**WebRatio**: a Model-Driven development environment for building Web applications based on BPMN and WebML

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and Travel Advisor example from FAU
WebRatio guidelines and key ideas

Business requirements, not technologies, are the driver of software development process

- **Capture** business requirements in abstract models
- Build an application **tailored** to business needs

Your **hands on** a real working prototype, at any time

- Automatic code generation and **evolutionary prototyping**
- Customer / **User involvement** in the development process

100% Model-Driven approach, without compromises

- Customize the development environment, rather than the application
- Generate an application from scratch
- **Reuse** every custom component
What is WebRatio?
WebRatio is a **Model-Driven development environment** allowing to capture business requirements in abstract models and automatically generate a full-featured, industrial-strength, business application.

With WebRatio your ideas become a solution in 3 steps:

1. **Design the Model**
2. **Customize the Rules**
3. **Generate the Application**
1. Design the Model

Two types of models concur to define the application requirements:

**Process Model**
- It is used to define:
  - Organization and roles
  - Activities and assignments
  - Business rules
  - Business workflow
- It is based on **BPMN** notation

**Application Model**
- It is used to define:
  - Page contents
  - Business logic
  - User interface & Visual identity
  - Integration
- It is based on **WebML** modelling language
2. Customize the Rules

The **generation rules** used by WebRatio for building the final Web application are fully **customizable** and **extensible**. More specifically, you can define:

**Layout templates**
For a **perfectly fine-tuned layout**, tailored to customer’s visual identity

Once defined, they can be **reused** for generating any application with the same visual identity

**Custom model components**
Written in Java and used for implementing any kind of business logic, integration or complex task

Once defined, they can be **reused** in any application model for implementing the same business logic
Starting from the models and rules defined in the previous steps, WebRatio is able to **automatically generate** the final application. The result is:

- a **standard and open Java Web application**, with no proprietary runtime
- deployable on **any Java Application Server**
A perspective for each type of user

**WebRatio Development Environment**

- Process Model (BPMN)
- Application Model (WebML)
- Layout Templates (HTML, CSS, JavaScript, etc.)
- Custom Components (Java)

**Roles and Responsibilities**

- **Business Analyst** captures business process requirements in the Business Process Model.
- **Application Analyst / WR Modeller** captures functional requirements in the Application Model.
- **Web Designer** designs all the layout templates tailored to the customer’s visual identity.
- **Java Developer** builds the custom components needed for complex logic and/or integration.

**Layered Architecture**

- **Process layer**
- **Presentation layer**
- **Service layer**
- **Integration layer**
- **Data layer**

**Visual identity**
- Standard Java Web application

**Application Model**
- Custom Components (Java)
- Layout Templates (HTML, CSS, JavaScript, etc.)
Thank you

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Domain Model = Trip Advisor
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Add Database
Demo to show – sort by

1. Venue Category
2. Venue City
3. Venue Name
4. Venue State
5. Venue Country
For Categories – You want the Admin to select preexisting predetermined Categories. This is done by selecting all the existing categories from the database and sending it to Venue info and making Admin selects from a drop down menu.
Add New Venue - Link flows with 2 binded parameters
Add New Venue - Tie all the fields to the Venue table Attributes
Add New Venue

Category is tied with the relationship role between venue table and category table and the input field is a selection field. A new Venue must fit into created Category by the Admin.
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Category is tied with the relationship role between venue table and category table and the input field is a selection field. A new Venue must fit into created Category by the Admin.
Add New Venue

Now, the Layout needs to be modified so Admin can enter the input data – Under Venue Management
Venue Search

From Category Table User must select the Venue category - no option is given to enter any data

From Search – Binding Parameters are passed to the list to filter. Category is a selection field. Other fields user enter. For Sprint 3 – we will also make state, county, and city as selection field.
Venue Search
Venue Search - Venue list is binded to search venue
Venue Search – Venue Display List

All field are set as False so user filter the list depending the number of Venues displayed. Not all fields need to be satisfied to be displayed in the list.
Venue Search - Venue Display List

Venue List selected from the Venue table
Venue Search - Venue Display List

Set Validate to 0 for now
Venue Search - Venue Display List

All fields are set as False so the user can filter the list depending the number of Venue displayed. Not all fields need to be satisfied to be displayed in the list.

