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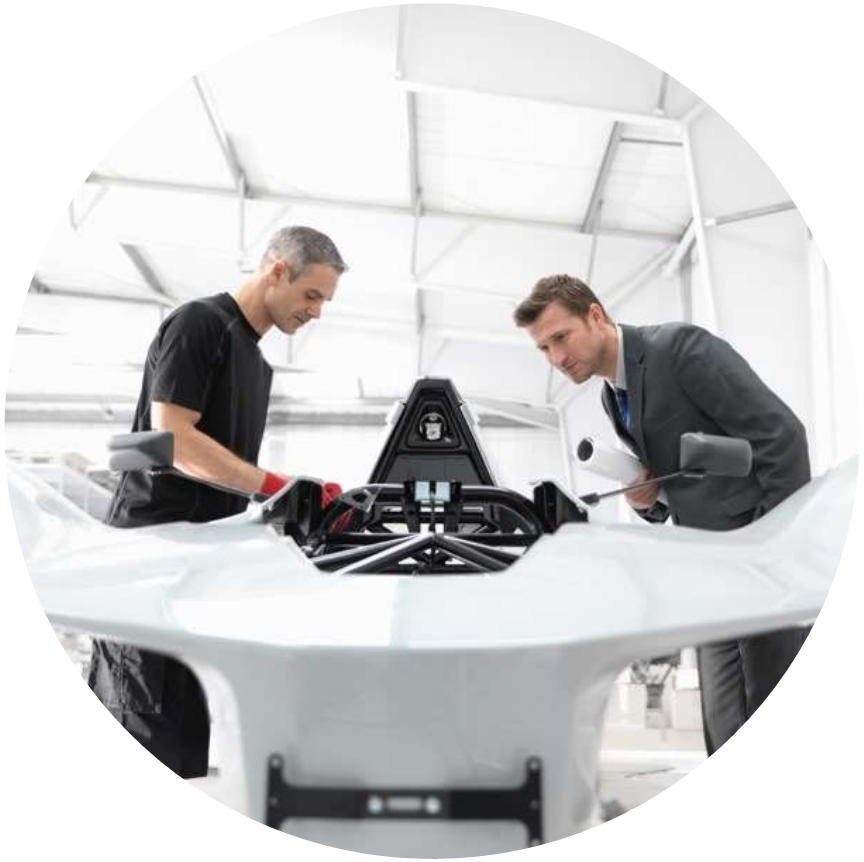
Compliance Beyond Tradition



3D Printing and Modular Construction

Ken Wilson
15 September 2022

Safety. Science. Transformation.™

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Agenda

Who are UL Solutions

UL Solutions in the Built Environment

Prefabricated and Modular Construction

- Scope and Scale
- Benefits
- Challenges
- Standardised Approach
- Learning from Past Practice

Modular Building Inspections

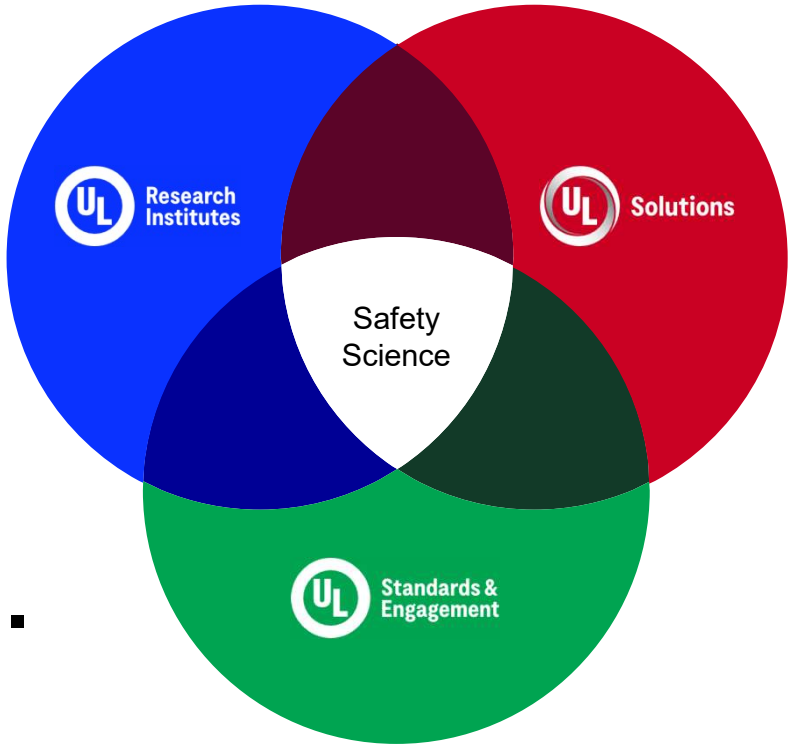
3D Printed Buildings

Product Certification

ANNOUNCING OUR NEW BRANDS

Three organizations.
One shared mission.

