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ITAPA Planning Session: Technical Focus

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Overview

- Technical description of AERIUS
- Discussion
  - Integrated tool
  - Dispersion model
  - Quality assurance
  - Plans to be aware of
  - Project participation
- Next Steps

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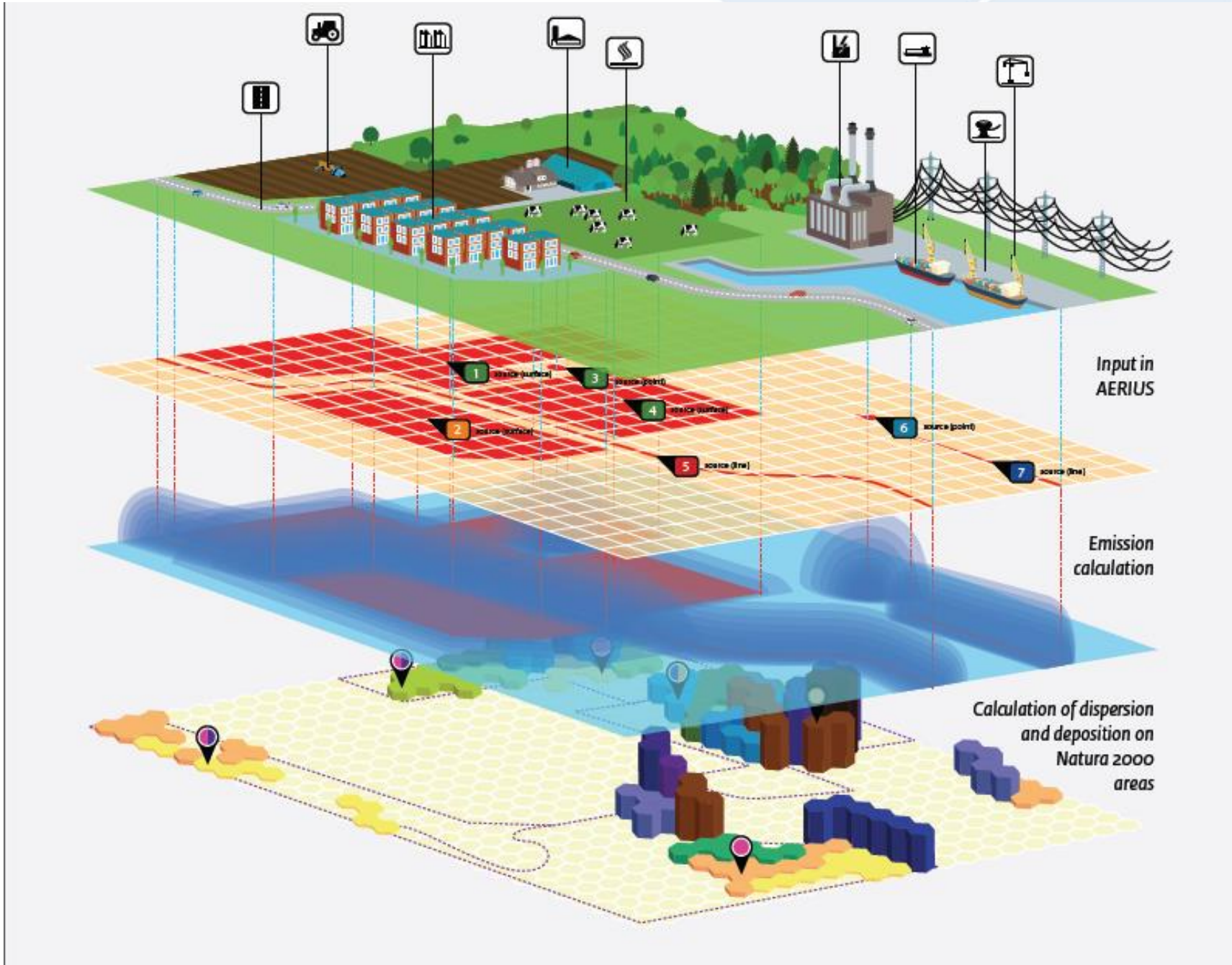
AERIUS Overview

