



**WEAVING DIGITAL
STANDARDS DATA INTO
ENGINEERING WORKFLOW**

SWISS IS NOT...

- Standards aggregator
- Standards reseller
- Standards publisher
- Replacement for PDF

SWISS IS...

- Linked data platform
- Semantic Web
- Digital Thread
- Model Based Enterprise
- Web 3.0
- Industry 4.0
- IoT for Documents



First introduced

Becomes ubiquitous for standards delivery

1991

2001

1996

First industry standards in PDF format

2017

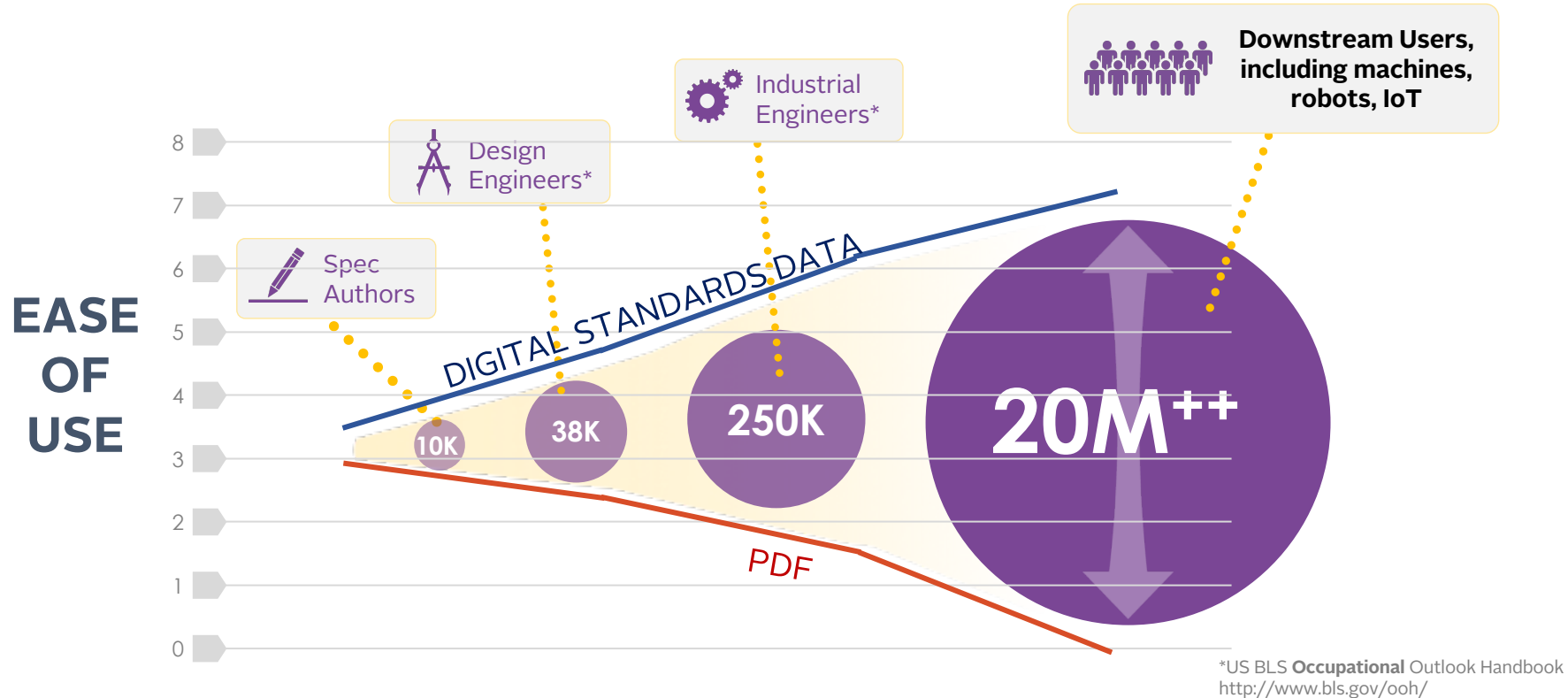
Still the de facto standard ;-(



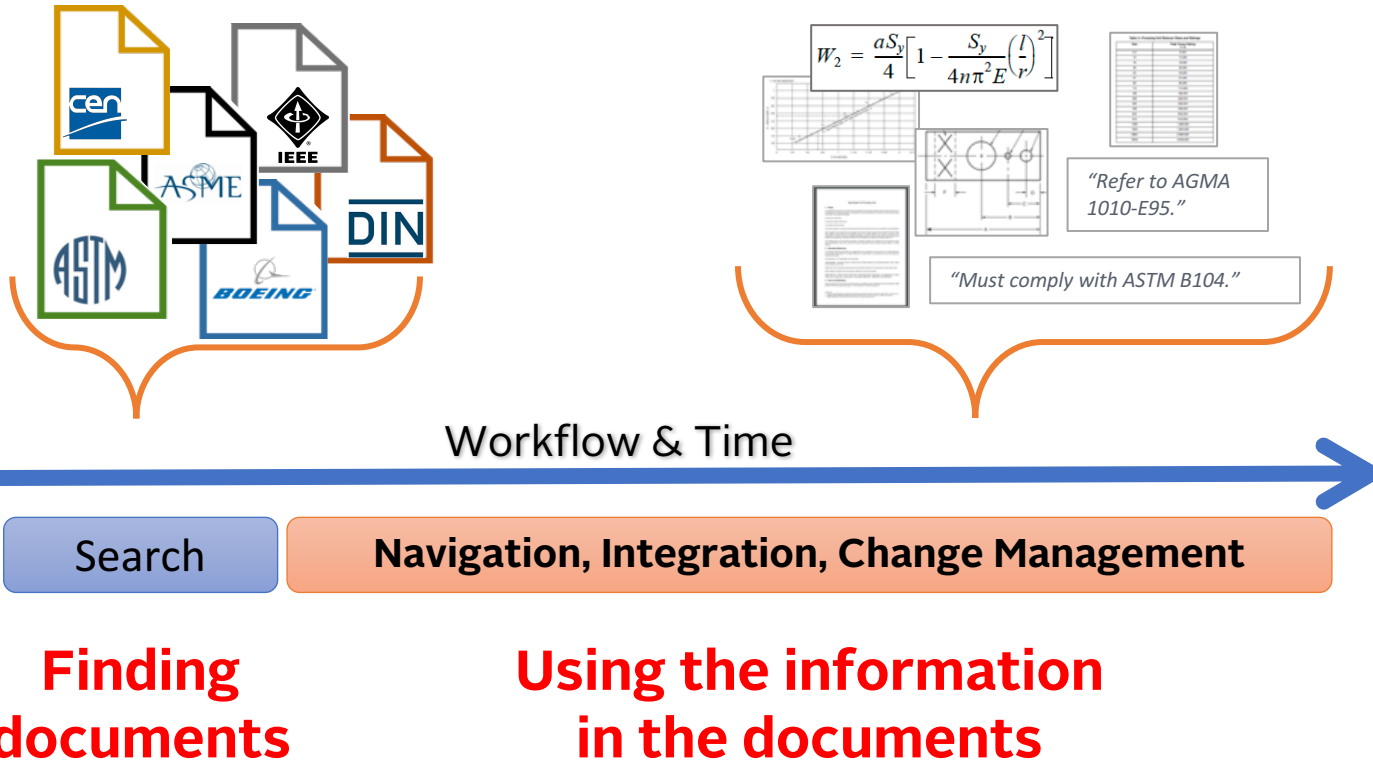
“Work instructions with change management”

