

The hitchhiker's guide to satellite dependencies

For the last half century, humanity has gained access to better weather reports, live coverage of the Olympics, and a handheld map of the globe, all thanks to satellites in space. But what happens if these satellites fail? That question has been asked, but never answered in full. This thesis has aimed to assist researchers in answering that question, by providing a foundation on which to conduct such an investigation. This foundation is provided by presenting important aspects to consider when developing an analytical method for understanding how satellites affect modern society.

In this thesis, it was found that when trying to understand how society and its parts are dependent on satellites, it is important to consider why we wish to understand it in the first place? Are there financial reasons? Are we doing it for someone else? Is there a danger in not understanding these possible dependencies? Furthermore, satellites and the services they provide are complicated. If someone is to analyse them, they will need help and guidance. Even worse, knowledge of these dependencies can be used by ill-faithed individuals and organisations to disrupt important societal functions, like ambulances or bank transfers! This knowledge must be protected. We can do this by hiding information or simply not writing it down in the first place.

It is important to address these issues when analysing dependencies, because otherwise we risk doing something which achieves no purpose or might even be damaging to society. The foundation which is presented in this thesis can be used by people who wish to understand how satellites affect them. Without such a foundation it might be hard to say something useful about satellite dependence in the first place. This thesis also provides a prototype of how to analyse satellite dependence as extra help. The prototype and the aspects to consider were developed by reading reports on how satellites affect society and asking experts about how they analyse satellite dependencies. Many of the reports also made use of experts, sometimes in interviews, and sometimes as workshops. Getting people together was also useful, since we tend to cooperate better with people we know. In a disaster this can mean the difference between life and death!

It became clear that there are many issues with satellites. Often, we do not understand how dependent we are on satellite services. Ask yourself: what would you do without a GPS? How would you pay or withdraw money without a working debit card? How would your workplace function if the digital lock refuses to open? With the suggestions in this thesis, you might find it easier to answer those questions!