



ROADMAP FOR MARKET DEVELOPMENT

Abstract

*This document is the Roadmap for Market Development for the
period 2019-2024*

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Executive Summary

The *Roadmap* provides an illustrated overview of the market development path for the wholesale market for electricity. It is organised into four main sections: Ex-Ante, Capacity, Balancing and Settlement. The forwards markets are outside the scope of the Roadmap. The main objectives are to show Market Participants the priorities with regard to the markets, to present a clear picture of the features being added and to show what the implications are over time of changes to the priorities. The Roadmap will be published every six months and Market Participants will have the opportunity to feed into the priorities. It is not licence mandated, and the work included is still the subject of various price control submission processes which have not been concluded. However it represents the best information at this time. Many of the projects are in the long term and as with all Roadmaps are subject to change. Market Participants are invited to give feedback which will be considered for subsequent Roadmaps.

The Market Operator development strategy is to firstly address any outstanding defects and only then to add essential functionality in the short to medium term. Additional functionality will be added over time.

Ex-Ante markets will see work commence on Multi-Nemo arrangements in 2019. At a later stage work will commence on Registration and Transfer Improvements, Additional Products and Website Improvements. Two later projects will address EU Coupled Intraday offerings. Data from the Ex-Ante and Balancing Market will be analysed in an evidence based review to determine if additional improvements are needed.

The Capacity Market will include work on State Aid Decisions, Secondary Trading and improvements to the Market Participants experience on the auction platform. Work may also be done on the Optimization of auction results.

Key outstanding defects are being addressed as a matter of priority in the Balancing Market and in the Settlement systems. Repricing and Resettlement functionality will be delivered in 2019.

Note that projects that may directly result from Brexit have not been included in the Roadmap but may be added in later versions when they have been more clearly identified and scoped.

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1. Introduction

This document outlines the Roadmap for Market Development (“the Roadmap”) for the period 2019-2024 across all I-SEM markets to include Ex-Ante, Capacity, Balancing and Imbalance Settlement. Given the importance of the Settlement function and in the interest of transparency it is split out as a separate category or product line.

One of the objectives of the Roadmap is to give Market Participants a high level overview of the main features and functional changes that are being planned for each market during the period 2019-2024. While all reasonable effort is made to communicate the latest information to Market Participants it has to be acknowledged that the plans are not fixed. It is therefore the intention of EirGrid and SONI, known here as the TSOs (in their various roles as System Operators, Market Operators etc.) to publish an updated Roadmap every six months to allow for changes and re-prioritization.

The Roadmap is not mandated by TSO licences nor is it a market code obligation, however, it has been decided by the TSOs to publish it in order to be as transparent and open as possible. As it is the first of its type to be published, feedback from Market Participants on this document is most welcome and should be sent via email to info@sem-o.com using the subject “Market Development Roadmap” before **6th of September 2019** for consideration in advance of the next Roadmap which will be published at the end of November 2019.

2. Background

During the I-SEM Project there were a number of instances where features were added to or removed from the central systems which were being delivered by the TSOs. The Roadmap helps to plan and to articulate strategic thinking which is behind the decision to remove or add key features to a market or central system. It is high level and captures the key priorities in a particular timeframe.

All markets are covered by the Roadmap which helps both the Market Participant and TSOs to develop credible and realistic expectations over time. Many of the projects (in particular those which are scheduled for later years) may not have received full approval at this point and the fact that the projects are listed does not indicate that they have been

ROADMAP FOR MARKET DEVELOPMENT

through all internal controls. Steps such as full capital approval will only happen closer to the commencement of project delivery.

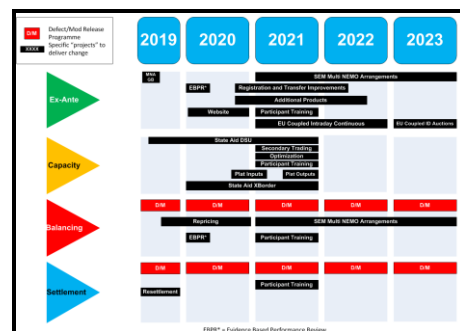
The Roadmap should be considered in conjunction with a number of other documents including the Market Systems Development Plan, however there are a number of differences which are outlined in Figure 1 below.

