UML-based ArchiMate in Papyrus

By: Thomas Gericke

ADOCUS

About Thomas

- Thomas Gericke, BSc Computer science, Adocus
- Worked with methodology and modeling since 1997
- Areas: Software architecture, Requirements, Business modeling etc.
- Worked with: consulting, mentoring, teaching
- Tools: IBM Rational Rose, IBM Rational Software Architect, Sparx Enterprise Architect, Papyrus etc.
- Notations: UML, Astrakan, BPMN, ArchiMate
- Certifications: TOGAF, SAFe...

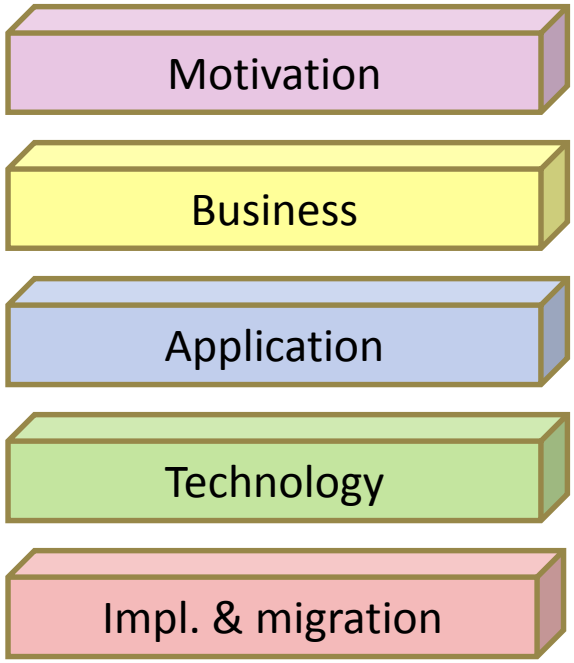
About Adocus

- Specialized within enterprise architecture and visual modeling
- Provides consulting services, training and tool customization
- Specialized in modeling tools:
  - Papyrus UML
  - IBM Rational Software Architect (RSA)
  - Sparx Enterprise Architect
- Has a standard product MetaModelAgent
  - For Papyrus UML and RSA, available on Eclipse Marketplace
  - Helps define and apply UML based DSMLs
- Member of Papyrus Industrial Consortium

What ArchiMate® is

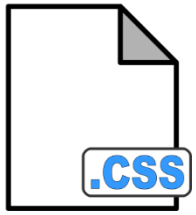
- Enterprise architecture visual modeling notation
- Unrelated to, but inspired by UML
- High level, ”broad”
- Covering strategic aspects of modeling
- Governed by the Open Group®
  - Used by TOGAF®
- Requires license in some cases
  - Not for internal use
  - Not for bundling within free tools
- Must be complemented with other model types:
  - Business models (BPMN etc)
  - Technical models (UML etc)
  - Etc...

ARCHIMATE®



About extensibility in Papyrus

- Papyrus can be extended with
  - Profiles/stereotypes based upon standard UML profile extensibility
  - Symbol appearance (controlled with CSS and SVG:s)
  - Tailorable toolbars, menus, property views etc.
  - Code plugins/program logic that adds new features and integrations
- Papyrus can also be configured by:
  - Hiding existing functionality



Drivers, goals , NFRs, constraints, principles...

Increased interest in EA, ArchiMate and Papyrus (Driver)

ArchiMate in Papyrus (Goal)

Seamless integration from strategy to realization (Goal)

Compliant with ArchiMate specification (Constraint)

Independent of other Papyrus software (NFR)

