

Roadsoft® Roundup



For Roadsoft help, visit
the Roadsoft Manual at
<http://roadsoft.org/help>

Roadsoft Workplan 2020 Survey Responses to Comments

Roadsoft clients are extremely valuable resources that the Center for Technology & Training (CTT) relies on in shaping the direction of future Roadsoft development. CTT staff take user experiences, feedback, input, and suggestions into consideration to help steer the direction of future Roadsoft feature additions and enhancements, as well as to ensure that the software meets their needs. The CTT connects with Roadsoft clients through annual Roadsoft User Group (RUG) webinars, other training sessions, semi-annual Roadsoft on the Road personalized technical assistance held at individual agencies, the Roadsoft User Conference of the United States (RUCUS), and through an annual survey.

As outlined in [Roadsoft Roundup 19.3](#), the CTT recently published a survey and asked Roadsoft clients to respond and provide input. The last question of the survey was an open-ended question asking respondents for general input and comments. There were seventeen additional comments and suggestions provided in response to the final question of the survey. Due to the number of comments and suggestions provided in the survey, and the detail that we wanted to provide in our responses, we decided to address them in this issue of the *Roadsoft Roundup*.

Roadsoft Survey Comments and CTT Responses

We have summarized and grouped the comments, along with our responses, by similar or related topics.

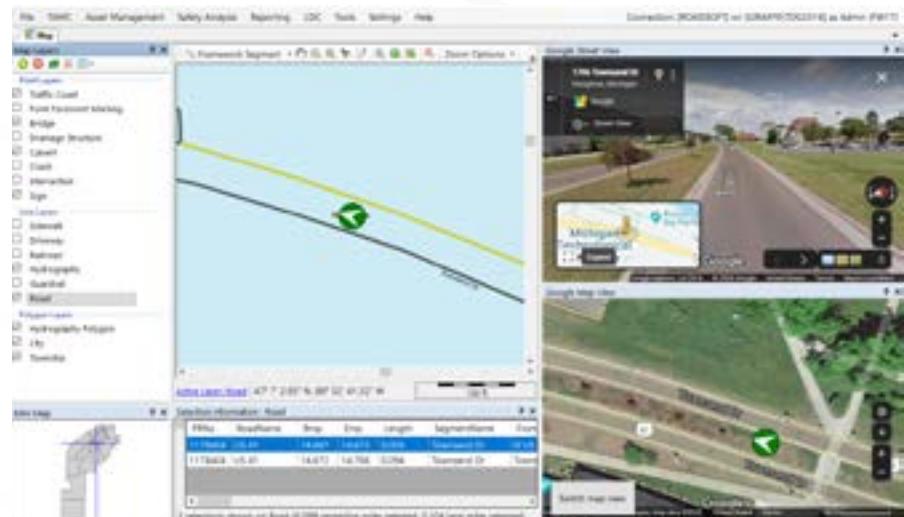
Comment: "Would like Mobile app to use phones GPS to input sign and culvert data while in the field."

CTT Response: Beginning with version 2018.11 (released November 2018) and newer, users have the

ability to add and edit Signs, Culverts, and Sidewalks using the Roadsoft Mobile app which takes advantage of the Android or iOS phone/tablet's built-in GPS. Future Roadsoft Mobile releases will add additional data collection functionality.

"Make it easier to align with Google maps or Google Earth."

In version 2019.10, we updated the menu items 'Open in Google Maps', 'Open in Google Street View' and 'Open in Bing Maps' (from the map right-click menu under 'Web Integration'). Selecting one of these new menu items will open a split screen in the map, giving users a side-by-side view of their Roadsoft Map and the online map they chose to view. Zooming and panning the Roadsoft map will keep the Google map in sync and vice versa. Navigating down a roadway via Google Street View will also shift the Roadsoft map and the direction of travel will be indicated on the Roadsoft map with an arrow icon.



Roadsoft 2019.10 introduced new integration with Google and Bing Maps.

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"Update the Sign Library please."

An update is currently in progress to modernize the Sign Library interface and to update sign images so they are up to date and can be used in Roadsoft Mobile. This update should be available in the 2020.03 release of Roadsoft and LDC.

