NORTHERN POWERGRID

Digitalisation Future Initiatives >

Initiative: Data strategy and architecture (1 of 3)

Description	**The data strategy and architecture will provide us with a vision for managing data and our data stakeholders, an architecture and an operating model through which the whole organisation will come together for delivery of data requirements.**	Business outcome
Initiative breakdown	The EDTF report recognised the need for a digitalised energy system and has data at the heart of its five recommendations. Energy data is becoming an output that our external stakeholders will continue to request. Provision of data is potentially becoming a legal obligation for the DNOs. At the same time, the industry has produced data best practices and is expecting energy participants within the networks domain to implement and align with these. The data strategy and architecture initiatives will assess the vision, the operating model, and the architecture that we will pursue in order to satisfy internal and external stakeholders with their data requirements. To do this, we propose that data is ultimately managed in a matrix organisation, where there is ownership and accountability toward both internal and external data stakeholders. This will be achieved through horizontal and vertical accountabilities that come together for the delivery of data requirements and requests. Figure 1 in section 3 of 3 depicts the proposed data organisation. At the centre of this sits a data transformation office that becomes the central point of accountability and plays a coordinating role for all data requests and deliveries. This vision of an organisation is based on lessons learned from other organisations who have excelled at data management. The key features of the initiatives required to deliver the data organisation are as follows: **Visioning:** This is the first step of a series of activities that we will undertake to further develop the data strategy. The objective is to bring the organisation together and align on a single vision for data. The intention is to use the vision to paint a picture of the future and be able to set the principles and the high-level goals for our transformation. **Stakeholder requirements:** We need to have a clear view of our data stakeholders and consumers. Whilst current energy system participants are obvious external customers, we will consider potential future business models, wider stakeholders, prosumers and expand on our set of data stakeholders. Building data requirements, will allow us to map out the end-to-end data use case (a.k.a. journeys) to ensure we understand the service needs of these stakeholders. Groups of data requirements will have business owners assigned, which will be defined as part of the overall operating model governance with clear accountabilities for the management and maintenance of the data requirements being set, and will be under continuous review. Continued on the next page…	The data strategy and architecture will articulate and design the blueprint, processes, governance and the operating model required for the management of data for internal and external purposes. The strategy and architecture are important inputs into all future data activities, especially as they relate to how we will interact with external stakeholders. In the strategy, there will be a focus on how data requests should be triaged, who should own external interfaces for specific data points and how we will be organised for delivery of such data requests.

Initiative: Data strategy and architecture (2 of 3)

Description	**The data strategy and architecture will provide us with a vision for managing data and our data stakeholders, an architecture and an operating model through which the whole organisation will come together for delivery of data requirements.**	Business outcome
Initiative breakdown	**Data operating model:** We will identify multiple data towers, where each tower will become a single point of accountability for the data it owns. There are a number of clearly obvious towers such as asset data and network operations data, however, the scope of the data operating model will expand to cover more than energy system data, it will cover business data which, subject to governing regulation, may be made available to external stakeholders. **Data towers:** The target operation model will define how the towers will operate and will define elements of data management such as, but not limited to: — quality standards and terminology standards — data collection processes and technologies — data quality management processes — roles, skills and capabilities — performance management criteria — information governance. The towers will work collectively to deliver these data requirements. Whilst groups of data requirements can themselves have owners, the towers' accountabilities will be focused on delivering the governance against such requirements and ensuring they operate to appropriate principles and data remains consistent and fit for its intended purpose. Continued on the next page...	The data strategy and architecture will articulate and design the blueprint, processes, governance and the operating model required for the management of data for internal and external purposes. The strategy and architecture are important inputs into all future data activities, especially as they relate to how we will interact with external stakeholders. In the strategy, there will be a focus on how data requests should be triaged, who should own external interfaces for specific data points and how we will be organised for delivery of such data requests.

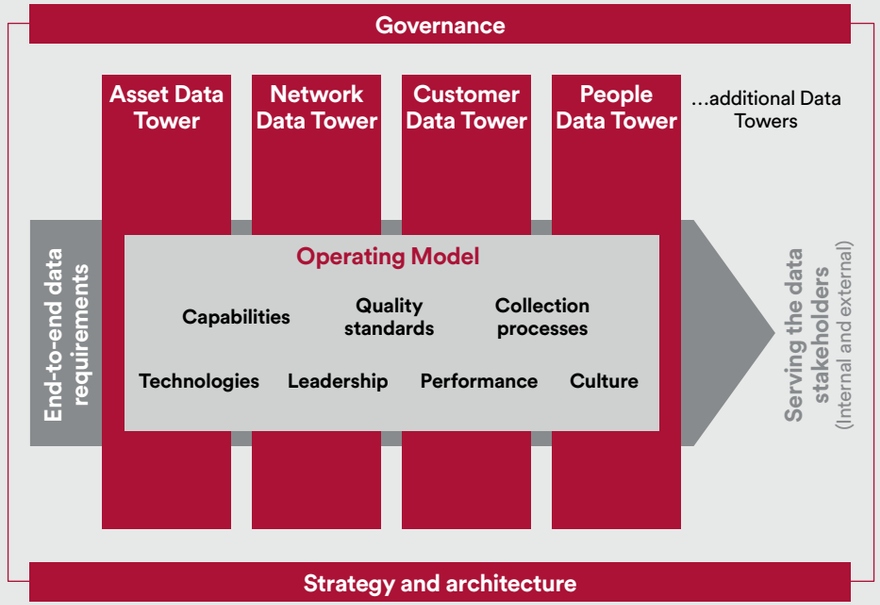
Initiative: Data strategy and architecture (3 of 3)

Description	**The data strategy and architecture will provide us with a vision for managing data and our data stakeholders, an architecture and an operating model through which the whole organisation will come together for delivery of data requirements.**	Business outcome
Initiative breakdown	**Data architecture:** Based on the role that each data tower will execute and taking into consideration the data stakeholder's requirements and the target operating model, they will create data architectures that cover the following aspects: — Data catalogues (inc metadata) — Data discoverability and triage process, especially in line with open network data requirements and the spirit of collaboration — Data models and data flows — Data technologies, and repositories, including consideration of data lakes — Access rights, security and privacy — Data management tools — Data formats and interoperability (i.e CIM). As part of this initiative, we will consolidate the vision, operating model, data requirements, data catalogues and output of this initiative into a solution that can be used for internal and external uses. The benefit of this will be to provide external stakeholders with visibility of our data catalogues and triage process.	The data strategy and architecture will articulate and design the blueprint, processes, governance and the operating model required for the management of data for internal and external purposes. The strategy and architecture are important inputs into all future data activities, especially as they relate to how we will interact with external stakeholders. In the strategy, there will be a focus on how data requests should be triaged, who should own external interfaces for specific data points and how we will be organised for delivery of such data requests.

Initiative: Proposed data organisation

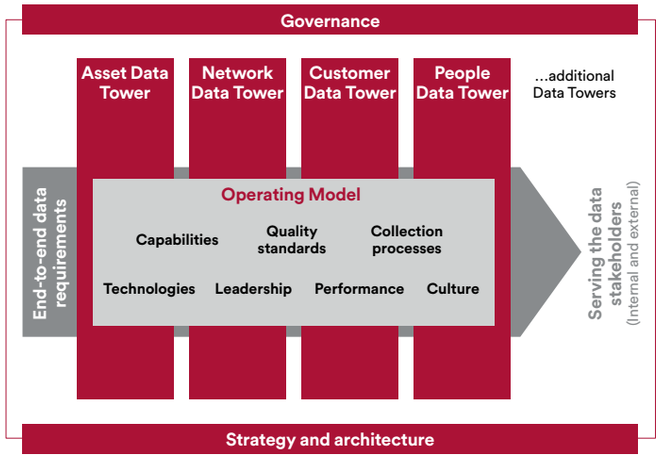
Description	**The data organisation provides us with the reference model through which the whole organisation will come together for delivery of data requirements.**
Initiative breakdown	— The framework proposes a stakeholder/customer centric view to data in line with GB energy system direction and Ofgem guidelines — Customer requirements will be defined through end-to-end data use cases — The data requirements will be owned by appropriate business functions within Northern Powergrid. An example of a data requirement is provision of our data towards the National Energy System Map — The data requirements will be delivered through single or multiple data towers — The data towers are logical homes for the type of data that is managed within them. The towers will be the single points of accountability for the data they own and are accountable for: – Integrity – Quality (accuracy and completeness) – Real-timeliness of the data — An overall data operating model will provide the principles and the ways by which the towers will work. These include the capabilities within each tower, the process, systems and performance measures that they will run — Overall data architecture will provide the to-be state for: – Data catalogues – Data models – Data flows – Data quality standards – Data collection processes – Data technologies, and repositories, including consideration of data lakes – Data management tools – Information governance — The entire model is to be controlled through a common governance process based on Ofgem's published Data Best Practice guidance.

Figure 7
Proposed Data Organisation



Initiative: Data Transformation Office

Description	Set up a Data Transformation Office to create a central point of escalation for data and ensure it has a portfolio view over data transformation programmes.	Business outcome
Initiative breakdown	**Data Transformation Office:** The Data Transformation Office (DTO) will become the central hub for all data activities. It will be the final escalation point for all key data related programmes and will oversee the performance of delivery against data requirements. The Data Transformation Office champions all data best practices and will face off to key stakeholders such as Ofgem, especially as it relates to the open data network strategies and vision. The DTO's role is both strategic and transactional. Strategic in the sense that it owns our overall data strategy and is there to create cohesion and alignment across the organisation, but transactional in the sense that it will oversee different initiatives, and will ensure we perform against external data requests. Final triage decisions can be given to the DTO when it comes to providing data externally. This initiative will design a Data Transformation Office with the following features and put in place plans to stand it up. The features will include: — Team structure — Roles and responsibilities — Reporting lines and escalation routes — Governance — Portfolio management of all data transformation activities — Communications and stakeholder approaches and plan — Execution of data triage. The Data Transformation Office forms part of the data organisation shown on the previous page.	The Data Transformation Office is the central hub for the management of all data transformations programme. It allows us to take a portfolio view of all our data transformations, but also centrally manage our performance against data requirement delivery, especially those relating to data stakeholders' needs.



