



Shell JIP33 Implementation Journey

The importance of Digital Requirements Writing and the Future of Digital Standards

Tom Shortall
Technical Standards Lead

Definitions & cautionary note

Cautionary Note

The companies in which Shell plc directly and indirectly owns investments are separate legal entities. In this **presentation** “Shell”, “Shell Group” and “Group” are sometimes used for convenience where references are made to Shell plc and its subsidiaries in general. Likewise, the words “we”, “us” and “our” are also used to refer to Shell plc and its subsidiaries in general or to those who work for them. These terms are also used where no useful purpose is served by identifying the particular entity or entities. “Subsidiaries”, “Shell subsidiaries” and “Shell companies” as used in this **presentation** refer to entities over which Shell plc either directly or indirectly has control. Entities and unincorporated arrangements over which Shell has joint control are generally referred to as “joint ventures” and “joint operations”, respectively. “Joint ventures” and “joint operations” are collectively referred to as “joint arrangements”. Entities over which Shell has significant influence but neither control nor joint control are referred to as “associates”. The term “Shell interest” is used for convenience to indicate the direct and/or indirect ownership interest held by Shell in an entity or unincorporated joint arrangement, after exclusion of all third-party interest.

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This **presentation** contains forward-looking statements (within the meaning of the U.S. Private Securities Litigation Reform Act of 1995) concerning the financial condition, results of operations and businesses of Shell. All statements other than statements of historical fact are, or may be deemed to be, forward-looking statements. Forward-looking statements are statements of future expectations that are based on management’s current expectations and assumptions and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in these statements. Forward-looking statements include, among other things, statements concerning the potential exposure of Shell to market risks and statements expressing management’s expectations, beliefs, estimates, forecasts, projections and assumptions. These forward-looking statements are identified by their use of terms and phrases such as “aim”, “ambition”, “anticipate”, “believe”, “could”, “estimate”, “expect”, “goals”, “intend”, “may”, “milestones”, “objectives”, “outlook”, “plan”, “probably”, “project”, “risks”, “schedule”, “seek”, “should”, “target”, “will” and similar terms and phrases. There are a number of factors that could affect the future operations of Shell and could cause those results to differ materially from those expressed in the forward-looking statements included in this **presentation**, including (without limitation): (a) price fluctuations in crude oil and natural gas; (b) changes in demand for Shell’s products; (c) currency fluctuations; (d) drilling and production results; (e) reserves estimates; (f) loss of market share and industry competition; (g) environmental and physical risks; (h) risks associated with the identification of suitable potential acquisition properties and targets, and successful negotiation and completion of such transactions; (i) the risk of doing business in developing countries and countries subject to international sanctions; (j) legislative, judicial, fiscal and regulatory developments including regulatory measures addressing climate change; (k) economic and financial market conditions in various countries and regions; (l) political risks, including the risks of expropriation and renegotiation of the terms of contracts with governmental entities, delays or advancements in the approval of projects and delays in the reimbursement for shared costs; (m) risks associated with the impact of pandemics, such as the COVID-19 (coronavirus) outbreak; and (n) changes in trading conditions. No assurance is provided that future dividend payments will match or exceed previous dividend payments. All forward-looking statements contained in this **presentation** are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. Readers should not place undue reliance on forward-looking statements. Additional risk factors that may affect future results are contained in Shell plc’s Form 20-F for the year ended December 31, 2022 (available at www.shell.com/investor and www.sec.gov). These risk factors also expressly qualify all forward-looking statements contained in this **presentation** and should be considered by the reader. Each forward-looking statement speaks only as of the date of this **presentation**, **4th October 2023**. Neither Shell plc nor any of its subsidiaries undertake any obligation to publicly update or revise any forward-looking statement as a result of new information, future events or other information. In light of these risks, results could differ materially from those stated, implied or inferred from the forward-looking statements contained in this **presentation**.

Shell’s net carbon footprint

Also, in this **presentation** we may refer to Shell’s “Net Carbon Footprint” or “Net Carbon Intensity”, which include Shell’s carbon emissions from the production of our energy products, our suppliers’ carbon emissions in supplying energy for that production and our customers’ carbon emissions associated with their use of the energy products we sell. Shell only controls its own emissions. The use of the term Shell’s “Net Carbon Footprint” or “Net Carbon Intensity” are for convenience only and not intended to suggest these emissions are those of Shell plc or its subsidiaries.

Shell’s net-Zero Emissions Target

Shell’s operating plan, outlook and budgets are forecasted for a ten-year period and are updated every year. They reflect the current economic environment and what we can reasonably expect to see over the next ten years. Accordingly, they reflect our Scope 1, Scope 2 and Net Carbon Footprint (NCF) targets over the next ten years. However, Shell’s operating plans cannot reflect our 2050 net-zero emissions target and 2035 NCF target, as these targets are currently outside our planning period. In the future, as society moves towards net-zero emissions, we expect Shell’s operating plans to reflect this movement. However, if society is not net zero in 2050, as of today, there would be significant risk that Shell may not meet this target.

Forward Looking Non-GAAP measures

This **presentation** may contain certain forward-looking non-GAAP measures such as **cash capital expenditure** and **divestments**. We are unable to provide a reconciliation of these forward-looking Non-GAAP measures to the most comparable GAAP financial measures because certain information needed to reconcile those Non-GAAP measures to the most comparable GAAP financial measures is dependent on future events some of which are outside the control of Shell, such as oil and gas prices, interest rates and exchange rates. Moreover, estimating such GAAP measures with the required precision necessary to provide a meaningful reconciliation is extremely difficult and could not be accomplished without unreasonable effort. Non-GAAP measures in respect of future periods which cannot be reconciled to the most comparable GAAP financial measure are calculated in a manner which is consistent with the accounting policies applied in Shell plc’s consolidated financial statements.

The contents of websites referred to in this **presentation** do not form part of this **presentation**.

We may have used certain terms, such as resources, in this **presentation** that the United States Securities and Exchange Commission (SEC) strictly prohibits us from including in our filings with the SEC. Investors are urged to consider closely the disclosure in our Form 20-F, File No 1-32575, available on the SEC website www.sec.gov.

Operator perspective

- What is driving us to digital requirements?
 - Complexity adds risk and cost
 - Systems Engineering
- The project workflow
- Digital Tools
 - JIP33 adoption and presentation
 - Datasheets
 - Document and digital guides
 - Blended sets of requirements
- Discussion

