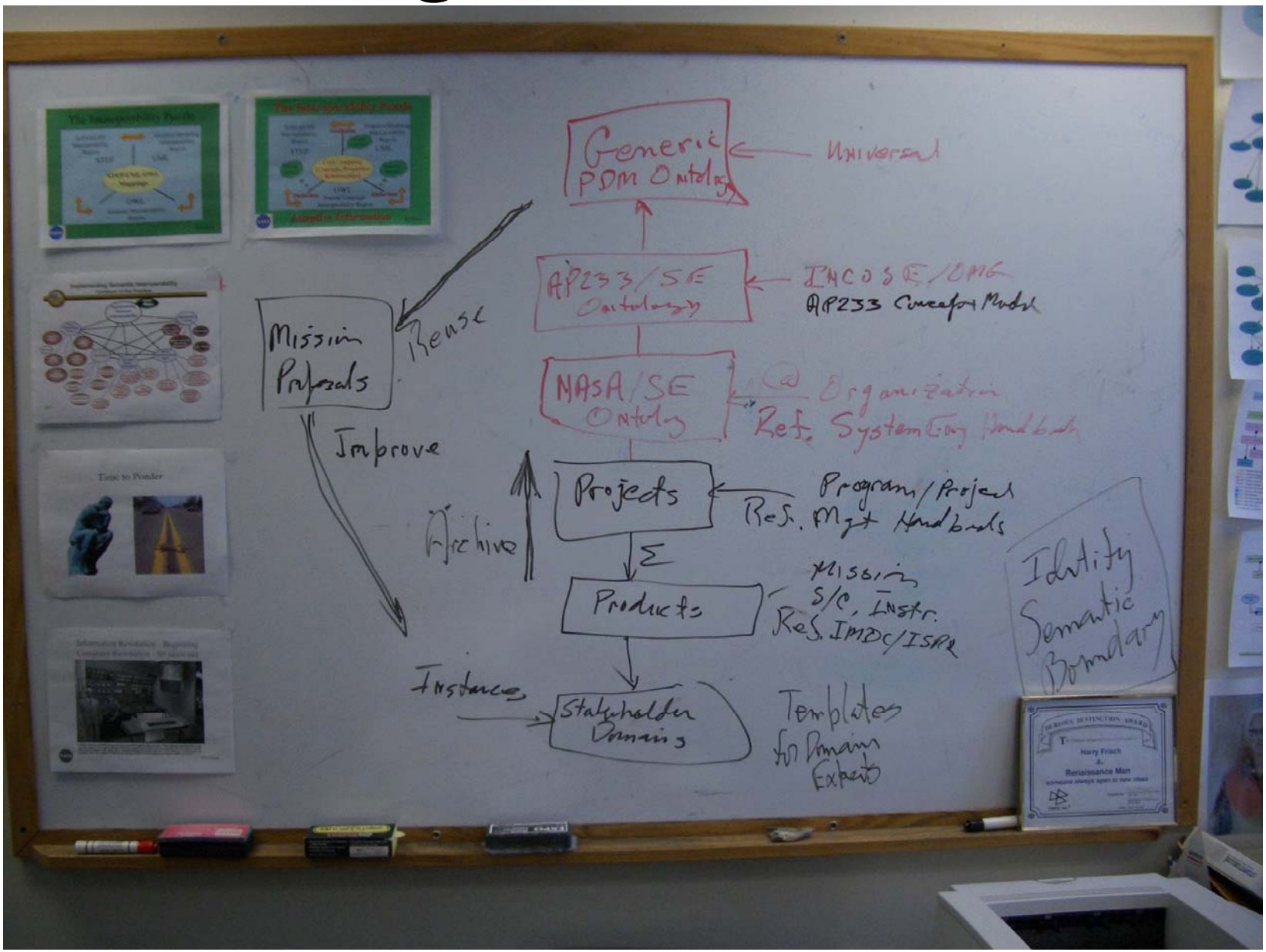
Ontologies as Everyday Knowledgebases

Steve Waterbury and Harry Frisch

Ontology Working Group

