

Mastering Fact-Oriented Modeling with Natural Language

by Marco Wobben

DATA
Helder op het raakvlak van Business en IT **2025!**

THE SECOND BEFORE YOU REALIZE
IT NEVER WAS "JUST" DATA.



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```
function DateTimeIntervalToStr(  
    aValue: TDateTime;  
    useSubjectiveTime: boolean = false): string;  
var  
    hh, mm, ss, ms: Word;  
begin  
    if (aValue = 0) then  
    begin  
        if useSubjectiveTime then  
            Result := 'less than a second';  
        else  
            Result := '0 seconds';  
        end  
    else  
    // -----  
    // more than 24 hours  
    // -----  
    if (aValue > 2) then  
    begin  
        // less than two weeks is expressed in days  
        if (aValue / 7 < 2) then  
            Result := IntToStr(Trunc(aValue)) + ' days'  
        else  
            // less than two months is expressed in weeks  
            if (aValue / 30 < 2) then  
                Result := IntToStr(Trunc(aValue / 7)) + ' weeks'  
            else  
                // less than two years is expressed in months  
                if (aValue / 30 < 24) then  
                    Result := IntToStr(Trunc(aValue / 30)) + ' months'
```



MARCO WOB BEN

data

reality

AGENDA

- The Challenges
 - What is Fact-Oriented Modeling?
 - Natural Language as a Modeling Tool
 - Benefits of FCO-IM
 - **Demonstration**
 - Are you the one?
 - Q&A
-

THE MEANING OF DATA





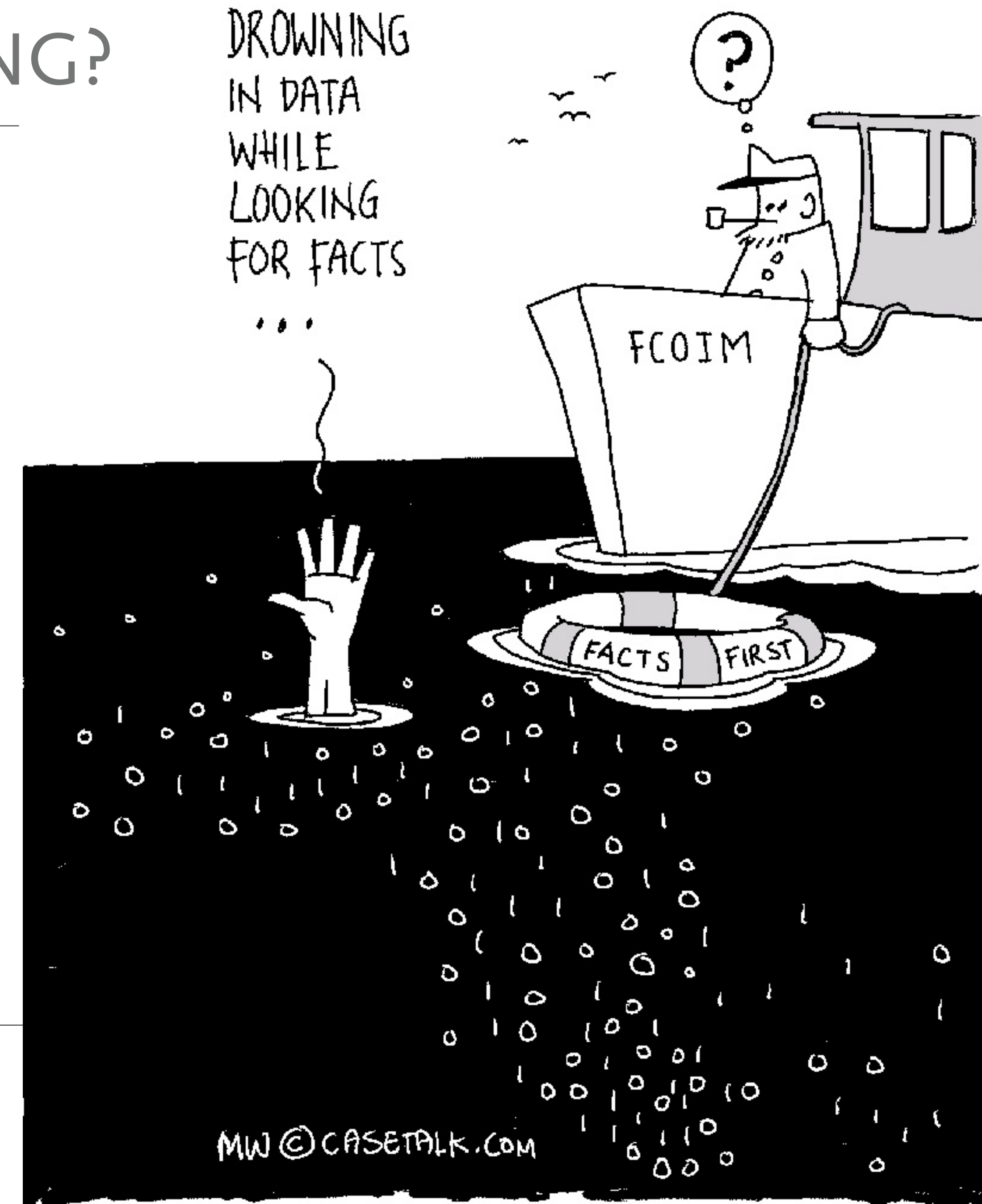
THE CHALLENGES

- Communication gaps between business and IT
- Ambiguity in traditional models (e.g., ER, UML)
- Misinterpretations in requirements
- Increasing need for traceability and precision
- + *Hallucinating LLM as intermediaries, generators, interpreters, documenters, modelers...*



WHAT IS FACT ORIENTED MODELING?

- Modeling based on facts as elementary statements
- Focus on semantics rather than syntax
- Examples:
 - “Customer 9001 places order 2025987.”
 - “The price of product 25637 is €24,98.”
- Several fact modeling techniques:
 - NIAM,
 - ORM,
 - FCO-IM



```
18 [Party Full Name]
19 "Party 1000 is called John Doe."