- Open source, free and online
- Multiple pollutants
- Mapping interface
- Tests emission reduction options
- Dispersion model
- Protected site/habitat data
- Provides data for permit issue



Scope of AERIUS

AERIUS SCENARIO

Issuing permits
managing available
development room

Analysis of actual deposition
and trends. Asses amount
of development room

AERIUS MONITOR

Reduction of
Nitrogen deposition

AERIUS REGISTER

AERIUS CALCULATOR

Permit Reques: Calculation

Connnect via webservice
or provide manual input

AERIUS CONNECT

AERIUS Modules

- **Calculator** – Dutch detailed modelling tool (eg advanced SCAIL/AST)
- **Register** - system to submit applications, issue and record permits
- **Monitor** - manages deposition/ reports trends, permit accounting and Dutch room for development
- **Scenario** - provides overview of deposition under different scenarios
- **Connect** – Chargeable service; network of people from government and industry
- **AERIUS Extra** - data management tool for large projects/business

Calculator demonstration video

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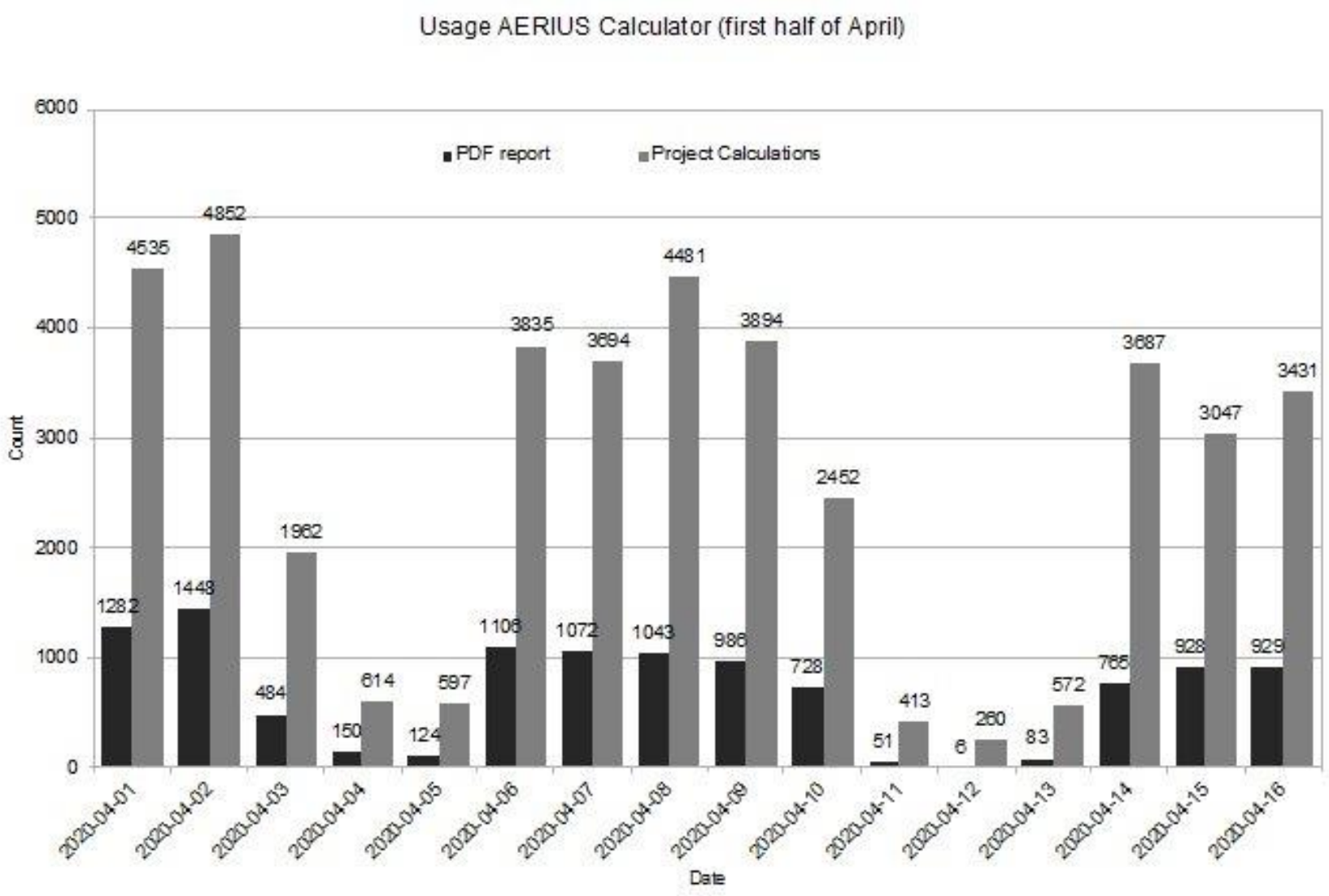
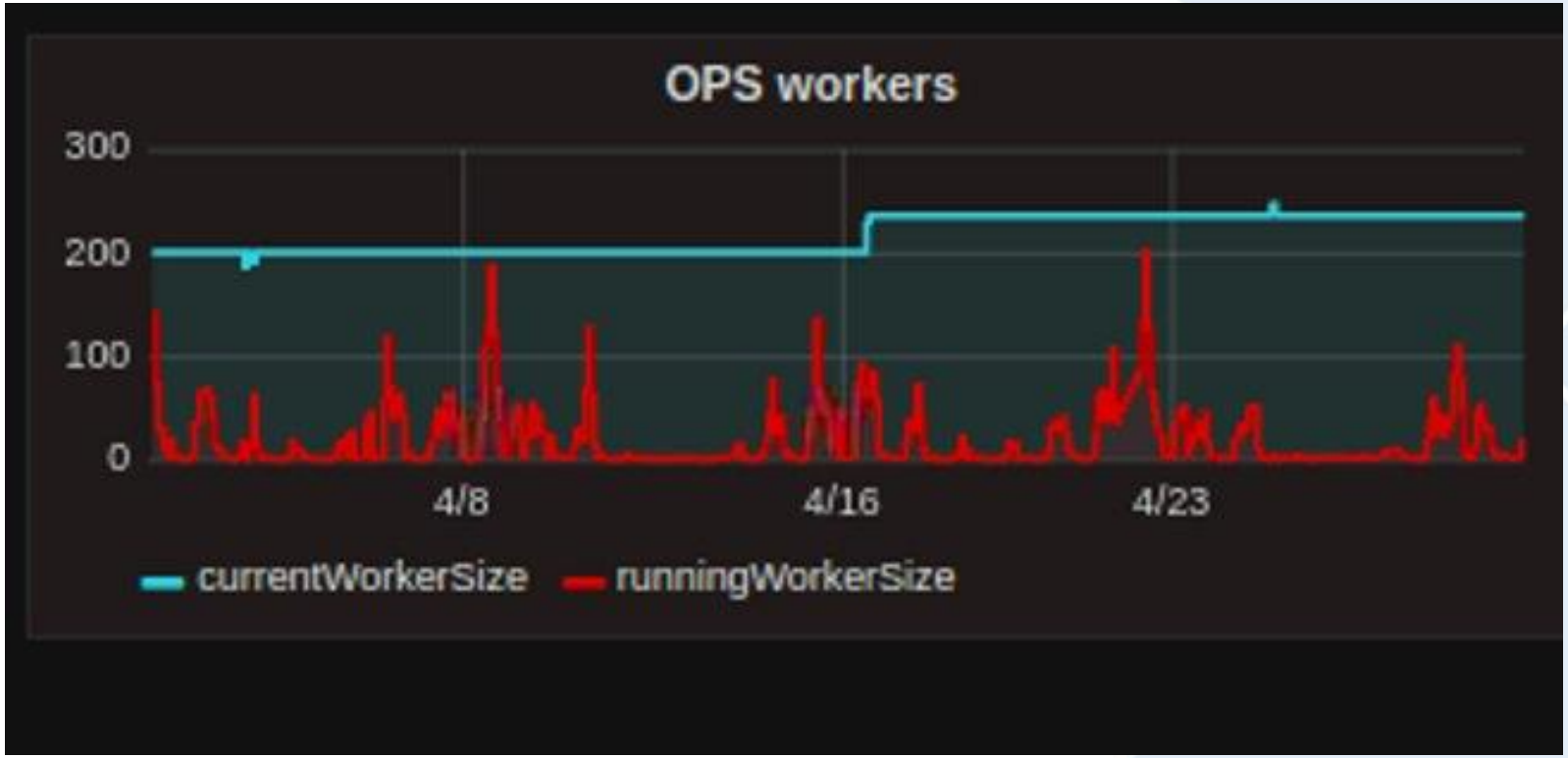
AERIUS Calculator - Users



