



How to Collect and Manage Requirements for Successful GIS Projects

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GIS
INSPIRING
WHAT'S
NEXT

Requirements

Provide direction for program success





Doom

Gloom

Let's talk about people

- People have personalities
- Personalities can be tricky



Collect Requirements

The background features a dark blue gradient on the left, transitioning to a lighter teal on the right. On the right side, there are several overlapping, semi-transparent geometric shapes and lines in shades of green, orange, and dark blue, creating a dynamic, modern aesthetic. The text 'Collect Requirements' is centered in the left half of the image in a white, bold, sans-serif font.

A good user story uses the “INVEST” model:

Independent. *Reduced dependencies = easier to plan*

Negotiable. *Details added via collaboration*

Valuable. *Provides value to the customer*

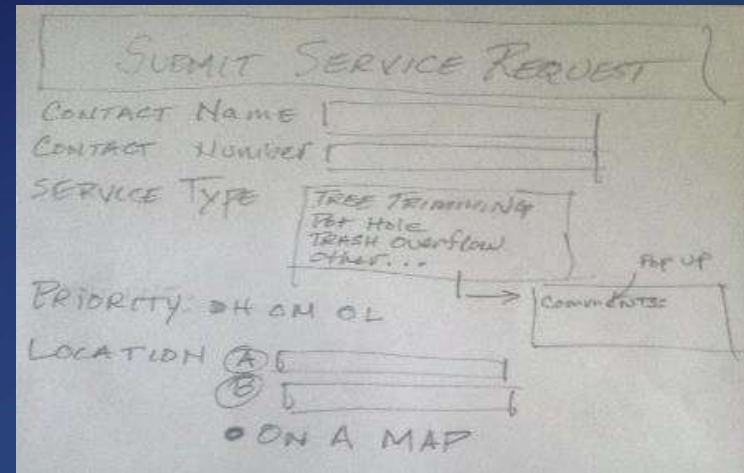
Estimate-able. *Too big or too vague = not estimate-able*

Small. *Can be done in less than a week*

Testable. *Good acceptance criteria*

Some things are not about a [user]

As a user interface, I need to look like the following image so that I can be intuitive to use





Keep your stories **visible**

User stories facilitate a **conversation** with the team and with the users...



