**MMP:**
Multiscale Modelling Platform: Smart design of nano-enabled products in green technologies
Why MMP?

Trend: Increase of functionality + quality of products through applying nano-enabled materials and devices.

Accomplishment: understanding multi-scale phenomena + adequate numerical tools which guide the nano-enabled design
Main objective

Development of an integrating modelling platform especially equipped to target multi-scale and multi-physics engineering problems

MMP-platform
- executes simulation scenario
- integrates geographical distributed computational modelling facilities
- assembles data repositories
- allows for user interaction (GUI)
- embedded algorithms for scale coupling and multiphysics
- standardized interfacing
- modular, sustainable, safe
- freeware: GNU-LGPL

User interface
- upload simulation scenario’s
- monitor and control process
- view results

Cyber-infrastructure
Applications

- **LED** – improvement of performance of phosphor light conversion in LEDs

- **CIGS** – increase of efficiency of CIGS thin film processing for photovoltaic devices
**Project plan: WP flow diagram**

**WP1. Multiscale modelling platform development (CTU, TU/e, Access)**
- software architecture and implementation
- develop scale transition modules
- establish data standard and define communication protocols
- build web-based platform operations
- develop graphical user interface
- support development of application interfaces
- version control and modularity

**WP2. Case study: phosphor converted lighting systems (VTT, Philips, TNO)**
- development simulation chain
- set-up the various sub-models involved
- develop required application interfaces
- MMP-based opto-thermal multi-scale simulation
- validation with data from industrial end-user

**WP3. Case study: CIGS process optimization (Access, ..., CelSian, TNO)**
- define the integral simulation work-flow
- define application specific interfaces
- multi-scale modelling of gas flow and temperature, diffusion, crystal nucleation & growth, PV-properties.
- validation of integrated model with data end-user

**WP4. Dissemination and Exploitation (Philips and all other project partners)**
- set-up and maintain project webpage
- develop exploitation plan and educational strategy
- user support, forums, discussion on platform
- report on interface definitions & standards
- publications

**WP5. Administrative and Financial Management (TNO)**
- administrative and financial aspects
- Communication between project partners and EC

**WP6. Scientific coordination (TNO)**
- coordinate the overall project and the consortium
- internal communication, project meetings
- monitor and manage results
- deliverables
Committed partners for successful research

Project meeting in Prague at CTU on 19-9-2014