



prism



Human Factors & Virtual Reality

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PRISM - FG3



What's the aim of WP7?

- The idea was to **merge Human Factors (HF) knowledge with Virtual Reality (VR) technologies** with the aim of:

Enabling the assessment of human reliability, in each of the seven areas of application, by **using the most advanced HF techniques**;



Areas of application

Design stage

Operational stages:

Emergency stage

Exploration & Drilling;
Construction;
Commissioning;
Operation;
Maintenance, Repairs
& Modifications;
Decommissioning.

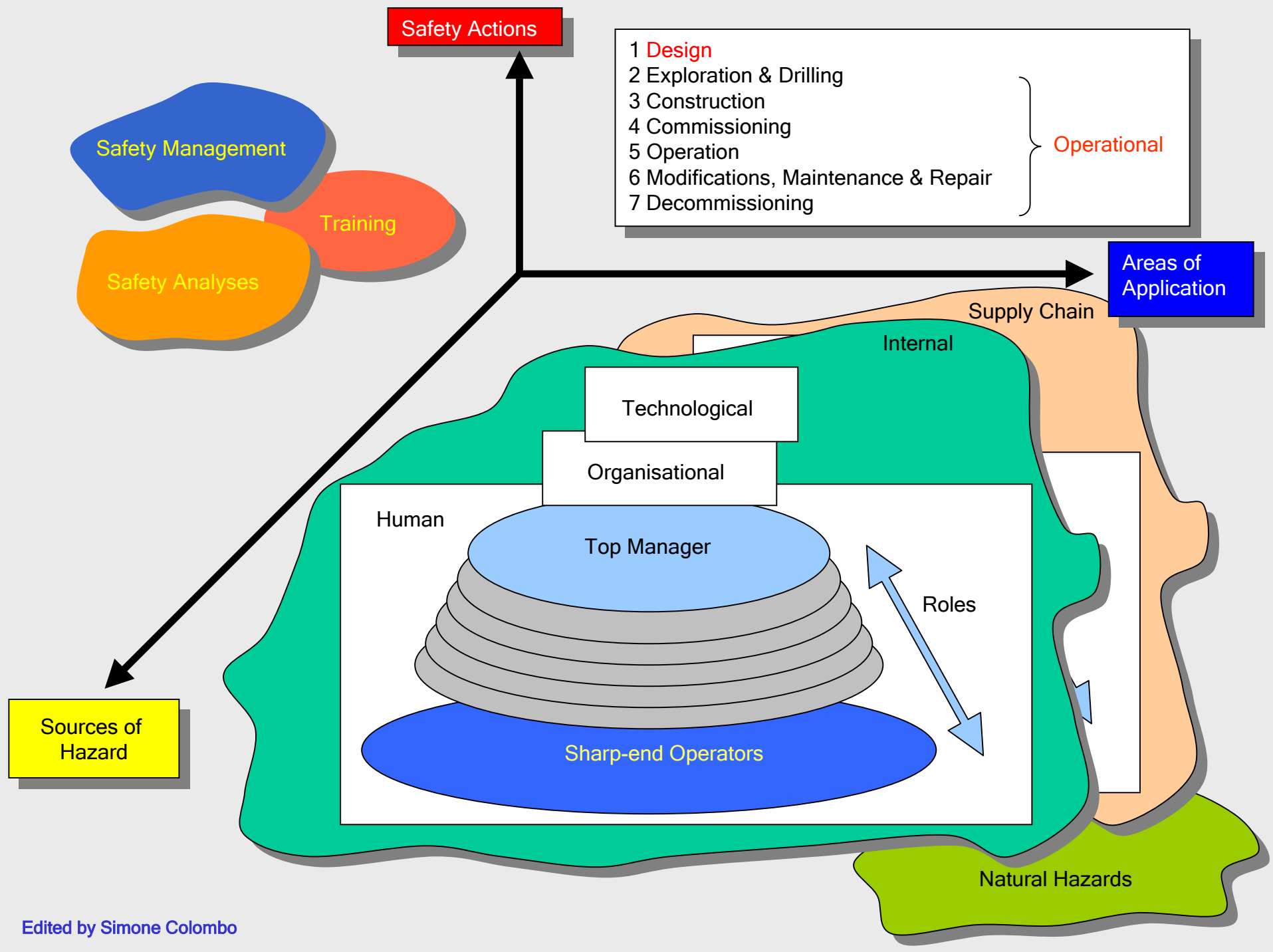


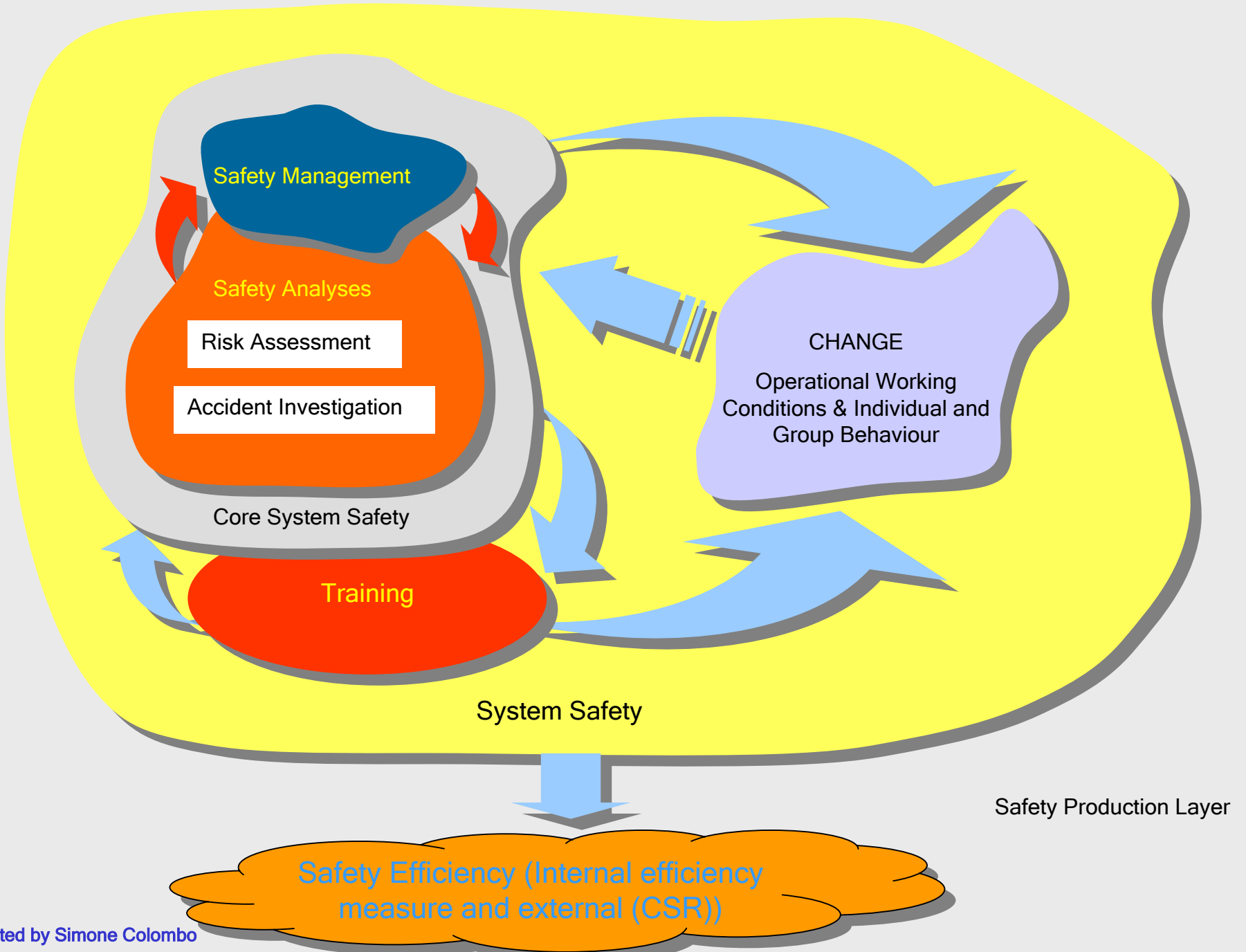
How safety is produced?

Safety is produced when the three safety actions, namely:

- **Safety management** (decision making process);
- **Safety analyses**;
- **Training** (individual and group);

are **synergistically, systematically** and **recurrently** performed.







New Tech

The **combination** of **HF & VR** enable to produce a **new tech** formed by:

- **Prevention** tools;
- **Detection** tools;
- **Demonstration** tools;

to apply at the:

- **Design** stage;
- **Operational** stages;
- **Emergency** stage.



