Museum Teamwork without Email:
Solving Business Challenges with Cloud-based Collaborative Tools
UC Davis Arboretum & Public Garden
IMLS Sparks! Ignition #LG-45-14-0024-14

ADMINISTRATIVE

Institution: UC Davis Arboretum & Public Garden, University of California, Davis
Project Title: **Museum Teamwork without Email:** *Solving Business Challenges with Cloud-based Collaborative Tools*
IMLS Award: $24,849
Project Cost: $56,288, with $31,439 Cost Share
Grant Period: Extension approved 07/02/2015; key personnel change approved 03/16/2016
- Original Award Dates: August 1, 2014 to July 31, 2015
- Modified Award Dates: August 1, 2014 to July 31, 2016

Project Director: Mary Burke, Director of Conservation & Environmental Leadership

OVERVIEW

In late 2014, the UC Davis Arboretum & Public Garden received a grant from the Institute of Museum and Library Services *Sparks! Ignition Grants* program to focus on a sometimes invisible area of museum management: the tools provided to museum staff to support critical back-of-house collaborative work. New cloud-based technologies are now available that show real promise at helping museums, large and small, creatively manage the daily flood of incoming information.

Building on a small fleet of mobile tablets and other devices, the IMLS project team at UC Davis rapidly prototyped, tested, and evaluated numerous cloud-based emerging social business tools in real world "use-cases". We sought to understand how these tools might best support the collaborative work of an increasingly mobile museum work force, now tasked with managing complex community-based projects. This rapid-testing and deployment of multiple cloud-based project management and communication tools gave our project-based collaborative teams the chance to experiment with new ways of tracking progress on real-world projects.

Results varied from team to team: some collaborative platforms were rapidly adopted but became 'ghost towns' after the test project wrapped up; some tools immediately delighted teams who now cannot imagine doing their jobs without them; student teams preferred entirely different tools and platforms and, as reluctant and infrequent users of email, were mystified by the career staff's hesitation about more social tools. Older staff, with long ingrained habits (e.g. 'checking email') driven by silo-ed ecosystems, were reluctant to have a new online site to set up, log into, and check regularly. Most interestingly, each team appreciated the freedom to test and select the tools or suite of tools that best matched their needs. Teams have their own cultures and ways of communicating and interacting; thus, a tool was a great success for one group might be intensely disliked or simply ignored by another. However, **G Suite for Education** ("Google Apps"), **Slack**, **Asana**, and **Trello** were among the most appealing tools. Finally, these tools helped us frame deep conversations about collaboration and changed our team structures and meeting schedules. Although email remains a critical part of internal and external communications, these new tools—or newer cloud-based tools that will surely one day replace them—are here to stay.

PROJECT SUMMARY

What is the Problem? In museums today, projects are increasingly complex and customer-facing. Rather than internal staff working independently or in a single department, as was once common, many museum projects now involve multiple teams, communities, and many outside partners. As the complexity and number of partners increases, professional museum staff find themselves spending more and more hours each week handling "meta-work"—the work about work—as they try to quell a growing and uncomfortable inner sense that they are somehow neglecting their 'real work'.

In many museums, staff receive up to 200 emails each day. The McKinsey Global Institute[1] reports that the average worker spends 28% (13 hours) of their work week reading, deleting, sorting and sending emails. Professional staff report frustration about having less and less time to complete their non-email related tasks.

Email was designed for simple, quick asynchronous communication. Times, tools, and work styles have changed radically in the last decade, but many museums—including the UC Davis Arboretum and Public Garden— still use email as the primary tool for managing tasks, collaborating on documents, making and tracking group decisions, coordinating schedules, communicating ideas and idea development, and for overall project management.

Meetings also increase— in both frequency and length— as projects get more complex, until museum staff feel that they spend their days running from meeting to meeting. Worse, any meeting, however short, can fracture the precious 'long blocks' of productive work time that many professional staff need to make meaningful progress on important work, a situation that is particularly bad for "makers" (vs. "managers"), as noted in the celebrated Paul Graham 2009 essay, "Makers Schedule, Managers Schedule."[2] In a 2012 survey of over 3200 people, the biggest waste of time at work, according to 47% of respondents, is "having to attend too many meetings".[3]

Investment in collaborative platforms was once reserved for the largest and best funded museums and, in the business world, for the global industries with 10,000 to 40,000 employees scattered around the world— no one else could afford it. However, times and tools have changed. Small start-up firms have modeled new ways of leveraging emergent social software platforms to have a business impact—integrating agile project management, cloud-based collaborative workspaces, with workplace tools and processes like Kanban/sprint boards and 5-min stand-up meetings. It is a good time for the museum community to look seriously at more robust and agile ways to collaborate, and to use social tools for museum operations and not just to enhance the visitor experience.

PROCESS

What Actually Happened. The project kicked off with in-depth meetings with the Director and the rest of the leadership team. Leadership at the top of the organization— their support, their interest, and their involvement—has been critical to the success of this project. Because this project would impact the work flow of nearly every team at the UC Davis Arboretum and Public Garden in at least some small way, the first

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[1] McKinsey Global Institute, *The Social Economy: unlocking value and productivity through social technologies.* July 2013 @http://www.mckinsey.com/insights/ high_tech_telecoms_internet/the_social_economy

[2] Graham, Paul. 2009. *Maker's Schedule, Manager's Schedule* referenced above is here: http://www.paulgraham.com/make.

[3] Gouveia, Aaron. 2012. *Wasting time at work.* Salary.com is here: http://www.salary.com/wasting%2Dtime%2Dat%2Dwork%2D2012/

concern was to take care not to overload staff with too many tools and new processes to learn at once. But, more importantly, this early project planning lead to very thoughtful conversations about teams, team structures, meeting schedules, and other 'framework' issues.

