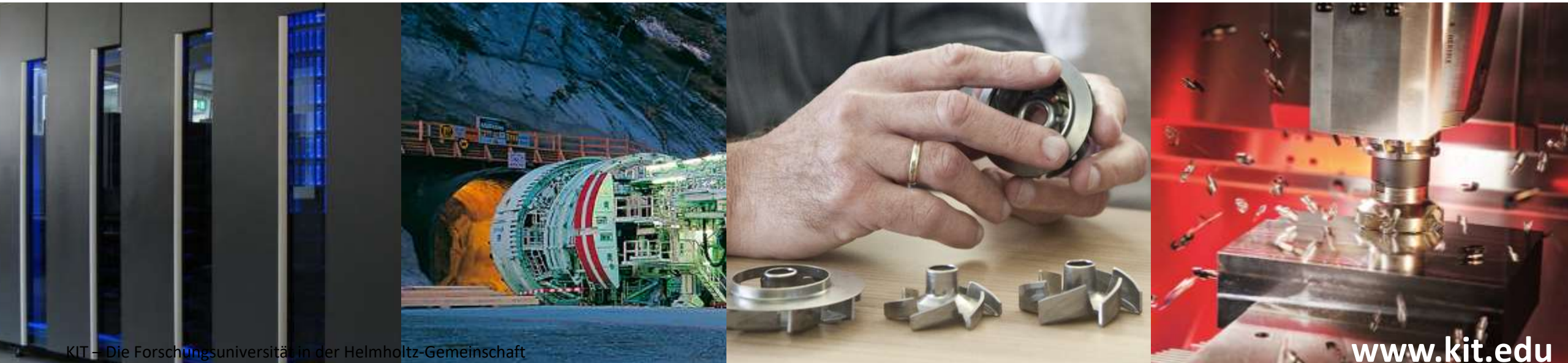
Karlsruhe Institute of Technology

Smart Data Innovation Lab

Accelerating Data Analytics

Prof.Dr. Michael Beigl. teco.kit.edu



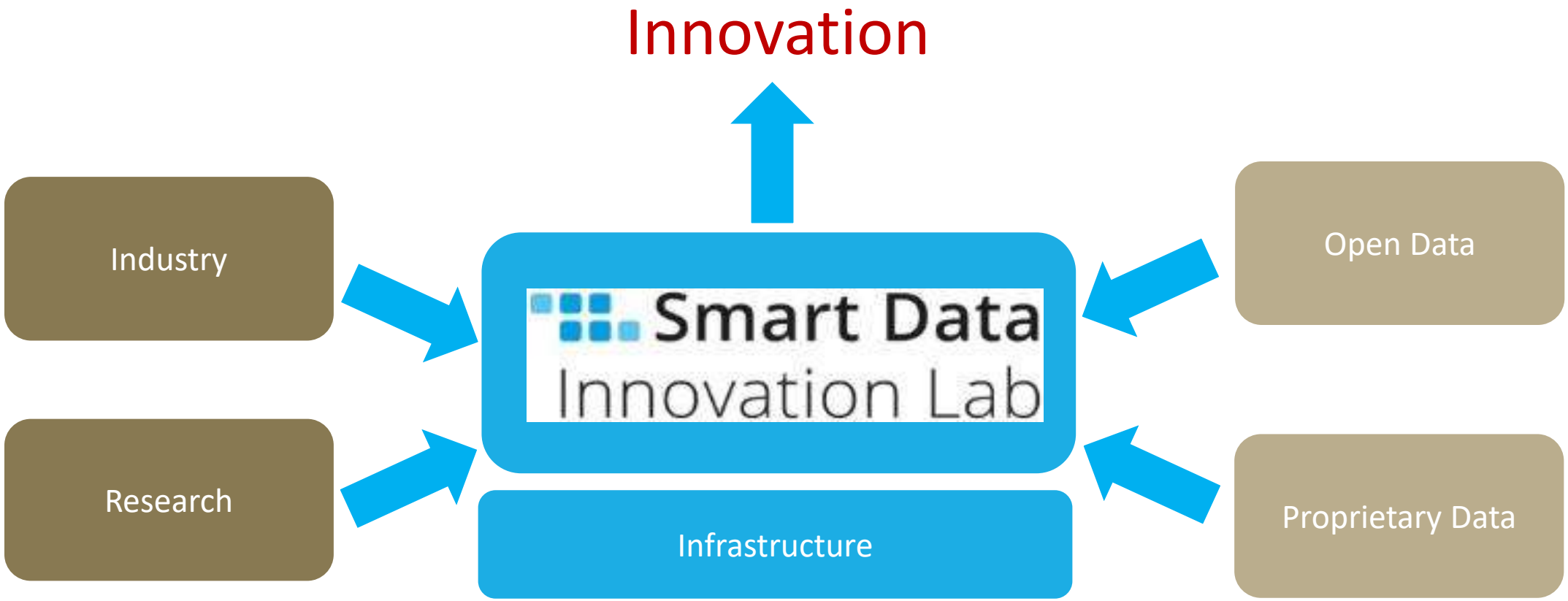
Smart Data Innovation Lab

Karlsruhe Institute of Technology

- **Smart Data Innovation Lab (SDIL)**
  - National Big Data center, plus a State Big Data competence center (SDSC-BW) plus a community effort
  - Run by multiple parties from Industry and Academia (core partners)
