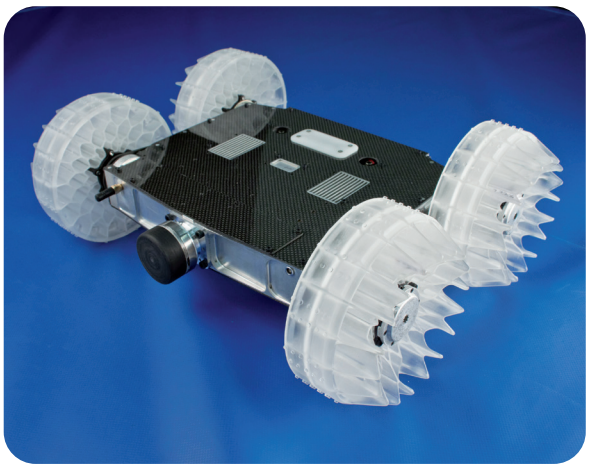
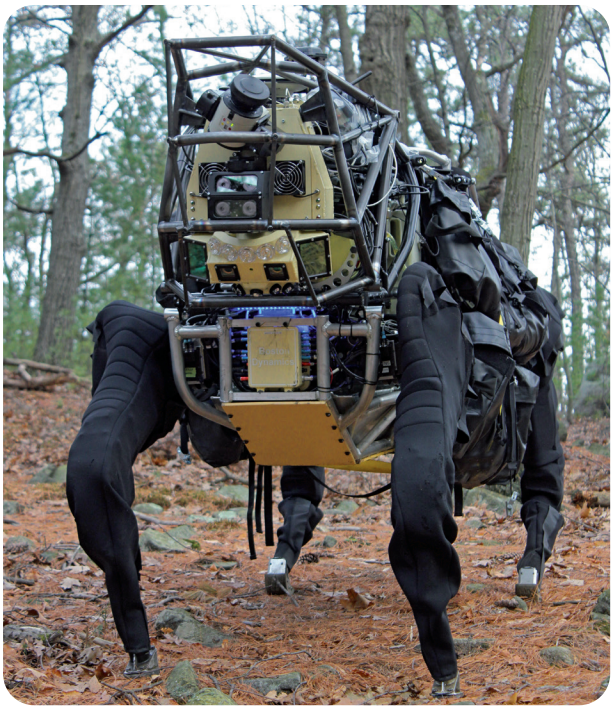
Animal-like robots



BigDog is a dynamically stable quadruped robot created by the NASA Jet Propulsion Laboratory. BigDog weighs 110 kg and is about the size of a small mule. It is capable of traversing difficult terrain, running at 4 miles per hour carrying about 150 kg and climbing a 35 degree incline. Locomotion is controlled by an onboard computer that receives input from the robot's various sensors. BigDog is funded by the Defense Advanced Research Projects Agency (DARPA) in the hopes that it will be able to serve as a robotic pack mule to accompany soldiers in terrain too rough for conventional vehicles. Instead of wheels, BigDog uses four legs for movement, allowing it to move across surfaces that would defeat wheels. The legs contain a variety of sensors, including joint position and ground contact. BigDog also features a laser gyroscope and a stereo vision system.



The **Legged Squad Support System** (LS3) is a DARPA project for a legged robot which could function autonomously as a packhorse for a squad of soldiers. Like BigDog, its quadruped predecessor, the LS3 is projected for military use, with the ability to operate in hot, cold, wet and dirty environments. The LS3 is a dynamic robot designed to go anywhere soldiers and marines go on foot. Each LS3 will carry up to 200 kg of gear and enough fuel for missions covering 20 miles and lasting 24 hours. LS3 will not need a driver, because it will automatically follow a leader using computer vision or travel to designated locations using sensing and GPS.

Robotics company Boston Dynamics created a 5 kg-robot called the **Sand Flea** that can jump about 10 m in the air and is equipped with an infrared camera. The robot uses gyro stabilisation to stay level during flight, to provide a clear view from the onboard camera and to ensure a smooth landing. The Sand Flea was used in Afghanistan to support troops by allowing areas to be investigated before any soldiers set foot on the ground. Afghanistan has become a hotbed of robotic soldiering, as thousands have already been deployed there. The numbers are even higher when one considers the unmanned aerial vehicles also used. Land-bound robots do things like bomb disposal and reconnaissance, reducing the risk to the troops in the field.

1 Complete the following sentences about BigDog.

a. BigDog is the size of a .....

b. It weighs .....

c. It is able to run at .....

d. It can carry about .....

e. It can climb a .....

f. Locomotion is controlled by .....

g. The computer receives inputs from .....

h. Its function is to .....

i. The legs contain a .....

j. BigDog also has a laser .....

2 Find the beginning of these sentences about the LS3.

a. ..... functions autonomously as a packhorse.

b. ..... for military use.

c. ..... environments.

d. ..... soldiers and marines go on foot.

e. ..... 200 kg of gear.

f. ..... missions covering 20 miles.

g. ..... using computer vision.

h. ..... using sensing and GPS.

3 PAIR WORK Ask and answer these questions about the Sand Flea.

a. How much does a sand flea weigh?
b. How many metres can it jump?
c. What is it equipped with?
d. What does it use gyro stabilization for?
e. Where was it used?
f. What was it used for?

bomb disposal: *disinnesco di ordigni esplosivi*
to defeat: *far fallire*
to deploy: *schierare*
to ensure: *assicurare*
to feature: *presentare, avere*
to fund: *finanziare*
gear: *equipaggiamento*
hotbed: *focolaio*
incline: *pendenza*
landing: *atterraggio*
land-bound: *terrestre*
packhorse: *cavallo da soma*
packmule: *mulo*
rough: *accidentato*
squad: *plotone, squadra*
terrain: *terreno*
unmanned: *senza equipaggio*