

# INTERBULL CENTRE

ANNUAL OPERATING PLAN 2024



Version 3: 30 January 2024

**January 2024**

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## 1 ABOUT INTERBULL

<p><b>OUR MISSION</b></p> <p>To enhance livestock genetic improvement through international data exchange and best methods development.</p>	<p><b>OUR VISION</b></p> <p>To be the worldwide network providing information services for the genetic improvement of livestock.</p>
<p><b>OUR ORGANISATION</b></p> <p>Interbull comprises Interbull Centre, an operational unit that provides services to its members and service users, and is governed by the Interbull Steering Committee, which is a permanent sub-committee of the International Committee for Animal Recording (ICAR).</p>	<p><b>OUR OBJECTIVE</b></p> <p>To support the cattle industry with accurate genetic information on bulls of the major breeds for use by importers and exporters, thereby facilitating selection of the best genetics for different countries, environments, or breeding goals.</p>

## 2 INTRODUCTION

The Interbull 2024-2026 Strategic Plan outlines the changes Interbull envisages during the considered three years. The plan sets out how Interbull will perform its activities towards its mission to enhance livestock genetic improvement through international data exchange and best methods development by focusing on four strategic goals:

1. **Promote** expansion of existing services to current and new service users.
2. **Enhance** existing services to increase value and relevance to current and new service users.
3. **Explore** different service options to underpin Interbull's future.
4. **Support** capability and collaboration to effectively deliver Interbull's success.

This Annual Operating Plan (AOP) describes Interbull's focus activities, projects, and outputs for achieving its goals. This AOP 2024 is the first AOP that is written based on the Interbull 2024-2026 Strategic Plan. AOP 2024 specifies the forecast expenditure on the activities and projects that will deliver on the 2024-2026 Strategic Plan, during the 2024 calendar year, by the Interbull Centre, the Interbull's operational unit.

This AOP also includes the activities pertaining to Interbull Centre regarding Interbeef and the EU Reference Centre.

Interbull continues to engage with representatives from the Interbull Steering Committee (SC), the Interbull Technical Committee (ITC), ICAR and ICAR Groups, the Interbull Centre, and Interbeef as well as Interbull Service Users to develop the research, services and capability that will deliver against these strategic goals.

### 3 INTERBULL STRATEGIC PRIORITIES

Interbull’s strategy has four strategic pillars which support its delivery of results:

1. **Promote** expansion of existing services to current and new service users.
2. **Enhance** existing services to increase value and relevance to current and new service users.
3. **Explore** diversified service options to underpin Interbull’s future.
4. **Support** capability and collaboration to effectively deliver Interbull’s success.

Objectives within each strategic pillar during the three-year timeframe of the Strategic Plan to December 2026 are detailed below:

Strategic Priority	Objectives
Promote expansion of existing services to current and new service users	<ul style="list-style-type: none"> <li>• Increase the participation of new countries in existing Interbull services.</li> <li>• Maintain high-quality delivery of existing Interbull services.</li> <li>• Preserve or increase satisfaction of service users with current Interbull services.</li> </ul>
Enhance existing services to increase value and relevance to current and new service users	<ul style="list-style-type: none"> <li>• Identify opportunities for incorporating females into existing Interbull services.</li> <li>• Identify the opportunities to implement new traits in Interbull Portfolio</li> <li>• Continuously improve evaluation methodologies.</li> </ul>
Explore diversified service options to underpin Interbull’s future	<ul style="list-style-type: none"> <li>• Develop the concept of Interbull as a DataHub.</li> <li>• Proactively understand the needs of potential new service users, especially genetics companies and genomic service providers.</li> <li>• Identify and evaluate diversified service offerings to increase customer numbers and revenue.</li> </ul>
Support capability and collaboration to effectively deliver Interbull’s success	<ul style="list-style-type: none"> <li>• Interbull maintains a sustainable financial base and appropriate operational efficiencies.</li> <li>• Interbull is recognised as an employer of choice.</li> <li>• Interbull has the right capability and capacity to deliver current and future services.</li> <li>• Interbull collaborates effectively to expand its influence and impact.</li> <li>• The Interbull community is expanded and valued by its participants.</li> </ul>

