1   INTRODUCTION

In response to the need for across country comparisons the European Association for Animal Production (EAAP) set up a working group in 1975 to investigate the feasibility of standardization of breeding value estimation procedures across countries. At about the same time a working group under the auspices of the International Dairy Federation (IDF) was working towards similar goals. Continuous need for such activities led to the establishment of International Bull Evaluation Service (Interbull) in 1983 by EAAP, IDF and International Committee for Animal Recording (ICAR, formerly International Committee for Recording the Productivity of Milk Animals, ICRPMA), with support from the United Nations' Food and Agriculture Organization (FAO). Later, in 1988, Interbull was recognized as a permanent sub-committee of the ICAR. The work in Interbull gradually led to the recognition of the need for an operational unit. Consequently, in 1991 the Interbull Centre was established in Uppsala, Sweden. In 1996, the European Union (EU) appointed the Interbull Centre as its reference body for genetic evaluation of dairy cattle.

To achieve the standardization / harmonization goal the first step is to fully document different countries' national genetic evaluation systems (GES[1]). Accordingly, Interbull has acted dutifully to make different countries' GES as transparent as possible by conducting surveys on national GES for economically important traits practiced in its member countries (published as Interbull Bulletins (IBB) 2, 3, 5, 6, 13 and 24).

The second step to achieve the standardization / harmonization goal is naturally the development of a set of guidelines to encourage adoption of similar state of the art methods, 'world's best practice', by different national genetic evaluation centers (IBB 1 and 4). It is important to notice that Interbull's aim in preparing and publishing the previous set of guidelines (especially IBB 4, 1990) has been to prepare the results of national GES, specifically sire proofs for production traits, to be used in conversion equations for international use. However, the present set of guidelines (IBB 28) is mainly concerned about how the raw data are treated within each country. In other words the new Interbull guidelines addresses the issue of preparing national data to enter national and international genetic evaluations. The interest in preparation of national data has been brought about by two important developments that have occurred since late 1980's.

The first development has been an increasing trend in the number of traits in national GES, number of countries with national GES, and more importantly number of potential exporting countries. The volume of exchange of genetic material has increased and the pattern of exchange is more complex than before. Nowadays we cannot label specific countries as pure exporters or importers and virtually every country is both an importer and an exporter at the same time. Therefore, people involved in national GES must be observant of a large number of countries and this is a difficult task for anyone. It is in the interest of all countries to have a national GES that is easily understood, and also that any change in it is fully documented, so that the changes can be easily followed, should anyone wish to do so.

The second development has been the start of a truly international routine evaluation of bulls at the Interbull Centre in 1994. In the beginning, there were only a handful of countries submitting data for evaluation at the Interbull Centre, while in 2001 data from 25 countries, six breeds, and a large number of traits were sent to the Interbull Centre for routine evaluations, and it is likely that these numbers will grow over time.

The combined effect of these two developments is that the major dairy countries are today more interdependent on the decisions made at the national level in other countries' GES than at any time before. Any aspect of any country's GES may have an impact on the estimated breeding values (EBV) of bulls from all other countries. Several independent studies (Emanuelson *et al*., 1999, Jorjani, 1999, 2000, and Rekaya *et al*., 1999) suggest that structural and operational parameters of populations and national GES have a significant impact on genetic parameters. On the other hand, estimated genetic correlations between some countries are in some cases low to the point that they do not make much sense from a

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[1] In this document Genetic Evaluation System (GES) is meant to include all aspects from population structure and data collection to publication of results. Each and every statistical treatment of the data that has a genetic-breeding motivation or justification is an integrated part of GES.

biological point of view. The logical conclusion is that we need to search within national GES and their structural and operational parameters for reasons of low genetic correlations.

The purpose of this set of guidelines is to facilitate a higher degree of harmonization in the things that *can* be harmonized and to encourage documentation of the things that *cannot* be harmonized at this juncture of time. It is also hoped that these guidelines act as an Interbull service to increase the quality and accuracy of evaluations at the national and international level. In other words, the aim is to increase clarity in showing the biological and statistical reasons for what is done in national GES.