Market System Development Plan



- SEMO Based only
- 3 Years
- Includes infrastructure
- Licence Obligation
- Updated annually

Roadmap for Market Development

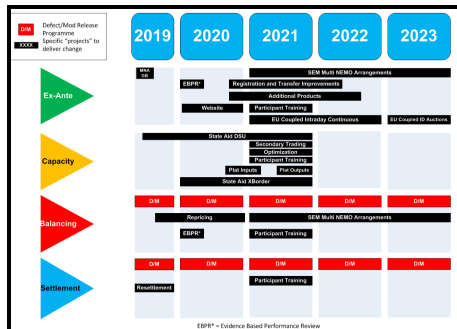


- All Markets
- 5 Years
- High Level Participant Facing
- EirGrid/SONI Initiative
- Updated every 6 months

Figure 1: Comparison of Roadmap and Market System Development plan

3. Objectives and Scope of the Roadmap

The Roadmap aims to be both high level and comprehensive. The Roadmap has three main objectives which are outlined in Figure 2.



- To communicate the strategic priorities with regard to all markets
- To present a clear picture of the features being added to the main markets over the next 5 years
- To show the impact of any changes to the strategic priorities on other priorities

Figure 2: Overall Objectives of the Roadmap

Given that many of the projects may not be delivered for some time it is not the intention to provide in-depth detail. This will be provided through other fora e.g. Market Operator User Groups. The Roadmap only includes projects which are Market Participant facing. The Roadmap does not show other projects which may be delivered in the same timeline which may deliver market operation performance improvements e.g. infrastructure improvements.

4. Market Operations Strategy

It is normal following the launch of new markets that defects and issues need to be addressed over time. The I-SEM Go-Live was no different. Since October 2018 the TSOs have been working to stabilise the central systems and improve the service offering. The Known Issues Report¹ which is published weekly outlines the key defects that are being addressed. In addition a number of key work areas are being prioritised during 2019 in order to ensure that the market fulfils its regulatory obligations. All work requires a commitment of resources and so the blend of projects outlined has to make assumptions around the availability of key internal resources for the work. The Roadmap reflects the same priorities in the short term:

- Fixing known defects
- A small number of projects that complement or at the very least do not impact on the plan to fix known defects

While defects are present in a number of areas the main focus is on the following:

- Pricing in Balancing Market
- Reports in Balancing Market
- Scheduling and Dispatch
- Credit, Settlement and Billing

A number of projects are intended to be delivered in 2019 to improve the functionality underpinning the service offering based on maximising benefits to the overall market while considering the resource constraints across the TSOs. These include:

- Multi Nemo Arrangement in GB
- Repricing functionality in the Balancing Market
- Resettlement

¹ [The Known Issues Report is published weekly.](#)

5. Roadmap Overview

The Roadmap covers all markets in order to illustrate where product investments are being prioritised. The TSOs are planning to deliver a number of projects e.g. rollout of new servers and software updates which will be delivered at the infrastructure level. These are not included in the Roadmap as they do not deliver new features to the market. However, they will improve the operation of the market.

