Basic Modeling and Data Services

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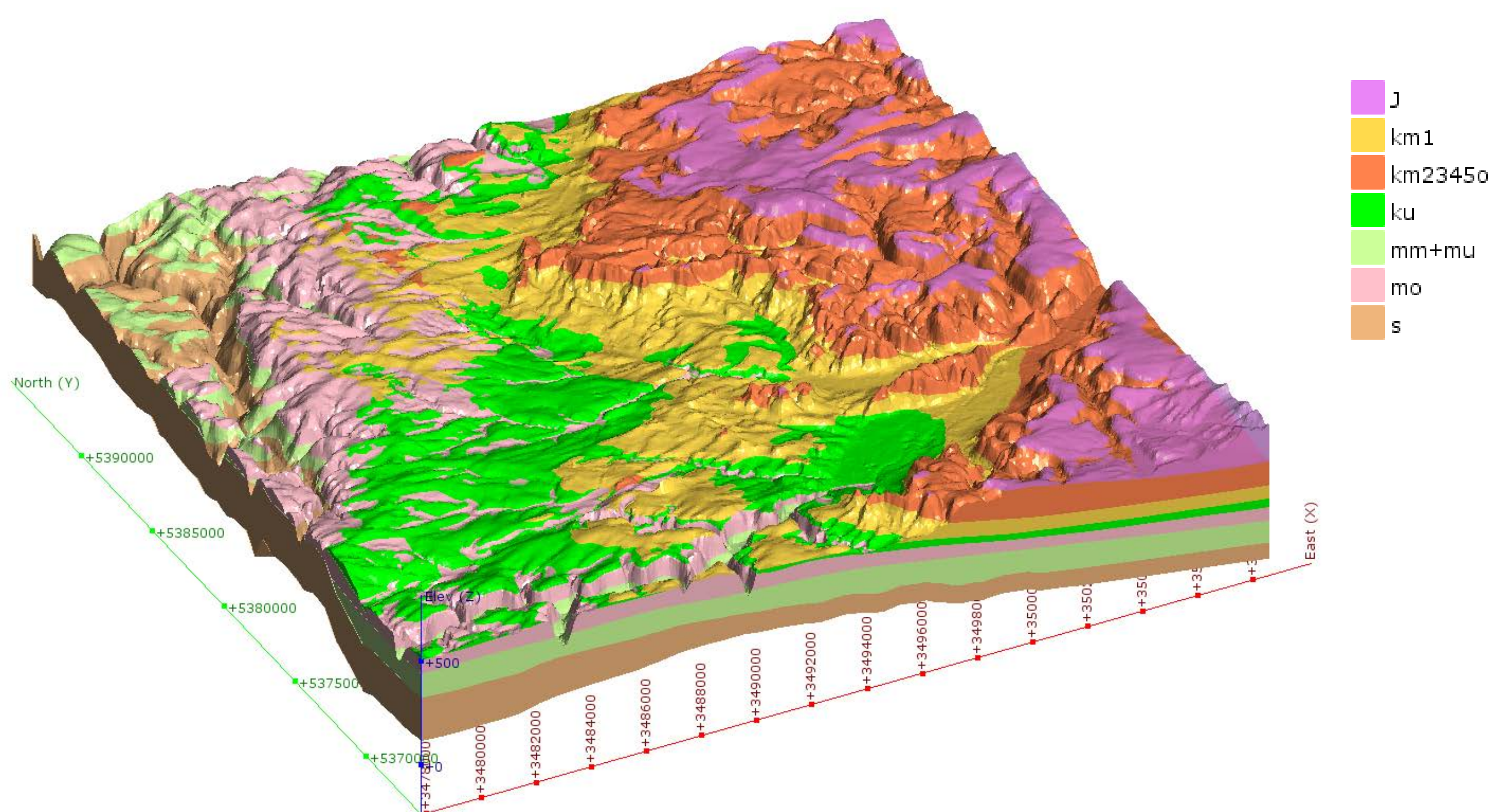