Initiative: Data transformation programme (1 of 2)

Description	**Through this initiative we will prioritise data stakeholder's needs and define pilots, as well as test and refine an end-to-end delivery approach. Using the results of the pilot(s), prioritise projects and improvement activities to iteratively grow the data capability.**	Business outcome
Initiative breakdown	Given the changing landscape of data, there is a need to scope and prioritise the data transformation activities that we will undertake. We plan to start with a set of data pilots. These will include use cases that are externally and/or internally driven such as: — Triaging data requirements — Publishing of energy data to provide data into the National Energy Systems Map — Publishing data for a connections heat map identifying where capacity exists or is in shortfall — Collection of data on low-voltage network for improved network operations — Faster and more effective data entry — Availability of real-time energy flow information — Use of smart grid and meter data. The sequence of piloting data requirements and scoping these into a transformation programme will be as follows: **Pilots:** — **Prioritisation:** Prioritise requirements to identify candidates for pilots using multiple internal and external criteria to establish the value proposition and prioritisation order. — **Pilot scoping:** Gathering requirements from architecture, operating model and other designs to scope out pilot projects. Data towers and business owners will work together to implement process, system and people changes to deliver against the requirement using pre-defined and repeatable templates and processes and identifying defined outcomes. — **Pilot execution and validation:** Deliver pilot using agile methodology. Validate results against defined outcomes with customers and/or internal stakeholders, ensuring that the pilot has achieved intended outcomes. Document approach and ways of working to form a template. — **Lessons learned:** Carry out lessons learned and provide feedback on the operating model, the architecture, execution of governance and role of DTO to make improvements for scaled execution. Continued on the next page…	The transformation programme will iteratively deliver the benefits and outcomes of agreed scope. This is done based on a prioritised transformation roadmap which takes input from having carried out a number of pilots. The pilots test a number of proof of concepts. For example, there might be the need to create a digital place for sharing data externally. The pilots will also execute and test a systematic approach to meeting requirements from our internal and external stakeholders. This systematic approach will lead to consistency, reduction of rework and maximisation of the value of data.

Initiative: Data transformation programme (2 of 2)

Description	**Through this initiative we will prioritise data stakeholder's needs and define pilots, as well as test and refine an end-to-end delivery approach. Using the results of the pilot(s), prioritise projects and improvement activities to iteratively grow the data capability.**	Business outcome
Initiative breakdown	**Execution:** — **Transformation programme execution:** Using agile methodology and the results of the pilot(s), we will prioritise projects and improvement activities to iteratively grow the data capability. The currently identified data initiatives are detailed within this document (see "Digitalising the energy system", "Enabling data analytics and insights", and "Improving network planning and operations"). — **Continuous review:** We recognise that not all external and/or internal data requirements are known at this point so we have built the need for a level of flexibility into our action plan. For this reason we will generally start with pilot activities to enable the validation of the value proposition before committing to an enterprise solution and/or change priorities as new requirements emerge. This will form part of the continuous update process of our Digitalisation Strategy and Action Plan. — **Set up agile at scale:** We will use frameworks such as SAFe to set up scaled agile capabilities. This will be required for the delivery of the data transformation roadmap below. — **Data transformation roadmap:** Carry out a prioritisation and assessment exercise. Build an implementation roadmap. Ensure there is stakeholder buy-in and the value is agreed. Priority should be given to activities that enable key business areas and satisfy key data stakeholders requirements. — **Programme scope:** Using the roadmap, scope a transformation programme. Where possible this is best delivered through agile. Create charters, backlog of products and set up agile delivery capabilities. The programme should be managed as a portfolio by the Data Transformation Office (DTO). — **Programme execution:** Execute multiple sprints of agile projects to achieve the roadmap. Create business cases and benefits realisation plans. Test that the outcomes and benefits are achieved. Reprioritise the backlog if necessary to meet stakeholder expectations.	The transformation programme will iteratively deliver the benefits and outcomes of agreed scope. This is done based on a prioritised transformation roadmap which takes input from having carried out a number of pilots. The pilots test a number of proof of concepts. For example, there might be the need to create a digital place for sharing data externally. The pilots will also execute and test a systematic approach to meeting requirements from our internal and external stakeholders. This systematic approach will lead to consistency, reduction of rework and maximisation of the value of data.

Initiative: Use of external data and data triage

Description	**A single point of accountability (SPA) will be put in place, responsible for identification of opportunities to use external data to improve operations and customer service. The SPA will also be responsible for ensuring triage of external data requests are effectively managed.**	Business outcome
Initiative breakdown	The SPA will be established under the Data Transformation Office and will have two responsibilities: **Use of external data:** External data can be valuable sources for adding value in our operations and customer services activities. Examples of this would include the use of flood data to add resilience to specific assets or correlate weather patterns with incidents. We will proactively search for such sources of data and as they are identified, act as the SPA to assess the usability, value and impact of the data to enhance services. The SPA will sit within the overall data organisation and will have the following responsibilities: — Working with the business to undertake market and horizon scanning to identify any external data opportunities and engage the business for their use. — Work with the business to understand the nature of the data and how it might add business value. Articulate these into scope for assessment and create data requirements. — Identify which data towers could deliver the requirements, and facilitate initial assessments. — Run appropriate pilot projects, ensure the data architecture is updated and make other appropriate adjustments as required, such as changes to procedures. — Manage implementation if business value is confirmed. Ensure data and business impacts are addressed including but not limited to changes to data catalogues, metadata, architecture and legal compliance (i.e GDPR). Implementation and adoption will align with other data transformation projects and will utilise agile ways of working to deliver benefit quickly. **Data triage** Digital channels will be built to capture data requirements and enquiries through our CRM solution or any national scheme. The SPA will be responsible for the management and delivery against such requests and will become the point of contact for any human contact required under the data request process. The SPA will also be responsible for the identification and assessment of any external data requests that could be made readily available to external stakeholders under the open data principles.	Creation of a single point of accountability that facilitates use of external data for the improvement of business operations and customer service. The same SPA will also interface with external stakeholders for their data requests and manages the digital channels that capture requests, enquiries and tracks service. Combining this role will provide insight into the use of our data by external stakeholders providing insight that could lead to reciprocal data sharing.

Initiative: Data quality

Description	**This initiative will help us enhance the quality of our data through direct input and will reduce a reliance on spreadsheet and other sub-optimal methods of collection and sharing through use of digital solutions.**	Business outcome
Initiative breakdown	Whilst our asset data is held in our central asset management and spatial solution forming an Integrated Network Model, there are other data sets that require to be cleansed, improved and centralised. This initiative will revise our processes to reduce the use of spreadsheets, access databases, emails and paper as a means for collection, submission and data entry and move to digital solutions to expedite data collection, entry and sharing and will reinforce quality standards at the time of data collection and entry. This will include integration of work management and field service solutions with the data repositories and will be expanded into mobility solutions. Data and the quality of data will become an intrinsic part of any delivery and as such will be measured in that way in terms of process and governance. Key features for this are: — **Discovery and prioritisation:** With a focus on all the processes that collect and submit asset, operational and customer data, discovery will look at processes where data collection error rates can be improved, and submission or lead times streamlined. The discovery exercise will focus on where digital solutions can be used to enhance such processes, and where paper-based submissions can be digitised. Opportunities are prioritised at this stage. — **Process automation:** A discovery exercise will identify opportunities for processes to be streamlined and automated so that, where possible, data entry can become automated. — **Data quality:** As part of discovery the value of data will be identified. Where auto data entry cannot be achieved, conditional controls will be applied to make the manual entry of high value data compulsory through logical system controls. — **Solution selection and design:** This step will identify the most appropriate solutions and create high-level designs and architecture for their implementation. — **Implementation:** Based on prioritisation, agile rollout plans will be produced. Implementation and adoption will align with other data and digital transformation projects to identify dependencies and sequencing opportunities so that delivery can be maximised.	Provision of optimisation through technology for future efficiencies. This initiative will also enhance data collection and create direct links to the asset and operational systems. The outcome will reduce further burden on the data entry function, optimise processes and reduce rework.

Initiative: Data gap analysis and cleanse

Description	**This initiative will help us enhance the quality of our current data through a series of activities that will cleanse our existing network data and identify and bridge gaps in that data.**	Business outcome
Initiative breakdown	Whilst we are confident in the accuracy of our data sets in our asset management and spatial system and our network management system due to the work that was undertaken during their implementation, we are aware that other data sets may have inconsistencies and require a level of cleansing and data improvement. This initiative is to establish the scope of the data that we will examine, identify data cleanse requirements, data completeness gap analysis and mobilise activities to address the data deficiencies and improve the quality of that data. Key features for this are: — **Data discovery:** Discovery will look to build on our recent work to implement technology that can identify data quality issues. We will continue to use technologies of this nature to surface data into a digestible format that identifies what data is being held in each data set. — **Establish value of data:** Once the data has been identified, assessments will be undertaken to establish the value/importance that data may have to the internal and/or external stakeholder. — **Ease of cleanse:** Based on high to low value data, assessments will be undertaken to establish the ease by which the data can be cleansed and data gaps corrected. — **Prioritisation:** Once the value of data and ease of data cleanse has been established a prioritisation matrix will be used to determine the priority order by which data cleanse activities will be undertaken on a given data set. This priority assessment will be based around timescales, cost and benefit. — **Implementation:** Based on the prioritisation, agile rollout plans will be produced. Implementation and adoption will align with other data and digitalisation transformation projects to identify dependencies and sequencing opportunities so that delivery can be maximised.	Provision of cleansed and complete data will enhance the value of the data as an asset and will allow greater business and external stakeholder confidence when the data is used for modelling and decision making.

