Business Critical Models in the Ministry of Defence in 2014

1. We are publishing our business critical models[1] as part of our response to the Macpherson Review of Quality Assurance of Analytical Models. A previous list of MOD business critical models was published as part of the Macpherson Review report[2].

Background

2. Following the problems in the award process for the InterCity West Coast franchise by the Department of Transport, Sir Bob Kerslake and Sir Jeremy Heywood commissioned a review of the quality assurance of analytical models that inform policy across government. The review was led by Sir Nick Macpherson, Permanent Secretary at the Treasury, who published his Review of quality assurance of government models in March 2013.

How have we implemented the Macpherson Review?

3. As required by the Macpherson Review[3], our governance statement must confirm that we have an appropriate quality assurance framework for analytical models. So we asked each Arm's Length Body that has one or more business-critical models to confirm their arrangements are appropriate in their annual Assurance Statement. We will publish our governance statement soon.

4. MOD has well established arrangements already. To further strengthen our processes and documentation - as well as our culture and the environment in which quality assurance takes place - we have agreed an Action Plan with the Defence Audit Committee and others. For example, we are:

   - improving our governance arrangements, for example ensuring each business-critical model has a Senior Responsible Owner

   - ensuring our processes and guidance are clear and cover quality assurance arrangements

   - promoting a pro-quality assurance culture, for example by using Modelling Champions in key organisations and, where appropriate, including quality assurance as a work objective for staff

   - promoting transparency by publishing a list of our business critical models below.

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[1]As suggested by the Macpherson Review, we define a model as business critical if it drives key financial and funding decisions, its essential to the achievement of our business plan, or if error could lead to serious financial, legal or reputational damage.
[2]https://www.gov.uk/government/publications/review-of-quality-assurance-of-government-models
[3]https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/206946/review_of_qa_of_govt_analytical_models_final_report_040313.pdf

Next steps and getting in touch

5. We are exploring ways to strengthen our Action Plan further. So we asked the Defence Scientific Advisory Council to review our implementation and give us their recommendations. We are considering their report[4] and will make further improvements based on the findings.

6. For any questions, please contact DefStrat-Econ-Gen-PC-1@mod.uk

List of Business Critical Models in Defence

Number	Name	Type	Description	Organisation
1	Historic Project Performance (HPP)	Forecasting	Generates cost growth and schedule slippage indices from historic data and applies to current EPP cost profiles not covered by CAAS ICEs	DE&S
2	Scout SV Cost Model	Forecasting and Policy simulation (Investment Appraisal)	Cost, schedule and risk model for Scout Specialist Vehicle programme	DE&S
3	Scout UV Cost Model	Forecasting	Cost model for Scout UV	DE&S
4	Warrior Armoured Vehicle Post Main Gate Cost Forecast Model	Forecasting	WCSP cost model for post Main Gate estimating activities. Used for QRPC, each quarter of the ABC cycle	DE&S
5	Multi Role Vehicle - Protected (MRV-P)	Forecasting	Cost model for future MRV-P	DE&S
6	Non-Articulated Vehicle - Protected (NAV-P)	Forecasting	Cost model for future NAV-P	DE&S
7	PHOENIX II	Financial Evaluation	Model has been used to inform the IA and the IGBC to allow the PHOENIX II project to move into the Assessment Phase (AP) of the project	DE&S
8	Challenger 2 Mid Life Extension	Forecasting	Challenger LEP Pre-Initial Gate Cost Model	DE&S
9	Future Logistic Information Services (FLIS)	Forecasting	Cost model	DE&S

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[4] https://www.gov.uk/government/publications/study-into-mods-response-to-the-macpherson-review

