Adapting to COVID: Resources for Natural History Collections in a New Virtual World

Virtual Project Management (Tips and Tools)

October 27: 2:00 - 3:00 pm ET

David Jennings - iDigBio Project Manager
Diego Barroso - TORCH TCN Project Manager, BRIT
Jen Zaspel - TPT TCN PI, Milwaukee Public Museum

iDigBio is funded by grants from the National Science Foundation's Advancing Digitization of Biodiversity Collections Program (DBI-1115210 (2011-2018) and DBI-1547729 (2016-2021)). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation. © 2011-2020 iDigBio
Project Management Basics

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iDigBio is funded by grants from the National Science Foundation’s Advancing Digitization of Biodiversity Collections Program [DBI-1115210 (2011-2018) and DBI-1547229 (2016-2021)]. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation. © 2011-2020 iDigBio
A little about me to provide some framing…

- Master’s degree in Industrial & Systems Engineering with a concentration in Engineering Management
- Managed projects of various sizes for the past 25 years
- Worked in the aerospace, medical device, cosmetics, public utility, and higher education sectors
- Combination of formal, informal, and on-the-job training
- Licensed Professional Engineer in Florida
- Held a variety of leadership positions
- Lots of remote work experience
Advancing the Digitization of Biodiversity Collections

**iDigBio hub, Thematic Collection Networks, & Partners to Existing Networks**

1,623 recordsets
124.9 million specimen records
39.7 million media records

- 10-year, $100 million national effort involving 317 institutions across 29 TCNs and 48 PENs
- iDigBio’s annual budget averages $3 million

**Cyberinfrastructure**
Data publishing for natural history collections
Data quality control review
Data access via user-friendly web portal interface
Data access programmatically via APIs

**Research Use**
Collaborative development of tools and products using iDigBio data
Publications exemplifying and community training on best practices for data use

**Digitization, Workforce Development, and Citizen Science**
Workflows for digitizing historic specimens and for born-digital new specimens
Trainings related to equipment, digitization skills, and data literacy
Products and events to integrate citizen science in digitization workflows

**Education, Outreach, Diversity, & Inclusion**
K-16 course materials featuring specimens
Mentoring for EODI activities organized by natural history collections
Multi-pronged efforts to broaden representation in science

**Community Coordination**
Digital Data in Biodiversity Research Conference (annually in June)
Biodiversity Summit (annually in September)
Alignment with similar international initiatives, e.g. GBIF, DiSSCo, ALA
Long-term sustainability of digitization and data mobilization efforts

[Image: Maps of biodiversity collections across the United States]

[Website link: www.idigbio.org]

[social media @idigbio]
Why a session on Project Management?

• Challenges with scientific and research projects:
  – Scientists want to do research, not administration  
  – Project management & administration can be time consuming  
  – Administration distracts scientists from their main interests  
  – Scientists often lack training or experience in project management  
  – Funding agencies desire accurate cost estimates and predictable outcomes  

• There must be a better way:
  – Educate emerging scientists in the basics of project management and administration  
  – Transfer knowledge and lessons from experienced scientists to those in emerging projects  

Let’s start with a couple of definitions…

• What is a **project**?
  – “A project a *temporary* endeavor undertaken to create a *unique* product, service or result.”
    • *temporary* = defined beginning and end in time, which is necessary to constrain scope and resources
    • *unique* = it is not a routine operation, but a specific set of operations designed to accomplish a singular goal

• What is **project management**?
  – “Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.”
    • Structure to maintain focus on goals and outcomes
    • Predictably meet project requirements within established constraints

https://www.pmi.org/about/learn-about-pmi/what-is-project-management
Project Management is not as abstract as you think…

“Plan-do-check-act (PDCA) represents an intersection between the scientific method and everyday operations. Given an objective, whatever process is defined to achieve that objective can be—and often unknowingly is—subject to PDCA.”

