



Terms of Reference for Sensor Devices Task Force

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1 Background

The following are the Terms of Reference (ToR) of an ICAR Group. The Group is known as the Sensor Devices Task Force (SD-TF).

1.1 ToR Changes

Changes to these ToR over time are summarized in Table 1:

Table 1. Change summary.

Date of Change	Nature of Change
27 th May 2016	First version of ToR approved by ICAR Board and “... CE will convene members and begin the Task Force work asap”
May 2016 to Nov 2017	ToR updated with members and dates for achieving goals to give the second version.
May 2018	<p>Reformatted to comply with ICAR branding guidelines.</p> <p>Amended to avoid conflicts of interest by clarifying voting rights of members. Refer to 4 Governance.</p> <p>Amended to include a section giving context. Refer to 2 Context.</p> <p>Amended to include a section dealing with relationships with other ICAR Groups. Refer to 8 Relationships with Other ICAR Groups.</p> <p>Membership removed as this is maintained separately by the ICAR Secretariat.</p> <p>Include updated priorities from Feb. 2018 report to ICAR Board.</p>
June 2018	<p>Include feedback from SD-TF meeting on Friday 8th June 2018.</p> <p>Include feedback from Steven Sievert on Friday 15th June.</p> <p>Elaborate timeline details into separate section (6). Remove timeline details from objectives.</p>

1.2 General

ICAR has the role of supporting farmers in their effort to collect valid data for daily management, and to deliver proven and validated information's for genetic evaluations. Technology used on the farm for data collection continues to develop, and there is a need for ICAR constantly to evaluate guidelines to meet these challenges.

ICAR DHI members are coming across sensors/indicators on dairy farms which are neither ICAR tested nor ICAR certified. The data from such sensors is unqualified with respect to accuracy levels, calibration and/or validation status. Farmers and breeders are taking the data from such 'sensors' into their farm systems and are making management decisions based on this data. This unqualified data may be transferred from on-farm computer systems into central databases and/or data processing centres, either intentionally or unintentionally at the present time. Certain ICAR SCs and WGs have been discussing these non-ICAR certified indicators on and off in the last few years, however the time has come to formally address the suitability of sensor and indicator



data in herd management and genetic evaluation programs through this project called the Sensor Data Task Force (SD-TF).

In 2013, ICAR convened an 'Accuracy Task Force (A-TF)' with the goal of developing a sound philosophical basis for ICAR to use in establishing accuracy for the collection of animal recording data that is incorporated into information services. The A-TF reported to the ICAR Board in Krakow 2015 and is expected to complete its work with a final report to the ICAR Board and General Assembly in Chile 2016. While this A-TF did its job to provide ICAR Sub Committees, Working Groups and Members with a sound basis on accuracy determination, the output however was, by its very nature, theoretical. It is recommended that the work of the A-TF be concluded as planned and we move to a more practical phase through a focused project team to address sensors and data arising.

Note: For ICAR we have to be diligent, for if we on the one hand remain too inflexible then perhaps we become irrelevant. On the other hand, if we are too forgiving and be perceived to drop our "standards", we could end up providing a poor or confusing direction to our farmers/breeders. The challenge for ICAR is to achieve the correct balance.

1.3 The Challenge

ICAR and its members do not have a method to determine the 'fitness for use' of non-ICAR certified sensors (including data from such sensors) currently being used by farmers and breeders to make decisions.

We know this to be the case as our DHI members see non-ICAR certified sensors on farm (and data from such sensors) being used for both management and breeding decisions, e.g. Milk Volume/Speed, Flow sensors, Fat & Protein sensors, and SCC sensors, all providing data to farmers and databases resulting in decisions being made on the local level. These members have asked ICAR to provide guidelines and the methodology to help classify and qualify such sensor data so as to determine their suitability for the respective decisions.

The following sections cover the key elements of the Terms of Reference for the SD-TF.

2 Context

The SD-TF, is one element of ICAR's Group structure as elaborated [here](#) on the ICAR website. As a Task Force:

- a. It has a limited term
- b. Its chair is appointed by the Board of ICAR
- c. Its members are appointed by the Chief Executive of ICAR.



The main purpose of the SD-TF is to achieve a number of objectives related specifically to sensor devices.

3 Objectives

The objectives of the SD-TF are to:

No.	Goal
1	Provide methodology to help classify and qualify non-ICAR certified sensors and sensor data that measure; a. Milk yield and composition, b. Milk flow rate and duration, c. Live Body Measurements (Condition Score, Weight), d. Live Activity Measurements (Rumination, Eating, Walking), and e. Feed Efficiency Measurements (Intake, Methane, Temperature) so as to determine their suitability for the respective management and breeding decisions by Summer 2019.
2	Disseminate new guidelines so members and practitioners are aware of and educated in, the new guidelines for determining suitability of data from non-ICAR certified sensors by Summer 2019.

4 Governance

The ICAR SD-TF Chairperson will be appointed by the ICAR Board and members appointed by the ICAR Chief Executive. The term of membership and voting rights of members will be determined at the time of appointment and may be reviewed from time to time. In principle, members can only vote on those issues for which they or their employers do not have a conflict of interest. The SD-TF will self-govern.

5 Secretariat

Secretariat - person appointed by ICAR CE - role is to:

- a. Administer - agree dates and venues in consultation with SD-TF Leader, provide notice of meetings to members, agree agenda with Leader, distribute agenda, take minutes, agree minutes with Leader, and distribute minutes.