```

Natural Language Fact Statements

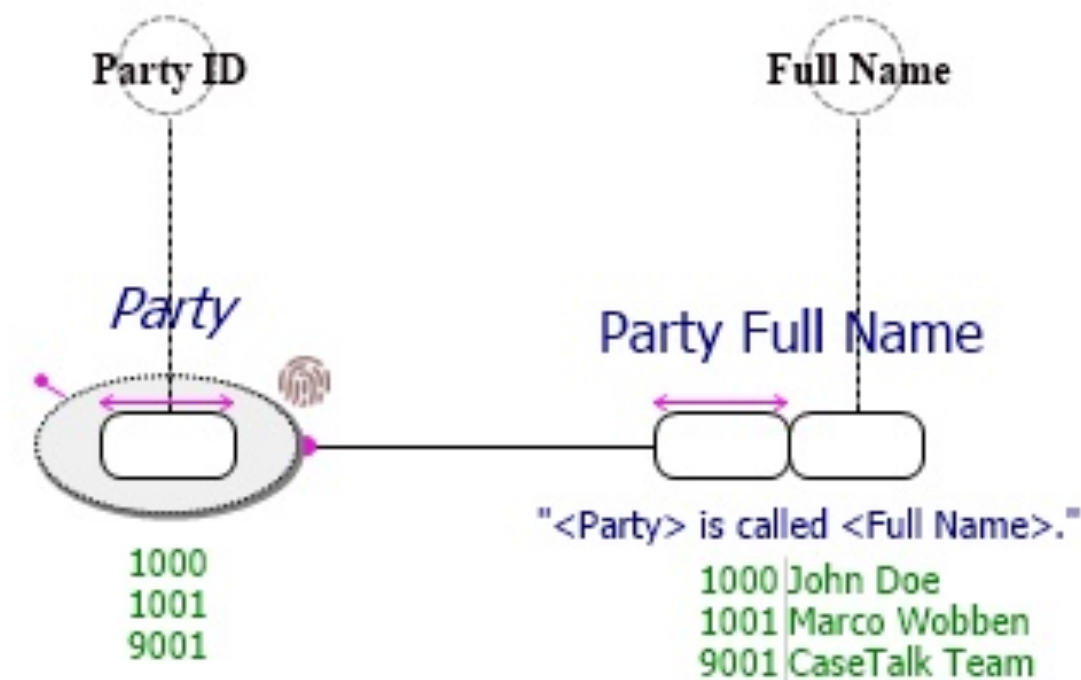
"<Party> is called <Full-Name>."

Information Grammar

'Party:<Party-ID>' John·Doe

1000

Information Grammar Diagram



 Party
○ Party Full Name ○ 🖱️ Party ID
—Semantics— "Party is called Full Name."
—Examples— party 1000 is called John Doe. party 1001 is called Marco Wobben. party 9001 is called CaseTalk Team.

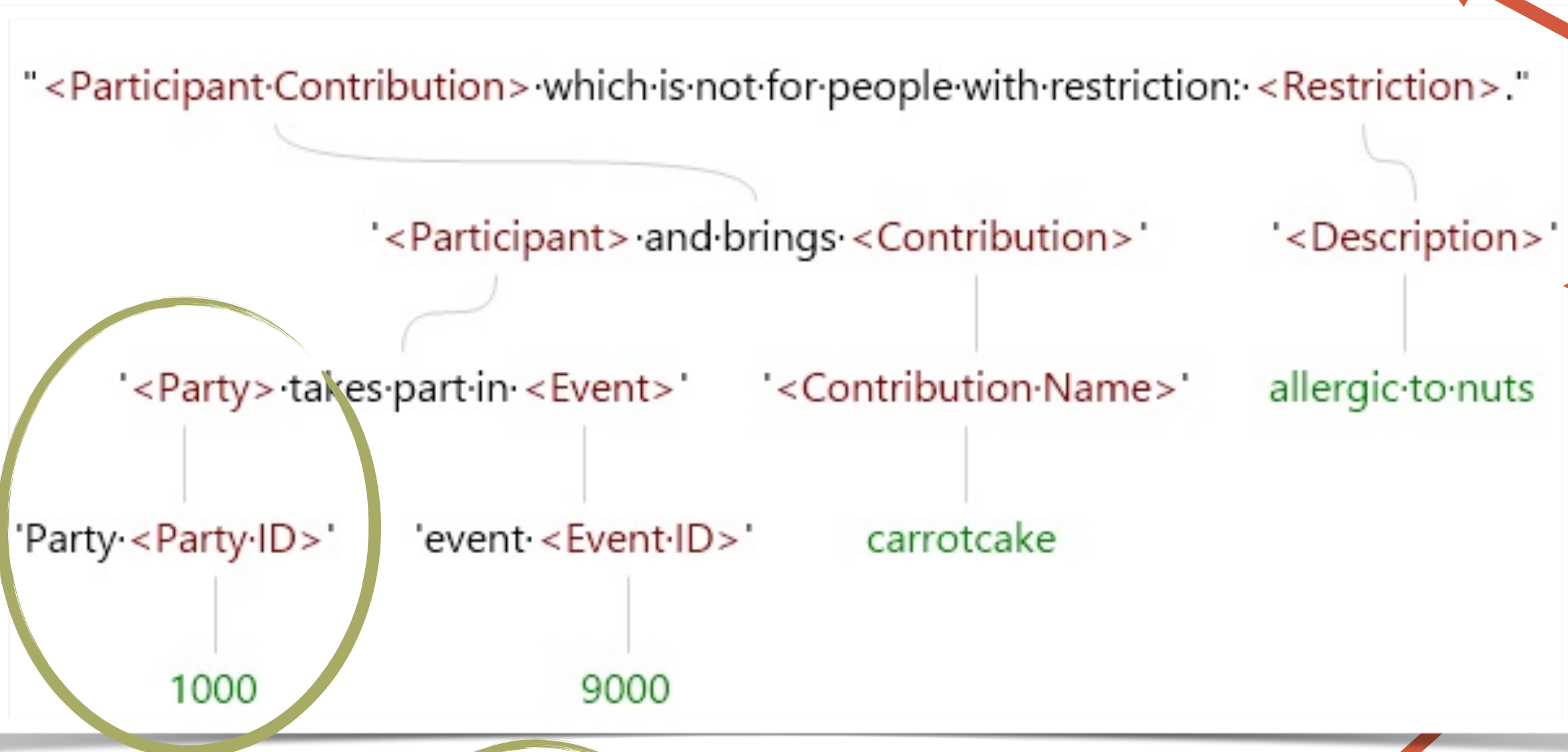
Model Transformation, with communication





CASE TALK

- 1 [Contribution Restriction]
- 2 "Party 1000 takes part in event 9000 and brings carrotcake which is not for people with restriction: allergic to nuts."

