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SUMMARY of *IAFSS Workshop to define a Fire Safety Mission for Europe*

Brussels, Monday 3rd December 2018

Workshop Scope

Although great strides have been made in reducing the negative impacts of fire over the past few decades, the global impact of fire remains staggering. The World Health Organization (WHO) estimates global burn deaths to 180,000 annually, the vast majority of these in low and middle-income countries. Within Europe, more than 3,500 people are killed annually. In most developed countries, the cost of fire damage is estimated to be at least 1% of the Gross Domestic Product (GDP). Something must be done to facilitate substantial reduction in these losses and significantly increase societal health, safety, and welfare. To better characterize the problems and develop solutions, fire safety science and engineering research needs to be integrated into societally transformative risk mitigation and resiliency initiatives. A holistic, society-focused Fire Safety Mission is needed.

In June of this year, the European Commission published the outline for "Horizon Europe", the research & innovation programme which will follow Horizon 2020, with a proposed budget of around 100 billion € for 2021-2028. The published text makes no mention of fire safety. The proposed structure will build on Thematic "pillars" and horizontal "missions". The definition of a "Fire Safety Mission" is particularly suitable for the inclusion of fire safety in Horizon Europe, as fire safety is truly horizontal in nature, cutting across a broad variety of potential themes.

The International Association of Fire Safety Science (IAFSS) recently launched a position paper calling for action concerning fire research and engineering needs for the future, *The IAFSS Agenda 2030 for a Fire Safe World*. Using the *IAFSS Agenda 2030* as a starting point for dialogue, the IAFSS and ISO TC92 Fire Safety. invited fire safety stakeholders to a workshop to begin defining a Fire Safety Mission for Europe.

Workshop Format

The Workshop was divided into four distinct parts, the first three sessions began by framing the problem of a fire safety mission in a European context – where are we coming from and where are we headed? – followed by stakeholder perspectives. The final session focussed on group work to begin defining a Fire Safety Mission for Horizon Europe. The workshop schedule, provided in appendix 1, identifies these parts.

Workshop Summary

Presentations from the Workshop have been made available through the IAFSS website: iafss.org.

A summary of the individual Work Group (WG) findings are given in Appendix 2 to this document while an overall summary of the recommendations from all the WGs is given below.

Step 1 – A preliminary Fire Safety Mission

All groups were in agreement concerning the need for an ambitious goal relating to reductions in the cost of fire in terms of lives, the environment or property. It was felt that there is a need to improve communication efforts to couch fire safety in positive terms, e.g. in terms of potential for lives saved rather than number of deaths, in terms of benefits from fire safety rather than cost of fires, to move from "design by disaster" to "design for safety".

There was agreement that it is high time for the fire community to be proactive and to own the message of the value of fire safety. There is an opportunity for Europe to be a world leader in fire safety!

Potential Mission statements should include ambitious goals relative to the reduction of fire deaths (suggestions ranged from zero deaths to a 50% reduction), significant reductions in the cost of fires and the concommittant environmental and societal cost. In order to attain the necessart level of fire safety in, e.g. the built environment within Europe by 2030 at a total annual cost that is lower than the 2018, clear goals are necessary where Europe is the world leader in:

- Resilience to climate-induced wildland fire by 2030
- Innovation in fire-safe and sustainable materials, systems and buildings

The IAFSS accepted the charge to take specific suggestions from the groups to craft a Mission statement for communication with the Commission and the Fire Science Community.

Step 2 – Alignment with the Commission Criterion for Missions

All groups agreed that a Fire Safety Mission qualified on all of the Commission Criteria by being *bold, inspirational, with wide societal relevance, showing a clear direction, ambitious, cross-disciplinary and with the potential for multiple, bottom-up solutions*. The greatest challenge identified concerns the lack of benchmarks which hinders the measurability of progress, e.g. in terms of, e.g. the cost of fires, the numbers of fire deaths and injuries, the types of incidents, common fire fighting practice etc.

The Fire Information Exchange Platform and the Joint Research Centre's intention to work towards a common understanding of what to measure and how, are important initiatives that can alleviate at least some of these challenges in the future. It is clear, however, that there is sufficient understanding of the magnitude of the problem and its cross-disciplinary, multi-stateholder nature to warrant a Fire Safety Mission for Europe.

Step 3 – Obstacles to accomplish the goal of a Fire Safe Europe

The main obstacles to achieving a fire safety mission at present were identified as the lack of awareness and pan-European concensus on fire safety and what is needed to achieve it. The establishment of a European Fire Safety Agency (akin to the Food Safety Agency) would be one possible method to alleviate this lack of awareness and concensus. A centralised data collection system would also help develop benchmarks and a common understanding of the problem.

Fire Safety has the potential to become an enabler of an envisaged future where the vast majority of fires are survivable and losses (societal, economic and environmental) from fires are reduced significantly. Stakeholder inertia due to the complexity of fire safety issues can be alleviated by systems thinking, allowing potentially conflicting requirements to be optimised in the system as a whole.

Workshop Organisers and Sponsors

The workshop was organised by the International Association of Fire Safety Science (IAFSS) in collaboration with the International Standardisation Organisation's Technical Committee TC92 on Fire Safety.

