Agent-oriented Proof Planning

SFB 378 Ressourcenadaptive Kognitive Prozesse

Ωmega

Project MI 4 OMEGA: Siekmann, Autexier, Benzmüller

Overview of the project

Learnomatic
[J-IGPL-03]
[ECAI-02]
[CADE-02a]

LEO
COSIE
ATPs & CASs
[Synthese-03]
[JAR-submitted]

TRAMP

LOUI

MULTI
[PHD-Meier-03]
[AutoMath-Book-03]
[ENTCS-04b]

OANTS
[KI-01]
[MSc-Huebner-04]
[ENTCS-04a]

SAPPER

P.rex
[PHD-Fiedler-01]
[IJCAR-01]
[IJCAI-01]

PDS
[PHD-Autexier-2003]
[JSL-in-print]
[J-IGPL-2004]

MathWeb
[CADE-02]
[MICAI-04]

MAYA

MBase
[MSc-Franke-03]
[JSC-01]

OMDOC

OANTS Retrieval
[ISSAC-02]
[IJCAI-03]

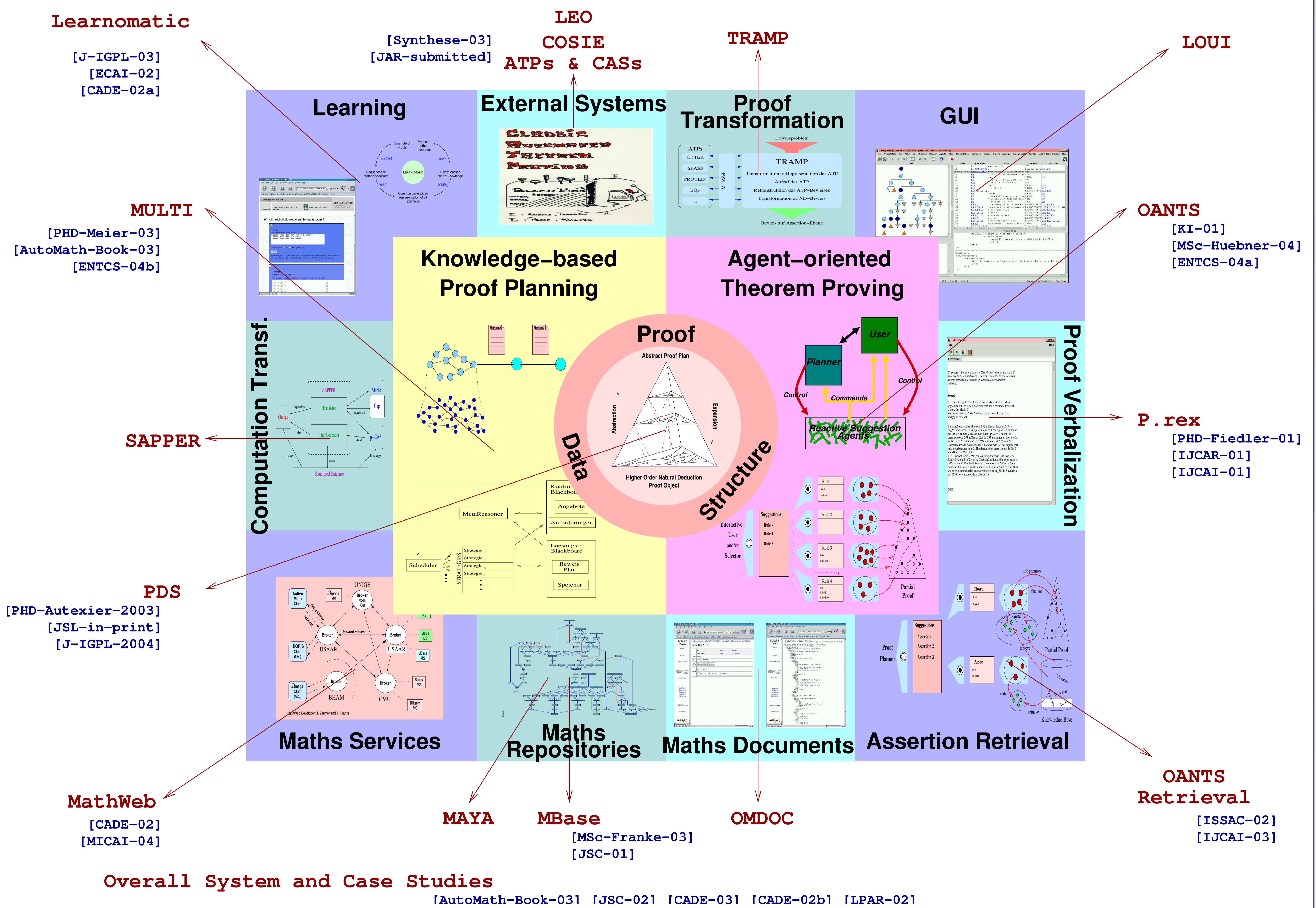**Overall System and Case Studies**
[AutoMath-Book-03] [JSC-02] [CADE-03] [CADE-02b] [LPAR-02]

Results

- Increased flexibility in proof construction
- Meta-level proof search controlled by reasoning patterns
- Automatic learning of proof-planning knowledge
- Support for user-friendly interaction
- Access to mathematical services for the deduction community
- Significant case studies
- CORE-calculus for semantic reasoning

Open Problems

- Unified proof construction layer based on CORE
- Adaptation of reactive and deliberative proof planning procedures
- Adaptation of mathematical support tools
- Maintenance of mathematical knowledge sources
- Resource-adaptive sampling of mathematical knowledge
- Support for typical mathematical activities

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