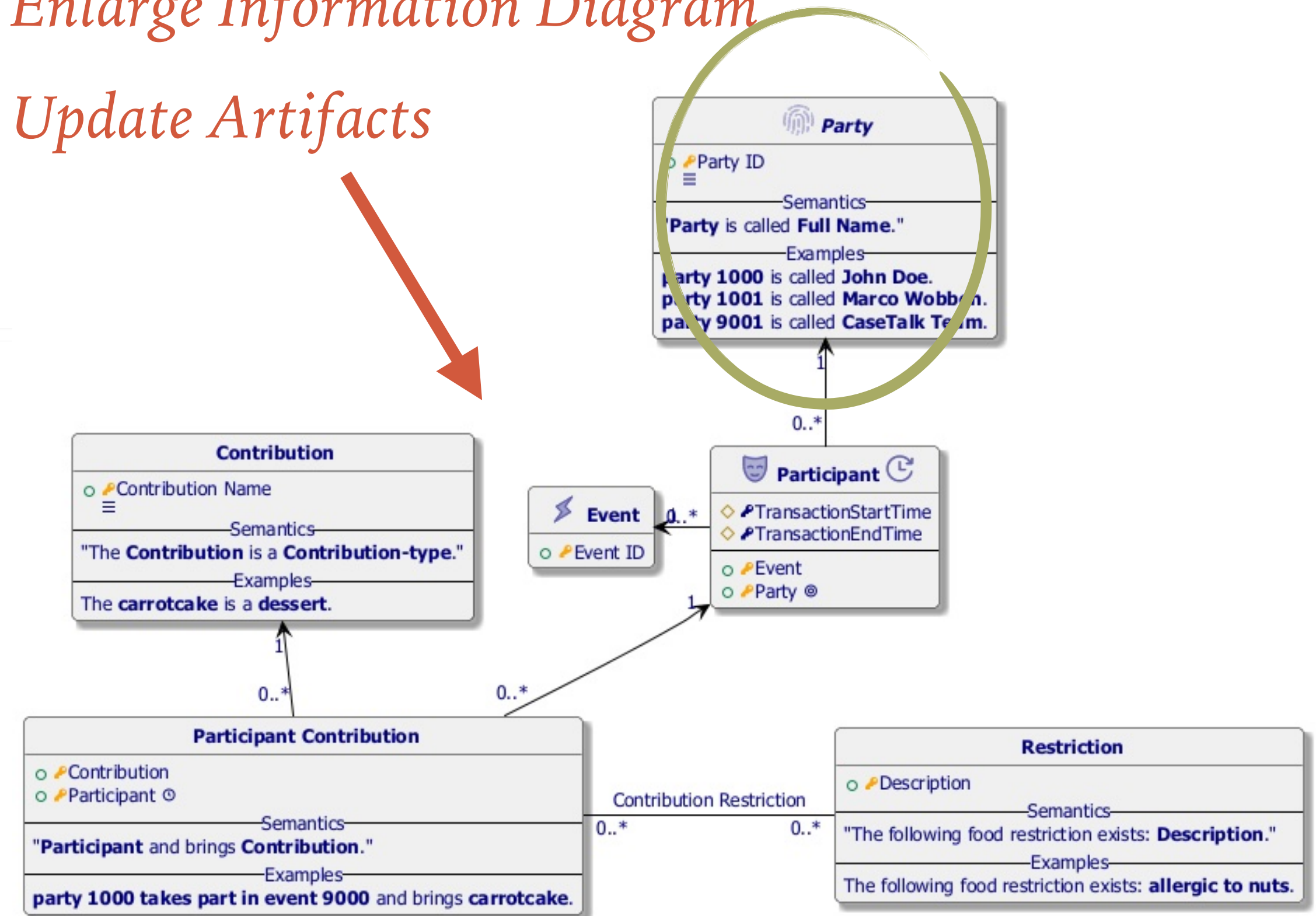
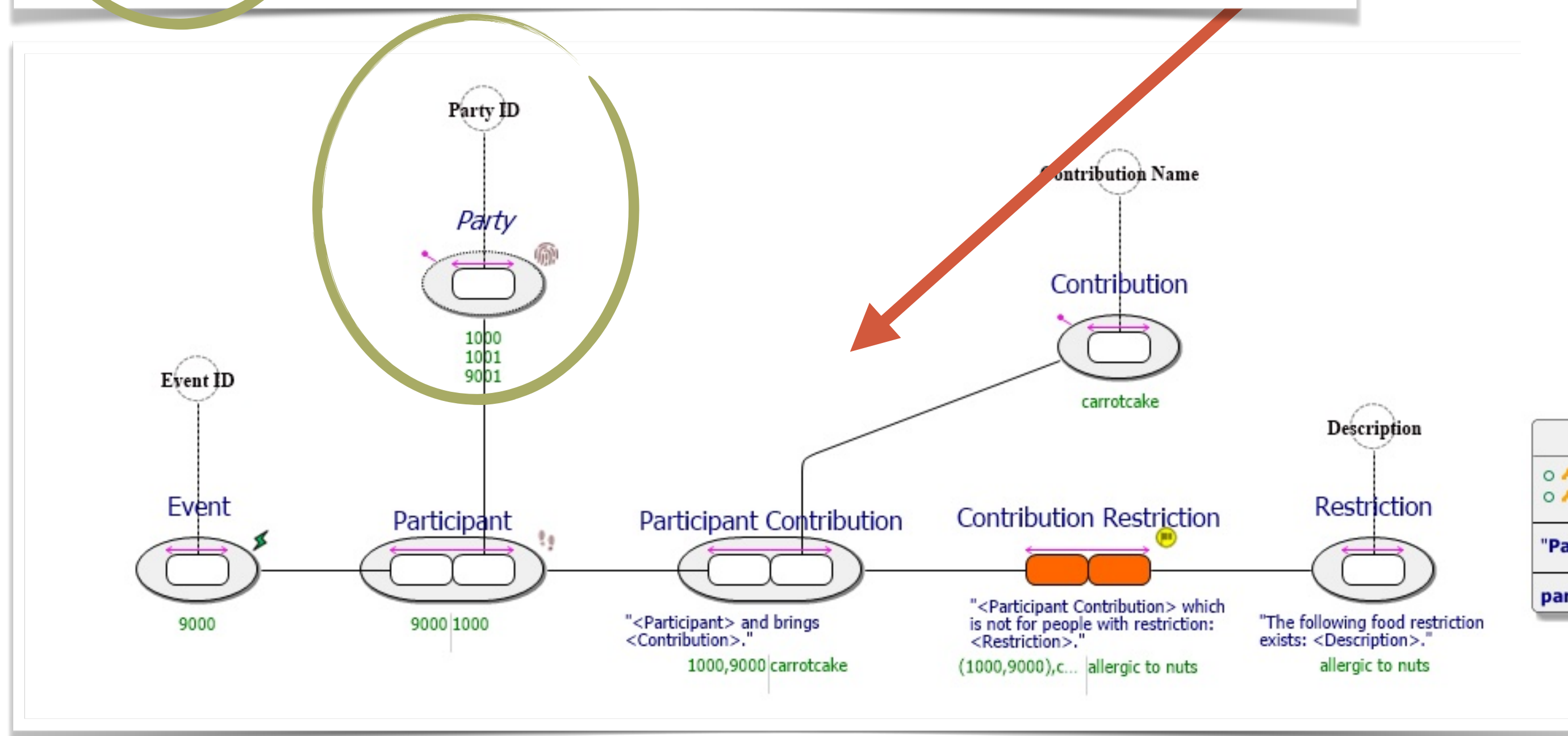


Add Fact Statements

Extend Information Grammar

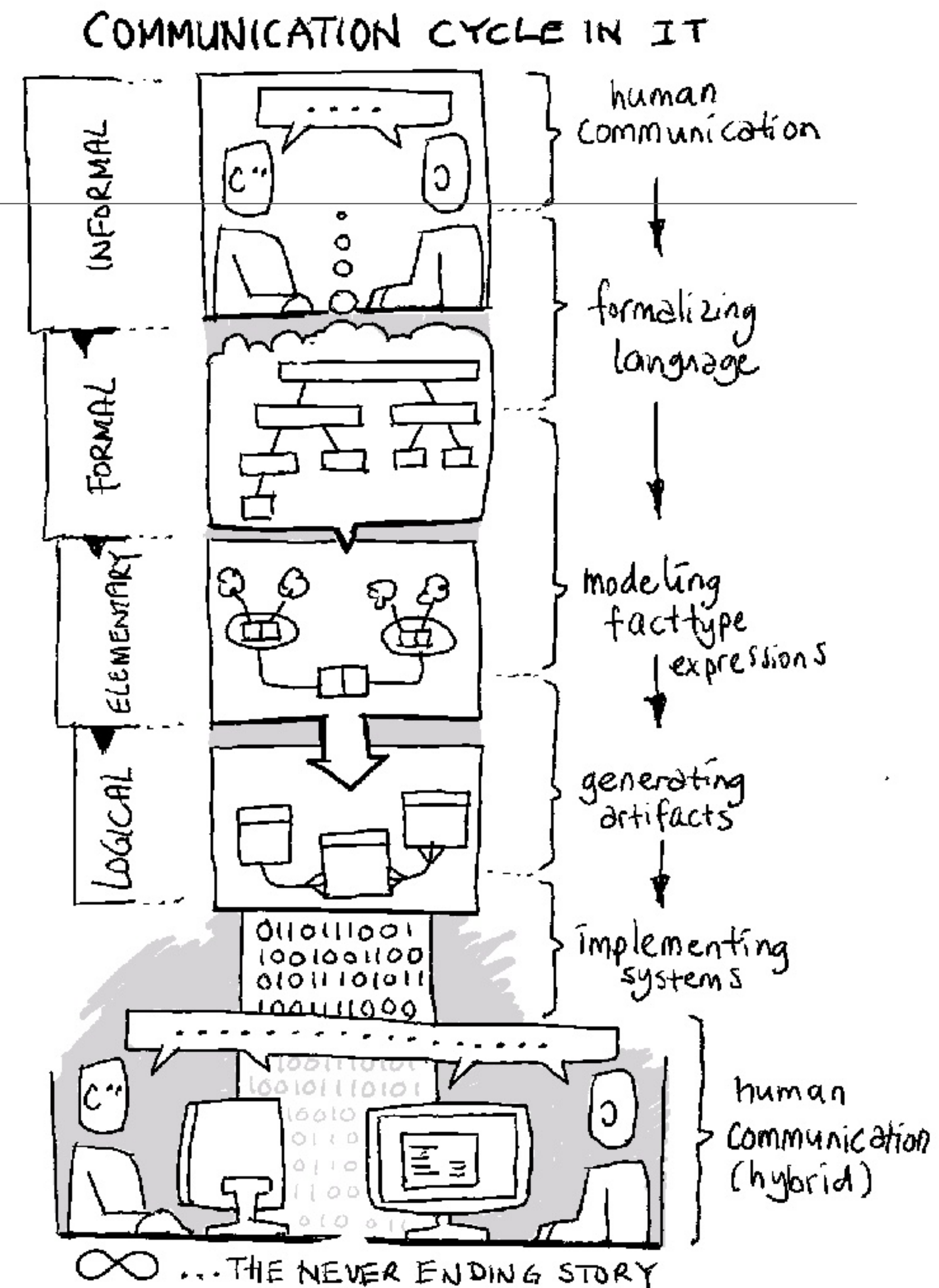
Enlarge Information Diagram

Update Artifacts



NATURAL LANGUAGE AS A TOOL

- Use of controlled, precise sentences
- Readable by business users, usable by IT
