

Ethical Angles

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Morality, Ethics, & the Law

- Morality
 - A code of behaviour, often based on social or religious ideas.
 - What a person believes is right or wrong
- Ethics
 - The decision-making process for determining whether actions or decisions are right or wrong
 - Rules of behaviour set up to support a shared social vision (differs between societies)
- Law
 - Formal system of enforceable rules set up by a society to regulate the action of its members

Satellite Communication Constellations

- Satellites provide a wide range of civil and military services
- A recent addition to these are the large constellations of communication satellites that provide GPS, phone or Internet connectivity anywhere on the planet
- Current providers
 - Starlink (<https://www.starlink.com/technology>): 5504 LEO (March 2024)
 - OneWeb (<https://oneweb.net/>): 35 GEO, 600 LEO (March 2024)
 - Amazon Project Kuiper (<https://www.aboutamazon.com/what-we-do/devices-services/project-Kuiper>): 3236 LEO (planned)
- Surely providing Internet access worldwide is a good thing?

In Groups

- Research and discuss the dilemma described on the next slides
- Later one member of the group will summarise your findings to the class for further discussion

The Scenario

- After years of working your way up the corporate ladder, you are now Head of Engineering for a tech start-up.
- The company has won a contract connected to a project creating a constellation of thousands of low Earth orbit satellites.
- This constellation has the potential to create a reliable system of internet access for areas of the world that are hard to reach by conventional infrastructure.
- Your company is one of those chosen to develop and build a low-cost, lightweight, efficient satellite that can be produced at scale.
- This is a huge accomplishment for you, as well as for your company.

Dilemma

- A conference that brings together various project partners is met by protesters whose message is that the internet constellation has several potential negative impacts for nature and human communities. Disparaging comments have been made about your company's participation in the project on social media. Some members of your team seem quite rattled by the protests, and you convene at a coffee shop to discuss.
- *3 groups:*
 - *Constellation project managers*
 - *Satellite engineers*
 - *Protestors*
- *How are your positions are related to the internet constellation.*
- *What values might inform your positions?*
- *What knowledge do you have that might inform this position that the other groups do not have access to or understanding of?*

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- *In your groups, consider:*
 - *What are the main ethical issues raised by these satellite constellations?*
 - *How far can we solve these by using technological fixes?*
 - *How much do we have obligations to future generations?*
 - *How do we know that people in the future, will value the same things we do now?*
 - *Both creating the internet constellation and preventing its implementation seem to potentially benefit future generations. How do we balance these 'goods' and make a decision on how to proceed? Who gets to decide?*

Dilemma

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- *You have 30 minutes to identify and discuss the ethical issues as seen from your group's point of view and producing a 5-slide presentation that summarises your findings*
- *At the end of the session each group will present their findings*

Useful Links

- You are encouraged to use generativeAI to support your research and to help you identify ethical issues in this field
- [The Challenge of Environmental Ethics](#)
- [RAEng/Engineering Council Statement of Ethical Principles](#)
- [An overview of satellite constellations](#)
- [A call for space ethics](#)
- [The impact of internet constellations on space as an ancestral global commons](#)