<Displays Agenda for today slide>

Int: Great to see everybody today. This is the second meeting that we're having around this project. This is a project to develop a phone and web application to support health, and to track the effects of methane and ozone on health outcomes. So I think everybody has seen the proposal for this project and some information about it. But as we go through these slides, I will try to fill in the blanks that we discussed last time. But I thought a good starting point would just be to go through some introductions of who we are. So M, you were with us last time? And we went through some content for the app, we went through an educational module, and we went through a few other bits and pieces, and our participants gave us some really good feedback. We have conversations like this one with our Lincolnshire team, with yourselves and we also have a team in Ghana. So we had a conversation with them as well, and got some feedback with the application. We took that back to our design and development team around developing this app. And they have done a lot of changes. It was only last week that they sent me considerable amounts of content that they've made changes to. So part of today is going through that. Now if you haven't had an opportunity to look at the content from last time, and I think I did circulated slides last time, if you haven't had an opportunity to look at that then that's OK. We're equally interested with what you think about the content we're presenting today. We then have a new component that we haven't discussed before and that is around a function of the app. Part of the application is educational, but part of it is also about receiving an air quality update that you opt in or out of as a user of the app. The update will be around temperature, ozone, and it might give you some recommendations for the day. Say if you're somebody who is an asthma sufferer, you may opt in to receive health protection recommendations associated with different concentrations of ozone in your area for a day. You will then be prompted later in the day to self-report your respiratory and mental health. So the idea here is that this is the environmental conditions in your area, how have you felt today? And we're looking to develop an evidence base around the relationship between various components of air quality and people's well-being. Something we discussed last time was how do you do this self-reporting? How do you ask people to report their health and well-being? There are lots of standardised ways that you might do this, if you were doing it as a research project with a social survey, you might use the sort of go to mental health and respiratory survey items which are sort of universally validated. You know, like there are certain survey items with generalised anxiety disorder and those sorts of things. But the message that we also got was that it would be really useful to have visual self-assessment in addition to that. So you might have widgets, you have pain scales for children and those sorts of things. What could we do to develop something similar for self-assessment? That is a sort of the new bit that we're talking about today, and we have some sort of evaluation of feedback points to capture your expert views on these things. I know that a few of you work really closely with mental health cohorts. So it'll be really interesting to catch your ideas and then we'll just discuss it. So just to start with, I'm going to go around and ask people to introduce themselves. M, you have done this before, but I don't think anybody else has. I will just ask you to say your name, who it is that you represent, and also to consider your area of lived experience; that might be around the role that you have professionally. It might be around personal experience. M, I'm going to ask you to do this again, just for the sake of everyone, but what comes into your mind when you think about methane? So in our last meeting, we went through the role that methane plays in ozone. Apologies for those that haven't seen those slides, we talked about the fact that methane is one of the atmospheric chemicals that actually produces ozone, and that ozone is something that is associated with poor health and declines in things like respiratory health and mental health. That is what we were talking about meeting. So you all know me, I am H, I was formally in geography at the University of Lincoln, but I have now moved into our research role at the Lincoln institute for Coastal and Rural Health, which is really exciting, which is why I want to come out to Grimsby, but that's for another time. When I first think about methane, and I said this in the first meeting, for some reason I have this overwhelming sense of the colour orange. I know that methane is actually invisible, so this makes absolutely no sense, it might be A taking me to a Immingham and those Blade Runner type scenes of industrial areas with the flares going up. Actually, I found out recently, would you believe - Where did Ridley Scott grow up anyone? Middleboro. Under all those beautiful industrial scenes in Blade Runner based on Redcar, so I know where I'm going for my next holiday! A. took me for this great drive, do you remember we were on the port, and I was like – Can we stop so I can take photos? This is like Blade Runner, and you were like – No, I don't think we're meant to be here, we can't stop, can you take photos out of the car window? I've got these photos of the flares of the piles in Immingham. Honestly, that's what's paired in my brain the colour orange. A, maybe we will start with you, I know you know some of your colleagues here, for people who don't know you, can you tell us a little bit about your background, and what comes to mind when you think of methane?

Res1: I am A, Engagements and Projects manager for Health and Care Partnership. I focus on population health, inclusion health, and kind of looking at inequalities on the wider determiners. So that is very broad. It's great, there's lots of different projects, and asthma is the link that we've got here working hopefully with Thrive, social prescribers to help children and young people. So that's really exciting. Actually, when I think of methane, I think of cows. It kind of comes to mind. And to be fair, I had no idea whatsoever before that methane could come from anything other than cows. So that's probably my limited knowledge aside. But on the Blade Runner thing, every time I drop back into Grimsby on the A180, well not Grimsby, Stallingborough, that area at night time, I always say it looks like Blade Runner.

Int: Blade Runner is my favourite movie in the world. The original, and I can't believe that Ridley Scott grew up in Middleborough. It has just blown my actual mind. Fun fact for the day. So to this group, after this meeting, in addition to circulating a link to these slides, I will also so recirculate the link to the other slides from the first meetings just because it might be of interest to have a look at some of the information around the role that methane plays, where it comes from, but the role it plays in ozone. Because that's probably a little less understood. T, tell us about yourself?

Res2: So yes, my name is TC, and I work with my colleague at Centre4 I'm the head of health, well-being and community, and this is the first time I'm joining you today. So I saw this, it actually popped up in my calendar, and it was a rare occasion that I didn't have anything else planned at the time. So I thought I would come in and see what this was all about. So thank you for having me. I suppose methane for me, and something I've not thought about until you just mentioned it there, it would actually be reflecting back at Immingham. Growing up as a child, my dad worked on the docks, I'm quite a lot of time we would go in the car and pick him up with my mom. The same as you, you would see the flames coming out of the big chimneys, and being on the dockside itself, was incredible, an incredible vision. I suppose for me, it would also be about, and I don't know if this is right or wrong, I would probably in my brain, is telling me, would have an impact on the climate change. I don't know too much about it but really interested in what this is going to educate me with.

Int: Fantastic. A was telling me a short history of the docks and everything last time. So that is really interesting to hear that you have a sort of family connection to that space as well. Certainly, in the slides that I will circulate from the last meeting, there was a little bit more information about the links to climate change as well. So we know for instance that methane contributes something like 40 times greater impact on warming than carbon dioxide. So it's like a huge contributor to global warming, but it's possibly a lesser known one. M?

Res3: Good morning everybody, I am M, I am the operations manager at Centre4 in the health and well-being team, I suppose the real link here is their social prescribing is the main sort of contract that I am here to help deliver. That's based on long term health conditions. Two of those conditions are asthma and COPD, which are obviously hugely affected by air quality and all those kinds of things. And we're obviously meeting clients who have those conditions on a daily basis as well. Really sort of interested between the connection that's established between those respiratory conditions I'm mental health as well, which would be good for me to find out more about those things. I think regarding my knowledge of methane, I've done this before, so I've already got an answer which makes it easier for me, but I'll add to that as well. So my daughter was the manager of waste disposal sites, and what they did there, was use the gas that was produced from the rotten waste to supply the village. You know they didn't have British Gas or anything like that coming through their cookers. They had the gas that was produced from this waste disposal site where they were recycling the gas. But in addition to that, recently, I kind of show something on the news a couple of weeks ago that was a problem that China has tried to deal with at the minute: the role that rice production plays in the production of methane as well. And recently been set huge targets on reducing that, and obviously recognised it in the same way, the impact that it's having on people’s lives.

