Rules of Civilization (RoC)

Using an LDAP backend for an edutainment project

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Agenda

- What is Civilization
- The basic Idea of RoC
- Use Cases
- How and why LDAP is used as back end
- Data Model
- Implementation plan

Civilization

- The classic 4X game created by Sid Meyer in 1991 (first MicroProse later Firaxis Games)
  - eXplore, eXpand, eXploit, eXterminate
  - A global strategy game, in which the player controls a whole country or even Planet
  - Since then new versions of the game came up and are stil popular:
    - Civ II 1996, Civ III 2001, Civ IV 2005, Civ Revolution 2008, Civ V 2010, Civ Beyond Earth 2014, Civ VI 2016, Civ VII 2025
    - They all differ but maintain most of the principles but adding new features
  - Many other games were designed with similar principles
- I will use the latest Civ VII for examples in this talk

Civilization

- The player
  - chooses a historical leader person and a culture, e.g. Alexander the Great and the Classical Greek culture
  - Starts 4000 BC at the neolithic revolution sedentism creating a first village with a settler
  - creates more units, explores the map consisting of hexagons
  - creates buildings in the settlement, e.g. a farm to create food, or a school to further research, a temple to increase happiness of the people,
  - performs research, cultural development, earns money and diplomatic influence, creates a religion, establishes policies and traditions, interacts with other civilizations from trade agreements, alliances up to espionage and different types of war

Civilization

- Some actions of the player increase the sum of the respective values:
  - Gold, research strength, cultural strength, production, happiness and diplomatic influence
  - These sums a counted by the respective values of all hexagons occupied by citicens
- There are different units:
  - Civilian units like settler, trader, missionary, archeologist
  - Military units of different kinds (land, marine, airforce, etc.)
- The player moves these units on the map of hexagons
- The aim is to win the game in competition with leaders of other civilizations with different options, e.g. winning:
  - the race of space exploration
  - via economy
  - militarily
  - etc.

Hexagons

- Each Hexagon has a type:
  - Land: dessert, tundra, forest, mountain, etc.
  - Water: coast, ocean, lake, navigable river, small river, etc.
- Some Hexagons have additional resources:
  - Horses, sugar, gold and many more
  - If these hexagon are occupied, the effects of the ressources come into play
- The player can build on these hexagons
  - Plants, buildings and world wonders
- Each type, each resource and each building have different number of values that sum up to the wealth of the player

First city

This is a good first city with fresh water and lots of resources nearby. Since it the first, it is automatically the capital. It belongs to Himiko, a Japanese queen in the second century AD, it has one happy citizen, and will grow in 6 terms