  - Analytics of large, non-open data esp. For/with *Industry and SMEs*
  - Newest analytics and in memory systems and software also from industry (z.B. SAP HANA, IBM Watson, Software AG Apama, Huawei Fusion Insight) and powerful computing infrastructure
  - Curation of Data using IDS ontology
  - Over 50 projects have been run in SDIL during the last 3 years

SDSC BW

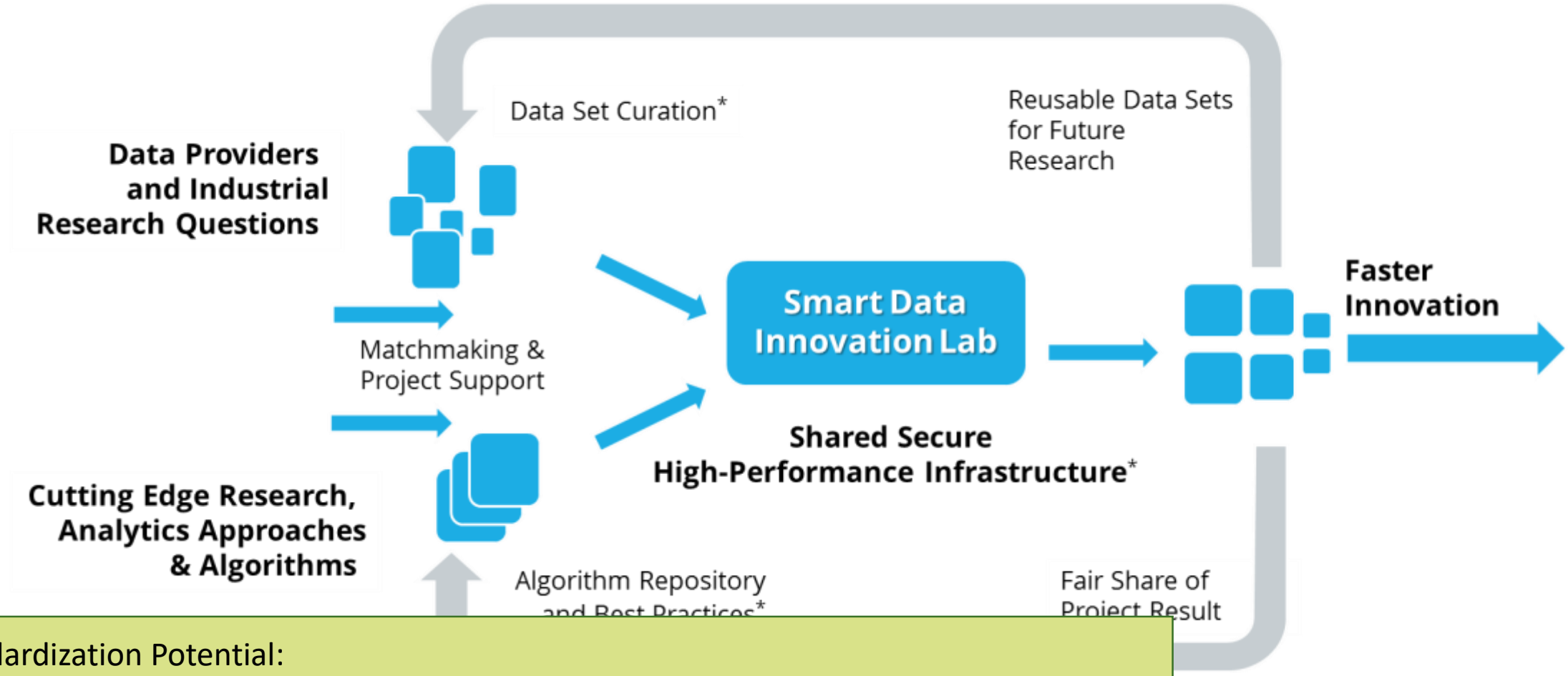
Concept of the Smart Data Innovation Lab



