



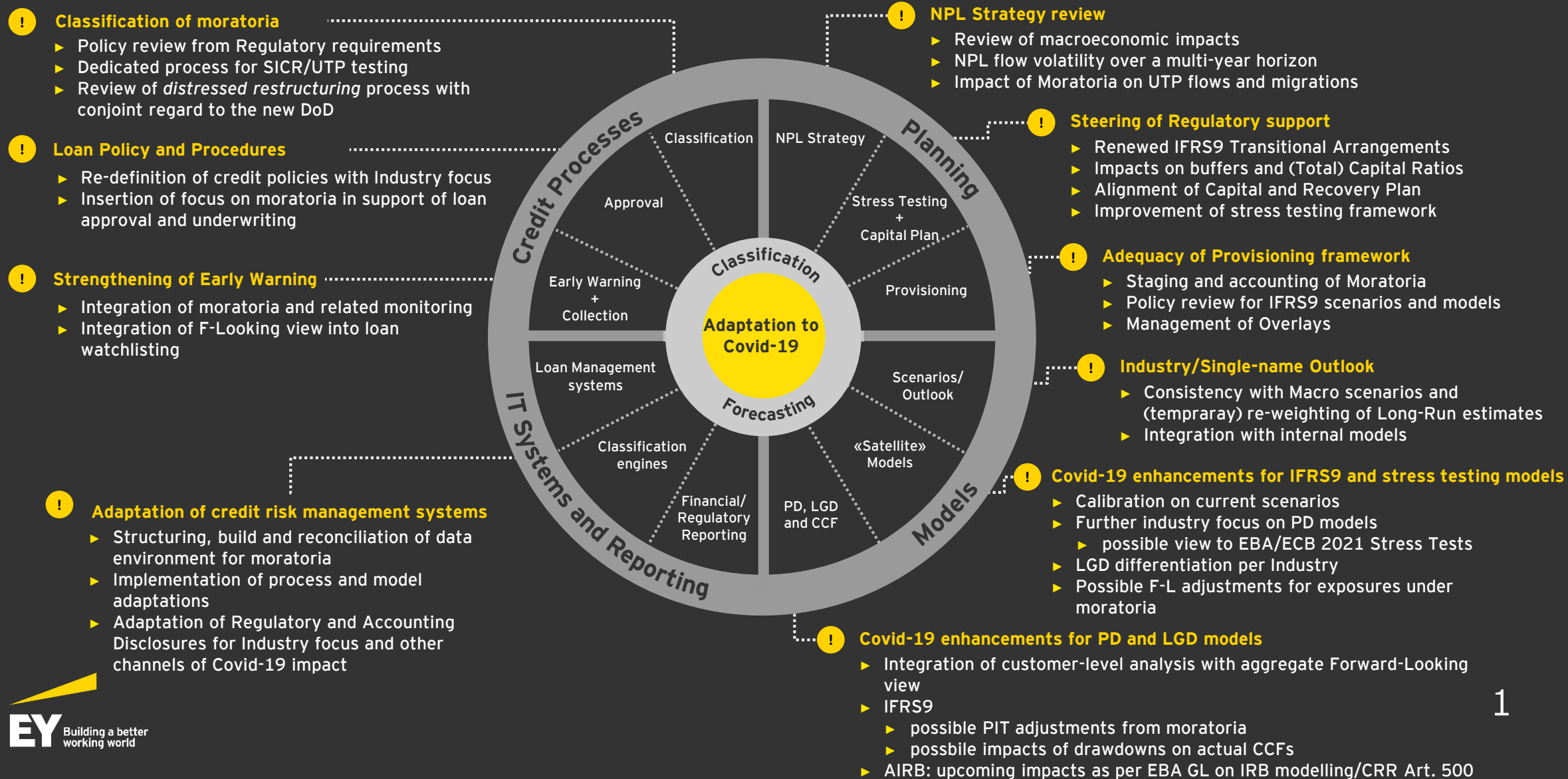
The new Definition of Default
and credit risk models in the
Covid-19 context.
IRB and IFRS9 Validation.

