

Presentation for Norwegian mobile operators (amended)

2013 update of NPT's LRIC model of mobile networks

6th – 7th December 2012 • Ian Streule, Matthew Starling

Introduction

Approach and timetable

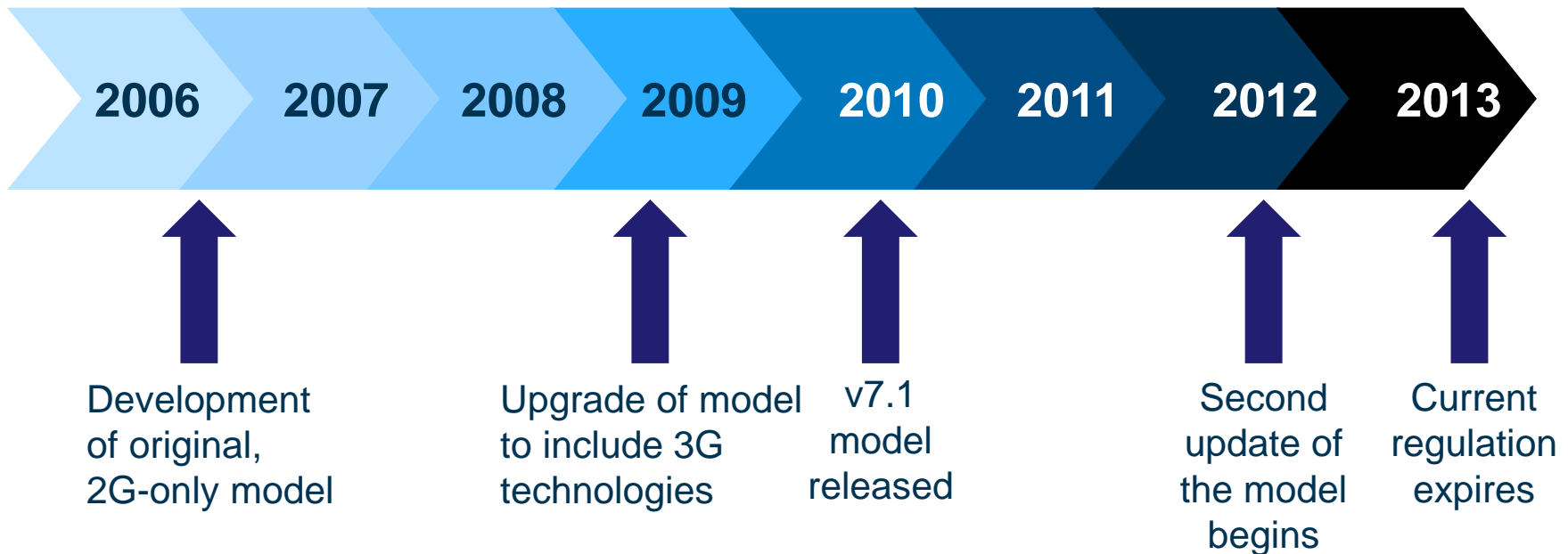
Updates proposed to the LRIC model

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NPT's LRIC model of mobile networks has been in development since 2006

- Analysys Mason Limited ('Analysys Mason') has been commissioned to assist the Norwegian Post and Telecommunications Authority ('NPT') in updating the existing long-run incremental cost (LRIC) model for mobile networks in Norway



The Analysys Mason project team

Name and title	Role in the project
Ian Streule (Partner)	Project Director (has worked on NPT's mobile LRIC model since 2006)
Matthew Starling (Manager)	Project Manager, leading the update of the LRIC model (has worked on NPT's mobile LRIC model since 2009)
Alex Slinger (Consultant)	Lead Modeller, leading the modelling activities of the LRIC model
Alex Reichl (Associate Consultant)	Assisting in the update of the LRIC model

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The process involves three phases, with industry involvement requested in each

