Opening plenary

RESNA 2017

SPEAKER: Good morning. If you would come in and have a seat, we'll get started in just a moment.

Good morning and welcome to RESNA 2017. We have a very good busy plenary session for you. The theme today fits the overall theme. Today we'll hear from Dr. Alex Mihailidis regarding disrupting assistive technology and the aging landscape. Before we hear from Alex we are going to acknowledge our Sponsors.

And we especially want to acknowledge our Platinum sponsor. We are really glad to have them here.

SPEAKER: How are you doing? It's a good town. Did you get a piece of it last night? Many years ago, I had a piece of New Orleans and spent time, thinking, I have enough time, I thought it gives me a particular feeling, your name what it was? Old. I felt old. I visited with friends from Texas.

 Anyway I'll keep my remarks very short. I never went to one to hear the sponsor speak. Who we are are the folks that provide wheelchair vans. I think you probably know a little bit more about us than that. And the crew there and learn a little bit more what we do. I hear we have pop core machines.

NMEDA is not a vendor. We do we have a simple message. The ‑‑ part 1 of it is, there are solutions out there for people. Adaptive quem solutions that people can use to regain their mobility. And 2 of that is it makes a deference where people get those items. It is very dangers when it goes bad. The safest bet is to that's the home page. Enter the ZIP is there, and punch that button there and that's the quality assurance program:

Have a great conference, thank you.

SPEAKER: We are going to bring back a tradition that started and took a pause last year. We are going to literally take minute to let each sponsor speak. We will take a few minutes to do that.

This is going to be really, really fast. The presenters. These are the scientific papers that do really, really well in the sessions. Do a quick 1‑minute pitch and if you hear something that strikes you you can visit and learn more in‑depth about it.

Let me have my first minute madness presentation.

(Inaudible)

Move on to the next one. Good morning. My name is Mike. From the shower into the shower and out again safely. Imagine doing it on one leg. Our solution is a patented easy‑on easy‑off platform at eliminates the barrier. And the reason we differ from the comp titian is a significantly lower price from the competitor. And we see a good future for the disconnect for quick change. Ride up on the bike, and next thing, you are in the water. That's the pitch.

SPEAKER: Hi, eye gaze is great, until it's not. Or to answer to the solution is what if it adjusts itself? We use technology to bring it in position to the end user. We saw some successes and failures and are making changes. We are taking the next step forward to development. Plus a. Thank you.

SPEAKER: Thank you. We have the next slide.

SPEAKER: I usually speak for the university so 1 minute is going to be a challenge. So who is academia? We have a teach, research, service. In an assisted living facility. Learn how to do positioning cush cushes. Communication and I've got qualitative it was a win for me because I got published and I got to come to New Orleans and present it. Thank you.

SPEAKER: Thank you next slide. That's mine. Let's go to Jennifer. It is a sign

SPEAKER: Yeah. We have maybe it's in the queue, so I'm presenting today. We look at the people's ability to look at the assessments. The buddy symmetry settlement, sleep, and pain. And we want to know what is the competence of the therapist for training, they take it before and after, as they take the assessments. So we got data, what it's like for competence at each stage. Ultimately we hope to use the training module and use it for people with cerebral palsy.

SPEAKER: Good morning. We have been involved in systems (inaudible) is really screwed up and the the issues is what needs to change and what we have is a good model of developing a product for the military. When they need better system. The government procures an approach that designed to products and give them to everyone that needs them. So instead, distinctive technology in our field, (inaudible) the corporations beg for funds and they are denied the products they are supposed to receive. Why the system is so screwed up and why we need to change so it's sort of a free for all. The products designed in America and they are at no costing. That's it. Thank you.

SPEAKER: I'm Jamie. Good to be here today and we are talking about products that the exoskeletons. And what you may not know, if someone is walking behind them, if they fall, in variably they will fall. Coming up with strategies to deal with exoskeletons. And our students have come up with a strategy to use exoskeletons with censors. We are interested in this. I think it's today in the program it says tomorrow, but you have to look at that. We'll see you today.

SPEAKER: (Inaudible) this is part of my project for we know (inaudible)

SPEAKER: Thank you and our final presentation.

