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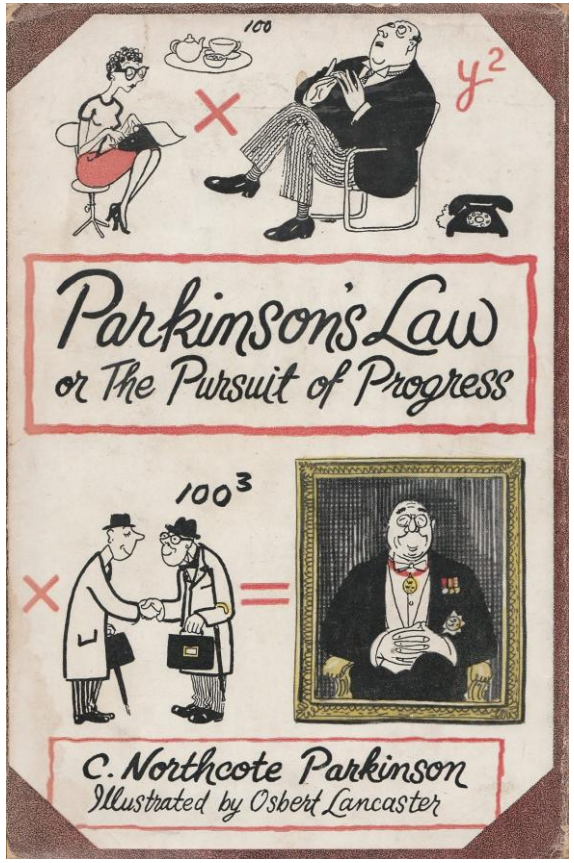
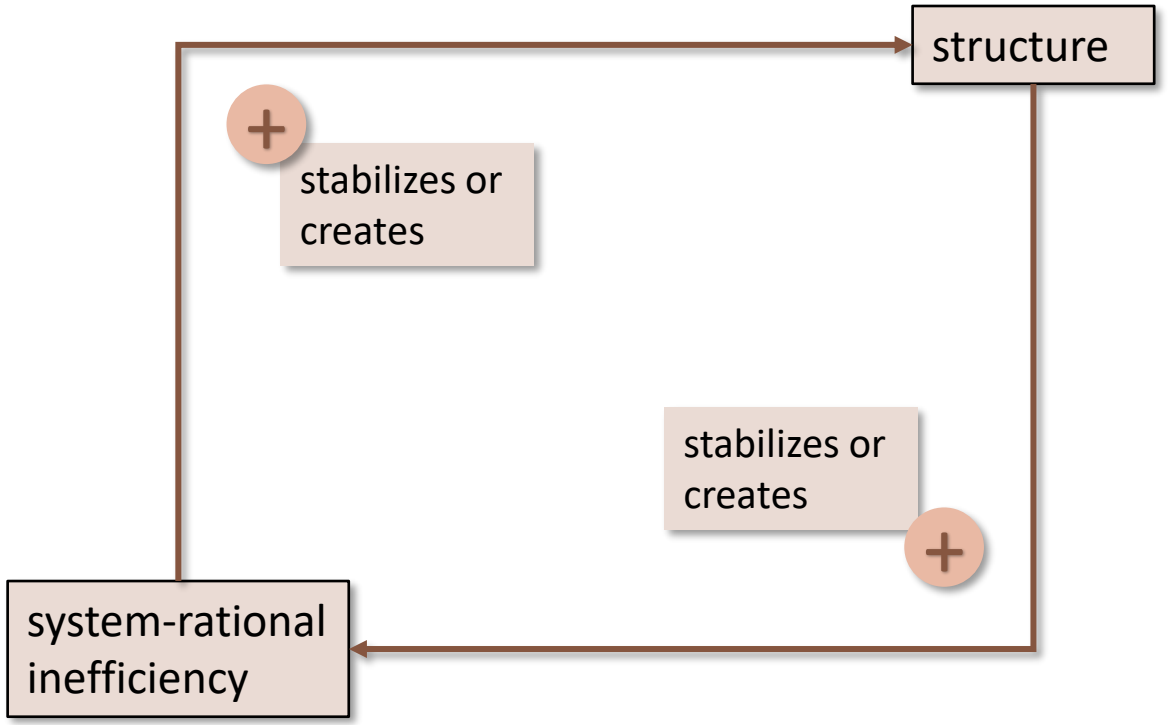
Ultimate organizational management

"radically simple, dynamic networks
will dominate organization.

Emergent weakness: systemrationality dynamics

Information asymmetry as trapdoor function





Emergent strength: e.g. Bitcoin

Radically simple (and antifragile) cybernetic design

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» The nature of Bitcoin is such that once version 0.1 was released, **the core design was set in stone for the rest of its lifetime**.«
Satoshi Nakamoto

»Bitcoin is **the first example of a new form of life.** It lives and breathes on the internet. It lives because it can pay people to keep it alive. It lives because it performs a useful service that people will pay it to perform.
It lives because anyone, anywhere, can run a copy of its code. It lives because all the running copies are constantly talking to each other. It lives because if any one copy is corrupted it is discarded, quickly and without any fuss or muss.
It lives because it is radically transparent: anyone can see its code and see exactly what it does.
It can't be changed. It can't be argued with. It can't be tampered with. It can't be corrupted. It can't be stopped. It can't even be interrupted. If nuclear war destroyed half of our planet, it would continue to live, uncorrupted. It would continue to offer its services. It would continue to pay people to keep it alive.
The only way to shut it down is to kill every server that hosts it. Which is hard, because a lot of servers host it, in a lot of countries, and a lot of people want to use it.«
Merkle, Ralph C.