Working for a safer world.



UL Solutions

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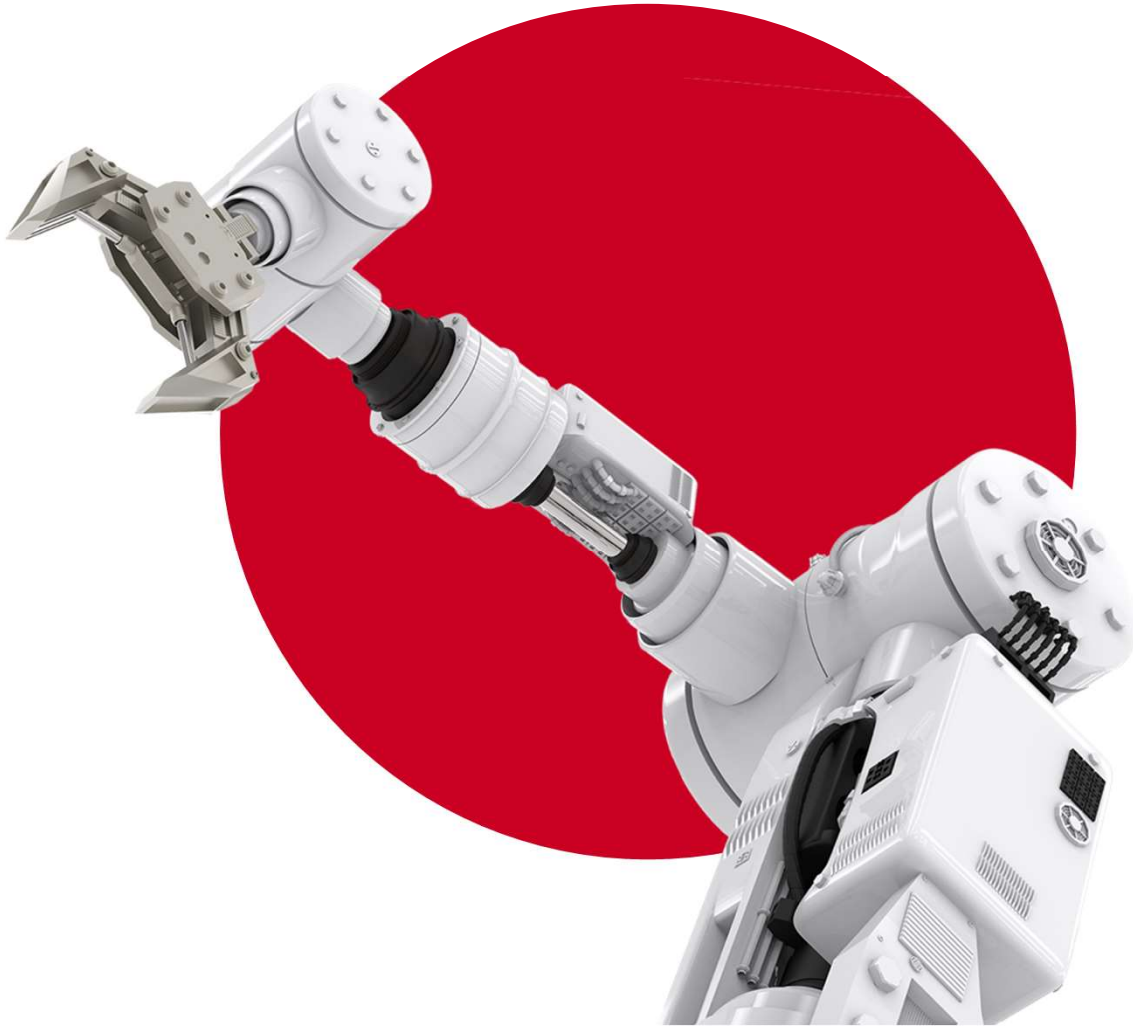
UL Solutions

We are now UL Solutions

New brand. Same mission.



Evolving safety science, exploring the world's pressing challenges and continuing to empower our customers to innovate with confidence.

