Project
Personal Digital Agent
4 Project-Teams (5-6 Persons each)

Als **Software-Agent** (auch **Agent** oder **Softbot**) bezeichnet man ein Computerprogramm, das zu eigenständigem und eigendynamischem (**autonomen**) **Verhalten** fähig ist. Das bedeutet, dass abhängig von verschiedenen Zuständen (Status) ein bestimmter Verarbeitungsvorgang abläuft, ohne dass von außen ein weiteres Startsignal gegeben wird oder während des Vorgangs ein äußerer Steuerungseingriff erfolgt.

Personal Digital Agent (PDA)

The interactive browser-based Internet applications and Apps for smartphones will be accompanied by ***software agents*** following the new paradigm of ***Assistance*** and ***Delegation*** focused on agent technologies and ***conversational (speech) man-machine interfaces*** (***softbots***).
The personal digital assistant may perform monitoring of different entities (e.g. WebServices or ***MicroServices***) e.g. personal preferences, sensors@home (Raspberry phi), calendar, emails, google maps (travel simulation),traffic, weather, stock trading's etc. and proposing ***proactive*** individual recommendations via speech synthesis and speech dialog to the user – supporting the ***users daily plan and tasks*** e.g. according to scheduled meetings & activities (calendar), preferences, current location, travel plans, weather, tasks (email), sensorStatus@home and scheduling conflicts etc.….
The PDA will start every morning with a ***welcome dialog incl. detailed recommendation*** e.g. about ***optional modes of transportation*** depending on ***personal preferences***, current location, weather, travel plans, and other circumstances (entities).
The final PDA prototype will ***perform independent execution of at least four different use cases*** which will introduce proactive ***speech dialog*** to the user taking into account current
results from different monitoring services, personal preferences and user dialog.

https://medium.com/@jackkrupansky/what-is-an-intelligent-digital-assistant-3f601a4bb1f2

https://medium.com/microhq/the-micro-bot-chatops-for-microservices-546ecc1a9ed8

https://blog.giantswarm.io/advanced-microservice-application-slack-donethis-tracker/

Project Technologies

***PDA monitoring services*:**

Calendar, Weather, sensors@Home, Traffic Situation (Sbahn, road…), Stock Exchange,
Email, GoogleMaps, current location, etc. using existing services (components) from the Internet.
Monitoring services with existing **RESTful or WebServices interfaces** can be used which serve as components for realizing **the 4 different use cases**. **Each use case must combine results from at least 3 different monitoring services**. **Two of the 3 monitoring services must be unique among all use cases.**

***Programming Languages*: Java**, **Python**, **Go**, **TypeScript** (JavaScript), **Kotlin**, **C#**, ….

Services may be realized using ***different programming languages*** due to the service interface which is programming language independent.
AI-Assisted Programming e.g., **Copilot** may be applied.

Development tools (DevOps)

may be selected depending on individual preferences - the programming language, service components and frameworks to be used for achieving efficiently the project goals (e.g. Swagger, Travis, Flask, Vue.js, GitLab, WebStorm, Jest, TestPHP, Mockito, JUnit, PyTest, …..)

MonitoringServices and Components - Examples:

GooglePlaces, GoogleCalendar,, GoogleMaps, TelegramBot, DeutscheBahn API, AlphaVantage, Newspaper3K, OpenWeather, OddsApi, OpenLigaDB, RaplaApi, SpotifyApi, DualisApi, SpritpreisApi, NewsApi, FitBit, …..
Text2Speech*, *Speech2Text*, *ChatGPT*, *Gemini API, PyTorch, VOSK, Silero, Alexa API, Dialogflow, Fuzzywuzzy, pyttsx3**, MQTT, PyQt, *MicroServices***, Slack API, Slack Bot, chatterbot, SnatchBot, Gobot, Docker, Docker Compose, Kafka, Mongo DB, Redis, Trello, ….

Project Management (Scrum, Backlog, Sprint, Whiteboard, etc.)

The ***4 project teams (5/6 persons each) may*** comprise two sub-teams responsible for:

Tasks, team1A:

- Project Management
- Reviews
- Requirements
- Use Cases
- Architecture
- Design Pattern
- Modeling
- Version Management

Tasks, team1B:

- Tool selection
- Reusable components, frameworks and service selection
- Realization (implementation)
- Tests (UnitTests)
- Integration (IntegrationTests)
- Demonstration (***early Prototype***)
- Demonstration (final Prototype)