- Every model element backed by fact expressions
- Verbalized constraints:
“Each invoice is issued by exactly one employee”
- Standardizing & Aligning enterprise
- Develop Common, shared, specialized language



BENEFITS OF FCO-IM

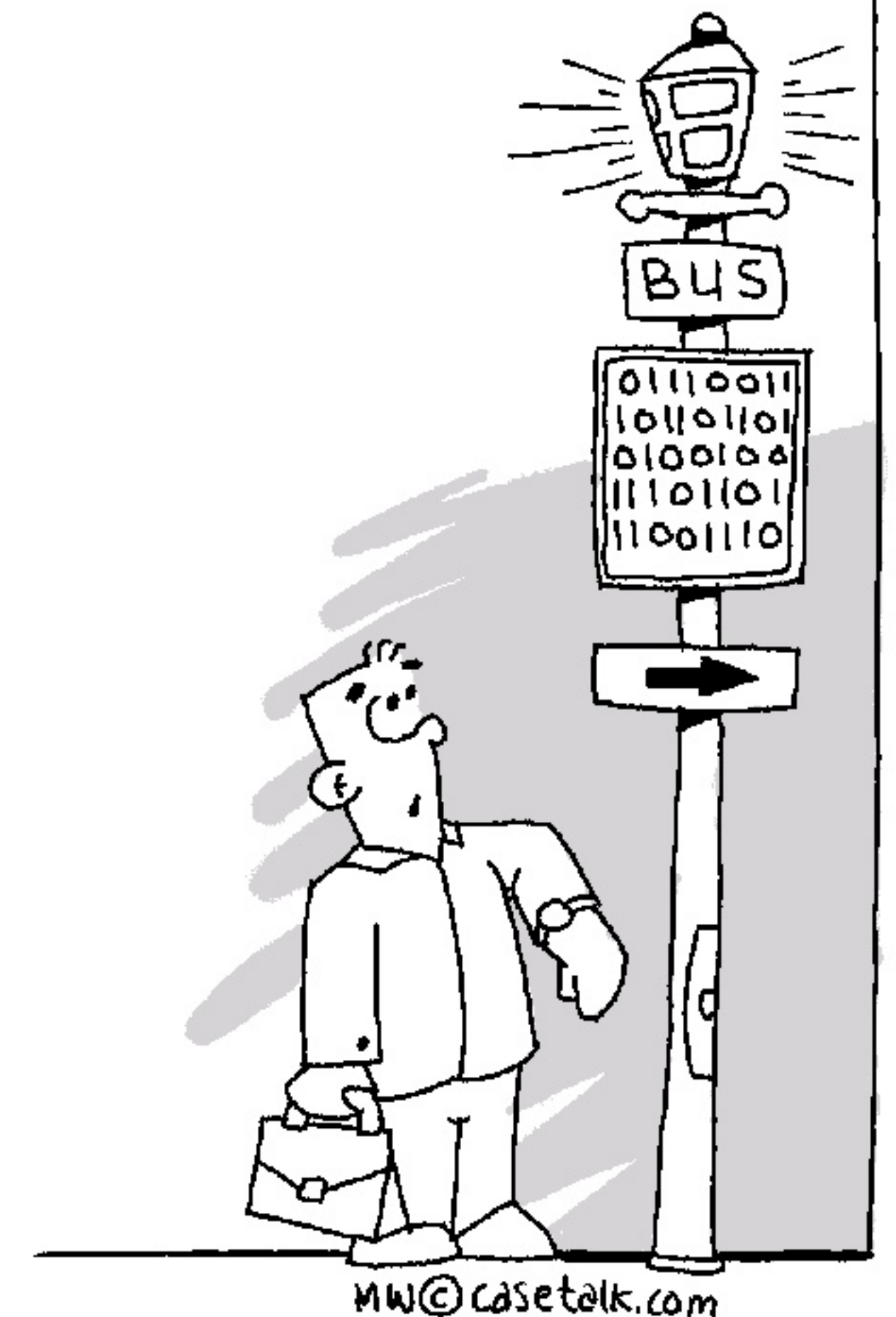
- Fully Communication Oriented Information Modeling
- Models only what is communicated

