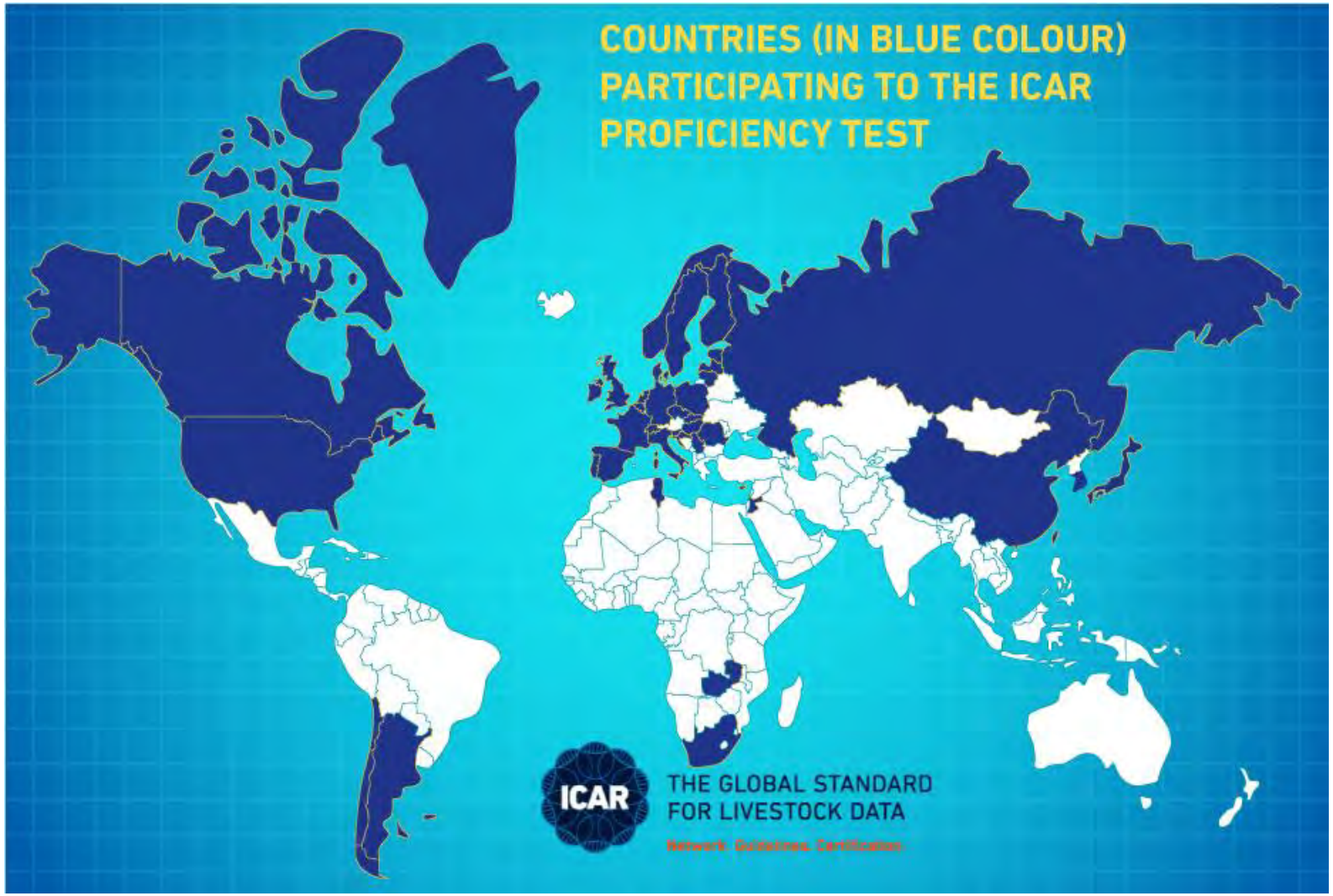
ASSIGNED VALUES IN ICAR PROFICIENCY TESTING MADE TRACEABLE WITH EC JRC CRM

S. ORLANDINI (ICAR)

IDF ICAR WEBINAR 03.12.2020

ICAR PT - ISO 17043 SINCE 2016



88 Participants– 40 Countries- 4 Continents

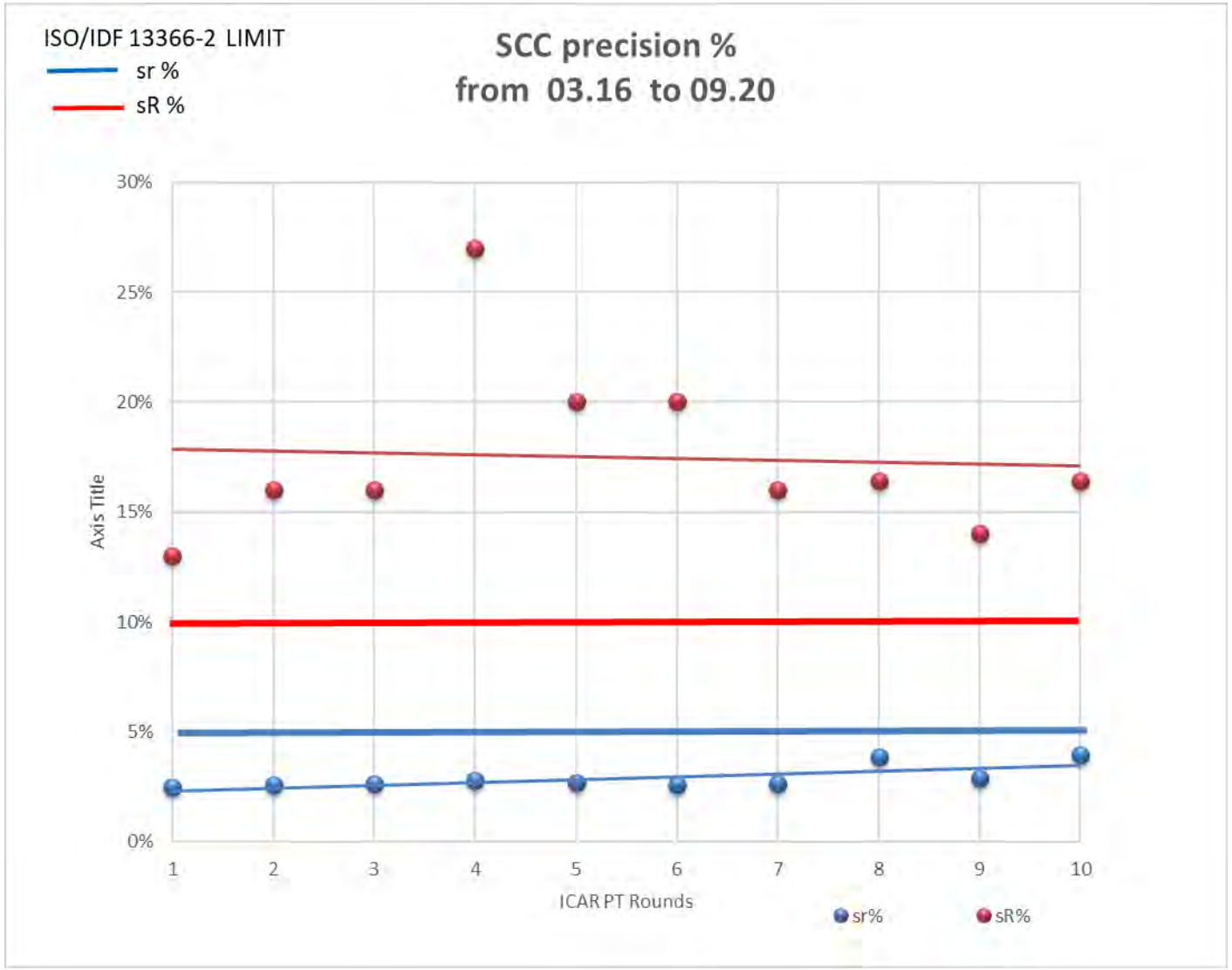
ICAR PT – PARAMETERS OFFERED

- Fat
- Lactose
- Urea
- **SCC**
- BHB (Beta-Hydroxybutyrate)
- PAG (pregnancy-associated glycoproteins)
- Bacterial DNA (PCR)