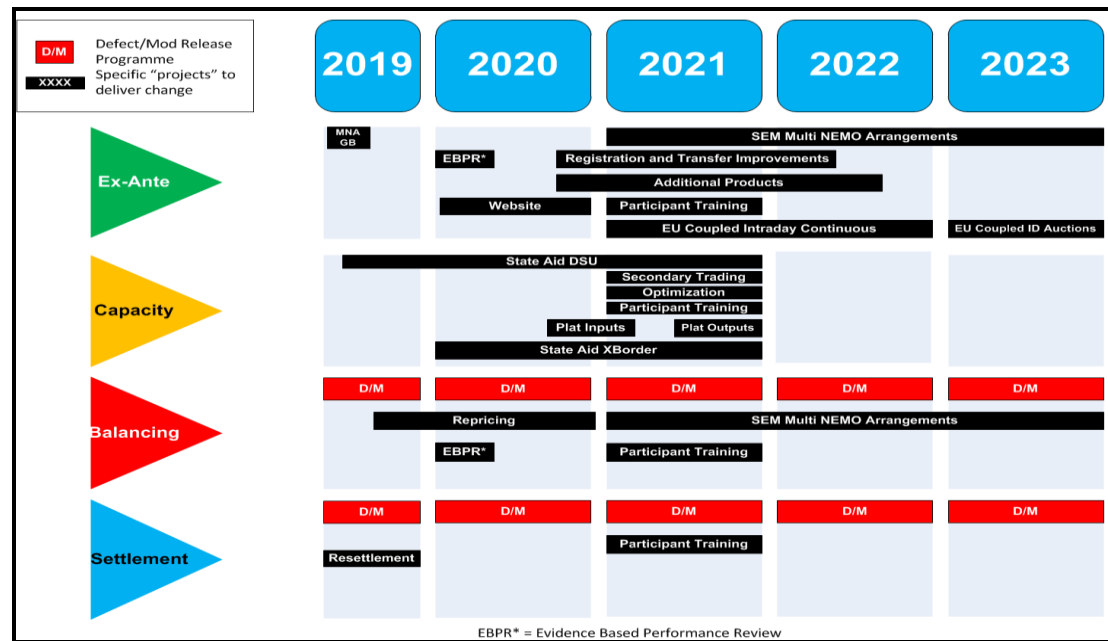


Figure 3: Overall Roadmap

A. Ex-ante Markets

Following a period of stable operations which has given both SEMOpx members and the Market Operator time to identify possible enhancements, SEMOpx will be in a position to introduce some additional features over the next few years. The delivery of additional features and/or improvements is balanced with the need to commit significant resources to fix defects across other areas. In a heavily interdependent market system architecture, changes to individual market systems can drive the need for additional testing in other systems. This is a characteristic of the new SEM solution as distinct from the legacy SEM central systems.