Phase 1: Project initiation

- Industry workshops
- Issue of a data request

Phase 2: Draft model preparation

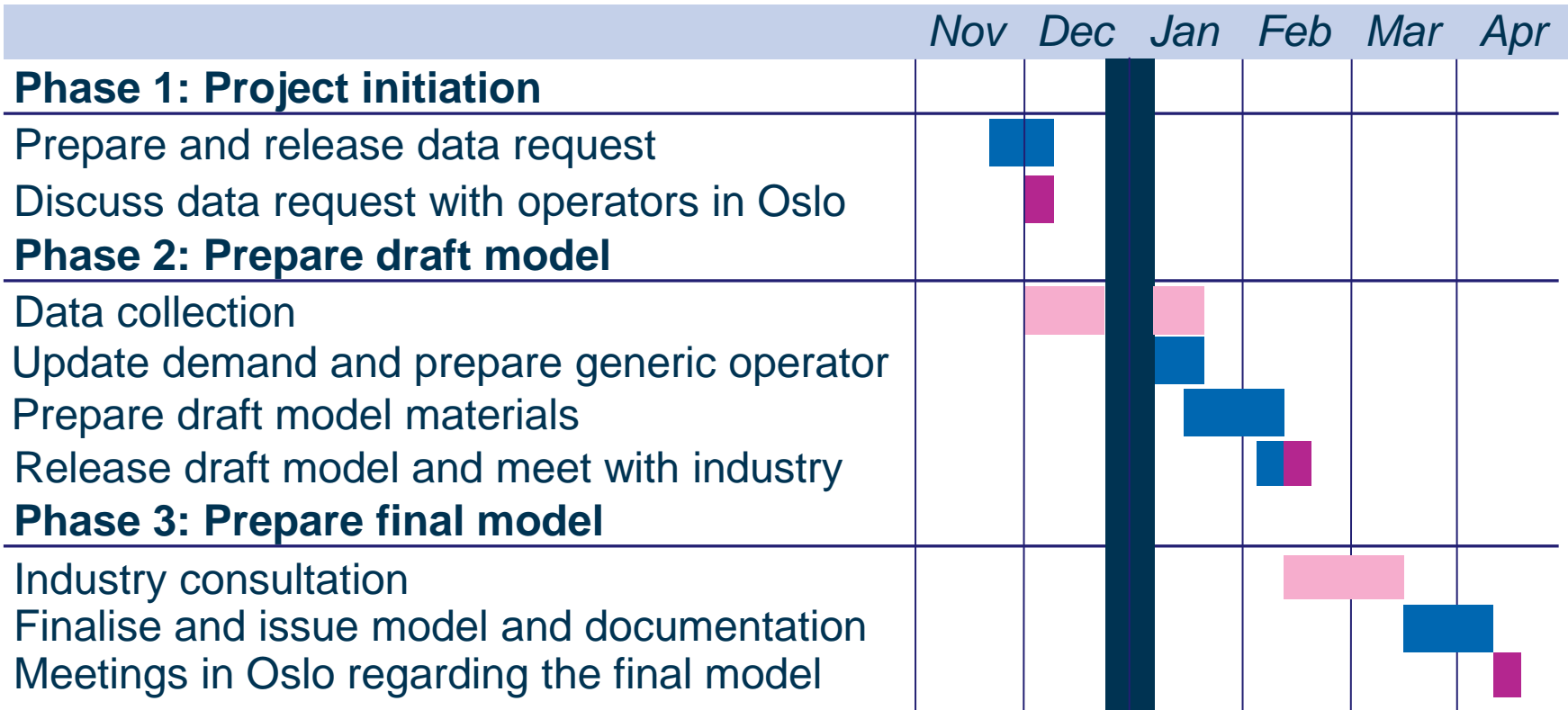
- Period of data collection
- Update of the model and derivation of a generic operator calculation
- Preparation of draft model and documentation
- Industry workshops

Phase 3: Model consultation and finalisation

- Review of the draft model materials
- Review of the consultation responses
- Finalisation of the updated LRIC model
- Final industry workshops

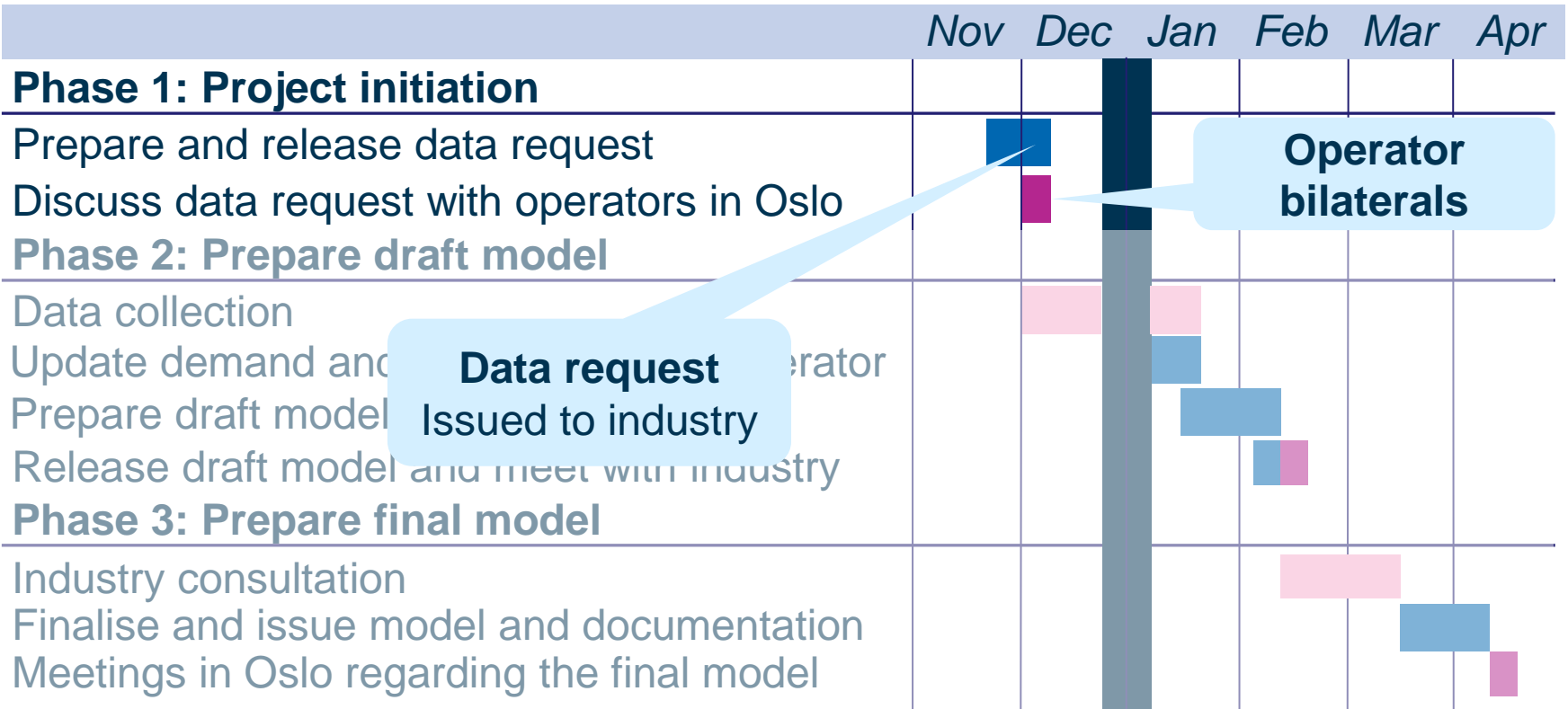
KEY ■ Project task ■ Project task involving industry

