Introduction to FME-based Data Processing Services

Marcel Sprotte (con terra)
Who am I?

- Marcel Sprotte
  - Geographer
  - Started working in big data migration projects
  
  > Since 2012 at con terra GmbH

  > Team Project Service, Data Integration

  > Consulting und Training
Geo solutions that convince.

We develop geo-solutions that make business processes more efficient, cost-effective and transparent.
1993 Foundation
1995 Esri Partner
1999 Safe Software Partner
2004 Foundation 52°North
2006 Group of companies with Esri Deutschland
2011 100-Employees
2018 Esri Platinum Partner Independent company
2019 160+ Employees
Geo-IT for private sector and public administration
Data Integration – mit FME Technologie

FME – the simple solution for complex Data Integration

- FME makes (spatial) information usable - independent of data source, data structure, data schema and data format

- FME supports importing and exporting of more than 450 data sources such as GIS and CAD data, raster data, web services and (spatial) databases

- Simple creation of complex workflows without coding using over 500 so called transformers
Different Data Types and Formats – One Solution
Safe Software Inc.

- Based in Vancouver, Canada
- Founded in 1993 by Don Murray and Dale Lutz
  - Focused on development
- Worldwide Partner Network to provide professional services (VAR, OEM)
- www.safe.com
Partnership - Safe Software Inc. and con terra GmbH

- con terra is **Platinum Partner of** Safe Software
  - Close relationship since 1998
  - Reseller / Top Partner of the Year (2007 to 2019)
  - European Service Center for FME

- Creating and developing solutions for the German and the Spanish market
  - German/ Spanish Version of FME
  - INSPIRE Solution Pack for FME
  - map.apps ETL Extension
  - Plug-ins (Reprojektions, ISYBau, Geograf, ...)
  - NAS, EDBS, XPlanGML, BIM, INSPIRE, S-57, OKSTRA...
Core Functionalities

- Format Conversion
  > More than 450 different formats can be read and written
- Structural Transformation
  > Manipulation of the data model
- Content Transformation
  > Using/ adding information to the data
- Geometric Transformation
  > Changing/ restructuring geometry
- Migrating Data
  > Integrating various source formats into a new data structure
FME Desktop

FME Workbench
FME Workbench

- Intuitive point-and-click graphic interface to enable translations to be graphically described as a flow of data

- Analysing Source and Destination Data and visual inspection

- Schema Mapping

- Geometric operations, Quality Assurance, data consistency, etc.
Data Transformation with FME – Workbench

Input  Data Modeling  Output
FME Editions

- How do editions differ
  - The number of supported formats
- Functionality and the number of transformer stays the same
FME Lizenzierung

- Single Use License
- Network license
  > A license to borrow!
FME Server
FME Server

- FME Processes via the Internet
- Automations
- Data Distribution
- Data Upload
- Quality Assurance
- Integration in other Applications
Publishing a Workspace

- Creating a FME process in FME Workbench

- Publishing the Workspace onto the FME Server
  - Connecting to the FME Server
  - If needed, uploading source data
  - Choosing the service

- Run the Workspace on FME Server
Publishing a Workspace

- Connecting via WebConnection
- Storing the Workspace in a Repository
Publishing a Workspace

- Selection and Configuration of Services
Running a Process on FME Server

- Running a Process via
  - Website (manually)
  - Event-based
  - REST
  - Scheduling
  - FME Workbench
  - FME Server App
  - Other Apps
FME Server – the Result

- Synchronous
  - Result is directly processed and delivered
  - Download via http://...