Information asymmetries and cognitive barriers

Human complexity (in)competence

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THE PSYCHOLOGICAL REVIEW

THE MAGICAL NUMBER SEVEN, PLUS OR MINUS TWO: SOME LIMITS ON OUR CAPACITY FOR PROCESSING INFORMATION [1]

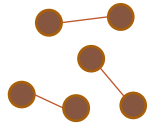
GEORGE A. MILLER

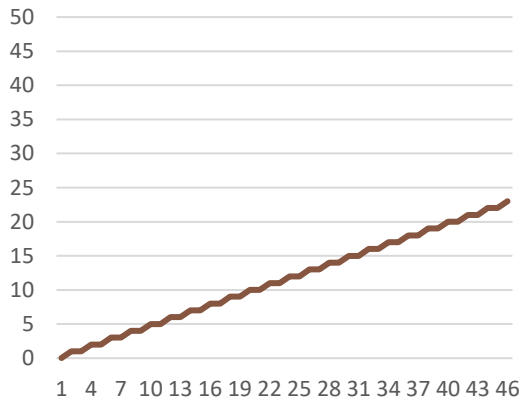
Harvard University

Human flaw in system design…

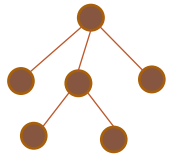
Cardinality & Ashby‘s law

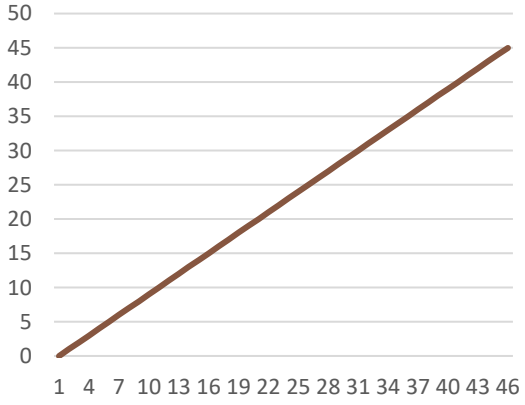
1:1





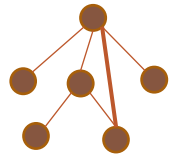
1:n

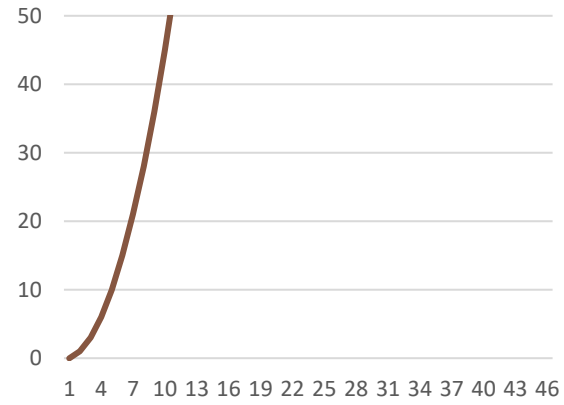




N-1

n:m

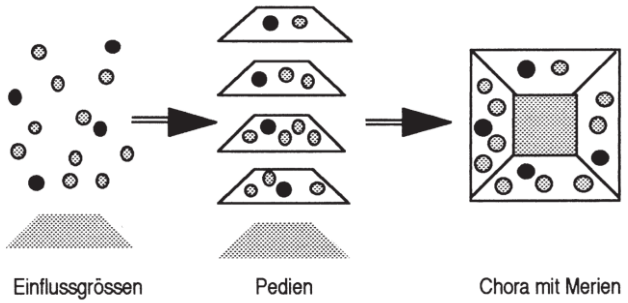


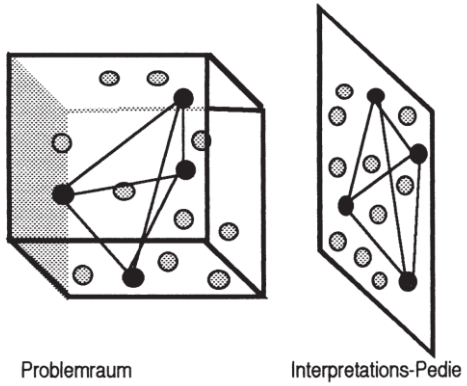


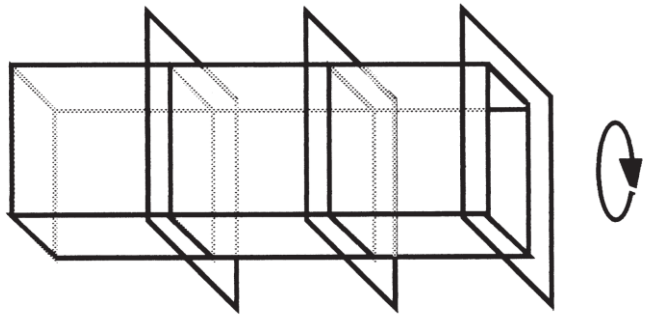
N(N-1)/2

Solution concept Helidem

Exploratory combinatorics: interpretive networks







Kahle, E., Wilms, F. E. P.: Der *Helidem* : Eine nichthierarchische Form der Analyse komplexer Wirkungsgefüge

… Metadata as a solution approach?

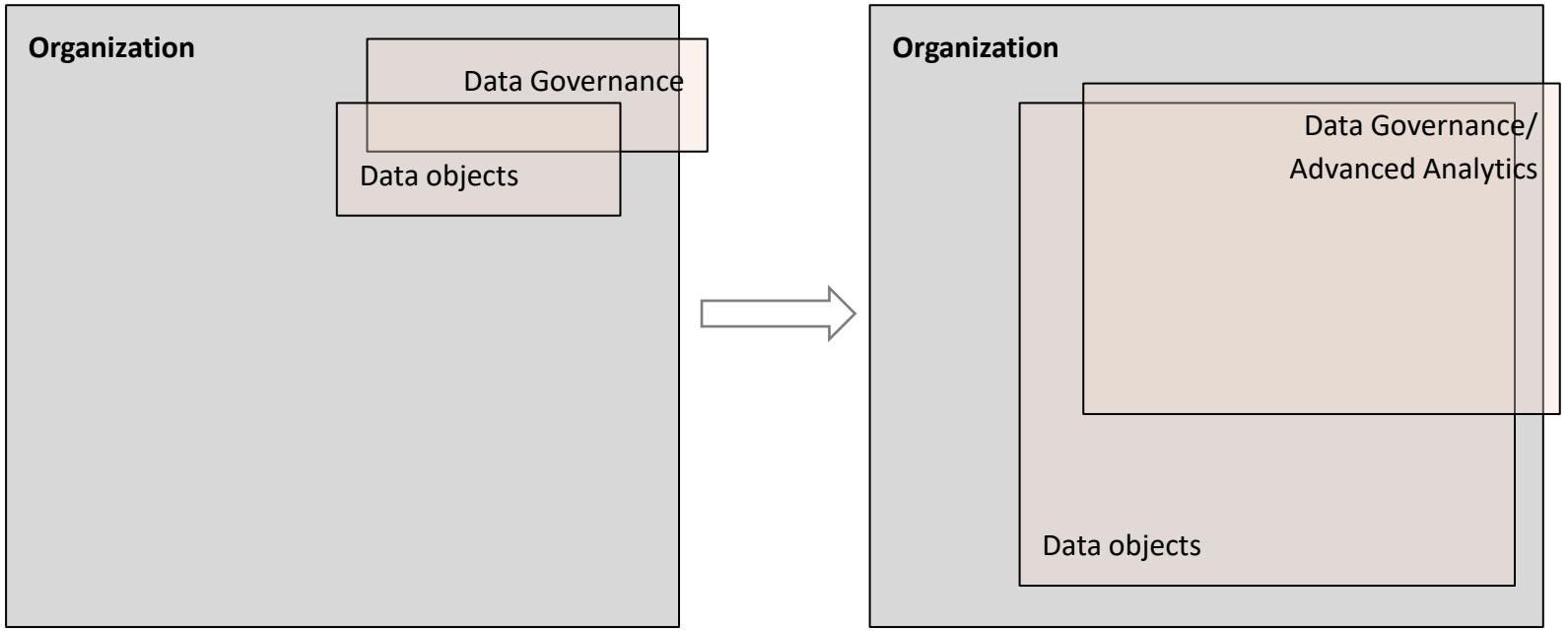
State of the art: inevitable overselling & underperforming

