NBN

Beyond Oracle Cloud: How AI enables smart access to trusted knowledge.

Filip Huysmans (Contribute)
Yvan Baes (NBN)

contribute

Grenfell Tower fire

The Grenfell Tower fire, which occurred on June 14, 2017, was a devastating incident in which 72 people lost their lives, making it the deadliest residential fire in the UK since World War II

*The Grenfell Tower fire led to widespread public outcry and scrutiny of fire safety regulations in the UK. Investigations revealed systemic failures in **building safety standards** and regulatory oversight.*

Source: Wikipedia

Standards are everywhere!

NBN

International partners

Standards do not stop at national borders. Together, we are building global standards.

The NBN is an agency of the federal government.

Our **mission**:

1. **Develop** Belgian (NBN), European (EN) and international (ISO) standards.
2. **Encourage** the use of standards.
3. **Offer** solutions for easy access to standards.

Some numbers

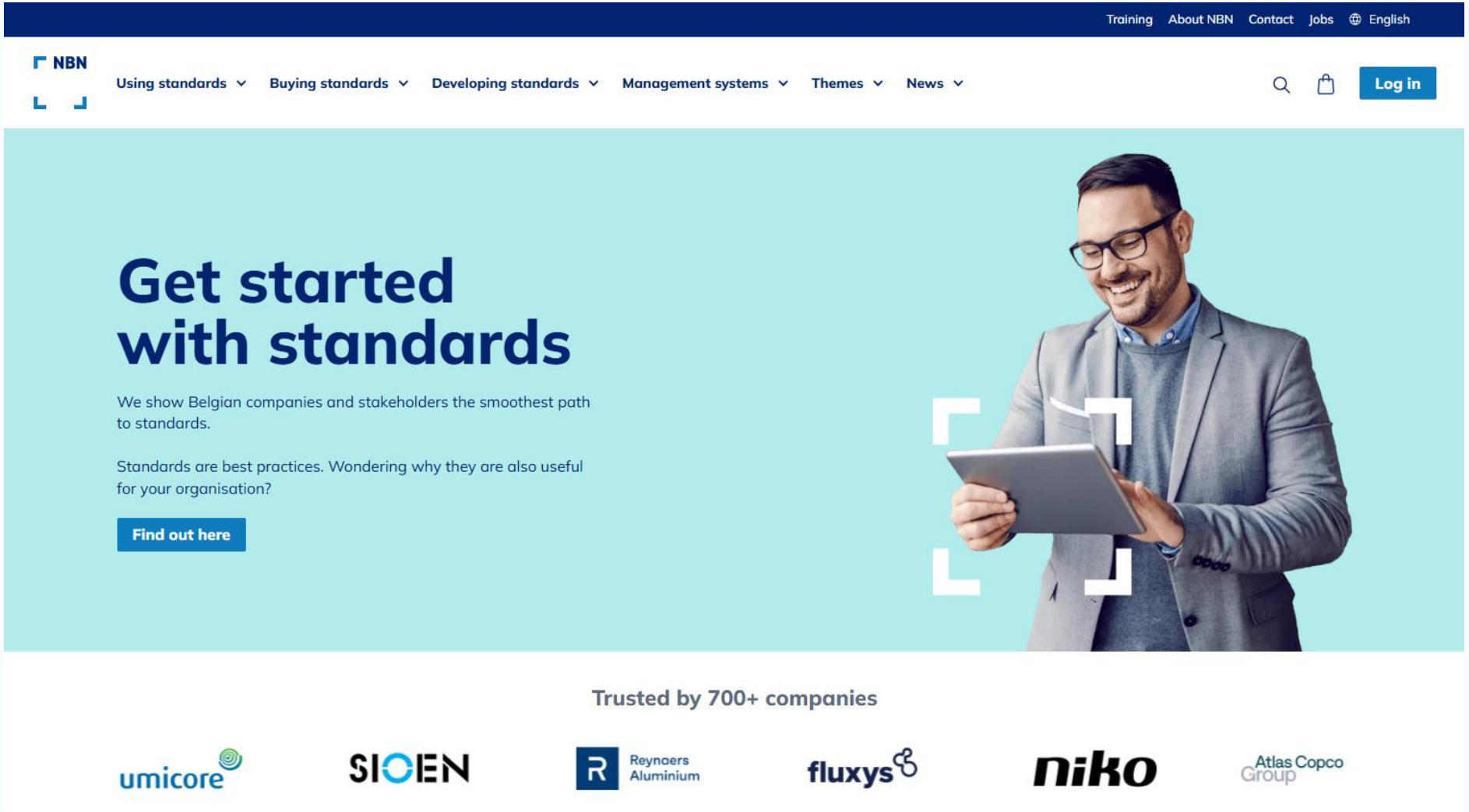
>700
COMMISSIONS

+60.000
ACTIVE STANDARDS

>3.000
BELGIAN EXPERTS

>170.000
CONSULTATIONS ON NBN STANDARDS PLATFORM

NBN standards portal



ICS: 03.120.10

Geregistreerde Belgische norm

NBN EN ISO 9001

5e uitg., september 2015

Normklasse: X 50

Kwaliteitsmanagementsystemen - Eisen (ISO 9001:2015)

Systèmes de management de la qualité - Exigences (ISO 9001:2015, Version française corrigée 2015-09-15)

Quality management systems - Requirements (ISO 9001:2015)

Toelating tot publicatie: 18 september 2015

Vervangt NBN EN ISO 9001 (2008), NBN EN ISO 9001 NL (2009) en NBN EN ISO 9001 NL/AC (2009).