ABI SUPERVISION, RISKS &
PROFITABILITY, 22nd September 2020

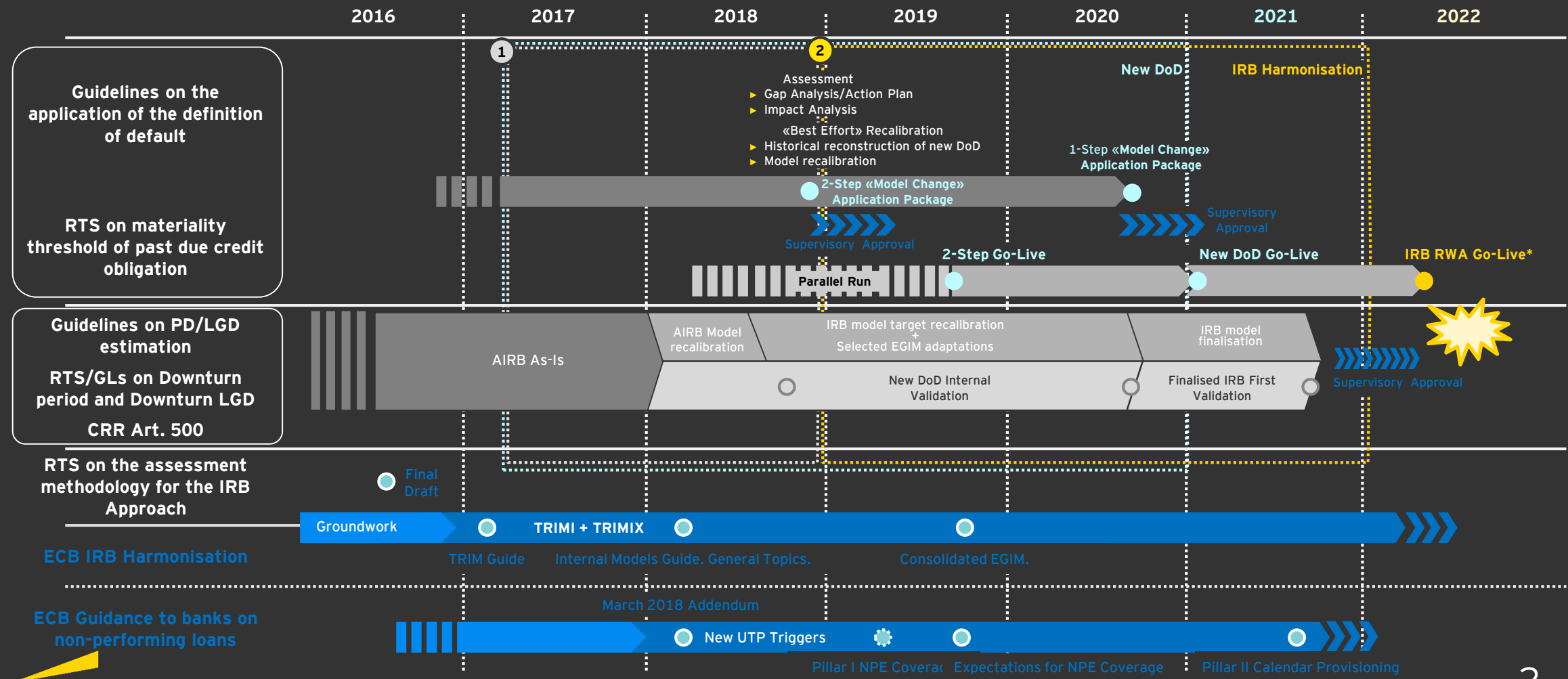
■ ■ ■
The better the question. The better the answer.
The better the world works.



The emergence of Covid-19 Implications for credit risk management at banks...

