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Announcer ([00:02](#)):

You are listening to the Safety Moment Podcast by Utility Safety Partners. Safety is always a good conversation and it's a click away. Here's your host, Mike Sullivan.

Mike Sullivan ([00:16](#)):

Welcome to the Safety Moment Podcast. Today my guest is Dr. Ali Bayat. He is the CEO of the Canadian Underground Infrastructure Innovation Centre. They are a new organization actually they've been around for a couple of years now that are linked with the University of Alberta providing damage prevention solutions that quite honestly, the industry just does not have the wherewithal to move towards. Dr. Bayat, thanks for joining us on the podcast today. It's nice to finally do a little bit somewhat in person with you. Before we get going, perhaps introduce yourself to me really, because we haven't really met yet, but I'm anxious to do so.

Dr Ali Bayat ([00:59](#)):

Thank you, Mike, for the invite. My name is Ali Bayat, I'm a faculty member at the University of Alberta in the Civil and Environmental Engineering Department. I'm also director of Canadian Underground Infrastructure Innovation Centre at the university, which we call it as CUIIC.

Mike Sullivan ([01:17](#)):

What is CUIIC? The Canadian Underground Infrastructure Innovation Centre. That's a big mouthful. I thought Utility Safety Partners is a lot, but CUIIC, What is CUIIC?

Dr Ali Bayat ([01:30](#)):

So it's a research and education centre basically at the university. So it started in April, 2022. So there were basically two centres on the east at the University of Waterloo. There was CAT Centre for Advancement of our Technologies. They were active for about 29 years. It was one of the first centres established at the U Waterloo. And then we had CETT at the University of Alberta and we were active for about 11 years on different aspects of underground infrastructure, particularly basically new construction. So now around April, 2022, a group of industry leaders got together. The decision was if we could merge these two centres and have something that is basically for across the country. And that's how basically CUIIC was established at the University of Alberta. So CAT stopped operations, CETT stopped operation and CUIIC basically rolled

Mike Sullivan ([02:36](#)):

And basically CUIIC like so many of us today. You're a remote operating service, right? Or centre? I mean we say centre, but it's not centralized. You're really, your folks are everywhere.

Dr Ali Bayat ([02:49](#)):

Yeah, we are at the University of Alberta, but all our members, we have about 60 member organization come from across North America. So we have staff members in provinces. The idea is we could have presence or courses and or workshops and stuff are happening on different provinces. But yes, we are located at the University of Alberta. We are the centre at the Alberta, but we have presence in the different places.

Mike Sullivan ([03:15](#)):

What exactly does CUIIC do? I mean what's your focus beyond the title and it tells us a little bit.

Dr Ali Bayat ([03:22](#)):

The vision for CUIIC essentially is to be a world-class hub for research, education, innovation in underground infrastructure. Essentially the mission is to target current and future needs of for buried infrastructure and push sustainable basically innovation and to facilitate that connection between industry and academia. That's the second mission, just to bring these two closer, make sure that we focus on the problems that are relevant. And the third is the particular attention to younger professionals ensuring that we are able to attract basically talents to this domain and ensuring that we progress. Similar to other fields,

Mike Sullivan ([04:06](#)):

I see some parallels here between utility safety partners, CUIIC, the Canadian Common Ground Alliance, but I think what you're bringing to the table here is that obviously that research element, we have a tremendous amount of data in Alberta. One call Utility safety partners, the Common Ground Alliance in Canada, the regional partners. There's so much data and yet I think we're limited in terms of what we can do with it because we're too busy managing the day-to-day and providing the service to the digging community across the country. And that element of what CUIIC can bring I think might be the missing link between where we are today and where we can go.