Sept 13, 2006

It all began on a white-board



The pieces (subjects & objects) - we have

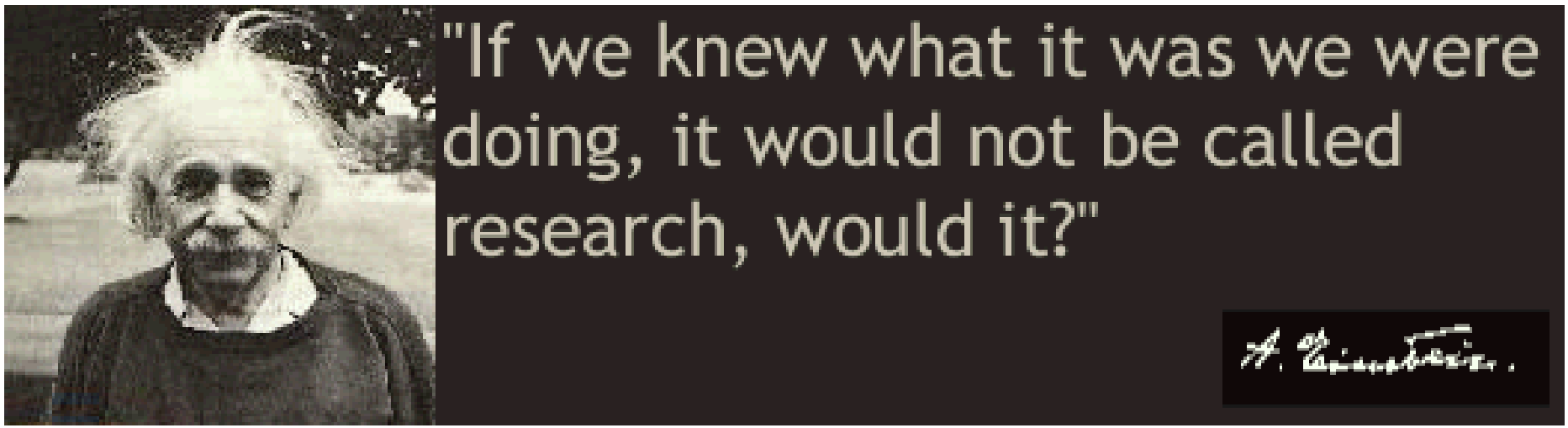