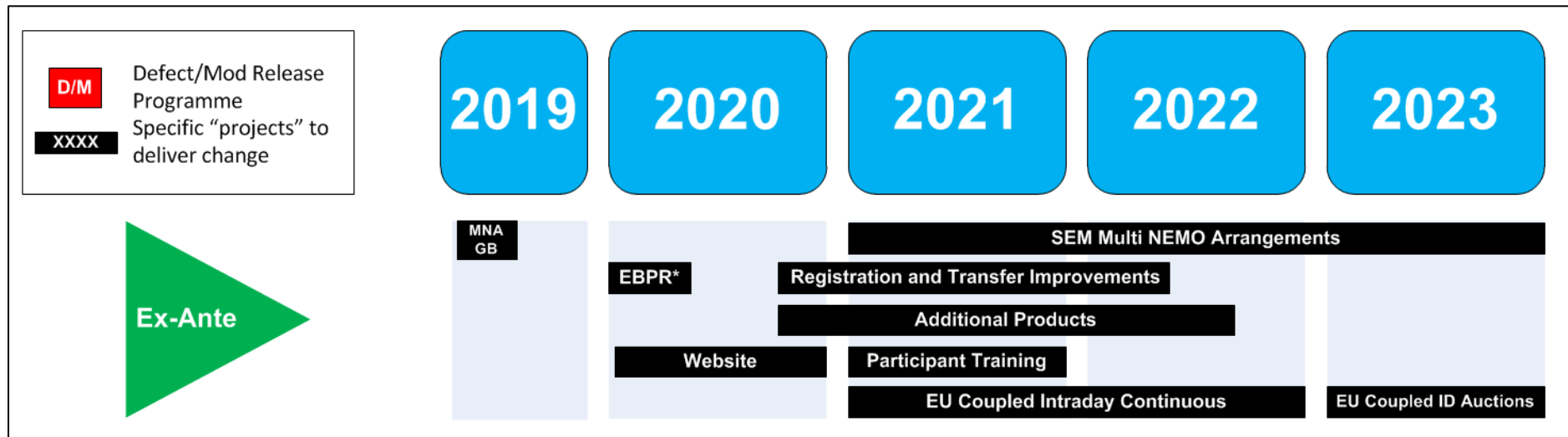


Figure 4: Ex-ante Roadmap

- 1) The first significant enhancement to be added will be the commencement of **Intraday Multi-NEMO arrangements in Great Britain**.

Description:

The addition of Intraday Multi-NEMO arrangements in Great Britain. The project includes contractual and procedural amendments for Intraday 1 and 2 auctions, as well as regression testing of SEM systems to ensure no detrimental effects as a result of the changes made in the GB ex-ante order books and settlement.

Business Case:

The implementation was originally part of the I-SEM implementation but was postponed until after the go-live. Both UK and SEM Regulatory Authorities have requested this project to be completed. It potentially leads to improved liquidity in the intraday markets as well as allowing further competition in the GB markets.

Delivery Impact:

An Impact Assessment confirmed that the scale and nature of the project allows for implementation during Q3 2019.

There are potentially a number of additional features which could amount to separate projects in time, to be added to the ex-ante markets during 2020 which are outlined below.

- 2) All markets will undergo an **Evidence Based Performance Review** during 2020 to determine if there are any significant changes that should be investigated based on the performance of the markets so far.

3) An **Ex-Ante Website Enhancements** project is proposed for 2020.

Description:

A number of improvements need to be made to the SEMOpx website e.g. allowing dynamic reporting.

Business Case:

Market Participants have been vocal about the need to improve the website service offering to be at least comparable to other exchanges. It was part of the original scope for I-SEM but was de-scoped.

Delivery Impact:

The work is complementary to other projects at the time and should not impact on the improvements being done elsewhere. It is anticipated that it would take more than one year to deliver the improvements.

4) A number of **Additional Product Improvements** that may need to be developed for the ex-ante markets.

Description:

There are a number of additional improvements being considered:

- Faster application and removal of trading halts
- Complex and Block Orders

Business Case:

Market Participants have requested a number changes to products in the form of additional features or improvements.

Delivery Impact:

This work will span one or more years and involve procurement, solution redesign, build, test and deployment. It would also involve close cooperation with our service provider EPEX.

5) A number of **Registration and Transfer Improvements** to be made to the ex-ante markets.

Description:

Unit Registration changes being sought include:

- Effective dating of members and units access to auctions and continuous trading.
- Allowing units to be transferred from one member to another in the continuous trading system

Business Case:

Market Participants have requested that these changes be made to allow more flexibility in the transfer of units between members adding competition. In addition effective dating of access to auctions and continuous trading markets will mitigate risks and financial consequences of trading when not eligible to do so.

Delivery Impact:

This work would span one or more years and may involve procurement, solution redesign, build, test and deployment. It would also involve close cooperation with service providers.

Additional features to be added to the ex-ante markets during 2021 are outlined below.

6) The first is to allow **multi NEMO arrangements** to compete in SEM.

Description:

The redevelopment of the new SEM solution architecture to support multiple NEMOs operating in either Ireland or Northern Ireland.

Business Case:

CACM requires competition in the provision of multiple NEMO arrangements. It could potentially lead to improved liquidity in the markets.

Delivery Impact:

This will involve procurement, design changes, testing, deployment, contractual changes and procedural changes. Therefore it is a significant piece of work spanning multiple years.

- 7) The **EU Coupled Intraday Continuous** is an initiative of TSOs and power exchanges from across Europe to create a joint integrated intraday cross-border continuous market.

Description:

Previously known as XBID (Cross Border Intraday) but now known as Single Intraday Coupling (SIDC), the project would involve the SEM coupling with the EU Intraday continuous market which is currently only a local SEM market.