SPEAKER: Hi everyone. I work on a collaborative team at the University of Pennsylvania. In occupational therapy and we try to understand how robots can help occupational therapists. And we study patient therapy pairs and use the paradigm in robotics and map that in how we define different roles that they can use in the OT session with a client. And then understanding what type of cuing happens with the therapist. Come by and talk to us. We hope this will lead to better algorithms for better service robots.

SPEAKER: All right. Is this the presenter? Next slide. All right.

This concludes the minute madness. Thank you so much.

SPEAKER: We are going to get on to the plenary speaking. He did say a couple of things. This can he have point of view minute madness. It's going to have a time for questions and answers for people to ask questions. The bio is in the program on page 9. Take time to read that.

Please welcome Dr. Alex Mihailidis

SPEAKER: So thank you Mike and for inviting me. It's an honor to be here as speaker. This is my 20th year as being here and it's nice for me and 20 years of giving this talk. The presentation here is going to be wide‑ranging. I like to describe as 30 percent factual, 60 percent opinion and 10 percent (inaudible).

I'll point out the slides and send in e‑mail.

So knowing the RESNA audience. I'll start with the conclusion slide. If you take one message way, research shown that evidence there is strong potential for AT to support healthy and active aging negative

We believe even if you have dementia, sensory or other cognitive impairment. You can lead a good lifestyle.

We ensure people can have that high quality of life as child, teenager or older adults in my presentation today.

I'm not going to spend a lot of time on the reports, journals that talk about the scary phrases that let us know the population is aging. Our recent census came out last month that show more older adults than children. It's a significant mile disown to think about it. To provide assistance in health and wellness.

1 of the issues we have seen is the fact there are older adults, but because of the advances on modern medicine, people are living longer. It's very common we see people living for 15, 20 years with Alzheimer's disease. We are seeing people with Down Syndrome living to an older age.

The question is how to deal with those things and still find good health care.

My part is not only dealing with individuals that are older, but there is a decrease in care givers. I'm talking about family members. The sons, spouses of the individual that are there 24/7.

The reason is not just because there is a smaller number but a change in the family unit. Parents are living on the East Coast and children on the West Coast and they are still providing care across the country. What can we do to support the caregivers themselves?

We start to see more care givers faces their own challenges. 70 to 80 percent of caregivers face mental health challenges as result of the care.

We are seeing a lot of things come out in‑deep technology and solutions that support older adults and the caregivers themselves.

This is a good description of where technology can play a role. If you look at this model here. Typically, now, we are down in this area. And while the numbers are not precise, the cost of care is quite high but quality is life is quite low in this model.

As we go up the model. I'm sorry I can only do this one with the pointer.

(Inaudible) from acute to relates care. We want to provide care to people no matter where they were and how they need it. We show that quality of life can be high and the hope is cost of care can be low. Anyone involved in home care can thel you this is thought a problem. But this is where technology can play a role. Through technological solutions we can get quality of life high and cost of care down.

Particularly in the aging technology field, we have filed in problems we have made in the solution. For 15 and 20 years we have said we are going to develop sensors, robots and are going to be cost effective and provide care. None of these exist yet. The reason for this is there are none of devices that exist yet.

We talk to them and ask why don't you buy them? They say they are difficult to use. I can't figure out how to use them.

So the question is why does it have to be like this? This is from my conversation of being in this area.

Hi, how are you doing. If he wasn't 7 feet tall, I never would have noticed him.

So the question is why is it like this?

First, the needs are very complex. The older apologize is very, very heterogeneous. I gave a similar talk to a group of seniors a few months ago and 1 stood up and said when you see 1 senior, you see 1ier. And you say all of them nodding their heads. More often, the understanding of the needs are not part of the project. Talking about the product it's very important they understanding the sameness of the population and the 1 size fits all approach.

And also, there has been a silo men alt in the field that has resulted in poor outcomes.

They see the same things happen. The ETs over here and the PTs over here. And the gerontologists are not a part of it. And we need to bring everyone together and that's going to be difficult and that's part of the work they do at Age Well.

Now, one of the biggest reasons why where apologize if you have anything that makes these devices this product, when you analyze it from a business perspective, it's one of the most successful technology on the market. Ever. But the companies themselves well tell you 70 to 80 percent don't ware the button. When you talk to the users, the answer. I don't want people to ask me are you sick. I don't want people to know I fallen before and injured myself.