Project Management is intertwined with Leadership

• **Management** is about *coping with complexity* to bring order and predictability to a situation

• **Leadership** is about *coping with change* to survive or compete effectively in a new environment

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<th>Leadership</th>
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<td>Planning and budgeting</td>
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<td>Organizing and Staffing</td>
<td>Aligning people</td>
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<td>Control and problem-solving</td>
<td>Motivation</td>
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[https://hbr.org/2001/12/what-leaders-really-do](https://hbr.org/2001/12/what-leaders-really-do)
Project Management is always about balance…

You can only control 2 out of 3

Available options

Cost of change

Initiation

Closing
Project Management begins with a Workplan

- A workplan serves as a map and guide for your team:
  - **What** needs to be done?
  - **Who** is doing the work?
  - How much will the work cost (**budget**)?
  - When will the work be done (**schedule**)?
  - How the work will be done (**workflows**)?
  - How will you manage **communications**?
  - How will you manage **risk**?
  - How will you manage **change**?
  - What **metrics** will you use to track and measure **progress, quality, and scope**?
  - What are your internal and external **dependencies**?

- Remember that a workplan is a living document
- The planning process is vitally important for your team
Advice, tips, and lessons learned…

Part 1

• Manage your risks *early* and *often*
  – Risk management is a key component that is often met with the most resistance
  – Don’t put all your senior officers in one shuttlecraft
  – Enemies, like Romulans, can be cloaked

• Plan for change because it is *inevitable*
  – Quantify the impacts, prioritize, and get endorsement
  – Having is not so pleasing a thing as wanting

• Avoid using “percent complete”
  – People guess (or lie) and tend to be overly optimistic
    • Keep your phaser set on stun
  – Use *binary completion*: Is the work done? Yes/No

• Manage your time wisely
  – Work—and meetings—expand to fill available time
  – The last 20% of the work will take 80% of the time (“80/20 rule”)

Advice, tips, and lessons learned…  

Part 2

• Build relationships
  – Shoe mail is better than Zoom is better than Phone is better than Slack is better than Email
  – Cross-functional and diverse teams are the key to success □ avoid tunnel vision
    • Infinite Diversity in Infinite Combinations

• Don’t guess!
  – The most valuable and least said word in a project manager’s vocabulary is “No”
  – The most valuable and least said phrase in a project manager’s vocabulary is “I don't know”

• See both the forest and the trees □ understand where things fit

• You can act on incomplete data □ be flexible
  – Insufficient data does not compute
  – When logic fails, trust a hunch
Advice, tips, and lessons learned…  

**Part 3**

- Don’t spend all your time tracking progress
  - Use just enough granularity but no more
  - Avoid cascading milestones and objectives

- Complexity of coordination increases exponentially with the number of people—or PIs—involved
  - The same goes for committees and advisory boards \( \square \) keep them manageable

- Divide and conquer \( \square \) manage as a program vs. a project
  - Non-interference is the Prime Directive \( \wedge \)

- Keep your PIs and Program Officer happy
  - Live long and prosper \( \wedge \)
Thank you!

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Practical Tips for the Budding TCN Project Manager - or, “Things I’ve learned along the way”

Diego Barroso
TORCH TCN Project Manager
Fort Worth Botanic Garden / Botanical Research Institute of Texas

<dbarroso@brit.org>
Backstory:
- Training in Biochemistry & Neuroscience
- 2013 - 2014: Georeferencing Tech for @ Michigan
- 2014-2018: Proj. Mgr., Great Lakes Invasives TCN @ Michigan
- 2020-2023: Proj. Mgr., TORCH TCN @ BRIT (Lead)

Thank you! to:
Bill Fink, Doug Nelson, Diarmaid O’Fóighil (UMMZ)
Rich Rabeler, Matthew Foltz, Pat Rogers (MICH)
Andy Miller, Phil Anders (INHS)
Peter Fritsch, Tiana Rehman, Jason Best, Clay Barrett
Ed Gilbert, Ben Brandt, Nelson Rios
Organization & Documentation - Part 1

- Create a single, **centralized, online repository** for your project’s documentation (internal documents, which you will unexpectedly need when you are 3000 miles away.)

- **Who’s who? (at-a-glance):** Create a **project-wide directory** of all participating institutions (with contacts at each, like P.I., digitizer, etc.), and keep it **up-to-date.**

- **Public Documentation / Tutorials (website):** Saves you work and makes others’ lives easier. Helps you **publicize** your project, gain **new collaborators** (translate it!), and create your **brand.**

- It helps to have **boiler-plate emails** for communicating things to new participants (efficiency, standardization), or recurring events (Quarterly, Annual reports).
Organization & Documentation - Part 2

- Keep **painstaking records**; don’t throw out emails. Build your personal **Knowledgebase / Archive**; also helps with **Accountability**.

- Create **reports as-you-go**: as soon as something “reportable” happens, **add it to the format**! When reporting time comes around, the report will be practically **done**, and with **better data**.