### 4 INTERBULL CENTRE PRIORITIES FOR 2024

Interbull Centre’s highest priority is the delivery of its current Services. In case of a lack of resources, the staff will focus on ensuring high-quality Service delivery, which may cause a delay or rescheduling of Strategic Goals’ tasks. The **‘MUST DO’** priorities for 2024 have been identified as follows:

#### PROMOTE EXPANSION OF EXISTING SERVICES TO CURRENT AND NEW SERVICE USERS

- High-quality delivery of Interbull Centre’s Services, as the operational unit for Interbull and Interbeef, and as the European Union Reference Centre for Zootechnics, according to processes and procedures defined in the Quality Management System (QMS).
- Maintenance of Interbull Centre’s Infrastructure, software, and programs to guarantee an updated and efficient IT environment towards high quality services delivery.
- Maintain an up-to-date Quality Management System, incorporating changes in the operating and management system.

- Launch new Interbull website.
- Increase Interbull Centre's visibility as EURC for Zootechnics.
- Publish the proceeding of the 2024 Interbull Annual Meeting: issuing Interbull Bulletin no. 60.

#### **ENHANCE EXISTING SERVICES TO INCREASE VALUE AND RELEVANCE TO CURRENT AND NEW SERVICE USERS**

- Performance Recording, Evaluation and Publication Database ("PREP Db"): Continue populating PREP database with standardised and reviewed Dairy and Beef traits information, new electronic forms populated, and staff can edit online electronic forms.
- Roll out the enhanced GEBV test software for service users.
- Review of Dairy service schedule.
- Identify potential emerging problems in relation to genetic and genomic evaluations and provide contingency plans.
- Review of Type of Proofs Coding in MACE.

#### **EXPLORE DIVERSIFIED SERVICE OPTIONS TO UNDERPIN INTERBULL'S FUTURE**

- Implement "Future MACE" software in MACE services to increase MACE robustness to bias due to genomic pre-selection – and complete the first Pilot evaluation using Future MACE.
- Release the results of the Pilot Run for the "SNPMace" project, as next steps towards offering a service at the Interbull Centre that performs meta-analyses to estimate SNP effects by combining information from multiple countries without the exchange of genotypes.

#### **SUPPORT CAPABILITY AND COLLABORATION TO EFFECTIVELY DELIVER INTERBULL'S SUCCESS**

- Interbull Centre Staff training: to have uninterrupted services it is important to build the capability and capacity so that more than one person can provide each of the services.
- Ensure appropriate resources at the Interbull Centre, business models and fee structures to support activities for Interbull, Interbeef, GenoEx and European Union Reference Centre (EURC).

## 5 INTERBULL CENTRE ANNUAL OPERATING PLAN FOR 2024

The ‘Priority’ assessment is based on the following ‘traffic light’ system, where green has the highest priority:

<b>MUST DO</b>	<ul style="list-style-type: none"> <li>• Must have this requirement to meet the business needs. The must requirements are non-negotiable.</li> <li>• Critical to the current delivery timeframe for the project or organisation to be a success.</li> </ul>
Should do	<ul style="list-style-type: none"> <li>• Should have this requirement, if possible, but project or organisational success does not rely on it.</li> <li>• Important but not necessary for delivery in the current delivery timeframe.</li> <li>• They are often not as time-critical or there may be another way to satisfy the requirement so that it can be held back until a future delivery timeframe.</li> </ul>
could do	<ul style="list-style-type: none"> <li>• Could have this requirement if it does not affect anything else in the project or organisation.</li> <li>• Desirable but not necessary, e.g., could improve the user experience or customer satisfaction for little development cost.</li> <li>• These will typically be included if time and resources permit.</li> </ul>

The ‘Effort’ assessment is based on a ‘traffic light’ system where green constitutes the least effort.

minor	<ul style="list-style-type: none"> <li>• Under 4 weeks total time requirement</li> </ul>
Moderate	<ul style="list-style-type: none"> <li>• 4 to 8 weeks</li> </ul>
SIGNIFICANT	<ul style="list-style-type: none"> <li>• Greater than 8 weeks</li> </ul>

### 5.1 SERVICES

High-quality delivery of Interbull Centre’s services is critical to its success. All Interbull Centre’s current services are hence identified as ‘MUST DO’. Delivery of the services accounts for approximately 60% of Interbull Centre resources.