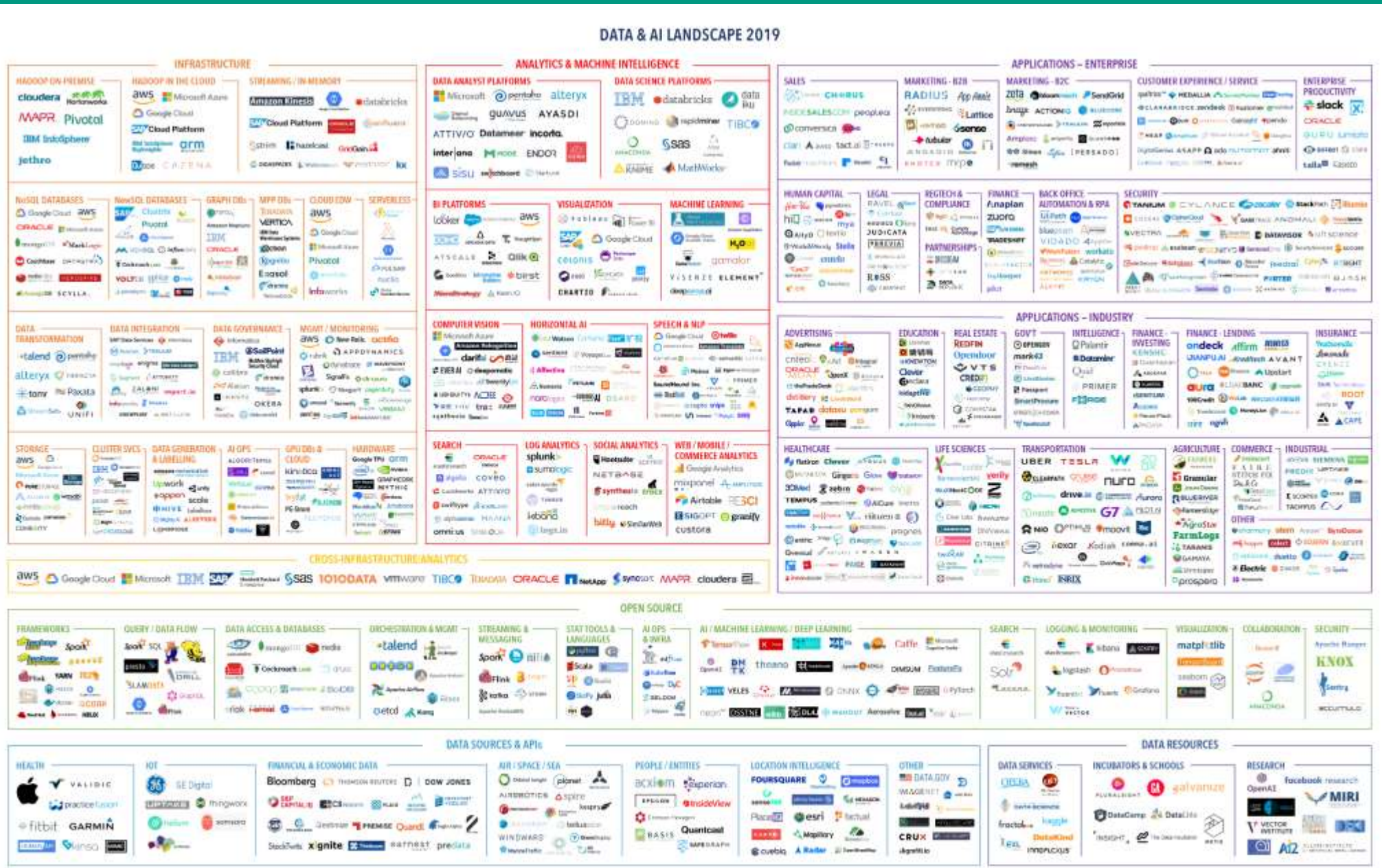
Accelerating Data Analytics

- Bootstrap
- Harmonize tools
- Define your processes
- Establish a network
- Design competences

