KOCAELI CHAMBER OF INDUSTRY

PROSES SAFETY SYMPOSIUM

Functional Safety IEC 61511

Davide Arnoldi - Functional Safety Manager

VTU engineering

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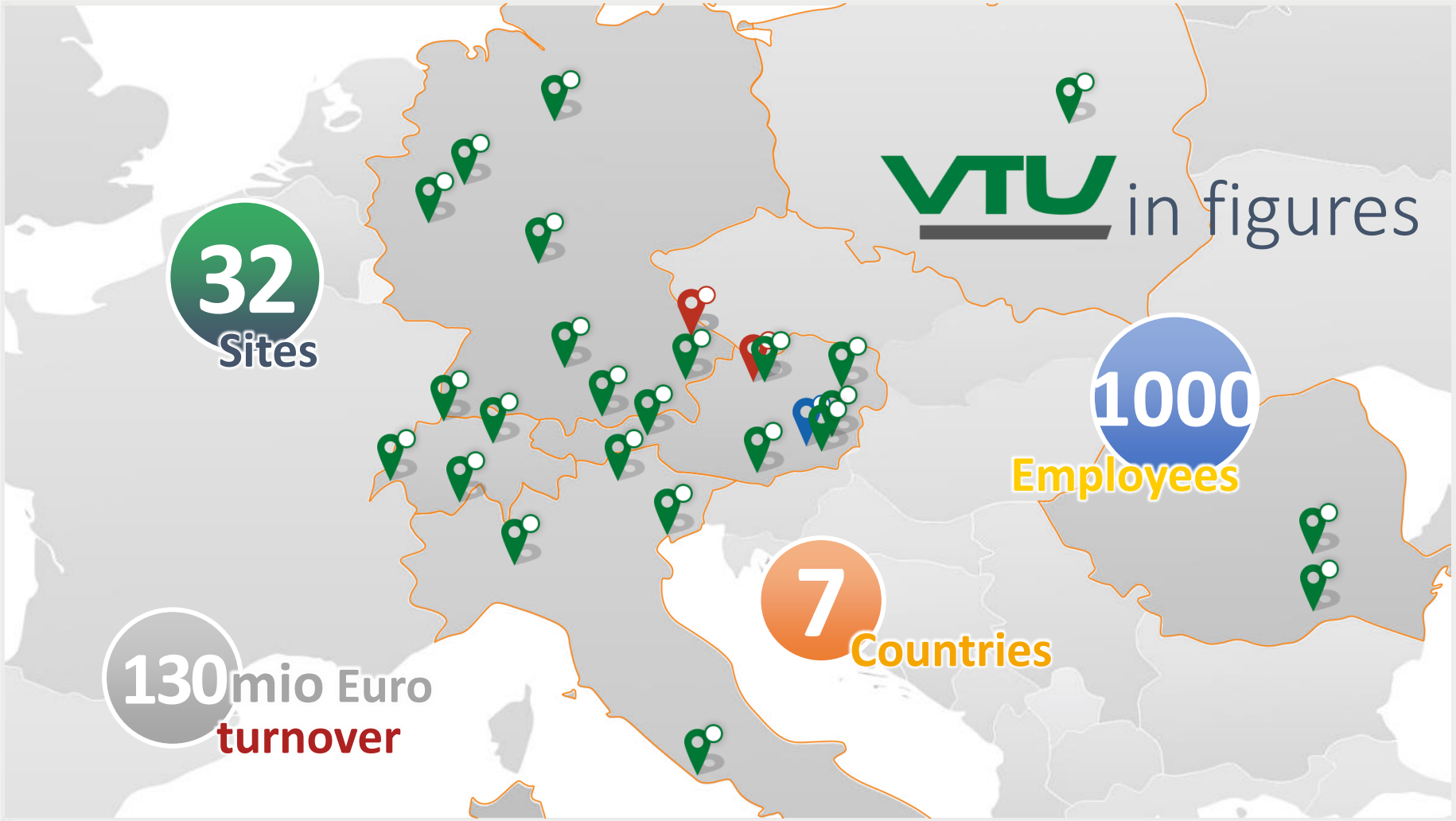
VTU in figures



EPC
International
Multidisciplinary
Extensive experience in chemistry, pharmaceuticals, oil & gas.