SERVICE	EFFORT	PRIORITY
<b>International Evaluation Services:</b>		
MACE	SIGNIFICANT	MUST DO
TMACE	Moderate	MUST DO
GMACE	SIGNIFICANT	MUST DO
InterGenomics	SIGNIFICANT	MUST DO
Interbeef	SIGNIFICANT	MUST DO
<b>Validation Services:</b>		
Validation Services (including EUrc validations)	SIGNIFICANT	MUST DO
ICAR DNA Interpretation Centre Accreditation	Moderate	MUST DO
<b>Data Exchange:</b>		
GenoEx-PSE *	minor	MUST DO
GenoEx-GDE *	minor	Could do
Exchange of Recessive Genetic Traits *	minor	MUST DO
<b>Knowledge Exchange</b>		
Knowledge exchange includes Hosting and maintaining Interbull websites and the PREP database, organising meetings, and publishing the Interbull Bulletin	SIGNIFICANT	MUST DO
<b>European Union Reference Centre (EUrc)</b>		
Activities related to Interbull Centre’s mandate as European Union Reference Centre	SIGNIFICANT	MUST DO

\* Expansion of services in 2024 are most likely to be achieved in the following areas:

- **GenoEx-PSE:** The International Genotype Exchange Platform (“GenoEx”) is providing a service with the exchange of genotypes for Parentage Verification. It is expected that the first ICAR Accreditations for DNA Data Interpretation Centres for **Parentage Discovery** will occur in 2024, and that (some of) those organisations will subsequently choose to exchange SNP data for Parentage Discovery through GenoEx-PSE.
- **GenoEx-GDE:** The International Genotype Exchange Platform (“GenoEx”) is in use for the exchange of genotype in the delivery of the InterGenomics evaluations. GenoEx-GDE could be used for the exchange of genotypes, independent from international evaluation services.
- **“Exchange of Recessive Genetic Traits”** has started with exchange for Holstein cattle only but has now been expanded to Brown Swiss.

Interbull Centre has been ISO 9001 certified since January 2016 by Bureau Veritas, a global leader in Testing, Inspection and Certification (TIC) organization.

Interbull Centre services are performed with:

- **Accurate predictions**
- **Independence**
- **Timely delivery**
- **Documented methods and practices publicly available**
- **Unbiased statistics**
- **Comprehensive communication**
- **Secure data repository.**



Management and genetic data analysts are committed to fulfil customer requirements and to achieve the quality policy and goals through continual improvements of the quality management system. In line with continuous improvement practices, Interbull Centre staff aims expanding certification to new services.

## 5.2 INFRASTRUCTURE

Infrastructure is required for Interbull Centre to be able to provide the services listed above. One of the cornerstones is to keep customer data safe and with correct access and integrity by using Free and Open Source software.

Interbull Infrastructure is built up with multiple systems:

- **Production systems**: where customers handle their data upload/download (IDEA, GenoEx and PREP);
- **Calculating system**: containing 20 calculating servers and 3 file storage clusters;
- **Web Services**: both for external and internal use (Gitlab repository, forum, chat, wiki, Interbull Bulletin, ftp-server, document share, survey, password share and instances of test servers);
- **Backups and replications.**

In order to guarantee an updated and efficient environment towards high quality services delivery, the maintenance and development activities of Interbull Centre’s infrastructure will consider:

- production system;
- calculating system;
- web and email services;
- software and programs.