10	Queen Elizabeth Class Aircraft Carrier	Financial Evaluation/Forecasting	ACA Joint Cost Model - Cost model informed by COBRA, Risk Models, MoD in-year model, MoD EPP/ESP model, QEC Industry future support cost model	DE&S
11	Queen Elizabeth Class Aircraft Carrier	Forecasting	Carrier in-service support cost model. Currently being built	DE&S
12	T26 Global Combat Ship	Forecasting	Industry Joint Whole Life (EPP/ESP) Cost Model, Risk and opportunities Model, MoD in-year model, MoD EPP/ESP model	DE&S
13	MARS Tanker	Forecasting	Model underpins one of the key Projects monitored at Board level by DE&S	DE&S
14	MSDF (HM Naval Base Portsmouth, Clyde and Devonport) Cos tmode;	Financial Evaluation	Consolidating MSDF ABC (budgetary) costings for OC	DE&S
15	MSDF (HM Naval Base Portsmouth, Clyde and Devonport) ABC Datum model	Financial Evaluation	Simulation based on 3PEs of contract costs plus risks and opportunities	DE&S
16	Ships Support Alliance T23	Financial Evaluation	Defence Marine Services (DMS) PFI Forecasting model	DE&S
17	Ships Acquisition	Forecasting	T45 support. Exisitng contract extended. New model MG 2016	DE&S
18	Maritime Composite Options	Forecasting	Options analysis for the future UK ship building capabilities	DE&S
19	3F20 Model	Financial Evaluation	Cost model to baseline requirements cost	DE&S
20	LCS Transformation	Financial Evaluation/Procurement and commercial	Cost collation models for the purpose of Bidders / VFM team to complete for evaluation and as feeder models to the Investment Appraisal	DE&S
21	Next Generation Food Project (NGFP)	Financial Evaluation/Procurement and commercial	Cost model for Financial Evaluation of the Bidder costs in response to ITSFB	DE&S
22	LTPA Financial Model (Qinetiq owned)	Financial Evaluation/Procurement and commercial	Model for determining LTPA price in accordance with "Yellow Book"	DE&S
23	ASRAAM	Forecasting	Model in-build	DE&S

24	FAST Project Team Typhoon Support PSOp3 Cost Model	Forecasting	Model to estimate forecast costs for the provision of EJ200 at outturn prices up to OSC 2030	DE&S
25	FAST Project Team Typhoon Support PC5 IRS	Forecasting	Model to estimate the Whole Life Cost of the PC5 IRS element of Typhoon Support Repairs and Services	DE&S
26	FAST Project Team Typhoon Support PC5 CbC	Forecasting	Model to estimate the Whole Life Cost of the PC5 CbC element of Typhoon Support Repairs and Services	DE&S
27	FAST Project Team Typhoon Support RDSS	Forecasting	Joint industry/MOD cost model to estimate the Whole Life Cost of the RDSS element of Typhoon Support Repairs and Services.	DE&S
28	FAST Project Team Typhoon Support TAS2	Forecasting	A model to estimate future forecast costs of Typhoon Support contract TAS2 to FY29/30.	DE&S
29	FAST Project Team Typhoon Support C1	Financial Evaluation/Procurement and commercial	Model to estimate the delivery of Typhoon Support Contract 1. Includes 3PE of uncertainty and cost	DE&S
30	Watchkeeper	Forecasting	Risk analysis model providing Monte Carlo cost estimates to support investment decisions, latest Review Note and financial planning.	DE&S
31	MG4 Lightning II	Forecasting	Model used to produce through life costs	DE&S
32	UKMFTS Rotary Wing	Forecasting	Model to estimate whole life costs of UKMFTS package	DE&S
33	Scavenger	Forecasting	Assessment and whole life cost models	DE&S
34	Future Combat Air Support (FCAS)	Financial Evaluation	Cost model to support FCAS Technology Advantage Programme	DE&S
35	Airseeker	Forecasting	Output forecasting tool	DE&S
36	Strategic Transport & Air to Air Refuelling (STAAR) Project Team	Forecasting	PFI Financial model	DE&S
37	Strategic Transport & Air to Air Refuelling (STAAR) Project Team	Financial Evaluation	PFI Evaluation model	DE&S
38	A400M In Service Support	Forecasting	Investment appraisal and cost forecasting	DE&S

