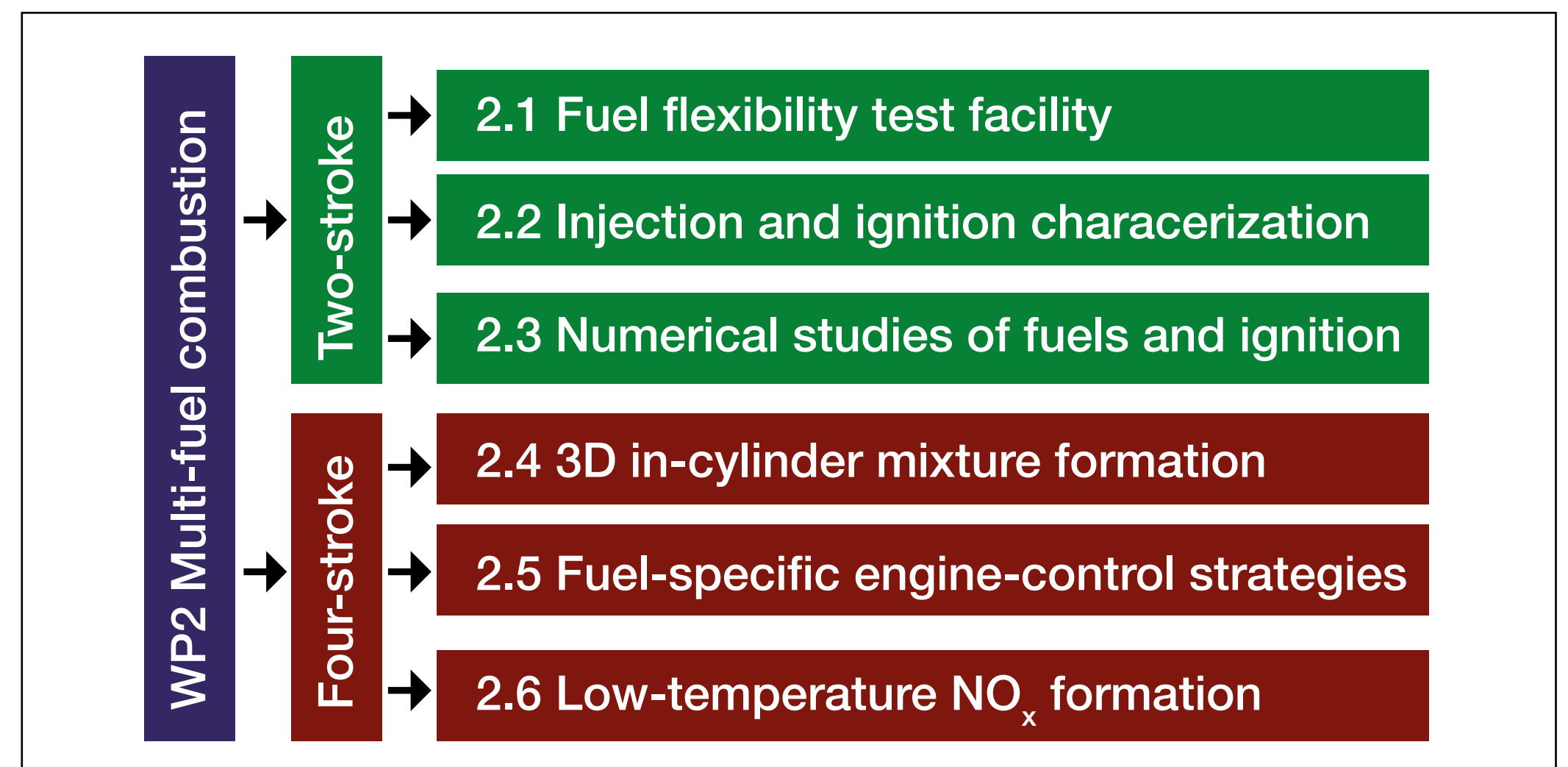


# WP2 Multi-fuel Combustion



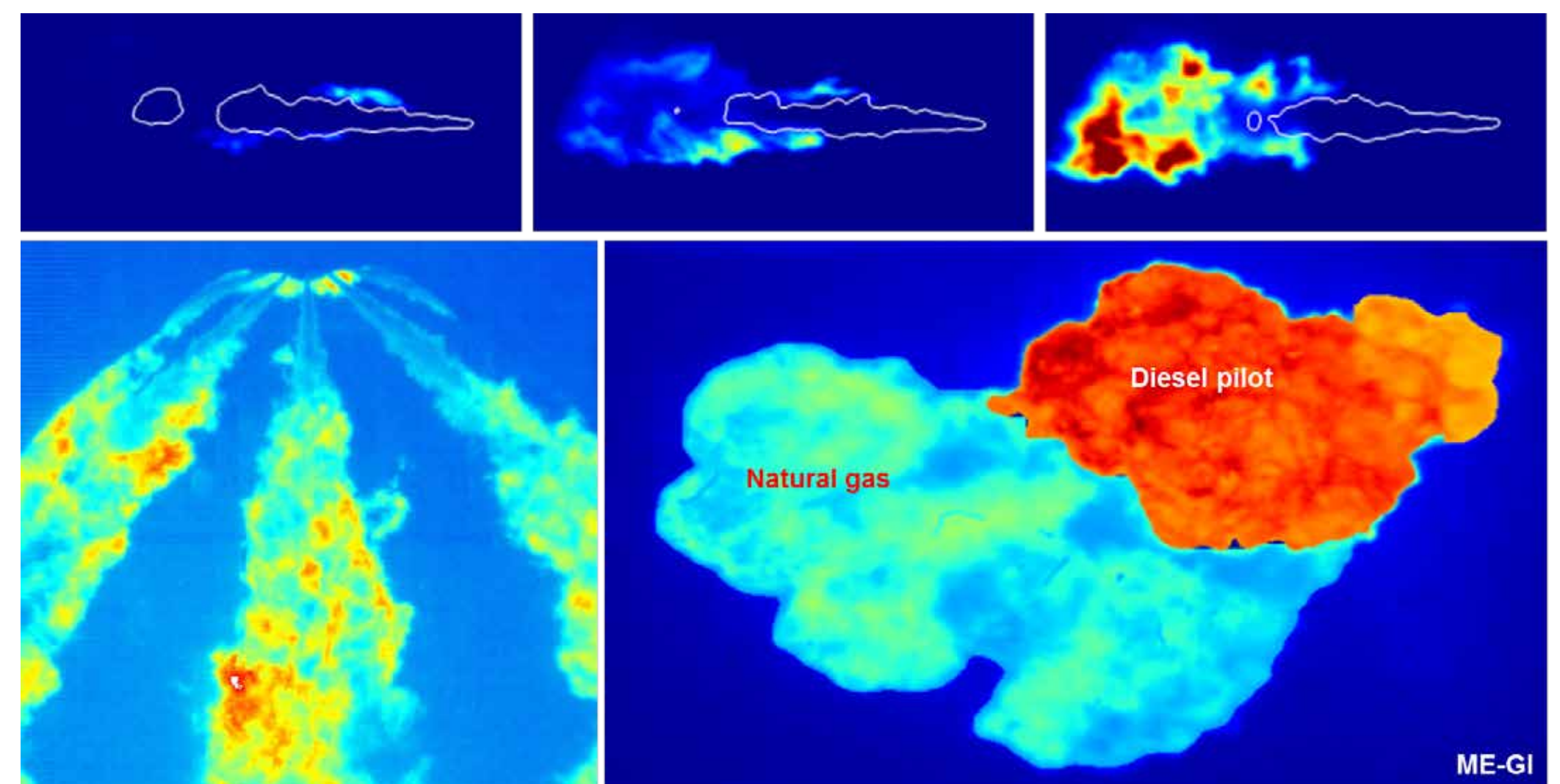
## WP OBJECTIVES

The overall objective is to improve fuel flexibility of marine engines. In order to efficiently exploit a larger variety of fuels, an increased understanding of injection, combustion and emissions formation is required. For this purpose we propose to develop experimental facilities with optical access for tests under conditions relevant for marine engines. For furthering understanding of ignition and emission formation numerical tools will also be developed and applied. Finally, novel engine control strategies will be developed to fully exploit potential benefits of such fuels.