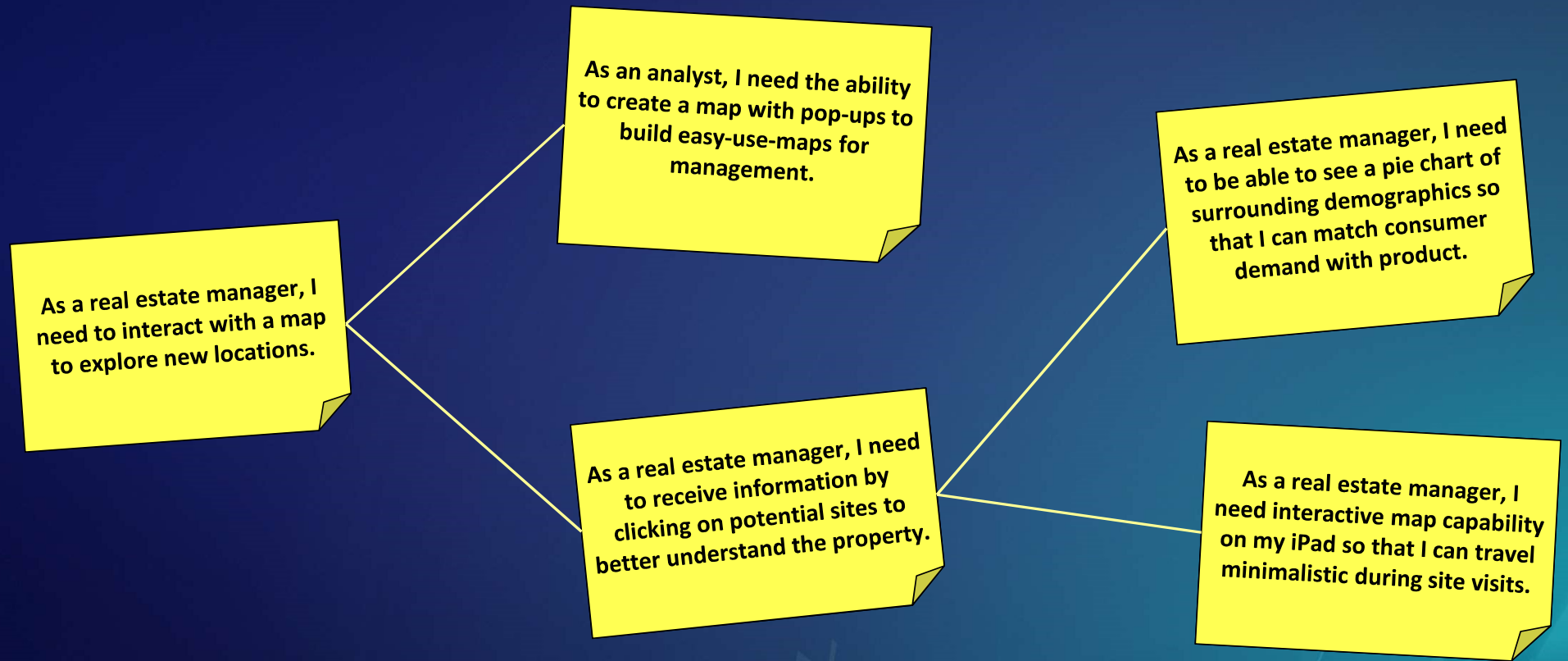
Hey! Something to look at,
talk about, comment on,
react to...



The team



Progressively decompose your stories...



How do we know when we are done?

Confirmation...the acceptance test

Given [PRECONDITION]

When [ACTION]

Expect [RESULT]

How do we know when we are done?

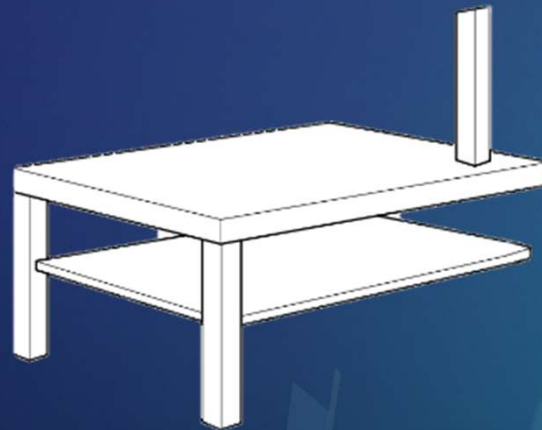
Confirmation...the acceptance test

- **Given** I have enabled offline access on my map
- **When** I click on the map to create a feature
- **Then** the feature will be stored locally until I sync with connectivity.

How do we know when we are done?

Couple of things to note...

- Define acceptance just in time...don't waste too much time
- Part of the conversation process
- Acceptance consistency (given...when...expect) is helpful, but not necessary



Definition of Done

We don't do strict...

Examples of practices that might be included in the definition of “done:”

- Acceptance criteria met
- Code is reviewed by another development team member
- Test cases are written
- Unit tests and UI automation tasks are written
- Feature is tested for accessibility

treehouse

<http://blog.teamtreehouse.com/when-is-a-user-story-done-acceptance-criteria-definition-done>

Watch out for the 'Gotchas'

Things to avoid

- Avoid long lists of acceptance criteria on a single user story
- Prepare for conflicting requirements
- Avoid requirements that are ambiguous
- Avoid requirements that describe HOW
- Requirements must have a "reason"
- Avoid moving forward on development until after the customer has reviewed the design
- Don't forget to prioritize



Manage Requirements

The background features a dark blue gradient on the left, transitioning to a lighter teal on the right. On the right side, there are several overlapping, semi-transparent geometric shapes and lines in shades of green, orange, and light blue, creating a dynamic, modern aesthetic.