Planning. This special grant, which supported and enhanced collaborative team work across the entire organization, inspired our Director Kathleen Socolofsky to look with a critical eye at existing team structures, and consider how our staff might be better aligned with major strategic initiatives that will be guiding our work for the next three years. This effort led to a new staffing structure for multiple teams. Rough sketches captures some of the dynamic conversations underway at this time as we discussed what information had to be 'pushed' (HR alerts, etc.), what information staff might need to 'pull', and what information could be internal to the team, rolling up to the leadership in a 'dashboard format.'
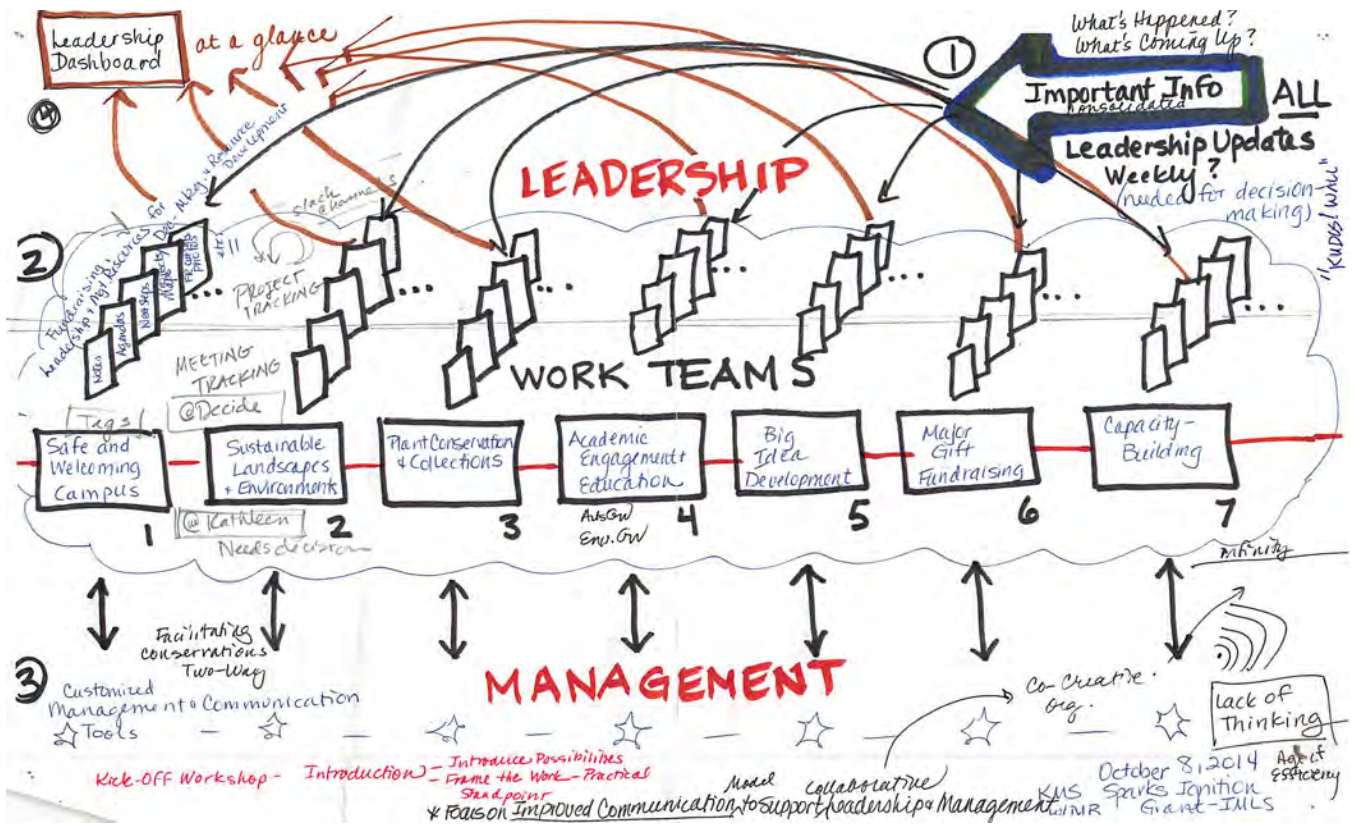
Sketches made during early planning meetings capture ideas that led to a new, more collaborative team structure.

Teams that previously reported in 'operational areas'—nursery, curatorial, horticultural—were reorganized into cross-disciplinary teams tied to delivering on major strategic goals (e.g., A Safe & Welcoming Campus; Sustainable Landscapes; Capacity Building; Plant Conservation; etc.), and a new weekly meeting schedule. The Director realized early that a great deal of the email traffic was due to the difficulty of arranging meetings and solving urgent project issues. Standing meetings allowed the new teams to discuss and solve problems face-to-face. The tools, then, could be rolled out to these new teams so that the work being tracked via cloud-based tools would not only be the on-going operational work but also roll up to the objectives and tasks tied to major strategic goals. This somewhat complicated staff reorganization process was invaluable but unexpected, and added a few months to the project timeline.

Interviews/Needs Finding. Rather than conducting separate interviews one-on-one with staff, at the Director's request, the IMLS project team organized mini-workshops during all-staff meetings to present 1/

the Sparks! project goals, 2/ review cloud-based collaborative tools available for testing and evaluation, and 3/ to discuss, in a group setting, ideas about how and when the tools might be integrated into a variety of team projects across the organization. Simultaneously, new mobile equipment was ordered and rolled out on a team-by-team basis (mostly, that is—some staff leapfrogged the wait for their team's roll-out if they had an urgent need for the mobile technology).

Mini-Workshop at ArbPG led by Sparks! team (left); Chart: List of People and Project Teams (right).

Meanwhile, sharing the Sparks project goals with the leadership of American Public Garden Association (APGA) led to the development of a national community survey that included the question: "What collaborative online tools would you like to learn more about?" We originally proposed to host a single online webinar about the Sparks! project and the tools under review. However, the interest was so great and the interest in tools was so diverse that the single webinar expanded to be a three-part webinar series, available online here.
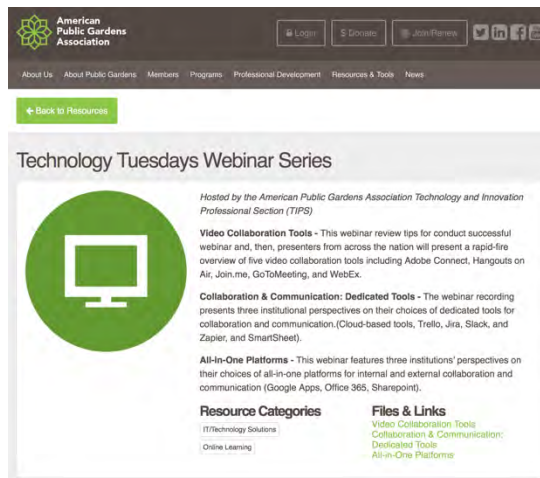
The IMLS Sparks Project team helped organize three webinars on cloud-based collaborative tools for the APGA.

Roll-Out of Cloud-Based Tools. Planning for this stage was complex: we evaluated all the team members, the roles they played on multiple teams/projects, and made our best-guesses at matching the tools and equipment that might work best for each team and business use. Budgets were then created to fund the testing and evaluation of various suites of cloud-based collaborative tools and platforms by teams.

CHART OF TOOLS
Collaborative, Cloud-based Tools: IMLS Sparks Grant

Product/Service	Business Use ~ Business Value	Cost/Per	#	Total Cost
mobile security and backup tools				
1Password?	Secure Passwords			
Apple Keychain	Secure Passwords			
iCloud	iPad/iPhone backups			
communication tools				
Slack	threaded conversations			
Jostle (nonprofit license?)	"getting to know you" cross team			
Confluence	PUSH communication - ArbPG Wiki			
Google Calendar/Confluence	Shared Master Calendar			
Flickr	Team Celebrations			
LucidPress (500# free)	Team Celebrations/Announcements/News			
LucidPress/Keynote	Donor Stories			
Presentations/iPad	BENQ Projector/AppleTV setup			
A3 Sheets	Executive Reports for Director			
Decision Worksheets	Structured Decision Making (possibly)			
shared resources & shared files				
IrisBG	Plant Records			
ArcGIS Online	Project Atlas			
Google Earth/Maps	Project Atlas			
Google Drive	Collaborative Team Documents			
Confluence?	Team File Storage?			
UC Davis CANVAS?	.... OR: Server, Asana, Trello, Slack, etc.			
iCloud	Cross-App Communication/Storage			
Dropbox	Cross-App Communication/Storage			
Flickr	Team Photo Storage			
IrisBG	Plant Photos – IMAGE Storage			
leadership tools				
TBD – need to research	Leadership Dashboards – "At A Glance" ALL			
SmartSheet	3-Yr Strategic Plans/Major GW Projects			
Aha!	Project Road Maps			
PipeDrive	Donor/Personnel Road Maps			
Cloze? DonorPerfect?	CRM Tools			
Evernote? other apps?	Capture Business Cards			

