Beam Interlock System

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The Beam Interlock System

- Risk Management

- What is the BIS?

- List of Inputs/Outputs

- A little peek inside

Risk Management

Risk management is the identification, assessment, and prioritization of risks followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events.

- identify, characterize, and assess threats

- assess the vulnerability to the specific threats

- determine the risk

- identify ways to reduce those risks

- prioritize risk reduction measures based on a strategy

Risk Matrix
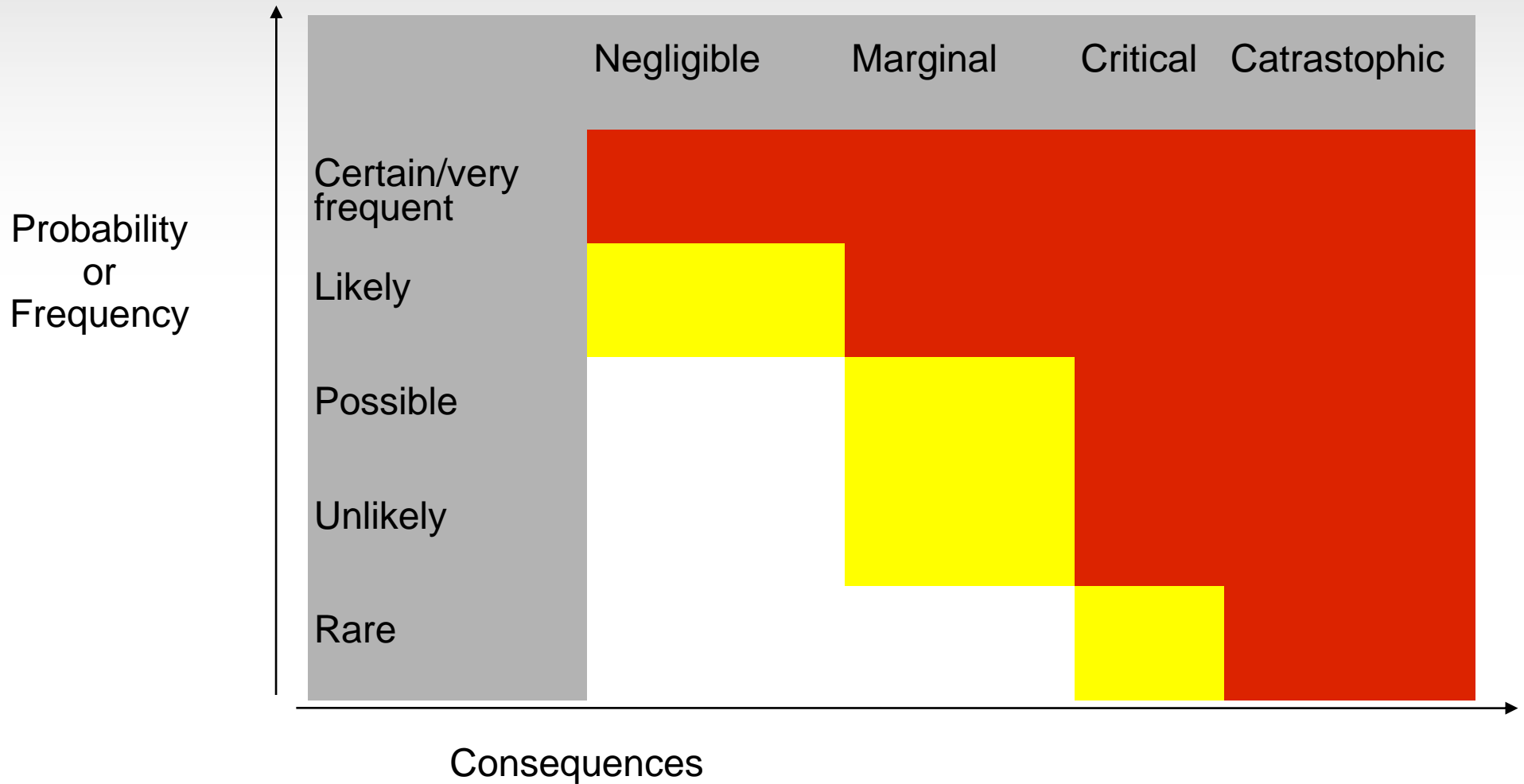
What is the BIS

The goal of the Beam Interlock System (BIS) is to improve the operation safety by reducing the risk of harm to health of personnel and patients. For this purpose the system collects interlock signals from a number of subsystems and re-generates interlock signals derived from the acquired signals for re-distribution to all connected subsystems.
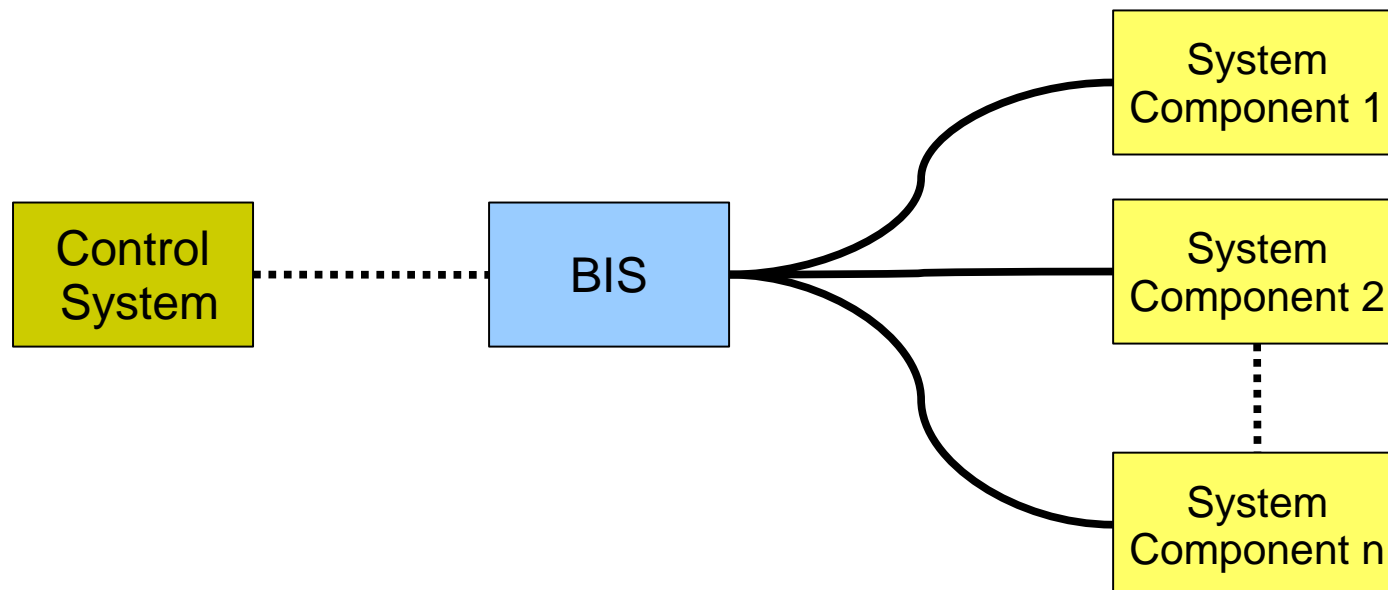
- The BIS will not add functionality, it will still be possible to operate accelerator without it, yet at a (much) higher risk.

- The BIS is a relatively slow system, maximum reaction times in the order of 200-300 ms

  - Prevent possible hazardous situations

- The BIS will act independently of the control system but will be connected to it. So status information can be read at any time through the slow control path.

List Of Inputs/Outputs

System	Number of Devices	total inputs	Total outputs
Beam Instrumentation	112	112	12
Power	267	267	267
Vacuum	15	15	0
Magnets	267	536	267
Sources	8	4	12
Radiation protection	1	20	0
Radio Frequency	3	3	3
Safer Interlock	5	5	5
Beam Veto	9	9	0
Infrastructure	4	15	1
Irradiation room	16	21	21
Total	707	1021	566

A little peek inside

Siemens PLCs And Safety I/O Modules
(certified for personnel safety)

- Reliable

- Fexible

- Scalable

Siemens Simatic Safety Matrix
Provides a simple table interface with the Cause&Effect method making safety functions easily created and implemented.