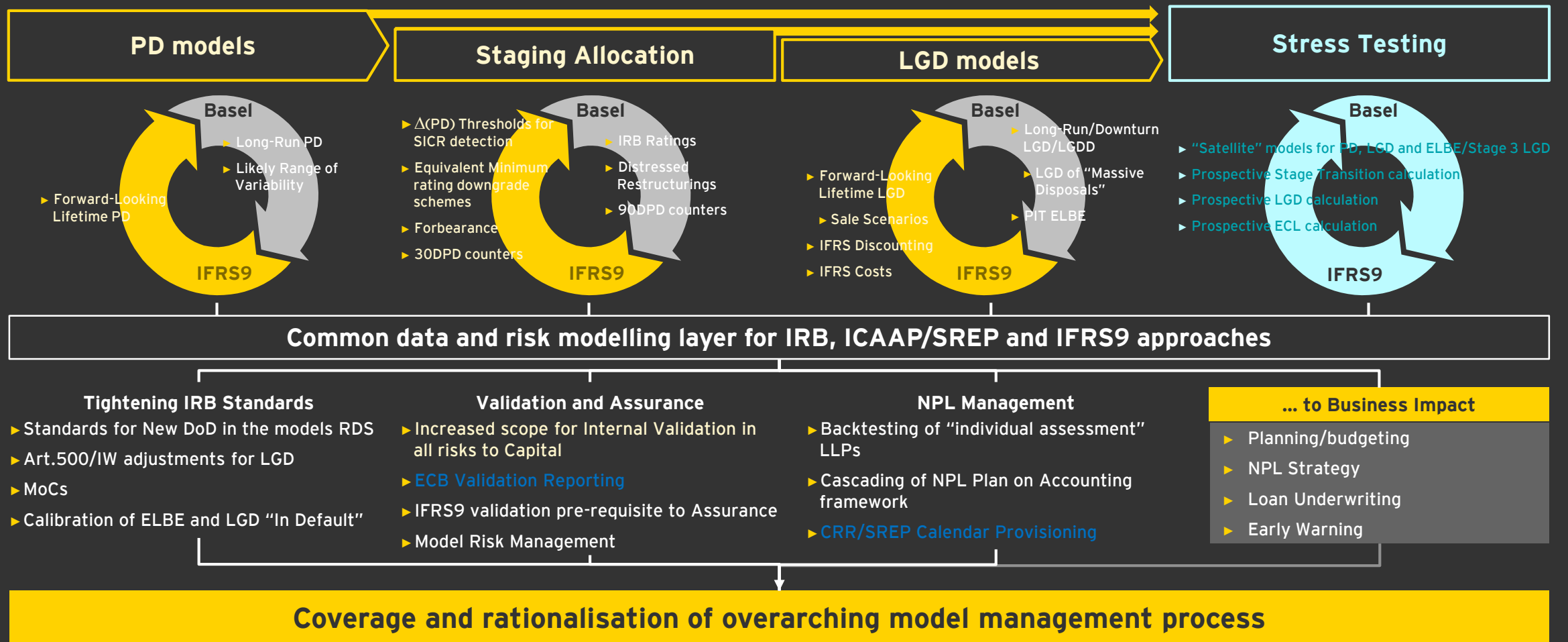


The new Definition of Default ...in progress on the revised EBA IRB Roadmap...



