

Section 4

In today's astronomy lecture, I'm going to talk about the need for a system to manage the movement of (1) in orbit around the Earth. In other words, a Space Traffic Management system. We already have effective Air Traffic Control systems that are used internationally to ensure that planes (2) Well, Space Traffic Management is (3), but focusing on the control of satellites.

The aim of such a system would be to prevent (4) in space between the objects in orbit around the Earth. In order to do this, we'd need to have (5), and we'd also have to develop (6) to enable us to prevent such accidents.

But unfortunately, at present we don't actually have a Space Traffic Management system that works. So why not? What are the problems in developing such a system?

Well, for one thing, (7) these days, compared with how they were in the past, meaning that more people can (8) So there's a lot more of them out there, and people aren't just launching single satellites (9), consisting of thousands of them (10) So space is getting more crowded every day.

But in spite of this, one thing you may be surprised to learn is that you can launch a satellite into space and, once it's out there, it doesn't have to (11) to Earth to (12) So while we have international systems for ensuring we know where the planes in our skies are, and to prevent them from (13), when it comes to the safety of satellites, at present we don't have anything like (14) of tracking them.

And it isn't just entire satellites that we need to consider. A greater threat is (15) in orbit around the Earth – (16) satellite and junk from space stations and so on. And some of these are so small that they can be (17), but they can still be very dangerous.

In addition, some operators (18) to share information about the satellites they've launched. For example, a satellite may be (19)

or it may have been launched for commercial reasons, and the operators don't want competitors to have information about it.

And even if the operators are willing to provide it, the information (20) Details are needed about (21), as well as about its location at a particular time – and remember that a satellite isn't very big, and it's likely to be moving at (22) We don't have any sensors that can constantly follow something moving so fast, so all that the scientists can do is to (23) concerning where the satellite is heading next.

So those are some of the problems that we're facing. Let's consider now some of the solutions that have been suggested. One key issue is the way in which information is dealt with. We need more information, but it also needs to be (24), so we need to (25) that we can all agree on for the way in which this information is presented. We already do this in (26), so although this is a challenge, it's (27) Then, as all this information's collected, it (28) so it can be used, and that will involve creating a single database on which it can be entered.

As we continue to push forward new developments, (29) is only going to increase. To cope with this, we need to develop a system like the one I've described to (30) the numerous spacecraft operators, but it's also essential that this system is one that establishes trust in the people that use it, both nationally and at a global level.

One interesting development ...