The project is due to last five months



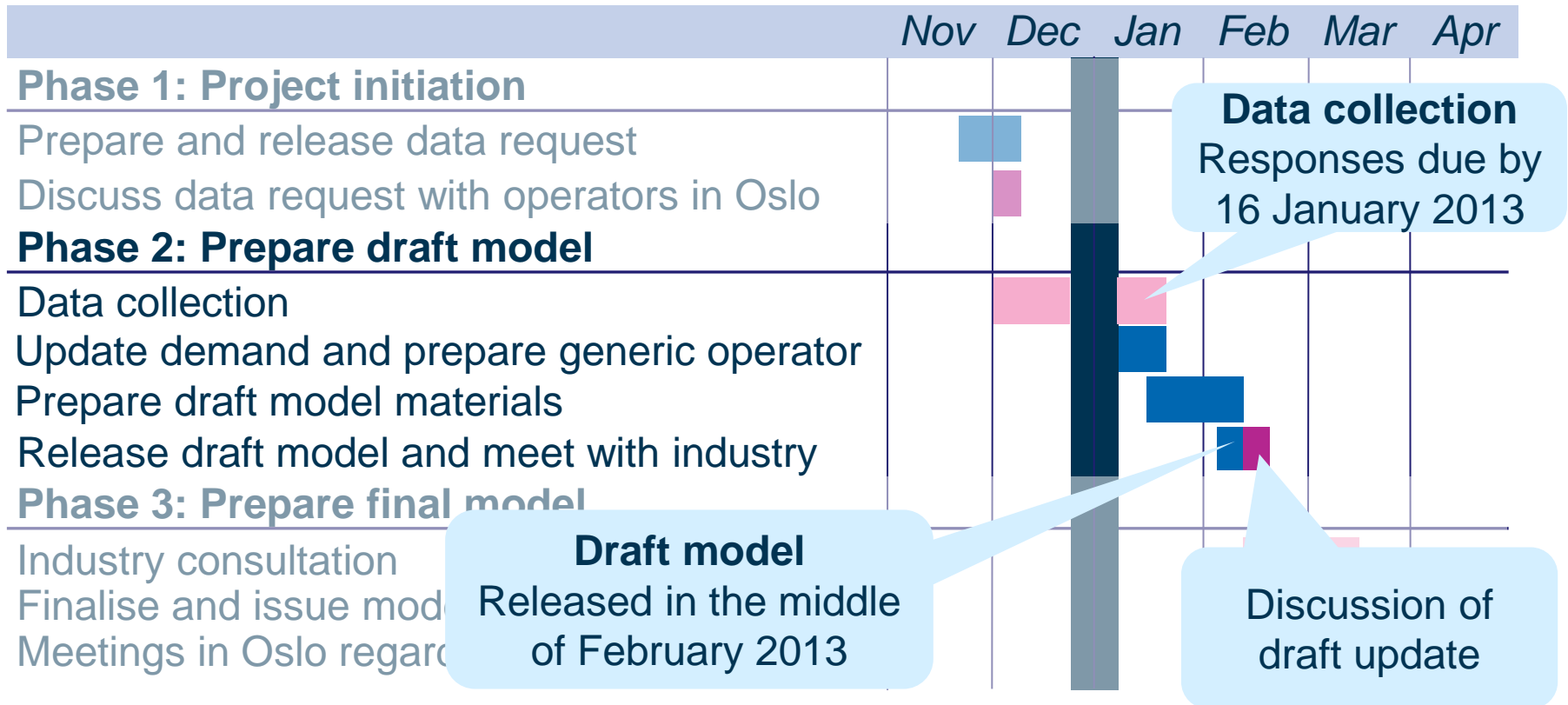
- KEY**
- Model development
 - Industry meetings/workshops
 - Operator consultation period
 - Holiday periods

