Dextrose full name is the special purpose dexterous manipulator actually glad we call it Dexter instead and we happen to have obviously a model of it right here and it it really does resemble honest to goodness of course although person with the 11-foot arms with no head into a torso and so let's again walk us through we can use the model how housed actually going to work well first as we saw in the graphics Dexter is launched in pieces and it's pieces the two arms the torso and platforms to support experiment I've
never been actually hooked up together

on the ground because they can't support

their own weight if they're hooked up

together under the normal gravity of

Earth so this is the first time the
dexter is going to be assemble is in

space by the space Walker that that's
going to be quite impressive to see the

arms are on the side they will be picked

up by Canada arm too which is the

robotic arms of space station and they

will be assembled then and hooked up

connected by the astronaut once Dexter

is fully connected it has the ability to
change out very small pieces of the equipment on Space Station it has the ability it's so dextrous that's why it's called dexter your name that it can change out pieces as small as a phone and as big as a phone booth so this is the range of dextrous manipulation it can do it has two arms but only actually uses one the to extract and replace a piece of equipment what it does with the other one is it will stabilize itself in microgravity things get very wobbly so you need an anchor yourself astronauts have to do that even on a spacewalk to
not be pushed away from structure once

44
00:01:43,799 --> 00:01:48,540
they start working so one arm will be

45
00:01:46,109 --> 00:01:52,019
attached to structure and the other arm

46
00:01:48,540 --> 00:01:54,780
will go and pick up and remove the piece

47
00:01:52,019 --> 00:01:56,629
of equipment it has a platform so you'll

48
00:01:54,780 --> 00:02:00,960
have the new piece of equipment here the

49
00:01:56,629 --> 00:02:04,259
one to be replaced take the old one out

50
00:02:00,959 --> 00:02:06,328
push it aside pick the new one up and

51
00:02:04,259 --> 00:02:09,509
push it back here we have cameras all

52
00:02:06,328 --> 00:02:11,038
over so we can supervise the the work of

53
00:02:09,508 --> 00:02:13,079
the robot it so it can be controlled

54
00:02:11,038 --> 00:02:15,109
from inside the space station

55
00:02:13,080 --> 00:02:18,719
astronaut operators are from the ground

56
00:02:15,110 --> 00:02:21,840
in and what is really nice is that you

57
00:02:18,719 --> 00:02:23,520
don't need any assistance from a space
Walker in order to be able to do this job so it may be times when it will be very useful to use the robot to change out a piece of faulty equipment on the space station without having scheduled a long space walk however clearly it's a robot it kind of think and it can't reason like a human being so it can't do everything but for parts of the maintenance of the end of servicing a space station and will be very useful and of course we reason you're what i always have as many spacewalks is you we do it because that you are exposing
00:02:52,709 --> 00:02:56,129
astronauts to as great as the view as

00:02:54,750 --> 00:02:57,419
they get you are exposing them to space

00:02:56,129 --> 00:02:59,789
you're getting them outside their their

00:02:57,419 --> 00:03:01,829
home and and having a system like this

00:02:59,789 --> 00:03:04,949
you can do battery change outs and and

00:03:01,830 --> 00:03:06,630
satellite work like dexter allows you to

00:03:04,949 --> 00:03:08,969
be an options you know we don't have

00:03:06,629 --> 00:03:10,530
right now correct i mean stretch box are

00:03:08,969 --> 00:03:12,959
risky they are riskier than staying

00:03:10,530 --> 00:03:15,150
inside the pressurized environment of

00:03:12,959 --> 00:03:18,590
the space station but there will be also

00:03:15,150 --> 00:03:21,539
a task for dexter to assist during

00:03:18,590 --> 00:03:23,250
spacewalk and even on my flight on 127

00:03:21,539 --> 00:03:25,669
the third flight of the japanese
elements we will use dexter as a supporting platform we have a lot of equipment to change out batteries in particular and we'll have space walkers out there and the robot so there will be a team of three there's the extra space walk we're talking about now you actually gonna get some first-hand experience pardon the pun working with dexter when you're on your flight how's your training prepared to you for that well the training for robotics operator is very generic at first some of it is the concepts of manipulating a robot
is very similar across the various

robots that we have in space the Canada

on the Space Shuttle the canadarm2 which

is on the space station permanently and

we have also a small arm attached to the

ejapanese pressurized system and they're

all somewhat unto the same

configurations so your generic training

prepares you very well to dinner

afterwards really do the specific task

it's like driving a car if you've driven

a car once you can drive another kind of

car even though the switches are not

exactly the same place

the concept of the same thing and we're
actually one of the things that you mentioned you mentioned a lot of the robotics except for the Japanese porch facility that you talked about that the rest of the robotics works have been done by my Canadian companies it's been that kind of his contribution to the International Space Station what does dexter mean to canadians and as part of Canada arm to and and the other robotic systems we have there well for us the International Space Station for us all is an experimental facility this is the first time in the history of mankind
that we build such a big scientific outpost in the environment of space and that we do it in collaboration with many nations Dexter is the first-ever servicing robot that as I've ever been designed so this is this is something something that we don't really know exactly where it's going to be useful maybe we'll find and we'll learn lesson about Dexter that will be apply later and it even though it is science fiction today to think that there will be little robots that will be able to go in service or weather satellites and our
and our earth observation satellites one

