Mentimeter

In1020 - Fysiske begrensninger og Synkronisering

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Mentimeter

Dagens forelesning

- Kort repetisjon
- Hva er en datamaskin bygd opp av?
- Hva er en port bygd opp av?
- Fysiske begrensninger og utfordringer med hardware
- Hvordan bruke synkronisering som en del av løsningen

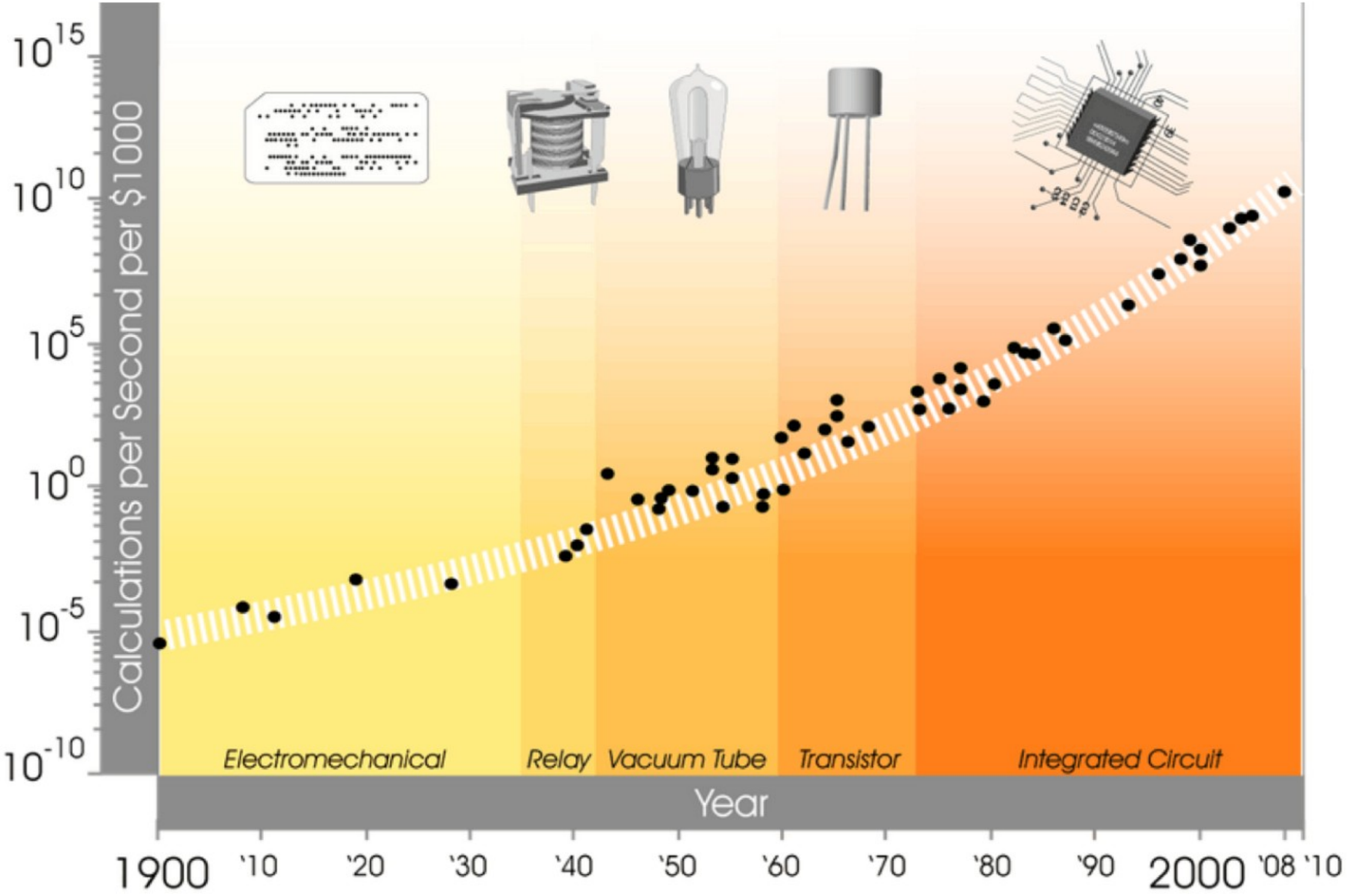
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Inne i en datamaskin :)

