
Low

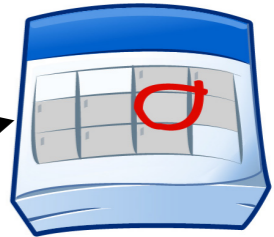
Submit

Google docs ACME Help Desk

	A	B	
1	Timestamp	Your name:	Brief description
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3			

Bob's Menu

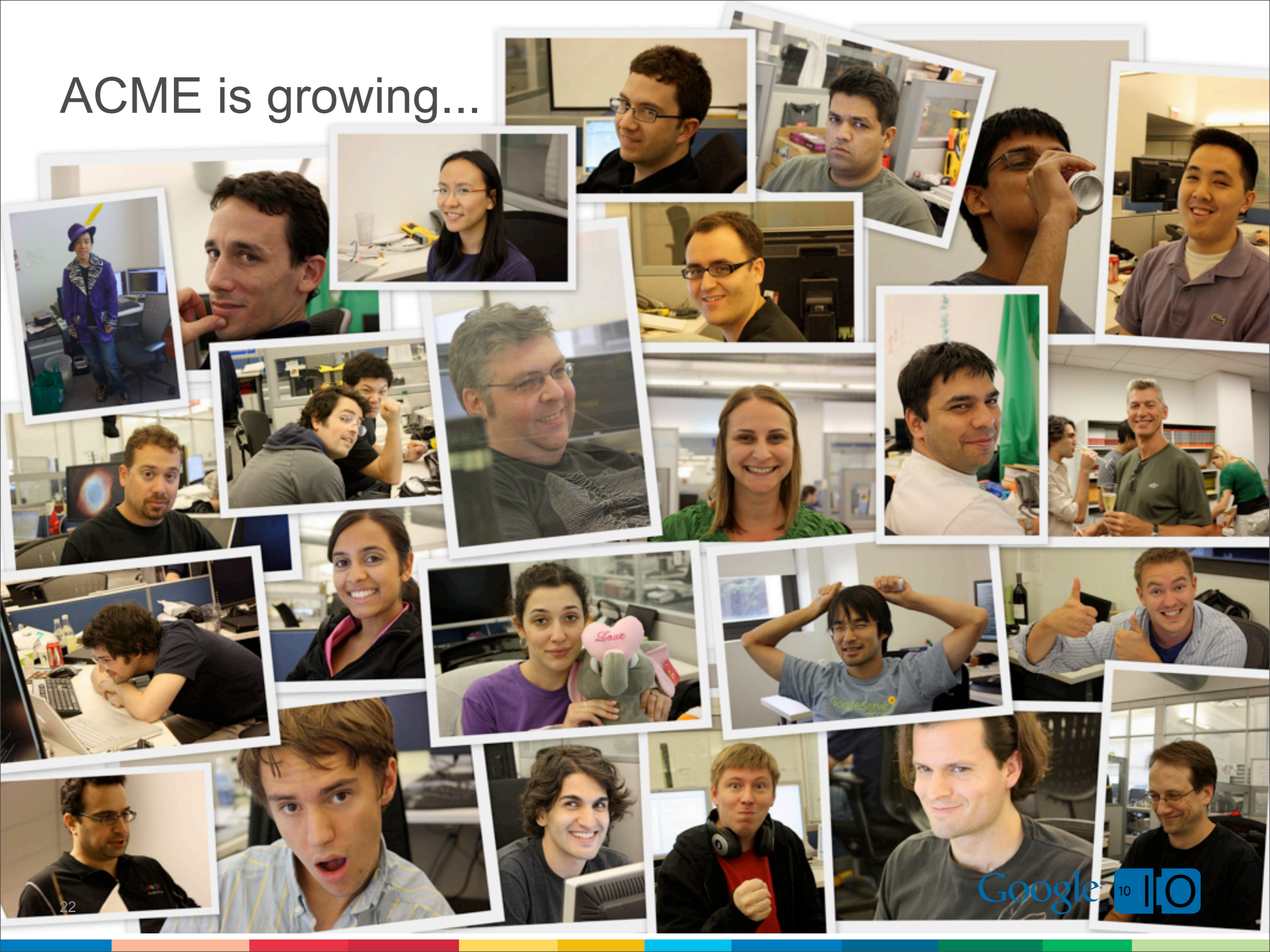
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Bob got a promotion!



