

robustdetails®



Professor Sean Smith

Director of Institute for Sustainable Construction, Edinburgh Napier University

www.napier.ac.uk/isc

Email: se.smith@napier.ac.uk

Senior Acoustic Consultant

RMP Acoustics

www.rmp.biz





Overview

- Brief update on ISC and new structures
- Wall and floor construction systems
- Offsite
- Part L v Part E – technical clashes?
- COST Action TU0901
- Future “rating” classifications from ISO for sound insulation
- ISO 717.....all change?



Brief update on ISC and new structures

- Scottish Energy Centre
- Building Performance Centre
- Centre for Offsite Construction
- Centre for Sustainable Communities
- Centre for Geotechnics
- Robin Mackenzie Partnership (RMP)



New Centre Additions...

Wood Studio

Centre for Wood Science & Technology

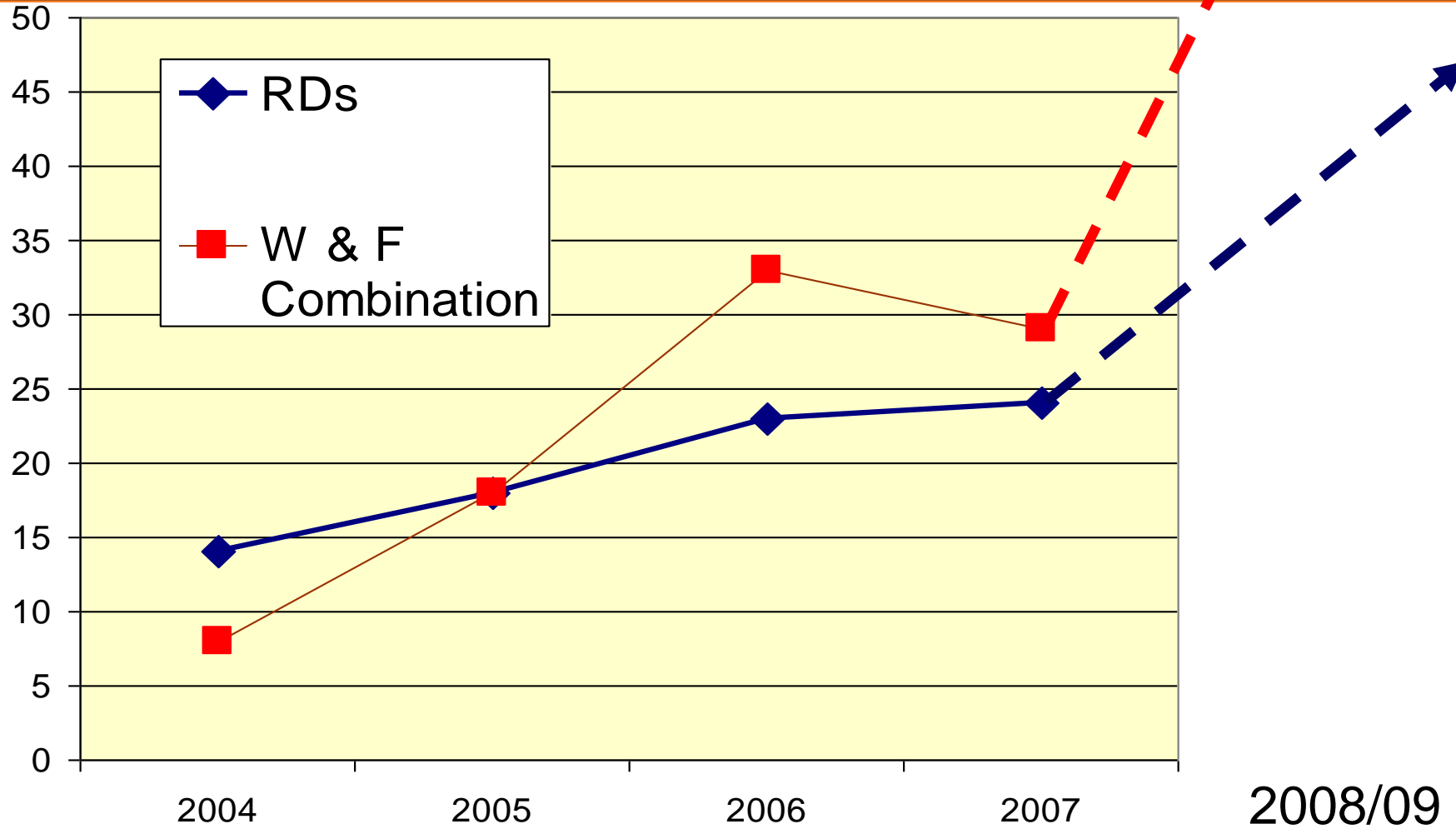
Centre for Timber Engineering



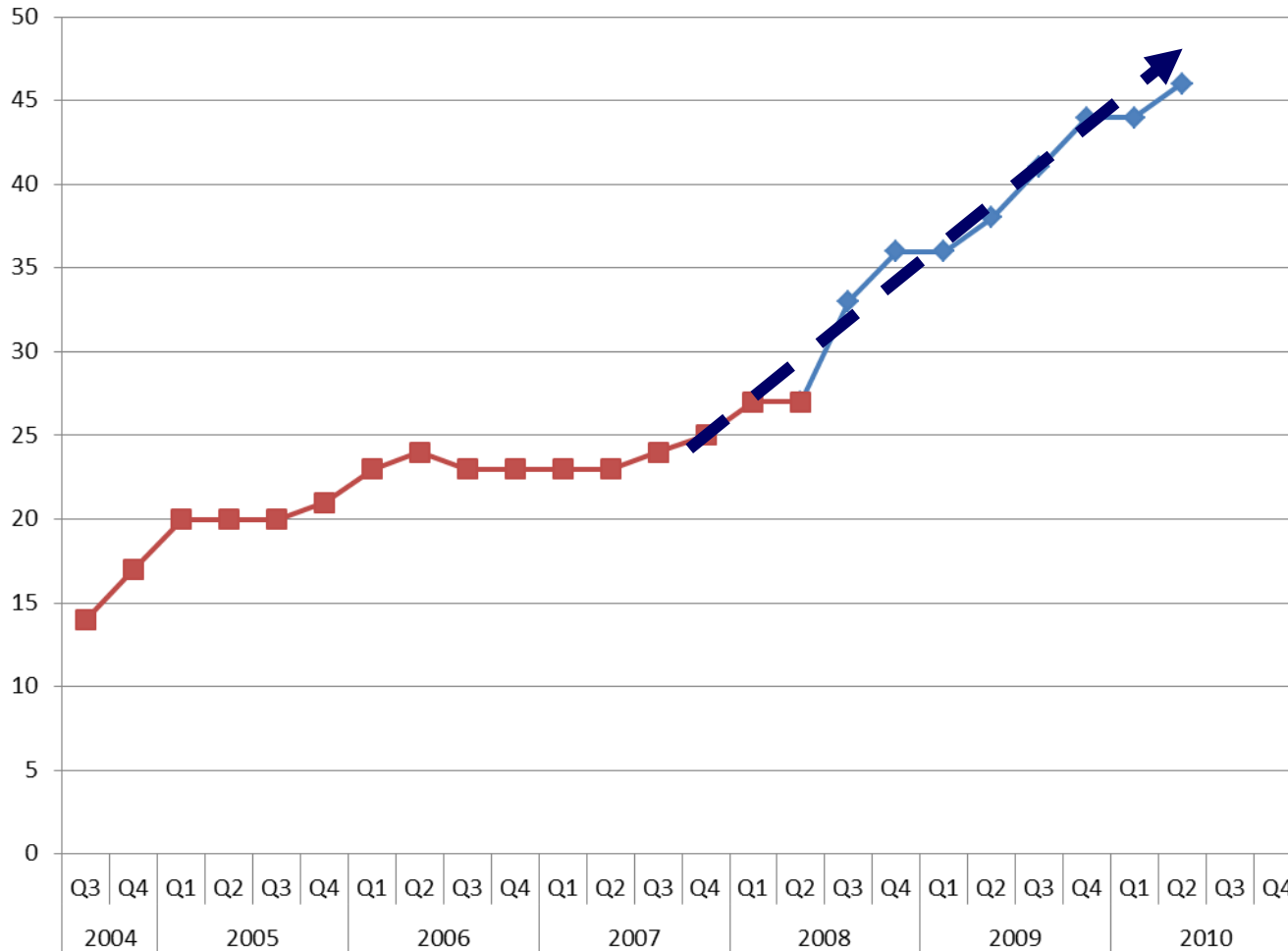
Wall and floor construction systems

- Last 2 years has seen various small changes and tweaks to construction on party walls