Business Case:

This is mandated by the EU and is needed to be compliant with CACM (Capacity Allocation and Congestion Management). It enables continuous cross-border trading across Europe.

Delivery Impact:

This work would span one or more years and may involve procurement, solution redesign, build, test and deployment, contractual and procedural changes.

- 8) A Learning Management System was used very effectively during the I-SEM project to deliver scaled training to Market Participants. A similar **Participant Training** initiative will help to support learning across the industry.

Description:

The development of a Learning Management System to support the administration and delivery of training to Market Participants.

Business Case:

The markets are constantly having to adopt to regulatory and technological changes. In order to support this, a Learning Management System will be developed to help Market Participants adapt to change.

Delivery Impact:

The work would take approximately one year and would involve business analysis, procurements and in-house materials development.

- 9) At present the DAM is the only coupled auction at EU level in the SEM markets. The **EU Coupled Intraday Auction** functions at an EU rather than local level.

Description:

Based on recent developments in Europe the EU Coupled Intraday Auctions aims to couple intraday at a European level. The concept of coupled auctions at a European level is new and is only just beginning to be considered in Europe.

Business Case:

This may be mandated by the EU and may be needed to be compliant with CACM. This would integrate the regional and local intraday auctions of the SEM with the wider EU, leading to greater liquidity.

Delivery Impact:

This work will span one or more years and may involve procurement, solution redesign, build, test and deployment, contractual and procedural changes.

B. Capacity Market

During the ISEM project there were a number of items of functionality de-scoped with the intention of adding them at a later stage. A case in point is Secondary Trading. This is included on the roadmap along with three other specific items around State Aid and improvements to the auction platform. In line with the overall strategy (See 4 Market Operations Strategy), the focus is on fixing defects before adding additional functionality.

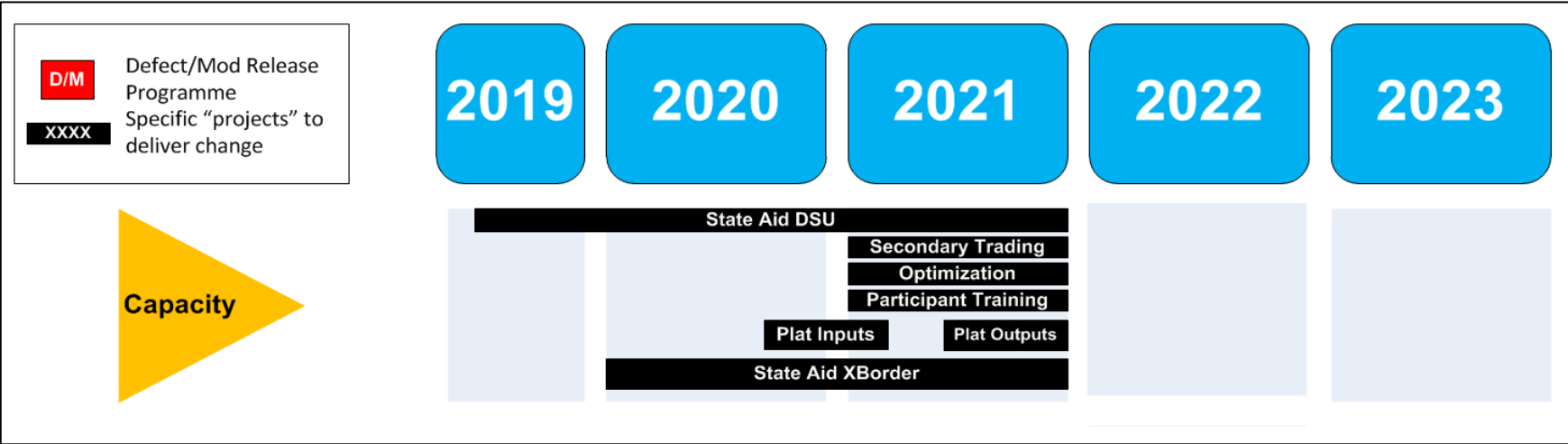


Figure 5: Capacity Roadmap

There are a number of projects which are noteworthy for the Capacity Market:

- 1) 2) Two projects cover work to implement an EC Commission decision which impact **DSUs** and **Cross Border** Capacity Market participants (those from outside of Ireland and Northern Ireland).