Dr Ali Bayat ([04:48](#)):

Absolutely. I think data definitely is important. I always say we are forming a community, we are forming an association, but that association is around education and research. So we are not a lobby, we are not representing, but we would lock all sectors of industry come together at a place like university, which is non-biased and a place for educational research and we can focus, we can bring different sectors that are involved in underground infrastructure. We built that community and collectively we start working around major problems that we face as an industry. So data definitely is one piece. So there are information that are not utilized or they're underutilized and we can use the capacity that exists in higher education. We can bring talents, we can bring basically people around these problems. We have a lot of information, we have a lot of problems. So we act as a linkage between these resources and these problems.

Mike Sullivan ([05:53](#)):

I love that because like I said, I think it's been missing in our industry for so long. The Canadian Common Ground Alliance, the Common Ground Alliance in the US produce an annual dirt report, the Damage Information reporting tool, and the next edition in Canada will be coming out very soon when the CCGA hosts its conference in Quebec City in a few weeks and the report will outline a variety of damages for every province and we'll look again at some of the same information year after year, how many notifications, the notification centre, the one call centre circulated to its members, how many damages there were per thousand notifications and look at root cause analysis and year after year it's almost the same thing. And yet we develop best practices and we impose them, we move them forward and they go into the best practice manual and yet we're continually seeing the same thing year after year. And this is where I think there's something missing between what we're doing, what we're producing and the best practice and the implementation. And I'm wondering is that something, I mean first of all, I'm guessing you're familiar with dirt reports and what are we missing here?

Dr Ali Bayat ([07:17](#)):

I would just basically address that and that's something that we see collectively in different aspects that's on the damage or even on construction rates. There are many aspects of underground. I think all in all risk is high. I think risk is high for what we do and it's been like that for many years and I think with the volume and attention that Underground was getting, it was okay. But what we see, I think that the activities are increasing, the underground real estate is becoming more and more valuable and we have to go and do more stuff and as a result, if we are not fundamentally addressing the risk, we are going to see more and more problems popping up. So what you are explaining is if we want to move and elevate ourselves from the current degree of risk from the way things are right now and try to fundamentally move up, I think we have been focused on hardware quite a bit like new tools, new technology, that's okay and that has its own place.

[\(08:33\)](#):

But as you touched, I think if we want to fundamentally address the risk, we have to pay attention to software and software is only data. We need to better understand, better comprehend why those risks are happening, what is the core issue that's causing that, and then be able to see how we can address it. And that requires information and knowledge and with current computational technologies, with the way we can handle data with machine learning, with advanced technologies that are available, it's quite possible. But I think our learning needs to kind of revolutionize if we want to address risk at a different caliber and different level.

Mike Sullivan ([09:19](#)):

When a person submits a locate request, be it a homeowner or a professional excavator or even an owner of bird utilities, when they submit a locate request to utility safety partners, the likelihood of damage is almost zero really. I mean the process has been tried and tested and redesigned and made better and better every year for 40 years here in Alberta. And so we're fairly confident when that locate request is submitted, there will be no damage. But it comes down to will it be right now there's some legislation if you're governing federally regulated or provincially regulated transmission pipelines, but everything else doesn't have to register with us. And a person doesn't have to submit a locate request if they don't want to. And we're working on that. The whole damage pension legislation, which I'm sure you're aware of, but it comes down almost to the person and I was fortunate enough to have a host, a gentleman a while back and on a podcast and we talked about the why we take risks, why does human beings, why do we take risks and is that something that CUIIC is looking at as well? Because unless somebody submits a locate request, who knows?

Dr Ali Bayat ([10:42](#)):

I think when we look at the risk, and that's what I think CUIIC we are doing, the problems that we are trying to solve nowadays is quite multidisciplinary. So in some of the grant application we are looking, we involving people from sociology, psychology,

[\(10:59\)](#):

I'm an engineer, so there are multiple angles that why do we behave that way? Why are we taking that additional risk? And I think we always look at it from engineering point of view, but I think these are complex problems. Again, if we want to make that major change and we want to get to the root of these issues, we need to comprehend the problem and we need to understand the problem from different angles and then we can come up with a better understanding. Once we know why it happens, then perhaps we can explore solutions that could address it. My thinking is we either don't collect enough

data or information or data or information is scattered. Even the ones that we have are not basically utilized to the extent that it could be utilized. We need to better comprehend, we need to better know why those risks are happening and then there might be solution and we can communicate better and say like industry startups, this is what we want. This is the core of the issue. We need a tool that allows us, so once we understand we are able to allocate those resources to the right arena to make sure that we are creating, we are building things that's going to address the core issue within that problem.