## 5.3 MEETINGS and COMMUNICATIONS CALENDAR 2024

### Meetings

#### **Interbull/ICAR Annual Meeting: 20-24 May 2024, Bled (Slovenia)**

18 and 19 May 2024: ITC and SC Meetings  
20-21 May 2024: Business and Open Meetings  
22 May 2024: Joint ICAR-Interbull Sessions  
23-24 May: ICAR Meetings

#### **Interbull SC meetings**

*Interbull Steering Committee Meetings are held by video conference unless otherwise indicated:*

15 February 2024  
16 April 2024  
19 and 21 May 2024 in person, during the Interbull annual meeting – Bled (Slovenia)  
17 July 2024  
16 September 2024  
12 November 2024  
10 December 2024

#### **Interbull Technical Committee Meetings**

14 March 2024, Online ITC meeting  
18 and 21 May 2024 in person, during the Interbull annual meeting – Bled (Slovenia)

#### **Interbeef Working Group and Technical Committee Meetings**

8 March 2024, online meeting  
19 May 2024, in person during the ICAR meeting – Bled (Slovenia)  
2 July 2024, online meeting  
22 November 2024, online meeting

### Interbull Publications

#### **Interbull Centre Annual Operating Plan 2024**

February 2024

#### **Interbull Centre Annual Report and Financial Report 2023**

March 2024

#### **Interbull Executive Summary**

28 March 2024; 28 June 2024; 27 September 2024; 13 December 2024

#### **Interbull Bulletin**

Issue No. 60 (2024): Proceedings of the 2024 Interbull Annual Meeting: September 2024.



### 5.4 RESEARCH AND DEVELOPMENT- DAIRY

Note: This section (5.4) excludes specific beef activities; specific beef activities are detailed in a section 5.5.

#### Strategic Priority 1: Promote expansion of existing services to current and new service users

OBJECTIVES	DELIVERABLES IN 2024	2024 TARGET / OUTCOMES	EFFORT	PRIORITY
1.1 Increase the participation of new countries in existing Interbull services.	1.1.1 Customer focused description of services and activities.	1.1.1 a) Increased awareness and participation to existing services.	Moderate	could do
		1.1.1 b) Increase Interbull Centre's visibility as EURC for Zootechnics.	Moderate	<b>MUST DO</b>
	1.1.2 Communication with stakeholders	1.1.2 a) Targeted Communication: Communicate and engage with stakeholders through Executive Summary, meetings, workshops, etc.	<b>SIGNIFICANT</b>	<b>MUST DO</b>
		1.1.2 b) Organise Annual Meeting	<b>SIGNIFICANT</b>	<b>MUST DO</b>
		1.1.2 c) Broad Communication: distribute newsletters and assure website's content up-to-date and relevant.	<b>SIGNIFICANT</b>	<b>MUST DO</b>
		1.1.2 d) Issue Interbull Bulletin.	Moderate	<b>MUST DO</b>
		1.1.2 e) Preparing and Publish the Activity Report.	<b>SIGNIFICANT</b>	<b>MUST DO</b>

		1.1.2 f) Webinar on PREP database.	Moderate	<b>MUST DO</b>
		1.1.2 g) Webinar on GenoEx-GDE	MODERATE	<b>MUST DO</b>
		Webinar on GenoEx-PSE	MODERATE	<b>MUST DO</b>
	1.1.3 Draft communication and marketing plan written	1.1.3 a) Endorsement by SC of a draft communications and marketing plan	Minor	Should do
	1.1.4 Restructuring of Interbull Centre webpage	1.1.4 a) review of current web content	<b>SIGNIFICANT</b>	<b>MUST DO</b>
		1.1.4 b) Backend integration	Moderate	<b>MUST DO</b>
		1.1.4 c) Fix display of WIKI pages with Table of Content on web page	Moderate	<b>MUST DO</b>
1.1.4 d) Launch of new webpage		Moderate	<b>MUST DO</b>	
1.2 Maintain high-quality delivery of existing Interbull services.	1.2.1 Update of QMS according to changes in operating and management system during 2024.	1.2.1 a) QMS updated.	Moderate	<b>MUST DO</b>
	1.2.2 Review of Type of Proofs Coding in MACE	1.2.2 a) Proposal ready	Moderate	<b>MUST DO</b>
	1.2.3 Bug corrections in PSE file format		Moderate	<b>MUST DO</b>

