Concepts for evaluation of sound insulation of dwellings - from chaos to consensus?

Legal sound insulation requirements have existed more than 50 years in some countries, and single-number quantities for evaluation of sound insulation have existed nearly as long time. However, the concepts have changed considerably over time from simple arithmetic averaging of frequency bands in the beginning to a variety of more complex concepts developed in different countries and later included in EN ISO 717:1996, thus representing a cataloguing of concepts rather than a harmonization. In 2004 a survey was carried out including 24 countries in Europe. A comparison of legal requirements and classification schemes revealed significant differences of concepts. The paper summarizes the history of concepts, the disadvantages of the present chaos and the benefits of consensus concerning concepts for airborne and impact sound insulation between dwellings and airborne sound insulation of facades. The concepts suitable for evaluation should be well-defined under practical situations in buildings, be measurable, reproducible and of course correlate well with subjective evaluation. More noise sources - incl. neighbours' activities - and an increased demand for high quality and comfort together with a trend towards light-weight constructions are contradictory and challenging. This calls for exchange of data and experience, implying a need for harmonized concepts, including use of spectrum adaptation terms. The paper will provide input for future discussions in EAA TC-RBA WG4: "Sound insulation requirements and sound classification - Harmonization of concepts", aiming at harmonization of concepts for legal requirements and classification criteria.