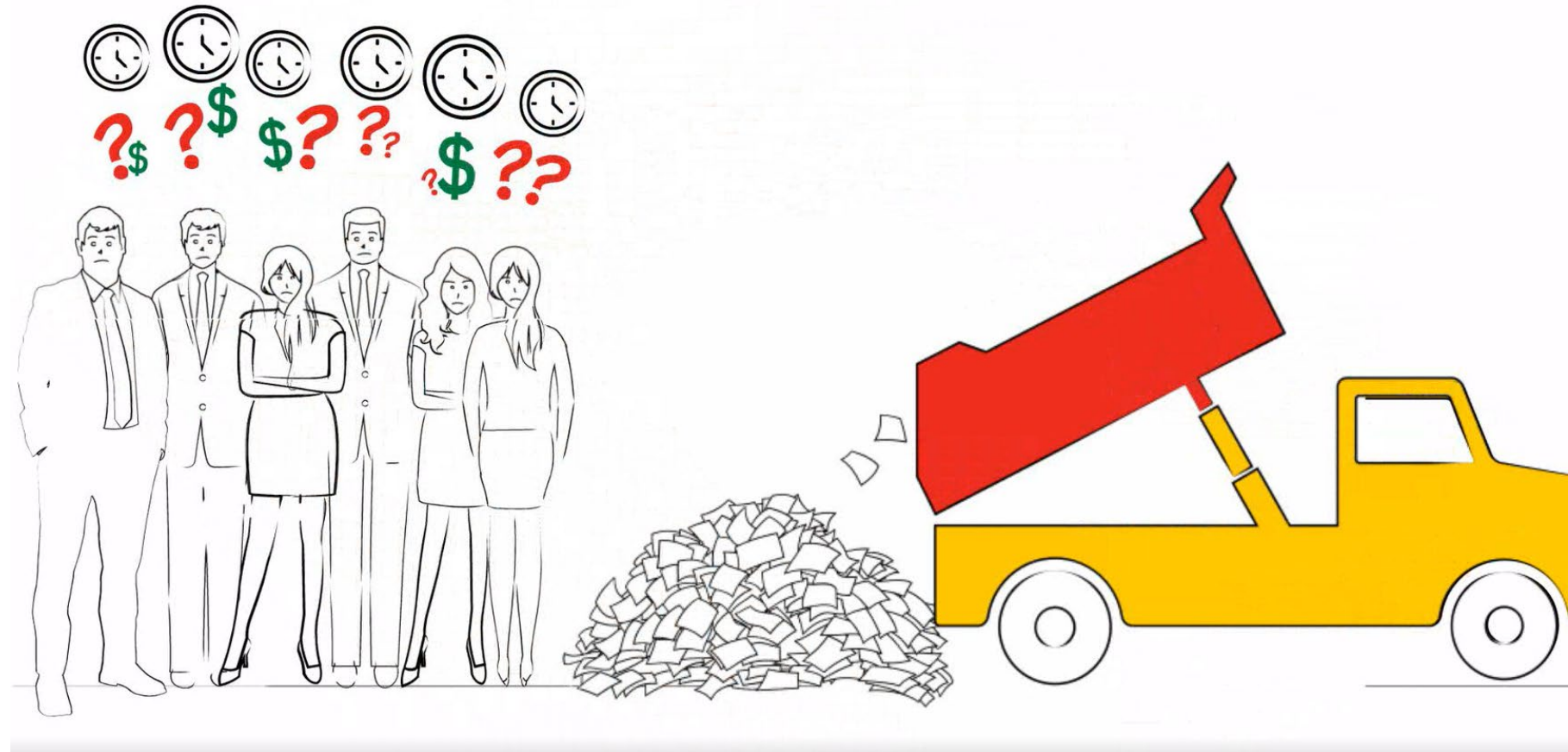
The supplier perspective

- Volume
- Complexity
- Ambiguity
- Variety
- Inspection interference
- Documentation drives change