ACME is growing...



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Soap & Xml parsing

```
function amazonFind(query) {
  var wsdl = SoapService.wsdl(
    "http://webservices.amazon.com/AWSECommerceService/AWSECommerceService.wsdl");
  var service = wsdl.getAWSECommerceService();

  // Amazon credentials/header signing
  var header = getAmazonHeader();

  // Call the operation with the relevant parameters
  var parameter =
    [ "ItemSearch",
      [ "AWSAccessKeyId", accessKey ],
      [ "AssociateTag", assocTag ],
      [ "Request",
        [ "SearchIndex", "All" ],
        [ "Keywords", query ]
      ]
    ];
  var result = service.ItemSearch(parameter, header);

  // Need to parse the results...
  var list = result.Envelope.Body.ItemSearchResponse.Items.Item;
  for (var i in list) {
    var name = list[i].ItemAttributes.Title.getText();
    var price = list[i].ItemAttributes.ListPrice.FormattedPrice.getText();
  }
}
```


NEW!

JDBC

```
function findManagerOf(person) {
    var conn = Jdbc.getConnection(
        "jdbc:mysql://...us-east-1.rds.amazonaws.com/Database",
        "user", "password");

    var stmt = conn.prepareStatement(
        'select fname,lname from person where ssn ' +
        'in (select manager from person where lname = ?)');
    stmt.setString(1, person);

    var rs = stmt.executeQuery();

    if (rs.next())
        return [rs.getString(1), rs.getString(2)];
    else
        return [];
}
```

Bob's system

ACME Help Desk

Please describe your issue below, and we'll get working on it!

* Required

Brief description of problem: *

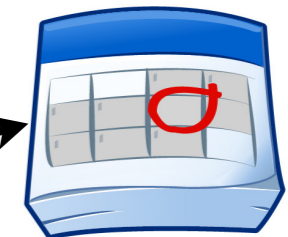
Urgency:
Low

Submit

Google docs ACME Help Desk

	A	B	C
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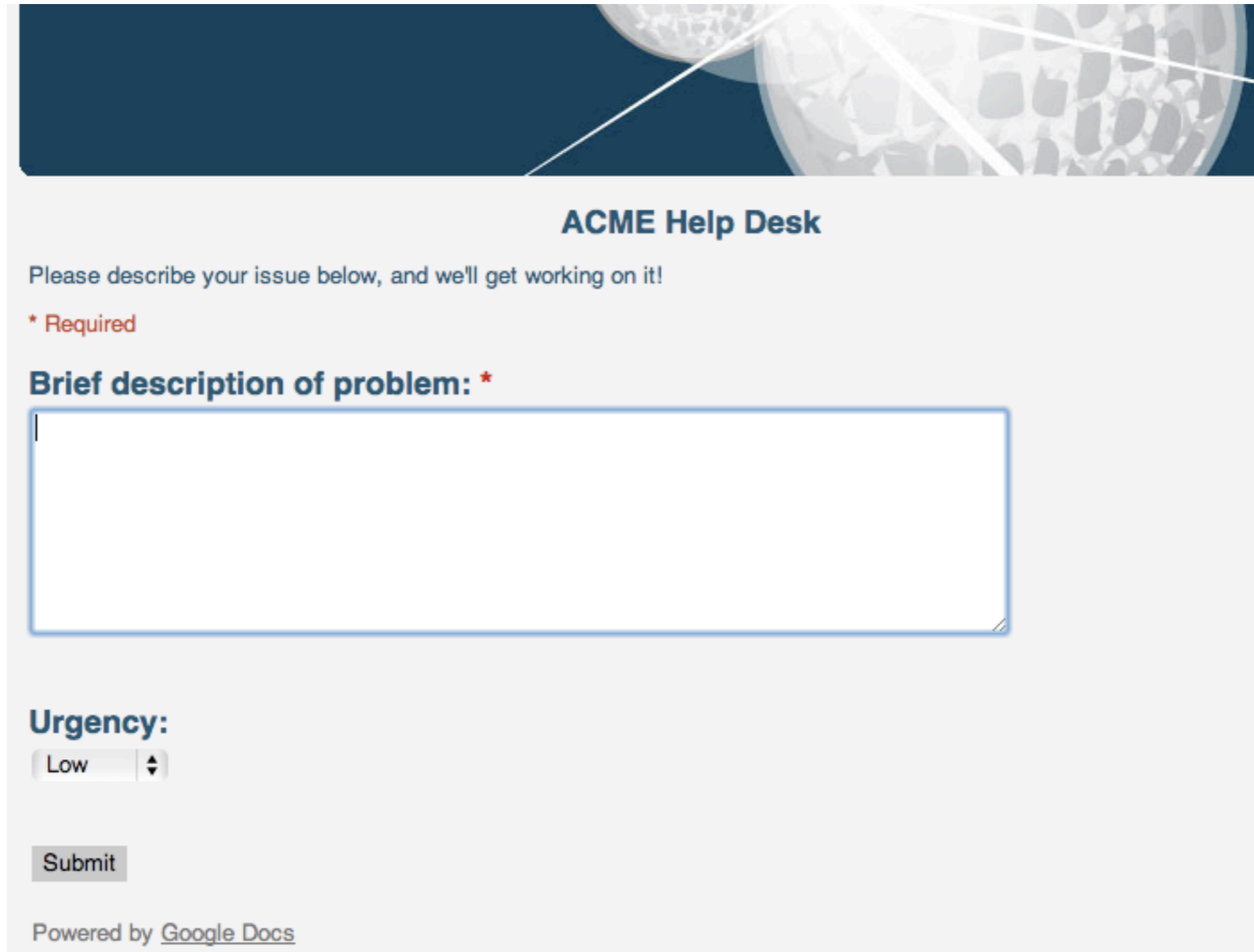
- Bob's Menu
- Send Status Email
 - Schedule Appointment
 - Push to KB
 - Purchase on Amazon