Phase 1: Project initiation



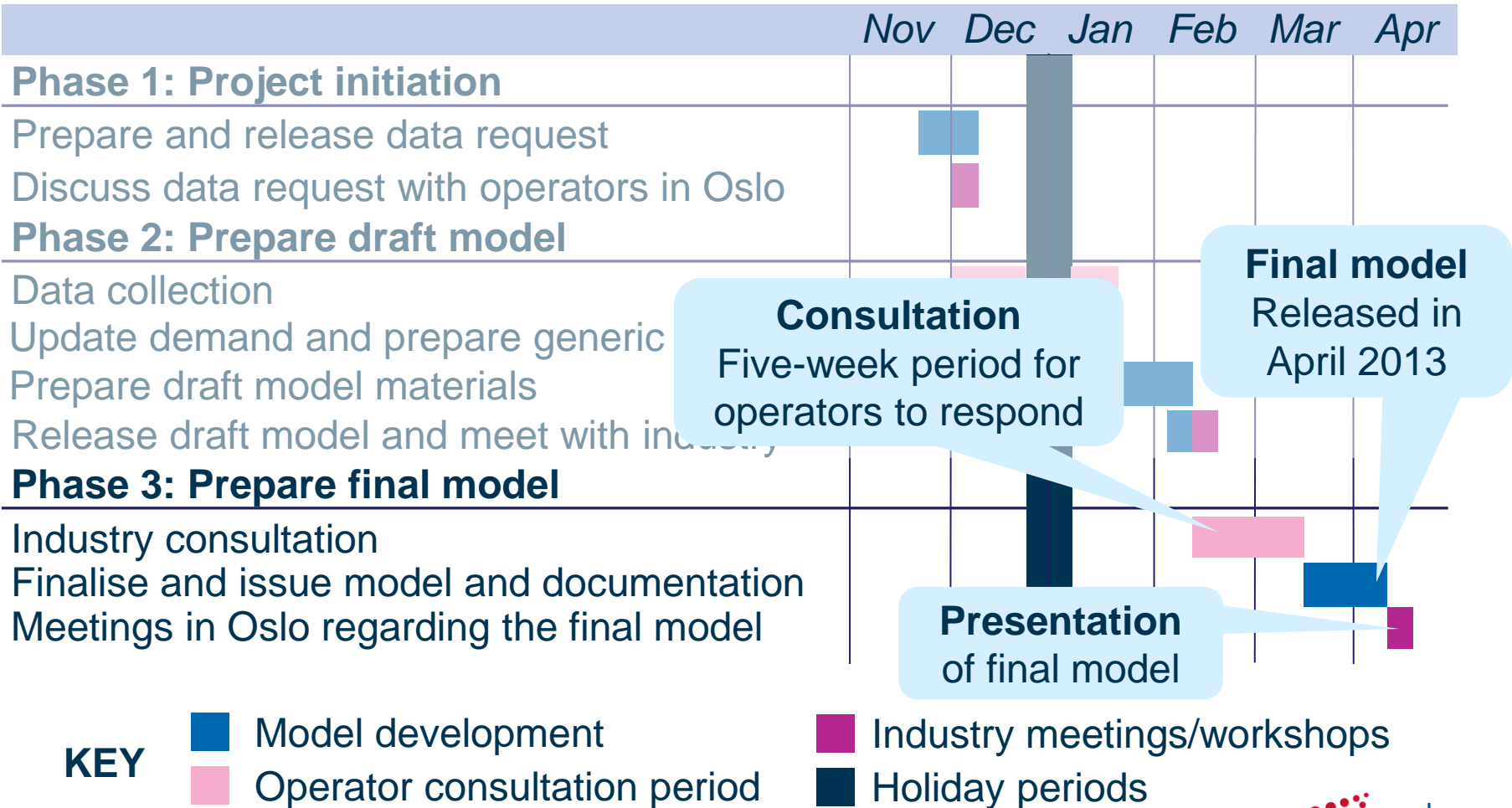
- KEY**
- Model development
 - Industry meetings/workshops
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Phase 2: Prepare draft model



- KEY**
- █ Model development
 - █ Industry meetings/workshops
 - █ Operator consultation period
 - █ Holiday periods