Mike Sullivan ([12:24](#)):

I like that because you're absolutely right. It is more than just engineering, it's more than just software development. The human element is complicated like you said. And for example, arguably today submitting a low-key request is probably easier than it's ever been. And yet for those of us who are familiar with our smartphones and we're comfortable with that, our kids are ordering a pizza online and we reserve our hotel rooms and flights online, it's nothing. We don't think about it. And for the digging community perhaps it's getting to be just like that. I mean they do it so often they've had to adapt and yet the homeowner might, I mean people who have listened to the podcast have heard me say this before, they might dig once in a lifetime, once every 10 years. If they're ordering a pizza once every 10 years, they're probably going to call, they're not going to do it online.

[\(13:24\)](#):

So yes, arguably it's never been easier unless you're not comfortable with the software, you're not comfortable with the process, you're unfamiliar. And then you add to that, we were just talking about a person who is willing to take the risk. I'm sure there's nothing there. I won't hit it. That part, I don't think there's anything we can do from an engineering standpoint, obviously software development wise to address that. That's when you get into that human element is in exactly that. Why do we take risks and how do we target those people who were predisposed to taking risks and educating them and convincing them not to. There was years ago when I began in this industry, it wasn't uncommon for the shock and awe. There were constantly, you go to an event, could be an aggregation or agricultural show or something like that. And there was the pipeline booth, X, y, Z pipeline company and they had the images, pictures on their booth of pipelines exploding and a heavy equipment digging into a pipeline explosion and fire and all that.

[\(14:42\)](#):

It was horrible and it got people's attention. There's no question about it, but I was sending the wrong message which was pipelines blow up, that's not the message you want to send. And so they stopped doing it and interestingly enough, when the pipeline companies stopped doing it, all of a sudden pipelines came into the news more and more and more and they've taken a real beating from the media. But if we can't go shock and awe, if we can't, it's like putting on your seatbelt. I mean there's a huge campaign behind it. How is that a discussion point amongst CUIIC? If you have the sociologists, you have those people that are looking at this.

Dr Ali Bayat ([15:30](#)):

I think once I give you an example, we were looking at one of the technologies and risk was quite high and we were trying spent about a year to look at the field data and see what is going on. So we identified 22 short stoppers, we looked at it and we found that there are 22 reasons that basically the problem happens and normal construction stops. Then we dig then and found, okay, how frequent these are happening and then what is the consequence of each. But the more we are able to dig, for example, we look at it and say, okay, the problem's more happening on the night shift than the issue.

[\(16:13\)](#):

And then maybe it's happening closer to the end of the shift maybe. I mean the more we can dig and proceed, we are going to be able to, there's a reason, I mean no one wants to put themselves in danger, but there are a bunch of factors that makes that worker to make that additional risk that he shouldn't. And I think the more we understand that, what are those conditions that ends up basically being there and it could be educational. We want to do all those campaign and there are elements, we do our work to educate people, but there are situations that are causing and if we understand, if we know it's the night shift, we know end of the shift, if then we can just go and start doing things to see if we can address it and use a bunch of elements, that's stop it.

[\(17:09\)](#):

So when I'm saying the data, when I'm saying, look, sociologists, psychologists is not just the common and give an opinion, I think we need facts and the more we use that information, the better we collect the information, the better we analyze those information. The more we do root cause analysis, the more we use machine learning, the better we understand. I think then we are going to be able and to go and address it. If we don't, then we are just going to stop at a distance and say people are taking additional risks, let's educate. Then we put bunch of campaigns, but we are not going to get to the core of the issue.