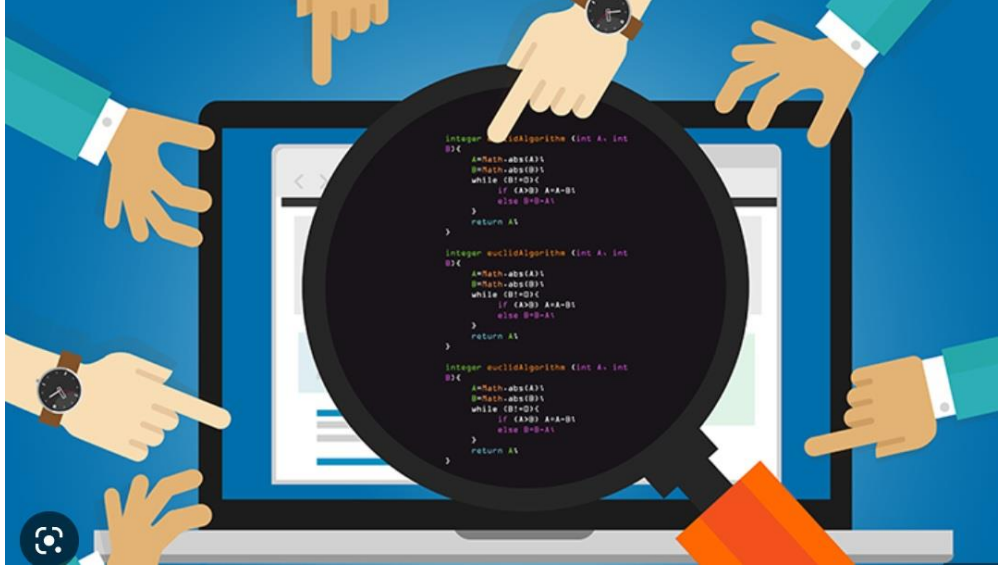
Project Objectives (max. 30 points for each team member)

- **Realizing** and **demonstrating** ***4 different PDA use cases*** (**max. 4 points each**) incorporating at least ***three monitoring entities*** (services) each.

- **Realizing** (adapting) ***at least one architectural pattern and one design pattern*** (**max. 4 points**).

- **Demonstrating** ***80% test coverage*** according to UnitTests (**max. 4 points**).

- ***3 Project Status Presentations incl. Review*** (**max. 6 points**) about:
  - Requirements
  - **UseCases**
  - **Architecture**
  - **Models**
  - **Implementation** (**current code examples**)
  - **Design & Code Reviews**
  - **UnitTests** (coverage)
  - Integration
  - **Early prototype**



Project Reviews:

- Each project, in terms of design and code, will be reviewed by team members from another project team
- Reviewers explore the current project results which are read out by project team members. **Reviews should comprise design & code reviews.**
- For project presentation the essential and most important results concerning **design reviews and code reviews** should be selected.

Project Evaluation

Decision about the sequence (which team starts first, second, third and fourth) of ***project presentations will be drawn***.

For ***achievement of all project goals*** within the project constraints each team member may receive equal number of points (**max. 30 points** for each team member).

Final project presentation and demo should include essential project results reflecting use cases, architecture, models, design pattern, implementation, test coverage and the **running prototype demonstrating the different use cases**.

	2 Weeks (Sprint)		2 Weeks (Sprint)		2 Weeks (Sprint)		2 Weeks (Sprint)		
KW 40	KW 41	KW 42	KW 43	KW 45	KW 46	KW 47	KW 48	KW 49	KW 50
	SprintSession	SprintSession	SprintSession	SprintSession	SprintSession	SprintSession	SprintSession	Provision	Review
Project Introduction	**Team1** Initial project idea, concept	**Team1** Project Presentation incl. Review by Team2		**Team1** Project Presentation incl. Review by Team3		**Team1** Project Presentation incl. Review by Team4		**Team1** Prototype **Demo & Delivery**	
Project Introduction	**Team2** Initial project idea, concept	**Team2** Project Presentation incl. Review by Team1		**Team2** Project Presentation incl. Review by Team4		**Team2** Project Presentation incl. Review by Team3		**Team2** Prototype **Demo & Delivery**	
Project Introduction	**Team3** Initial project idea, concept		**Team3** Project Presentation incl. Review by Team4		**Team3** Project Presentation incl. Review by Team1		**Team3** Project Presentation incl. Review by Team2	**Team3** Prototype **Demo & Delivery**	
Project Introduction	**Team4** Initial project idea, concept		**Team4** Project Presentation incl. Review by Team3		**Team4** Project Presentation incl. Review (from Team2)		**Team4** Project Presentation incl. Review by Team1	**Team4** Prototype **Demo & Delivery**	

A **project presentation** (ca. 25 minutes), reflecting all project tasks, will be performed by at least 2 team members so that **each team member is participating** in the presentations **at least once**.
The **sprint session** may be started by a **team standup meeting** (max. 10 minutes) where every team member is briefly explaining his current work status, problems and the next individual project goals within the sprint session.

Gesamte Kursbewertung

Theoriefragen #1 (Kursmitte, etwa KW 44)	max. 15 Punkte
Theoriefragen #2 (vor Kursende, etwa KW 48)	max. 15 Punkte
Projektabgabe PDA (KW 49)	max. 30 Punkte