"Please allow users to edit or multi-edit sign work order numbers or give the option to automatically set them based upon predefined pattern such as date."

We are currently looking into this functionality for not only signs, but all work order items. It will be available in a future release.

"When in the sign module, as you change the old sign out from engineer grade to HIP(modernization) and pick the modernization in the maintenance module, have the sign module transfer the Modernization from the maintenance tab over to the sign module. This way when doing a filter to see how many signs are engineer grade, you will have less mistakes if you do not need to change the sign module to the type of sheeting once you have already done so in the maintenance module."

Standardizing and enhancing Work Orders/Maintenance for all modules in Roadsoft is an ongoing Work Plan task. One sub-task is to implement user-definable triggers that will fire when a work order is completed, such as updating sheeting info on a replacement, or creating an inspection indicating the new condition of the asset after maintenance has been performed. As we finish these features, we will roll them out as soon as possible.

Several comments were related to map functionality, formatting, and printing:

"When printing a map, allow for default map title to be changed and saved." "Make the print map preview dynamic to allow for scaling and positioning prior to printing." "The ability to pan and zoom in the print map preview." "It would be nice to be able to create a map per jurisdiction (township, city, etc.) showing by color the PASER ratings for the rated roads."

Map printing has been a work in progress since it was first implemented. While Roadsoft is not a GIS application like ArcMap, we strive to provide as many easy presentation tools to our users as possible. We have collated requests from users and will be working to release improvements as we get them done and will

continue to do so in the foreseeable future. Roadsoft 2019.10 addressed an issue with saving default map titles when printing. The next release will also add the ability to save the current map view as an image.

"In general, the ability to customize printing for reports is very important to us. We should have the ability to change the way reports are built and printed to fit any number of criteria that we need."

Custom reporting is an ongoing work plan task that will give users more control over how reports look and what fields are included. Changes to reporting are user-driven and released as they are ready. Send suggestions regarding reporting to roadsoft@mtu.edu.

"PLEASE improve the Legend Builder to allow the users to color objects in the window based upon more fields. (i.e. signs by Work order status, MMUTCD code, etc.)."

We are working on more dashboard-type customizations to Roadsoft to allow users to see 'quick views' of their data for a module, such as a Good/Fair/Poor summary table and chart for roads. This customization would also include the option to do some 'quick legends' for the map to make it easier for a user to view graphical map data. This will be an ongoing process and will be released, module by module, as we complete the functionality.

We received a number of responses to the survey that require more details from the user for us to make improvements to the software. These comments included:

- *Would love to see more integration with ESRI and their products.*
- *A general interface modernization would make things more user friendly.*
- *We found we had to do a lot of work-arounds in order to make the Sidewalk module work for us. Mobile was not cooperating. We were able to get everything we wanted but had to work around the mobile and just use desktop only. Would like to see the mobile improved so that we don't have to work around in the future.*
- *Roadsoft is such a powerful tool, but the headaches to export things, redraw things, hack PDF documents and other work needed to make the output presentable to the public or to a Commission makes it way less useful than it should be. Once*

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Roadsoft has mapping and reporting tools on par with its other capabilities, I would love to use it again.

These types of comments are particularly challenging for us as we understand there may be some frustration and strong feelings from the respondents. However, without more details, it is difficult to determine what we can do to address them.

With Roadsoft and LDC, or any other software that comes out of the CTT, we are a phone call or an email away, and we encourage user feedback and suggestions to make our software better. If there's a report that requires doing a lot of manual work to produce, send us a sample so we can determine if it's something we can add to the software so it can be generated with a few clicks or less. If there's a map you are trying to generate, give us the details and we'll see if we can make it happen.

In 2018, there were six updates to Roadsoft. In 2019, there were four updates, with another planned for early 2020. Depending on the scope and size of a user's requested enhancement, we strive to get as many as we can into each update. To accomplish this, we need our users' help. Give us a call to give us the details, or email roadsoft@mtu.edu and send us a screenshot, a pdf, a spreadsheet, or whatever you can to help us improve the software and your experience using it.