- Different mineral fill solutions for party walls
- MgO Boards (Magnesium Oxide)
- Growth in use of aircrete solutions
- Adapted external wall solutions for timber frame coming forward soon
- Better build overall across the sector
- Exciting Candidate RDs in the pipeline

RDs & Combinations (future predictions in 2007)



Actual v Predicted (- - -) New RDs over time



Lots of choice

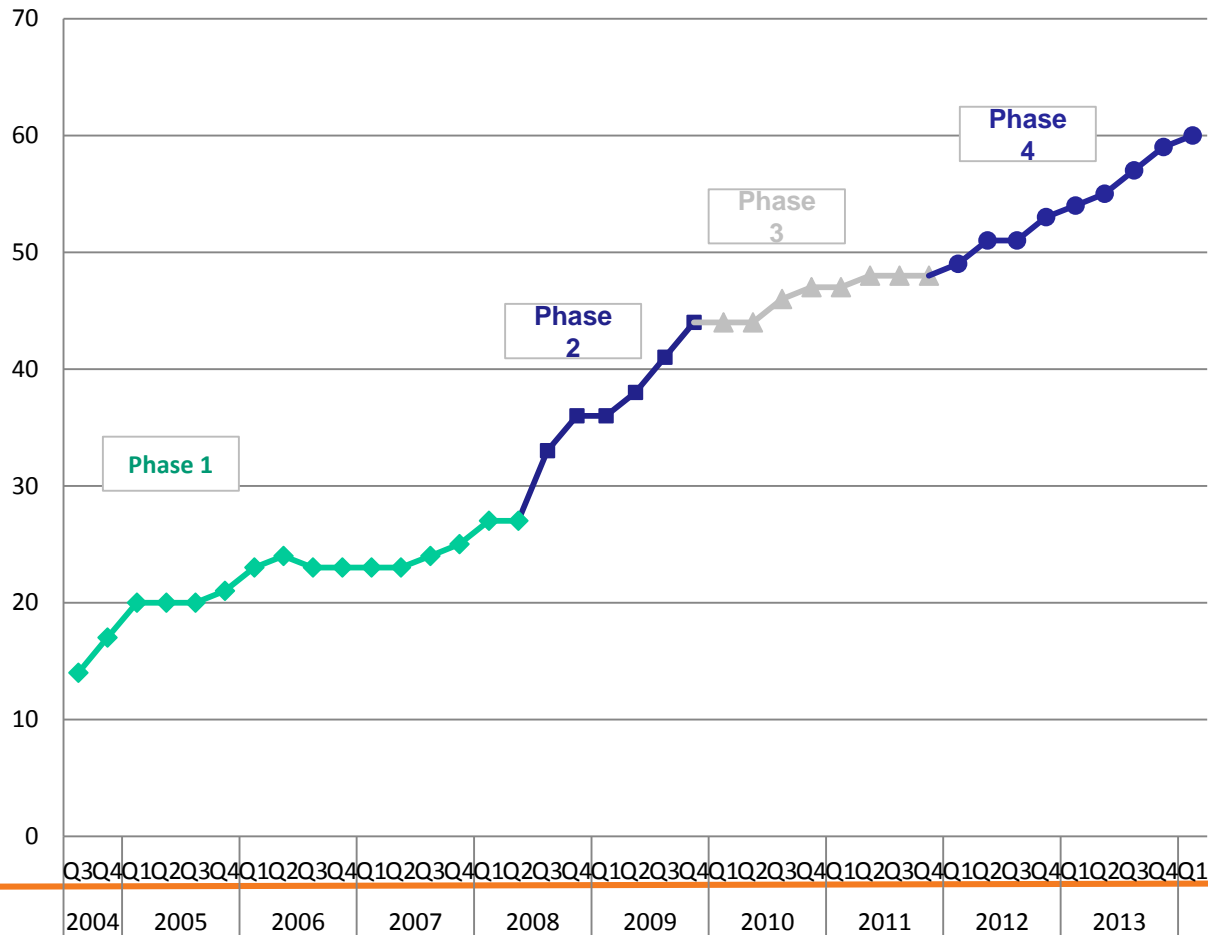
Many wall and floor combinations to choose from