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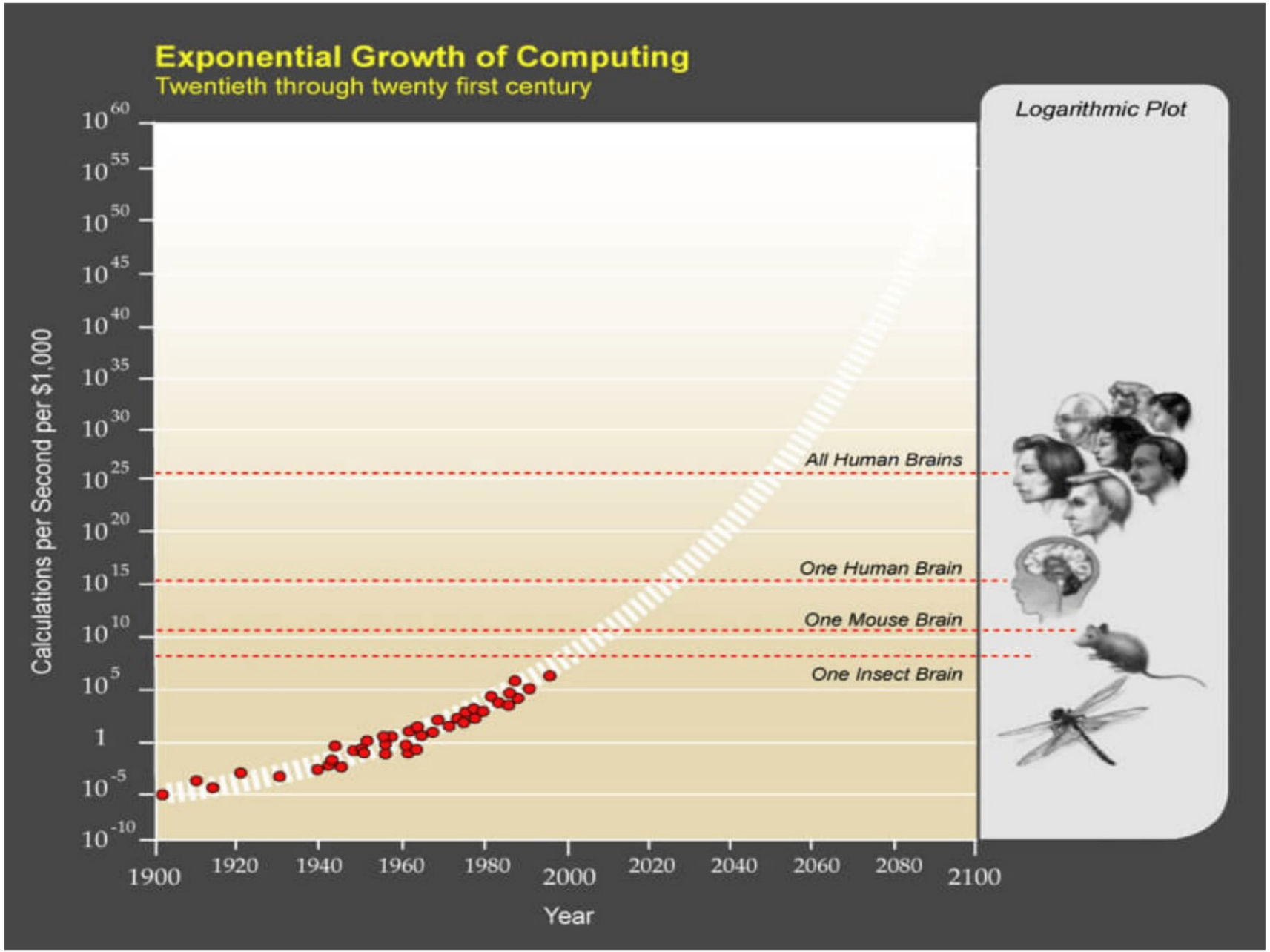
teknologiutviklingen

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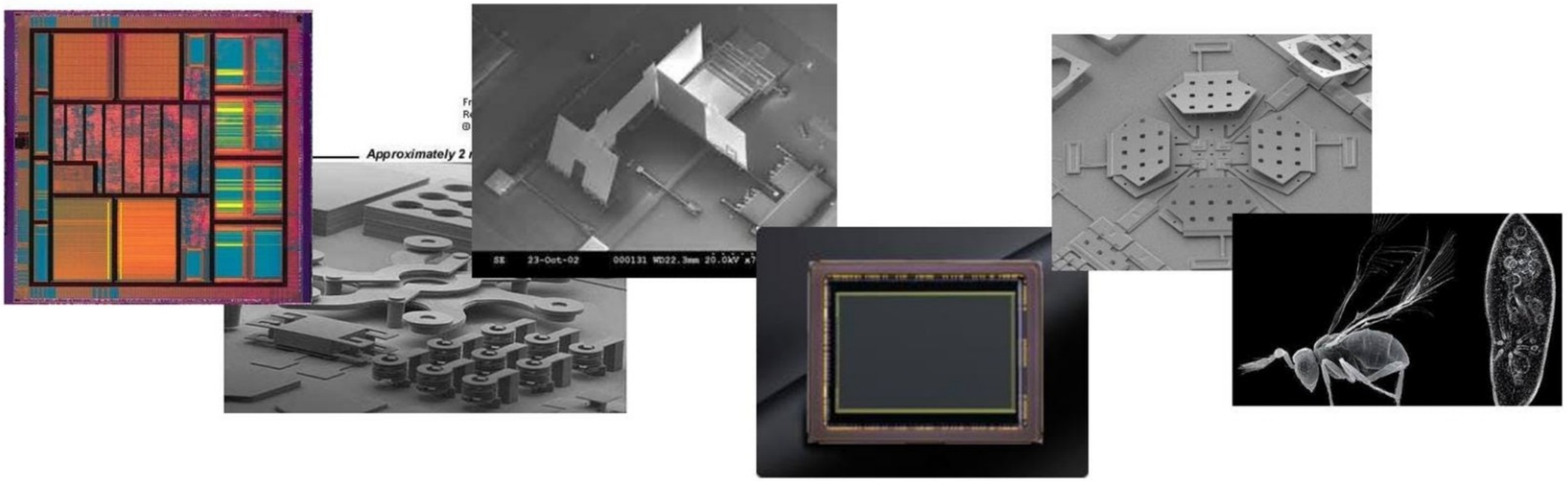