Additionally, the CTT conducts the Workplan Survey annually. If you or your agency haven't participated in the past, we are hoping that you will consider spending a few minutes in August, 2020 to help us guide the future direction of Roadsoft.

Framework Migration Update

The CTT continues to work with the Michigan Department of Technology, Management and Budget (DTMB) and the Michigan Department of Transportation (MDOT) to finalize the data migration process for Roadsoft user data to the latest version of the Michigan geographic framework base map (MGF). Roadsoft relies on the MGF to geographically locate transportation assets and crash data that are stored in the program. The MGF is a unified base map that allows all of the local agencies in the state to share data because it is based on the same location system. Based on the progress and timing of the conversion, Roadsoft data migration and MGF version 20 implementation will occur with the 2020.3 release in March of 2020.

Windows 7 End of Service Life Reminder

As previously announced, Microsoft ended their support for Windows 7 and will no longer provide security updates as of January 14, 2020. In response to this announcement, the CTT no longer supports or allows new software installations on PCs running Windows 7.

More information is available on the Roadsoft website at: <http://roadsoft.org/windows-7-end-service-life>.

Agencies that need assistance should contact Roadsoft technical support at roadsoft@mtu.edu.

Reminder - Roadsoft No Longer Supports SQL Server 2008 & 2008R2

As previously announced, Microsoft ended their extended support for SQL Server 2008, SQL Server 2008R2, and SQL Express 2008 in July, 2019. In response, the CTT ended Roadsoft and MERL support for all SQL 2008 products as of January 1, 2019. As of the 2019.10 release, Roadsoft will no longer connect to any of the SQL Server 2008 products.

More information is available on the Roadsoft website at: <https://roadsoft.org/roadsoft-support-sql-server-2008-and-2008r2-ending>.

Update SQL Server

The CTT has information and software available to assist agencies with updating their SQL server software. Instructions on how to [back up, move, and restore a database](#) are available in the Roadsoft manual at www.roadsoft.org/help. In addition, three CTT-specific SQL Express installers are available for download at: <http://roadsoft.org/downloads/sql-downloads>.

Agencies running Roadsoft on a database using purchased versions of SQL Server (Enterprise, Business Intelligence, Standard, etc.) should contact their office technical support for SQL Server update assistance.

Agencies that need assistance with upgrading and moving their database should contact technical support at roadsoft@mtu.edu.

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Roadsoft Programmer Spotlight

Erin Terbrack, Technical Writing Intern
Center for Technology & Training

The *Roadsoft Roundup* is one connection between you, the users of Roadsoft, and our team at the Center for Technology and Training (CTT). While this often means news and updates related to Roadsoft the software, we want our readers to have the opportunity to learn more about the process and people behind the software. As part of a continuing series of spotlight articles on Roadsoft personnel, this issue introduces another student programmer, as well as two of the CTT professional software programming staff.

Student Programmer - Joe Kurtz

"Stay focused and care about new opportunities."

Joe Kurtz offered this advice while discussing his experience as a software intern at the CTT. Kurtz started at the CTT in June 2019 and is a third year software engineering major. He started attending Michigan Technological University in September of 2018 after hearing experiences from both his brother and close friend. "It's been crazy but exciting, and I'm glad I did it. I'm in a better spot now than I've ever been," Kurtz said. Kurtz heard about the position from CTT computer programmer Blaine Thorpe, who encouraged Kurtz to interview for the internship. Kurtz stated that he was interested in the position because he enjoys programming and values the professional experience internships can offer.

The average day at the CTT varies, but Kurtz explained that most of his work centers on testing changes to the Roadsoft software. "I'll read the tickets and see what needs to be tested,"

Kurtz said. "I'll try and break it. It's one of the fun things about testing. If it passes enough times, the change gets approved and then goes into the next Roadsoft release. That is cool to know that something I tested gets sent to the actual Roadsoft people to use." Kurtz emphasized the creativity it can take to intentionally stress the limits of a program. "Because



Student Programmer
Joe Kurtz

you have to think 'what could go wrong here?'" Kurtz explained, "But that's how you make good software. You try to account for every possible scenario."