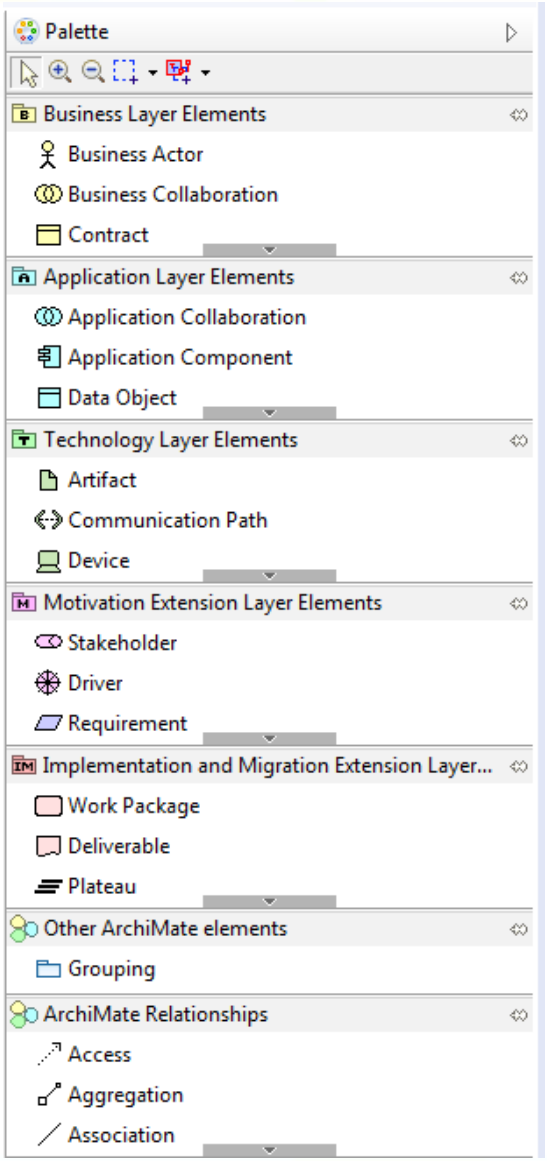
Keep within boundaries for what is possible with extensions in Papyrus (Constraint)

Use closest UML classifier as far as possible (Principle)

Use closest UML relation as far as possible (Principle)

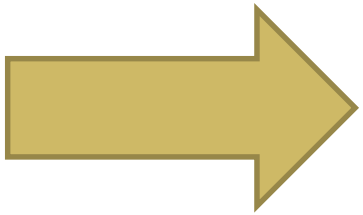
Details about the upcoming extension

- Papyrus ArchiMate UML extension from Adocus includes:
  - UML profile/stereotypes
  - Graphics for ArchiMate symbols
  - Add context menu and diagram tool palette
  - Wizards & Templates
- Will be offered as open source and contributed to Papyrus Industrial Consortium



General mapping rules

- External services/functions →Use case
- Internal services/functions → Collaboration
- Roles of some kind → Actor
- Things in the physical world → Node