Figure 1: Magic Quadrant for Data Integration Tools

Source: Gartner (August 2021)

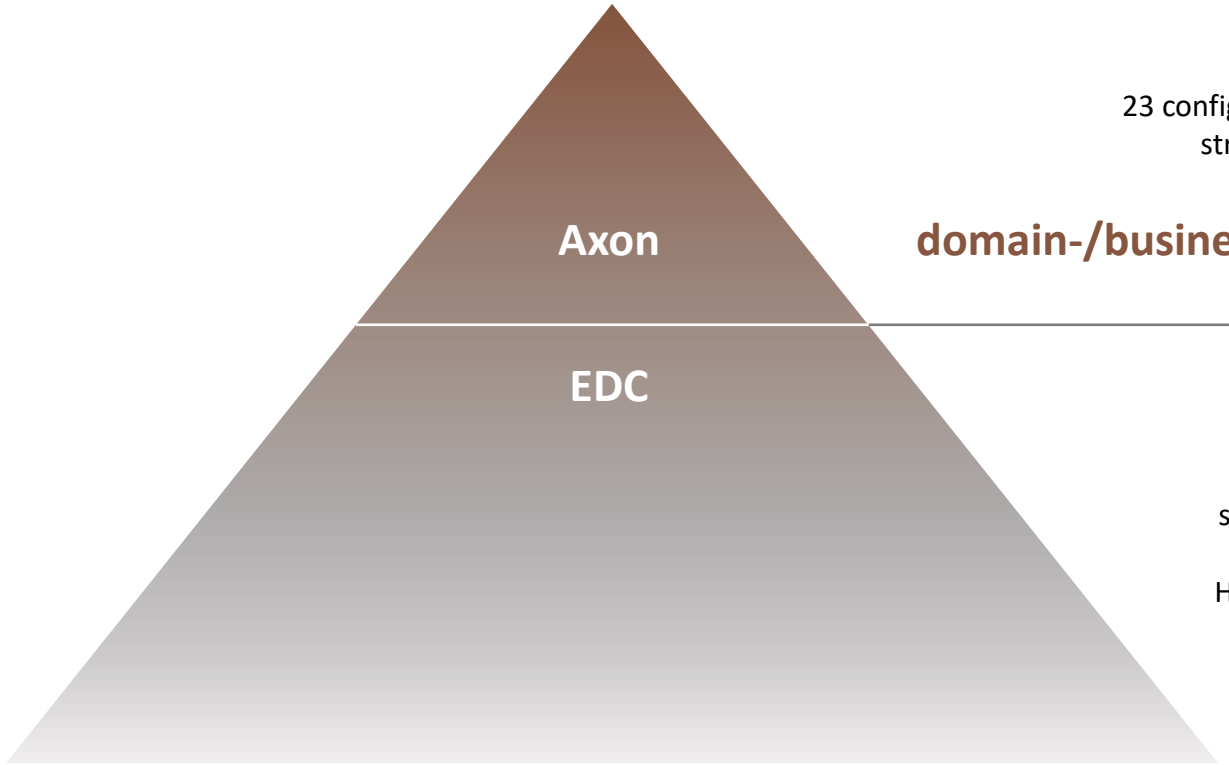
(Data) Governance

Organization as organization of data objects



Data-driven organization

e.g. Informatica: Axon and EDC provide a (potentially) complete solution



23 configurable facets ⇒ »all« organizational structures, processes... can be mapped.

domain-/business oriented meta model

technical meta model

Schema*scanners enable simple, complete automatic inventory of »all« data objects.
However: only by using **parsers**** can data-driven processes be organized efficiently.

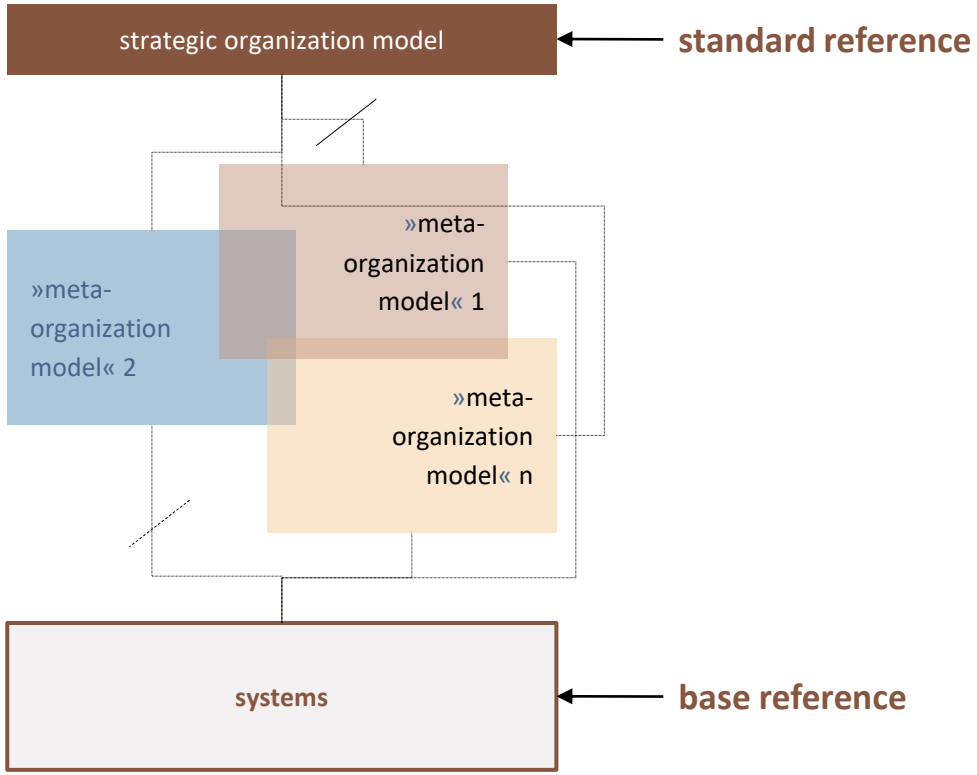
*Schema:= data object structures, meta data

**Parser (called »advanced scanners« at Informatica):= Processes that analyze codes, from which, among other things, dependencies of data objects (»technical lineages«) can be determined automatically.