- Weekday usage
- 2.4 to 4.8k daily users
- 30% of Calculations extracted as PDF reports

Modelling and core usage

- Physical servers
- 200 - 250 core capacity maintained
- Usage between 50 and 90% weekdays
- More scalable options



Interesting aspects: AERIUS

- Open source software
- Mapping capability at 250m resolution
- Calculation of
  - process contribution for new activities
  - In-combination effect
  - “room for development” (Dutch decision policy)
- Calculation to registering of new emissions
  - no permit (standard rules)
  - Permitted activity
- Dynamic inclusion of new permits in “room for development” calculations

Natural England Flickr: Jenny Wheeldon 2016

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Differences from UK

- Higher background concentration/deposition
- Integrated Approach to Nitrogen in law
- Extensive ammonia monitoring network
- High resolution deposition data
- More activities require a “permit”
- Detailed mapping of Annex I habitats

Image: Air quality monitor; Netherlands; Susan Zappala 2015

Similarities to UK

- Need for Habitats Directive compliance
- Many sites are exceeding critical loads/levels
- Air quality regulation needs to be balanced against growth ambitions
- Agriculture important to economy
- Need to consider a variety of emission sources
- Thresholds approach challenged

ITAPA so far

Pre-Discovery Project

- Immediate government consultation restriction due to data license
- Feasibility assessment with readily available UK Data
- Options appraisal with ballpark costings
- **Decision:** Whether to pursue full Business Case

Business Case

- Seek views more widely
- Full business case and detailed costings developed
- Define linkages with other initiatives and multiple uses for data
- **Decision:** whether to implement AERIUS-UK and how

AERIUS UK

- AERIUS developed with available UK data, preferred model, etc.
- Guidance/Training Launch
- Plan for data improvement and use to improve mapping/ modelling
- Trial period then require maintenance

Subject to funding

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Technical Evaluation of AERIUS

Objectives

- Test data and technical requirements of AERIUS ✓
- Test effectiveness with more limited UK data (cf Netherlands) ✓
- Compare to existing tools and define benefits ✓
- Test potential for application in the UK ✓

and therefore…included as option to address user needs for air pollution assessment tools ✓

Stakeholder feedback (gov only)

- Positive reception ☺
- additional applications (eg National Inventory) ☺
- potential for integrating ☺