Robust performance

Feedback loop to proprietary RD owners



Number of New Robust Details (2004 - 2013)



Embedding of Part L will lead to some further new CRDs

Offsite system approaches likely

Product Co.s learning journeys



Offsite – wall and floor system approach

- Real “ALE” solutions - Part A, L and E
- Provides future opportunities for CRD system approach
- Better control and product specification tightening
- B2B and combined R&D by companies
- There are government grants available to support such R&D
- Potentially 70% will be offsite by 2016 in Scotland



Part L and Part E – technical clashes?

- Thankfully these are limited
- However, as more Part L solutions come forward – liaise with RD Technical – as this can help RD Standards Committee to engage and support the sector with new RDs and solutions (Technical@robustdetails.com)

Super-performing Walls

- Ironically some of the high sound insulation performing walls are testing the “boundaries” of ISO/BS issues with background noise
- Future ISO Acoustic Classification Scheme for rating sound insulation

Acoustic classification scheme (ACS)

Defines different levels of
“acoustic quality” in dwellings

Minimum three classes

Class criteria concerning:

- ◆ *Airborne sound insulation*
- ◆ *Impact sound insulation*
- ◆ *Level of noise from traffic and other external sources*
- ◆ *Level of noise from building equipment/installations*
- ◆ *Reverberation time (optional)*





Acoustic classification of dwellings in Europe June 2013

Overview schemes and interaction with legislation

Country	Class denotations ⁽¹⁾	CS Reference (latest version)	Link BC to CS	BC Reference to CS	Comment	Classes for new dwellings	Classes for "old" dwellings
DK	A / B / C / D	DS 490 (2007)	+	Class C		A, B, C	D
FI	A / B / C / D	SFS 5907 (2004)	-	N/A	BC = Class C	A, B, C	D
IS	A / B / C / D	IST 45 (2011)	+	Class C		A, B, C	D
NO	A / B / C / D	NS 8175 (2012)	+	Class C		A, B, C	D
SE	A / B / C / D	SS 25267 (2004)	+	Class C		A, B, C	D
LT	A / B / C / D / E	STR 2.01.07 (2003)	+	Class C		A, B, C	D, E
IT	I / II / III / IV	UNI 11367 (2010)	-	N/A	BC ~ Class III	I / II / III	IV
DE ⁽²⁾	III / II / I	VDI 4100 (2012) ⁽³⁾	-	N/A		III, II, I	None
AT	A / B / C / D / E	ÖNORM B 8115-5 (2012)	-	N/A	BC = Class C	A, B, C	D, E
NL	I / II / III / IV / V	NEN 1070 (1999)	-	N/A	BC ~ Class III	I / II / III	IV, V
"TU0901"	A - F and npd	TU0901 Conf.Book (2013)	N/A	N/A	(4)	A / B / C / D / E / F and npd	

Abbreviations: BC = Building Code (regulatory requirements); CS = Classification scheme

(1) Classes are indicated in descending order, i.e. the best class first.

(2) Moreover, the German Society of Acoustics (DEGA) has published a recommendation [17] for acoustic labelling of dwellings. The system has seven classes A*-F and a colour code, the lower classes intended for old buildings.

(3) The revised version of VDI 4100 published in 2012 changed descriptors from R'_{w} and $L'_{n,w}$ to $D_{nT,w}$ and L'_{nT} , as had been discussed for years for the regulations. Also the class criteria were made stricter, and all classes are now above regulation (before the lowest class corresponded to regulations).