Description:

EC Commission decision C(2017)7789 regarding State Aid SA44464 (2017/N) covers two areas which are were not included in the original I-SEM Capacity Market systems: DSUs and Cross border participants.

Business Case:

The decision by the EC Commission highlights the difference in treatment for Reliability Options between DSUs and generators which could lead to DSUs being disadvantaged. It also highlights the need to accommodate cross border Capacity Market participants.

Delivery Impact:

These are sizeable projects which will require work in the area of business requirements, design, development and test.

- 3) A Learning Management System was used very effectively during the I-SEM project to deliver scaled training to Market Participants. A similar **Participant Training** initiative would help to support learning across the industry. See Page 13.

4) **Secondary Trading** of Reliability Options has been requested by Market Participants

Description:	Business Case:	Delivery Impact:
Secondary Trading allows Market Participants to trade their Reliability Options after initial purchase.	Secondary trading of options is widely available on other markets. It has been requested by Market Participants.	The scope of the work involves potential changes to business requirements, market rules and central systems. Central systems work would involve design, deployment and test.

5) There are two projects that will improve the experience of the auction participants. The first project covers **Platform Inputs**.

Description:	Business Case:	Delivery Impact:
The areas relates to Auction inputs including: • Improvements in usability and design of interfaces • Develop online qualification and registration layer	The benefits will be seen mainly by Market Participants in terms of superior user experience, reduced input errors and improved audit/security	The scope of the work mainly involves business analysis, design, deployment, test and vendor management.

6) The second area of interest relates to number of **Outputs** from the Capacity Auction Platform.

Description:

There are a number of updates to more adequately reflect the Capacity Market Code including:

- Improve CMP Reports
- Enable copy and paste functionality to be available to Market Participants
- Resolve issues with viewing results

7) A project to improve the **Optimization** of the capacity algorithm.

Description:

Capacity Auctions are operated using Auction Format C, which solves the auction using a process of full enumeration of all possible options. The number of combinations increases dramatically as the number of inflexible offer steps increases. It is therefore necessary to limit the algorithm to consider only a subset of likely solutions. This results in sub-optimum outcomes. Using a Mixed Integer Programming solver, Auction Format D, reduces this risk and should result in a more optimal outcome.

Business Case:

Many of these relate to issues with the original design and defects. The benefits will be seen mainly by Market Participants and streamline processes and procedures internally.

Business Case:

As the Capacity Auction is allocating hundreds of millions euro/pounds, even small improvements in optimality could improve welfare by millions. Nevertheless, the implementation would be complex and not without risk. The RAs are minded to adopt Auction Format D so it may be apt to implement to comply with policy decisions.

Delivery Impact:

The scope of the work mainly involves business analysis, design, deployment, test and vendor management.

Delivery Impact:

Delivery will require resources for design, build, test, certification. Specialist expertise will be required.

C Balancing Market

The main Market Operations strategy is to prioritize the resolution of outstanding defects and to ensure that critical functionality is available including repricing. At a later stage, additional functionality to support multi nemo arrangements will be added.



Figure 6: Balancing Market Roadmap

- 1) The principle objective in the short term is to **stabilize central systems** even further and improve the experience of Market Participants.

Description:

Business Case:

Delivery Impact:

The Balancing Market has defects in a number of areas which are reported via the *Known Issues Report* including:

- QBOA (Quantity Bid Offer Acceptance)
- Report Changes
- Scheduling and Dispatch

Market Participants and other key stakeholders have asked for all significant defects to be closed out before adding additional functionality to the Balancing Market.

The scope of the work involves deployment, testing, release management and vendor management.

- 2) The **Multi NEMO Arrangements** project will impact on the Balancing Market. See Section A.