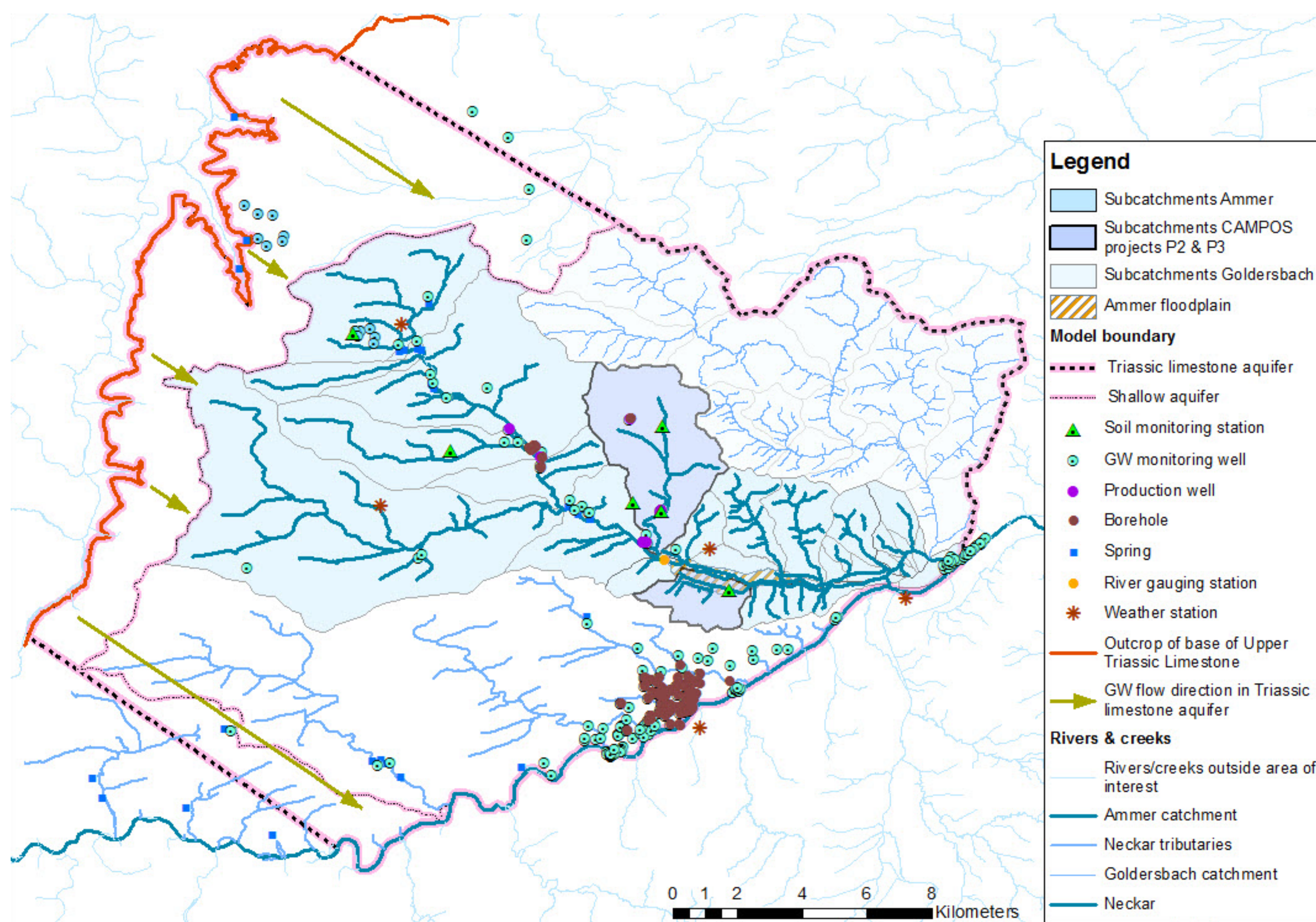[1]University of Tübingen, [2]University of Hohenheim

