Updates from the Product Development Process team



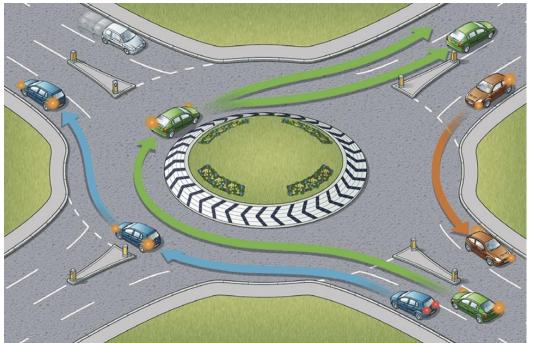


The Process of Processes











The Process of Processes



ESSENTIALS

 Establish essentials – standardized/harmonized processes supporting consistent and repeatable delivery of products/services:- consistency.

EFFECTIVENESS

Make sure we are doing the RIGHT THING effectively delivering the required
products/services to customers within agreed
resourcing.

EFFICIENCY

 Improve delivery of required products/services to customers- faster, cheaper, with lower transaction cost to use etc.

EXCELLENCE

 Essentials + effectiveness + efficiency + continuous improvement on delivering the right thing in the right way.

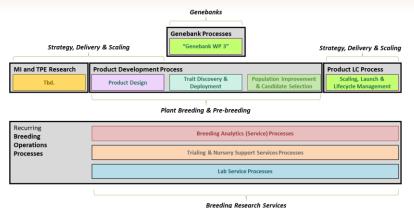
QUALITY MANAGEMENT SYSTEMS

- What gets measured gets done
- What gets measured and fed back gets done well

What gets rewarded gets repeated.

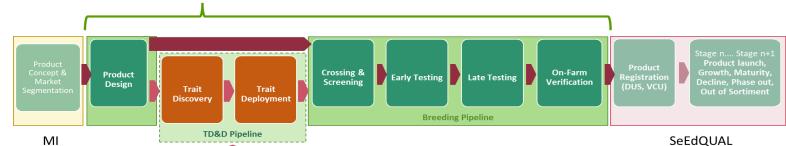
Unifying high level plan





Product Development Process

GENEBANK



	SIP	OC I	Мар	
Suppliers	Inputs	Process	Outputs	Customers
Providers/ Suppliers of each input	Inputs needed to enable the process	Process Start Steps in the Process Process End	Outputs of the process	Customers of each output
5	4	1	2	3

Supplier(s)- ALL inputs	Input(s)	Process (Stage)	Output(s)	Customer(s)
		Mi to eliaborate	Product Concept	Next MI Stage
		Mi to eliaborate	Market Segment Information	Product Design Team
		Stage Gate from MI		
Product design team, Market Intelligence and TPE research	Market Segmentation and Product concept	Product design	Target Product Profile (TPP)	Crossing and Screening teams and where needed Trait Discovery and Deployment
teams, breeding pipeline team, TD&D pipeline team, trait specialists	Understanding of existing elite germplasm pools and genetic variance of traits		TPP detailing main traits and any potential trait discovery targets	teams
	Phenotyping protocols and performance			
		Stage Gate Product Design to Trait Discovery		
		Stage Gate Product Design to Crossing & Selection		
TD&D teams, trait specialists, genebank teams, breeding	Trait discovery targets from TPP	Trait Discovery	Source germplasm and genetic variants	Trait deployment teams and, where relevant, crossing and screening teams
pipeline teams, BRI and other specialist services	Appropritate experimental design, phenotyping, genotyping, logistics, data management, and analytics capacities, capabilities, skills, protocols			(genetic variant knowledge)
aprending set these	and support		Source germplasm lists	
			Data and knowledge on genetic variants of interest and predictions	
		Stage Gate		
TD&D teams, trait specialists, genebank teams, Crossing and	Identified Priority Traits, their sources of new variation and/or specific genetic variation of value	Trait Deployment	Semi Elite Donors	Crossing and Screening teams
screening teams, BRI services	Recurrent parent sources		Semi-elite trait donors containing novel variation in demanded recurrent parent backgrounds	
	Appropriate breeding design, trialing design, nursery, phenotyping, genotyping, logistics, data management, and analytics capacities,		Data for breeding application including	
	capabilities, skills, protocols and support		training adjustment	
		Stage Gate		
Crossing and Screening teams, BRI services, Early testing teams	Target Product Profile	Crossing & Screening	Experimental Products	Early Testing teams
	Early generation lines with desired breeding value defined in TPP		Individuals from populations that have anticipated higher breeding value defined	TD&D team
	Early generation lines with high realized and predicted breeding value for TPP defined traits		by TPP	
	Breeding lines with specific desired breeding value		Data for training adjustment	
	Semi-elite trait donors containing novel variation in demanded recurrent parent backgrounds (where needed)		Data on exotic allele advancement	
	Appropriate breeding design, trialing design, nursery, phenotyping, genotyping, logistics, data management, and analytics capacities, capabilities, skills, protocols and support			
		Atron Anto		
		Stage Gate		

