

New horizons

GRM



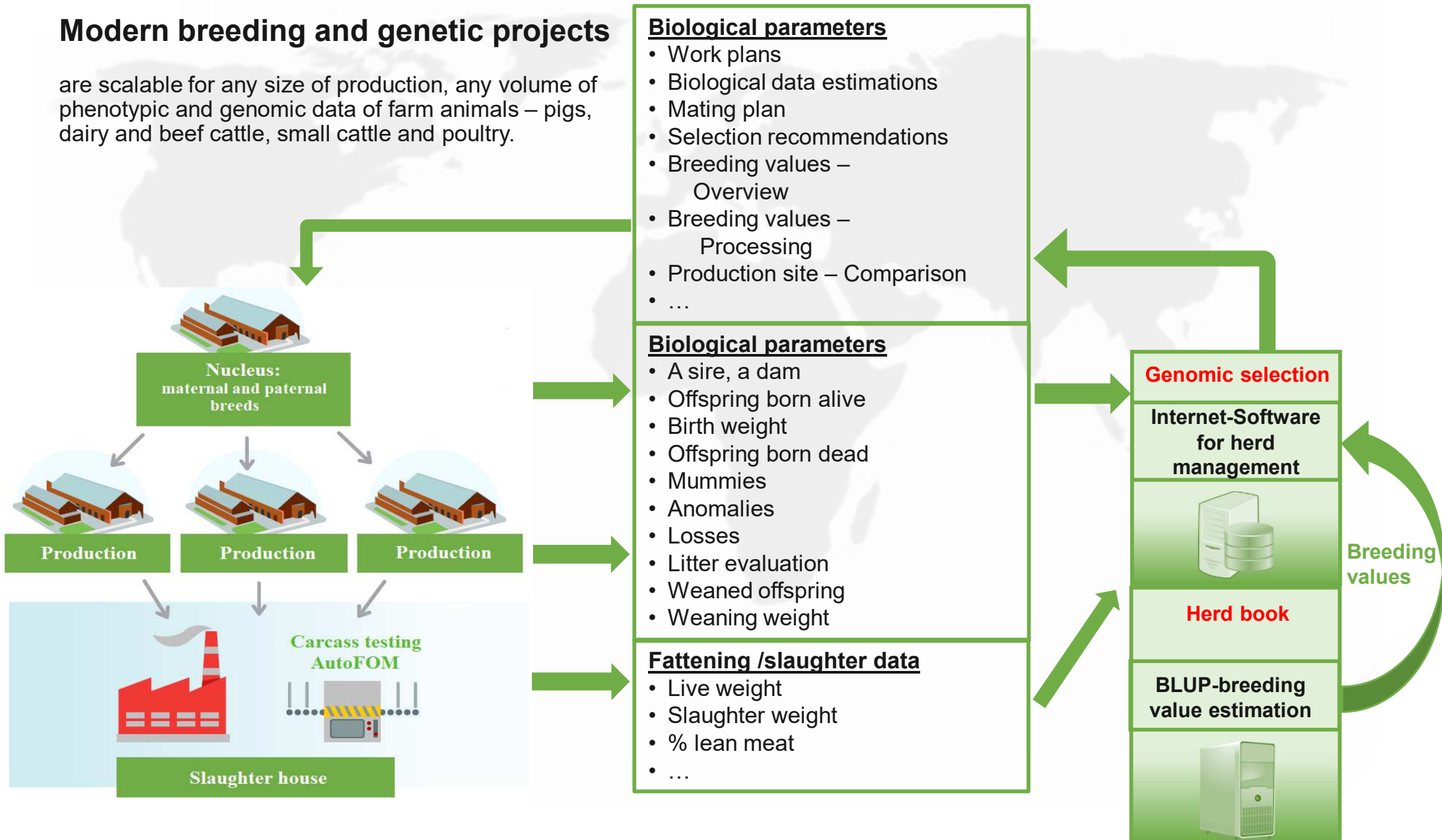
GRManagement GmbH



**Modern way of implementing
breeding and genetic projects**

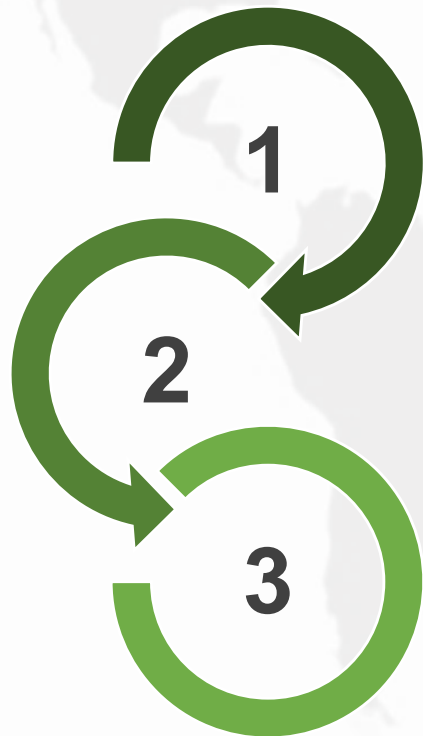
Modern breeding and genetic projects

are scalable for any size of production, any volume of phenotypic and genomic data of farm