Moores lov

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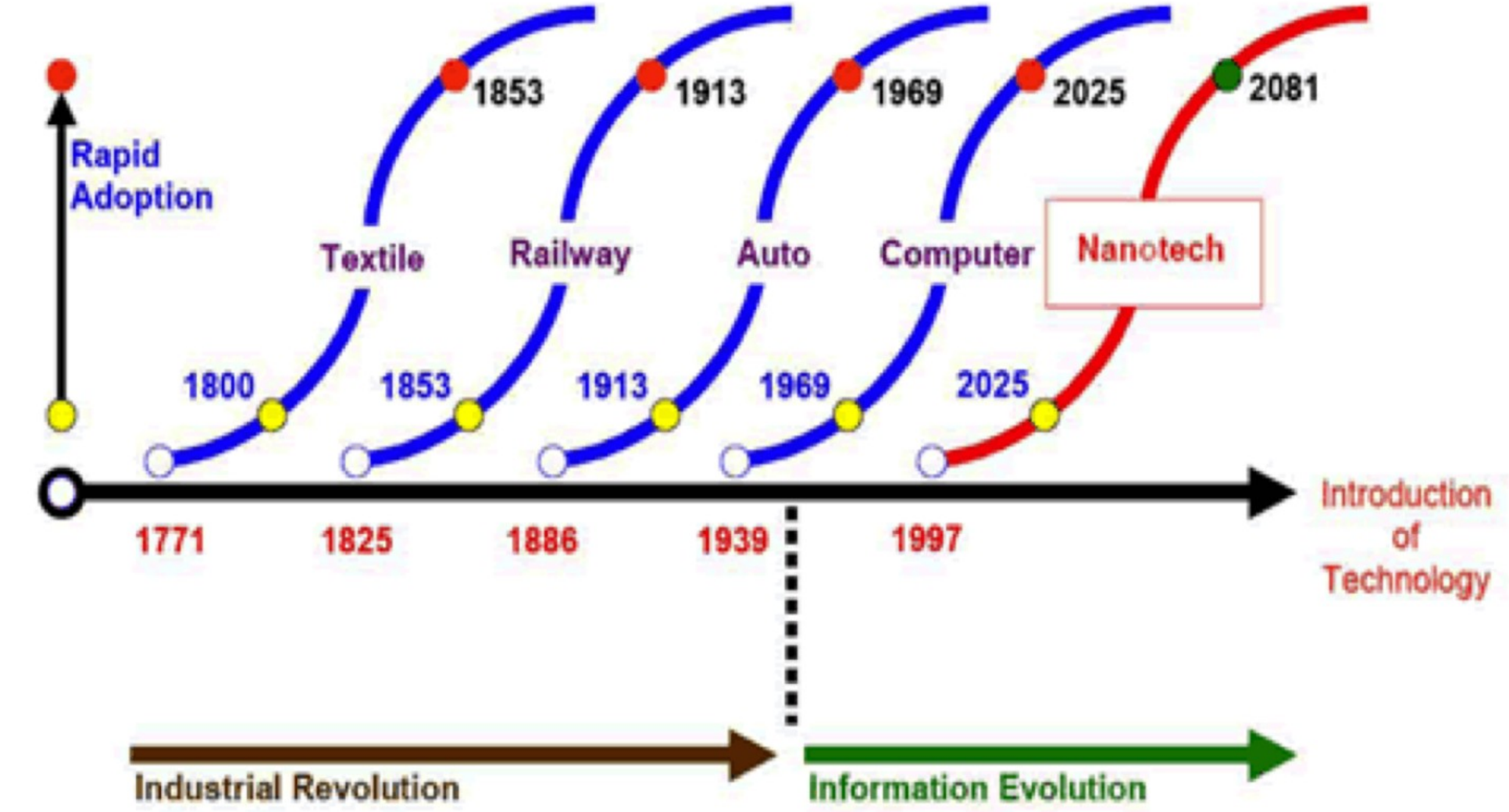

Exponential Growth of Computing
Twentieth through twenty first century
Logarithmic Plot
Calculations per Second per $1,000
10^{60}
10^{55}
10^{50}
10^{45}
10^{40}
10^{35}
10^{30}
10^{25}
10^{20}
10^{15}
10^{10}
10^{5}
1
10^{-5}
10^{-10}
All Human Brains
One Human Brain
One Mouse Brain
One Insect Brain
1900
1920
1940
1960
1980
2000
2020
2040
2060
2080
2100
Year

Hva kan lages i et system <30um (usynlig)?