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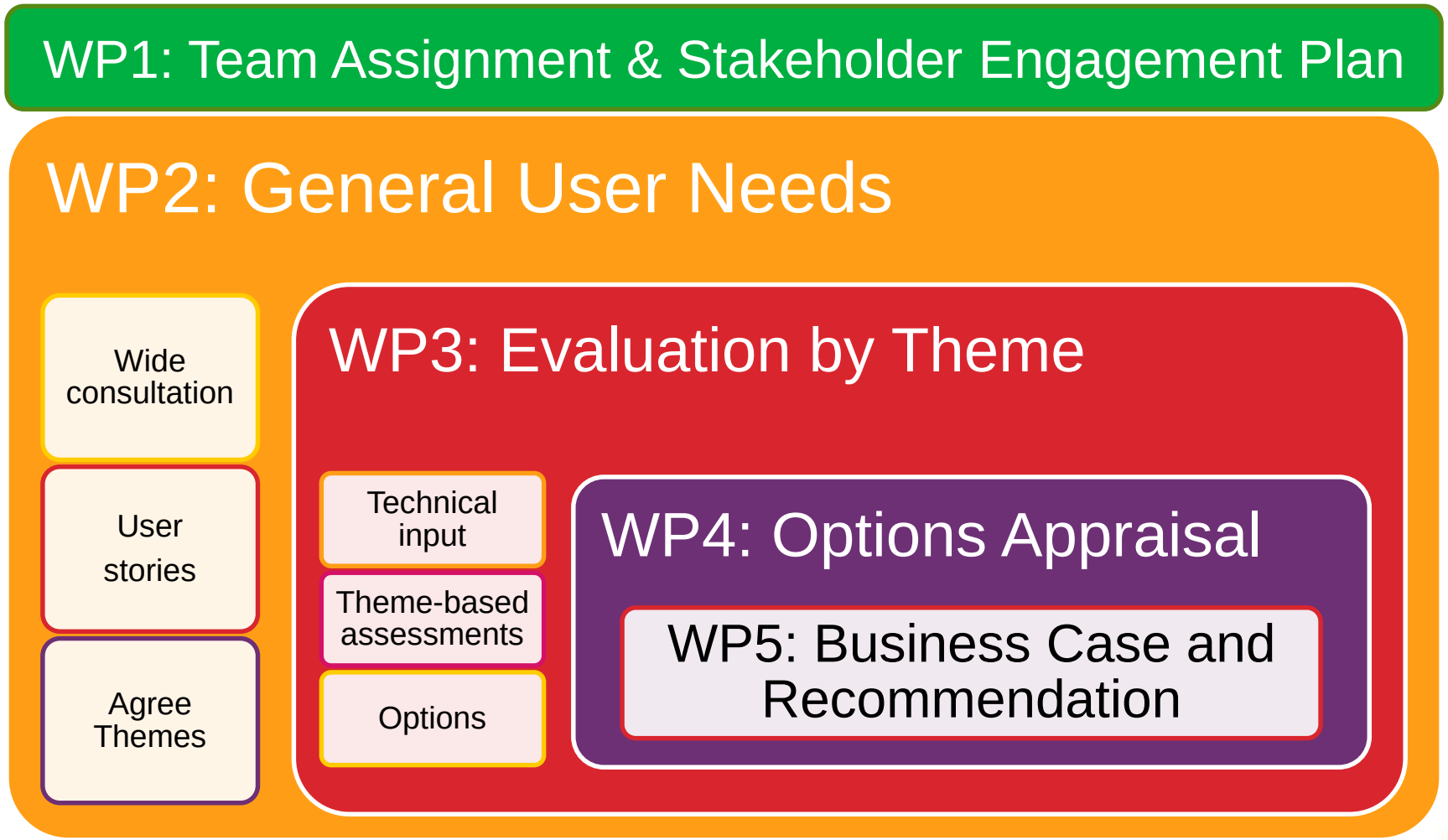
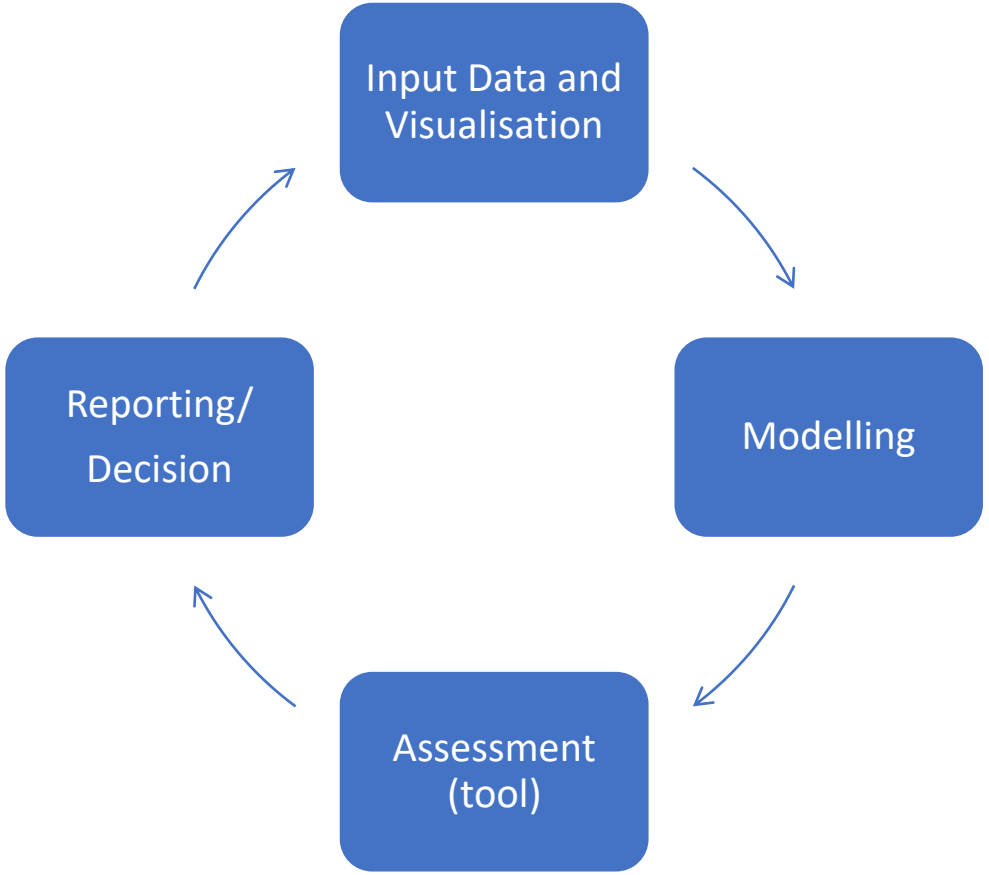
ITAPA Phase 1: Options evaluation