1) Bootstrap



Standardization Potential:
- Data Curation


DATA & AI LANDSCAPE 2019
INFRASTRUCTURE
HADOOP ON PREMISE
HADOOP IN THE CLOUD
STREAMING / IN-MEMORY
NoSQL DATABASES
NewSQL DATABASES
GRAPH DBs
MPP DBs
CLOUD EDW
SERVERLESS
DATA TRANSFORMATION
DATA INTEGRATION
DATA GOVERNANCE
MGMT / MONITORING
STORAGE
CLUSTER SVCS
DATA GENERATION & LABELLING
AI OPS
GPU DBs & CLOUD
HARDWARE
ANALYTICS & MACHINE INTELLIGENCE
DATA ANALYST PLATFORMS
DATA SCIENCE PLATFORMS
BI PLATFORMS
VISUALIZATION
MACHINE LEARNING
COMPUTER VISION
HORIZONTAL AI
SPEECH & NLP
SEARCH
LOG ANALYTICS
SOCIAL ANALYTICS
WEB / MOBILE / COMMERCE ANALYTICS
APPLICATIONS – ENTERPRISE
SALES
MARKETING - B2B
MARKETING - B2C
CUSTOMER EXPERIENCE / SERVICE
ENTERPRISE PRODUCTIVITY
HUMAN CAPITAL
LEGAL
REGTECH & COMPLIANCE
FINANCE
BACK OFFICE AUTOMATION & RPA
SECURITY
APPLICATIONS – INDUSTRY
ADVERTISING
EDUCATION
REAL ESTATE
GOVT
INTELLIGENCE
FINANCE - INVESTING
FINANCE - LENDING
INSURANCE
HEALTHCARE
LIFE SCIENCES
TRANSPORTATION
AGRICULTURE
COMMERCE
INDUSTRIAL
OTHER
CROSS-INFRASTRUCTURE/ANALYTICS
OPEN SOURCE
FRAMEWORKS
QUERY / DATA FLOW
DATA ACCESS & DATABASES
ORCHESTRATION & MGMT
STREAMING & MESSAGING
STAT TOOLS & LANGUAGES
AI OPS & INFRA
AI / MACHINE LEARNING / DEEP LEARNING
SEARCH
LOGGING & MONITORING
VISUALIZATION
COLLABORATION
SECURITY
DATA SOURCES & APIs
HEALTH
IOT
FINANCIAL & ECONOMIC DATA
AIR / SPACE / SEA
PEOPLE / ENTITIES
LOCATION INTELLIGENCE
OTHER
DATA RESOURCES
DATA SERVICES
INCUBATORS & SCHOOLS
RESEARCH
July 16, 2019 - FINAL 2019 VERSION
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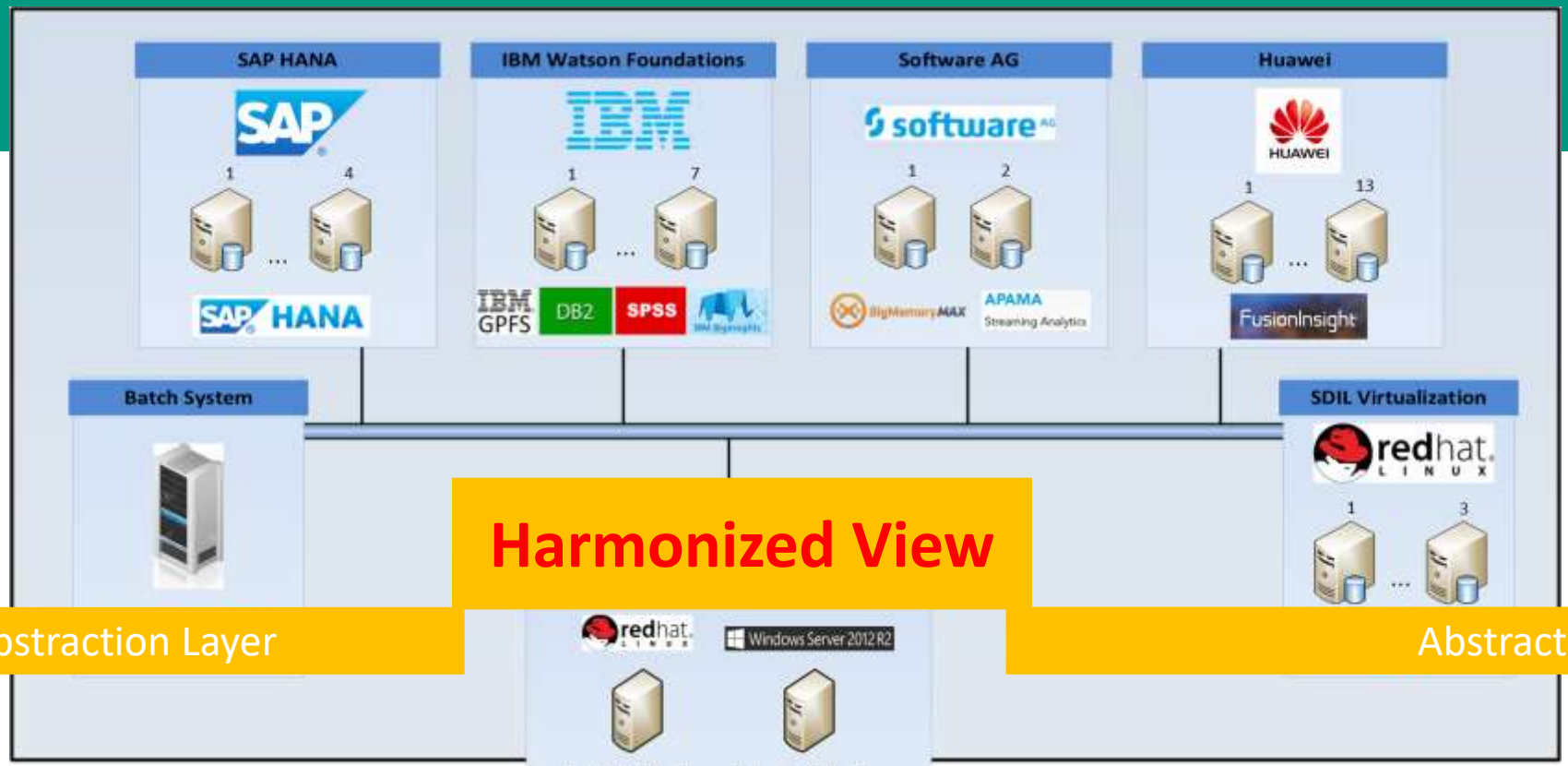
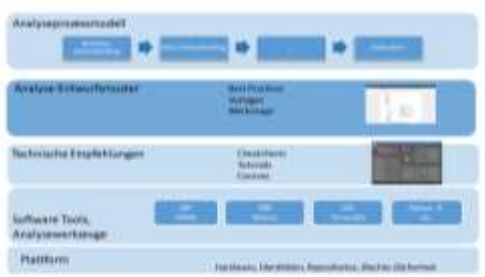
EARLY STAGE VENTURE CAPITAL