	2019	2041
Prosessor	(Nesten)	Ja
MEMS*	Nei	Ja
Sensorer	40k pixel	100M pixel
Kommunikasjon	Nei	Ja
GPS	Nei	Ja

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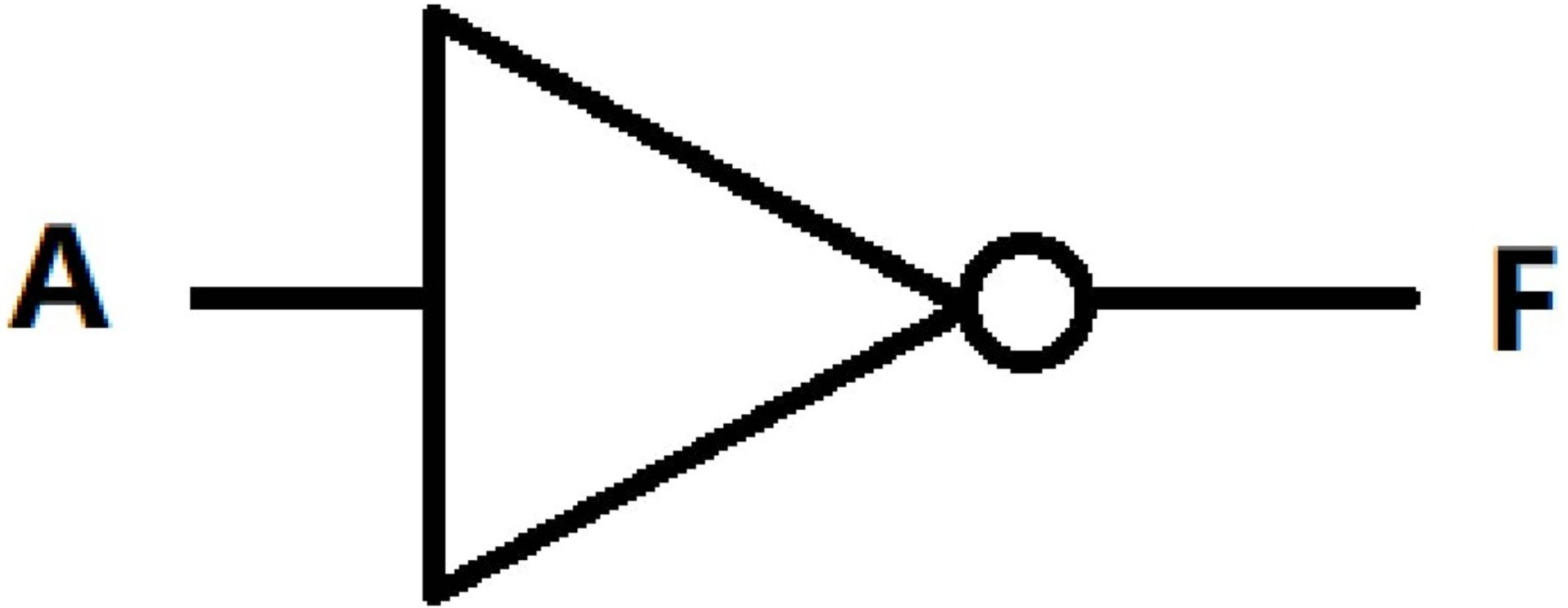