“whereof one cannot speak, thereof one must be silent”
~Wittgenstein

... “what can be shown cannot be said”

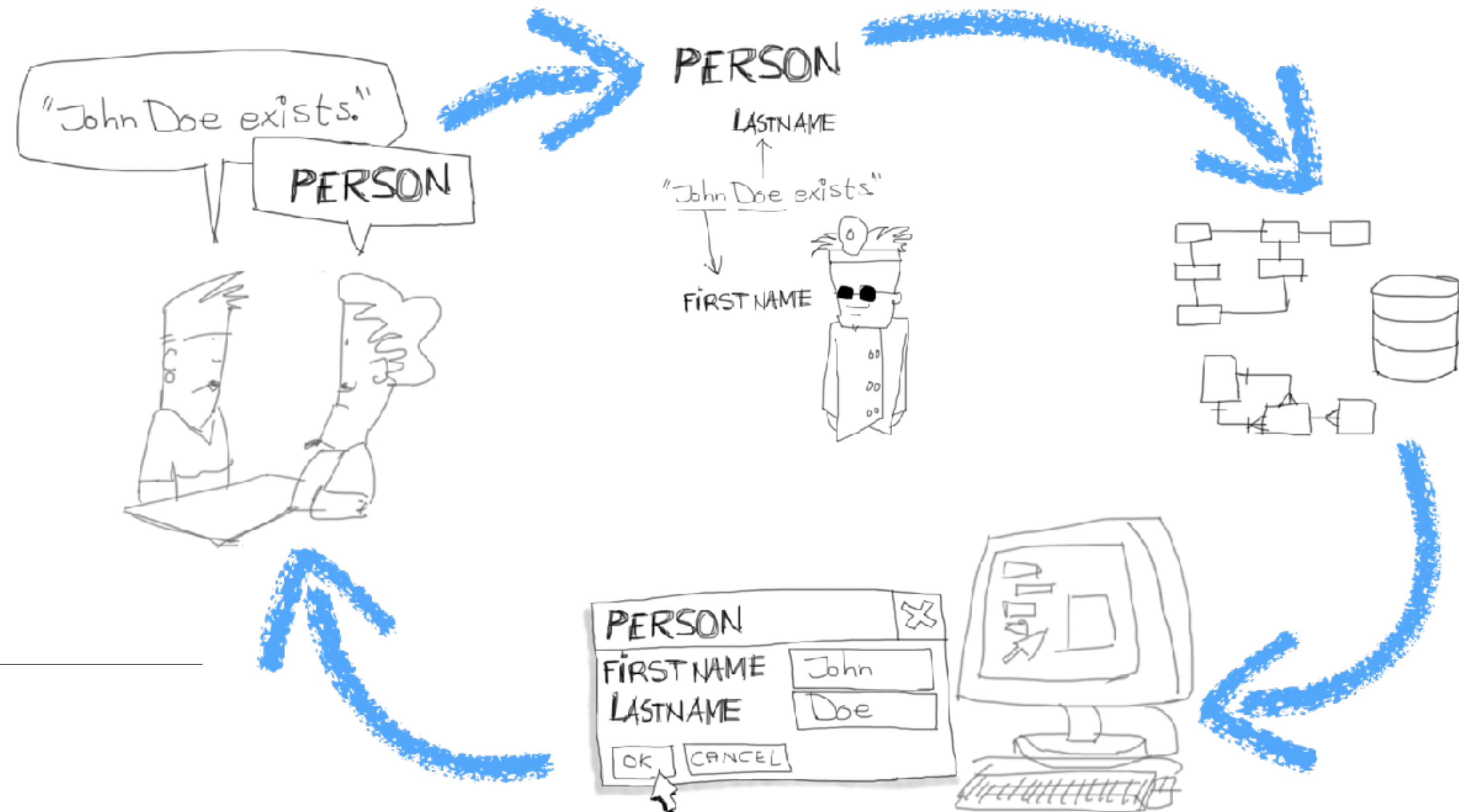
- Clear distinction between source, message, the data, and interpretation
- Model and artifacts remains verifiable and traceable

It may take a while to reach your goals if you don't understand the data.



