A new Safety Standard for High Tech Products
- A Hazard Based Approach

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Objectives

Brief background
High Level Overview – Who, What, When, How, Why
Brief overview of NA version
Brief overview of current status
Brief overview of basic concepts
General safety principles of IEC 62368-1
Being Prepared
Open Q&A
Background

60065 7\textsuperscript{th} Edition is the latest in a series of A/V standards that have converged into one single standard with which the UL standard is now harmonized. Currently there is a document out for vote on this standard for routine maintenance of the standard.

60950-1 – 2\textsuperscript{nd} Edition likewise is the latest in a series of ITE (including Telecom) standards that have converged into one standard with which the UL standard is now harmonized. Currently there is a document out for vote on this document for routine maintenance of the standard.
Background (cont)

62368-1 – is the latest in the series of convergence that brings together 60065 and 60950-1 products under a single standard as the products continue to converge. IEC 62368-1 is a hazard based standard – it was published in January 2010 as an IEC Standard and it will ultimately replace 60065 and 60950-1 – the hazard based approach allows for more timely introduction of new technology without the need to revise the standard first.
What are HBSE and IEC 62368-1?

In General:

- HBSE – is a comprehensive engineering approach to product safety.

- IEC 62368-1 – is a product safety standard.
  - Scope is broad including products currently covered by IEC 60065 and IEC 60950-1.
  - It follows a different approach to safety using some HBSE concepts – but it is not a full HBSE or Risk Based standard – it relies on performance tests to demonstrate safety.
  - This Hazard Based approach is different than the more prescriptive approach taken by the existing standards, IEC 60065 and IEC 60950-1.
IEC TC108 blends the expertise from the previous IEC TC74 (for 60950) and IEC TC92 (for 60065) committees with a purpose to:

• Develop a **single** standard to cover (and ultimately replace) equipment and/or apparatus currently covered by the scopes of IEC 60065 and IEC 60950-x.
• Maintain current standards available for concurrent use for a reasonable period (dependent on regional/national adoption).
• Coordinate future standards development in the fields of electronics products.
Who (cont.)

TC 108 Management Structure

TC 108
Safety of Electronic Equipment within the Field of Audio/Video, Information and Communication Technology
Chairman: J. Remy
Secretary: A. Brazauskis
Asst. Secretary: M. Burk
Technical Officer: T. Rotti

Participating countries: 31
Observer countries: 8

Chairman's Advisory Group on Strategy (CAGS)

MT 1
Maintenance Team (A/V; e.g. 60065)
Convenor: J. Remy

MT 2
Maintenance Team (IT; e.g. 60950-x)
Convenor: S. Statt

WG HBSDT
Hazard Based Standard Development Team
for IEC 62368
Convenor: R. Pescatore
Secretary: J. Remy

WG ENV
Environmental Aspects in the Field of Audio, Video and ICT Equipment
Convenor: F. Hermann

WG5
Touch Current
e.g. 60990
Convenor: P. Perkins
Passed the vote for IS on Oct 2\textsuperscript{nd}, 2009:
\begin{itemize}
  \item 5/7 in favor (\(\geq 2/3\))
  \item 1/4 against (\(\leq 1/4\))
\end{itemize}

IEC 62368-1, First Edition was published in January 2010.

IEC 62368-1, Second Edition is planned to be published in 2013.

Five-year transition:
\begin{itemize}
  \item Learning curve,
  \item Short-term resource.
\end{itemize}
North American Standards – They’re Different?

Tracking IEC
Current Standards –

• 60950-1 for ITE
• 60065 for CE

Working on 62368-1 First Edition

• Following recommendation of IEC – use and gain experience
• Preparing for Second Edition

UL 62368-1 First Edition will include

• IEC 62368-1 First Edition
• NA National Differences
• Provision for using accepted CDVs for IEC 62368-1 Second Edition

When UL 62368-1 Published, we will offer UL certifications accordingly as an option to UL 60950-1 and UL 60065
We can also offer certifications (Classification) today or mention that the product complies in the UL or CB Report
We will offer CB Certifications to IEC 62368-1 when UL 62368-1 is published
NA Bi-National Standards Process

1. THC Develops Proposal
2. TC Considers and Votes in Canada
3. THC Responds to Comments and issues new Proposal if necessary
4. STP Considers and Votes in USA
5. When TC and STP Approve, Bi-National Standard Published
6. Maintenance Process Initiated
IEC 62368-1 – What is It?