- Asynchronous
  - Result will be written later
  - Receive via email attachment

- Stream / Service
  - Data is processed on the fly
Security

- User centered („create and own“)
- A user owns the source he has created (Workspace, Repository, etc.).
  > Full Control
  > Sharing
- Role based
- Active Directory
- HTTPS
Roles and Actors

Author
FME Workspaces

User
Consuming data/services

Administrator
Managing FME Server

Developer
Integration
Automations

- Event based Processing
- Directory Watch
- System Events
- Schedules
- …
Workspace Viewer

- Ansicht von Workspaces im Web UI
- Weitere Ausbaustufen folgen
Possibilities to integrate FME Server in (Web)-Apps

- Web Application
  - JavaScript API
  - REST
  - Direct URL
- FME Server
- ENTERPRISE AUTOMATION
- Desktop Software
CONNECT. TRANSFORM. AUTOMATE.

One Powerful Transformation Engine - Three Ways to Deploy

- FME Desktop
  - Intuitive Workflow Authoring
- FME Server
  - Enterprise Automation
- FME Cloud
  - Take Automation to the Cloud
Let’s step into the real world...
Examples
The Netzplan
Netzplan Münster

- A new service by Stadtwerke Münster GmbH

- Real Time Display of bus positions in Münster

- FME Server is connecting to the open API to get data
  - Processing
  - Reformatting
  - Making it available for displaying on https://netzplan-muenster.de/
Architecture

- IVU System
  - Stadtwerke MS
  - EPON CSV
    - SWMS Haltestellen
    - SWMS Linienverläufe

- FME Server
  - Engine Level
    - FME Engine 1
    - FME Engine 2
    - FME Engine ...

- Amazon Services
  - DynamoDB
  - Amazon Lambda
  - API Gateway

- Geo DB

- Google
  - Ist-Zeit Feed
  - GTFS Real Time

- Live Public Transport Service
  - Web Socket
  - Rest Service

- Extern
  - Intern
  - Ist-Zeit Feed
  - GTFS Real Time

- VDV 453/454
- SWMS Haltestellen
- SWMS Linienverläufe
- FME Engine 1
- FME Engine 2
- FME Engine ...
- Amazon Services
- DynamoDB
- Amazon Lambda
- API Gateway

- Geo DB
Netzplan Münster

Google Maps
map.apps and map.apps ETL
map.apps

Software component of con terra technologies

- software component of con terra technologies
- Individual and user-centered
- Open, adaptable and integrable
- Sustainable and efficient
- Established and mature
map.apps ETL

- Integrate FME Server possibilities into map.apps
- No coding needed!

- File Upload
- File Download
- DB Import
- DB Export
- Web Connect
- Real Time
FME-Process 1:1 map.apps ETL - Configuration through the administrator  
map.apps ETL - App for the user
Orientation at a conference before the Pandemic

An Interactive Floor Plan
Where is the room „Saal Bonn“?

Which presentation is coming up in the room I sit in?

Where can I get a cup of coffee?

What is this guy talking about?
Requirements

- Fully responsive design
  > Mobile usage
- Re-usable
- Needful event information
- Connection to the agenda database
- Linked within the FMEdays App
- Using con terra solution patterns
FMEdays Interactive Floor Plan

- Using con terra solution patterns
- map.apps 4.6
- ArcGIS Enterprise
- FME Technology
The Infrastructure
It’s been a while... getting hungry?

Tracking down a Food Truck
The Greenhouse Company

- Food Truck Start Up from Münster
- Fresh Salads and more for a healthy lunch break
- Always honks when it arrives
- Long queues before the truck even arrives!
The Idea

- Developing a mobile app for positioning and notification
- Map service with map.apps and map.apps ETL
- Using the FME Server Notification to the max
Preparation

- Creating Android-App
- Using a mobile device as a sensor within the truck
- Identifying stops and times
- Creating Geofences
Implementation

- User Registration

- Tracking of Food Truck position
  > Via Geofence
  > Emailing to users if the truck is near their position

- Using last known spot for map extent
Architecture

WebSocket

Live-Position

Data
- Geofences
- Hungry people

map.apps

emailing
Result

- Responsive application with map.apps
  - Live Positioning
  - Stops

- Registration

- Roll Out to the customer
thanks!

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