

# SECURITIES AND EXCHANGE COMMISSION

## FORM 8-K

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### FILER

#### **3DICON CORP**

CIK: [1375195](#) | IRS No.: **000000000** | State of Incorporation: **OK** | Fiscal Year End: **1231**  
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UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549

**FORM 8-K**

**CURRENT REPORT  
PURSUANT TO SECTION 13 OR 15(d) OF  
THE SECURITIES EXCHANGE ACT OF 1934**

Date of Report (Date of earliest event reported): April 13, 2013

**3DIcon Corporation**

(Exact name of registrant as specified in charter)

Oklahoma  
(State or other jurisdiction of incorporation)

000-54697  
(Commission  
File Number)

73-1479206  
(IRS Employer  
Identification No.)

6804 South Canton Avenue, Suite 150  
Tulsa, OK  
(Address of principal executive offices)

74136  
(Zip Code)

Registrant's telephone number, including area code: (918) 494-0505

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

- ☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
  - ☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
  - ☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
  - ☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))
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**Item**  
**7.01.**      **Regulation FD Disclosure**

On April 13, 2013 and April 14, 2013, a weekly science and technology radio magazine sponsored by the Oklahoma Center for the Advancement of Science & Technology (“OCAST”) aired an interview on a number of radio stations (the “Radio Show”), featuring the Chief Executive Officer, Mr. Mark Willner, and the Chief Technology Officer, Dr. Hakki Refai, of 3DIcon Corporation (the “Company”).

The transcript of the Radio Show is filed herewith as Exhibit 99.1 to this Current Report and is incorporated herein by reference.

The information contained in the transcript, which was prepared by OCAST, is a textual representation of the Radio Show. There may be material errors, omissions or inaccuracies in the reporting of the contents of the Radio Show. The Company assumes no responsibility to correct or update the third-party transcript.

In accordance with the safe harbor provisions of the Private Securities Litigation Reform Act of 1995, the Company notes that certain statements set forth in this Current Report on Form 8-K, and exhibits hereto, provide other than historical information and are forward looking. The actual achievement of any forecasted results, or the unfolding of future economic or business developments in a way anticipated or projected by the Company, involve numerous risks and uncertainties that may cause the Company’s actual performance to be materially different from that stated or implied in the forward-looking statement. For a written description of the risks and uncertainties, many of which are beyond the control of the Company, see the section entitled “Risk Factors” in the Company’s Form 10-K for the fiscal year ended December 31, 2013. Readers should consider all of these risk factors as well as other information contained in this report. The Company disclaims any intention or obligation to update these forward-looking statements whether as a result of subsequent event or otherwise, except as required by law.

**Item 9.01.**      **Financial Statements and Exhibits**

(d)                      Exhibits

| <b><u>Exhibit No .</u></b> | <b><u>Description</u></b> |
|----------------------------|---------------------------|
|----------------------------|---------------------------|

|      |  |
|------|--|
| 99.1 | Transcript of Radio Show aired April 13, 2013 and April 14, 2013 |
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## SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Date: April 16, 2013

**3DICON CORPORATION**

By: /s/ Mark Willner

Name: Mark Willner

Position: Chief Executive Officer

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*Oklahoma Innovations* Radio Show

Air Date: April 13-14, 2013

Guests: **Mark Willner** and **Hakki Refai**, 3DIcon

>> From the OCAST Radio Network, this is *Oklahoma Innovations*, a weekly science and technology radio magazine brought to you as a service of OCAST, the Oklahoma Center for the Advancement of Science and Technology. OCAST is the state's only agency whose sole focus is technology, its development, transfer, and commercialization. OCAST's mission is to identify and fund promising research and technologies that allow Oklahoma to compete in a global market economy from our own backyard. This program features some of the state's most gifted and talented scientists, inventors, entrepreneurs, manufacturers, and business leaders who all have one common goal, developing technology-based economic growth for all Oklahomans. Now, here are your hosts Gary Owen and Steve Paris.

[ Music ]

>> **Gary Owen:** Welcome, Oklahoma to another edition of Oklahoma's science radio magazine, *Oklahoma Innovations*. Steve Paris and I are coming to you from Tulsa, Oklahoma once again. We've been on the road quite a bit and we've been to Tulsa quite a bit.

>> Steve Paris: We have, Gary, and I'm going to be here for the next three days for different purposes each day.

>> **Gary Owen:** Wow! I want to tell our audience that this week we're going to be talking about something everybody's familiar with these days. It's called 3D technology, but here's the kicker. It's how 3D display technology is going to evolve in the next several years and a lot of it being stimulated right here in Oklahoma.

>> **Steve Paris:** It certainly is, and some of those old 3D glasses you're going to be able to throw away somewhere down the road. We'll talk about that here in just a little bit with our guest, but I wanted to just mention 3DIcon. We're very proud of organizations like this at OCAST, the Oklahoma Center for the Advancement of Science and Technology, because they have operated -- they have performed some of their research based upon some of the awards that they have won competitively through OCAST.

>> **Gary Owen:** Hmm.

