

# UML based ArchiMate in Papyrus

By: Thomas Gericke

# 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: Rational Rose, Rational Software Architect, Sparx EA, Papyrus etc.
- Notations: UML, Astrakan, BPMN, ArchiMate
- Certifications: TOGAF, SAFE...

# About Adocus

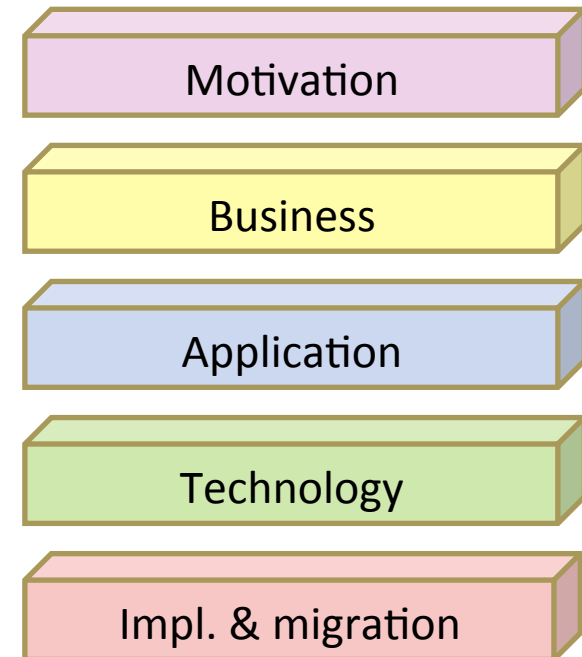
- Specialized within enterprise architecture and visual modeling
- Provides consulting services, training and tool customization
- Specialized in modeling tools:
  - Papyrus UML
  - IBM RSA
  - Sparx EA
- Has a standard product MetaModelAgent
  - For Papyrus UML and IBM RSA, available on Eclipse Marketplace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



# What ArchiMate is



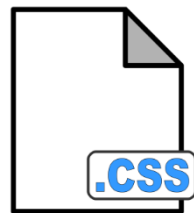
- Enterprise architecture visual modeling notation
- Unrelated to, but inspired by UML
- High level, "broad"
- Covering strategic aspects of modeling
- Governed by Open Group
  - Used by TOGAF
- Requires license in some cases
  - Not for internal use
  - Not for bundling within free tools
- Must be complemented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



# 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

<<stereotype>>



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



Increased interest in EA, ArchiMate and Papyrus (Driver)



ArchiMate in Papyrus (Goal)



Seamless integration from strategy to realization (Goal)



Independent of other Papyrus software (NFR)



Compliant with ArchiMate specification (Constraint)



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



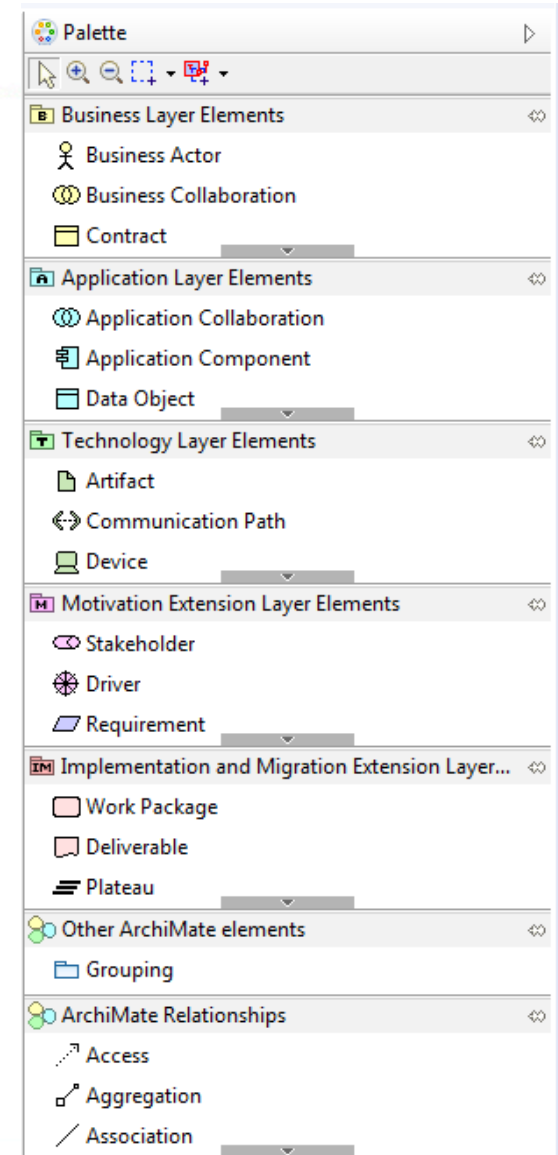
Use closest UML classifier as far as possible (Principle)