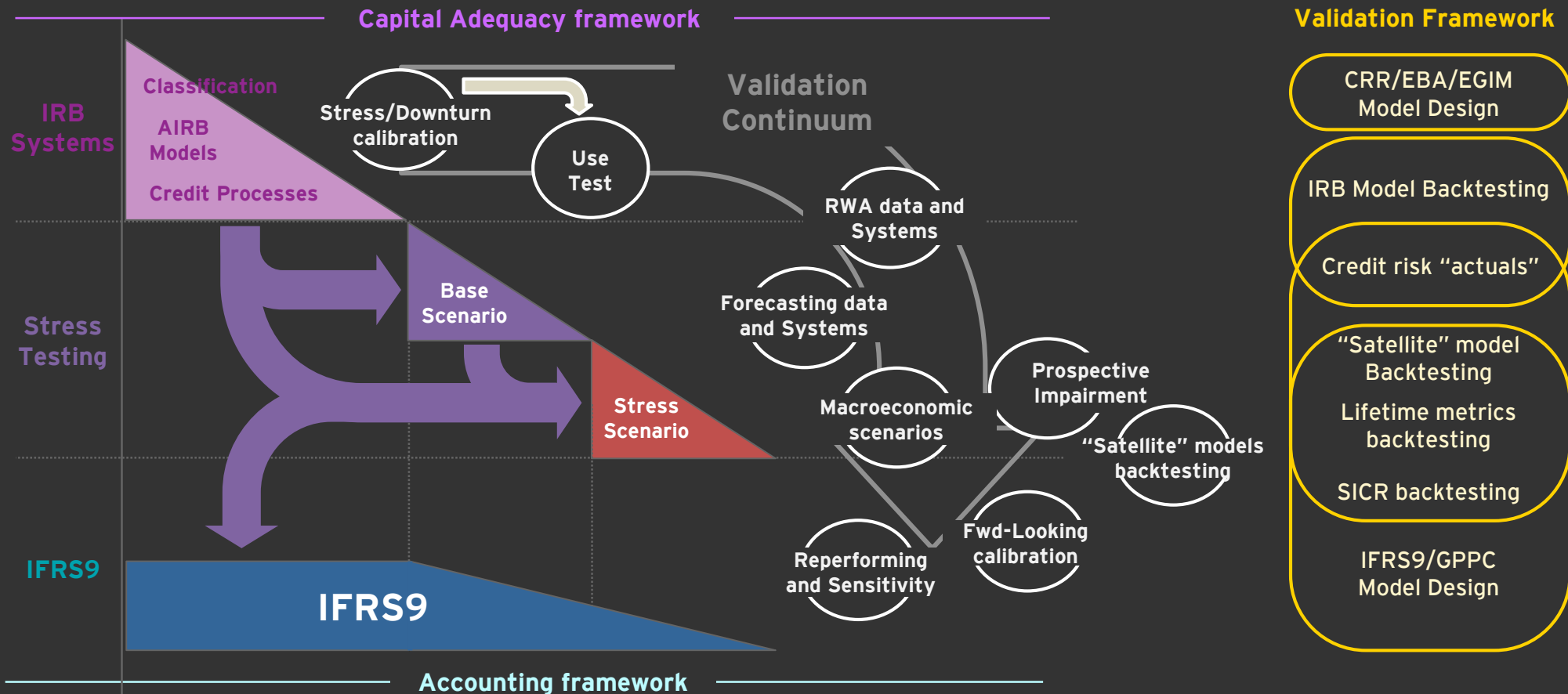
* Non-mandatory deadline for selected Low-Default portfolios, targeted for final IRB harmonisation at 2023-end.

Basel vs. IFRS9 ...beyond IRB models...