>> **Steve Paris:** So we kind of keep a close on organizations like that and watch their progress, and we smile when they make progress, and this is an organization we're really smiling about. We need to introduce our guest. First is Mark Willner, who's the Chief Executive Officer of 3DIcon. Mark is an experienced high-tech CEO with more than 30 years in the electronic display industry. I'm going to let him tell about the rest of it. Mark, get up close to that mic if you will, and tell us a little bit about how you came to be involved with 3DIcon.

>> **Mark Willner:** Yeah. I was introduced to 3DIcon by an investment banker, actually, who was out looking at various technologies and approached me, and we started talking, and it was clear that we had a fit between my background and some of the issues and challenges facing the company. As a result, we ended up working together in a consulting arrangement and about a year ago, the board decided to make me an offer to be the CEO.

>> **Steve Paris:** So here you are.

>> **Mark Willner:** Here I am.

>> **Gary Owen:** Now a big function, several things you do of course as the CEO, but one of the things that you have to do is -- or that you need to do is to tell other folks about 3DIcon so they can invest in this process, right?

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>> **Mark Willner:** Right. As a public company, we have to be very careful about how we communicate information to the outside world, as I'm sure you can imagine, and our basic mechanism for doing that is our public filings with the SEC.

>> **Gary Owen:** Of course.

>> **Mark Willner:** In addition, I periodically publish a CEO letter that goes out on our website and that's another way that we communicate with shareholders and potential investors. A big part of the job of course, is making sure the company is properly capitalized, and so a large part of what I do is to build the strategy that can provide the foundation for that financing.

>> **Steve Paris:** And that's one of the things that we like to point out. Without going into a lot of detail, because you can't, by law, tell a lot of things about this because it's protected. But you know, some people have to think, okay, they can go out there and do their research on what they have in their piggy bank. No, it takes a lot of money to do research, and that's why you sometimes have to go after investments. And that's a big part of the R and D process, not only in Oklahoma, but everywhere.

>> **Mark Willner:** Right. Just to add to that. You know, we are looking for funding right now, not only from traditional public market sources, but also from U.S. government sources and we're putting a partnership arrangement together with a large government system integrator who I cannot announce at this point, but we will be able to do that in the future, and we're going to be going and talking to some of the folks in the Department of Defense and Homeland Security and organizations like that about our technology and our company.

>> **Steve Paris:** You just -- you just started some questions right there talking about Homeland Defense. We'll let you talk about that here in just a little bit, but we probably need a little bit more about our company history, the relationship with the University of Oklahoma. Strong relationship there.

>> **Mark Willner:** Very strong. Very strong. You know, the company has invested about \$10 million to date, and a significant part of that money has actually been provided to the University of Oklahoma to fund a series of sponsored research agreements that led to the development of the technology itself, our 3D display technology at the University of Oklahoma. That technology has now been patented and those patents are exclusively licensed to 3DIcon for commercialization. Dr. Refai, our CTO was the inventor of the technology at OU and we're happy to have him on board as our CTO.

>> **Steve Paris:** I'm so glad you passed it off to him, because I want to introduce Dr. Hakki Refai; he is the Chief Technology Officer at 3DIcon. And, you know, I could sit here and tell a lot of things about you that I have in front of me, but I think we want to hear it straight from your mouth. Tell us a little bit about how you came to be involved with 3DIcon and emphasize a little bit, about that special research and technology that you've developed.

>> **Hakki Refai:** Yes. Actually I came to 3DIcon in 2008, October 2008, but actually I was engaged with 3DIcon since I was a student doing my PhD study. As Mark mentioned that 3DIcon invested in sponsored research agreement with OU, and when I was doing my PhD in optical communication, I was engaged on the first sponsored research agreement with 3DIcon to do a study around 3D display. Although it's different from my PhD study, but I spent a lot of time doing this study and at that time and I enjoyed exploring 3D technologies out [inaudible] to provide this study. And after I graduated, I worked at OU as a research scientist and at the same time, I was engaged with 3DIcon to -- in the second sponsored research agreement and we started at OU -- we were big group actually. Around like seven, eight people from professors and post-docs, students, and we built -- we started -- my group actually started with the static volume display, which is called "Cspace display." And we started building the first prototype at OU at that time when I was working at OU. And then, after -- in 2008, as I mentioned, I moved to 3DIcon to continue my work at 3DIcon and continue the development of the prototype. We are seeking right now to improve it.

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>> **Steve Paris:** The good thing about doing what you're doing now, in addition to working with 3DIcon as you mentioned earlier, you are an affiliate assistant professor at the Electrical and Computer Engineering Department at OU Tulsa.

>> **Hakki Refai:** I used to be, actually.

>> **Steve Paris:** Oh, has that changed?

>> **Hakki Refai:** Yeah, it's changed. See when I joined 3DIcon, it's changed.

>> **Steve Paris:** Okay.

>> **Hakki Refai:** But I used to

>> **Steve Paris:** You still have a strong affiliation with the University of Oklahoma though.

>> **Hakki Refai:** Yeah. And we still. We got OCAST grant, which is joint proposal with Oklahoma University, and we almost built it together, 3DIcon and OU.