	1.2.4 Prepare EURC work programme for 3-year period (2025-2026-2027)		<b>SIGNIFICANT</b>	<b>MUST DO</b>
	1.2.5 SLURM Implementation	1.2.5 a) Adapt services workflow to SLURM	<b>SIGNIFICANT</b>	could do
1.3 Preserve or increase satisfaction of service users with current Interbull services.	1.3.1 Identify potential emerging problems in relation to genetic and genomic evaluations and provide contingency plans.	1.3.1 a) Identify any potential emerging problems in relation to genetic and genomic evaluations.	Minor	<b>MUST DO</b>
		1.3.1 b) Provide contingency plans if needed.	Moderate	Should do
	1.3.2 Review of Dairy service schedule	1.3.2 a) Activate WG	Minor	<b>MUST DO</b>
		1.3.2 b) ToR ready	Moderate	<b>MUST DO</b>
		1.3.2 c) Proposal to ITC	<b>SIGNIFICANT</b>	<b>MUST DO</b>

**Strategic Priority 2: Enhance existing services to increase value and relevance to current and new service users**

OBJECTIVES	DELIVERABLES IN 2024	2024 TARGET / OUTCOMES	EFFORT	PRIORITY
2.1 Identify opportunities for incorporating females into existing Interbull services.	2.1 Discussion paper on options for incorporating females into Interbull services	2.1 Steering Committee consideration of discussion paper	Moderate	<b>MUST DO</b>
2.2 Identify the opportunities to implement new traits in Interbull Portfolio	2.2. Identify the opportunities to implement new traits in Interbull Portfolio	2.4) Identify which trait(s) to prioritise/ propose into the New Traits pipeline.	Moderate	Should do
2.3 Continuously improve evaluation methodologies.	2.3.1 Methods and guidelines for validation of dairy evaluations.	2.3.1 a) Continue the development of methodologies for validation of models used at national level for dairy breeds evaluations.	Moderate	Should do
	2.3.2 Technical strategy	2.3.2 a) Follow up on technical strategic activities	Moderate	<b>MUST DO</b>
	2.3.3 New GEBVtest software	2.3.3 a) Roll out the enhanced GEBVtest software	Moderate	<b>MUST DO</b>

**Strategic Priority 3: Explore diversified service options to underpin Interbull’s future**

OBJECTIVES	DELIVERABLES IN 2024	2024 TARGET / OUTCOMES	EFFORT	PRIORITY
3.1 Develop the concept of Interbull as a DataHub.	3.1.1 GenoEx-GDE	3.1.1 a) Improve platform’s value by including complete information of SNP arrays.	<b>SIGNIFICANT</b>	Should do
	3.1.2 GenoEx (PSE/GDE)	3.1.2 a) Improve the user query extraction interface	Moderate	Should do
	3.1.3 GenoEx-GDE	3.1.3 a) Possibility to re-run quality (pedigree) check.	Moderate	Should do
	3.1.4 Performance Recording, Evaluation and Publication Database (PREP Db) – EURC	3.1.4 a) PREP Db populated with standardised and reviewed additional dairy electronic forms	<b>SIGNIFICANT</b>	<b>MUST DO</b>
		3.1.4 b) Newly created electronic forms populated with available information	<b>SIGNIFICANT</b>	<b>MUST DO</b>
		3.1.4 c) Allow staff to edit online electronic forms	<b>SIGNIFICANT</b>	<b>MUST DO</b>
		3.1.4 d) Notifications from PREP on new inserted records – develop a more general way to subscribe to such notifications	Moderate	could do
		3.1.4 e) Review of questions in current GENO forms for creation of PREP’s electronic forms	Moderate	Should do

