

hello I'm Sonny Williams I'm up here on the International Space Station so this is no – this is a really cool module of course most of these modules you'll see they have four sides and they're put together that way we could sort of walk work on a flat plane either a wall a floor another wall or the ceiling but you know again all you have to do is turn yourself and your reference changes the reason I'm bringing that up is because this is where four out of six of us sleep and so people always ask about sleeping in space do you lie down are you in a bed not really because it doesn't matter you don't really have the sensation of lying down you just sit in your sleeping bag so here's one sleep station right here I'm going in right now you can follow me if you want so I'm inside it's sort of like a little phone booth but it's pretty comfy I've got a sleeping bag right here that we sleep in so we don't have sort of like a little bit of a cover we don't fly all over the place but you know you can sleep in any orientation I have it sleeping feeling like I'm standing up right now but like you saw him on the floor but it doesn't matter if I turn over and I sleep upside down I can't have it I don't have any sensation in my head that tells me that I'm upside down so it really doesn't matter the sleep station is also like a little office we've got a computer in here as you can see we've got a couple little toys I've got some books I've got some clothes and other things that make it sort of like home I'm coming out and just for reference that's one sleep station this one's another right here there's one on the ceiling if you want to call it right here and then there's a fourth on the other wall over here so all of us sleep in a little bit of a circle all right come on back there's more to show you I know that there's some questions about how to use the bathroom and how do you actually live in space like normal like at home I mentioned real quickly about getting up in the morning and brushing your teeth and washing your face well how do you do that well here is the bathroom essentially you get up in the morning and we have a little kit and it has all the essential things that you need like your a toothbrush and toothpaste and brush see how see how much better the brush makes my hair look I'm just joking it still stands up straight it doesn't matter where you are it's always going to stand up straight while you're up in space a lot of people ask about toothbrush and toothpaste so luckily enough toothpaste you can do it outside right this way it's sticky and so it sticks to your toothbrush no problem another cool thing is that water sticks to your toothbrush too you can see it I'll have some water come out water is pretty neat up in space it'll stick to your toothbrush and it will make a big bubble and that's just my surface tension and then you can drink it so a lot of people ask about what do you do with the toothpaste after you brush your teeth two options swallow it and it's sort of like mouthwash but it tastes a little gross or you can just spit it out in a paper towel and then you don't have to worry about it the only thing I wouldn't recommend at home I'm only up here for four months so it's not that bad one of the most pressing questions about using the living in space of course is the bathroom so let's take a look at that little piece of work come on and here we are at the throne this is awesome you might see the little you might have noticed a little moon on the outside this is our orbital outhouse right here and of course it serves for two functions number two right here I'll show you but you see it's pretty small so you have to have pretty good aim and you'll be ready to make sure things get let go the right direction and it smells a little bit so I'm closing it up and that's of course for number two and this guy right here is for number one so there's sort of two slightly separate functions but you can do a little suspension by hanging on right here and doing number one and number two I might add it's color coded so you really don't get it mixed up which is nice this is

yellows for number one and also there's a selection of paper people always ask about toilet paper what do you do a toilet paper what kind of toilet paper do you have we have gloves just because sometimes it does get messy we have some Russian wipes which are a little bit coarse if you like the coarse type of toilet paper we have some nice tissues which are nice and soft if you like soft toilet paper we have Huggies just for any cleanup you know we're all babies once and this sort of helps and then if things get really out of control we have disinfectant wipes just to make sure we clean up here because you know just like the water I showed you the number one stuff can sort of go all over the place if you don't aim correctly and did I mention both of these have a little bit of section so they should keep things going in the right direction but like I said sometimes things get a little out of control if you are out of control yourself flying around so we have lots of protective stuff and of course you do have your privacy there's a little door so other people know that you're in there here's a pretty cool place this is sort of like in your house where everybody meets in the morning after you wash your face brush your teeth you want to find something for breakfast and this is our kitchen you might notice there's all sorts of foods here it's like opening the refrigerator you got all your different stuff that you want to have drinks meats eggs vegetables cereals bread snacks and that's a good place that's where you find all the candy side dishes and then some little power bars just in case so we have all this type of food some of it is dehydrated and so we have to hydrate it fill it up with water some of it is already made and then all we have to do is heat it up so something like this I'm pulling out barbecued beef brisket pretty yummy not only is this food made in the US but we also have food here from Japan we've got Russian food as you can see all these red containers are filled with food that's from Russia and then we get some of our specialty stuff some things that we like some of our favorite stuff that your family can send up in fact I like fluffernutter's and so I got sent up some fluffs so I could make my fluffernutter with peanut butter so you have a lot of food up here no problems no want to say where we are so right now we're in the Japanese laboratory it's one laboratory out of many here on the International Space Station it's actually on the left hand side if I was International Space Station and I was flying through space like this my left hand would be where the Japanese laboratory is so now again we're on the right hand side all the way on the right of the International Space Station this is Columbus the European module it has science experiments all over you could see it looks a little bit crowded and here we do a lot of our medical experiments here we are in the u.s. laboratory again this is a laboratory with science experience on all of the walls here all sorts of stuff that we do and one of the things we also do is we exercise we have some exercise equipment on board the space station we need to do that because we lose bone density and muscle mass while we're up here and that's a result of not having to fight against gravity so how we keep ourselves in shape are with a bike a treadmill and a weightlifting machine this is the bike you notice the clip the pedals so all you need to do is actually clip your feet in and then you can start pedaling you don't need a seat because you don't sit down actually I haven't sat down for six months now so you don't need any any type of seat just make sure you're you're held in with your pedals you probably see that the bike bounces around a little bit as I move it it's not steady and held to the wall firmly and the reason for that is the space station is pretty big you saw that there's also solar arrays on the space station if we start putting any forces into the space station it's going to make those solar arrays bounce around a little bit so to prevent that the