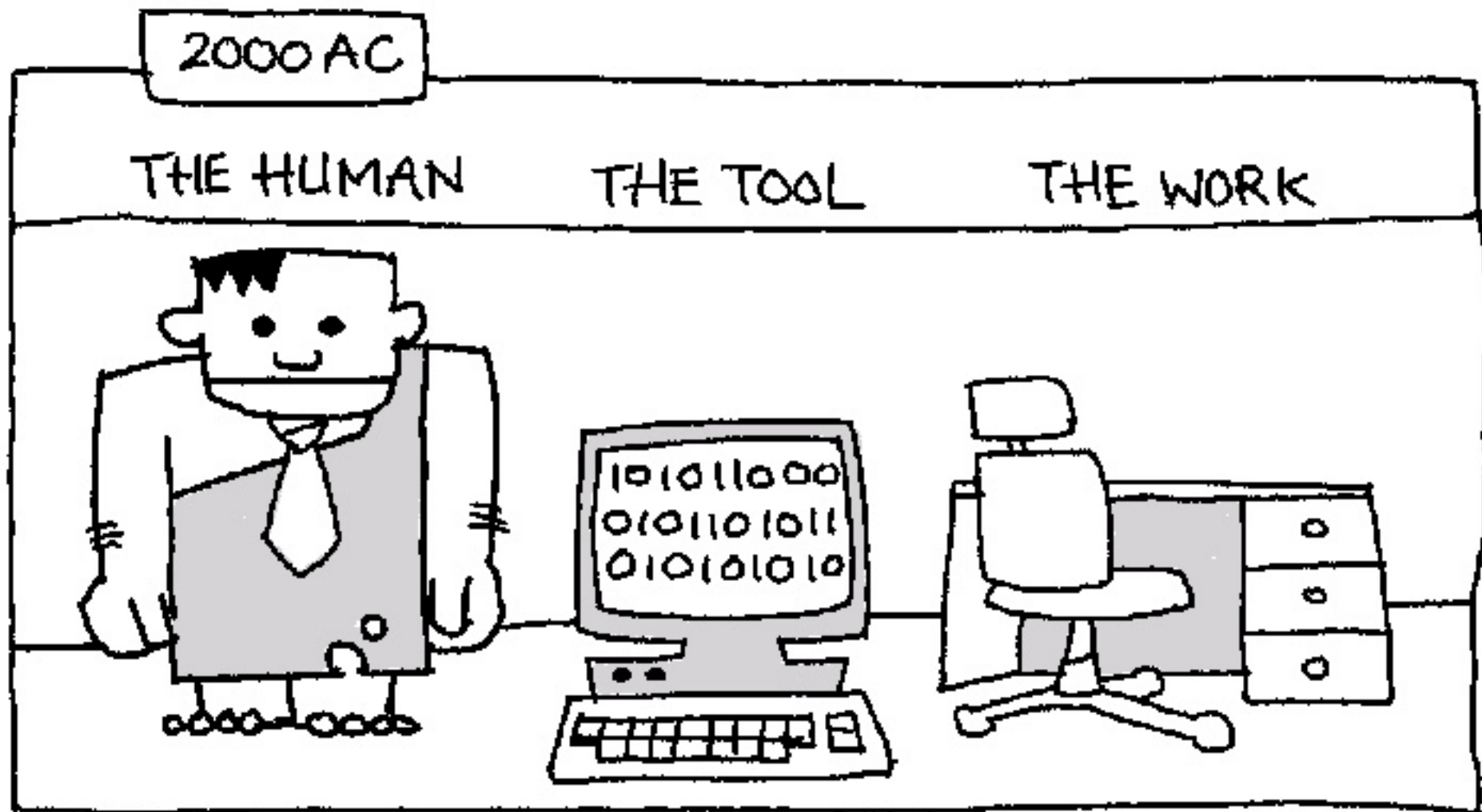
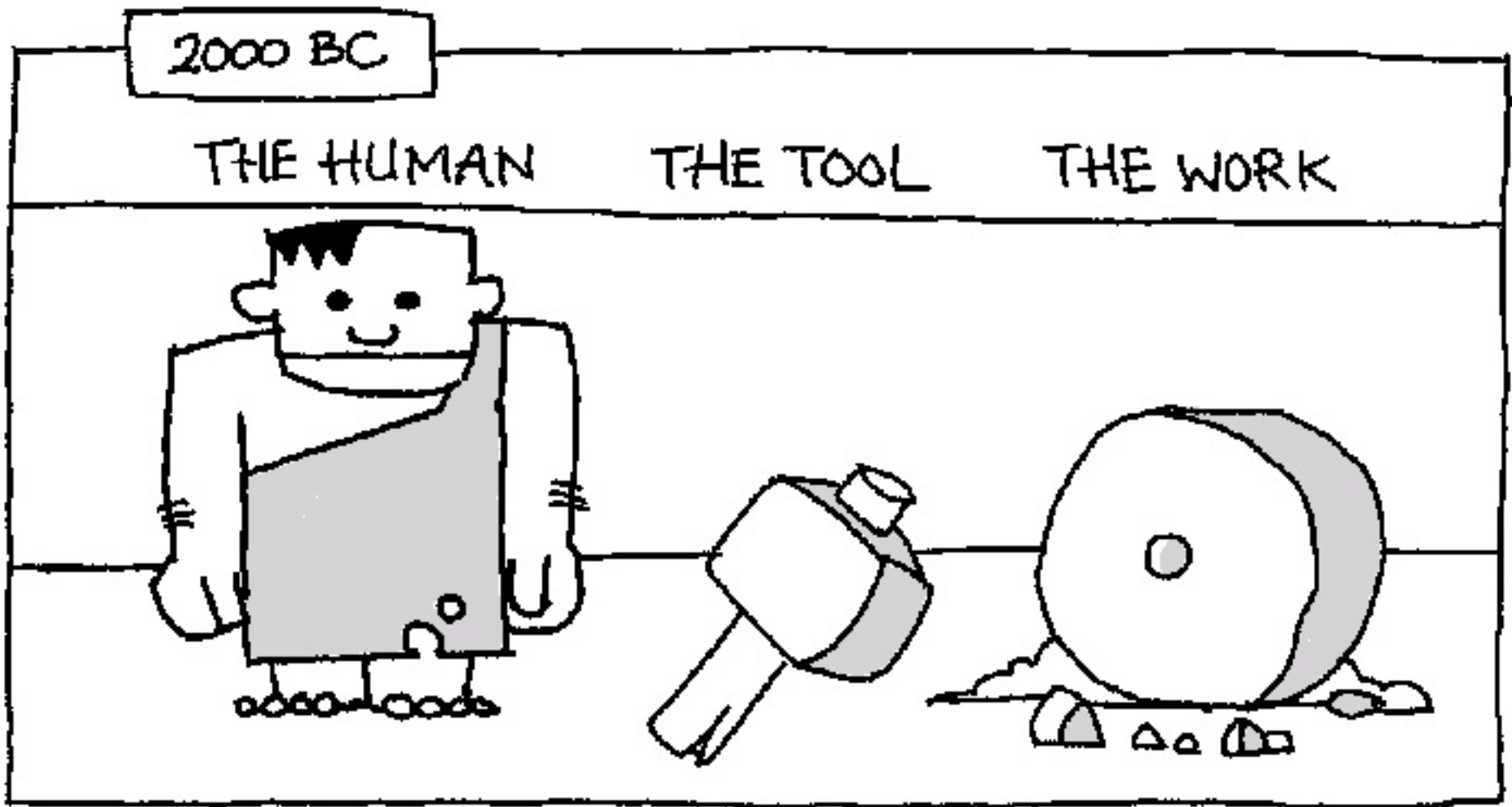
BENEFITS OF FCO-IM

- Consistency in expression
- Facilitates validation with domain experts
- Support multiple languages
- Grounding effect through examples
- Model once, use anywhere
- Rich and detailed annotations



DEMONSTRATION

... AFTER 4000 YEARS,
TOOLS STILL NEED HUMANS