Critical success factor: clear references

Definition proliferations vs. strategic organization model

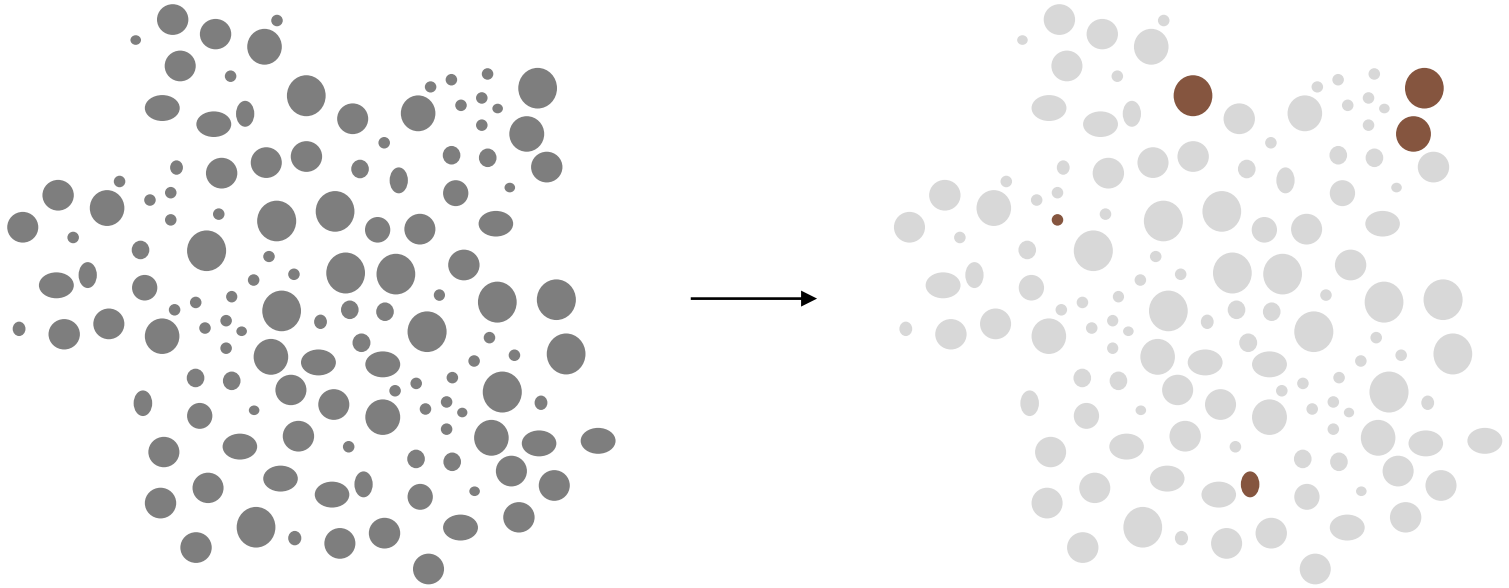
- Glossary/Ontology/Taxonomy/Data Dictionary... := (»only«) definitions
- Risk: insufficient coordination, redundancies, inconsistencies, lack of topicality...



Implementation alternatives

Traditional »complexity reduction«:
complicated, lossy, slow, expensive, not scalable.

The systems themselves are the best basis for analysis.
However, the inventory of data objects leads to extreme complexity in the first step.
Without further machine support, there have hardly been any alternatives to the traditional way:



incoherent population,
unmanageable number of data objects.

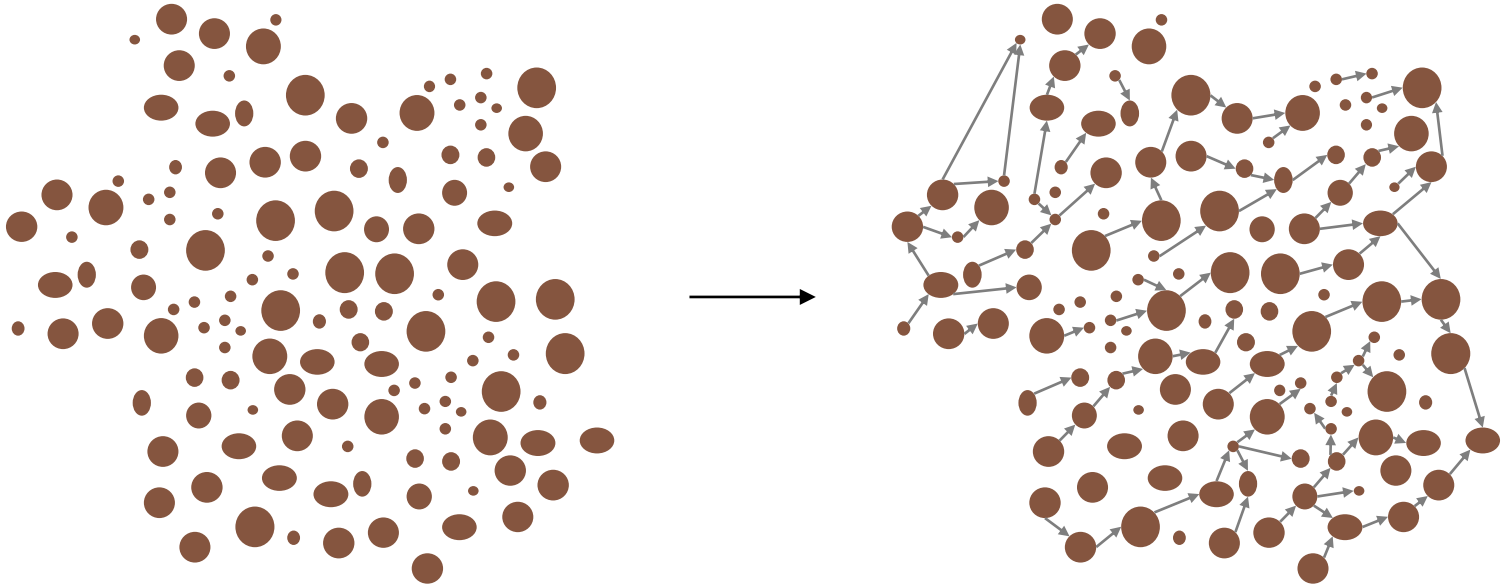
Basis for **traditional procedure model:**
more or less arbitrary and lossy sample selection.