Role within the CRC

MODELING: Facilitating research in individual projects through
(i) provision of a 3-D model for surface and groundwater,
(ii) specific support/advice to (post-)doctoral researchers in individual projects (e.g., setup of local models), and
(iii) continuous technical assistance in all issues concerning modeling to CAMPOS researchers on demand.
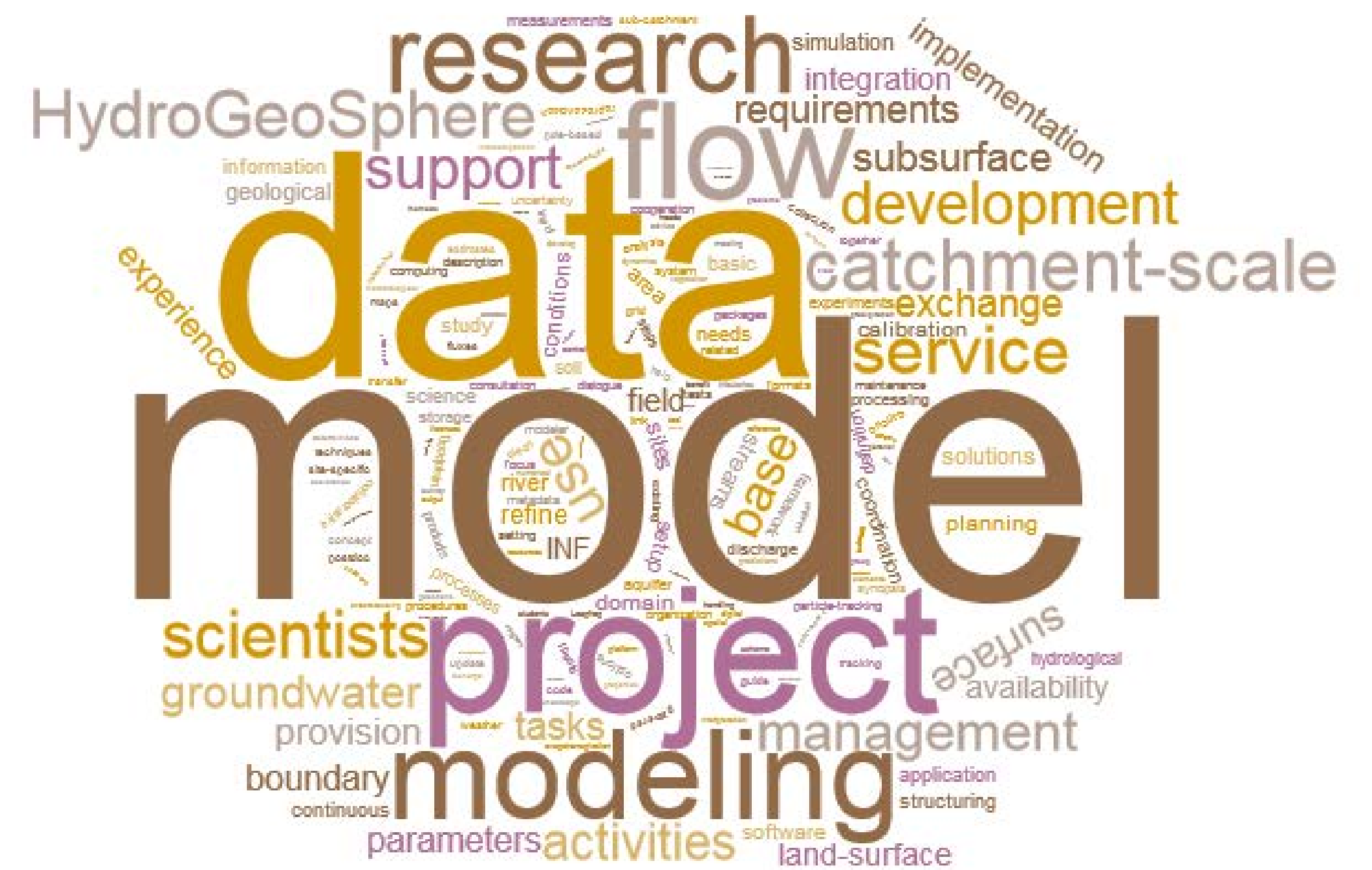
DATA: Supporting and promoting integrated research through
(i) continuous dialogue and guidance of the collaborative effort required to develop, establish, and profitably use the data management, and
(ii) consultancy in all issues concerning data for researchers in individual projects P1 to P8 and Z1.

The Model Domain is Larger than the Ammer Catchment

Modeling Services

Specific Tasks: Interlinkages With Research Projects

Research in P1, P2, and P3/4 will comprise sub-domain models. Z2 will support the activities and make sure that smaller-scale local or sub-domain models will be consistently linked to the basic 3-D flow model. Data will be exchanged with P5 and P6. Z2 will provide base model to P7 and P8.