The glue (predicates) - we have

Ontology supports

Interface preparation

{House - builds - Person}

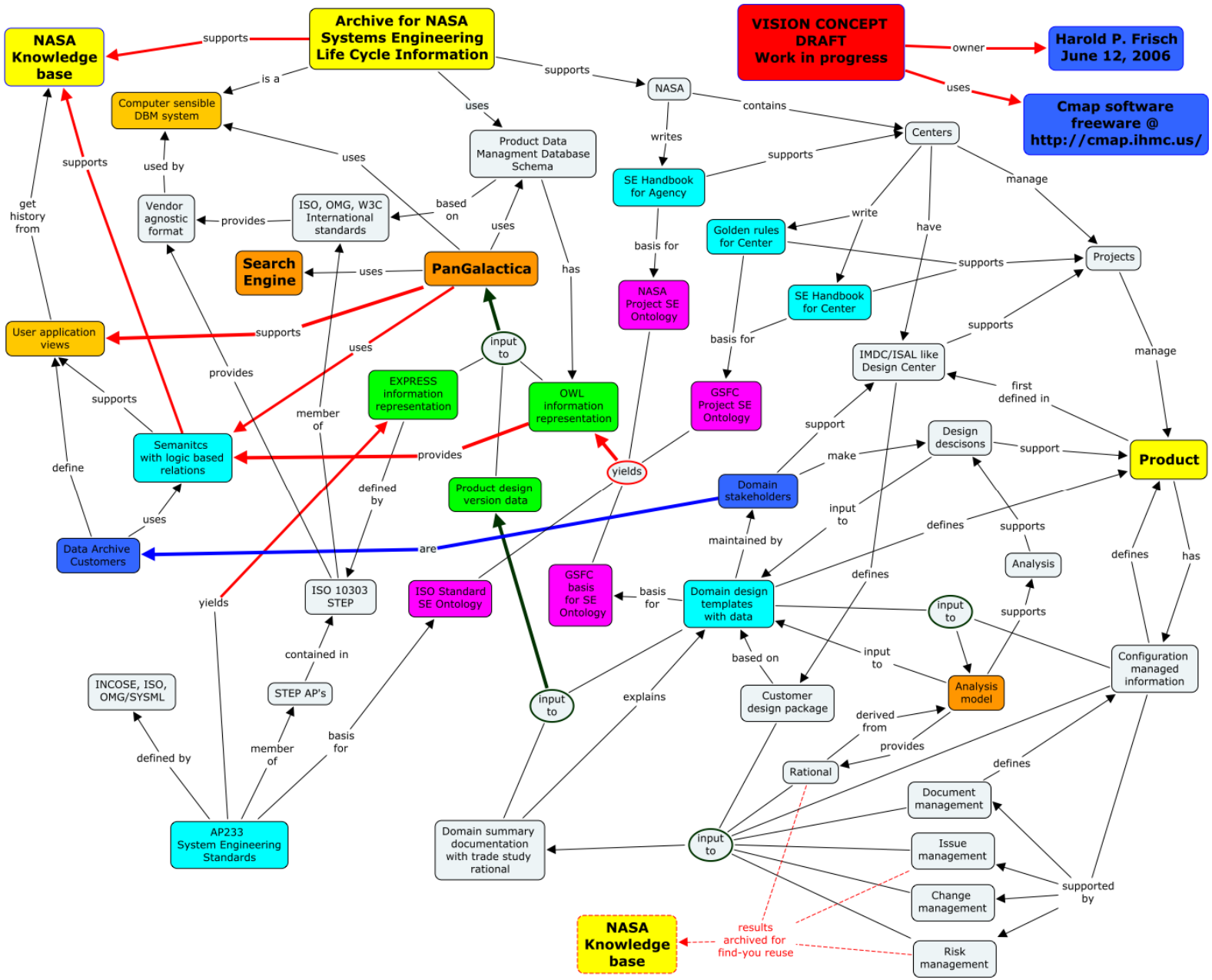
