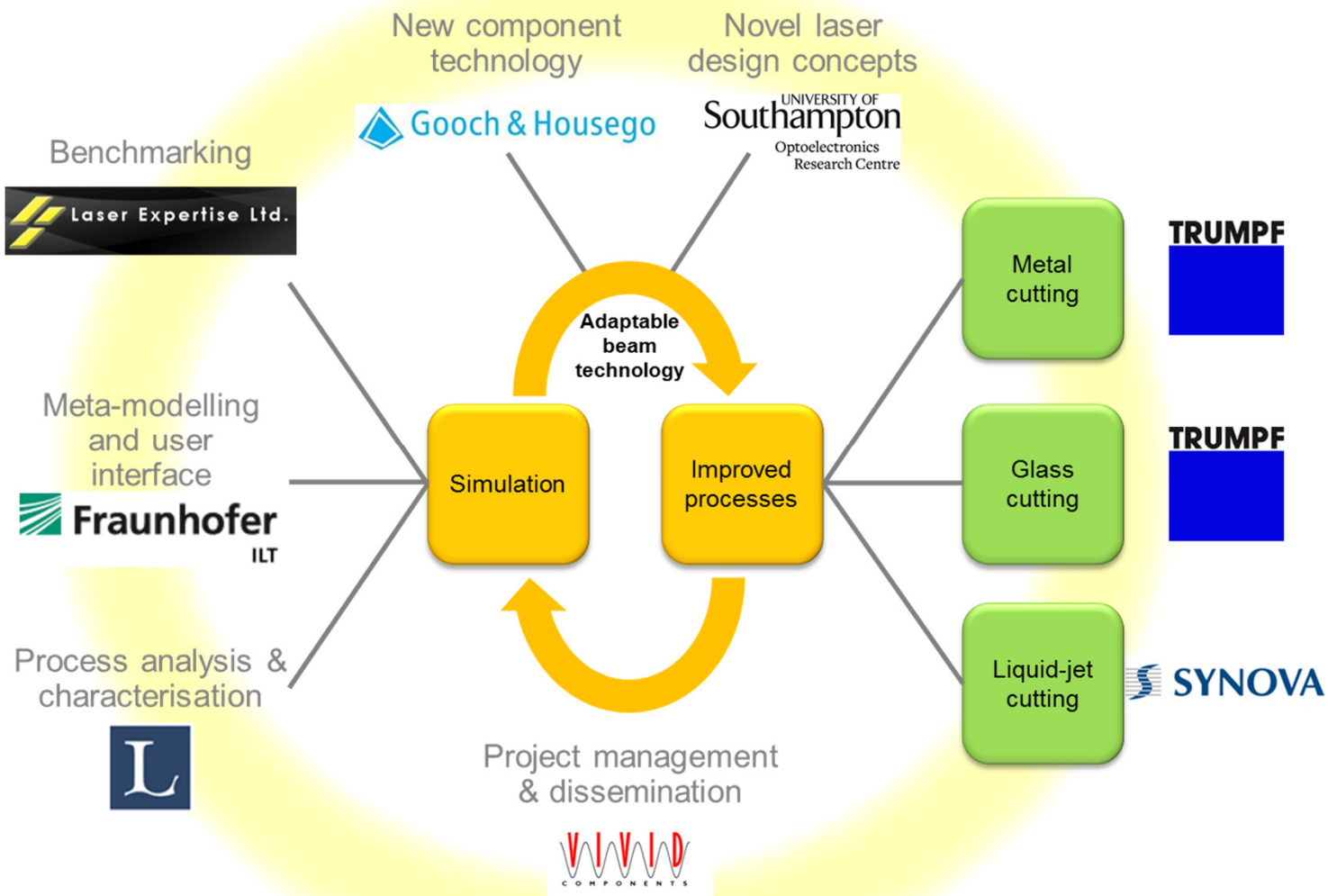
# High power Adaptable Laser beams for materials prOcessing




*Please get in touch with any questions or comments: contact info below!*

The HALO project is now complete. It has made a profound impact on the technology of laser cutting, establishing the new state-of-the art in the fields of thick stainless steel, glass and liquid jet sapphire cutting.

The *modus operandum* is shown in the diagram: simulation fed by real data defined new components and better processes which in turn were used to drive further simulations and identify yet more improvements.