Int: Fantastic, and really interesting to see that you picked up in the news as well, what's going on in other countries. We will move on to G?

Res4: Hello I am GB, I am Deputy Director of Public Health in NE Lincolnshire council. My remix covers most areas of adult health including Health Protection and air quality. I have this strategic lead around that, R who has been to this meeting previously, has the operational lead. So obviously, we know that asthma is increasing at an epidemic rate, particularly in young people, air pollution is linked to that. Methane, I think all the things that I associate with methane have been mentioned from cows to use in energy, and reclaiming landfill sites etc. So all of those things are really important. I don't think we fully understand how much methane is contributing to kind of public issues; particularly in urban areas where there is a lot of carbon related air pollution. So that's where I’m coming from, obviously, given the interest of the programme in north Lincolnshire, and my boss is DL, the Director Public Health in Northern Lincolnshire, so that's an area of interest. Just for your own benefit, H, if you like Blade Runner scenes and you've been to Immingham, I highly recommend a tour around the Scunthorpe steelworks by train. There is an organisation called the Appleby Railway that does little tours along the railway around Scunthorpe steelworks, and you will not find a more Blade Runner scene in England these days then what were you will find during that tour. I think it runs between March and September, and it's entirely free. That is another benefit, it runs on a Saturday afternoon, and it's quite an experience.

Int: You do not need to tell me twice! I am there. That sounds amazing.

Res4: It is a really unusual thing, and quite dramatic.

Int: That's so cool. The things that I didn't know about the Midlands. I couldn't move to a more appropriate place in the world for my interests, thank you. S?

Res5: Hi colleagues, my name is SK, I have met a couple of you but for those who don't know, I'm on placement in North Lincolnshire, I'm a Public Health Specialty Registrar, which means I'm training to be a consultant, but my specialty rather than being like cardiology or something, is public health. I started my placement in September. I have a background interest in climate and health; particularly focused on adaptation because it's a gap, but I'm interested in mitigation as well. So I guess I got myself nominated because D knew that I was interested in climate and health and of sort of had a bit of an academic background before I came into public health. So I don't run a service or anything, but my experience is kind around climate and health topics. In terms of what I know about meeting, lots of what's already been said. Basically, in terms of the anthropogenic methane, which is I guess what we're concerned and focused about, we're not just going to drain the bogs, that's estimated to be more than half of the contribution potentially; much worse than the big ticket greenhouse gases that we all think about, but fortunately much shorter kind of persistence in the atmosphere. So I know that's why it's become a target of interest because we can eliminate that. It will be out to the atmosphere much quicker than other greenhouse gases. So it might buy us a bit of time as we continue to emit other greenhouse gases. It's fully understood. There's lots of work to try and map and understand where it's being emitted, in particular from fossil fuels, and fossil fuel production. I don’t actually know that much about the UK, but I know in Texas, there's a lot of work to use drones to try and understand to do area mapping to figure out where the flaring is happening. Intensive human health, I think you mentioned that there is particular issues around the troposphere, so let's bring those down closer to where people actually are, and creating that which is difficult for our lungs, but also particulate matter. So PM 2.5 which not only has links to respiratory health and things like asthma, and exacerbation of lung conditions, but also long term cardiovascular health. And this increasing evidence around things like dementia and mental health. It's bad, we should stop, is my summary of methane. Most of the things the anthropogenic causes come out and also some of the natural ones, Lincolnshire seems like a place that is particularly a coalescence of a lot of those things, because I feel because of fossil fuel, waste management stuff, there’s agriculture, it's like an interesting constellation of some of those anthropogenic causes.

Int: I couldn't have summarised it better myself. That's exactly how I view it, that there are these different sources around Lincolnshire, which is quite unique. Now J, you have probably talked about methane till you are sick of it, can you please introduce yourself to the team?

Res6: I think that earlier on H more or less introduced me, I am a Doctoral Research Associate in the University of Lincoln. I'm essentially playing a supporting role to H and her research team. I help with the qualitative analysis and wherever I can help. Stan just hit to listen, it's easier when you're analysing the data, when you've been part of the discussion.

Int: Thank you very much again for joining, J has had to sit through every single time we do these meetings, so he becomes very familiar with them, and he’s very calm and very patient. We've just had somebody else join us, J? We are just introducing ourselves, who would we represent. You missed the little intro to this but what comes to mind when you think about methane?

Res7: What I think about meeting? I’ll explain a little it more in a moment what I think of methane. So I am JH. Head of clinical networks, which for the ICB predominantly cardiac, stroke, diabetes and respiratory.

Int: Thank you, we should say ICB, Humber and Yorkshire. So J and I work quite closely with Lincolnshire ICB, but it is fantastic to have representation from Humber and Yorkshire ICB, we don't work with you guys as much as we should. We really hope we can more in the future. So what do you think of when you think about methane>

Res7: CH4

Int: That's very accurate!

Res7: Fractional distillation, short carbon chain. And isn't it in cooking gas?

Int: Yes, it can be in cooking gas. We have a chemist amongst us, that is concerning.

Res7: Oh no, I'm not a chemist. That was going back to O’ level chemistry as of 40 years ago, 40 years plus.

Int: That's an intimidating memory then. So I was just explaining that I will circulate the first set of slides that came from the first meeting that we had, just so everyone is on the same page, it's hard for me to know who is going to turn up. The reason we are discussing methane is because, as we've mentioned before, it is what we refer to as a precursor to ozone. So methane is a hydrocarbon which when it combines with other atmospheric pollutants like nitrous oxides from cars, and also when it reacts with radiation, it is really important, because you're going to get more ozone on higher radiation days but you have this relationship that occurs between radiation hydrocarbons like methane, nitrous oxides, and that is what produces ozone. Actually, as S was saying, very little is known about the role of methane in health outcomes, and there's lots of reasons for that. At some point, we will have them next year, we will have a couple of in person events. And when we do that, we were really took you guys through the other components of this project. So where all here together, we're talking about app development and we're getting your feedback in how to do that in a more equitable, inclusive way based on your lived experience. But the other big component to this project is actually around machine learning to try to understand the role that methane does play in ozone and also the links then to health outcomes, and we are using E Midlands ambulance data to do that. And in the future, we will be using ICB data as well. But the big challenge around this, is how methane is measured in the UK. So for in fact worldwide, usually you have really good observation measures that are conducted by the Met Office or Defra. We have these datasets that come from actual measures and observations for things like ozone. But the difficulty with me fighting and trying to understand the role that it plays, is that we don't actually measure it very often, what we do is use satellite data instead of on ground measures. And there are lots of complications with satellite data in that it comes from the upper atmosphere, and it doesn't always represent what's going on, on the ground. So actually, we don't know a lot about the role that methane plays even in ozone production. And from a regulatory perspective, why that's important, is that I went to a conference recently with the chief research director for EA and Defra, and they both turned around and said we don't regulate methane emissions in this country. And part of the reason for that is there aren't really direct health outcomes. Or there is no known direct, health outcomes, because you can't evidence it. And I went up to these guys, poor things, they didn't realise that they had someone as antagonistic as meaning the audience. So I kept putting my hand up and saying - Why don't you use better satellite data? Why don't you do this or do that? And they kept going – Ssh, too difficult. I went up to the later and said - So you are telling me that you would regulate emissions from the private sector if we could demonstrate that there's a link between health and methane? And they said yes. And I went – Right, challenge accepted, let's go. But it's a lot harder than you'd imagine. So someone mentioned about what sort of data there is for the UK, you'd be interested to know, there is a private satellite company called GHGSAT, who are actually doing low level, so ground level, satellite data capture of sites around the world including the UK. And they actually have a satellite that monitors Immingham. So leaks and flares account for something like 85% of all methane emissions. And because we don't measure methane emissions in the UK, we don't know when those things happen. Most satellites don't capture it either because they're too high up in the atmosphere. So once the methane's emitted, it mixes in the atmosphere, and you need to actually pick up leaks and flares in real time if you're looking at most satellite data. But this company essentially hovers, they have satellites the size of microwaves the hover above specific facilities, and they pick up leaks and flares. And I'm registered with their platform so I can see when leaks and flares occur in the UK, which is very, very interesting. Anyway, just a little aside, but we will at some point hopefully get round to talking to you guys about that very interesting, Very complicated data science side of things.

