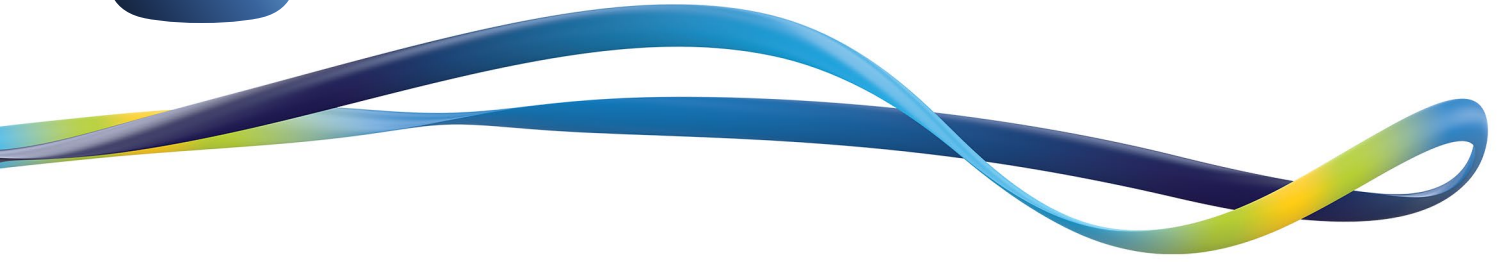# ESB Networks Innovation Process Summary: Innovation Project Identification, Evaluation and Delivery

DOC-270123-HQF

Contents

1. ESB Networks Innovation Process Overview

At ESB Networks our definition of innovation is to implement new ideas for the enduring benefit of our customers and business. We have developed robust governance and processes to identify, evaluate and deliver Innovation projects where innovation is defined as a technological innovation, a business process innovation or a combination of a business process and technological change. Innovation is not considered to be minor change or routine improvement to Business As Usual (BAU). However, major changes in existing BAU processes or alterations which produce significant benefits are considered innovation, as to produce such large changes innovation is deemed to have been required.

We have developed an Innovation Strategy Framework (see Figure 1.4) to manage every stage of the development and implementation of our strategic initiatives, from setting the vision to establishing Business-As-Usual (BAU). In developing this Framework and our Innovation Strategy Cycle we reviewed best practice from other jurisdictions, worked with external consultants, engaged in workshops with representative groups from across ESB Networks and sought feedback from stakeholders to create a solution for our organisation. This framework respects that our customers, who support the cost of these projects, expect efficient and effective dividends from the innovation process. It recognises the risks and uncertainties inherent in investing in trialling untested innovation ideas and ensures an appropriate level of oversight. (Please see Innovation Strategy and governance process document for more details)

The diagram below in figure 1.1 gives an overview of our processes which is detailed in this document from how we identify, evaluate and scope projects to how were deliver and transition and disseminate our innovation projects and their learnings into ESB Networks and our stakeholders.
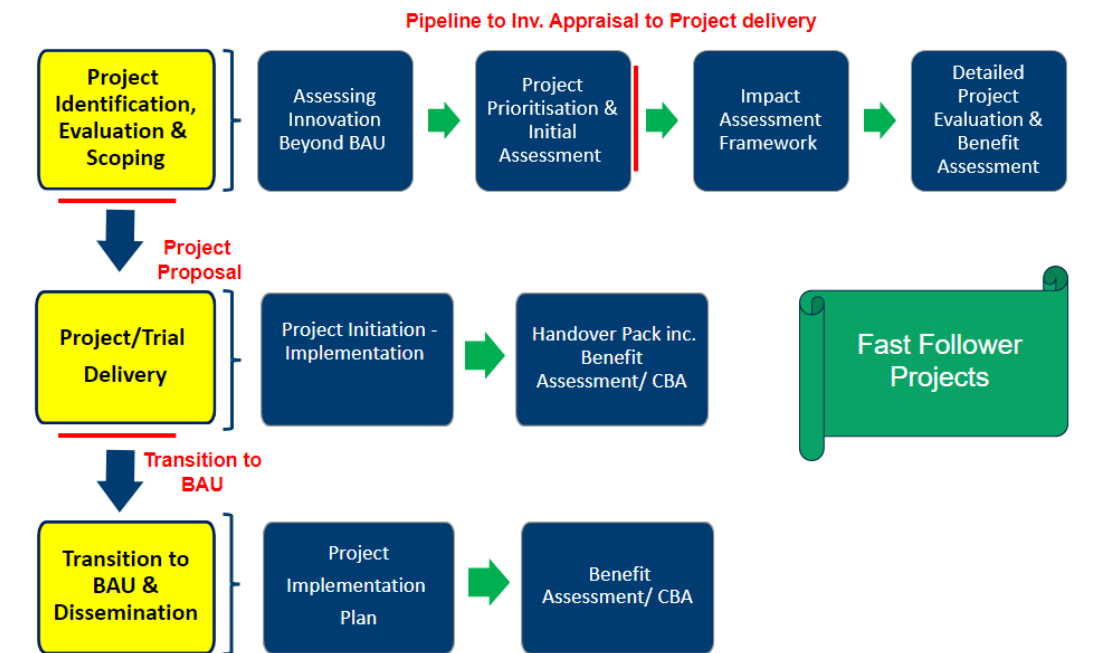

