

The Power of Information

How I see the Internet...

Categories of Information

Lets break down how I see the Internet...

Factual Information

Factual internet information is simple and true, hardwired and unchanging. I think the simple facts, code and numbers of the internet are integral to understanding how we are sending and receiving information.

Analytical Information

Analytical information is the interpretation of factual information. The internet facts or codes are not simple to understand at first glance but by modes of analysis, the information can be decoded to be understood by humans.

Objective Information

Objective information is accurate explanations from multiple viewpoints. The internet uses various tools to help and protect users interacting with each other. These tools ensure our internet can have end-to-end connectivity with distributed governance.

Subjective Information

Subjective information highlights one person's point of view. The internet is used by individuals who fill the online world with information. This information is what leads us back to the internet for more and influences our population, with that comes serious risks.

Factual Information

Solely Dealing with Facts



Binary Code

Binary information is shifted around through cables and wifi to computer processors' decisive circuits. Information on the internet is sent around as "bits" and these simple yes or no fact sequences are how computers have states of memory. The computer completes this process at a much faster and more complex rate than humans can perceive. Binary code is a simple logical and sequential idea where the number 1 is like an on switch that equals one bit and the number 0 is like an off switch that equals another bit. Strings of 8 bits can represent numbers between 0 and 255. These strings of 8 bits are sent and received very fast through bytes, 1024 bytes strung together is a kilobyte and 1024 kilobytes is 1 megabyte (Rai, 2021).

11010011100010

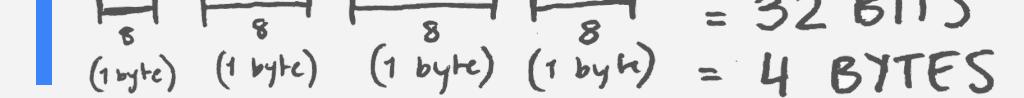
Information Packets

Large chunks of code and information can be broken down into smaller packets which make for more efficient and reliable transmission rates. We can view information packets like postal packages, the header is the envelope, the payload is code content and the trailer is the signature, the header contains instructions and directions for the location or IP address the packet is to be sent (Yasar & Zola, 2022).



IP: Internet Protocol

If everyone uses internet protocol then everyone can communicate. IP is a pre-defined language that every single machine on the internet uses to identify machines or devices and to send and receive information over the internet (Tyson, 2004). IP is expressed in decimal numbers but communicated as binary coded information by computers.

11.172.224.47
 = 32 BITS
(1 byte) (1 byte) (1 byte) (1 byte) = 4 BYTES

Analytical Information

Interpretation of Factual Information



DNS

The Domain Name Server is a way of mapping text names to IP addresses automatically. This way people can quickly and easily type text to find IP addresses rather than writing the IP address itself. Every time a domain name is used the internet's DNS servers translates the human-readable or memorable word domain name into the machine-readable IP address (Tyson, 2004). This quick analysis of the facts or codes happens by lots of DNS servers in a distributed database so it is super speedy and efficient.

The DNS servers respond to billions of requests to find information such as a website.com and it does this by memory or by contacting other DNS servers like .net or .org to find which server might know more information on the location of the information. Once the DNS finds the IP address it returns it to your browser for you to see a web page.