Use closest UML relation as far as possible (Principle)

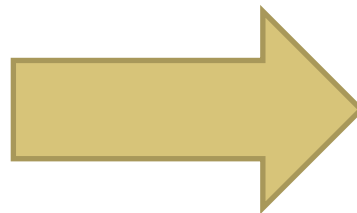
# Details about the upcoming extension

- 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



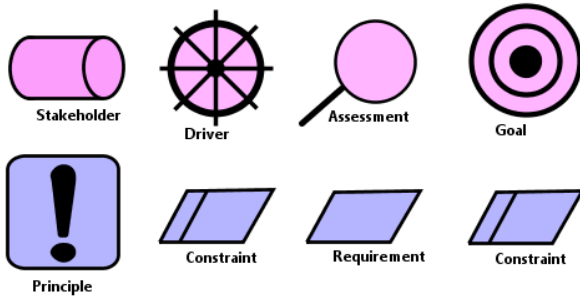
UNIFIED  
MODELING  
LANGUAGE



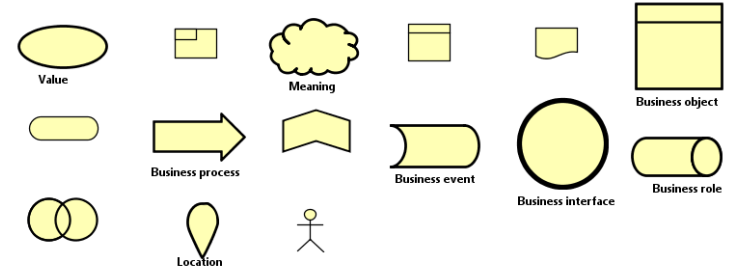


# ArchiMate symbols in the extension

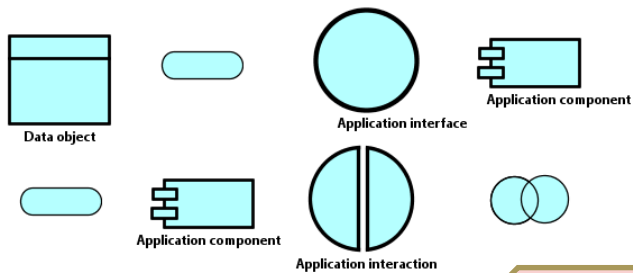
## Motivation



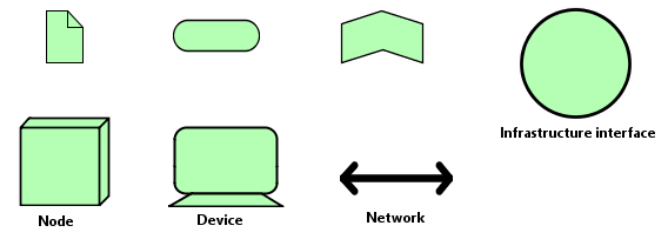