Approved Stage plan

Approved SIPOC

- Align with MI, SE
- Common lexicon

Implementation

Translating from SIPOC

KPIs



Collect Payment

The waiter hands the bill to

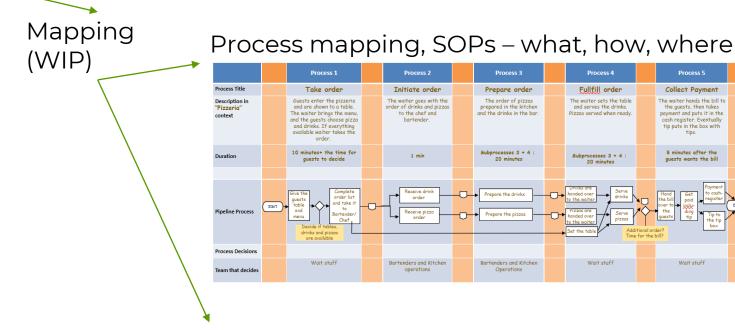
payment and puts it in the

cash register. Eventually tip puts in the box with

5 minutes after the

Product Development Process SIPOC

mediant Text reason and Text reason becoming the tam, trait proclaims The production team, trait proclaims Product Design Easen, 1981 and Conserving Harm, 1981 and Screening Easen, 2014 and showledge on genetic variants of value to ease	Supplier(s)- ALL inputs	Input(s)	Process (Stage)	Output(s)	Customer(s)
Note: design team, Murket design team, Murket refreshers and FF research amount. Feeting policies are manuscularly of existing eliting			MI to ellaborate	Product Concept	Next MI Stage
Appropriate formating design training adjustment. Appropriate formating design training adjustment. Appropriate formating design products and product concept teams and where readings are after the team, training adjustment. Appropriate formating and streening teams and where reading products and performance. Product Design to Trait Discovery Stage Gate Product Design to Trait Discovery and Deployment und description to Trait Discovery and Deployment trait discovery targets in Trait Discovery and Deployment trait discovery targets in Trait Discovery and Deployment consists of Trait Discovery and Deployment trait discovery targets in Trait Discovery and Deployment trait discovery targets from TPP Trait Discovery Data of traiting adjustment and genetic variants of interest and predictions. Data and knowledge on genetic variants of interest and predictions. Data and knowledge on genetic variants of interest and predictions. Data and knowledge on genetic variants of interest and predictions. Data and knowledge on genetic variants of interest and predictions. Data and knowledge on genetic variants of interest and predictions. Data and knowledge on genetic variants of interest and predictions. Data and knowledge on genetic variants of interest and predictions. Data and knowledge on genetic variants of interest and predictions. Data for training adjustment. Data			Mi to ellaborate	Market Segment Information	Product Design Team
mediant Text reason and Text reason becoming the tam, trait proclaims The production team, trait proclaims Product Design Easen, 1981 and Conserving Harm, 1981 and Screening Easen, 2014 and showledge on genetic variants of value to ease			Stage Gate from MI		
Penotyping protocols and performance Product Design to Trait Discovery	Product design team, Market Intelligence and TPE research Leams, breeding pipeline team, TD&D pipeline team, trait	Understanding of existing elite germplasm pools and genetic variance	Product design	TPP detailing main traits and any potential	
Poduct Design to Trait Discovery BEAD teams, trait specialist, proceding to great product Design to Cossing & Selection Trait discovery targets from TPP Appropriate experimental design, phenotyping, genotyping, logistics, data management, and analytics capacities, dispatched proceding and screening teams, Bill and other pecialist services. But an an inconsider product proceding and screening teams, Bill services. But an an inconsider product proceding and screening teams, Bill services. But an an inconsider on genetic variants of instrument and predictions. Trait Discovery Source germplasm and genetic variants of instrument and predictions. Source germplasm lates. Source germplasm and genetic variants of instrument and predictions. Source germplasm lates and instrument predictions. Semi-ellet trait donors containing novel variation of value semi-central predictions. Semi-ellet trait donors containing novel variation of value perceptive breeding design, traiting design, nursery, phenotyping, generyloning, logistics, data management, and analytics capacities, capabilities, skills, protected and support. Stage Gate Trait Disposement Stage Gate Cossing & Screening Cossing and Screening teams, Bill services, Early testing teams Target Product Profile Early generation lines with desired breeding value defined in TPP Early generation lines with desired breeding value Source germplasm and genetic variants of instrument and genetic variants of variations of value Cossing & Screening Cossing & Screening Data for training adjustment Data for training adjus	specialists				