- Provide **personalized attention** whenever necessary -- especially when the TCN is just starting out, or for any newcomers. Do online/Zoom **demos**; **record** them -- and **publicize** them -- if possible.

- **“Under-promise and over-deliver.”** (Assume people will wait until the last minute to send you whatever it is you are requesting.)
Day-to-Day operations (production environment) - Part 1

- You are responsible for turning in deliverables, on time and within budget.

- Pretend you are running a factory; take ownership. Learn the workflow; it is your job to keep the gears turning (tech support). Anticipate possible problems (listen to your staff) and try to resolve them before they impact the project.

- Make processes/tutorials as simple as possible; never assume people are tech-savvy.

- Mix it up! After 4 hours of any given task, productivity goes down.

- Keep your staff engaged. Build the relationship so they return (helps avoid having to train new employees every term!)
Day-to-Day operations (production environment) - Part 2

- Always **image the specimen first**, and create a **backlog**. (COVID settled this debate).

- **Automate** as much as possible: image post-processing, OCR for transcription, GeoLocate.

- Keep **costs** in mind (e.g., parking can easily amount to 10-20% of hourly wage). Remember, the project manager is one of the largest expenditures on the project (**the Foltz principle**).

- **Prioritize** tasks. In addition to “Importance & Urgency,” I like: 1) **time** it will take + 2) **“CPU Cycles”**. This way, I always have something to do. **Don’t waste valuable “long stretches of time”** doing a string of quick and easy tasks.
Metrics & Reporting Practices

- Suggestion: “Daily email report.” Provides auto-feedback to staff, and makes it easy to calculate numbers for report. Avoid blatant micro-managing; use Symbiota queries if needed. “DigiLedger” (Joe Lippert, at BRIT).

- Good idea to keep: Weekly, Monthly, Quarterly, Annual summaries; good for projections. Will we deliver, if we keep going at this rate? Make adjustments accordingly. Share the data with project stakeholders.

- Keep up to date. You should be able to produce numbers within the hour (assume you will be asked for stats at the drop of a hat, because you will be).
Relationships & Communication with stakeholders & workforce (1)

- For important things, prefer email. It creates a permanent record, makes communication more thought-out, and allows you to answer at your convenience (fewer interruptions).

- Be prompt when responding. Better to acknowledge quickly and reply at length later, than to not answer until done. Keep people apprised of where their “ticket” is, and keep your word.

- Each institution is unique; learn the individual quirks (e.g., data, internal conflicts), yet be discreet. Know people by name, and who works with whom. Be empathetic.

- For every institution and for every dataset, there is a “gatekeeper”; respect that, and learn to navigate these relationships. Remember: you may suggest and try to persuade, but they have ultimate say.
Relationships & Communication with stakeholders & workforce (2)

- A P.M. is both a “supervisory” and a “public servant” role, often to the same people (“constituents”). Scrum’s “Servant Leadership”: my goal is to help them meet theirs.

- A P.M. represents the project and is its public face. Always maintain the highest standards. Be fair to everyone.

- Accept that there’s only so much you can do; pick your battles wisely. “Herding cats” is a big part of the job. Know your crowd, and don’t burn bridges.

- We have monthly meetings with the P.I.’s.; helpful input from everyone, “keeps everyone accountable.” Keep (collaborative) minutes, including the list of attendees, and make it available within 24 hours (as a matter of Public Record).
- Suggestion: Monthly or Quarterly newsletter?
Miscellaneous - Part 1

• Don’t be afraid to ask for help. People are nicer than you expect! Better to ask for help than to miss your mark.

• I don’t know everything, but I know someone I can ask (Newton: “shoulders of giants”; “I got a guy for that.”). Don’t forget to be someone else’s “guy” when they need it.

• Know what you know, and what you don’t know. If you don’t know, turn it over to someone who does.

• Occasionally, you will be dragged into things you’d rather not do. Learn from every experience, and build relationships. But also, know when -- and how -- to say NO.
Miscellaneous - Part 2

- **Stay up-to-date** and **on your toes**. Be **nimble** and keep a **can-do attitude** (Laura Maihofer; “3 Morelos”). (Diego: lightbulb, ballast, LED retrofitting, bash vs. Excel, csv vs. tsv, PC vs. Mac BOM, Symbiota code for Cyrillic characters, geocoding, reverse geo-coding, XML)

- On **innovation**: invent, develop, but remember -- **no need to reinvent the wheel**. (Also, avoid “N.I.H. Syndrome”). “Explore AND Exploit”.

