Costing in the Context of assessment an example of Whole Life Cost Calculation in a Partnering Environment

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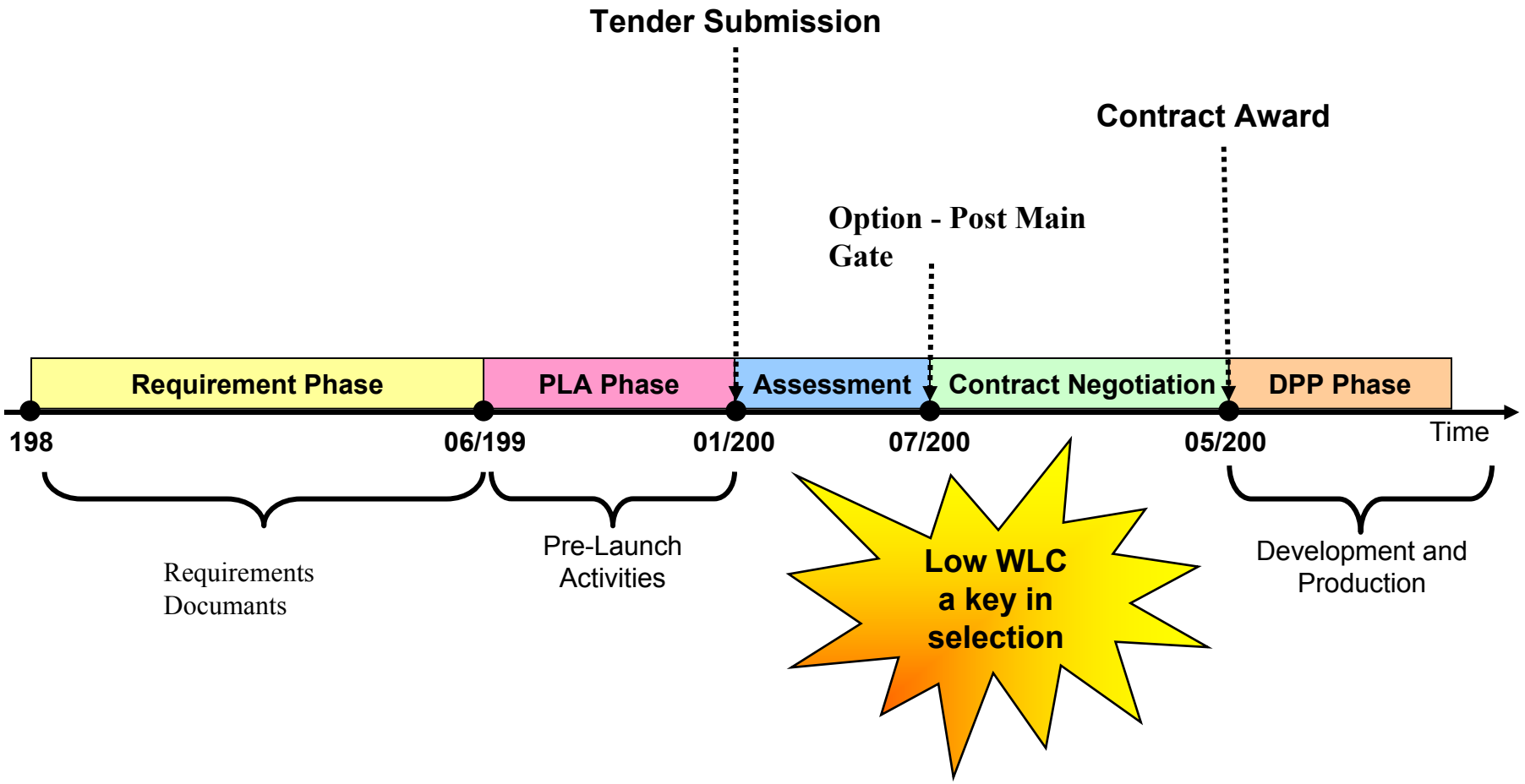
Contents of the Presentation

