

# The 5<sup>th</sup> Season – Viral “Winter”

*How pandemics create a new “season” and what the challenge is for telecommunication networks*

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With Support from Heliot Group

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*What Covid-19 has made painfully clear is that things are irrevocably changing. This might be the first time in recent history that we are confronted with a crisis of such an unprecedented magnitude, but it possibly will not be the last. As we are fighting the virus with every available artillery, we also need to make sure that quick decisions taken now are still informed, efficient and balanced in the long-term. This is what the authors of this paper had in mind, when they decided to put it forward.*

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## This is not a unique, but a likely recurring event

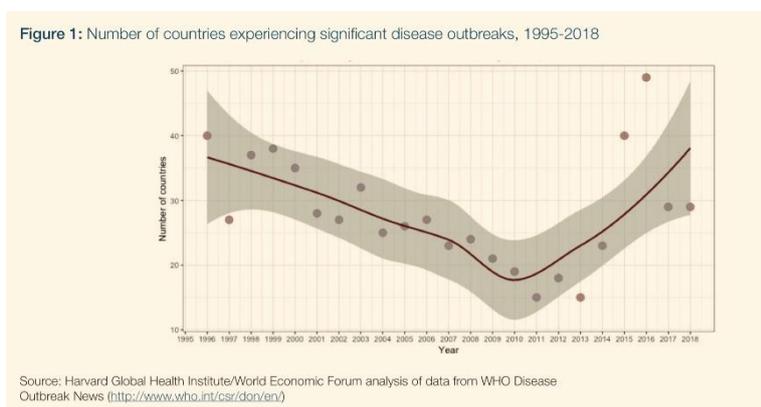


Figure 1 / Number of countries experiencing significant disease outbreaks 1995-2018, source: HGHI/WEF

There will be likely more larger pandemic events, forecasters at the World Economic Forum say in a study already published before Covid19. This could well become a feature of our lives: normal life without a pandemic threat (as we know it), but then recurring and intermittent periods with pandemic character, that is a viral “winter”.

The challenges in this are many, but by now identified and robust solutions are being developed everywhere. This paper is a first reflection about the role for telecommunications infrastructure in this, as well as its contribution to the resilience of society to other – additional - disruptions in such periods. It is well known that “if it rains, it pours”. Stress in one component will increase demands on other components in any system, with the result of increased fragility there too.

## **Today, what we see is some collateral “Good” but predominantly “Bad”. Can we get more of the good and less of the bad?**

- Significant suffering and exposure of fragile persons, heroic action of exposed key workers in all sectors, who traditionally are not as well rewarded as those who can work from home, but are so essential in times of crisis  
... will this change going forward, will there be a realignment?
- Risk of collapse of whole sectors, fired employees and bankrupt companies,  
... but swift state intervention, and a larger government role as “employer of last resort”.
- Temporarily empty shelves, as customers do not trust official announcements,  
... although supplies are there.
- Total breakdown of end user consumption for all but groceries and primary services.  
... no capacity yet to fully handle all additional demand online.
- A massive increase in internet usage and data transmission,  
... pushing networks to their limits, causing risk of failure.
- Unsophisticated social distancing tools for now,  
... with limited differentiation, controls and feedback loops.
- An unwelcome gift of more time for children and adults alike:  
... how to spend it? Is more Netflix the answer? More online education? Should we teach them or mentor and how?
- Flexibility of all commercial rental agreements for office, storage etc,  
... first official recommendations are being issued, but challenging for stakeholders
- Massive adaption and acceptance of home office working,  
... but no solution where work from home is impossible, no rewards for higher risks.
- Massive reduction of time lost in commute,  
.. giving time back to employees, otherwise lost. That’s good.
- Massive reduction in carbon emissions. ... that’s good.
- Rethinking about second use/extended life of groceries, electronics and other goods,  
... as replacement is not possible now. Cradle-to-cradle creates robustness. That’s good.

