



CASE STUDY

Optimizing Camp Schedules

How Campify creates complex schedules with speed and ease



GUROBI
OPTIMIZATION



Campify

Eyal Abadi and Joseph Levy founded Campify in 2020, just as the first wave of COVID-19 and government-enforced lockdowns swept the United States. With social distancing guidelines and restrictions changing literally by the hour, planning any type of event became a virtually impossible task.

Both deeply connected to community nonprofits and youth services, Abadi and Levy recognized the challenges these regulations presented to summer camps in particular. With those obstacles in mind, the pair combined their technical skills to create a new scheduling platform that meets the complex needs of camp directors.

What Campify Needed

Many camps today still rely on old-school systems to plan out their schedules, spending hundreds of hours shuffling color-coded sticky notes across whiteboards to organize group activities.

Abadi and Levy set out to change all that with Campify, saving camps precious time with a little help from mathematical optimization.



Since nonprofit budgets are extremely tight, they attempted to help camp directors by using free open-source software and an optimization model that they wrote themselves. However, none of the existing solutions were able to adequately address the camps' needs.

"Every camp has a different concept of what a good schedule is," explains Levy. "They want to be able to describe a good schedule to the system, to put in place their custom rules, have the system give them a schedule, and then be able to make manual changes."

So, Levy and Abadi tried using Gurobi with an academic license. Suddenly, models that were taking hours or days to solve with open-source software were being solved in just seconds by Gurobi.

Solving Complex Scheduling Problems with Gurobi

Designing an optimal camp schedule was already a complex task before COVID-19 came along. But now, there are more limitations than ever to consider, from how many kids can be in a room together to which groups should stay together for easier contact tracing, should that need arise.

Not only does Campify's use of mathematical optimization allow camps to account for those constraints when designing their schedules, but thanks to Gurobi's powerful optimizer, users can adjust their inputs at any time and get an updated schedule within seconds.

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Gurobi is not just faster.
It's infinitely faster.

JOSEPH LEVY
CO-FOUNDER, CAMPIFY

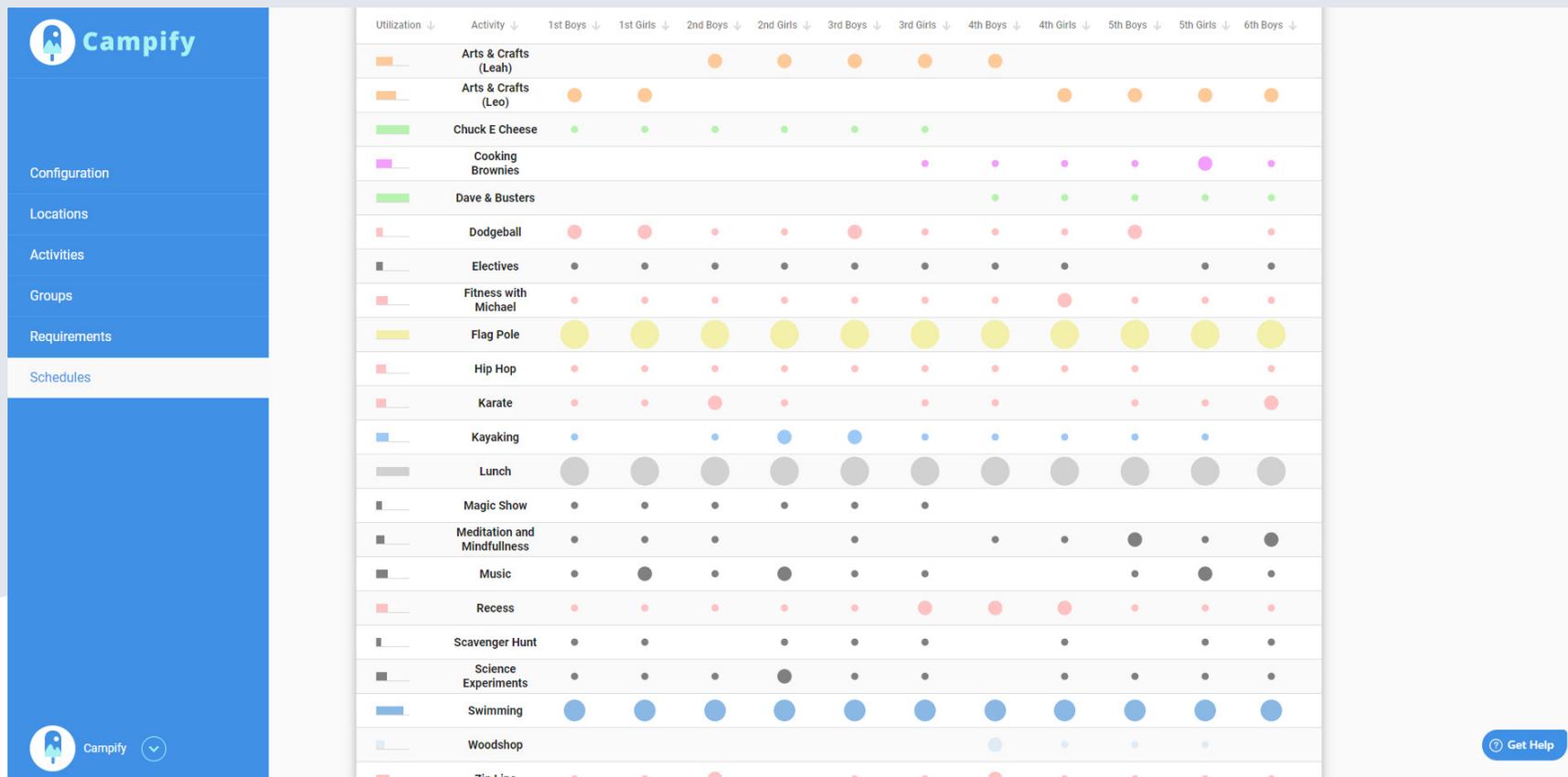
For every “activity” that’s created in Campify, camp directors can select when they’d like it to be available, how many periods it should last, how many groups or individuals can participate at the same time, and how many times per day or week that activity should show up in one schedule.