animals – pigs, dairy and beef cattle, small cattle and poultry.



The modern way of implementing breeding and genetic projects

It involves three successive stages of creating an information system:



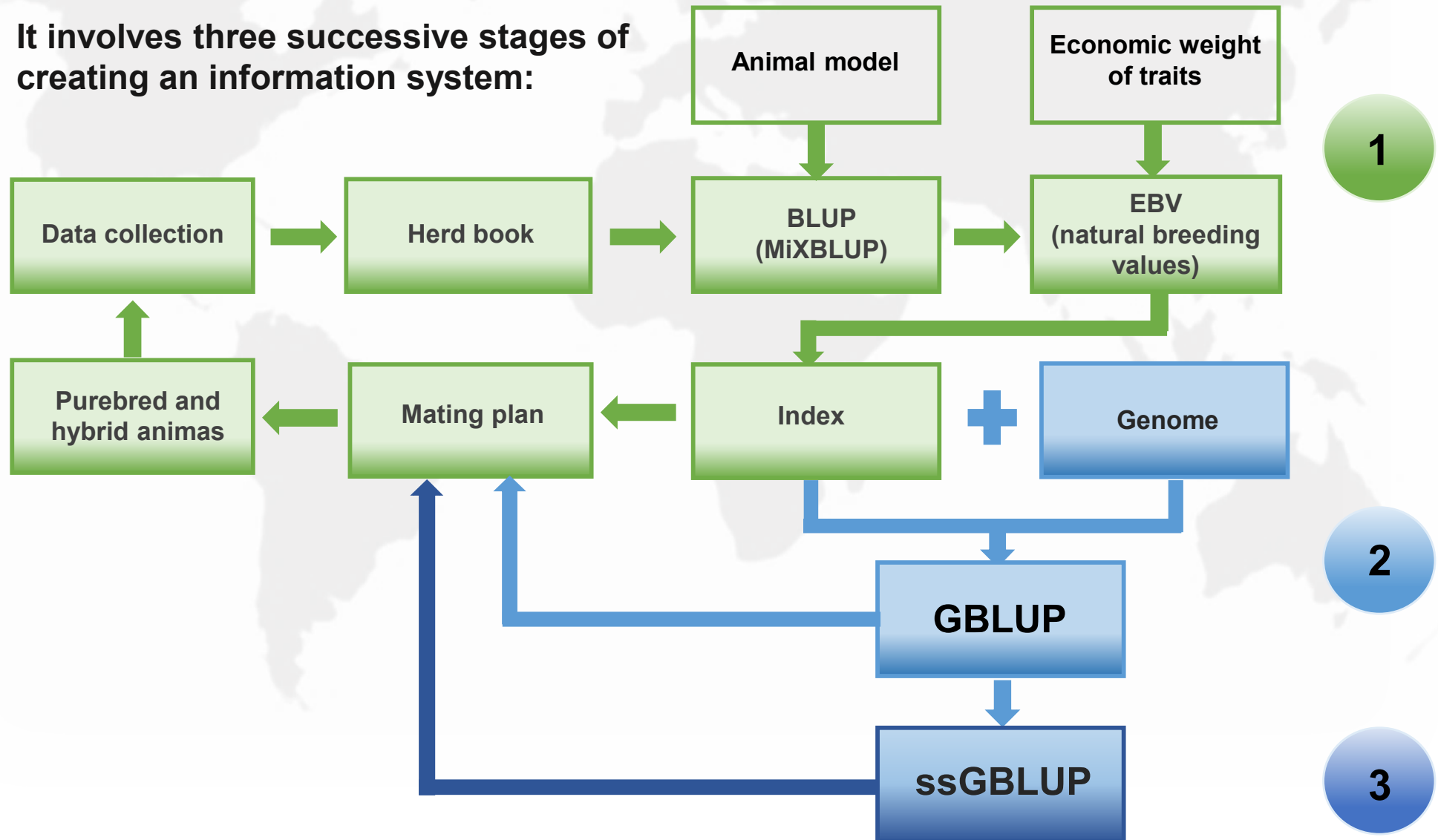
Establishing a sustainably running traditional BLUP breeding value estimation