{Man - marries - Woman}



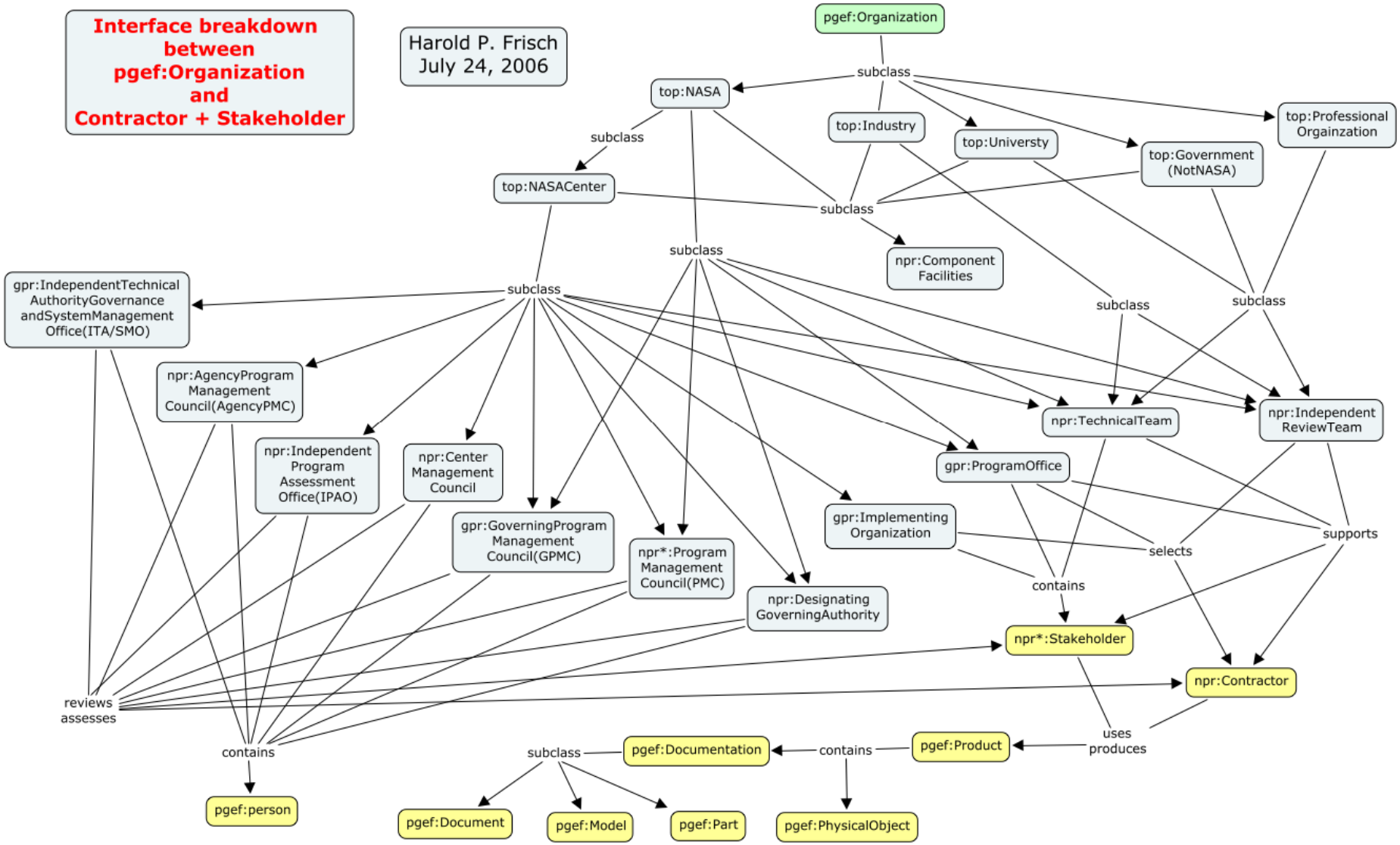
The easy way - Unscalable & uncheckable mess