Bob's intrigued, but something's missing...



Completely static interface



The image shows a static web form for an ACME Help Desk. At the top, there is a dark blue header with a pattern of overlapping circles. Below the header, the text "ACME Help Desk" is centered. A message reads "Please describe your issue below, and we'll get working on it!". A red asterisk indicates a required field. The label "Brief description of problem: *" is followed by a large, empty text input box. Below the input box, the label "Urgency:" is followed by a dropdown menu showing "Low". A "Submit" button is located below the dropdown. At the bottom, it says "Powered by Google Docs".

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Submit

Powered by [Google Docs](#)

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UI for Apps Script

23 ▾ 10pt ▾ **B** Abc A ▾ [Color Picker] ▾ [Grid] ▾ [List] ▾ [Table] [Table Border]

My First GUI [Close]

First Name:

Last Name:

Email Address:

OK

B D

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need to provide internet access with LAN. Can we set up a secondary 'C them with keys to it?

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Script invocation

File Edit View Run Share Triggers Help

Select a function to run

Publish as Service...

Usage Restrictions

Please read this carefully. It's not the usual yada yada.
By publishing this script as a service, you are allowing users who access the url shown below to run the script AS YOU.

- Allow only myself (bob@example.com) to invoke this service
- Allow only members of example.com to invoke this service

URL

Enable Service

```
Bob's S
22
23 fun
24
25
26
27
28
29 }
30
31 fun
32
33
34
35
36 return orange ;
37
38 if (value=="Active")
39     return 'red';
40
```