39	A400M Development and Production Phase	Forecasting	Financial Planning Model based upon DPP contract	DE&S
40	A400M Training Service Support	Financial Evaluation	Model used for Investment Appraisal to support A400M Training Service MGBC	DE&S
41	Mode 5 IFF	Forecasting	Generates Cost data to inform IG, RN and MG submissions	DE&S
42	MARSHALL	Forecasting	Whole life cost model	DE&S
43	Submarine Operating Centre - In-Service Submarines	Financial Evaluation	Model estimates whole life costs of the proposed options for Submarine Dismantling Project	DE&S
44	Successor Platform Cost Model (includes Next Generation Nuclear Propulsion Plant (NGNPP) costings)	Financial Evaluation	Model estimates whole life costs of the NGNPP programme	DE&S
45	Submarine Production - Astute Forecasting Model & Independent Cost Estimate (ICE)	Financial Evaluation	Model to estimate the Astute programme acquisition cost. Include 3 point estimates of cost uncertainty, cost risk and schedule risk	DE&S
46	Submarine Production - Joint Submarine Forecasting Model	Forecasting	Model produced to forecast for the totality of the Submarine Programme contracted with/planned to be contracted with BAES	DE&S
47	Core Production Capability Whole Life Cost Model	Forecasting	Model scope covers the factory regeneration and subsequent operating costs of the production facility for UK submarine fuel	DE&S
48	Nuclear Propulsion Project Team	Forecasting	Whole Life Cost estimation. Includes a 3 point estimate of uncertainty, cost and schedule risk. Key Outputs include application of:VAT & Inflation	DE&S
49	Vulcan Trials Operation and Maintenance (VTOM)	Policy simulation (Investment Appraisal)	Estimates the Whole Life Cost of the proposed options for the continuation of STF Critical Operations and Vulcan Site maintenance and security	DE&S
50	Vulcan Trials Operation and Maintenance (VDAD)	Policy simulation (Investment Appraisal)	Estimates the Whole Life Cost of the proposed options for defueling and decommissioning the Vulcan Nuclear Reactor Test Establishment	DE&S
51	Strategic Weapon System (SWS) Trident Boost Rocket Motor (BRM)	Cost forecasting	The model will be used to generate 10/50/90% confidence levels to support a business case submission to the IAC	DE&S

52	The Astute Class Training Service (ACTS)	Forecasting	Addition of Boat 5 to extant Astute Training PFI to provision crew training for Astute Class specific requirements	DE&S
53	DDLP Facilities	Forecasting	In-Service Superintendant Upkeep Submarines De-equip Defuel & Layup Preparations Facility	DE&S
54	TEUTATES	Forecasting	The model was used to generate 10/50/90% confidence levels to support a MG Business Case submission to the IAC in January 2014	DE&S
55	Future Deterrent Capability - Infrastructure Programme	Forecasting	Estimates the Whole Life Cost of the proposed options Successor Infrastracture	DE&S
56	DCNS ABC	Financial evaluation and cost forecasting model	Model provides a complete view of the DCNS ABC forecast and is revised inline with the Quarterly reviews.	DE&S
57	DE&S - IUS SDM based Should Cost Model	Forecasting	Cost Forecasting - Reforecast from bottom up for Grapevine 2 Integrated User Services, based on Service Demand Model of volumes and benchmark prices	DE&S
58	DE&S - CT SDM based Should Cost Model	Forecasting	Cost Forecasting - Reforecast from bottom up for Grapevine 2 Connectivity Services, based on Service Demand Model of volumes and benchmark prices	DE&S
59	LE TacCIS MORPHEUS	Forecasting	Cost forecasting model for future LE TacCIS capability	DE&S
60	LE Tac CIS LSU IG Cost Forecasting tool	Forecasting	Model used for IG and populating costed plan. New model is under development to support MG	DE&S
61	LE Tac CIS LSU MG Cost Forecasting tool	Forecasting	Cost forecasting model being developed for MG	DE&S
62	LE Tac CIS LSP Main Gate model	Forecasting	Cost forecasting model for MG	DE&S
63	Chinook Sustain Beyond 2015	Forecasting	Model in-build	DE&S
64	Materiel Strategy: Change Programme	Policy simulation (Investment Appraisal)	Options for support to DE&S change programme	DE&S