HALO is supported by the European Commission's Seventh Framework Programme

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# High power Adaptable Laser beams for materials prOcessing

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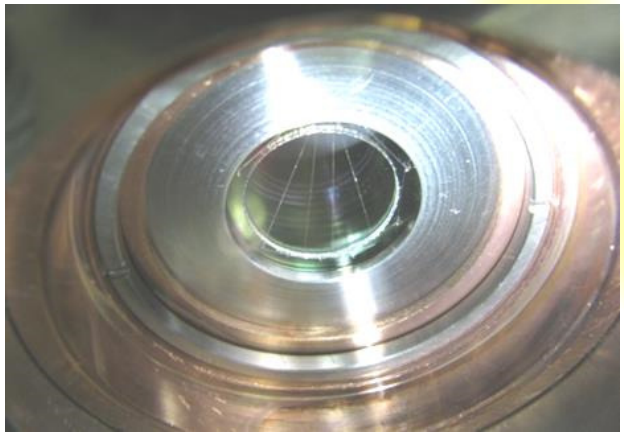
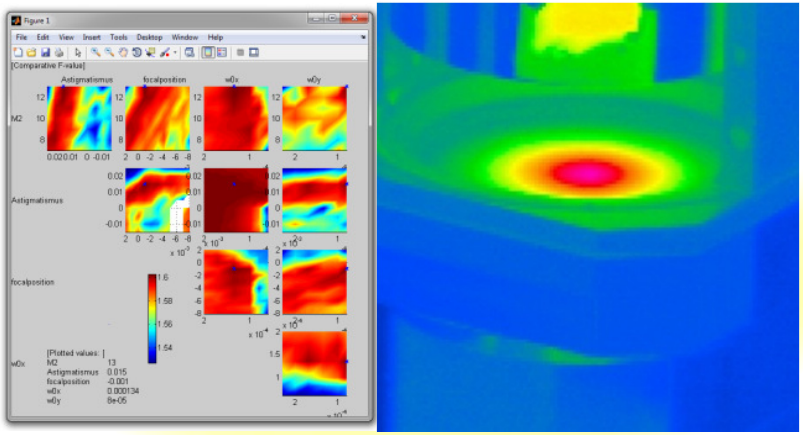
SEVENTH FRAMEWORK PROGRAMME

- New components and novel adaptable lasers
  - First reported isolator to maintain LG modes
  - AO modulators for real-time laser mode selection
  - Adaptable lasers offering optimised beam profiles
  - Segmented waveplates for tailored polarisation.
- Meta-modelling of complex laser-material interactions
  - HALO IT-tool with user-friendly GUI available
  - Reduced dross and roughness using standard optics for improved stainless steel cutting
  - Reduction in micro-cracking in glass cutting
  - Optimised liquid jet nozzle design.
- Sheet metal cutting
  - Edge quality improved
  - Production feed rate doubled
- Glass cutting with ps-lasers
  - Reduced rear-side damage
  - Increased cutting speeds
  - Multi-beam patterns optimised
- Liquid jet cutting
  - Unsurpassed edge quality
  - Patent applied for progressive cutting strategy.



*5-segment waveplate made at Gooch & Housego (UK)*



*Images courtesy of Fraunhofer ILT*

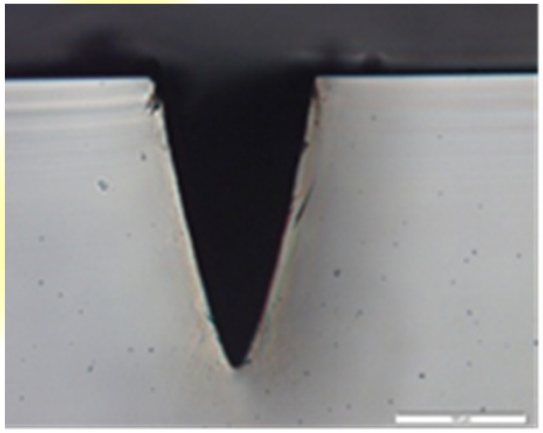


*Image courtesy of TRUMPF Laser*

SYNOVA

VIVID COMPONENTS

Fraunhofer ILT

UNIVERSITY OF Southampton Optoelectronics Research Centre

TRUMPF

Gooch & Housego

Laser Expertise Ltd.

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