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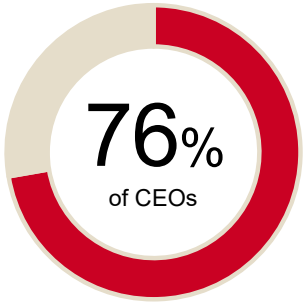
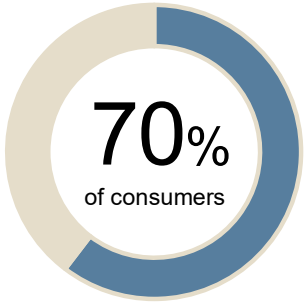
Building trust: Hard-won, easily lost

Trust is critical for business success, but it must be earned. From raw materials to new innovations to local market access, science-based, independent conformity assessment can help build confidence in safety, security and sustainability.



foresee end-customer trust as critical to competitiveness over the next five years
Accenture



want to know how brands are supporting social and environmental issues
MarksteinCo + Certus Insights

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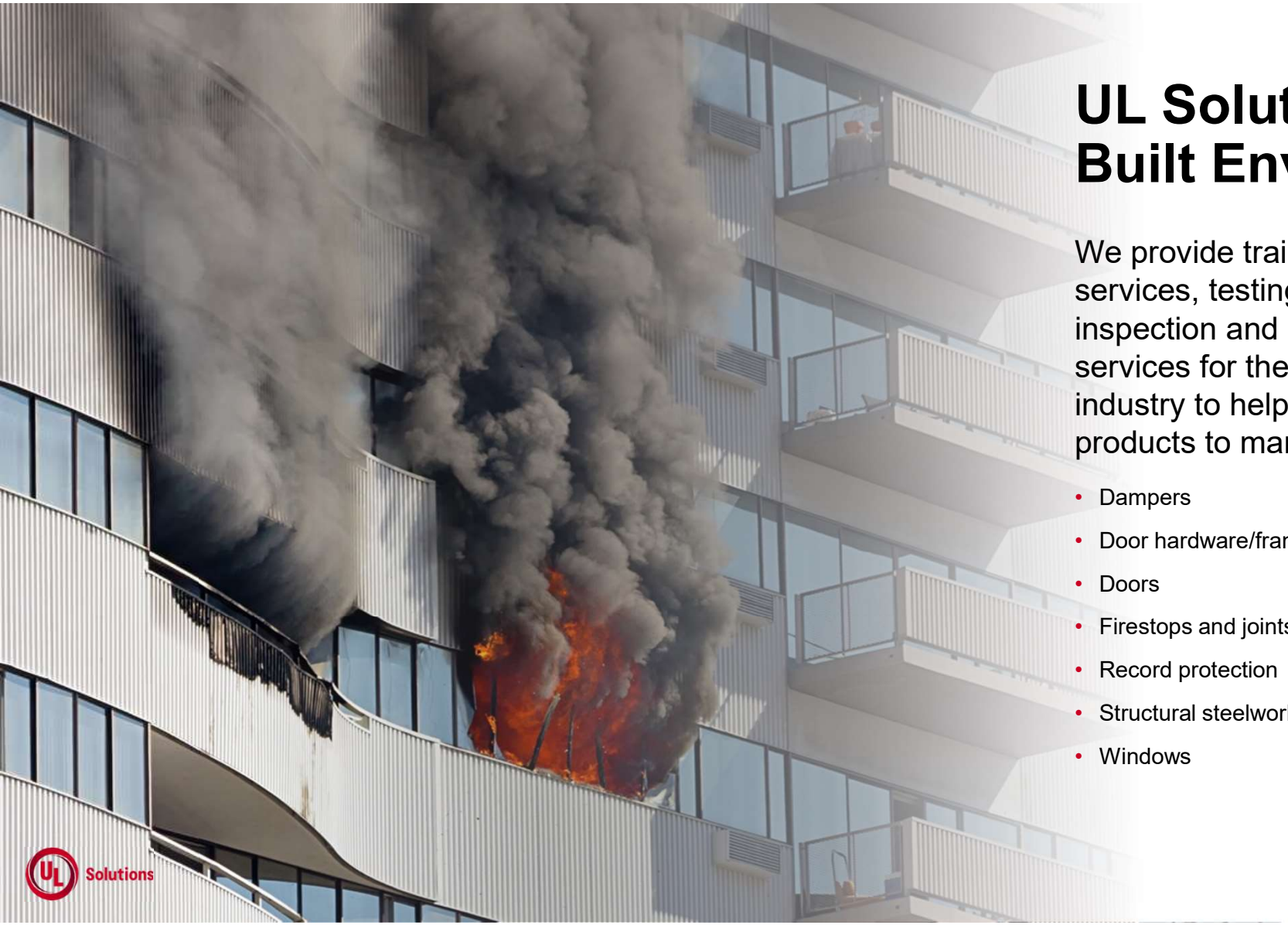


UL Solutions Built Environment

We provide training, advisory services, testing, verification, inspection and certification services for the fire resistance industry to help you get compliant products to market faster.