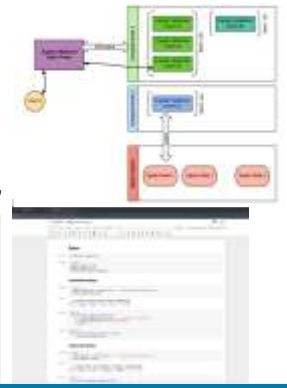


Standardization Potential:

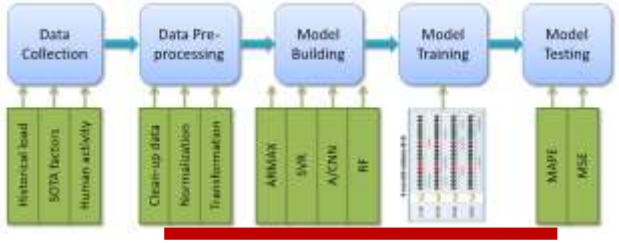
- Common view on the many systems and tools beyond vendors and influence groups

Analytics Process





Preparation



Usage

AI Analytics

Define processes

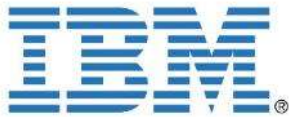
- E.g. specially suited for SME
- **Funded One-Month-Projects in Baden-Württemberg**
  - Practical evaluation of Data potential
  - Initial Analytics
  - with Strategic Impact
  - Method: Clear Step-Wise Process = Acceleration
  - Legal Framework