Figure 1 Project Identification, Evaluation, Delivery & Transition to BAU Overview

An overview of project Identification and Evaluation

The process from idea identification to project delivery includes project identification, evaluation, scoping and approval stages:

Figure 2 Project Identification and Evaluation

1. Identifying Project Ideas Beyond Business-As-Usual

Innovation ideas are initially reviewed to ensure that the scope of the idea proposed is to trial a technology or concept that is beyond BAU.

2. Project Prioritisation and Initial Assessment

Innovation ideas then go through an initial assessment and prioritisation for further investigation and scoping against five criteria: Lifecycle Savings Potential; Time Frame/Complexity; Core Competencies; Strategic Fit and Innovation Type; and Customer Need and Demand.

3. Impact Assessment Framework

As projects move from pipeline to scoping, an Impact Assessment Framework is applied to evaluate the impact across six strategic areas:

- Safety;
- Network Reliability and Resilience;
- Facilitating Growth and New Connections;
- Customer and New Market Services;
- Environment;
- Social and Sector Learning.

4. Detailed Project Evaluation and Benefit Assessment

Once the ideas have passed these early reviews and assessments, they are scoped out and an investment appraisal is developed for each project. The investment appraisal includes a detailed benefit analysis; this is a qualitative and a quantitative analysis where possible. If the investment appraisal deems the project viable (which may be conditional on a successful pilot project), then a project proposal is developed with clear project objectives for recommendation to the ISG for transition to project delivery stage.

5. Strategic Validation Through Collaboration with Stakeholders and Third Parties

Innovation ideas and projects are validated throughout the project lifecycle through collaboration with stakeholders and third parties

2. Identifying Project Ideas Beyond Business-As-Usual

The innovation framework that ESB Networks has put in place requires those proposing innovation projects, and in particular incremental innovation, to reflect on whether their idea is over and above BAU and would not be done by the business in the normal course of events.

Innovation in ESB Networks is guided by the Oslo Manual2 (2018, published by the OECD and Eurostat) as a technological innovation, a business process innovation or a combination of a business process and technological change. Innovation is not considered to be a minor change or routine

improvement in BAU. However, major changes in existing BAU processes or alterations which produce significant benefits are considered innovation, as to produce such large changes innovation is deemed to have been required. However minor changes in BAU, which may be quite worthwhile and deliver significant economic benefit, are not reported on by innovation in ESB Networks and covered under the business performance improvements being delivered within business areas and through business change programmes.

The project proposers/sponsors assess their innovation idea using standard templates and as such are required to consider the following:

1. What are the benefits/savings potentially associated with the project? These benefits may, where appropriate, be considered from a whole system perspective.
2. What options or alternatives exist, and what risks are associated?
3. Is there an optimal way of scheduling the project such that the timing and level of investment is optimised in relation to future options which may develop?
4. What are others in industry doing about the same issue?
5. What are the risks associated with not pursuing it?