For more information
davide.arnoldi@vtu.com

www.vtu.com

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Risk

All industrial plants are subject to a risk

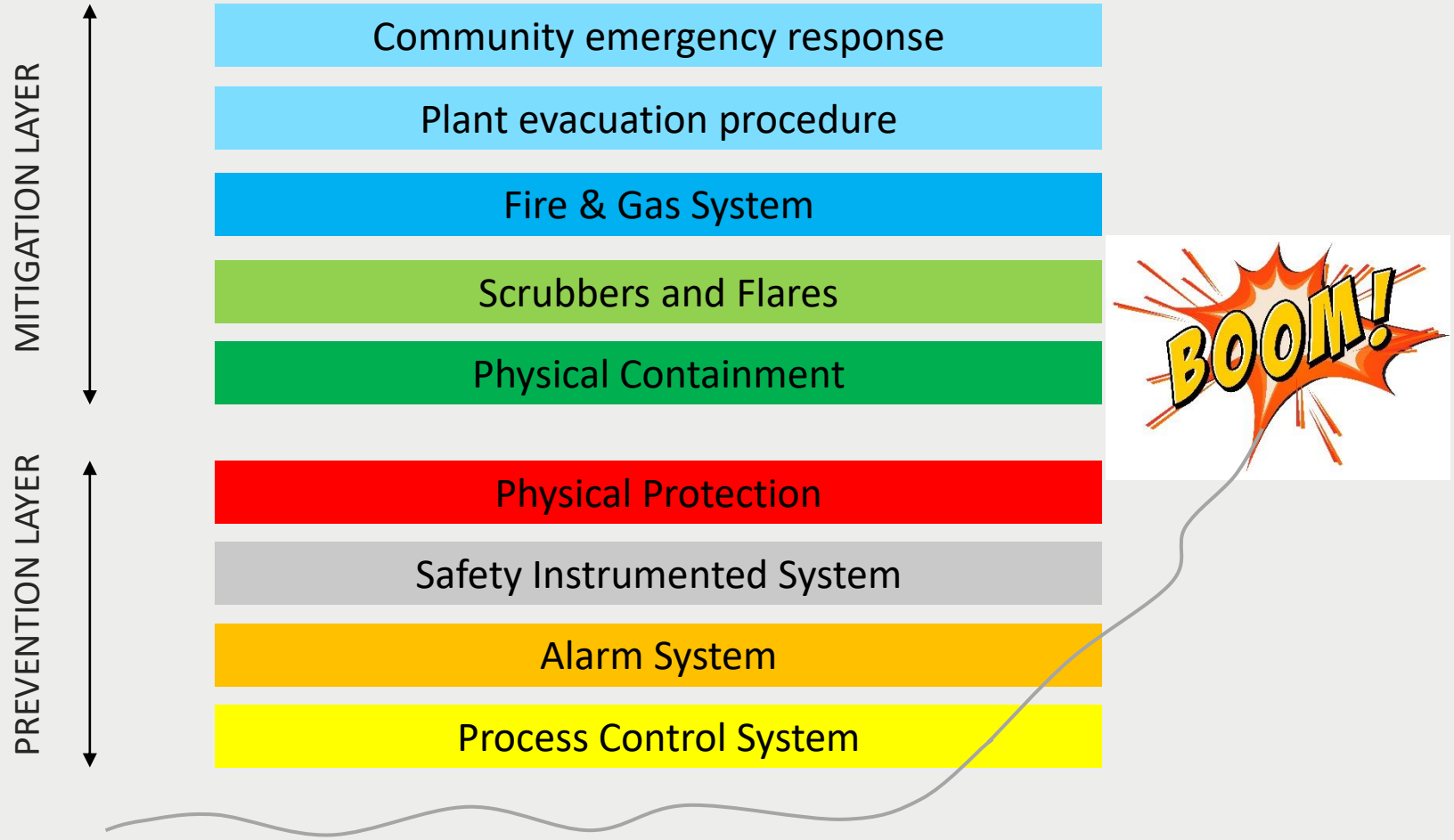
The risk is directly proportional to the relationship between the frequency of a dangerous event and the consequence

R = F x C

The frequency is typically how many times a year during production a dangerous state can occur.