- First contact
- Data hand over
- Recommendations
- Next steps
- Hand-over

Standardization Potential:
- Best practice processes

Establish a network

- You cannot do all the work alone
- Companies need to take over
- In various roles, specialization needed

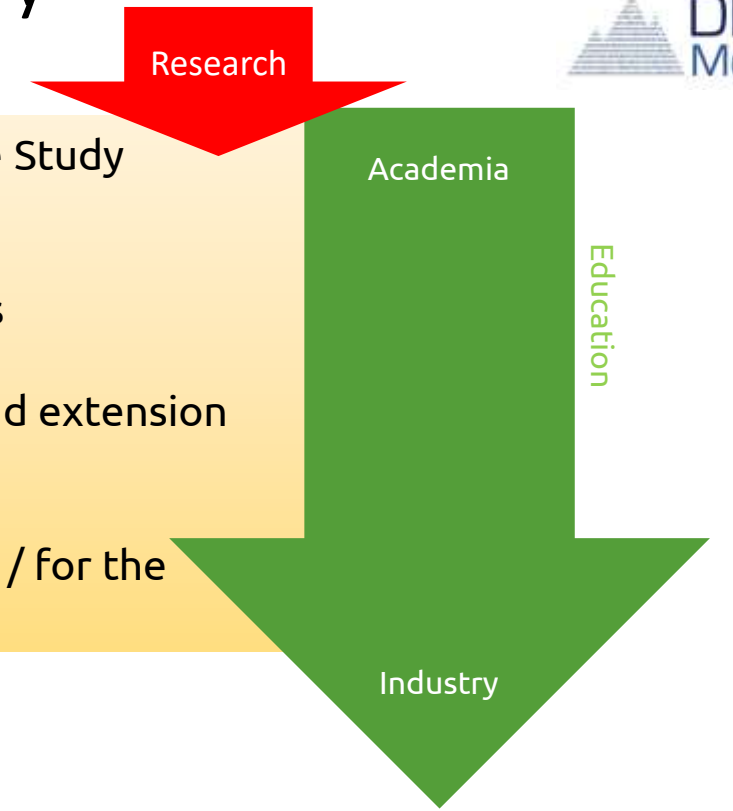


Standardization Potential:
- Hand-over interfaces to industry
- Industry/Research compatible Analytics platforms

Design Competences

- Constant education, for your own people and your „customers“
- Shifting the knowledge from Academia to industry
- Thus accelerating data use and data science

DIGITAL Mountains



Graduate / Undergraduate Study programs

½-1 y Retraining programs

Apprenticeship training and extension studies

Courses and workshops at / for the industry

Standardization Potential:
- Common Courses
- Curricula for various cases

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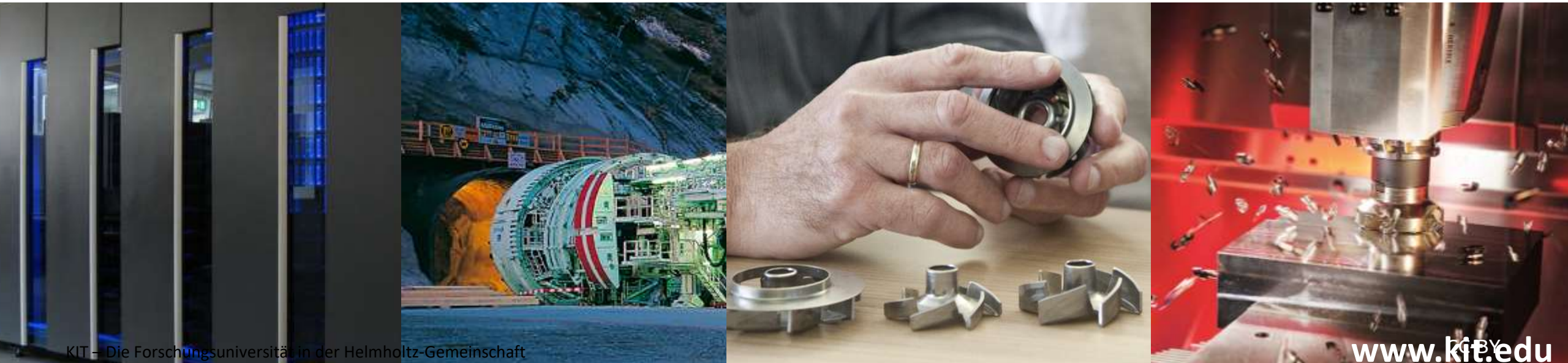

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