65	Capability Systems Model (CSM)	Planning	CSM is a system level model of the entire CBR protection system (including, detection, protection, sense, etc.) and provides understanding of the impact of capabilities within the CBR protective system.	DSTL
66	CDM	Planning	Model provides Front Line Analysts, Targeteers and DSTL Analysts with collateral damage and risk assessments of UK weapons pre-strike.	DSTL
67	Close Action Environment (CAEn)	Financial Evaluation	CAEn is a multi-sided close combat interactive wargame and simulation, representing the all arms close combat battle, at up to company group level.	DSTL
68	CUTLASS	Planning	A DSTL Man-In-The-Loop simulation facility primarily to assess the Operational Effectiveness of the F-35 Joint Strike Fighter, in a variety of Air-to-Air and Air-to-Ground Missions using Military Aircrew.	DSTL
69	Force Structure Cost Model (FSCM)	Forecasting	The model estimates the cost of the Defence Programme out to 30 years. Key outputs include: Cost of Force elements (Equivalent Annual Cost, Whole Life Cost, etc) to inform Balance of investment studies; Manpower; and Equipment.	DSTL
70	Hazard Prediction and Assessment Capability (HPAC)	Science-based	US hazard prediction model used to provide advice on hazard areas in the event of a Chemical or Biological release. Advice is provided to the MOD and civil authorities to support decision making.	DSTL
71	Indoor Operational Toolkit	Science-based	Indoor Chemical and biological dispersion toolkit comprising a range of different models for the prediction of CBR contamination within indoor environments	DSTL
72	Integrated Survivability Toolset (IST)	Financial Evaluation	This toolset is used to calculate the survivability of land platforms (in user defined configurations) within user defined scenarios. The toolset considers the impact of the Vulnerability, Lethality, Mobility and Sensing capabilities of UK and threat systems in order to determine the overall survivability of UK platforms within the threat environment.	DSTL
73	PALETTE	Planning	Weapon lethality model for land based Hard targets.	DSTL
74	SADM	Planning	Model used to support Naval Operational Planning	DSTL

75	SAM, GAPS and DEBRIEF	Planning	A suite of software tools for the replay and analysis of a variety of data types recorded during submarine operations. The results of these analyses are fed directly into the planning and execution of current and future operations.	DSTL
76	Strategic Balance of Investment Toolset (StratBoI)	Financial Evaluation	A balance of investment toolset, investigating the cost effective balance of Force Elements and enablers required to undertake the full range of required military operations, as defined in MoD strategic guidance. (A Force Element is a MoD term to describe an appropriate collection of Trained Equipped Personnel, such as a Battalion, Ship Platform or Air Force Element (Aircraft or Squadron).) Can explore 'what if' scenarios in relation to areas such as cost, policy or capability.	DSTL
77	TARVIEW	Planning	Weapon lethality model for land based mobile and relocatable targets.	DSTL
78	Unified Weapons Modelling - Weapon Target Interaction (UWM-WTI)	Financial Evaluation	This collection of models is used to assess the vulnerability of UK platforms (including personnel) to threat weapons and the lethality of UK weapons on threat targets. Targets modelled include armoured fighting vehicles, protected mobility vehicles, land fires vehicles, engineering vehicles, logistic vehicles and dismounted personnel.	DSTL
79	WISE	Financial Evaluation	WISE is a formation (Div/Bde) or unit (BG) level all-arms combat model, concentrating on land forces but with some ability to represent the impact of Air and Naval forces on the ground battlespace.	DSTL
80	Next Generation Estate Contracts (NGEC) procurement	Procurement and Commercial	Evaluation of bidders submissions in respect of the award of the future generation estate maintenance and project delivery framework contracts to identify successful bidder.	DIO
81	Strategic Business Partner (SBP) procurement	Procurement and Commercial	Evaluation of bidders submissions in respect of the award of a strategic business partnering contract to identify successful bidder.	DIO
82	Manpower Models (Navy/Army/Air/Civilian)	Planning	Modelling use of manning levers to achieve future personnel commitments	Head Office
83	New Employment	Forecasting	Forecasts of MOD military pay bill	Head Office

	Modelling		under New Employment Model	
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