Tutorial: Learn to build UML profiles

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Lab 1 – A profile to express relational databases

Objectives:

- Build a profile
- Apply it on a model

Exercise:

1. Create a profile to express relational databases
   A. Identify the concepts that you want to add to UML (Table, Primary key, etc.)
   B. Identify the meta-classes that will be extended by the concepts newly introduced
   C. Implement the profile within Papyrus
      - File -> New -> Papyrus Project -> Select "SW engineering – profile" as architectural context
2. Customize the notation associated to the stereotypes
   A. Associate each of your stereotype with a dedicated icon. This icon will be displayed when you will use your stereotypes on a model. Note: icons can be found at https://www.iconfinder.com/.
3. Use your profile on a database model
   A. Import the model that can be found in the subfolder **"Lab1-Profile-For-RelationalDatabases"**
   B. Apply your profile on the imported model
      - Click on the root element of your model
      - In the property view select the "profile" tab
      - Click on the "+" button and reference the profile that is in your workspace.
   C. Complete the database model (using your stereotypes) to satisfy the following requirements
      - A customer is identified by an "ID"
      - A customer can be client in zero or many banks
      - A bank handles zero or many account
      - A Bank is identified by an "ID"
      - A customer is the owner of a specific account
      - A account has only one owner
      - A customer can realize transactions.
      - A transaction takes place at a specific date.
      - A transaction is related to a specific account.
      - **Note: If you cannot fulfill all the requirements, this probably means you need to refine your profile.**

Lab 2 – Requirements modeling with SysML v1

Requirements of a Radio Alarm Clock

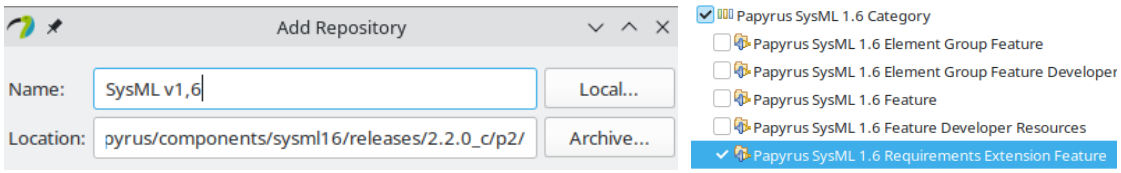
«requirement» Simuler l'aube avant le reveil	«requirement» Reveil automatique	«requirement» Projection	«requirement» Visibilite
«Requirement» id= text=Une lumiere doit s'allumer progressivement 30mn avant le reveil.	«Requirement» id= text=Le radio reveil doit assurer e l'utilisateur un reveil automatique e l'heure souhaitee avec une simulation d'aube et la radio ou un buzzer.	«Requirement» id= text=Un projecteur doit permettre d'afficher l'heure au plafond	«Requirement» id= text=La projection ne sera visible que si la piece est dans l'obscurite
«requirement» Cadran rotatif	**«requirement» Reglage horloge**	**«requirement» Tension**	**«requirement» Secours**
«Requirement» id= text=Le reglage de l'horologe et de l'alarme se fera par rotation d'un cadran: sens anti-horaire pour les heures, sens horaire pour les minutes.	«Requirement» id= text=On doit pouvoir regler facilement les heures et les minutes de l'affichage courant ainsi que de l'alarme	«Requirement» id= text=La tension d'alimentation devra etre 230V-50hz	«Requirement» id= text=Une pile devra permettre que les reglages ne soient pas perdus en cas de coupure de courant
«requirement» Dissipation	**«requirement» Gestion radio**	**«requirement» Alimentation**	**«requirement» Pile**
«Requirement» id= text=La dissipation d'énergie du radio reveil ne doit pas dépasser 25W.	«Requirement» id= text=On doit pouvoir changer facilement la station et le volume de la radio.	«Requirement» id= text=Le reveil sera alimente en le branchant sur le secteur	«Requirement» id= text=La pile de secours (non fournie) devra une pile 6LR61 9V

Exercise (using Papyrus)

1. Install the requirements sub-profile of SysML 1.6 via the update site [1]. Use Help > Install New Software > Add… (Add repository, see left part of [2]), select “Papyrus SysML 1.6 requirements extension” afterwards, as shown in the right part of [2].
2. Create an AlarmClock SysML project (SysML architectural context)
3. Add a package called “requirements”
4. Create a requirements diagram
5. Identify composite requirements and decompose them into elementary requirements. Think about composition links.
6. Add derivation relationships if needed.

[1] https://download.eclipse.org/modeling/mdt/papyrus/components/sysml16/releases/2.2.0_c/p2/

[2]



Expected outcome

The report (as a PDF) and the model should be send to ansgar.radermacher@cea.fr. Please zip your report and your model in an archive “**FIRSTNAME-LASTNAME.zip**”