



2022

Annual **INCOSE**
international workshop

HYBRID EVENT

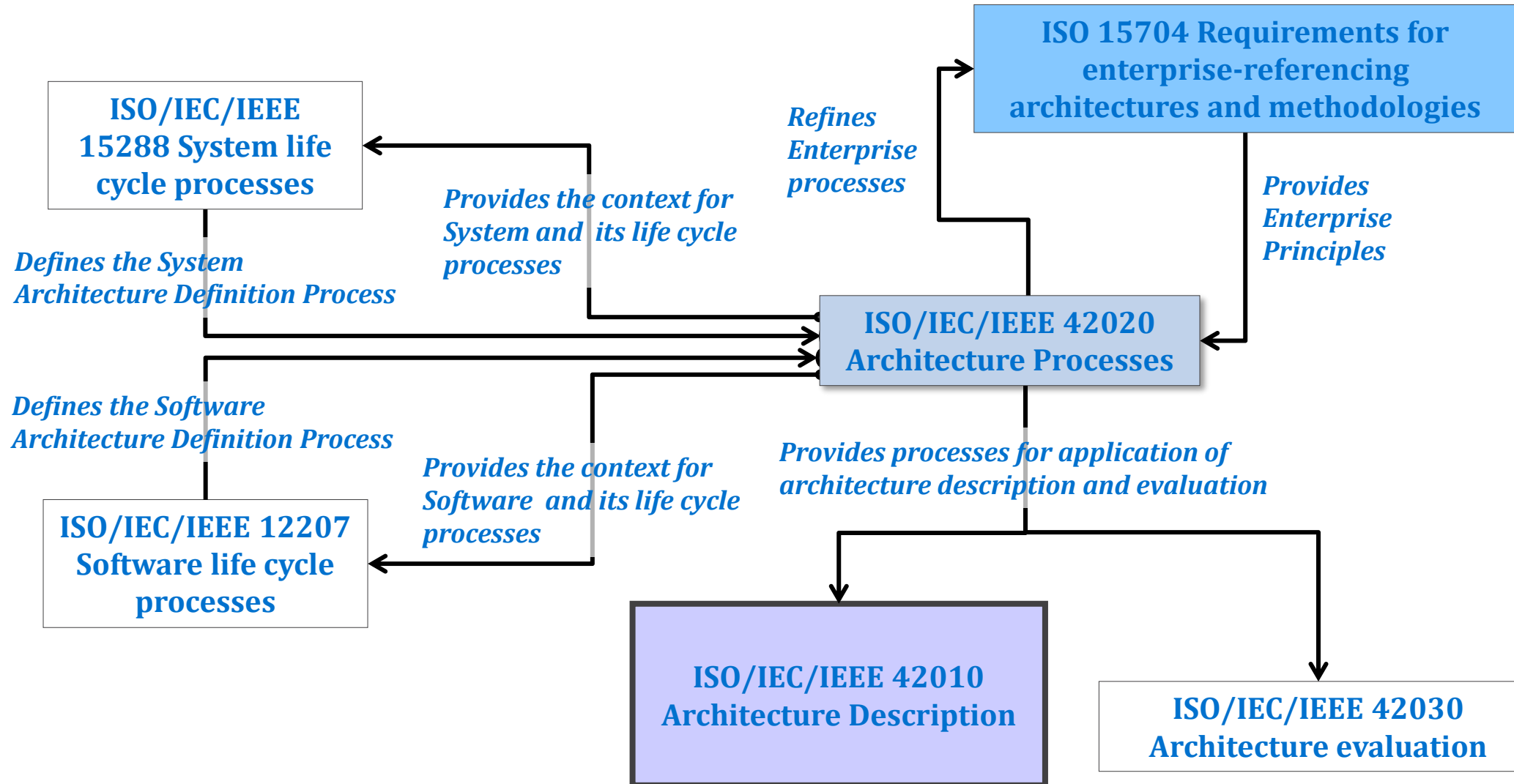
Torrance, CA, USA

Jan 29 - Feb 1, 2022

MBSE Round-robin overview – Richard Martin