Phase 3: Prepare final model



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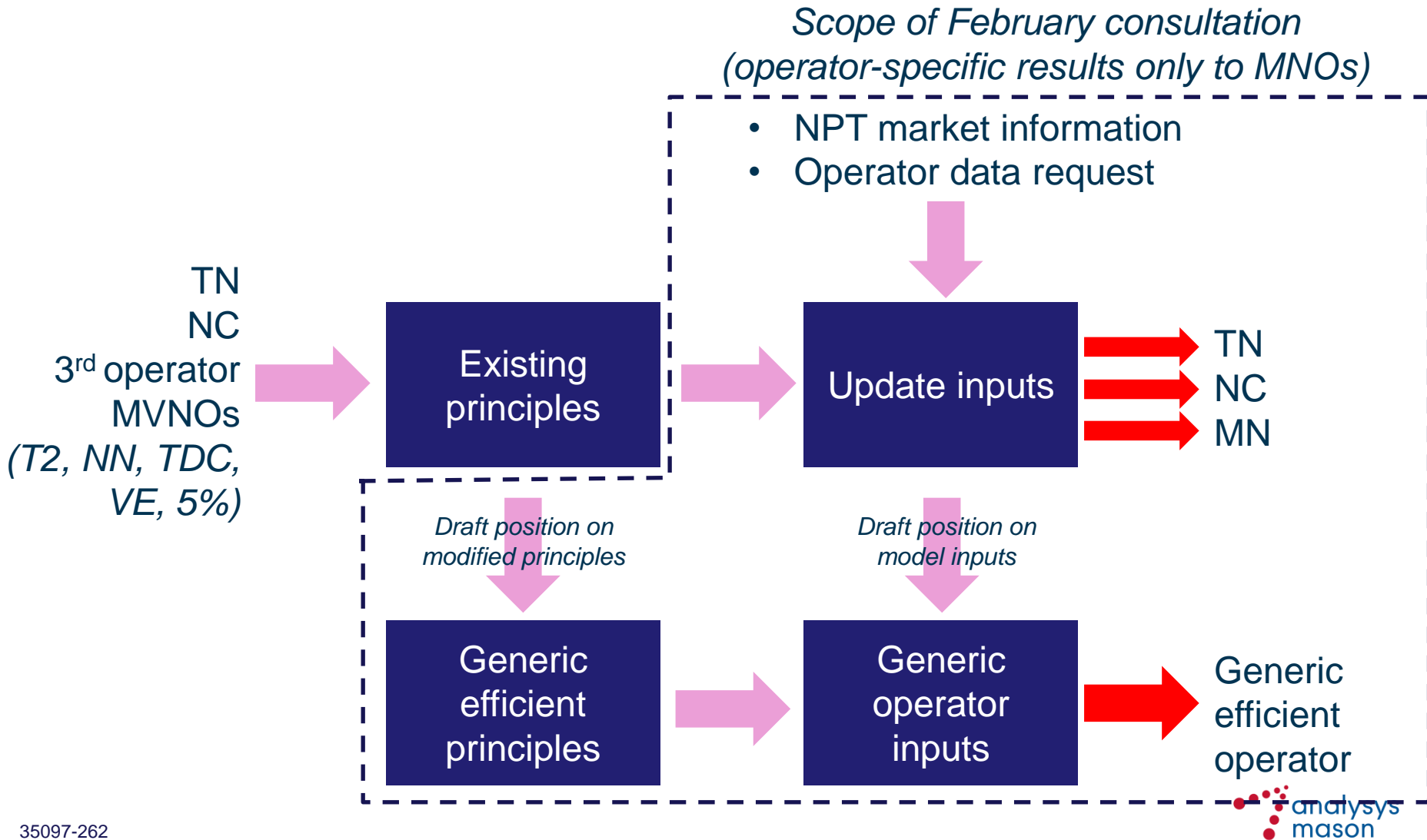
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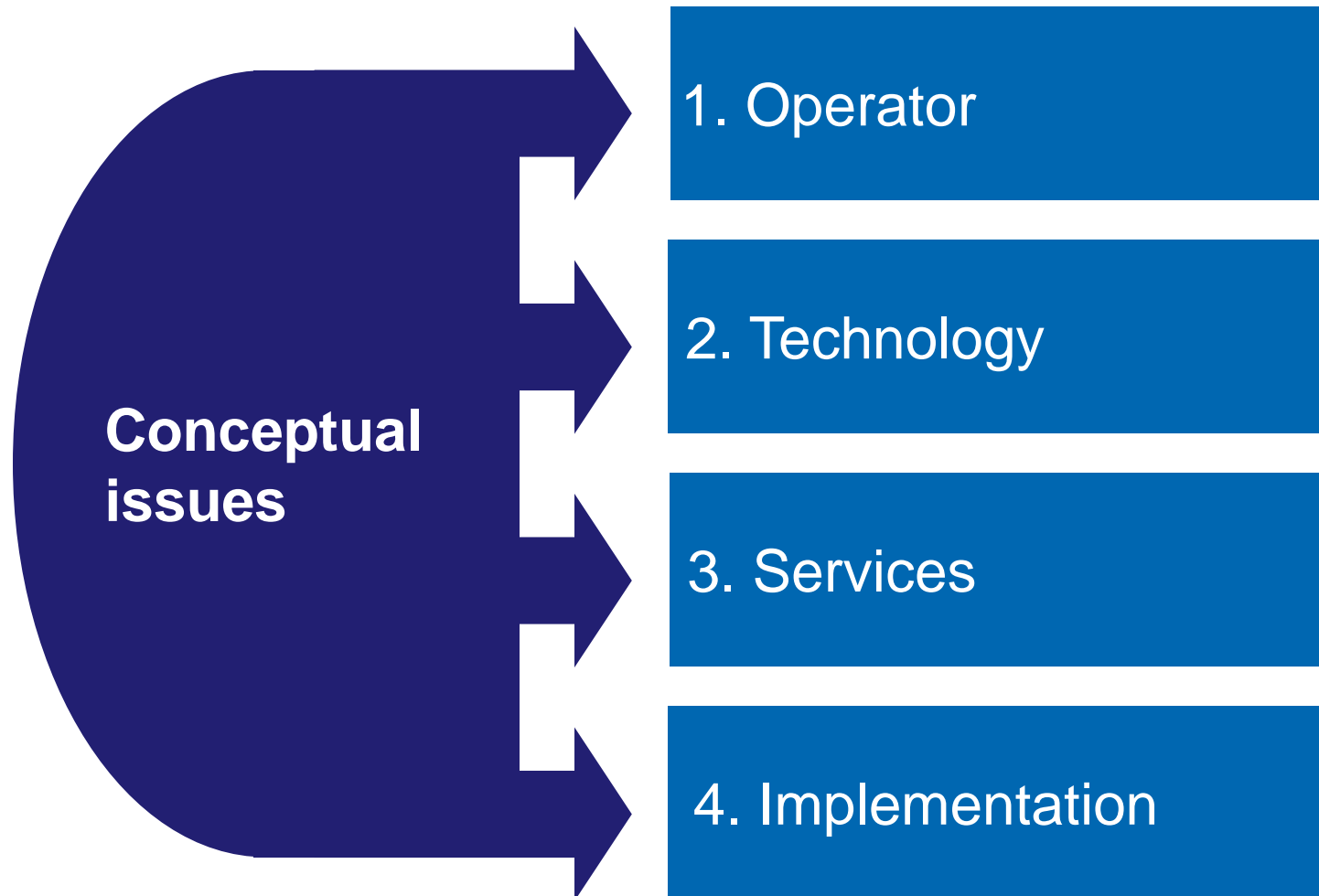
Objectives of the project