iStock Photo522144912 thomas-bethge

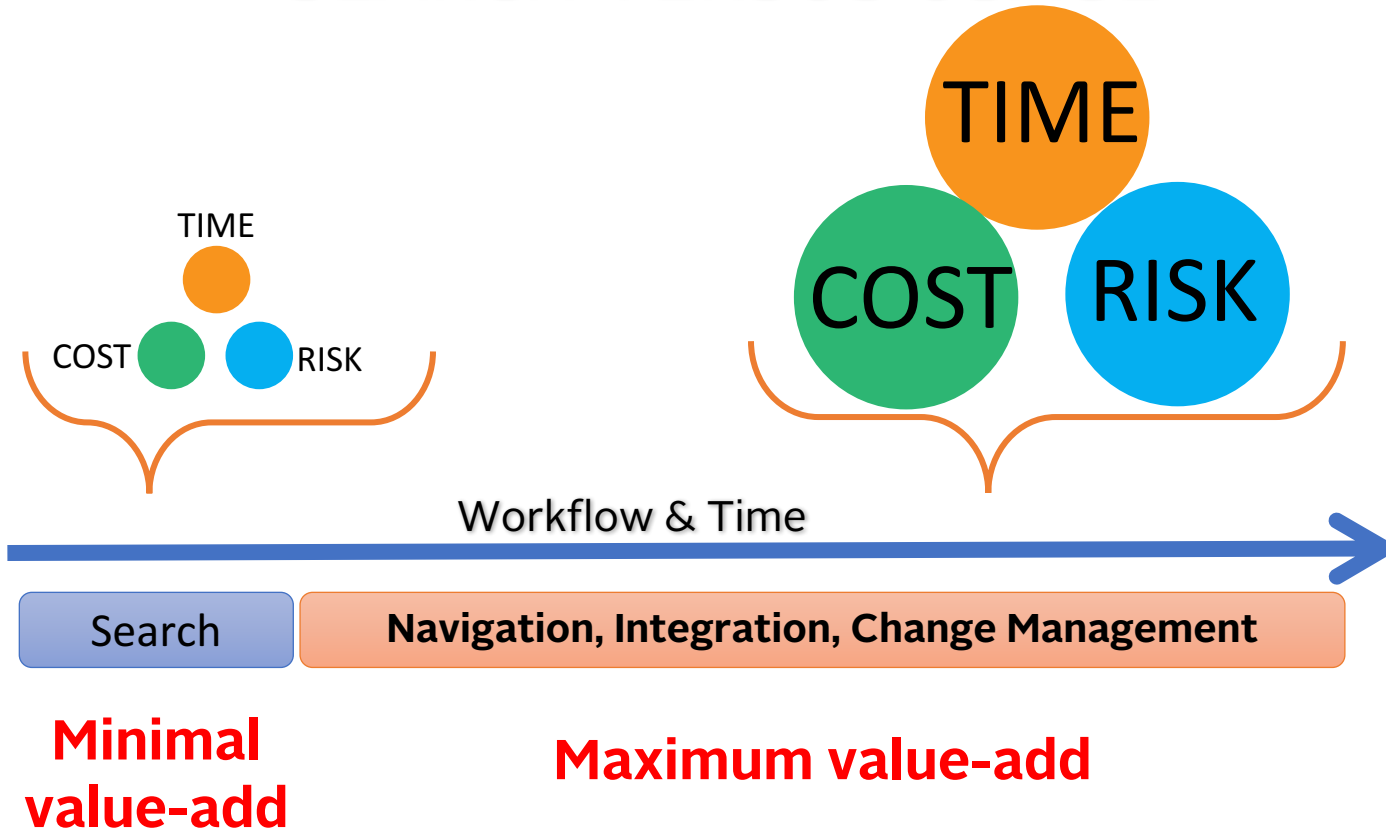
USABILITY OF PDF vs DIGITAL DATA



SEARCH VERSUS USAGE



SEARCH VERSUS USAGE



CURRENT PARADIGM: PRINT & PDF



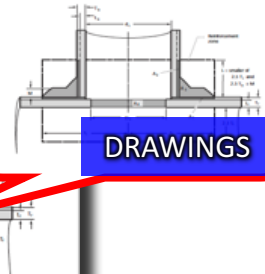
**Standards are published,
distributed, stored, and
shared as individual
documents...**

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BUT STANDARDS ARE USED LIKE DATA

$$W_2 = \frac{aS_y}{4} \left[1 - \frac{S_y}{4n\pi^2 E} \left(\frac{l}{r} \right)^2 \right]$$

EQUATIONS



DRAWINGS

ASTM A572-10
Standard Specification for High-Strength Low-Alloy Structural Steel Plates and Shapes

Table 3—Yield Strength Factor, K_1

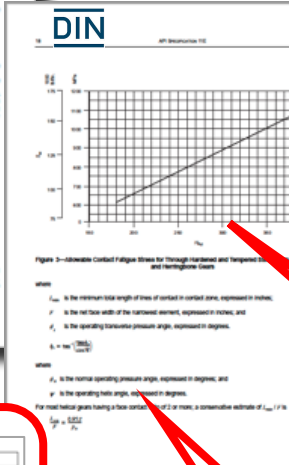
Material	K_1
Steel (except titanium)	1.00
Aluminum alloy	0.80
Steel (except titanium)	0.80
Steel (cold-chamber casted)	1.25
Steel (annealed)	0.85
Cold-rolled	0.75
Aluminum alloy	1.00

"Go to Section 4.2.4."

INTERNAL LINKS

Size	Peak Service Rating
6x4	1.75
8x6	2.25
10x8	2.75
12x10	3.25
14x12	3.75
16x14	4.25
18x16	4.75
20x18	5.25
22x20	5.75
24x22	6.25
26x24	6.75
28x26	7.25
30x28	7.75
32x30	8.25
34x32	8.75
36x34	9.25
38x36	9.75
40x38	10.25
42x40	10.75