The meeting was made possible by the sponsorship of the following organisations listed in alphabetical order: Brandforsk, Kingspan, The Modern Building Alliance, The National Fire Protection Association (NFPA), pinfa, Rockwool and The Society of Fire Protection Engineers (SFPE).

Appendix 1: Workshop program

WHERE WE ARE COMING FROM?

10.00-10.10 Welcome and Introductions (Margaret McNamee, LTH)

10.10-10.20 Why fire safety is important in tomorrow's world (Patrick van Hees, LTH, Chair IAFSS and ISO TC92)

10.20-10.40 Lessons Learned from Fire Research in H2020, the example of wildfire research (DG RTD, Nicolas Faivre)

WHERE ARE WE HEADED?

10.40-11.00 Fire Information Exchange Platform (DG GROW, Georgios Katsarakis)

11.00-11.20 What do we mean by Missions in Horizon Europe? (DG RTD, Neville Reeve)

11.20-11.40 Coffee

WHY A FIRE SAFETY MISSION – STAKEHOLDER PERSPECTIVES?

Funding Agency: Björn Sundström, Chairman of the Board, Brandforsk

ire Fighter: Pieter Maes, Brussels Fire Department

Fire Engineer: Brian Meacham, President-Elect, SFPE

Academia: Guillermo Rein, Imperial College

Industry: Jonathan Crozier, pinfa and Quentin deHults, Modern Building Alliance (MBA)

12.30-13.00 Questions and Panel Discussion

13.00-13.45 Light Lunch

AFTERNOON WORKSHOP – DEFINING A FIRE SAFETY MISSION

13.45-14.00 Introduction to Afternoon Breakout Sessions

14.00-15.00 Roundtable workshop to define possible Fire Safety Mission for Horizon Europe

FINAL PLENARY SESSION

15.00-15.50 Summary report key points from breakout table discussions

15.50-16.00 CONCLUSIONS and WHAT'S NEXT?

The afternoon workshop session was seeded with the following TASK: Each group task is to generate some preliminary input to a possible fire safety mission for Europe. A three-step approach was used to facilitate the workshop dialogue:

1. STEP 1 – Brainstorm a preliminary draft of a Mission

   Begin by discussing the key components of a possible fire safety mission for Europe. Use the Commission's definition of a mission as the framework for your discussions: "A mission is a portfolio of actions intended to achieve a bold and inspirational as well as measurable goal within a set timeframe, with impact for science and technology, society and citizens that goes beyond individual actions".

   As you work, you may consider some of the following questions to seed the discussion:

   - What is the key fire safety goal that the mission should be designed to achieve?
   - What is the timeframe within which the goal is realistically achievable?
   - How can achievement of the goal be measured over time?
   - Is the goal one that requires action at the collective rather than individual level?
   - How will the goal benefit stakeholders in the fire safety community and beyond?

2. STEP 2 – Check your draft against the Commission's five criteria for selecting missions

   Begin by discussing the key components of a possible fire safety mission for Europe. Use the Commission's definition of a mission as the framework for your discussions: "A mission is a portfolio of actions intended to achieve a bold and inspirational as well as measurable goal within a set timeframe, with impact for science and technology, society and citizens that goes beyond individual actions".

   European research and innovation missions are selected with five key criteria in mind. Check your draft statement from Step 1 with these criteria:

Criterion 1: Bold, inspirational with wide societal relevance
Criterion 2: A clear direction: targeted, measurable and time-bound
Criterion 3: Ambitious but realistic research and innovation actions
Criterion 4: Cross-disciplinary, cross-sectoral and cross-actor innovation
Criterion 5: Multiple, bottom-up solutions

3. STEP 3 – Now consider obstacles your mission will need to overcome to succeed

   If you have time, consider the obstacles to achieving the goal of your mission. Examples include obstacles in the area of research needs, regulatory constraints, or stakeholder collaboration (to name but a few). Ask yourselves, if a fire safety mission for Europe were to fail, what would the most likely causes of the failure be?

Appendix 2: Summary of Group work

Group 1:

Step 1:
The group identified a number of key words for use in formulation of a mission statement:

- Improvement
- Sustainability
- Low Carbon
- Health
- Well-being
- Benefits
- Resilience
- Education (Kindergaten ++)
- Fire safety as ENABLER
- Environment
- Positivism to prevail

Preliminary Draft Mission: “99% citizens fire safety aware” OR “99% survivability from fires”

Step 2:
There is a to benchmark measurability of mission. Therefore, all criteria but #2 are seen to be met by the mission suggestions.