(4) Proposal prepared by TU0901.

Class criteria for airborne sound insulation

Airborne sound insulation between dwellings and other rooms						
Class limits ^{(1),(2)}						
Type of space	Class A $D_{nT,50}$ (dB)	Class B $D_{nT,50}$ (dB)	Class C $D_{nT,50}$ (dB)	Class D $D_{nT,50}$ (dB)	Class E $D_{nT,50}$ (dB)	Class F $D_{nT,50}$ (dB)
Between a dwelling and premises with noisy activities ⁽³⁾	≥ 68	≥ 64	≥ 60	≥ 56	≥ 52	≥ 48
Between a dwelling and other dwellings and rooms outside the dwelling	≥ 62	≥ 58	≥ 54	≥ 50	≥ 46	≥ 42

NOTES

(1) $D_{nT,50} = D_{nT,w} + C_{50-3150}$

(2) As an alternative to $D_{nT,50}$, the performance can be estimated for all types of constructions by the currently more common descriptor $D_{nT,100} = D_{nT,w} + C$, see clause 3. If $D_{nT,100}$ is applied, the class denotation is X_{100} , eg. B_{100} .

(3) Premises with noisy activities are rooms for shared services like laundries, central boiler house, joint/commercial kitchens or commercial premises like shops, workshops or cafés. However, in each case, noise levels must be estimated and the sound insulation designed accordingly, e.g. for party rooms, discotheques etc. Offices are normally not considered as noisy premises, and the same criteria as for dwellings apply.

Class criteria for impact sound insulation

Impact sound pressure level in dwellings. Class limits. (1),(2),(3)						
Type of space	Class A $L'_{nT,50}$ (dB)	Class B $L'_{nT,50}$ (dB)	Class C $L'_{nT,50}$ (dB)	Class D $L'_{nT,50}$ (dB)	Class E $L'_{nT,50}$ (dB)	Class F $L'_{nT,50}$ (dB)
In dwellings from premises with noisy activities ⁽⁴⁾	≤ 38	≤ 42	≤ 46	≤ 50	≤ 54	≤ 58
In dwellings from other dwellings	≤ 44	≤ 48	≤ 52	≤ 56	≤ 60	≤ 64
In dwellings: - from common stairwells and access areas - balconies, terraces, bath, toilet not belonging to own dwelling	≤ 48	≤ 52	≤ 56	≤ 60	≤ 64	≤ 70

NOTES

(1) $L'_{nT,50} = L'_{nT,w} + C_{1,50-2500}$

(2) The same limit values are to be fulfilled by $L'_{nT,w}$.

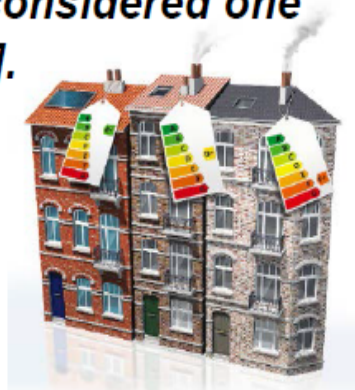
(3) As an alternative to $L'_{nT,50}$, the performance can be estimated for all types of constructions by the currently more common descriptor $L'_{nT,100} = L'_{nT,w} + C_v$, see Clause 3. If $L'_{nT,100}$ is applied, the class denotation is X_{100} , eg. **B**₁₀₀.

(4) Premises with noisy activities are rooms for shared services like laundries, central boiler house, joint/commercial kitchens or commercial premises like shops, workshops or cafés. However, in each case, noise levels must be estimated and the sound insulation designed accordingly, e.g. for party rooms, discotheques etc. Offices are normally not considered as noisy premises, and the same criteria as for dwellings apply.