machines bounce around a little bit move around a little bit and that way we don't put any forces on to the structure of the spacecraft out to the solar arrays alright a little farther on come on I'm here with my two buddies in the airlock actually these are two spacesuits that are ready primed up to go outside as we call it to go do a spacewalk in case we have to do any thing outside some of the things we do outside there's just like inside repairs we have a lot of electrical boxes and machinery in solar arrays in fact that I talked about earlier that our outside and sometimes they don't work quite right remember space is really cold and really hot and it's also the vacuum of space with no pressure and so some of the equipment doesn't work well all the time so we might have to go out and do a spacewalk right behind me is actually the hatch that you go out into space and right now we have it filled up with a couple other spacesuits because we've got four of them up here and some of our tools but right behind here is the hatch in which you actually go right outside into the vacuum of space the spacesuit is pretty big as you can see it's like being a football player part of the reason it's so big and bulky is because of this backside of this backpack it's like going on a hike with a backpack but the backpack and the suit weighs about 300 pounds luckily in space nothing really weighs anything so you don't feel that it's so heavy but we need to have such a big suit because that guy back there is essentially the heart of the space craft this I call this actually a spacecraft it has all the oxygen for you it has all the carbon dioxide removal system for you it also has a heating and cooling system to make sure that regulate our body temperatures while we're outside it also has a computer so it tells you on a display here if there's anything that is going wrong with the suit if we're running out of oxygen if we have too much carbon dioxide or any type of electrical problem so it's a pretty awesome little spacecraft and actually got to go out use my spacecraft a little spacecraft a couple times and it worked like a charm lucky that it works very nice you might want to see what the helmet looks like it's pretty cool too we don't usually go out like this so you usually can see when the helmets open so you can see what it looks like inside somebody's little head would be inside of here so you can see you can turn your head all the way around while you're inside of there but the helmet stays still so that's determined you're you're how far you could see and it's usually pretty sunny out there so we have to wear our sunglasses and this is our sunglasses right here which make you look pretty cool it's like a glass-bottom boat this is the cupola it stick sticks down below the space station it's one of those places you find yourself hanging out and all the time because all you want to do is look back at our planet I think some questions I had were about what are you doing your free time and you can't help but want to just come to the cupola and look outside as much as you can and a lot of folks I play this game with myself about where we're flying over the earth I try to come in here and just guess after being here for a little while you can sort of figure it out you can tell different cloud types over different continents you can tell different soil types over different continents so let's see and then of course there's a lot of ocean so usually we're over the ocean at first glance I will tell you in just a moment where we are there we go right now we are right over Africa it's a little bit cloudy as you can tell so we're right over the continent of Africa hey what's that they think that's a Soyuz spacecraft that's the spacecraft that's taking us home to Planet Earth today oh my gosh we might have to go take a look at that that's pretty cool it's a little bit smaller than the rest of the spacecraft the space station so you'll see if we get go there it'll be a little bit more cramped though we're going you can look all the way back to the back of the