- Non-standard solution
- Risk = \$\$\$\$

The supplier perspective

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REQUIREMENTS 101

One Requirement at a Time, Please

<https://www.youtube.com/watch?v=PBrNgF5EPOA>



Individual requirements, **one at a time**



Each requirement **numbered**



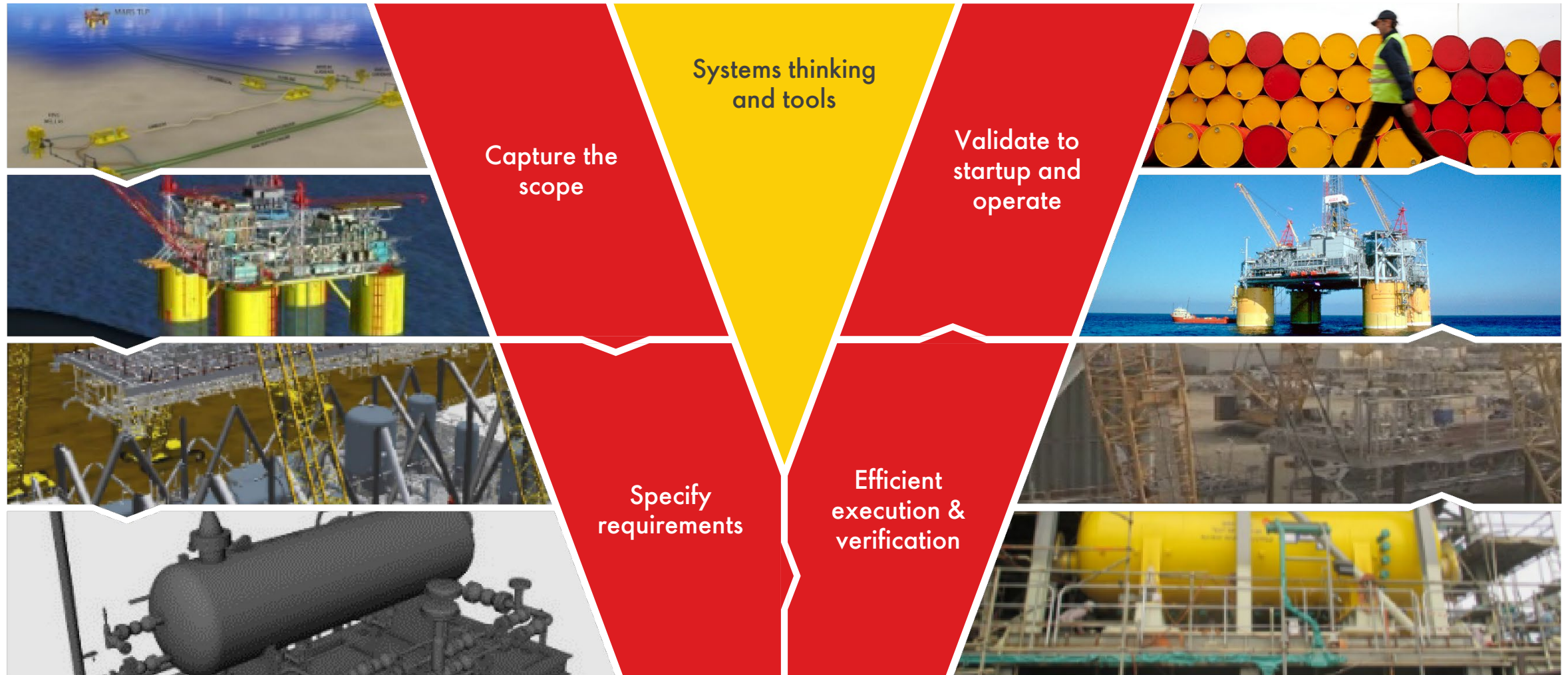
No long paragraphs



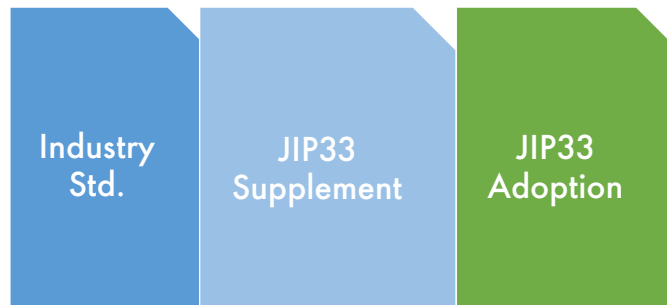
No mixing requirements



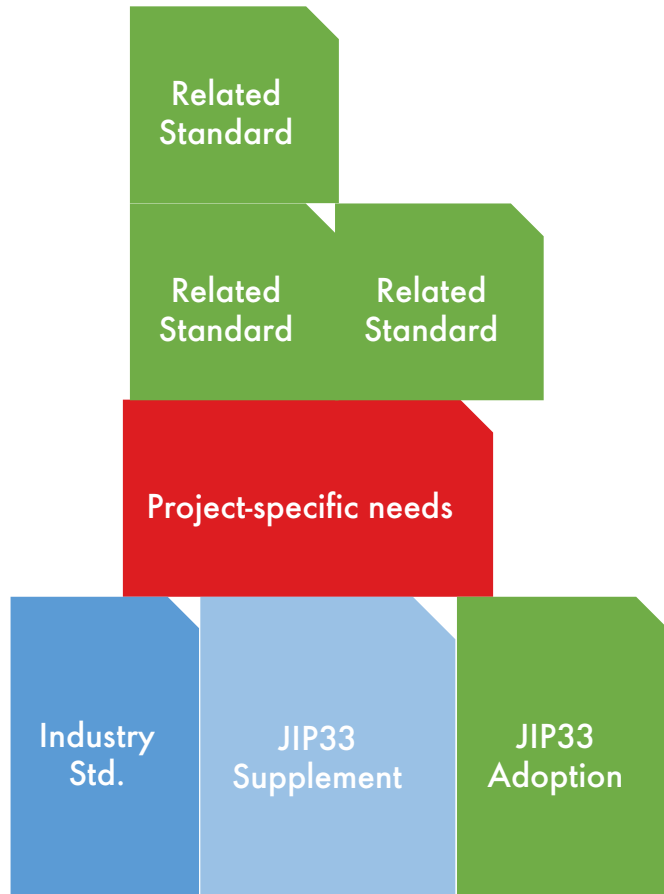
Systems Engineering transformation



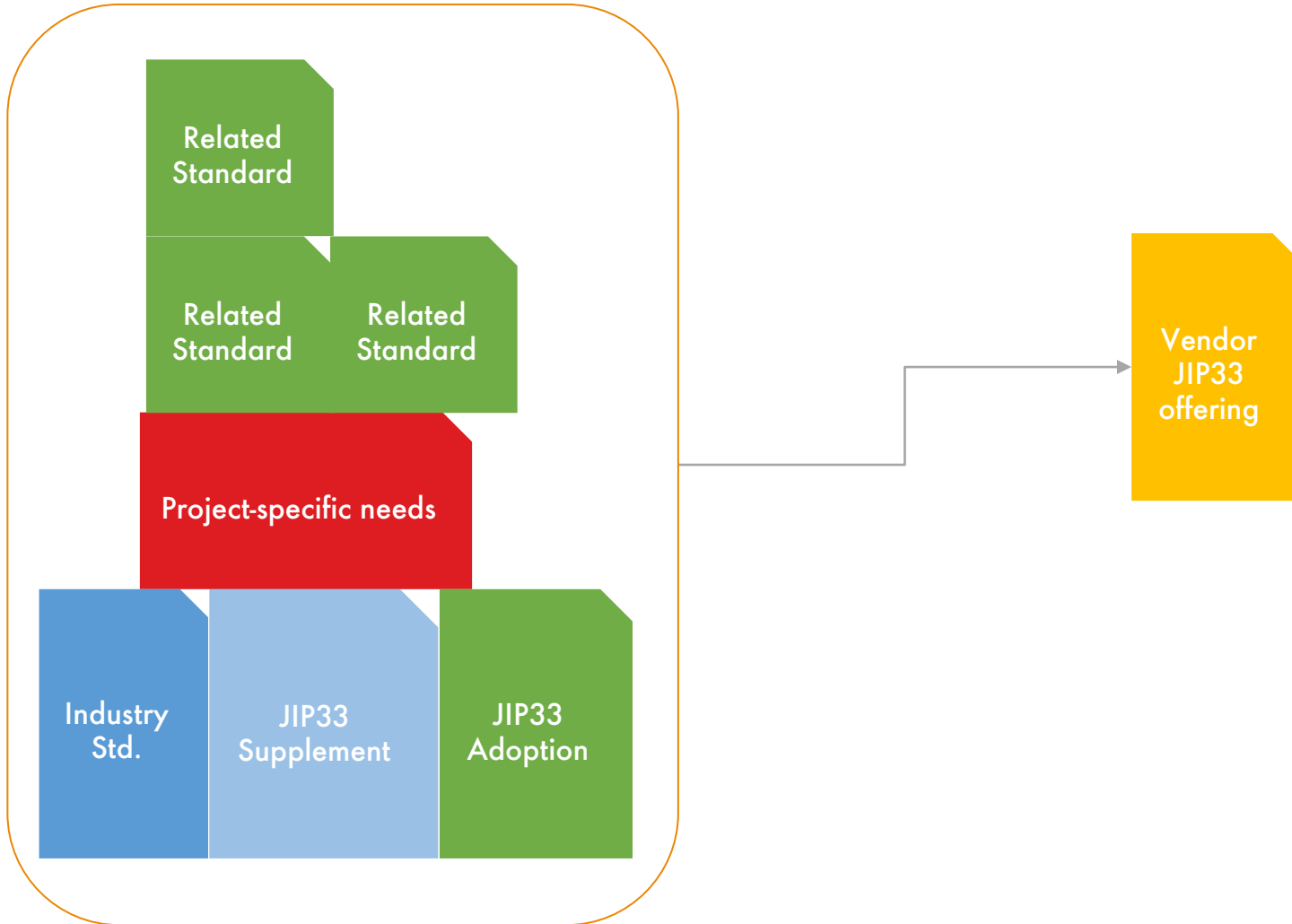
Project use of standards



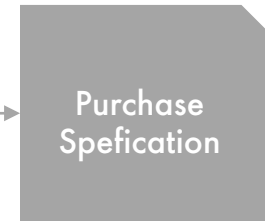
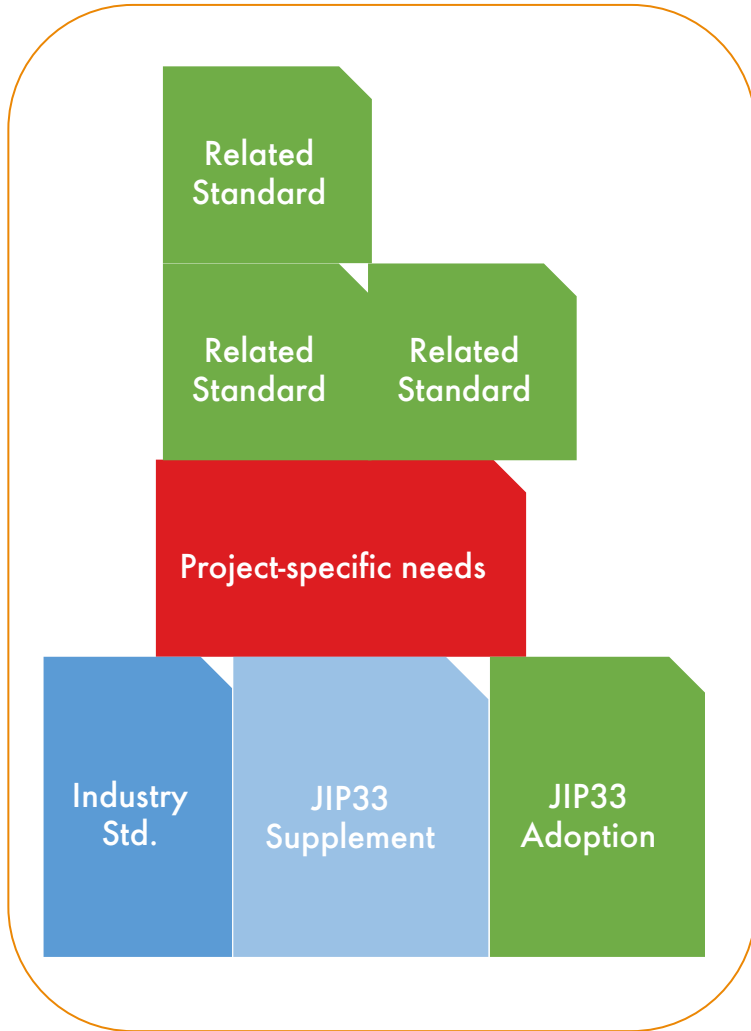
Project use of standards