The hard way - Scalable & checkable capability

White board Concept Map

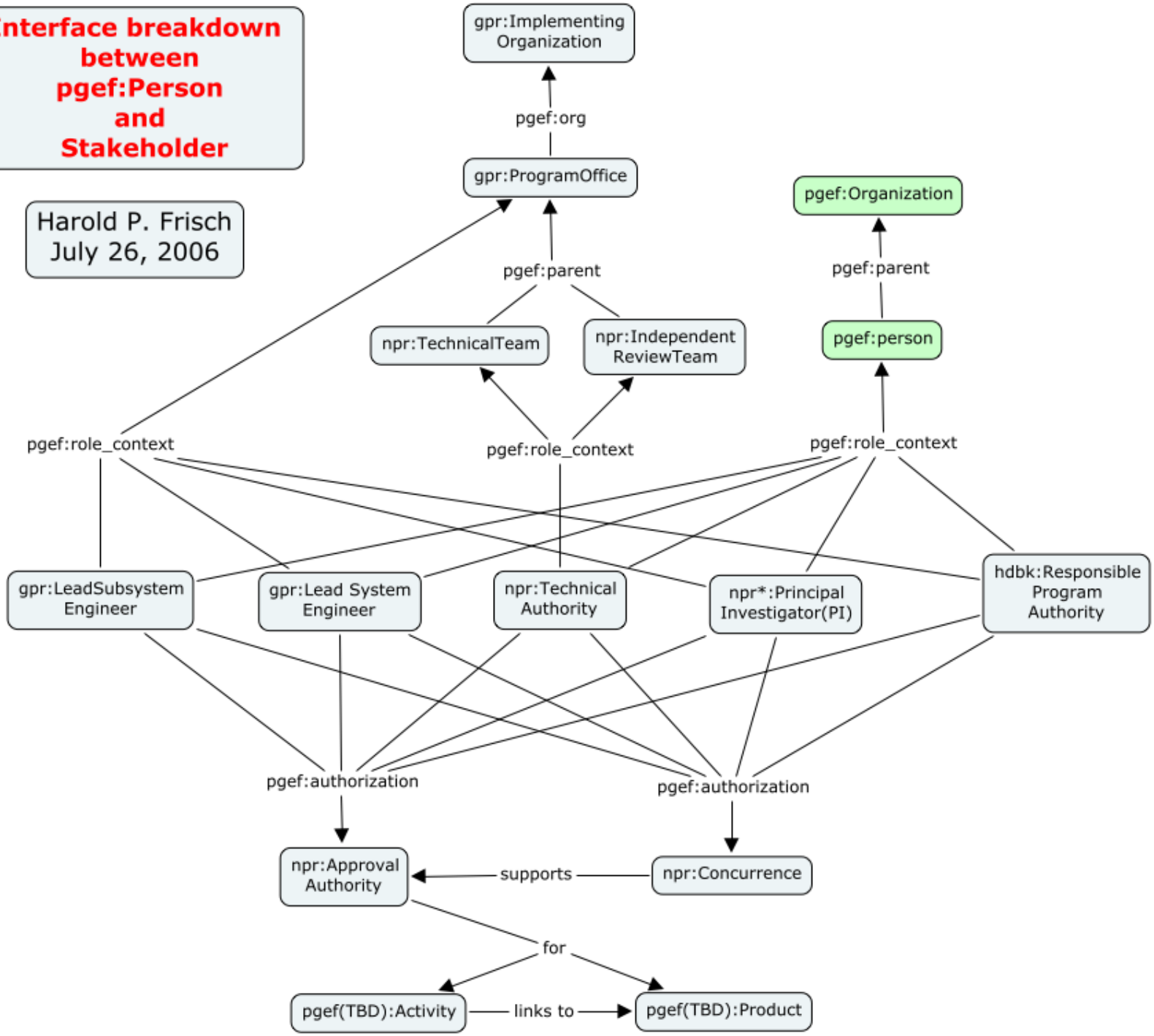


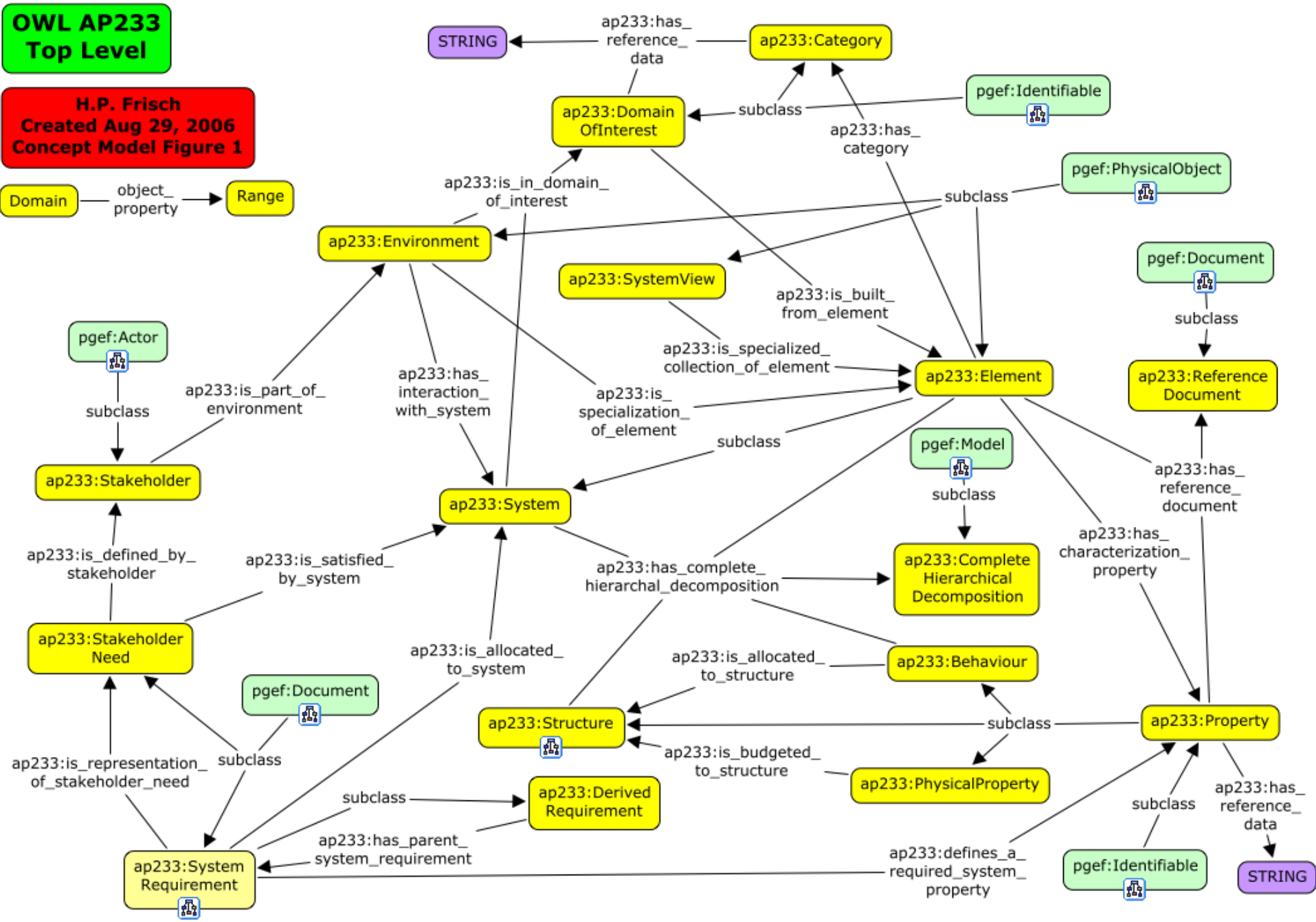
Derived from NASA NPR's & GPR's

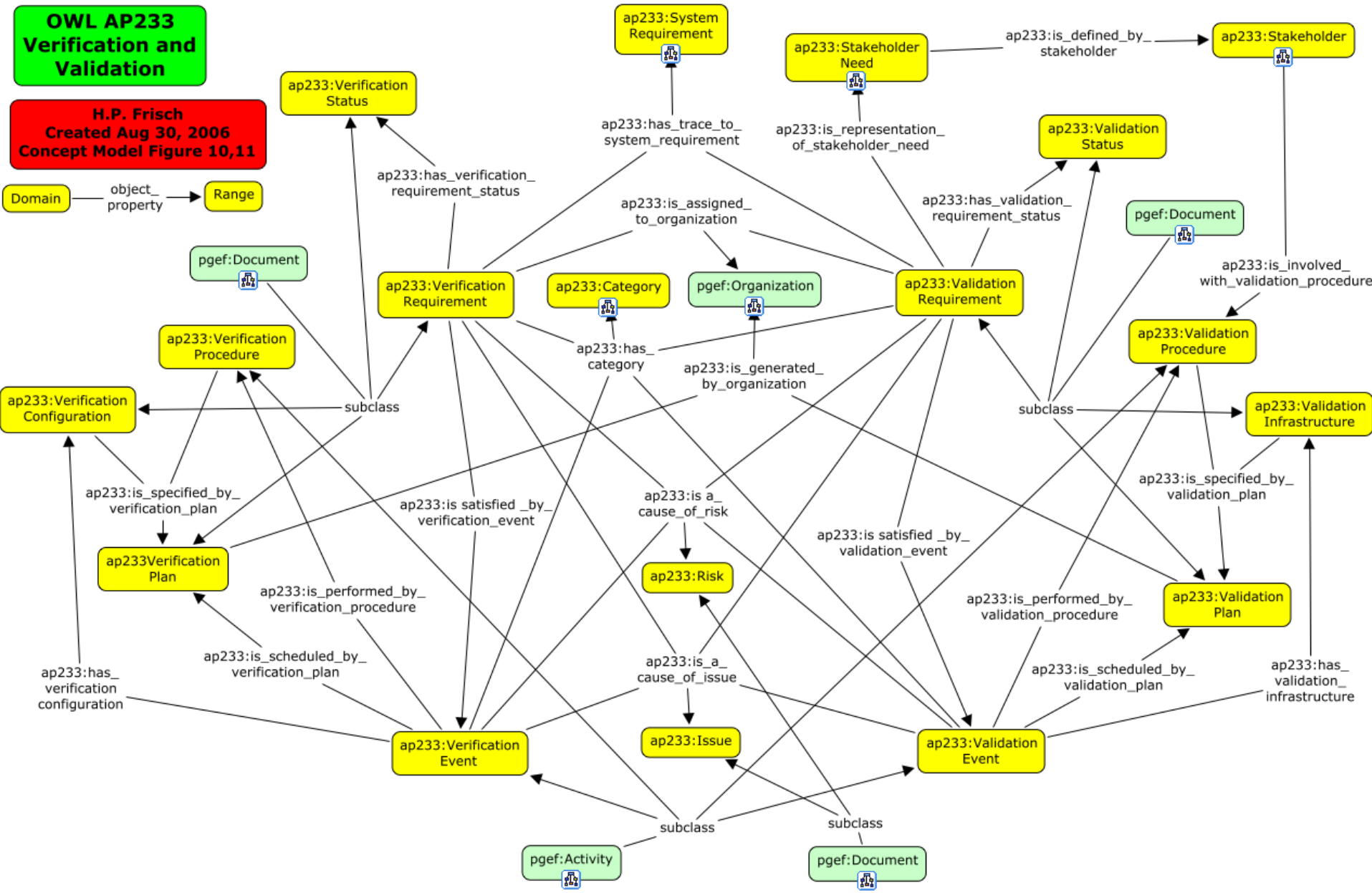


Interface breakdown between pgef:Person and Stakeholder

Harold P. Frisch
July 26, 2006




OWL AP233
Top Level
H.P. Frisch
Created Aug 29, 2006
Concept Model Figure 1
Domain
object_
property
Range
STRING
ap233:has_
reference_
data
ap233:Category
ap233:Domain
OfInterest
subclass
pgef:Identifiable
ap233:has_
category