>> **Gary Owen:** And that's one of the things that is key to Oklahoma research is collaborations and cooperating and like -- you're a private company and the University of Oklahoma working together. I want to go back to Mark for just a minute. Mark, backgrounds of your management team. You've talked a little about the two of you. You all have several folks here plus a board of directors.

>> **Mark Willner:** Yeah, we've got a great management group. We talked a little bit about Hakki's background, my background. I come from the public -- excuse me, the private company area. I've raised a lot of venture capital, a lot of strategic money during my career and did mostly start-ups and turn-arounds during my career in high tech, and most of those in electronic displays. But there's another gentleman here, Dr. George Melnik, that we brought in at the same time that the company hired me, and he's essentially our VP of R&D. And George is really leading the commercialization charge, taking this great technology that Hakki has invented and getting it out of the lab and into production through our customer partners that we are working with now.

>> **Gary Owen:** Let's talk to the audience so we can give them an early stage -- an idea where we're going with the program, what this technology is. Right now we know 3D, visually as watching a screen with glasses. And it's on a flat screen, relatively speaking. You're talking about projection in 3D without glasses in commercial applications. And I want you to kind of give a better explain to that. And there's one little hook on this whole technology.

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>> **Mark Willner:** Right, so a couple of things to mention. First of all, the flat screen 3D that we have today in our living rooms that nobody uses is all based on wearing special glasses.

>> **Gary Owen:** Right.

>> **Mark Willner:** That has turned out to be a colossal flop, and when you talk to most of the big TV companies and they will tell you that's true. The next generation of 3D will be flat screen without glasses, and there's some early versions of that, some of which we're looking at, but really the focus for us is beyond that next step and that is to the third step, which is what we call a volumetric 3D display. Think of it as a large, plastic ice cube. And when I say large, you know, a foot on a side, a meter on a side that basically sits on a tabletop and you look inside this plastic ice cube and you see a full color 3D image. And it's just like Princess Leia from Star Wars, except the image doesn't get projected into the air, it gets projected into a plastic cube.

>> **Gary Owen:** Okay.

>> **Steve Paris:** So that's kind of the gist of where you are now, where you're wanting to go. And you've -- you all have made some great progress here at 3DIcon in a relatively few years.

>> **Mark Willner:** We have, and we intend to make more progress on an accelerating basis. You know, we're in the process of looking at raising some additional capital. We're applying for new research grants, one of them being another OCAST grant, and we have a very tight commercialization timeline and a very well structured plan and a very narrowly defined set of applications and markets we intend to go after initially with this technology.

>> **Steve Paris:** Very good. We want to talk about those markets because you mentioned to us, you know, during the break or earlier before we started, you talked about Homeland Security. You talked about any number of things that this may have an application to. Talk about some of those. Let's see where we're going here.

>> **Mark Willner:** We're initially targeting what I would call high-end low volume applications in the government and the industrial sectors. Basically what we're doing is, we're looking at applications where there is existing 3D data. Okay, for example, oil and gas exploration, medical imaging, Homeland Security, and when I say homeland security, I'm talking about screening of cargo, baggage, and passengers. They're capturing those images in 3D, but then the operators are all looking at those images on a 2D display. So they're losing a lot of the richness of the data. Another application that we could all relate to is air traffic control. You're looking at airplanes flying around in a 3D space on a 2D screen. Our display will allow the air traffic controller to see it as if he was looking down from the sky, and seeing all the planes flying around, in a 3D space.

>> **Steve Paris:** Wow. That is -- we've just scratched the surface, pardon the pun, but when we talk about display technology and where it's going in the future. [Background Music] We're coming to you from 3DIcon, a relatively new company in many respects, and we've got a lot more to learn about where they're going with their technologies and how it might eventually affect you as a consumer when we return, on *Oklahoma Innovations*.

[ Music ]

>> When I came in to the hospital for a routine surgery, I expected to be healed. A few days later, I was too weak to even get up from my bed. Did you know this year, about 3,000 Oklahomans like me who enter the hospital will contract pneumonia, and about half of them will die due to lack of treatment options for the antibiotic-resistant bacteria.

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>> With the support of the Oklahoma Center for the Advancement of Science and Technology, an Oklahoma-based pharmaceutical company is developing new antibiotic medications to fight against the most common pathogens in hospital-acquired pneumonia. Advancing health, supporting innovation. That's what OCAST is all about. OCAST is looking for Oklahoma researchers serious about investigating new treatments and products that improve the quality of life and the economy for Oklahomans. For more information, call OCAST toll free at 866-265-2215, or visit our website at [ocast.ok.gov](http://ocast.ok.gov). Investing in science and technology, it's saving the lives of Oklahomans.

>> It's all about Oklahoma technologies, research, science, and commercialization. This is *Oklahoma Innovations* on the OCAST radio network.

[ Music ]

>> **Gary Owen:** This week we're coming to you from 3DIcon in Tulsa, Oklahoma, a developer of groundbreaking 3D projection and display technologies that are being designed to produce -- get this, in full cover, 360-degree volumetric images. And when we say volumetric, what does that mean to the consumer? I know you talked a little bit about it, but give us a little better demonstration to -- in relation to what we know as flat screen and HD screens and resolution.