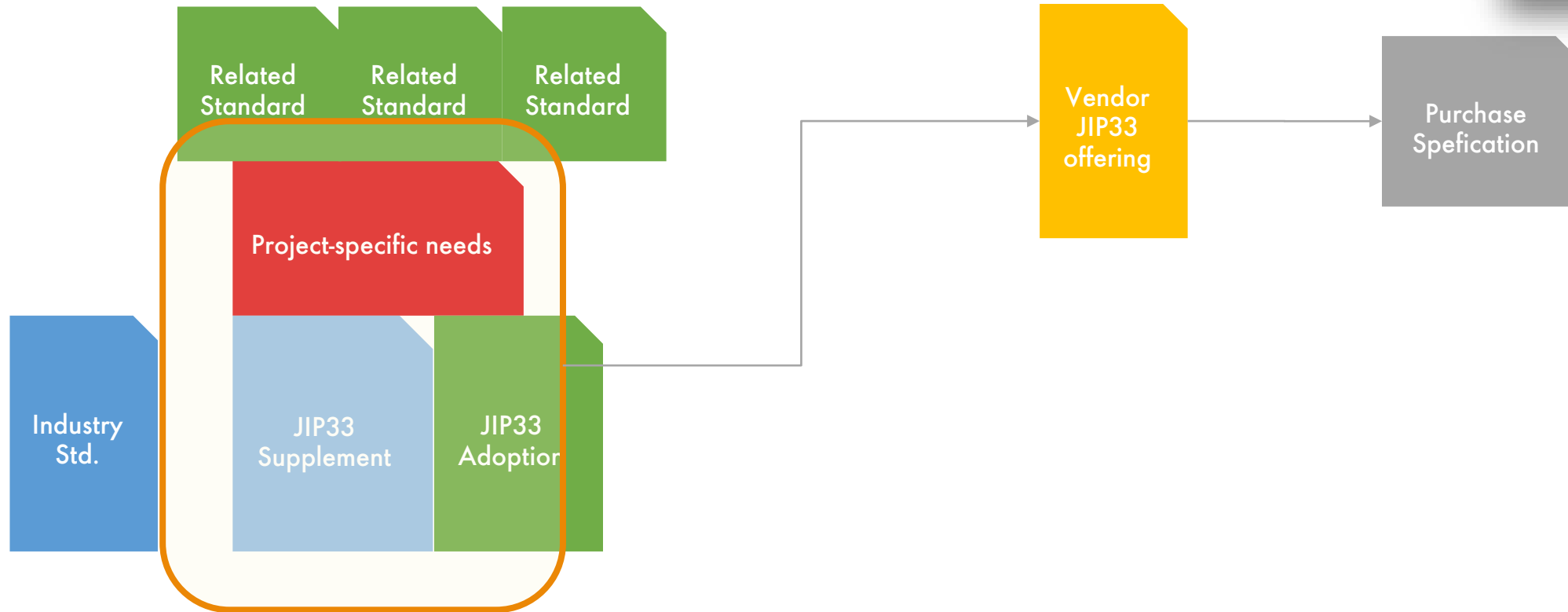
Project use of standards



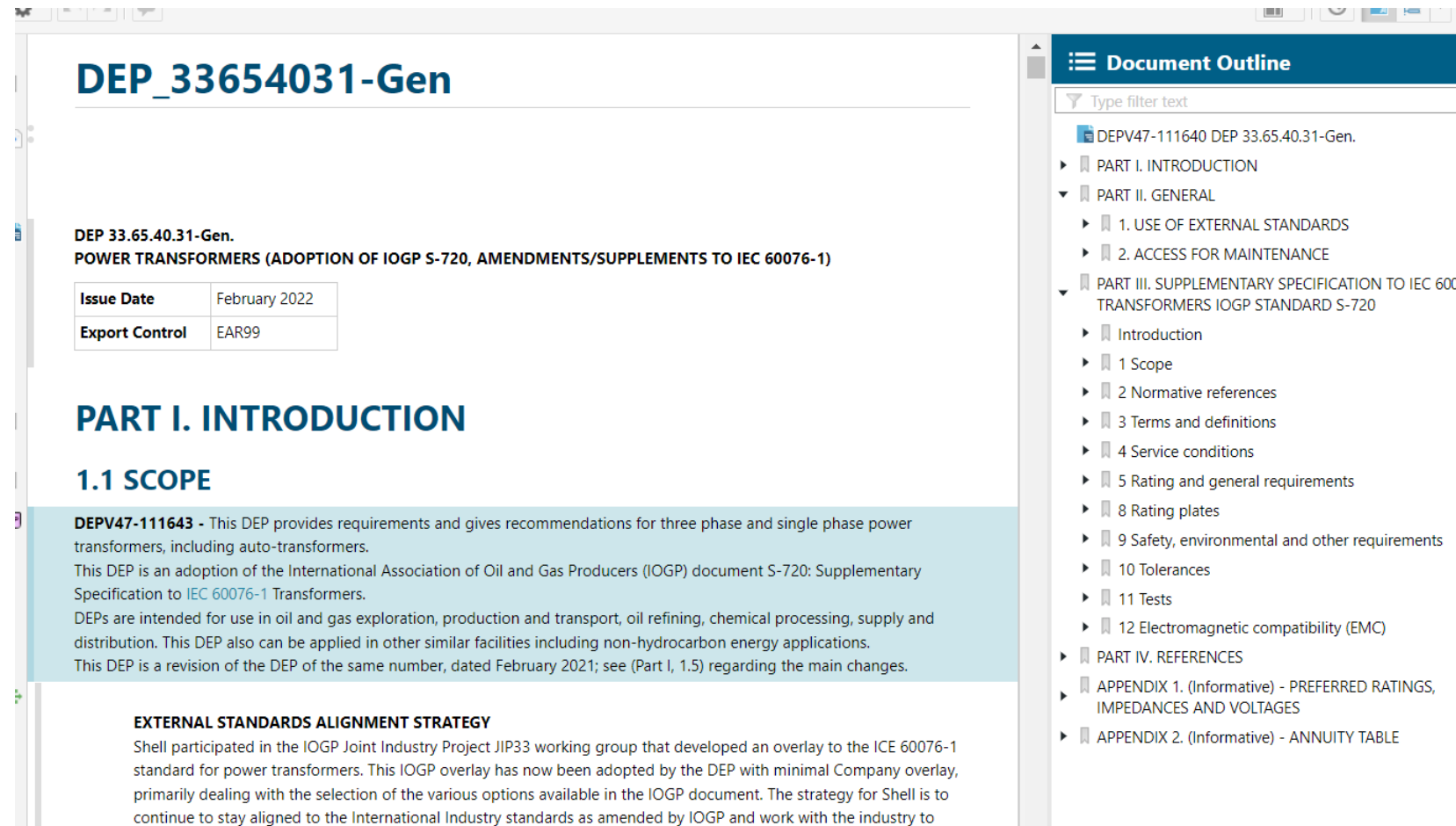
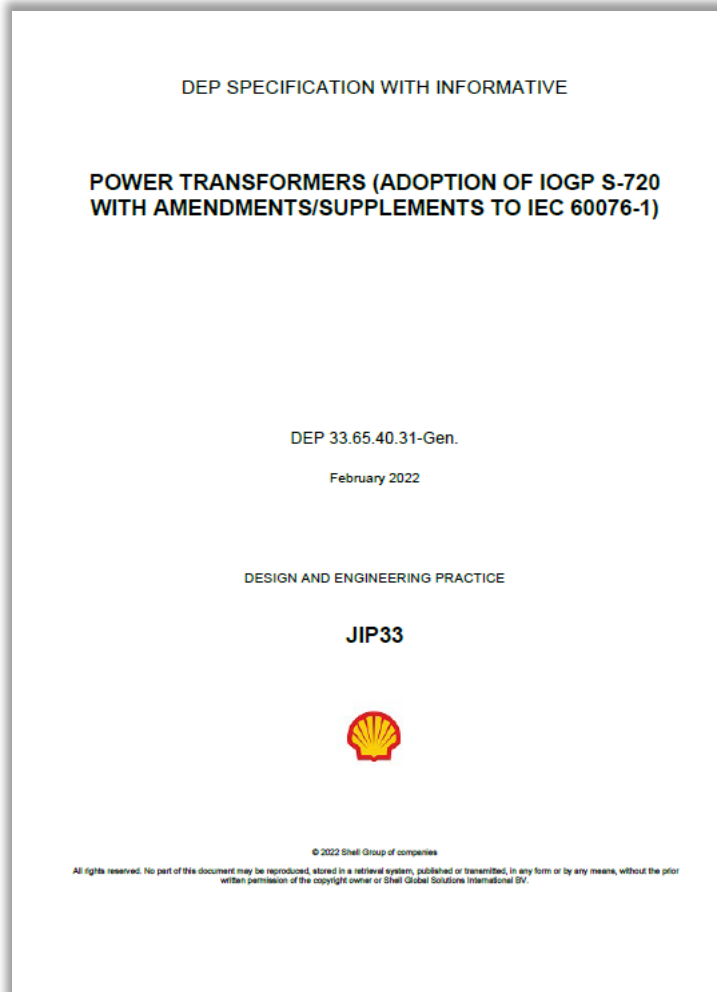
Project use of standards



Digital specification with the relevant requirements



JIP33 adoption in Shell standards – e.g. S-720 transformers



DEP_33654031-Gen

DEP 33.65.40.31-Gen.
POWER TRANSFORMERS (ADOPTION OF IOGP S-720, AMENDMENTS/SUPPLEMENTS TO IEC 60076-1)

Issue Date	February 2022
Export Control	EAR99

PART I. INTRODUCTION

1.1 SCOPE

DEPV47-111643 - This DEP provides requirements and gives recommendations for three phase and single phase power transformers, including auto-transformers. This DEP is an adoption of the International Association of Oil and Gas Producers (IOGP) document S-720: Supplementary Specification to IEC 60076-1 Transformers. DEPs are intended for use in oil and gas exploration, production and transport, oil refining, chemical processing, supply and distribution. This DEP also can be applied in other similar facilities including non-hydrocarbon energy applications. This DEP is a revision of the DEP of the same number, dated February 2021; see (Part I, 1.5) regarding the main changes.

EXTERNAL STANDARDS ALIGNMENT STRATEGY

Shell participated in the IOGP Joint Industry Project JIP33 working group that developed an overlay to the IEC 60076-1 standard for power transformers. This IOGP overlay has now been adopted by the DEP with minimal Company overlay, primarily dealing with the selection of the various options available in the IOGP document. The strategy for Shell is to continue to stay aligned to the International Industry standards as amended by IOGP and work with the industry to

Document Outline

Type filter text

- DEPV47-111640 DEP 33.65.40.31-Gen.
 - PART I. INTRODUCTION
 - PART II. GENERAL
 - 1. USE OF EXTERNAL STANDARDS
 - 2. ACCESS FOR MAINTENANCE
 - PART III. SUPPLEMENTARY SPECIFICATION TO IEC 60076-1 TRANSFORMERS IOGP STANDARD S-720
 - Introduction
 - 1 Scope
 - 2 Normative references
 - 3 Terms and definitions
 - 4 Service conditions
 - 5 Rating and general requirements
 - 8 Rating plates
 - 9 Safety, environmental and other requirements
 - 10 Tolerances
 - 11 Tests
 - 12 Electromagnetic compatibility (EMC)
 - PART IV. REFERENCES
 - APPENDIX 1. (Informative) - PREFERRED RATINGS, IMPEDANCES AND VOLTAGES
 - APPENDIX 2. (Informative) - ANNUITY TABLE

JIP33 adoption in Shell standards – e.g. S-720 transformers

DEP 33.65.40.31-Gen.
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Page 20

9.6.1.3

Where specified, pressure relief devices shall be provided with a facility for directing emissions of liquid from the relief device in the direction away from the transformer.

