Santa: Broadcasting from the University of British Columbia, this is Blue and Gold Cast. I'm Santa Ono, the President and Vice-Chancellor of UBC. On this season of the Blue and Gold Cast, I'm speaking with the people who are leading some of the most innovative and creative work coming out of our campuses.

Today, my guests are Dr. Madjid Mohseni and Chief Liliane Squinas. Dr. Mohseni is a professor of chemical and biological engineering at UBC. His research interests include finding solutions to water pollution, and providing clean water to communities who need it. He's on the Board of Directors of the RESEAU Center for mobilizing innovation which aims to find pathways to sustainable water health equity for indigenous and rural communities.

Liliane Squinas is Chief of the Lhoosk'uz Dené Nation. She is committed to improving the well-being of her community as well as neighboring ones, and she approaches this goal on multiple levels. From education to infrastructure. In 2014, RESEAU and UBC were approached by Chief Squinas on behalf for Lhoosk'uz Dené community, a remote village about 200 kilometers west of Quesnel.

RESEAU and UBC worked together with Chief Squinas and her community to build a sustainable water treatment plant in the village. In July of 2021, they brought clean water to Lhoosk'uz Dené after 20 years. Dr. Mohseni, Chief Squinas, welcome to Blue and Gold Cast. Let's talk about how this project came to be. Chief Squinas, what led you to reach out to the RESEAU Center and UBC?

Chief Squinas: I always feel that we are a forgotten small isolated community with only logging road access. Our previous settlement area had no infrastructure like the water sewer or power. The current relocated reserve is on Indian Reserve No. 1 which included new housing along with the infrastructure, and yet, our water quality remain poor. Now, we have been on bottled water program for approximately 20 years, and then the delivery and cost was very unpredictable. We needed to look for an alternative solution.

Santa: Thank you very much. Dr. Mohseni, can you tell us a little bit about how this project started, and how the treatment plan works for the community?

Dr. Mohseni: As a UBC-based network, has been around since 2008. Over the years, we have been working with a number of communities, and also other partners from industry, government as well. Indeed by around 2014, when Chief Liliane and her council approached us, we already had some success stories among them, for example, Lytton First Nation. When Chief Liliane approached us or was introduced to us, they accepted our invitation to come to UBC. We had very good discussions with one another. We tried to listen to their concerns and the issues that Chief Squinas just highlighted.

The fact that the community was very remote, no hydro, no electricity, relatively poor track record by industry and the government, in terms of prior work in infrastructure for the communities. Our first approach and offer was to engage our engineering students from chemical and biological engineering department, for the students to go and travel to the community, and listen to the needs and the concerns of the members. We had some cultural orientations for our students, and they traveled to the community. They met with

the elders, with the residents. They listened to them. They collected some water samples, and more importantly, they observed and experienced how poor the water quality was.

Just to give you an example, some of the students came back and said, "We did not want to take shower because the water smelled so poorly." That was the start of the dialogue and conversations with the community. That led to collaborations with them, and eventually through partnership, not only with the community and residents, some other partners, we brought industry and government to really commit to this project. That eventually led to the water treatment plant that is now in place.

Santa: That's remarkable. Actually, this question is for both of you. What were the main challenges and concerns that the team or the community faced along the way, Chief Squinas?

Chief Squinas: My original main challenge was continuously being on Indigenous Services Canada's waiting list to get improved water. When we just got tired of waiting, that's when we started pushing for alternative solution. If you have experience the Indigenous Canada's water models, they were too complicated. I don't have the capacity within my community to operate such a system, so there was multiple challenges internally.

Santa: Dr. Mohseni, how about you? What kind of challenges? You mentioned some, but any other challenges or concerns?

Dr. Mohseni: The common challenge as we mentioned, just being very remote. I think, for many people living in urban areas, this is not even thinkable that the community is two hours from the nearest grocery store or gas station. That's on a logging road. Many times of the year, it's impassable, and we mentioned no electricity, no communication. When you are at the community there is no way for you to communicate to the outside world.