Kurtz is originally from Traverse City, although he has also lived and worked outside of Michigan. For hobbies, Kurtz said he loves to mountain bike and to "do anything and everything on my computer." While enjoying more recent computer games, he also uses console emulators to play more classic titles made for platforms like Super Nintendo. Kurtz also described programming by comparing it to Legos. "It's like having an enormous, enormous bin of Legos. And with these Legos you can make all kinds of amazing things. But some of the pieces will only fit together with another piece. And the instruction set for what fits together is like a dictionary. The fun parts of programming are figuring out how to get the logic to work."

Kurtz explained that one of the biggest processes he's learned at the CTT is how a software development team works. "I've seen it go from an idea, to code, to a program you click on. That was huge for me." Kurtz stated that there is more to the process than writing new code. "So much of it is how the code should be designed. Where the problem is at—not what code to write. That's the very last step." Because of this, Kurtz said he hopes to continue developing the skill of "navigating the structure of software." Kurtz thought one of the most rewarding aspects of the internship is not only having the opportunity to learn, but seeing in action the ideas he reviewed "in class 10 minutes ago." Kurtz encouraged others to invest in opportunities at work and during internships, and to learn from every experience.

Roadsoft Professional Programmers

As we continue sharing student programmer experiences, we are expanding to share more about the staff who develop Roadsoft every day. The CTT currently employs nine full-time programmers. Some of these programmers work on multiple projects within the CTT, while others focus exclusively on Roadsoft.

We're going to start the introductions with Sean Thorpe and Jeremy Guinn. Thorpe is a software engineer who architects

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more efficient coding processes and oversees the CTT software interns, and Guinn is a former intern that was recently hired on as a full-time programmer who focuses on front end development, with current projects including Roadsoft module standardization..



*Software Engineer
Sean Thorpe*

developing Roadsoft's web tools and has also led the "under the hood" progress of updating Roadsoft's coding. Thorpe described it as "re-architecting" in order to make progress simpler and allow for "development to happen way quicker." Thorpe explained the process by using a table as a metaphor. "Rather than every time that we need a table, we go print legs and laminate, we just ask for a table. Just making things reusable." This re-architecting translates into much of the work Thorpe has developed at the CTT.

Thorpe explained that as a software engineer, his work affects how the software is developed. "My job is to write the software and to make it work the way the research engineers want it to," Thorpe said, referring to a current project with the drainage structure module. "I'm working with Research Engineer Andy Manty to get that right. I'm getting all the pieces ready and then he and I will work to determine how we want the pieces to interact and get used." The process of updating Roadsoft requires this collaborative effort, with research engineers providing the specific requirements of their domain and the software developers designing the best way to articulate these processes in code. It leads to quite a bit of communication, "Talking about vision and direction, features, and demoing features."

For those without a background knowledge of software engineering, the work of this field can seem a bit unexplainable. A common metaphor is suggesting it is hidden within a "black

box." Thorpe, however, provided a way to consider the process of his work. "The difference between computer science and software engineering...Computer science people develop and enhance. They work on developing better algorithms and more accurate algorithms. Quicker, faster, more efficient." Thorpe explained that software engineering is more about constructing with these elements, rather than breaking down the materials themselves. "I'm using those algorithms to build, to architect large structures." This is why patterns in code can be very valuable. Too many differing forms of variables make it more difficult to efficiently alter the software, since it takes more time to understand what the language is saying.

This ability to understand the shared code is one of the main skills Thorpe hopes software interns will learn during their work. Thorpe led the development of the software intern "pit", the working space for software development and testing at the CTT. He also oversees their work. Not only should the students learn how to "inspect, code, interpret, and understand what's happening in the code" they should also leave having an understanding of how to "come up with a list of potential solutions to fixes. You have the option to work at the atomic level, the elemental level, or the structures level. Deciding what level you should be looking at to fix your problem is really important" Thorpe explained.