More interesting 85 percent of the users never push it. I know it's it ticket to long term care. This is a model we are using. We are continuing to do the same ‑‑ I didn't go out last night. We are knowing not to end up further than we currently are.

One of the big wrenches in the thing. Even if we figure out what the caregivers want, it's a change in the demographic. There are going to be far more tech savvy. They are going to be far more accepting of technology. Younger caregivers. Well‑connected through social media and smart tone phones. So we need to figure out what they are going to want. It's starting a significant debate in the field. Who are we designing for?

The question to ask in meetings, are we wasting time in the field designing for the current adult? If they had not going to use the technology that's going to come out. I'm going to touch upon this later on.

This brings up the notion of disruption. We hear it all the time, but it's a big term to use in the assistive technology field in general. For the sake of clearness. When it's coming into the market place, and radically transforms the market.

Kodak was the first to come up with the digital camera. They had the foresight, but and everyone else (inaudible)

Everyone else came out with a senator phone. And now you see the flip phone that doesn't have the same features as the iPhone.

We need to be disruptive. No longer incremental. Or build in the small successes we have had. We need to do different things.

How to be disruptive? How many in the audience got into the field because you were inspired by a personal story? Wow, no one. Fantastic.

I'm going to continue with the story anyway.

This is for the trainees in the audience. You need to be inspired to step out of the comfort zone and do something different merchandise

With respect went to the aerospace engineer. Left Canada and got laid off. I worked for Chrysler and got the hell out. I didn't go what to do. Until I met Robin, an engineer like I am. And his wife had moderate to severe Alzheimer's disease. And he talking about all the things we had to do for her. And she knew what was going on and she is very agitated and it was difficult for him as well. And he said would not it be great if we had computers to do this are if us?

And I'm still do that work now. The key things in terms of disruption is you want to town to be disruptive. I still e‑mail him and give him an update and if he says you are going down the wrong path. We will stop what we are doing. We want to make sure we are relevant.

It also requires new ways of thinking and pulling it into the work we do. We see that happening in the field in recent years. We really get into different areas like artificial intelligence, things we never thought possible 5 years ago.

How many remember when IBM developed Watson? In Jeopardy? . I think it's a neat break through moment in the area of computer science, but

(Playing video)

So what you see here is an example of what computers CD now. You can download the development kit for this and develop an app were your phone to have national interfaces to interact and art intelligence. Or even to naturally as possible to use communication styles that fits what they want to use. Adapting to the person and learning about the needs of the peen and changing over time to come up with the best solution. We need to come up with to other experts and get them up here is tell us what they see and what we can take from them and what we can give back to them as well.

This moves to the next part of my talk.

Where can we be disruptive? Where can I make a dig difference in the lives of seniors and dare givers? That's smart homes, robotics and big data.

Also other places as well and also what you are going to see are red texts that indicates the workshop that is happening here at RESNA. I encourage you to see the aging track at Age Well.

Let's start with smart homes. Not just adjusting the thermostat or lifting the blinds. I'm talking about those that do things that automatically recognize what your ability may be, preferences assist persistence appropriately. There is no effort required for me to activate it it.

You can automatically connect to the doctor, for example. And I don't have to get into the computer and figure out how to get Skype, for example. It flips and connects to the doctor so I can have a quick check in with him or her and flip back it the program.

We have systems that recognize people with dementia recognizing making a cup of tea or using the toilet. Seamlessly monitoring their health.

One example of the smart home is a projects we have used in the group and the workshop, is tomorrow at 11:00 a.m.

We call it ambient based physiological monitoring. Many of the clients are older adults. They identify an issue they have the older adult clients are not complying with monitoring the health at home. And sending the information to the client.

I did a post doc years doing the (inaudible). They could not figure out how to send the data. We figured out how to collect the information automatically. Can the person get up, go get dressed, eat, go and take a walk maybe, and during the normal routine, all the data is collected 20 or 25 times. It's the trend you want to look at. More importantly, we want to know if the blood pressure is up or down, but also if they climbed a set of stairs to make it go up.

Here is one of my grad students sitting and watching TV and what you see is an electrical activity of his heart. He is wearing 2 pieces of clothing. There is a lot of work behind it. The student over here is getting his INTOD there is a lot of work in this.

During normal activity, getting this information.