Implementation alternatives

New: machine lineage determination

⇒ (really) advanced organizational analytics

A schema scanner provides a potentially complete but unstructured inventory of data objects.
Parser application (codescan) enables efficient analyses of dependencies (incl. analysis gaps).
Result: Networks of data objects allow maximum complexity reduction without information loss.



incoherent population,
unmanageable number of data objects.

Basis for **efficient** process model:
Population lineages provide
simple machine analysis support.

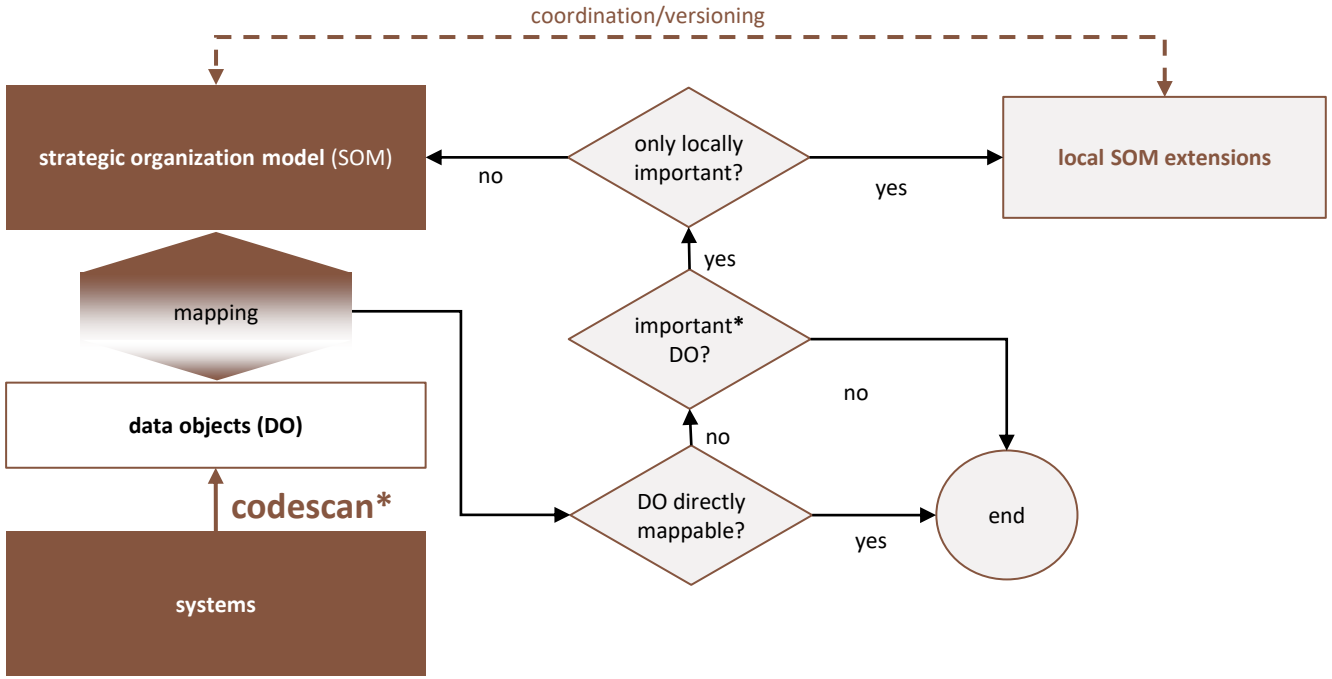
Implementation alternatives

Data lineage offers potential for dominant improvement

	Traditional process model	Using technical lineage
Simplicity	Complexity reduction only by loss of information (only samples manageable) ⇒ complications because of large distance to base reference	**Complexity reduction without information loss with controlled, complete and fastest possible access to the base reference**
Scalability	high context dependencies, effectively no economies of scale	**Full collection of data objects incl. dependencies can be automated to the greatest possible extent on any scale if required ⇒ arbitrarily scalable**
Costs and lead times	a »manual« recording of technical lineages is very slow, error-prone and economically impossible.	**Minimal costs of full machine surveys (at a reasonable level of detail), minimum marginal costs for updates.**
Quality of results	the required compromises lead to low informative value. It is also not possible to adequately assess the need for updates. Severely limited planning and control basis.	**The best statistics is a full survey: most meaningful analyses at »any« level of detail; automatable signaling and execution of updates. Best possible planning basis for overarching improvement measures.**
Compliance aspects	Data protection, information security, etc. are not critical in either case (focus on metadata, scanner access can also be implemented asynchronously).	

Data-driven organizational analysis

Simple, pragmatic process organization and continuous optimization

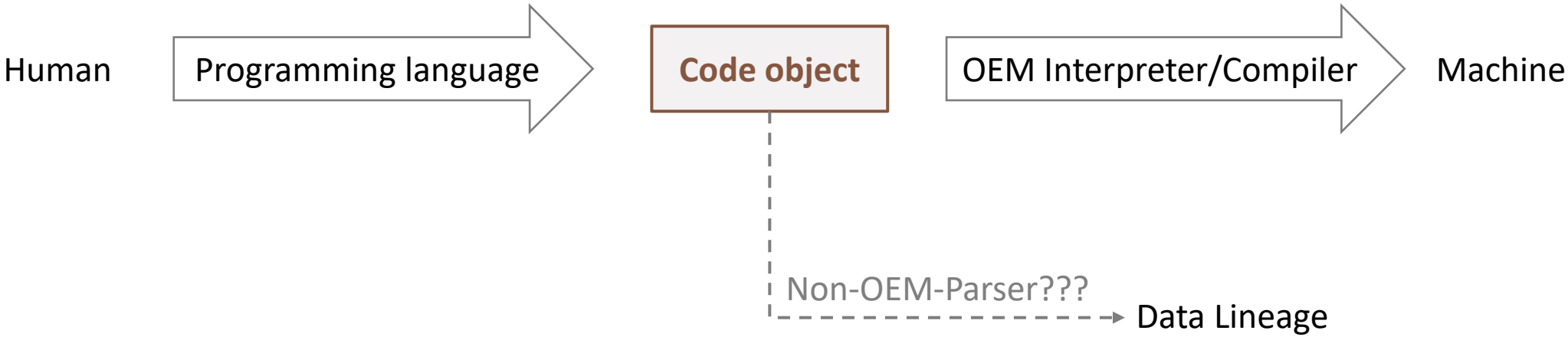


*the »complete« machine capture of data objects *incl. their dependencies* also enables machine analyses
- on the (potential) significance of a data object in the overall context, and
- of any remaining analysis gaps in the population

⇒ faster/better decisions, maximum shortened lead times, minimum costs, simplest quality assurance.