## EXPECTED OUTCOME

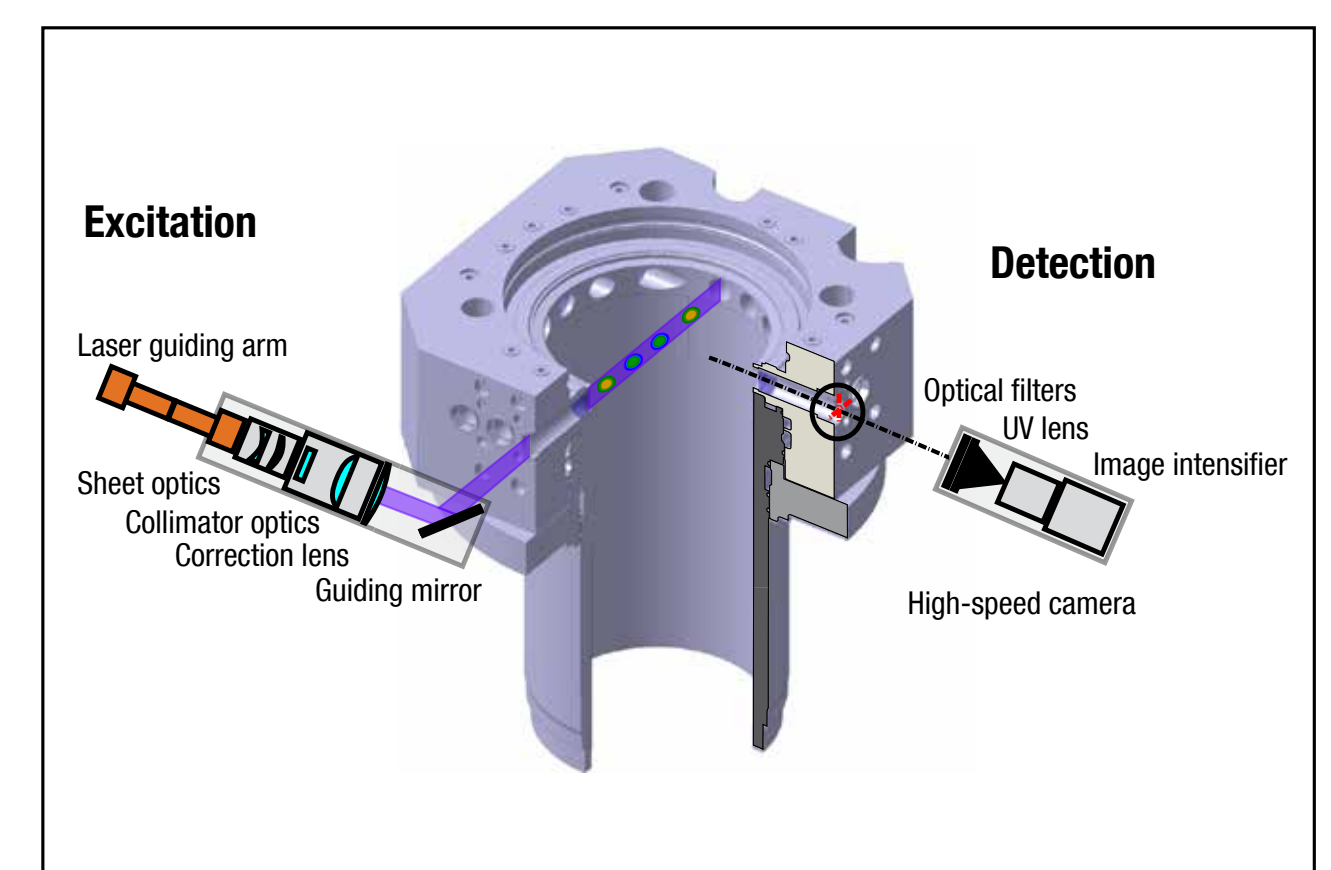
- Further improved fuel flexibility of marine engines
- Increased understanding of injection, ignition, combustion and emissions formation for novel and mixed fuels
- Experimental and numerical tools to enable exploitation of alternative fuels in marine engines:
  - Test-rigs and engines for optical studies
  - Improved CFD capabilities for multi-fuel operation
  - Improved engine control strategies.



Optical engine diagnostics in Hercules B/C and Helios

## PROGRESS AND PLANS

1st year milestones	Status	Month
Multi-fuel test facility specifications	Preliminary specifications established	6
Multi-fuel test facility design	Design process has started	12
Optical engine access	Preparations in progress	12
Development of skeletal models	Work has started on LNG, LPG and methanol	12
Concept design for optical engine	Concept study ongoing	6
Concept design for 3D fuel-distribution measurement	Literature study finished, integration to engine ongoing	6
Spray chamber measurements	Ongoing	7
Study of potential of existing NO <sub>x</sub> models finished	First calculations show promising results	8
Fuel-specific control strategy	First basic engine tests finished	-



Schematic overview of set-up for 3-D mixture formation studies (Technical University of Munich)

## WP PARTICIPANTS

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