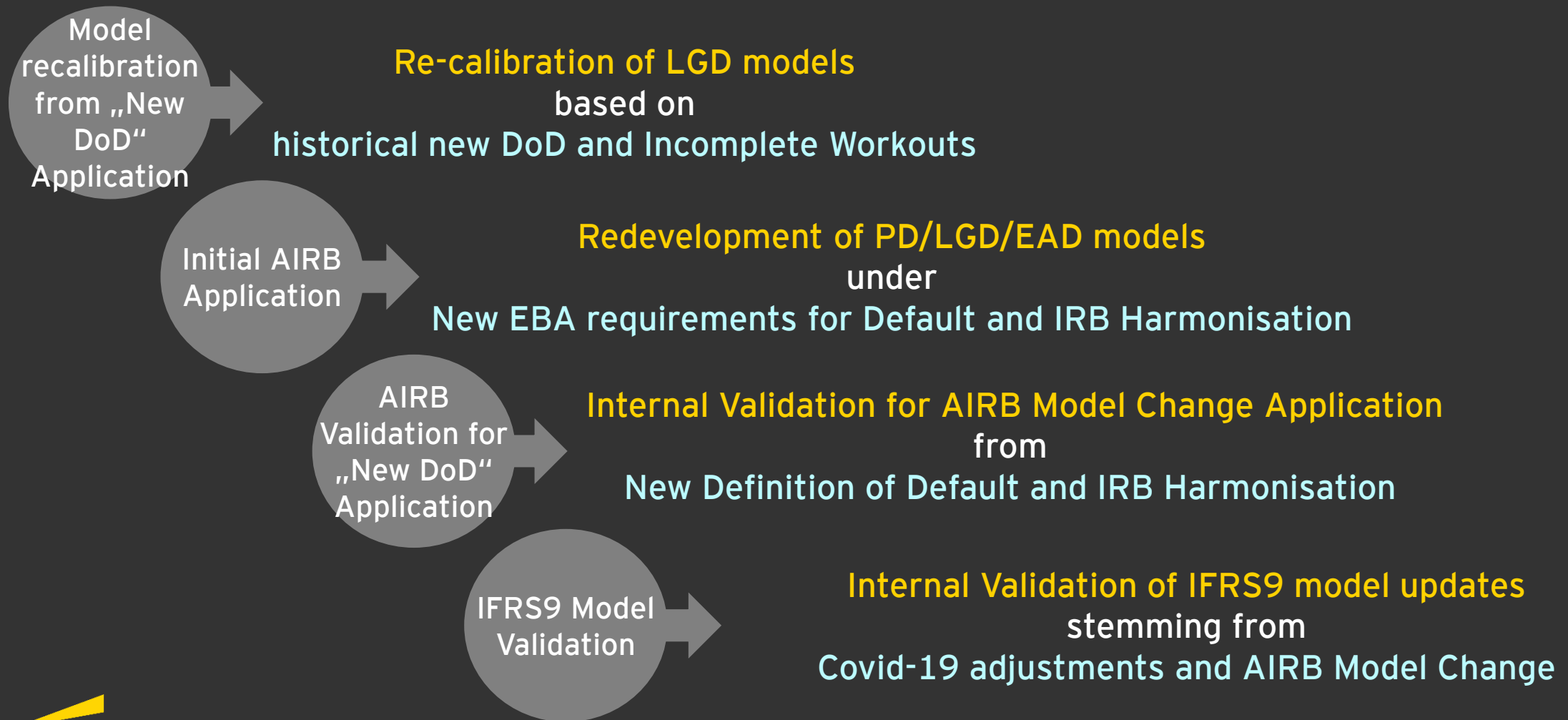
The Validation Continuum ...to Internal Control.

Default and modelling requirements are cascaded through Regulatory and Accounting applications into the related Validation Continuum, providing an overarching framework for controls of model design, backtesting and IT implementation testing.



Credit risk modelling and validation

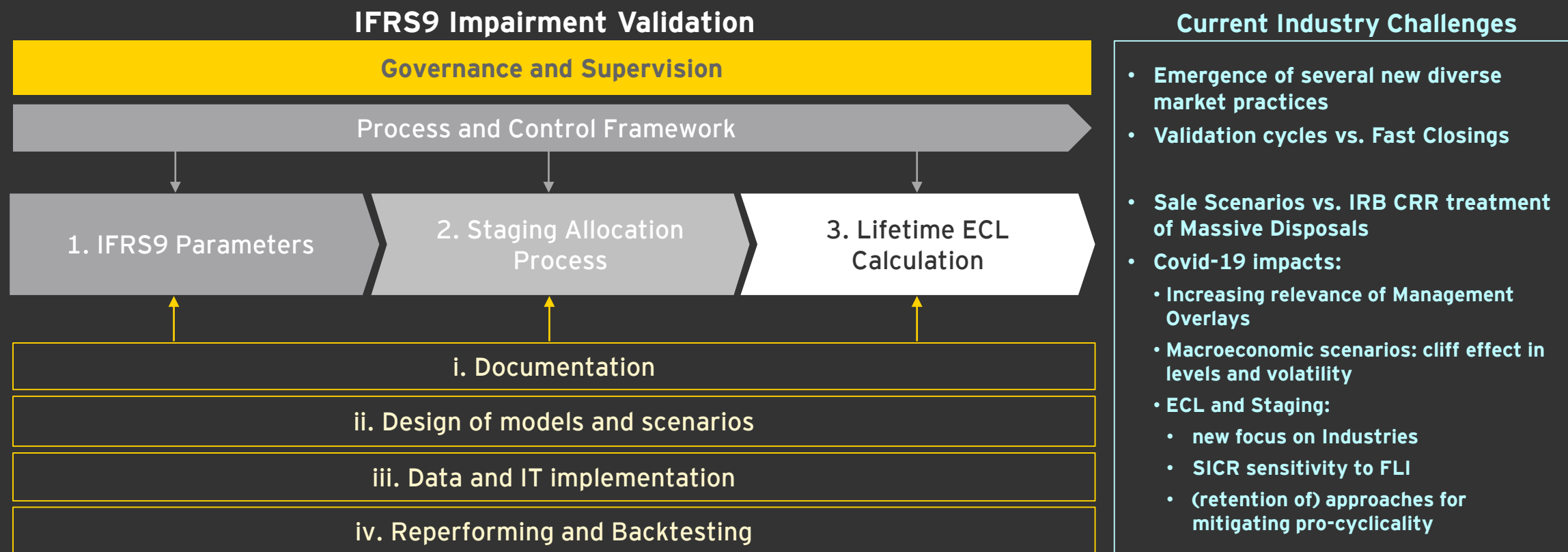
An ongoing convergence path in the market