- Whole Life Cost (WLC) definition
- Requirements for WLC calculation during project development and in the CADMID cycle
  - Using a common tool and common assumptions
  - Collecting MoD data
  - Sharing of industry data
- Independent Verification and Validation (IV&V)
- Functionalities and use of LCC model
- Benefits of partnering for WLC calculation

Example Programme History



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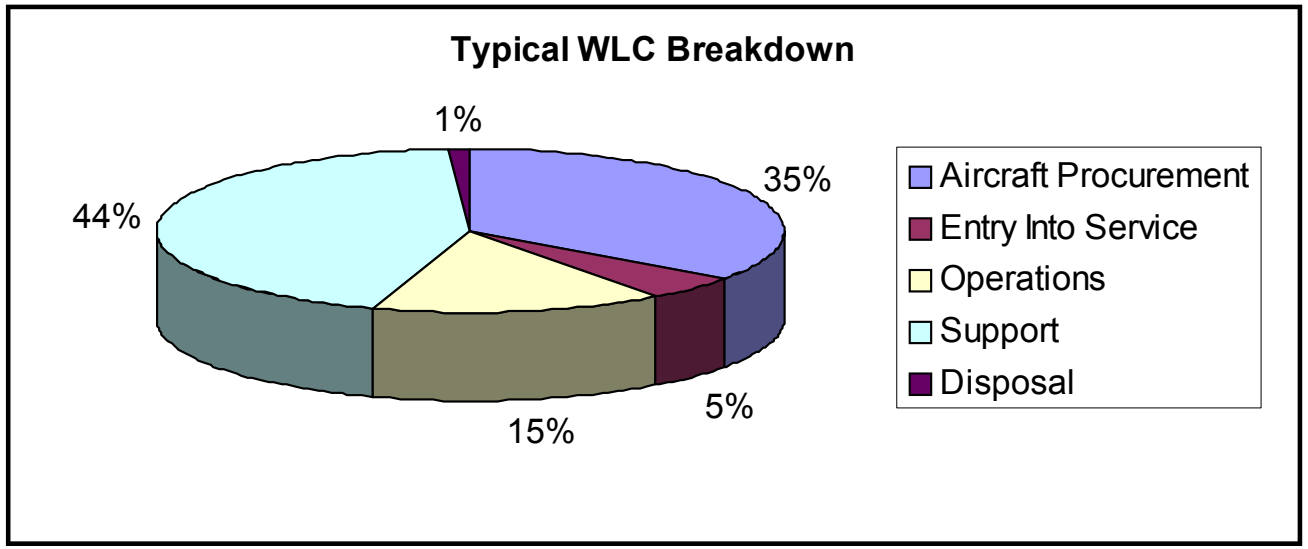
Whole Life Cost (WLC) Definition

- Whole Life Cost (WLC) of an item = total cost of ownership
  - Programmes use Life-Cycle Cost (LCC) as synonym
- Includes all the costs during the whole life of the item !