>> **Hakki Refai:** The flat screen usually tricks the eyes of the viewer to deliver 3D data. But when you speak about volumetric display that means you are going to see the image in front of you, and you can walk around the image from all directions to see all sides of the image.

>> **Gary Owen:** To see the depth of the image.

>> **Hakki Refai:** The depths of the image, so it's a real image in front of you. It's not fake and it doesn't -- on the flat screen you will be it, have some sort of headache while you are watching for long periods of time. But when you see the real 3D image in front of you, it's normal. It's -- that's what the human visual system wants.

>> **Steve Paris:** And so we don't confuse the audience, we also want to compare that to holographic type of images, because that's really not what 3D is, is it? Holographic, or is it?

>> **Hakki Refai:** Holographic it's 3D but it's not volume in front of you. When you look to it from one side, you see the 3D image through the holographic hologram let's say. But here, in our display, it's a real 3D image, real volume in front of you.

>> **Steve Paris:** And this is without the aid of glasses, by the way.

>> **Hakki Refai:** You don't need glasses. I guess -- and especially like our technology will provide high-resolution images, so you can see all the details on these images. This technology actually can create around 800 million voxels. Voxel is a 3D pixel and volume...

>> **Gary Owen:** Wow.

>> **Hakki Refai:** ...so 800 million voxels, when you look to the image with this high resolution, you will be able to see all the details of that generated image. So it's impressive.

>> **Steve Paris:** Okay, so we're familiar in the HD world of -- like, for example, 1980 of -- I or pixel size. In the photography world, we know what pixels basically are. So when you compare pixels to the volumetric window, what's your -- explain that, the differences between those.

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>> **Hakki Refai:** Yeah, the pixel has two sides, X, Y. But here we are talking about a cube, a volume which is X, Y, Z. So you have three dimensions for each voxel. So being able to create all these voxels; it's not easy, but our display can generate like nearly 800 million voxels.

>> **Mark Willner:** Let me jump in and give you some comparison from a consumer perspective. Your standard HDTV, your 1080p TV, that generates about two million pixels. We're talking about 800 million pixels.

>> **Gary Owen:** Wow.

>> **Mark Willner:** Okay? And that's in the first product prototype that we're building. Beyond that we're going to be building two billion and four billion voxel (product) prototypes.

>> **Gary Owen:** Let's talk about applications, because you talked earlier in the show about commercial applications. When we talked we talk a little bit about air traffic controllers as an example, but in your demonstration before we started with the show, you showed us some medical applications. Give our consumers an idea of where that fits.

>> **Mark Willner:** Well, if you think about medical imaging today, the CT scans, the MRI scans, and including ultrasound, all of that data is captured today for the most part in 3D.

>> **Gary Owen:** But they're not seeing it that way.

>> **Mark Willner:** But you're not seeing it in 3D. So when the doctor looks at your MRI scan or your CT scan data, they look at it a slice at a time on a 2D display, and in their mind they have to recreate the 3D image just like the air traffic controller has to do with the 3D airspace. So, our technology would allow you to see the full scan information in 3D and be able to look at it from different angles, have a bunch of doctors sitting around it collaborating, saying, "Well, how do we want to start this surgery?" And you know, "Where do we see the problem?" So surgical planning is a very, very key area of application for this technology. Another area that's near and dear to the state of Oklahoma is leveraging this great radar technology that's being developed here in the state for weather forecasting and weather analysis. And that's both military and commercial. So again, capturing the information in 3D. How many times have we heard on the radio or the TV we've got 3D Doppler radar.

>> **Gary Owen:** Yeah.

>> **Mark Willner:** Okay, well, you're watching it on a 2D display.

>> **Gary Owen:** Another thing we want to emphasize here that like when you go back to the medical part of this, mostly doctors are looking at this in black and white, or in those kinds of hues where your technology will be in color?

>> **Mark Willner:** Right. Our technology, the road map shows us getting to a full color, very high-resolution display and in medical imaging, that's absolutely critical.

>> **Steve Paris:** You just mentioned something about how we look at everything in 2D, two dimensional, even though it may be an original 3D image. What's that going to mean for say the television industry or the electronics that are coming down the pipe for all of us?

>> **Mark Willner:** Well, you know, what's happening in the television industry right now is that the first generation of 3D displays, displays with the glasses...

>> **Steve Paris:** With the glasses, right.

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>> **Mark Willner:** ...was a complete flop.

>> **Steve Paris:** Yeah.

>> **Mark Willner:** But it is inevitable that TV will go 3D and it will be great 3D and it will be without the glasses, and that transition will take a while to occur. We spent some time talking to Phillips and [inaudible] in the Netherlands and they basically said, "Look, it's going to be the same kind of transition as black and white to color, and from standard definition to high definition. 2D to 3D will happen. It's inevitable." Being a display technology person, I can see it happening, but it's probably three to five years away before we're going to see great looking 3D in the home.

>> **Gary Owen:** You know, my question is are we eventually going to see this on our mobile devices, this kind of display?