Selection of a reference group of animals for genomic selection (SNP, GBLUP) with subsequent calculation of the combined breeding index

Genomic selection done for all animals (SNP, ssGBLUP) with subsequent calculation of combined breeding index

The modern way of implementing breeding and genetic projects

It involves three successive stages of creating an information system:



Tools for breeding work Mating plan

Anpaarungsliste

Eltern

Sauen		Rasse: YY																		
ZuchtID	GebDatum	IZK%	GZW	B%GZW	PZW	B%PZW	TZ75	MTZ	FVZ	RSD	MD	RZW	B%RZW	LGF	FAR	IAB	EZW	B%EZW	fZI	
4000855	26.11.2019	0,00	+165	61	+125	71	-16,9	+31,4	-0,1	+0,24	+0,83	+132	50	+0,48	+2,55	-2,22	+160	77	+70	
4001907	26.03.2020	0,00	+169	62	+181	67	+14,3	+60,1	-0,1	-0,49	+2,27	+100	55	-0,66	+1,51	-2,62	+137	72	+43	
4002203	01.05.2020	0,00	+162	53	+159	60	+23,1	+111,2	+0,2	-0,23	-0,23	+137	48	+1,14	-0,76	-0,26	+113	55	+15	
4016798	23.07.2021	0,00	+157	57	+144	69	+7,6	+1,0	-0,0	-0,63	+2,27	+129	45	+1,22	-0,80	+1,09	+128	68	+32	
4007344	21.08.2021	0,00	+161	51	+174	58	+9,9	+67,0	-0,2	+0,04	+1,29	+120	43	+0,41	-3,18	-0,91	+113	60	+15	
4007558	12.09.2021	0,00	+165	54	+141	64	-11,2	+14,0	-0,3	-0,15	+1,05	+120	43	+0,33	+0,05	-1,27	+154	65	+62	
4011104	19.03.2022	0,00	+160	50	+156	58	+12,5	+14,7	-0,0	-1,12	+2,18	+109	42	+0,59	+0,00	+1,19	+139	60	+45	
4013051	28.06.2022	0,00	+164	45	+151	54	+9,0	+22,5	-0,0	-0,96	+1,82	+121	36	+0,98	-1,35	+1,18	+140	54	+46	
4014082	23.07.2022	0,00	+152	43	+121	50	+6,0	+16,0	+0,1	-0,73	+0,84	+107	36	+0,57	-2,40	+1,35	+164	52	+74	
4422192	16.02.2023	0,00	+152	30	+141	49	-4,4	+41,7	-0,1	-0,24	+0,66	+109	10	+0,04	-1,01	-0,96	+141	52	+47	