## Business



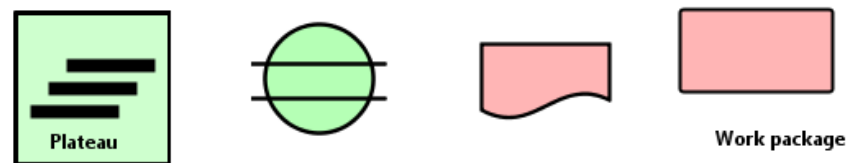
## Application



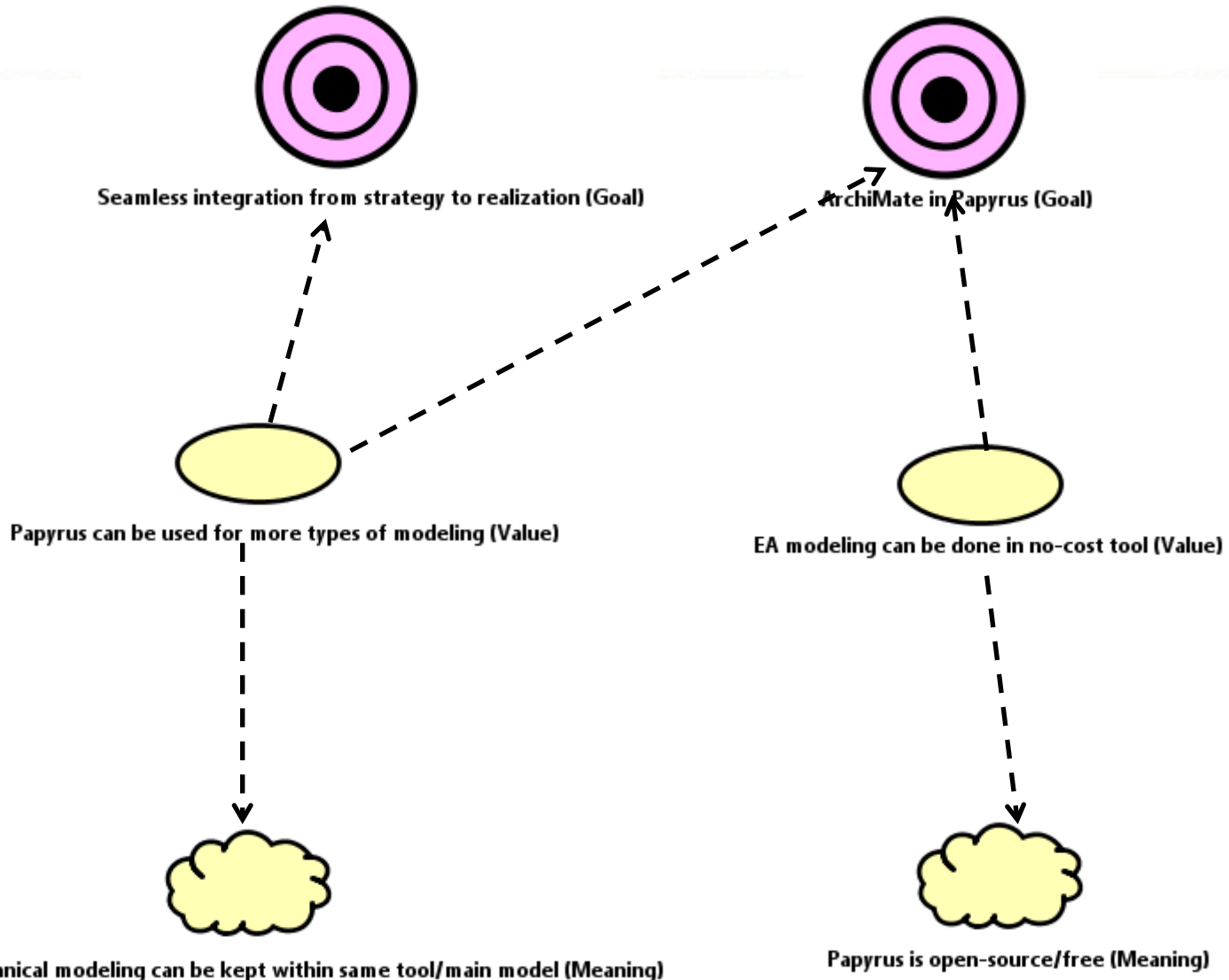
## Technology



## Impl. & migration



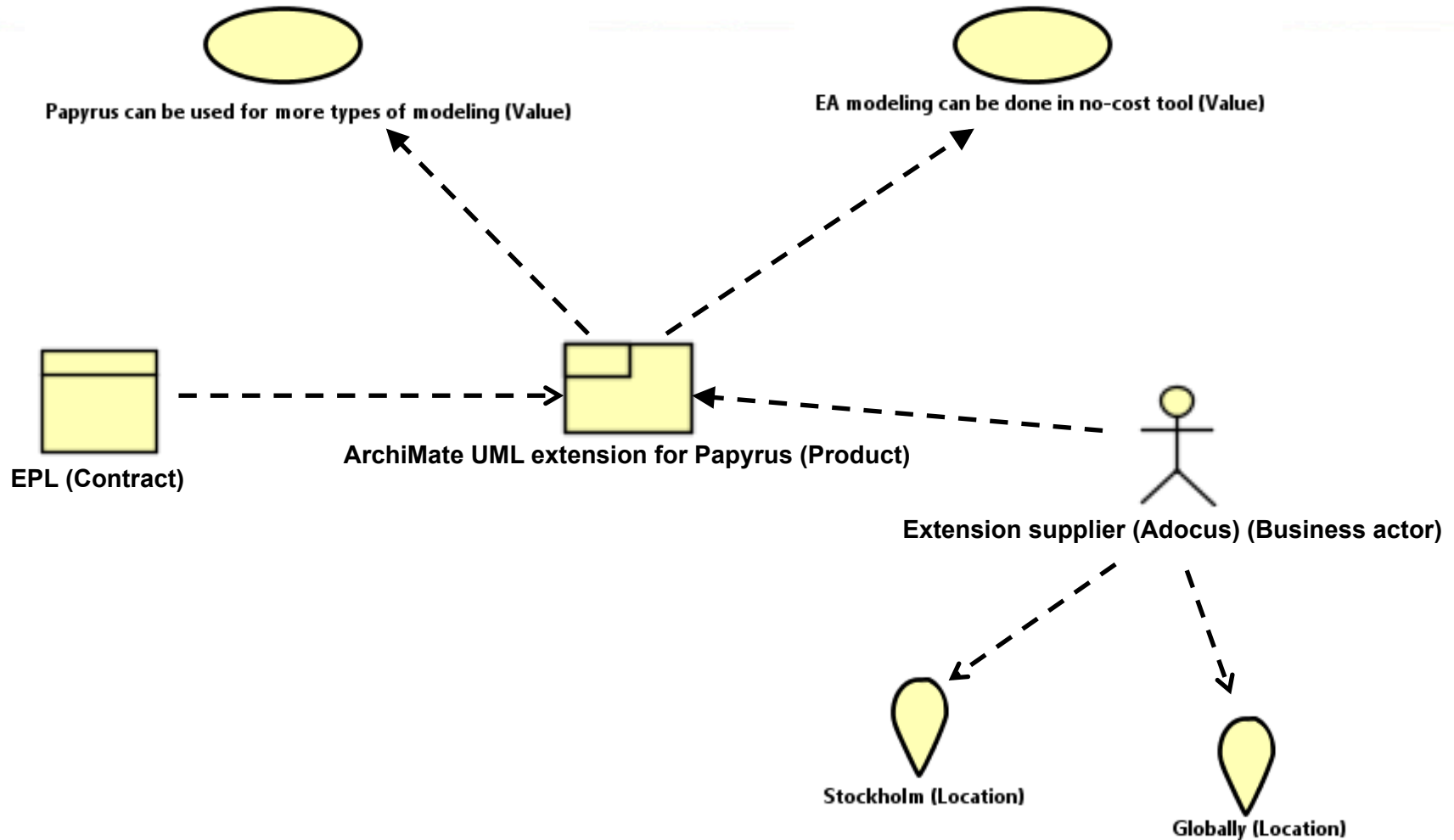
# Goals, values and meanings...