Product/Service	Business Use ~ Business Value	Cost/Per	#	Total Cost
Team Project Management ~ Shared Checklists				
Asana	Team Planning – Sprints/Kanban			
Trello	Team Planning – Sprints/Kanban			
OneNote	Team Planning – Sprints/Kanban			
JIRA?	Team Planning – Sprints/Kanban			
I.Done.This	Summary of Accomplishments/Done Work			
Zapier	Trigger - Cross-Tool Auto-Updates			
IFTTT	Trigger - Cross-Tool Auto-Updates			
Task Management - Personal				
OmniFocus, Various	OmniFocus – Mac OS			
	OmniFocus – iPad iOS			
	OmniFocus – iPhone iOS			
Meeting Management				
Confluence?	Meeting Agendas			
Evernote? Confluence?	Meeting Notes - Online Storage			
	... SketchNotes (sketch & upload)			
Notability/Evernote	Notetaking at Meetings – CAPTURE & upload			
iMovie?	Video Capture at Meetings (KS Request)			
Event Management				
Evite	Invitations/Event Management			
Paperless Post	Small Party – Donor Event Invitations			
Project Review ~ Brainstorming PDF Editing				
PDF Expert? others?	Review/Edit PDFs			
Evernote? others	Visual Notetaking / Sketches			
~ Writing ~ Dictation				
Dragon Dictate	Dictation/Writing			
New Microphone(s)	Dictation/Writing			
Google Docs/Sheets	Collaborative Writing			
Office365 Word ?	Collaborative Writing			
Scrivener	Writing Tools - Individual			
Papers	Research /Journal Manuscripts - Individual			
Paperless Office				
ScanSnap ix500	Scanner for 1109EH			
ScanSnap Portable	Portable Scanner for Team Members			
Hazel	Automatic Filer – File Namer			
DevonThink	AI Filing & Research Tools			
WorkFlow Improvements & Training Tools				
SaneBox	Mail Management "upstream" ($299/year)			
Camtassia (UCD license?)	Screen Capture – Video Training for Students			
Lynda.com	Online Training – Technology			
UC Davis LMS/Canvas	Online Training – new "SmartSite" tool			

Rough mid-project budget sheets used to estimate costs/team for various tools and suites.

After reviewing the roll-out plan, the Director asked that the 'community focused' teams, with less risk for high-profile failure (for example, as could happen if an on-campus infrastructure project had serious project management problems), lead the way with our initial testing and evaluation.
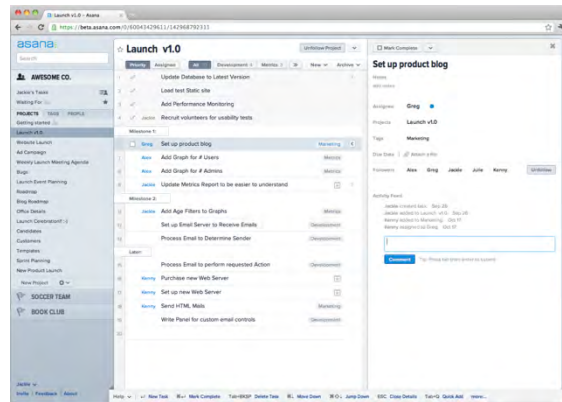
Small teams led the way with the pilot projects (left); sample of Asana screen, one of the first tools tested (right).

Staff on the 'Academic Outreach and Education' and the 'Major Gift and Fundraising' Teams were particularly enthusiastic, so they kicked off the cycle of experimentation. Friendly, engaging, experimental, and, as importantly, frequently organizing and running large and small public events, these staff saw an immediate value to tools that would allow them to communicate and track the endless details and many moving parts of their work on the fly, especially as these staff were away from their desks and offices so

much of the time. Best of all, many of these early projects were almost 'modular' in their structure; tasks and timelines set up online for one event could be adapted and modified for later events.

Community and Donor Events, organized by our Outreach & Education and Fundraising teams, were early pilot projects.

In contrast, the enthusiasm of the 'Sustainable Landscapes' and 'Safe and Welcoming Campus' teams— largely, facilities managers, groundskeepers, landscape architects, and horticulturists— was tempered with concern that their high profile work (e.g., new garden construction linked to major donor events) could be delivered without a pause, as we experimented with new ways to "get things done". In addition, because of their close work with architects and other specialists, either at UC Davis or on the outside vendor team, already had systems in place to provide project management.

Teams running new garden construction and major infrastructure projects were slower to adopt new tools.

And, although this was the most mobile of our teams (and rarely indoors), we had not budgeted for 'ruggedized cases' that could protect the mobile equipment in the sometimes dirty, wet, and muddy environments in which much of their work took place. Theft of valuable equipment was an additional concern for team leaders; hundreds of students walk and bike by our worksites every hour, and mobile tech can be an 'attractive nuisance' to keep track of in student environments. (Subsequently, newer security
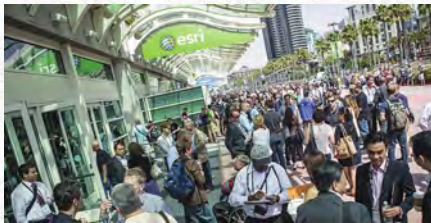
features implemented by both Apple and Android manufacturers has alleviated but not entirely eliminated these issues.) In short, a full launch for the hort/facilities team continues to lag behind the rest of the staff.

Next, early discussions about the Project Atlas, an idea about how best to communicate place-based project information across a distributed staff, also attracted national attention. These conversations with other botanical gardens led to the development of a successful proposal to host a national symposium on cloud-based GIS. A $25,000 gift from the CEO of Esri brought together staff from botanical gardens and zoos across the nation to have a focused "community conversation" about how we could work together to develop these new place-based cloud-based tools. Symposium funding was used to cover the direct costs for the workshop and a speaker series, including travel costs for our key invited speakers. The three-day national conversation, including a one-day workshop, was extremely productive as we focused on how cloud-based GIS applications can help manage projects and enhance visitor experience.

Registration materials for the national symposium on cloud-based GIS, and the APGA-Esri workshop agenda.