Requirement Management Tools

Licensed and Open Source



Microsoft Team Foundation Server (TFS)

Req ID	Req Name	Title	Requirement Type	Priority	Assignee	Status
1498	System/Requirement 1	User should have access to a public search engine	Task	High	Alan Berger	Open
1499	System/Requirement 1	User should be able to add items to cart	Task	High	Alan Berger	Open
1500	System/Requirement 1	User should be able to add items to cart	Task	High	Alan Berger	Open
1501	System/Requirement 1	User should be able to add items to cart	Task	High	Alan Berger	Open
1502	System/Requirement 1	User should be able to add items to cart	Task	High	Alan Berger	Open
1503	System/Requirement 1	User should be able to add items to cart	Task	High	Alan Berger	Open
1504	System/Requirement 1	User should be able to add items to cart	Task	High	Alan Berger	Open
1505	System/Requirement 1	User should be able to add items to cart	Task	High	Alan Berger	Open
1506	System/Requirement 1	User should be able to add items to cart	Task	High	Alan Berger	Open
1507	System/Requirement 1	User should be able to add items to cart	Task	High	Alan Berger	Open
1508	System/Requirement 1	User should be able to add items to cart	Task	High	Alan Berger	Open
1509	System/Requirement 1	User should be able to add items to cart	Task	High	Alan Berger	Open

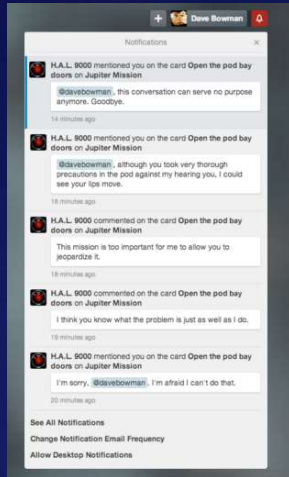
JIRA

ID	Summary	Sub-Tasks	Assignee	P	Status	Resolution
SYSA-4	System should allow anyone in public to submit a request for service via a web application	SYSA-7, SYSA-8, SYSA-9	Alan Berger	High	Open	Unresolved
SYSA-7	SYSA-7 / User has capability to add name and contact		Alan Berger	High	Open	Unresolved
SYSA-8	SYSA-8 / System generates work order ID		Alan Berger	High	Open	Unresolved
SYSA-9	SYSA-9 / System verifies email address		Alan Berger	High	Open	Unresolved
SYSA-11	System should allow user to enter service type information	SYSA-11	Alan Berger	High	Open	Unresolved
SYSA-12	SYSA-12 / Application prevents valid choices to user (from filtering, pop-ups, push-over flow, etc)		Alan Berger	High	Open	Unresolved
SYSA-13	System is expected to streamline process of how the public provides information	SYSA-13	Alan Berger	High	Open	Unresolved
SYSA-17	SYSA-17 / If requesting user, then system populates email address or name based on last entry		Alan Berger	High	Open	Unresolved
SYSA-14	System should not require GIS expertise	SYSA-14, SYSA-15, SYSA-16, SYSA-17	Alan Berger	High	Open	Unresolved
SYSA-16	SYSA-16 / User can enter intersection		Alan Berger	High	In Progress	Unresolved
SYSA-15	SYSA-15 / User can select on a map		Alan Berger	High	Open	Unresolved

Waffle.io

Column	Item ID	Item Description	Status
Backlog	24	req: add authentication, analytics and a terms	Open
Ready	23	delete old tasks on existing	Open
In Progress	22	show errors of status list	Open
Done	21	add a board view over board and handle status	Open

Using Trello



Install pot rack over the island in list [Ideas](#)

Members: + **Installation** +

Description [Edit](#)

The pots and pans are piling up on the ground and I'm always tripping over them. I would say we should get rid of a few, but I love every single pot and pan we own! We need a pot rack. It would go great over the island in the kitchen.