They have been working on smart floor tiles by getting blood pressure by standing on them. And censors that can get all this information.

Let's move to robots.

Normally, I tend to get the same question of cost. They are way too expensive to get in the home. That's recognize, they are very expensive. That's true, we try to make them that lift the person, and while they are in the bathroom, go make breakfast. That's true. This is the challenge we like to solve. But a robot that will do that is in the range of $250,000.

But if we have a robot that's simple, it can be affordable. For example, we built this for $500.

This is more of a research platform looking where they can play a role in seniors.

In terms of robotics, we have seen a wide range of applications. We see cognitive robots that help people stay cognitively stimulated.

This is an example of one of the social robots, Ed, and this is a really person with moderate dementia.

(Playing video)

What you saw are 2 examples are how it operated. There is a verbal prominent, but again we use a prominent to help the person. In this innocence, it learns they are work with a maybe a gesture and they can adapt to how well the person responds to the robot itself.

I have to touch very quickly on driverless cars. It's authority not a new idea. We see them more and more now. I'm more worried about this here. The self-driving car is a godsend for older Americans. This came from AARP. The endorsement for driverless cars. I'm not sure this quote holds true. Not because of the technical issues. They are working quite well. They are on the road, driving around. I was behind one a few weeks ago in Toronto and as much as I tried to make it crash, I could not. The bigger issue in terms the of these are the social aspects.

A big reason why a senior will call a taxi is to have someone to help them get in and out, maybe bring in the groceries. Imagine if a driverless car shows up. Who is going to help them with their groceries? To transfer in and out? A big problem in Toronto is snow. Obviously. We have seen instances of seniors and others getting out of cars and falling. How are the driverless cars going to know where to pull up to avoid the puddles? We have to do more research to fully endorse this statement.

Big data is an important and hot topic in the area of assistive technology in general.

Censors we are getting massive amounts of data. Not how we get the data but what we do with it.

One of the nice examples is the work we do with the library of activity monitoring of older adults. We collect data like this, the clock around the circle here, and the very sensor version of the different rooms. One motion sensor in each room. You can see a pattern develop. You can see them sleep from 11 to 7. And maybe went for a walk and went back to bed. This is data we can collect easily. One person over a 3‑year period. We can do very interesting things such as look at changes in the patterns. For example, if they go to the bathroom 2,3 times as much, or wake up more at night. It shows changes in health.

How do we predict changes in clients before they happen so we can put the right intersection intervention in place? One example I missed is using that data set, we did a project looking at 3 months of that data with 85 percent confidence, we are able to predict who is going to develop dementia. Imagine the power of that tool.

We are not diagnosing the change in condition, but we can raise alerts to say something can shaping down the road, maybe you need to talk to them about it. Maybe the meds or in the environmental design. And this is where big data can play a key role.

Final part of the talk is so what?

We can design this technology, build censors, algorithms. So what? If we can't get them to the people who need them. We have not achieved the goal.

In my opinion, there are 4 things that have to happen.

First, we need to accept risk.

The AT field, I can say this for engineers, and professors. They are very risk‑averse people. If it looks or operates different than what we are used to. I see people nodding their heads, hopefully in agreement. But if we come up with things that are going to operate different, that's okay.

We need to change the delivery models. Don't fear competition. Academics are competitive with each other and we going over and don't want to share. Several of us are collecting the same data and not sharing it. You can actually have far more advances if we do. (Inaudible) and rethinking the way we design.

New delivery models in AT.

In the technology and aging field, I would say 80 to 85 percent are non‑medical devices. They are developed that something can go to Best Buy whenever, and have them start to use it. This is a big change in the technology in the aging field. I suspect it is coming faster than we may think. And we need to be prepared for it. Fern more important, there is a grass roots movement where we build our own solutions and a caregiver. I got a story where a caregiver came in and said over the weekend and I build a fault detection system for ply dad. And it works better than the one we worked on for 14 years. We happened to support and nurture it and bring it into the fold.

It took me 40 minutes to figure out how to make this animation. So I'll leave it up for the rest of the talk.

In terms of design, we have really been going back and form with market push and pull. How much are we listening to users in the work. In my opinion, we have swung the pendulum too far. As experts, people who design and develop technologies and come up with ideas, we are afraid to do anything without the blessing of the consumer. This is the problem. Who has heard of innovative dilemma? When you look at the mid‑tech companies over the past couple of decades and at the ones that went bankrupt. They looked at the needs and not what they wanted down the road. And when the needs did change

The companies were not prepared to provide the solution.