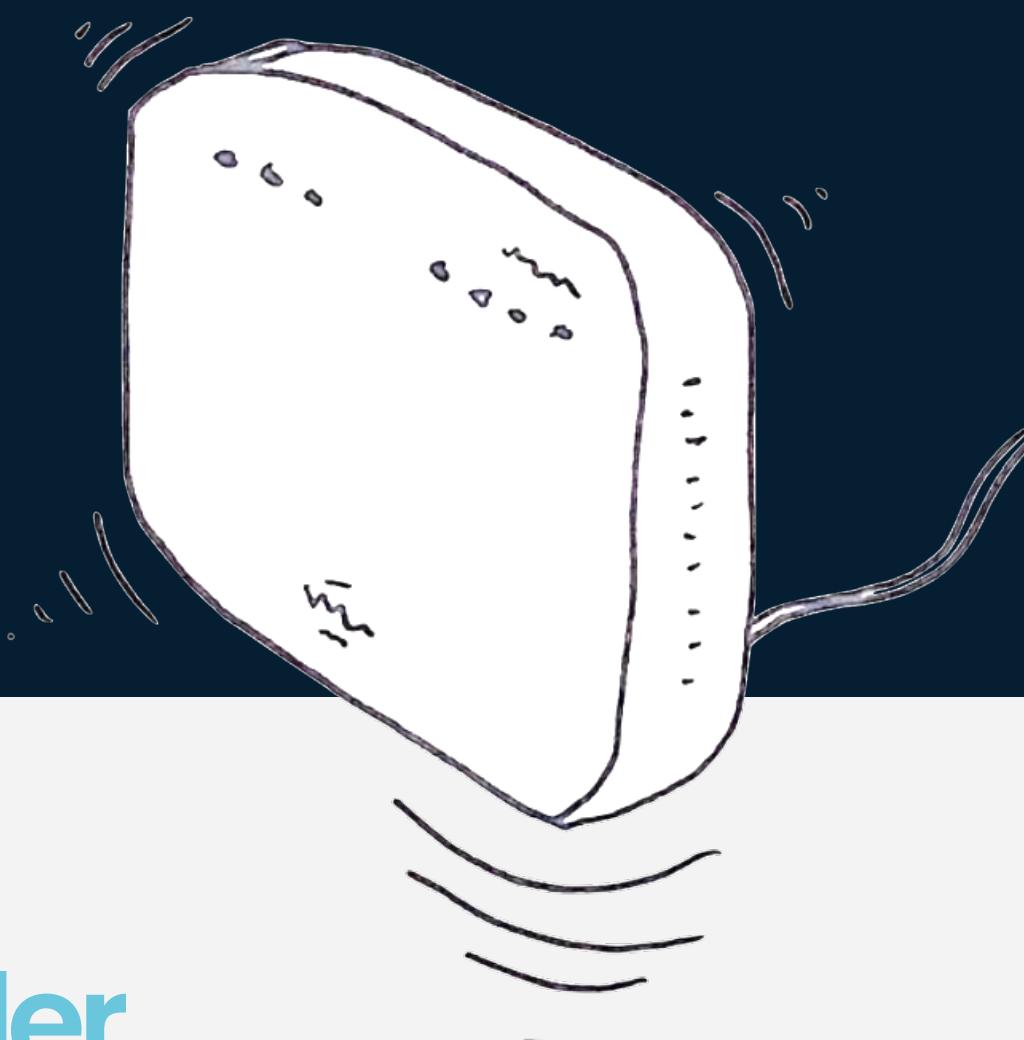


Internet Service Provider

Through an ISP your modem brings the internet to your home. The modem interprets signals from your ISP and translates them into signals that your local devices can access and send information through. This is another way your ISP can analyse the factual information like codes and packets to bring them to you tangibly.

Router

A router connects your devices to each other and then to the modem. This connection can be through an ethernet cable or wireless router which creates a local area network (LAN). This router creates a firewall for security and manages all the information flowing through the network to the individual IP addresses within the LAN.



Objective Information

Multiple Viewpoints Understood from all Sides



HTTP

The most common protocol or internet language is HTTP which stands for Hypertext Transfer Protocol. HTTP is a prescribed order for presenting information that is transferred over networks through requests and responses. When users submit sensitive data via a website all this data is plain text that anyone can read.

HTTPS

Hyper Text Transfer Protocol Secure uses encryption for requests and responses so that the data is safe and secure. When compared to HTTP which can be understood by anyone, HTTPS prevents the information from being viewed by just anyone. Instead, clients and servers need an agreed private key and public key to encrypt communications. HTTPS authenticates interactions and builds a system of trust for all private internet information (Cerf & Mejia, 2015).