Deze Europese norm EN ISO 9001:2015 heeft de status van een Belgische norm.

Deze Europese norm bestaat in drie officiële versies (Duits, Engels, Frans).

De Nederlandstalige versie is uitgegeven onder de verantwoordelijkheid van het NBN. Deze versie is identiek aan de NBN EN ISO 9001, 5de uitg., september 2015 en heeft dezelfde status als de officiële versies.

Hoewel de grootste zorg is besteed aan deze Nederlandstalige uitgave, kunnen fouten en onvolledigheden niet geheel worden uitgesloten. Het NBN kan dan ook niet aansprakelijk worden gesteld voor rechtstreekse en/of onrechtstreekse schade, ontstaan door of verband houdend met de toepassing van deze uitgave.

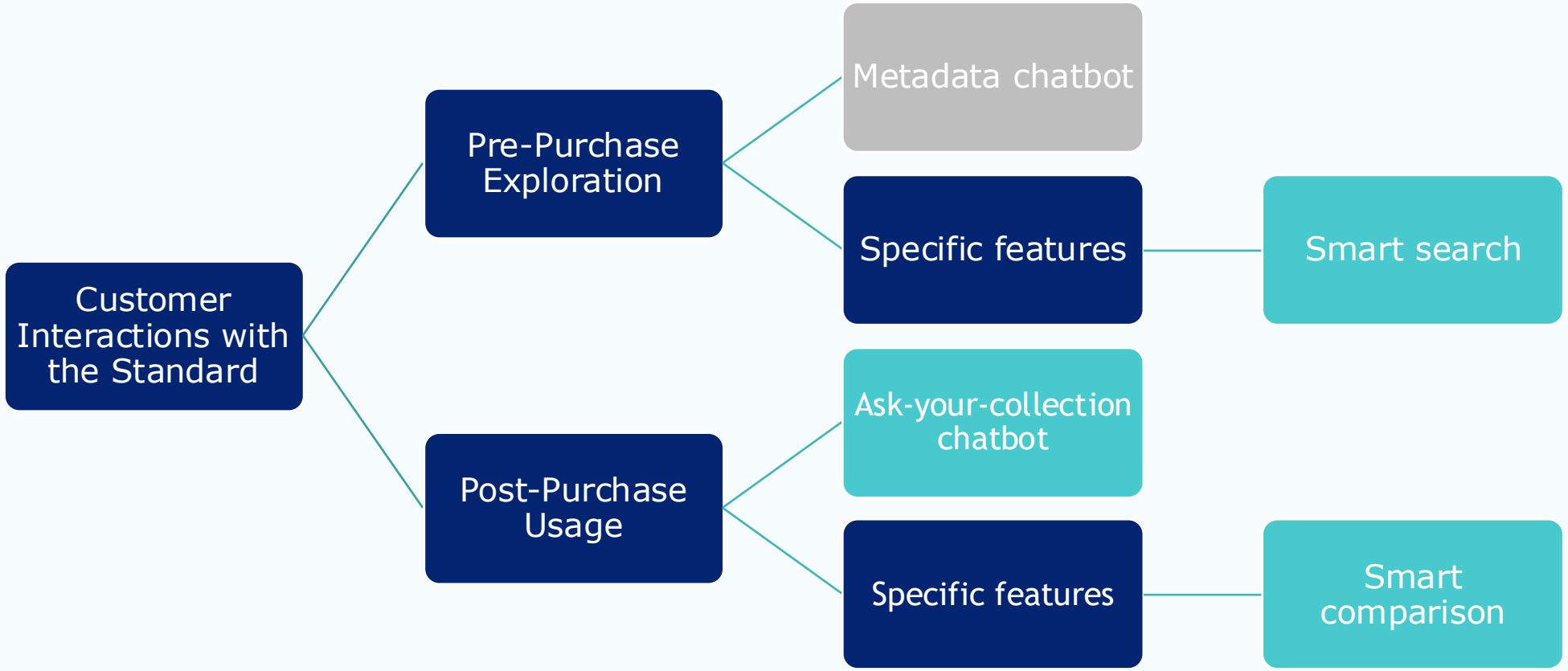
Bureau voor Normalisatie - Jozef II-straat 40 - 1000 Brussel - België
Tel: +32 2 738 01 11 - Fax: +32 2 733 42 64 - E-mail: info@nbn.be - NBN Online: www.nbn.be
Bank: 679-0000951-78 IBAN: BE69 6790 0009 5178 BIC: PCHQBEBB BTW: BE0880857592