Justification: Added to ensure that emissions from the pressure relief device do not damage the transformer components.

9.6.1.4

Indicating instruments shall be accessible for maintenance without obstruction.

Justification: Added for ease of maintenance of indicating instruments without removal of other parts.

9.6.1.5

Indicating instruments shall be readable from ground level.

Justification: Indicating instruments should be readable without the need of elevated platform or ladder.

9.6.1.6

For the following applications, enclosures shall offer the specified degree of protection in accordance with [IEC 60529](#):

- Indoor- IP41, IP2X with the enclosure doors open;
- Outdoor - IP56.

Justification: Specified for protection of transformer enclosure from dust and water in various installation environments.

Shell adds the following Informative text:

The transformer datasheet DEP 33.65.40.93-Gen. includes the provision for providing anti-condensation heaters.

9.6.1.7

Access panels shall be provided for liquid immersed transformers and reactors for allowing maintenance of internal components, for example internals of cable boxes, OLTC contacts, main power bushings and current transformers.

Justification: Required for access to the following:

- o cable boxes for the connection between the cable and the bushing;
- o service to OLTC contacts inside the transformer tank;
- o service and replacement of bushings;

The screenshot displays a software interface for managing work items. The main area shows a list of items with their IDs and descriptions. The 'Work Item Properties' panel on the right provides detailed information for the selected item, DEP47-205158. The properties include the section number, ID, type (Requirement), satisfaction status, selection status, and document number. It also shows a list of links and parent/child relationships.

Work Item Properties

Section Number: SPECIFICATION TO IEC 60076-1 TRANSFORMERS IOGP STANDARD S-720 > 9 Safety, environmental and other requirements > Add new subclause > 9.6.1.6 Construction requirements > 9.6.1 General > 9.6.1.6

ID: DEP47-205158

Type: Requirement

Satisfaction Status:

Selection Status: Selected - Unmodified

Document Number: 33654031

Links

Edit Links

has parent

- DEPV47-205157 - 9.6.1.6

replaces

- DEPV46-205158 - For the following applications, enclosures shall offer the following degree of protection in accordance with IEC 60529:

is invoked by

- DEPV47-205139 - I

is parent of

- DEPV47-205159 - I
- DEPV47-216029 - I



is replaced by

- DEPV48-205158 - For the following applications, enclosures shall offer the following degree of protection in accordance with IEC 60529:

is complied by

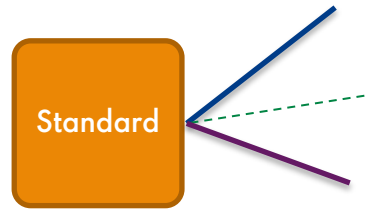
- CA1-580349 - For the following applications, enclosures shall offer the following degree of protection in accordance with IEC 60529:
- HL-218032 - For the following applications, enclosures shall offer the following degree of protection in accordance with IEC 60529:

Adopt Datasheets as Shell standard document with guidance

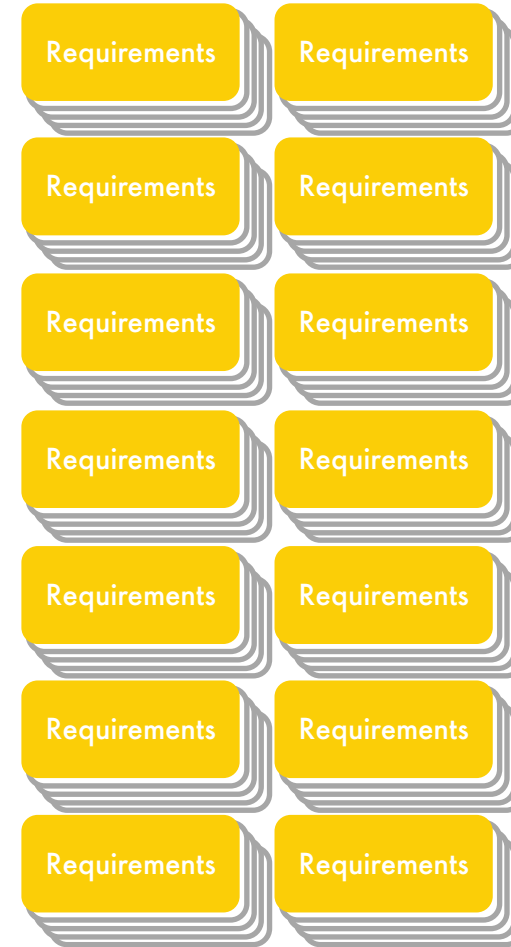
Row	 DEP 33.65.40.93-Gen.: S-720D Data Sheet for Transformers		 <small>JOINT INDUSTRY PROGRAMME</small>	
2	Tag No. :	<i>Insert Tag Number</i>		
3	Service :	<i>Insert Service Description</i>		
4	Ref. Clause	Description		
5	1. General			
6	Manufacturer :		Input Data	
7	Vendor :		Input Data	
8	Equipment identifier :		Input Data	
9	Quantity :		Input Data	
10	Type of dry type transformer :		Select	Shell default: cast resin encapsulated
11	4.1, 5.7.1, A.1.1 a) to x)	Service :	Select	
12		Conformity assessment system :	Select	
13	2. Environmental conditions			
14	5.5, A.1.1 a) to x)	Altitude (if more than 1000m or 3280ft) :	Input Data	Select
15	4.2 a) to e), 4.2 f, A.1.1 a) to x)	Minimum ambient temperature :	Input Data	Select
16	4.2 a) to e), 4.2 f, A.1.1 a) to x)	Maximum ambient temperature :	Input Data	Select
17	4.2 a) to e), A.1.1 a) to x)	Yearly average ambient temperature :	Input Data	Select
18	5.5, A.1.1 a) to x)	Design ambient temperature (if more than 40 °C or 104 °F) :	Input Data	Select
19	4.2 a) to e), 4.2 f, A.1.1 a) to x)	Relative humidity at maximum operating temperature (if more than 90 %) :	Input Data	%
20	4.2 h	Climatic class for dry type transformer as per IEC 60076-11 :	Select	
21	4.2 h	Environmental class for dry type transformer as per IEC 60076-11 :	Select	
22	4.2 h	Fire behavior class for dry type transformer as per IEC 60076-11 :	Select	Shell default: C5
23	9.6.18.1, 9.6.18.3	Corrosion class :	Select	
24	A.1.1 a) to x)	Seismic zone as per IEC 60721-2-6, Figure 5 :	Select	Shell default: outdoor
25	4.2 f, 4.2 i, 5.7.4.2,	Location :	Select	

Is the Standard like this?