TO DO THE WORK...



WHAT HAPPENED AFTER MODELING?

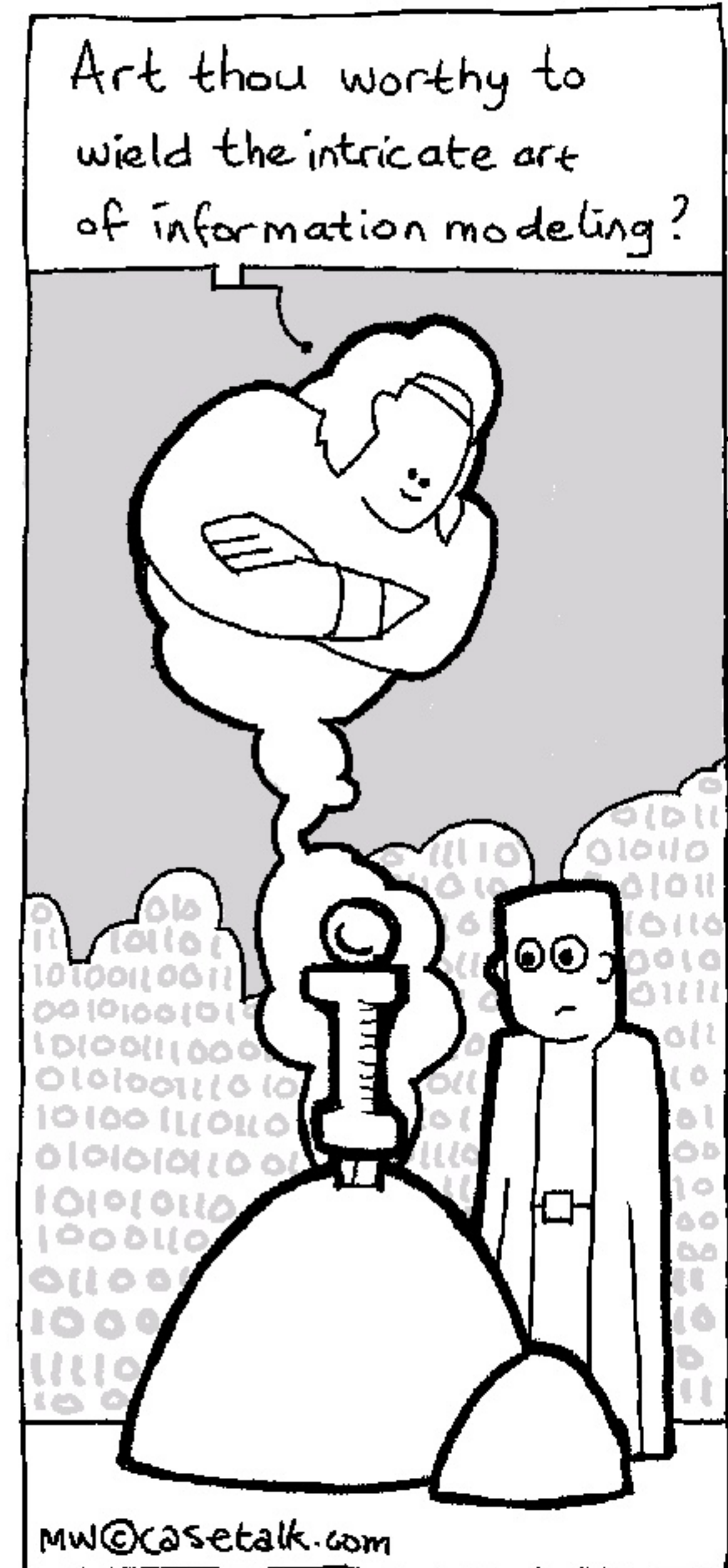
- Conceptual models
 - Logical data models
 - ER, UML, KG diagrams
 - Glossaries import/export
 - Semantic Web vocabularies
 - Mapping source catalogs
 - Seamless handover to technical teams
XML, JSON, SQL, Java, Python, ER/Studio, PowerDesigner,
etc..