Lastly, as we learned more about the power of online collaborative tools, it stretched our expectations for the quality of "real-world" conversations and discussions in team meetings. This added yet another deliverable to the Sparks—to make team work more collaborative and effective both online AND in real-time meetings. A few books proved invaluable in guiding our efforts to improve our meetings and approaches to collaborative discussions, and are worth noting for the profound impact they have had on this project: "The Surprising Power of Liberating Structures: Simple Rules to Unleash A Culture of Innovation" (Lipmanowicz & McCandless); "Sprint: How To Solve Big Problems and Test New Ideas In Just Five Days" (Knapp, Zeratsky & Kowitz); and "Scrum: The Art of Doing Twice the Work in Half the Time" (Sutherland & Sutherland). As our new collaborative teams began to work together, we used the highly structured 'conversations' explained in the 'Liberating Structures' book; some teams adopted either Scrum or Kanban boards for online or whiteboard task tracking; and we led an intensive 5-day collaborative "Sprint" to launch a new multi-year project at UC Davis. The major goals and tasks, sketched out here on the whiteboard at the end of the Sprint Week, were later moved to a Aha! Roadmap, a goal settings and online task tracking collaborative 'online space'.
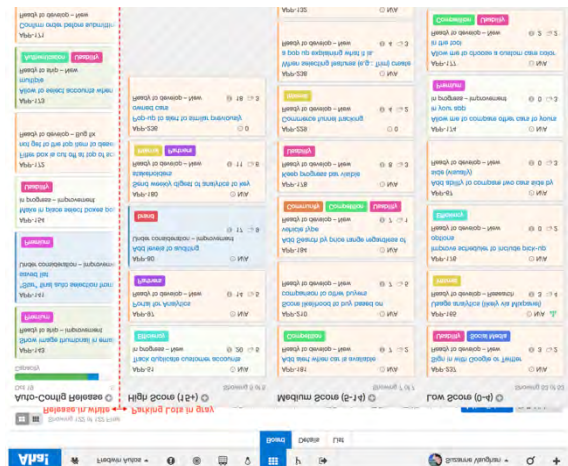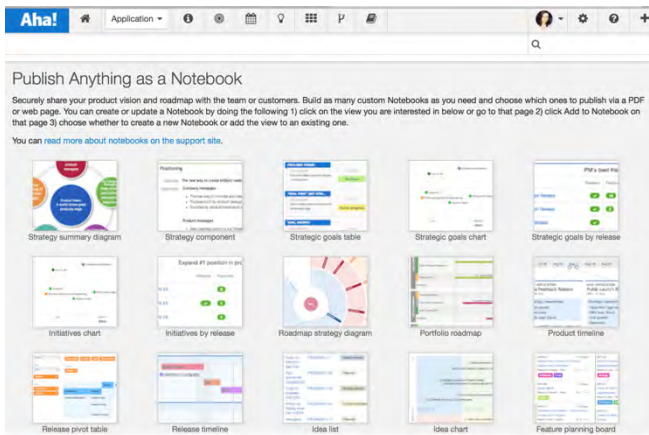
Sprint Whiteboard (above) at the end of the five-day Sprint Week; sample pages from Aha! Roadmap (below).

Project Activities

Interviews: Planning and Goal Setting within the UC Davis Arboretum & Public Garden
The project's high-level launch was successful. Campus and team leaders were important creative partners as we began to design the final project details, assess tools, and consider how to integrate them into team work and project management.
- ArbPG Leadership Presentations (3) and Interviews (5)
- ArbPG Staff Presentations & Interviews - all-team (2); team meetings (5)
- Planning meetings with ArbPG Director, Assistant Directors and Team Leaders (multiple)

Internal and External Presentations:

- Presentation to key museum partners: Dr. Peter Raven (2); APGA Technology and Innovation Leadership Team (multiple); help prepare APGA TIPS Membership Survey
- Presentation and Planning with Project Atlas Partners and Esri technical staff (3)
- Presentation to UC Davis GIS staff – project planning meetings for Project Atlas (2)
- *By Project End Date:* additional Team Leader Meetings (continuing), plus interviews with External Partners and experts (pending; scheduled for January-March 2016)

Team Management & Collaboration at the UC Davis Arboretum & Public Garden
- ArbPG Leadership worked to define 'what success would look like' – online resources for effective collaboration, including checklists, status/updates, team communication, resources, decisions 'threads', etc. – to be more fully described in whitepaper
- Multiple Teams Launched – testing and evaluating of online collaborative tools

Testing and Evaluation of Cloud-Based Collaborative Tools
- **"Communication" Tools.** Slack, HipChat, Ryver, Facebook.
- **"Checklist" Tools.** Asana, Trello, Smartsheet, Todoist, Pipedrive, iDoneThis.
- **"File Storage" Cloud Tools.** Dropbox, Box, Google Drive, iCloud, Amazon.
- "**Integrated Tools/Platform" Tools.**
  - Atlassian: Confluence, Jira, Hipchat.
  - Google: Google Docs, Google Sheets, Google Drive.
  - Microsoft: Sharepoint, Office365 (Word, Excel, Outlook), OneDrive, OneNote.
  - Learning Management System: UC Davis CANVAS. Includes: calendars, assignments.
  - Strategic Planning: Aha! Roadmaps.
- **"Specialized" Tools.**
  - Cross-Tool Integration for Cloud Services: Zapier, IFTTT.
  - Project Atlas: ArcGIS, Collector App, IrisBG, CBI DataBasin.
  - Password Management: 1Password; Apple Keychain.
  - Meeting Capture: OneNote; Evernote; Apple Notes.
  - Online Meetings: Skype; Zoom.
  - Photos: Flickr; Instagram; Facebook.
  - Writing: Google Docs; Dragon Dictation; Scrivener; Byword.
  - Top-Down Communication/Newsletters: LucidPress; SquareSpace.
  - Online Training: Vendor sites, YouTube, Camtassia; Lynda.com, Screencasts Online.
  - Better Email Management. Sanebox.
  - PDF Management. Adobe, Papers, Goodreader, PDF Pen, PDF Expert.

Collaborative Learning Across Museums
- Two **Conference Presentations** on Sparks! Project: Cloud-based Tools and Collaboration
  - 2015 APGA National Meeting, Minneapolis, MN, June 2015..
- Four **Online Webinars** offered to APGA Membership
  - **Membership Survey** – American Public Garden Association (APGA). A presentation to the APGA Technology and Innovation Professional Section (APGA TIPS) led to two unanticipated outputs: an APGA-wide membership survey designed by APGA TIPS to assess member interest in cloud-based collaborative tools for museums, as well as preferred delivery and presentation methods.
  - **Webinars:** Based on survey findings, speakers from across multiple gardens were recruited to present their museum's use of the following cloud-based tools:

- Sept. 23, 2014 - **Disaster Management** (portion of webinar)
- Dec 9, 2014- **"Collaboration and Communication: All-in-One Platforms"**. Cloud-based tools for document creation, shared calendars, etc.
- Feb. 10, 2015 - Cloud-Based Collaborative Tools for **Team Management and Communication: "Collaboration and Communication: Dedicated Tools."**
- May 12, 2015 - **Video Collaboration** with Cloud-Based Tools
- Three of these webinars are now available in the APGA Resource Library. Because webinar hosting was new to our team, we didn't think to tape the first webinar until people who were not able to attend contacted us later, seeking the training. For the subsequent three 'collaborative tools' webinars, Longwood Gardens offered to record, edit, and post these valuable resources. APGA links to these Longwood webinars via the resource library. Approximately 150 people have viewed these webinars. SEE: Attachment A, for list of speakers and gardens involved.