Just recently, there are some internet access, but that's very unreliable. These are the common challenges, and Chief Squinas highlighted some of the fact. When it comes to working with the government, of course, with all the funding that they have, the need from many communities is very high as well. Often the communities are put on a waitlist or on a list of priorities, and given the fact that this community has been very small, so it was very difficult for them to justify. The work that we did with the data that we gathered helped to make the case to the government that there is a need, and this community is really in need of solutions.

The other thing, some extraordinary challenges that came along the way in the past several years, I can mention, for example, the wildfire in 2017 that came to the doorstep of the community and really the community had to be evacuated. If you travel to the community now, you see many areas around the community are burnt down as a result of that fire. That basically, put a stop on everything. Of course, we all know COVID in the past year and a half brought significant challenges. In terms of lockdowns, supply chain issues, and the fact that for the community to be able to secure contractors that would put the interest of the community at the top.

Santa: That must have been horrifying for the wildfires to come right to the edge of the community. I'm so glad that everything has resumed in terms of this work. This was a

collaborative project between researchers and students at UBC and the community. Chief Squinas, how did students and community members connect?

Chief Squinas: I'll start with my own experience. When I first met with the fourth-year engineering students at UBC campus, I felt very intimidated. I only have a Bachelor's degree in business, and here, I'm sitting with four-year students and all the doctoral professors. I had to get over that hurdle, and then with me feeling that way, I sympathized with my membership when the students came into the community. The only thing that I wanted was more on one-on-one communication, and to develop their trust and respect for one another to work right from the grassroots level. Once the grassroots level work has been accomplished from my membership, I know that they'll take ownership of the project that's occurring. Hopefully, that answers your question.

Santa: Well, it certainly does. I'm really glad that affinity group between you and the faculty and the students that I'm sure they had a very fulfilling experience and learned a lot in interacting with you and the members of the community. Dr. Mohseni as an educator, can you tell us about the value of students' support in projects like this?

Dr. Mohseni: Perhaps before I answer this question I want to highlight the value that the community brought to our students. The first thing, really the fact that the community had a good leadership in there. Chief Squinas if you meet her in person, she's extremely humble, but me interacting with her in the past six or seven years, she's really visionary. That puts not only the interest of her own nation, but also nations from around the area really paramount.

I think that's very important. With her support and leadership, the community all came together to support us, to support our students, to welcome our students. I think our students learn enormously from their interactions, they learned about a lot of technical challenges that the community faces. Just to give you one example, we were running a pilot at the community a few years ago in 2018 during this season, the fall. The student was there during the Thanksgiving. The water operator from the community invited him to his house, had Thanksgiving dinner and prepared the lodge.

Next to the lake outside and to basically to share that experience. When the student came back, he was glowing, basically the experience that he faced. I wanted to mention that the impact that the community has on our own students, but from the student's side I think our students are very eager to learn. The best way for them to learn is by interacting with the users, the problem owners, and the right holders. That gave them all of them who go through the process not only in this project, they feel that they gain a lot by doing this, but also they bring their experiences.

What they learned in the classrooms, they try to apply that. I mentioned earlier that through the work of the students and the fourth-year class, we were able to make the case that despite all the challenges, the remoteness of the community, and also the fact that there is no hydro, there is no power, still a solution could be developed and implemented. The students were able to put that in front of the government and engineers from the government and industry. Bring the industry and government together to work collaboratively with the community to make this happen.

Santa: Well, that's really a remarkable. First, let me say that bringing the government and industry, and academia together in an impactful way is easier said than done. Kudos to all of you for really coming together in partnership. The second thing I wanted to say is that I was speaking to our chancellor Steven Point today, and we think to reconciliation really requires that we as an institution amplify and multiply these kinds of partnerships.

Not only for us to go into the community, but for us to welcome the community with open arms into our university and to learn from their millennia of wisdom. For that reason that I'm thrilled that we're able to highlight this partnership on this podcast. Chief Squinas, how can projects like this ensure that they have a lasting positive relationship with the community?

