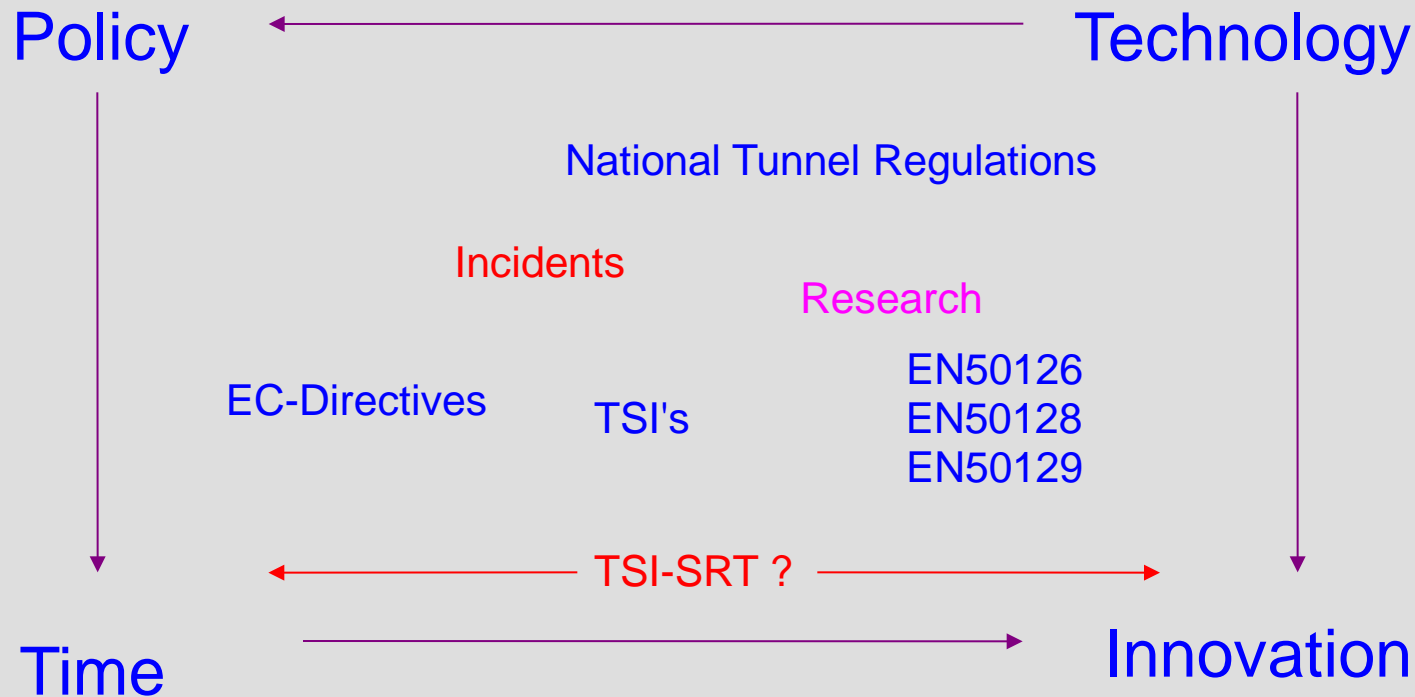




TSI-SRT Safety in Railway Tunnels

Benefit or Burden?

Regulations = Balance Policy/Technology



TSI-SRT Policies

- Views:
 - The maximum that has to be done
 - A starting point for further improvement
 - A shake down of what has been achieved
- Differences (to other TSI's):
 - Close co-operation with the fire-brigade
 - Tunnel approval by Notified Body

TSI-SRT Contents

- Not a Tunnel “Handbook”
- No repeat of existing Law & Regulations
- Focussed on railway operational procedures
 - No traceable relation to incident analysis
 - No tool for financial control
 - Low value for tunnel initial design

Tunnel Cost

Danger:

Tunnel construction at fixed cost could endanger safety when problems arise with the civil construction.

Solution:

Tunnels should be contracted with the installation contractor to assure that the intended safety level is delivered

Incident Analysis/Research

- Sprinkler design and capacity
- Drainage system fire control
- AFFF performance in ballast/drainage canal
- Smoke Control
- Fire detector performance
- Sprinkler/catenary/fire brigade appliances

Research versus Cost

Incidents drive research

Research drives cost upwards

Key Issue:

Can you afford to loose the tunnel?