44x42	11.25
46x44	11.75
48x46	12.25
50x48	12.75
52x50	13.25
54x52	13.75
56x54	14.25
58x56	14.75
60x58	15.25
62x60	15.75
64x62	16.25
66x64	16.75
68x66	17.25
70x68	17.75
72x70	18.25
74x72	18.75
76x74	19.25
78x76	19.75
80x78	20.25
82x80	20.75
84x82	21.25
86x84	21.75
88x86	22.25
90x88	22.75
92x90	23.25
94x92	23.75
96x94	24.25
98x96	24.75
100x98	25.25
102x100	25.75
104x102	26.25
106x104	26.75
108x106	27.25
110x108	27.75
112x110	28.25
114x112	28.75
116x114	29.25
118x116	29.75
120x118	30.25
122x120	30.75
124x122	31.25
126x124	31.75
128x126	32.25
130x128	32.75
132x130	33.25
134x132	33.75
136x134	34.25
138x136	34.75
140x138	35.25
142x140	35.75
144x142	36.25
146x144	36.75
148x146	37.25
150x148	37.75
152x150	38.25
154x152	38.75
156x154	39.25
158x156	39.75
160x158	40.25
162x160	40.75
164x162	41.25
166x164	41.75
168x166	42.25
170x168	42.75
172x170	43.25
174x172	43.75
176x174	44.25
178x176	44.75
180x178	45.25
182x180	45.75
184x182	46.25
186x184	46.75
188x186	47.25
190x188	47.75
192x190	48.25
194x192	48.75
196x194	49.25
198x196	49.75
200x198	50.25

TABLES



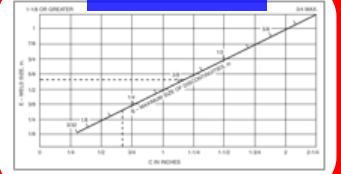
EXTERNAL REFERENCES

"Must comply with API 650."

