

## Tool Comparison Worksheet

Automating development with Domain-Specific Modeling (DSM) involves evaluating existing tools and their features, related costs and availability of supporting services. The list below aims to help you in comparing MetaEdit+ with alternative tools that you may be considering.

With this form you can make your own comparison. Just add any tool you would like to compare MetaEdit+ with into the right column.

### Language development

Tool features	MetaEdit+	Tool: _____
• Several integrated modeling languages	✓	
• Multiple simultaneous modelers	✓	
• Language definition tools (metamodeling)	✓	<ul style="list-style-type: none"> <li>• Graphical</li> <li>• Form-based</li> </ul>
• Integrated metamodeling and modeling (test the language while defining it simultaneously)	✓	Integrated tools
• Automated language deployment to modelers	✓	
• Metamodel coverage for rules and constraints of the language	✓	<ul style="list-style-type: none"> <li>• Rule and constraint definition tools</li> <li>• Generator-based constraints</li> <li>• Regular expressions</li> </ul>
• Metamodel checking during language definition	✓	
• Traceability between elements of a metamodel	✓	Bi-directional: <ul style="list-style-type: none"> <li>• Who is using the element</li> <li>• What elements are used</li> </ul>
• Metamodel evolution	✓	Deployed language can be safely changed
• A metamodel specifies one or multiple languages	✓	Both possible
• Automatic models-updating upon metamodel change	✓	Models will always open in editors
• Support for old language versions	✓	
• A repository to handle various metamodels	✓	Object Repository
• Import and export of metamodels	✓	<ul style="list-style-type: none"> <li>• XML</li> <li>• Binary formats</li> </ul> These can cover also <ul style="list-style-type: none"> <li>• Notation (symbols)</li> <li>• Constraints</li> <li>• Generators</li> </ul>
• Library of metamodels	✓	70+ languages available
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• Extend UML with stereotypes, tagged values and constraints	✓	Possible, but why? <ul style="list-style-type: none"> <li>• Modifying a metamodel gives more power</li> <li>• Can also remove unnecessary elements, add new types, constraints etc.</li> </ul>

## Symbol and representation definition

Tool features	MetaEdit+	Tool: _____
• Specifying notation for the language	✓ Draw in Symbol Editor or import symbols	
• Rich notation (more than just an icon for nodes and a line for arcs)	✓ Symbols for objects, relationships, roles and properties	
• Symbols can change based on model data	✓ <ul style="list-style-type: none"> <li>• Generator-based symbol elements</li> <li>• Conditional symbols</li> <li>• Regular expressions</li> <li>• Ports in symbol to connect with</li> </ul>	
• Library of symbols available	✓ Several hundred notational elements	
• Import (and export) symbols	✓ <ul style="list-style-type: none"> <li>• Scalable vector graphics (SVG)</li> <li>• Bitmaps</li> </ul>	
• Access and modify notation with any programming language/platform	✓ SOAP/.NET/Web services API	
• Modeling tool development automated	✓ Editors immediately available with <ul style="list-style-type: none"> <li>• icons, menus, toolbars</li> <li>• Copy &amp; paste, replace, trace</li> <li>• Auto-layout, undo &amp; redo etc.</li> </ul>	

## Generator definition

• Generator and metamodel are integrated	✓	
• Supports straight model-to-code transformations	✓ No intermediary formats needed	
• Supports model-to-model transformations	✓ Between the same or different metamodels	
• Support for templates, visitor pattern, crawlers and multiple streams	✓	
• Syntax highlighting and output filtering	✓ Generator Editor	
• Generator debugging	✓ Generator Debugger	
• Generated and hand-written code can be separated	✓	
• Protected blocks can be defined into the generated result	✓	
• Many to many mappings from models to files	✓	
• Read and parse external files	✓	

## Modeling with your language

• Support for different kind of editors	✓ <ul style="list-style-type: none"> <li>• Diagram</li> <li>• Matrix</li> <li>• Table</li> </ul>	
• Support for modeling operations (copy/paste, reuse, replace, group, layout, grids, zooms, model hierarchies etc)	✓	
• Support for multiple concurrent modelers	✓ <ul style="list-style-type: none"> <li>• Multi-user</li> <li>• Single-user functionality</li> </ul>	
• Support for large number of models	✓ 4 billion model objects per project	
• Automatic validation of models based on the metamodel	✓	
• Constraints can be checked at modeling time or when wanted	✓ Automatically available based on either <ul style="list-style-type: none"> <li>• Metamodel</li> <li>• Model-checking reports</li> </ul>	
• Link and reuse among models	✓ As defined in the metamodels	
• View changes graphically	✓ Changes highlighted directly in the models	

Modeling tool features (continue)	MetaEdit+	Tool: _____
• Models update automatically if a new language version is available	✓ If desired	
• Models can be saved and stored using the older language version	✓ If desired	
• Model browsing tools	✓ Various browsers with filtering and different hierarchies	
• Document generation	✓ Predefined, customizable generators <ul style="list-style-type: none"> <li>• RTF, Word, HTML</li> </ul>	
• Metrics and model checking	✓	
• Traceability between model elements	✓	
• Automated trace on modeling history and change comparison	✓ Change and Version Tool with <ul style="list-style-type: none"> <li>• Tree view, graphical, textual</li> </ul>	
• Import and export of models	✓ <ul style="list-style-type: none"> <li>• XML</li> <li>• Binary format</li> <li>• Includes also representations</li> </ul>	
• Model-to-model transformation	✓ <ul style="list-style-type: none"> <li>• With Generator Editor using XML as intermediary format</li> <li>• Directly using the API</li> </ul>	
• Access and modify models with any programming language/platform	✓ SOAP/Web services API available for almost any programming language and platform	
• Reverse engineering	✓ <ul style="list-style-type: none"> <li>• With XML import</li> <li>• API</li> <li>• Generator language (MERL)</li> </ul>	
• Trace back from generated code to models	✓ Live-code function: click the generated code to see the model	
• Animate models during program execution	✓ Animate with API	
• UML support	✓ UML metamodel is one of the many included	

## Other

• IDE integration	✓ <ul style="list-style-type: none"> <li>• Eclipse plug-in</li> <li>• Visual Studio extension</li> </ul>	
• Version control system integration	✓ <ul style="list-style-type: none"> <li>• SVN, GIT, etc.</li> </ul>	
• Can be integrated with other tools (simulators, versioning, emulator, etc).	✓ Easy as based on most commonly applied integration techniques <ul style="list-style-type: none"> <li>• Web services/SOAP/.NET</li> <li>• XML</li> <li>• Command line interface</li> </ul>	
• Easy to use and learn	✓	
• Other technologies required	⊘	
• Runs on different platforms	✓ <ul style="list-style-type: none"> <li>• Multiple platforms</li> <li>• Heterogeneous platform set-up</li> </ul>	
• Manuals and tutorial available	✓ <ul style="list-style-type: none"> <li>• Modeling, Metamodeling, Sysadmin</li> <li>• Tutorials, Examples and cases</li> </ul>	

## Supporting services

• Maintenance	✓ Covering minor and major tool upgrades	
• Support and helpdesk	✓ On-site, forum, email, phone, fax	
• Training services	✓ <ul style="list-style-type: none"> <li>• DSM creation for experts</li> <li>• DSM use for modelers</li> <li>• Organizational change for process, management</li> </ul>	
• Consulting services	✓	