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**It’s way too early to talk about “lessons learned” while a large-scale human tragedy unfolds. But some evident realities have already surfaced. We need to become better prepared for the occasion of “viral” winters.**

Once a virus outbreak becomes a more regular “reality” then it is in some ways like a shift in harsh seasons. Like from winter to spring. In the days long past, in winter, we did stay inside, farming stopped and we lived off stored supplies. Once we know spring has arrived, preparations start, patterns are changing. Our ways of living will adapt to the new circumstances and sometimes to the unpleasant realities. The difference is that next time we should be prepared.

To manage, this requires information on a massive scale, as well as being able to continue economic activity as much as possible online. Backbone infrastructure is crucial. Qualified and motivated staff, health care assets, telecommunications and logistics.

Environmental and human data (at airports, train stations, bus stops, public places, supermarkets, cars, pallets, boxes) needs to be collected on a granular scale and shared widely. Exposed employees should be much better informed about the risk they are taking on by continuing to work outside, their environment – to the extent possible – need to be managed.

Social distancing becomes more effective, more tailored, more precise, more localised. Information about the whereabouts of supplies could be shared with consumers. Vulnerable citizens could be surrounded by virtual fences. Occupancy information of supermarkets should be shared so we can decide when to go, book a place in advance maybe. Also, we should be able to protect ourselves better against the inevitable increase in cyber-attacks as more personal data is exposed online.

What about data protection, privacy and anonymity? Here, lie some fundamental technology choices. As Thomas Scheibel, CEO of Heliot the 0G network provider for Switzerland and Austria explains: "Either we collect all information about every person via their mobile phones individualised, or we observe through sensors passively the presence of human beings without knowing who they are individually. Both are possible."

This new information wave of millions of localised data points of things and

humans, however, coincides with an even larger increase of mobile and internet traffic.

Already before the viral winter there was a doubling of data every 18 months. Now we are likely to face a further substantial increase in this pandemic phase.

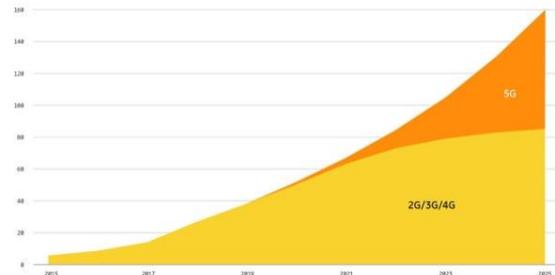


Figure 2 / Global mobile data traffic (EB p.m.)  
source: Ericsson Mobility Report 2019

Heliot, the 0G network operator for Switzerland and Austria believes that telecommunication infrastructure today is at its limits when trying to meet both these new demands. "Cellular and 5G is not the solution for all and everything", claims Thomas Scheibel, CEO of Heliot.

### One Risk Rarely Arrives Alone

We are facing now the reality of one risk, that is infectious diseases.

However, there are other equally likely and potentially severe risks. Often these are interrelated to each other, and can cause a domino effect across various areas of society. **Imagine, no internet and social distancing at the same time. Imagine food supply chain disruption and quarantine at the same time. Imagine no cellular connection and viral "winter" at the same time.**

As a result, we all need to prepare for this new type of seasonality, similar to winter. While guarding against other risks. But with short notice. Contracts need to change, flexibility needs to be provided,

burdens to be shared, information be shared. Crucial infrastructures need to be robust and with enough flexibility and capacity to avoid multiple failure.