ap233:is_in_domain_
of_interest
pgef:PhysicalObject
subclass
ap233:Environment
ap233:SystemView
pgef:Document
ap233:is_built_
from_element
subclass
pgef:Actor
ap233:is_specialized_
collection_of_element
ap233:Element
ap233:Reference
Document
subclass
ap233:is_part_of_
environment
ap233:has_
interaction_
with_system
ap233:is_
specialization_
of_element
subclass
pgef:Model
ap233:Stakeholder
ap233:System
subclass
ap233:has_
reference_
document
ap233:is_defined_by_
stakeholder
ap233:is_satisfied_
by_system
ap233:has_complete_
hierarchal_decomposition
ap233:Complete
Hierarchical
Decomposition
ap233:has_
characterization_
property
ap233:Stakeholder
Need
ap233:is_allocated_
to_system
ap233:is_allocated_
to_structure
ap233:Behaviour
pgef:Document
ap233:Structure
subclass
ap233:Property
ap233:is_representation_
of_stakeholder_need
subclass
ap233:is_budgeted_
to_structure
ap233:PhysicalProperty
subclass
ap233:Derived
Requirement
subclass
ap233:has_
reference_
data
ap233:has_parent_
system_requirement
ap233:System
Requirement
ap233:defines_a_
required_system_
property
pgef:Identifiable
STRING