Initiative: Analytics strategy and Centre of Excellence

Description	**Implement an analytics Centre of Excellence (CoE). The CoE will be the experts in the use of analytics and will champion the use of analytics and delivery of use cases across Northern Powergrid.**	Business outcome
Initiative breakdown	— **Analytics requirements discovery:** Conduct a discovery exercise of analytics requirements and capabilities across Northern Powergrid and take into account peer group and wider industry best practice. External stakeholders will be engaged to obtain requirements on expected capabilities. Data quality and completeness within Northern Powergrid will also be taken into account as a dependency. — **Analytics Centre of Excellence (CoE) design and build:** Following discovery, a CoE design will be established that will consider the technology and resources required to establish the operating model for an analytics CoE capability, that would deliver and exceed the requirements. Forming part of the Data Transfer Office, the CoE will be a central hub for providing analytics capability across three levels of core analytical capabilities: Complex, where the analytical requirement is across multiple internal and external data sources; Compartmentalised, where the data is localised to a single data sets; and finally self service. For the latter, tools such as Microsoft Power BI would be used with the former being the responsibility of the CoE to deliver. To do so they will liase, define, build and deploy such requirements utilising new technology, artificial intelligence (AI), Machine Learning (ML) and/or existing systems. The CoE will work with already established analytical capabilities within Northern Powergrid. The CoE will align with the overall data operating model and will define its own operational processes and dimensions. — **Analytics roadmap for implementation:** Using the CoE, create a roadmap for implementation of use cases. Use cases have been identified and prioritised as part of this action plan. Once the COE is established these use cases will be re-evaluated by the COE to validate their need and benefit. New use cases will be identified as part of the continued review cycle of this action plan and will be assessed, prioritised and planned following the defined operation procedures of the COE. — **Align analytics CoE with agile at scale:** Align with agile delivery teams to become part of the overall transformation programmes and leverage existing capabilities for delivery. — **Analytics use cases rollout (ongoing):** The CoE will be accountable for the identification of areas that would benefit from analytical techniques being applied and will be responsible for the identification of new analytical capabilities. Align with the rest of the data transformation programme to leverage economies of scale and reduce dependencies.	With strong data quality foundations in place, we will design a Centre of Excellence to deploy analytics. The benefits, such as insight driven action, come from leveraging a central hub to advise, coach and build complex analytics solutions. The execution will iteratively deliver the benefits and outcomes of analytics requirements, build the team's capability and increase the business' own capabilities.

Initiative: Enabling advanced analytics for network operations

Description	**The initiative focuses on quick win opportunities to be conducted in the short term, with a discovery of emerging technologies to be leveraged for advanced modelling and decision making.**	Business outcome
Initiative breakdown	The ability to provide network operations and asset management with advanced analytical capabilities is dependent on the availability of a centralised view of quality data and the establishment of the data analytics Centre of Excellence described earlier. **Centralise network data:** Delivered in conjunction with the data gap analysis and data cleanse initiative and building on our investments in the creation of an Integrated Network Model, this initiative will analyse existing data sets to identify what data is available within existing systems that can be used at source for analytical purposes or that can be extracted and loaded into alternative systems to allow it to be used for analytical purposes. Some examples of the initiatives that can be released following this are: — **ETR accuracy and end-to-end integration:** Being able to provide accurate ETR is an important part of delivering high quality service. This initiative will build on our work that has improved our ability to provide more accurate estimated time for restoration by applying machine learning (ML) and/or artificial intelligence (AI) to the data sets that have been released through the centralise network data initiative and more accurately predict ETRs based on a wider set of surfaced historical data, third party data and data becoming newly available from initiatives delivered under this action plan. An example of this new data will be from the delivery of the work management focused initiative (discussed later) whereby we will build out our data set of how long a typical job type takes, split between the various activities of that job type, thereby building a more accurate picture of the time each stage has taken, increasing our ability to automatically estimate more accurate ETR. — **AI/ML discovery:** AL/ML can provide powerful insights into areas of our data and patterns of behaviour not visible to the human eye. This initiative will conduct a discovery exercise to identify the potential use cases for such technologies to be used across our data sets and surface such patterns of behaviour. Examples could include forecasting processes, fault predictions, network trading forecasts, etc. Use cases for AI and ML will be identified to provide further modelling and assessment capability and enhance decision making. These use cases will feed into the use of external data initiative and will be prioritised based on the benefit and value they can add. Proof of concepts will be used to test their value before commitment is made to full scale rollout.	The initiatives will provide some immediate benefits to us through identifying the data sets that analytics can be applied to. They will provide customer benefits through quicker response and more accurate communication as well as more targeted investments and avoidance of regret spend. The initiatives will also bring operational efficiency whilst they assess quality of existing data. The advanced analytics enabled by AI/ML will increase operational efficiencies while reducing human error.

Initiative: Network planning and investment analytics

Description	This initiative will define targets and goals for network planning and investment and will identify opportunities to enhance modelling.	Business outcome
Initiative breakdown	**Enhance network planning/investment data use cases:** How we take data out of our systems that form our Integrated Network Model, other internal sources, smart grid, smart meter and industry data sources, environmental (corrosivity areas, flood planes, lightning hotspots) and to combine such data from these varied sources will enable us to make enhanced and informed decisions and is paramount to us. Such enhanced capability will allow decisions to be made in support of CNAIM (Common Network asset indices methodology) protocols and in particular will allow us to be more efficient in the high cost area of asset replacement planning. Provision of more data points (such as those we are collecting under our Foresight project) will enable growth of network planning and investment analytics. This calls for alignment with our data transformation initiatives to articulate network planning data requirements, enhance existing data use cases and define new ones. **Network planning and investment architecture:** Provision of a target architecture for network planning/investment covering the following areas: — Capabilities required for the future of the network planning and development DSO role — Data requirements (align the delivery of these through use cases in conjunction with the SPA and DTO) — Define to-be processes (required for process automation) — Define to-be system requirements — Integration and information flow — Network and security infrastructure — The target architecture will articulate any changes required to meet strategies and future objectives. **Discovery of modelling use cases:** Execution of a discovery on the use cases for intelligent digital solutions to improve modelling. This milestone will shortlist priority processes to pilot and then scale. The pilots will confirm the applicability of technologies, provide tested approaches and outline the requirements to scale. **Modelling use cases rollout:** Work with the STA and DTO to establish delivery programme with iterations that implement the use cases prioritised during discovery supported by change management and benefits tracking.	This initiative will provide us with a roadmap to capture additional data, required for implementing additional capabilities and enhancement of functionality. The provision of a target architecture will provide us with a set of goals and targets we would need to implement to achieve future objectives.

Initiative: Network operations strategy and operating model

Description	**In line with our DSO v1.1 development plan, we will define our strategic goals and architecture (business and IT) to enable the Control Room of the Future.**	Business outcome
Initiative breakdown	**Enhance network planning/investment data use cases:** In conjunction with our network operations and aligning with our DSO v1.1 development plan, we will define and articulate the future role of network operations and their requirements from digitalisation. This will cover, but will not be limited to an articulation of the role of the Control Room of the Future, what key capabilities and services our network operations will need to deliver, and what key digital resources they will require. **Use of smart data use strategy:** As we are upgrading our telecommunications network and are increasing the number of data points that our network is capable of delivering, there is an opportunity to assess the extent to which such data can be utilised for network operations in both real and slow time. Using the term 'smart data' to collectively describe such data points, the use of smart data strategy will identify how and where these data points will be used by network operations to become the Control Room of the Future and identify what data points they may need to populate and operate the concept of an Advanced Distribution Management system being formed through the integration of a number of digital systems. This initiative will align with overall data transformation initiatives described in the sections of this document "Promoting Data Transparency" and "Enabling data analytics". The outcome of this exercise will give us the ability to understand where measurement gaps reside, what the DSO direction is for expansion of sensor capabilities and identify where integration is required to present a single view of the truth. **Network operations architecture:** Based on the strategy exercise above, we will produce a network operations to-be architecture. In this stage, the future state application landscape is mapped to future capabilities, processes and standards. The architecture should align with overall architecture principles. There should be close alignment with data architecture as outlined in the data swim lane of this deliverable.	The outcome of this initiative is articulating the future role of network operations, especially the role of the control room. The architecture will capture the future map of systems, capabilities and processes for network operations while their DSO target operating model will provide insight into digital changes that need to occur in order to implement the strategy.

Initiative: Management capability for energy resouces connected to our network (1 of 2)

Description	**This initiative will identify an enterprise scaled solution to manage the energy resources connected to our system in order to execute our DSO role.**	Business outcome
Initiative breakdown	As distributed energy resources increase there is a need to understand and interact with them at an enterprise level so that we can deliver against our DSO plan. To do so we will undertake the following initiatives: **Design and specification:** Using the strategy, high-level process design and architecture as input, this exercise will articulate the desired capabilities required from a system that will allow us to manage the energy resources connected to our network, and how it should integrate with connected energy resources and other internal and external systems. The design will map our DSO v1.1 development plan objectives and the capabilities required from such a solution. The design will be used as a key input into product selection and consolidates the findings of all the previous initiatives, such as strategy, architecture and operating model. **Use cases discovery:** In order to carry out an effective product selection process, we will identify a number of key use cases that the management solution, and its integration, need to satisfy e.g. forecasting, situational awareness of distributed energy resources, or energy arbitrage. The prioritisation of use cases will depend on the alignment of the implementation approach with our DSO v1.1 development plan. **Product selection:** We will run a product selection process. This process will leverage innovative approaches such as “value prototyping” where we will ask potential vendors to showcase their products against defined use cases and specifications. The product vendors will have to invest in building end-to-end demonstrations, showing the overall capability of their products and highlighting key integration and data requirements as well as the availability of modules so as to enable flexibility of implementation. The outcome will be a chosen product with a set of prioritised business capabilities that will become the scope of deployment. Continued on the next page…	Implementation of enterprise energy management solution per release plan and schedule, providing planned benefits and realising the objectives set out in the DSO v1.1 development plan strategy and ED2 plans.

Initiative: Management capability for energy resouces connected to our network (2 of 2)

Description	**This initiative will identify an enterprise scaled solution to manage the energy resources connected to our system in order to execute our DSO role. The solution will become integrated with existing network and asset management systems.**	Business outcome
Initiative breakdown	**Implementation roadmap:** Based on the outcomes of the strategy exercises, we will have identified which of our DSO roles and capabilities we wish to realise first. On this basis, and considering any operational or organisational constraints, this initiative will create a roadmap for implementation. We will outline the content of different releases. For example, we may decide that in line with our DSO development plan, we wish to implement connection flexibility, and/or adopt the role of the neutral market facilitator early in the rollout. The implementation roadmap will articulate how many rollout programmes there will be, the sequence of capabilities and the benefits that will emerge. **Implementation 1 and 2:** For the purposes of the action plan we have assumed there will be two major releases of E-ERMS but in practice this may change. This part of the initiative will design a programme delivery, using agile if appropriate. As part of this initiative, the details of systems integration points, or any process changes to existing network and asset management activities, are also implemented. The scope of implementation will also include integration and implementation of any commercial processes and operating model changes. The E-ERMS rollout is dependent on upfront strategy and architecture work as well as other potential changes to network and asset management systems. It is possible that scaled rollout would not commence earlier than Q2 2023.	Implementation of enterprise energy management solution per release plan and schedule, providing planned benefits and realising the objectives set out in the DSO v1.1 development plan strategy and ED2 plans.