Prijsgroep: F

Copyright

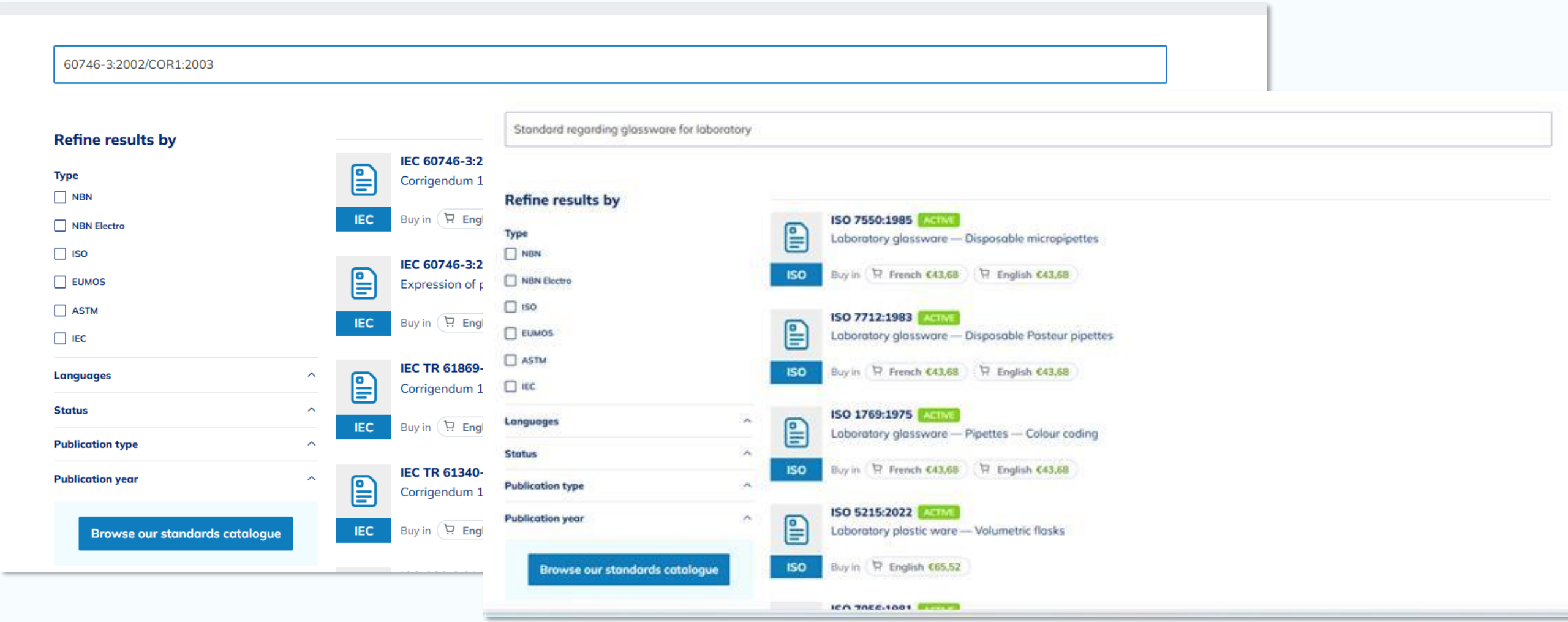
- Standards are protected by **copyright**.
- It is **not** allowed to copy, disclose or distribute (parts of) standards.
- How do you recognise a copyright-protected standard? By the **watermark** (user e-mail address).
- NBN solutions **guarantee** use in accordance with copyright.

AI for NBN – Three Validated AI Products



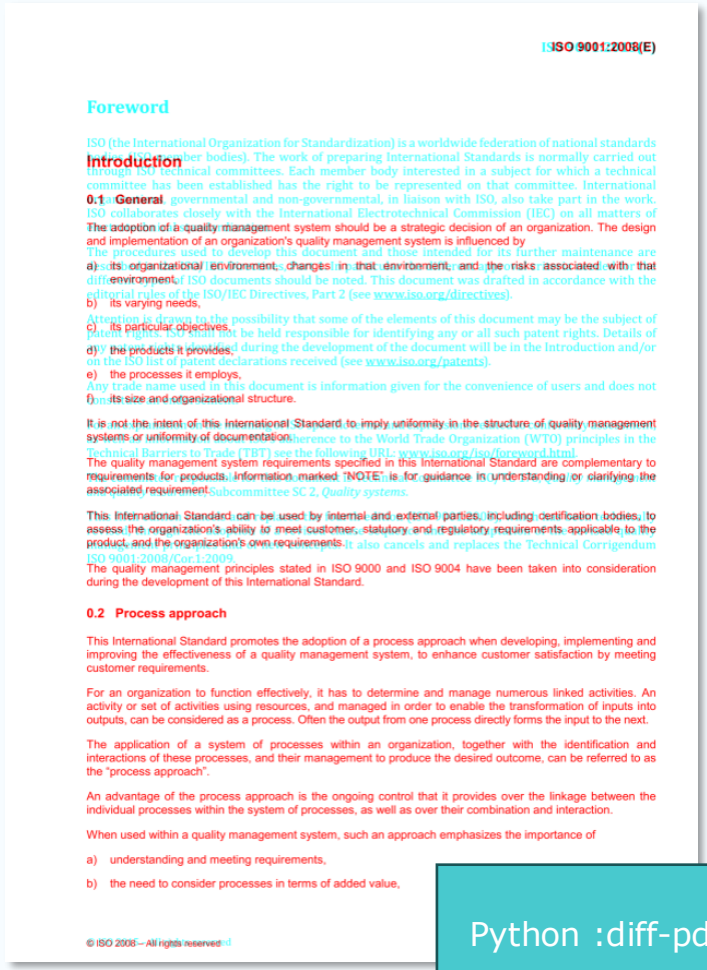
AI for NBN – Smart-Search

From rules based Search to LLM-first environment.