>> **Mark Willner:** Actually, you can buy mobile devices today that have a very limited 3D capability, so a single user can get a left and a right eye view. So you have some 3D effect, [Background Music] but it is not to the extent that we can deliver 3D.

>> **Gary Owen:** Okay. We're going to take a break. We'll come back from 3DIcon in Tulsa when we return on *Oklahoma Innovations*.

[ Music ]

>> From Oklahoma City to [inaudible], from Clinton to Tulsa, you're tuned to *Oklahoma Innovations* on the OCAST radio network.

>> 1859 marked the first recorded oil well in Oklahoma. The find created quite a buzz. Oilmen from across America rushed to our great state in search of black gold. The search for oil never stopped, but the technology used to find it has changed dramatically. With the support of the Oklahoma Center for the Advancement of Science and Technology, an Oklahoma-based technology company has invented a new product that will increase daily oil production by as much as 50%. These advanced drilling systems are anticipated to generate and protect thousands of jobs in the oil field, manufacturing, and service industry. Creating new technology. Improving Oklahoma's economy. That's what OCAST is all about. OCAST is looking for Oklahoma researchers serious about investigating new products that improve the quality of life and the economy for Oklahomans. Call OCAST toll free at 866-265-2215, or visit our website at [ocast.ok.gov](http://ocast.ok.gov). The field of science is pumping new life into Oklahoma's economy.

>> Growing up, my family enjoyed fresh fruit all summer, and now I do the same with my children. But in 2011, more than 160 people contracted salmonella from contaminated cantaloupe, and 29 people died, including one Oklahoman. With the increase in food borne illness outbreaks, how am I supposed to feel safe feeding my family?

>> With the support of the Oklahoma Center for the Advancement of Science and Technology, Oklahoma State University researchers are investigating better ways to disinfect cantaloupe and stop this threat to human health and Oklahoma's agricultural based economy. Investing in our health. Advancing agriculture. That's what OCAST is all about. OCAST is looking for Oklahoma researchers serious about investigating new treatments and products that improve the quality of life and the economy for Oklahomans. For more information, call OCAST toll free at 866-265-2215, or visit our website at [ocast.ok.gov](http://ocast.ok.gov). Investigating in science and technology. It's good for your health.

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>> Research and development. Technology transfer and commercialization. Creating high paying jobs in Oklahoma. It's what OCAST is all about. This is *Oklahoma Innovations* on the OCAST radio network.

[ Music ]

>> **Gary Owen:** Our guests this week are a couple of guys in Tulsa Oklahoma, that a -- man they're really opening our eyes about where the future's going in 3D technology. The company's called 3DIcon, a developer of groundbreaking 3D projection and display technologies. We're visiting with Mark Willner who's the CEO and Dr. Hakki Refai who is -- he's the man behind the technology, and we are learning a lot about where this is all going. Before the break, Mark, we had talked a little bit about some of the advances and where you see this technology going. One of the key things you kind of touched on a little bit in the beginning of the program, I want you to get a little more in depth. For those who are interested in oil and gas, this is fascinating how you see this application being using in the oil and gas industry.

>> **Mark Willner:** Right now, the oil and gas industry uses various means to create seismic data to give themselves a picture of what's happening under the ground, and there's two basic ways of doing it. Small explosive devices are used, and there's sensors in the -- at the surface that capture that data. And then there are special trucks that are used to actually thump the ground, okay? And those trucks include the sensor's technology. The issue though is once the image data comes back, it's in 3D format, and yet, they have to look at it on a 2D screen. So they lose a lot of the fidelity of the information, and a lot of the value of the 3D image data that they are generating at great expense. With our technology, they'll be able to see under the ground as if they had x-ray vision.

>> **Gary Owen:** Wow. That's incredible.

>> **Mark Willner:** And there's another example of that and that's seeing under the water. There's a lot of data that's being generated by sonar today. And that's used in the military and in the industrial sector.

>> **Gary Owen:** Including oil and gas, right?

>> **Mark Willner:** Including oil and gas, right. Also used for navigation, underwater navigation, commercial fishing, as well as deep-sea exploration. So the ability to visualize that information, that sonar information, not on a flat screen, but on a 3D display really is going to be key in enhancing the value of that data and enhancing the application itself.

>> **Gary Owen:** And again, as you said, they're already getting the 3D data, but they're not seeing it. They're seeing it on a flat screen not a 3D screen, right? That's what we're talking about.

>> **Mark Willner:** Right. And the operators in all of these applications have to take the 2D image data that they see on a flat screen display and sort of in their mind create the 3D image...

>> **Gary Owen:** Yeah.

>> **Mark Willner:** ...which actually they had to begin with in the image data...

>> **Gary Owen:** Sure.

>> **Mark Willner:** ...but since they don't have a great 3D display to look at, they're having to do that themselves.

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>> **Gary Owen:** Okay, let's go another route because consumers are going, wow, this is really cool. What benefits do we have out of this? And we kind of touched a little bit about where television's going, but let's talk about the marketing side. And we've seen kind of a hint of this in futuristic motion pictures, right whereas you see visual images all around you. Times Square for example, I can't remember the movies, but I've seen visuals where you see these 3D billboards moving around Times Square, okay? Are we talking about that kind of technology in 3D?