Outside of the CTT, Thorpe enjoys the outdoor opportunities of the Keweenaw Peninsula. He described his interests as "a hodge-podge of things", which includes activities like biking, hiking, camping, skiing, cooking, and volunteering for the MTU Crew rowing team. Thorpe named Montreal Falls and Mount Baldy as some of the best hikes in the area. Relating to his original interest in the field of software engineering, Thorpe explained that he is "more of a builder," which translates to the work he does every day.

Jeremy Guinn

Jeremy Guinn is a software developer at the CTT, joining the staff in August 2019. He is currently earning his Bachelor of Science in Computer Science as a part time student, adjusting his schedule at Michigan Tech in order to work at the CTT full time. Guinn started as a software intern, quickly adopting the role of technical lead with his previous experience in computer programming. He became a first stop for software intern ques-

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Software Engineer
Jeremy Guinn

tions. “I could advise the other interns on good practices of coding, ticket creation, and debugging,” Guinn said. Guinn grew up in the Chicago area before moving to the Upper Peninsula for school.

As a software developer, Guinn said that he focuses on both front end and backend development for the CTT upload website. Guinn explained, “Front end development is reading the actual website that you view when you go to the specific URL in your browser. Backend is what the user won’t see, but it is how all the data gets to the user to see. So the backend is what is storing the data, what is manipulating the data, and what then sends the data to the front end. And then the front end decides how it wants to display it to the user.”

In addition to rebuilding the CTT upload site, Guinn has been working on module standardizations in Roadsoft. Specifically, Guinn is dry running the process of taking an existing module (the culvert module) and updating it with the new software architecture that software engineer Sean Thorpe developed. “It is a framework created so that we can easily standardize modules. And the development time it takes to create new modules is much shorter. So it reduces the amount of duplicated code and duplicated work that we need to do to create a new module for a client,” Guinn said. He explained that the process has meant he gets to engage with the Roadsoft programming language in an advanced way, and it also means he gets to consider multiple perspectives. On one hand, Guinn is working with the internal components of Roadsoft. On the other, he considers how Roadsoft users work within the program.

With this in mind, Guinn shared that programming can include quite a lot of researching and learning. “The day of developing isn’t always writing lines of code. My day consists of doing research, and it’s a lot of reading code.” On an average work day Guinn arrives early to the office, because as a part time student, his schedule at the CTT is broken up by class time. When Guinn has some free time, he helps as a certification officer in the Ridge Roamers rock climbing club at Michigan Tech. He has been enjoying the sport for about six years and has been a part of the club for four. “I have been a certification

officer for three years. I was also the treasurer, vice president, and the active web developer for the club.” Guinn created an administration panel for Ridge Roamers. The software allowed the club to manage their inventory and members, as well as track the equipment in use.

Guinn said that although “problem solving” is an often quoted reason for enjoying computer programming, he never-the-less believes it is accurate. “Software engineering is itself a process of trying to solve a problem. And finding not only a solution, but efficient solutions. I enjoy the iterative process of getting that first working solution and then seeing how it can be improved and made faster, more efficient, and more friendly.” Guinn felt this was a benefit to updating the Roadsoft modules coding as well.

As Guinn continues to become more involved with Roadsoft development, he shared his enthusiasm for being able to soon lead development for the MERL front end web application, a program the CTT also maintains. For now, he continues providing guidance to the software interns and updating the CTT’s applications.

Upcoming Training & Events

2020 Special Topics in Roadsoft: Getting Started with the Mobile App - Feb. 19, 2020

2020 PASER Training Webinar - Feb. 20, 2020

2020 IBR System for Rating Unpaved Roads Webinar - Mar 3

2020 Special Topics in Roadsoft: A Quickstart Guide to Using the Laptop Data Collector (LDC) - Mar. 5, 2020

2020 Meeting the TAMC Investment Reporting Requirements using Roadsoft - Apr. 1, 2020

2020 What's New in Roadsoft Version 2020.3 - Apr. 2, 2020

Visit <http://ctt.nonprofitsoapbox.com/upcoming-events> to register for these events and to see all upcoming CTT training events.

Questions? Email ctt@mtu.edu