- Develop the LRIC model to account for recent and future changes in the mobile market that are relevant to the costs of mobile voice termination
- Develop a calculation of the costs of mobile termination:
 - for the actual mobile network operators (Telenor/NetCom/Mobile Norway)
 - for a generic operator
 - that at least considers the impact of 4G networks, even if it does not calculate 4G network costs explicitly
- As in the 2009 modelling project, three costing approaches are of relevance:
 - **LRIC+++** – long-run (average) incremental costs including overhead mark-ups, which was used for price regulation to the end of 2010
 - **LRIC** – long-run (average) incremental costs excluding overhead mark-ups, which was used as the glide path endpoint for price setting to the end of 2013
 - **pure LRIC** – the avoidable costs associated with the mobile termination service, as recommended for the costing of termination by both the European Commission and ESA

We will update the existing calculations according to the established principles



The existing model has been developed according to four key dimensions



v7.1 modelling principles: Operator

	Conceptual issue	Recommendation for original model
1. Operator	Structural implementation	Develop a bottom-up model, reconciled against top-down accounting data, resulting in a hybrid model
2. Technology	Type of operator	Model actual operator costing for Telenor and Netcom, as well as a hypothetical national operator
3. Services	Size of operator	The size of Telenor, Netcom are modelled assuming long-term convergence. For the hypothetical national operator, an efficient size is forecast
4. Implementation		

v7.1 modelling principles: Technology

	Conceptual issue	Recommendation for original model
1. Operator	Radio technology standard	Reflects operator's actual GSM and UMTS networks from 1993 onwards
2. Technology	Treatment of technology generations	The migration of voice and data to UMTS is modelled. Actual historical data is included along with a forecast
	Extension and quality of coverage	For Telenor/Netcom, actual coverage is implemented, with a converged forecast. For the hypothetical operator, a forecast of national coverage is applied
3. Services	Transmission	Applies actual transmission networks
4. Implementation	Network nodes	Adopts actual designs with scorched-node calibration of radio sites
	Input costs	Actual/average equipment costs applied
	Spectrum situation	Actual spectrum allocations are reflected