GIS Project Atlas and Place-Based Collaborative GIS Tools
- Preparation of paper map to capture staff knowledge about ongoing projects.
- **Cloud-based Project Atlas Design Meetings** at 2015 GeoDesign Conference, Redlands
    - o Assistant Vice Chancellor Robert Segar, UC Davis, Sparks! Leadership team, attended. Meetings in Redlands with Esri Specialists in campus design and mapping to plan for the UC Davis Project Atlas, and identify best models for campus project tracking/communication using online, cloud-based GIS tools.

- An **APGA-Esri GIS Symposium,** July 20-22, 2015 | "Exploring the Future of Cloud-based GIS in Public Gardens" (50+ participants). *This* APGA- Esri *Symposium was Not Part of Initial Scope, but emerged from Sparks! Conversations re: the Project Atlas.*
    - o Proposal developed for 'community conversation' re: Cloud-Based Tools for GIS
        - Development with Dr. Peter Raven, August-Sept 2014. Proposal submitted, September 2014. Funded ($25,000) by Jack Dangermond, President, Esri.
    - o Organized, hosted, and led 2015 Esri-APGA GIS Symposium, July 20-22, 2015.
        - Presentations here: http://publicgardensgis.ucdavis.edu/training/symposia/
    - o Prepared and presented large exhibit for Symposium in the Esri Map Gallery
    - o Recruited speakers for key presentations on cloud-based GIS by six botanical gardens and zoos, keynote speaker Dr. Peter Raven; Esri specialists; and the Chief Cartographer (retired) National Geographic, to present how cloud-based GIS tools can be used to reach visitors and K-12 audiences in museums.
    - o Organized and ran half-day workshop— "A Community Conversation" —on future of cloud-based collaborative GIS tools for gardens and zoos.

Mid-Project Corrections. A few purchasing issues arose that delayed the original timeline. For example, we held up some of our initial tech purchases to wait for new releases of mobile equipment and test a wider variety of devices and approaches. Therefore, some of the specs for the equipment are different than listed in the original proposal; the mobile equipment did not exist at the time we wrote the original proposal.

As described in the 'Successes' section, this project not only engaged the interest of many partners, but this interest had unexpected benefits for our Sparks! 'bottom line' as UC Davis leadership, staff IT partners, and alumni stepped forward to make in-kind or cost-sharing contributions to assist us with our project goals. For example, when we approached UC Davis leadership to request a $5000 to supplement IMLS Sparks!

funds for a new cloud-based plant records system that integrated with the new GIS tools, the Assistant Vice Chancellor for Campus Planning covered the full $19,500 cost, unexpectedly freeing up nearly $7000 in technology/tools/services funds that had been set aside in the Sparks budget for this system. This unexpected windfall in the final months of the Sparks project allow us to purchase new mobile devices and additional software, subscriptions, and licenses for the Sparks teams.

Institutional Challenges. ORGANIZATIONAL STRUCTURES. In some significant ways, we underestimated how much impact this project would have on our organization's work flow, team structures, and team relationships and communications. As noted above, it triggered a sea-change in many of the ways that "… we do business." Although our Director regretted the unavoidable delays this created for some of our Sparks work, she was appreciative that the Sparks grant provided exactly the 'push' needed to capture the attention of three Assistant Vice Chancellors at UC Davis to clarify new collaborative teams, roles, and responsibilities.

METRICS. We spent time at the start of the project attempting to devise meaningful metrics and ways of measuring about how the online tools for collaboration and communication were reducing reliance on email. This proved to be difficult. Although we will continue to pursue metrics for evaluation of ongoing work, it is clear that most of the feedback will be anecdotal and more about project workflow changes rather than reporting back exactly how many in-team and across-team internal emails (by count) have been eliminated.

LEGAL ISSUES. The most difficult challenge we faced was an internal legal issue that delayed our software purchases for nearly a full year. The UC Davis Business Contracts Office (read: legal team) refused to approve the software and licenses we needed to purchase for the Sparks Grant. The legalese listed in the small print on the software license agreements (on the: "click to accept this license agreement") was unacceptable to 'Business Contracts'. Our Purchasing Department refused to approve the purchase of team licenses for proposed online collaborative tools. We found this 'No Purchases Permitted' from unnamed, invisible lawyers very frustrating, because we had already met with lead technical and IT advisors at UC Davis *as* we developed the Sparks proposal <u>and</u> had secured all required campus support and approval *before* submitting the original proposal to IMLS.

We originally attempted to resolve this issue by working directly with the software companies. These software firms agreed to alter their legal terms, but only if we could 'up' our team purchase to a $5000 fixed-time contract, an amount that far exceeded our IMLS budget. As we continued to seek a solution, we moved all the teams to the "free tier" of the cloud-based tools under consideration; however, our testing and evaluation continued via clever work-arounds. The issue was finally resolved when we elevated the issue to the highest level by seeking the approval from the Vice Chancellor for Information Technology in the CFO's office at UC Davis; her assumption of responsibility for oversight of this project work overrode the objections of the 'Business Contracts' team. The Vice Chancellor also clearly clarified the risks of cloud-based tools for a large institution like UC Davis when she explained: "Without sandboxing these tools apart from our most critical information systems, any crack in information security, however small, can represent a real risk for the entire campus." Security issues and concern from the IT staff when proposing the use of cloud-based collaboration tools is a familiar issue in many museums, so the language recommended by our Vice Chancellor in our final (successful) purchasing requests is included here:

- This is a **pilot project**, explicitly designed for testing and evaluation by small teams (2-32 people). The prototyping environment will be "sandboxed" from any on-going production work.

- Any mission-critical tasks or work will be simultaneously tracked in a duplicate, independent, and stand-alone backup system (including via paper, whiteboards, Word documents, email, and other current 'real world' systems), to protect the ongoing work of these small teams.
- Information on addresses, SSNs, employee/student numbers, etc. are expressively forbidden. No sensitive information aside from UC Davis email addresses and names of team members will be tracked in this pilot system during this evaluation.
- Use of these tools is restricted to tracking of museum and botanical garden workflows to help staff manage and/or discuss multiple in-house garden projects, such as garden construction projects and management of small events (e.g. family science events; student team mini-projects, etc.) for the staff teams, community, and volunteers.
- Once the pilot project phase is completed (May - June 2017) we will begin an analysis about which tools, if any, may be suitable to move from a prototype environment into production mode.

FINDINGS

Recommendations

Executive Summary of Findings (TL; DR)