Eber		Rasse: YY																		
ZuchtID	GebDatum	IZK%	GZW	B%GZW	PZW	B%PZW	TZ75	MTZ	FVZ	RSD	MD	RZW	B%RZW	LGF	FAR	IAB	EZW	B%EZW	fZI	
6002240	04.12.2022	0,00	+111	8	+104	17	+2,4	+3,6	+0,0	-0,06	+0,01	+98	0	-0,21	+0,87	-0,54	+117	14	+19	
93025204	20.10.2021	0,78	+112	3	+111	3	-4,8	+24,5	-0,0	-0,09	-0,03	+99	3	-0,20	+0,77	-0,69	+110	3	+12	
93025208	20.10.2021	0,78	+112	3	+111	3	-4,8	+24,5	-0,0	-0,09	-0,03	+99	3	-0,20	+0,77	-0,69	+110	3	+12	
95026671	30.07.2022	0,00	+125	24	+143	57	+28,8	+77,3	+0,2	-0,05	-0,15	+94	0	-0,27	+0,58	-0,35	+103	18	+04	

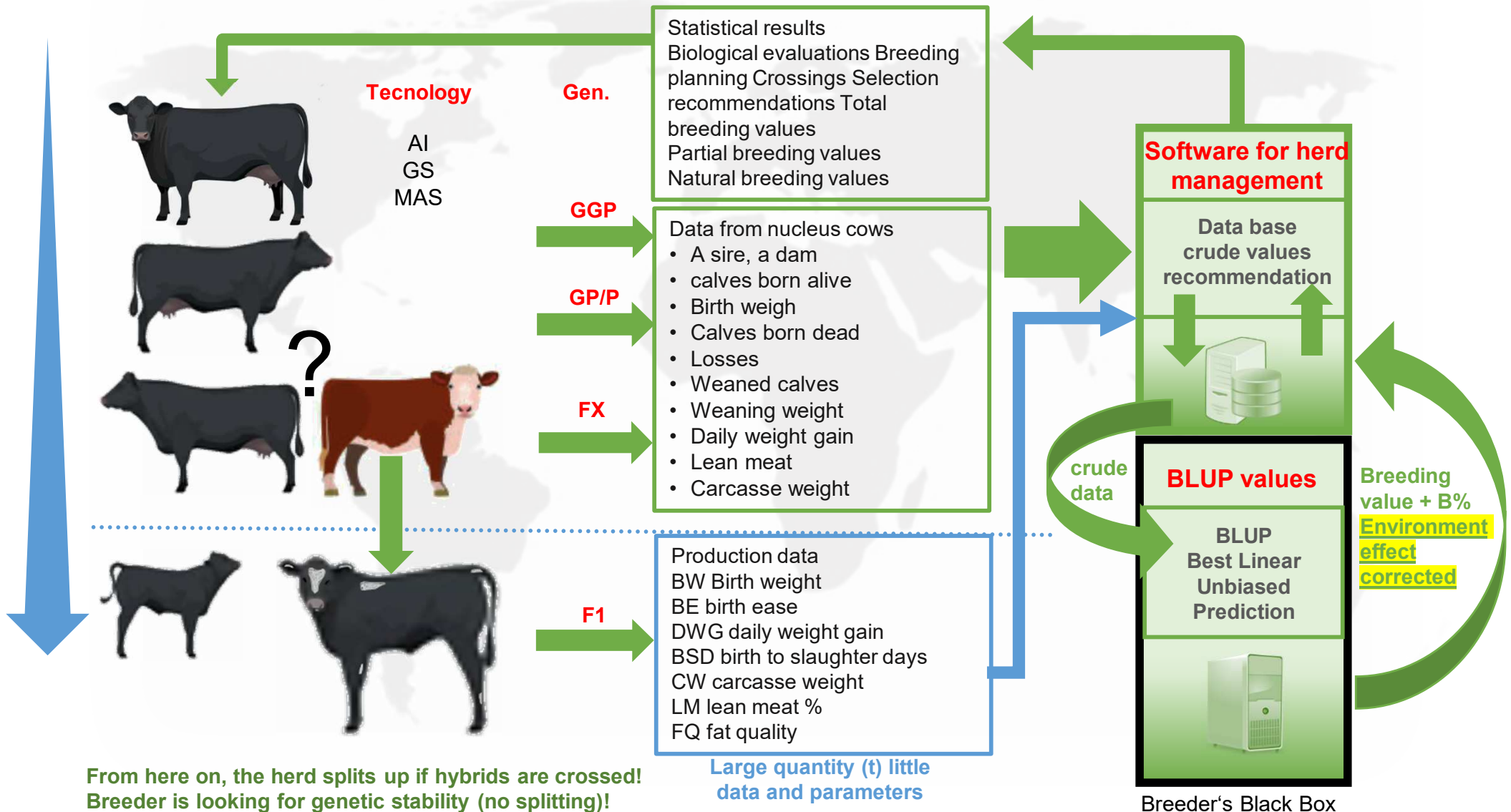
Anpaarungen für Sau 4000855

ZuchtID	BEW	IZK%	GZW	B%GZW	PZW	B%PZW	TZ75	MTZ	FVZ	RSD	MD	RZW	B%RZW	LGF	FAR	IAB	EZW	B%EZW	fZI
95026671	14,51	0,00	+145	21	+134	32	+5,9	+54,4	+0,0	+0,10	+0,34	+113	12	+0,11	+1,57	-1,29	+132	24	+37
93025204	13,89	0,00	+139	16	+118	19	-10,9	+28,0	-0,0	+0,08	+0,40	+115	13	+0,14	+1,66	-1,46	+135	20	+41
93025208	13,89	0,00	+139	16	+118	19	-10,9	+28,0	-0,0	+0,08	+0,40	+115	13	+0,14	+1,66	-1,46	+135	20	+41
6002240	13,81	0,00	+138	17	+114	22	-7,3	+17,5	-0,0	+0,09	+0,42	+115	13	+0,14	+1,71	-1,38	+138	23	+45

Anpaarungen für Sau 4001907

ZuchtID	BEW	IZK%	GZW	B%GZW	PZW	B%PZW	TZ75	MTZ	FVZ	RSD	MD	RZW	B%RZW	LGF	FAR	IAB	EZW	B%EZW	fZI
95026671	14,70	0,00	+147	21	+162	31	+21,6	+68,7	+0,0	-0,27	+1,06	+97	14	-0,47	+1,05	-1,49	+120	22	+24