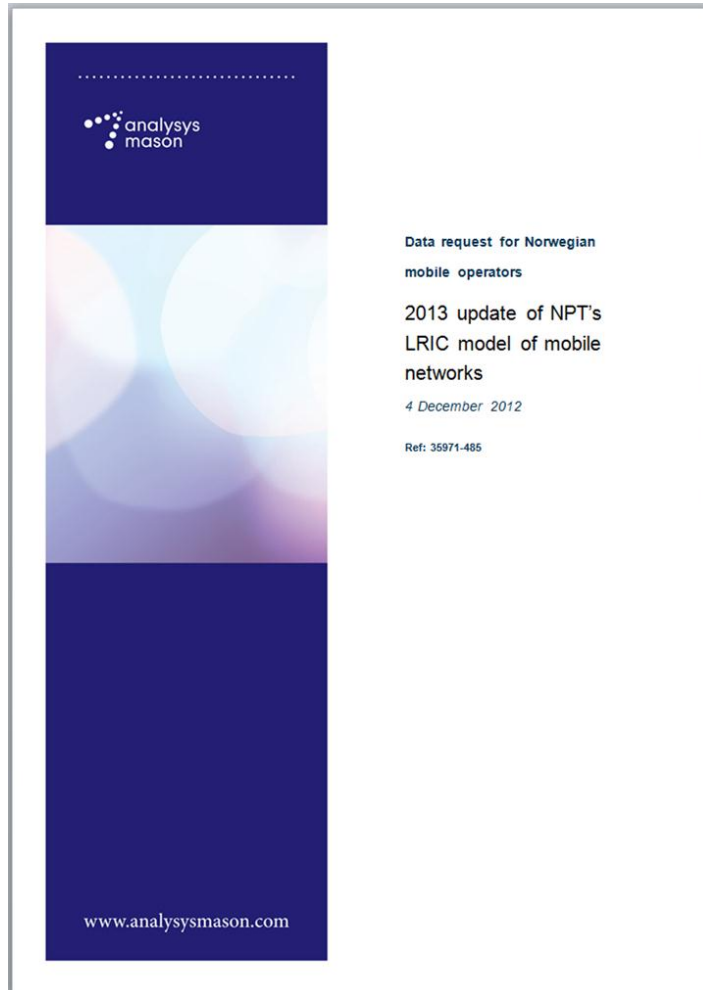
v7.1 modelling principles: Services

	Conceptual issue	Recommendation for original model
1. Operator	Service set	Actual voice and data (SMS, GPRS, EDGE and HSPA) services are included, reflecting UMTS high-speed and low-speed data services
2. Technology	Wholesale or retail	Retail costs are excluded from the wholesale costs of termination
3. Services		
4. Implementation		

v7.1 modelling principles: Implementation

	Conceptual issue	Recommendation for original model
1. Operator	WACC	NPT's mobile operator WACC is applied
2. Technology	Depreciation method	Recovers incurred network expenditures over time in accordance with MEA price trends, network output in the long run and the discount rate
	Increments	Both a LRIC+++ method and a "pure" LRIC approach are used
3. Services	Year(s) of results	A full time series model is used, capturing operators from their GSM launch, following onto UMTS deployment and beyond
4. Implementation	Mark-up mechanism	Equi-proportionate mark-up of costs in the LRIC+++ approach

A data request was released to industry on 5 December 2012



- The data request asks for specific information related to demand, network and costs
- We expect to discuss these questions during this bilateral, to understand what data is available within your business
- Responses are due by 16 January 2013
- The data request has been restricted to tabulated information as far as is possible, and only the most essential data points have been requested