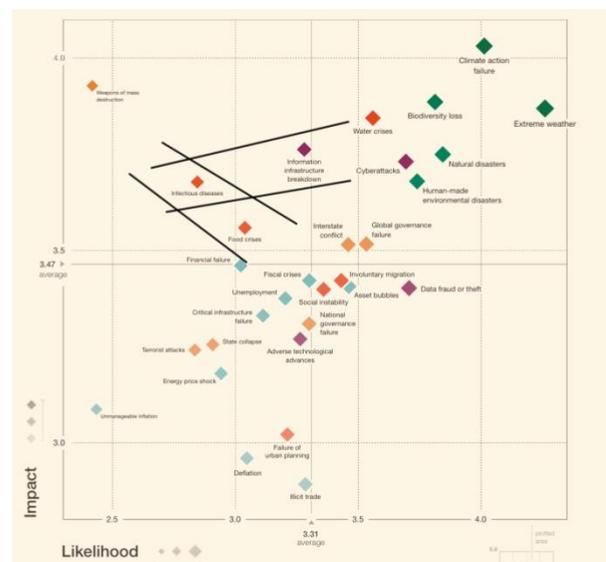


Figure 3 / Global Risk Report 2020, source: WEF

## What will the future bring?

More flexible office space, better home working conditions, better school and kindergarten offerings in remote mode, larger online multi-„player“ events and communities, better information about supplies and inventories, decentralised local production hubs to diversify supply chains further, while using bulk transportation as much as possible, better information about our surroundings, better instructions, but also more hacker attacks, more online entertainment. Finally, two jobs may become normal: one in the viral „winter“, and one in the normal season (we will all become seasonal workers).

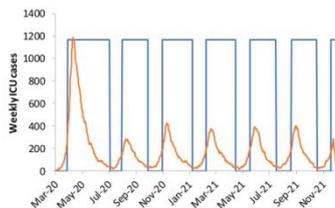


Figure 4: Illustration of adaptive triggering of suppression strategies in GB, for  $R_0=2.2$ , a policy of all four interventions considered, an "on" trigger of 100 ICU cases in a week and an "off" trigger of 50 ICU cases. The policy is in force approximately 2/3 of the time. Only social distancing and school/university closure are triggered; other policies remain in force throughout. Weekly ICU incidence is shown in orange, policy triggering in blue.

Figure 4 / Adaptive Triggering of Suppression Strategies for  $R_0$  of 2.2 (Covid19),  
source: Imperial College London

Also, this flexibility needs to be available on a seasonal basis (months at a time) but maybe also on a bi-weekly basis shifting resources within short and a longer cycle.

Amongst many other things, all this requires also reliable telecommunication infrastructure and technology. If there would be a failure of an overloaded telco infrastructure, this would have truly disastrous consequences. 0G can provide that essential backup to many forms of primary communication.

## 0G to be the fabric of this new seasonality. Less is more.

Heliot, as the Sigfox operator for Switzerland and Austria, makes small everyday things visible to owners, clients, suppliers, transporters, insurers. Heliot does this without using complex and protocol intense cellular technologies like 5G. It uses 0G, a low intensity, data-poor and very low radiation, but very robust and long-life radio protocol. Less is more here.

Thomas Scheibel, CEO of Heliot Group, says: „**0G can help to make social distancing a truly effective tool, it can create trust in the supply chain with full transparency. It makes testing kit, mask supply and deployment much easier, can enable cross-border flow and inventory monitoring for goods, and allows monitoring environmental conditions and risks for key frontline workers (nurses, carers, truckers, services, etc), the elderly and the sick.**“

He explains that Heliot, as well as many other Sigfox Operators globally, are working already together with a large ecosystem of solution providers, new developers and inventors, to make this a reality, today. The various tools available are collected and presented at the company's website<sup>1</sup>. Also the company is offering free tokens and support to all developers and solution providers to help in the current crisis.

When being asked how this compares to other technologies, the Heliot CEO claims that all this can be achieved, without having to invest into more radiation, more 5G infrastructure, without opening the gates wide open to hacking attacks. He says: „Telecommunication providers and users will see that is much more efficient to use 0G for simple everyday objects visibility. “

<sup>1</sup> [www.heliotgroup.com](http://www.heliotgroup.com)

In his view, telecommunication providers would need all available bandwidth they may get their hands on. It would be needed for massively larger data transmission volumes, for telemedicine, home office communications, remote mass sports events and virtual interactive multi-participant trade shows for example. 0G can help to clear out the radio spectrum.

Not surprisingly, also telecommunications have to meet the test of sustainability and efficiency in all it does.

### *About HELIOT*

*Heliot was founded in Switzerland in 2017 and has since then created a nationwide network of low intensity, small data transmitting 0G base stations, offering services to industrial customers from various sectors. It is expanding into Austria and Slovenia, and has a team of 15 employees in Lausanne, Zürich and Vienna.*

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