Mike Sullivan ([17:51](#)):

It's what I was saying, a public awareness program that blankets, if you don't have a target audience, you're really just trying to throw darts in a room. But if your balloon is on the wall and you know what you're going to aim for it, you're going to hit it. So I agree, I agree. And it's interesting though when we talk about when the events are happening, the typical, oh, it's happening on Friday night or the last shift of the day, whatever the case may be. And it reminded me, we did some analysis a number of years ago because that was all these things typically happen on the end of the week or at the night shift or something like that. And that was just a commonly held belief and I can't remember when it was, but it was definitely a number of years ago, maybe four or five years ago, I put some of that data together because I was being asked to and I was floored that it wasn't the Friday night.

[\(18:44\)](#):

It wasn't the Friday at three o'clock or something like that, that these things happen. But until what I mean to say there is like you said, until you start to look at it, you don't know That was a commonly held conception or perception that oh yeah, these things happen Friday evening, the last shift of the week or whatever and we all took it as gospel, but until you know don't know. So I find that element, and again, I spoke about this and we talked about, I spoke with you and the people working at CUIIC about becoming a member and I'm very proud to say that utility safety partners is now a member of CUIIC and vice versa. So thank you for that because I really do think there's something, I can't exactly wrap my arms around it yet, but we will of what this relationship can provide and for Alberta it's so, well, it's obviously close to us because of where we are and U of A is right here in Alberta and we're working towards legislation.

[\(19:54\)](#):

The better we can understand why damages are happening, then the better that legislation can be because the legislation, it's not the end all be all. We've lived without it for so long comprehensive legislation, Ontario is the only province that has it. They still have damages still happens now they seem to be less than anywhere else, but it still happens. So it's not the end all be all. It's nice to have, but it's designing that legislative language so that it can live for a very long time. You don't want it to lock you in

time. We're going to have to send everything by fax. You don't want to have language like that. But can legislation, what I'm getting at here is can legislation or legislative language address some of these things we're talking about that go beyond engineering, go beyond software.

Dr Ali Bayat ([20:51](#)):

Again, look back to what you were mentioning about I think engagement is factor one. I think we need to engage, we need to talk. And when I'm talking about using data and information is not just solely to identify the problem. I think that's step one. Once you know the problem, then we are going to have a bunch of hypothesis that what are the solutions? How could we address this problem? Let's say we find out that it's not Friday night, it's Thursday evening,

([21:23](#)):

Then okay, are we going to add a legislation or are we going to add a device or are we going to add a tool? We don't know how effective these are going to be. So it should be the DNA. I think if we want to proceed, when I'm talking about data driven strategies or investigations, it's all the way we need to form a cycle. So we are going to basically understand the problem a bit better. We want to utilize bunch of strategies, then we are going to measure to see are they effective or not. And we are going to learn again that again how much it's working and how it's a cycle that we want to build. It doesn't stop only on problem identification. It's going to be basically utilized in order to assess effectiveness of each of these strategies. And again, we can collect data and we can say these were okay, these were wrong, these were effective, these were non effective. So respect to legislation the same thing. I mean is that going to be basically helping? Some of us might agree, some of us might disagree, but until we start recording and understanding and collecting information, it's just going to be opinions

Mike Sullivan ([22:39](#)):

And

Dr Ali Bayat ([22:41](#)):

We won't be able, like it's okay, we can have opinions and it could be good, but if we want to move and as you said, we see its plateau is not changing if we want to change and in order to change, I think we need to collect information, we need to be able to analyze it appropriately and then find out what is working, what's not working and move in that direction

Mike Sullivan ([23:10](#)):