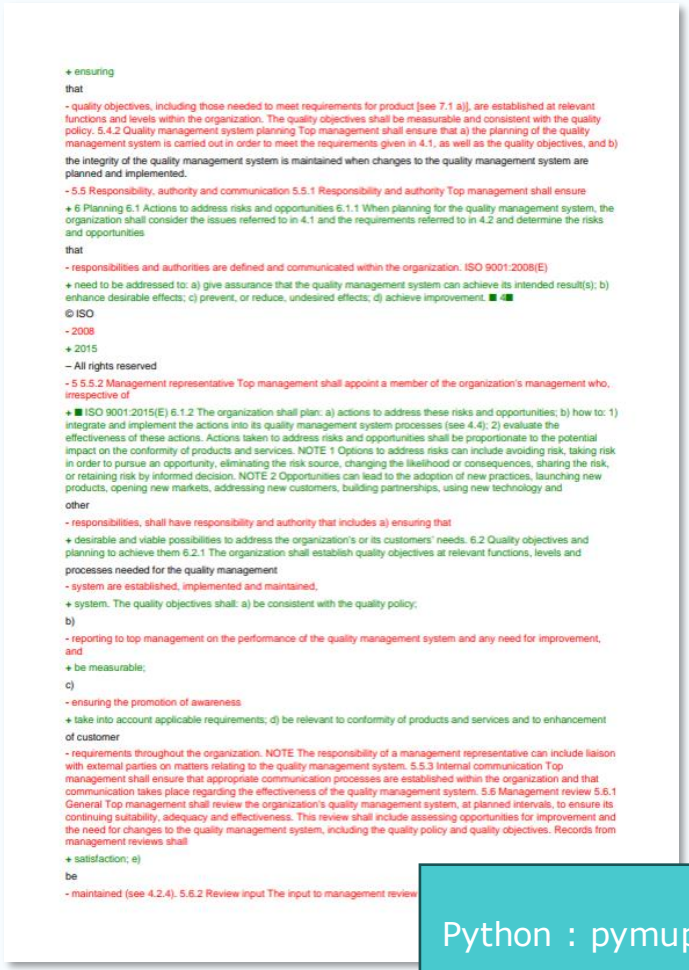


AI for NBN – Smart Comparison

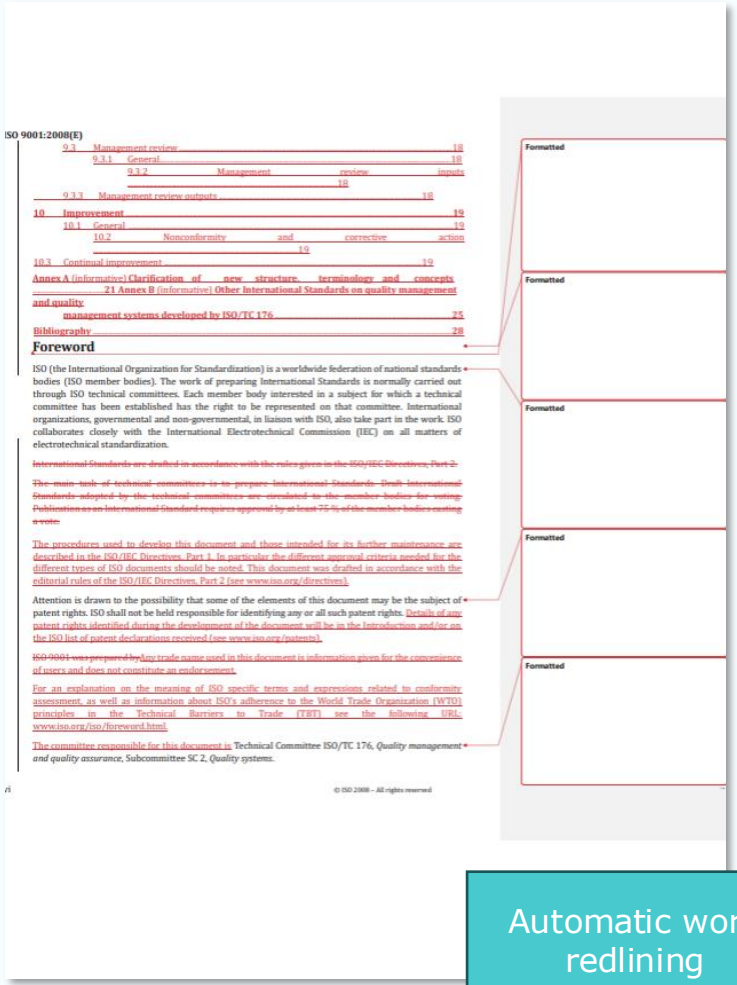
There are limits to the usefulness of real redlining solutions