D&D teams, trait specialist, products experimental design, phenotyping, genotyping, logistics, data management, and analytics capacities, specialist teams, beeful teams, per specialist services D&D teams, trait specialist, products and other pecialist services D&D teams, trait specialist, products and support Stage Gate Trait Deployment Semi-lite trait donors containing novel variation of value Removering present sources Appropriate breeding design, traiting design, nursers, phrontoping, generyoning, logistics, data management, and analytics capacities, capabilities, skill, protocols and support Trait Deployment Stage Gate Cossing & Screening Cossing & Screening Data for training adjustment Deprimental Products Target Product Profile Early generation lines with depired breeding value defined in TPP Early generation lines with depired breeding value defined in TPP Early generation lines with depired breeding value defined in TPP Early generation lines with depired breeding value defined in TPP Early generation lines with depired breeding value defined in TPP Early generation lines with depired breeding value defined in TPP Early generation lines with depired breeding value defined in TPP Early generation lines with depired breeding value defined in TPP Early generation lines with depired breeding value defined in TPP Early generation lines with depired breeding value defined in TPP Early generation lines with depired predictions Data fo			Product Design to Trait Discovery		
proteins tempt for the period services Appropriate experimental design, phenotyping, genotyping, ligistics, data management, and analytics capacities, spabilities, skill, protocols and support DBAD teams, trait specialist. Identified Priority Traits Data and knowledge on genetic variants of violentered and predictions. Stage Gate Trait Deployment Semi Elle Donors Appropriate herein design, traiting design, numery, phenotyping, genotyping,			Product Design to Crossing &		
Appropriate experimental design phenotyping, legistics, participated services As a support of the experimental design phenotyping, legistics, data management, and analytics capacities, capabilities, stills, protocols and support DBLO teams, trast specialists, specific services and predictions DBLO teams, trast specialists, specific services and predictions DBLO teams, trast specialists, s	TD&D teams, trait specialists,	Trait discovery targets from TPP	Trait Discovery	Source germplasm and genetic variants	
DAD exams, trait specialists, speechast teams, Crossing and creening teams, BRJ services. Early testing teams, BRJ services. Early testing teams, BRJ services. Early testing teams, BRJ services and predict from the team of the services of new variation and/or specific greating and Screening teams, BRJ services. Appropriate breeding design, traiting design, nursery, phenotyping, genotyping, tightics, tights management, and salvylics capacities. Tooling and Screening teams, BRJ services and Screening teams, BRJ services, Early testing teams, BRJ services, Early generation lines with high realized and predicted breeding value defined in TPP Early generation lines with high realized and predicted breeding value fellined by TPP Data for training adjustment Data on exocit allele advancement Tool on exocit allele advancement Tool on exocit allele advancement Early generation lines with high realized and predicted breeding value fellined by TPP Data for training adjustment Data on exocit allele advancement Tool of TPP defined trains Data for training adjustment Data on exocit allele advancement Early generation in the Early Service and Early Early E	pipeline teams, BRI and other			Identified Priority Traits	
DBD teams, trait specialists, enables teams, Crossing and cereoring teams, Bill services. But services, Early testing teams, Bill services, Early Services, Bill s					
DBD teams, trait specialists, emothers teams. Crossing and cereving steams. Bit services are success and continued from the first state of the success of new variation and/or specific presents. Considered from the first state of the success of the variation of value and cereving steams. Bit services are success and supports the reding design, nursery, phenotyping, generolyping, liquid protection and supports. Considered from the success of the success					
semelant teams, Bill services Recurrent parent sources Appropriate breeding design, trialing design, nursery, phenotyping, services, leaf, process and support sources Appropriate breeding design, trialing design, nursery, phenotyping, services, leaf, process and support Stage Gate Cossing & Screening Early generation lines with high realized and predicted breeding value defined in TPP Early generation lines with high realized and predicted breeding value Breeding lines with specific desired breeding value Stage Gate Cossing & Screening Larry generation lines with high realized and predicted breeding value for ITP defined traits Breeding lines with specific desired breeding value Appropriate breeding design, trialing design, nursery, phenotyping, generation lines with high realized and predicted breeding value Appropriate breeding design, trialing design, nursery, phenotyping, generation lines with high realized and predicted breeding value Appropriate breeding design, trialing design, nursery, phenotyping, generation lines with high realized and predicted breeding value Data for training adjustment Data on exotic allele advancement Appropriate breeding design, trialing design, nursery, phenotyping, generation lines, process and explained, leaves readed) Appropriate breeding design, trialing design, nursery, phenotyping, generation lines, process and explained, leaves readed)			Stage Gate		
