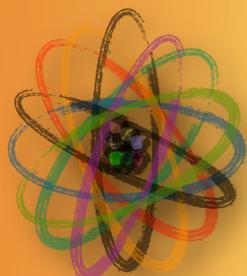# Pursuing a Universal Foundation of System Design Quality

Projecting the choice properties of Thriving Systems Theory onto widening domains of information systems models

Les Waguespack©2011
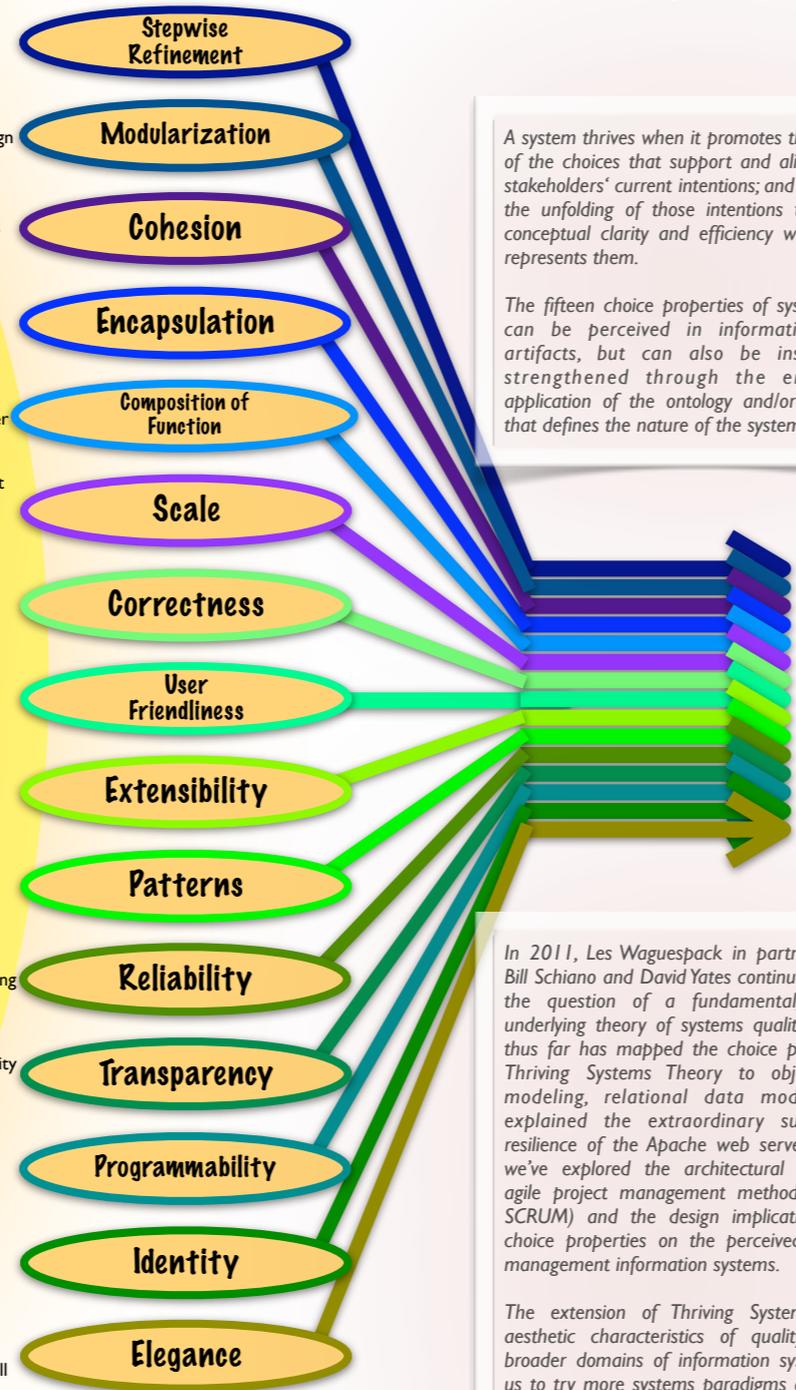Computer Information Systems Department
Bentley University

from the beauty in nature

properties of order in nature

to the quality in systems

system design actions and choice properties

elaborate: develop or present (a theory, policy, or system) in detail — *Stepwise Refinement*

modularize: employing or involving a module or modules as the basis of design or construction — *Modularization*

factor: express as a product of factors — *Cohesion*

encapsulate: enclose the essential features of something succinctly by a protective coating or membrane — *Encapsulation*

assemble: fit together the separate component parts of (a machine or other object) — *Composition of Function*

focus: (of a person or their eyes) adapt to the prevailing level of light [abstraction] and become able to see clearly — *Scale*

align: put (things) into correct or appropriate relative positions — *Correctness*

accommodate: fit in with the wishes or needs of — *User Friendliness*

extend: render something capable of expansion in scope, effect, or meaning — *Extensibility*

pattern: give a regular or intelligible form to — *Patterns*

normalize: make something more normal, which typically means conforming to some regularity or rule — *Reliability*

expose: reveal the presence of (a quality or feeling) — *Transparency*

generalize: make or become more widely or generally applicable — *Programmability*

identify: establish or indicate who or what (someone or something) is — *Identity*

coordinate: bring the different elements of (a complex activity or organization) into a relationship that will ensure efficiency or harmony — *Elegance*


A system thrives when it promotes the unfolding of the choices that support and align with the stakeholders' current intentions; and it promotes the unfolding of those intentions through the conceptual clarity and efficiency with which it represents them.