93025204	14,08	0,00	+141	16	+146	18	+4,8	+42,3	-0,0	-0,29	+1,12	+100	14	-0,43	+1,14	-1,66	+124	19	+28
93025208	14,08	0,00	+141	16	+146	18	+4,8	+42,3	-0,0	-0,29	+1,12	+100	14	-0,43	+1,14	-1,66	+124	19	+28
6002240	14,00	0,00	+140	17	+143	21	+8,4	+31,8	-0,0	-0,28	+1,14	+99	14	-0,44	+1,19	-1,58	+127	22	+31

BLUP breeding value estimation for cattle, sheep and goats



BLUP Best Linear Unbiased Prediction

Nucleus Herds

Lines of the great-grandparents improved in pure breeding. 1 trait per line, e.g. laying performance

Pure bred GPs

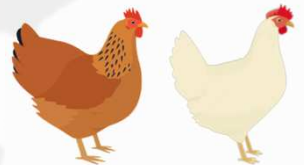
Cross breeding

Pure lines crossed to Hybrids

Parents (Hybrids?)

Multiplier Herds

Hybrids might be crossed



Generation
GGP

GP

P

or

F1

Statistical Results

- Biological evaluations
- Breeding planning Crossings
- Selection recommendations
- Total breeding values
- Partial breeding values
- Natural breeding values

Data from Multiplier Farms

- Performance data
- Resistance
- Behaviour
- Resonance freq. (Kdyn)
- Yolk percentage
- Egg white consistency
- Egg white height (H) mostly in Haugh Units
- Egg weight (G)

Laying hens as 1-day-old chicks

Hatcher Farm

Young Hens

Production Farm

Egg production



F2

F2

production data

- Laying Performance
- Body weight
- Feed consumption
- Egg weight
- Mortality
- % Brood eggs