Attachments

pot-rack.jpg
Added Apr 16, 2014 at 9:38 pm
[Download](#) [Remove Cover](#) [Delete](#)

[Add an attachment...](#)

Checklist

67%

- Buy-the-pot-rack
- Drill-some-holes-in-the-wall
- Measure...

Add

- Members
- Labels
- Checklist
- Due date
- Attachment

Actions

- Move
- Copy
- Subscribe
- Vote
- Archive

[Share and more...](#)

The Trello interface for a board titled "Best Trello Integrations". The board is divided into several columns, each representing a different category of integrations. The categories are: Task management, Project Management, Marketing, Development, and Support. Each category contains several cards with icons and brief descriptions of the integrations. For example, under "Task management", there are cards for "Set up recurring cards", "Duplicate cards", "Turn emails into cards", and "Organize multiple to-do lists". Under "Project Management", there are cards for "Create cards from new form submissions", "Get alerts for board activity", "Start tracking time", and "Record card activity". Under "Marketing", there are cards for "Curate content ideas", "Manage an editorial calendar", "Promote content", and "Stay on top of social media". Under "Development", there are cards for "Track product development progress", "Kick off QA testing", "Prioritize software issues", and "Act on customer feedback". Under "Support", there are cards for "Manage help desk volume" and "Oversee help doc creation". The interface also shows a user profile for "Danny Schreiber" in the top right corner and a "Show Menu" button.

Using GitHub

This screenshot shows the GitHub interface for a repository. At the top, there are navigation tabs for Code, Issues (176), Pull requests (0), Wiki, Pulse, and Graphs. Below the tabs is a search bar with the text "is:issue is:open" and buttons for "Labels" and "Milestones". A "New issue" button is located on the right. The main content area displays a list of issues with columns for status, author, labels, milestones, assignee, and sort order. The issues listed include:

- New pub for Survey123** (2 - In Progress, A - Doc-Dev, Priority=High) #3355 opened 14 hours ago by markavertzonis
- Question: Best version to be linking to from non-desktop help** (SubGrp=Apps) #3348 opened 5 days ago by kyliedonia
- Localization: Workforce initial release help** (0 - Backlog, A - L10n, Area=L10n, SubGrp=Apps) #3345 opened 5 days ago by kyliedonia
- Localization: Workforce initial release home** (0 - Backlog, A - L10n, Area=L10n, SubGrp=Apps) #3344 opened 5 days ago by kyliedonia
- Incorrect appearance of table in AppStudio doc** (1 - Planned, A - Author, Priority=Moderate) #3339 opened 6 days ago by markavertzonis

This screenshot shows a Jira project page for "ArcGIS/BayerCropScience". The page is divided into several columns representing different stages of the workflow:

- Backlog (106 / 528):** Contains a list of issues including "Create 'Notifications list' page" (873), "Spatial Query Feature: Download/Export" (965), "DB - Enable tracking of units for data layer attributes" (828), "Protocol Report - Grayscale Version" (977), and "Confirm SST agX data ingest for a job step - wireframe" (842).
- Sprint Backlog (30 / 244):** Contains issues currently in the sprint, such as "Production Build 1.7" (919), "Clarify Protocol Status & Job Status widgets (dev task)" (740), "Author cannot make edits to protocol that they copied" (899), "Transparency slider will not change back to 0%" (889), and "Protocol Report Modal" (970).
- In Progress (11 / 37):** Contains issues currently being worked on, including "882 develop 2" (978), "Remove the halo effect on the text symbol" (971), "832 save confirm modal" (966), "AgXPOC" (905), and "843 develop" (900).
- Needs Test (2 / 1):** Contains issues that need to be tested, such as "Change 'Home' button to 'Map View'" (955) and "Number of notifications does not change upon deleting a notification" (916).