Encryption

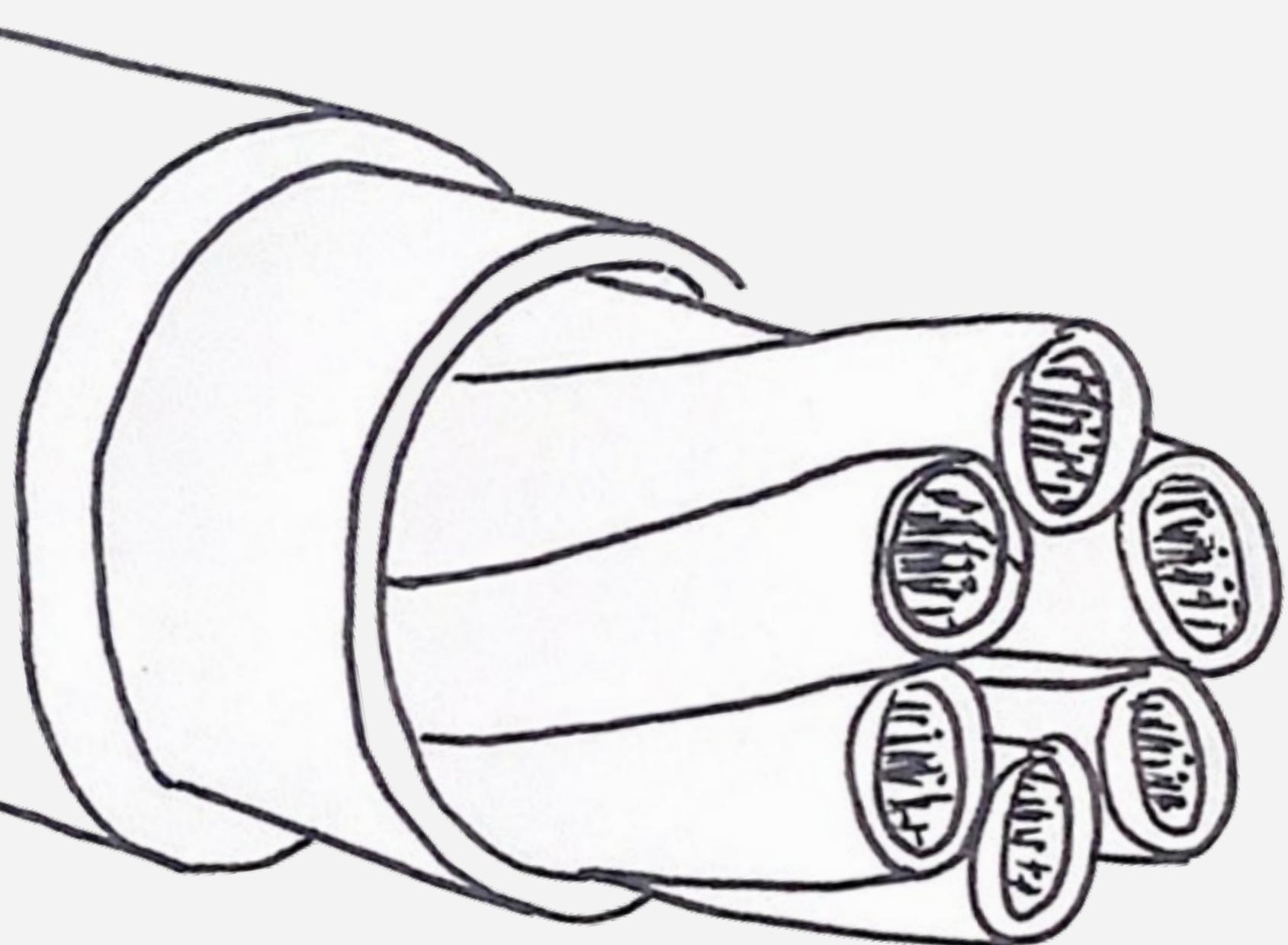
Private information is sent and received securely through encryption. Encryption scrambles a message to hide it and then through a process of decryption the message can become readable again. To read it we use 256-bit keys that quickly decode the message only for the key holder or intended receiver (Cerf & Mejia, 2015).

Security

HTTPS appears in the URL when a website is secured by a Secure Sockets Layer (SSL). TLS is like a handshake between the user and the server. They communicate to verify each other through SSL and to establish the cryptographic algorithms they will use to decrypt their information and they agree on session keys (Cloudflare Inc, 2022). Possession of the private key that matches with the public key in a website's SSL certificate proves that the server is the legitimate host of the website (Cerf & Mejia, 2015).