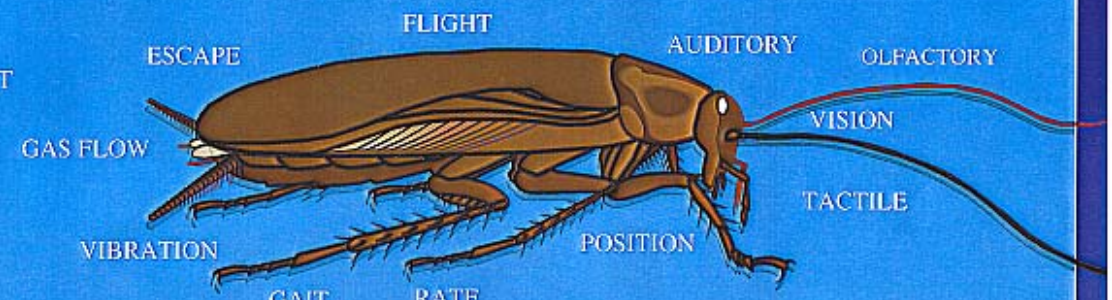

OWL AP233 Verification and Validation
H.P. Frisch
Created Aug 30, 2006
Concept Model Figure 10,11
Domain
object_ property
Range
ap233:System Requirement
ap233:Stakeholder Need
ap233:is_defined_by_ stakeholder
ap233:Stakeholder
ap233:Verification Status
ap233:has_trace_to_ system_requirement
ap233:is_representation_ of_stakeholder_need
ap233:Validation Status
ap233:has_verification_ requirement_status
ap233:is_assigned_ to_organization
ap233:has_validation_ requirement_status
pgef:Document
pgef:Document
ap233:Verification Requirement
ap233:Category
pgef:Organization
ap233:Validation Requirement
ap233:is_involved_ with_validation_procedure
ap233:Verification Procedure
ap233:has_ category
ap233:is_generated_ by_organization
ap233:Validation Procedure
ap233:Verification Configuration
subclass
subclass
ap233:Validation Infrastructure
ap233:is_specified_by_ verification_plan
ap233:is satisfied _by_ verification_event
ap233:is a_ cause_of_risk
ap233:is_specified_by_ validation_plan
ap233:is satisfied _by_ validation_event
ap233Verification Plan
ap233:Risk
ap233:Validation Plan
ap233:is_performed_by_ verification_procedure
ap233:is_performed_by_ validation_procedure
ap233:is_scheduled_by_ verification_plan
ap233:is_a_ cause_of_issue
ap233:is_scheduled_by_ validation_plan
ap233:has_ verification configuration
ap233:has_ validation_ infrastructure
ap233:Verification Event
ap233:Issue
ap233:Validation Event
subclass
subclass
pgef:Activity
pgef:Document

Simplicity & Complexity
Scalable & Checkable

NEUROETHOLOGY INSPIRED NEURAL NETWORKS

Network Algebra is Not Enough
Network Calculus is Needed

- POWER
- ENERGY MANAGEMENT
- REPRODUCTION
- LIFE SUSTAINING
- LEARNING
- ADAPTIVE
- FAILURE TOLERANT



Bottom Line

CPU	=	1 Cubic Millimeter
Cerebral Processing	=	500,000 Neurons
Reflexive Processing	=	500,000 Neurons

Time to ponder