A notification at the top right indicates "gavinn updated #960".

This screenshot shows the ArcGIS documentation website for the "arcgis-doc-website" repository. The page title is "Home" and it was last edited by Marika Vertzonis 21 days ago. The content includes a brief introduction to the documentation and a section titled "What content goes on doc.arcgis.com?".

What content goes on doc.arcgis.com?

- Home pages and help systems for the ArcGIS Online platform & its connected apps and data, etc. These pages are presented in the same UI as ArcGIS.com.

Note: The links below go to the content under development, not the current released version.

- AppStudio for ArcGIS
- ArcGIS.com Help
- ArcGIS for Smartphones & Tablets
- BAO
- Collector for ArcGIS
- Community Analyst
- Community Maps

Using TFS

Backlog items to Features

Backlog Board Mapping Off In progress items Show View Backlog items to Features

Title	State	Effort	Tags
Acquisition and core workflow In Progress			
Add, Edit, Remove from shopping cart	Approved	5	Mobile
Edit existing users	Committed	5	Web
Direct link to an item in the catalog	Committed	8	Mobile
Welcome mails that include a "Getting Started" v...	New	3	Mobile

Title	State	Remaining Work	Work By: Assigned To
Editing items already added to the cart	Done	9	Christina Kelly (8 of 14 h)
Cancelled a submitted order	Committed	22	Lowell Steel (17 of 14 h)
Notification to the user	To Do	6	Noah Munger (6 of 7 h)
Design work on the cancel dialog	To Do	4	
Credit card refund	To Do	4	
Order history updated styling	To Do	4	
End-to-end testing	To Do	2	
New route to view a cancelled order	To Do	2	

Tasks Needing Attention

■ To Do ■ In Progress

Backlog Distribution

■ Committed ■ Approved ■ New ■ Done

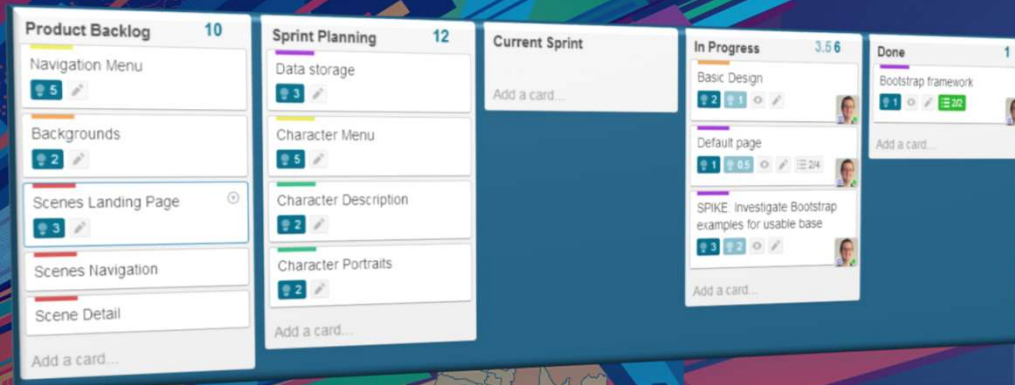
Type of query: Flat list of work items | Work items and direct links | Tree of work items

And/Or	Field	Operator	Value
<input type="checkbox"/>	Team Project	=	@Project
<input type="checkbox"/>	And Assigned To	=	Christina Kelly
<input type="checkbox"/>	And Work Item Type	x =	Task
+ Add new clause			
	Backlog Priority		
	Blocked		
	Business Value		
	Called By		