Recurrent parent sources Appropriate bereding design, trialing design, nursery, phenotyping, entropying, legistics, data management, and analytics capacities, stifli, process and analytics capacities, stifling adjustment stifl	TD&D teams, trait specialists, genebank teams, Crossing and		Trait Deployment		Crossing and Screening teams
gencylong, legitics, skills, protection and support Target Product Profile All services, Larly testing testing Early generation lines with desired breeding value defined in TPP Early generation lines with desired breeding value defined in TPP Early generation lines with desired breeding value defined in TPP Early generation lines with specific desired breeding value for TPP defined trails Breeding lines with specific desired breeding value Same-elles trait downs containing model variation in demanded recurrent parent backgrounds (where needed) Appropriate breeding design, trialing design, nursery, phenotyping, gencypine, legitins, protection and samplement, and sample	screening teams, BRI services	Recurrent parent sources		variation in demanded recurrent parent	
Target Product Profile Early generation lines with desired breeding value defined in TPP Early generation lines with desired breeding value defined in TPP Early generation lines with high realized and predicted breeding value for TPP defined trusts Breeding lines with specific desired breeding value for TPP defined trusts Breeding lines with specific desired breeding value for TPP defined trusts Sees-like trust disnort containing novel variation in demanded recovered parent backgrounds (where needed) Appropriate breeding design, training design, nursure, phenotyping, generotypine, depicks, data management, and analytics capacities, capabilities, skills, protocols and support		genotyping, logistics, data management, and analytics capacities,			
Bit services, Early testing teams Early generation lines with desired breeding value defined in TPP Early generation lines with high realized and predicted breeding value for TPP defined traits Bit ending lines with specific desired breeding value Service lites that the very lite of the properties of the properti			Stage Gate		
Early generation lines with desired breeding value defined in TPP Early generation lines with high realized and predicted breeding value for TPP defined rules. Breeding lines with specific desired breeding value Semi-eille trait downs containing novel variation in demanded recurrent partner background; before needed: Appropriate breeding design, trialing design, nursery, phenotyping, genotyping, lightics, data management, and lashlylic capacities, capabilities, skills, protocols and looping of the proportion of the property of the p	Crossing and Screening teams, BRI services, Early testing teams	Target Product Profile	Crossing & Screening	Experimental Products	Early Testing teams
for TPP defined traits Breeding lines with specific desired breeding value Semi-elles trait downs containing novel variation in demanded recurrent parent backgrounds (where needed) Appropriate hreeding design, nutures phonotoping, generylaping, degreeding, traiting design, nutures phonotoping, generylaping, degreeding, traiting design, nutures, phonotoping, generylaping, degreeding, and analytics capacities, capabilities, skills, protocols and support		Early generation lines with desired breeding value defined in TPP			TD&D team
Breeding lines with specific desired breeding value Semi-eller trait downs containing movel variation in demanded recurrent parent backgrounds (learn rended) Appropriate breeding design, trialing design, nursery, phenotyping, generyping, liquid, portions the support complete, capacities, capacities, capacities, proteoping the support capacities, capacities, capacities, proteoping the support					
Semi-eilte trait donors containing novel variation in demanded recurrent parent backgrounds (where needed) Appropriate breeding design, railedgist, nursery, phenotyping, genotyping, ligitics, data management, and analytics capacities, capabilities, skills, protocols and support		Breeding lines with specific desired breeding value			
genotyping, logistics, data management, and analytics capacities, capacities, capacitities, skills, protocols and support				pata on exotic allele advancement	
Stone Gate		genotyping, logistics, data management, and analytics capacities,			
			Stage Gate		