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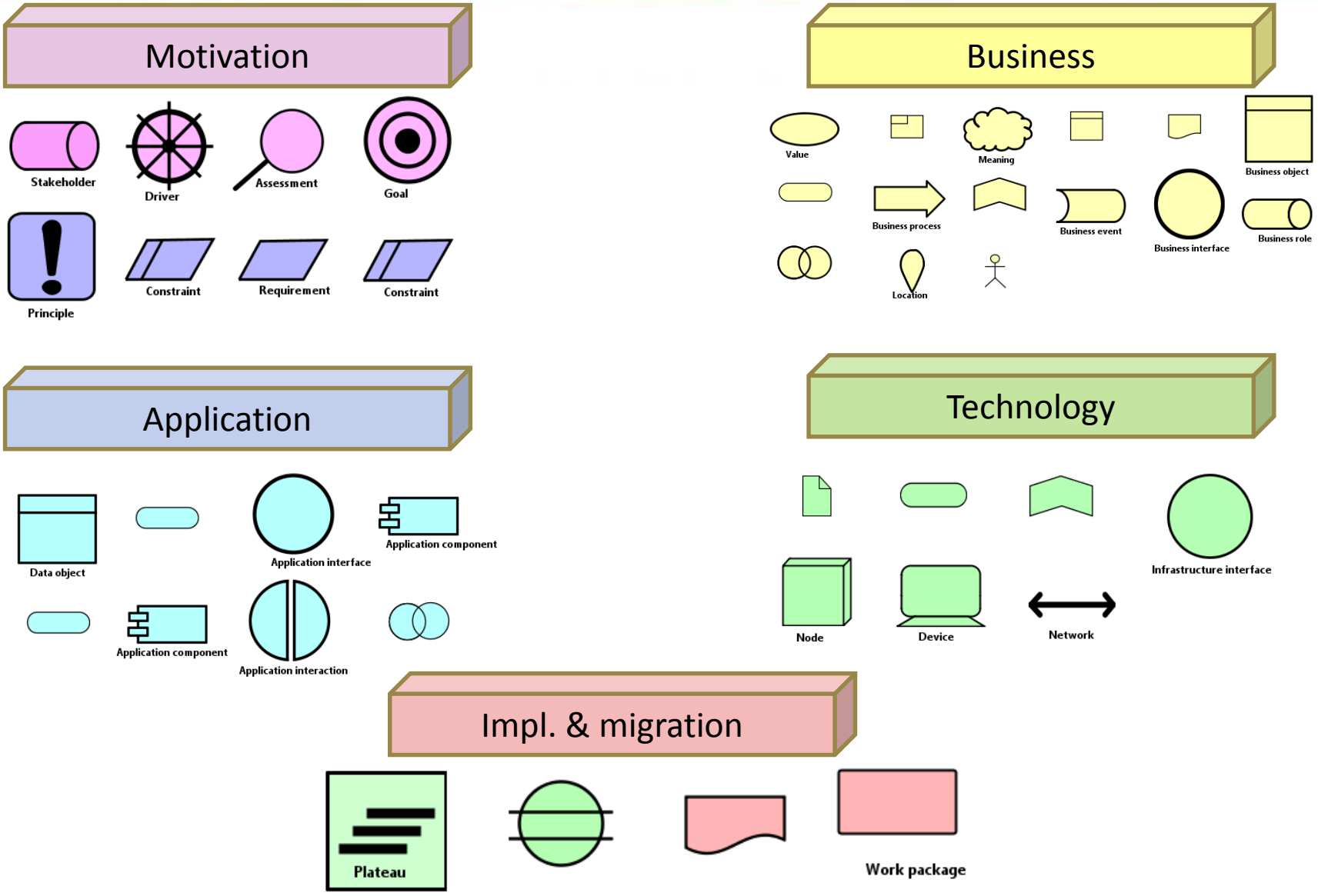