Overall benefits

The new tech will allow to move **from a “paper simulation”** (based on analysts creativity and imagination) to a **virtual simulation** where **safety analyses** are carried out in a **concerted way**.



Overall benefits

- To **support decision makers** in making safety-critical decisions and best resources allocation,
- To **support safety analysts** in **anticipating** inadequacies associated with HF, **conceiving** new design strategies, and **deciding** the adequate level of competences,



Overall benefits

- To **support trainers** in making more incisive and effective training courses;
- To **produce adequate competencies** for running safely new and more complex technologies both at:
 - Operational stage;
 - Emergency stage.



Overall benefits

- To improve the learning and self-learning process efficiency of trainees;
- To identify and measure the effects on operators' reliability and performance of modifications brought to:



Overall benefits

- The Process (both hardware & software),
- The Organizational set-up,
- The Training contents,
- The Roles and Rules definition,
- The Task allocation.

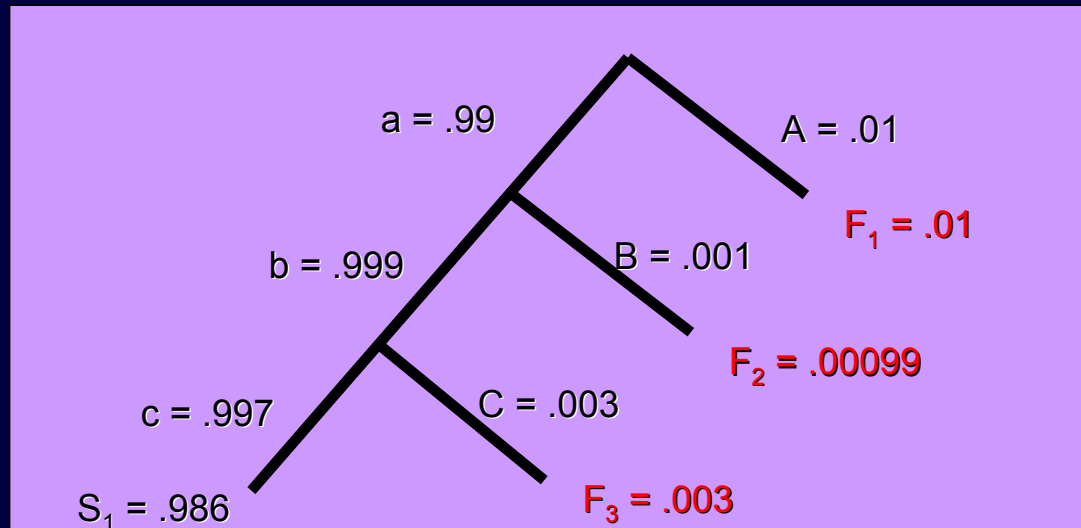


At the design stage

- Exploiting VR allow :
 - To **prefigure** potential **human failures** before they are actually made in reality;
 - To immediately **search for suitable solutions**, following a **human-centred approach**, so to avoid their occurrence in reality.

At the design stage

- To *retrieve data and information*, specifically associated with the **working environment at hand**, essential to run present Human Factors methodologies





At the operational stage

- At the operational level it allow:
 - To **keep** the appropriate **awareness**, **promptness** and **preparedness** of the workforce in place;
 - To **improve skills** and **understanding**;
 - To **design** better **training programs**;
 - To **measure** the efficiency of **learning processes**;



At the operational stage

- To bring out human capabilities;
- To visualise accident dynamics and stress critical aspects (spatio-temporal emphases), such as:
 - Inappropriate actions (short-cuts, barriers elimination, etc.);
 - Technological limitations;
 - Awkward operational conditions;
 - Inter- and Intra-Team coordination.



At the operational stage

- To **demonstrate** the reasons **why** procedures, tasks, working rules, crews composition, barriers, etc., have been devised in that specific way.



At the emergency stage

The main advantage relate to the opportunity of simulating the **entire emergency situation**, including the consequences.



Position statements

- The **New Tech** can substantially contribute to **support safety production** by supporting:
 - The application of **advanced HF methodologies**;
 - The **decision making** process;
 - The **Emergency preparedness**.



Position statements

- **Merging VR technology & HF methodologies** can sensibly:
 - **Reduce the costs** of safety production (at least for what concern the HF analyses part);
 - **Reduce the time** to perform safety analyses;
 - **Increase the efficiency** in safety production and emergency management.