The whole Interface round 1

The whole Interface round 50

A city much later

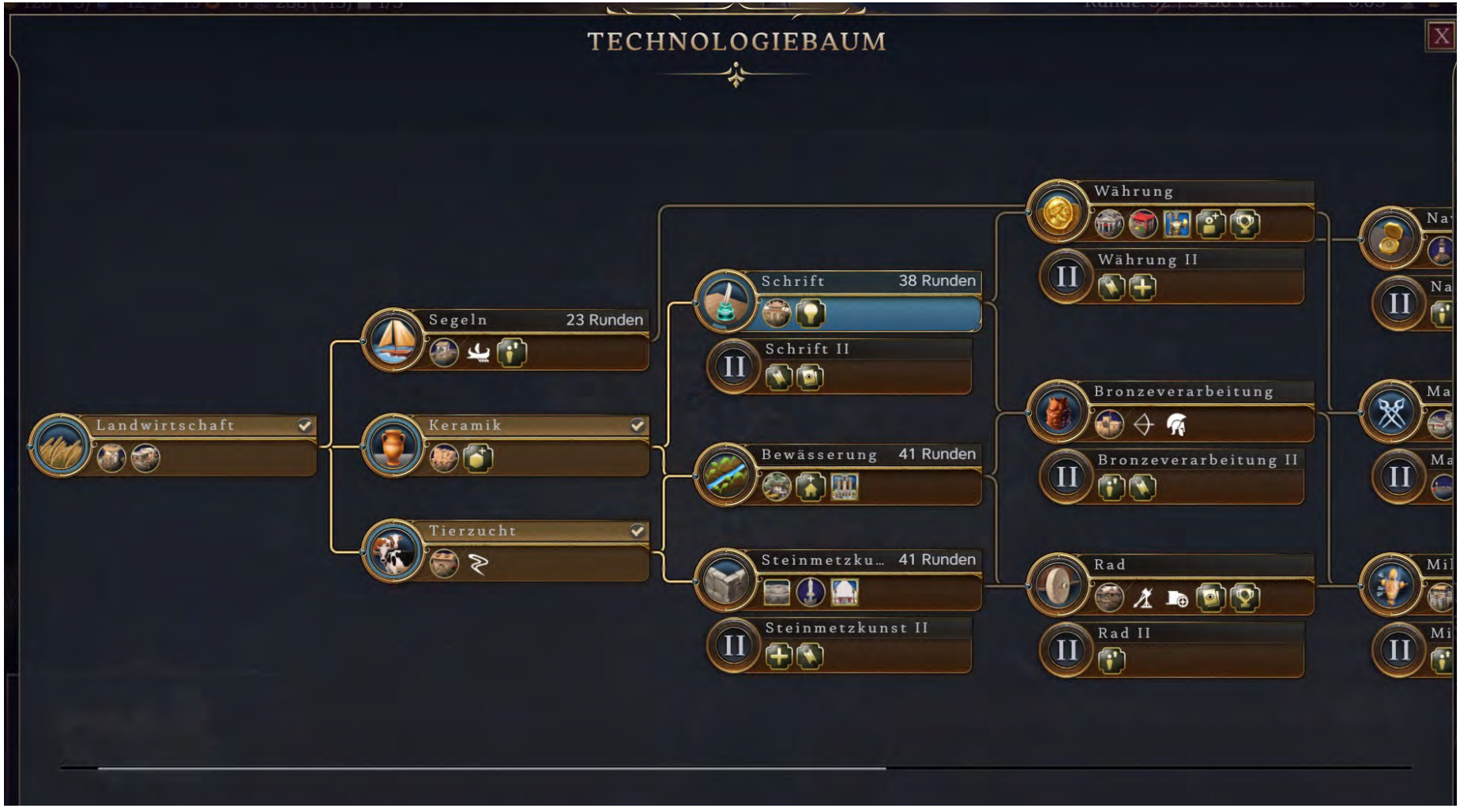
Egyptian city of leader Hatscheput (1479-1458 BC) with lots of quarters with building and world wonders. The values of the hexagons are displayed here. It has 41 citizens and will grow one more in 9 terms. Currently it builds an academy, which will be finalized in the next term.

Greek archers defend Athens

City view

120 (+5) +12 +13 +6 288 (+13) 1/3
ATHENAI
11 12 0 2 1 6 3
GERADE ABGESCHLOSSEN
KORNSPEICHER
+1
Verborgene ansehen
PRODUKTION
KAUF
GEBÄUDE
ALTAR
+3 | 0
23
EINHEITEN
SPÄHER
2
8
HEERFÜHRER
2
75
SIEDLER
3
13
SCHLEUDERSCHÜTZE
2 5 15 5 2
8
AKTIV
1
IN DER LISTE
13
14
8
8
8
STADT-DETAILS
BAU-ÜBERSICHT
GEBÄUDE
PALAST
+5 +6 +2 +5 +3
KORNSPEICHER
+1
MODERNISIERUNGEN
Alles minimieren
JAGDLAGER
Menge in Siedlung: 1
+2 +1
MINE
Menge in Siedlung: 1
+1 +1
HOLZFÄLLER
Menge in Siedlung: 1
+2 +1 +1

Research tree



culture tree

Civilization

- There is even much more in the game play
- But you got the principle
- Be assured: at least for a group of gamers it is a lot of fun to play

Exploring the Realm of Digital Historical Games

Donnelly and Norton write in their book Doing History, “we should stop judging other historical practices by the standards of academic history, and instead acknowledge that each form of historical representation has its own methodology, its own forms, codes and conventions, and its own cultural Value” (2011, 155).