Integrated tool



- Data is held in one place and accessible
- Easy to visualise
- Easy to test mitigation alternatives
- Aligned use of evidence
- Clear for applicants, advisers , regulators and local authorities

Driver for data improvement and open data used to improve national reporting and targeting

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Stakeholder feedback (so far)

- Supportive but would need to plan resource to input to tool development
- Clear benefit of UK working and alignment where possible
- Needs rigorous testing against current detailed modelling
- Concern about having to choose one model
- Concern about having one mechanism to make a decision
- Clear streamlining for in-combination assessment
- Clear benefit for open data, data access and harmonising data

CONCLUSION:

Challenging to implement and will take a lot of discussion but worth the effort

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Discussion
ITAPA Planning
Technical Focus

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Dispersion model

What are your thoughts on selection of a single dispersion model?

Principles for selection

- Free/ licensing/ cost
- Ease of use with readily available data
- Functionality
- Wide applicability to a range of emission sources
- Comparability with current model results
- Others?

Quality assurance

AERIUS Technical and User evaluations

- PBLQ, project management and work process evalaution
- TNO, expedience of AERIUS (scientifically and usability)
- SIG, software improvement group, quality of the source code
- PENtest, security evaluation, ethical hacking penetration test

Gateways Reviews

What tests would you expect to see in quality assurance of the tool, model outputs and usability?

Quality assurance

Gateway Reviews

- Voluntary
- Results typically closed
- Summary can be provided to public with key recommendations
- Typically implemented at transition phases in software development
- 2 Gateway Reviews requested for AERIUS in Netherlands

What tests would you expect to see in quality assurance of the tool, model outputs and usability?

ITAPA Phase 2 Timing

Timing from start	Start	3 months	6 - 9 months	1 year	15 - 18 months
Increment	0	1	2-3	4	5-6
Milestones	Governance Structure Setup user groups Final detailed workplan	Stakeholder groups established Dataset collation Agree technical choices	Technical demonstration Guidance and training development	Quality assurance - Technical - User acceptance Development of final version for release	Prioritise future developments System maintenance Review and evaluation

- Increments of approximately 3 months
- Iterative and step-wise process
- Technical and policy workstreams

ITAPA and current projects

- Open Data and digitisation of permitting/ decision making
- Data improvements - habitat mapping, satellite data/monitoring, data integration
- Integrated working
  - Farm activity data (national atmospheric emissions inventory)
  - Habitat condition data held in one place
  - NECD reporting and monitoring repository
  - MET Office Integrated Modelling Project

What are you aware of that the ITAPA Project Plan should account for?

How can I get involved?

- Contributions
  - Quality assurance
  - User evaluation
  - Validation
  - Oversight
  - Advice
- Stakeholder engagement
- Stay informed
- Spread the word

Your thoughts….

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