	3.1.5 IDEA pedigree “on request”		Moderate	Should do
3.2 Proactively understand the needs of potential new service users, especially genetics companies and genomic service providers.	3.2.1) Interbull Service assessment	3.2.1 a) Interbull service needs assessment	Moderate	<b>MUST DO</b>
	3.2.2 Description of potential target markets/audiences	3.2.2 a) Potential target markets/audiences identified and described	Moderate	could do
3.3 Identify and evaluate diversified service offerings to increase customer numbers and revenue.	3.3.1 Future MACE software	3.3.1 a) Implementation of Future MACE software in MACE Service at Interbull Centre	<b>SIGNIFICANT</b>	<b>MUST DO</b>
		3.3.1 b) First Pilot evaluation using Future MACE	Moderate	<b>MUST DO</b>
	3.3.2 SNPmace implementation	3.3.2 a) SNPmace: Plan for next steps.	Moderate	<b>MUST DO</b>
		3.3.2 b) SNPmace Business Model developed	<b>SIGNIFICANT</b>	Should do
		3.3.2 c) Validation analyses finalised	Moderate	Should do
		3.3.2 d) Issue a data call	Moderate	Should do
3.3.2 e) Pilot run performed.	<b>SIGNIFICANT</b>	Should do		

**Strategic Priority 4: Support capability and collaboration to effectively deliver Interbull's success**

OBJECTIVES	DELIVERABLES IN 2024	2024 TARGET / OUTCOMES	EFFORT	PRIORITY
4.1 Interbull maintains a sustainable financial base and appropriate operational efficiencies.	4.1.1 Evaluate Interbull Centre resourcing to support activities for Interbull, Interbeef and EURC.	4.1.1 a) 2025 Budget	Moderate	<b>MUST DO</b>
		4.1.1 b) Review of 2024 AOP	Moderate	<b>MUST DO</b>
		4.1.1 c) Prepare 2025 AOP	Moderate	<b>MUST DO</b>
	4.1.2 Ensure Business Funding Models and fee structures are in place for delivered services and planned projects.	4.1.2 a) Up-to-date documentation of Business Funding Models and Fee Structures.	Moderate	<b>MUST DO</b>
		4.1.2 b) Prepare a financial report for 2023	Moderate	<b>MUST DO</b>
	4.1.3 Business Model principles for new traits to be introduced and/or Services to be released.	4.1.3 a) Present (verify existing or develop a new) business model and appropriate fee structure for each new trait and service to be introduced.	Moderate	Should do
4.2 Interbull is recognised as an employer of choice.	4.2 Discussion paper	4.2 Steering Committee consideration of the discussion paper	Moderate	<b>Must do</b>
4.3 Interbull has the right capability and capacity to deliver current and future services.	4.3.1 Implementation of new Governance	4.3.1 a) Implementation of new Governance; Plan based on Recommendations and Response Table.	Moderate	Should do
4.4 The Interbull community is expanded and valued by its participants.	4.4.1 Issue customer satisfaction's survey	4.4.1 a) survey ready	Moderate	<b>MUST DO</b>
		4.4.1 b) review of results	Moderate	<b>MUST DO</b>

### 5.5 RESEARCH AND DEVELOPMENT – BEEF

**Note:** In Section 5.4, activities have been identified that are – in the first instance - relevant for the delivery of dairy services. Several of those may also be relevant to beef services. In the following tables, activities have been identified that are specifically/only relevant to the delivery of beef services. Some of the activities that have been identified, have not been approved by external/third parties and have been tabled separately.