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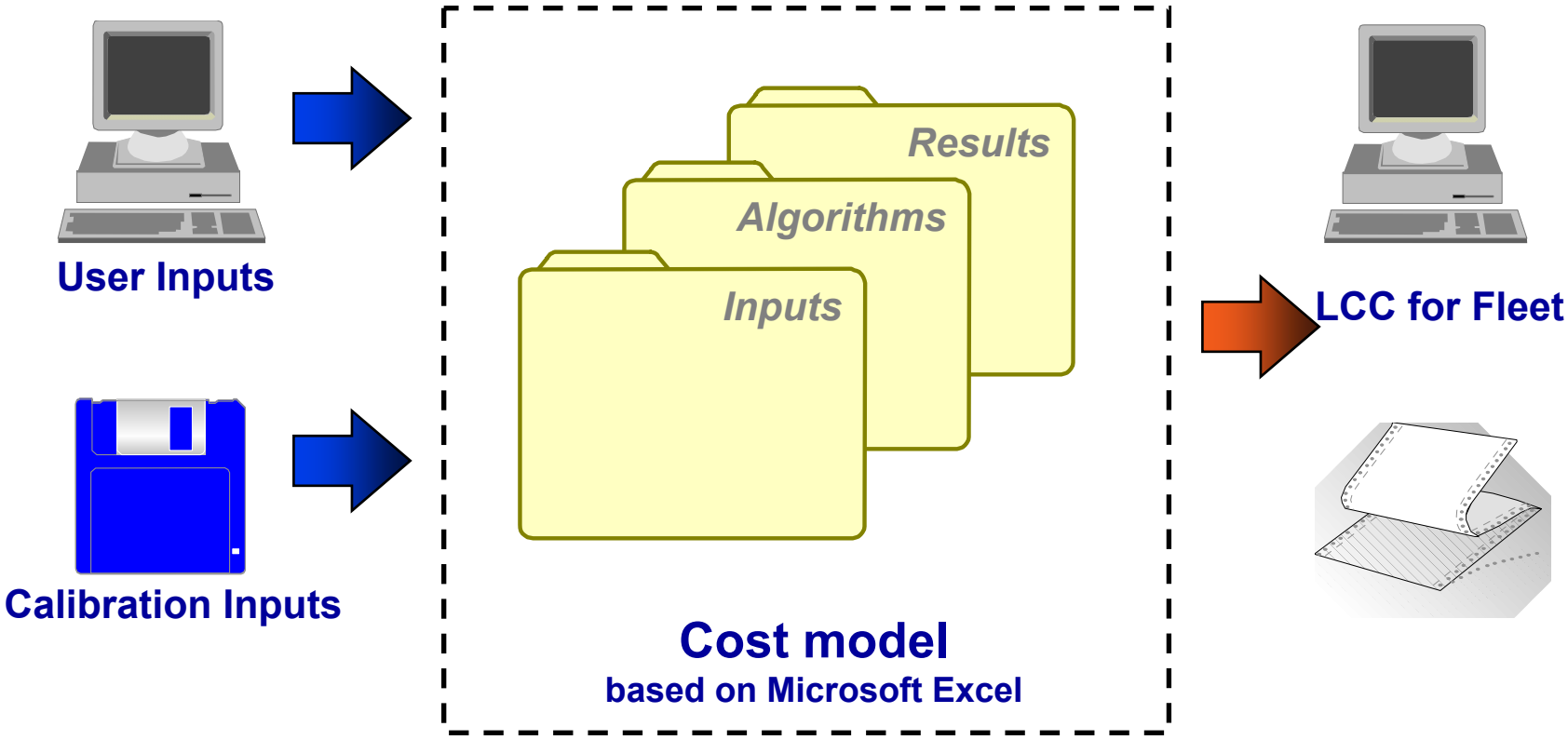
Modelling Concept