day well it's completely with that kind

of robot the first time that will learn

whether or not we can do that and then

one day we'll be able to service right

structure in space these are the first

steps we have to take these first steps

and learn how to use it and for other

things that's exactly what station is

about and you mentioned this right it's

the international cooperation we have

all these countries working together

that it's one of the things we are

learning to do for longer-term
exploration you are Canadian Space

158
00:06:01,379 --> 00:06:07,529
Agency astronaut working within NASA

159
00:06:03,288 --> 00:06:10,379
what's that like it's like being part of

160
00:06:07,529 --> 00:06:12,508
every big family it what is amazing

161
00:06:10,379 --> 00:06:14,819
about about NASA in particular because

162
00:06:12,509 --> 00:06:16,919
this is where I work as someone from

163
00:06:14,819 --> 00:06:19,139
another country is that it doesn't

164
00:06:16,918 --> 00:06:20,848
matter who you are which country you

165
00:06:19,139 --> 00:06:22,918
were born what language you spoke when

166
00:06:20,848 --> 00:06:25,800
you were a kid what colors can you have

167
00:06:22,918 --> 00:06:28,168
it is about who you are your

168
00:06:25,800 --> 00:06:30,930
qualifications and what you can bring to

169
00:06:28,168 --> 00:06:32,728
the team we're a team and we the

170
00:06:30,930 --> 00:06:34,439
astronauts we sometimes are the most

171
00:06:32,728 --> 00:06:36,519
visible part of the team and we're
actually just a small part

that team thousands of very very competent dedicated people behind that

the people that design the systems the people that manage the program the people that administer their important without which everything we can't book and we're just the ones that go and execute the plan that was designed on

the ground and I I never feel like I'm Canadian or I'm not american or I'm not Russian no I'm part of a national team

and we have a mission to do it at some

common one so it's it's a great job if
you want to sign up I encourage you
probably past my prime I guess all right

well actually this is the part of the webcast which the audience participation
where people have submitted questions at
the nasa gov for you to answer and a lot
of them are actually related to the number of spacewalks we have which makes a lot of sense since STS 123 has five spacewalks schedule more than any other

for for a single station mission so

start off with Abigail from South Florida asking do spacewalking astronauts have to be certified scuba
divers since their spacewalk training takes place under water absolutely that's an excellent question every astronaut is scuba diving certified because a lot of the preliminary analysis that we do we go scuba diving before we put the big suit which is quite cumbersome the visibility is restricted often we will try to think about how we're going to do a task by going scuba diving much more easy for us to go around and look through all the angles and then we had we design a plan which we then execute in the pool trying．
to figure out if it works so scuba

diving is very important all right of

course the big pool we're talking about

is in Houston NASA Johnson Space Center

has the big pool with you a lot of the

the full mock-ups and the training and

yeah the closest we get to microgravity

to weightlessness it's not exact but

it's as close as we get and it's at

least it more convenient than ever the

way do you go to space to do it George

from Moon Township asks how exactly does

the tether system work when astronauts

do their spacewalks on the space station

another very good question clearly space
walkers are always always always

tethered to the space station at any
given time for the good reason that if

for so for some reason they would push

away from station without

being without holding if they weren't

tether and they have nothing else to

hold on they would start floating in

outer space has their own satellite and

that's not a good that would be bad yes

so the tether of course the estranha

instead of the station with a real and

as they move along the station the real

unreal a little wire very sturdy wire
and they check on that wire all the time

we practice this on the pool a lot to

check on your wire on your tether it's

very important if it gets entangled you

go and D and detangle it if for some

reason it curves into a place you don't

like it go and make sure it's all nicely

routed because it's your life saver if

needed however we do have a backup

system do you have what we call our

safer system it's got little jet pack

that if you do I guess push away or

something happens you that's right and

then you always have the robotics
operator I mean cannon arm to as a
55-foot reach who knows if the national
would start floating about them maybe
the operator can go and fetch them out
of space but these are really
far-fetched scenario we've never been
there and hopefully never will let's go
to have the back-up plan so that's why
we do it let's see we do have let's see
you gain from Rapid City asked how do
astronauts deal with the fear that must
be present launched and actually you
mentioned floating away throughout the
entire mission this is this is a risky
business to go and put humans in space

and bring them back safely we've only been at this for 40 some years it's very recent in the history of mankind jet rocket propulsion has its risk and we understand them but that's but that's our job and privilege of going to space the interest of working at such a cutting edge of technology in an international collaboration far outweighs the risk and we're certainly willing and there's a lot of people that would be it's without risk we can't advance we can't discover I often quote I wonder if we could go and interview
christopher columbus today in

in the NASA news and say well you're

embarking on this voyage do across the

ocean and you don't know where you're

going to end up aren't you fearful and

that would be interesting to see what he

had to say see Dan from kennewick wants

to know do astronauts have a hard time

sleeping or resting in space how'd you

sleep nine years ago well first we sleep

in sleeping bags and because we flow we

don't have a mattress we don't have a

bed because we wouldn't be able to stay

on it so in our sleeping bag we can put
our sleeping bag vertical diagonal

upside down or example as we wish and we

just anchor it on a wall somewhere so we

don't drift while we sleep we sleep

actually very well and we're so busy

during the mission we were 16 17 18 hour

days by the time you get into the

sleeping bag it takes very few minutes

before you fall asleep and it's very

comfortable I slept very well so

exhausting helps okay well that's good I

actually really that was our final

question I want to thank you for joining

us and thank you for your insight we are
looking forward to covering your mission

sts-127 next year but we've got one

going now in a few hours go and ever

indeed an ex is a matter of fact we'd

like to thank our web viewers for their

participation in today's program

remember to tune into NASA's home on the

internet wwas gov / shuttle for live

launch and landing blogs and updates

throughout the flight of space shuttle

endeavour's STS 123 mission I'm Allard

Beutel thanks for watching