Quoted from Adam Chapman, „Digital Games as History – How Videogames Represent the Past and Offer Access to Historical Practice“, New York 2016

Rules of Civilization (RoC)

- My idea now is to use the Civilization user interface for displaying information on a world map
- Any interesting event (with a time an a location) can be displayed, e.g.
  - when was the Library of Alexandria built, when and by whom was it destroyed
  - When and where was paper invented
- I want to propose the Civ UI as new form of schoolbook, with multimedia information which should make more fun than just reading a text
  - Pupils can wander around the world to find information
  - Teachers can create learn paths, to make their point
- RoC could also be used by researchers who want to present research results and also to discuss the rules: what happens if you build an university?
  - How much will it further research
  - Will it increase the population of the city
  - Will it increase the wealth of the city
- Thus, in addition to the shown UI, RoC also needs an interface to define such rules and a discussion board

Sadly not my idea

Replaying history: learning world history through playing Civilization III

Kurt D. Squire

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December 2003

Rules of Civilization (RoC)

- For now RoC will only be a chess board not an AI playing chess
- A map can be used by many people:
  - The concept of ministers in Civ is just a consultant giving good or bad advice – in RoC a player can be a minister forming together with the leader the government. Respective the government form he has more (Democracy) to say than in others (Dictatorship).
  - Thus school classes (one civilization) can play with other school classes
- So we need a highly performant platform that can be played by hundreds of players
- Hexagons need to be organized in continents, civilizations, cities, etc, which in itself has a hierarchical structure:
  - Planet -> Civilization -> city -> hexagon
  - With such a structure it is easy to sum all values of a civilization

Rules of Civilization (RoC)

- Besides hierarchical data we need:
  - groups (players of one civilization),
  - Roles (leader, science minister, etc.) with specific permissions
  - Authentication to authorize for group memberships and roles
- It needs to be connected to the internet

Rules of Civilization (RoC)

- Even if you do not have LDAP as hammer, all those requirements look like nails ....
- Thus the idea is to use LDAP as backend with special object classes and attributes
- The front end needs to be web-based and should thus be implemented with a java script framework

Again not new

- Meeting the Symas guys on Monday evening, I learned that someone else already used LDAP as backend for a game, namely
- Ever, Jane: The Virtual World of Jane Austen, a massively multiplayer online role-playing game developed by 3 Turns Production with Judy Tyrer serving as lead developer
- They worked with Symas Corporation to get LDAP provided as a database for the game, using custom schema

RoC Data model

OC Planet
- Name
- GeoType
- Climatetype
- Moons
- Age
- ...

OC Continent
- Type
- …

OC Civilization
- Name
- Leader name
- Culture
- government type
- active policies
- available policies
- active traditions
- available traditions
- religion
- religious beliefs
- completed research
- active research
- completed cultural achievements
- active cultural achievement
- users (DN)
- …

Data model

OC City
- Name
- Inhabitants (int)
- happiness (int)
- food needed (int)
- ...

OC Hexagon
- Type (hill, savanna, tundra, etc.)
- is_inhabited (bool)
- Status (normal, damaged, polluted)
- gold (int)
- culture (int)
- food (int)
- production (int)
- happines (int)
- diplomacy (int)
- owner (DN of Civilization)
- City (DN single value)
- cityBuilding (DN)
- Village (DN)
- natureWonder DN
- Countrybuildings (farm, saw mill, mine, etc.)
- mobilityInfrastructure (road, street, railway)
- Climate
- Weather (?)
- religionEffect
- tradeEffect
- tourismEffect
- ...