Initiative: Network planning and operations' existing initiatives

Description	**By implementing innovation projects, we will test and confirm opportunities to augment modelling, analytics and measurement points for enhanced network operations and asset management capabilities, and improved consumer service.**	Business outcome
Initiative breakdown	We are currently executing a number of initiatives that are designed to improve our network operations capability. The specific initiatives we are currently working on are as follows: — Network monitoring database and visualisation improvements — Advanced network management system rollout (flexible connections) — Network forecasting models — Distribution system analysis tools — Customer-led distribution system — Development of improved distribution load estimates — Improving demand forecasting — Smart network design methodologies. After completion of the existing initiatives and subject to the scale they have been delivered to (i.e. scale versus proof of concept) we will undertake the following activities: **Value analysis for scale:** At the end of each project the benefits and outcomes of the project will have to be clearly articulated. Projects that provide insight and analytics for asset management and network operations will be aligned with other analytics and modelling initiatives within the same areas to provide maximum benefits. Their fit within the wider architecture will also be assessed as will the suitability for integration with existing systems. Only if the value of the initiatives is clearly assessed and agreed will the scaling of the solution and their wider implementation be considered. **Roadmap for further development:** Scaled rollout of the existing initiatives will become part of a wider roadmap. Where this is the case, these new scaled initiatives will be included in an updated action plan and will become part of the overall integrated plan to ensure alignment with similar and/or dependent projects. This ensures we manage a portfolio of initiatives in a coherent and holistic manner to maximise benefits.	By trailing and implementing our in-flight innovative projects, we will be able to build analytical, modelling ability and enhance our measurement rigour. These projects once completed will be assessed so as to identify scaled rollout opportunities and be integrated and delivered as part of a full roadmap.

Initiative: Asset data platform upgrade

Description	**Enhance the existing asset data platform in order to provide improved access to system asset data. Enhance security and produce a new architecture that sets the foundation for building future functionalities.**	Business outcome
Initiative breakdown	We have made a significant investment and have delivered a single Integrated Network Model that provides a single data repository for network asset information including asset attribution, spatial location and network connectivity for all our network assets. This set of initiatives are designed to upgrade the underlying database to release new capabilities and update the original architecture to ensure maximum value is obtained. EAM/Spatial upgrades: — **Database upgrade:** Upgrade underlying spatial database to release new database capabilities and improve performance. — **Modernise architecture:** Modernise the architecture with a single master dataset and implement an improved read-only capability to improve user experience, further secure the master data through access control and improve synchronisation and exception logging. — **Database structure:** Normalise the asset database and create individual asset groups to drive efficiencies, create data check tools and implement a new partition logic. — **Interface upgrades:** Upgrade interfaces from DB Link to Oracle ESB creating dynamic interfaces between different applications.	The outcome of the EAM/ Spatial upgrade is to improve access to asset data and build the foundation for future initiatives that will leverage asset data to realise efficiencies in asset management activities in support of creating the foundations for a smart grid.

Initiative: Define and implement an enhanced a condition-based risk management strategy (CBRM)

Description	**Enhancing our condition-based risk assessment capabilities will allow us to be more efficient in the utilisation of resources and target capital investment. This initiative runs in conjunction with the network planning and investment initiatives.**	Business outcome
Initiative breakdown	**Discovery and feasibility study:** Identify areas where condition-based risk assessment can be improved through the amalgamation and analysis of disparate data sets. Consider areas where artificial intelligence, machine learning and robotic process automation could be used in conjunction with existing systems and distribution system analysis tools. Consult with the analytics center of Excellence to identify use cases for enhanced capabilities in this area. Articulate the key requirements for those enhancements and prioritise. **Predictive algorithm design:** Selection and testing of algorithms to be deployed for enhanced CBRM capabilities. Algorithms will be based on maintenance KPIs, asset data, failure history, environmental data, condition data, and CNAIM protocols. **Deployment:** Algorithms will be deployed based on established prioritisation with pilot asset group undertaken first, then scaled across all assets types. **Additional sensor requirements gathering:** Taking input from discovery and other network analytics initiatives, identify requirements for additional measurement points from assets that could enhance CBRM still further. Work in conjunction with the use of external data SPA function to understand impact on existing data models and data sets, prioritise and establish benefits case and calculate return on investment. **Additional sensor deployments:** Where a case exists to deploy additional sensor and/or monitoring capability to assets and enhance CBRM and analytics capability, work in conjunction with appropriate Northern Powergrid asset investment function to establish engineering programme for deployment of additional sensors and/or monitoring capability. Create an implementation roadmap and align release of benefit of enhanced capability to the engineering programme.	The execution of this initiative will provide us with cost optimisations and reduction of risk for asset failure and enhance targeting of capital investment. It will also enhance the CBRM capability through the identification and delivery of new data requirements.

Initiative: DSO v1.1 development plan initiatives

Description	**By implementing innovation projects, we will test and confirm opportunities to support the digitalisation of the energy system. Digital initiatives will enable these to be deployed at scale and maximise their benefit through the use of technology and data.**	Business outcome
Initiative breakdown	We are currently executing a number of initiatives under our DSO v1.1 development plan which are designed to support the digitalisation of the energy system. The specific initiatives we are currently working on are as follows: — Auto voltage control and monitoring replacement at EHV — Primary substation remote terminal units' replacement (RTUs) — Primary and secondary operational telecoms system replacement for SCADA — Distribution monitoring of low-voltage monitoring at local substation level — Secondary telecoms system — Control and operational systems. After completion of the existing initiatives and subject to the scale they have been delivered to (i.e. scale versus proof of concept) we will undertake the following activities: **Value analysis for scale:** At the end of each project the benefits and outcomes of the project will be clearly articulated and candidates for digital enablement identified. Initiatives that can provide insight and analytics for asset management and network operations will be aligned with other analytics and modelling initiatives to provide maximum benefits. Initiatives that can provide control and system management will be assessed for their fit within the wider architecture and assessed for their suitability for integration with existing systems. **Roadmap for further development:** Scaled rollout of the existing initiatives or digital enablement will become part of a wider roadmap. Where this is the case, these new initiatives will be included in an updated action plan and will become part of the overall integrated plan to ensure alignment with similar and/or dependent projects. This ensures we manage a portfolio of initiatives in a coherent and holistic manner to maximise benefits.	By trailing and implementing our in-flight innovative projects, we will be able to build analytical, modelling ability and enhance our measurement rigour. These projects once completed will be assessed so as to identify scaled rollout opportunities and be integrated and delivered as part of a full roadmap.

Initiative: Omni-channel integration (1 of 2)

Description	**Provide us with the ability to listen to the voice of the customer and build a suite of integrated channels, including live chat, aligned with customer preferences and journey requirements.**	Business outcome
Initiative breakdown	**Omni-channel strategy:** In order to enable an omni-channel experience, a strategy will be produced so that customers can shift between preferred channels, when required, in a cost-effective manner. The key features here should include: — **Channel costing:** Cost analysis on every channel (and potential channels for the future) where we provide a service in order to identify optimal cost-effectiveness. — **Customer preference analysis:** Customer research (both secondary research and customer focus groups) to identify preferred channels by customer groups as well as analytical research to understand channel usage, effectiveness and customer sentiment. This can be done as part of customer journey mapping as well. — **Cost-benefit analysis and channel development roadmap:** Based on channel costs and preference, channels will be prioritised for further investment and development into a roadmap. This roadmap details the development and integration of channels. **Channel integration:** Implement workflow management capabilities to facilitate customer channel shift across all key journeys. The features of these activities should include: — **Channel customer journey:** Definition and mapping of customer journeys across channels with clear articulation of customer requirements. — **High-level design:** Produce high-level design of the scenarios (personas and journeys) and produce architecture as key inputs. Consider key systems integration points such as CRM, OMS, etc. — **Deployment:** Plugging our channels into the workflow management system to enable end-to-end case tracking. Continued on the next page…	The outcome of this initiative is the provision of an omni-channel experience for our customers and stakeholders, ensuring digital and other traditional channels are available, linked and effectively operated. We will also be able to analyse the voice of the customer over the channels, identifying improvements and being proactive in engagement.

Initiative: Omni-channel integration (2 of 2)

Description	**Aligned with customer preferences and journey requirements, build a suite of integrated channels that include live chat and provide us with the capability to more closely listen to the voice of the customer.**	Business outcome
Initiative breakdown	**Social listening platform analytics:** Conduct an assessment with the current social media monitoring platform in order to create analytics based on customer interaction across social media channels and provide integration with the CRM. Key features include: — **Definition of analytics and integration requirements:** Setting the purpose, objectives and requirements for building analytics based on social media interaction as well as integrating the platform with the CRM. — **CRM integration:** Integrating the social listening platform with the CRM. **Live chat deployment:** Deploy live chat and chatbot functionalities in the website to enable a direct and immediate support for the customers, reducing the number and type of inbound contacts. Key activities will include: — **Service catalogue and architecture:** Definition of enquiry types to be enabled by live chat and chatbot functionalities. Architecture design and definition of functional and non-functional requirements of the live chat and chatbot functionalities, outlining integration and data requirements. — **Integration:** Integration of the live chat functionality within our website, CRM and back-office systems (field force information, outage management systems).	The outcome of this initiative is the provision of an omni-channel experience to our customers and stakeholders, ensuring digital and other traditional channels are available, linked and effectively operated. We will also be able to analyse the voice of the customer over the channels, identifying improvements and being proactive in engagement.

Initiative: Contact centre modernisation

Description	**Use of modern IVRs and implementation of full suite of Contact Centre as a Service functionality to provide call monitoring, reporting and tracking.**	Business outcome
Initiative breakdown	**Planning:** Definition of a holistic model for the new contact centre, including systems (IVR, contact centre systems, corporate voice platform, back-up voice platform), requirements (e.g.: voice recording, analytics, reporting) and integration points (CRM). The first release focuses on the IVR system (definition of a cloud-based architecture to replace the old IVR components), while the second release builds upon full functionalities (call recording, monitoring and reporting) and integration points. **Integration and migration:** Diversion of incoming calls to the cloud-based IVR, directing the output back to the contact centre via existing PSTN in the first release. Link the contact centre with the CCaaS solution and the cloud-based IVR to enable a fully managed and scalable customer service in the second release.	A fully managed CCaaS solution will reduce complexities and enable flexibility and scalability to deal with increased demand, increasing first contact resolution and hence improving the customer experience. Also, the ability to analyse customer complaints quickly will increase the one-day resolution rate.