- The immense diversity of collaboration tools are best evaluated in a few broad categories:
  o Communication Tools (online conversations)
  o Checklist Tools (task management)
  o Integrated Platforms
  o Specialized Tools for Special Purposes (photos, publications, etc.)
- UC Davis students were powerful 'drivers' of what turned out to be our single most successful suite of cloud-based collaborative tools: **G Suite for Education** (formerly: Google Apps for Education). Free for UC Davis students and staff, most students were adept and comfortable with these tools. As one staff noted: "They already live in Google Apps full time, every day." Many of our projects are planned and executed by student-led "Learning by Leading" teams. The student leaders have so many details to manage and organize that they were greatly relieved to have a suite of tools that students could begin to use on Day One, with no training.
- Other tools were adopted and much appreciated by staff teams. Our winners in these categories really impressed us; we plan to integrate some of these team tools on a project-by-project basis in the year ahead. Museums may wish to investigate these impressive cloud-based tools further, if they have an project workflow that is a good fit:
  o **Slack** – One of our team favorites, Slack is a powerful threaded **communication tool** that shows the most promise for 'replacing email' by providing simple and powerful ways to manage team conversations and track decision-making.
  o **Asana** – This task-tracking cloud-service gained champions on a few project teams. Asana can be integrated with Slack to make a 'FrankenCloudTool', "AsanaSLACK", so that project checklists and team chatter about project work can be closely linked. The Asana Dashboard feature was especially appreciated.
  o Other task-tracking tools were much appreciated and got many thumbs-ups:
    - **Smartsheet** was a terrific Excel-like tool for large complex projects with multiple areas, tasks inside of areas, and many external partners. Our logical-sequential thinkers (analytical) people especially appreciated Smartsheet.
    - In contrast, **Trello** was especially popular with the 'visual thinkers' on our teams who use Scrum/Kanban boards to track work. This tool allows team members to move digital 'index cards' around a big board, as a task progresses from Backlog, to Next, to Doing, to Done.
    - **Pipedrive**, designed for sales teams, had a special role in helping us track projects that had a "repeating structure", such as the repeating tasks that triggered by small

internal projects such as 'recruit, interview, and hire new interns, 'onboard new staff', and 'track gift/thank you processing for small gifts'.

- ▪ **Aha! Roadmaps** is a very specialized tool for a top-down team that has a leadership committed to Strategic Planning. Designed as a tool to help teams deliver high impact results, Aha! Roadmaps impressed us by framing strategic planning—from Goals, to Strategies, to Objective and Key Results—in crystal clear steps, closely integrated with task tracking. This tool provides outstanding tools that transform strategic planning into beautiful 'presentations' and documents to share with donors, external partners, and investors. At $1200/year per team leader, Aha! Roadmaps was the most expensive collaborative tool we evaluated.

DISCUSSION

Email and information overload has been identified as one of the key drivers of staff burnout and work dissatisfaction. Ubiquitous email, especially when used as the primary tool for managing workflow and team projects, represents a real challenge for managing and maintaining productivity in the work place—email encourages most people to focus on the shallowest of tasks (e.g., partial skimming and rapid replies) as they attempt to clear in-boxes. Worse, email can distract people from the deep work that nearly all truly important and impactful projects demand. Most futurists agree that although email is a very robust and multi-purpose tool, more than 50 years after its birth, it may not be up to the rigors of managing the complexity of work today. Even 'simple tasks' like organizing a meeting—scheduling the time, agreeing on the agenda, and making sure decisions are distributed afterwards—can cause a blizzard of emails, each of which must be read and processed, while delivering little value or forward motion on important projects.

Therefore, it is no surprise that venture capitalists and tech firms are working hard and fast to develop new solutions to what is widely called 'the email problem'. However, the fast and emergent development of new cloud-based tools means that any recommendation for specific software tools in this report will likely be quickly obsolete, even within a season or two. Nonetheless, our teams gained a great deal of experience and many insights as we tested and evaluated these tools.

These key findings, rather than cloud-based tool reviews, that are shared below.

"It's Not Really About Email"

While doing this project, we realized that we were not really trying to 'solve the email problem', but to address a deeper and more important issue that has important repercussions on wellness, life satisfaction, and happiness in the workplace: information overload and lack of time to do "deep work".

INFORMATION OVERLOAD. As the first generation living in the age of instant and continuous information, the average worker today is confronted with such an overwhelming number of channels and messages that it is easy to "miss the forest for the trees". First defined in Toffler's book "Future Shock", Information Overload is simply the personal experience of "too much change in too little time."

The distress we experience is driven by human biology and, especially, how our brains evolved to work with the external environment. When confronted by familiar situations and familiar information, the human brain can easily process many incoming 'inputs' without much effort. But when *new* situations occur and *new* information arrives, a lot of mental capacity is required. Worse, the speed at which the new information arrives can make the handling and responding appropriately especially exhausting.

The *type* and *speed* of change can have a severe impact on a person's ability to cope with the flow of information; some more sensitive people are at risk of getting sick or simply shutting down in the face of the onslaught. For all of us, however, the risk of information overload is driven by three factors: the <u>novelty</u> of a medium, the <u>speed</u> at which the medium changes, and the medium's <u>irregularity</u>. Each of these three factors requires rapid adaptation within the brain by creating new neural pathways. Second, processing all this continual 'noise' of new information keeps people from focusing on deep work, defined by Cal Newport as: "Professional activities performed in a state of distraction-free concentration that push cognitive capabilities to their limit." *Mastering hard things* and then producing *high quality* and *great value* at an *elite level* requires long stretches of deep work with little interruption and few distractions.

Understanding that email was part of a much bigger 'information overload problem' helped our project team re-frame some of the solutions we explored. For example, we set up 'predictable, collaborative, scheduled meetings' as one simple way to simultaneously reduce email volume, while improving decision making, and reducing the sense of disruption and distraction for our staff.

Second, we knew from the start that EMAIL IS NOT GOING ANYWHERE. We did not choose to measure the 'reduction in email' as a metric for this project. Obviously, communication with people outside our internal teams and closest partners would continue to be via email. University directives, requests from faculty and students, and the many messages we receive from our community all arrive via email. In addition, for most of us, email serves as our primary communication tool, archive, knowledge base, and contact hub.

Despite our acceptance that email would continue to be central to our workflows, we appreciated this time to explore and gain familiarity with tools that many Silicon Valley firms had already adopted as they manage fast-changing projects and deliverables in an intensely competitive environment.

What We Learned about the Tools We Tested
We focused our exploration on tools that would help us track discussions, decisions, and other important project metrics that would help us build an institutional memory and more easily onboard new staff and volunteers. And: to gain a little clarity on the daily status (not started; in progress; done) of tasks for critical projects, as well as the obstacles holding up forward progress without chasing, finding, and reviewing a multitude of disordered email threads with mis-labeled, irrelevant subject lines. Our key findings were:

WOW: BIG FIELD. BIG TOPIC. Collaborative software is not a single well defined term, but instead includes a broad array of apps and services that are trying to solve completely distinct problems in the workplace. Knowing where to begin was the first challenge. To simplify our analysis, we realized that we could evaluate 'project tracking tools' in three categories:

- **Communication** Tools – teams talking ABOUT project work
- **Checklist** Tools – teams tracking STATUS of assigned tasks (e.g., Ready, Doing, Done, Reviewed)
- **Platform** Tools – suites of tools that integrates Communication/Checklist features, and more;

In addition, we tested behind-the-scenes utilities that 'snapped' cloud tools together:

- **Integration** Utilities – Zapier, IFTTT (If This Then That)

The two 'integration' cloud services listed here permitted staff to choose their own favorite tool, update tasks on their screens using their preferred tool (e.g., check Trello task as 'done'), but their updates would appear instantly and 'auto-magically' – thanks to a 'zap' or an IFTTT rule – in a *different* cloud-based team dashboard (e.g., in Asana) chosen by the team leader, for discussion and review at the next team meeting.

We also began development of a UC Davis website—not yet completed—called "WOW: Ways of Working at the UC Davis Arboretum and Public Garden" to communicate the cloud-based tools that are available to our full ArbPG teams and share our use-cases across the organization.