<Displays personality matters slide>

Int: Just another point on a survey that I sent around a little while ago, and I will send around again after this I sent round a survey asking for participants on these meetings, to fill out a little bit about themselves and positionality. The reason for that is that we are not monitoring people, it is completely anonymous, but we are interested in what we bring to the table as people develop self-reporting items for mental health on respiratory health. I know that, say for our Lincolnshire team, we have people who have been asthma sufferers their whole lives. And including myself who I've had challenges with things like anxiety since we were little. And that means what we bring to the table as lived experience experts ourselves is our own individual positionality which makes us unique in the way that we think about how this might interact with the app we are developing. The survey that we've got is just a few survey items, and it's asking you to consider your own positionality so that we can capture as a wider team what viewpoints we are bringing to the table. It's just a three or four item survey. You can do it now if you want to, but you don't have to. I think quite a few people have already done, but it means when we're analysing our data, we can say - Oh actually, what we're doing here is capturing the views of people who have experienced themselves or experienced with others, you know, and that gives us a sense of where we're all coming from. And it also helps us say – Hey, who else do we need to bring to the table for the conversation? Do we maybe need to work with more community members with lived experience of mental health or respiratory, that sort of thing.

<Displays Methan Early Warning Network Slide>

Int: We're working with a fantastic design and development team called Common Knowledge who are responsible for all the pretty pictures and slides and all of the design and imagery that we're presenting to you today. This is a little mock-up of what our app might look like when you receive an alert.

<Displays Main Feature (Refresher) slide>

1. Register a user profile including health conditions, demographic characteristics;
2. Set alerts, up in for push functions, for ozone in your area to receive recommendations for Health Protection;
3. Receive prompts to self-report daily respiratory and mental health outcomes health outcomes including text/visual scales (e.g. Emotion wheels);
4. Advanced option for setting bespoke thresholds for alerts (e.g. If particularly susceptible to us from attacks might lower threshold for Health Protection recommendations.)

<Displays Your Suggestions Slide>

Int: In our first meeting we asked you to identify unintended negative consequences and make suggestions that could enhance our ME-NET platform. M, you were in those meetings, thinking about to the slides in the discussions that we had, but there was some feedback that you and R had, do you remember any of your feedback about the slides?

Res3: Not in massive amounts of detail, but I think the main thing from me thinking about it from a user's perspective, which is kind of what we see day to day, is about the language not becoming too scientific. I think that was the big think that we're feeding back. It was fantastic information that was coming through, but thinking about the service users that we have, they probably just want to see what's good for them, and all of the science behind it. I think you probably get some people you do want to go down that mine shaft is the more they find out, the more they end up scaring themselves, I think.

Int: So there was a lot of concerns that by giving information that these are the effects that air pollution has, people might be afraid, people might not want to take their kids outdoors, and that might not be a good thing either. You and R we're saying to try to use images over complicated words.

‘A picture tells 1000 words’

* Education Model: start with simple picture-based image we've touch animation guiding user attention to links between health, sources of pollutants and environmental/metallurgical condition - > fed back to CK;
* Outcome: CK will adopt an ‘agile’ approach, users are guided through a simple module with options for ‘find out more’ boxes with backs, and additional links to ‘find even more’ – 3 tiered.
* Self-reporting health and well-being:
* Outcome: we will give users the option of both numeric and picture-based reporting, but we need your help to Co design and trial the visual material!

<Displays Co-Design Following your Feedback slide>

Int: I will send link to this presentation as a follow up e-mail. I will also send a little survey to capture some of the things that we don't get time to discuss today. In our first meeting, that we had a couple of days ago with our Lincolnshire group, there was a lot of opinions, which is fantastic, but we didn't have time to cover everything because there's quite a lot of content. Basically, after the feedback of the first round, I went away now to thank. I thought that I need some mock ups to try and capture what this educational module might look like other than just large amounts of text.

<Displays sketches>

Int: So I went away and got my pens out and drew lots of pictures which you can't really see, but this is just to show you the process that I went through. I wanted something like the bottom right image which has all of the elements of where methane comes from, how ozone is produced in a single diagrammatic image, which you don't really need to understand chemical equations, you just have to know that radiation interacts with different chemicals in the atmosphere and producers this harmful thing called ozone. It's then related to your health, then how can I health protect? Well maybe if there's lots of ozone then you can close the window. And then I gave them to my design and development team, who said yes that's beginnings, but we can probably do something that looks more professional. Said they came up with two types of educational modules.

<Displays Educations Module #1 slide>

Int: They're very similar but one is a more illustrative route, and the other is more design features. So what I'm going to do is go through them and then give you the opportunity to raise your hand on the raise hand function, and tell me which of these you prefer. And some stuff we would like you to think about, I suppose we need to think about our international colleagues as well. We are designing this platform for colleagues in the UK and for colleagues in Ghana. We're trying to think about diversity and inclusion across socio economic groupings, and trying to think what is it's aesthetically pleasing and tells a meaningful story. I will go through the slides for the first version of the educational module. M, maybe you can tell us afterwards if it's actually captured the feedback that you and R had for us.

<Displays Air Pollution can impact your health and well-being slide>

<Displays Ozone in the air can make it hard to breathe slide>

<Displays Where Ozone it come from? Slide>

<Displays Ozone is produced when sunlight mixes with emissions from factories, cars, houses and agriculture Slide>

<Displays Methane is an important emission that contributes to the formation of ozone in the air that we breathe Slide>

<Displays Methane in the air comes from oil production, indoor cookers, waste processing and cows Slide>

<Displays How can I protect my health? Slide>

< Displays There lots of things you can do to protect your health on days when ozone levels might make it hard to breathe Slide>

<Displays – Close the window, consider lighter exercise today, exercise lighter in the morning, exercise in the morning rather than the afternoon, use your preventative inhaler today, pack your blue inhaler if you're going out. Slide>

<Displays – Find out More. Slide>

Int: So in this version, the ‘find out more and additional information’ comes at the end. Yeah, it's very illustrative as in using real images of things popping up around the place. So that is the first version.