The assessment process and appraisal of the innovation idea, including reflecting on these five questions, provides ESB Networks with the confidence that the approved innovation projects have exceeded an appropriate hurdle threshold and are beyond simple Business-As-Usual.

It also enables us to prioritise our innovation projects. It should be noted that later in the evaluation and approval process, project proposals may be rejected by the ISG as they may be deemed insufficiently innovative. In these cases, they can continue to be executed as BAU projects.

3. Project Prioritisation and Initial Assessment

In order to carry out an initial assessment and preliminary ranking of project ideas, prior to more detailed consideration, a simple set of criteria outlined below is used to score the projects.

Lifecycle Savings Potential	The potential for a project to generate savings within five years. In general, the savings are to ESB Networks on the basis that ESB Networks represents customers' interests, but significant savings to other stakeholders within the electrical energy system from innovations/changes in practice by ESB Networks would also be considered if they provide an overall societal benefit
Time Frame / Complexity	How soon can we get the product/service out in the market, or how complex/difficult will the project be?
Core Competencies	What capabilities can be leveraged internally; processes, assets and values?
Strategic Fit and Innovation Type	Horizon 1, considered to be core strategy. Horizon 2, natural evolution of services that ESB Networks could offer in adjacent areas (called out in strategy). Horizon 3, products or services not traditionally associated with ESB Networks (not explicitly called out in strategy).
Risk	What is the expected level of risk of the project in relation to the likelihood of project completion and the delivery of expected benefits in relation to costs?
Customer Need and Demand	How relevant is the product/service potentially and is there known demand within five years?

Table 1: Initial Assessment Criteria

A screening matrix (See Table below) for shortlisting project ideas is used. The process is intended to provide clarity to the assessors and allow a common evaluation method for projects across all innovation pillars and areas. During subsequent consideration, other requirements may emerge which change the ranking, e.g., one project may have little direct benefit itself but may be an enabler of other projects with significant benefits. The scoring for each section has an appropriate weighting, as show in table 3.2, to give a total score up to a maximum of 105 points.

Weighting	Score	1	2	3	4	5
4	Lifecycle Savings Potential	Under €200k	€200 - €500k	€500 - €750k	€750- €1,000k	Over €1,000k
1	Time Frame/ Complexity	Over 5 years	4 to 5 Years	3 - 4 Years	2 - 3 Years	Under 2 Years
3	Core Competencies	100% External	75% External	50% External	25% External	0% External
4	Strategic Fit and Innovation Type	Unaligned		Adjacent		Core
4	Risk	High		Medium		Low
5	Customer Need and Demand	Under 10%	10 - 25%	25 - 50%	51 - 75%	Over 75%

Table 2: Screening Matrix for Initial Assessment of Project Ideas and the Mandatory Requirements Assessment

The projects which emerge from this initial screening process are then subjected to a detailed project Evaluation and Benefit Assessment in the next stage (Section 3.7) to confirm that they will provide long-term value to our customers and/or our other stakeholders

However, projects may not simply be selected because of the benefits they provide, but also for other potentially mandatory reasons which require the project to be undertaken directly. This area is covered by scoring the project on the basis of the commercial benefits expected which gives an overall score in three figures, and then adding in a score of 1000 if any of the mandatory requirements associated arise. Having a very high score prioritises the project, but the underlying benefit is still seen in the last three digits from the standard initial assessment criteria.

Justification for Mandatory require would include the following:

- Legal/Regulatory/Environmental: There is an obligation on ESB Networks to achieve a certain result and the project is justified on this basis
- Enabler: The project may be required in order to let a more important project proceed
- Project/Stakeholder: Project is critical to a stakeholder

Mandatory Requirements		Description	1000
Score of 1000 points for each mandatory requirement. Overall Total then gives the inherent benefits of the project as the numbers after the thousand's separator, with the requirement to do the project by the thousands score	Legal Requirement		
	Environmental Requirement		
	Regulatory Requirement		
	Enabler of Essential Project		
	Project: Stakeholder Commitment		
	Other		
	Mandatory Total		
		Overall Total	

Table 3 Screening Matrix for Initial Assessment of Project Ideas and the Mandatory Requirements Assessment

Similar issues may also arise in relation to Radical/ Breakthrough projects. Following feedback from stakeholders we have created a separate assessment criterion for breakthrough and radical projects. For the new criteria for breakthrough and radical projects a similar weighted scoring system to that of our original screening matrix is used with a more granular list of criteria detailed in the table below.