ONE SIZE DOES NOT FIT ALL. For this pilot project, teams and individual staff were free to select tools that they felt would be the best match for their team's or their own particular needs. It is hard to overstate the relief that staff felt when they realized that they did not need to use one single tool or platform, but could sample various approaches and 'see what stuck.' Consequently, teams landed on completely different solutions that were a good fit for them. Because we were simply trying to provide support and empower team work across the organization, no tool had to "roll up" and fit into a bigger framework. This might be the best approach during this period of rapid development of these tool suites by tech companies. In a few years, when the dust has settled, there are likely to be some clear winners, but for now, there is no reason not to give team leaders the tools that are the best match for their needs.

DIGITAL NATIVES (STUDENTS) CHALLENGED OUR ASSUMPTIONS and had different preferences. This comment amplifies what we noted for our teams, but it is worth noting how strikingly different the preferences of UC Davis students was when compared to our staff. In short: students hardly 'get' email. They think it is 'stupid'; they rarely check email accounts; they are mystified by the staff devotion to it and gently try to show us how the same tasks and conversations we older staff are "clinging to" in email can be handled much more elegantly in various social- and cloud-based tools. These young student leaders certainly challenged our 'email is not going anywhere' assumption. We recalled, in meetings, how Blockbuster Video and Borders Bookstores once were on every corner; yet both seemed to disappear overnight. We ended the project feeling that this was the single most compelling lesson of the project: sure, email is not going anywhere today, but all museums can begin now to prepare for the revolution that will follow as millennials come of age, by experimenting with these internal team-communication tools.

THE CONTRARIAN VIEW. As a closing note, a compelling 'contrarian' article on the value of email was published in Slate in 2013 ("In Praise of an Overflowing Inbox", Farhad Manjoo). "Nobody gives email its due," he begins, and goes on to celebrate how this indispensable, ubiquitous and forgiving tool was his best forum for brainstorming with colleagues, sharpening arguments, finding new ideas, and making new connections with sources. The open, messy, and chaotic nature of email is as much a feature as a bug, he claims, forcing people to confront lots of viewpoints as they open messages. The new cloud-based and tidier tools do manage conversations better and track decisions, he notes. But Manjoo worries that the lack of randomness and "half-assed skimming" we all do in our stuffed email inboxes— but will longer need to do in social tools with their tidy projects and threaded conversations — may close down the accidental and divergent half-ideas and accidental conversations, stumbled over via email, that led to some of his most interesting work as a writer. This is the 'innovation happens by bumping into each other' truth, noted here in a digital framework. However, we prefer actually bumping into each other, rather than via email.

Successes. Teams enjoyed exploring, testing, and using the new collaborative software. However, some unexpected successes took us by surprise:

- **Impact of Mobile Technology.** The IMLS project leaders were early adopters of tablets and mobile technology and already had 6+ years of experience integrating mobile tech at work. Thus, we were taken aback at how transformative the addition of mobile technology "across the organization" was for the staff teams. Many of the team leaders had never even used a laptop, much less a tablet; they had only worked at desktops. Before we could get them to weigh in on the tools, they began all evaluations saying, with enthusiasm and gratitude, just how much value the mobile tech had added to their work: "I

hadn't realized what I was missing out on!"; "Now I can go anywhere and work! I can update right in the middle of meetings and not return to my desk with piles of papers and notes that have to be input later."; and "This has been the biggest contribution to 'wellness at work' that I have ever experienced in my career: I can even go outside! I can meet with students anywhere, even right at the project site!, and I can get a break from sitting in a chair starting at my computer."; and "I am getting more work done than I have ever done before. I can't imagine going back to only having a desktop computer."

- **More Money! - Unanticipated Financial and In-Kind Contributions from Partners and UC Davis.**
  - IrisBG – $19,500 contribution from UC Davis Community Resources and Planning office for one-time conversion costs to transition plant records to a system that integrates with ArcGIS Collector and allowed teams to use iPads/iPhones to integrate collection maps and plant records.
  - UC Davis site licenses negotiated at no-cost for the cloud-based tools:
    - Slack – for all staff and student team members (communication)
    - Jira and Confluence (checklists; calendars)
    - Sharepoint, Office365 Cloud-based suite, including OneNote (project resources sharing)
    - Box – cloud-based file sharing (project resources sharing)
    - Canvas – Learning Management System (online courses, training)
    - Zoom – cloud-based meetings and webinars
  - LucidPress – free: 500 licenses x 2 years for LucidPress for UC Davis Learning by Leading Student teams, donated by UC Davis recent graduate & alumni of the LxL programs
  - Pivotal Tracker – free: 250 licenses for student and staff teams (task management)
  - Educational Discounts – provided by multiple vendors upon request (up to 50% cost reduction)

Failures.

- **Project Atlas.** We knew at the start of the project that we needed to find some cloud-based solutions that would help us track 'place-based project work', ideally, using a cloud GIS system or something similar. Delivering on this project continually alluded us, because it was a far-more complex 'systemwide problem' than we initially realized. Originally framed as a Arboretum & Public Garden issue, this turned out to involve multiple UC Davis divisions and operational departments, ranging from 'Campus Planning and Administration', to 'Facilities Management', to 'Design and Construction Management'. We have currently redefined our problem statement to one that is entirely within our range of control: "cloud-based plant records systems (including collection maps)". We are also now part of a larger UC Davis-wide team that is trying to 'fix' the broken workflow for creating a new campus base map periodically and then unifying all design, construction, and facilities maintenance across campus. We are little fish in this much bigger pond, but are glad that the IMLS Sparks project triggered campuswide discussion about this work.

- **Slow Start: Garden Construction Teams.** Our 'physical world' project teams—Horticultural Team and Facilities Team— have remained the most reluctant to track work using online tools. They already have a high-performance, high functioning methods in place: they simply meet in one room, once a week, with all the maps, markers, resources they need and have a real-time in-depth conversation about all that is underway, including the issues they are facing, the decisions they need from leadership, and what is ahead on the near- and far horizon. For problem solving and instant communication about project issues with student 'Hort' or 'Restoration' teams while on-the-go, Facebook has been a perfect solution. For larger project management issues, they are concerned—and properly so—that the online tools may not be able to capture the complexity of all that they need to manage. They are open to looking into these tools and approaches, but only if it will not destabilize a team process that is already

working very well. In other gardens, Smartsheet is used with great success for teams like this, but the project and team leaders have simply not had the bandwidth thus far to explore this alternative.

- **Platform Solutions are Just Not For Us.** We started the IMLS Sparks! project with a lot of enthusiasm about the 'platform solutions'. However, flexible, agile, and low cost tools ended up fitting our more playful and experimental approach. A platform-based solution might be right for a more 'top down' organization but for our museum with a lot of 'leadership at the edges', the little tools were a better fit.

NEXT STEPS

For our many "Learning by Leading" student-led teams, we will be moving forward to study the online structure set up for G Suite for Education for our most successful student teams, and replicating it across the entire 'Learning by Leading' team structure. This will greatly simply team-training and help us onboard student leaders and student interns more quickly.