Save query

Making a Decision

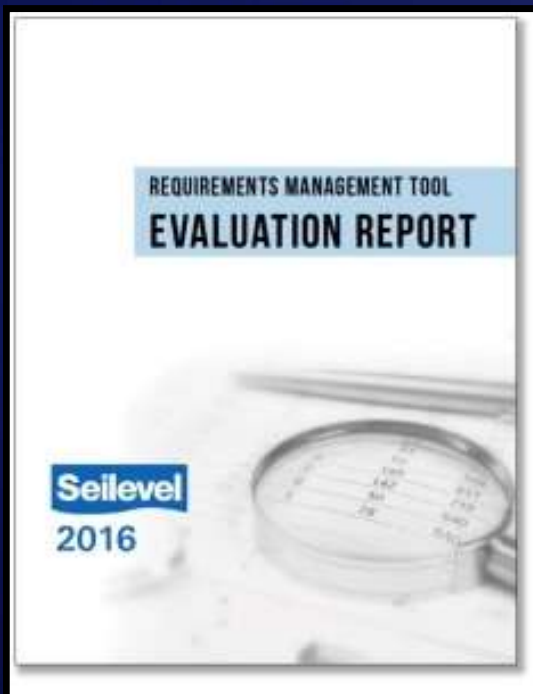
Project Considerations	Trello	GitHub	TFS
Requirements are Proprietary	●	●	●
Mobile App	●	●	●
Easy to setup	●	●	●
Estimation tools	●	●	●
Scheduling tools	●	●	●
Automated Burndown chart	●	●	●
Easily integrated with Visual Studio for Code Repository	●	●	●
Capacity Planning	●	●	●
Exports to MPP and Excel	●	●	●



What does this look like?

Scenario!

There is a lot of info out there to help



PROJECT MANAGEMENT ZONE

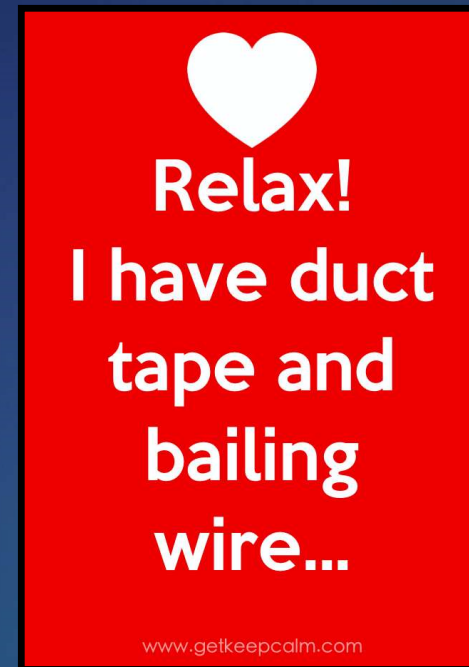
	JIRA X	Pivotal Tracker X	Team Foundation Server X	Trello X
	Bug tracking and project planning tool, available as cloud service and as commercial tool.	Pivotal Tracker is a web-based, lightweight, agile project management tool for software teams.	The Team Foundation Server is a source code management system also offering project management features as part of Microsoft's application lifecycle management solutions. More project management features are accessible via synchronization with Microsoft Project.	Trello is a web-based project management and collaboration tool based on Kanban-like lists.
Category	Project Planning, ranked #2 Issue Management, ranked #1	Project Planning, ranked #13	Project Planning, ranked #10	Project Planning, ranked #4 Project Collaboration, ranked #
Developer	Atlassian	Pivotal Labs	Microsoft	Trello
Website	atlassian.com/software/jira	pivotaltracker.com	visualstudio.com/tfs	trello.com
Technical documentation	confluence.atlassian.com/jira/jira-documentation-1556.html	pivotaltracker.com/help	visualstudio.com/en-us/docs/devops-alm-overview	help.trello.com
Social network pages	LinkedIn 17,123 followers Twitter 23,706 followers	Facebook 19,429 likes Google+ 1,492 followers LinkedIn 152 followers Twitter 10,741 followers	Facebook 2,228 likes LinkedIn 666 followers	Facebook 85,396 likes Google+ 33,717 followers LinkedIn 11,440 followers Twitter 146,027 followers

<http://project-management.zone/system/jira,pivotal-tracker,team-foundation-server,trello>

<http://assets.cdnma.com/13314/assets/WebsiteDownloads/2016-Seilevel-RequirementsTool-Evauation-Report-FINAL.pdf>

Free, open source fans?