The consequence refers to the extent of the involvement of people (injured or killed), to the involvement of the environment by a loss of dangerous substances and also to the economic impact of the company

Prevention and Mitigation safety layers



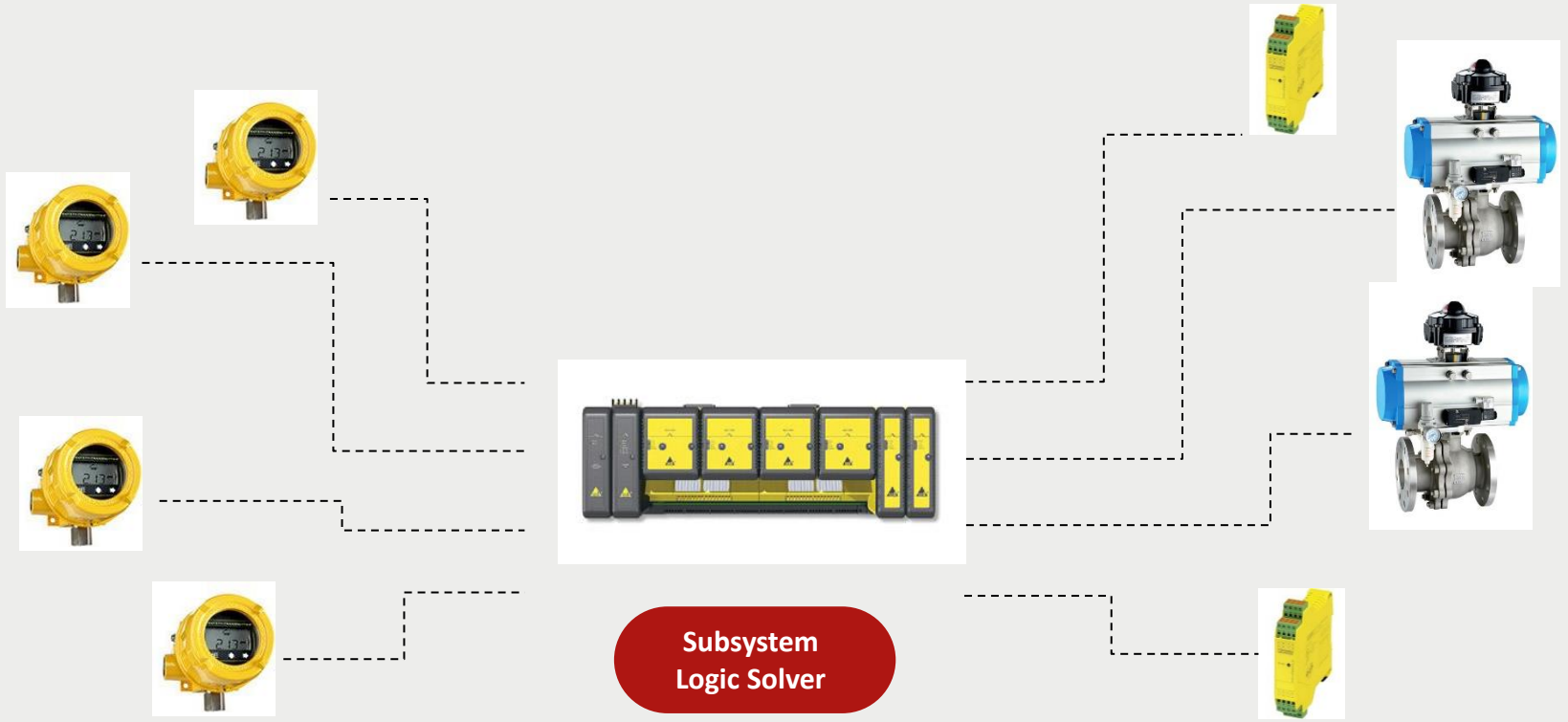
Functional Safety IEC 61511

Functional Safety is the specific field of engineering for the design of Safety Instrumented Systems (SIS) such as to reduce the risk of possible dangerous events.

They are prevention systems!