<Displays - Educational Module #2 slide>

<Displays - Air pollution and Health slide>

<Displays - Air Pollution can impact your health and well-being slide>

<Displays - Ozone in the air can make it hard to breathe slide>

<Displays - Where Ozone it come from? slide>

<Displays - Methane in the air comes from Factories, cars, houses and agriculture slide>

<Displays - Ozone is produced when sunlight mixes with emissions from factories, cars, houses and agriculture slide>

<Displays - Methane is an important emission that contributes to the formation of ozone in the air that we breathe slide>

<Displays – Methane in the air comes from oil production, indoor cookers, waste processing and cows.

<Displays - How can I protect my health? slide>

< Displays There lots of things you can do to protect your health on days when ozone levels might make it hard to breathe slide>

<Displays – Close the window, consider lighter exercise today, exercise in the morning rather than the afternoon, use your preventative inhaler today, pack your blue inhaler if you're going out. slide>

<Displays – Find out more slide>

Int: So in this version, across the bottom, it's just gibberish at the moment, but across the bottom might be where you find out more information, that is more bespoke as to what exactly people are looking at, at the time. It's far more design features rather than actual images of people with cows and things like that. So we have some memory prompting images from the first version on the left here, and the second version on the right, and what I'd like you to do is use the raised hand function to show me which you would prefer. First up the version on the left? Hands up for version 1 as a preference? Version 1 is the man coughing and the building and the cow, the real images. Version 2 is the silhouetted man with the most sort of schematic cow at the bottom.

<Displays – Time to vote slide>

Int: We have 3 preferences for version one. Same process version two? So we have 3 for version two as well. Tell me why? T?

Res2: So for me, I think this should be that you can actually see the man coughing, whereas the second one by the first glance, you wouldn't actually know that. But you can actually see it in the first one. I think visually in the first slides that you gave us, the picture tells the story, whereas the other one I had to keep reading the writing to see what that's trying to tell me. I do like some of the things in the other one, if they could be adapted, but for me I think the first one would definitely be my winner.

Int: It's really interesting, a few people from our Lincolnshire group two days ago said the same thing, they said they liked the man coughing because it was explicit, but then they liked the design elements in the second one. S?

Res5: Similarly, I think there are bits to combine from both of them, but there were some things I didn't like about #2 that made me equivocate because it was a forced choice. The chemicals, they shouldn't be there, it's not really doing anything, but it looks intimidating. It looks like you're about to do a science bit, but actually the text is the same. So what I preferred about the second one, it visualises that the specific connection was the same happening in the atmosphere and in the different industries, instead of just picturing them vaguely, it's showing they are directly connected, it shows it physically. Since you mentioned EDI, quite a few of these silhouettes are coded pretty white and pretty male, but at least they’re silhouettes. So there could be more generically coded maybe, I think it might be easier for people to visualise themselves represented in a silhouette than an image. If I was using tools like that, having links at the bottom rather than having to go through them all, and then having to get to the end to get to like a general NHS information thing would probably be how I would want to use it because I'd pick up the sections that were relevant to me. Like if my windows were already closed, but I was going needing my inhaler, I would want to see the stuff particularly linking to that on the page.

Int: Thanks that's really useful, and your point there about silhouettes being more ambiguous or more universal, is something you really need to think about, and immediately when I saw these, I said to my design company that it is very eurocentric, that's fine as a starting point, but we need to think about universality. A?

Res1: I was thinking similar. I was thinking if it's going out to Ghana, would some of the images relate to people. It relates to me, but it might not relate if I was a person living in Ghana. And also, just one thing that I thought of was like your windows well, they look like windows that we have in, I'm not sure the style of houses in Ghana, but would they relate to the kind of imagery and housing makeup and all of that that goes with it. It is very white European culture that comes through on these slides. If you just doing it for European, then yes will stop but if you don't get for Africa, I'm not sure if it will all relate.

Int: Yes, I thought about the more obvious dynamics around the representation of people, but it hadn't even occurred to me that windows might be substantially different. That housing might be substantially different, so that's a really interesting pickup, thank you. Like I said, I will send around a link to a brief survey. If there's anything else that people would say that we don't have time for, or you want to have a bit more of a thing, I think these sorts of considerations are really important. We have two meetings with our Ghanaian colleagues in the next two weeks. - Cook stoves are more likely to have solid fuel stove in parts of Ghana. Exactly, are we accounting for things like rural and urban? I think what came to my mind just as you were talking, was about the fact that you have different sources as well, like we haven't really represented waste processing here and that would be a huge one for Ghana as well. So we might need to think a little bit about what we are representing.

<Displays Map Development slide>

Int: So the other element that I wanted to share before we move on to the self-reporting components is that we talked about part of the function of this app, and this is what we presented to the Welcome Trust as part of our prototype, is a map. And this map allows you to zoom into the UK and into Ghana, and to see the area where you live. And what we were tasked with is the challenge of showing the relationship between methane and health outcomes. So we know that other than really bad kind of industrial accidents, the link between methane and health is really about ozone production. I was sort of mentioning earlier, the issue with satellite data for methane, because it is so high up in the atmosphere where the emissions have mixed already, it means that actually the annual range of methane, even if he took satellite readings in the upper atmosphere for every day, over the UK, the emissions range would be very narrow because it's not taken from a point of whatever is happening on the ground, it has mixed around and it has averaged out, as chemicals do in the atmosphere. If you are taking it from point sources on the ground, it would be very different and would capture leaks and flares, but the most reliable and consistent data that we have comes from the satellites that capture mixing. So we can't really show daily fluctuations, but we can show a bar across the bottom of the map that allows you to drag from year to year, and see how maybe methane emissions have changed in your area at an aggregate geographical scale from year to year. What we can do is a much more granular representation of ozone, because we can use the Met Office forecasting data, which is daily if not hourly, and we've actually developed our own forecasting model using machine learning, which is really cool. So we can actually give a daily forecast of ozone. We've been looking at doing that for the UK, and we know we have a really accurate model, because we can compare it to actual measures and observations. We don't know how we're going to be able to do this for Ghana, we might have to use the Ghana air quality index, which doesn't consider ozone but is particular matter instead. Because while we develop a machine learning muscle for Ghana, we couldn't actually try it against actual observations because we don't have that data. But either way, will be able to show some data at a granular level for ozone. And then for health data, we were thinking how do we show the relationship between health and environmental factors. So our design and development team have come up with…