IFRS9 Impairment Validation

Governance, processes and models through Covid-19

The impact of the Covid-19 emergence on the Impairment framework has far-reaching implications, beyond uncertainty reflected in forward-looking estimates, as volatility induced and initial mitigation applied are increasingly needing to be managed in a «new normal» setting.



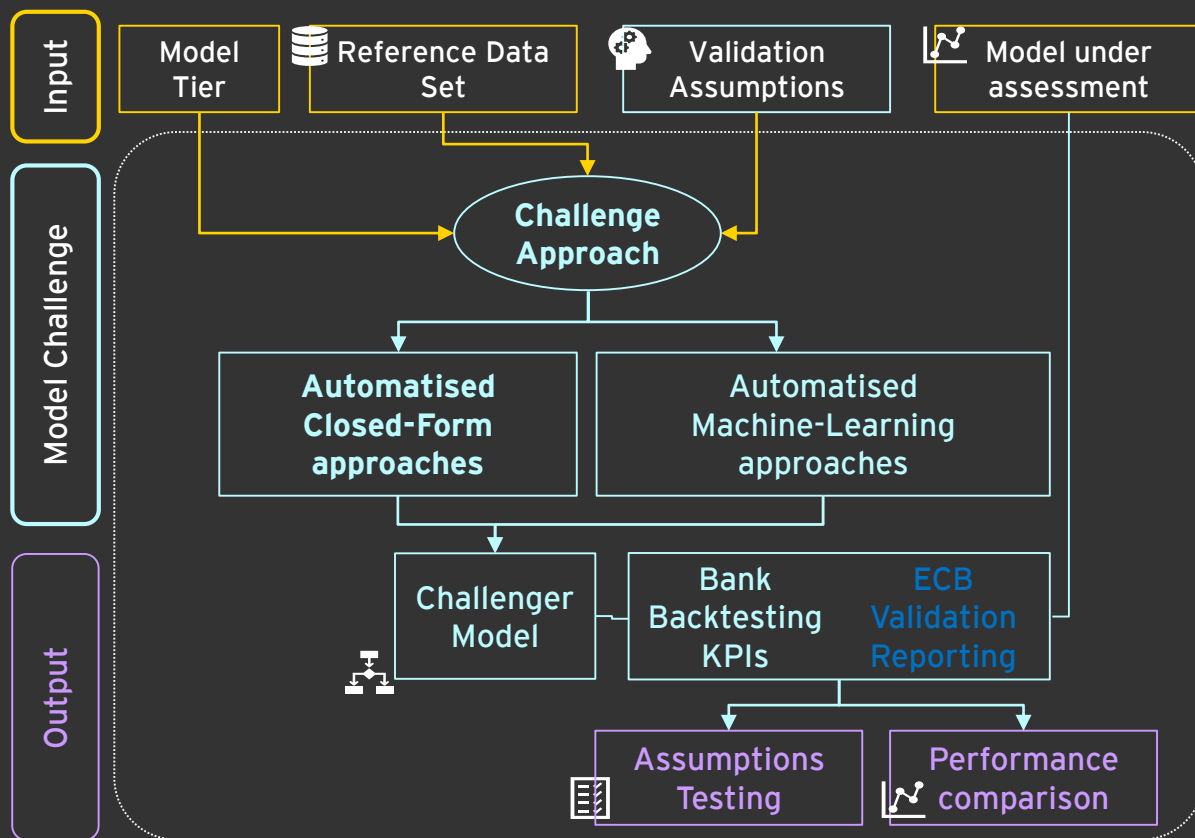
IFRS9 Impairment Validation

Validation and model challenge for Covid-19 impacts

Example	IFRS9 modelling approaches	Validation and Model Challenge
Macroeconomic Scenarios	<p>Interpolation of baseline scenario forecasts</p> <p>Re-weighting of multiple macroeconomic scenarios</p> <p>Overweighting of «Long Run» FLI</p>	<ul style="list-style-type: none"> Re-allocation of calendar-year forecasts by Accounting forecasting period Comparison test between «Favourable» scenario and «Consensus» pre-Covid scenarios Comparison Test between «Long Run» parameters and parameters conditional on macroeconomic «Long Run» trends
Lifetime PD	<p>Static treatment of Moratoria</p> <p>Management Overlays on F-L PD</p>	<ul style="list-style-type: none"> Projection of segment-level moratoria portfolio shares Interval estimation of expected default flow for Industry-level moratoria rates Extrapolation testing of PD «satellite» models at segment/industry level against modelling of segmented default rate time series
Lifetime LGD	<p>Cure assumptions</p> <p>F-L framework for Loss Given Liquidation</p>	<ul style="list-style-type: none"> Testing significance of Industry-level differentiation of cure rates Testing for correlation between Corporate PDs and CRE price Indices

The Way Forward Machine Learning in credit risk model validation

The EY Solution for ML-aided validation covers a full spectrum of model challenge activities, enabling process automation with AI modules for challenging the development of a tailored suite of model type and parameters consistent with model Tiering.



Automation and Machine Learning in credit risk model validation

Clustering

Variable clustering performed with Supervised Learning techniques, enabling maximization of heterogeneity of (e.g.) PD/LGD across grades, **constrained to satisfy validation assumptions.**

Variable Selection

Enhanced challenger variable selection with Supervised Learning techniques, enabling an efficient multi-variable approach to **catch non linear relationship at validation and development stages.**

Model Challenge