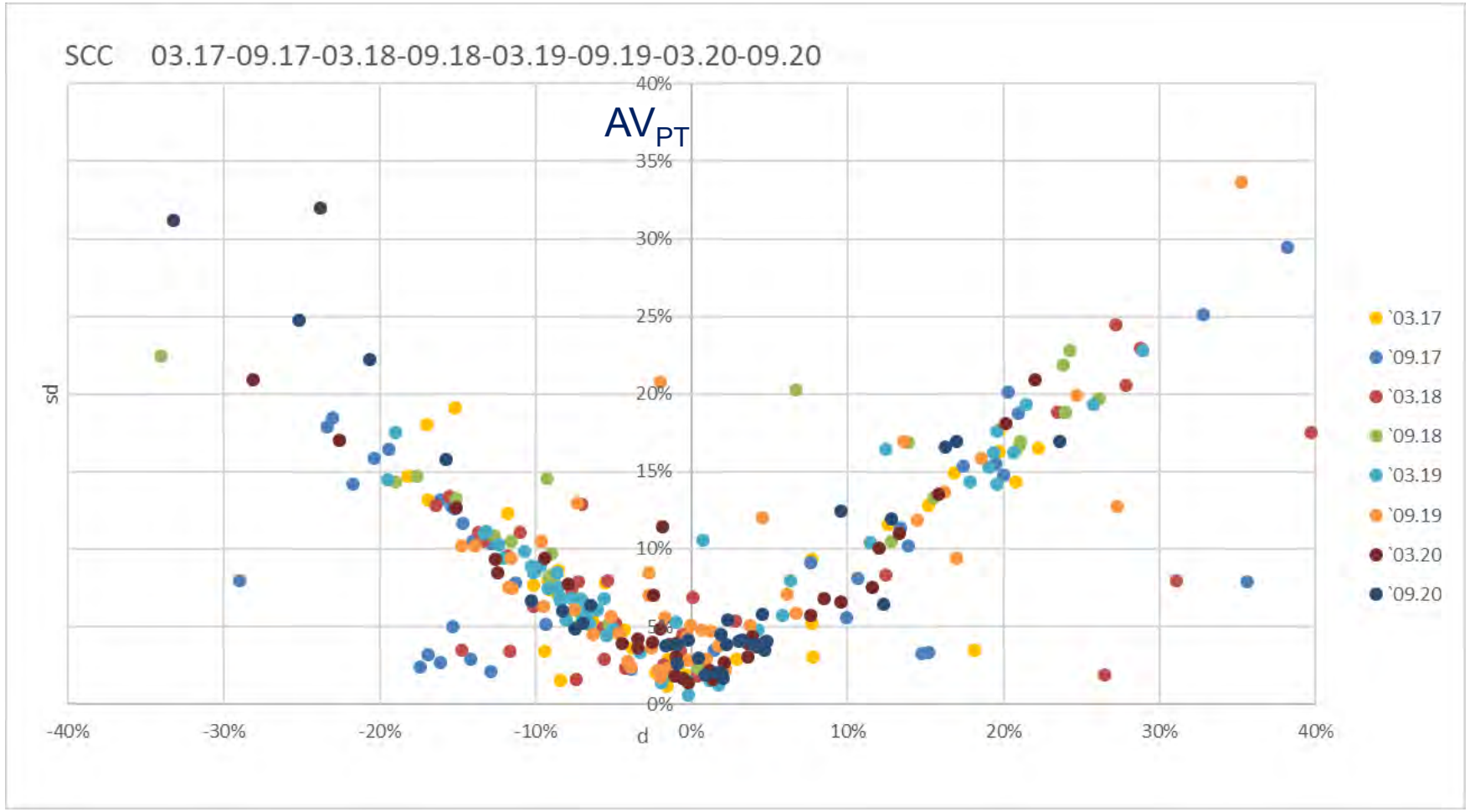
ICAR PT - ISO 17043 SINCE 2016

55 Participants– 37 Countries- 4 Continents

ICAR PT – SCC PRECISION

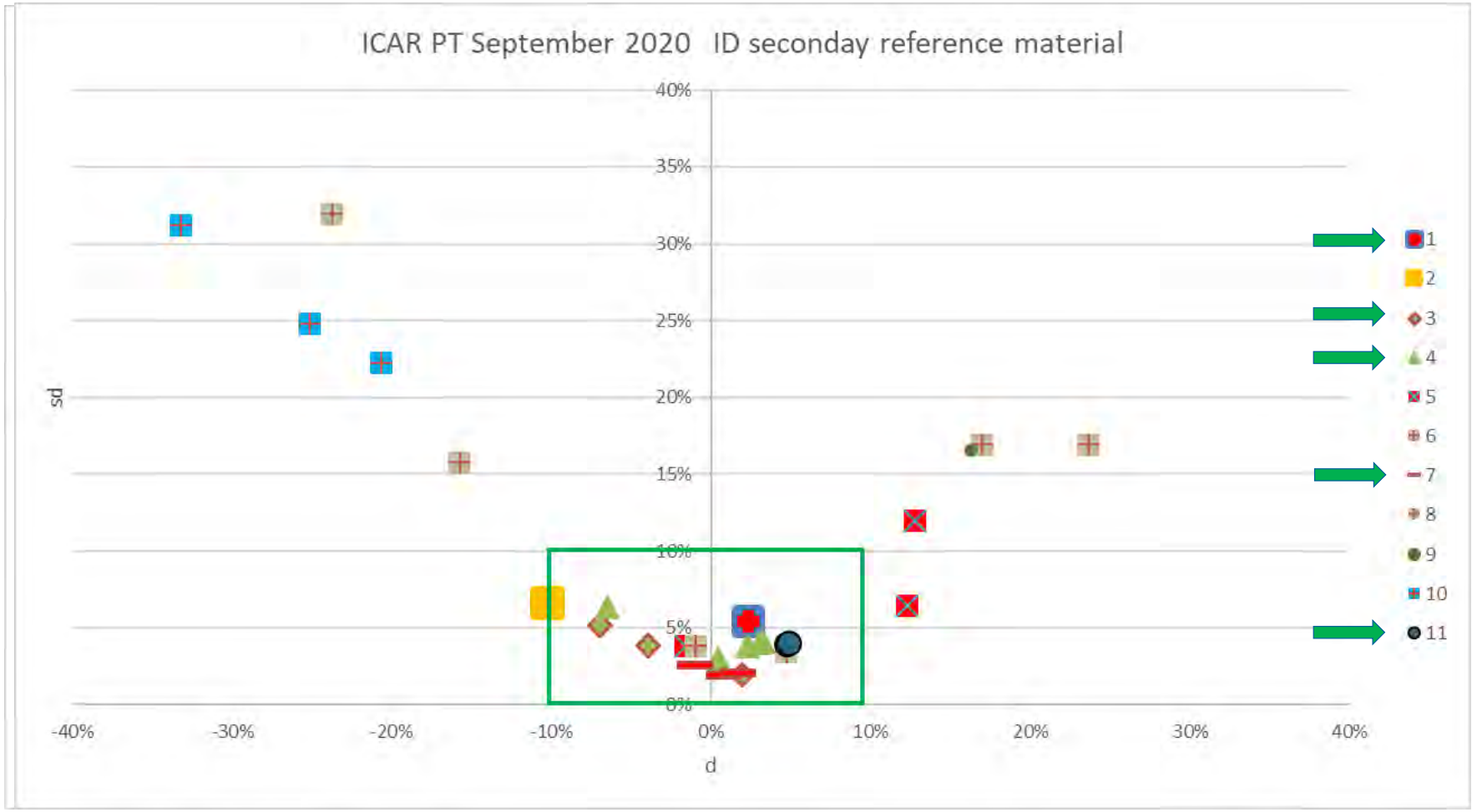