<Displays Map Data slide>

Int: You can drag across and show a yearly average changing scale for degree of ozone. You can see this a bit more clearly in the middle image, and then there is a health profile. For the health profile, we're using ambulance data at this point, but we're hoping to work with ICB datasets as well. I just gave them an example of what this might look like working with the EMAS. So we have a vulnerability index that we've been working with, which is around per population, what proportion of population calls an ambulance for really severe symptoms like asthma attack or a mental health crisis. And this is one reflection of vulnerability because rather than looking at condition diagnosis rates, because you might have a condition, but you manage it well, we're looking at what happens with health crisis. So you might be able to click an area like this circle here on the right, and then get a bit of information in synthesis and then learn more about our data here. Another little example, this is again that agile design, so you can learn more about our data here, economic more about methane. Actually, what we might be able to do, is read more about methane emissions here, we might link users who are interested to the satellite platform where they can visually play around with it. And actually, the Sentinal 5P missions that we use the data from, is a really easy platform to navigate. You literally click a box that says you want to look at methane and it shows you a map of the world with satellite data on it. It is pretty self-explanatory. We might refer people to a document that we have online, an academic paper or something about how we manage our health data. And then there's a bit more information there. I had a colleague from EMAS on Monday and I said that I had just rip this together, so that the design and development team would have something to demonstrate as concept as to how we might do this. Again, just some features about how things might pop up. So that is the map, I appreciate it it's a bit more sciency than other components of the application, and actually I just wanted to tell you one little suggestion that another team member had and see what you think of it. A few people didn't like the idea of this health profile being numeric. So being 0.8, which means below average. If you're a statistician, you know you've got less of a chance if it's under one. But there was a suggestion to do this in a pictorial format, one in five. And someone even suggested - Could you have a number of people and a proportion of them coloured in to show health risk. So I'm just wondering what you guys think of that content, and also what you think of the idea around how you might represent health vulnerability. And if you have any other ideas? G?

Res4: I think it's probably too complicated to engage widespread users. I work in the business obviously, and some of that I wouldn't immediately understand. You do have to make it much more simple to understand to get the kind of engagement I think that you would want for something like this. I'm not sure I have any suggestions at the minute, but perhaps engagement directly with those who create these platforms for public consumption would be helpful.

Int: Yes, it's been suggested to us that we should be taking these images to community groups, and we're hoping to do that in the near future. Maybe I should come up to Grimsby, that could be my excuse to come up to Grimsby. A?

Res1: I agree, personally that would put me off. It looks really quite complicated. It is like a science app or something like that. I do like the colours. I think the colour scheme is really nice, but I think all that, I just feel like I don't know what I'm doing, and I'm just not used it.

Int: What I did is put all of these on slides for convenience and shift it all together, but you will be seeing one screen at a time. This screen would have pop up – This is what this is, this is what that is, and guidance in the same way that you would have with, you know, when you open a new app for the first time and it guides you through how to use it. So there will be stuff like that. But that's only useful if people don't feel overwhelmed by the initial images, that's problematic as well. If people feel put off and overwhelmed by the initial images, that's problematic as well. T?

Res2: I agree with both J and A, to be fair. I think it's very complicated, when you look at that, knowing the participants that we support, it would be interesting for you to actually come and talk to them and show them. I think it needs to be far more simplified for their use for them to engage with that. I agree with J, even myself, I'm looking and thinking - Oh gosh. So actually, you know, with one glance. And even though there was guidance there, I don't know if I'd get put off going any further. But I think, you know the information that we want to share with them, I think it could be fantastic. I think it just needs to not look like this. I think it definitely needs to be more user friendly to the person. We talk about language, don't we? And that's what it needs to portray. I think we also need to look at that visually. So they want to press that guidance, and they want to go to the next screen instead of actually looking at the first thing and thinking – Oh no, I don't want to go any further. Sorry!

Int: No, no please don't apologise, this is why we're here. I think that's really useful that even the idea that the very first thing that people see needs to be approachable and needs to be inviting, and OK, so you probably with an app like this are going to need some informational prompts and it might be a little bit out of people's depth. But if you can get it right and guide in the right way and it's approachable, that might be OK versus right straight away – I’m completely put off and I have no interest in accessing the support that's actually there. S?

Res5: I wonder if you could explain a bit of what is the ideal outcome in presenting this to people because I'm struggling to understand what you're sort of intended purpose of this is, which would help me comment on what I make of it.

Int: Excellent question. It is purely educational. It is a function that is there to support people to understand the wider links between methane and health and ozone. In the very first meeting that we had, we discussed when you would set up a user profile, you might be pushed through some guidance on how to use the app. So one of those guidance modules would take you to this map and say - This is a way for you to learn about your region. So there might be some more general guiding text that's needed here, like - Find out more about the environmental conditions where you live. You can zoom in on this map, affects your area and you might click ozone and that changes to show you ozone. Tap on a city near you to learn about health conditions in the area and you might tap on somewhere you know, and the information comes up. My apologies, I'm probably missing some of that from the previous time. I probably could have segued a bit more nicely into that. It's purely for educational purposes.

Res5: So I think with that in mind then, to me something like this has potential value because we could all do I think with having populations being more activated in demanding better air quality, better climate action. So to me, this has the potential to do that if it's in a way that works for people. I would look at this, but I'm not the target audience, I would look at this and find it interesting and useful. I think it looks great, but that probably means that it's not right! I think with that in mind, it makes me think of things like addresspollution.org. I don't know if you've seen that, I'll pop a link in, but it lets you put in your post code and then it shows you very simply. It shows a picture of your house front like Google Maps, like your front door. And then it shows you kind of colour coded the key air pollution outcomes for like particular address against like the limits and the benchmark for your area against the kind of targets, and I think potentially also other areas. I think it would then let people go to their local representatives and say - Well people from there can mostly breathe, I want to be able to breathe. I'm shouting that it's much worse here. That's me feels like the bitter bit that a person would be able to take it away and say that - It's not getting any better over time, it's not as good as the people over there. That might be a way to simplify it and let's it needed to action. I don't know if it's relevant enough, although it's not your intended purpose, and then it could just be a snapshot of some of the key indicators and like a colour code for the how it relates to other areas.

Int: Thank you. That's all really useful. I think having some context to find out about your area, I really like the idea of being able to put a post code in, although that would depend on the granularity of data for certain data sources, but even being able to put in a local area, where I'm from, or something like that. I also like the idea of benchmarking, which would be possible for ozone. I don't know how meaningful it would be for me thing depending on the data, but it would certainly be possible for ozone. So thank you, they're really good ideas. M?

Res3: I was just going to say, I'm reflecting really on a lot of things that everybody else has said already. So I appreciate and want to duplicate that, I think this is a little bit like when I look at my electricity billing kilowatt hours and this, that and the other, you just don't want to get into the detail. It is - Have I used a lot, or haven’t I? From when we spoke at the first meeting, I very much see it from the point of the user where it's very simplified. Almost my thought process was - How do I feel today? What's going on outside? What should or can I do that changes that? But, having reflected on all those conversations last time and slides such as this, I think there is some incredible information there, so I do think there is a great value in showing people this information, but it's about getting it down to that simplified version where it kind of almost makes you want to read it as opposed to who sometimes you look at it and think – I'll skip that because I want to focus on my breathing today, ot working out what numbers are saying.