Machine communication problems

Gödel's incompletenesses…



Conceptual problems in the state of the art…

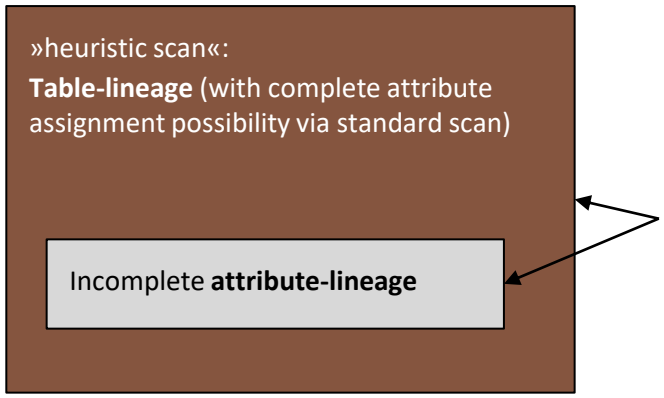
… and a simple solution

Two major weaknesses:

1. **Supporting machine quality assurance of parsing results** (the fundamental complexity problem thus shifts from the population to the nets).
2. Parsing process implementation is **inflexible due to a focus on attribute-level lineages** (the resulting networks are thus inevitably incomplete in realistic use cases; however, a realization of the aforementioned potential benefits requires extensive scan completeness)

Adequate *implementation planning* is hardly possible under such circumstances:
»Randomly« identified analysis gaps are closed extemporaneously, which tends to *shift the initial development costs and problems one-sidedly to the client and severely impairs potential benefits as well as further advancements* (no budgeting without resilient action planning, no substantial further development without budget).

However, **these restrictions should be easily avoidable,** if the core model can also represent lineages between »larger« data objects than attributes (e.g. table ↔ table or table ↔ attribute). Thus, the main problems can be easily solved by a situational aspiration adjustment regarding the level of detail (»heuristics«):

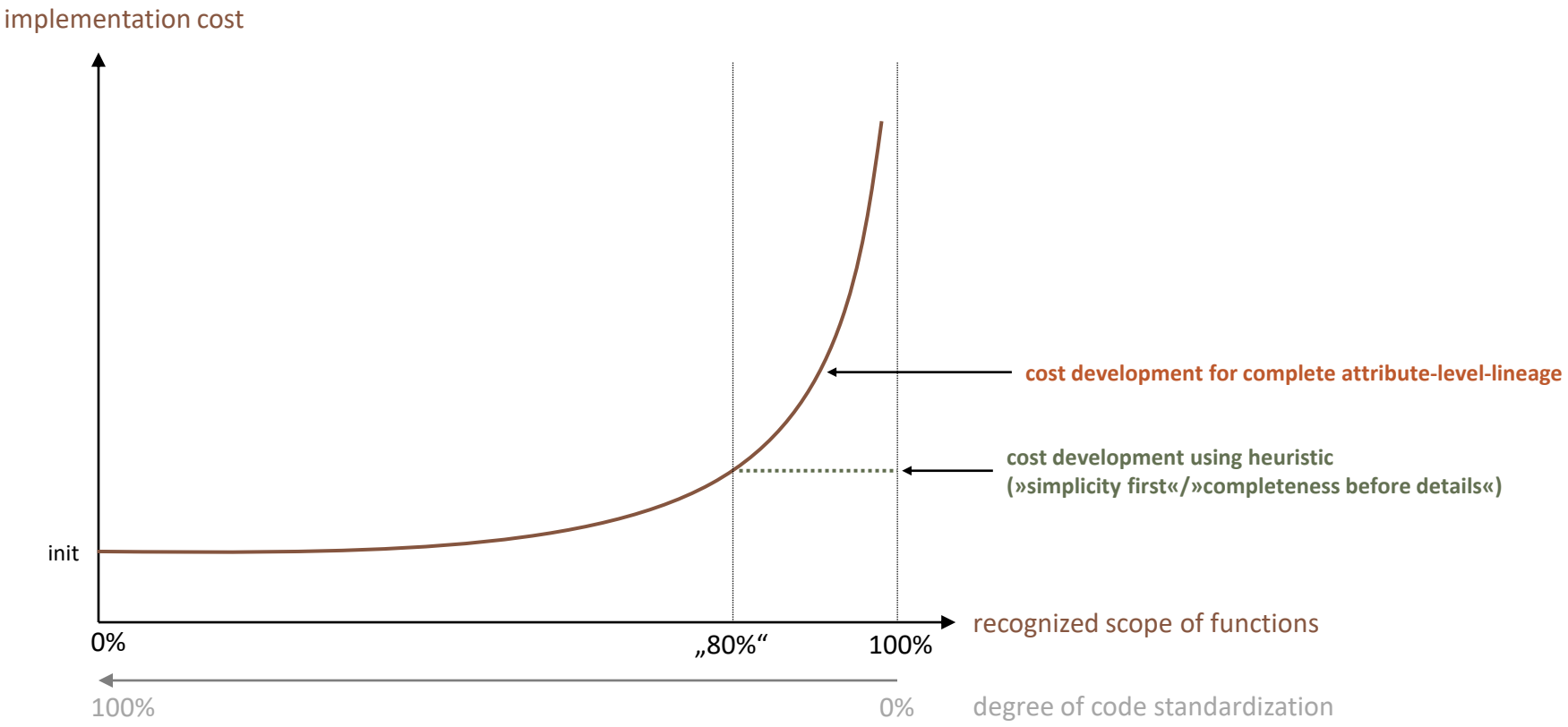


Automated gap analyses between heuristic-complete and detailed, but incomplete scans enable, among other things,

- easy quality assurance of advanced scanner results
- complete domain-oriented data analyses (with fast code access where transformations are still missing)
- concrete evaluations and planning of *targeted* attribute-level scanner development
  ⇒ reasonable balance of interests in trustworthy development partnership.