Implementation plan

- I will use existing IdM-software didmos from DAASI International as basis
- Use agentic coding for creating the dedicated back end and front end
- Use AI for getting first content into the map
- First a PoC and if that really works as planned, a productive board that can be played by groups
- Go to schools and talk with teachers
- May be found a company to make it sustainable
- Be aware: This is not an activity of DAASI International, but my free time project but based on the open source software didmos from DAASI International

didmos

DAASI International

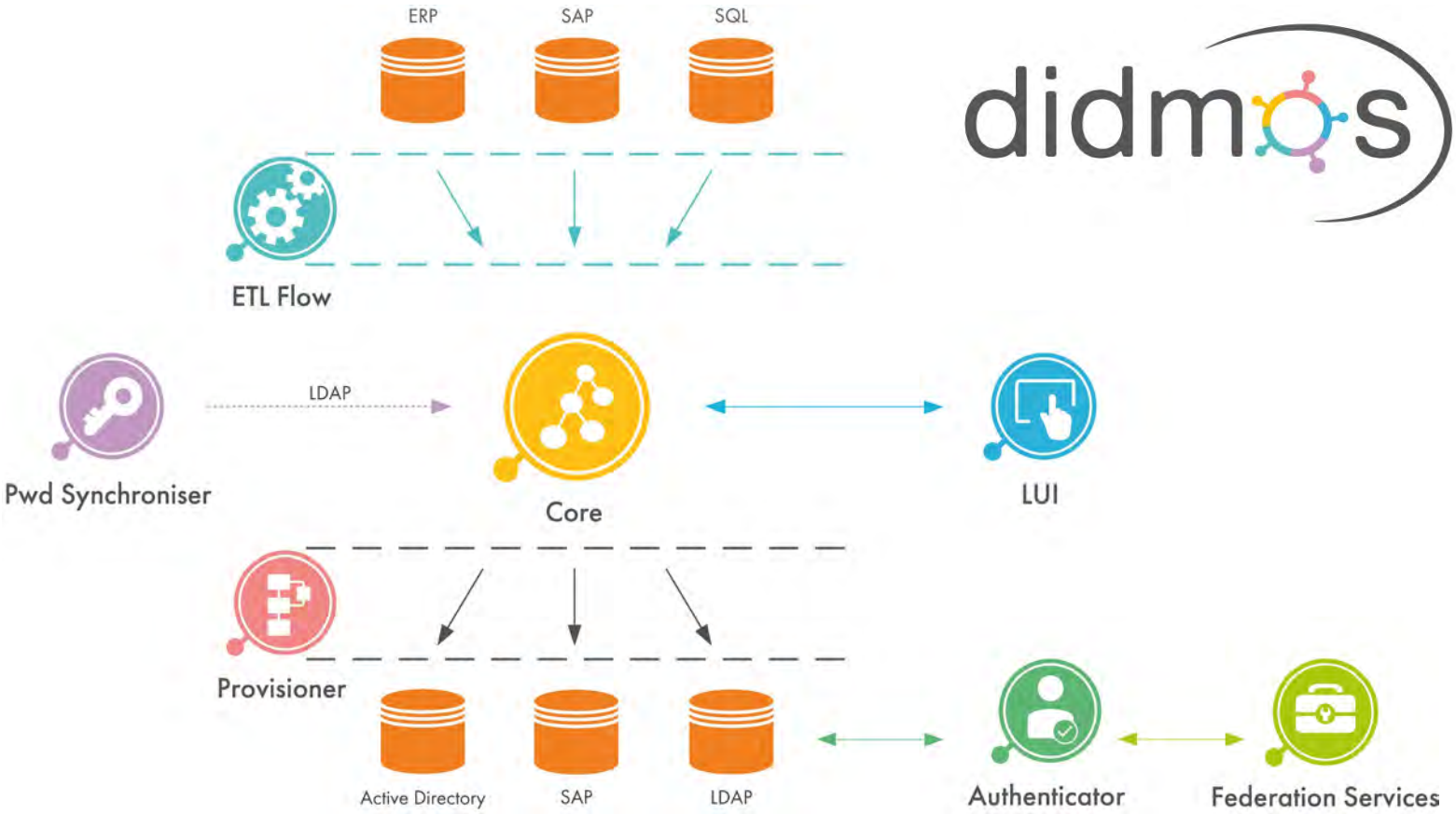
Identity

Management with

Open

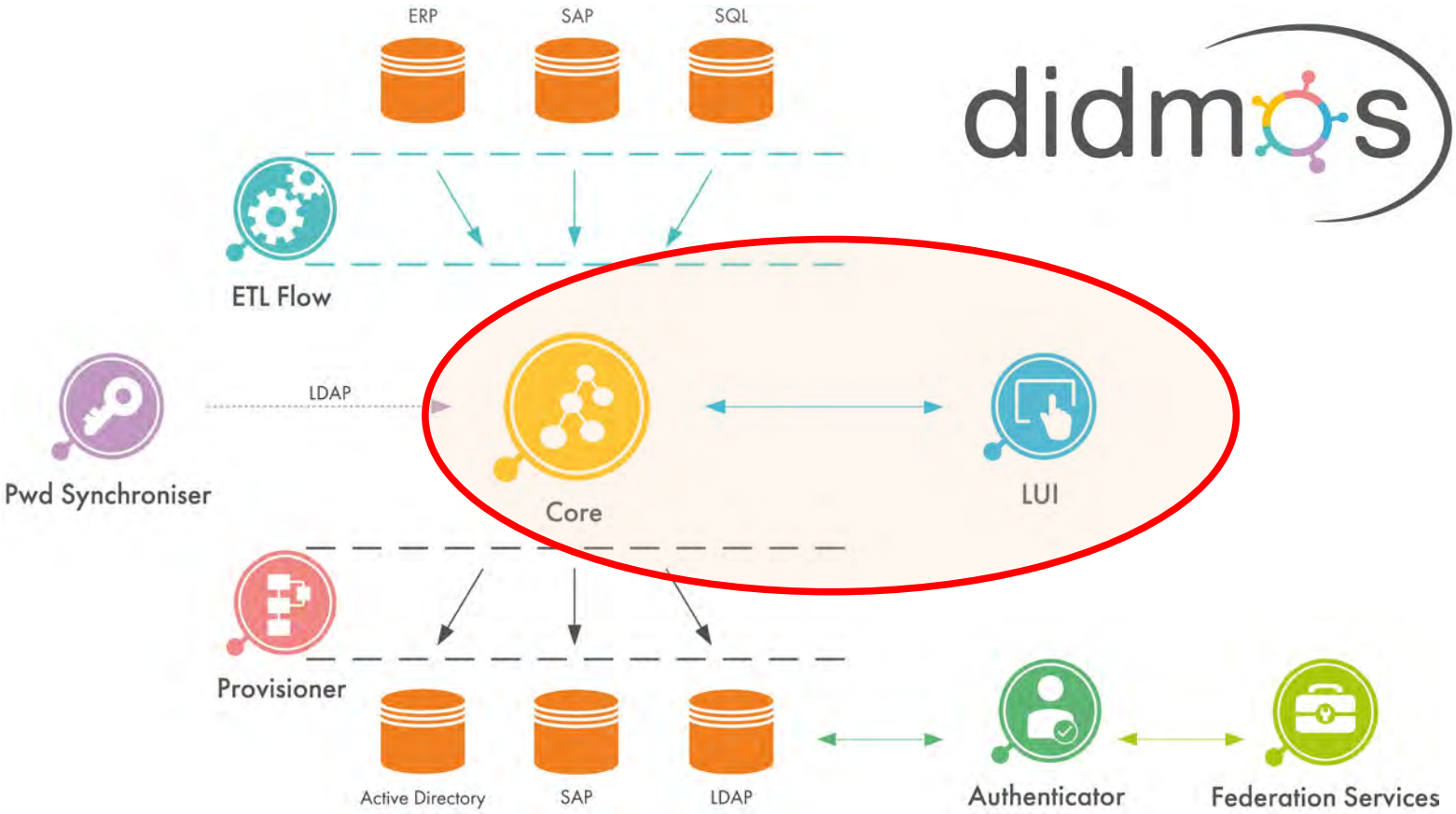
Source

didmos - Overview



DAASI International

didmos - Overview



DAASI International

didmos Core Is at the IdM Heart of didmos

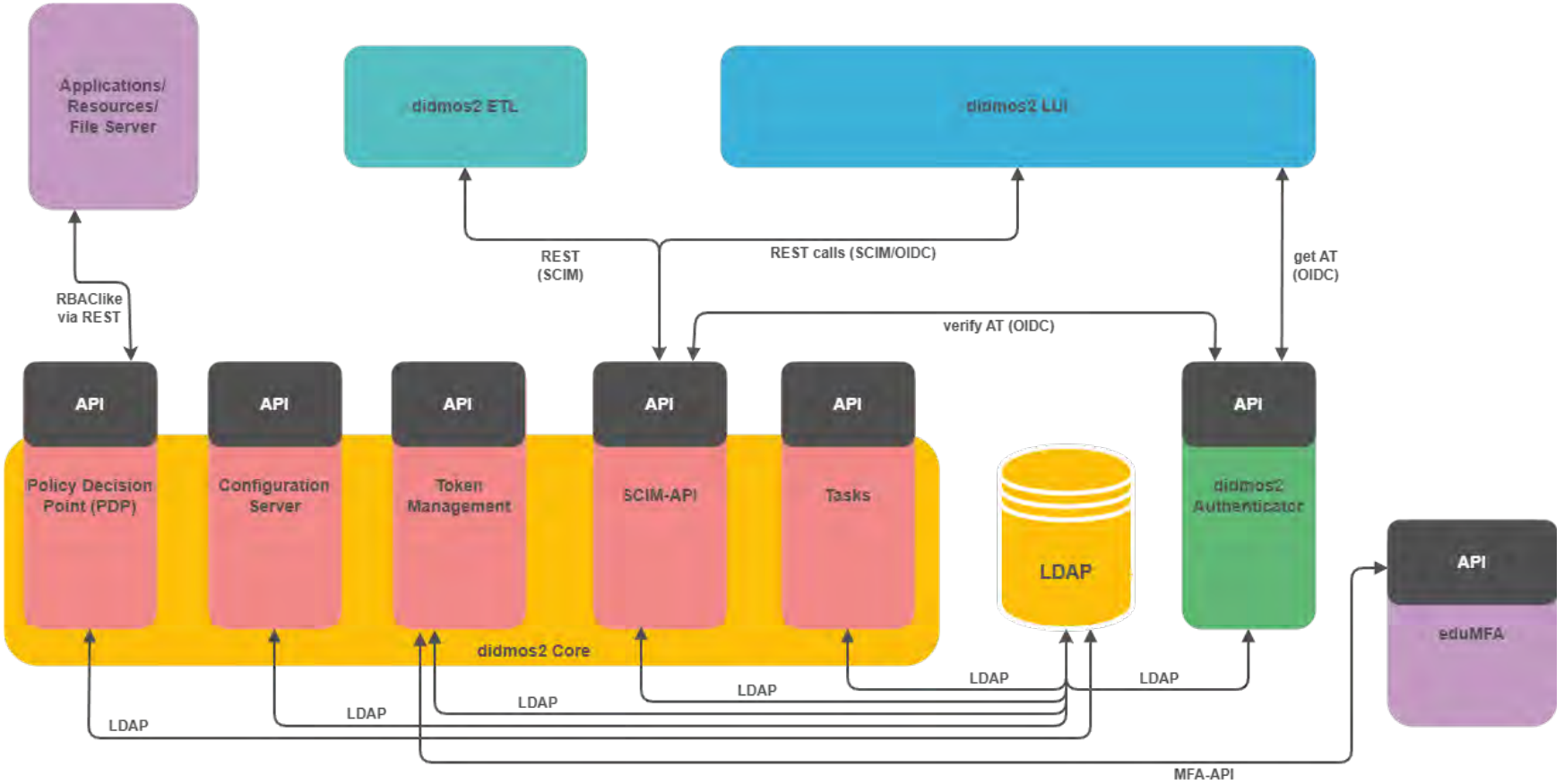
- Core consists of two components:
  - OpenLDAP server as metadirectory
  - Backend/API server for data access and background processes (based on Django/Python)
- Support for modern standards such as
  - SCIM for data access
  - OIDC/OAuth2 for authentication
- The API server consists of several modules (called “apps” in Django), which respectively provide a modern REST API via which data can be shared as JSON