#### Interbeef R&D activities

FOCUS ACTIVITIES	DELIVERABLES IN 2024	2024 TARGET / OUTCOMES	EFFORT	PRIORITY
B1. Regularly review and adjust methods and tools	B1.1 Improve Interbeef evaluations pipeline.	B1.1a) Review of the pipeline to address possible improvements	minor	Should do
B2. Expand services where a compelling business case exists.	B2.1 Inclusion of Female Fertility Traits in Interbeef Genetic Evaluation	B2.1a) Pilot run of International Genetic Evaluation of Female Fertility Traits for Interbeef	Moderate	Should do
		B2.1b) Adjustment of IDEA beef module to repeated records	Moderate	Should do
B3.	B3.1 Beef Additional information exchange WG	B3.1a) Share of pedigree information via AnimInfo “on demand”	Moderate	could do
		B3.1b) Share performance records “on demand”	Moderate	could do
B4.	B4.1 Expand Exchange of Recessive Genetic Traits to beef breeds and associations	B4.1a) Expand Genetic Traits Exchange to beef breeds and associations.	Minor	could do
B5. Develop new methodologies and validations	B5.1 Methods and guidelines for validation of beef evaluations.	B5.1a) Continue the development of methods and guidelines for validation of models used at national level for beef breeds evaluations.	Moderate	<b>MUST DO</b>
B6: VCE working group		B6.1 assess clear procedures on when VCE are required	Moderate (EXTERNAL activity))	<b>MUST DO</b>
B7: "Towards multi-breed multi-trait beef cattle international genomic evaluations for novel traits and small populations." (PPP Project)		B7.1 Collect data from national breeding organisations and preparation to send to the team at WUR.	Moderate	<b>MUST DO</b>
		B7.2 Monthly Project Meetings	Moderate	<b>MUST DO</b>



**Interbeef Genomic Evaluation.**

Interbeef Genomic Planning is not finalised, and depends on:

1. Review by ICAR Board of Long-Term Interbeef plans
2. Finalisation and approval by the Beef Genomics Task Force
3. Planning of actual work by WUR and ITBC
4. Planning of resource and infrastructure needs and service delivery within Interbull Centre
5. Approval of budget, and collection of funding for these activities
6. Agreement/Contract for external resources

FOCUS ACTIVITIES	DELIVERABLES IN 2024	2024 TARGET / OUTCOMES	EFFORT	PRIORITY
BG1.	BG1.1 Genomic Beef Evaluation	BG1.1a) Modify the actual IG and Beef pipeline	<b>SIGNIFICANT</b>	Should do
		BG1.1b) Modify the workflow description in Wiki page	Minor	Should do
		BG1.1c) All beef genomic software in production environment is in line with ITBC IT policies.	Moderate	Should do
		BG1.1d) Research and Pilot runs. Genomic Evaluation.	Moderate	Should do
	BG2,2 Monthly Direct Genomic Values Service	BG2.2a) Development of a pipeline for DGV (Direct Genomic Values) based on the SNP results	<b>SIGNIFICANT</b>	Should do
		BG2.2b) Add a wiki page describing the service and the workflow.	Minor	Should do
BG2.2c) Research runs for the DGV		Moderate	Should do	
BG3: Development of new Beef services	BG3.1: Principles of the Interbeef Genomic Evaluation	BG3.1a) Defined the Business Model for Future Interbeef Genomic Services	Moderate (EXTERNAL activity)	Should do
BG4: Roll out business model, and fee structure for Interbeef activities.	BG4.1 Business Model principles for new traits to be introduced and/or Services to be released.	BG4.1a) Present (verify existing or develop a new) business model and appropriate fee structure for future Interbeef services and activities.	Moderate (EXTERNAL activity)	Should do

### 5.6 IT MAINTENANCE AND DEVELOPMENT ACTIVITIES

ACTIVITIES	DELIVERABLES IN 2024	2024 TARGET / OUTCOMES	EFFORT	PRIORITY
M1. Maintenance of Production systems	M1.1 IDEA	M1.1.1. Systems error free with full uptime.	Moderate	<b>MUST DO</b>
	M1.2 GenoEx	M1.2.1 Systems error free with full uptime.	Moderate	<b>MUST DO</b>
		M1.2.2 GenoEx statistics on data and usage	minor	Should do
		M1.2.3 SQL queries from URD	Moderate	Should do
	M1.3 PREP Db	M1.3.1 Systems error free with full uptime.	Moderate	<b>MUST DO</b>
M2. Maintenance and development of Calculating System	M2.1 Crunchers maintenance	M2.1.1 Crunchers running.	Moderate	<b>MUST DO</b>
M3. Maintenance and development of web and email services	M3.1 Maintenance of system and possible related issues	M3.1.1 Websites available.	Moderate	<b>MUST DO</b>
Improve infrastructure performance	4.4.1 Queue system implementation	4.4.1a) Testing MACE workflow in queue implementation	<b>SIGNIFICANT</b>	could do