What it is?

• New Safety Standard for
  - Consumer Electronic (Audio/Video) Apparatus,
  - Information Technology Equipment, and
  - Communication Technology Equipment

• Hazard-Based (not full HBSE or Risk Based)

• Technology Independent

• Created Upon
  - Sound Engineering Principles,
  - Existing IEC Horizontal Standards
  - Research, and
  - Field Data

What it is NOT?

• NOT a simple merger of IEC 60065 and IEC 60950-1
IEC 62368-1 – Scope – What Products are Covered?

IEC 62368-1, Audio/Video, Information Technology and Communication Technology Equipment – Safety – Requirements, which covers:

• Information Technology Equipment
  - IEC 60950-1, Information Technology Equipment – Safety

• Communication Technology Equipment
  - IEC 60950-1, Information Technology Equipment – Safety

• Consumer Electronic (Audio/Video) Equipment
  - IEC 60065, Audio, Video and Similar Electronic Apparatus – Safety Requirements
Implementation Plan for IEC 62368-1

Is intended to ultimately replace IEC 60065 and IEC 60950-1 safety standards

Initially Published in 2010 with a minimum five year effective date that is being recommended by TC 108

The new Test Report Form (TRF) for IEC 62368-1 published by UL as Originator

Publication of national standards based on IEC 62368-1 expected to follow after the publication of IEC 62368-1. It is hoped that National/Regional Committees will adopt effective dates for their versions of the new standard that will coincide with the effective date timing recommended by TC 108, but this cannot be guaranteed
Some Key Points to Remember!

**HBSE** – is a comprehensive engineering approach to safety – UL is the leader in the education of this approach and is further developing it

**IEC 62368-1** – is a product safety standard

- The scope is large and inclusive of the current ITE and CE product standards
- The standard takes a different hazard based approach to product safety, unlike the current standards

There will be a need for education and information

The new standard will exist along with the current standards during the implementation period
Why Do We Need It?

Less distinction today and in the future between product categories:
• Similar technology,
• Similar marketing/distribution channels,
• Similar use environments,
• Similar users.

Desire for a single safety standard to:
• Lead to design and manufacture of safe products,
• Be technology independent,
• Be stable,
• Introduce new technology to the marketplace easier.
Status of IEC 62368 - IEC

The implementation of IEC 62368-1 will be a major undertaking as such we need to stay aware of the status:

Status as of May 2011:

**IEC TC 108:**
Responsible for IEC 62368-1, IEC 60065, and IEC 60950-1.


IEC 60065, Edition 8 – Next Amendment Planned for 2013 - maintenance

IEC 60950-1, Edition 2 – Next Amendment planned for 2013 - maintenance
Status of IEC 62368 – Adoption by Others

IEC 62368-1 First Edition rejected by CENELEC, it is anticipated they will adopt the Second Edition and publish a related harmonized EN Standard

The Netherlands has published their National Standard harmonized to IEC 62368-1 First Edition

South Africa has published their National Standard harmonized to IEC 62368-1 First Edition

The Japan National Committee beginning to study IEC 62368-1 First Edition, but will wait until IEC 62368-1 Second Edition to publish a related Japan National Standard

US and Canada via the THC is in the process of developing a IEC 62368-1 First Edition National Standard(s) for North America – expected publication date 2012 – 2013 (this will position NA for quicker adoption of IEC 62368-1 Second Edition). UL is leading this effort currently as Chair of the THC for the NA standard and lead SDO.

IECEE, CB Scheme – has indicated that once one country adopts IEC 62368-1 as a National Standard, they will officially add it to the CB Scheme. TRF has been published for the First Edition by UL as the Originator.