General Model Support

- Coordination of CAMPOS modeling activities to ensure information exchange and consistency in modeling work.
- Continuous and seamless transfer of knowledge within CAMPOS and beyond (RTG "Integrated Hydrosystem Modeling")

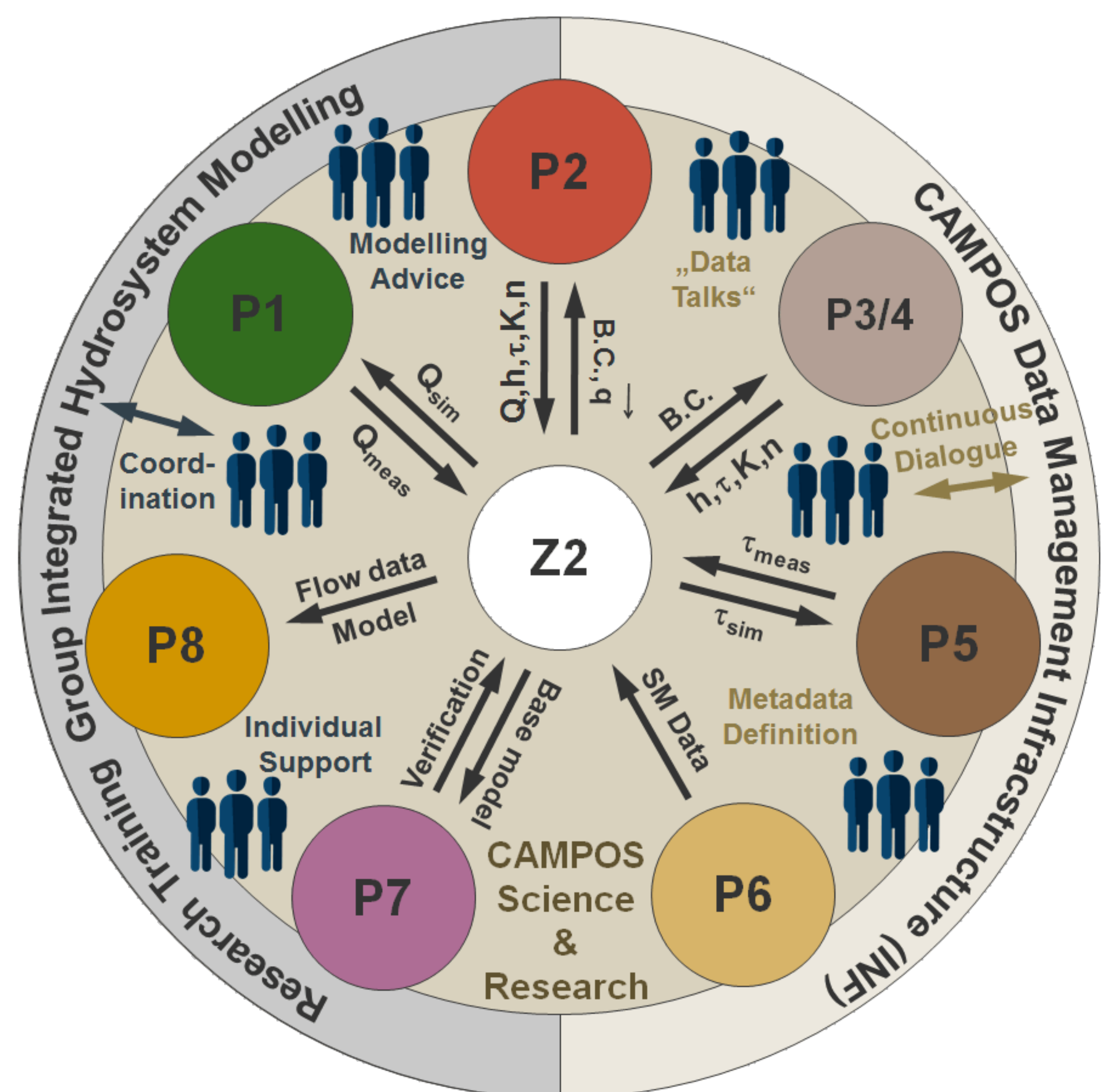## Reasons to use HydroGeoSphere as Simulation Platform

- Unstructured grids → complicated geometries and grid refinement
- 1-D, 2-D, 3-D elements for stream-flow, surface run-off, and groundwater
- Richards equation and diffusive-wave approximation of shallow-water eqns. → good physical representation of non-linear flow processes
- Vertex-centered Finite Volume method is locally mass conservative
- Parallel computing capabilities
- User-friendly tools for model set-up and in- and output handling
- Many applications to solve real-world problems on the catchment scale
- Cooperation with and support by HGS developers

Data Services: Scientific Support and Coordinative Actions

- Dialogue on projects' data demands, data production and storage, data exchange options and researchers' individual requirements
  → Basis for definition of metadata formats and CAMPOS data management concept
- Spatial modeling data base: set-up and maintenance of a data base including all data directly relevant to modeling
- Advice and training for (post-)doctoral researchers in internal data organization, data handling, data processing and data storage
- Continuous scientific support on all data management issues
- Close collaboration with INF project