ICAR PT – BIAS SCC DISTRIBUTION AROUND AV_{PT}



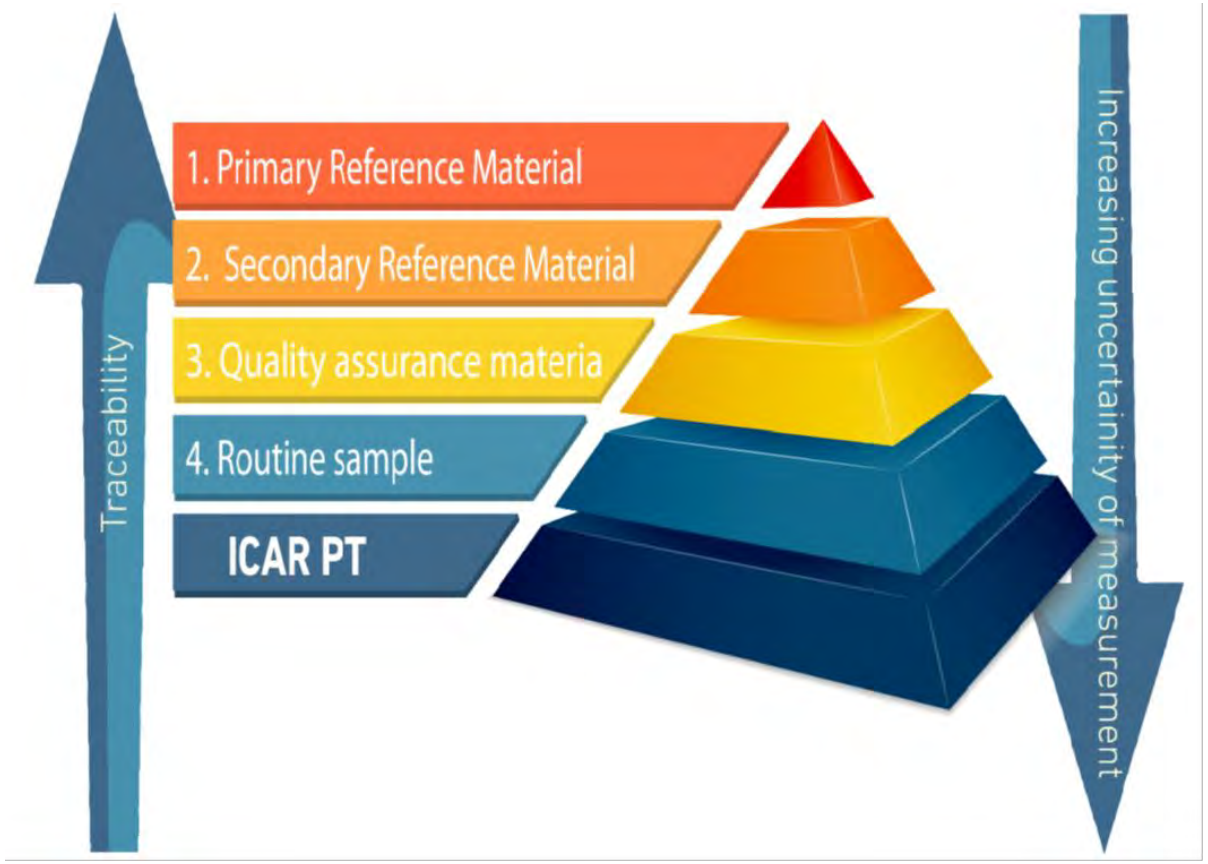
d_{lab}=mean lab-mean of AV_{PT} sd= st. deviation of d_{labi}
AV_{PT}= Assign value PT