ASME Section VIII, Division 1
Figure 4.4 Reinforcement of Branch Connections

4.3.4.5.5 Reinforcement of Multiple Openings

GRAPHS



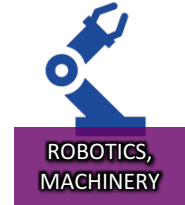
DATA IS INTEGRATED DOWNSTREAM

Copy/Paste

"Do not exceed weight limits expressed in ASTM B104."

"Refer to AGMA 1010-E95."

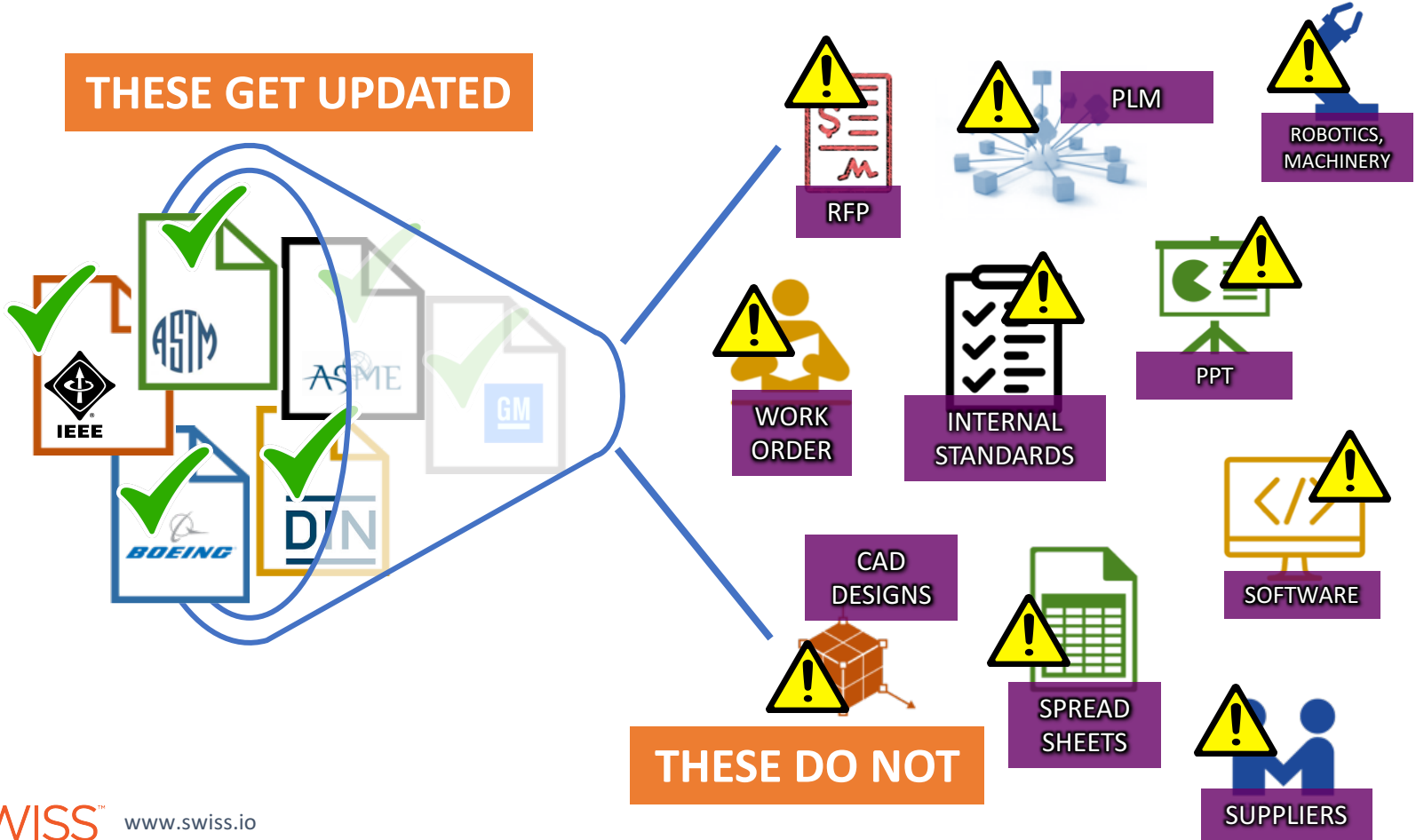
$$W_2 = \frac{aS_y}{4} \left[1 - \frac{S_y}{4n\pi^2 E} \left(\frac{l}{r} \right)^2 \right]$$



Manually Rekey



CHANGE MANAGEMENT IS INEFFICIENT



LOTS OF REFERENCES, NO LINKS

4.7.4 Burst pressure

Burst pressure testing shall be conducted in accordance with ASTM D380 of the test samples that were subjected to the leakage test (see 4.7.3). The test samples shall be observed throughout the test for evidence of leakage or failure. Requirements shall be as specified in 3.7.3.

4.7.5 Low temperature flexibility

The low temperature flexibility test shall be determined in accordance with the low temperature test described in ASTM D380 (see 4.7.2). Requirements shall be as specified in 3.7.4.