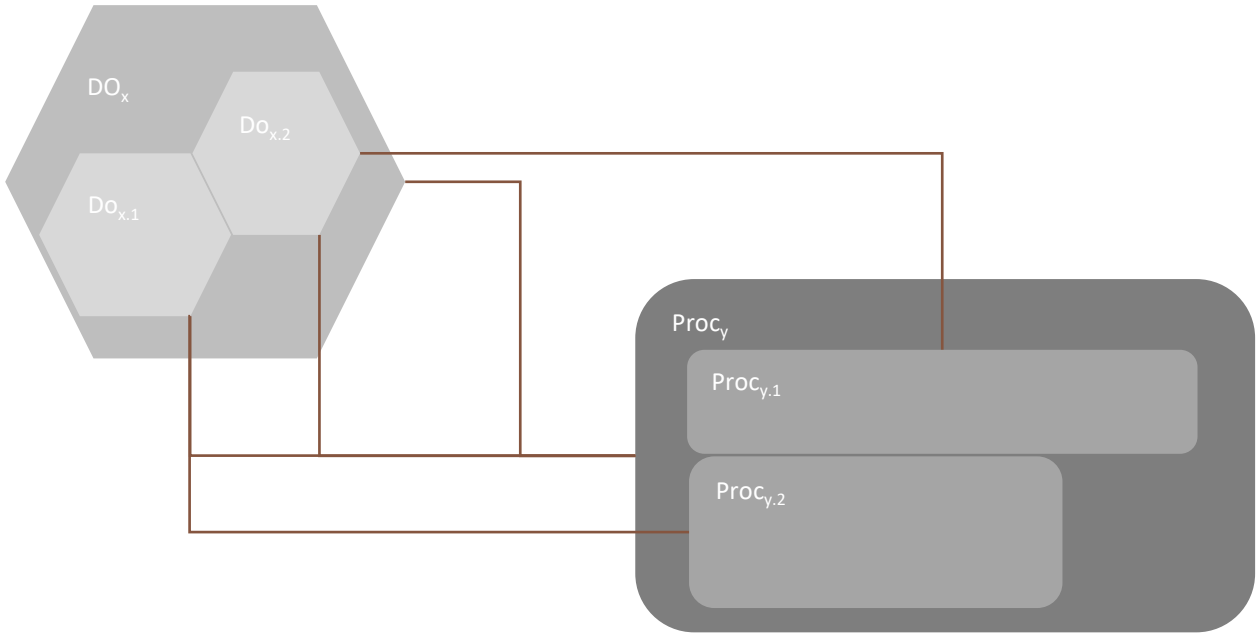
Conceptual problems in the state of the art…

… and a simple solution



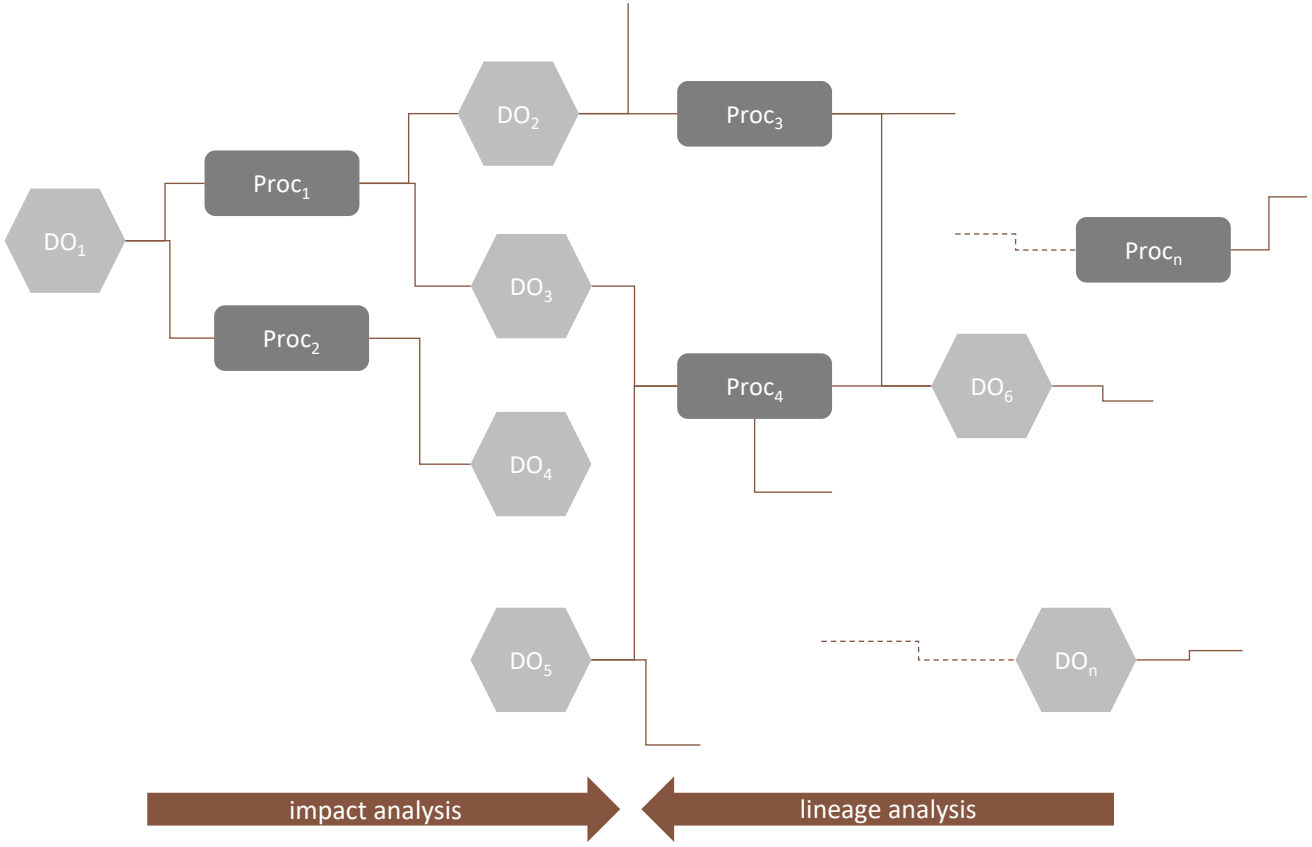
Simplification through scale-invariant object model