Because students rotate in-and-out of assignments quickly, we have learned to set up INSTITUTIONAL accounts to manage these online cloud-resources. This applies to staff accounts too; it is worth giving some thought to setting up, for example, an account named after the Staff Role (e.g. Curator), rather than the person, in <u>any</u> cloud-based tool, so that the "transition of power" to a new Curator or new team leader is painless and not tied to an individual's personal account or name when they leave. Lessons learned!

We plan to focus on and expand our use of the tools listed in 'Recommendations'. We now feel confident that the tools listed in 'Recommendations' are suitable for use in our organization. In the next year, the many tools still listed here and in 'Resources' will settle to a noble few, as each team leader finds the right fit for the right workflow.

Cloud-based collaboration tools are affordable, available, and easy to use. With a little investment, even small museums might benefit from using some of these new and emerging tools to track project work and help teams accomplish the many complex tasks they manage more easily and more quickly. Although our own special circumstances—managing collaborative projects across a 5000-acre campus— drove our choice of using mobile tablets as a testing platform, most museums already own the internet-connected laptops and desktops needed for an office-based cloud-based collaboration. Those with smart phones and mobile tablets in the workplace will especially appreciate how these cloud-based collaborative tools working across all platforms and all kinds of mobile devices. Monthly and yearly subscription fees for cloud-based collaborative tools for both mobile and desktop systems are affordable for all but the smallest museums. As the friction is removed from tracking and reporting on team accomplishments, project quality and project velocity can increase across the entire museum enterprise, positively impacting everything from back-of-house reporting and analysis to improving visitor experiences and exhibits.

RESOURCES

- **Communication Tools.** Slack, HipChat, Facebook.
- **Checklist Tools.** Asana, Trello, Smartsheet, Todoist, Pipedrive, iDoneThis.
- **File Storage Cloud Tools.** Dropbox, Box, Google Drive, iCloud, Amazon Drive.
- **Integrated Tools/Platform Tools.**
  - Atlassian: Confluence, Jira, Hipchat.
  - G Suite / Google: Google Docs, Google Sheets, Google Drive.
  - Microsoft: Sharepoint, Office365 (Word, Excel, Outlook), OneDrive, OneNote.
  - Learning Management System: UC Davis CANVAS. Includes: calendars, assignments.
  - Strategic Planning: Aha! Roadmaps.
  - Place-Based Information (Project Atlas): ArcGIS, Collector Appiri, IrisBG, CBI DataBasin.
- **Tools for Special Purposes.**
  - Better Email Management. Sanebox.
  - Cross-Tool Integration for Cloud Services: Zapier, IFTTT.
  - Meeting Scheduling. Calendly, WhenToMeet, Doodle.
  - Meeting Capture: OneNote; Evernote; Apple Notes.
  - Online Meetings: Skype; Zoom.
  - Top-Down Communication/Newsletters: LucidPress; SquareSpace.
  - Writing: Google Docs; Dragon Dictation; Scrivener; Byword.
  - Photos: Flickr; Instagram; Facebook.
  - Online Training: Vendor sites, YouTube, Camtassia; Lynda.com, Screencasts Online.
  - Password Management: 1Password; iCloud (Apple) Keychain.

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Attachment A:
APGA Tech Tuesday Webinars – Speakers and Topics

Sept. 23 2014 - "**Disaster Recovery and Business Continuity**"
Topics:
- Explain the difference between disaster recovery and business continuity.
- Define their organizations' current strategies for disaster recovery and business continuity.
- **Discuss the challenges and concerns regarding cloud-based disaster recovery.**
- Address how Morton recovered from its disaster.
- Engage attendees in comments and questions.

Presenters:
- Shaun McPhearson, IT Manager, Morton Arboretum
- John Page, IT Manager, Longwood Gardens

Dec. 9, 2014- "**Collaboration and Communication: All-in-One Platforms**."
Topics:
The webinar will present three institutions' perspectives on their choices of all-in-one platforms for collaboration and communication, including Google Apps, Office365, and Sharepoint.
Presenters:
- Sai Ravichandran, IT Director, will address Morton Arboretum's use of Google apps. Sai is a technology and business visionary with executive and hands-on experience in IT management with a unique background combining program management and broad information technology expertise. She has proven technical leadership in the planning, implementation and operation of IT solutions for mission-critical academic and not-for-profit environments. She has managed and hosted enterprise applications on multi-platform, shared environment, providing quality IT service delivery to 3000+ users.
- Andrew Ruginis, Director of IT, will address Chicago Architecture Foundation's use of Office 365. Andrew manages all technology initiatives, both strategic and tactical. This includes maintaining the technology infrastructure and budget, overseeing I.T. Department staff, and supporting all CAF Staff technology needs. Prior to joining CAF, Andrew worked at The Field Museum of Natural History for five years, the last two years as Director of Information Technology.
- Hassab Gebremedhin, PMP, Sr. Applications Administrator, will address Longwood Gardens' use of SharePoint. Hassab has worked in technology for arts and culture for over a decade, specializing in collaborative and web based applications implementations and project management. Hassab serves as the project manager for the Business Intelligence and SharePoint implementations at Longwood Gardens. She also serves as the program manager for the Virtual Guest Experience program and supports multiple applications

Feb, 2015 - "**Collaboration and Communication: Dedicated Tools.**"
Topics:

- What goals was your institution trying to achieve or what problems was it trying to solve when looking for dedicated collaboration and communication tools?
- What dedicated tools did your institution choose for collaboration and communication? Why? What do you like and what do you wish they did better?
- How are staff (maybe even students and volunteers) using the tools?
- What impact have the tools had on the way your institution communicates and collaborates?

Presenters:
- **Mary Burke** will provide an overview of types (categories) of cloud-based tools and UC Davis's IMLS Sparks! Ignition Grant. Mary is Director of Collections and Planning at the UC Davis Arboretum and Public Garden.
- **Quinn Morgan** will address Trello, Jira, Slack, and Zapier. Quinn is the Product Manager of Lucidpress and oversees its daily operations.
- **Brian Kelly** will address Mt. Cuba Center's use of SmartSheet.

May 12, 2015 - **Video Collaboration**: Adobe Connect, Google Hangouts, Join.Me, GoToMeeting, GoToWebinar, WebEx

Topics
- What goals was your institution trying to achieve or what problems was it trying to solve when selecting a video collaboration tool?
- Why did you select the particular tool and what do you like about it? What do you wish it did better?
- How are staff (maybe even students and volunteers) using the tool?
- What impact has the tool had on the way your institution communicates and collaborates?

Presenters:
- **Susan A. Caldwell**, instructional designer, Longwood Gardens. Susan will review tips for conducting a successful webinar and, then, review Longwood's use of Adobe Connect.
- **Jennifer Schwarz Ballard, Ph.D.,** is the Vice President of Education and Community Programs at the Chicago Botanic Garden. Jennifer will review Chicago Botanic Garden's use of Hangouts on Air.
- **Melissa Theis** is the Manager of Client Services at CENTAMAN, a leading Point of Sale and Ticketing solution for botanic gardens, zoos, aquariums, museums, and a variety of other attractions around the world - including Morton Arboretum. Melissa will review CENTAMAN's use of Join.me, GoToMeeting, and GoToWebinar.
- **Jim Kilmer** is the Director of The OPAL Group's Technology Services Division. Jim will review OPAL's use of WebEx.

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