Appendix A:
Landscape Analysis of Scheduling Tools and Software

∞ **CPRL** | **Center for Public Research and Leadership**

COLUMBIA UNIVERSITY
IN THE CITY OF NEW YORK

Appendix A: Landscape Analysis of Scheduling Tools and Software

Introduction

As shown in the Master Scheduling Equity Framework, tools are a key driver of strategic scheduling. The scheduling teams we spoke with relied on a range of tools—SIS, scheduling software, consulting support, data analytics tools—to schedule more strategically. All of them relied on specialized scheduling software, like Abl's, which included enhanced usability and efficiency. The goal of this landscape analysis is to provide an overview of some of those tools and the functions that may make them particularly useful in assessing whether the existing master schedule undermines equitable access to key courses, programs of study, and other resources and in creating new master schedules that maximize access and opportunities to learn. This analysis is organized into two parts: The first part provides results and findings from the SIS and scheduling software survey. The second part lists SIS, specialized scheduling software, consulting services, and data analytics tools available to support schools and districts with the master scheduling process.

A survey of SIS and scheduling software providers

To complete this analysis, CPRL surveyed a set of SIS and scheduling software providers about their functionality. The list of providers to survey was narrowed to include only those that provided the ability to construct a master schedule. Scheduling providers and tools that only analyzed data or that exclusively provided consulting support were excluded from the survey but are included elsewhere in the analysis. Twenty-five service providers were invited to participate in the survey, and eight completed the survey: five were SIS providers, and three were providers of other specialized software.

The survey asked a series of questions about three aspects:

1. Access to data—what information users are able to view

2. Intelligent error detection—whether users receive alerts or notifications of errors as they schedule

3. Customization and scenario planning—the ability for users to customize tools and construct multiple scheduling options

TABLE 1

Shows a summary responses across all three categories

Survey Response Summary: Number of "Yes" responses per question in each category

Software	SIS	Access to data			Error detection	Customization and scenario planning	
		Can users view student information?	Can users view teacher information?	Can users sort information?	Can users receive error alerts?	Can users add customizations?	Can users schedule for different scenarios?
Abl Master Scheduler		5/5	2/5	19/22	5/7	2/2	2/2
Aeries SIS	▓	5/5	5/5	22/22	6/7	2/2	2/2
Class Creator		5/5	0/5	22/22	3/7	1/2	2/2
Synergy SIS	▓	5/5	5/5	22/22	7/7	2/2	2/2
Aspen SIS	▓	5/5	5/5	22/22	7/7	2/2	2/2
Gradelink SIS	▓	5/5	4/5	11/22	2/7	0/2	2/2
Schedule My Teachers		0/5	0/5	0/22	0/7	0/2	1/2
Sycamore School	▓	5/5	5/5	4/22	5/7	0/2	1/2

Access to data

Schools rely on data disaggregated by student subgroup to spot ways the schedule may limit access and opportunity for certain student populations. CPRL surveyed providers about users' ability to view student and teacher demographic data when using their tools. The survey also included questions about users' ability to sort enrollment, teacher assignment, grade distribution, and course requests by student group (e.g., to tell whether students with IEPs are taught by only some teachers or how many Latino students submitted a request for AP chemistry).

Results from the survey can be found in Table 2 and Table 3.

Key findings regarding access to data

- Student demographic information is visible in nearly all (seven out of eight) the tools

- On the other hand, information about teachers' demographics and backgrounds was less frequently available, with only half (four out of eight) tools letting users view all five details about teachers (experience, prep schedule, race and ethnicity, certification, and teaching load) while scheduling.

- Student demographic data is visible in these tools, but it's not always easily used to produce insights about disparities among subgroups. Only half (four out of eight) tools let users sort grade distributions, class enrollment, course requests, and teacher rosters by student subgroup.

TABLE 2
Shows a summary of responses regarding users' ability to view data.

Tool	SIS	What student information can users view?					What teacher information can users view?				
		language	disability status	race and ethnicity	gender	SES	certification	teaching load	race and ethnicity	experience	prep schedule
Abl Master Scheduler		•	•	•	•	•		•			•
Aeries SIS		•	•	•	•	•	•	•	•	•	•
Class Creator		•	•	•	•	•					
Synergy SIS		•	•	•	•	•	•	•	•	•	•
Aspen SIS		•	•	•	•	•	•	•	•	•	•
Gradelink SIS		•	•	•	•	•	•		•	•	•
Schedule My Teachers											
Sycamore School		•	•	•	•	•	•	•	•	•	•

In what ways can users sort information?

Tool	SIS	Sort grade distribution by...							Sort class enrollment by student...					Sort teacher rosters by student...					Sort course requests by student...				
		student language	student disability status	student race and ethnicity	student SES	teacher certification	teacher experience	teacher race and ethnicity	language	disability status	race and ethnicity	gender	SES	language	disability status	race and ethnicity	gender	SES	language	disability status	race and ethnicity	gender	SES
Abl Master Scheduler		•	•	•	•				•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Aeries SIS	▓	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Class Creator		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Synergy SIS	▓	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Aspen SIS	▓	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Gradelink SIS	▓	•	•	•	•	•								•	•	•	•	•					
Schedule My Teachers																							
Sycamore School	▓	•		•	•																		

TABLE 3
Shows a summary of responses regarding users' ability to sort data.