Coming soon. Next gen, the new software from Pelican Corp that facilitates the locate request process. What's changing? Well there's a new user interface which is nice, but there's also now mobile site functionality. NextGen gives the mobile platform the exact same functionality as the desktop platform. There's also easier ticket entry for homeowners and an improved mapping tool. Next gen will be hitting utility safety partners and our neighboring provinces between Manitoba to the Pacific Ocean very soon. So let's say that I'm trying to go with any scenario here that we can test. So we approach CUIIC and we say, okay, we've discovered that the digging community when they are doing for example sidewalks or road resurfacing, there is never been any damage and yet they are required to submit a locate request. Is that information enough that QA can take for us and look at and say, you know what, this can be exempt. Or on the other side of the coin we discover that any excavation that is conducted without subsurface utility engineering prior to the likelihood of damage is 70%. I'm just throwing numbers out

there and yet we don't require Sue before excavations today. So what would CUIIC do with any kind of information like this to analyze it and come back with some feedback?

Dr Ali Bayat ([25:01](#)):

I think again, if we can put resources, students, graduate students, PhDs, postdocs, look, all of these guys, we use their brains. We use whatever technologies out there. We try to analyze that data and come back say, this is the picture. Look, if our attention is here, there's not that much damage here. In fact, look, I think number one is going to allow us to allocate our resources in a right manner and these are not going to be all definitive. We are all talking about probabilities. So I mean it is just going to be saying, look, in this case the damage is or we are not paying attention to this situation. But it seems to be like a lot of, so I think analyzing that and putting graduate students, postdocs, PhDs, some talents behind it, what we have seen is then we get a better understanding and then collectively, I think we can define what is next, what do we want to know?

[\(26:03\)](#):

I think it's not a one thing we want to know. I'm just trying to say it's the dynamic situation that we are trying to improve. We put ourselves in that improvement cycle that we understand, we act and then we collect information and then we try to analyze. So again, putting a master or PhD student, we look at all these failure, let's say data and to see what we can learn out of these failures that are, we have done our best and still things logistically. There was failures, there was incidents. Look we can try, do we know why? What is there an explanation for why this happens? I think the more we understand that, and that's where I think the university, not only CUIIC, I think we try to bring academics from different universities across the country to participate. We need to define the problem. We need to form that partnership and then bring the right skill around the solution and they can work around it. It's going to be a process. But by us engaging, we put our attention toward the real problems that are out there and with you, I think you guys are busy. So utilizing these capacity that exists at the public institution, it just forms that partnership that's going to be beneficial for both sides.

Mike Sullivan ([27:32](#)):

It's really, like I said earlier, for me it's the missing link that we have not had an avenue towards any of this before these resources and I think it's tremendous. I don't know why we didn't connect earlier, but I'm glad we've connected now and I really look forward to furthering the relationship. Now CUIIC is having its 2023 Safety Academy very soon, end of the month. Tell me a little bit about that event. I'm looking forward to that.

Dr Ali Bayat ([28:01](#)):

Yeah, so we run these basically, or we have education committee that they're focused on the entire education aspect. So we run monthly webinars. So there are what good participation from different sectors of industry on those monthly webinars. And then we have these academies. These are two day kind of in-person events.

[\(28:24\)](#):

The format is we form a safety committee in the CUIIC. They discuss what are the key challenges or key issues that they would like. These are not fixed courses that we fix. The content is changed every year. So we invite the speakers like there are 15, 16 speakers that come and discuss different topics that are there. So again, it's industry coming together with academia. We create these educational events that we can discuss what the key issues around safety with respect to underground infrastructure. I think it's

a rich agenda that's going to happen in end of November. We are excited about it and we hope that will be a good event and we are moving it. So I think we have a bunch of these academies. We try to make sure we have it in Ontario, BC, Alberta. Again, the mandate is countrywide. These events are happening in different provinces at different time of year.

Mike Sullivan ([29:25](#)):

I'm looking forward to being there. I registered for the conference a couple of weeks ago. I am looking forward to being there. One of my friends colleagues in the industry ed plant is giving a presentation on construction practices damage prevention as well. And he's also the current chair of Utility Safety Partners best practices committee. I'm hoping that there'll be some cross-pollination between our committees. We also have an education awareness committee, best practices government relations training standards committee. And I think there's some great opportunities for cross-pollination here or for those committees, especially on Utility Safety Partner's side to move over to those committees as well on CUIIC's committees and perhaps be able to utilize some of that research that it can do for us.