Chief Squinas: My members have totally put their trust in the expert advice that's been given to them. I think those are the two critical areas that we need to continue into the future.

Santa: Yes, I agree. I would say that one of the things that I have learned in interacting with different communities is that you earn trust. That it takes time to earn the trust and being engaged in one project with changing individuals from the university side isn't enough. That university has to be there on the long haul. To not only be there at the beginning of ideating a project, but to be there year in and year out. That's what I've heard from various communities is really critical for developing trusting relationship. Dr. Mohseni what are your future goals for this project? What does the future look like in terms of its relationship with UBC and how can UBC help you.

Dr. Mohseni: I'm glad you asked this question. This is a very important question. As you just pointed out the relationship that we built with communities is not on one specific project. It's an ongoing partnership that we are going to have. This was our commitment to Lhoosk'uz Dené nation and to Chief Squinas, and to other communities that we work with. That we are going to enter into this conversation and collaboration, not only on the water issues, but on other things or other challenges that the community is facing.

Because UBC really has all the minds and talents that are required for solving the global challenges or local challenges. If we put our heads together, and if you bring our resources together and commit to that partnership with the lens of collaborations and really true partnership we can solve a lot of our problems, and a lot of the problems that the communities have. What we have been trying to do is not to be limited to a grant or a particular funding for a project, but rather to look at the long-term.

I think what I'm hoping that the university has, I know it does based on its indigenous strategic plan is really building that lasting relationship. That is able to support groups like ours and the work of our students. A lot of our students, I am by virtue of the fact that I've been involved in a number of projects with communities. A lot of our students approach me and want to work with communities. We do have different groups of the students and engineers for sustainable world, engineers without borders, and so on. They all are keen really to be involved.

I think if they do have the mechanisms to be able to work and have a conversation with communities like Lhoosk'uz Dené nation, we are able to do a lot of things. For the needs for example, Lhoosk'uz Dené I know that they have a lot of aspirations. They have plans to actually bring clean energy for their community using bioenergy. We know that we have bioproducts institutes at UBC that is able to provide great support.

A lot of the needs that the community has in terms of education. I'm now working with our engineering gearing-up group, to be able to see how we might be able to support the chief and the community's needs in terms of supporting the youth in their communities. In short, I think the continued support and being able to provide opportunities for our students to engage at the community levels in through partnership is going to go a long way. Is going to provide a lasting legacy for UBC as an institution that can be of value to all of our communities across the province and nation.

Santa: Chief Squinas, what is your future vision for your community, and how do you see UBC continuing to be a partner?

Chief Squinas: Job readiness is right on the top of the list, mainly because I have the Blackwater project mine that's coming in our traditional territory, which is going to really change the whole outlook of our backyard. When I look at the job readiness, our local school district haven't done a very good level of educating my graduates. They've been pushed right through the system regardless if they earn grade 10 level or not. I have some members that have been deemed grade 12 graduate. When they do their entry-level testing for college, they have a grade 6 Math or a grade 8 English.

That is costing my ban a lot of money to bring up their education level to get them into post-secondary. That's another vision that I have is to find an alternative way to improve that system where I can tackle improving the education level. Not only for my membership. We have three other reserves in the Cornell area hopefully, that we can work together to improve the education level.

Santa: Well, thank you for that. If I can do anything directly with you, Chief, and your counsel and continue these conversations, please don't hesitate to reach out to me. We really do want to build upon this wonderful partnership that we've discussed today on Blue and Goldcast.

Dr. Madjid Mohseni and Chief Lilliane Squinas, thanks so much for being on Blue and Gold cast today. Dr. Madjid Mohseni is a Professor of Chemical and Biological Engineering at UBC and a member of the board of directors at RESEU center for mobilizing innovation. Chief Lilliane Squinas is the head of the Lhoosk'uz Dené nation. That does it for this month's episode. You can find links to our guest work as well as previous additions of this show at blueandgoldcast.com. You can also find us on your favorite podcast app like Apple Podcasts or Stitcher. You can tweet at me at @ubcprez. I'm Santa Ono. Thank you for listening.