- “**Expect the unexpected**” (COVID-19, anyone?). BACKUPS, BACKUPS, BACKUPS. Make a **transition** plan (aka, “if I get hit by a bus”).

- Give **credit** where credit is due. **Stick up** for your employees. **Reward** good work. **Enjoy it**!
Jennifer M. Zaspel
Associate Curator and Head of Zoology Milwaukee Public Museum

- **Project Title:** Collaborative Research: Digitization TCN: Digitizing collections to trace parasite-host associations and predict the spread of vector-borne disease
- **Project Start Date:** September 1st 2019
- **Project Period:** 3 years
- **Participating Institutions:** 28
- **Co-PIs/Leads on Subs:** 34
- **Participants:** 110+
Digitization Objectives

- Transcribe and georeference label data from 1.2+ million arthropod parasite specimens from 22 collections across North America (U.S. and territories) including ~55,000 specimens from biotic-association collections.
Pre-submission Planning and Timeline

Terrestrial Parasite Tracker Collections Survey

Please answer some brief questions about your collections, digitization, and your parasite collection

* Required

Your Collection Name *

Your answer
Project Kick-off Meeting

- Introductions to collections and collaborators
- Review expectations
- Discuss any changes in scope or IT updates
- Share resources
- Project planning
Project Planning: Who is doing what?

- Creating job descriptions & hiring staff
- Developing imaging & data entry procedures
- Overseeing specimen handling
- Training staff in handling and digitization procedures
- Tracking production
- Quality control of images
- Quality control of data
- Archiving & deploying images & data
Hands-on Training and Continued Sharing of Resources

Workflow Development

TPT Workshop 1
Field Museum of Natural History, February 2020
### Project Tracking and Reporting

#### Daily Reporting

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#### Quarterly and Annual Reporting

- **Project Name:** iDigBio
- **Organizations:** University of Michigan (UM), Milwaukee Public Museum (MPM)
- **Dates:** Jan 1, 2020 to Dec 31, 2020
- **Activities:**
  - Data entry and curation
  - Specimen imaging
  - Fieldwork
  - Workshop participation
- **Results:**
  - Over 50,000 images recorded
  - Thousands of specimens catalogued
- **Impact:**
  - Increased biodiversity awareness
  - Enhanced data availability for research

- **Collaborations:**
  - With *Vascularis, WREG, NOSN, CIPFA* at workshops
  - With *UNITE, IIT, and Enzo collections* for data aggregation

- **Future Projects:**
  - Expansion of data collection
  - Integration of new technologies

- **Support:**
  - Financial support from external grants
  - In-kind support from partnering organizations
Webinars, Newsletters, and Managing Correspondence

Dear TPT Network,

Welcome! Welcome to the world of digital citizenship. With the upcoming school year, we look forward to sharing our new digital citizenship course with you. We believe that digital citizenship is an essential part of 21st-century learning, and we are excited to offer this course to help students navigate the online world safely and responsibly.

April 17, 2020

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Preventative Parallels: Teaching Digital Citizenship

In this issue:
- HOMEWORK HELP: Developing digital citizenship skills in the classroom
- WEBINAR RECORDING: Protecting your online identity
- NEWSLETTER SIGNUP: Stay up-to-date with the latest in digital citizenship

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Remote Learning Highlights

Central Ohio Science Fair 2020

The Central Ohio Science Fair is open to all students in grades 6-12. The fair will be held virtually on April 9. Visit the Science Fair website for more information.

Watch the webinar on how to implement TPT's digital citizenship curriculum: 

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Remote Learning Highlight

Friday April 10th, 9:00 AM PST

Join us for a special webinar with special guest and digital citizenship expert, Dr. Jane Smith. She will discuss the importance of digital citizenship in today's world and how to incorporate it into your curriculum.

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Crowdfunding Success Stories

The Community Transformation Project is a local initiative that is looking for funding to support various community projects. If you are interested in contributing, please visit their website.

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Managing Correspondence

We are excited to announce that we will be launching a new newsletter to keep you updated on the latest in digital citizenship. Sign up today to receive regular updates.

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We hope you found these resources helpful. As always, we are here to support you in your teaching journey. Please feel free to reach out with any questions or feedback.

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Join the TPT Network today and stay connected with educational professionals from around the world.

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Thank You!