Safety Convergence – the Evolving Definition of Safety

The Next Five Years in Fire and Electrical Safety
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Overview

1. Population growth - why sustainability now?

2. UL's role in safety standards, testing, certification and surveillance programs

3. Challenge of achieving sustainability requirements

4. Opportunity for collaboration and research

5. Summary and path forward

Global Impact of Population Growth
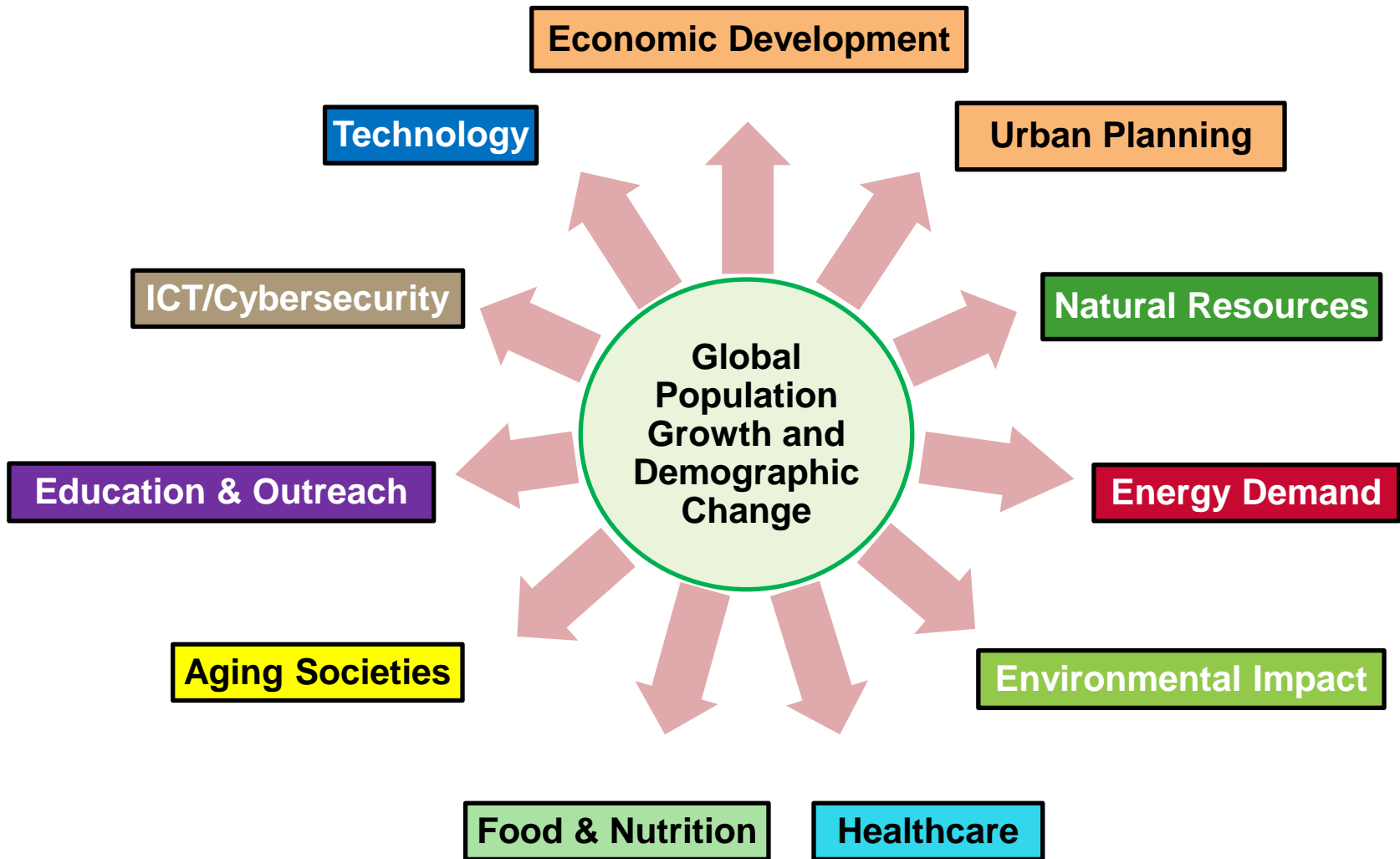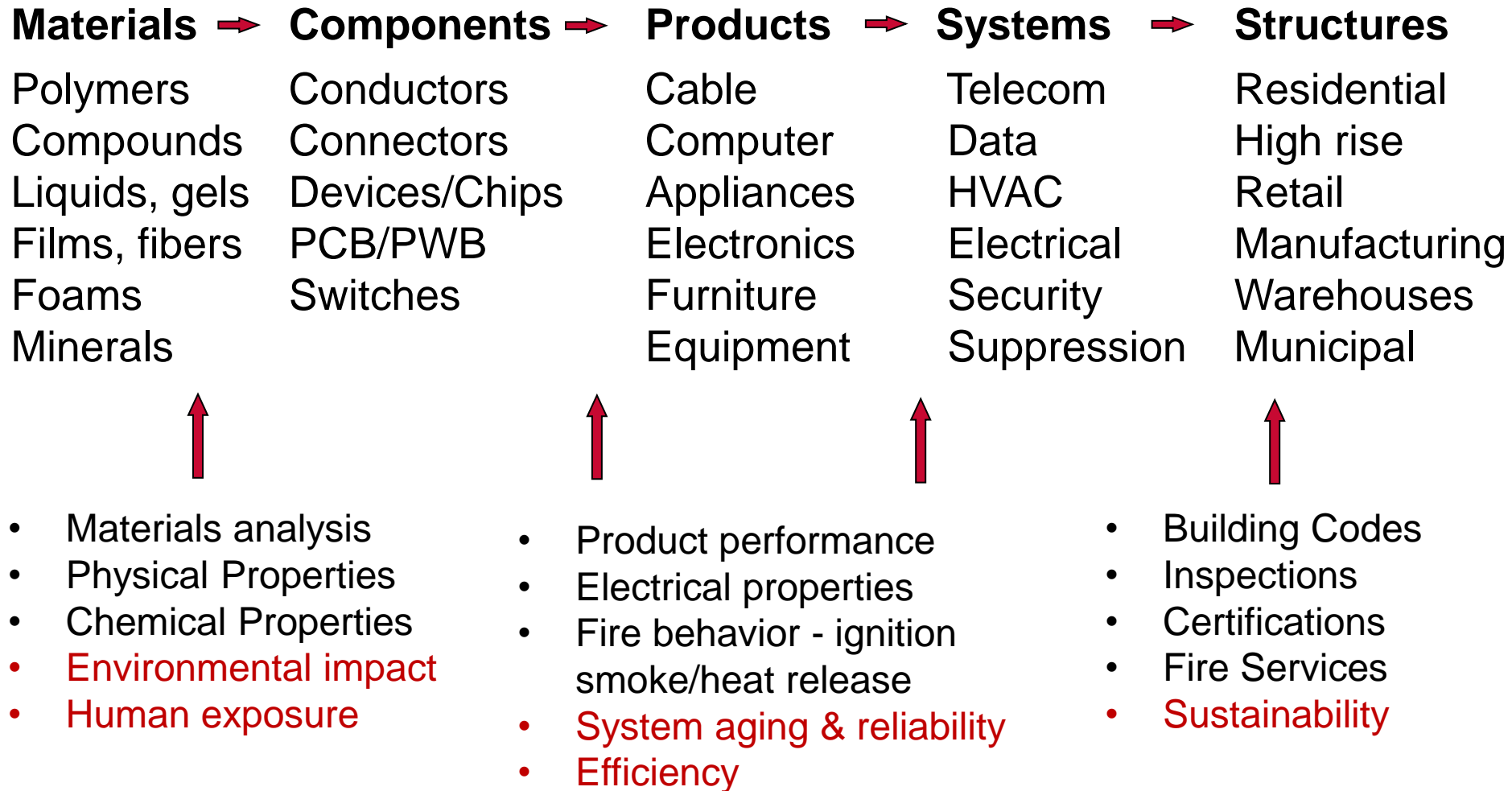
UL Role in Public Safety