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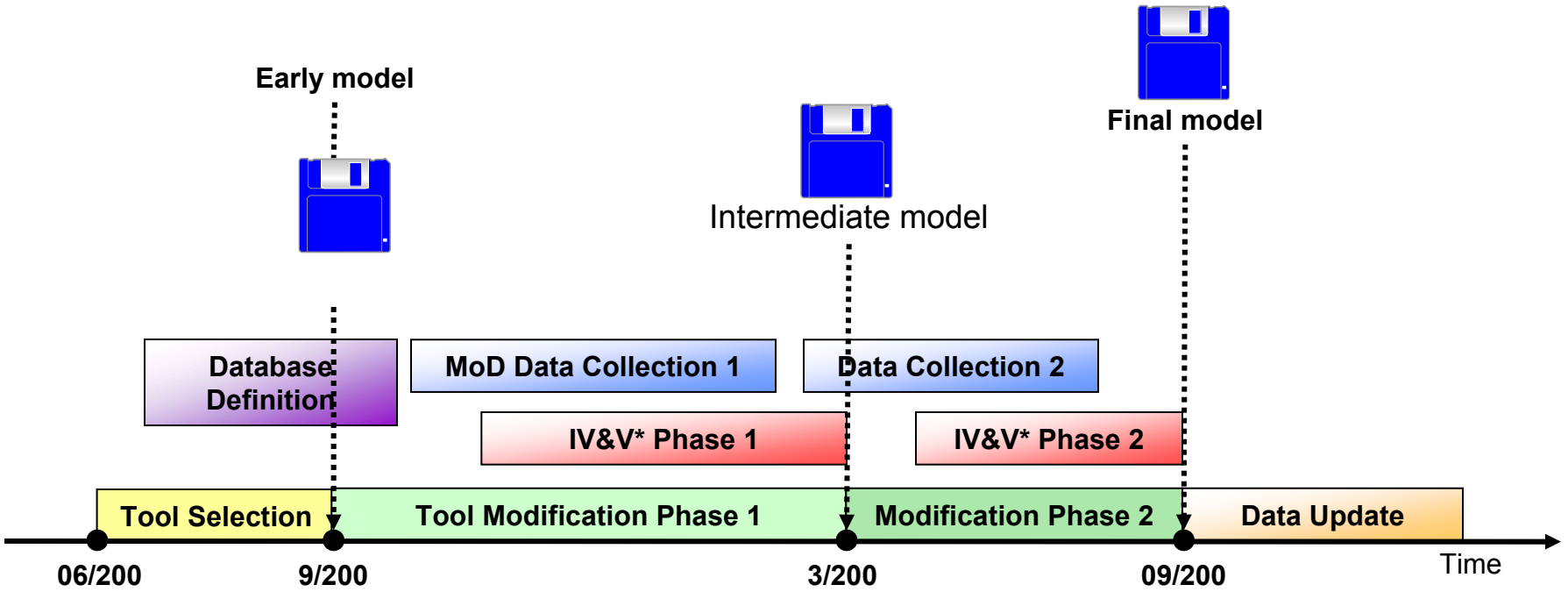
Requirement for DPP Phase

- MoD, Industry each need an LCC Model:
  - Compare Support Concepts (common and non-common)
  - Trade-off for design solutions
  - Budget planning and reporting
  - Exchanging common cost and RM&T information
  - Set and monitor costs objectives

… whilst accounting for the operational & environmental differences between operators

- Must be usable by and take into account requirements of MoD and Industry
- Initial Model did not meet all requirements
- Need define a process to develop a new or modified LCC Model

LCC Model Definition Process



Unbiased evaluation of seven LCC tools performed by PFG CF

New functions included:
Budget planning and reporting
Financial functions (VAT, VOP, NPV)
Actual National data import
Update of Aircraft configuration
LCC objectives calculation

Functions update:
Comparison of support scenario
Update of industry RM&T and cost data

* DCT: Data Collection Tool
* IV&V: Independent Verification and Validation

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Sharing One Common LCC Model

- Advantages
  - Use same calculation methods and assumptions
    - Results can be compared !
    - Budgets estimated on same base
  - No wasted resources
    - Only one modelling
    - Resource pooling for debugging
  - Industry data shared easily
    - Increased R&M data transparency
    - Industry commitment to update data

- Disadvantages
  - Less flexibility in National inputs
    - Resolved by importing National data / override defaults
  - Less flexibility in report formats
    - Tool based on MS Excel: additional reports easy
  - How sure that model is ‘fair’?
    - “Industry model, after all!“
    - Resolved by developing model in partnering
    - IV&V performed by PFG CF

Cost Breakdown Structure (extract)

CBS Number	CBS Identifier
3	OPERATION AND SUPPORT COSTS
3.1	Post-Design Services
3.1.1	Major Upgrades
3.1.1.1	Major Upgrades Study Phase
3.1.1.2	Major Upgrades NRC
3.1.1.3	Major Upgrades RC
3.1.1.4	Major Upgrades Initial ILS Costs
3.1.2	RFC
3.1.2.1	RFC Costs
3.1.2.2	S/B Derived from RFC NRC
3.1.2.3	S/B Derived from RFC RC
3.1.3	Routine Service Bulletins
3.1.3.1	Routine S/B NRC
3.1.3.2	Routine S/B RC
3.1.4	Trials Work
3.1.4.1	Field trials costs
3.2	In-Service Certification Costs
3.2.1	In-Service Certification Costs
3.2.1.1	Industry Certification Costs
3.2.1.2	National Certification Costs
3.3	Obsolescence In-service
3.3.1	Obsolescence In-service
3.3.1.1	In-service Obsolescence Costs

Lots of Line Items And Cost Elements

Having created the CBS, now collect data to feed each of the cost elements !"