Intelligent error detection

Master scheduling is a complex process with many moving pieces. One function that can help schedulers keep equity concerns top of mind while sorting through myriad technical details of scheduling is intelligent error reporting. This can alert users to things like demographic imbalances and improperly scheduled students so they can proactively address them. Survey results can be found in Table 4.

Key findings regarding error detection

- The most commonly detected error was course conflicts, with seven out of eight tools including that feature.

- Among the least common error alerts are those that have affected marginalized students' access to learning and positive outcomes.
  - Only half (four out of eight) of the tools alerted users to demographic imbalances
  - Only half the tools (four out of eight) alerted users when a student was scheduled for a course already taken
  - Only half the tools (four out of eight) alerted users when a student was not scheduled for a course needed for graduation

- There were fewer tools with built-in alerts for errors that might indicate tracking, segregation, or if a student is on track to graduate, but five tools gave users the ability to set custom features.

TABLE 4: Shows a summary of responses regarding error detection.

Tool	SIS	What potential errors are users alerted to?						
		Course conflicts	Demographic imbalances	Teacher load imbalances	Duplicate courses	Incomplete course load	Missing courses for graduation	Set custom alerts
Abl Master Scheduler		•	•	•		•		•
Aeries SIS	▓	•		•	•	•	•	•
Class Creator		•	•	•				
Synergy SIS	▓	•	•	•	•	•	•	•
Aspen SIS	▓	•	•	•	•	•	•	•
Gradelink SIS	▓	•						•
Schedule My Teachers								
Sycamore School	▓	•		•	•	•	•	

Customizations and scenario planning

When scheduling strategically, schools may opt to schedule according to specific priorities. For example, ensuring that intervention and enrichment blocks occur simultaneously, or placing all students with IEPs and their associated teachers into the schedule before building the rest of the schedule. During the pandemic, schools were in need of tools that helped them create multiple scenarios—in the event that schools remained hybrid or returned in person, or that the maximum number of students allowed in class together increased or decreased—and to organize time for teachers and students who were learning in different settings (some remote, some hybrid, some in person). We surveyed providers about their tools' ability to let users schedule according to priorities and plan for multiple scenarios. Survey results can be found in Table 5.

Key findings regarding customization and scenario planning

- Most (six out of eight) tools include the option to create multiple and hybrid schedules. At the time of this survey, the pandemic had been active for several months, and we suspect these features were particularly in demand. But we did not survey providers on whether these were new or existing features.

- The two tools that provided only some scenario functionality provided the ability to create either multiple scheduling scenarios (but not to create hybrid ones) or hybrid schedules (but not multiple scheduling scenarios)

- Only four out of eight tools allowed for both types of customization.

Sidebar: Customization Questions
Does the tool let its users:

1. Set course priorities (i.e., designate the order in which individual courses or categories of courses are scheduled)

2. Schedule groups of students first (e.g., ELLs, students with IEPs)

Scenario Questions
Does the tool let its users:

1. Create hybrid (online and in-person) schedules

2. Visualize multiple possible schedules

TABLE 5: Shows a summary of responses regarding users' ability to make customizations and plan for multilple scheduling scenarios

Tool	SIS	In what ways users set custom features?		In what ways can users schedule for different scenarios?	
		set course priorities	schedule particular student first	create hybrid (online and in-person schedules)	visualize multiple possible schedules
Abl Master Scheduler		•	•	•	
Aeries SIS	▨	•	•	•	•
Class Creator		•		•	
Synergy SIS	▨	•	•	•	•
Aspen SIS	▨	•	•	•	•
Gradelink SIS	▨			•	
Schedule My Teachers					
Sycamore School	▨				•

Conclusion

Effective tools help drive strategic scheduling efforts. They can give schedulers access to critical, real-time data about the schedules' impact on students' ability to access effective teachers, coursework, and diverse peers. Without effective tools, schedulers must resort to time-consuming and sometimes rudimentary practices, which may detract from efforts to schedule more strategically. All of the featured districts used specialized scheduling software, like Abl's, which provide additional and critical features that are not found in many SIS. Tools may provide needed inputs for scheduling strategically, but they must be combined with data and a commitment to equity in order to successfully be leveraged as tools for maximizing equity.

Scheduling service providers

Below is a complete list of the scheduling tools, providers, and services we encountered during the study.

SIS

- Aeries SIS
- Aspen SIS by Follet
- Blackbaud
- Core SIS by Alma
- Edupoint SIS by Synergy
- EduWave K–12 SIS by Integrated Technology Group
- Gradelink SIS
- Infinite Campus SIS
- Maestro SIS by Bocavox
- PowerSchool SIS
- QuickSchools
- SapphireK12
- Skyward Student Management Suite
- Sycamore School
- Tyler SIS

Scheduling Software

- Class Creator
- DMSchedules by District Management Group
- Enriching Students
- Master Schedule Builder by Rediker
- Master Scheduler by Abl
- Schedule My Teachers
- Scheduling Plus by Rediker
- School Insight by Common Goal Systems
- USA Scheduler School Master Scheduler

Consulting Services

- Abl
- District Management Group
- Merenbloom Seminars & Consulting

Data Analytics Tools

- Campus Analytics Suite by Infinite Campus
- District Schedule Audit by Abl
- Schoolzilla by Renaissance
- Synergy Analytics by Edupoint