Standard →

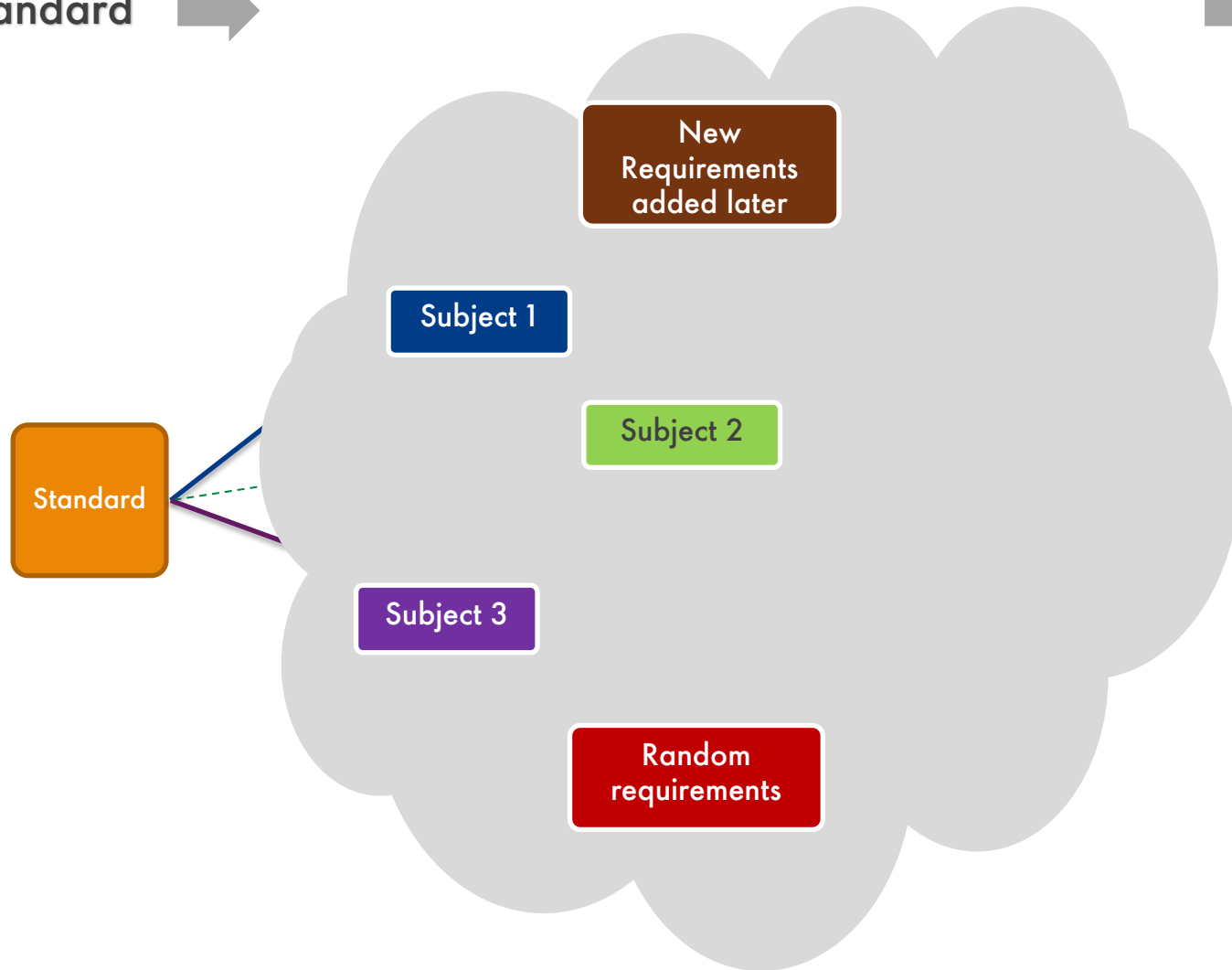


Requirements



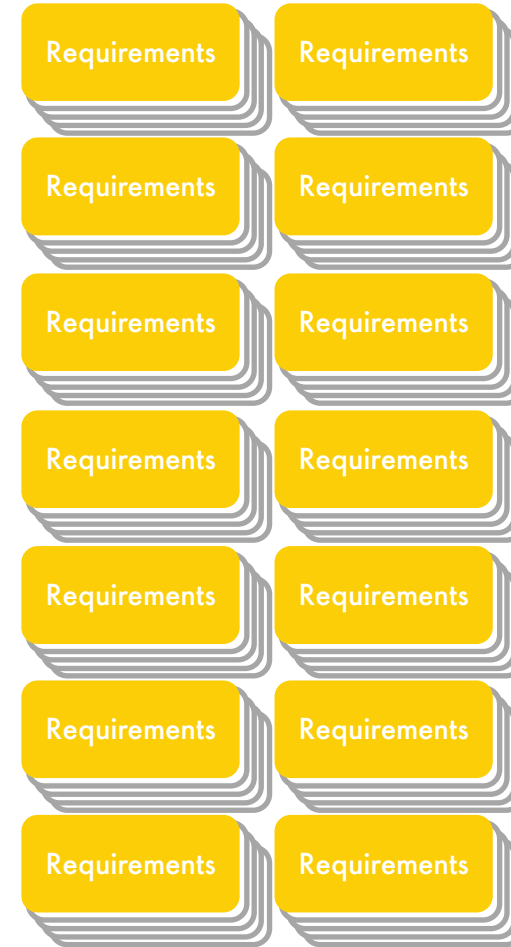
Is the Standard like this?