Last year, Business Analyst Learnings published an article comparing 3 free requirements management tools. Go check them out!



<https://businessanalystlearnings.com/technology-matters/2017/7/4/a-list-of-free-requirements-management-rm-software>

Requirements

THE most important part of a project

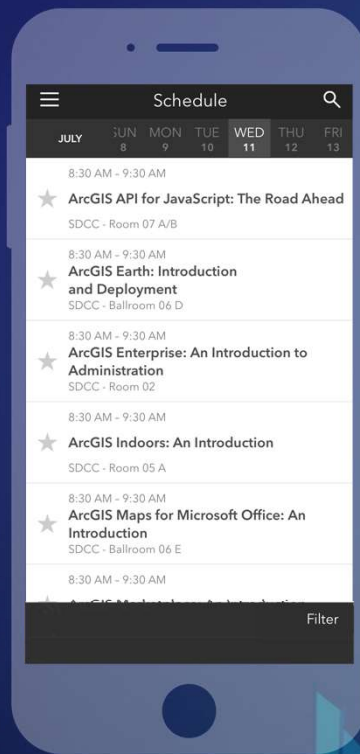
- **Involve the right people in the process**
- **Solid requirements gathering leads to successful projects**
- **Consider solution, COTS capabilities before collecting additional requirements**
- **Pick a methodology that fits your project**
- **Focus on the level of detail that is appropriate**
- **Important to prioritize and allocate**
- **Invest plenty of time to secure customer approval**

Please Take Our Survey on the App

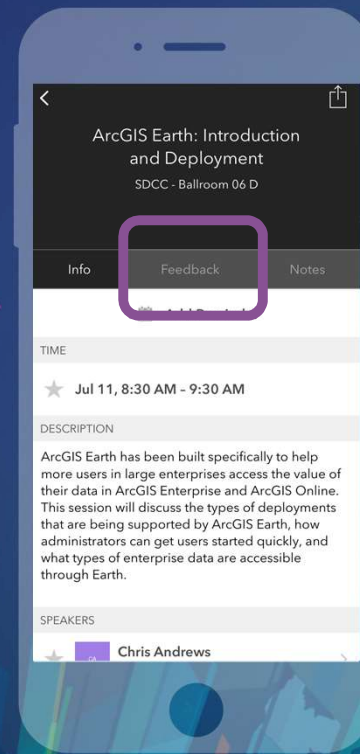
Download the Esri Events app and find your event



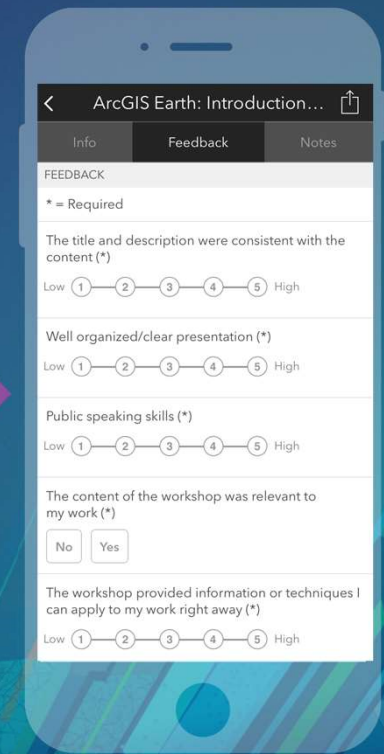
Select the session you attended



Select the Feedback tab



Complete answers and select "Submit"



See Us Here

WORKSHOP

- Esri Best Practices: Utilizing AGILE Project Mangement

LOCATION

- Room 14 B

TIME FRAME

- 4pm



esri

**THE
SCIENCE
OF
WHERE**