ICAR PT – SECONDARY REFERENCE MATERIAL (SRM) PERFORMANCE



→ Are produced in 5 countries from 3 different continents

ICAR PT SEPTEMBER 2020



Report SCC Traceability

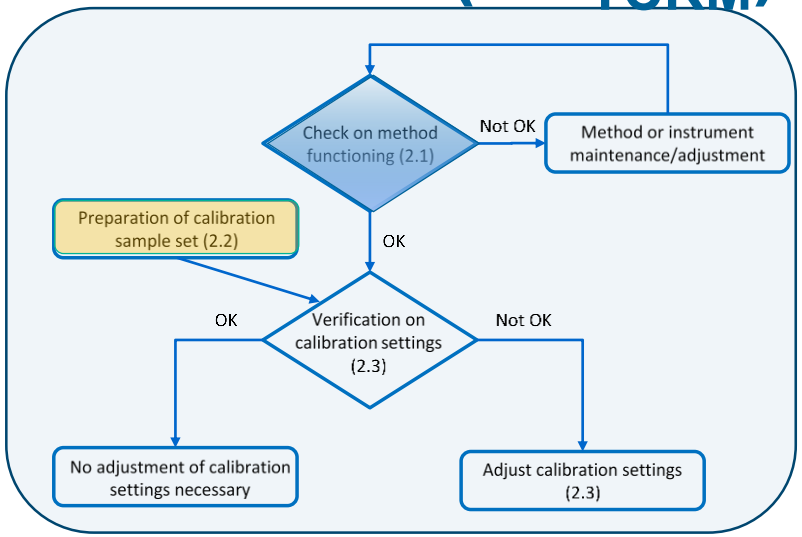
https://www.icar.org/index.php/technical-bodies/sub-committees/milk-analysis-sub-committee-landing-page/

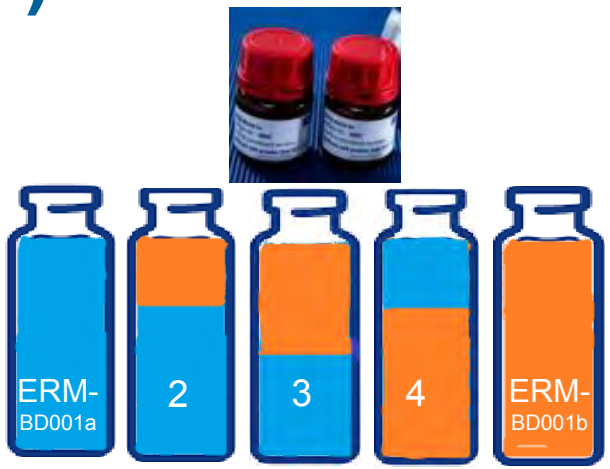
Definitions :

AV=Assign value calculated form the ICAR PT data

AV_{TCRM} Assign value calculated form instrument calibrated with EC JRC CRM

ICAR PT SAMPLES ASSIGN VALUE TRACEABLE TO EC JRC CRM (AV_{TCRM}) (1)





Repeatability sr%

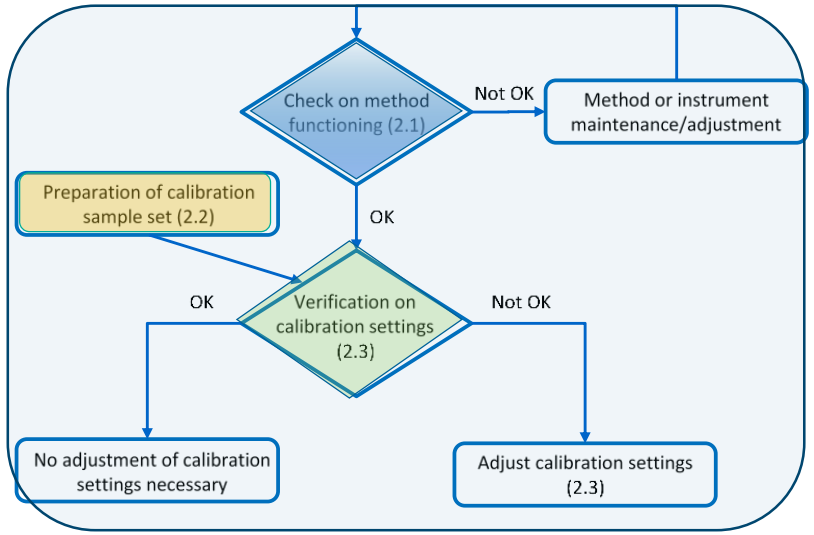
		CRM1	CRM2	CRM3	CRM4	CRM5
CRM	value	62	338	614	890	1166
Instr. 1	mean	67	336	626	905	1177
Instr. 1	sr	4,74	12,84	11,15	16,33	17,95
Instr. 1	sr %	8	4	2	2	2
Instr. 2	mean	62	340	627	918	1184
Instr. 2	sr	1,92	5,54	8,90	12,57	14,91
Instr. 2	sr %	3	2	1	1	1
ISO 13366-2	sr%	6	5	3	3	3