>> **Mark Willner:** Yeah, we see the -- we see the initial applications being in the industrial and government sectors, but we're going to be moving as quickly as possible into the commercial sector, and in particular in what we would call "experiential marketing and product advertising." Think about test-driving your new Mercedes without actually sitting in the car by basically looking inside the car, experiencing the dashboard, the seating arrangement, all of that in 3D before you buy the car, in the dealer showroom. So that would be another example. Think of a tabletop display of high-end jewelry or what have you in a retail store environment, where the images coming up from the counter and you see it in front of you and that's the thing you're going to buy.

>> **Gary Owen:** Wow.

>> **Steve Paris:** Well, that's -- that's going to open up a whole new world of marketing.

>> **Gary Owen:** Oh my gosh.

>> **Steve Paris:** Wow, so you can actually show somebody a car that's not really there.

>> **Mark Willner:** That's correct.

>> **Steve Paris:** Yeah, you've got -- you have to wonder what it's going to do to all the floor planning that goes on with automobile dealerships around the world.

>> **Gary Owen:** And department stores.

>> **Steve Paris:** Yeah, they won't have to keep as much material in stock -- or product in stock as they -- and maybe the car companies won't like that, but who knows? It may create a whole new paradigm.

>> **Gary Owen:** And let's talk about that. Now we're talking about a display -- you've explained to us where the technology is going, to us who are businesspeople and investors and we see where this technology is going obviously, the first thing is, "gosh, that sounds very expensive to integrate this." Well, like anything else, the more applications that are used, cost goes down, I mean, when I think about the 3D TVs with the glasses, it was expensive to get into that and slowly, even though it was a flop they started coming down in price a little bit, but you know, talk about that. I mean, is this going to be common in the next ten years do you think, or building into that, or is that a little early?

>> **Mark Willner:** Absolutely. 3D displays will be as ubiquitous in ten year as color displays and hi-def displays are today. I mean, it's inevitable if you're coming at this from within the display industry, you see the underlying technology development, 3DIcon being a big part of that, other companies developing technologies, and it's not going to be a one-size fits all. There's going to be different technologies for different applications. I will say that our market entry strategy is really focused on going after those high-value, high-end applications, our business model is technology development and licensing, so we're going to get this technology in the hands of the big companies that can really make best use of it. Medical imaging, we'll be going after General Electric and Siemens and some of the Japanese companies that are doing similar work, in some of the government systems, we'll be focused on Raytheon, Boeing, Lockheed Martin, Northrup Grumman and other organizations that have the capability of building a large system like an air traffic control system where our 3D display is only one part of that.

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>> **Gary Owen:** The 3D -- the 3D display technology that we're talking about is called CSpace, and so CSpace you see as an expanding integration into a variety of applications if I'm understanding that, and then there's the Pixel Precision software integration, am I right or wrong about that? Is that a different platform or do the two work together?

>> **Mark Willner:** Let me speak to that. Pixel Precision is actually an interesting outgrowth of our 3D display development effort. Dr. Refai realized that the existing software tools that we needed to develop the 3D display technology were inadequate, so he actually wrote his own software tool that we are now calling Pixel Precision and we are actually selling that on an exclusive basis through a company in Texas as a product.

>> **Gary Owen:** Wow. Let's talk a little bit, Steve and I always get into the manufacturing side of this, the technology stamp is there, it's ready for commercialization. Where do you see -- how do you see this manufacturing process going?

>> **Steve Paris:** Before you go there you touched on that a little bit, you talked about the companies that you're going to go after, you're going to license this technology too, and I suspect they're going to handle the manufacturing side of it, is that right?

>> **Mark Willner:** In some cases, yes. In some cases there'll be a third-party manufacturer, but you know, if you think about the subsystems that actually go into our 3D display, most of those are proven subsystems today. For example, the image creation is done using a Texas Instruments DLP chipset, that's commercially available, so that's a building block that you can just buy off the shelf and use as-is. The lasers that we're using to basically drive the display? Also commercially available. So really, the manufacturing of our display is for the most part a system integration exercise, which is different than a traditional manufacturing exercise that you'd have for something like a flat-panel display for a TV.

>> **Gary Owen:** Hmm. Okay.

>> **Steve Paris:** Wow. Okay.

>> **Gary Owen:** All right, at this point guys I think we've covered a lot of the applications. Now, Steve I know you're very interested in the business model of this.

>> **Steve Paris:** He's talked about the business model, and I don't know if you have more to add to that, but everybody has to have a business model, every investor wants to know what your business model's going to be, as much information as they can possibly get from you.

>> **Mark Willner:** Well, there are a few other components to the business model...

>> **Steve Paris:** Okay.

>> **Mark Willner:** ...that it would probably make sense to mention. Number one; it is a technology development and licensing model. The licensing is really going to be a three-step process. The first step would be to grant exclusive licenses in fields of use to basically secure partnerships with some of these key companies. They're going to want an exclusive to forward invest in this technology...

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>> **Steve Paris:** Sure.

