#	Name	Description	Theme	Votes
4	Transmission-Distribution Collaboration	Better collaboration across Transmission and Distribution is required to enable a secure and efficient solution	Considerations	19
16	Tech and ops collaboration	At Octopus we've found that having tech teams and ops teams collaborate very closely leads to continuous improvement and feature development as well as an understanding of each other's challenges. Can you achieve this if you outsource technology build?	Solutions	12
10	Start up mentality	Having a start up mentality means being prepared to fail. Is this something the ESO is really empowered to do?	Challenges	9
23	Adaptability	The future energy system is much more consumer behaviour driven (eg EV charging). Need ability to adapt quickly; almost impossible to predict.	Solutions	9
11	Collaborative Transformation	Analogous transformations in other sectors such as Telco and Digital TV highlight the need to fully involve all operational teams from Day-1 to get the buy-in. Can't treat as a "technology" programme, must be a "transformation" approach.	Considerations	8
15	Leadership is Key	This requires the right approach from the top down to bring along the whole enterprise on the journey to new mode of operation.	Considerations	8
46	TECHNOLOGY: Simulation, virtualization	Simulation and virtualization of key partners of ESO and stakeholders. Those environments allow testing without compromising the grid, therefore they allow a faster growth. Additionally, they help pre-qualification processes and integration of stakeholders.	Solutions	8
5	Relationship between hardware/software/human-machine interface implementation and decision science	Need for market design and algorithms to evolve together with implementations, and in particular to consider whether there are current aspects of market design and decision support practice which do not map on to the envisaged future world.	Considerations	7
28	Dispatch efficiency/transparency/skip rate	Small resources can't tell if they're getting equitable treatment in the BM (versus optimal dispatch). Solution: launch the metric, and build IT and ops procedures to ensure a good score is achieved	Challenges	7
59	Planning under uncertainty	How do we plan operational systems against uncertainty as to what the future world will throw at us (cf example of solar penetration in 2020 presented earlier)	Challenges	7
60	Modular	Design with a view of the future and the potential supply demand picture changing dramatically as the world moves away from traditional sources of energy.	Considerations	7
6	Percentage of Perfect	What does good balancing look like? Ask the RIGHT question. There are metrics coming (like skip rates) but that doesn't help understand the whole system. Perhaps a percentage of perfect hindsight dispatch to provide a benchmark of performance?	Solutions	6
18	Should a tech led ESO outsource tech?	Disruptors and highly tech capable businesses in most sectors build their own tech so they can get a tightly coupled operating model and tech capability. ESO needs to work out how much they should build themselves.	Challenges	6
19	Long term storage market	An incentive is required to create a long term (multiple days or weeks) storage market or incentive mechanism	Solutions	6
29	Accurate data	Accuracy is crucial, otherwise it is like flying blind. Need to understand the quality of data. Starting point can be MONITORING the quality of data (tools can be built). Also once you have accurate data you need technologies to interpret and display it	Challenges	6
3	Load Forecasting	Structures that encourage and enforce accuracy, similar to production forecasting	Solutions	5
8	Simple, 'just do it' actions	Things NGESO can do now with minimal spend and few external obstacles. Examples: (1) mandatory detailed carbon reporting for all directly contracted ancillary services. (2) recast operational metering based on resource scale, using Code of Practice 11 as a guide	Solutions	5
32	"Balancing" tech and security	The technology industry think you can run the grid like a technology company. It's not the case though - if a tech company fails, no-one is too bothered, if the grid fails, everyone's life (and health) is affected. Electricity is more or less a human right now.	Challenges	5
7	Other ESO experience	Other system operators are already facing higher renewable penetration and need for balancing - has ESO sought advice on people and process changes required to deliver higher low/ zero carbon?	Challenges	4
20	Improve granularity and accuracy of customer-side input-data into FES (elec & gas use)	Sustainability First / Centre for Sustainable Energy 4-yr project 'Public Interest Advisory Group' - 'Access to smart meter data for a public interest purpose'. In June 21 it will set out possible future paths for access to anonymised and aggregated smart meter data - aligned with privacy considerations - - smartenergydataag.org.uk	Solutions	4
30	Don't reinvent the wheel	Look at other sectors/markets that have made similar radical transformations and learn from their experiences.	Considerations	4
39	Solutions vs mechanisms	Future aspirations are very solution focused. Need to include mechanisms and governance that facilitate fast paced change.	Challenges	4
42	PEOPLE: co-creation process with people.	ESO should count with the workers involved in the transition (e.g: operation centre). Manage expectations (worker journey)	Solutions	4
49	Customers journEIES	We've mentioned "customers" a lot and the customer journey but one of the features of the future system is the sheer variety of actors and their needs - from public to plant. How are we fully accounting for/understanding/prioritising different customers	Considerations	4
51	Transition	How will you actually transition a process from old to new... that's often a blocker from what we've seen. but is vital if you want to go agile, and get the speed / learnings	Considerations	4
52	How do you avoid "open heart surgery" on existing systems?	We've found tech migrations easier when you start a fresh alongside existing systems rather than trying to replace them in-situ. Would be great to understand the feasibility/challenges with this kind of approach in ESO context.	Other	4