Initiative: Website modernisation (1 of 2)

Description	**Building a new website with modern features and architecture and complementing our capabilities with website analytics to control traffic, usage and establish continuous improvement. The website is integrated with a modern content management system.**	Business outcome
Initiative breakdown	**CMS strategy:** This will define our content management strategy so that content is secured, accessible and reusable through different channels. Two key features to be included are: — **Content repository:** A clear definition of storage and repository locations for visual, audio and communication content in a manner that is secured and accessible through integration and accessed through appropriate channels. Collection of all content, potentially cleansing and storing in designated and defined hierarchy and structure. — **Architecture:** High-level architecture design and definition of functional and non-functional requirements for a content management system, identifying key integration points. **CMS platform development:** After appropriate product selection, deploy a CMS platform to provide the ability to build and share content effectively across channels. Key features should include: — **Asset catalogue definition:** Creation of a clear catalogue of our assets (both for website and intranet) to be migrated to the central CMS platform, in a manner that increases productivity of the communications team by localising assets into a single place. Assets will include home pages, templates, links, images, videos and visual identity related to external communications. — **Asset standardisation:** Cleansing and standardisation of assets in the catalogue to increase the re-use of material and reduce rework in the communications team. — **CMS deployment:** Release 1 would be the migration of assets to the CMS platform and integration with the website, including communications workflows. In Release 2, the same activity will focus on migration of assets to the our intranet and addition of associated workflows. Release 2 would also include integration with distribution lists to share content with all colleagues in an effective manner. See assumption on integration requirements in assumptions and dependencies. The key features of website modernisation will include: — **Architecture:** Design and definition of a modern architecture for the website (e.g.: based on a containerised and serverless model) to replace the current architecture (presentation, web, content, platform and resource layers) to allow deployment of modular components and continuous development. Continued on the next page…	The outcome of this initiative is to move from the existing website architecture and enable faster delivery of new web functionalities to adapt to fast changing customer needs. At the same time we will have the capability to monitor website performance and ensure the channel meets customer expectations as well as identify improvements where required. Furthermore, the website will be integrated with a new content management system that allows intuitive, effective and fast content to be built for effective communication and engagement with the stakeholders and customers.

Initiative: Website modernisation (2 of 2)

Description	**Building a new website with modern features and architecture and complementing our capabilities with website analytics to control traffic, usage and establish continuous improvement. The website is integrated with a modern content management system.**	Business outcome
Initiative breakdown	**Product section and migration:** A key criterion for product selection will be the adherence of the product to the evergreen architecture principle. As part of Release 1, data and content from the existing website would be migrated. Release 1 will also include key applications (e.g.: Power Cut look-up and Logging) and integration with back office and CRM. Release 2 will consider further integration points (network data such as capacity maps and outage management) and provide additional web applications (e.g.: Safedig, Planned PowerCuts, My Services). It is further suggested to implement a web analytics platform to collect, analyse and display data about website and intranet usage and implement continuous improvement initiatives. The key features here would include: **Definition of KPIs:** Define KPIs to measure the website/intranet performance against business and technology requirements. At this stage all the web features are broken into every action that customers perform and these actions are then translated into operational KPIs aligned to business goals. The KPIs might include: URL visits (number of visits per URL), visit duration (time customers stay on a page), pages per visit (number of pages visited before the customer leaves the website/intranet). The KPI definition has a key dependency with the previous definition of end-to-end customer journeys. **Tool deployment:** Integration of the analytics platform with the website, intranet and CMS. The implementation will consider creating different views and filters for different user personas. Such user personas will have different permission levels that will be defined according to security considerations.	The outcome of this initiative is to move from the existing website architecture and enable faster delivery of new web functionalities to adapt to fast changing customer needs. At the same time we will have the capability to monitor website performance and ensure the channel meets customer expectations as well as identify improvements where required. Furthermore, the website will be integrated with a new content management system that allows intuitive, effective and fast content to be built for effective communication and engagement with the stakeholders and customers.

Initiative: Customer strategy (1 of 2)

Description	**This initiative will focus on customer segmentation, completion of customer journeys for all types of services, and tracking and managing of connections customer performance. A connections blueprint is suggested to ensure connections leverage best industry practices.**	Business outcome
Initiative breakdown	**Customer journeys:** This is a continuation of existing activities to further build and refine customer journeys. Appropriate customer information and findings to define end-to-end customer journeys across all service types should be used. In connections, the work should also include medium and large connections types. During the development of customer journeys, include design of key features such as performance measurements, channel touchpoints, data requirements and process maps. Revisit and improve customer journeys already produced, such as those produced for small connections. Considered within customer strategy, it is recommended that a connections end-to-end blueprint is also produced. This will develop a blueprint/ business guide detailing the end-to-end business processes, system requirements and technology architecture of the target connections business that leverages best practices for customer outcomes and operational efficiencies. The work should include: — **Cross-industry best practice research:** Develop a richer understanding of leading practices by drawing on experience in similar organisations within or outside the energy sector. Identify new practices, business models, or capabilities that can be leveraged within Northern Powergrid and define appropriate business relevance. — **End-to-end connections to-be processes:** Collate all documents providing details on end-to-end as-is processes. Ensure documents provide insight on roles, integration and data requirements. Use these as an input for process optimisation and articulation of to-be processes. — **End-to-end high-level business architecture design:** Design the target architecture clearly showing key dimensions such as capabilities, functional systems, processes, data flows and integration points for the entire connections business. — **End-to-end connections blueprint:** Consolidate above findings into a blueprint document that will serve as a live document and one that provides a baseline for change. This blueprint can always be updated should there be any further improvement initiatives or significant changes identified. Continued on the next page...	The output of this initiative is to give us deeper insight into customer requirements and ensure that service delivery is designed as per customer highest standards and pleasing experience. Moreover, a framework will be implemented that tracks connections delivery, with a focus on drivers of Broader Measure of Customer Service (BMCS) and ensuring that the connections business leverages best practices and is organised according to them. This is done through the implementation of a connections blueprint.

Initiative: Customer strategy (2 of 2)

Description	**This initiative will focus on customer segmentation, completion of customer journeys for all types of services, and tracking and managing of connections customer performance. A connections blueprint is suggested to ensure connections leverage best industry practices.**	Business outcome
Initiative breakdown	Finally, we will produce a connection delivery performance framework. This will develop a robust connections and major projects delivery performance management framework to align the performance and SLAs of internal staff, as well as contractors, to the highest BMCS incentives for small connections and incentive on connections engagement (ICE) for medium and large connections. Key features that need to be implemented are: — **BMCS and ICE assessment:** Conduct a detailed qualitative and quantitative assessment of historic BMCS (and ICE) results including customer feedback. Deep dive into jobs that caused delivery issues and/or poor customer satisfaction results. Assess our performance with other DNOs while also analysing the future requirements for highest BMCS and ICE rewards. Identify weak areas and provide mitigation plans. Execute these as a change programme. — **Design:** Design standard performance reports that map BMCS survey results to teams, service providers and key drivers of performance. Assign RAG status and put in place ability to socialise these through internal collaboration tools. Integrate reports with continuous improvement capability. — **Service providers:** Track the service provider performance and automate reports, ensuring they are socialised with service providers through appropriate workflows and tools. Use these reports to refresh/negotiate service contracts with delivery partners and introduce the SLAs in line with the performance management framework in order to improve delivery times. Incorporate pain/gain sharing mechanism for incentivising performance relative to the targets.	The output of this initiative is to give us deeper insight into customer requirements and ensure that service delivery is designed to provide the customer with the highest standards and a pleasing experience. Moreover, a framework will be implemented that tracks connections delivery, with a focus on drivers of BMCS and ensuring that the connections business leverages best practices and is organised according to them. This is done through the implementation of a connections blueprint.

Initiative: CRM modernisation and rollout

Description	**Complete planned CRM initiatives and identify further capabilities meet business objectives.**	Business outcome
Initiative breakdown	Complete existing CRM rollout programme: Deployment of CRM solution in four releases as per plan. — **Release 1:** Disconnections Delivery, Unmetered Repairs and Quality of Supply. — **Release 2**: AFP rollout (Contractor to CRM upload facility). — **Release 3**: Connections, Diversions, Disconnections. — **Release 4**: Site Safety, OH Maintenance, Disconnections Serv., Substation Maintenance, Vegetation Management, Property Services/Cut Out changes, Unplanned Powercuts. **Complete CRM integration:** Testing and validation of all CRM integrations with front end (e.g.: Website, EAPs) and back end (e.g.: Auto-design, QPID), ensuring a fully-functional and end-to-end CRM deployment. **CRM capability analysis:** Carry out a CRM capability assessment to identify areas for growth and improvement. Areas for growth and improvement could include but are not limited to complaints management, enquiry management, customer onboarding, campaign management, debt and credit management. **CRM enhancement plan:** Based on CRM capability analysis, define a roadmap. This could be planned across multiple releases (suggest 2 or 3) and should be prioritised based on capabilities across all services and customer segments. For example, enhancing Customer Complaints across key journeys. **Customer reporting and automation:** Further exploitation of CRM reporting and automation capabilities.	The outcome of this initiative is to leverage a modern CRM platform that improves the quality of customer information, allows automation of common tasks and allows better reporting and analytics. This will allow us to better understand and serve the customer, improving the overall experience.

Initiative: Customer analytics

Description	**Implement a customer data platform (CDP) to centralise customer data and provide a single view of the customer, building the ability to undertake customer analysis and drive wider use of AI.**	Business outcome
Initiative breakdown	**Single view of customer strategy:** Assess the best way to centralise customer data. Implement customer data management strategies and implement ownership and governance. **CDP release 1:** Implement CDP and integrate with customer data sources. Focus on data management and customer profiling capabilities to begin to create foundational capabilities. **CDP release 2:** In future release, implement analytical capabilities. See line below on implementation of analytical platform. Also include within scope of future releases marketing and communications capabilities, such as PSRs, and social media. **Analytics platform:** Assess in-house analytical platforms and capabilities to rationalise. Implement analytical platform to provide customer insight and reports. Note – Please also consider data and analytics initiatives suggested in Promoting Data Transparency, and Enabling Data and Analytics Insight.	The outcome of this initiative is to generate a single view of the customer in order to enable better customer segmentation, identification of key touchpoints to understand key customer journeys and predictive analytics. This will bring the ability to tailor services to the customer and anticipate customer needs, improving the overall customer experience.