The fifteen choice properties of system quality can be perceived in information system artifacts, but can also be instilled and strengthened through the enlightened application of the ontology and/or vocabulary that defines the nature of the system domain.


In 2011, Les Waguespack in partnership with Bill Schiano and David Yates continues exploring the question of a fundamental, universal, underlying theory of systems quality. The work thus far has mapped the choice properties of Thriving Systems Theory to object-oriented modeling, relational data modeling, and explained the extraordinary success and resilience of the Apache web server. This year we've explored the architectural qualities of agile project management methodologies (i.e. SCRUM) and the design implications of the choice properties on the perceived quality of management information systems.

The extension of Thriving Systems Theory's aesthetic characteristics of quality to these broader domains of information systems leads us to try more systems paradigms as a way to investigate quality in those domains and to further substantiate and refine the underlying Thriving Systems Theory.
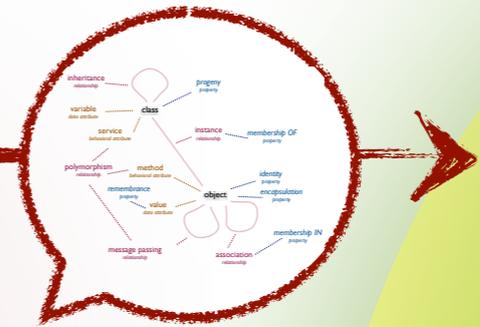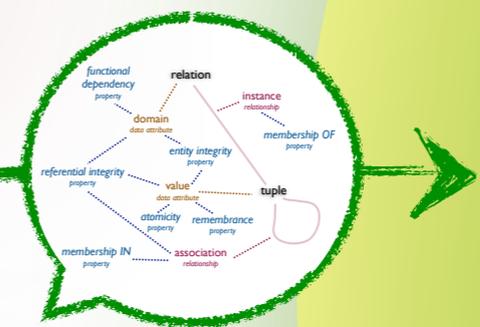

Object-oriented ontology

Waguespack (2011). A Design Quality Learning Unit in OO Modeling Bridging the Engineer and the Artist, ISECON 2011, Wilmington, NC, Nov, to appear.

Waguespack (2009). A Two-Page "OO Green Card" for Students and Teachers. Information Systems Education Journal, 7 (61).
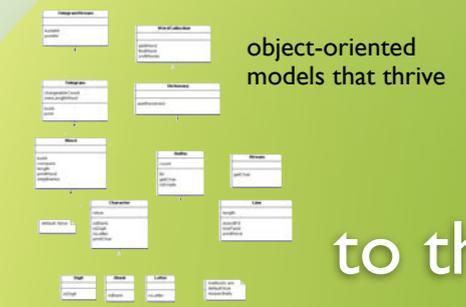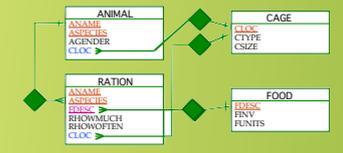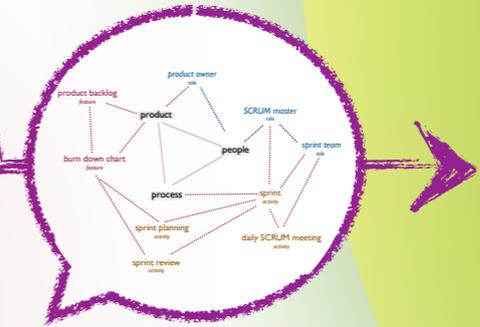
object-oriented models that thrive

Relational data ontology

Waguespack (2010). The Relational Model Distilled to Support Data Modeling in IS 2002. Information Systems Education Journal, 8 (3).
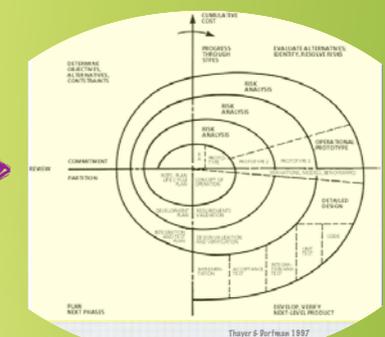
relational data models that thrive

Agile vocabulary of SCRUM

Waguespack and Schiano, W.T. (2012). SCRUM Project Architecture and Thriving Systems Theory, HICSS-45, Grand Wailea, HI, Jan, to appear.
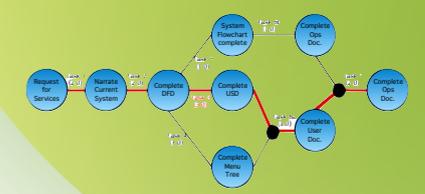
agile project management models that thrive

business models that thrive ??

Business process modeling vocabulary or ontology?

Seeking collaborators with business process modeling domain expertise!

Thriving Systems Theory

Schiano, W. T., Yates, D. J., and Waguespack, L. J.. Apache web server: Applying lessons from physical architecture to enable systems to thrive. ACM Transactions on Management Information Systems (submitted Aug 2011).

Waguespack, L. J., Schiano, W. T., and Yates, D. J. (2010). Translating architectural design quality from the physical domain to information systems. Design Principles and Practices: An International Journal, 4(1), 179-194.

Waguespack, L. J. (2010). Thriving Systems Theory and Metaphor-Driven Modeling. London: Springer-Verlag.

DESIGN
Principles & Practices:
An International Journal

Thriving Systems Theory
and Metaphor-Driven Modeling

21 August 2011