UL has a 119-year history of advancing public safety as an independent, third party, testing and certification NGO.

UL strives to achieve safe living and working environments by facilitating the introduction of safe products to the marketplace.

- UL has >1,400 safety standards (originally fire, shock, electrical hazards and expanding to water, medical devices, wireless, transaction security and beyond.
- UL follows the ANSI requirements for consensus-based standards development and revisions through Standards Technical Panels.
- UL's standards are performance-based and not prescriptive.
- UL looks to the Federal Government and regulatory community to oversee the use of toxic substances (prescriptive requirements).

Supply Chain and the Safety Continuum

Materials →	Components →	Products →	Systems →	Structures
Polymers	Conductors	Cable	Telecom	Residential
Compounds	Connectors	Computer	Data	High rise
Liquids, gels	Devices/Chips	Appliances	HVAC	Retail
Films, fibers	PCB/PWB	Electronics	Electrical	Manufacturing
Foams	Switches	Furniture	Security	Warehouses
Minerals		Equipment	Suppression	Municipal

- Materials analysis
- Physical Properties
- Chemical Properties
- Environmental impact
- Human exposure

- Product performance
- Electrical properties
- Fire behavior - ignition smoke/heat release
- System aging & reliability
- Efficiency

- Building Codes
- Inspections
- Certifications
- Fire Services
- Sustainability

Fire Timeline and Mitigation Tools

Fire Service

Hardened Environment

Active Suppression

Prevention

Passive Fire Resistance & Containment

Detection & Alarm

Flash Over

Ignition of First Item

Material and Product Safety Standards

Spread to Second Item

Spread to Interior Finish

Additional Fuel Packages Involvement

Propagation to Adjoining Compartments
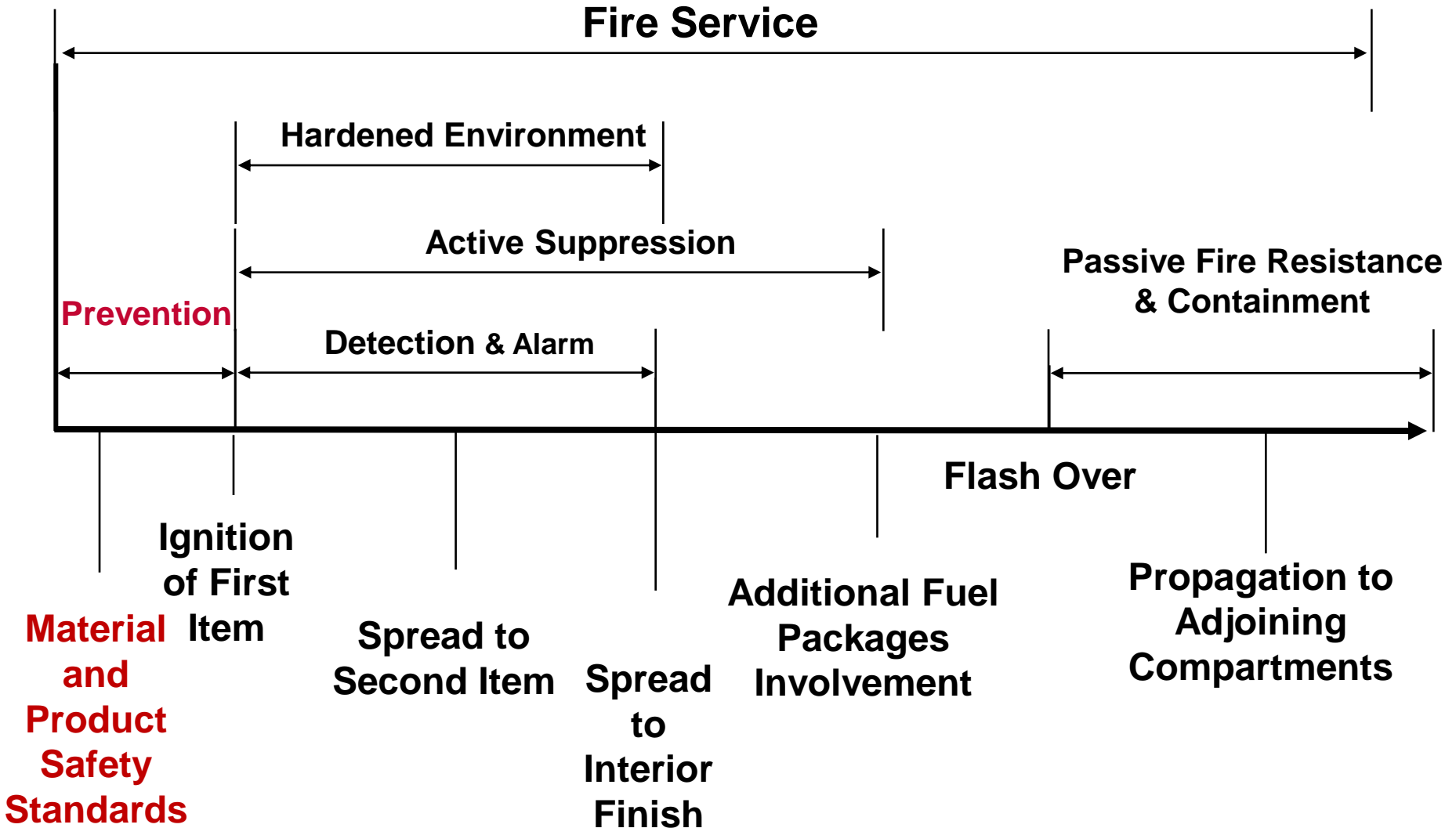
Safety Convergence Challenge and Perspectives