Dr Ali Bayat ([30:18](#)):

Absolutely. No, thank you again for utility safety partners for sponsoring that event and for the speakers that are coming. And that's one of the beauties that I think the Safety academy was the reason we could connect basically with utility safety partners. So it's allowing us to connect the right parties and that is the core of the CUIIC look. I mean it's not just, I am doing research and everyone comment, but it's more engagement. It's more, I think more than the research itself. It's just having understanding about the right problems. So I think engaging with utility safety partners want to give us a better understanding about what are the real issues. We don't want to repeat things that you guys have done over the years. It's just creating that synergy that we work together around the problems that truly matters and we can utilize industry epidemic and all the available basically avenues in order to create a solution around it. And again, it just, in some areas I think we have reached a co go to some of the shows and et cetera. The talks are mostly lesson learned, which is good. We need lessons learned, but we need to see those lessons learned kind of incorporate

Mike Sullivan ([31:46](#)):

Systematically

Dr Ali Bayat ([31:47](#)):

Into or understanding we need to move and lessons learned that I saw five years ago, it shouldn't be lessons learned. I'm learning agreed five years, but I mean we have to move and that move has to be systematic. It can be just basically one off teams and we hope we can work together towards solutions that are cross sector roles involve different disciplines. And that's the kind of problems we are going to have. I guess in future.

Mike Sullivan ([32:20](#)):

It's

Dr Ali Bayat ([32:21](#)):

Going to require multiple line of expertise. It's going to require different organizations coming together and we can focus on solutions. That might take time, but I think it's going to move us to the next orbit basically.

Mike Sullivan ([32:36](#)):

I think it's fascinating. Such a missing piece of our damage prevention puzzle all of a sudden is there and we have access to it. We're a member now. I look forward to that. I look forward to going to your conference end of November and I also look forward to hosting you at our conference at the end of February in Beff. I understand you've agreed to give a presentation. Thank you so much for that and we'll be coming back with that schedule so you can take a look at it and make sure that we put you in the right spot. Dr. Bayt, thank you for joining me today. I sincerely appreciate it. I thank what CUIIC is doing and providing the industry is so well needed and has been needed for a very long time. It's just the beginning of what CUIIC is doing and I can't imagine what it can possibly achieve in the next five years. It's really going to move, like you said, it's going to move us in the right direction. Just saying we need to do it is not enough. We know what we need to do, but we just don't have the resources. And I think what CUIIC has done is provided that avenue to those much needed resources that will allow us to move forward the way we so desperately need to.

Dr Ali Bayat ([33:53](#)):

Thank you, Mike. No, I think the utility safety partners yourself, I mean very positive reactions. I think we have enjoyed from day one, that interaction, the degree of support that you're having and we need. I think that's the entire thing with CUIIC. I hope it becomes the community that at the university focused on education, focused on training next generation of professionals that are going to come and together we can work toward those problem finding solutions and at the same time training the next group of people that are going to come and become the leaders in the industry and ideally move this forward. But again, like Utility Safety Partners with the conference, with the academies, all that. I really appreciate the openness and the support that you guys have shown so

Mike Sullivan ([34:49](#)):

Well, thank you so much and look forward to finally meeting you in person at the end of November.

Dr Ali Bayat ([34:53](#)):

Looking forward to it.

Mike Sullivan ([34:55](#)):

That's going to wrap things up on the podcast. I want to thank our producers Stories and Strategies, and I hope you choose to follow this podcast on any directory you're listening on. And please do leave a rating. You can follow us on Twitter @utilitysafety and we're also on Instagram and Facebook. If you'd like to send us a note, maybe have an episode idea, email us at info@utilitysafety.ca and please put podcast in the subject header. I'm Mike Sullivan, president of Utility Safety Partners. Click to know what's above and below. One click costs you nothing. Not clicking could cost you everything.