

Decision Science Forum

2011

How successful business development can be
support by Serious Gaming



Agenda

- Company profile and policy
- Process Safety
- Management questions
- Training and development
- The risk control game
- Game Design
- Game Setup



VTTI Purpose and Values

VTTI operates a network of bulk logistics assets around the world. We do so in a manner that is safe, environmentally sound and commercially advantageous for our customers and shareholders.



Facts and Figures

- Interests in 11 countries and 5 continents
- Capacity of more than 6,000,000 m³
- Load and discharge more than 6,000 vessels a year
- Working on continual expansion which will give us capacity of 8,000,000 m³ by 2012
- Building the most advanced pipeline in Europe, running 120km from Rotterdam to Amsterdam
- The first in ARA to deploy ship vapour recovery technology
- Uniform international standards wherever we operate



Company profile

- Fast growing tank storage company
- Lean organization
- Internationally orientated
- Different terminal maturity levels across the globe
- Different cultural setting
- Common approach to tackle business risks



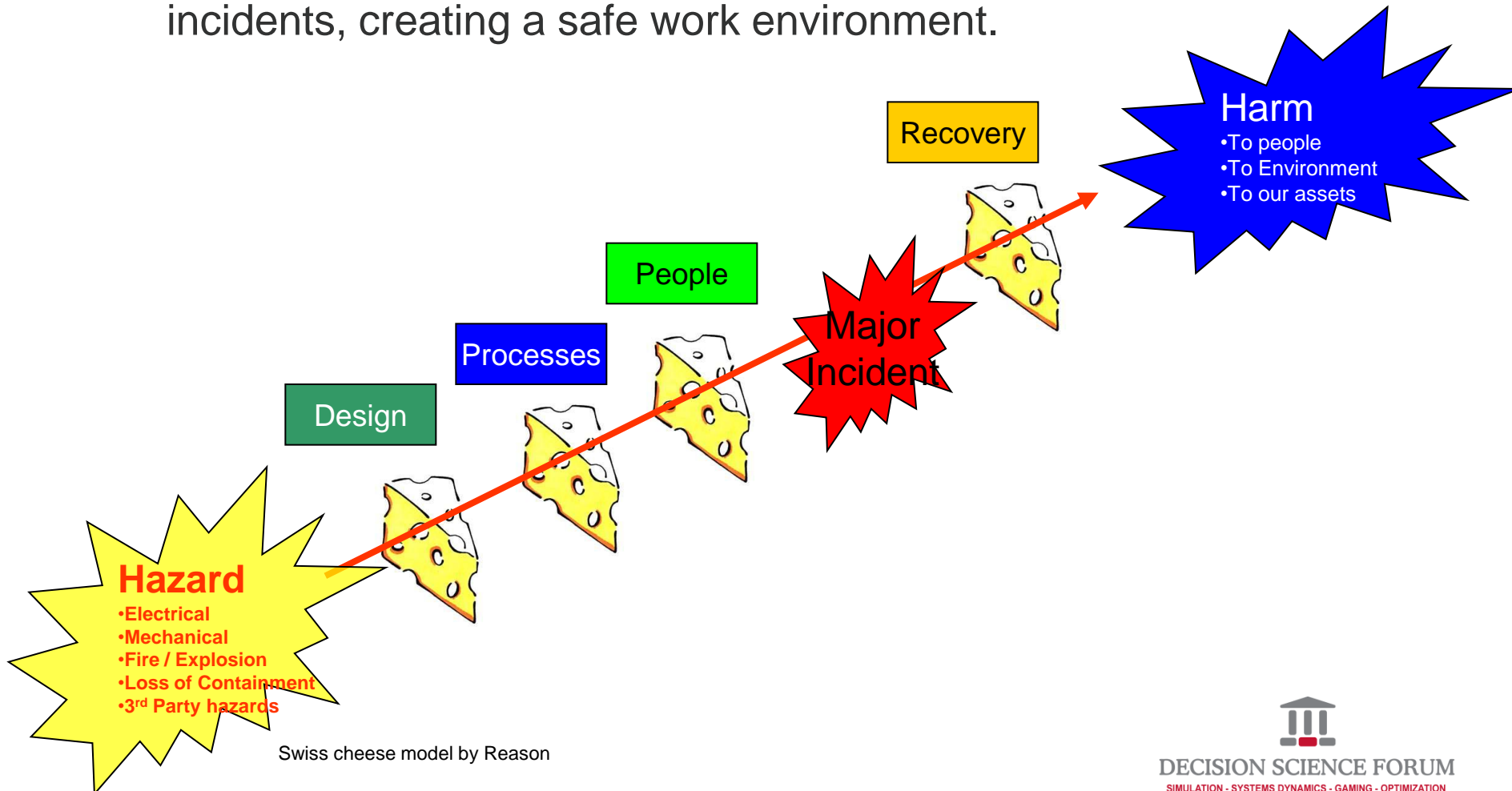
VTTI HSE Policy

**“Our assets are spread across
11 countries and cultures, VTTI operates to a
single HSE policy with the non-negotiable
dictum: “All accidents can be avoided.”**



Process Safety

- Process Safety is key in terminal business to prevent major incidents, creating a safe work environment.



Swiss cheese model by Reason

Management questions

- Management decisions are multi-dimensional interdependent
- How do the technical, organizational and behavior interdependencies relate and influence each other
- A challenge in every day business to maintain the control of Safety Risks



Training and Development

- Challenge managers to understand the dynamics of hardware – processes – people interdependencies
- Normal education process, training and workshops does not offer the possibility of confronting people with the impact of the interdependencies of their own multi-dimensional decision making.



The Risk Control Game

- Purpose
 - Create an intrinsically safe terminal operation while obtaining good business results
 - Consider the principals of layers of protection and probability of failure;
 - Hardware design
 - Processes; Operational, Process Safety, Emergency Response etc. etc.
 - Human factor; Behavior, Safety Leadership



Game Setup

- Multi Users / Team
- 5 year period
- Annual budget round to adjust strategy
- Outcome measurable in:
 - Safety performance rating
 - Incident and escalation
 - Recovery cost
 - Financial performance
- Evaluation of 5 years of management
 - Interdependencies
 - Decision making processes
 - Effect of leadership and behavior