## Appendix 1: ACRONYMS

<b>AWW</b>	<b>Adjusted Weaning Weight</b>
<b>BFMTF</b>	<b>Business Funding Model Task Force</b>
<b>BSW</b>	<b>Brown Swiss</b>
<b>EBV</b>	<b>Estimated Breeding Values</b>
<b>EUrc</b>	<b>European Union reference centre</b>
<b>GenoEx</b>	<b>International Genotype Exchange Platform: a database situated in the Interbull Centre for the storage and exchange of genomic data.</b>
<b>GenoEx-GDE</b>	<b>Genomic Data Exchange on the GenoEx Platform: A service provided by the Interbull Centre through the GenoEx Platform that allows users to exchange genomic data</b>
<b>GenoEx-PSE</b>	<b>Parentage SNP Exchange on the GenoEx Platform: A service provided by the Interbull Centre through the GenoEx Platform for exchanging standardised sets of SNPs for genotyped animals to facilitate parentage analysis activities.</b>
<b>GDE</b>	<b>Genomic Data Exchange</b>
<b>GMACE</b>	<b>Genomic MACE: International Genomic Evaluation Methodology used at Interbull Centre</b>
<b>HOL</b>	<b>Holstein</b>
<b>ICAR</b>	<b>International Committee for Animal Recording <a href="http://www.icar.org">www.icar.org</a></b>
<b>ICBF</b>	<b>Irish Cattle Breeding Federation</b>
<b>IDEA</b>	<b>Interbull Data Exchange Area</b>
<b>IG</b>	<b>InterGenomics</b>
<b>IGQA</b>	<b>InterGenomics Quality Assurance.</b>
<b>Interbeef</b>	<b>ICAR's Interbeef WG, for the international evaluation of beef cattle. Interbeef evaluations are performed at the Interbull Centre</b>
<b>INTERBULL</b>	<b>International Bull Evaluation Services <a href="http://www.interbull.org">www.interbull.org</a></b>
<b>InterGenomics</b>	<b>International Genomic Evaluation Service performed at the Interbull Centre for the Brown Swiss and Holstein breeds</b>
<b>ITB</b>	<b>Interbull</b>
<b>ITBC</b>	<b>Interbull Centre</b>
<b>ITC</b>	<b>Interbull Technical Committee</b>
<b>MACE</b>	<b>Multiple Across Country Evaluation: International Genetic Evaluation Methodology used at Interbull Centre</b>
<b>NGEC</b>	<b>National Genetic Evaluation Centre</b>
<b>PDF</b>	<b>Portable Document Format</b>
<b>PREP Db</b>	<b>Database with information on Performance Recording, Evaluation and Publication of national cattle populations.</b>
<b>PSE</b>	<b>Parentage SNP Exchange</b>
<b>QMS</b>	<b>Quality Management System</b>
<b>SC</b>	<b>Interbull Steering Committee</b>
<b>SLU</b>	<b>Sveriges lantbruksuniversitet: Swedish University of Agricultural Sciences</b>
<b>SNP</b>	<b>Single Nucleotide Polymorphisms</b>
<b>snpMACE</b>	<b>A meta-analysis to estimate SNP effects across countries</b>
<b>TF</b>	<b>Task Force</b>
<b>TMACE</b>	<b>Truncated MACE: Service provided by the Interbull Centre to assist countries with improving the national genomic prediction and validation.</b>
<b>ToR</b>	<b>Terms of Reference</b>
<b>WG</b>	<b>Working Group</b>
<b>XML</b>	<b>Extensible Markup Language</b>