Criteria	Description
Idea/Project Sponsor	In Breakthrough/Radical projects, there can be relatively little prior knowledge. Therefore, the reputation, track record and knowledge of the ideas sponsor is a critical part of the innovation idea/project assessment.
Feasibility/ Realisability	Is the idea understandable and intuitively understandable as a good idea? Are the technical and economic assumptions underpinning the idea or project correct? Will it lead to other opportunities? Will it develop core competencies? Does it require competencies outside ESB Networks and are appropriate partners available to provide those competencies?
Meets Customer Needs	Does the idea meet a customer need or requirement? Ideas/concepts/technologies are more likely to be successful if they meet existing or future customer needs
Scalability	Can the idea be scaled? The value of the idea is greatly increased if it can scale in volume and scope.
Degree of Fit to ESB Networks' Strategy	ESB Networks' strategy is designed to meet national requirements within areas of ESB Networks' responsibility – if not aligned with ESB Networks' Strategy, then it is possibly a project for another entity to carry out.
Costs / Benefits and Resource Availability	Costs and benefits should be proportional to the risk involved and should be within the budgets and resources available to ESB Networks

Table 4. Initial Assessment Criteria for Breakthrough and Radical Ideas

We continue to favour Technology Readiness Level (TRL) 7 or higher in our innovation projects as on balance and based on overall feedback we continue to believe this level of ambition is appropriate to give best value to our customers in view of the scale of resources available within a utility of our size. However, ESB Networks is able to leverage research carried out in academic/research institutions, which includes research at lower TRL levels, and we will continue to support academic research in Ireland through funding and sponsorship such as our support. In addition to this following previous consultation and engagement from stakeholders while our traditional split of projects has been 75% incremental and 25% breakthrough, we aim to have a proportionate target of projects across the 3 broad horizons of innovation of 70% Incremental, 25% Breakthrough (25%) and 5% Radical.

In assessing the benefits of 'Incremental' projects, they tend to lie primarily within ESB Networks, whereas for 'Breakthrough' projects, they are probably shared between other stakeholders and ESB Networks, e.g. 'Flexibility' might benefit ESB Networks from investment deferral but also benefit customers selling flexibility services (See Figure 3.2 below). Accordingly, it was decided that the value expected would be more heavily weighted towards the societal value rather than the value to ESB Networks. An example of potential areas for innovation is shown in figure 1.5. For innovation any innovation project proposal to be implemented it must be of benefit and meet assessment criteria in order to best serve our customers and meet our climate action targets.
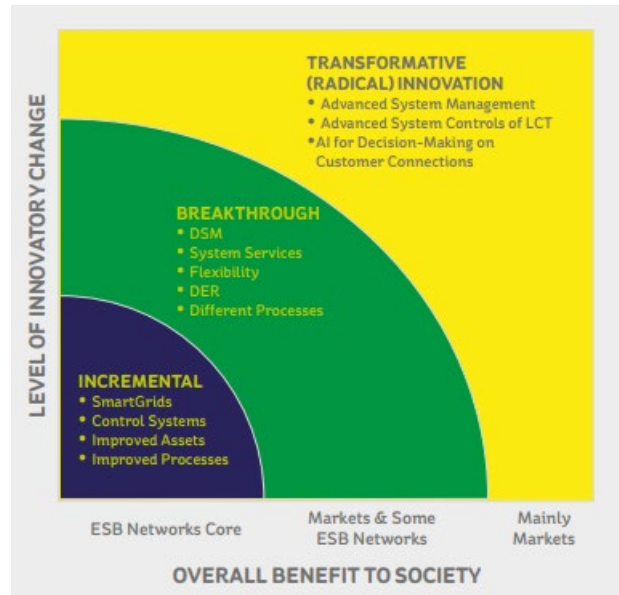
Figure 3. Impacts of Incremental, Breakthrough and Radical Projects

4. Impact Assessment Framework

As part of the investment appraisal process, ESB Networks has developed an impact assessment framework. This is a set of scorecard metrics used to evaluate the impact of the proposed initiative across six strategic areas: Safety; Network Reliability and Resilience; Facilitating Growth and New Connections; Customer and New Market Services; Environment; and Social and Sector Learning. Each innovation opportunity is assessed against the six strategic areas as either Significant, Moderate, Minor or Non-Applicable.