Source: Economist Norman Poire

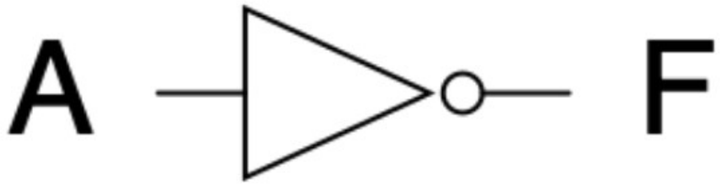


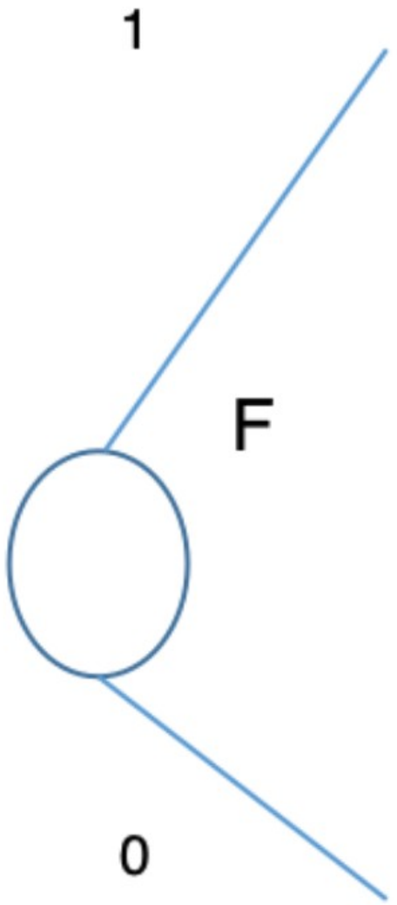


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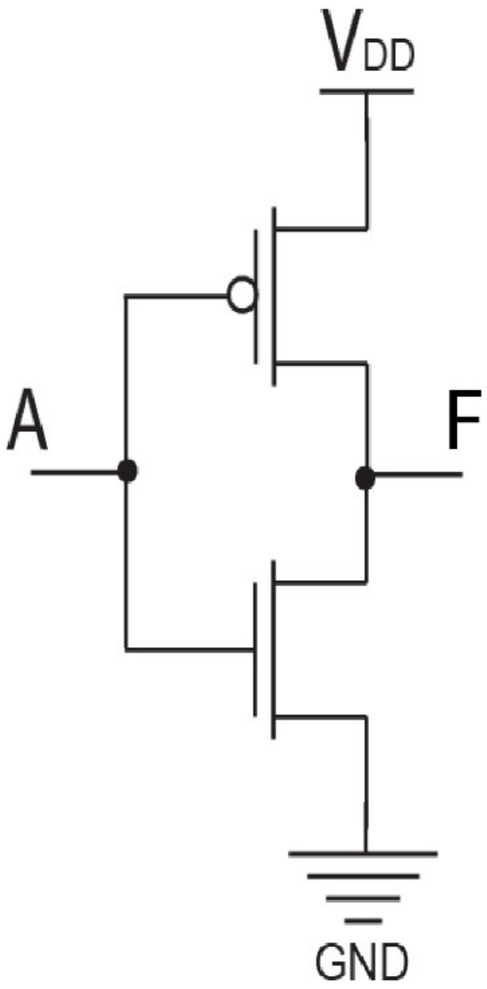
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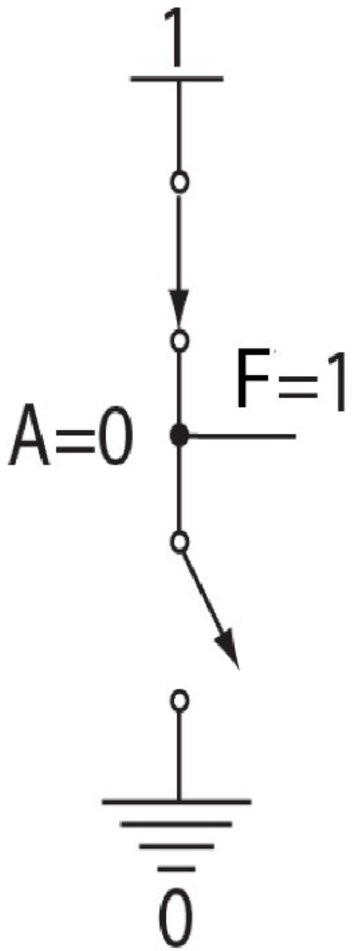


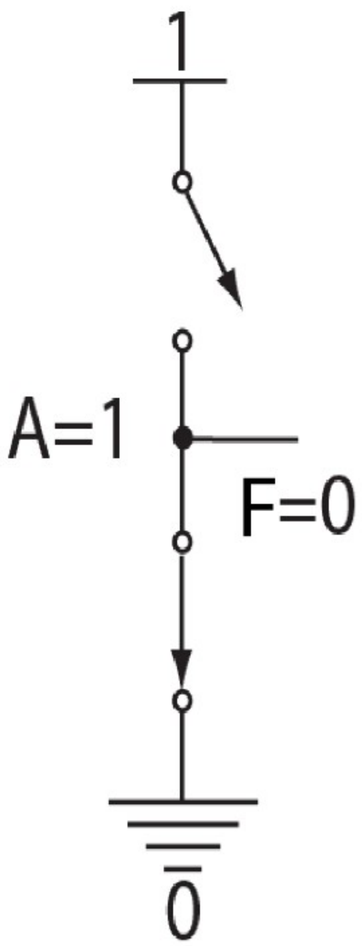


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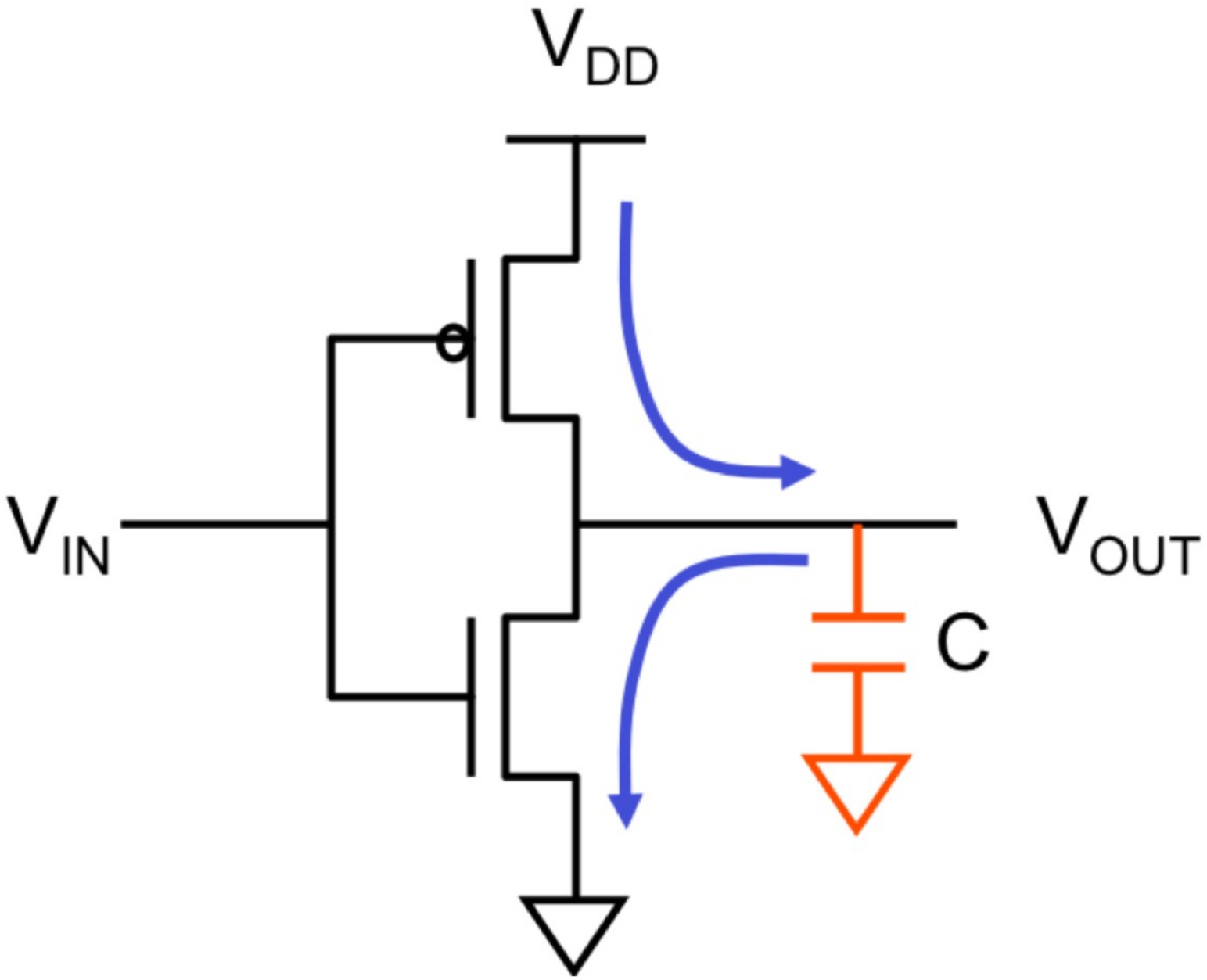
A	F
0	1
1	0