Final implementation of IEC 62368-1 Second Edition (when it supersedes previous standards) is likely sometime between 2015 and 2018. With the parallel publication of amendments to the current standards as well as the Second Edition of 62368, there will certainly be much confusion and the need to comply with multiple standards for a number of years.
## Transition: IEC 62368-1 (60065 and 60950-1)

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Final implementation timing to be determined.
Why Such a Long Transition?

Unlike previous revisions of IEC safety standards, suppliers of IT and Audio/Video products will require more time to transition to IEC 62368. Manufacturers will need sufficient time to ensure that all suppliers, especially component suppliers, understand and are able to apply IEC 62368 with relevant national differences.

Need time for test houses and certifiers to develop and deploy test protocols, test report forms (TRF) and acceptance documents (certification reports and test data).

National Differences will need to be developed and published.

Safety Engineers will need adequate time to learn the new requirements and how to apply them properly.
Hazard Based Safety Engineering (HBSE) Standard Principles and TC 108

HBSE

• Is a process

• Utilizes a three block model to address the transfer of hazardous energy to a body part

• Identify limits defining hazardous and non-hazardous energy

• Describe methods to mitigate hazards and measurement of safeguard effectiveness.

To develop IEC 62368-1 – TC 108

• worked to create technology independent requirements leveraging the HBSE approach – it is not a full HBSE approach though

• worked to maintain current, proven prescriptive construction paths as alternative means for determining compliance to the general performance/testing path approach of the standard.
Hazard Based Safety Engineering (HBSE) Standard Principles

1. Identify energy source
2. Is source hazardous?
   - Yes: Identify means by which energy can be transferred to a body part
   - No: Design safeguard which will prevent energy transfer to a body part
3. Measure safeguard effectiveness
4. Is safeguard effective?
   - No: Repeat steps 2 and 3
   - Yes: Proceed to next step
5. Hazardous energy source → Transfer mechanism → Body part
6. Hazardous energy source → Safeguard → Body part
General Format/Approach of IEC 62368-1

Objectives of Hazard-Based Standard:
- Clearly identify the hazard being addressed,
- Clearly state principles upon which hazard is addressed,
- Preserve basis of requirements (rationale document),
- Be performance based (rather than prescribe construction, but allow prescribed construction options),
- Type test standard
  - Useful to designers, and suitable to assess conformance by suppliers, purchasers and certifiers.
- Meet above in an ‘user friendly’ manner.
This International Standard is based upon Hazard Based Safety Engineering principals and classifies energy sources, prescribes safeguards against those energy sources, and provides guidance on the application of, and requirements for those safeguards.... The prescribed safeguards are intended to reduce the likelihood of pain, injury and, in the case of fire, property damage

In practice, safeguard selection will take account of the nature of the energy source, the intended user, the functional requirements of the equipment, and similar considerations.
Structure of IEC 62368-1 (cont.)

Energy Sources

- Electrical
- Fire
- Chemical
- Mechanical
- Thermal
- Radiation

Has some new requirements (ie, compared to IEC 60950-1, Edition 2) to enhance product safety, including but not limited to:

- Methods for classifying energy sources
- Definitions for ordinary persons, instructed persons, and skilled persons
- Child accessibility test probe
Opportunities

Benefits of Hazard-Based Standard:

- Easier introduction of new technology to the marketplace,
- Provides single standard for a broad range of products,
- Will allow minimization of national/regional differences,
- Design freedom,
- Stable,
- Preserves information on basis for requirements,
- Understandable,
- User friendly.
UL Position

• UL supports the adoption of the new IEC 62368-1 standard – our staff participating in various National Committees to IEC TC108 are promoting the advantages of the new approach and proposed longer transition period

• 62368-1 ultimately will provide a single standard for products that have and continue to converge, so there will no longer be differences in requirements applied to similar products

• 62368-1 allows for the introduction of new technology more readily – alternatives/flexibility are given to the prescriptive requirements contained in the standard

• 62368-1 will not extend time to market – in fact, working together early on (at the design stage) will allow us to help our customers bring products to market more quickly – especially new technology
How UL is Responding?