DAASI International

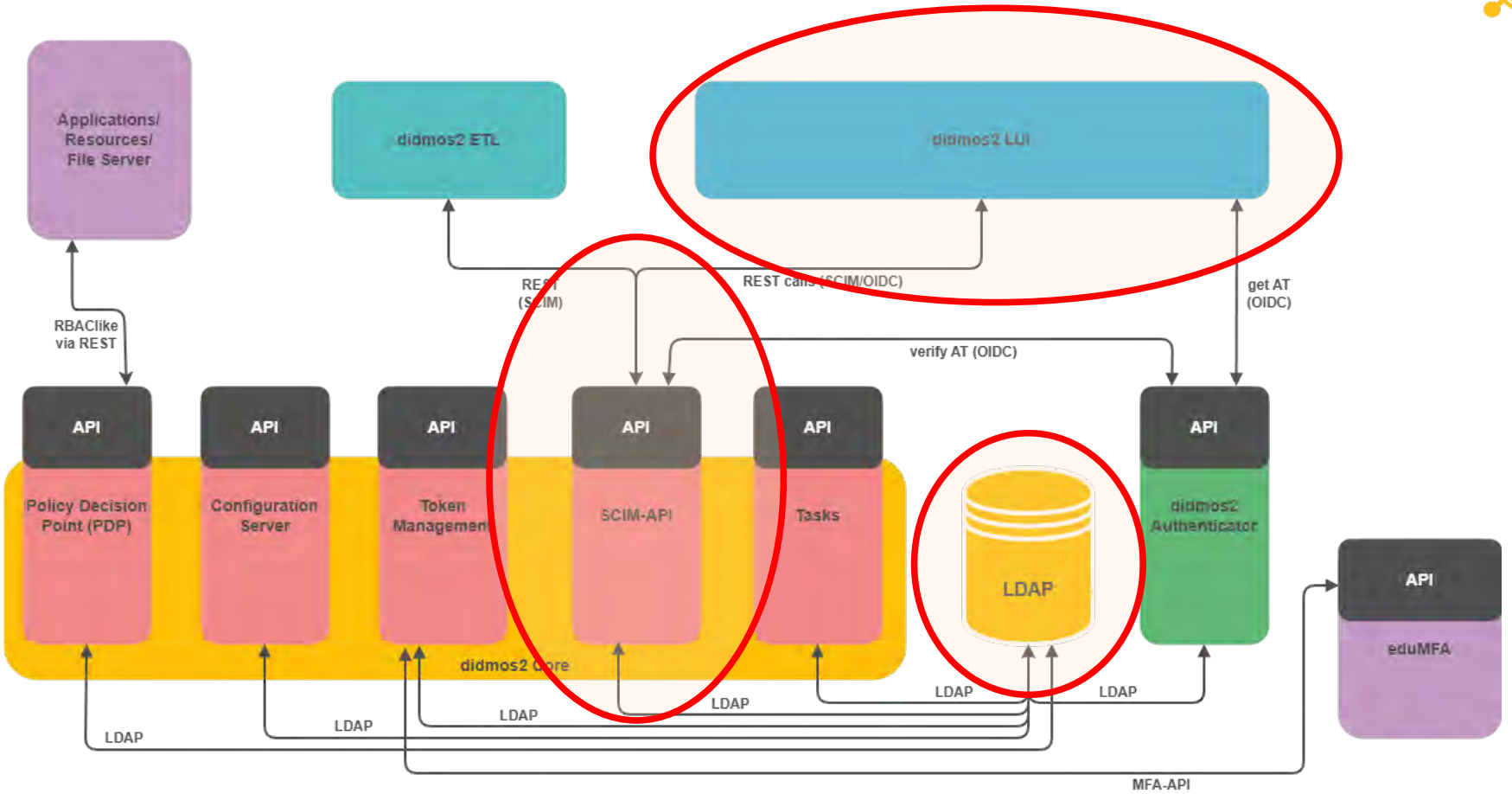
Modules in Core

- Module for the administration of identities, groups and roles
  - Is addressed by the clients ETL Flow, and LUI
- Module to maintain workflows
  - Request and authorisation workflows
  - Time-controlled internal tasks
- Module to administrate permissions
  - Central policy decision point
  - Implementation of the RBAC standard
- Module for MFA token management
  - Currently connects to privacyIDEA
- **Customer specific modules can be added**
  - Any specialised function can be integrated
  - Customised code is maintained separately from the Core code
  - Plan to have a RoC module

didmos Core Data Flow



didmos Core Data Flow



didmos LUI

Frontend entirely based on JavaScript (Angular)

- Single-page application
- Responsive
- Mobile app (PWA) capable
- Authentication with OIDC
- Entire layout can be changed on build-time (CSS, templates); some elements on run-time (logo, themes) due to Angular

Extensive usage of SCIM

- Only Core is responsible for the manipulation of LDAP objects
- SCIM calls protected by OAuth2/ bearer tokens
- Menu items can be controlled via permission assignment from Core to LUI

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didmos LUI Modules

- **Each project uses a dedicated frontend**, but common functionality is developed in a shared library with features such as:
  - Search and browse function for users, groups, other objects