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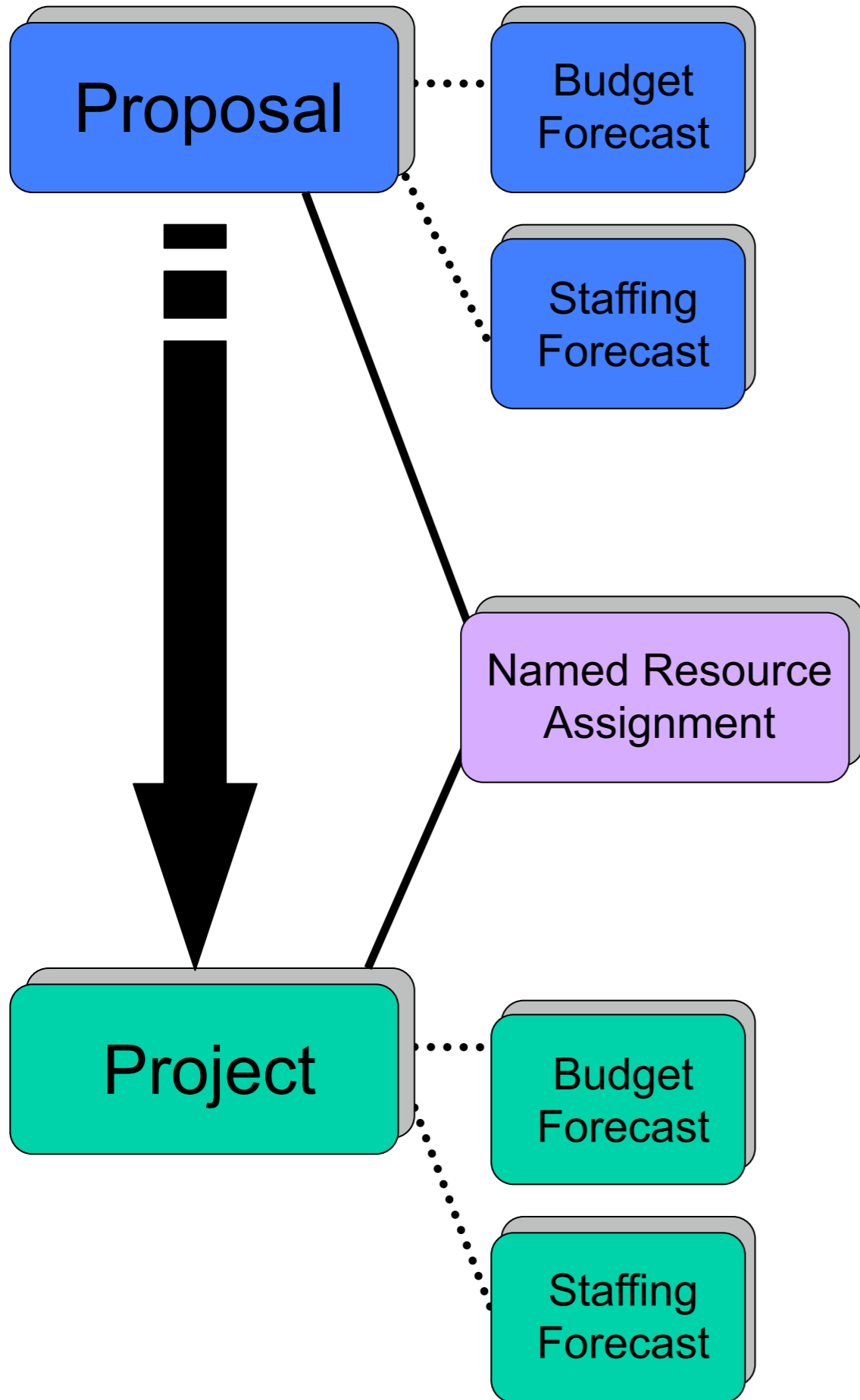
Motorola Mobile Devices

Google™ apps

POGO

Stephanie Anthony

May 2010



Aggregate Portfolio Reporting
Project Dashboards (Health, Key Data)
Target Spend vs Approved/Unapproved Spend

Resource Mgmt Reporting
Pool Resources Requested by Month
Pool Resources Allocated by Month
Resource Capacity vs Requested vs Allocation
Resource Allocation %

Individual Project Reporting
Milestone Completion
Requirements Volatility
PRD Metrics charts

Summary

Apps Script

- talks to Google Products
 - talks to Soap, REST and JDBC
 - talks to users
-
- Motorola saving \$1 million/annum

New capabilities - today!

- **New:** Installable Event Handlers
- **New:** JDBC
- **New:** Apps Script UI
- **New:** Stand Alone Invocation

And there's more...

- **New:** Documents List
 - read files from the documents list
 - create and modify files (Apps only)
- **New:** Maps
 - create maps, get directions
 - limited geo-coding and elevation
- **In ~2 weeks:** Documents
 - script Google's new document editor

Even more?

- **Q3 2010:**
 - Apps Script in Sites
 - Apps Script in Documents

Try Apps Script!

<http://goo.gl/e6TS>

Questions

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