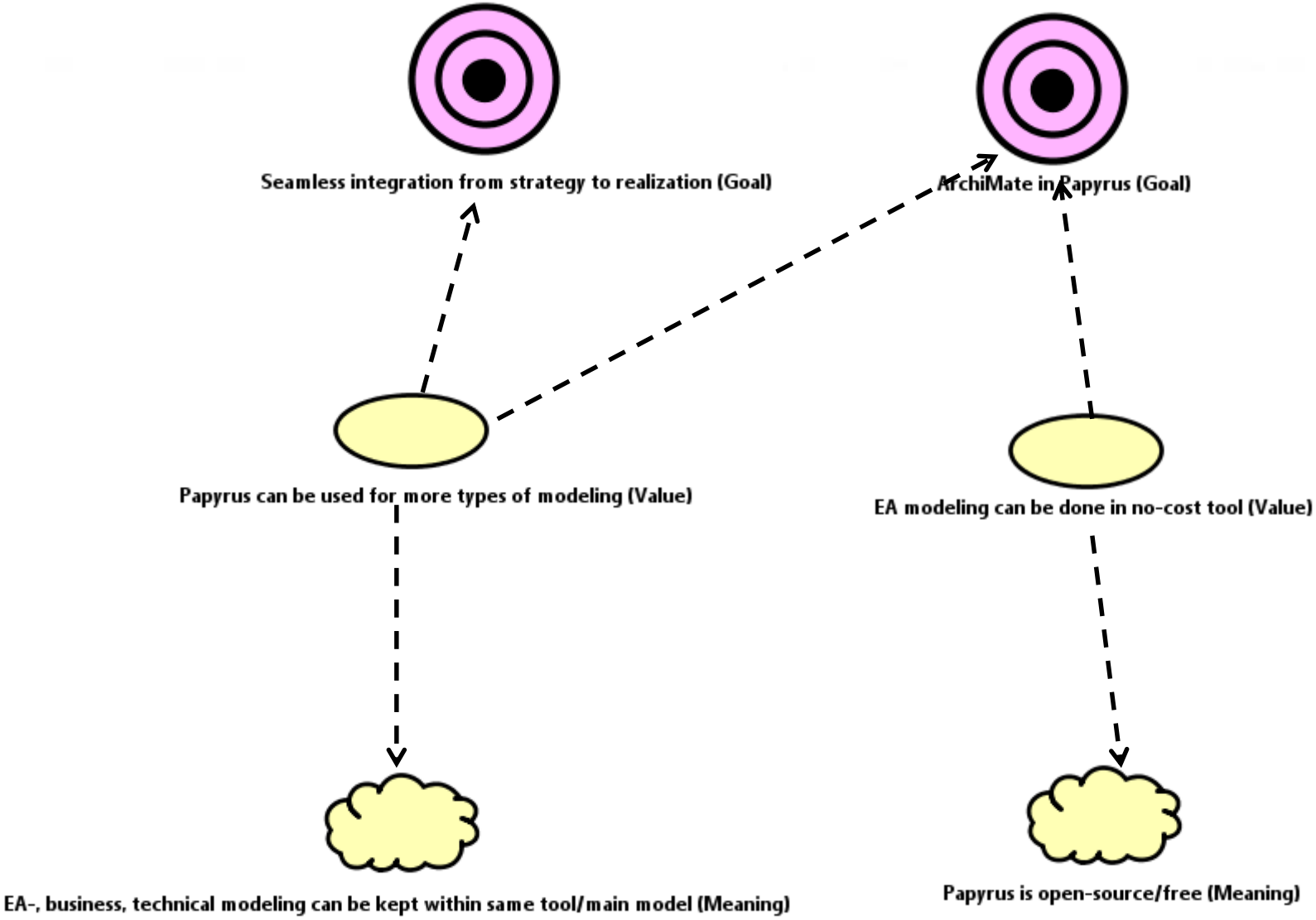
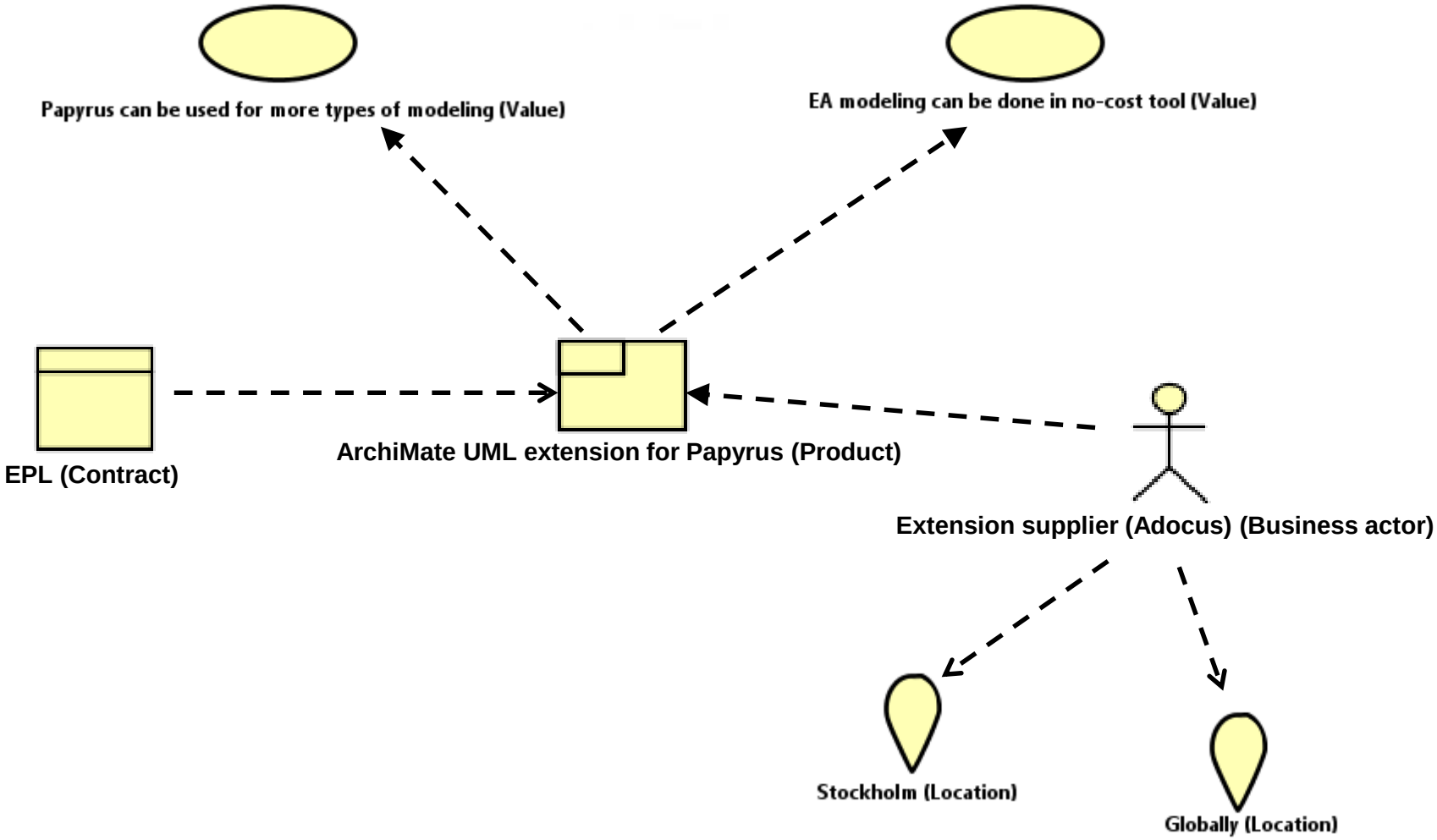
ArchiMate symbols in the extention