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nqa. ISO 9001 Registered

Data Collection

- Cost Breakdown Structure (CBS) needs data input
- MoD data (capitation rates, internal costs, assumptions, etc.)
  - Default values agreed in common in model
  - Can be overridden in two ways
    - By manual input
    - By importing data stored in Access data base
  - Collection of that data is responsibility of MoD
- Industry data (prices, RM&T data, DMC data, etc.)
  - Hardwired in model from Price proposal
  - Benchmarked during IV&V and by RM&T experts
  - Collection of that data is responsibility of Industry
- General data (common for all: GDP data, etc.)
  - Hardwired in model, can be overwritten

MoD Data (Access Database)

- Master Data and Assumptions List (MDAL) defines general assumptions
  - Stake holder agreed !
- MS Access database
  - Can store many scenarios
  - Data exported for Cost model input

Industry Data (RM&T Projections)

From Design Data

Efficient way to monitor Aircraft Design

– Design for Availability, Reliability & Maintainability

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Industry Data (DMC Projections)

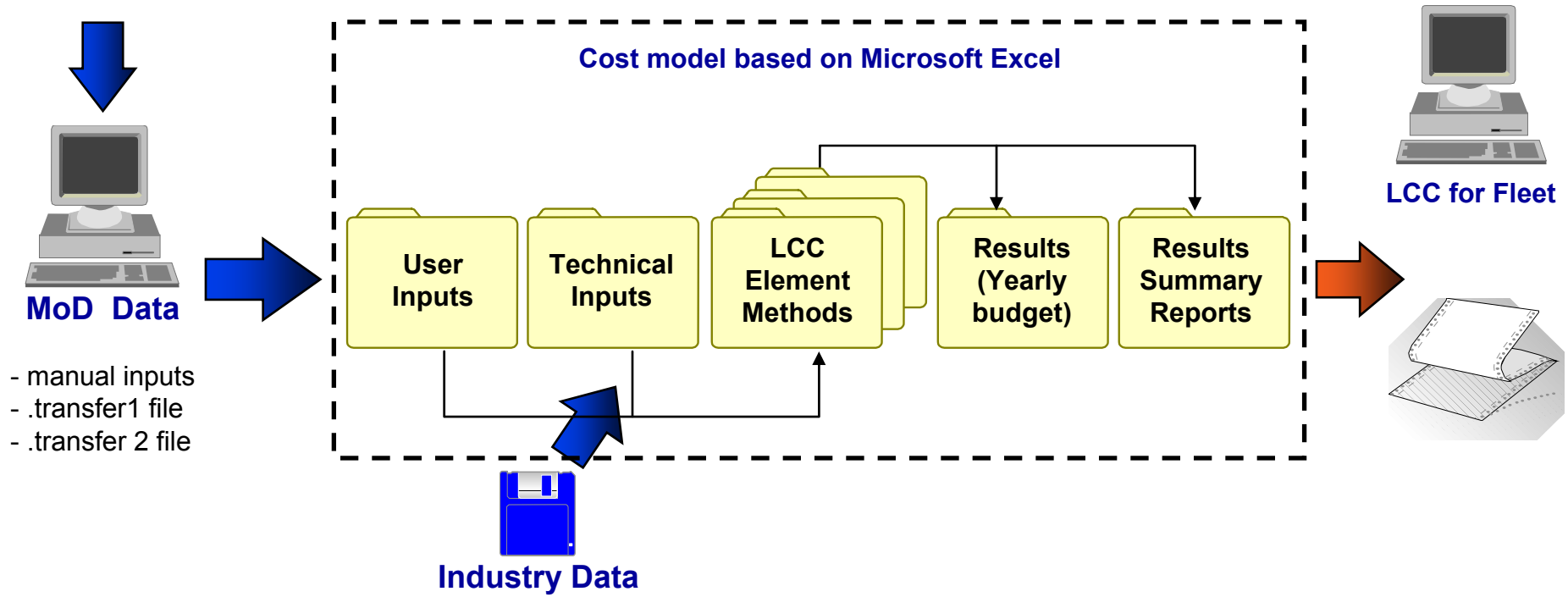
Efficient way to evaluate cost drivers

Industry Data (Aircraft Components)

Efficient way to monitor equipment selection and Spares costs

LCC Model Structure

based on Microsoft Access



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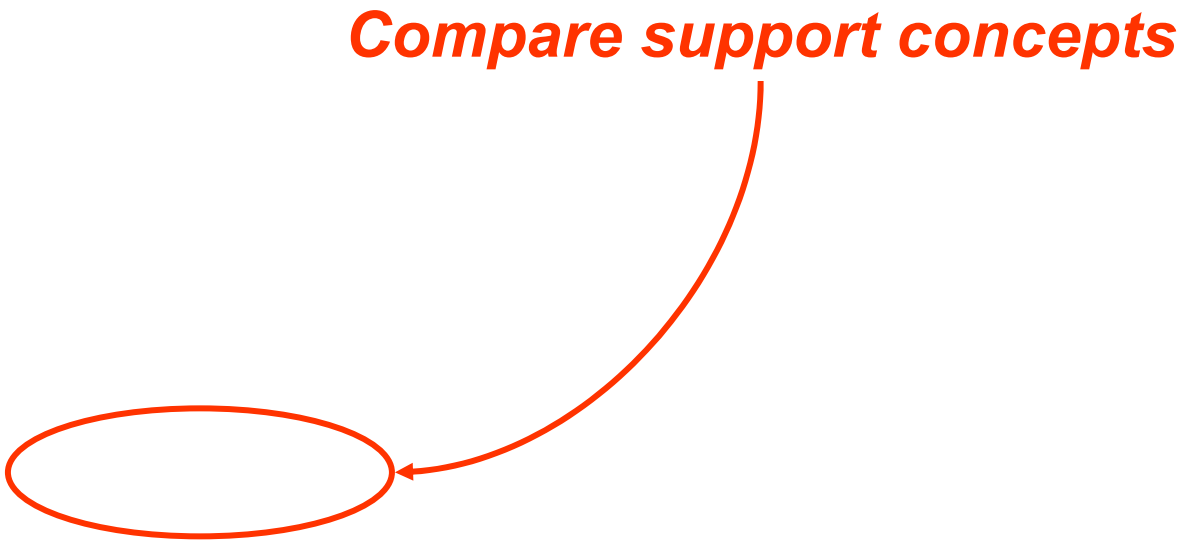
Independent Verification and Validation

- Some understandably suspicious of using partnered Model with Industry
- Implemented solutions:
  - Model made in cooperation MoD – PFG: full visibility and of VfM & Risk
  - User may override most default values
  - Comparisons with results of other models (e.g. OPUS-10)
  - Independent Verification and Validation (IV&V)
- IV&V conducted under the leadership of PFG CF
  - Independent testing of internal logic of the tool
  - Integrity testing of all functions
  - Benchmarking of results against commercial data by PFG
  - IV&V Report and certificate for each Toolsheet issue

Functionalities and Uses (1)