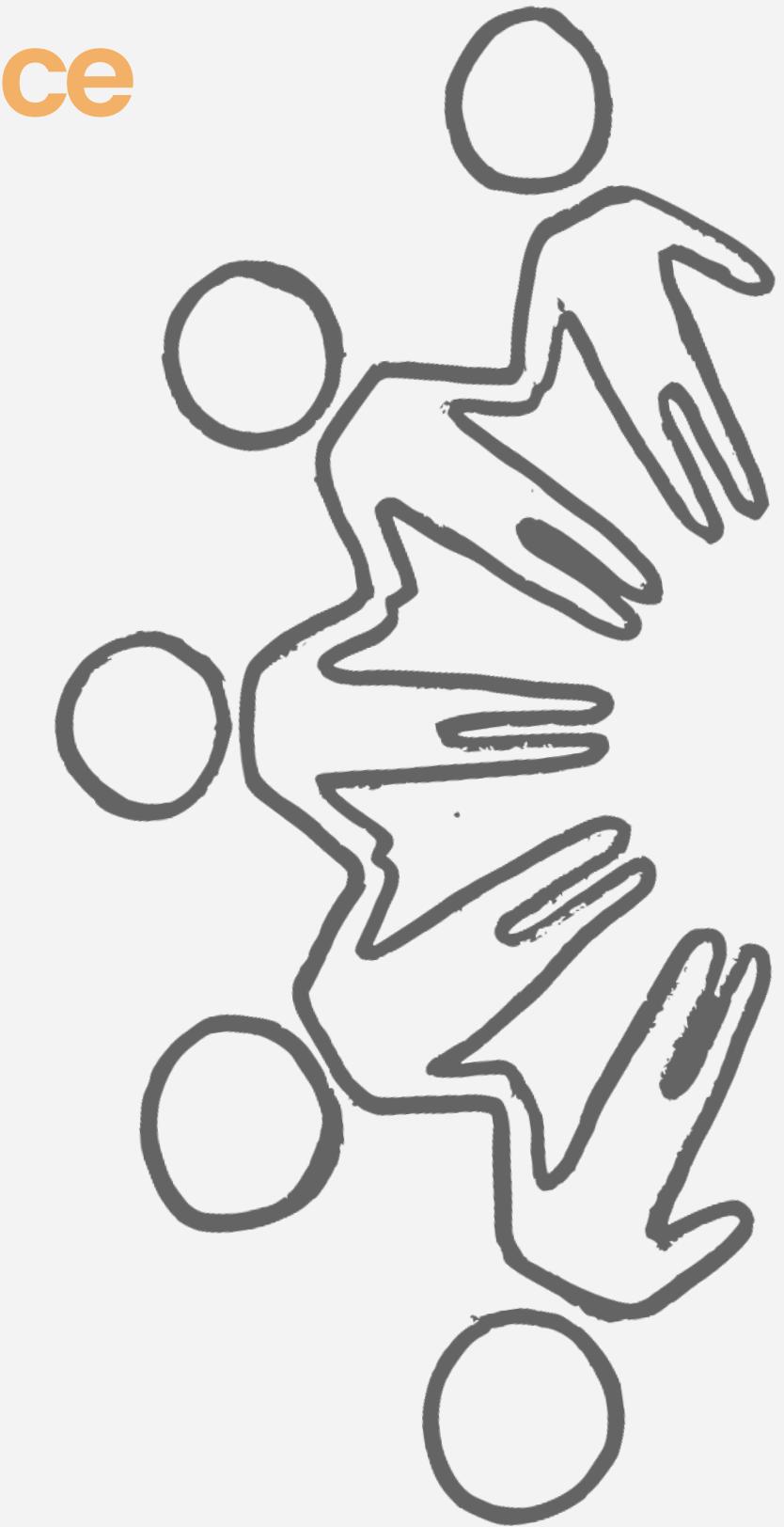
Worldwide Connection

Although there is a seemingly placeless virtual space that creates the internet and the cloud, it's internet infrastructure that is physical and worldwide that connects us all. Coded information that's sent through light moves a lot faster than electricity and a lot further than radiowaves. Fibre optic cables send 'bits' of light through threads of glass that are engineered to reflect the light to bounce up and down the cable. Multiple 'bits' are sent simultaneously through the fibre optic cables and around the world. These cables are submerged throughout the sea to connect countries in a notoriously vulnerable and very tangible way. We might think of the internet as a singular entity but it is actually a distributed system of thousands of inter-domain routing systems that span the world. All of this global connectivity comes under agreed rights and state or sea-specific laws but still maintains its distributed governance once in the online realm.



Distributed Governance

Coordination and collaboration are paramount to the internet's operation. Trust must bind everyone together; from servers to corporations to users to ensure the internet keeps functioning. There is not a reliance on one power but the reliance on professional and technical parties to hold up their end of the deal so they too can benefit from the internet. In a report about locations of power on the internet, Mathew (2014) explains how distributed governance is key to the information society and maintaining the values of "freedom" and "democracy". The internet must have an appropriate combination of technology and social arrangements and technical personnel who all act with social values in mind "for the good of the internet" (Mathew, 2014).