We focus too much on current needs and are too afraid to say you know what? I think you can benefit from a robot. Or whatever else it may be.

I like to use tis to summarize it. It comes from a very reputable source. The Air Canada in‑flight magazine.

This is the inventor of Dyson vacuums. Respect

I think this quote summarizes technology in aging and in some ways the AT field very nicely.

The final piece is disruption technology needs to be collaborative and transdisciplinary. This is really important. Over many, many decades, we have seen models to bring the best and brightest is the way to go. We saw this with the moon landing, other examine examples. Bring the best and brightest, fund them and give them the resources. We have seen this in our field as well. We have Agewell, In Europe, they have a programmer that puts millions of euros to form solutions.

This is a relatively new net work in Canada. To translates new technology solutions. We have approximately 2‑gist researchers across Canada. We have the (inaudible)

Through funding and resources and business management and expertise and translation, to overcome the challenges I talked about today.

You can join Agewell as a trainee. It gets you full address to the researchers, a base of over 140 researchers. If you want to stop by and take a look.

Example invasions that are happening. How do you (inaudible)

Finishing up. There is a need for a change now, not only in technology but in the AT field. More important, nose are purchasing AT changing as well. No longer the primary user is making the purchases. But the caregiver so you need to understand their needs as well.

Whether it's a smart home, security system or robot. As such, we need to look at new approaches. In one question I like to pose is the technology in the field and the AT field and they are not really coming together. What lessen can we learn to make sure this doesn't happen?

One of the big things we need to understand is aging does thought equate to disability. This is a raging debate in both fields. When we talk to seniors, they say I am not disabled. They use walkers and canes and eyeglasses, but they are not disabled. How to we wring the 2 demographics together. We need to rethink what AT is. Go for the typical examples to what is today. IPads, Fitbits. Robots. This is not the classic definition of AT now, they must to keep up with invasion.

This comes to RESNA. They must provide the venue for the debate. They have one to remember tomorrow that's going to talk about the issues. We need to not shy away from promoting the issues in the field. We need to promote and celebrate it at the conferences. So the time is now. We need (inaudible) of time what only to bring it as a field with older adults but the governments around the world recognize this as well.

I'm trying so hard not to do a Trump joke.

We need to be disruptive and do things differently, not only in technology, but how to deliver them.

We can build you a better sensor, apply things from Watson to provide a better solution for you.

We need to spend time in the ethical social points. We introduce new things to vulnerable populations. We are going to have a robot at home, without is going to happen from that social aspect? These are a few thoughts, I hope you enjoys hearing them and have lively debates over them. Please buy raffle tickets from Raj. I'll see you on or about the conference. Thank you.

SPEAKER: Thank you Alex. We have 15 minutes for questions. Please line up if you would like to ask are a question. I have a couple of questions. You talked about one barrier which is the cost barrier but another is the idea of privacy. Like surveillance. How do you overcome the cost and privacy barrier?

SPEAKER: So, my personal response is privacy is not as big an issue as we make it to be:

We talk about privacy and security. Ethical problems. But if yourself take to the older adults. They understand by having cameras in the home, they accept it.

If you show them how technology works, who sees the data and how it's used to educate it them. The issues go away. We get the concern more from the caregivers and families than from the adults homes.

The ethical dilemma in the field is not the surveillance or privacy issues. The older adult say hey, I sow you present on the robot, how can I get them am? And I say you can't be. That's the ethical problem I think.

SPEAKER: Enjoyed your talk. It was inspirational. I like the message. It's sort of awake up call. I would like to say a word in defense of us. We are less risk averse. I see challenges. One is we are beaten to death in practice by funding requirements and to do the systems invasion as required takes a lot of time and effort. In addition to people not always being on top of all the technology. And in the assistive technology field, we are hampered a lot by the traditional funding mechanisms. And so for sure I think there is an opportunity in leveraging the capability of design concentration. So the point I may suggest, building on what you said is the challenge is may not building the technology, but

May be a challenge for us is to penetrate the Googles and so on that are doing the product development and saying you need to make the considerations as well and we have the expertise to hem you

SPEAKER: You are right and I'd like to see the word aging added to RESNA's tag line. I think a few of us have been advocating for at a few years now. We need to examine that as an organization. We want to move residents from a 400‑person population to 700? Talk about aging. Don't hold me to that.