- Dampers
- Door hardware/frames
- Doors
- Firestops and joints
- Record protection
- Structural steelwork protection
- Windows

Prefabricated and Modular Construction

- Off-site construction using assembly line methodology
- Construction components delivered on-site for final preparation and assembly
- Expected to be 100+ billion-dollar global industry by 2028

Scope and Scale

- Construction components delivered on-site can range from panels, modules or entire units

- Kitchens
- Bathrooms
- Meeting pods
- Bedrooms / Sleep pods
- Complete buildings

Benefits

- Reduction of on-site assembly from months to days, or even hours
- Estimated to provide up to 35% costs advantage in time savings
- Elimination of weather delays
- Greater control over service and contractor alignment
- Significant improvement in delivery and hand-over commitments

Challenges

- Reduced ability for on-site inspections
- Limited access to concealed construction elements
- Greater reliance on third party validation of compliance
- Variation in quality and detail of supporting evidence

Learnings from past practice

Pre-fabricated appliances and furniture with electrical and plumbing connections have been part of our market for many years – what can we learn from them?

Standardized approach to compliance

In North America, The International Code Council and The Modular Building Institute have been collaborating since 2019 on the development of standards:

- Planning, Design, Fabrication and Assembly
- Inspection and Regulatory Compliance
- Mechanical, Electrical, Plumbing Systems, Energy Efficiency and Water Conservation (*in process*)

Further opportunities around sustainability are also expected to become a focus.

Modular Building Inspection

- Inspection conducted at site of manufacturer and/or assembly
- Inspection covers all applicable codes and standards
- Each modular unit inspected and issued a unique identification number

UL MODULAR
BUILDING INSPECTION PROGRAM
Compliant

File Number:	**4789465038 Client unit #**
Date of Inspection:	**11/09/2020**
Site:	**Client Address**
Scope of Service:	**Factory Built Modular Building Inspection for compliance with NFPA 1, NFPA 101, ICC Building, ICC Fire, ICC Mechanical and NEC requirements.**

This is to validate that the above location has been inspected by UL and in Compliance with the stated Scope of Service. UL does not provide any representation or guarantee that all attributes of the Site have been considered. Additional information can be found from the Site owner's UL report which is in the possession of the Site owner.