Int: OK so maybe there is some value in the information here, part of our goal could be around that we really want communities to be ready for meaningful conversations around climate change mitigation, around improving air quality. But to do that, we need to present the information in a way that doesn't immediately provoke an – Absolutely not! response. And there might be something about how we package the information. There could be some leading, more conversational messages that come across to people first before they dive into a map. And there could be maybe the way the text, like what the text is potentially, how we communicate the tone. I agree it's quite important educationally that the content is interesting in all of that, but if it's impenetrable, then it can be as interesting as it wants and people aren't going to feel like they have access to it. So this is about trying to think through how you can improve the accessibility and make it a bit more equitable. It's not just people with certain educational backgrounds who might find it interesting, that maybe that the only ones that feel like they have access is because of how we are representing the data. J?

Res7: You have to be very numerate to understand this slide, don't you? A lot of people won't be numerate, perhaps I said that they won't way, I love numbers, but a lot of people don't. And those who don't, will probably not tune into this slide. And/or we have to create two slides, one for those that love numbers and those that don't to think about how we get that message across. The health profile, I'm not too sure what that value adds, I don't know if that's a high health profile or a low health profile when it's 0.8. But also, those are quite broad, those will be population profiles which are very different to individual risk. And so, I would query as to whether that statistic should be there at all.

Int: This is a really tough one because part of the remit of the project is to develop a visual dashboard that demonstrates the link between health and methane.

Res7: Yes, I appreciate that. But it's whether if there is a statistic, then it's the right statistic.

Int: There was a suggestion that rather than having a statistic, you would have said 10 people or 100 times little people and a certain number of them coloured in?

Res7: There is a whole range of acute and chronic mental health emergencies that may have no relevance to or maybe not a factor relating to the ozone level. I don't know if there is, I don't know what the evidence is. And also, you can get quite a broad range of acute and chronic respiratory emergencies that will become independent of this. There will be a baseline level regardless of what this is. I suppose it is more with the statistic being provided perhaps more than not having an association at all.

Int: That makes sense. I should have said, I got this content very late, a few days before I was presenting it. At the time it actually had relative risk on it instead of health profile. I said that I didn't think anyone would know what that means. So I rapidly produced an alternative. The way I said it in the e-mail was I thought that you can choose to look at acute or chronic respiratory or mental health, rather than it being lumped together a score like that. So it might be that you can scan through and see your interest, which might be in respiratory health, or it might be in mental health. And actually, these measures are around health conditions with known evidence based links to ozone. So you would have some information about that. Originally, we had an idea to have a whole educational module about that, but we felt it would be a bit too detailed and it was unhelpful and sending some conflicting messages to people. I think something you have picked up on which we have neglected to address is the fact if we don't have an educational module, addressing the very specific associations with gene respiratory health and mental health and ozone, we probably need something in there that says why we are even talking about this. Ozone is related to respiratory health in this area, something about this area. Does that make a bit more sense for context?

Res7: It does. Is there evidence for links with mental health?

Int: There is actually with ozone. I will circulate the last presentation that we gave in the first stakeholder meeting, it's definitely not as robust as for respiratory health, there's definitely more questions and answers, but I think there does appear to be some link. And we know that there is a very strong evidence base around particulate matter and mental health. I went to seminar given by a professor of psychiatry from Oxford recently he was talking about particulate matter having an inflammatory effect on the cerebral cortex of children who have behavioural disturbance and psychosis. So it is something that you breathe through and accumulates on the brain matter. And we have evidence for that, isn't that crazy?

Res7: Let me ask a question in a different way, is there a generally accepted link amongst the wider research community that this is an established link amongst the wider research community? What I'm trying to do they say that there might be cases that cite for it, there might be cases that cite against it. Is this a generally accepted principle in the scientific community? What I'm trying to make sure is that you don't focus something here that you immediately are going to trigger a whole kickback from others who don't agree.

Int: Absolutely. There is a widely accepted link to mental health and air quality. The specifics of that is there simply is not enough research. So there are ambiguities. We know that there are much more well evidenced links between particular matter and mental health outcomes, but yes, I will send you the previous presentation, where I can't remember off the top of my head but there were more stronger identified links say between ozone and psychiatric emergencies than there were between ozone and other types of presentation. It's a bit more complicated than – Is there an evidence base? There is an evidence base, but it's for specific types of measures. There seems to be more robust research that's being conducted, and there is still a big problem with the robustness of the research because people don't really know how to do this research yet. It is still too young. But we certainly know that anything that has an effect on the information of the brain directly impacts mental health. And we absolutely know that air quality has an inflammatory effect, not just on the brain, but on the lungs, it has a similar effect on the brain as it does on the lungs. In fact, there are links to dementia and air quality associated with brain inflammation. But yes, I will follow that up with you if that's OK?

Res7: Yes, sure.

Int: I take your point, and it was something that was raised last time about not sending misleading messages. So we actually scrapped an entire idea for an educational module around mental health because we realised the evidence base is too nuanced to be actually useful to most people. A, you've had your hand up for a while?

Res1: I'm struggling to know what your target audience is for this app because all that conversation there was well sciency. And I understand that science is important when you're doing these things, because these things are kind of sciency, if your app is for academics, then I guess this is perfect for academics. But if this is to have a person living on the East Marsh or the South Ward, this is going to go over their heads big time. I think I mentioned to you before like the average adult reading age of people is East Marsh is 8 years. I don't say that with a pleasure of sharing that information, but with sadness. That is something to think about. I don't know what your target audience is. I think he tried to do the right thing with this and educate people about it, but if it's in this format, I don't think you're going to get the downloads great that you're going to need to support it in the community.

Int: That's really helpful, thank you. That sounds really challenging regionally as well with health protection services and how you deliver them.

Res1: I'm not sure if S might know, but there's been lots of NHS type research, easy to read documents, how you reach people with English as a second language, it's something that we're thinking about. But coming on to a little bit about the maths and things like that, if you're reading age is that kind of age, and then you're getting prescriptions off doctors and you don't understand them – like 2x 25ml of medication for a child, or even for yourself. I'm not quite sure how 1311 kd per hour is going to resonate in someone's brain; even that understanding. I think for me it kind of needs to be – It’s high today, take precautions, don't think. And then you can have a little bit about what we're trying to do with the project, that we're working on it. Of course, there will be people in every community that is as say PhD level of reading and understanding, and of course there will be people with less. Maybe that could be alternative to people want the information then they can click on that, and if someone wants it simple, they can click on that, again, sometimes I think I can understand Professor Brian Cox and what he says when I'm watching about the solar system. And then 5 minutes in, my brain is absolutely blown by science. So sometimes I might want this if there's a particular thing going on in the environment or in the community. And then sometimes I might just want to close my window today – The pollution is going to be high in your area as well.

Int: That's really useful and what I am thinking is that in the same way that we had a conversation about developing an agile approach to the educational module, keeping it simple with another layer beneath that if people want that. I'm almost wondering if what we've got here is really good and we keep it, but that's the second layer. And there's a first layer that is much simpler which still allows people to visualise health and environment, but without all this jargon which might not be helpful for stuff. But that's still there in the next layer, which might be a – Find out more function rather than the most immediate function. Does that sound a bit more suitable? If this sort of stuff is a step further for people who might want it? There is a much more simple display that isn't all numbers and it's about highs and lows and that sort of thing, as the front facing?

