PragmaDev Process, a new tool to verify business processes.

Paris - France - November 13th, 2019 - PragmaDev launches *PragmaDev Process* a new product that aims at verifying business process models described with BPMN (Business Process Model Notation). The new product includes an editor, an executor, and an explorer. It is the outcome of a 2 years research project financed by the French Army with use cases from Eurocontrol and Airbus Defence & Space. The editor is free of charge without any restrictions and the executor offers free execution of small models.

Complex organizations or system operations are based on processes described in graphical models. The most popular notation is BPMN (Business Process Model Notation). It describes what the different partici-pants in the organisation do and how they interact with each other. These processes must be thoroughly discussed before they are applied in a real situation. Any misunderstanding of the process might lead to a catastrophic situation in operation.

Since 2001 PragmaDev has developed a high level of expertise in executable models. *PragmaDev Studio* is a recognized modeling tool to specify and design complex communicating systems. The idea was to transfer some of the advanced features of Studio in a tool based on BPMN. The work was carried on with real mod-els coming from military and civilian contexts.

"*When we started the project we thought BPMN models were quite straight forward and fairly simple to understand. As the project advanced it turned out the execution semantic of the models could create some unexpected flows of execution and most of our use cases were wrong in one way or another. This tool will definitely help all business process modelers to get rid of any ambiguity. Because there are domains where there can not be any compromise on the semantic.*" says Emmanuel Gaudin, PragmaDev Founder & CEO.

Among the main features are:

- **Editor**
  The editor can edit brand new diagrams, and can import or export any BPMN diagram. When importing, the tool checks the xml conformity to the standard and the static semantic of the dia-grams. The static semantic checker implements all the rules defined in the standard such as:
  - Sequence flow consistency.
  - Message flow consistency.
  - Gateway and events consistency.
  - etc...

- **Execution**
  Based on BPMN standard semantic the modeler can execute the process step by step. The tool will outline the possible choices at each step of execution. There is no possible human interpreta-tion leading to misunderstanding.
  The execution can generate a trace which can be used as a reference documentation. It can also be automatically re-executed on the model to verify a new version of the model behaves like an older one. For that purpose the tool will trigger the same symbols the user did manually step by

step. The tool will verify the same symbols are executed when the scenario is replayed based on their logical ids and on their textual contents.

Execution scenarios are generated on the fly as MSCs (Message Sequence Chart) and can be replayed on the model step by step or automatically.

- **Exploration**

  As a result of a collaboration with ENSTA Bretagne research lab the tool can explore the different paths of execution automatically.

  - Complexity index

    It is basically the number of possible paths, it is a rough indicator that can alert on possible flaws in the process. For example if a model made of 15 symbols can generate more than a 1000 possible steps of execution, it is doubtful that is what the designer intended to describe.

  - Property verification

    A property can be automatically verified at each step of execution. If a violation is encountered the tool will automatically generate the scenario leading to the issue.

- **Properties**

  A property is something that is always true during execution, for example a sequence of events. Properties can be expressed graphically in *PragmaDev Process* with the PSC (Property Sequence Chart). Once the property is defined it can be verified automatically with OBP (Observer Based Prover) tool from our partner ENSTA Bretagne. The tool will automatically explore all possible scenarios.

About PragmaDev

PragmaDev is a privately held company based in Paris France that provides since 2001 a set of model driven tools dedicated to the specification and design of communicating systems: *PragmaDev Studio*. PragmaDev has just introduced *PragmaDev Process*, a simple and powerful tool that aims at helping business process modelers to verify their models. PragmaDev customers include Airbus, Nokia, Renault, the French Army, Wipro, ST-Microelectronics, Korean Telecom, the European Space Agency, Toshiba, and LG Electronics.

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