Skills mapping, who – RACI, decision making

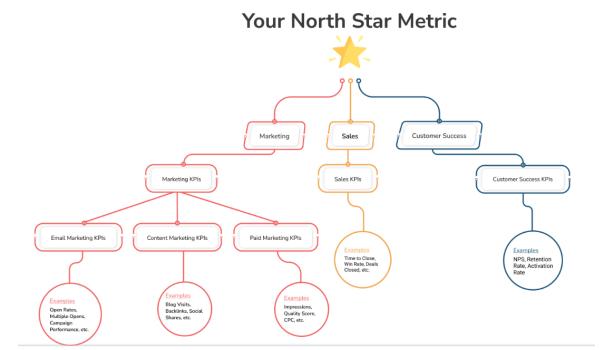
KPIs



Develop a set of high level KPIs to be measured <u>across</u> breeding programs

Metrics- things we measure KPIs strategic metrics aligned with goals

Every KPI is a metric, but not every metric is a KPI



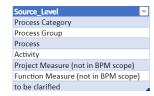
PPMF working group



Process performance management framework

- Definition and stakeholder endorsement of KPI design principles and processes
- Definition and stakeholder endorsement of KPI MEL framework

Measurement Title	Description	Portfolio 🔍	Organizational con	Business Question addressed (Descrip	Action(s) triggered	Business Benefits characte	M ~	Target (if Type a KPI)	Owner	Status	Source Process	Source Process	Required input (Source(s) of input c	Calculation	Category	Classifica 🗸	Rol lever
Measurement Name	Short description of the Measurement	Grouping	Crop Center Crop Pipeline Site Location	What exactly is described through the measure and its score?	Whet corrective action(s) would be taken in response to the score?		Metric OR ION		Name	current use profile	Source Process Name	Process Category/ Process Group/ Process/ Activity/ Task	Is the data needed for the measurement/KPI available and (easily) accessible?		appropriate		OR Effectiveness OR	inventiveness DR Relevance DR Operational Excellance
# germplasm created	The number of germplasm entries created through use of the EBS system	EBS	All ESS adopting programs	adoption by the breeding program?	Metric Dwners pay attention to EBS adoption progress Computing resource (cloud) and support need can be		Metric		Crop lead	IN USE	Technology Adoption	Project Measure (not in BPM scope)	data being generated and captured in the database as a result of people using the	EBS production database	# germplasm records in EBS	Lead Measure	Effectiveness	Operational Excellence
# experiments created	The number of experiments created through use of the EBS system		programs	adoption by the breeding program?	and support need can be sallored	Process efficiency improvement More informed decision making on time decision making Proof of Rol Into ERS	Metric		Crop lead	IN USE		in BPM scope)	and captured in the database as a result of people using the system.	EBS production database	in EBS			
# occurences created	The number of occurrences created through use of the EBS system		All EBS adopting programs	adoption by the breeding program?	Motric Dwners pay attention to EBS adoption progress Computing resource (cloud) and support need can be sallored	Data quality improvement Process efficiency improvement More informed decision making on time decision making Proof of Rol into EBS			Crop lead	IN USE		in BPM scope)	and captured in the database as a result of people using the system	EBS production database	in EBS			
# occurences harvested	The number of occurrences harvested using the EBS system	EBS	All ERS adopting programs	adoption by the breeding program?	Metric Owners pay attention to EBS adoption progress Computing resource (cloud) and support need can be trained.	Data quality improvement Process efficiency improvement More informed decision making on time decision making Date of Bol into EBS	Metric		Crop lead	IN USE	Technology Adoption	Project Measure (not in BPM scope)	data being generated and captured in the database as a result of people using the	ERS production database	# occurrences records in EBS	Lead Measure	Effectiveness	Operational Excellence
# plot data points created	The number of plot data points collected using the EBS system	EBS	All E85 adopting programs	adoption by the breeding program?	Metric Dwners pay attention to EBS adoption progress Computing resource (cloud) and support need can be	Data quality improvement Process efficiency improvement More informed decision making on time decision making Panet of Analysts (AS	Metric		Crop lead	IN USE	Technology Adoption	Project Measure (not in BPM scope)	data being generated and captured in the database as a result of people using the	EBS production database	# plot data points in cas	Lead Measure	Effectiveness	Operational Excellence
	created using the EBS system	ERS	All EBS adopting programs	adoption by the breeding program?	and support need can be tallored	Data quality improvement Process efficiency improvement More informed decision making on time decision making Proof of Rol into ERS			Crop lead	IN USE	Technology Adoption	in BPM scope)	and captured in the database as a result of people using the motion.	EBS production database	records in EBS			Operational Excellence
	Average number of stars (0.5) given by the user as a rating of existraction with their interaction with the service desk		EBS service desk	Are users receiving a satisfactory level of support when using the help deak, i.e. getting the information they need in an understandable and friendly manner?	Service desk lead and dispatchers review procedures and documentation, additional training for dispatchers		KPI	4.3	André Embersics	IN USE	Technology Adoption	Project Measure (not in BPM scope)	The user rating (number of stars) which can be optionally provided when a ticket is closed. Target is 4.5 or higher lost of 51	JRA ticketing system	The average number of stars received on the service desk inquiries.	Lead Measure	Effectiveness	Operational Decilience
Response time to EBS Service Desk inquiries	The percentage of tickets submitted to the support dook that receive a first response within 1 hour	ces	EBS service desk	EBS platform being handled and responded	Service desk lead and dispatchers review procedures, staffing levels	Increased user satisfaction and productivity	iD1	95%	André Embersics	IN USE	Technology Adoption	Project Measure (not in BPM scope)	Submit time and response time captured by the JIRA ticketing system. Target is 93% of tickets have first	JIRA ticketing system	Time elapsed between when a tricket is submitted by the user and when a human provides the initial response	Lead Measure	Effectiveness	Operational Excellence