Res1: I think T’s invitation of coming to speak to some of the people in Centre4, and you do a bit of a test bed on version A, version B, more information, less information or whichever. But I think the answer to your question has to come from the people who you want to engage and interact with, and not me because my reading age or my understanding isn't that level of eight years old, but equally I'm not a science person, and all those numbers. I really like M’s analogy of an electricity bill. I have no idea what it means. I don't even know if I am in credit or not. I just kind of wing it. So this would just blow my mind!

Int: That's really good advice actually. And just sort of asking the people who explore, right? S?

Res5: It's like we're getting towards a way forward that makes sense. As you are speaking, I was casting my eye back over it. I think the layering makes a lot sense. This has the right stuff on it, it's just competing with all the other stuff. There is a visual thing that says high health risk. If some of the other stuff was hidden within that layer, and just high health is going to colour bar was the thing that popped out at you, and what you should do about this at different levels of risk. I don't know what 0.8 means either because he's kind of like weird, there's probably a reason why it's slightly out like that. But you'll probably be familiar with Sunsmart?

Int: Of course, Sunsmart.

Res: I can see having a Sunsmart version of this which is like the level of UV today is 3, put a hat on, which is like that. That is here just about, the risk is that out of, doesn't say what the risk of UV is on there, it should do. So it is this out of this, and the action you would therefore take are these. And then having the more nerdy stuff for freaks like me who want to read it hidden behind there, but ultimately, the point about testing it with the people who are the intended audience is exactly the right one.

Int: I really like that idea. I think that's sort of what I was getting at before, is that you have some of that content as a - Find out more. Rather than that's what pops up. So if you are interested in health risk, then you have the bar or something. And if you want to find out more about methane levels, you click on something and then the stuff comes out. I think that's really useful. I also really like the Sunsmart analogy, I think that is fantastic. T? Did you have your hand up?

Res2: I did but it was exactly what S was going to say that. Just looking at this and thinking if it was me. Potentially, I would want something more from it. Like again we look at the temperature there, so if my child was coughing a lot, it would be handy for me to look on and say that the temperature is this and this is the guidance. Like you say, close windows. But maybe a little hint to say to maybe take your child out later, again it's that prompt. And actually, they can change maybe some of the plans for the evening. I think we have a lot of apps for different health conditions that work really well. So for me, it's about actually looking at those apps and seeing what that support looks like to somebody and adapting that into this. I think for people to engage with this, there needs to be something more for them: it is about me and my condition, and actually there's that guidance. Once you get used to that, like you say that second layer, I might take more of an interest than think, how does this all fit in? How does it all work? It gives you more of an understanding behind if you want to look for it.

Int: I like the idea of just stripping it back, simplifying and embedding stuff like this that people might want to know as an additional layout that isn't overwhelming when you access. Because you should be able to look at a map and understand say a colour scheme that tells you about temperature or something like that. It is pretty universal, it's almost like traffic lights, and people should have that information if they want to in a simplified way without it being that you have to have a PhD to understand this. So it's about how we do that. Personalization point is a really interesting one, and it's one that I brought up with my design and development team. So just to say, I think what we're realising is that we're sort of given this as a research project to do. And this is very much a prototyping exercise, and that what we really need to do is secure more funds for this to be able to go through a much more co-development to co-design kind of iterative process. And M, this is my naivete in understanding the actual cost of development and design of an application in the I love the idea of going back and forwards with this stuff with our design company, but they are forever telling me - Have you looked at the budget? Have you seen how much of your budget you have spent asking us to redesign a map? I'm like – No, I did not. For all of the reasons that A said, they send me spreadsheets and I'm like exactly like with the energy bill, I just shut down emotionally and say - Ok fine. I'm exactly the same. It is sounding like a much more iterative process is needed. Much more community engagement is needed with these sorts of things. At the risk of shutting down anymore excellent conversation about this, what I will say is that I will send out a survey where you can input anything you have another chance to say now. But there is one final component to this project that I was hoping to go over in the remaining time. I imagine people are going to have a lot to say about it as well, so I'll send that up in a follow up e-mail.

<Displays Visual Self-assessment slide>

Visual Analogue Scales

* Used to measure experiences that are typically difficult to measure conventionally e.g. pain;
* Involve a 100 millimetre horizontal continuum from none to extreme state.
* Tend to be the most reliable for measuring change in an individual rather than comparing between individuals.

Int: There were questions earlier about how much evidence base we have for mental health links? The whole point of this project is that we don't have enough evidence base. And we're trying to figure out if there are meaningful links that come up and if so, what are they? How do you differentiate between more moderate more severe mental conditions and things like that. And part of what we're doing is a big data approach. So we're using machine learning, we're adding mental health presentations into our model to see if we can establish casual pathways. But the other part of it is people self-reporting and people's lived experience. That's what this is all about. So what we're trying to do is develop a self-reporting mechanism that is easy to use, that is something you could use even if you're not into numbers. When you set up a profile, maybe you make a choice – Actually I would like a more numeric self-reporting mechanism because - Hey I'm a carer, I know what I'm doing, and I want to start collecting the data so I can take it to a doctor. That's what I want, I want numbers. But if people don't want numbers and they want to see what the links are with their child, you know, find out what environmental conditions seem to affect your child. You might still want something you can self-report without jumping into all of the very detailed numbers and things like that. So this is the sort of thing we're interested in. 100 millimetre horizontal continuum, from none to extreme state, that people can click or drag very simply, is something that we are talking about here. Now I won't go over every single little component of this because we don't have a whole lot of time.

<Displays Co-Design slide>

* We will present some content, including variations on validated measures, and some novel measures;
* Give you the opportunity to vote on options and give you more detailed feedback;
* This process will inform the visual self-assessment tools embedded in the ME-NET platform!

Int: Originally when we set out to do this exercise, we were hoping that our design company could co-design what was referred to as widgets, little images that represent mental health state and also respiratory health state. And then we could design continuums where people can say from nothing to something and scale across in the way that you might say how much pain you're experiencing on a scale of one to ten. That was what we had in mind. This is the validated, itself assessment scale for certain emotional experiences.

<Displays Visual analogue scales slide>

Int: This was a validated assessment scale for certain emotional experiences. So first, OK, it's quite important to see where the horizontal or vertical metrics like this visually are more useful. That might be something that we want to think about. What is your thoughts on this? Just as a visual, stylistic component, better these are validated measures, but in an app come out what would be more useful, to have something vertical or have something horizontal?

Res:5 Horizontal, because it's like the sliders you normally do on an app like swiping left and right. That's the movement you tend to do on the phone. And you can do it with one firm.

Int: M agrees. T?

Res2: I agree. I'm an elder millennial, but I'm a millennial. So I have used a lot of apps in my lived experience!

Int: That is what we want to hear. These sorts of measures are validated by psychologists, but we're trying to put them into an application that promotes usability. To me, I thought horizontal makes a lot of sense. But it is the sort of thing that you want to think about.

Res5: I know it's a validated thing, but the faces are absolutely terrifying. Can they be modified? Could they look less like they're going to strike some sort of episode comment like that absolutely chilling, I can't look.