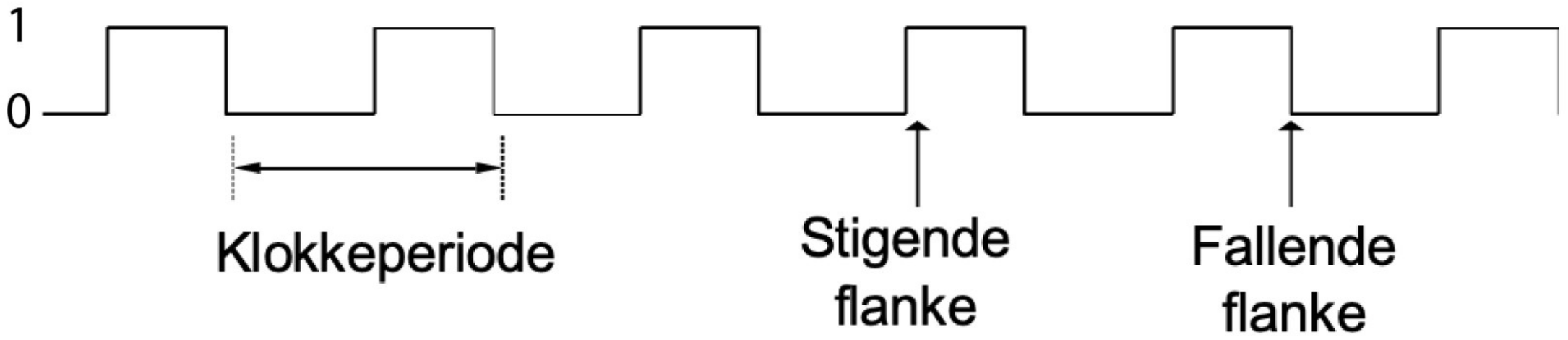


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Et klokkesignal er et digitalt signal som veksler mellom ´0´ og ´1´ med fast takt



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$$frekvens = \frac{1}{klokkeperioden}$$

