With an abundant number of Web APIs and services, mashups become increasingly popular for creating situational Web applications. Still, current mashup tooling is not suitable for end users, as the supported use cases are either trivial or require detailed knowledge of underlying technologies and development methods.

The EDYRA project aims at simplifying the creation of composite mashup applications. In order to empower end users to build mashups without programming skills, we provide immediate feedback and instant payoff from development effort, by seamlessly interweaving mashup development, usage, and reconfiguration tasks.

RESEARCH VISION

Mashup paradigms and **end user development (EUD)** complement each other quite well, since they facilitate the ad hoc development of situational applications and address the **long tail of user needs**. However, existing mashup platforms fail to deliver on a number of **research challenges**:

- Lowering the required level of technical insight, e. g., by automatically connecting suitable inputs and outputs of components.

- Offering adequate user guidance, e. g., by recommending suitable components or compositions for a task.

- Adherence to functional requirements and dependencies. For instance, a user only accepts gratis components, or Flash is required by a component to work properly.

- Non-disruptive and task-oriented application development that blends with phases of application use.

- Development and reconfiguration of the mashup becomes integral part of solving a domain problem.

- Instant feedback for user actions and seamless integration of recommended components into a running application.

Adressing these challenges, the **research goal** of EDYRA is a development process for the end user development of composite rich internet applications. The targeted audience are domain experts without extensive programming skills. They will be enabled to build mashups largely on their own by reusing building blocks that fit the current context and match their quality requirements.

DEVELOPMENT PROCESS

Instant feedback is provided by the interwoven run time and development platform.

- Extend applications on the fly as part of solving a task in the application domain.

- Abstraction of technical details through activity-based recommendations.

- Guiding users by recommendations.

- Semantics-based semi-automatic composition including mediation of interface heterogeneity.
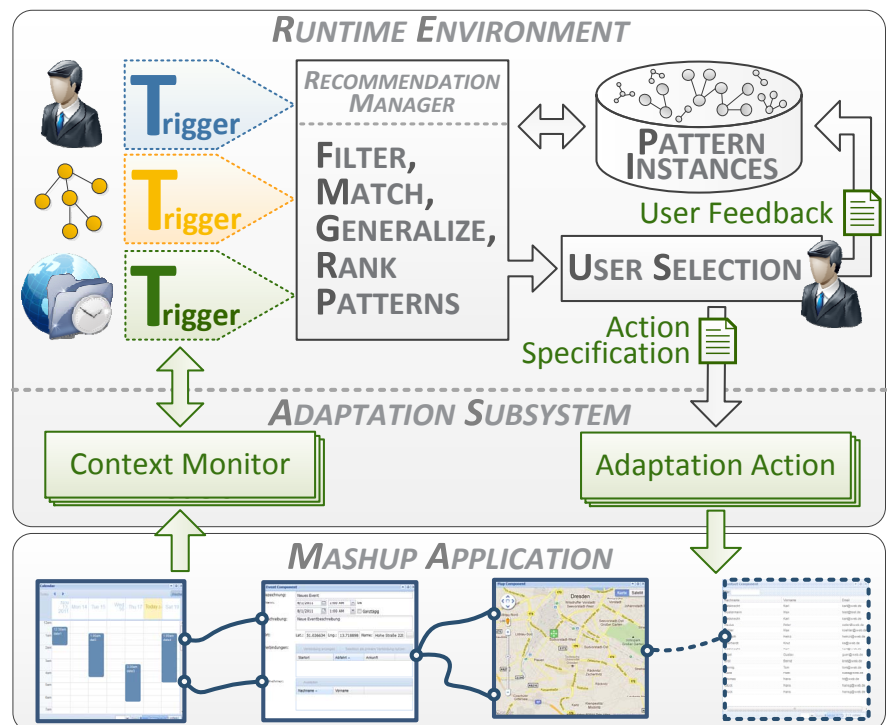

Fig. 1: The EDYRA recomendation cycle

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EDYRA

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SEMANTIC COMPONENT DE-SCRIPTION

Fundamental part of our concept is a component description featuring amongst others:

• Semantic anotation of input/output data and capabilities.

• Quality properties.

• Required hardware and software featuers of the device, and properties of the user.

QUALITY- AND REQUIREMENT-AWARE RECOMMENDATIONS

End users are guided through the composition procedure.

• Context-sensitive recommendations of composition steps that match a given set of functional and non-functional requirements.

• Recommendation combining semantics-based and crowd-based techniques.