Fast, »complete« and cost-efficient lineages



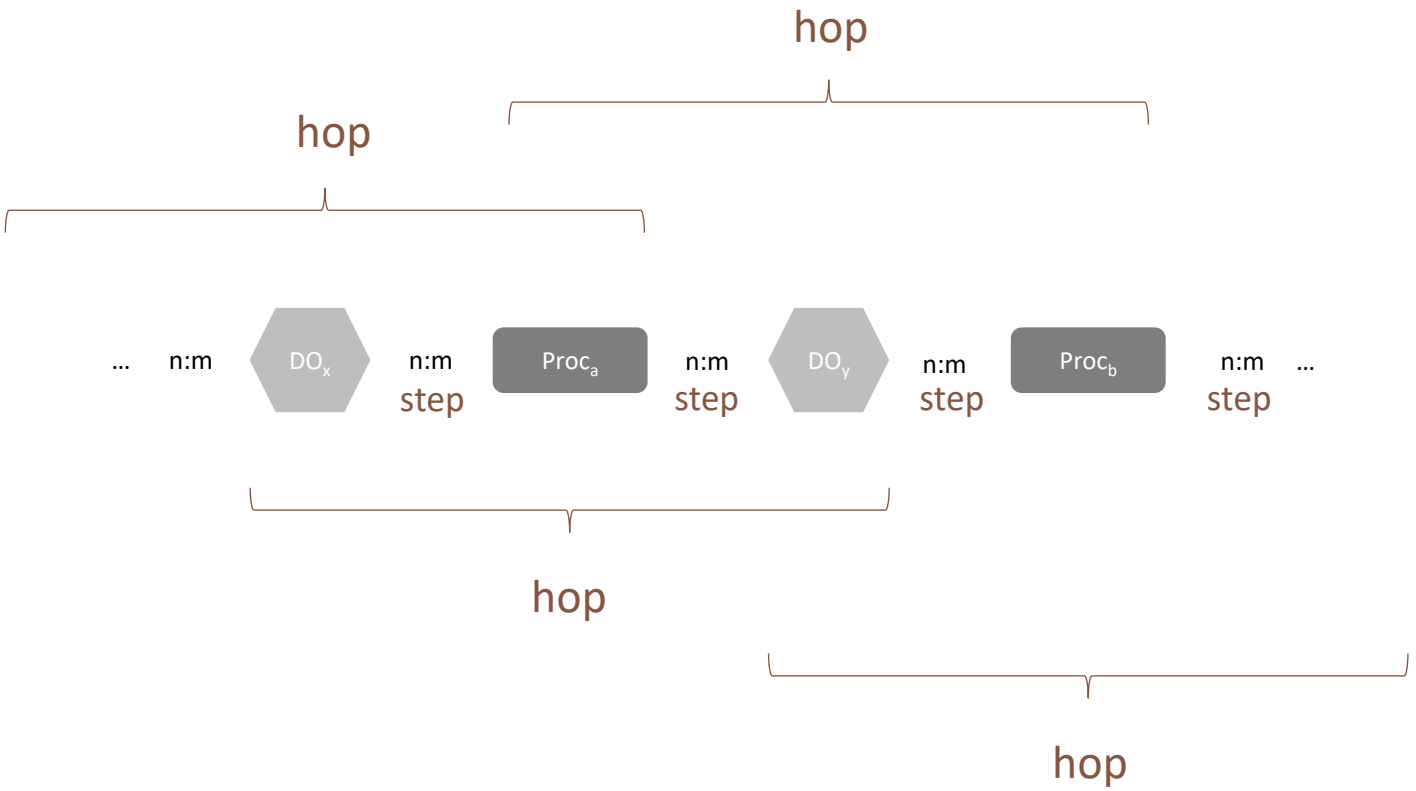
Networks of data and process objects

⇒ dynamic, path- and context-dependent analyses



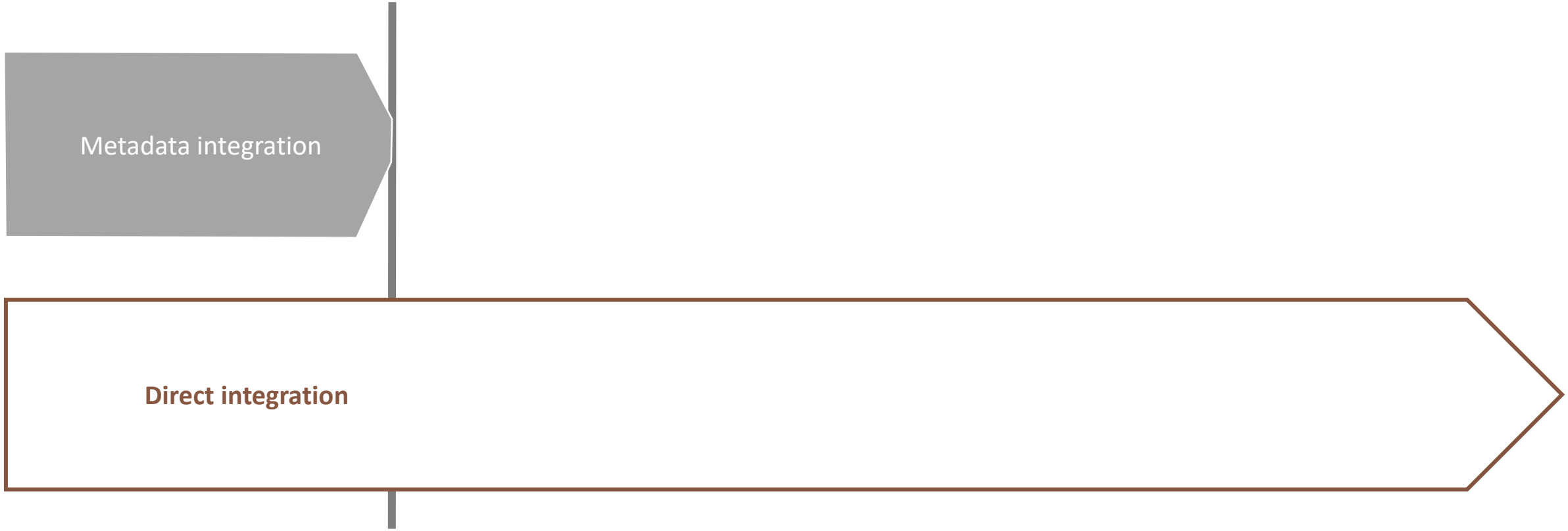
step + step = hop

Network traversal with dynamic reference/focus objects



Metadata vs »real« integration

Rube Goldberg machines vs. dominant improvement



Metadata vs »real« integration

Rube Goldberg machines vs. dominant improvement

	Indirect („meta“)integration	Direct integration
Data/code object inventories	− o +	++
Functional dependencies	− o	++
Data content	−−	++
Process integration	−−	++

Dominantly better integration can be radically simple

Next evolutionary steps in organizational management:

?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Thank you :-)