Affordability of tunnel loss

YES

Get the people out in time

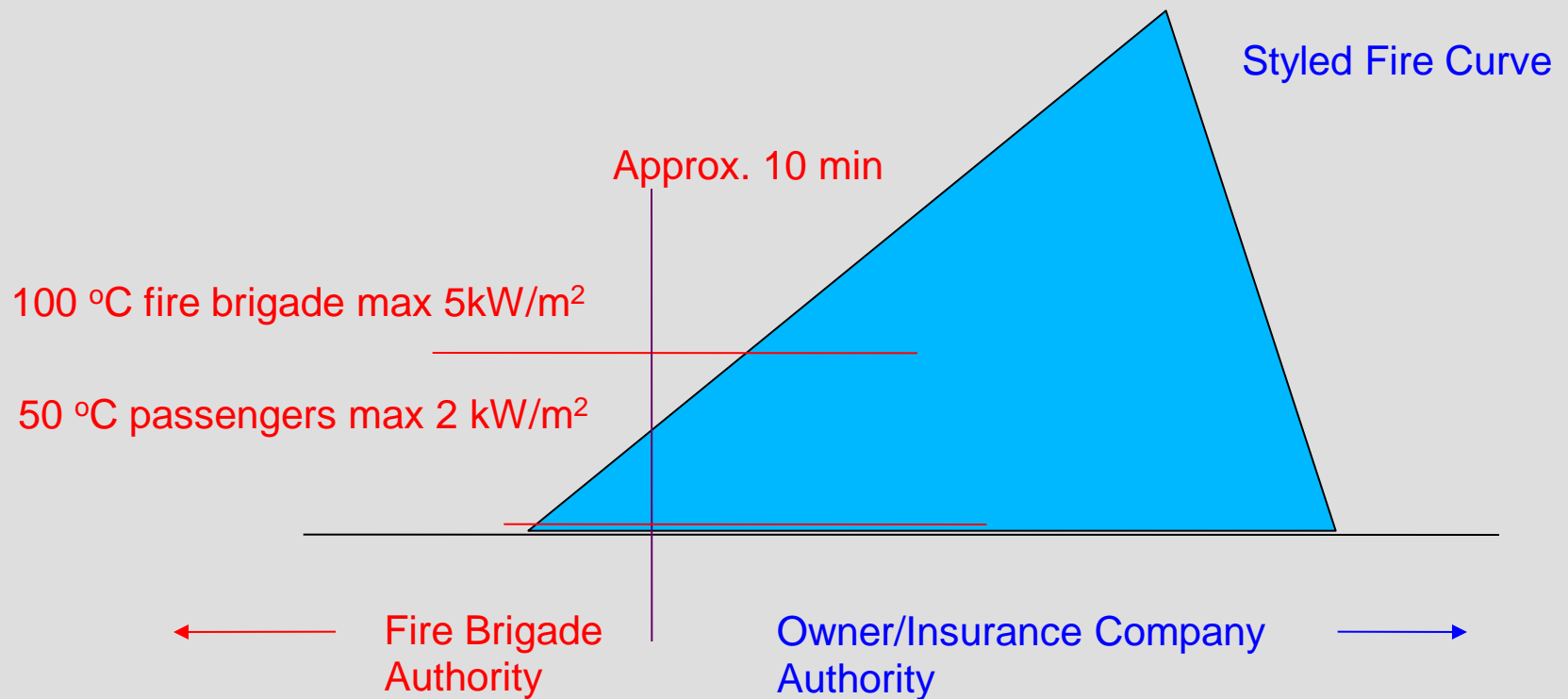
Let it burn out!!

NO

Determine your threat level in advance

Arrange for approval by all involved authorities

Fire Curve/Safety/Authority



Tunnel Approval

- Building Inspection & Licenses
- Environmental Inspection & Licenses
- Labour Safety Inspection & Licenses
- Railroad Inspection & Licenses
 - Notified Body
 - Coordinating Notified Body?

Notified Body/ISA

Independent Safety Assessor

- Regulatory ISA
 - determines the safety rules to be met
- Engineering ISA
 - interprets the rules, maintains safety in construction phase
- Validating ISA
 - Checks if all applicable rules have been fulfilled

TSI-Safety in Railway Tunnels

Conclusion

- Guideline for a minimum safety level
- Limited value for initial design setup/verification
- Challenge for a railroad notified body

Key-Issue

- Can you afford the loss of the tunnel?
- Determine threat level at design phase!

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The logo for Lloyd's Register, featuring the words "Lloyd's Register" in a white, serif font. The text is centered between two horizontal white lines. The background is a dark grey.

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