• Fuzzy description of user requirements for ranking of candidate components regarding multiple QoS.

• Presenting functionality instead of technical descriptions of composition fragments to the end user.

• Integration of recommended composition fragments into the running application.

COLLABORATION

• Collaborate while using, creating, extending, and reconfiguring mashup applications.

• Synchronous collaboration in order to share data and functionality to accomplish
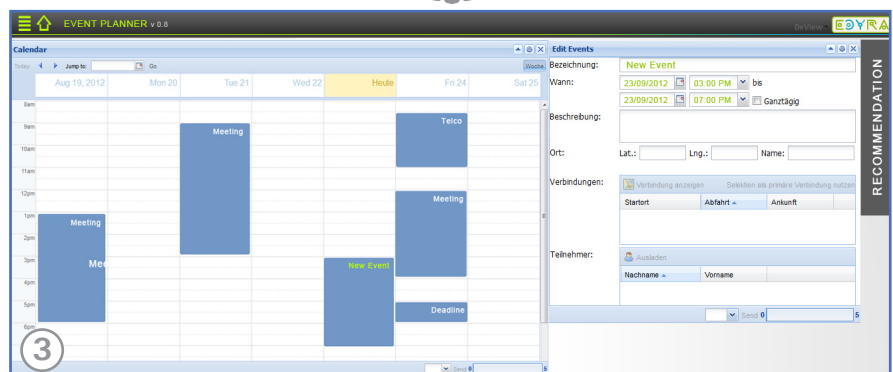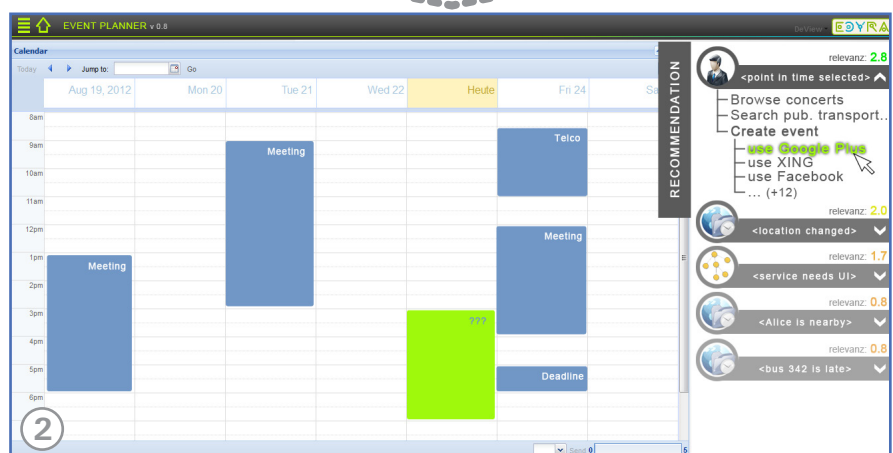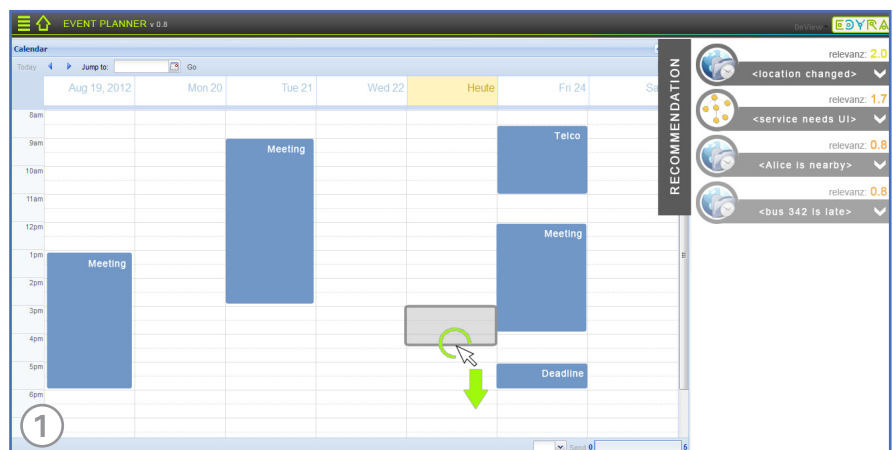

Fig. 2: *Guided development in EDYRA: While working with a mashup, triggers can lead to providing recommendations of composition steps (2). The mashup is extended seamlessly at runtime (3).*

common tasks, and enable expert support for end users.

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