Initiative: Customer self-service

Description	**Provide a one-stop location for customers to enquire, track and manage their services and transactions. Integrate this capability with appropriate systems to give customers a high level of service.**	Business outcome
Initiative breakdown	This initiative will strategise and implement a customer self-service portal. The key steps recommended are: **Customer self-service discovery and blueprint:** Definition of customer services to be made available in the self-service portal, building a blueprint for the customer self-services. **Pilot design:** Involvement of customers through design thinking for the portal design. Deployment: **Release 1:** Rollout of a fully integrated self-service on high priority journeys such as the connections journey. **Release 2:** Expansion of web chat and inclusion of chatbot. **Release 3:** Inclusion of emerging services. **Release 4:** Inclusion of a Response Time Estimator to provide process visibility to the customer while allowing us to plan activities in an optimal manner.	The outcome of this initiative is to provide a platform that removes burden from the customer services team while allowing the customers to transact themselves and have full visibility of jobs, improving the overall customer experience. The capability will integrate with connections auto cost, estimates and quotation capabilities.

Initiative: Automated estimate and quotation

Description	**This initiative aims to produce quotes and estimates faster and on demand to connections customers. The capability will integrate with digital channels, including the customer portal, but also automate design and engineering activities to bring end-to-end efficiencies.**	Business outcome
Initiative breakdown	**Automate cost estimation solution:** This initiative is about automating and streamlining connections costs, especially for larger connections. This is important as it will be a key input into the pricing. The initiative calls for discovering the solutions that could provide appropriate functionalities and then implementing them accordingly. **Automated self-serve estimates & quotes:** This initiative is about discovering and understanding the as-is and scoping the detailed connections job types that will be eligible for self-serve through automated estimates and/or quotes. The scoping will be aligned to the customer research and customer journey work to reflect customer needs accurately. The detailed job types will be broken down into prioritised items to be deployed and rolled out in phases. The initiative then suggests: — Extension of automated estimates for medium and large connections (automated estimates already in place for small connections) — Automated quotes for small connections — Extension of automated quotes for medium connections. **Pricing and quotation system:** This initiative is about a discovery exercise to understand the as-is systems and scope the detailed requirements of the new pricing and quotation system. This will involve revisiting the capabilities already outlined in the core connections systems proposals. Consolidation of the requirements across all connection types will be essential to develop a common pricing and quotation system. The proposal then proposes implementation as: — Upgrade pricing and quotation system for small connections — Migrate and enable quote on site through new systems — Upgrade pricing and quotation system for medium and large connections.	The output of this initiative will give us the ability to expedite cost estimation and provide customers with fast and on-demand quotation across all digital and physical channels. This is built on the quote on site ability and extends the auto estimate functionality in place. It also focuses on finding solutions that automate design activities, especially for medium and larger connection types.

Initiative: Deploy a hybrid cloud

Description	**Migrate our workloads to the cloud to enable flexibility and scalability while reducing technical debt in a progressive manner, retaining critical infrastructure within our data centres.**	Business outcome
Initiative breakdown	**Define a cloud strategy:** Develop our vision for cloud environments, creating a target end-state as well as identifying foundational technologies required to support migrations. The cloud strategy will provide a high-level business case that captures the value, and costs, of migrating as well as identifying technologies and applications that must remain. **Develop a cloud target operating model:** Conduct a readiness assessment with IS and business stakeholders to map out the organisational readiness for the cloud migration as well as the impact generated. Based on the assessment, a target operating model will define new roles and responsibilities, processes, security measures and KPIs to be deployed, aligned with the wider IS operating model, before any migration is progressed. **Application assessment:** Review the applications, systems and services with key stakeholders in respect of their business value, technical fit and total cost of ownership (TCO). Develop a prioritised roadmap of applications to be kept, replaced, retired or consolidated. **Design the hybrid cloud architecture:** Define a high-level architecture, and requirements, that will outline the standard hosting infrastructure for us, including on-premise and cloud environments. **Minimum viable product (MVP):** Conduct a MVP for the architecture design, so that service integration and tooling can be validated against a small sample set of test migrations, prior to the full deployment and migration of workloads. **Migrate workloads:** Migrate workloads with optimal change applied, considering cloud migration, cloud transformation and DevOps transformation impact. **Optimise data centres:** As objects are migrated to the cloud, the existing data centres' capabilities can be rationalised for the appropriate balance of edge and data centres.	Deploying a hybrid cloud will enable us to reduce the infrastructure costs, optimise the utilisation of physical real-estate and leverage commodity platforms. The cloud migration will also enable flexibility and scalability while reducing technical debt by rationalising the landscape of legacy applications and services.

Initiative: Build an architecture capability

Description	**Develop the architecture and capability to guide and accelerate the implementation of the digitalisation roadmap.**	Business outcome
Initiative breakdown	**Architecture Strategy and Vision:** Internal and ecosystem changes, particularly around data, integration, platforms and standards, will need a clear mandate and perspective. This will be defined in the Strategy and Vision, together with a set of guiding architectural principles to shape the nature, purpose and capability needed to sustain it. **Develop governance:** Define the architectural governance process, artefacts and templates for the whole technology landscape and our interaction with our stakeholders. Test and validate that these are appropriate and aligned to the overall governance (business and IS) approach. **Architecture Enablement Group:** Create an Architecture Enablement Group that supports colleagues and external stakeholder teams with standard system, integration and data patterns and frameworks that deliver architectural value. Roll out communications to colleagues as well as stakeholders on the purpose and value of architecture. **Establish architecture capabilities:** Identify the roles and responsibilities, and develop a roadmap to address any skills gaps in the team. Validate the business and stakeholder sponsorship and deploy any processes, tools or technology needed to support the team. **Baseline architecture:** Develop an understanding of the current business, information and technology landscape that supports us and our interactions with external stakeholders. Leverage appropriate tools to accelerate the capture of our current state. **Target architecture:** Identify the contextual, conceptual and logical services (why, what and how) and capabilities, together with the appropriate standards, systems, platforms, integration and data principles, patterns and frameworks that deliver the digitalisation initiatives and capabilities. **Roadmap architecture:** Establish a roadmap that identifies transitional architecture that achieves our Digitalisation Strategy, clarify the required technology, data and interconnections (API) and incorporate any new regulatory, business strategy and technological capabilities, constraints or requirements. Continue to progress reference patterns, tools and environments that support the roadmap.	A description of the current, evolving and future state of the IS landscape, together with the skills to maintain it, aligned to the digitalisation strategy, and accommodating new regulatory, business strategy, stakeholder and technological capabilities which support the business priorities.

Initiative: Adopt agile ways of working

Description	**Promote the awareness and adoption of agile ways of working by setting up an agile delivery Centre of Enablement. As we mature in agile ways of working, product based delivery teams will be gradually deployed to build a best-in-class Digital Factory model.**	Business outcome
Initiative breakdown	**Set up an agile delivery Centre of Enablement (CoE):** Deploy a Centre of Enablement to promote agile delivery. The CoE will consist of a pool of agile SMEs (experienced agile practitioners within our business and/or external agile coaches), material and training that will be accessible across the organisation. **Roll out agile KPIs:** Develop and capture key performance indicators (KPIs) to measure the adoption of agile ways of working and our maturity. **Select an agile at scale model:** Conduct an evaluation on different models to select an agile at scale model (e.g.: SAFe and Scrum@Scale) that suits our Digitalisation Strategy requirements and the existing operating model. **Pilot agile at scale model:** Test and deploy product based delivery teams underpinned by agile at scale to accelerate digital delivery. The product based delivery teams will be structured around value oriented verticals (products) that innovate, drive digital delivery and renew legacy technology. **Deployment at scale:** Deploy the value oriented verticals across several products in an iterative manner to ensure a gradual and organic adoption of agile at scale practices. **Build and deploy a Digital Factory model:** Establish a Digital Factory to accelerate and industrialise the delivery of the Digitalisation Strategy and Action Plan aligned to leading industry practice. The factory operating model will consider the processes and governance required to operate multiple cross-functional teams together on value oriented verticals (products and services) at scale.	The agile Centre of Enablement will accelerate the adoption and maturity of agile ways of working to ultimately build a Digital Factory model with product based delivery teams. This model will enable continuous delivery of products and services and reduce time to market while enabling more flexibility to meet customer demands.

Initiative: Implement advanced threat detection tools

Description	**Ensure readiness for advanced threat-monitoring capabilities by completing the initiatives of the NIS-D improvement plan. The improvement plan will conclude with the implementation of solutions to enable advance threat-monitoring in both the IT and OT arena.**	Business outcome
Initiative breakdown	**Complete the NIS-D improvement plan initiatives:** Finalise the NIS-D initiatives that were scoped after we assessed its cyber security capabilities against the NCSC Cyber Assessment Framework (CAF). The NIS-D improvement plan initiatives to be completed are: — **IT and OT security operating model):** Authorise and implement an operating model with resources dedicated to the cyber security of OT environments. — **Behavioural analytics:** Evaluate, select and implement tooling and processes to improve the ability to detect behavioural-based anomalies and advanced threats. — **Risk management process:** Review and enhance the risk management process to ensure threat intelligence. — **OT change process:** Embed risk management into the OT change process. — **Privileged access management:** Review the effectiveness of the existing processes and implement any corrective measures. — **Automated asset discovery:** Evaluate, select and implement an automated asset discovery tools across all OT assets. **Deploy an Endpoint Detection and Response (EDR) solution:** Deploy a solution that combines threat visibility, detection and response across all our endpoints in order to shift the cyber security capabilities from a reactive to a proactive approach. The functionalities will include although not be limited to: — **Console alerting and reporting:** A console that provides visibility into our endpoint security status. — **EDR core functionality:** Capability to detect security threats and vulnerabilities on the endpoint in real time. — **EDR advanced response:** Advance analysis and response capabilities, including automation and detailed forensics about security incidents.	The completion of the NIS-D improvement plan will ensure we are ready for advanced threat-monitoring solutions in both the IT and OT space. Deploying an EDR and an OT security solution will support the shift towards a proactive threat management and closing the bridge between IT and OT cyber security. This will realise further efficiencies and reduce potential recovery costs.