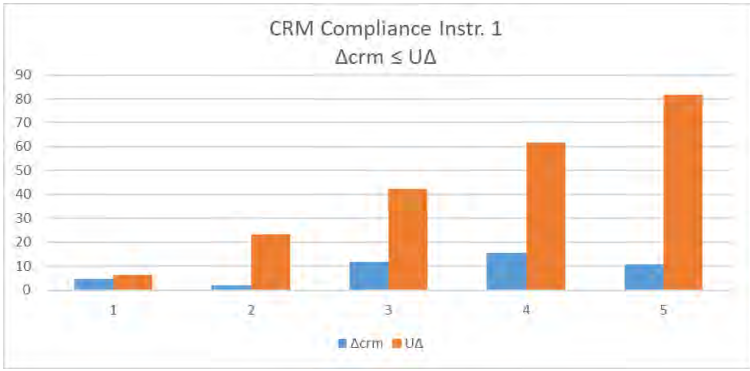
Linearity =De/Dc

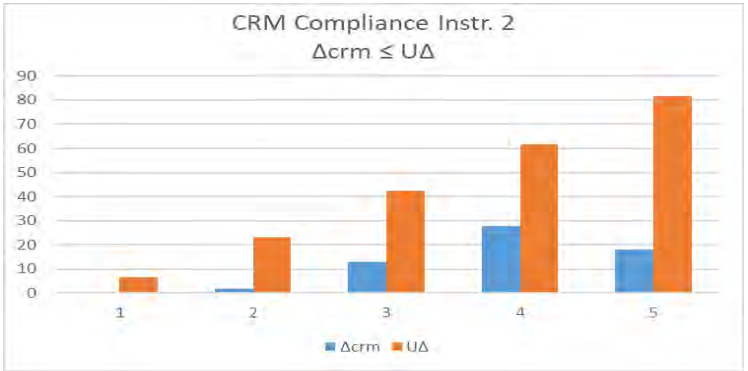
Linearity Instrument 1	CRM1	CRM2	CRM3	CRM4	CRM5	Limit
Mean residual	2,47	-7,09	3,49	4,41	-3,28	
SD	4,74	12,84	11,15	16,33	17,95	
Minimum	57	312	608	883	1143	
Maximum	73	356	643	938	1202	
D = Max-Min	16	44	35	55	59	
N	15	15	15	15	15	
Mean Max Mean Min	1110	De/DC (%)	1,04		positive	2%
Mean residual Max Mean residual Mi	11,49					

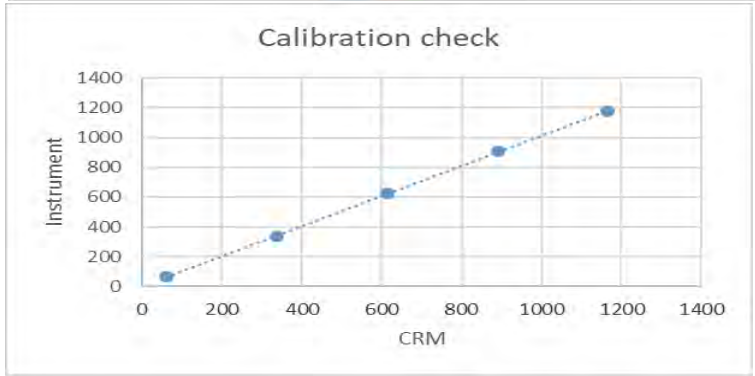
Linearity Instrument 2	CRM1	CRM2	CRM3	CRM4	CRM5	Limit
	CRM1	CRM2	CRM3	CRM4	CRM5	
Mean residual	0,35	-4,06	0,67	9,46	-6,41	
SD	1,92	5,54	8,90	12,57	14,91	
Minimum	60	329	612	895	1166	
Maximum	66	347	641	941	1205	
D = Max-Min	6	18	29	46	39	
N	15	15	15	15	15	
Mean Max Mean Min	1122	De/DC (%)	1,41		positive	2%
Mean residual Max Mean residual Mi	15,87					

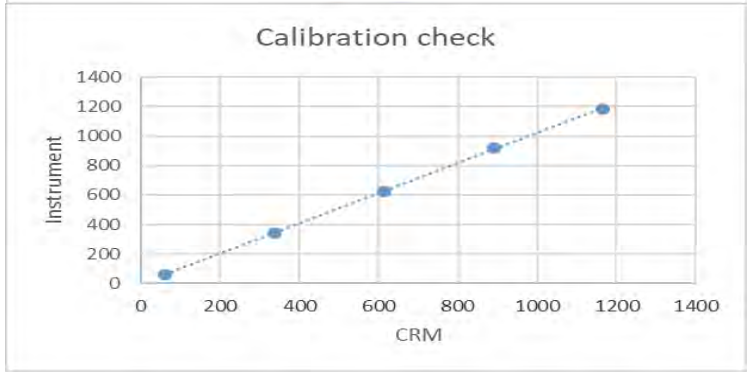
ICAR PT SAMPLES ASSIGN VALUE TRACEABLE TO EC JRC CRM (AV_{TCRM}) (2)











IS THE INSTRUMENT ADJUSTMENT NECESSARY ?