- b. Group Composition - maintain list of task force members with up-to-date contact details, in consultation with Chairperson and ICAR Chief Executive ensure membership is comprised of interested and enthusiastic members representing active stakeholders.
- c. Website - maintain website and forum ensuing contents are up-to-date and relevant according to the TOR.

6 Timeline

Plan for delivery to the ICAR membership over the next 12 months and at the ICAR 2019 meeting Prague, CZ.

Goal/Objective	Planned Deliverable	Delivery Date
Methodology to Classify SD and Quantify or assess data usability from these devices.	<ul style="list-style-type: none"> Resource/landing page on the ICAR website for SD. Publish detailed report of SD survey of members and experts. Publish summary table of SD with trait measurement capabilities and measuring principles. Link(s) to external work (i.e. 4D4F) related to SD summaries and resources. Complete reference table of trait characterization and validation criteria (gold standard where applicable) 	<p>August-September 2018</p> <p>August 2018</p> <p>August-September 2018</p> <p>August 2018</p> <p>January-February 2019</p>
Develop guidelines for determining data usability.	<ul style="list-style-type: none"> Development of standard guideline structure by trait or measurement. Guideline development in five key priority areas of milk yield & composition, milk flow, live body measures, live activity measures and feed efficiency measures. Presentation of draft guidelines for milking speed and body condition at ICAR 2019 meeting 	<p>Fall 2018</p> <p>Ongoing – Initial draft Q1/2019 and final version after feedback Q2 2019</p> <p>June 2019</p>

Goal/Objective	Planned Deliverable	Delivery Date
	<ul style="list-style-type: none"> Potential development of guidelines in other key areas including milk quality and mastitis 	Ongoing as part of RSD
Develop procedures and guidelines for certification or validation of SD.	<ul style="list-style-type: none"> Determine innovative approaches to testing or evaluation of SD. Review and determine suitable terminology to SD validation with respect to maintaining value of current ICAR certification of recording and sampling devices. Engage SD manufacturers for feedback in summary table review and proposed SD testing protocols. Deliverable proposed ICAR validation protocols for those devices to parallel planned draft guidelines delivery at ICAR 2019. 	<p>Ongoing- discuss in RSD</p> <p>Ongoing review of levels of data, levels of validation, certification, etc</p> <p>August 2018 and then early 2019</p> <p>June 2019</p>

After the ICAR 2019 meeting in Prague, the work of the SD-TF will move to the Recording and Sampling Devices Subcommittee (RSD-SC). The RSD-SC will access the expertise of other ICAR SC and WG as needed for additional development and review of guidelines in specific areas.

7 Communications with the ICAR Board

- Annual report of the SD-TF Leader to the Board.
- The ICAR secretariat support person to maintain files.
- Participation of the SD-TF Leader in meetings with the Board, normally on an annual basis coinciding with the ICAR Annual Meetings.

8 Relationships with Other ICAR Groups

Relationships between SD-TF and other ICAR Groups are as summarised in Table 2.

Table 2. Relationship with other ICAR Groups.

Group	Purpose of Relationship	Method of maintaining relationship
Milk Analysis Sub-Committee (MA-SC)	Ensure ICAR standards, guidelines and services relating to Sensor Devices are consistent with those for Milk Analysis.	<ul style="list-style-type: none"> • Overlapping membership. • Effective communication of plans and progress. • Joint expert advisory group(s) as required.
Recording and Sampling Devices Sub-Committee (RSD-SC)	Ensure ICAR standards, guidelines and services relating to Sensor Devices are consistent with those for recording and sampling devices.	<ul style="list-style-type: none"> • Overlapping membership. • Effective communication of plans and progress. • Joint expert advisory group(s) as required.
Dairy Cattle Milk Recording Working Group (DCMR-WG)	Ensure ICAR standards, guidelines and services relating to Sensor Devices are consistent with those for dairy cattle milk recording.	<ul style="list-style-type: none"> • Overlapping membership. • Effective communication of plans and progress. • Joint expert advisory group(s) as required.
Interbull Sub-Committee (IB-SC)	Ensure ICAR standards, guidelines and services relating to Sensor Devices are consistent with those for genetic evaluation of dairy cattle.	<ul style="list-style-type: none"> • Overlapping membership. • Effective communication of plans and progress. • Joint expert advisory group(s) as required.
Functional Traits Working Group (FT-WG)	Ensure ICAR standards, guidelines and services relating to Sensor Devices are consistent with those for recording and using data on functional traits.	<ul style="list-style-type: none"> • Overlapping membership. • Effective communication of plans and progress. • Joint expert advisory group(s) as required.
Others	Ensure ICAR standards, guidelines and services relating to Sensor Devices are consistent with those for the activities covered by the Group.	<ul style="list-style-type: none"> • Effective communication of plans and progress. • Overlapping membership as needed. • Joint expert advisory group(s) as required.



9 Priorities

Priorities are to be established by the SD-TF taking account of its terms of reference and any requests from the ICAR Board.

That the priorities for SD-TF in the next year include the following:

- a. Outreach to external institutions conducting research with sensor devices.
- b. Initial guidelines development for testing and certification of devices, data descriptions and usability.
- c. Develop protocols for testing devices where applicable and identification of resources required.
- d. Outreach to other ICAR SC, WG, and TF plus cooperative efforts with IDF SCAH on milk quality sensors.

REFERENCE: /USERS/BWW/DATA/WICKHAM LTD/CUSTOMERS/ICAR/ICAR SC WG
TF/GROUPS/TOR/REVISIONS/2018/GROUPS/SD-TF/TOR SENSOR DEVICES TF V18.04.DOCX

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