Project Impact Scorecard Metrics Description	Description
Safety	Safety to staff, contractors and general public
Network Reliability and Resilience	Improved continuity, reduced outages and Customer Minutes Lost (CML)
Facilitating Growth and New Connections	Growth in electricity consumption and additional connections to system
Customer and New Market Services	Consumer, prosumer, cost of supply, future peer-to-peer trading, facilitating future market services and models
Environment	Climate change and climate change adaptation, external impacts
Social and Sector Learning	Customer service, public policy, ESB Networks' role in leading transition to lower-carbon economy

Table 6: Impact Assessment Framework – Six Strategic Areas

5. Detailed Project Evaluation and Benefit Assessment

Innovative technologies or concepts which have the potential to support a lower-carbon energy system, reduce costs for customers, and improve system reliability are sought by the Future Networks Development team. Our Innovation Strategy Framework and innovation process acknowledges that the cost of our innovation projects which investigate these ideas is supported by our customers. Therefore, robust governance and risk management is in place to ensure projects run efficiently and effectively and deliver value for money.

Innovative technologies or concepts which have the potential to support a lower-carbon energy system, reduce costs for customers, and improve system reliability are sought by the Future Networks Development team. Our Innovation Strategy Framework and innovation process acknowledges that the cost of our innovation projects which investigate these ideas is supported by our customers. Therefore, robust governance and risk management is in place to ensure projects run efficiently and effectively and deliver value for money.

At this stage in the process, the project scope and investment appraisal are developed. In order to assess project benefits and establish clearly defend measures of success at the outset, qualitative and, where possible, quantitative analysis of the costs and benefits of all innovation projects are carried out. These are captured in the investment appraisals and / or dedicated CBAs. The assessment and tracking of benefits continue throughout each stage of the project lifecycle

We undertake CBAs in a consistent and transparent manner based on discounted cashflows. Our CBAs demonstrate a positive cost benefit when the resulting Cost Benefit Ratio (CBR) is greater than one. In situations where ESB Networks considers qualitative assessments only, success is measured by clearly defined project objectives, outputs and benefits recorded at investment appraisal stage. These defined outputs and benefits are then used as the baseline metric to measure success throughout the project lifecycle as per figure 4 below.

In situations where projects have been carried out in other jurisdictions such that the benefits are to a large degree assured and the risks are negligible for ESB Networks, then we will consider moving these types of projects to a Fast Follower process to confirm the benefits can be delivered on our network and system.

Our approach to focus on projects in the Technology Readiness Level (TRL) range 7 to 9 is a prudent approach for a DSO of our size and resource level. TRL is a type of measurement system used to assess the maturity level of a particular technology. There are nine technology readiness levels from 1" Basic Principals observed and reported" to 9 "Actual systems proven through successful operations; methodology widely adopted throughout industry".

Qualitative & Quantitative Benefit Assessment: Standard investment appraisal templates are used for each innovation opportunity identified. ESB Networks carries out qualitative and, where possible, quantitative analysis of the costs and benefits for all innovation projects. This provides the justification and analysis to support innovation projects and establishes clearly defined measures of success.

Cost Benefit Analysis (CBAs) are used by project managers for our innovation projects where possible. However, a well documented challenge for innovation is the ability to monetise the learnings and benefits from innovation projects. Despite this challenge, ESB Networks recognises that its central role as DSO in the electricity sector brings the responsibility to engage in innovation activities that offer broader industry learnings. In such situations where ESB Networks considers qualitative assessments only, success is measured by clearly defined project outputs and benefits recorded at investment appraisal stage. These defined outputs and benefits are then used as the baseline metric to measure success throughout the project lifecycle.

