Setting up a „model operations“ group

Tasks, Structure, Problems, Realization

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„Model Operations“? What for?

Models = common good of a working group
Model maintenance and technical coordination is needed
Its importance increases with increasing model size
Conflict of interest between work on scientific issues and model maintenance

→ Model Operations group
Planning: Tasks / Goals

Increase efficiency **in model development**

Organizing

- **Set up** commonly used platforms (e.g. Redmine)
- **Introduce** guidelines and standards for code development and documentation

Consulting

- **Assist model developers in** technical questions („help desk“)
- **Giving advice in** numerical optimization issues
- **Having an overview about the full spectrum of** code development in RD3

Programming

- **Developing own** tools as requested by the working groups
- **Implement ideas of** code optimization/run time reduction
Planning: Potential pitfalls

Group members are consumed by day-to-day business leaving no space for efficiency increases

Missing connectivity between model operations and other working groups

Solutions:
Each MO group member is associated to another working group and is spending most of the time in this group

MO group internally balances day-to-day business and mid- to long-term projects
Model Operations – Status quo

Group Agenda / Research Focus:
Increase Efficiency

Range of coverage
- Model Operations
- ESM & Macro & Landuse
- RD3
- PIK
- Extern

Model efficiency tools
- code optimization
- modularization

Work efficiency tools
- standardization
- technical consulting
- management tools
Achievement: Modularization

MAgPIE

- main.gms
  - [113] sets.gms
  - [114] include.gms sets
  - [117] declarations.gms
  + [118] include.gms declarations
  + [121] input.gms
  - [122] include.gms input
    + [5] 10_fbask.gms
    + [6] 11_scenarios.gms
    + [7] 12_coupling.gms
    + [8] 13_tc.gms
      + [3] endo.gms
      + [4] exo.gms
        + [3] declarations.gms
        + [4] input.gms
          + [5] presolve.gms
        + [5] ts_corrected.gms
      + [9] 14_emissions.gms
      + [10] 15_nr_impact.gms
      + [12] 18_residues.gms

REMIND

- main.gms
  - [4] IDIR "scenario/in"
  - [26] config.gms
  - [31] sets.gms
  + [32] include.gms sets
  - [33] sets_calculations.gms
  - [38] declarations.gms
  + [39] include.gms declarations
    + [5] 10_climate.gms
    + [6] 20_taxes.gms
    - [7] 30_biomass.gms
      + [3] exogenous.gms
      + [4] hoogwijk.gms
        + [5] magpie.gms
          - [3] sets.gms
          - [4] declarations.gms
          + [5] datainput.gms
            - [6] equations.gms
            - [7] presolve.gms
            - [8] bounds.gms
            - [9] presolve.gms
            + [10] postsolve.gms
        + [8] 31_fossil.gms
        + [9] 35_transport.gms
        + [10] 80_optimization.gms

Range of coverage:
- REMIND
- MAgPIE

- common concept
- common tools
- coding etiquette
Achievement: R libraries

- gdx read/write
- output PDFs
- Plotting tools
- aggregation tools
- Model data analysis

Range of coverage: MAgPIE
REMIND
Cooperation: Steven Dirkse (GAMS)
Achievement: Redmine – Project Management Service

- Cooperations: Ciaron Linstead (IT)
- Range of coverage: PIK, external institutions
- stats: 140 registered users, 20 projects
Achievement: Model Operations Wiki

- Tutorials
- Standards
- Meeting Reports
- Support Forum

Range of coverage:
- RD3
Achievement: Linking PIK metadatabase – TSM archive

- Cooperations: Achim Glauer (IT)
- Range of coverage: PIK
- added connection to TSM archive
Model Operations – Further Achievements

• starting MAgPIE runs in parallel
• flexible time steps in REMIND
• several bugfixes in REMIND & MAgPIE
• variable-renaming script for gdx files
• improved UNIX environment usage
• mdb-to-csv export tool
• coding etiquette enforced
• inter-scenario-consistency in REMIND
• code cleaning
• …
Model Operations – What comes next?

• Further model improvements
• Ongoing model harmonization
• User support

• David Klein will join MO in November
  • Financing 50% RD3 50%RD2