Information and Communication Technology:

The INFORMATION THEORY (CONTINUED)

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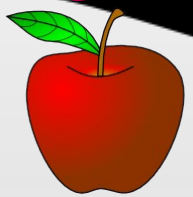
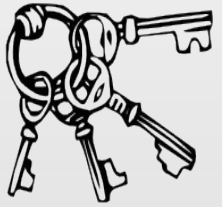
The INFORMATION CAPACITY or Bit Rate of Data Transmission





1 bit per second → 1 bps

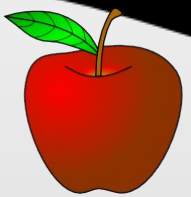
8 to 10 bit per second → 1 Byte per second
1 Bps

1000 bit per second → 1 Kbps

1000 Kbps → 1 Mbps

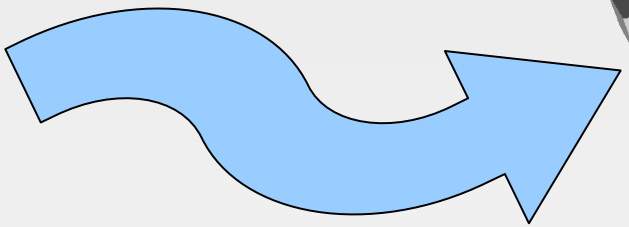
1000 Mbps → 1 Gbps

The Information Capacity (Bit Rate)



According to Shannon [1948], there are 2 (two) factors related to the information capacity:

- ***Bandwidth***
- ***Channel Quality*** **(*Signal to Noise Ratio*, S/N atau SNR)**



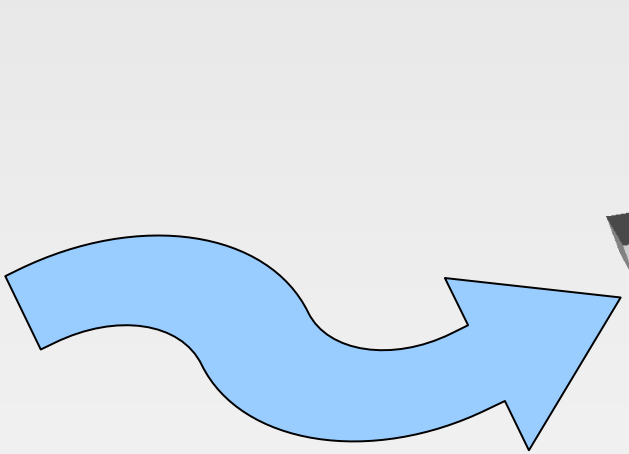
The Information Theory

The Communication Model

[1948] Claude E. Shannon, "*A Mathematical Theory of Communication*" *(a technical notes)*

/home/rhiza/Desktop/shannon.pdf

[1949] Claude E. Shannon and Warren Weaver, "*The Mathematical Theory of Communication*" (popular version)



The Information Theory

Communication Model

Shannon and Weaver [1949], **simplex mode**

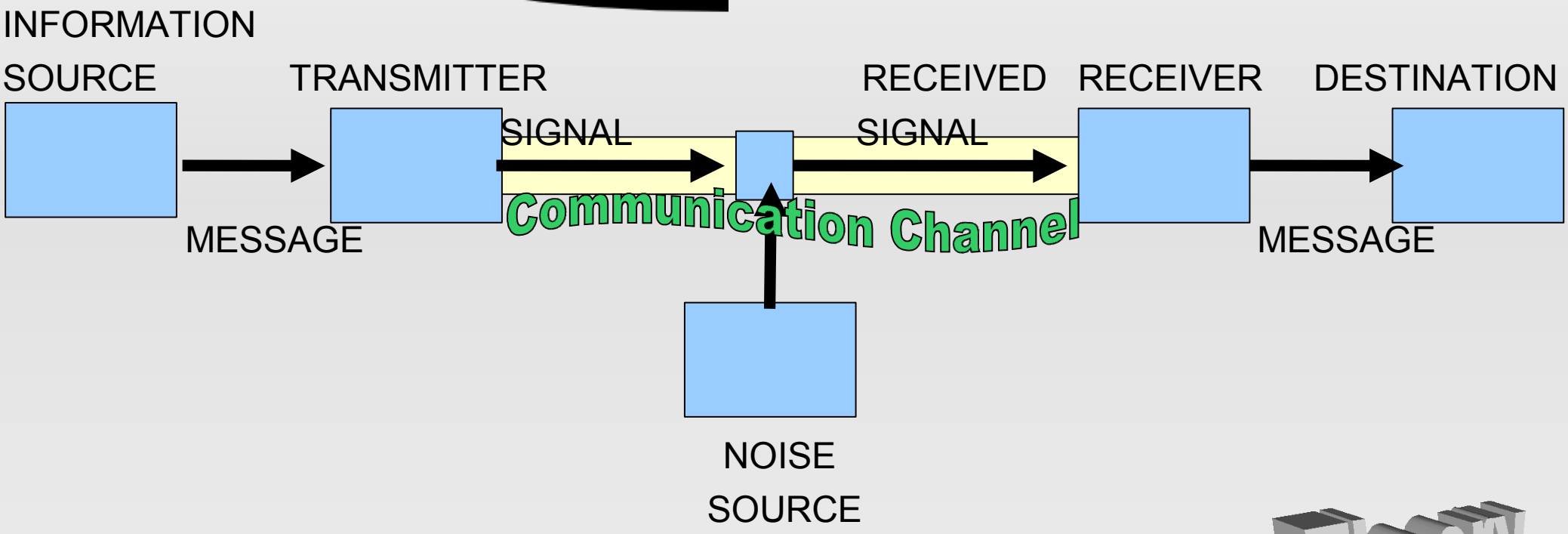
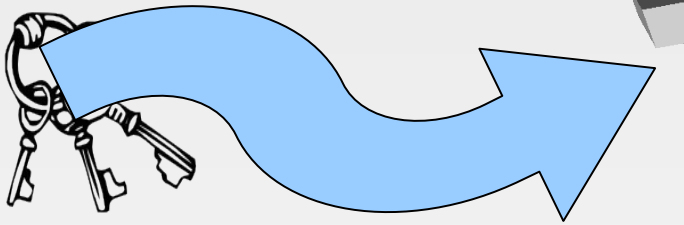


