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The role of computer systems and data in achieving the UN's SDGs

Introduction

When the UN sat down in September of 2015 at the general assembly, it adopted 17 new goals to be achieved by international cooperation which would lead to a better, more sustainable future. They followed on from the Millenium Development Goals that were set 15 years earlier, and they would look to see what needed to be achieved by humankind in the next 15 years to create a sustainable world. This world would not only need to be environmentally friendly but also create a sustainable social situation surrounding every community and family across the globe in order to achieve this (Ford, 2015). The major reason that the goals were set for 2030, is that it was by this year that most of the world's leading scientists predicted that if the world was not carbon neutral by then that we would cross a point of no return and that we would start to create permanent damage to the environment (Vidal, 2019). This is the year that if we aren't at a net carbon emission of 0 worldwide, then the average atmospheric temperature will rise by 2℃, causing an imbalance in global ecosystems and sea-level rise, before the year 2100 we could see a mass migration event that would displace around 500 million people worldwide.

How the SDGs are structured

A big part of the idea of creating and publicising the SDGs in the way that the UN did was the hope that it would not only guide governments across the globe in the creation of their policies; but also help NGOs, activists and researchers to hold those same governments accountable when one of them inevitably failed to deliver on their promises or to account for the SDGs at all (Ford, 2015). There are 17 goals, which have 169 targets to reach and 232 different indicators to show the progress that is being made.

These Indicators were suggested by a committee at the UN and amended and agreed to by majority vote in the UN General assembly by member states (Ford, 2015). Each indicator has to be collected to reflect the situation in a certain member state and show the progress, or lack thereof, in any given member state. Therefore, there is a lot of data that needs to be collected, collated and analysed to find out how any given member state is doing concerning any one goal that the UN set. And that data has to be collected on each of the 193 member states of the UN.

The use of classical systems and data

The question then is how do you deal with that amount of data? Computer systems will obviously have to collect, store and host the data that the UN will need to have to be able to hold its members accountable. The data will then also need to be analysed and structured to allow it to be made available to the public and the NGOs that keep pressure on the member states to achieve the goals. The next question is how do you collect this kind of data and how should it be analysed?

Most of the data that is being collected comes from the governments of member states, as they are in the best position to collect the data, which they mostly do anyway. The UN then

supplements with data that some governments perhaps aren't in a position to provide. This area has been difficult, especially on a local/municipal level where collecting data is often less prioritised (Faye, 2018). The aggregated data that allows the UN and the member governments to see not only which goals need more attention, but also why they are underperforming and what kind of policies or regulation could help the world reach the goals.

How AI can be utilised

One area which Governments, NGOs and the UN could improve on and benefit from is the use of AI. There are already many areas in which AI is being used for good. For instance the prevention of poaching (Vincent, 2019), the development of vaccines (Kurzweil, 2020) and making logistics more efficient (Wilson, 2020).

The UN could leverage the power that AI provides to find the most efficient ways for it to use its resources to help countries to achieve the SDGs. It could also help to pressure them into enacting policies that work towards the goals in each country. The problem with AI is that it could also very easily work against the SDGs, it has been found that out of 169 targets that were set, 134 could be improved by AI and 59 could also be made worse by AI (Vinuesa, 2020).

Simulation and Quantum Computers

To endorse an economic or political policy, it would be a good idea to know what effects it may have ahead of its implementation. This can usually be done through thought experiments or with extrapolation from data or facts. In recent years however there has been a shift in how public policy is shaped; computational simulation has entered the fore (Calder, 2018).

By simulating the complex and often unexpected effects that policies can create, governments can better understand and tweak policy to suit the problems that their country faces. Although this technique is generally understood to be more accurate than guessing, it can still miss important effects. To solve this, more accurate models need to be developed which is where quantum computing may change things (Popkin, 2019).

Recent developments have allowed companies and scientists to create computer systems that use natural quantum mechanics to their advantage. Last year it was finally proven that such a quantum computer would be exponentially faster for the solving of certain computational problems than a classical computer (Arute, 2019). It is also theorised that this is true for the majority of large scale simulations which may help with the policy decisions that need to be made to achieve the 2030 agenda.

Conclusion

The use of classical computer databases paired with established data collection methods, the use of AI and statistical analysis, and the future use of quantum computing in policy simulation could significantly affect whether the world reaches the 2030 goals. It is likely that without further research and use of the technologies outlined here, the world will not be in the place which we wanted it to be by 2030.

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