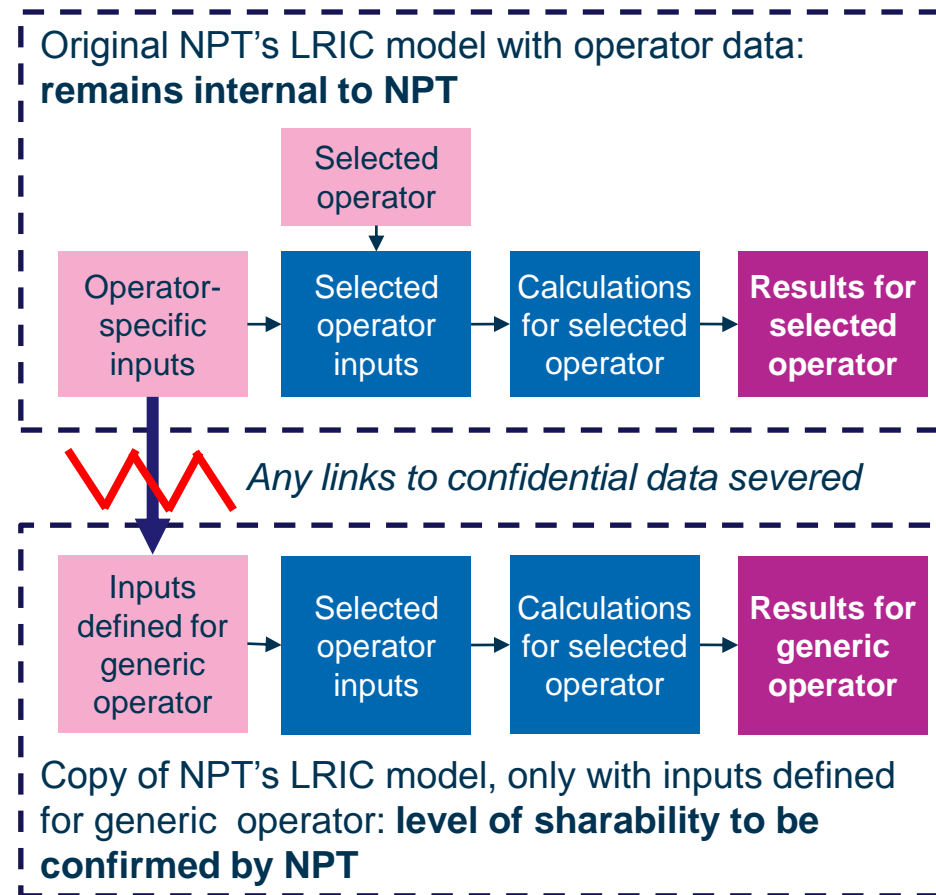
Overview of data request

- The data request is made of three main sections:
 - **Demand data**
 - Specific voice / SMS / data service volumes (unavailable from NPT statistics)
 - Traffic-by-area and busy-hour profiles
 - **Network data**
 - asset counts for certain specific network elements
 - HSPA upgrades
 - Consideration of assets that should scale with the removal of termination
 - **Cost data**
 - Bottom-up equipment unit costs
 - Top-down expenditure data by category

Design of a generic operator

- The existing model can consider the actual operator costs of:
 - Telenor/ NetCom (hybridised to 2009)
 - A “third operator”
- We expect to add cost calculations for Mobile Norway and a generic operator
- The generic operator design will be consulted on with the draft model
- Confidential operator data will be used directly for individual operator models
- The generic operator will be based on:
 - average/typical Norwegian input, derived indirectly from operator data
 - Analysys Mason estimates where operator data is unavailable

Expected set-up for model



Revision of the existing Pure LRIC calculation

- An implementation was undertaken in the 2009 project for a pure LRIC calculation in the context of the draft EC Recommendation
- The EC released the final version of the EC Recommendation in May 2009
- In April 2011, the European Free Trade Association (EFTA) Surveillance Authority (ESA) released a Recommendation for the costing of termination rates, which is analogous to that published by the European Commission in May 2009
 - in particular, this requires the consideration of a ‘generic’ operator
- Q8 in the data request also provides opportunity for operators to provide their input on the pure LRIC implementation
 - e.g. network design adjustments in the case without termination traffic

Considering mobile VoIP in the context of model calculations

- The five types of mobile voice traffic are:
 1. voice interconnected as CS, carried using GSM/UMTS voice circuits
 2. voice interconnected as IP, carried using GSM/UMTS voice circuits
 3. voice interconnected as CS, carried via its own VoIP in the air interface
 4. voice interconnected as IP, carried via its own VoIP in the air interface
 5. OTT voice that is carried using data bearers, carried as data bits
- We understand that OTT voice is becoming more prevalent in Norway (i.e. voice calls carried purely as data traffic)
- Q5 in the data request asks for information on the relative mix of these voice traffic types, so that we can understand the potential implications for the model

Indirect treatment of LTE but not extending the model to include LTE network equipment

- Our proposed approach is to
 - understand extent of cost sharing between 2G/3G and 4G
 - e.g. cost data for new flexi-NodeB
 - e.g. cost data for 2G/3G/4G sites
 - e.g. high-speed Ethernet/fibre-based backhaul
 - understand (forecast) 2G, 3G, HSPA and LTE data megabytes
 - understand (forecast) whether voice-over-LTE supports additional voice traffic or whether 2G/3G circuit voice migrates to LTE

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Upcoming milestones

- The data request has been issued to industry parties
 - there are fewer questions than in the previous projects, since this is an update
 - stakeholders have until **16 January 2013** to provide data submissions
- Electronic versions of these slides can also be provided
- In the coming weeks we will be available to field any questions on the data requests
- It is expected that the draft updated LRIC model will be issued in February 2013

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Relevant documents

- Documents related to the current LRIC models, published in December 2009 and September 2010
 - <http://www.npt.no/marked/markedsregulering-smp/kostnadsmodeller/lric-mobilnett>
- Recommendation on termination rate costing published by the EC in May 2009
 - <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:124:0067:0074:EN:PDF>
- Recommendation on termination rate costing published by the ESA in April 2011
 - <http://www.eftasurv.int/media/internal-market/ESAs-Recommendation-on-termination-rates.pdf>
- Ministry decisions on the termination of voice calls on individual mobile networks (market 7), published in May 2011
 - <http://www.regjeringen.no/nn/dep/sd/Aktuelt/nyheiter/2011/vedtak-fattet-i-klagesak-om-mobilkommuni.html?id=642623>

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