4.7.6 Over-tightening torque

Two adapter assemblies of each size shall be tested in accordance with SAE-ARP908. Requirements shall be as specified in 3.7.5.

4.7.7 Verification of fitting plating thickness for aluminum-nickel, cadmium, or zinc (see 3.5.1)

Verification of under plating and finish plating shall be measured in accordance with ASTM B499, ASTM B567, or ASTM B568. A cross-sectioning method, such as that specified by ASTM B487 or ASTM B748, can also be used as a referee method to confirm the precision when thicknesses of 30 microinches (0.76 μm) or above are used. The zinc plating thickness may also be measured in accordance with ASTM B633 or ASTM B695 as applicable. The plating requirements shall meet the requirements of 3.5.1. The following details shall apply:

- a. When applicable a minimum of three points shall be measured on the fitting surface. The fitting may be rotated, but measurement points shall be progressively further from the last point.
- b. Readings shall not be averaged. Measurements shall be as follows:
 - One measurement shall be taken at a point on the front and rear.
 - (2) Three measurements shall be taken in the middle areas.

DISCONNECTED SILOS

INTERNAL



EXTERNAL



GOALS OF NEXT GENERATION SOLUTION

1. **Interoperability** – Seamlessly move between content
2. **Seamless and Trackable Integration** – Move data anywhere
3. **Omni-Fidelity, Change-Aware** – Always current data
4. **Contextual Intelligence** – Data linked at concept level
5. **Comparison-Capable** – Knows differences between A and A.1

GO FROM THIS...

4.7.4 Burst pressure

Burst pressure testing shall be conducted in accordance with ASTM D380 on the test samples that were subjected to the leakage test (see 4.7.3). The test samples shall be observed throughout the test for evidence of leakage or failure. Requirements shall be as specified in 3.7.3.

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The low temperature flexibility test shall be determined in accordance with the low temperature test described in ASTM D380 (see 4.7.2). Requirements shall be as specified in 3.7.4.

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- b. Readings shall not be averaged. Measurements shall be as follows:
 - One measurement shall be taken at a point on the front and rear.
 - (2) Three measurements shall be taken in the middle areas.

...TO THIS

4.7.4 Burst pressure

Burst pressure testing shall be conducted in accordance with [ASTM D380](#) on the test samples that were subjected to the leakage test (see [4.6.3](#)). The test samples shall be observed throughout the test for evidence of leakage or failure. Requirements shall be as specified in [3.6.3](#).

4.7.5 Low temperature flexibility

The low temperature flexibility test shall be determined in accordance with the low temperature test described in [ASTM D380](#) (see [4.7.2](#)). Requirements shall be as specified in [3.6.4](#).

4.7.6 Over-tightening torque

Two adapter assemblies of each size shall be tested in accordance with [SAE-ARP908](#).

4.7.7 Verification of fitting plating thickness for aluminum-nickel, cadmium, or zinc (see [3.5.1](#))

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- a. When applicable a minimum of three points shall be measured on the fitting surface. The fitting may be rotated, but measurement points shall be progressively further from the last point.
- b. Readings shall not be averaged. Measurements shall be as follows:
 - (1) One measurement shall be taken at a point on the front and rear.
 - (2) Three measurements shall be taken in the middle areas.

CONTEXTUAL INTELLIGENCE

Take users exactly where they need to go.

4.7.4 Burst Pressure

Burst pressure testing shall be conducted in accordance with **ASTM D380** on the test samples that were subjected....

