USE-CASES

Crisis Management

- Modelling of flash floods in the city of Nîmes and assess the contribution of AI compared to a reference hydrodynamic model of the CS METIS platform.
- Domain: Hydrology, Hazards, floods, Crisis Management, AI.

Cybersecurity

- Bolstering detection of complex cyber-attacks, linking low-level alerts to attacker behavior and models in the MITRE ATTACK framework; effective correlation and reduction of false positives.
- Domain: Cybersecurity, early detection of real time attacks.

Public Safety

- Situational awareness in urban fire detection using Airbus DS SLC's ExtremeXP capabilities, including AI, assisted decision-making and real-time augmented reality.
- Domain: Secure communications for critical users, focus on detection and operation of urban fire scenarios.

Mobility

- Tailor transport policies to authorities' specific needs, especially for zero-emission zones and autonomous vehicles, providing adaptive estimates and customized policy analysis via interactive visualization and augmented reality.
- Domain: Planning and evaluation of transport policies, adaptability to authorities' specific needs.

Manufacturing

- Maximization of industrial machines uptime, enabling technical department to make informed decisions about impending failures of critical components, avoiding false alarms.
- Domain: Industry 4.0, predictive maintenance in industrial contexts, and manufacturing

CONTACT

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ExtremeXP

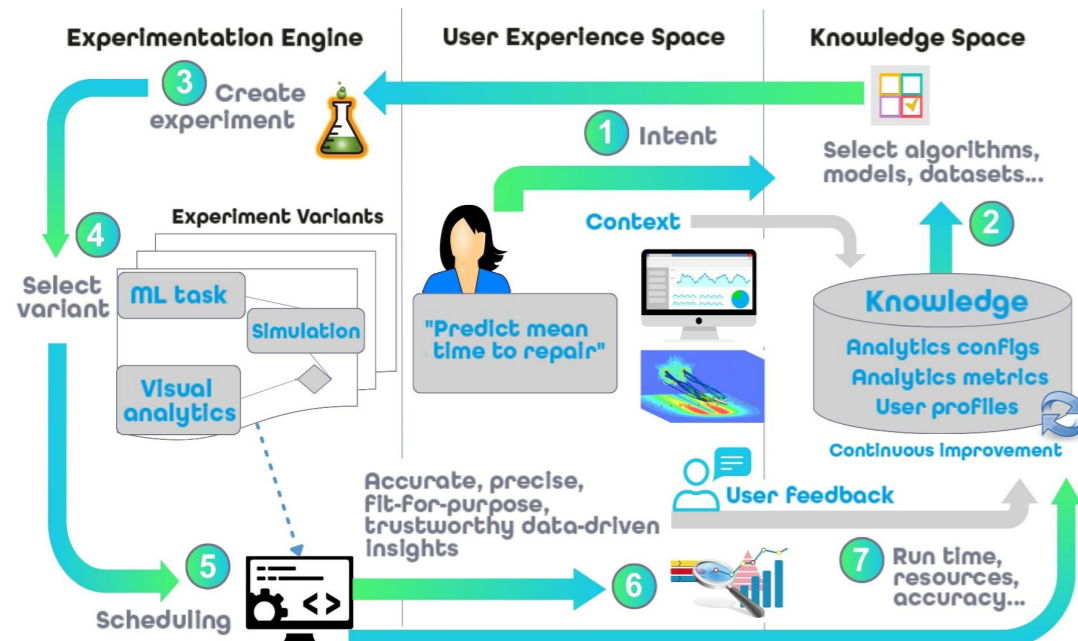## Experiment Driven and User Experience Oriented Analytics for Extremely Precise Outcomes and Decisions

EXTREMEXP : INNOVATION OF TOMORROW

> ExtremeXP offers an innovative approach called "experiment-driven analysis", placing the user at the heart of the analytical process. This method integrates interactive visualization and explainability techniques to increase the reliability of results and the process.

Generating reliable information from complex data remains a challenge, one that ExtremeXP strives to meet every day.

Experimentation Engine · **User Experience Space** · **Knowledge Space**

3 Create experiment
1 Intent
Context
Select algorithms, models, datasets...
2
Experiment Variants
4
Select variant
ML task
Simulation
"Predict mean time to repair"
Visual analytics
Knowledge
Analytics configs
Analytics metrics
User profiles
Continuous improvement
Accurate, precise, fit-for-purpose, trustworthy data-driven insights
User feedback
5 Scheduling
6
7 Run time, resources, accuracy...

THE PROJECT

ExtremeXP adopts a modular approach, centered around an experiment engine, integrating modeling, planning, enhancement of experiment descriptions, execution of complex analytical workflows, and monitoring.

ExtremeXP Global View

Transparent & Interactive Decision Making
- Explainable AI & Complex Analytics
- AR-based Virtual Dashboard
- Interactive Visual Analytics
- Real-time AR Overlays of Simulation Results

User-driven Optimization of Complex Analytics
- User Intent & Preferences Specification
- User Profiling & Context Analysis
- User Feedback via Serious Games
- Mapping of User Intent to Complex Analytics

User-driven AutoML
- Algorithm & Model Selection
- Feature Selection & Augmentation
- Constraint-based Continual ML
- Scalable ML Deployment

Experimentation Engine
- Adaptive Experiment Planning
- DSL Modelling
- Semantic Enrichment
- Complex Workflow Scheduling

System & User Monitoring

Analysis-aware Data Integration
- Automated Dataset Selection
- Interactive Data Cleaning, Enrichment, Interlinking

(Big) Streaming Data
User Profiles & Context
Knowledge Models

Extreme Data & Knowledge Management
- NFT-based Data Provenance
- Context-aware ABAC Engine
- Smart-contracts-based Acess Control

Analytics Repositories
Simulation Results

The Consortium
20 partners - 10 Countries

ATHENA Research & Innovation Information Technologies

Activeeon SCALE BEYOND LIMITS

AIRBUS

BIT SPARKLES

Bournemouth University

CS a Sopra Steria company

dfki ai Deutsches Forschungszentrum für Künstliche Intelligenz German Research Center for Artificial Intelligence

ICCS

IDEKO MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE

Interactive4D Serious Games Labs

i2cat

INTRACOM TELECOM

IThink UPC

mobyX

SINTEF

University of Ljubljana Faculty of Computer and Information Science

TU Delft Delft University of Technology

VU VRIJE UNIVERSITEIT AMSTERDAM

UPC