1. Ignition, Flame Spread, Char Formation – Flame retardants

2. Smoke Suppression – Smoke suppressants

3. Property improvements – Plasticizers, lubricants, impact modifiers, heavy metals, minerals, reaction by-products, etc.

4. End result: transport and transfer of VOC's, SVOC's,

Acute vs Chronic Safety

- Building codes and standards work together to define safety requirements for components, products and systems installed in buildings.

- Codes and Standards primarily focus on mitigating risks associated with acute safety issues (fire, shock and electrical hazards).

- There is a significant focus on chronic hazards associated with chemical exposure.

- The key goal for the safety community is to reconcile the unique requirements of acute and chronic safety.

Opportunity for Collaboration

- Exploring the new definition of safety requires collaboration between scientific and engineering disciplines. Collaboration is the key opportunity and challenge.

- To assist in this debate, the safety community must come together to discuss these issues, identify gaps in data and construct research studies to enlighten the regulatory community.

- This requires engagement of all parties in the product supply chain, manufacturers, safety researchers, AHJ's, public.

Conclusion and Summary

- Loss statistics demonstrate that dramatic improvements in public safety has been achieved over the past century (reductions in loss of life, injuries and property).

- These improvements were achieved by intense efforts of thousands of individuals representing all parties in the process – materials, manufacturing, academia, standards, regulators, AHJ's, fire services, public.

- We stand at the threshold of a new opportunity to advance these improvements by exploring the convergence of acute and chronic safety issues.

- Collaboration and fact-based science is the key to enlightened public policy to protect future generations.