Python :diff-pdfs



Python : pymupdf



Automatic word redlining

AI for NBN – Smart Comparison

1/26/26, 10:21 AM

Semantic Diff Report

- Source: iso_std_iso_9001_ed-4_v1_en_2.xml
- Target: iso_std_iso_9001_ed-5_v1_en_2.xml
- Similarity threshold: 0.6
- Order penalty (lambda): 0.0
- Move distance threshold: 1
- Chunking: XML-based chapter extraction (detects titles at all hierarchy levels)

Summary

- Moved: 47
- Replaced/Edited: 12
- Inserted: 18
- Deleted: 5

Moved chunks

A[5] -> B[8] (similarity: 0.78)

Before	After
Title: ~~Introduction, Sub-title: Relationship with ISO~~ 9004 ~~ISO 9001~~ and ~~ISO 9004 are~~ quality management system standards ~~which~~ have been ~~designed to complement each other, but can also be used independently. ISO 9001 specifies requirements~~ for a quality management system ~~that can be used for internal~~ application ~~by organizations, or for certification, or for contractual purposes. It focuses on the effectiveness of the quality~~	Title: **Introduction - systems - Fundam essential backgrou and implementatio** 9004 **Managing for organization - A qu provides guidance progress beyond t Standard. Annex B International Stand quality managemer developed by ISO/T does not include re management syste**

file:///C:/Users/elias.oumouadene/Desktop/Coding/diff_report_3_tmp.html

+

You are an expert standards analyst. Your sole input is a "Semantic Diff Report" (text/Markdown) comparing two versions of an arbitrary standard. Your job is to produce a single, self-contained HTML report that explains the changes at a semantic level for decision-makers and implementers.

Critical constraints

- Standard-agnostic: do not assume a particular standard or domain. Use only what is present in the diff.
- Semantic blackline: focus on meaning/intent changes, not literal word diffs.
- Input-limited: you will only receive the diff report text. Do not request more input. Do not browse. Do not invent beyond what the diff supports.
- Copyright-safe: only quote short phrases from the diff's own "Before/After" or summaries as evidence; do not reproduce large blocks of standard text.
- Return one complete HTML document only (doctype, head with styles, body with sections). No JSON, no Markdown.

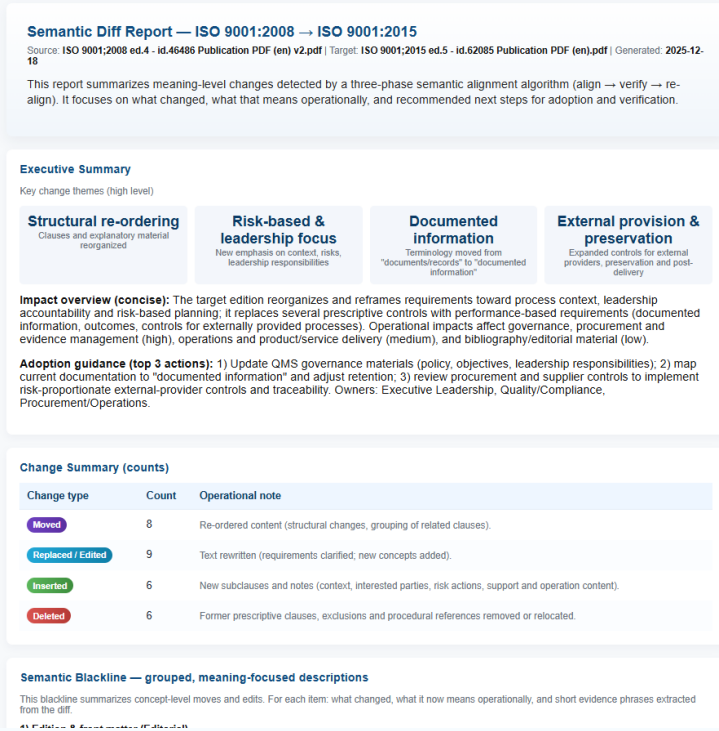
What to parse from the diff

- Overall summary counts (e.g., Moved, Replaced/Edited, Inserted, Deleted) if present.
- Each change item and its metadata: IDs (e.g., A[=], B[+]), similarity scores, move distances, change type (move/edit/insert/delete), headings/titles, "Before/After" snippets, "Change summary", and any "Word-level changes".
- Section/group headings (e.g., "Moved paragraphs", "Edited paragraphs", "Inserted paragraphs", "Deleted paragraphs", and any "Insert at B[...]" / "Delete at A[...]" lines).
- Any additional summaries/verification notes appearing in the report.

Semantic classification (for each change item)