58	Change adoption focus on people	Other than embedding the customer in the solution development - what have others done to embed change and make sure it's adopted before the next interaction/iteration	Challenges	4
22	Code process need for new voices	Will all decision bodies for codes etc be changed to remove legacy participants - lack of in depth knowledge of codes provides bias to legacy technologies - risking perpetuation of old thinking : attitudes	Challenges	3
27	Incremental and rapid CI/CD	Most modern tech stacks have rapid continuous deployment and integration. This means lots of small incremental changes rather than big releases. Worth considering how well this kind of incremental approach fits with a microservices architecture.	Solutions	3
33	Why limit assets to >1MW now	Given discussion on increase likelihood for smaller (micro assets) is limit of 1MW going to need to be revised in the short term	Challenges	3
35	How does intent for single platform integrate with ENA open networks flexibility	How aligned are these programs with ongoing work in ENA to increase flexibility markets procured / needed by DNOs / ESO in the future	Challenges	3
40	Building the tech team	Do we have the capability in house to take this forward? Or are we buying in. Or a hybrid. Tech resources at an enormous premium at the moment.	Challenges	3
45	PROCESS: reorganization of ESO could be required	Maybe big changes in the structure of ESO should be done	Challenges	3
48	Economic efficiency as main driver	If there is a change made to Ofgem - and ESO to deliver net zero - can the new systems take account of carbon - even if it is less economically efficient?	Considerations	3
12	Team structure	What is the team structure for delivering this? It starts with humans... if you want a start-up mentality, are your teams set up like that?	Other	2
13	People	Are all staff's performance and bonus targets aligned to delivery of zero carbon operation?	Challenges	2
21	Organise around product / function	Cross functional teams that are accountable for success of a product or function - idea to production at pace and iterate constantly	Considerations	2
25	These tech changes are complex	We are going to have to break it down as we go on to enable the TAC to make their optimal contribution and insight.	Considerations	2
31	Length and value of new services	Moving to zero carbon operation and need for greater numbers and complexity of using intermittent and embedded generation how will new (even smaller) assets get certainty to invest in providing services	Considerations	2
41	Consumer protection	Overall costs continue to increase year on year to balance the system with record prices being paid recently to maintain a supply margin. What protection needs to be put in place to ensure increasing use of flexible assets don't increase costs	Considerations	2
47	Use standards in a standard way	Example: PAS suffered from problems due to deviation from the standard for the chosen technology. DC went much better. DC was based on a more modern standard, which also helped, but the major factor in PAS was the non-standard elements.	Considerations	2
1	ROCs	Wind Farms losing ROCs when they participate in Balancing Markets	Challenges	1
2	Product Feature Backlog	Poor quality of backlog is a driver of many issues	Considerations	1
9	When the world permits, can some of us visit the Control Centre and see it in action?	Network Control	Other	1
14	Automation vs manual	Where is the human value constant / needed and therefore where do we need to automate to scale.	Considerations	1
17	Capturing what's in the Mind	Important moving to designing new platform is capturing the decision process in a mind dominated process - like when trading systems are replaced.	Challenges	1
26	Open approach to user experience design	Could have different stakeholder groups in different facilitated workshops for user design - eg solar commercial and industrial (C&I) vs distribution connected wind	Solutions	1
36	Breaking it down	Drawing in suggestions like David's on systems architecture	Challenges	1
37	Change in it	Existing providers have IT systems that interface with ESO systems - what are likely impacts for them and timescales - will ESO timescales match those?	Considerations	1
38	Time and resource requirement for users	How will users if new systems (market participants) not just ESO be rolled and managed given numbers of potential new users	Considerations	1
43	PROCESS: count with fast, flexible and agile companies	Count with fast, flexible and agile companies	Solutions	1
44	PROCESS: Agile yes but with long term vision	Sometimes Agile is too focused in the short term.	Considerations	1
50	Reduce the number of procurement platforms	Coupa, Salesforce, EPEX... supporting fewer platforms would make everyone's operations more efficient	Solutions	1
53	Driving principles	It wound be good to get a set of principles across key themes that will guide and drive the transformation i.e. technology, governance, market operations etc...	Considerations	1
54	Agile	The emphasis can be rather short term. Often agility is only achieved short term and not long term. If like in this case transformation needs to be innovative can Agile really be used? Once there is a plan yes great but when trying to define and (prioritise investments then no)	Considerations	1
24	The size of the BM is OFGEM's problem	NGESO has said it would like to see the BM return to a residual role. Fine, but it's about market structure, and it's for OFGEM to decide what's most efficient overall. Stop worrying about that and build to the BM you have.	Considerations	0
34	Automation platform	I think it's important that automation isn't something that only developers can implement. Data engineers, analysts, data scientists and operators should be given the right platforms to be able to automate their own tasks and processes.	Solutions	0
55	Why can't you have a parallel test environment to speed up without security risk?	Testing for refresh/replace	Solutions	0
56	Troubleshooting alarms with analytics	Similar to what we see with the thousands of alarms with wind - maybe analytics can be used to improve troubleshooting, prioritisation and moving to predictive	Solutions	0
57	Testing in Agile sprint	Move to app like from current large integrated legacy will need really good integration testing in the sprints	Considerations	0