>> **Mark Willner:** ...and they will have to pay an upfront fee to us, a basically upfront license fee in order to get that. In addition, once the products move into production there'll be a royalty stream to 3DIcon, and there's one more stream that we're going to be looking for, and that is fees based on designing prototypes and products with and for customers, because we have the greatest expertise in this area, we will actually be working with them or for them to design the initial products.

>> **Steve Paris:** Yeah. You know, Mark, one of the things that I asked you off-air a little bit ago was, "Who else is doing this type of research out there?" And you said you didn't know anybody else who was doing it quite this way.

>> **Mark Willner:** There are dozens of 3D technologies at various stages of development today, and as part of the due diligence that I went through during my first six months with the company, myself and one other individual went out and visited with most of those companies worldwide to find out how far along they are, whether or not there are partnership opportunities or licensing opportunities. And what we found was -- that really reinforced our original belief that our technology is truly unique, in that, if you need something that's a true 360 degree walk around collaborative, not having to rotate thing on screen but just being able to look at it as a real object and you need something that can scale to very large sizes, very high resolution that's very reliable and very safe, we really have the only technology, and that's recent market research that validates that.

>> **Steve Paris:** What you just described is a process that everyone who gets to this stage, to where you're getting an up and running business and you commercialize, you have to do due diligence as far as checking out the competition, finding out if anybody else out there is doing what you're doing or are attempting to. So you'll know where you stand.

>> **Mark Willner:** And you don't do it once, you do it once a quarter.

>> **Steve Paris:** [Laughter] Yeah, because that information is changing, it keeps going, absolutely.

>> **Mark Willner:** Very dynamic.

>> **Gary Owen:** Guys, we're going to have to take a little break here, but I hope our audience is really enjoying what they're hearing, because this is really the future and the near future, I should say, when you think about how some of the technology we're enjoying today, ten years ago, five years ago, how quickly it's evolved, now we're talking about 3D [Background Music] visualization and display, and where it's going is just incredible. 3DIcon in Tulsa, we'll be back with more *Oklahoma Innovations*.

[ Music ]

>> Now in its 17th year, this is *Oklahoma Innovations* on the OCAST radio network.

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[ Music ]

>> **Gary Owen:** If you've [Background Music] just joined us we've been talking with Mark Willner and Dr. Hakki Refai about 3DIcon, a Tulsa company that is really, I would say screaming when it comes to the development of new 3D display technologies, and there's a little comment here in the bio that was sent to us about "the eyes have it", the importance of 3D. Scientists estimate that almost 50% of the sensory neurons are related to the visual and perception sense. Seeing in 3D involves and stimulates many times more than these neurons than seeing in 2D. So the list is endless, 3D imaging was three times more effective in detecting polyps, 3D imaging increases the accuracy of tumor treatment several times, the use of 3D is critical for the study of DNA structures, 3D analysis is indispensable for oil and natural gas exploration, as you just heard a few moments ago. So where are we going with this, guys? What's on the horizon for your technology?

>> **Hakki Refai:** Actually, let me start from the beginning of the technology. I mean, we built the first proof-of-concept prototype at the end of 2008, and before that the operating principle was on paper, so we put the concept on paper and we tried to prove it on a prototype. So we build a small, little image, but to build that small, little image we had to, I mean, develop software which can run the imaging projector and the addressing projector at the same time, and that software was like, around 50,00 lines. We had to build electronic art in addition to the optics. So we build that proof of concept, and we applied to OCAST actually to be -- to fund our -- be part of our development process.

>> **Steve Paris:** Dr. Refai, that was back in about 2009, is that right?

>> **Hakki Refai:** Yes. Around 2009 we got the OCAST contract we got awarded by OCAST for our display to develop it, and we reached our goals mentioned in the OCAST proposal.

>> **Steve Paris:** It takes about three years right?

>> **Hakki Refai:** Yes, around three years, and we build brighter images right now, we have our image is 200 times brighter than prior OCAST, and our image is larger than prior OCAST and now we are applying, actually, to another OCAST to reach us to a product prototype in our new plan that we are reaching, we are going to develop larger image chamber, which larger images and the images would be with 800 -- nearly 800 million voxels so you can see all the details of that image, because you have a good resolution for that.

>> **Steve Paris:** So it doesn't come in quick steps until it comes towards the end and then it speeds up the process after you've built a compendium of knowledge out there, is that the correct way to look at it?

>> **Hakki Refai:** Yes, actually, at the start -- the start was slow because we had to learn everything.

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>> **Steve Paris:** You don't know everything!

>> **Hakki Refai:** Yeah, yeah, we had to learn everything and we have to develop it, so the beginning of the development was very -- took a long time and was very intensive. Now, actually, we can move to the next stage in a faster way because we are -- we have the experience to develop a new or improve the prototype, in addition the base of the display, we've already developed it. So moving forward, it's faster right now and our plan to reach a product prototype for commercialization.

>> **Steve Paris:** Yeah, and it'll take around -- it very well could take, we don't know exactly, but it could take up to three years to do that, it's just the nature of the process.