- Requirement change (boolean): A change that introduces, strengthens, relaxes, or removes a normative obligation (look for obligation language like "shall", "must", "required", "needs to", "is required to", or restructuring that imposes or removes actions). Classify change class as one of: New, Strengthened, Relaxed, Removed, Reworded.
- Specification change (boolean): A change to concrete parameters or criteria (e.g., numbers, thresholds, measurements, enumerations, explicit procedural criteria). Mark only when clearly evidenced by the diff (numbers/units/explicit criteria).
- Other semantic categories (zero or more):
  - Scope/Terminology (term shifts, coverage broadened/narrowed)
  - Structure/Reorganization (renumbering, new/deleted sections)
  - Method/Approach (process models, risk-based thinking, PDCA-like cycles, methodologies)
  - Documentation/Records model (documentation control concepts, recordkeeping)
  - External alignment/reference (links to other standards/frameworks)
  - Editorial/Clarity (non-substantive rewording)
- Clause/section family: infer from headings/IDs if present (e.g., use nearest headings or titles). Keep generic (e.g., "Section: Planning" or "Heading: 0.3 Process approach")—do not assume any specific standard's structure.
- Impact score (0–3): 0 None (no meaningful obligation/criteria change) 1 Low (terminology/clarity; limited downstream effects) 2 Medium (process/control adjustments likely; procedure/training updates) 3 High (new obligations or controls; significant planning/audit/supplier or system changes)
- Confidence (0.0–1.0): How confident you are in the classification given only the diff's content. If <0.6, set Verify=true.
- Driver tags (free-form based on the diff, e.g., "Risk-based approach", "Methodology integration", "External provider control", "Performance evaluation", "Improvement", "Terminology shift", "Structure update"). Choose tags that help the reader understand themes without assuming

=



Semantic Diff Report — ISO 9001:2008 → ISO 9001:2015

Source: **ISO 9001;2008 ed.4 - id.46486 Publication PDF (en) v2.pdf** | Target: **ISO 9001;2015 ed.5 - id.62085 Publication PDF (en).pdf** | Generated: **2025-12-18**

This report summarizes meaning-level changes detected by a three-phase semantic alignment algorithm (align → verify → re-align). It focuses on what changed, what that means operationally, and recommended next steps for adoption and verification.

Executive Summary

Key change themes (high level)

Structural re-ordering — Clauses and explanatory material reorganized

Risk-based & leadership focus — New emphasis on context, risks, leadership responsibilities

Documented information — Terminology moved from "documents/records" to "documented information"

External provision & preservation — Expanded controls for external providers, preservation and post-delivery

Impact overview (concise): The target edition reorganizes and reframes requirements toward process context, leadership accountability and risk-based planning; it replaces several prescriptive controls with performance-based requirements (documented information, outcomes, controls for externally provided processes). Operational impacts affect governance, procurement and evidence management (high), operations and product/service delivery (medium), and bibliography/editorial material (low).

Adoption guidance (top 3 actions): 1) Update QMS governance materials (policy, objectives, leadership responsibilities); 2) map current documentation to "documented information" and adjust retention; 3) review procurement and supplier controls to implement risk-proportionate external-provider controls and traceability. Owners: Executive Leadership, Quality/Compliance, Procurement/Operations.

Change Summary (counts)

Change type	Count	Operational note
Moved	8	Re-ordered content (structural changes, grouping of related clauses).
Replaced / Edited	9	Text rewritten (requirements clarified; new concepts added).
Inserted	6	New subclauses and notes (context, interested parties, risk actions, support and operation content).
Deleted	6	Former prescriptive clauses, exclusions and procedural references removed or relocated.

Semantic Blackline — grouped, meaning-focused descriptions

This blackline summarizes concept-level moves and edits. For each item: what changed, what it now means operationally, and short evidence phrases extracted from the diff.

Requirements vs. Specifications Analysis

Distinguish mandatory requirements ("shall") from guidance ("NOTE", "can", "should") and identify where performance-based wording replaces prescriptive wording.

Area	Change type	Effect on compliance evidence
Leadership & policy	Edited / Inserted	Explicit "shall" for leadership responsibilities increases evidence expectations (meeting minutes, assigned roles, communication records).
Context & interested parties	Inserted	New requirement to identify and monitor interested parties — requires stakeholder lists and monitoring evidence.
Documented information	Edited	Former prescriptive lists (manual, procedures, records) replaced by "documented information" obligation; organizations choose form but must justify retention and availability.
External providers	Edited / Moved	Shift to risk-based, proportionate controls: compliance evidence focuses on selection criteria, monitoring and re-evaluation records rather than fixed checklists.
Operational controls & release	Edited / Inserted	Release now requires documented evidence of conformity and authorization; retention of release records is required.

Interpretation guidance: Expect audits to evaluate whether documented information supports the "shall" statements and whether risk-based decisions are justified and effective.

Implementation Roadmap — suggested actions, priorities and owners

Action	Priority	Suggested owner(s)	Deliverable / Check
Update QMS governance: policy, objectives, leadership roles and responsibilities	High	Executive leadership; Quality	Revised policy document, role matrix, management meeting minutes
Map existing documents/records to "documented information" and update retention rules	High	Quality; Records management; IT	Documented-information register, retention table, access controls
Integrate risk-based thinking in planning and change control (6.1 / 6.2 / 6.3)	High	Process owners; Risk/Compliance function	Risk registers, action plans, evidence of effectiveness
Revise procurement & outsourcing controls to be risk-proportionate	High	Procurement; Legal; Quality	Updated supplier qualification criteria, contracts, supplier performance records
Adjust production/service controls: preservation, post-delivery, validation and human error prevention	Medium	Operations; Engineering; Quality	Process control plans, validation reports, post-delivery procedure
Update release & nonconforming output procedures; ensure release authorizations are recorded	Medium	Operations; Quality	Release checklist with authorizer, nonconformance logs
Review design & development controls and evidence retention	Medium	R&D/Engineering; Quality	Design inputs/outputs register, verification/validation records

AI for NBN – Smart Comparison

Change Analysis Report

Comparing ISO/IEC 27001:2014 to NBN EN ISO/IEC 27001:2023/A1:2024 using semantic-focused evaluation and operational implications.