It involves the installation of safety systems **independent** of the plant control, which detect dangerous scenarios and are activated by **driving the process in a safe state!**

Safety Instrumented System (SIS)



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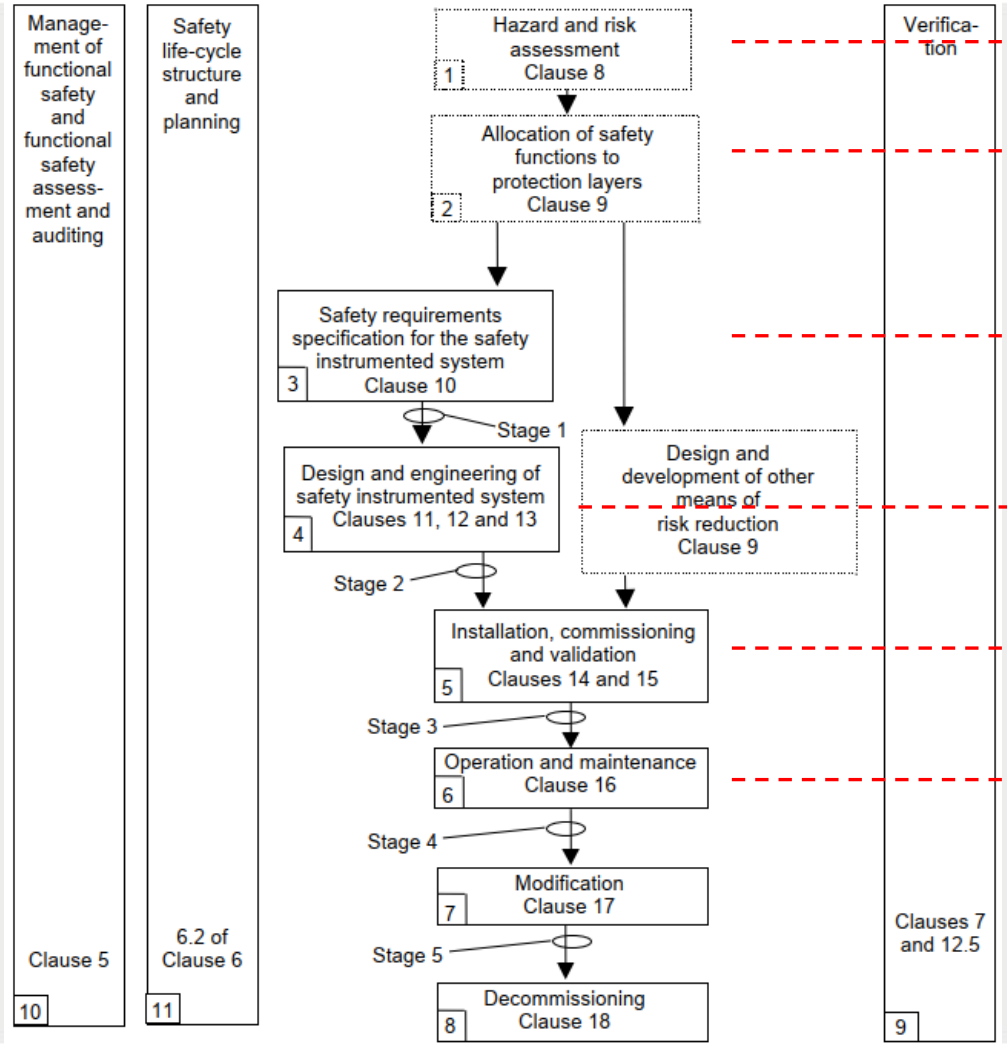


HAZOP

SIL allocation (LOPA, Risk Graph etc)