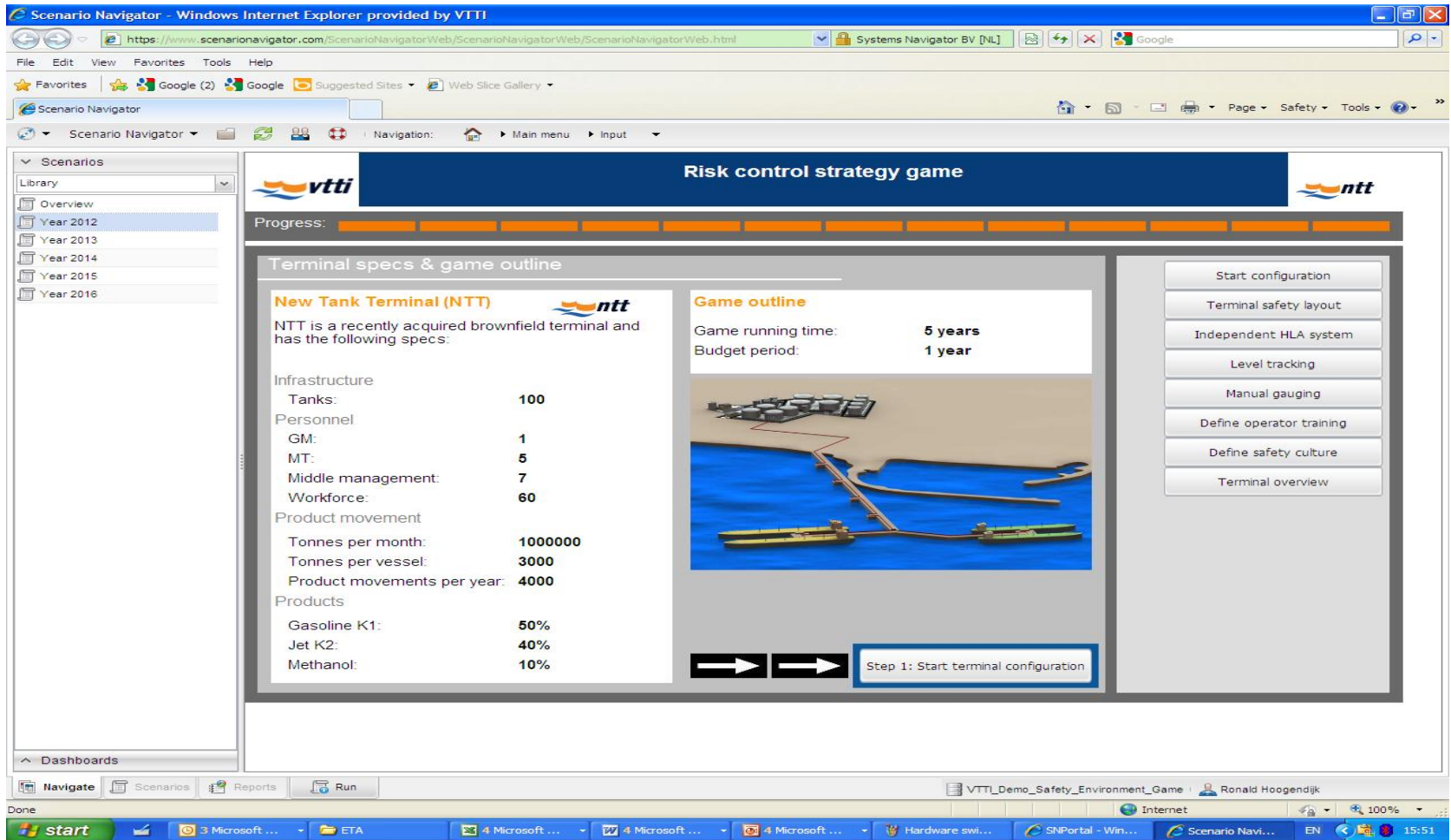


Game Design

- Terminal model setup:
 - Product movement vessel to tank
 - Design of tank equipment
 - Process safety set-up and Control philosophy
 - Organizational process
 - Training and development of staff
 - Behavior and Culture investments
 - Probability of Failure
 - Technical equipment
 - Human factor
 - Impact of leadership



The Game interface



The screenshot shows a web browser window titled "Scenario Navigator - Windows Internet Explorer provided by VTTI". The address bar shows the URL: <https://www.scenari navigator.com/ScenarioNavigatorWeb/ScenarioNavigatorWeb/ScenarioNavigatorWeb.html>. The browser's navigation pane on the left shows a "Scenarios" library with a tree view containing "Overview", "Year 2012", "Year 2013", "Year 2014", "Year 2015", and "Year 2016".

The main content area is titled "Risk control strategy game" and features the VTTI and ntt logos. A progress bar is visible at the top of the game area. The interface is divided into several sections:

- Terminal specs & game outline:**
 - New Tank Terminal (NTT):** Described as a recently acquired brownfield terminal with the following specs:

Infrastructure	
Tanks:	100
Personnel	
GM:	1
MT:	5
Middle management:	7
Workforce:	60
Product movement	
Tonnes per month:	1000000
Tonnes per vessel:	3000
Product movements per year:	4000
Products	
Gasoline K1:	50%
Jet K2:	40%
Methanol:	10%
 - Game outline:**
 - Game running time: 5 years
 - Budget period: 1 year
- Configuration Panel:** A vertical list of buttons on the right side:
 - Start configuration
 - Terminal safety layout
 - Independent HLA system
 - Level tracking
 - Manual gauging
 - Define operator training
 - Define safety culture
 - Terminal overview
- Game Area:** A 3D visualization of a terminal layout with a pier and vessels. Below it, a "Step 1: Start terminal configuration" button is highlighted.

The bottom of the browser window shows a taskbar with several open applications, including "start", "3 Microsoft...", "ETA", "4 Microsoft...", "Hardware swi...", "SNPortal - Win...", and "Scenario Navi...". The system tray shows the time as 15:51.