- Active in educating staff and others on the development of the new standard.
- Active in on-going development and review of IEC Documents.
- Working with various National Committees to help form positions and lead standards development.
- Lead SDO for North America version of IEC 62368-1.
- Experience – Working with the First Edition, applying it to products, use the TRF.
What Can UL Provide Now?

- General HBSE training courses (public/private)
- Specialized HBSE Training Courses (private)
- This introductory course (and more in the future)
- Comparison Summary Document and Related Training (see following slides)
- White Papers
- Technical Briefs
- Formal comparison projects, with testing and reports using the new standard with key customers (also allowing further refinement of the TRF)
- Informal round table discussions with customers individually or in group settings
- Go To: [http://www.uluniversity.us/Catalog/Browse.Catalog.aspx?Tab=1000000&Index=High%20Tech]
The Comparison Summary Document

Good Reference Document – doesn’t take place of the standard!

This document compares specific clauses from:

• IEC 62368-1 First Edition
  
  To
  
• IEC 60065 Seventh Edition, and
  
• IEC 60950-1 Second Edition, Amendment 1

This document is intended to help those interested in identifying the potential differences between IEC 62368-1 and IEC 60065 or IEC 60950 that may impact their specific products – when the standards are actually being used to evaluate a product

This document is not suitable for use as a study guide for IEC 62368-1. Because of the different hazard based approach used in IEC 62368-1 it is important to develop a good general understanding of the approach in that standard before trying to use this document. Either a careful review of IEC 62368-1 and or attendance of the introductory seminar on IEC 62368-1 offered by UL is highly recommended before trying to use this document.

This document also is not suitable to be used to demonstrate that a product evaluated to IEC 60065 or IEC 60950-1 is in compliance with IEC 62368-1 (IEC 62368-1 takes a different approach towards the demonstration of compliance)
Overview of the Comparison Document and Standard

The clause comparisons provided by the Comparison Summary document start with clause 5 which is where the specific requirements for the various energy sources begin.

The approach taken by IEC 62368 is hazard based and the initial clauses starting with clause 0 in particular provide valuable background into the approach taken by the standard to evaluate the safety of a product. Note – this approach to the determination of safety when evaluating products is different than those used in IEC 60065 and IEC 60950-1.

Clause 1 covers the Scope of products covered by the standard, Clause 2 provides a list of references to other standards and clause 3 provides definitions, etc.

Clause 4 is also particularly useful as it provides a general introduction and overview of the various requirements, energy sources and safeguards.

Along with the actual standards, this document can provide some good initial insight into the differences between IEC 62368-1 and IEC 60065 and IEC 60950-1.

Note – again, a thorough review of IEC 62368-1 first and or completion of the introductory seminar on IEC 62368-1 is strongly recommended before actually trying to use this document.
What’s Next?

We will continue to provide updates/information about what is happening with the standards.

- Amendments coming to IEC 60065 & 60950-1
- Next Edition of IEC 62368-1
- TRF updates
- UL 62368-1 updates

Expect publication of additional White Papers and Technical Briefs on a regular basis.

We will continue to use IEC 62368 – 1 to gain experience and encourage our customers to do the same

We will provide additional more in-depth seminars and classes, including the product level.

- Hazard Focused
- Product Focused
- Test Methods
- Etc.
What Would You Like to See?

UL wants to provide information & access to knowledge that will be of highest value to those interested in the new standard – to do so we need & request your active input.

What would you like to see with respect to education related to the new standard?

• Content
• Type of delivery: instructor led, e-learning, papers, etc.
• Timing

What would you like to see with respect to information related to the new standard?

• Periodic updates on status
• IEC TC 108 activities
• NA Standard Activities
• Type of access to this information
• etc.
Key Points to Remember!

• HBSE – is a comprehensive engineering approach to safety – UL is the leader in the education of this approach and is further developing it (ASSET).

• IEC 62368-1 – is a product safety standard
  - The scope is large and inclusive of the current ITE and CE product standards
  - The standard takes a different hazard based approach to product safety, unlike the current standards – it is not a pure hazard based or risk based approach

• There will be a need for education and information.
• The new standard will exist along with the current standards during the implementation period.
Questions & Answers

For information or updates, contact your normal contact at UL or check:

THANK YOU

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