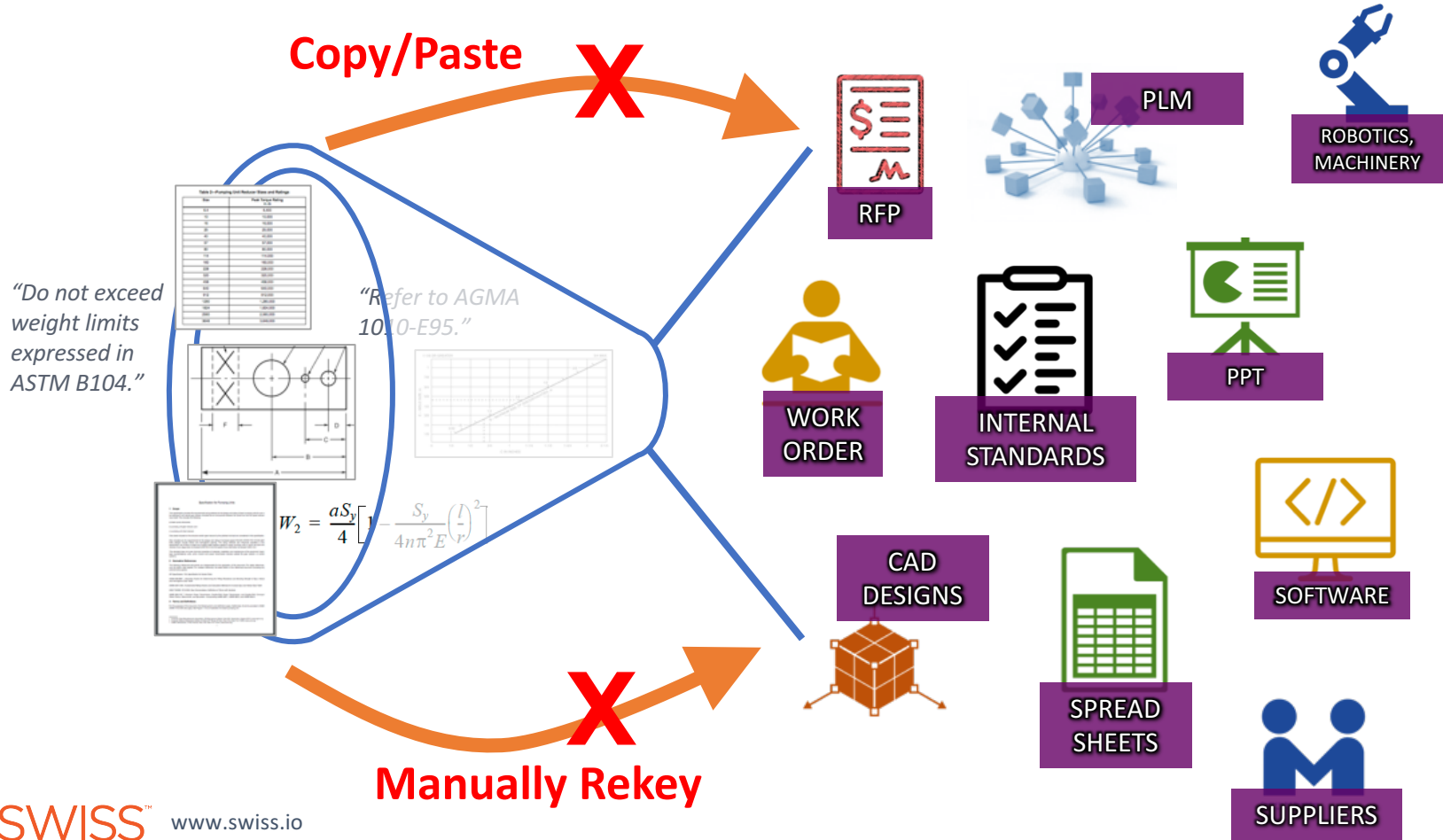
Top of ASTM D380

Section 16 Bursting Tests

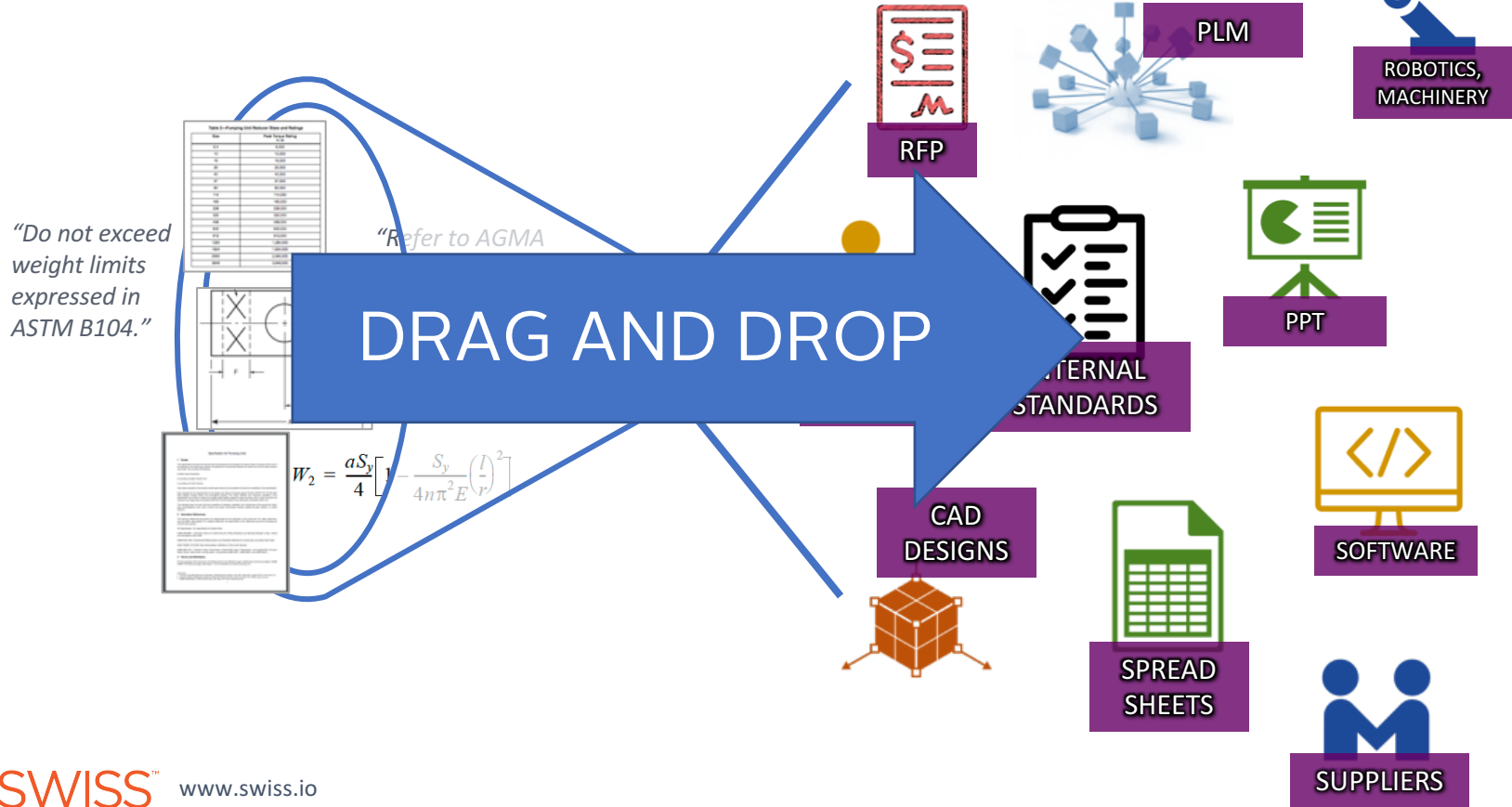
Section 16.3 Curved Bursting Tests