Change Summary

This edition brings notable refinements to structure and operational expectations. Key updates include formalized change management, clearer process criteria, and a dedicated internal audit programme section.

31 — Edited

Scope
Foreword; Introduction; Scope; Context; ISMS; Planning; Support; Operation; Performance; Improvement

Impact
Medium
Mixture of editorial and operational clarifications

4 — Inserted

Scope
Planning of changes; Internal audit programme; Management review general; Management review results

Impact
High
New explicit requirements

3 — Moved

Scope
Management review; Continual improvement; Nonconformity & corrective action

Impact
Medium
Structure and phrasing adjustments

0 — Deleted

Scope
None

Impact
No Impact

Semantic Blackline

Foreword — 2 Changes

EDITED High Impact

Expanded procedural transparency: references to "ISO/IEC Directives, Part 1" and "editorial rules of the ISO/IEC Directives, Part 2," plus web lists for "patent declarations." Evidence: "see www.iso.org/directives...", "see www.iso.org/patents". Operational implication: no process change; improves reference clarity.

MOVED Medium Impact

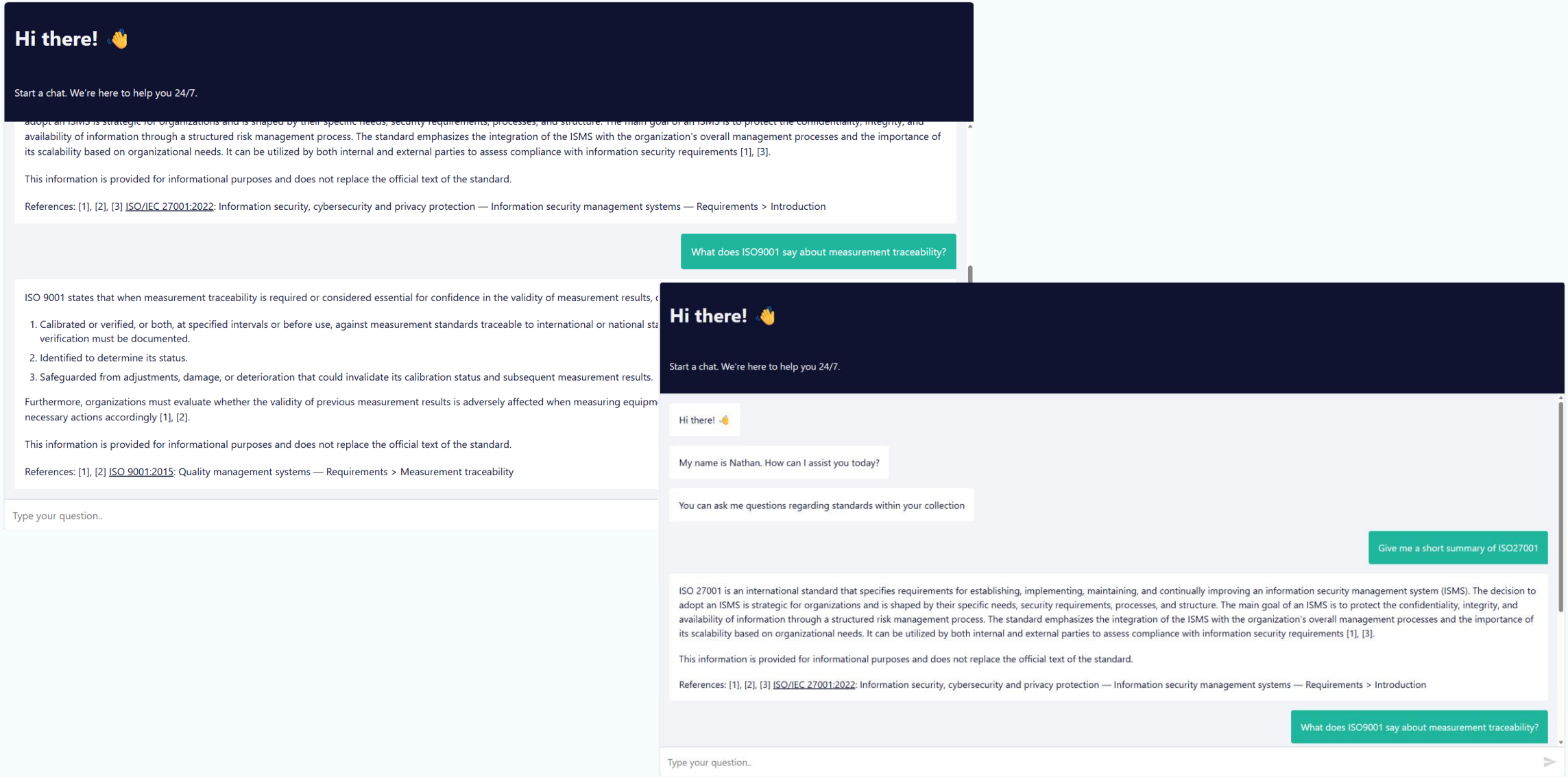
Additional guidance and committee details; edition statement updated and corrigenda incorporated; summary includes alignment statement. Evidence: "aligned with the harmonized structure... and ISO/IEC 27002:2022." Operational implication: awareness; no direct control changes.