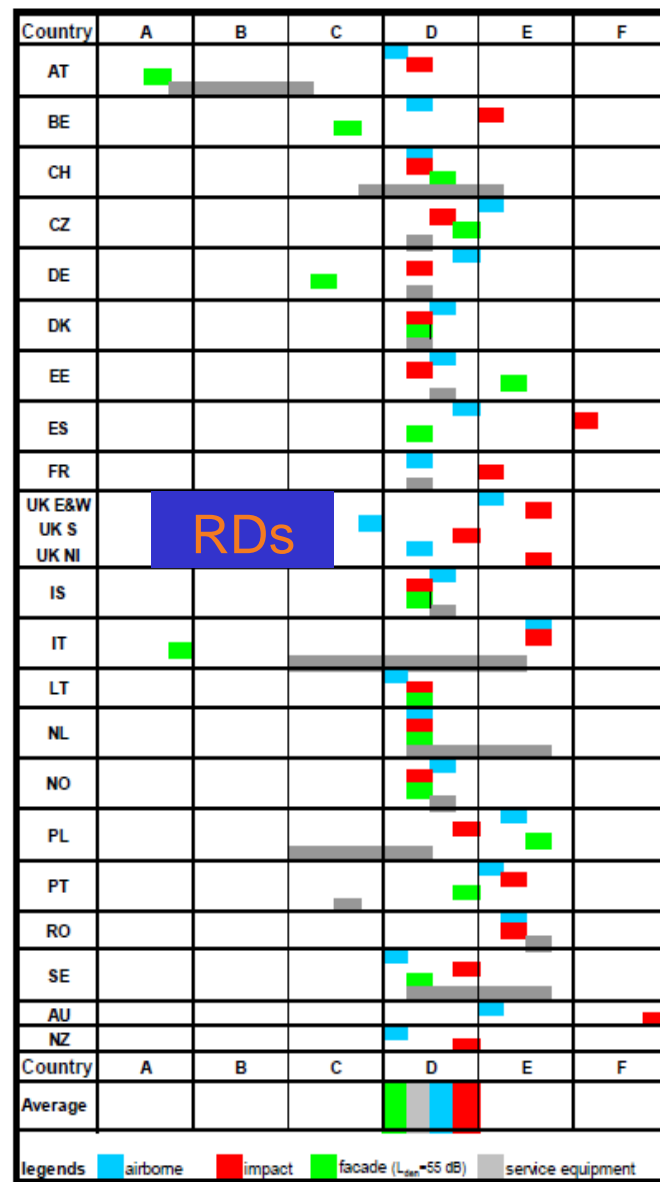
Classes corresponding to the translated current requirements

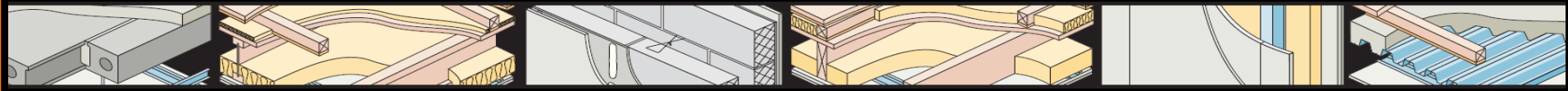
The diagram shows classes corresponding to the translated current requirements in the indicated countries.

Based on requirements reported from TU0901 members in 19 Countries (UK considered one country), ref. [9].



The diagram shows that the current situation for the requirements on average is characterised as class D, although with large deviations for service equipment and facades.





The TU0901 ACS proposal is now an ISO NWIP

See ISO & CEN documents ISO/TC 43/SC2 N1203 & N1218 or CEN/TC126 N930 & N937

Whether CfSH levels stay for Sound insulation the **ACS is in the ISO pipeline**

Scotland will still have Bronze, Silver and Gold standards for sound insulation

Some developers may wish to use the classification scheme to help with sales



ISO NP16717

The last 3 years.... Significant discussions and journey regarding NP16717 to change acoustic criteria of ISO

ISO 717 is the primary acoustic criteria / changes would have been product manufacturers, government bodies etc..

UK played a critical role – thanks to UK BS members, HB's, RDL and Eurogypsum

Thankfully..... Now resolved

CANCELLED



Robust Details Ltd Technicolour

is proud to present...

RDL Animations.....

thankyou



www.robustdetails.com