**Objective Information
Continued**
Multiple Viewpoints Understood from all Sides

Subjective Information

The Views of an Individual



Distortion of Reality

Only a couple of decades ago radio, television and newspapers were the only media choices an individual had to gather information about the immediate world. People also had limited calls or circles of people to communicate with. The information on the internet provides an individual with a vast array of options, access and new knowledge of the world. Along with this distributed governance and diffusion of information comes a shift in power as control of communication of political moral and security issues is made more difficult than older means of public communication. This shift encourages freedom of expression but also creates entirely different online realities for each individual. This is due to advances in algorithms, tracking users' online habits and the selling of data and information to those who can profit from it (Curran et al., 2016). Not only can the internet influence entire populations but the individuals themselves are driving the flow of information that they are being bombarded with. The influence of an individual's worldview on the information they consume has massive implications for one's behaviour, identity, relations, democracies and perceptions of reality itself(Curran et al., 2016).

Is it a necessity?

Do we really need the internet to survive? Some would argue the internet provides great benefits and view the internet as a tool for expression, freedom, commerce, connectivity and the improvement of societal awareness, and communication with anybody. We can build communities of like-minded people, think for ourselves and educate ourselves and our families. Others recognise the harms and disadvantages and consider the danger the internet poses to societal structures, culture, morality and human relations (Brey, 2006). A population dependent on technology that in the wrong hands could shut down the economy. A loss of privacy as companies mine personal data and make money from it. There are huge leaps for societies and pitfalls too. As we move towards a seemingly autonomous personal experience in virtual space we adhere to cultural notions of right and wrong, global trends and unified ways of communicating. Depending on the views of the individual they will decide their own risks and benefits.

Human Rights

In a report released by the United Nations, they encouraged states to facilitate access to the internet for all individuals (Subbaraman, 2011) because it is a priority for informing the world of situations of injustice and inequality. Articles 19 and 27 in the Universal Declaration of Human Rights state that "Everyone has the right to freedom of opinion and expression" and "Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits" (United Nations, 1997). But is all this impossible without the right to communicate? McIver et al., (2003) explain how communication, human rights and communication technologies are inextricably linked and to ensure the right to communicate we need to re-conceptualize information freedoms on the internet.

Others like Best (2004) argue that the internet should be a human right in and of itself and that information should be accessible to anyone and that the internet has taken that standard mode of world knowledge. Best (2004) argues that there is a "digital divide" between those online and those who are not online due to socioeconomic, political or geographical lines. If the internet has been established as the means for the liberation of communication and information then we have to ask the question... why is an adolescent sense of belonging, psychological wellbeing and identity development at risk (Allen et al., 2014)?

Vint Cerf (2012) who is an internet pioneer and one of the fathers of the internet wrote an opinion piece where he explains that the internet is just a way of improving the human condition but access to the internet itself is not a human right. He explains how it is a mistake to place any particular technology in this exalted category. He argues that we are missing a larger point, technology is there to enable some rights but it is not a right in and of itself (Cerf, 2012). For something to be considered a human right it has to be something humans absolutely need, this is a high bar and the internet does not stand pre-eminent above it all.

What about the Future?

Vern Ehlers (1995) declared how the internet "will create a community of informed, interacting and tolerant world citizens" but I would argue that as algorithms shape the virtual landscape, perceived reality will become further and further from the truth making us less informed and less tolerant of others reality.

Unfortunately, internet addiction is a predictor of loneliness and internet addiction with loneliness predicts depression in adolescents (Demir & Kutlu, 2016). Not only this but internet use and screen time are causing people to suffer from an essentially induced attention disorder due to the way it provides a distraction from isolation or lack of social support (Greenfield, 2021). New Zealand infrastructure is said to be vital to NZ's economic and social wellbeing (New Zealand Government, 2019) but if the internet and social media are harming adolescent mental health then is it really vital to us?

Information might be the key to the internet but is the internet the key to adding value to society? We are connected by all these forms of digital information but exclusion from this connection poses a risk or maybe a benefit to members of society. Information is knowledge and knowledge is power (Park, 1970) but depending on what you read and where you find your sources you will get differing opinions about it all. I see the internet as the facts advancing, the analytics improving, objectivity being strived for and the rest of the internet, well it's all subjective.

**Subjective Information
Continued**
The Views of an Individual

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Helena
Kennedy
300596981