- 3) All markets will undergo an evidence-based **Performance Review** during 2020 to determine if there are any significant changes that should be investigated based on the performance of the markets so far.

- 4) **Repricing** is a key function which is due to commence in late 2019.

Description:

Business Case:

Delivery Impact:

This project includes the deployment of functionality to deliver repricing when updated data is submitted into the system.

There is a need to reprice the majority of days since Go-Live as a result of disputes and known issues etc. Repricing is a mandatory function in the Trading and Settlement code.

The scope of the work involves deployment, testing, release management and vendor management.

- 5) A Learning Management System was used very effectively during the I-SEM project to deliver scaled training to Market Participants. A similar **Participant Training** initiative would help to support learning across the industry.

D. Settlement

The strategy for Settlement is to fix outstanding defects and to ensure that critical functionality is available.

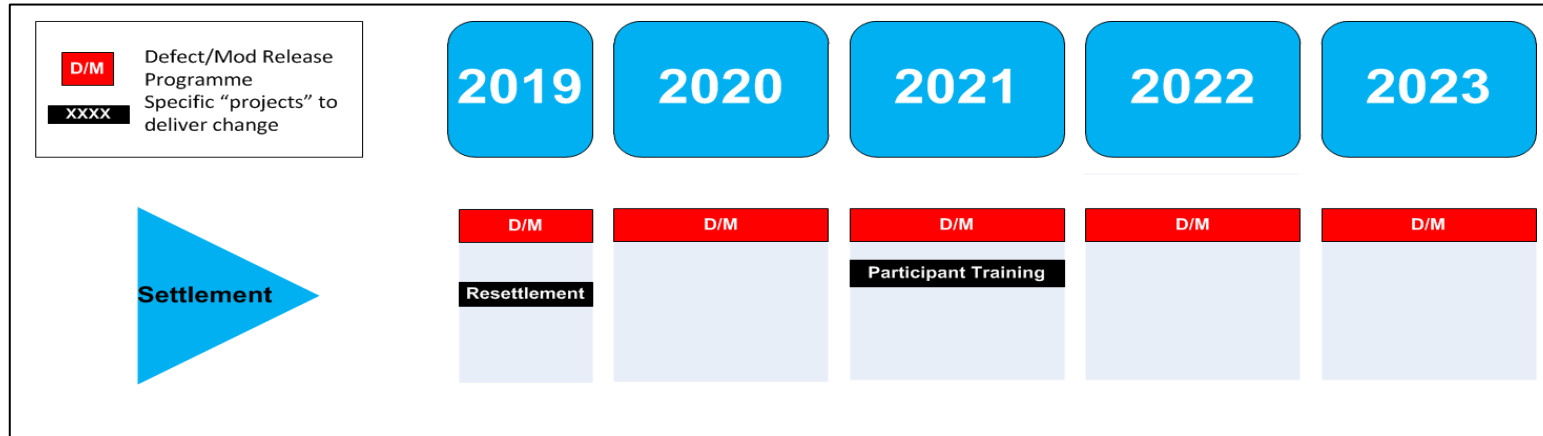


Figure 7: Settlement Roadmap

- 1) In addition to the fixes and modifications the only additional functionality being delivered is **Resettlement**.

Description:

Resettlement (M+4, M+13 ad-hoc) is a key function but it was known that the overall solution went live with a number of defects. Work needs to be done to address the issues related to performance, specific errors, manual workarounds and data flow that impact on Resettlement.

Business Case:

This is a major concern for Market Participants who have raised significant numbers of settlement queries. It is a code requirement and there is no alternative to resettlement.

Delivery Impact:

Resettlement functionality requires vendor management, development, deployment and test.

In addition to the Resettlement work being done there are a number of known modifications and improvements to settlement reports that will be delivered during 2019.

- 2) A Learning Management System was used very effectively during the I-SEM project to deliver scaled training to Market Participants. A similar **Participant Training** initiative would help to support learning across the industry. See Page 13 for details.