Int: One of our colleagues said the other day about the horizontal one that it was happy to extremely happy. I was like that looks like not happy at all to psychotic! This is the issue again, and I come back to pragmatism and budget. It's very frustrating how much this stuff costs will stop we want to work with a widget company. I'm waiting for a quote to see how much it would cost to actually work with this company to design our own widgets that aren't terrified but also represent more communities would connect with. I will show you and you will be even more terrified by these I can tell.

<Displays Respiratory systems slide>

1. Shortness of breath
2. Coughing
3. Chest tightness
4. Fatigue

Int: To start with, there aren't actually validated widgets for self-assessment for respiratory health. All we have are images. This is it.

<Displays Respiratory widgets slide>

Int: I'm waiting to hear back from the widget company as to whether or not they will help us design some widgets for respiratory health. And if they will, then that's the sort of thing that we need you guys to really weigh in on, particularly people working with respiratory health communities, because we want to talk to those communities rather than just sitting there in an ivory tower and think about what we think they should look like. But these are the sorts of images the exists currently for respiratory representations. But there aren't actually widgets. Now these are all very gendered. They are representing certain ethnicities. The idea of the widget, and probably why they're so terrifying, is that you strip all of that back, and you just have it in lines that are neutral. How do you do that?

<Displays Mental health symptoms slide>

1. Anxiety
2. Depression
3. No effect
4. Intrusive thoughts/sounds
5. Paranoia
6. Hearing/seeing things others can't
7. Energy levels
8. What else?

Int: That's what I'm going to show you next, and I can imagine that there's going to be some responses, or widgets that being developed by a widget company. At first, I thought fantastic there are widgets that exist for mental health.

<Displays Mental health widgets options slide>

* Adapting existing resources for the ME\_NET platform;
* Developing our own widgets (probably not visible now);
* Maybe we can trial how existing widgets are received in the application for self-reporting.

Int: I was thinking, do we just use these widgets? Do we try them, do we adapt them? Are these useful? It is the mental health pack. So this is a communication tool for psychiatric evaluation and explaining patient rights. These are what the widgets look like.

<Displays Mental widgets exercise slide>

Int: So you can see from one perspective that they are neutral, in the sense that you are not creating bias because they're white and female or because they're black and male or because they are whatever. What do you think? Are they clear? Any negative consequences?

Res3: I think because you are not just seeing the face it and you get in a context of that, I think that changes that completely. I think I'm not focusing particularly on what that face looks like, or even the words, the pictures get my focus. I think that is miles better personally.

Int I mean we're not looking at using all of these, this is just to give you a sense of what these widgets look like, because psychiatrists might use them for say younger people, english second language for very specific psychiatric purposes. For some of these, we might look to use in addition to your regular happy, sad, anxious, those sorts widgets, because part of what we had thought about was trying to capture some mental health symptoms related to psychosis. I'm not even sure if we can do that, if we should be doing that, but it was certainly part of the original brief, the interest in distinguishing between mood and things like depression and symptoms that might be more typical of very disturbed thought process like intrusive thoughts or paranoia. So this is what exists at the moment. I'd be interested to see what your thoughts are on some of those widgets like intrusive thoughts, paranoia, distrusting. Are these images that make sense? If you show them to somebody else that has a meaningful experience of paranoia, would that resound with them? Or even what are your major thoughts about some of these?

* Are these widgets clear?
* Do you think they would be clear to people you know?
* Potential negative consequences?

Res2: I'm not looking at them and thinking that this is great. I'm not sure. I need to really look at this and have a think. Again, it's my first meeting, but I'm just trying to think of some of us, our participants. So we look at our green project, that's around helping people through social prescribing with mental health issues. Obviously, they're already going through a process, and they are already being scaled and you know they're taking part with that. With this on top, how would this look to somebody? I'm not sure. Even smiley faces, what does that actually tell us? Where does that scaling come from, if they are sad, that is telling us their emotion, but we don't know why they're sad. Is that because of something that has just happened? Is that really giving us a measured outcome? I assume you want to see that they're feeling like this today. Actually, what you want to see is when does that change to a positive?

Int: I'm not sure either to be honest. Which is why I suppose we're asking other people. These are widgets that exist, and there is an element of pragmatism that if something exists in its effective, use it rather than design from scratch. But if it's not effective, and it's confusing, or it has negative effects on people, then don't use it. So there's certainly a long way to go with this component the self-reporting. This is just I suppose the beginning point, considering what already exists out there.

Res2: There is some good ones there that could be used. The feeling worthless, that shows it when you see that, you know down that whole kind of feeling that there alone. The isolated one is quite a good widget, but I'm not sure about some of the others.

Int: That's really helpful.

Res5: I'm less concerned about the smiley faces because they are validated, I just think that there were some things being invented that are unvalidated, like as you say pragmatically, if we can avoid when we do that, then it saves resource and you can go elsewhere. However as long as testers don't hate it, I think for these, I don't hate them. But yes, you could always have them a bit better, but you know we live within a resource constraint system. So like if you've been through any kind of, if you've had interaction with healthcare services, these kind of slightly dorky things will be familiar to you and not feel weird because you've had to do some. Like T was saying, you know, if you've been through the medical side, you will have had to do various scales and possibly pictures and things like that. They're probably worth having a go on and seeing other words. I think having the words that helps, the two together bring meaning to each other. My only question would be about two things, why is discharge plan down as one of the bad things? On the self-harm one, I wonder if it's triggering showing injury, as opposed to a little plaster or something. But yes, and maybe selective eating a little bit.

Int: The discharge plan. I have no idea why it is in that list. That is unclear to me. I can see your perspectives around the triggering points. I personally had also thought that. It's interesting to see the other people in other meetings have also raised that. I have my personal views about these things, but we're here to discuss what other people think. But I do find it interesting my own views are consistent with that. So I wondered if I was being overly sensitive I'm thinking too much on it around certain things like the syringe, is that something people really want to see? I'm not a health care worker, I haven't worked in that space with vulnerable people, but it is interesting that multiple people have raised some of those things, and they seem to be a little bit inappropriate. So I've actually spoken to the widget company and said would there be interested in some feedback from people who have worked in the healthcare space? They said that they would be. So when I send that little survey around afterwards, understand these images as well, it would be really good to capture some of that because we might have the potential to go back to them and say here are some suggestions for how he can make this less triggering. Would you consider a band-aid, rather than actually something triggering in that way. I think somebody has suggested for recovery a bottle of medicine rather than as syringe. So there might be ways of getting the same message across that people interpret a slightly less confrontational for instance.

<Displays Your feedback screen>

Int: <Discusses follow up survey>

<Displays Next steps slide>

Int: <Discusses next steps>

<Displays Future Meetings and themes slide>

Int: <Discusses Future Meetings and themes slide>

<Displays Final Components, Questions, Concerns slide>

Int: <Discusses Final Components, Questions, Concerns slide> Thank you so much for attending this meeting, really great to see everyone, any final comments or questions, hopefully see you next time. Thanks so for your inputs and I will follow this with an e-mail.

Interview Ends