SPEAKER: One of the things I noticed about the lanyard. We had a talk a few years ago about the way AT looks. Maybe if we changed the look of it, and not scream it's an I've falling and I can't be get up device, maybe we can get them to adapt more to it.

SPEAKER: Absolutely. We brought it up with the companies that make this. For example, Phillips. From a business perspective, it doesn't make sense to them to do that. They are going ‑‑ a lot of people tend to modify it themselves. There are a lot of things from a design perspective to improve the technology.

SPEAKER: (Inaudible) what is your definition of robot in

SPEAKER: I tend to use the classic definition of robot. Actuators, etc. I typically use that classic

SPEAKER: The reason I ask that is the device of a (inaudible)).

SPEAKER: Yes, it was. What happened it's the first technology designed inspired by robin and Diane. What happened is when we looked to expand the technology, we proposed screens up in every room of the person's house, they did not like the idea. So I thought to bring the robot to the room where the person needs it.

SPEAKER: My question is on the data sets. Where do you think the (inaudible) destroy or looking at sensors and all that kind of stuff. Right now started off, now the ones with the most research and (inaudible) where do you think

SPEAKER: I would like to say academics in particularly in Canada, we are so handcuffed by ethics boards that allow us to collect data that's publicly valuable. They. Hopefully industry will pick up the ball. 2 weeks ago I got an e‑mail that the VA has indicators that are publicly available. Things outside an academic role

SPEAKER: A follow‑up question. The privacy issues. (Inaudible)

SPEAKER: I can't intelligently comment on that. Others are 4 better experts than I am in general. If anyone has a comment on that, they are ‑‑

SPEAKER: Back I'm trying to make urgier you in the AT field, they say the margins are slim and the only money we can give to development is to make it cheaper to stay in the university budgelet. So the system. Where government is the instead they send to the universities that workinate independent of the companies. All those invasions are industry leading products that universities providing the expertise. So universities are running (inaudible) they come to the university and say we need the best and brightest and whatever to get what we need. There is no time for the sand boxing. So to me the most important message is redeticate the efforts and with where government, don't send the money to people who don't know how to do that. They will come to us when they need us. As academics, our role is the figure out how to bet meet the customer needs. Those partners (inaudible) how do you turn around and support our interests and incentives to make sure the companies get the best information

SPEAKER: I agree with you completely. That's why 10040y companied our network. They have access to academics when they need it.

Government and the whole traditional. Research and technology is going to require assessment. Why do we do nat? A classic example. The fall detection system we developed. If we call it a fall detection system, it has to go, in Canada, a level 4 of 5. If I call it a home security productive, it's a consume product, it cost much less. We have to look at. How we can bring those things into the field to lessen up the barriers.

SPEAKER: The WHO has redefined the term disability. I can't participant in activity so perhaps I consider a reference to the term disability creating by aassistive technology (inaudible) loss of any type of function requires assistive technology and expand by eliminating (inaudible)

SPEAKER: I completely agree: we done? Thank you.

SPEAKER: Thank you Alex. How about one more round of applause.

So just a few housekeeping items. First, right after this, we'll have a coffee break in the exhibit hall. We encourage everyone to go dawn and meet with and interact with the exhibitors and sponsors. There will be a walk about lunch from 12:15 to 115.

Raj is selling raffle tickets for an iPad donated by infinity. He's going to make a pitch.

SPEAKER: In case you are wondering what the money is going to be used for, I wanted to give an idea how it interacts. The students design competition. And we sponsor students. And this year, the big sponsors in the budget and (inaudible) and student design competition. The future of the industry is the conferences. Keep in mind the money is going back to the conference sew I hope you will ‑‑ $5 is fine.

On Thursday. (Inaudible)

SPEAKER: Thank you. Lastly, we have our Bright idea card in your bags when you registered. And this is to get new ideas for member benefits. We ask you ‑‑ there is a prize. A free membership to RESNA. Wait? Code. Someone said code. I don't have the code. Does anyone have the code? Go to the registration desk and they'll have it. Thank you all.

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