>> **Hakki Refai:** Yes, it's three years, maybe it's three years, but these three years is much, much faster than the previous three years, and you improve...

>> **Steve Paris:** Right, right, you can make much more progress in the same amount of time, right. And that's why you're looking -- both of you are looking down the road, and I keep hearing the word, "seven, eight years down the road," we can expect to see things that are going to be very shocking to people who aren't looking down the road for this, is that a fair assessment, Mark?

>> **Mark Willner:** Right, I mean, we -- we want to push this technology into as many sectors as possible.

>> **Steve Paris:** Sure.

>> **Mark Willner:** Clearly, we're starting at the high end, but "pushing it down the pyramid" as we like to say into the commercial space, and then eventually into the consumer space. Just in terms of the direction of the company though, I will tell you that we are not tied to a single technology. We are a 3D display technology development and licensing company, and hidden in that is a 3D technology invention company, an innovation company...

>> **Steve Paris:** There you go.

>> **Mark Willner:** So it's, as I said earlier, in 3D technology area it's not one-size-fits-all. There'll be various technologies that are a better fit for certain markets and applications than others. We intend to play in a number of those, and we're making investments now, small investments, in some of those other technologies.

>> **Gary Owen:** So we're talking to the listener today and we've certainly given them a great broad overview of where the potential is for your technology and where the company's going, and we look at the branch-offs of all of this. What do you see in your company, right now, where do you project your company to be in ten years -- five years even?

>> **Mark Willner:** Yeah, as I said previously, I think where we're going to be is we're going to be a multi-faceted 3D technology company. We will be able to serve multiple markets and multiple applications with different 3D technologies, not just one, and we have, I think, a great sense for where the 3D technology roadmap is going, and where in that roadmap we can choose to play. Clearly we are going to be a major player on the walk-around 360 volumetric space... .. Gary Owen: Right.

>> **Mark Willner:** ...but we also think we have a great play in the flat screen area as well.

>> **Gary Owen:** Now let's remember, you're a public company, not a private.

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>> **Mark Willner:** That's correct.

>> **Gary Owen:** So people can investigate investment in your company, is that right?

>> **Mark Willner:** You can buy our stock in the market, absolutely.

>> **Steve Paris:** You know, one of the things that I've observed is companies -- there are companies that have a focus just inside of Oklahoma, others have a focus inside the United States, this is technology that would be of interest around the world, I would think.

>> **Mark Willner:** Absolutely, but I will tell you, we are focused on collaboration within the state of Oklahoma, and in particular with OU, and other organizations within the state. We are talking right now to a company in Catoosa who is a specialty chemical company about being a manufacturing partner for our phosphors.

>> **Steve Paris:** Very good. That's -- we'll talk about that when you can announce which company that is, but as I look at this I see a lot of attention coming to Oklahoma, and of course that's the whole process of how this got started, is, you know, through OCAST we fund projects that look like they're going to be commercially viable, that's a key point there, and well, -- you all made a case today talking about a commercially viable company that has so many ways to go; Homeland Security, health, aviation, aerospace, and the list goes on, and on, and on, and I suspect you're going to find things that you haven't even thought about yet as the process rolls on.

>> **Mark Willner:** We want to be the poster child for a successful high-tech venture here in Oklahoma. We want to prove to the world that Oklahoma can do some homegrown high-technology and successfully commercialize that and attract high-tech entrepreneurs like myself, like Dr. Melnik, to Oklahoma to build successful companies.

>> **Gary Owen:** You know some people may be thinking out there right now, "Well, when is that tabletop computer coming where I'm going to be seeing 3D images on the tabletop?" Is that something that you guys look at getting into someday down the line in the future?

>> **Mark Willner:** Absolutely, you know, as we mentioned during the demo, which we can't show on the radio, because it's visual...

>> **Gary Owen:** Sure.

>> **Mark Willner:** ...the initial units will be sort of pedestal-type based for air traffic control and other applications but eventually that will become a tabletop sized unit through miniaturization basically.

>> **Gary Owen:** Mm, fascinating stuff. The speed that you showed us, Hakki, when you talked to us about this earlier, we talk about the design of how this is -- we think of speed in processing computers, we know what those Intel processors do and the RAM, the faster the computer runs the more information it can process, that's kind of what you're doing with this technology, isn't it? So that the images get bigger and faster in processing the volumetric volume, that we're talking about as far as resolution.

>> **Steve Paris:** Right.

>> **Hakki Refai:** Actually, our technology, the CSpace display, can be a real-time display. So because we are using DLP technology which was developed by Texas Instruments. So it's -- we already built the software to make a real-time display, so if you have a camera, for example, a 3D camera and you want to convert that image and display it, it's possible to use -- to be done by our technology.

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>> **Gary Owen:** Guys, we are out of time. It has been a fascinating hour of great information, Steve, [Background Music] and I got a real 3D visualization of what these guys are going to be doing about five years, and we want to interview them in the near future and see where they're going.

>> **Steve Paris:** Yeah, we'll come back.

>> **Gary Owen:** That's right. Guys, thanks so much, we'll talk to you next time on *Oklahoma Innovations*, have a good week. [ Music ]

[ Music ]

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