Mike Haligan
Program Owner
Building & Life Safety Technologies

UL LLC
333 Pfingsten Road
Northbrook, IL 60062, USA

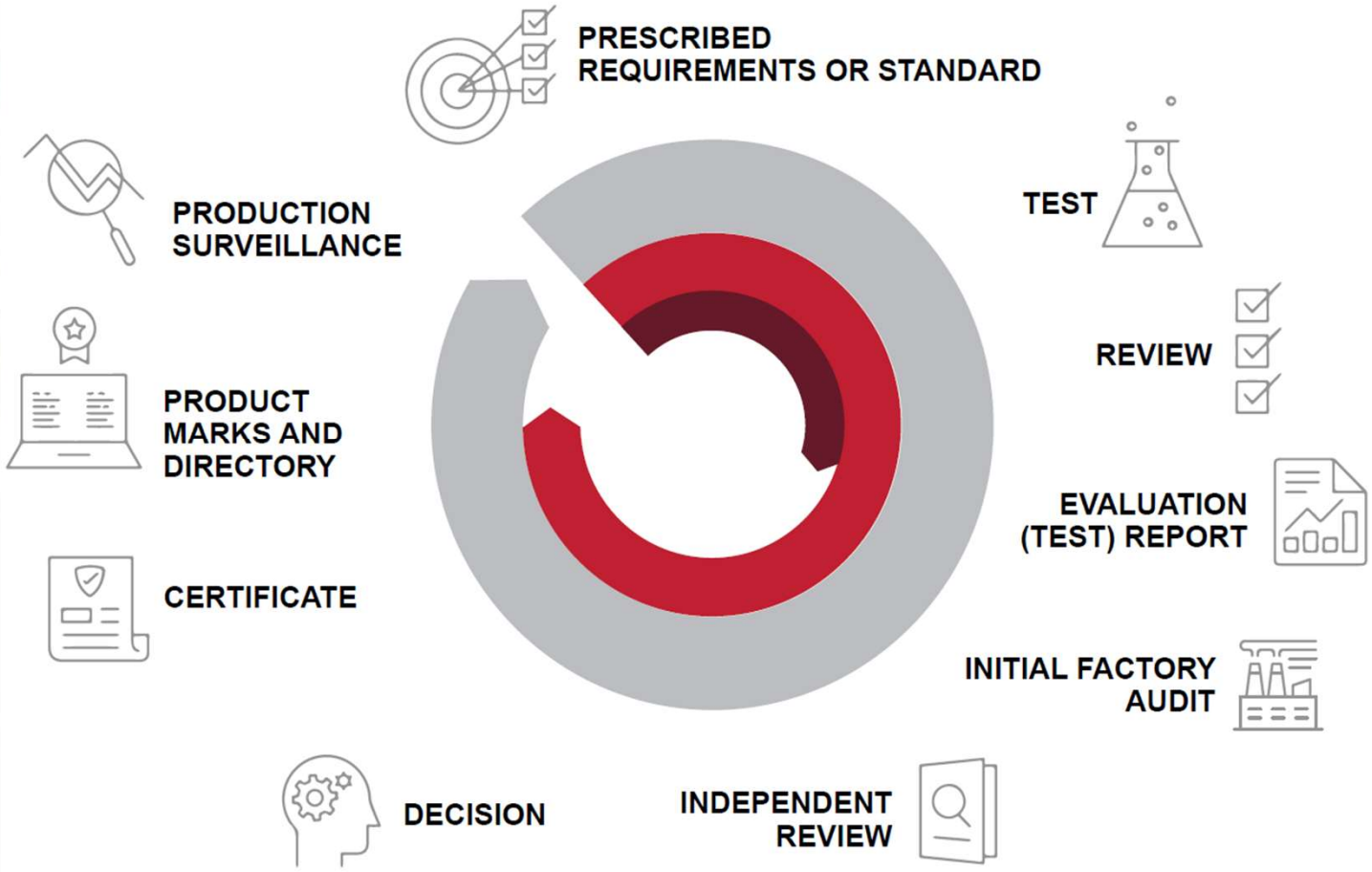
UL Solutions

3D Printed Buildings

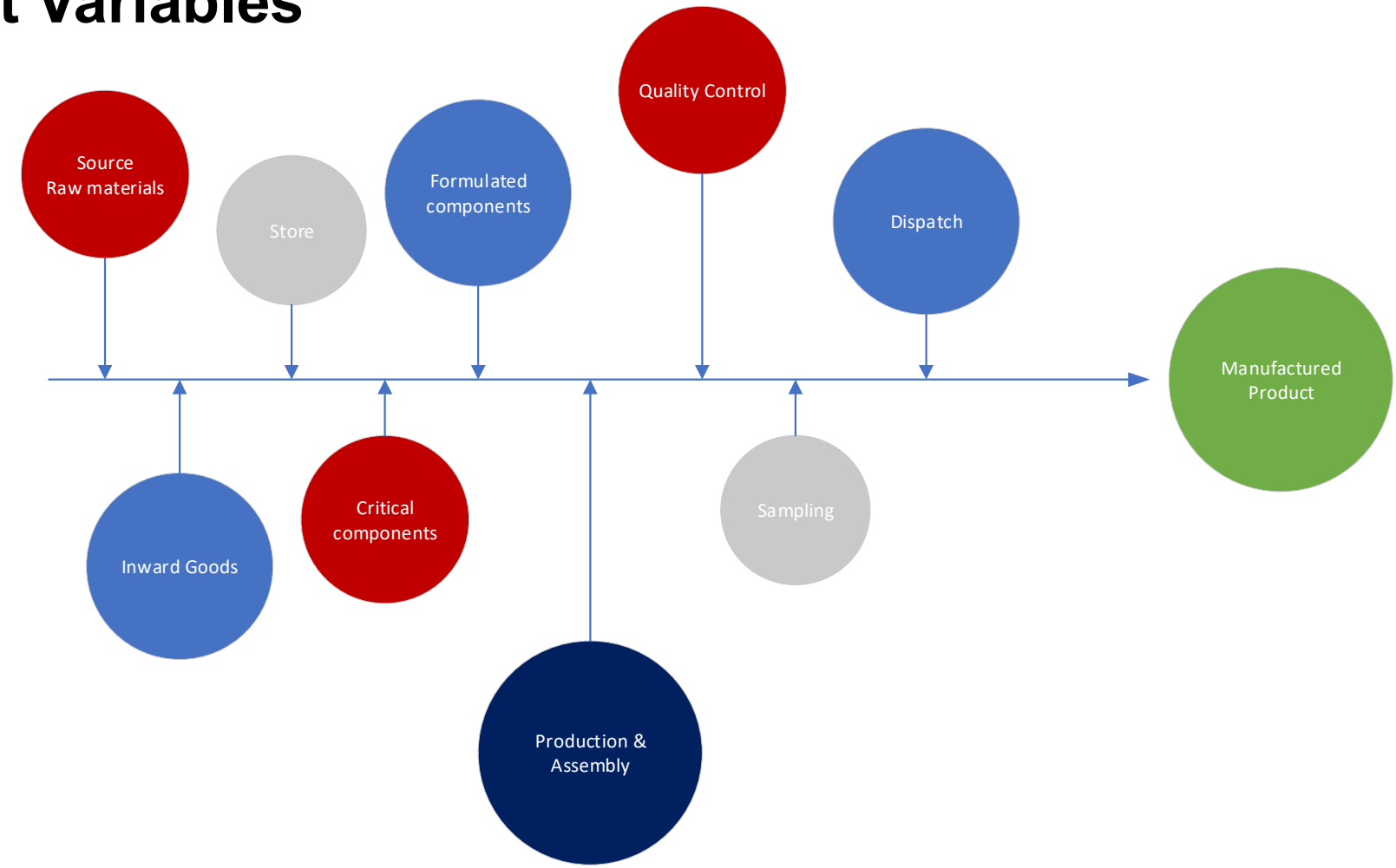
- Range of materials
- Range of scope and scale
- Building components or assemblies printed remotely or on-site
- **No change to the requirements that apply for structural integrity or compliance**

UL Solutions

Product Certification



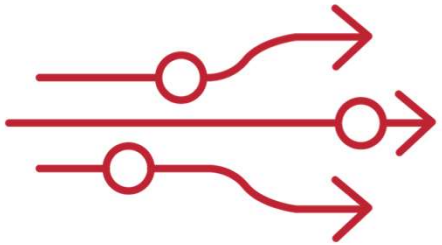
Product Variables



UL-AU Smart Certification Mark

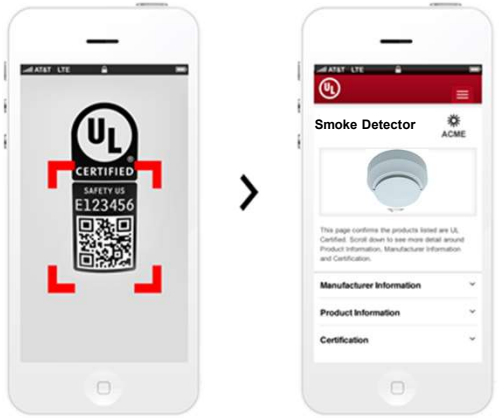
Physical Product

- Unique product identifier with QR code
- Apply to packaging or direct product marking



Digital Access

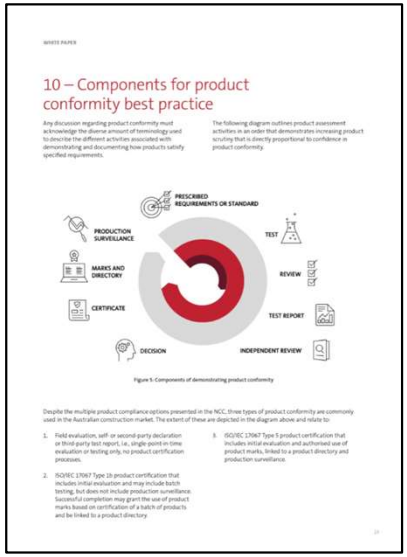
- Direct access to confirm certification status



Product Certification Information

- Mobile, in-situ access
- Links to UL ProductiQ™ global product directory
- Greater transparency for inspectors and users
- Allows addition of product information beyond certification

Product Conformity e-book



For a free copy, contact Ken Wilson

ken.wilson@ul.com

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