Initiative: Deploy telecoms asset management tools and retire old technologies

Description	**Enhance our telecoms management capability with tools that centralise the end-to-end lifecycle management of telecoms assets while getting ready to retire and decommission old technologies.**	Business outcome
Initiative breakdown	**Deploy an integrated telecoms service desk:** Extend the service desk to include all telecoms-related service desk incidents. Existing service desk agents will be trained to extend their services to telecoms and the telecoms-related calls will be handled according to the standard service desk approach, logging the enquiries via the single point of contact and assigning the tickets to relevant resolver groups. **Deploy a telecoms asset management tool and portal:** Conduct a requirements gathering to deploy a telecoms asset management solution that manages the end-to-end lifecycle of telecoms assets in a single platform. The functionalities will include although not be limited to: — **Centralised asset view:** The ability to track the lifecycle of all telecoms assets with advanced reporting capabilities. — **Financial management:** As our telecoms assets are revenue generating assets, the platform will consolidate the revenue generating activity and optimise the monetisation of assets by renting unused capacity to customers. **Discovery of retiring technologies:** As telephony technologies get retired (e.g.: PSTN), we will scan the horizon on an ongoing basis to assess alternatives as a replacement (e.g.: VoIP and SIP). **PSTN replacement and decommissioning:** As the PSTN network is retired, we will evaluate and pilot alternatives to ultimately de-install and decommission the obsolete telecoms network equipment.	The outcome of the integrated telecoms service desk and asset management tool is to realise efficiencies by centralising the management of the telecoms assets lifecyle and to further enhance the revenue-generation ability of the telecoms network. At the same time, we will develop an ongoing approach to scan the horizon of retiring technologies and be able to react and replace obsolete equipment.

Initiative: Process mining and process improvements

Description	**The use of process mining to identify areas of process optimisation and improvement. Process improvements will aim for efficiencies and increased output and should have customer and colleagues requirements considered.**	Business outcome
Initiative breakdown	**Discovery:** As we have business improvement managers within Customer and People Services and Operations, it is recommended that we build an enduring capability within those management areas to drive a process optimisation programme. This has already started and will be built on further. Discovery will be about taking process assessments, if needed, with the use of process mining to all key areas of the business. It is recommended that this is sequenced as Customer and People Services, Back Office Operations, Field Operations and then Network Operations. A portfolio of assessment and improvement projects will be defined with clear objectives, showing intended outcomes. **Improvement programme and planning:** Process optimisations are best delivered through agile capabilities. In this document, we refer to us building an agile delivery capability for our initiatives. The process optimisation activities should have a roadmap of delivery so as to ensure business risk is minimised and areas where benefits can be realised are clearly identified and prioritised. Customer services and connections are two clear areas to provide early benefits. It is important to consider customer journeys and requirements when assessing the processes within these areas. **Process optimisation and stabilisation:** The key objectives of process optimisation should be: — to achieve processes which have had waste and non-value-added activities removed and remain compliant. — to have clear documentation in which roles, data requirements, inputs and outputs are clearly identified. — the material can be used for functional developments and training. — to provide a source for further improvements. Achieving a stable set of processes is a key point for further automation.	The outcome of this initiative is to create a programme of process optimisation that removes non-value-added activities from processes, provides for a mature set of documentation and then provides a stable platform for the introduction of further automation and efficiencies.

Initiative: Robotics opportunity discovery and implementation

Description	**Automation is used to remove manual activities as much as possible. The result of automation will be faster operations, increased output, and freeing up of resources' time for carrying out more value activities, such as analysis.**	Business outcome
Initiative breakdown	**Discovery:** There is a dependency on the introduction of process automation, especially with the use of robotics, in that the processes in scope of automation should first be optimised. As such, we see this initiative running in conjunction with the process optimisation activities. Discovery for automation will be mainly focused on the use of robotics/AI tools where these technologies can be used. Given that process optimisation is under way in customer services then a good starting point is in associated processes. Suitable candidate areas for discovery are: — Customer and People Services — Connections — Material Management — Modelling activities in Network Operations, including network investment and planning — Performance and Reporting — Charge Setting — Back office and transaction activities (Information Service, for example). **Automation implementation:** Using agile delivery approaches is suitable for delivery of automation projects, as these can be small, high value initiatives. It is important to manage these as a portfolio with incremental value being delivered through agile releases. Focusing and starting in one area of the business (such as customer services and connections) allows for building and growing the internal capability and provides for a template that can be repeated.	By implementing automation alongside process optimisation, further efficiencies and improvements can be achieved to automate manual activities that are performed by human resources or speed them up through the use of artificial intelligence.

Initiative: Systems integration

Description	**Based on a relevant architecture, systems will be integrated to remove manual activities. At its core, this is about sharing data between systems for faster transaction and more effective analytics.**	Business outcome
Initiative breakdown	**Architecture and end-to-end process visibility:** Systems integration for intelligent automation should follow a broader architecture design. This should consider the complete user experience from modelling through task, workflow and decision mapping to content capture and presentation, as well as the governance, analytics and AI to support this. We should integrate our systems to facilitate data flows so that end-to-end processes can be transacted as automatically as possible and analytics can be performed, taking a process perspective. As we produce an entire target architecture, integration for intelligent automation opportunities will be captured and clearly shown. Furthermore, when we upgrade or replace a system, or indeed introduce new systems, then integration for intelligent automation requirements should be designed, developed, built, tested and deployed with early consideration for their security and management throughout their lifecycle. Finally we will consider the wider integration technologies that are described further in the section on improving our technology capabilities (see the Digitalisation Strategy and Action Plan document).	This initiative should be read alongside the section on improving our technology capabilities (see the Digitalisation Strategy and Action Plan document). It recognises that we should implement technologies that support integration and automation, and ensure that the full lifecycle of integration requirements are considered as part of any upgrade and new implementation.

Initiative: Modern technology workplace programme

Description	Deliver a user-centric technology ecosystem based on M365 to enable teams to work and collaborate seamlessly.	Business outcome
Initiative breakdown	**Windows 10 device rollout:** Procure Windows 10 device rollout: in order to ensure a secure, stable and reliable desktop and laptop estate for colleagues. This will be accompanied by remediation of the existing software estate to ensure readiness for Windows 10. **M365 rollout:** Migrate end-user Microsoft services to the cloud with Microsoft Fast Track support in the following services: — Exchange Online — Office ProPlus — Teams — SharePoint Online — OneDrive for Business — Intune Services — Enterprise Mobility and Security (EMS E3). The deployment will be conducted in iterative waves supported by bi-weekly adoption surveys. **M365 change and adoption programme:** Conduct change and adoption activities to ensure awareness and adoption of the Modern Technology Workplace tools and maximise the ROI of the programme. The programme will include: — **Champions network deployment:** Create a network of advanced M365 users that build excitement, buy-in and adoption of the platform, targeted at all levels. Leveraging champions will also alleviate the dependency on IS for day-to-day change tasks, allowing them to focus on strategic and value-add activities. — **Training:** Understand the training needs and providing several training options to end-users to ensure the platform is adopted and used correctly. End-users will be trained on how to use the platform and recognise how it can help them to collaborate with increased productivity. — **Communications:** A range of channels and messages will be used to ensure the end-users are aware, informed and enthusiastic about the new M365 capabilities. The communications workstream will agree on the high-level messaging and channels utilised.	The outcome of this initiative is to deliver a modern end-user and evergreen device estate that boosts employee collaboration even when working remotely, reduces productivity constraints due to poor performing IT and reduces the number of incidents regarding under performance.

Initiative: Digital workplace and talent uplift programme

Description	**Combine a digital workplace strategy with a workforce transformation programme in order to augment colleagues with skills and tools required for the future.**	Business outcome
Initiative breakdown	**Workforce transformation programme:** Assess the current and future digital skills required and roll out a digital skills uplift programme consisting of training pathways that are tailored for specific groups of colleagues. The workforce transformation programme will consist of the following stages: — Assess current and future business needs to understand the skills required by colleagues. The assessment will consider both technical skills (e.g.: data science, engineering, automation) as well as soft skills (e.g.: agile, design thinking). — Conduct a talent assessment to identify current skills. This will be done by categorising colleagues into employee personas that have similar responsibilities and conduct similar tasks. — Undertake a comparative analysis between the existing and future skills required and assign uplift priorities for every employee persona. — Develop and roll out a programme consisting of training pathways tailored by employee personas. **Digital workplace strategy:** Analyse colleague needs and develop a digital workplace roadmap to enable colleagues with digital workplace tools beyond the modern technology workplace programme (M365). In order to analyse colleague needs, employee personas will be built with journeys and pain points that derive in a set of digital workplace capabilities required. The required capabilities will be mapped against existing digital workplace tools beyond M365 to build a roadmap of tools to be deployed. **Digital workplace tools deployment:** Ongoing deployment of digital workplace tools. Tools will include, although not be limited to: — digital experience monitoring tools — virtual reality tools for training — whiteboarding and collaboration tools — idea management tools — knowledge management tools.	The outcome of this initiative is to understand the current digital skills we have and uplift colleagues' skills to support the organisation's digital journey, as well as introducing tools beyond M365 to further increase collaboration and productivity.

Initiative: Digital project management tools

Description	**Deploy project management tools to streamline project and programme management activities across connections and Major Projects while integrating project data with back-office systems.**	Business outcome
Initiative breakdown	**Develop a project delivery framework:** Build a common project delivery framework for major projects and connections to drive process standardisation across the end-to-end project lifecycle and create the foundation for us to exploit consistent project data. **Deploy a project management suite:** Conduct a requirement gathering to deploy a suite of tools for project and programme management (PM) across major works and connections. The functionalities will include, although not be limited to: — Key programme and project management functionalities including schedule management, cost management, risk analysis and trend & change management. — Interface or portal to enable access to contractors and third parties. — A programme/portfolio view of all projects with the functionality to prioritise projects and provide a portfolio planning and control capability. — Integration points with key back-office systems to streamline data flow between systems and generate a single view of the truth. **Digitalise project estimation:** Develop and deploy an automated estimation solution for major projects and connections. This will allow project managers to get cost estimates and quotes though a self-service tool and help optimise the design phase.	The outcome of this initiative is to provide a suite of project management tools that increase efficiencies across the whole project lifecycle, leading to improved project performance, reduced project overspend, better financial control and reduction of manual tasks.

Initiative: Automated work and material management (1 of 2)

Description	Deploy work and material management solutions to reduce manual tasks and streamline processes.	Business outcome
Initiative breakdown	**Work and material management blueprint:** Profile work and material management users into user personas that represent user groups with common pain points and user journeys. After developing as-is journeys, we will create to-be user journeys to define the new ways that users will interact with the new systems. This will help identify the benefits at each step and provide a document to easily communicate the new ways of working to stakeholders. **Work and material data discovery:** Map the key datasets that interact with work and material management solutions. This will inform the integration requirements for the new work and material management solutions as well as identify all sources related to work and material management. **Deploy a work planning and execution solution:** Conduct a requirement gathering to deploy a work planning and execution solution. The functionalities will include, although not be limited to: — Ability to capture work demand centrally and assign jobs based on capacity and availability. — Job progress tracking functionality. — Identification of industrial colleagues who are closest to faults so as to improve response times. — Mobile functionalities for field workers. — Interface or portal for contractors to input availability and capacity. — Skillset based scheduler to take skills/qualifications into consideration to further optimise work scheduling and develop more flexibility. — Functionality to permutate the optimal routes for existing jobs so that the order of jobs is optimised based on locations to reduce overall travel times and costs. Continued on the next page...	The outcome of this initiative is to realise operational efficiencies from streamlining and automating work scheduling, as well as to optimise material flows by automating the ordering of new material based on predictions.

