humanity has had its eyes on Jupiter for centuries first telescopes and in recent decades a deep-space probes were used to examine the largest planet in the solar system NASA is returning to the gas giant for the large spacecraft called Juno equipped with unique sensors Juno will look deeper into the planet structure than ever before to find out the answers to basic questions about Jupiter's makeup and how it formed Juno is looking for how Jupiter form and really how planets are made in general we're very much looking for the recipe
for planets the special thing about Juno

is is we're really looking at one of the first steps the earliest time in our solar system's history right after the Sun formed what happened that allowed the planets to form and why are the planets slightly different composition than the Sun Jupiter is so far away from Earth then even when it's at as closest to us it will still take a radio signal moving at the speed of light about 34 minutes to cross the distance getting Juno on a course to reach the distant planet is the job of an atlas 5 rocket
one of the largest in NASA's catalog
already been used to lost several NASA missions for the launch services program
including the new horizon spacecraft on its way to Pluto it's flown quite successfully like I said the 28 times pretty challenging missions pretty challenging payloads it's got a heritage that goes back to the Atlas one and some of the components and in the upper stage so it's an evolution of a family and in its current configuration and shape and form I'd say it's it's pretty robust the alignment of Earth and Jupiter leaves
the missions managers with a limited

00:02:01,828 --> 00:02:07,949
window to launch the spacecraft Gina

00:02:04,319 --> 00:02:09,239
only has a 22-day launch window and more

00:02:07,950 --> 00:02:10,979
or less we're down with another 13

00:02:09,239 --> 00:02:13,240
months until our next opportunity so

00:02:10,979 --> 00:02:14,710
it's those kind of challenges with make

00:02:13,240 --> 00:02:17,260
sure you do all the little things

00:02:14,710 --> 00:02:21,010
necessary to maximize the opportunities

00:02:17,259 --> 00:02:22,899
that you get for those 22 days even

00:02:21,009 --> 00:02:25,509
writing a powerful rocket into space

00:02:22,900 --> 00:02:28,390
will not be enough on its own to push

00:02:25,509 --> 00:02:30,789
Juno to its target the spacecraft still

00:02:28,389 --> 00:02:33,729
needs the kind of assist only a planet

00:02:30,789 --> 00:02:35,769
can provide that's why Juno will go into

00:02:33,729 --> 00:02:38,049
an orbit that will bring it past earth
two years after launch and use the Earth's gravity to slingshot it out to Jupiter arriving there in August 2016.

Aside from distance Jupiter offers unique challenges to a spacecraft such as a radiation field rivaled in intensity only by the Sun we have a box in the middle of the spacecraft that we call a vault and it's made out of titanium and that shields all the electronics from these hazardous radiation and we're very much an armored tank going to Jupiter just as Juno is building on the knowledge gained with
past missions to Jupiter future missions

will build on Juno's findings if we can

start to understand the role that

Jupiter played and how the planet formed

and how that eventually governed the

creation of other planets and Earth and

maybe even life itself then we know a

little bit about how to look for other

Earth-like planets may be orbiting other

stars and how common those might be and

the roles that those giant planets that

we see orbiting the other stars play

NASA's launch services program has

discharged several probes to deep space
in recent years including the

opportunity and spirit Rovers on Mars

the Cassini spacecraft that is studying

Saturn and the New Horizons man that is on its way to Pluto the schedule does not light for the LSP team after Juno experimental polar-orbiting weather satellite missions to the Moon and Mars are set for launch this year really all these missions at LSP is involved in NASA's involvement are all precursors to the bigger picture of getting you know humans out beyond low-earth orbit to Mars to an asteroid and beyond for
now though the team is focused on

getting Juno safely on its way to

Jupiter I will be celebrating when I

hear that that spacecraft has separated

successfully in those solar rays are out