Automating Improvement Science Process Workflow: Autocrat and Google Apps Scripts

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OVERVIEW

If you're struggling with: responding in a timely fashion to requests, keeping track of to-do items, following up and checking in on complex processes, or just want to learn more about what you can do with Google Forms, this is the poster for you.

How do we use automation in ways that free up time without sacrificing human interaction? By delegating routine tasks to Google Sheets Add-Ons and simple Google Apps Scripts.

In this use case, the following processes are now automated:

- initial notification of a new request for coaching,
- sending meeting invites, and
- reminding coaches to follow up with their teams about potential stumbling blocks like IRB proposals or data collection.

Coaches and people requesting coaching interact with a single Google Form, which produces output viewable as a Google Sheet, and the rest of the process takes place in the background. The automated parts of the system remove busywork from the coaches and administrators, allowing them to focus on the substantial work of the Network.

This poster highlights changes to the ticketing system, used by people proposing change ideas and the coaches who help them through the improvement science process.

INCENTIVES FOR CHANGE

- Testers in institutional teams missed crucial steps of planned PDSAs due to busy schedules and lack of follow-up.
- Coaches lost track of when follow-ups should be made.
- All communication outside of coaching sessions ultimately fell to a single administrator.
- Busy faculty and administrators complained of the complicated process for completing PDSAs.
- Documentation often lagged behind progress, with PDSA status updated irregularly.

IMPROVEMENTS

- Faster response times for coaches and change idea testers
- Automated follow-ups on crucial components of the process
- One interaction with the form updates data in several spreadsheets as soon as the form is submitted.
- Increased functionality for IRB and CITI certification documentation.
- Streamlined local coaching workflow.
- Ability to schedule reminders ("nudges") to be sent at a future date.

FIRST2 NETWORK

The First2 Network is an expanding group of over 1200 people and 30 organizations in WV and KY, working to increase the number of college graduates in science, technology, engineering, and math (STEM). First2 focuses on rural, first-generation, and low-income STEM students, making sure all our students can succeed.

First2 is a learning network, engaging in a disciplined inquiry process called Improvement Science. Together, faculty, staff and students at nine higher education institutions test change ideas and document the results. Improvement Science coaches support change idea testers as they design, test, and report on ways to improve student outcomes through Plan-Do-Study-Act (PDSA) cycles. Coaches meet regularly as an Improvement Science Team, which has helped develop common PDSA templates, common measures lists, coaching structures, and data sharing processes.

FIGURE 1

The diagram below shows a schematic of the paths that users follow through the form. A single form was used to allow for quicker transfer of data between the various behind-the-scenes processes. Testers use the left branch (#1-9), while coaches use the right (#1, 10-25). On a single visit, testers will navigate 3-5 screens, while coaches will see 5-13 screens. Green stars indicate points in the workflow where emails are sent automatically.

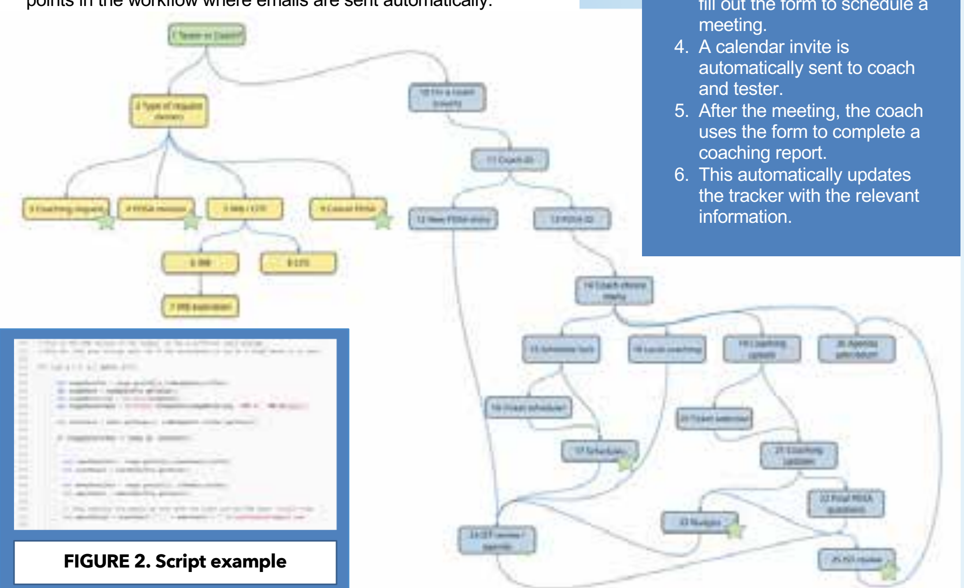

FIGURE 2. Script example

PREVIOUS WORKFLOW

1. Tester submitted form requesting coaching
2. Administrator sent email to coach.
3. Coach sent times to administrator.
4. Administrator created and sent tester and coach a calendar invite.
5. Coach entered information into the tracker spreadsheet on outcome of meeting.
6. Administrator followed up as needed.

CURRENT WORKFLOW

1. Tester submits form requesting coaching.
2. An automatically generated email confirms the request and submits it directly to coaches.
3. Coaches claim the ticket and fill out the form to schedule a meeting.
4. A calendar invite is automatically sent to coach and tester.
5. After the meeting, the coach uses the form to complete a coaching report.
6. This automatically updates the tracker with the relevant information.

LESSONS LEARNED

- Emphasize using as few tools as possible, to their maximum utility.
- Effort on the front end describing workflows is not only crucial but will save time in the long run.
- Plan for time to troubleshoot and beta test. Until the system is live, you can't anticipate how people will use it.

TOOLS

This was accomplished with a variety of tools:

- Google Forms
- Google Sheets
- Google Apps Scripts
- Autocrat
- Form Ranger

Form Ranger and Autocrat are premade tools from New Visions Cloudlab. Other automation was accomplished using custom scripts.

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