Standard →

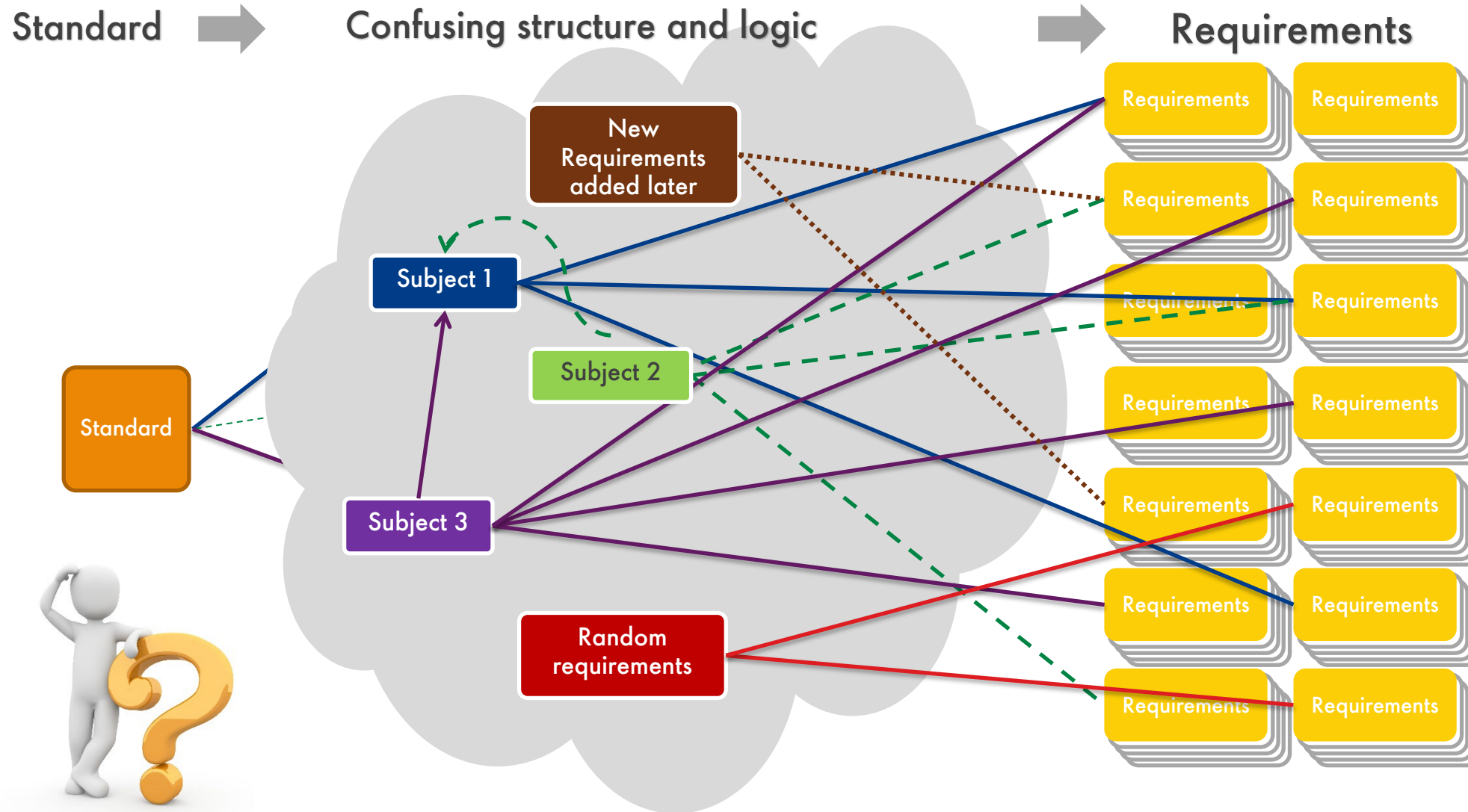


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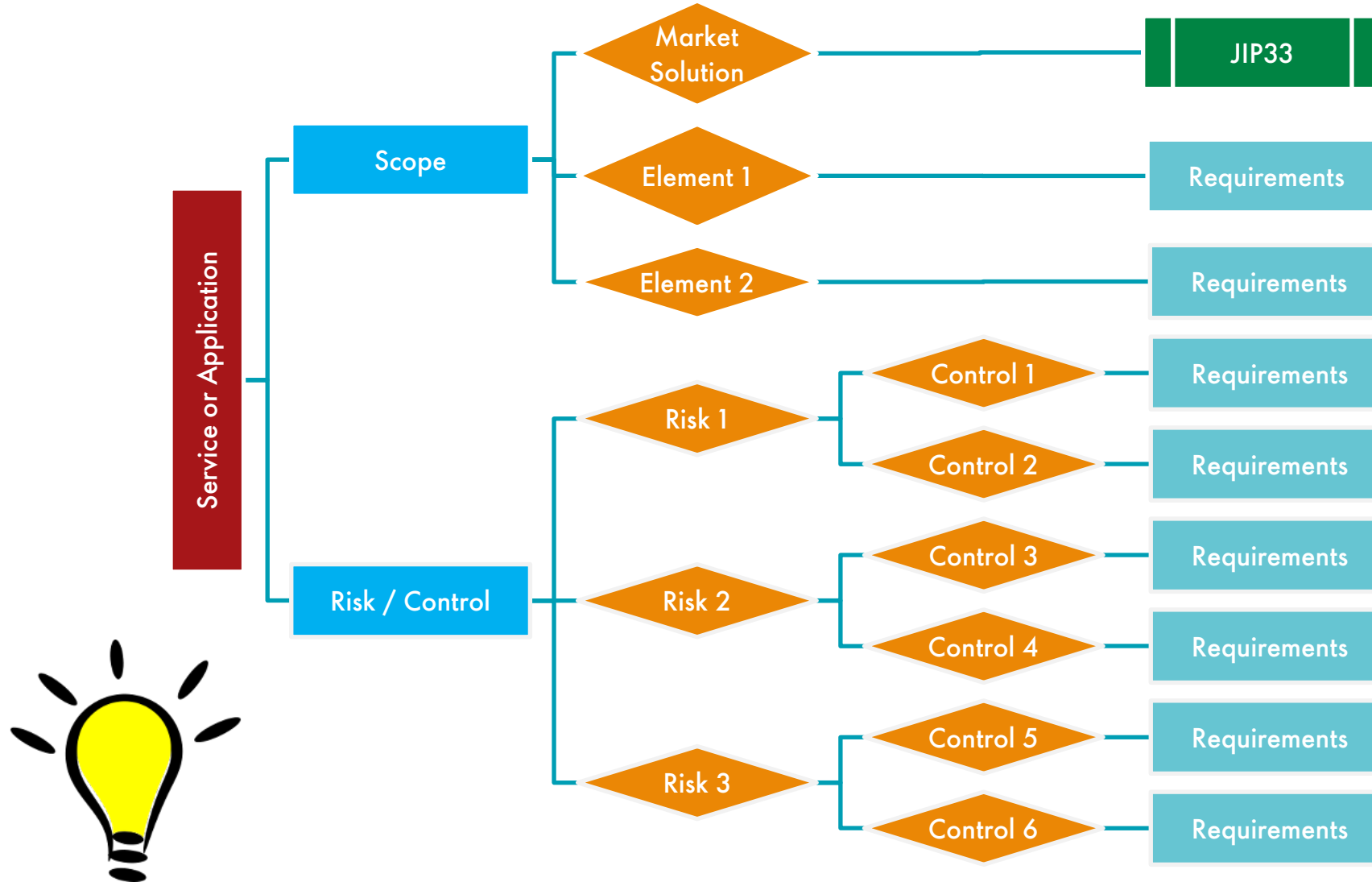
Requirements



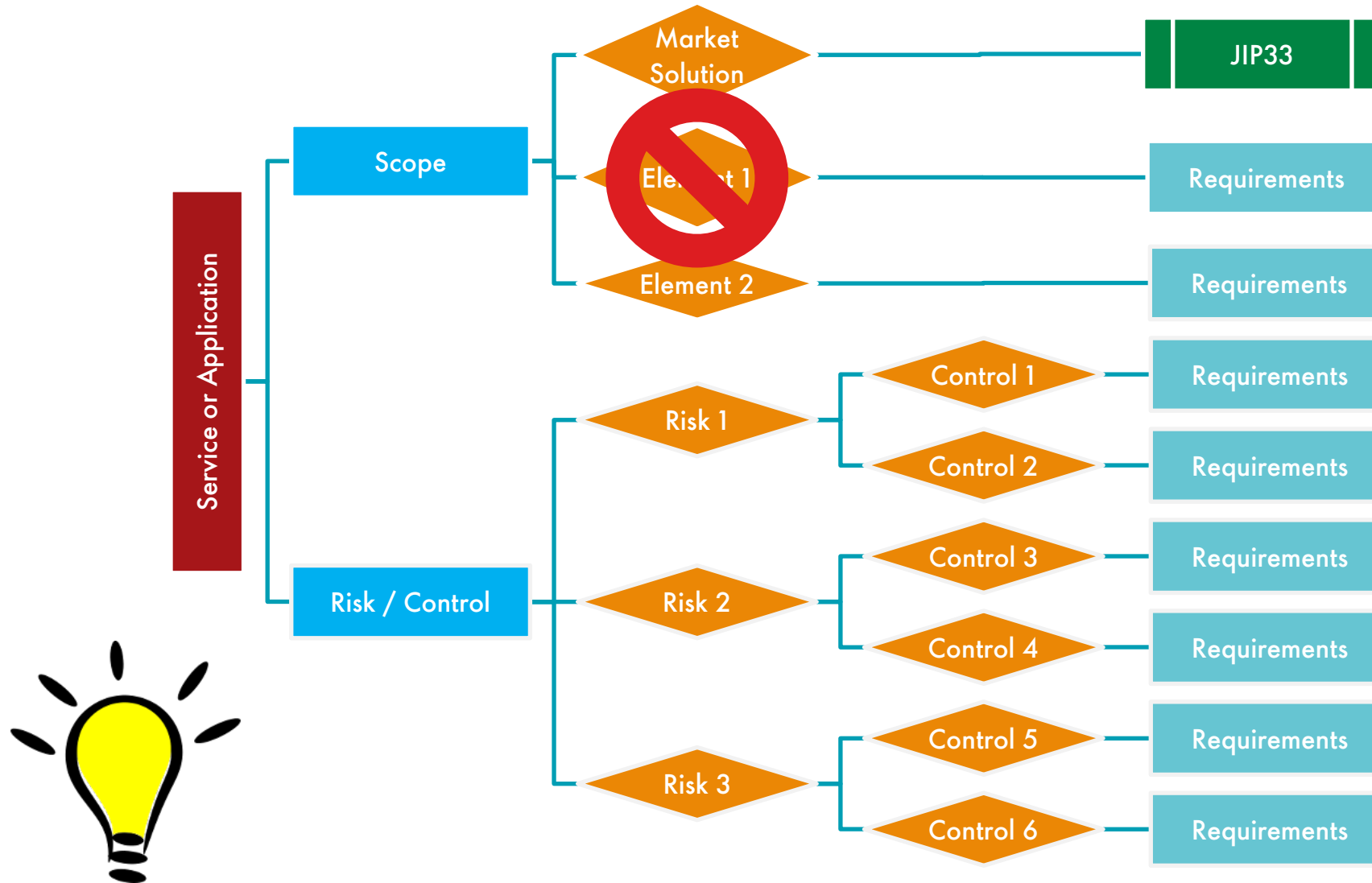
Is the Standard like this?