Figure 4. Assessing and tracking benefits throughout the project life cycle

6. Strategic Validation Through Collaboration with Stakeholders and Third Parties

Our customers and key partners including the CRU, national and EU government departments, local communities, the TSO, academia and industry are key stakeholders throughout the identification, delivery and transition to BAU of a project. As part of project evaluation, where appropriate we engage with key external stakeholders to ensure alignment with their needs and requirements to enable the transition to a low-carbon economy. This can take the form of engaging with projects initiated externally, e.g. EU projects, or it might take the form of bilateral meetings, webinars and consultation events which take place, for example, new assets or standards to support customer connections.

7. Fast Follower Approach

ESB Networks' 'Fast Follower' approach reviews new solutions/ technologies that have been trialled by other utilities and which may be feasibly transferred for use by ESB Networks in Ireland.

This approach seeks to leverage research and innovation that has already been implemented by other comparator utilities. It offers opportunities to adopt and/or adapt such solutions for Irish circumstances, cognisant of the fact that the Irish electricity network has characteristics that are not necessarily replicated elsewhere. These somewhat unique characteristics include the challenges associated with having almost six times as much overhead line rural network per capita as most other European countries, combined with having large amounts of non-synchronous generation on an islanded system with substantially less interconnection than the vast majority of comparable jurisdictions. As such, a simple 'Plug and Play' approach to innovation outcomes successfully achieved elsewhere may not always be applicable on our system. Nevertheless, given the size of our organisation in the context of global innovation efforts, ESB Networks believes it worthwhile to leverage successful innovation outcomes from others wherever possible, and that this approach should offer value for money for our customers. This has been echoed in previous stakeholder feedback.

In some situations, ESB Networks may not be in a position to directly implement suitably identified 'Fast Follower' projects. It may still be required to trial the solution due to particular characteristics of the Irish system, but significantly reduce the trial scope and timeline in doing so, thereby making best use of our innovation resources.

The essence of the 'Fast Follower' approach is to identify successful innovations that have been successfully implemented in other utilities and then replicate them within ESB Networks. Firstly, sources of such potential 'Fast Follower' ideas must be found, and the ideas assessed to establish if they are suitable for transposition to ESB Networks. Other utilities have technical requirements which may be subtly different to those of ESB Networks, so the apparent success of an idea elsewhere does not directly establish whether it will be suitable for use in Ireland.

8. Project Proposal to Trial / Pilot

Following successful completion of the assessments outlined in the earlier sections, an innovation pipeline idea can make the transition to an innovation trial or pilot project with an approved scope and clear measurable deliverables. In some cases, an innovation trial or pilot project may not be required and the 'Fast Follower' trial approach may be used.

Our robust approach to project identification and evaluation enables us to deliver the optimum mix of projects that have CBRs (Cost Benefit Ratios) greater than one, provide maximum impact and deliver long-term benefits to the operation of a low-carbon electricity system powering the decarbonisation of domestic heat and transport.

9. Transition to Business & BAU: Project and Learnings

ESB Networks' innovation projects deliver quantifiable benefits by successfully embedding the new knowledge, processes, solutions and technologies into our BAU practices to improve the ways in which we work and serve our customers. ESB Networks continues to reap the benefits of projects that have previously closed, as they are embedded in the organisation.

Transition to BAU

A culture of innovation is fostered across every level of ESB Networks' business. We have clear innovation objectives and a centralised innovation function that identifies and trials innovation projects before transitioning to BAU. A dedicated Innovation Portfolio and Transition manager continues to focus on improving the transition process and enhance how we disseminate learnings.

The ISG, established in 2019, has enhanced our governance and Innovation Strategy Framework. The internal and external ISG members bring a wide range of experience, expertise and knowledge to the decision-making process. This ensures that the most appropriate innovation projects, which also give the greatest benefits to our customers, will make their way through the innovation process and transition into the business. We have found that one of the keys to a successful transition to BAU is to engage the business owners early and ensure engagement and buy-in throughout the project lifecycle.

