(rapid electronic music)

(swagger rock)

- The design concept reduces the drag at transonic speeds, allows the airplane to fly faster and farther.

- We've actually done aeronautics research for over 100 years; so, NASA's predecessor was the National Advisory Committee for Aeronautics.

The NACA field laboratories became part of NASA, and we continue that tradition.

- They developed a lot of the theories with the people they had back then;

they developed wind tunnels.

We ran the wind tunnels
actually three shifts a day

14 00:00:53,490 --> 00:00:56,020 because there was that much demand

15 00:00:56,020 --> 00:00:58,530 for the data from the companies,

16 00:00:58,530 --> 00:01:00,490 and that who we were doing it for.

17 00:01:00,490 --> 00:01:04,370 We had lady computers who reduced the data for us.

18 00:01:04,370 --> 00:01:05,203 (auxiliary engine roaring)

19 00:01:05,203 --> 00:01:06,549 - [Control] Ready to launch, now.

20 00:01:07,477 --> 00:01:08,411 (main engines blast)

21 00:01:08,420 --> 00:01:13,620 - The X-15 was in many ways the ultimate research tool.

22 00:01:13,939 --> 00:01:17,359 The very first aircraft to fly into space

23 00:01:17,359 --> 00:01:20,590 and come back and land horizontally on a runway.

24 00:01:20,590 --> 00:01:22,204 - We had to make the engine run

25 00:01:22,203 --> 00:01:24,718 in order to make the plane fly.

26 00:01:24,718 --> 00:01:26,709 It had to be dropped from altitude;
it had to be started at altitude;

and it had to have stable combustion.

And we made it work.

- It was very much an experimental,

one of a kind laboratory in the sky

to investigate the next great hurdle, which was hypersonics.

And that's a problem we're still working on today.

- So we've always been trying to go farther, faster, higher;

that's what mankind has always wanted to do,

to explore.

That's what NASA does; we explore.

And now NASA is looking at a new X-plane

so that we can make it a little bit easier
to get across the country, about twice as fast.

- And the innovation there is actually the shape of the aircraft, so that we can enable supersonic flight over land,

and that'll open up a whole new industry.

- Here we are, looking at how do we take all of those things that we've learned historically, and place them in an aircraft that can actually fly faster than the speed of sound without creating the sonic boom.

And if we can accomplish that objective, then people all across the United States and in fact all across the world
54 00:02:34,870 --> 00:02:37,670
will be able to fly faster
than the speed of sound

55 00:02:37,669 --> 00:02:41,059
and in fact they could fly
multiple times the speed of sound

56 00:02:41,060 --> 00:02:44,509
without disrupting
communities on the ground.

57 00:02:44,509 --> 00:02:47,609
We want to be at the very
leading edge of technology

58 00:02:47,610 --> 00:02:50,138
when it comes to supersonic flight.

59 00:02:56,560 --> 00:02:58,990
- When you look out that window
and you see that winglet,

60 00:02:58,990 --> 00:03:01,270
that was developed originally by NASA.

61 00:03:01,270 --> 00:03:03,420
There's so many things that NASA has done

62 00:03:03,420 --> 00:03:05,893
that we're with you when you fly.

63 00:03:11,360 --> 00:03:13,790
- The computers used on the Space Shuttle,

64 00:03:13,789 --> 00:03:15,269
the prototype of those computers

65 00:03:15,270 --> 00:03:18,420
were actually flown on the F-8
Digital Fly-By-Wire airplane.

66 00:03:18,419 --> 00:03:21,919
- 80% of the world's commercial airliner fleet today use that same technology in order to fly their aircraft.

And almost all the military aircraft that are made today.

I remember the first time I was flying an F-18 Hornet.

I was in a bit of turbulence, and I thought I was holding the airplane steady,

and my flight controls were moving.

Well those technologies and those capabilities were developed by NASA.

Electric propulsion really just opens up the playing field for what you can do with airplanes.

Could be an air-taxi type vehicle or two or three, four people will travel.
across a downtown area and be able to get to a destination much quicker than being stuck on the freeway.

And so it's going to create all new types of designs for vertical lift transitioning to forward flight,

and the predictions are that we'll be three times more efficient.

- Unmanned aircraft systems follows in a long line of technologies that NASA always is pursuing
to improve the quality of life for your everyday person.

Like, they examine bridges or buildings that perhaps were damaged in an earthquake,

find out where the damage is.
You could do that by never having
to actually go into the
building or walk on the bridge,
so that makes it safer for people.
(pilot speaks on radio)
- For 60 years we've been exploring.
We stand on the shoulders of
giants that came before us.
They figured it out and we've
taken it a little bit farther.
It's what we call pushing the envelope
when you're a test pilot.