NO

current setting of the intercept, $intercept_c$	0
current setting of the slope, $slope_c$	0,9800
a_c = -$intercept_c$/$slope_c$ =	0,00000
b_c = 1/$slope_c$	1,02041
standard error of the regression equation	2,56497
$\lvert\bar{x} - \bar{y}(\bar{x})\rvert$	8,10667
lower confidence limit for b, LCL(b)	0,98955
upper confidence limit for b, UCL(b)	1,03137
b_c **different** from b?	**no**
lower limit for a_c, LL(a_c)	-0,05620
upper limit for a_c, UL(a_c)	16,26953
is mean bias **still correct**?	**yes**
a_c **different** from a?	**no**

If adjustment is necesary:

Adjusted settings	
$intercept_n$ = -a/b =	-1,66744
$slope_n$ = 1/b =	0,98965

YES

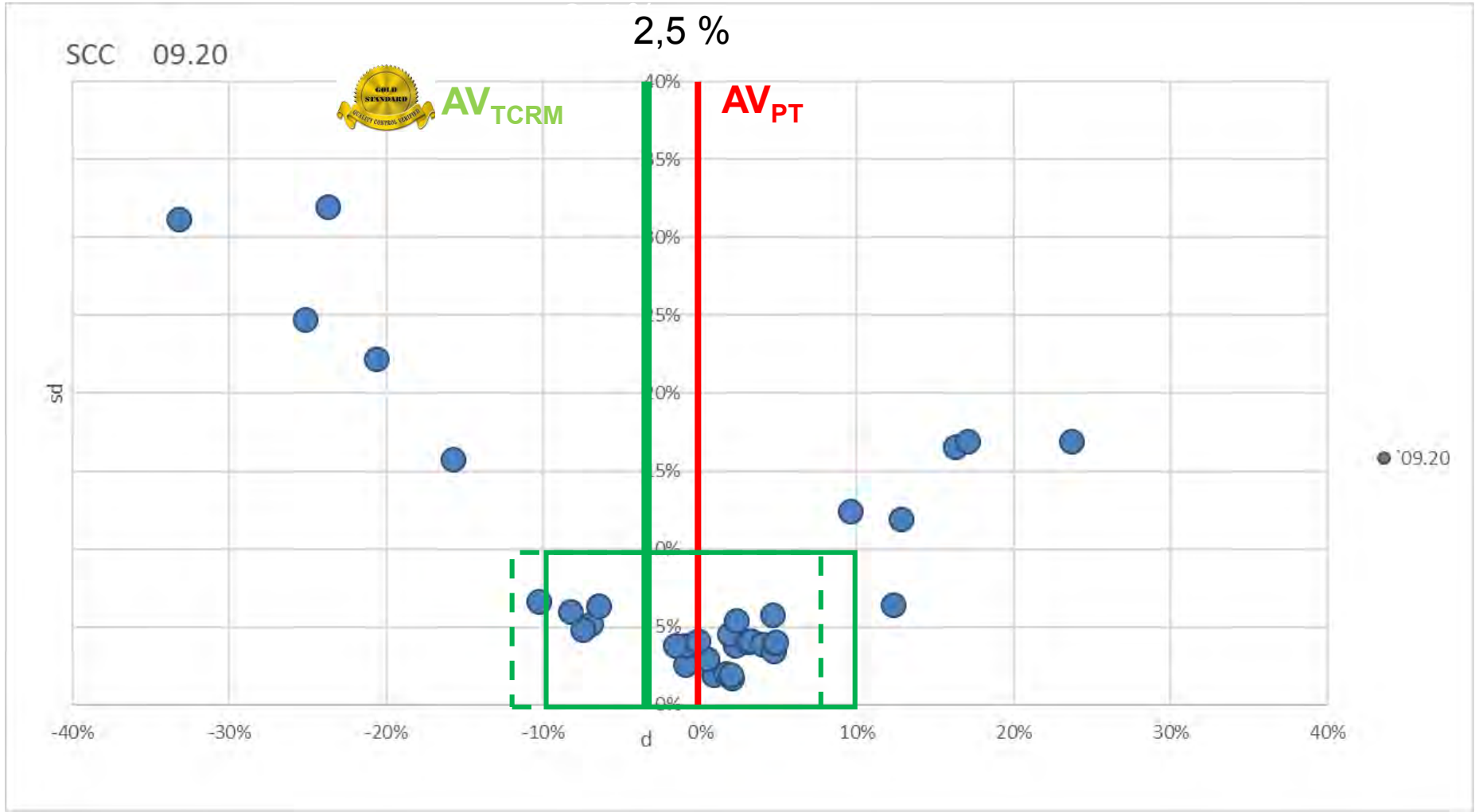
current setting of the intercept, $intercept_c$	0
current setting of the slope, $slope_c$	1,0000
a_c = -$intercept_c$/$slope_c$ =	0,00000
b_c = 1/$slope_c$	1,00000
standard error of the regression equation	3,13763
$\lvert\bar{x} - \bar{y}(\bar{x})\rvert$	12,20000
lower confidence limit for b, LCL(b)	0,99691
upper confidence limit for b, UCL(b)	1,04807
b_c **different** from b?	**no**
lower limit for a_c, LL(a_c)	2,21467
upper limit for a_c, UL(a_c)	22,18533
is mean bias **still correct**?	**no, adjustment necessary**
a_c **different** from a?	**no**

If adjustment is necesary:

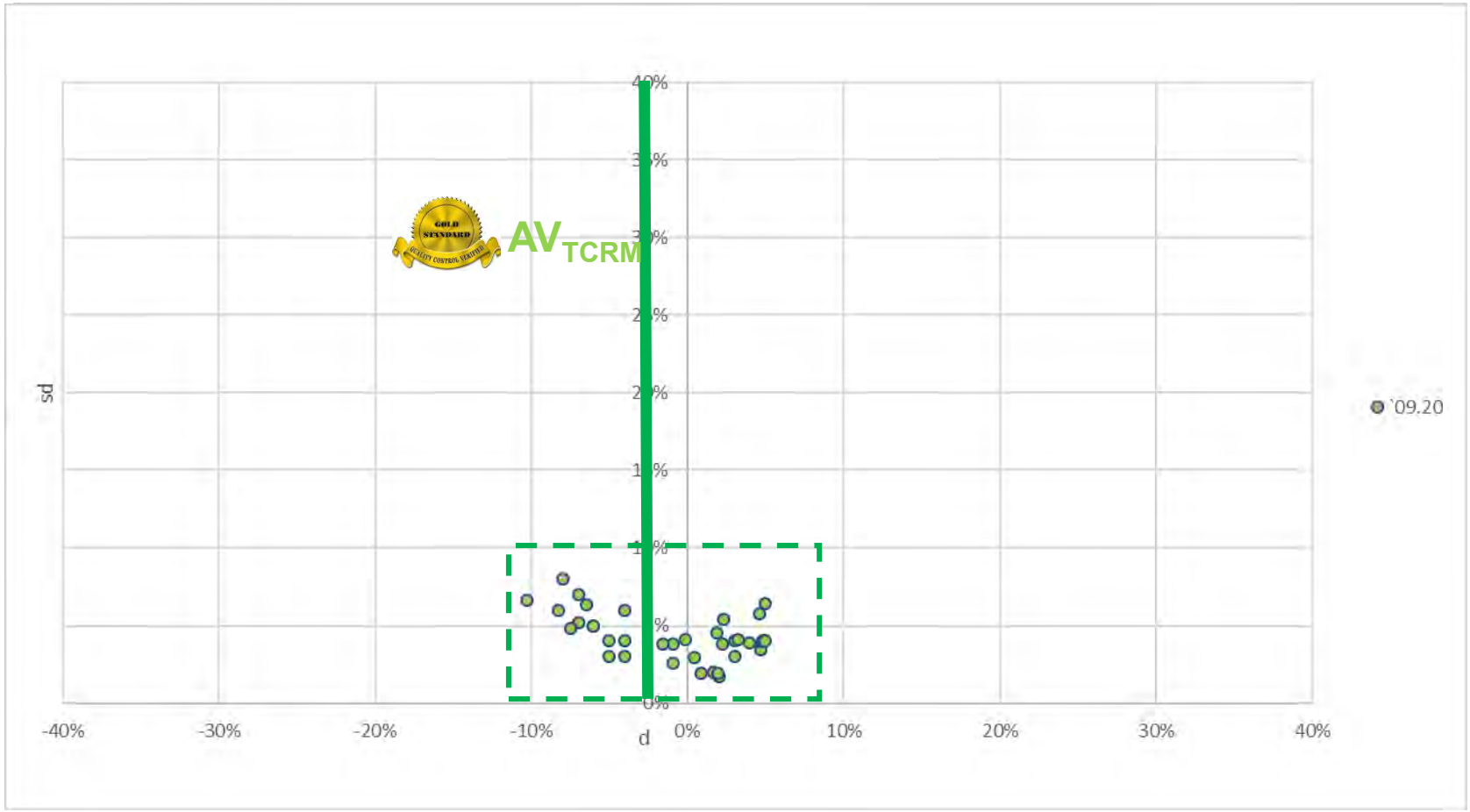
Adjusted settings	
$intercept_n$ = -a/b =	1,57223
$slope_n$ = 1/b =	0,97801