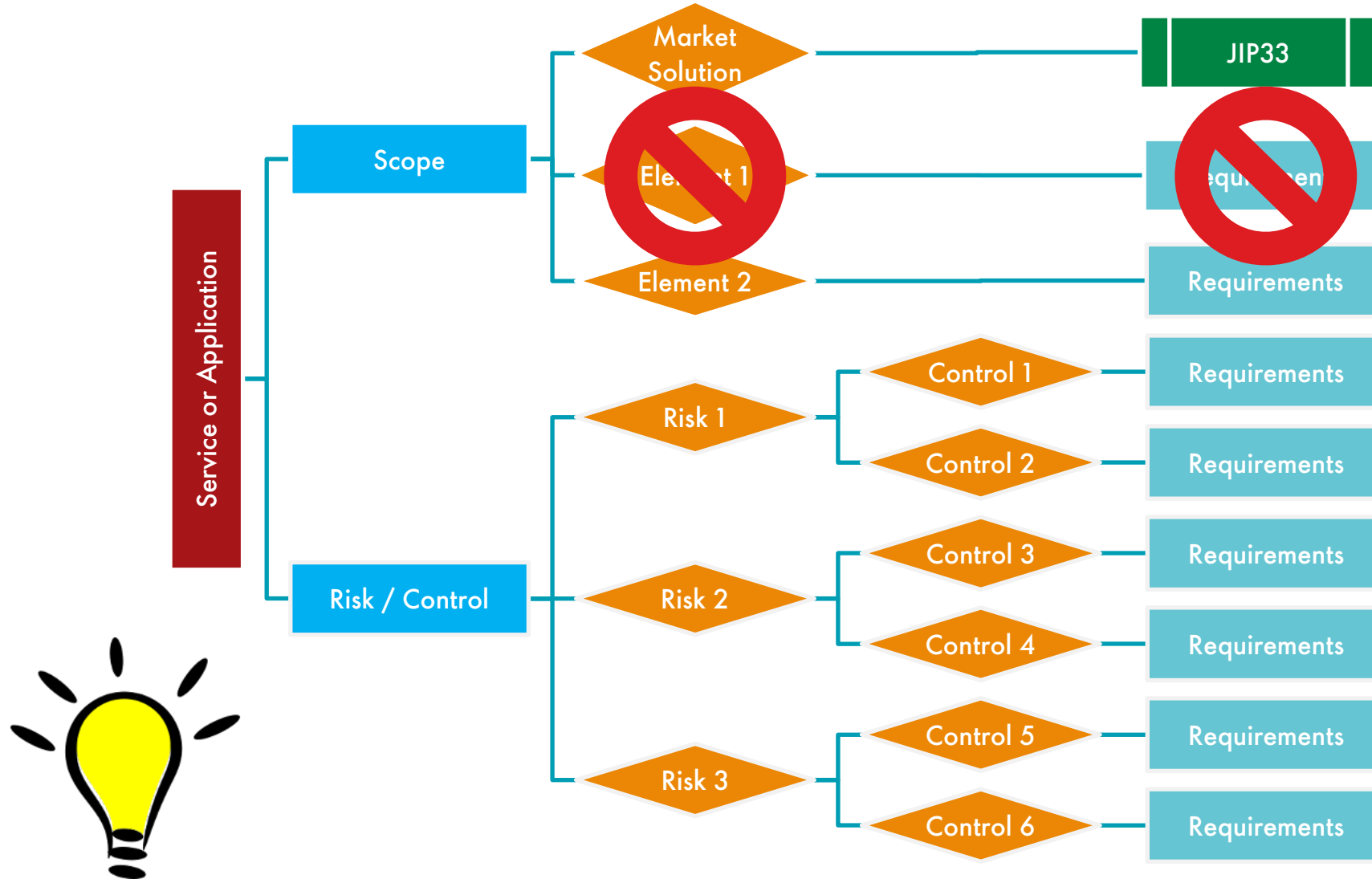
End Result



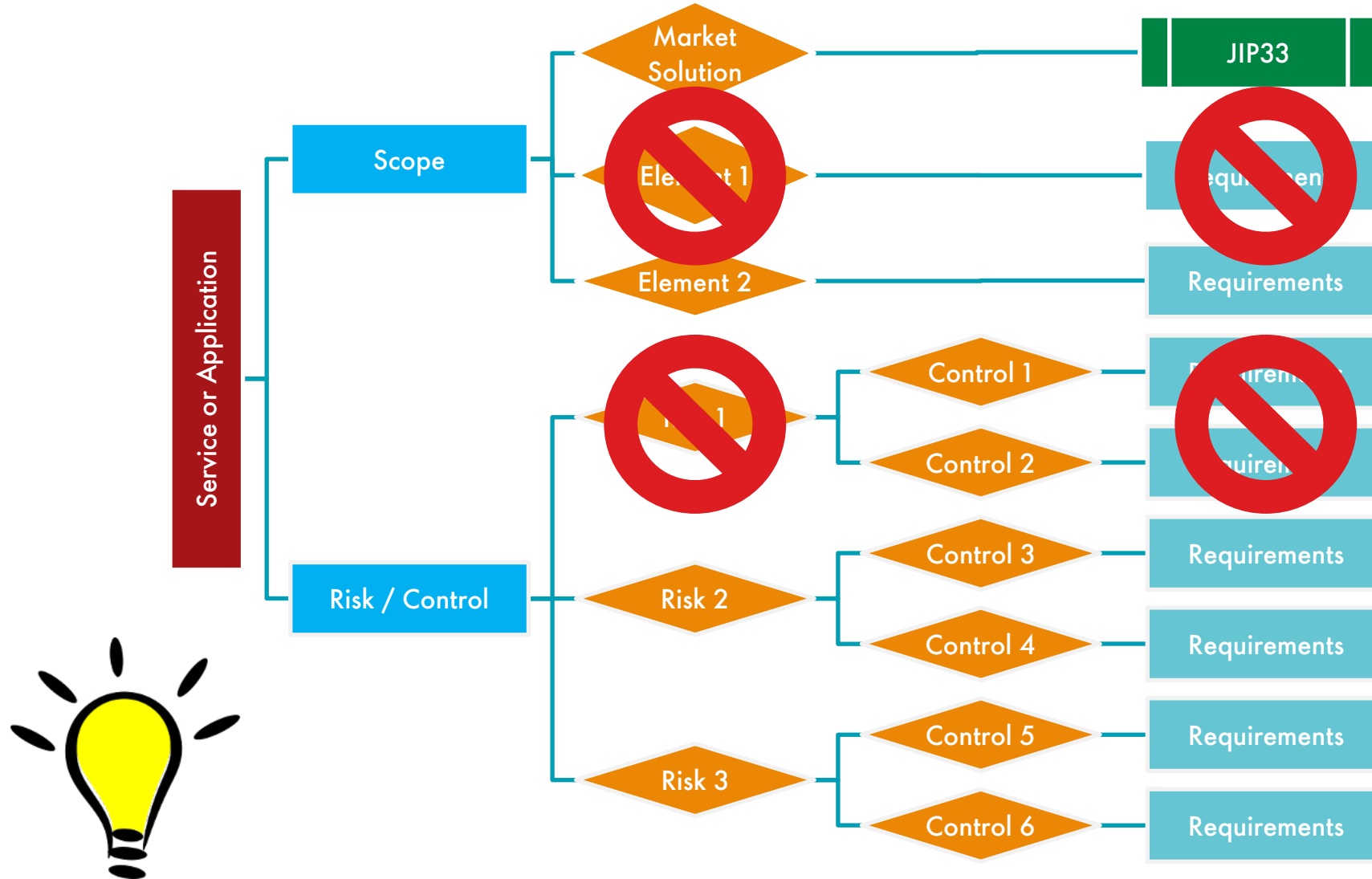
End Result



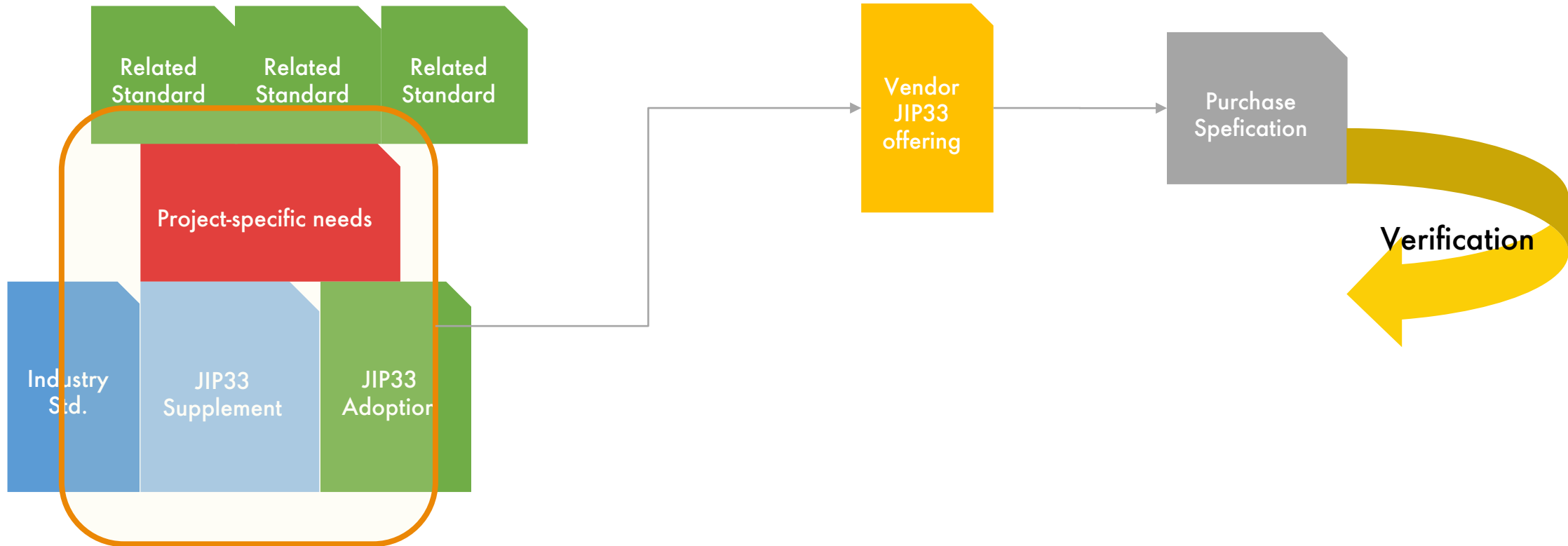
End Result



End Result



Digital standards would enable blended sets of requirements



Discussion