  - Administration of group memberships
  - Assignment of role memberships
  - Password (re-)set function
    - e.g. an email with one-time valid link/token
  - Self-disclosure (GDPR)
  - Request processing (account, group, role, delete requests)
  - Bulk import (CSV file)

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didmos LUI Modules

- … more commonly used functions in shared library:
  - Activity-log for compliance
  - Multi-tenancy capable
  - Multi-step delete process
  - MFA token management (with privacyIDEA)
- Customised extensions for any desired function and process possible, e.g.:
  - Portal functionality
  - Other data objects with requests and managements (e.g. companies, affiliation, services)
  - Multiple accounts per identity
  - Etc.

Status of the project

- I introduced the Idea on a panel of a digital humanities conference (DH Austria in Salzburg in 2018) where I had the pleasure to have Wilfried Reiter co-founder of the Anno games series as co-panelist.
- Then I was very busy with other stuff (e.g. reading and writing contracts...)
- I quitted my full time job as CEO of DAASI last month and will only work half-time for DAASI as consultant
- So as late as now I will be able to start really working on it in my new gained free time.

So now it is your turn

- Do you have questions?
- Do you want to tell me, that this is all stupid and a waste of time?
- Is it the hammer phenomenon, or is LDAP suitable for this endevour?
- Any other message for me?