Section 16.7 Lateral Bursting Tests

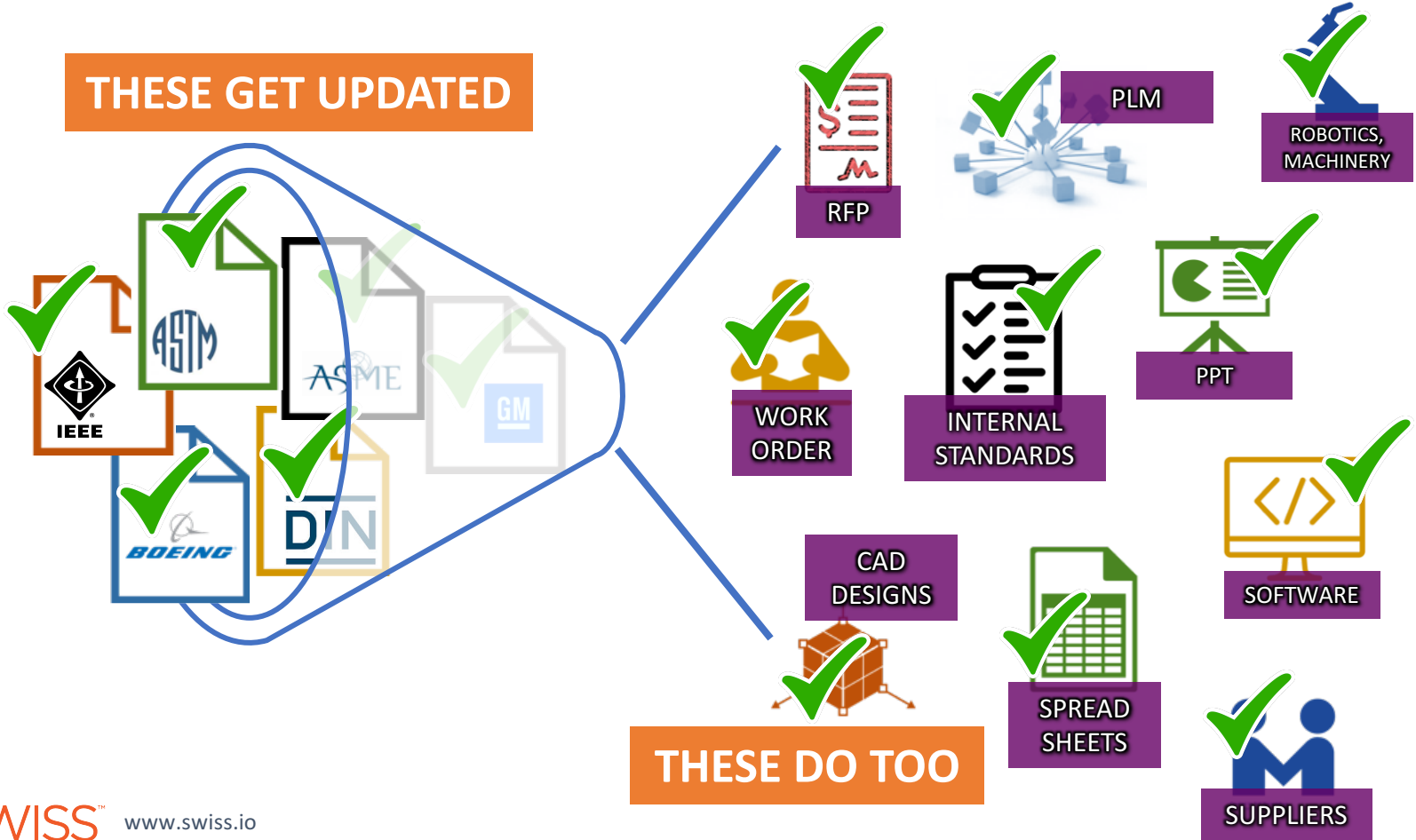
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MOVE DATA INSTANTLY, ANYWHERE