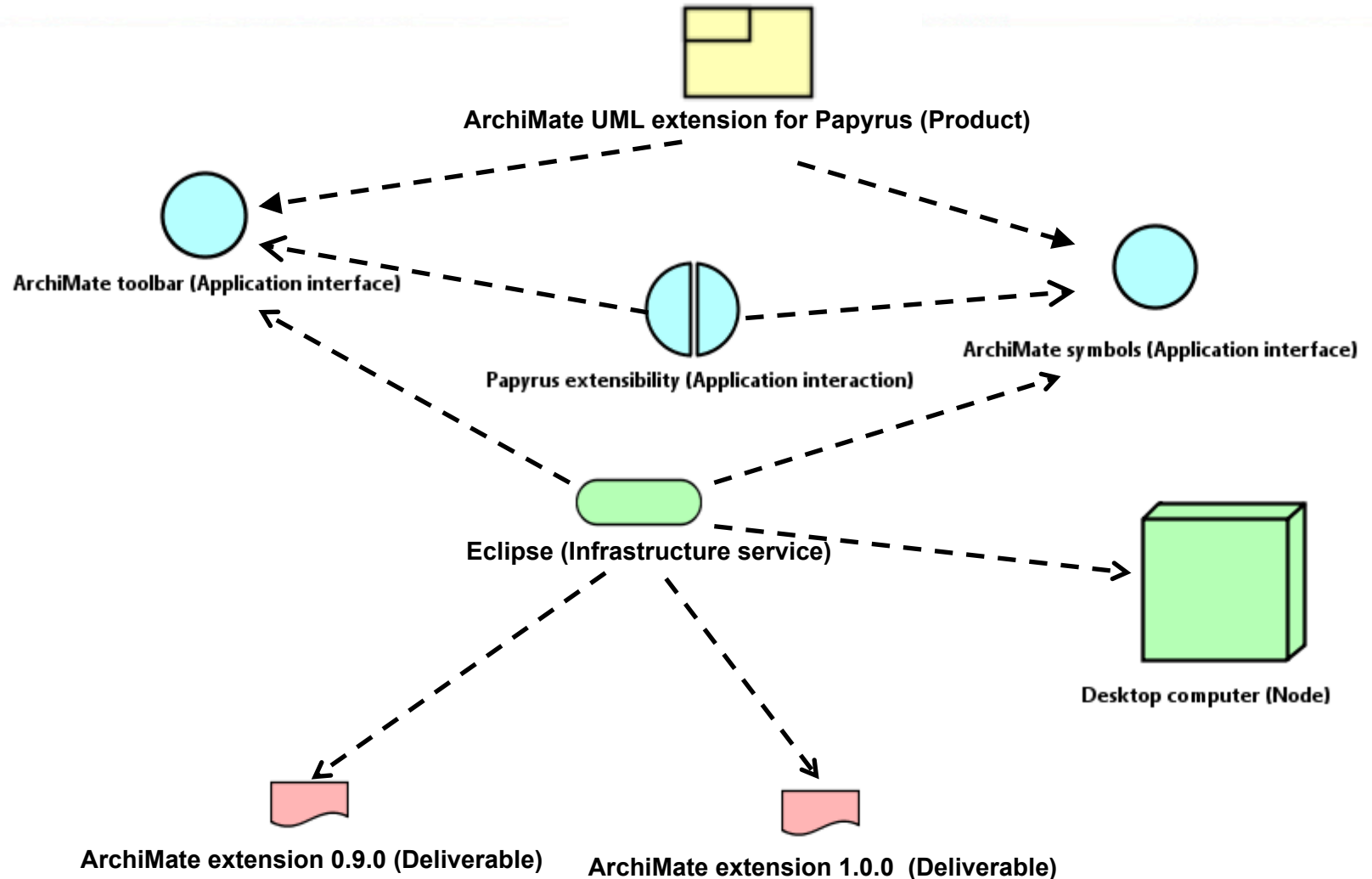
EA-, business, technical modeling can be kept within same tool/main model (Meaning)

Papyrus is open-source/free (Meaning)

# Values, product, contract, supplier, location...

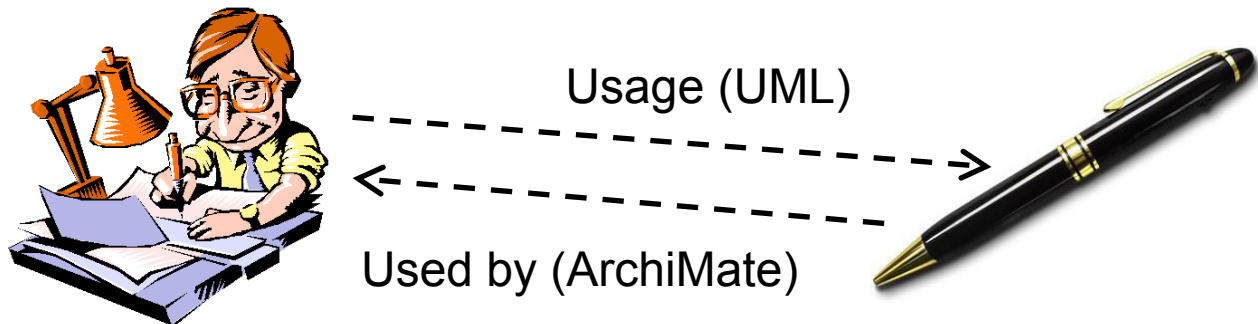


# Product, app. intf./interac., node, deliverables...



# Logical challenges

- Unclear meta-model for ArchiMate (2.1 specification)
  - No description of how to interpret 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 some 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 illogic 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 example UML)
- Note: There is an ArchiMate <-> UML mapping by OMG under work

# Roadmap

- Establish collaboration with interested parties
  - We wish to collaborate 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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- Web for Adocus related information:
  - <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