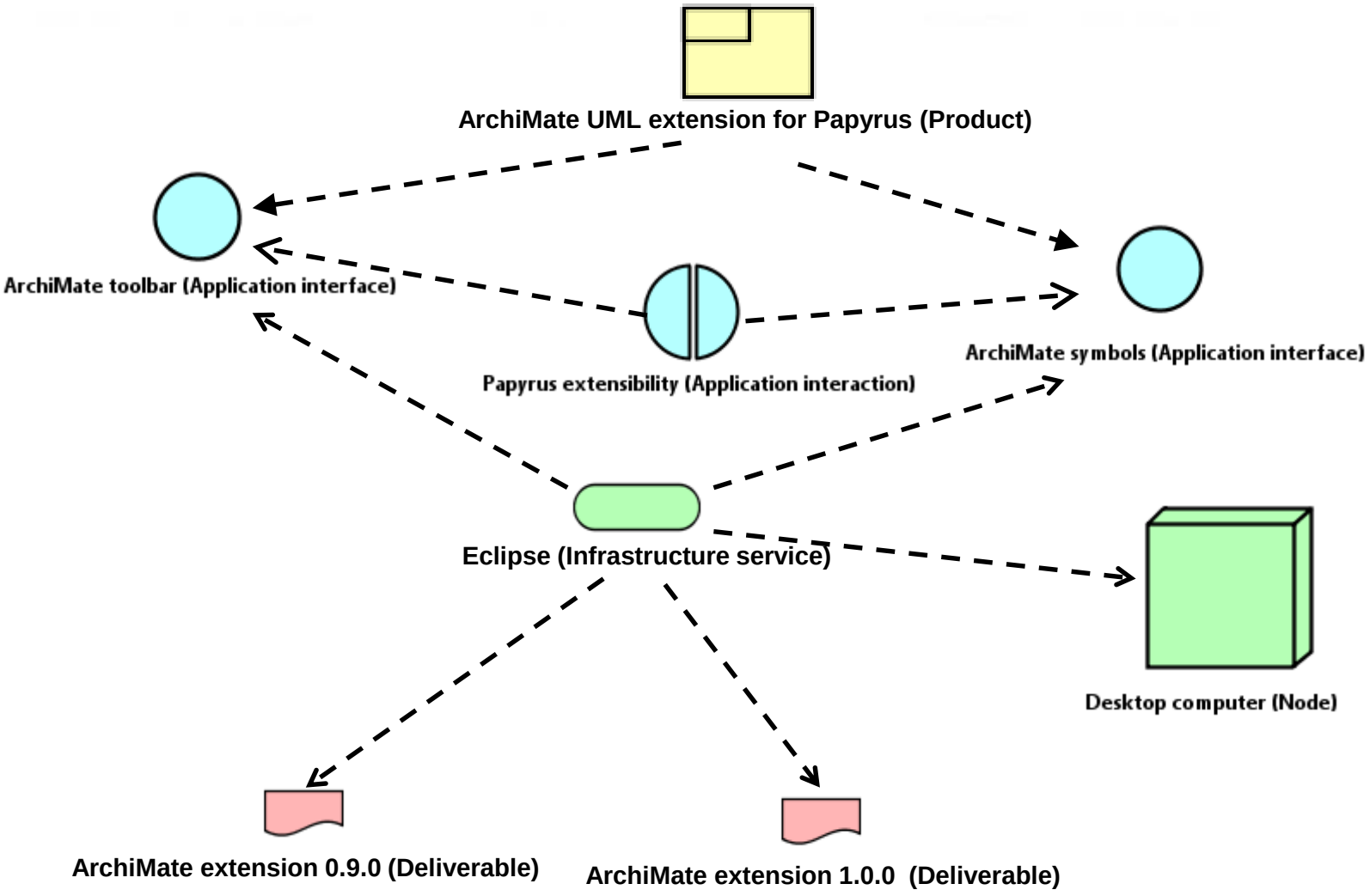
Goals, values and meanings...