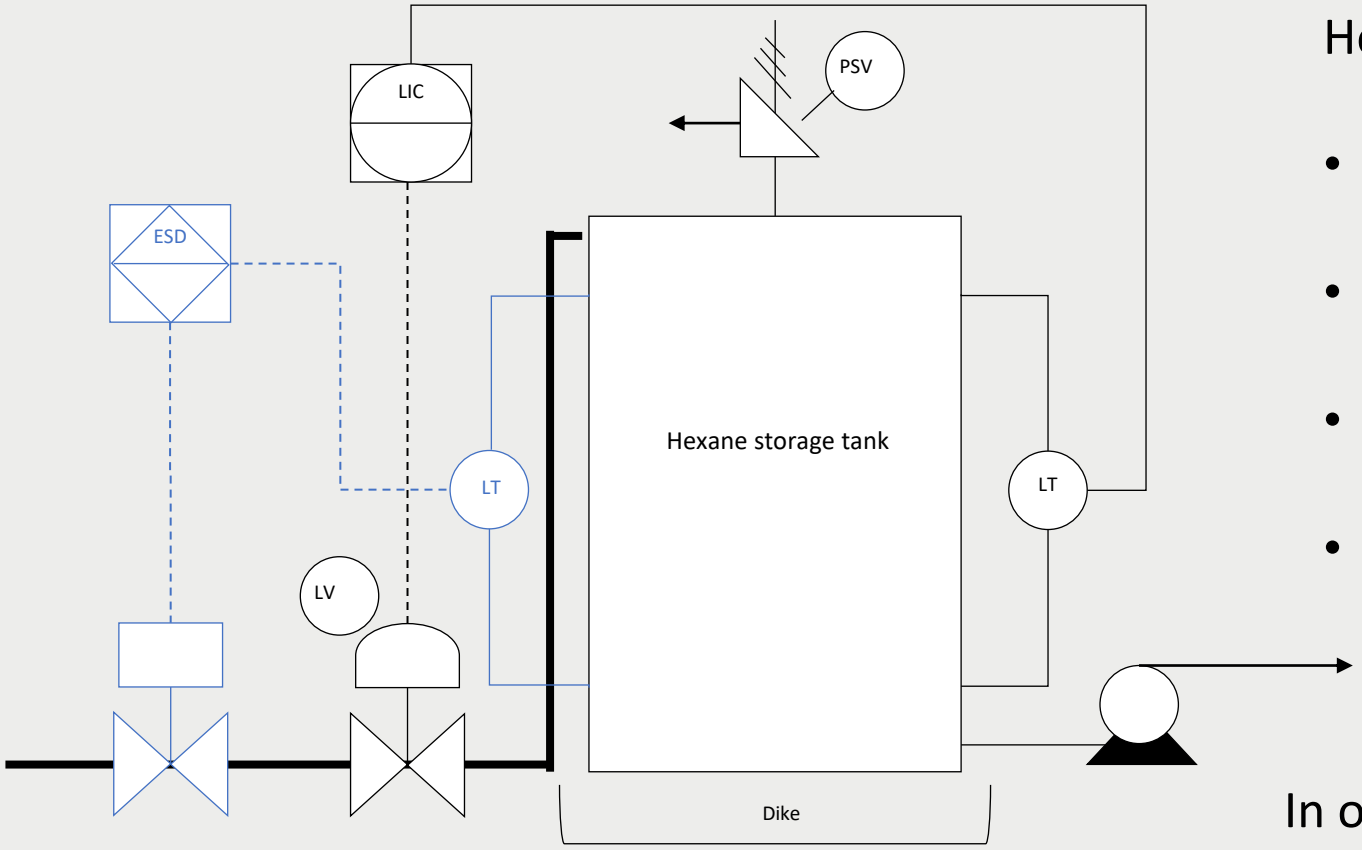
SIS requirements

Devices identification
SIL verification
Device purchase

SIS installation and validation maintaining the SIL level as required

Periodic test of SIS to maintain the SIL level as required

Functional Safety



How to design a SIS

- It is necessary to know the deviation and the possible consequence
- The level of risk to be reduced (SIL) must be assigned
- A SIS architecture must be designed that satisfies the necessary characteristics;
- It is necessary to buy suitable devices for what they have to do;

In other words, I must implement a **Functionally Safe system**!

To which types of process plants can functiona safety be applied?

This standard applies to a wide variety of industries within the process sector:

- **chemicals**;
- **oil and gas**;
- **pulp and paper**;
- **pharmaceuticals**;
- **food and beverages**;
- **non-nuclear power generation**;

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SAFETY SYMPOSIUM

FUAR İÇİ 41040 IZMIT/KOCAELİ

TEL: +90 262 315 80 00

FAX: +90 262 321 90 70

WEB: www.kosano.org.tr

E-MAIL: kso@kosano.org.tr