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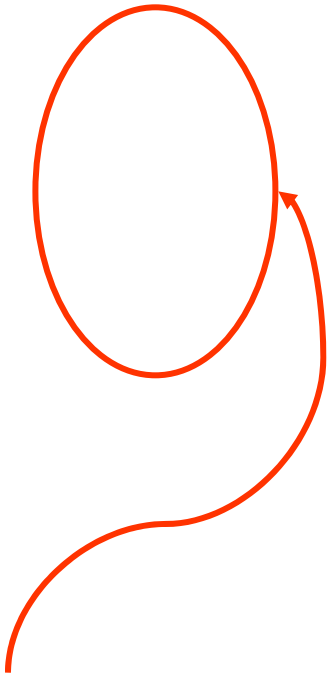
Functionalities and Uses (2)



Analyse benefits of common support across customer base

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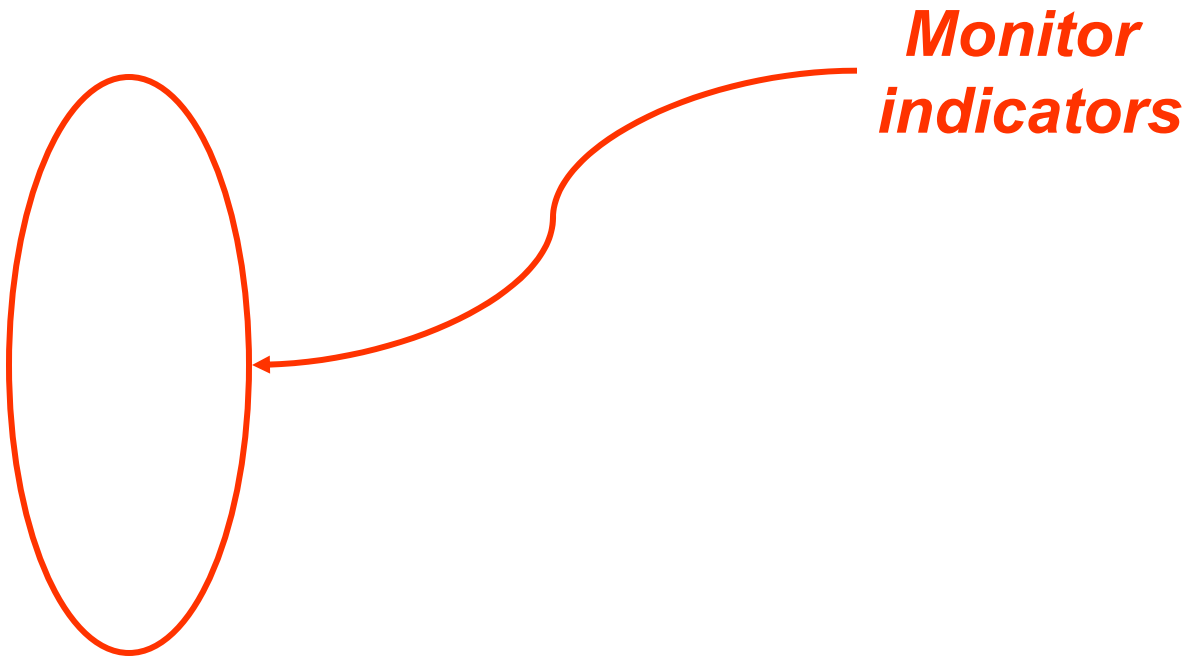
Functionalities and Uses (3)