Initiative: Automated work and material management (2 of 2)

Description	Deploy work and material management solutions to reduce manual tasks and streamline processes.	Business outcome
Initiative breakdown	**Deploy a material management solution:** Conduct a requirement gathering to deploy a material management solution. The functionalities will include, although not be limited to: — Managing provision of material to engineers and predicting usage of parts based on jobs coming from the work planning. Managing provision of materials to engineers and predicting the parts usage based on service request. — Ability to integrate with inventory data and back-office systems. — Warehouse management functionality to control stocks in specific locations (e.g.: warehouse, shop), register material ins/outs and manage the location of materials.	The outcome of this initiative is to realise operational efficiencies from streamlining and automating work scheduling, as well as to optimise material flows by automating the ordering of new material based on predictions.

Initiative: Intranet and colleague self-service

Description	**Deployment of an intranet solution to provide colleagues with a channel for internal communications, self-service, knowledge management and other services to increase colleague engagement.**	Business outcome
Initiative breakdown	**Intranet services discovery:** A discovery exercise to scope the colleague services to be added to the intranet (e.g.: benefits, health & safety, forms, policies, event) as well as opportunities to expand the services and/or refresh them, creating a front-end that pushes request to back-office and provides tracking functionalities. **Design intranet and integration points:** Definition of the structure (tree of website routes) and architecture (platform/applications) for the new intranet, identifying key integration points. **Deploy a modern intranet:** Conduct a requirement gathering to deploy a modern intranet. The functionalities will include, although not be limited to: — Integration with the new Content Management System. — Integration with HR portal. — Knowledge Management and Learning Management functionalities. — Colleague self-service functionalities to build a one-stop shop for our colleagues. **Deploy colleague self-service:** Continuously deploy new colleague self-service based on the intranet services discovery and new opportunities found. Opportunities will be prioritised based on benefits/costs as well as technical feasibility.	The outcome of this initiative is the rollout of a new intranet that makes it easy and intuitive for colleagues to find relevant material, ensuring a seamless colleague experience that increases colleague productivity and satisfaction. Also, allowing colleagues to transact themselves should eliminate support services involvement when not required, reducing the cost of support.

Initiative: Safety, Health and Environment (1 of 2)

Description	Digitise Safety, Health and Environment processes with a suite of solutions that deliver a one-stop shop for our colleagues and contractors.	Business outcome
Initiative breakdown	There are a number of activities suggested under this group of initiatives: **Incident reporting and analytics:** We are in the process of implementing a new system for Incident and Hazards reporting. A cloud-based modular solution could be a fit in this respect and we have pursued the same approach (Airsweb). The implementation of this capability allows us to digitise the reporting channels. At the same time, it allows us to collect hazard and incident data in one source of truth and therefore provides the ability to carry out analytics. Modular solutions are available to complement and provide this analytical capability and provide standard reports, visualisation and insightful analytics. But equally, self-service analytics through solutions such as Power BI can be used. The analytical capability suggested for SHE should be worked alongside and leverage any CoEs built for analytics. **People and Contractor Management:** This capability will set our colleague and contractors' specific safety requirements and will track that they are always competent. If integrated with operational activities, we will be able to highlight constraints, for example, which teams or contractors do not have certain competencies and, therefore, where operational bottlenecks may reside. The capability should also have the ability to integrate with training, as many of the competencies are realised through training. The SHE team will have visibility of training plans, progress of the training and be able to assign specific training to individuals whilst notifying managers. — **Safety Portal:** The portal will provide our colleagues and contractors with one easily accessible central location for SHE activities. The portal provides colleagues and contractors with the ability to report events, complete inspections, checklists and audits, and access safety information. This initiative should align with intranet activities. Continued on the next page...	The outcome of this initiative is to digitise our SHE capabilities through a modular approach. Starting with reporting and analytics, SHE will enhance tracking and people management and build toward more intelligent ways of training through VR and better situational awareness through real-time monitoring.

Initiative: Safety, Health and Environment (2 of 2)

Description	**Aligned with customer preferences and journey requirements, build a suite of integrated channels that include live chat and provides capability to more closely listen to the voice of the customer.**	Business outcome
Initiative breakdown	— **Emissions control:** We will centralise multiple environment management data points, such as emissions, waste, SF_6. The environment capability provides us with an automated and quick method to control, record and manage environment compliance; identify environment management actions, assign, and track these appropriately; and measure performance for environment actions. — **Asset tracking:** There needs to be one source of truth when it comes to safety standards and tests of assets. This initiative will consider implementation of a digital technology that captures all safety and compliance requirements for assets and tools, considers integration with our asset management system and ensures that all asset safety and compliance requirements are met. Integration with Asset Management could trigger issue of work orders as they relate to safety inspection, whilst all test records are centrally registered and traced for compliance and audits. Key assets that fall under such categories could be: harness equipment, lifting equipment, or vehicles. — **Use of VR:** Using virtual reality in training provides significant advantages, especially in training colleagues for dangerous jobs. Use of VR can become a significant tool for improvement in training, both in quality and scale. Its use cases must be discovered and the training could be part of the operational training we already provide. — **Real-time monitoring:** Real-time monitoring will be about expanding our alarming capability for safety purposes. It would include alarms to drivers, stakeholders or colleagues during work and leverages mobile technology at its core. Its use cases must be discovered and these are innovation projects in nature. **Mobility:** With incident reporting systems in place, mobility solutions can be provided so that our stakeholders have the ability to provide incident and hazard reporting “on the go”. There are two avenues to pursue here: 1) we can leverage existing mobility solutions, such OM Mobile and build in functionality to report incidents which integrate directly with the above mentioned systems, or 2) build bespoke apps or leverage the apps that incident reporting solutions provide.	The outcome of this initiative is so that we can digitise its SHE capabilities through a modular approach. Starting with reporting and analytics, SHE will enhance tracking and people management and build toward more intelligent ways of training through VR and better situational awareness through real-time monitoring.

Initiative: Back-office upgrade and integration (1 of 2)

Description	**Assess the existing back-office platforms to deploy a series of upgrades including further integration, analytics, better processes and cloud functionalities.**	Business outcome
Initiative breakdown	There are a number of activities suggested under this group of initiatives: **Back-office assessments:** Perform a cloud and product review assessment to understand the level of customisation done in back-office systems and how easy it would be to migrate them to the cloud or the level of customisation required in upgrades. Moreover, carry out a product review assessment to understand risk of near end of life. Use these as input and produce a cloud strategy to understand opportunities and benefits of migrating to cloud. **High-level fit gaps:** This initiative will evaluate each functional area and associated business process contained within the existing HCM, Service and Financial system footprints to identify any high-level gaps between existing and future process requirements in these areas and the functionality available in the HCM Cloud, Service Cloud and Finance E-Business Suite R12.2 functionality. **Integration strategy:** This initiative is about providing us with the ability to understand the integrations needed across the HCM, Finance and CX applications and how those can be correctly mapped within an integration layer. A wider analysis of the API integration across the whole of our estate will be required as outlined by the architecture enablement initiatives. The key capability areas in scope of this assessment are: — identification of the core integration requirements within our footprint, and understanding scalability and performance requirements — security considerations, as well as real-time versus batch integration requirements — data volumes and concurrency — SLA targets, and management and monitoring requirements — integration analytics requirements and recommended integration platforms. **BI strategy:** Business intelligence (BI) refers to the technologies, applications and practices for the collection, integration, analysis and presentation of business information to support better decision making. A strong BI strategy is essential for business growth and to maintain competitive advantage. A BI strategy will provide us with a goal and direction for our solution allowing us to gather the greatest insight out of our HCM, Finance and CX data. This assessment will focus on the core Oracle systems and will be aligned to the wider analytics outlined by other initiatives. Continued on the next page...	The objective of this initiative is to provide us with a suite of upgraded back-office systems. Given near end of life, we can assess opportunities to migrate to cloud or carry out technical upgrades to next release. We will also pursue integration opportunities with EAM and CX and further analytical capabilities.

Initiative: Back-office upgrade and integration (2 of 2)

Description	**Assess the existing back-office platforms to deploy a series of upgrades including further integration, analytics, better processes and cloud functionalities.**	Business outcome
Initiative breakdown	**HCM, Finance, and Hyperion upgrade:** As we progress with upgrading our HCM applications into the cloud, there is a need to ensure that the HCM cloud implementation delivers the training functionality that we require for our success. To this end, this initiative is aimed at reviewing the proposed HCM cloud releases to ensure they are able to provide us with an optimal understanding of the training requirements needed, allow us to design colleague journeys, provide us with the ability to cover end-to-end people processes, and with the ability to measure how our colleagues perform. Equally, there is a need to provide our colleagues with a portal for one stop colleague enquiries. We will also upgrade our Finance and Hyperion solutions as they reach end of life. **Impact assessment on EAM and CX:** As we reach a stable state with our upgrades, we will carry out an assessment that assesses the implications on current EAM and CX systems. This will include: — Assess impact of the Oracle Asset Maintenance Cloud solution to replace Oracle EAM, including CX integrations. Includes impact of Oracle EAM retention. — Assess impact of implementing Oracle Finance Cloud on same Cloud platform as HCM Cloud to replace Oracle Finance ERP applications. **Oracle analytics and back-office consolidation:** The next step will be to see if there is an opportunity to move everything to the cloud. In this instance, there is a assessment of the impact of replacing the proposed Oracle EBS R12.2 solution with Oracle Finance Cloud. At the same time, Oracle analytics can provide the reporting and analysis for the Oracle BEB components and will enable us to apply analytics to a range of topics across the enterprise including Procure to Pay, Invoice to Cash, Profitability Analysis, Unit Cost Analysis and Procurement Cost Analysis.	The objective of this initiative is to provide us with a suite of upgraded back-office systems. Given near end of life, we can assess opportunities to migrate to the cloud or carry out technical upgrades to next release. We will also pursue integration opportunities with EAM and CX and further analytical capabilities.