Challenger model estimates based on a **wide range of Supervised Learning techniques**, driven by alternative accuracy/interpretability trade-offs **consistent with Model Tier**, including Classification and Regression Trees (CART), Bagging and Random Forest.

Diagnostics

Wide set of **generalised performance KPIs** in line with Supervisory guidance and bank's own validation practices, including **performance metrics and assumptions testing.**

Machine Learning in credit risk model validation

M-L Challenge for LGD Validation at a primary IRB Bank

The use of the EY Solution has enabled a significant reduction in effort and a significant gain in performance KPIs used for dialogue with the Supervisor, highlighting feasible improvements in developed models under validation

Process Automation
within the model
validation module

**-75% FTE compared to
standard model validation
process**

Constrained model
validation

+

Process Automation

+

Machine Learning

**+284 bps of discriminatory
power compared to challenged
model**

**+293 bps of Goodness-Of-Fit
Index compared to challenged
model**

Highly streamlined LGD validation process
through use of Process Automation and
Machine Learning techniques



Challenger estimates from on a wide range of
Supervised Learning techniques, driven by
model/parameter-specific
accuracy/interpretability trade-offs



Selected highly interpretable Machine Learning
techniques highlight room for further
improvement for the challenged model

Machine Learning in credit risk model validation

Validation Reporting Backtesting at a primary IRB Bank

The use of the EY Solution for ECB Validation Reporting has enabled a significant reduction in effort and critically reduced the required elapsed for anticipated testing of alternative model/parameter specifications

Process Automation
within model backtesting

**-80% FTE compared to
standard model validation
process**

Highly automated Internal Validation and ECB
Validation Reporting through Process
Automation



Consistency with
Supervisory Instructions

+

Process Automation

**100% coverage of Supervisory
requirements**

Automatically filled reporting templates covering
Supervisory instructions on an end-to-end basis



Process Automation

**20+ automatically filled
reporting templates**

Room for further efficiency gain in backtesting
standardization over the full spectrum of credit
risk models

covering

**30+ models
for all AIRB
segments/parameters**

Thank You

EY | Assurance | Tax | Strategy and Transactions | Consulting

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