ICAR PROFICIENCY TEST

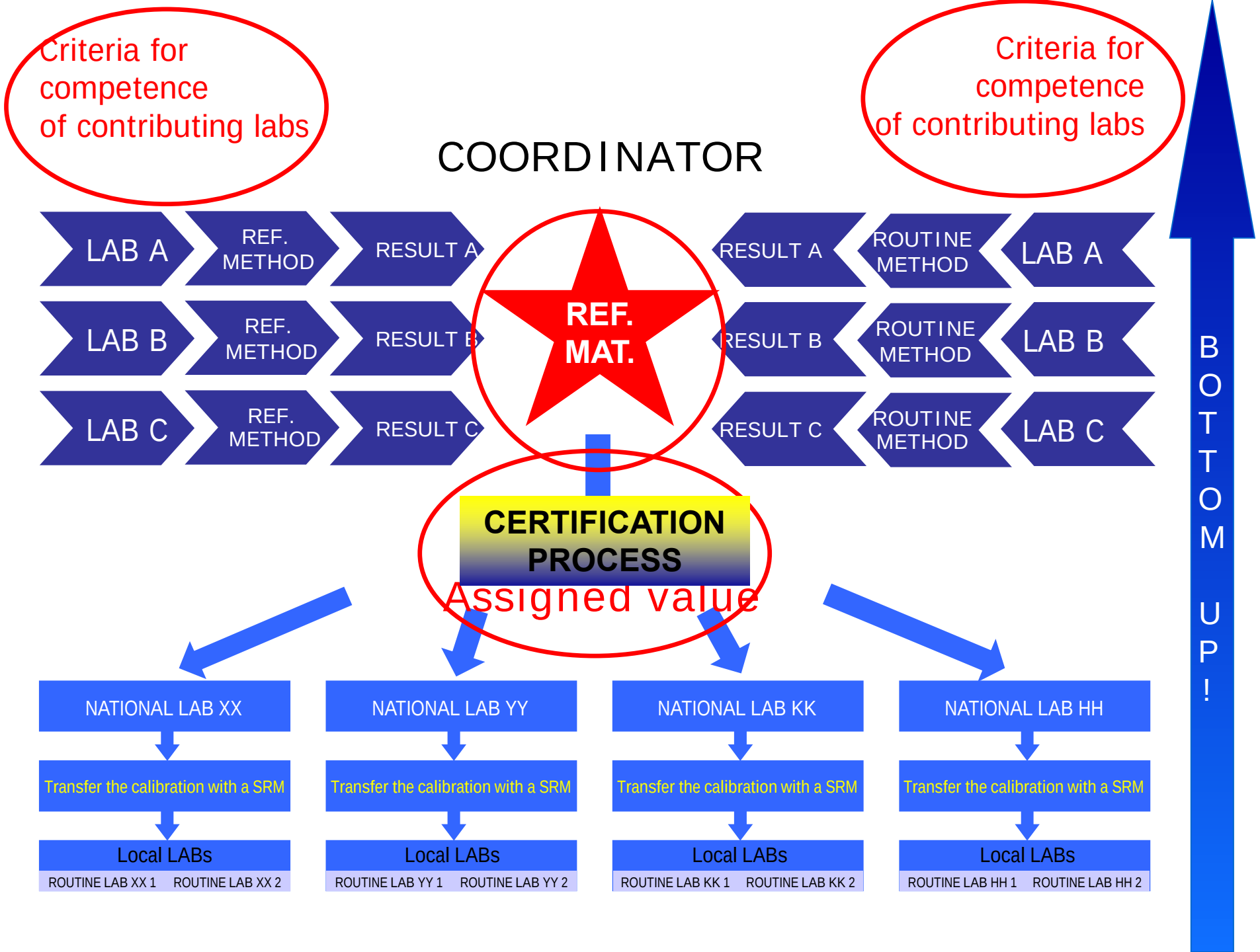
ASSIGN VALUE PT ⟷ ASSIGN VALUE$_{T\ CRM}$



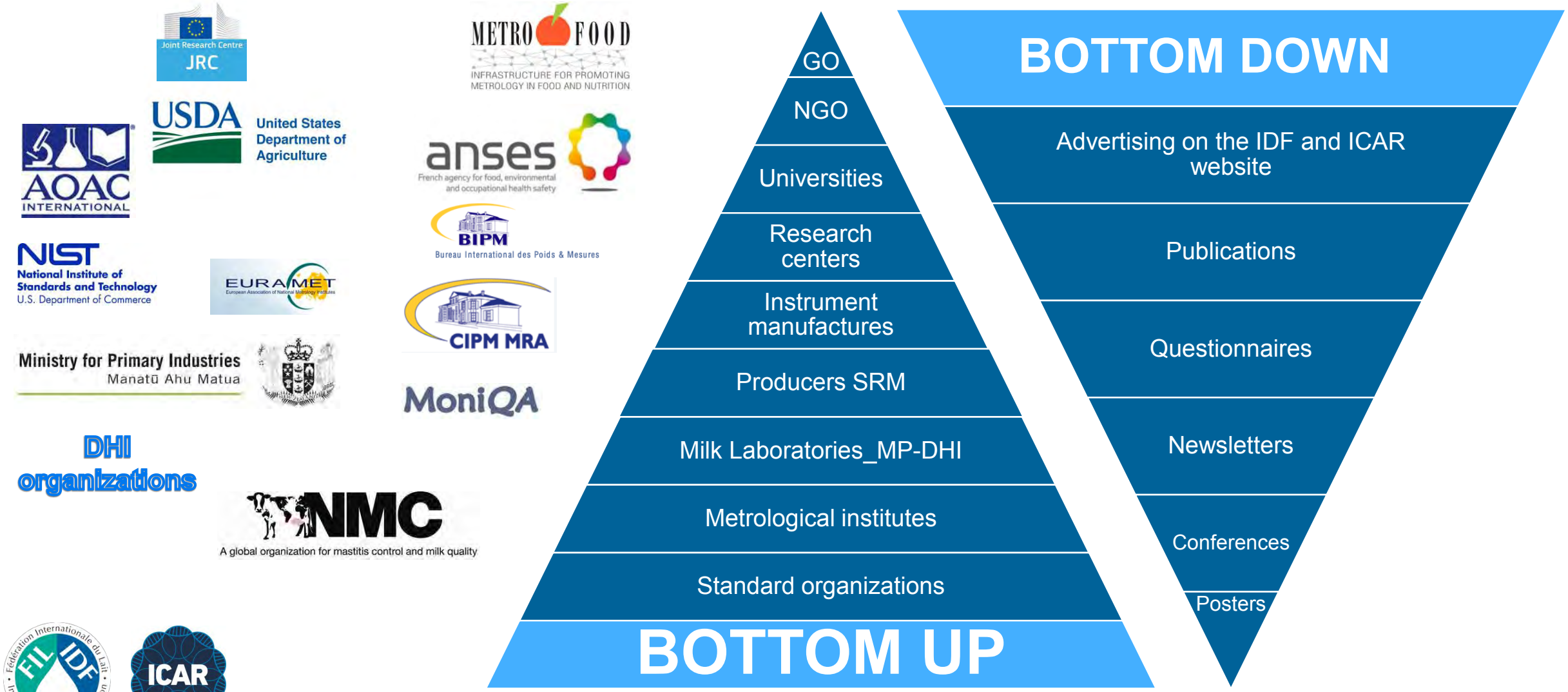
EVOLUTION EXPECTED……



PRESENTATION DONE IN 2010 AT EC JRC!



FOR A GLOBAL BETTER ACCEPTANCE



Joint Research Centre JRC

METRO FOOD
INFRASTRUCTURE FOR PROMOTING METROLOGY IN FOOD AND NUTRITION

USDA United States Department of Agriculture

AOAC INTERNATIONAL

anses
French agency for food, environmental and occupational health safety

BIPM
Bureau International des Poids & Mesures

NIST National Institute of Standards and Technology U.S. Department of Commerce

EURAMET
European Association of National Metrology Institutes

CIPM MRA

Ministry for Primary Industries
Manatū Ahu Matua

MoniQA

DHI organizations

NMC
A global organization for mastitis control and milk quality

FIL IDF
Fédération Internationale du Lait · International Dairy Federation

ICAR

MONITORING ACTIVITIES FOR THE GOAL REACHED

Important to monitor how the goal will be implemented in the analytical world

ICAR

- Asking to the ICAR PT participants the SRM
- Following the SRM providers in traceability to CRM
- Providing a report with each ICAR PT round to show the participant distribution and the AV and AV_{TCRM} comparison

METRO FOOD
INFRASTRUCTURE FOR PROMOTING METROLOGY IN FOOD AND NUTRITION

FNS-Cloud
Food Nutrition Security

AEOS
Analytical Equivalence

CHEMSTAT

- Calculation Model will monitor and compare the different PTs scheme and laboratories performance

FIL IDF
Fédération Internationale du Lait
International Dairy Federation

ICAR

ACKNOWLEDGEMENTS:

Joint Research Centre
JRC

ACTALIA
CONTRÔLE ET QUALITÉ

mpr

QSE

Qlip
Quality assurance in dairy

AEOS
Analytical Equivalence

ChemStat

Members of IDF ICAR AT S09 RSSCC

FIL IDF
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International Dairy Federation

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Thank you for your attention !