Fig. 1 — Schematic diagram of a general commun[illegible]



The Information Theory

The Information Capacity (Bit Rate)

Shannon and Weaver [1949], **simplex mode**

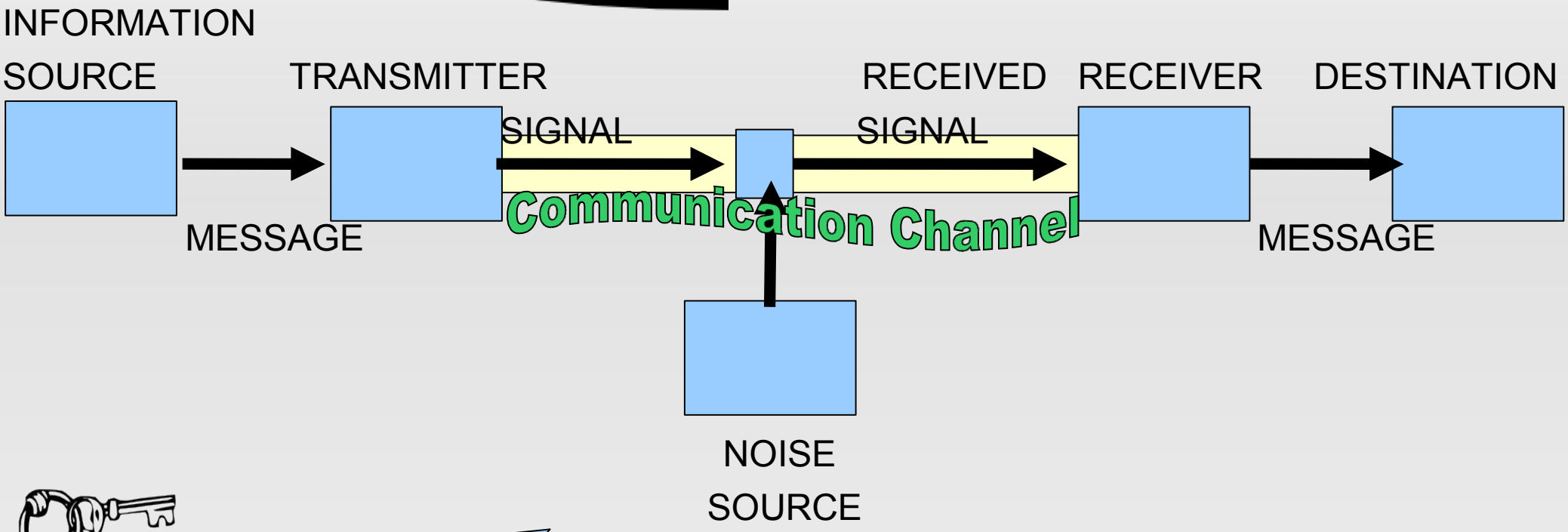


Fig. 1 — Schematic diagram of a general communication system.

The Shannon [**1948**] formula to compute the Information Capacity:

Information Capacity [bps] = (Bandwidthi [Hertz])* ^{2}log (1 + S/N)

Schweber, [**1996**], page **16**

The Information Capacity (Bit Rate)

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Schweber, [**1996**], page **16**

$$\textit{Bit Rate} = BW * {}^{2}\log (1 + S/N)$$

- *Bit Rate* (**The Information Capacity**) : The amount of information transmitted in a unit of time [**bit per second, bps**] through a communication channel
- **BW** (*Bandwidth*) :The spectrum of signals transmittable in the channel [**Hertz**, **getaran per detik**, *cycles per second*, **cps**], the difference between the highest freuency and the lowest frequency
- **S/N** (*Signal to Noise ratio*) : the quality of the channel in terms of the ratio of the transmitted signal power and the noise power

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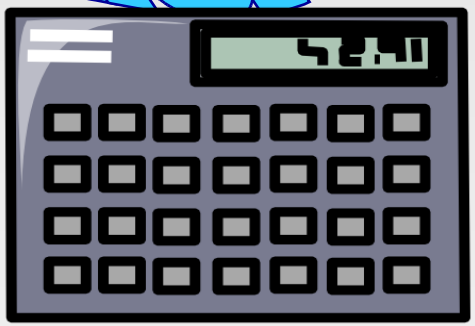
Next:
THE END
The Communication Mode