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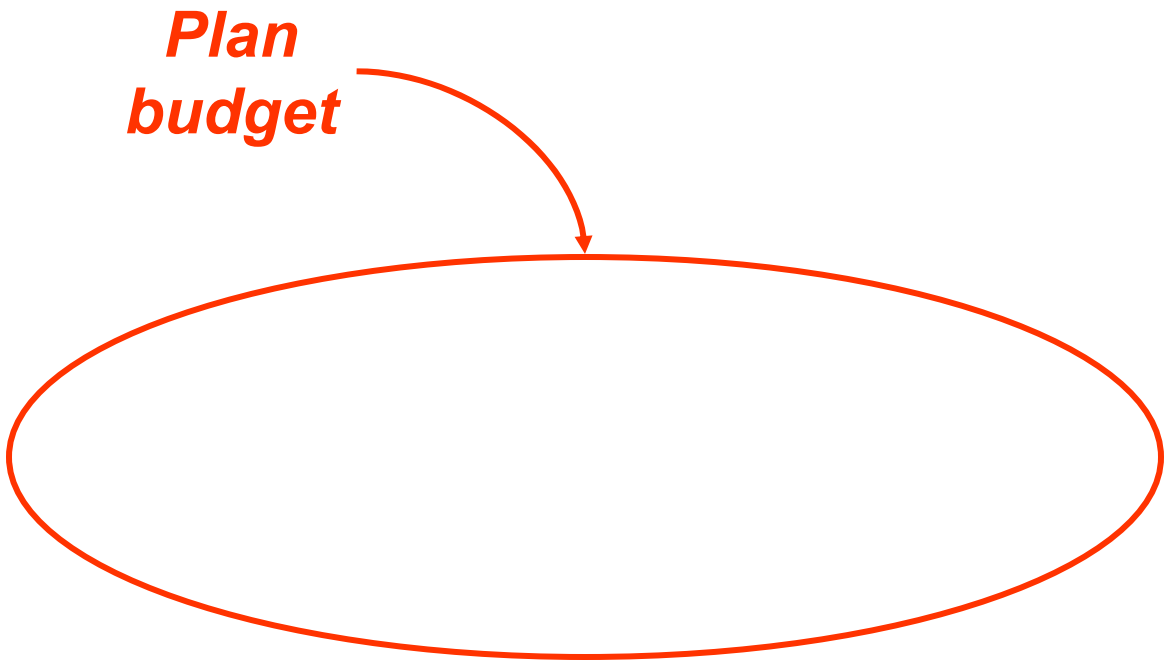
Functionalities and Uses (4)



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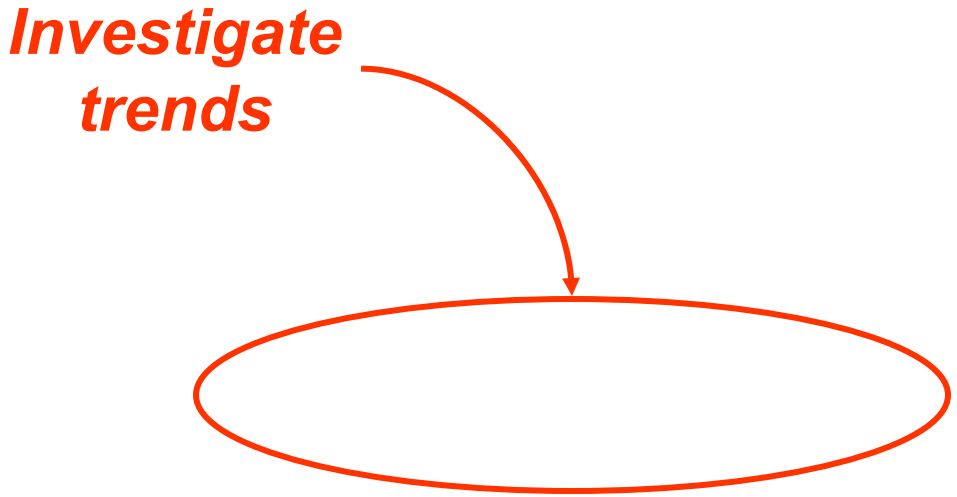
Functionalities and Uses (5)



Benefits of Partnering for WLC Calculation

- Partnering for WLC calculation (MOD-Industry)
  - Makes costs comparisons more efficient
    - Talk about results, not methods and formulas (agreed once and for all)
    - Reduces confrontational discussions
  - Renders WLC impact of industry offers more transparent
  - Efficient burden-sharing and better troubleshooting
  - The most appropriate source of data provides it
- Worked for example, but requires dedication, care and cooperation
- Analysis now shows important potential gains
  - Optimisation of support concepts and common support can lead to more than N**%** reduction in WLC
- A through-life vision is essential for programme decisions

Questions

- Sharing information:

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