Introduction & Scope — 1 Change

EDITED Low Impact

Expanded procedural transparency: references to "ISO/IEC Directives, Part 1" and "editorial rules of the ISO/IEC Directives, Part 2," plus web lists for "patent declarations." Evidence: "see www.iso.org/directives...", "see www.iso.org/patents". Operational implication: no process change; improves reference clarity.

AI for NBN – Ask-Your-Collection Chatbot



AI for NBN – Architecture

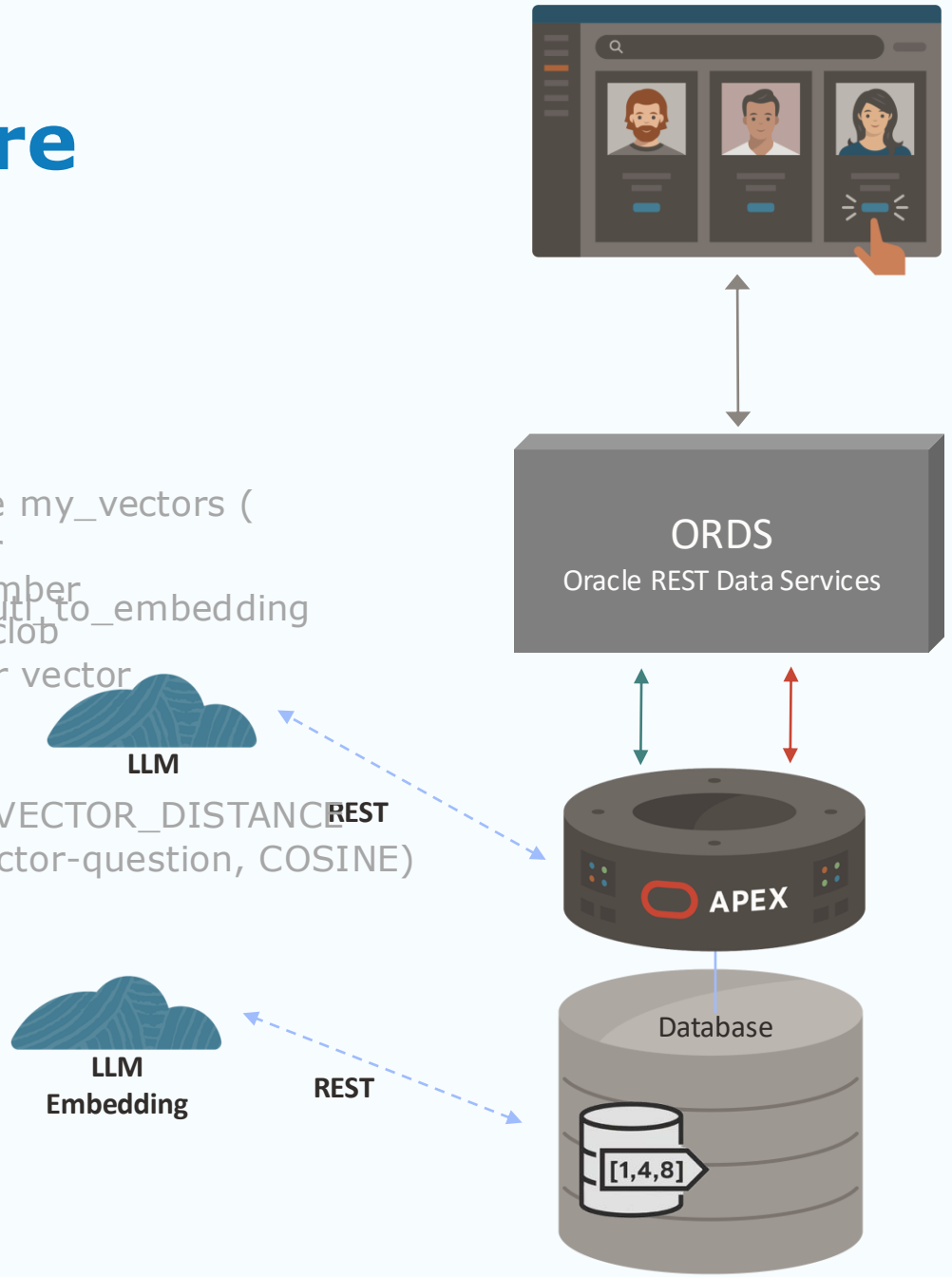
Building Steps:

1. Create a Vector Database
2. Embed your Content
3. Embed the User Question
4. Query the Vector Database
5. Provide all Info to a LLM
6. Return the Response to the User

```
create table my_vectors (
  id number
  my_fk number
  my_data clob
  my_vector vector
);
```

```
dbms_vector.utl_to_embedding
```

```
ORDER BY VECTOR_DISTANCE
( vector, vector-question, COSINE)
```



AI for NBN – Challenges

- **Predictability of cost.**
- **Containment of copyright protected content.**
- **Structured content (e.g. XML) works better than PDF.**
- **Semantic search does not work well with reference numbers.**
  - **Eg. ISO 9001**
- **Security: keeping protected content shielded**

NBN

Thank you !