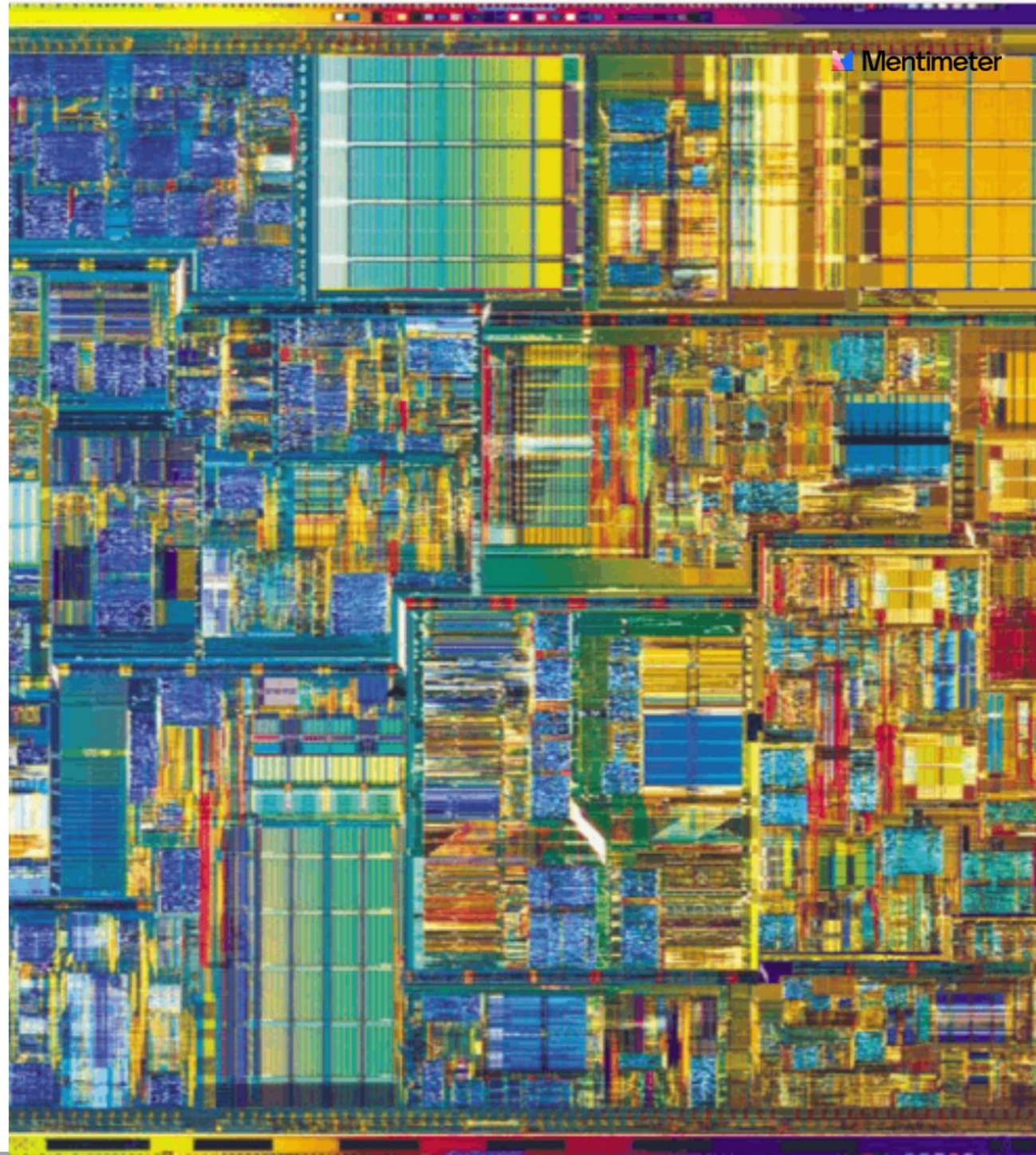
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Maksimal klokkefrekvens bestemmes av flere faktorer, blant annet:

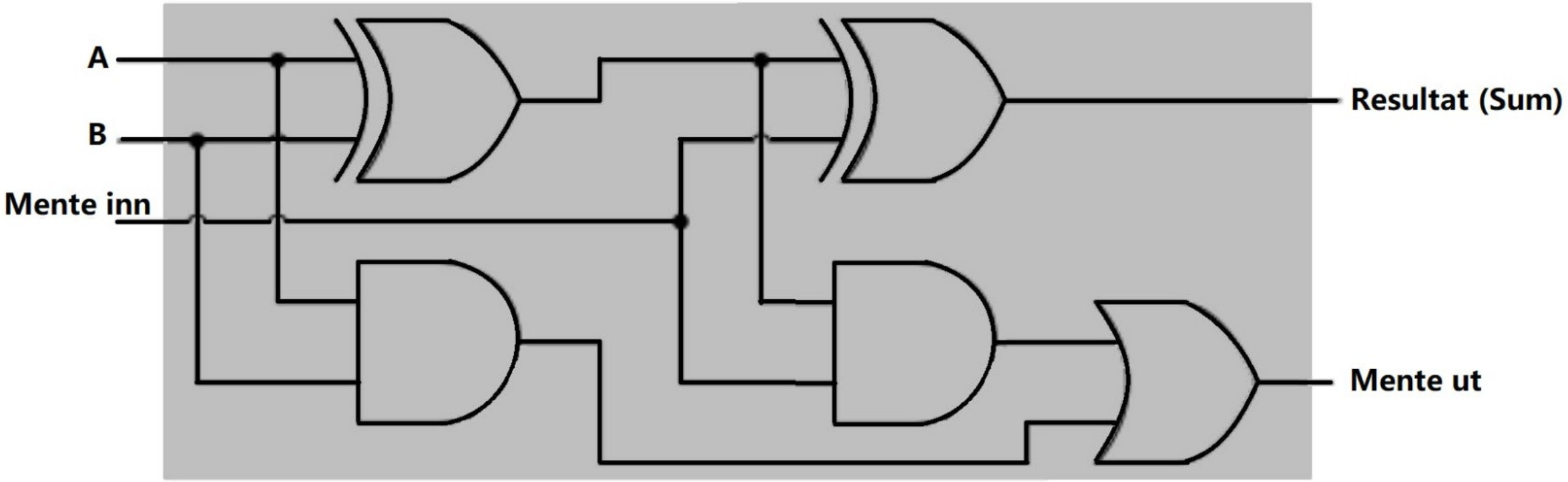
- → Forsinkelse gjennom en port (delay)
- → Teknologi