The Venue list is sorted by Category and Rating.
Hotel search in USA – usa and USA are displayed.
- **Venue Search – Venue Display - testing**

Only County entered. USA
• Venue Search – Venue Display - testing
• Venue Reviews

1. Write reviews for the venue selected
2. Read reviews for the venue selected
3. Delete reviews
• Venue Reviews — Domain model

Reviews table has two attributes that are connected to Venue Table (Venue oid) and User table (Username). There is also another attribute called Reviewer that user can input as the name to be displayed with his review.
To write a review, user login and select review venue.
• **Venue Reviews** - write a review

User selects the Venue

**Select Venue**

- **category**: Amusement Parks
- **code**: 3001
- **name**: Busch Gardens Tampa Bay
  - *Busch Gardens Tampa Bay is the ultimate family adventure park, offering 335 acres of fascinating attractions based on exotic adventures around the world. A unique blend of thrilling rides, one of the country’s premier zoos with more than 2,000 animals, live shows, restaurants, shops and games, Busch Gardens Tampa Bay provides unrivaled excitement for guests of every age.*
- **price**: $170
- **thumbnail**: ![Busch Gardens](image_url)
- **# photos**: 1
• Venue Reviews - write a review

Venue oid is passed to Review Venue

Note: For Sprint 1, we wrote the review but didn’t tie it the Venue or didn’t know how.
- **Venue Reviews**

Note: For Sprint 1, we wrote the review but didn’t tie it to the Venue or didn’t know how.
Venue Reviews  - write a review

In Form Review, input fields are created. Date will be date of stay or visit, user can load his own pictures, rate the venue, user name will be the name to be displayed with the review, and venue oid will preload.
The review is entered and saved. We have one review for Tampa Bush gardens. Next time a user looks at this Venue and clicks details, he will see a person named Tom has visited the place on Nov 4, 2013 and left a review.

Maybe the user likes to read all the bad reviews first, so we need to add sorting capability to the rating. Thus, we go back to display of review and add sorting to rating.
• Venue Reviews  - View review
Now, this is great but the reviews started to appear for all the venues. So, we have a problem. First, we need to make sure the reviews are stored properly under each venue id in the database. We check the table Review in the database. We can see each review was stored under proper Venue ID 33 being the Tampa Bush gardens.

<table>
<thead>
<tr>
<th>oid</th>
<th>review</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>best place to visit with you kids</td>
</tr>
<tr>
<td>2</td>
<td>Busch Gardens Tampa is a great park with great rides, definitely worth a visit any ..... really very impractical for people and on our case very dangerous</td>
</tr>
</tbody>
</table>

We know now the problem is on display so we try to fix this. We add a relationship role condition to review display to be true.

And we set binded parameter in data flow.

So the Venue oid is passed as RoleContion4 for display. This will prevent reviews of all venue and only show the selected venue review. Now, let us see if this works.
### Venue Reviews

- **View review**

<table>
<thead>
<tr>
<th>review</th>
<th>date</th>
<th>rating</th>
<th>Reviewer</th>
<th>pictures</th>
</tr>
</thead>
<tbody>
<tr>
<td>best place to visit with you kids</td>
<td>11/04/2013</td>
<td>5</td>
<td>Tom</td>
<td>tamp bush gardens.bmp</td>
</tr>
<tr>
<td>Busch Gardens Tampa is a great park with great rides, definitely worth a visit any ..... really very impractical for people and on our case very dangerous.</td>
<td>11/16/2013</td>
<td>2</td>
<td>David</td>
<td></td>
</tr>
</tbody>
</table>
Trip Advisor Demo