First year: Input screen

Scenario Navigator - Windows Internet Explorer provided by VTTI

https://www.scenari navigator.com/ScenarioNavigatorWeb/ScenarioNavigatorWeb/ScenarioNavigatorWeb.html

Systems Navigator BV [NL]

Scenario Navigator

Navigation: 5 Define safety culture > 7 Define safety culture - System

Scenarios

- Library
- Overview
- Year 2012
- Year 2013
- Year 2014
- Year 2015
- Year 2016

Risk control strategy game

Progress:

Safety culture - System

Control System HRM toolset Mindware Behavior

Step 8: describe the system building block of the safety culture

System

Measure	Description	GM	MT	Middle mgn	Workforce	Total Costs [k Euro]
Procedures	training and implementation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.5
Change management		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.5
Risk management	Risk thinking with change and new build projects	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.5
Safety Committee		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.5
Contractor management	HSE focus- PtW-MoC-	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.5
Proces Safety	Frame work gimplemented	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.5
Alarm management	Policy implemented	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0.0

Step 8: Safety culture - HRM toolset

Start configuration

Terminal safety layout

Independent HLA system

Level tracking

Manual gauging

Define operator training

Define safety culture

Terminal overview

Budget information k Euro

Available CAPEX: **100**

Estimated costs: **12**

Calculate cost

Navigation: Navigate | Scenarios | Reports | Run

VTTI_Demo_Safety_Environment_Game | Ronald Hoogendijk

Done

start | Microsoft Office O... | Microsoft Office E... | Microsoft Office ... | Microsoft Office P... | SNPortal - Windows I... | Scenario Navigator - ... | EN | 16:00




Scenario Navigator - Windows Internet Explorer provided by VTTI

https://www.scenariogenerator.com/ScenarioNavigatorWeb/ScenarioNavigatorWeb/ScenarioNavigatorWeb.html


File Edit View Favorites Tools Help

Scenario Navigator

Navigation: 5 Define safety culture > 9 Define safety culture - Mindware



Risk control strategy game



Progress:

Safety culture - Mindware

Control
System
HRM toolset
Mindware
Behavior

Step 10: Describe the mindware building block of the safety culture

Mindware

Measure	Description	GM	MT	Middle mgr	Workforce	Total Costs [k Euro]
SOR		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.0
SOR involving operators		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.0
Toolboxen	Weekly monthly roll	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.0
Nearmiss recording	All organization	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.0
Incident analyse	with analysis tool and evaluation during SL or MT meeting	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.0
Learning of incidents	Incident analysis to feed training and development	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.5

→
→

Step 10: Safety culture - behavior

Start configuration

Terminal safety layout

Independent HLA system

Level tracking

Manual gauging

Define operator training

Define safety culture

Terminal overview

Budget information k Euro

Available CAPEX: 100

Estimated costs: 53

Calculate cost



Results


Scenario Navigator - Windows Internet Explorer provided by VTTI

https://www.scenari navigator.com/ScenarioNavigatorWeb/ScenarioNavigatorWeb/ScenarioNavigatorWeb.html


Systems Navigator BV [NL]

File Edit View Favorites Tools Help

Navigation: Home Main menu Results



Risk control strategy game



Scenarios

Library

- Overview
- Year 2012
- Year 2013
- Year 2014
- Year 2015
- Year 2016

Results

Headlines

State:

[Read the M3](#)

Financials

Available CAPEX:	100	k Euro
Estimated costs:	62	k Euro
Terminal revenues and other income:	2328	k Euro
Accident recovery costs:	1350	k Euro
Other costs:	1000	k Euro
Financial result (EBITDA):	16	k Euro

Available CAPEX:

Uses the financial result of the previous scenario

Estimated costs:

Hardware investments, Training, Maintenance and Safety culture

Terminal Revenues and other income:

Every product movement and vessel arrival contributes to the terminal revenue.

Accident recovery costs:

Costs associated with the events that occurred during the year

Other Costs:

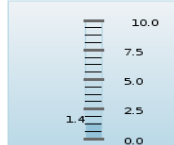
Fixed costs for a terminal such as land lease, utility cost, insurance premiums, IT, etc

Start next year

Safety culture rating

Total score: 1.40

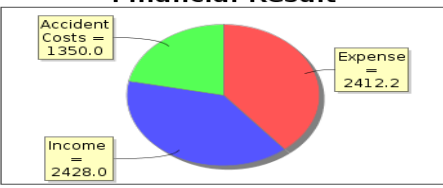
[1 - 10, 10 being the highest]



Events

Total tank overfill events:	1
Total number of product in tankpit events:	1
Total escalations:	1
Terminal explosion:	0

Financial Result



Accident Costs =	1350.0
Expense =	2412.2
Income =	2428.0

Done

start Microsoft Office O... Microsoft Office E... Microsoft Office ... Microsoft Office P... SNPortal - Windows 1... Scenario Navigator - ... EN 16:05



Questions

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