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Kalypso Simulation Platform

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Kalypso is a modeling and simulation platform for GML-based models. It is primarily developed to be a user friendly tool for the simulation of hydrological and hydraulic numerical models. Thanks to Kalypso's underlying generic approaches of the GML implementation, one can use the platform to handle GML models of arbitrary nature.

Kalypso consists of a Rich Client application which lets the user visualize and edit GML data in a generic way (both GML 2 and 3 versions are supported) and is also a client for several OGC Webservices (WMS, WFS, SOS). On the other hand, Kalypso brings a set of artifacts for a service oriented architecture in order to support gml processing.

Kalypso parses GML application schemas including depending ones such as the GML base schemas itself into a strong feature- and property-typed system by building on top of standard XML techniques such as SAX and Java API for XML-Binding.

Kalypso is LGPL open source and among others it is based on the Eclipse Platform and deegree. Please see <http://www.kalypso.wb.tu-harburg.de>.

Introduction

Kalypso is a modeling and simulation platform for GML-based models. It is primarily developed to be a user friendly tool for the simulation of hydrological and hydraulic numerical models. Thanks to Kalypso's underlying generic approaches of the GML implementation, one can use the platform to handle GML models of arbitrary nature.

Kalypso Rich Client Application

Kalypso consists of a Rich Client application which lets the user visualize and edit GML data in a generic way (both GML 2 and 3 versions are supported). Beneath generic GML views and editors such as a map view, table view and tree view, other views can be registered to Kalypso via a plugin-interface for named feature types. This enables Kalypso for example to support GML-based modeling of river profiles (aka cross-sections) via a registered Observation-profile editor for a river-profile

feature.

In order to achieve a strong (feature-)type system, Kalypso parses GML application schemas including depending ones such as the GML base schemas itself into a strong feature- and property-typed system by building on top of standard XML techniques such as SAX and Java API for XML-Binding. Kalypso's schema parser supports a wide range of XML features such as complex types, groups, includes, imports and substitution groups. Higher level GML types such as Observations and Measurements are supported as well in a generic way.

At the same time, Kalypso is a client for several OGC WebServices? such as WMS and WFS. The development of an SOS client is being undertaken as well.

Kalypso-Services

Kalypso brings a set of artifacts for a service oriented architecture. It consists of server applications with generic support for gml processing. On top of this infrastructure, special numerical models have been implemented. Legacy modeling applications have been integrated into Kalypso's Model Plugin architecture, suppressing the presence of heterogenous GUI front-ends and distributed installations. Further GML based processes are in construction and an adoption of the OGC Web Processing Service interface is under consideration.

Kalypso-API

Kalypso is LGPL open source and among others it is based on the Eclipse Platform and deegree. The sources and a developer portal are available at <http://www.kalypso.wb.tu-harburg.de>. For a benefit of semantic interoperability we want to encourage developers and model designers to use strong typed GML application schemas and applications. As the sources are structured in a modular way, the source code for GML-processing can be used also separately from the GUI-part.

Kalypso is under active development and currently provides user interfaces for several numerical (hydrological and hydraulic) models for various river basins in Germany. Furthermore three different Decision Support Systems with a strong accent on ecological information management are based on Kalypso's API.

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