Values, product, contract, supplier, location…

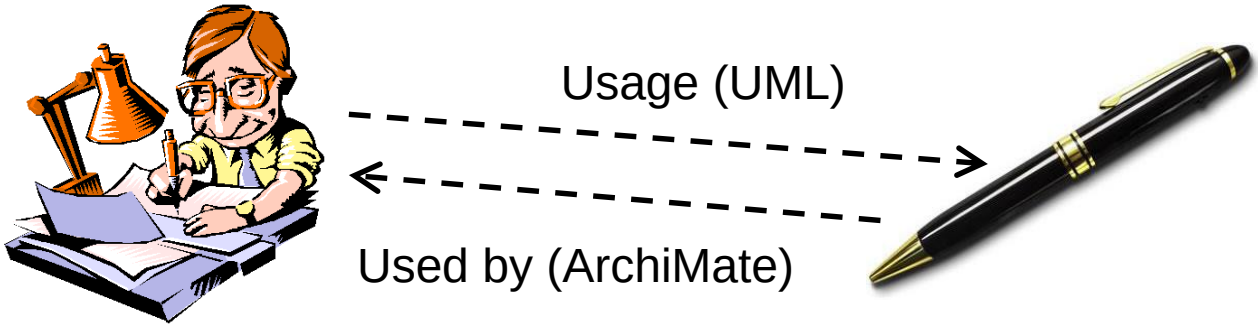


Product, app. intf./interac., node, deliverables...



Logical challenges

- Unclear meta-model for ArchiMate (2.1 specification)
  - No description of how to interprete the specification
  - Reader has to make assumptions and ”hope for the best”
- Errors in official meta-model
  - Role name on ”wrong side” of association
- Reverse interpretation of som relations (in comparison with UML)
  - Usage (UML) and Used by (ArchiMate) - illogical



Technical challenges

- Rendering issues in Papyrus
  - Floating labels are sometimes shown and sometimes not
- Relation anchoring and routing
  - Anchoring can to some extent be controlled in SVG but has hidden issues/things needed to work around
- Sizes of diagram objects
  - Some diagrams refuse to show elements in ”normal” size or let the elements be resized by user
- Lacking palette configuration
  - Elements not belonging to ”right” diagram will not be added (example Nodes in Class diagrams)
- Wishes for the future
  - An update of Papyrus with stable element presentation is needed
  - Anchoring and routing must be improved as well

Insights and conclusions

- ArchiMate is ”flat” in relation to UML
- ArchiMate is sometimes illlogic for those who have worked with UML
- It is harder to map ArchiMate to UML than originally thought/assumed
- Eclipse is today a too complex modeling environment for the target group for ArchiMate
- One of the great values of this Papyrus extension is to be able to blend EA models (ArchiMate) and other types of models (for examle UML)

- Note: There is an ArchiMate <-> UML mapping by OMG under work

Roadmap

- Establish collaboration with interested parties
  - We wish to collaboration with other EA/ArchiMate interested parties
- Development of additional resources
  - Model template with predefined layers
  - Model example(s)
- Call for fixes of remaining Papyrus issues
  - Some major issues need to be resolved prior to v1.0 release
- Overall tool simplification
  - Inspired by Papyrus for Information Modeling
- Making the outcome public available for free
  - Contribution to Papyrus Industrial Consortium
- Following the progress of OMG ArchiMate profile
  - Profile migration may be needed

Contact information

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  - http://adocus.com
  - http://metamodelagent.com

Please us contact via mail or LinkedIn

References

- Papyrus
  - Tool/eco system for extension
  - https://www.eclipse.org/papyrus/
- ArchiMate® 2.1 specification
  - Primary source of information
  - http://opengroup.org
  - Note: there is now an ArchiMate 3 specification available
- Investigating the mapping of an Enterprise Description Language into UML 2.0
  - By: M.J. Wiering, M.M. Bonsangue, R. van Buuren, L.P.J. Groenewegen, H. Jonkers and M.M. Lankhorst
  - Used as inspiration