 - Check-in, share, publish, refine & align...
-

AT THE STANDUP
WHERE YOU REALIZE
THE MINIMAL VIABLE
PRODUCT COULD DO
WITH SOME MORE
ARCHITECTURAL
WORK BEFORE HAND...



ARE YOU THE ONE?

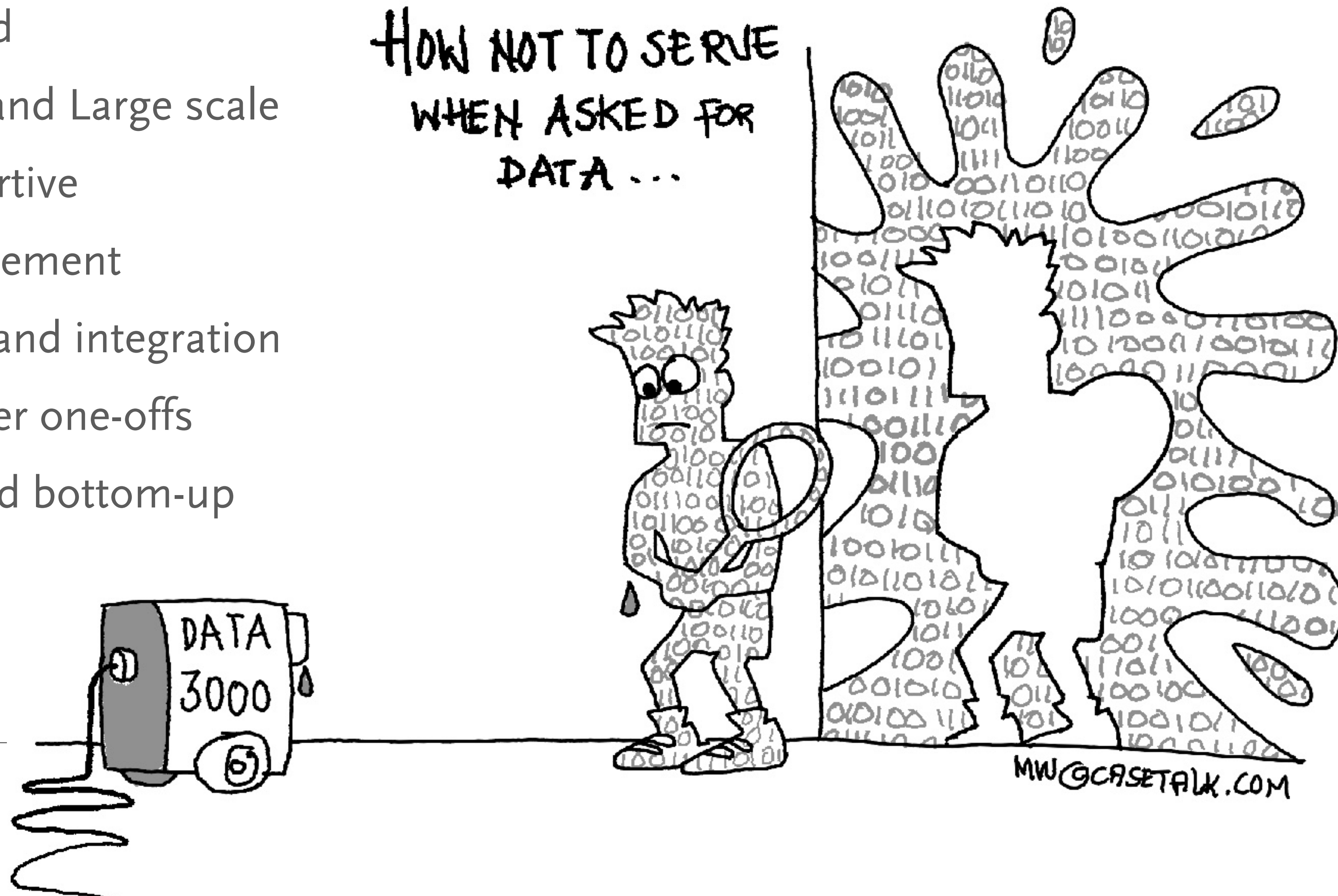
- Be **curious** and **open-minded**
 - Be **the facilitator** between IT and Business
 - Be the one who gets things **correct**
 - Be the one with **grit** to get things done
 - Be the short term **helper** and long term **thinker**
 - Be recognized as a **communicator**
 - Be trusted to exchange knowledge as **equals**
-



KEY TAKEAWAYS

- Communication Focused
- Excellent in Complexity and Large scale
- Natural language supportive
- Great stakeholder engagement
- Future-proof semantics and integration
- Enterprise alignment over one-offs
- Integrating top-down and bottom-up

HOW NOT TO SERVE
WHEN ASKED FOR
DATA ...



RESOURCES & FURTHER READING

- www.fco-im.nl
- www.casetalk.com
- en.wikipedia.org/wiki/FCO-IM
- www.linkedin.com/groups/3789847/
- <https://www.linkedin.com/in/wobben/>

Training &
Downloads



Discount Code
"TP25"

EARLY HUMAN BIAS AND
BINARY THINKING PROVED
HARD TO ERADICATE...