The Innovation Portfolio and Transition Team use a systematic methodology and implementation process (see Figure 5.1 below) to ensure that a consistent approach to project transition and dissemination is maintained.
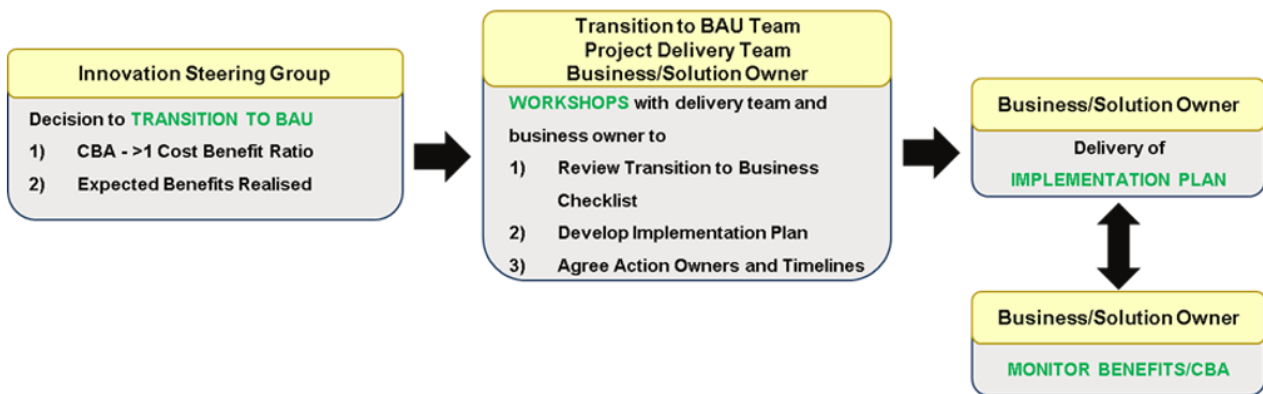

Figure 5.: Transition Methodology and Implementation Process

Once an innovation project is complete and it is recommended by the project team and business owners for transition to the business with approval by the Innovation Steering Group, the project delivery team compiles a handover document for the business owner. Projects at this point may reveal further innovation opportunities which, once passed the appropriate approvals, may then be followed through within the scope of an existing project or as a new project.

A workshop with the delivery team and Innovation Portfolio and Transition Team is held where a draft implementation plan is developed using a standard checklist (See Table 5.1) as a guide. Subsequent workshops are then held with the Innovation Delivery Team, the Business Owner and the Innovation transition manager to finalise the implementation plan and allocate roles, responsibilities and timelines to actions.

Scope of Transition	➢ Scope/Objectives/Measure of Success
Ownership and Stakeholders	➢ Business/Solution Owner ➢ Business/Solution Owner ➢ Key Stakeholders
BAU CBA/Benefit Assessment	➢ Cost Benefit Analysis for BAU ➢ Benefit Assessment for BAU
Business/Systems Transition	➢ IT Systems ➢ Policies/Standards/Legal Docs ➢ Processes
Resource Transition	➢ Training ➢ Internal Dissemination
Asset Transition/Procurement	Tender Requirement: ➢ Specification ➢ Evaluation
External Dissemination	Publications (Consultations/Papers/Reports), Webinars, Workshops, Presentations, Videos, Bilateral Meetings with Stakeholders etc.

Table 7. Transition to BAU Checklist

Once the implementation plan has been delivered and the innovation project has been embedded into the business, the outputs and benefits are monitored and tracked by the business owner. This enables ESB Networks to demonstrate true integration of the innovation projects' outputs to BAU and the realisation of the expected benefits.

A dissemination plan is developed for all projects, whether they transition to BAU or not, and whether the trials or research outcomes/findings were successful or not. The purpose of the dissemination plan is to ensure all learnings from our innovation activities are disseminated internally in ESB Networks and externally to the wider industry.

The innovation team continue to engage with other organisations and jurisdictions to investigate best practice and potential improvements for transitioning innovation project portfolio outcomes to BAU. This has enabled shared learnings in relation to the innovation process, governance, project reporting, transitioning projects to BAU, assessing benefits, measuring success and the dissemination of learnings.