NOW, CHANGE MANAGEMENT IS AUTOMATIC



EXPORT TO EXCEL

Right-click

Export Table to Excel

TABLE III Performance characteristics

Adapter assembly size	Operating pressure, max psi (MPa)	Proof pressure, min psi (MPa)	Burst pressure, min psi (MPa)	Bend radius (inside of bend), min inch (mm)
-2	300 (2.07)	600 (4.14)	2000 (13.79)	2 (50.80)
-3	250 (1.72)	500 (3.45)	1700 (11.72)	2 (50.80)
-4	200 (1.38)	400 (2.76)	1250 (8.62)	4 (101.60)
-6	150 (1.03)	300 (2.07)	1000 (6.89)	4 (101.60)
-8	150 (1.03)	250 (1.72)	750 (5.17)	6 (152.40)
-10	150 (1.03)	250 (1.72)	700 (4.83)	6 (152.40)

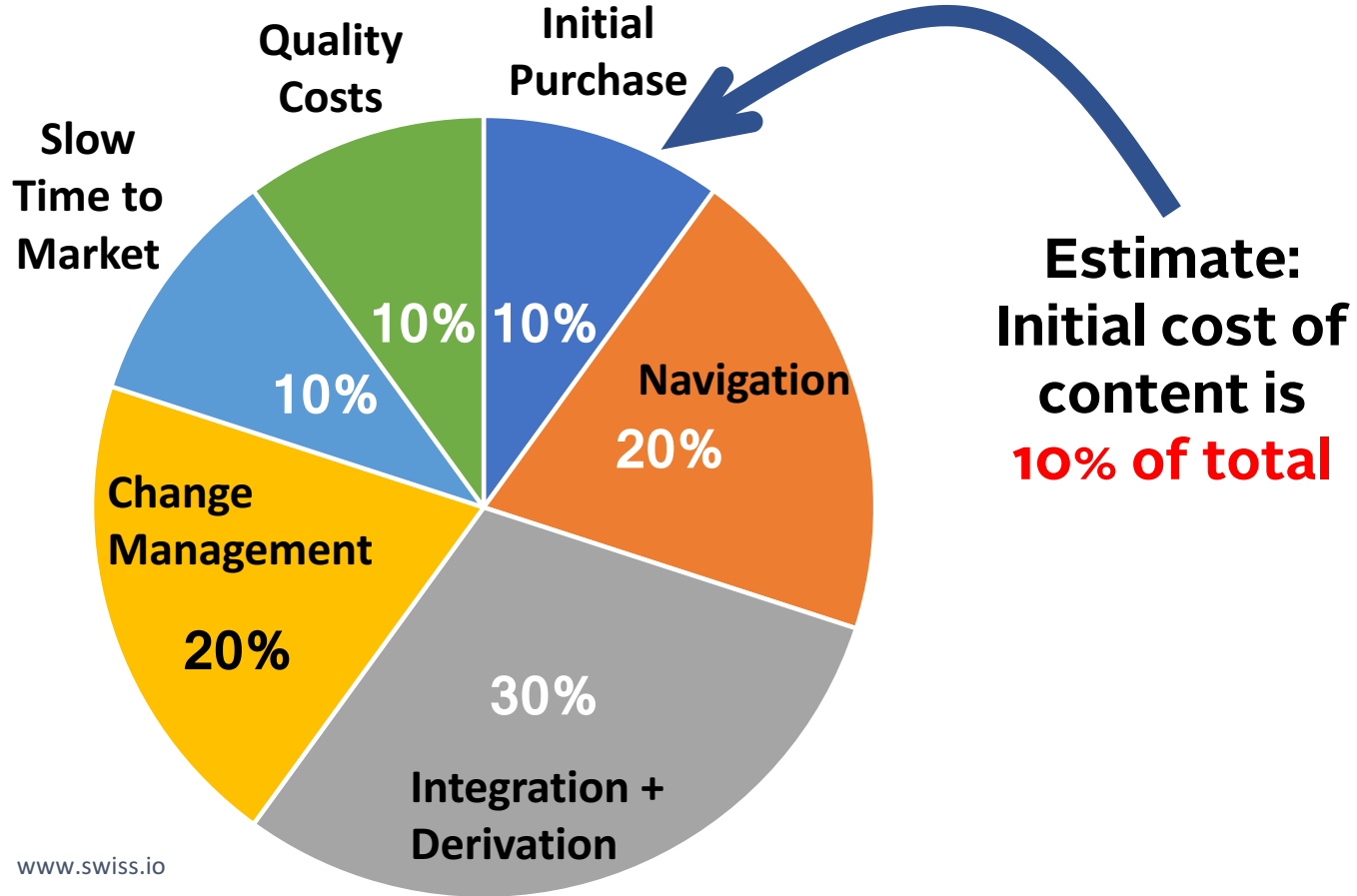
3.7.4 Low temperature flexibility

When tested as specified in 4.7.5 , there shall be no evidence of leakage from the adapter assembly.

3.7.5 Over-tightening torque

When tested as specified in 4.7.6 , there shall be no evidence of failure of the adapter assembly or difficulty in turning the swivel nut on the nipple by hand.

TOTAL COST OF OWNERSHIP (TCO)



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