Rol lever	~
Inventiveness	
Relevance	
Operational Excellence	_

Status	~
IN USE	
DEFINED	
PRIORITIZED for Definition	
IDENTIFIED	
Mock-up example	





KPIs



Working group:

Arlo Thompson, Brigitte Uwimana, Xiaofei Zhang, Kevin Pixley.

Built from existing KPIs (rice, maize), input from the team, review and input from the core team – iterative process

From >60 potential indicators to 26 KPIs relevant to breeding performance and modernization goals

Grass-root buy-in, much improved cohesion

Product Development

	Evidence to capture		Evidence to capture
1	Attain genetic gain targets	14	Site management achieves >85% high data quality
2	Breeding Portal is single source for MS/TPP	15	Digitized data capture & focused on advancements
3	Clear, concise TPPs drive mid/long term focus	16	Use of databases: EBS, <u>BreedBase</u> , BMS
4	MS/TPPs guide resource prioritization (Tiers)	17	Checks that are elite for TPE
5	Active current TDD projects maintained and updated quarterly	18	Advancement decisions are jointly conducted
6	All crops follow harmonized practices to assess trait value and ROI of TDD	19	Aggressive early testing, representing TPP & TPE
7	Minimize recycle time with process/technologies	20	Products advanced to OFV provide added value
8	Recycling of pre-elite/elite parents (>90%)	21	OFVT represent TPE @ 30+ locations
9	Use of selection indices	22	Gender disaggregated data from OFVT
10	QC genotype parents and advanced trial entries	23	Develop external networks with partners
11	Monitor genetic diversity long term	24	Training in continuous improvement, all levels
12	Employ Breeding Scheme Mgr to define schemes: Breeding &TD&D	25	Continuous process improvement in all planning
13	Minimum level of acceptable trial / data quality	26	Team evaluation: Breeding success

KPIs



- Review of and endorsement of high-level harmonized KPIs by Breeding leadership
- Crop/program/pipeline specific targets
- Harmonized, effective and efficient measurement approaches- analytics pipeline
- Reporting support- make it easybreeding portal, breeding scheme manager, PMC