In addition to having full control over their customized constraints, here are several things Campify users can do to make their scheduling process even better:

- Create schedule zones: For each activity, the user can add a location or “zone” to ensure that no group will have to walk too far from one activity to the next. This can also help keep young campers away from potentially dangerous areas.

- Keep the same groups together for high-contact activities: For example, Campify can help schedule the same two groups who played dodgeball together to also play kickball together, which would allow for easier contact tracing.

- Analyze all available options for fast and efficient problem-solving: Campify supports manual editing, so if an unexpected event occurs (for example, a camp counselor calls in sick), Campify presents all available alternatives and highlights the ones that would violate the user’s predetermined rules.



Camp Scheduling Made Easier Than Ever

Campify has made it easier than ever to design the perfect schedule while ensuring a fun and safe experience for all campers. And thanks to Gurobi, Campify can deliver customized schedules within seconds. The effects of faster scheduling can be felt far and wide, including in the registration process.

“Using the older, more time-consuming systems, camp leaders would have to start scheduling weeks in advance, during which time they had to close registration and no longer accept new groups. Now, camps can have a complete schedule within two or three days and keep registration open much longer than before,” explains Abadi.

But while Campify is backed by powerful technology, Abadi and Levy have made their platform accessible to all users, regardless of their technical knowledge.

| Active ↑ | Name ↑ | Location ↑ | Availability ↑ | Actions |
|-------------------------------------|----------------------|-------------------|----------------|---------|
| <input checked="" type="checkbox"/> | Arts & Crafts (Leah) | Art Room 1 | 58% | |
| <input checked="" type="checkbox"/> | Arts & Crafts (Leo) | Art Room 2 | 58% | |
| <input checked="" type="checkbox"/> | Chuck E Cheese | Field Trip | 11% | |
| <input checked="" type="checkbox"/> | Cooking Brownies | Kitchen | 44% | |
| <input checked="" type="checkbox"/> | Dave & Busters | Field Trip | 11% | |
| <input checked="" type="checkbox"/> | Dodgeball | Raquetball Courts | 100% | |
| <input checked="" type="checkbox"/> | Electives | The Field | 100% | |
| <input checked="" type="checkbox"/> | Fitness with Michael | Gymnasium | 100% | |
| <input checked="" type="checkbox"/> | Flag Pole | Flag Pole | 14% | |
| <input checked="" type="checkbox"/> | Hip Hop | Room 143 | 100% | |
| <input checked="" type="checkbox"/> | Karate | Room 115 | 100% | |
| <input checked="" type="checkbox"/> | Kayaking | The Lake | 70% | |
| <input checked="" type="checkbox"/> | Lunch | Lunch Room | 44% | |
| <input checked="" type="checkbox"/> | Magic Show | Auditorium | 100% | |



“We’re giving Gurobi’s capability to non-technical users. That’s the art of Campify—we’ve taken something as powerful as mathematical programming and made it easy and simple enough that anyone can enjoy it,” says Levy. “We care deeply about the system, including how it looks and feels for users.”

In the future, Abadi and Levy would like to apply AI so Campify can help make suggestions when users make common scheduling mistakes, such as forgetting to include a lunch break. Although they currently only work with a select number of camps in the summer, they also hope to work with schools in the fall and expand their services beyond scheduling.

Summary

Campify wanted to provide their clients with a faster, more efficient way to create camp schedules, but none of the existing solutions could adequately address their camps’ needs.

This led them to create their own platform that can account for hundreds of constraints and produce a detailed, customized schedule within seconds to minutes, thanks to Gurobi Optimizer.

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I'm always telling people, You could solve a lot of problems with Gurobi and make back the license cost in no time.

JOSEPH LEVY
CO-FOUNDER, CAMPIFY



For more
information

www.gurobi.com