plausible raw data

Software for herd management

Database
Field data
Recommendations



BLUP-breeding value estimation

BLUP
Best Linear
Unbiased
Prediction

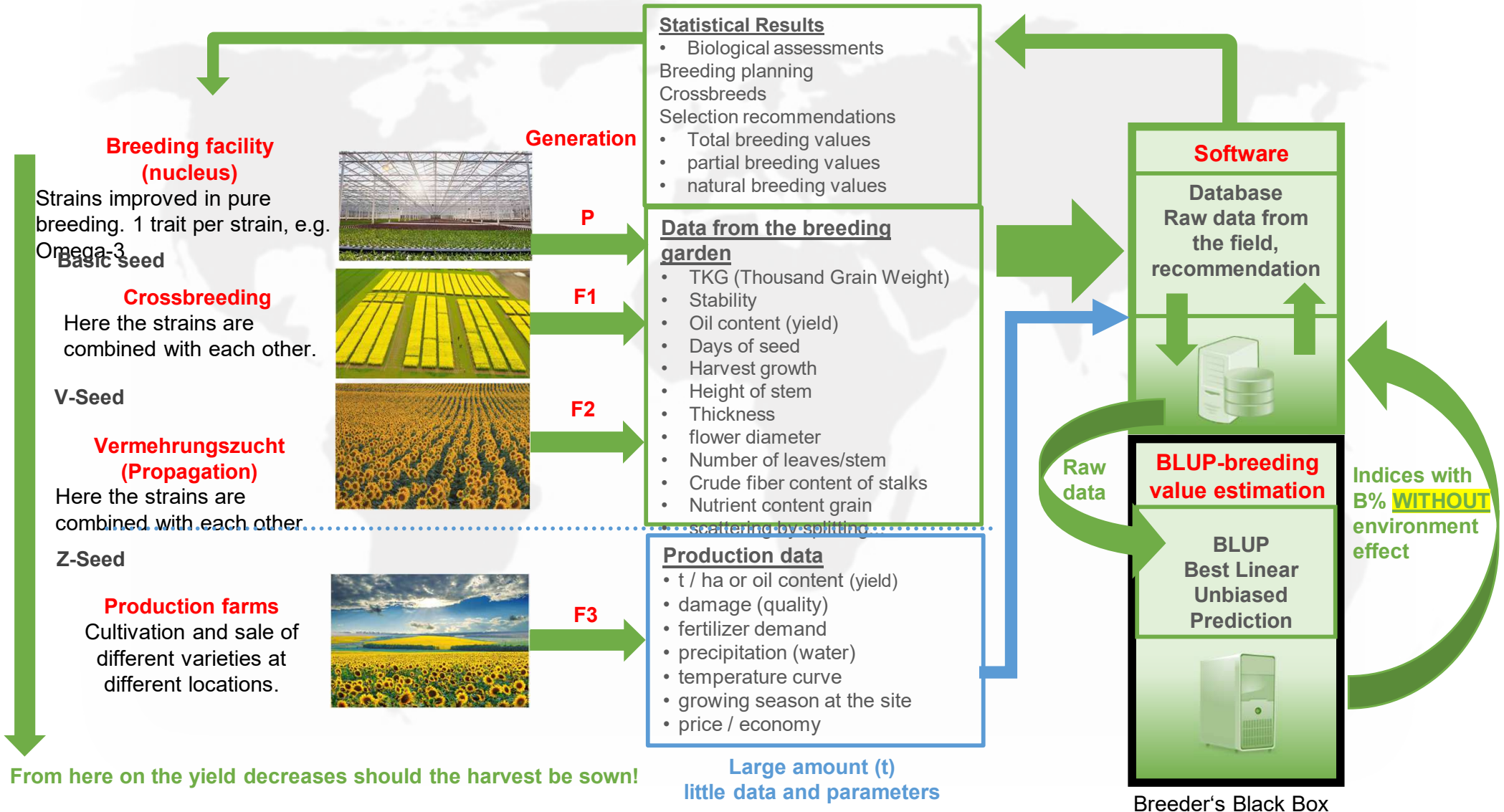


Breeding indices with B% without environment effect

From here on, the herd splits up if hybrids are crossed!
Breeder is looking for genetic stability (no splitting)!

Large quantity, little data,
and few parameters

BLUP breeding value estimation and genomic selection of plants



GRManagement GmbH

Global Trade, Consulting and Services in Agriculture and Industrial Breeding Industry



Radik Gareev

CEO, geneticist, MBA Agribusiness

Email: gareev@grmanagement.eu

Web: www.grmanagement.eu

Lyudmila Gorokhova

Assistant to the CEO

Email: info@grmanagement.eu

Web: www.grmanagement.eu