spacecraft which is where the Russian segment is and then you could look all the way forward to the front of the spacecraft where the where the Japanese laboratory the European laboratory and the American laboratory are and then back to the solar arrays where we started in this morning when we were looking out the Japanese window so other questions that were here are what would you recommend is a job if and what type of person would want to be an astronaut I think people who would like to explore of course people who like math and science that's what this is all about that we have people in the office who are doctors teachers veterinarians engineers pilots so all sorts of people become astronauts and I think if you see it's just sort of cool so I think people who like to do a little adventure and like to do cool stuff probably usually become astronauts hey one thing I didn't show you or I talked about but I didn't show you was the exercise one another piece of exercise device which is the advanced resistive exercise and that's what this is right here this is a red and you could probably see this bar and just do a little bit of maneuvering here stand by we have to set it up just like at any other gyms show you how this works so you can see you can change your attitude just bite going from one module to the next going up from the cupola down here this is what we call the a red and with this you can lift weights based on vacuum in these cylinders just like you do at home at a gym for example if I wanted to do a squat I could do it like this gain some weight on this thing I'm not lifting with anything so it's dirty it's too easy one of the cool things you could do you could do things that you can't do at home for example single leg squats with just one leg because the other leg you won't fall over so all sorts of stuff you can also do bench press we have a bench that we could add on here so you can work on your beach muscles hey Aki what are you doing down there this is one of the cool things about space – it sort of looks like there's a big old hole here but you don't even think twice about it you could just jump over the hole or if you want you can go jump into the hole I'm coming down come right back up again like Superman we were lucky we have a really cool big Space Station that you can fly around and that's actually called the PMM you might have saw it out the window is a big silver canister what's really great about that is it's essentially our closet in our pantry or whatever you want to call it we have extra food down there we have extra clothes we actually throw the trash out down there so it's nice and organized and we have all of our stuff that we need while we're working in all these other modules all stowed in this location down here and it's a lot of fun to play in so we're going into the Russian segment be ready you don't need a passport either it goes a lot farther back than this we'll go take a trip and say hello to the boys down there in just a minute but let's do that first actually and then we'll go down to the Soyuz at the very end this is your Guinea doing a little tour this is the FGB and what's cool about this module it is actually the very first piece of the space station that came up in 1998 the space station has been around for about now man for 12 years but it's been up in space for about 14 years and this was the very first it is like the Russians pmm it has a lot of storage as you can see Mona scream I am cricket so here we are in the heart of the space station really this is the service of all module this is the central post in case we had any problems I know when a couple of the questions are about what type of things do you have to worry about and some of the things we have to worry about in space are fire if we had a fire if we had a depressurization like we were hit by a micrometeorite and they made a hole or if we had some type of toxic atmosphere we use ammonia for our radiator so there is a possibility that ammonia could come into

the vehicle and then it would be bad for all of us if we have any of those problems we come right here which we call the central post it is the main heart of the space station it was also the first computers that came up here that ran the space station so behind this wall right here on these main computers so we gather here as a group of three or six and then figure out how we're going to either fight the fire patch the hole or solve the the toxic spill and what's cool about this module of course is the central post it also has great windows right down toward Earth it has controls to fly in visiting spacecraft if they need some assistance right here it has Russian computers as well as American computers to help us control anything we need to on the space station it's a cup of our crewmates back there I'll live Oleg Novitsky on the right and during Milan chinko on the left and there's also a second bathroom here which is really cool because six of us going to but one bathroom is really tough and so there's one bathroom here and one bathroom on the other side where I showed you and you can probably see on the wall behind a leg and Yuri some of the heroes of the space program Korolev Sergei Korolev who was a chief designer of putting men into space and of course on the right hand side Yuri Gagarin the first man this reminds us of our roots Yuri what are you doing still deal it making coffee Oh black coffee looks good okay spasiba we're going to check out our Soyuz real quick make sure it's ready to go all right back to the Soyuz I'm going to I'm gonna stop here just for a quick second you can see on the Russian spacecraft there's also other modules that stick out down and above right here is let's see I'm trying to be oriented that's a place where we do spacewalks read for the Russians for the Russian side there's Russian spacesuits in here and also a visiting vehicle which brought fruits and vegetables and becomes a trash container when we undock upon this side is also a future place where they're going to do spacewalks from and connected to it is Kevin's a legs and you've Ginny's Soyuz spacecraft and that was go see ours whoa there's been a TIA from the prop gun coming down it's a little tricky getting in here this is the docking probe right here this big thing this helps us connect to the spacecraft this probe actually sticks into this cone and that's how the spacecraft this our Soyuz becomes connected to the ISS initially that is then replaced by clamps which are around here that will allow the two spacecraft to be stuck together and then you can remove the probe in the cone all right so here we are in the store use this is what we call the Beto the living compartment the boy upset in Russian it also has a little bathroom it's not as good as the other bathrooms so we try not to use it too much it has drinking water in it if we need something to drink and then of course it's filled up with a lot of cargo for us for us bringing up and also bringing back down it has a second purpose when it comes back to earth it serves as a garbage container during the descent we'll will get rid of this area right here and everything that's in it will just burn up as it's coming into the atmosphere so that way we can get rid of a little bit of trash but the main area where we were on launch and where we're going to be on descent is down here because we're not part of the trash so we're in a safe place so we're in the descent module si it's a little small but you can get in I'm not sure how well you could see in here put on for a second I'm going to turn it up this way just so you could see the hatch and you can see Kevin it's a little bit small but we'll come in and show you around you come in okay you got to move a couple things we're just starting to get ready we're preparing a couple days ago for our ride home it's a little bit squishy but everybody asks how do you sit in the Soyuz and you sort of sit in your seat like this seat is molded to your body and so you can just sort of squish in here and be pretty relaxed

everybody has a handmade seat for them and then of course there's a control panel and that's where we do most of our actions and work right here there's hand controllers which you can fly the vehicle with and there's a stick right here primarily used for communications when we're trying to talk to the ground so three of us fit in here like I said it's a little squishy but somehow it seems like we all managed to get in here and fit pretty well and it's a pretty safe ride home you're probably wondering what's all this junk behind us well it's all of our parachute first of all and then it's all of our survival gear just in case we end up landing in some strange place on the planet and nobody's there to rescue us right away we have all sorts of survival gear with us keeping us safe in here so they've pretty much thought of everything and we'll be home on the planet within the next twelve hours pretty shocked