Synkronisering

- → Global klokkesignal
- → Lokale klokkesignaler
- → Synkronisering

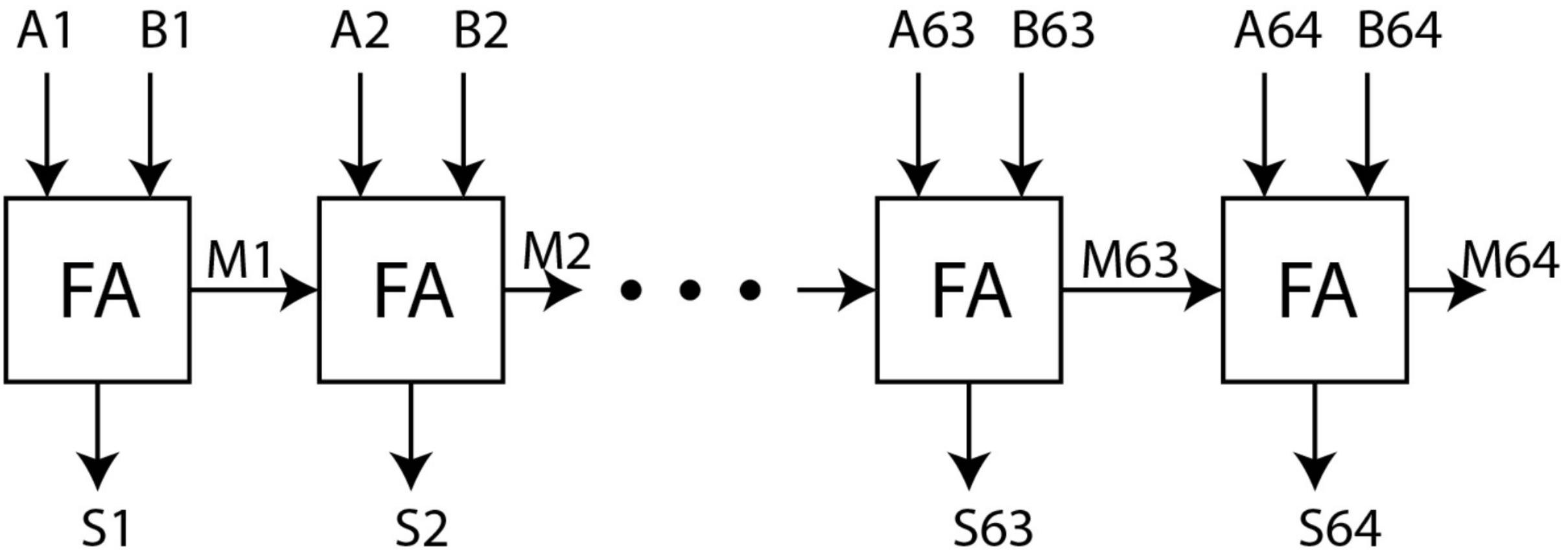


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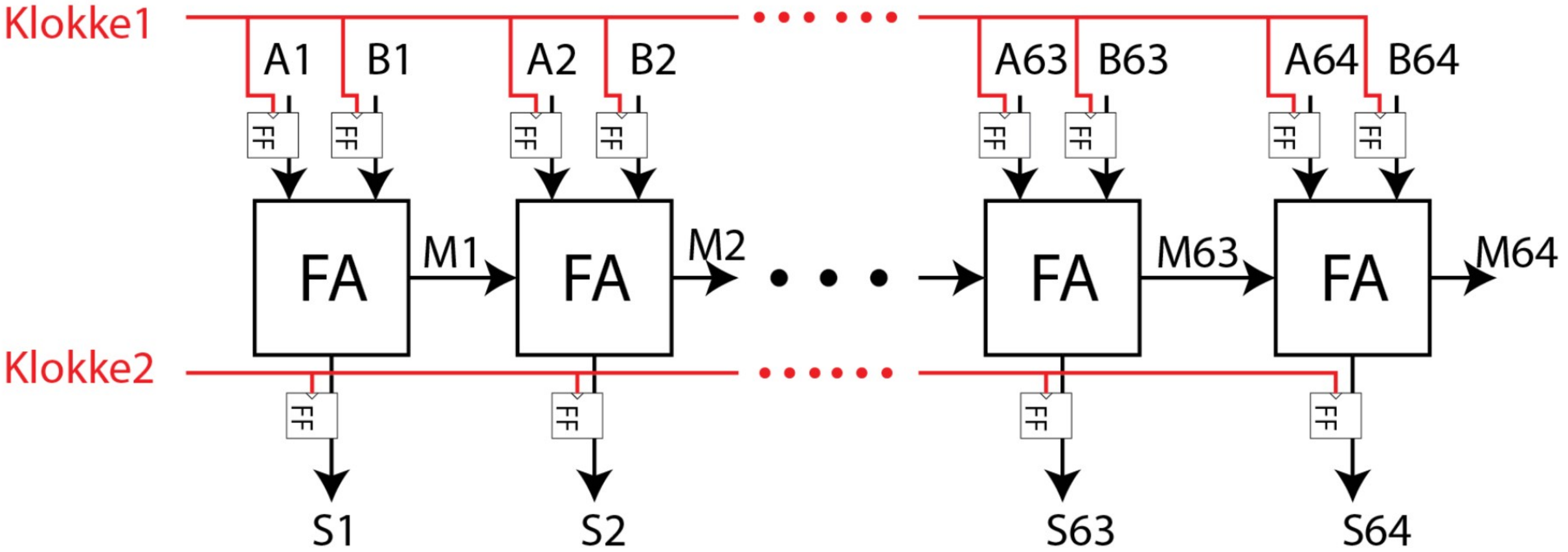


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Synkronisering

Hvordan kan dette tas vare på som ett tall?

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Seriell adder med minne og klokke

Spørsmål

Mentimeter

0 questions

0 upvotes