Step 3:
Obstacles:

- Lack of data/statistics
- Lack of cross-disciplinary commitment
- Fire bubble leading to the creation of fire safety silos
- Negative image and messaging associated with fire safety

Group 2:

Step 1:
The group identified a number of key words for use in formulation of a mission statement:

- City (mitigation flows)
- Poverty (informal settlements)
- Sustainability
- Density of people increasing and this increased the hazard
- Society
- Avoid the Great Fire of London (again)
- Safety ⇒Design by disaster; ⇒Design by science
- Inclusiveness
- Resilience of society/community/built environment
- 50% reduction of death/injuries/losses by fire
- Sccess story “people center”
- Disaster “keyword”
- Aviation and car industry are examples of industry that use safety as a positive rather than a negative
- Sustainable disaster
- Resilience through “proactive fire science”
- Making fire for society’s prosperity/progress, a force for good
- Foster innovation
- Interface Forest fire Science and Technology

- Systemic approach
- Sectors:
    - Built environment
    - Energy
    - Transport
    - Health Care
- Disciplines
    - material sciences
    - Standardisation
- Horizon scanning of new technology
- Understanding how Society is changing

Preliminary Draft Mission: "0% deaths, 50% # fires/property losses by 2050"

Step 3:
Obstacles:

- No integration, lack of communication
- Regulatory framework
- Standards
- Failure to implement actions
    - Enforcing
    - Quality
- Education of public professionals
- Awaremess
- Fragmental vs holistic, tunnel vision

Group 3:

Step 1:
Preliminary draft mission:

- Reduce death by fire incident by 50% by 2030
- Reduce economic, property, environmental loss by 50%
- Sustainable, resilient society
- Towards a fire proof Europe
- Centralised data collection
- A European fire statistics database on fire accidents, e.g. materials/causes/building types
- European database on human behaviour
- Improvement on fire related properties of materials

⇒ Make Europe the Global leader for Fire Safety by 2030, e.g. as % GDP

Step 2:
Criterion 1+2 are covered.
Criterion 3

- Technology development should go parallel with risk analysis
- QRA and protection and prevention in a complete system

Criterion 4

- EU Fire Safety Agency
- Integrate, overcome fragmentation

Criterion 5

- Upwards information
- Joint approach

Step 3:

Obstacles:

- Stakeholders only reactive and not proactive
- Fire Safety culture

Group 4:

Step 1:

The group identified a number of key words for use in formulation of a mission statement:

- Sustainability
- Health
- World
- Society
- Costs
- Safe (be/feel)
- Protection
- Scale of problem
- Climate change
- Big data
- Education
- Competence (i.e. more people and knowledge)
- Innovation (cross-disciplinary, ICT, IoT)
- Traceability
- Communication (positive)

Preliminary focus:

- Sustainability
- Health
- Society (vulnerable groups)
- Competence
- Innovation
- Communication (positive)

Step 2:

All but Criterion #2 are covered. This criterion is difficult due to the lack of objective benchmarks.

Step 3:

Obstacles:

- Lack of comparable data (between countries and sectors)
- Lack of interest from society
- Fire safety more to the forefront

Group 5:

Step 1:

Reduction of costs of fires

- Societal
- Economical
- Environmental

By 25% in 10 years (2030)

Keywords:

- Rescue
- Detection, alarm, extinguishment
- Awareness, information
- Social problems
- Ageing population
- Learning from fires
- Holistic approach

Step 2:
All criterion met by the mission

Step 3:
Obstacles:

- Need for education (at all levels)
- Fire safety at a national level
- Terminology
- Fire statistics (measurements)
- Dissemination of results
- Ageing population
- 95% of buildings the same in 10 years
- Migration

Group 6:

Step 1:
On a global scale, we want to reduce the impacts from fire to people (deaths, injuries, livelihoods) and to our economies, environment and society by 50% by 2030, through holistic and cross-disciplinary action which considers the return on investment in fire risk reduction.

Background discussion:

- Europe only? No, global focus with specific European objectives
- Northern Europe has more focus on fire safety research (Nordic countries)
- How to make fire safety a key consideration for all work, how to make fire safety a higher priority?
- Fire resilience
- Promoting fire safety in general
- AI, Big data, portfolio of projects, fire safety is horizontal, we need to identify projects that the EU wants to fund
- Focus on horizontal collaboration across thematic programs
- Two facts:
    - Long term: need to have dialogue for things to change (cant only focus on just current framework)
    - Short term: work on current projects
- Show burden of fire safety at EU level (national competence)
- Better at EU level ⇒ better at national level. Regulatory approach
- Challenge – fragmentation of industry
- Need for cross-cutting resources
- Systems thinking
- Use of digital tools/techniques for coordination and validation
- Fire safety in Buildings (in context of EU Commission)
- Separate life and cost, environment and society
- On a global scale we want to reduce the cost of fire (environmental, economic and societal) and to life (death, injuries, livelihoods) by 2030.
- Reduce # fires, # deaths/fire, #impacts of materials

- Need a holistic approach
- How much do we want to spend on achieving fire safety?
- Coordination of research
- Relevance of each area by geography
- Developed/developing

Step 2:

Criteria 1, 2, 4, 5, are largely met with the exception of problems with data availability and benchmarking. Criterion 3 can be a problem in terms of actions.

Step 3:

Obstacles:

- Coordination
    - Disciplines
    - Actors (political etc)
- Competence
- Difficult to implement in member states, because everyone has their own rules and approaches
- Cost of implementation
- Lack of clear strategy
- Psychology
- Lack of interest – not a priority
- Lack of awareness of smaller fires
- Change perception after events
- Difficult to have collevtive action for building fire safety