Structured Electronic Design
Performance and Costs
of Physical Systems

Performance and costs

Performance and costs

The amount of information that can be processed by physical systems is limited:

Performance and costs

The amount of information that can be processed by physical systems is limited:

Physical limitations

Performance and costs

The amount of information that can be processed by physical systems is limited:

Physical limitations

Noise addition

Performance and costs

The amount of information that can be processed by physical systems is limited:

Physical limitations

Noise addition

Power limitation
and losses

Performance and costs

The amount of information that can be processed by physical systems is limited:

Physical limitations

Noise addition

Power limitation
and losses

Speed limitation
(rate of change)

Performance and costs

The amount of information that can be processed by physical systems is limited:

Physical limitations

Technological limitations

Noise addition

Power limitation
and losses

Speed limitation
(rate of change)

Performance and costs

The amount of information that can be processed by physical systems is limited:

Physical limitations	Technological limitations
Noise addition	Limited availability and/or imperfect implementation of the operating principle in available technology
Power limitation and losses	
Speed limitation (rate of change)	

Performance and costs

The amount of information that can be processed by physical systems is limited:

Physical limitations	Technological limitations	Economical constraints
Noise addition	Limited availability and/or imperfect implementation of the operating principle in available technology	
Power limitation and losses		
Speed limitation (rate of change)		

Performance and costs

The amount of information that can be processed by physical systems is limited:

Physical limitations	Technological limitations	Economical constraints
Noise addition	Limited availability and/or imperfect implementation of the operating principle in available technology	The price we need to pay for its performance
Power limitation and losses		
Speed limitation (rate of change)		

Performance and costs

The amount of information that can be processed by physical systems is limited:

Physical limitations

Noise addition

Power limitation
and losses

Speed limitation
(rate of change)

Technological limitations

Limited availability and/or
imperfect implementation
of the operating principle
in available technology

Economical constraints

The price we need to
pay for its performance

Total result of cost factors
such as:

Performance and costs

The amount of information that can be processed by physical systems is limited:

Physical limitations

Noise addition

Power limitation
and losses

Speed limitation
(rate of change)

Technological limitations

Limited availability and/or
imperfect implementation
of the operating principle
in available technology

Economical constraints

The price we need to
pay for its performance

Total result of cost factors
such as:

Dimensions
Weight
Power consumption

Performance and costs

The amount of information that can be processed by physical systems is limited:

Physical limitations

Noise addition

Power limitation
and losses

Speed limitation
(rate of change)

Technological limitations

Limited availability and/or
imperfect implementation
of the operating principle
in available technology

Economical constraints

The price we need to
pay for its performance

Total result of cost factors
such as:

Dimensions
Weight
Power consumption

Quality expressed in performance measures

Performance and costs

The amount of information that can be processed by physical systems is limited:

Physical limitations	Technological limitations	Economical constraints
Noise addition	Limited availability and/or imperfect implementation of the operating principle in available technology	The price we need to pay for its performance
Power limitation and losses		Total result of cost factors such as:
Speed limitation (rate of change)		Dimensions Weight Power consumption

Quality expressed in performance measures

$$\text{Figure Of Merit} = \frac{\text{Weighted product of performance measures}}{\text{Weighted product of cost factors}} \left[\frac{\text{Bits}}{\text{Joule} \bullet \text{Euro}} \right]$$