ISO/IEC/IEEE 42010 Architecture description

ISO/IEC/IEEE 42010, standard context



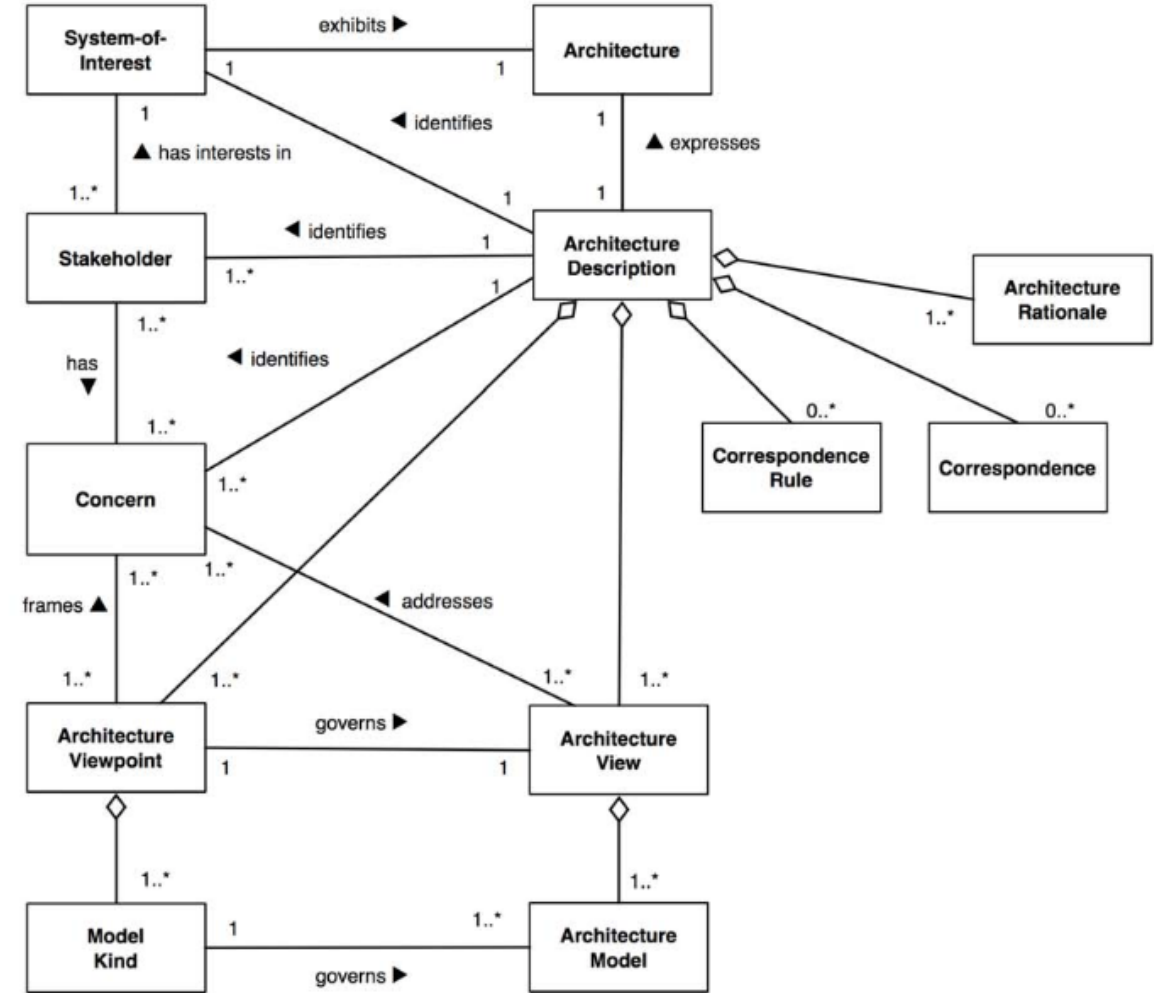
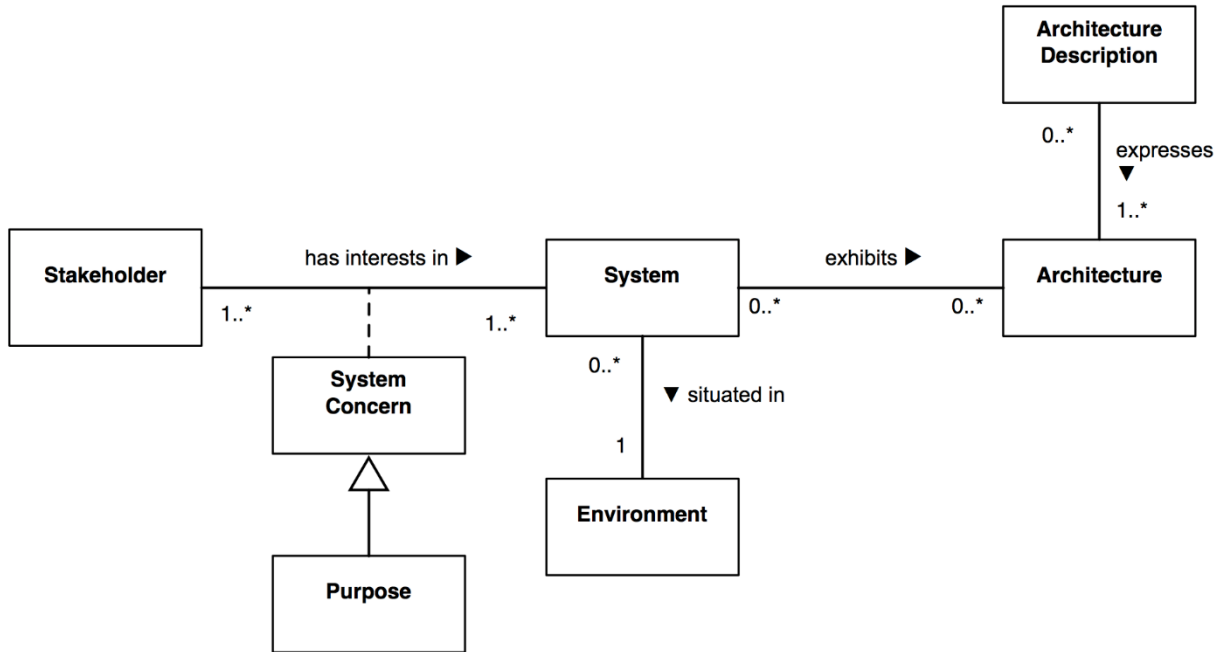
Scope and history



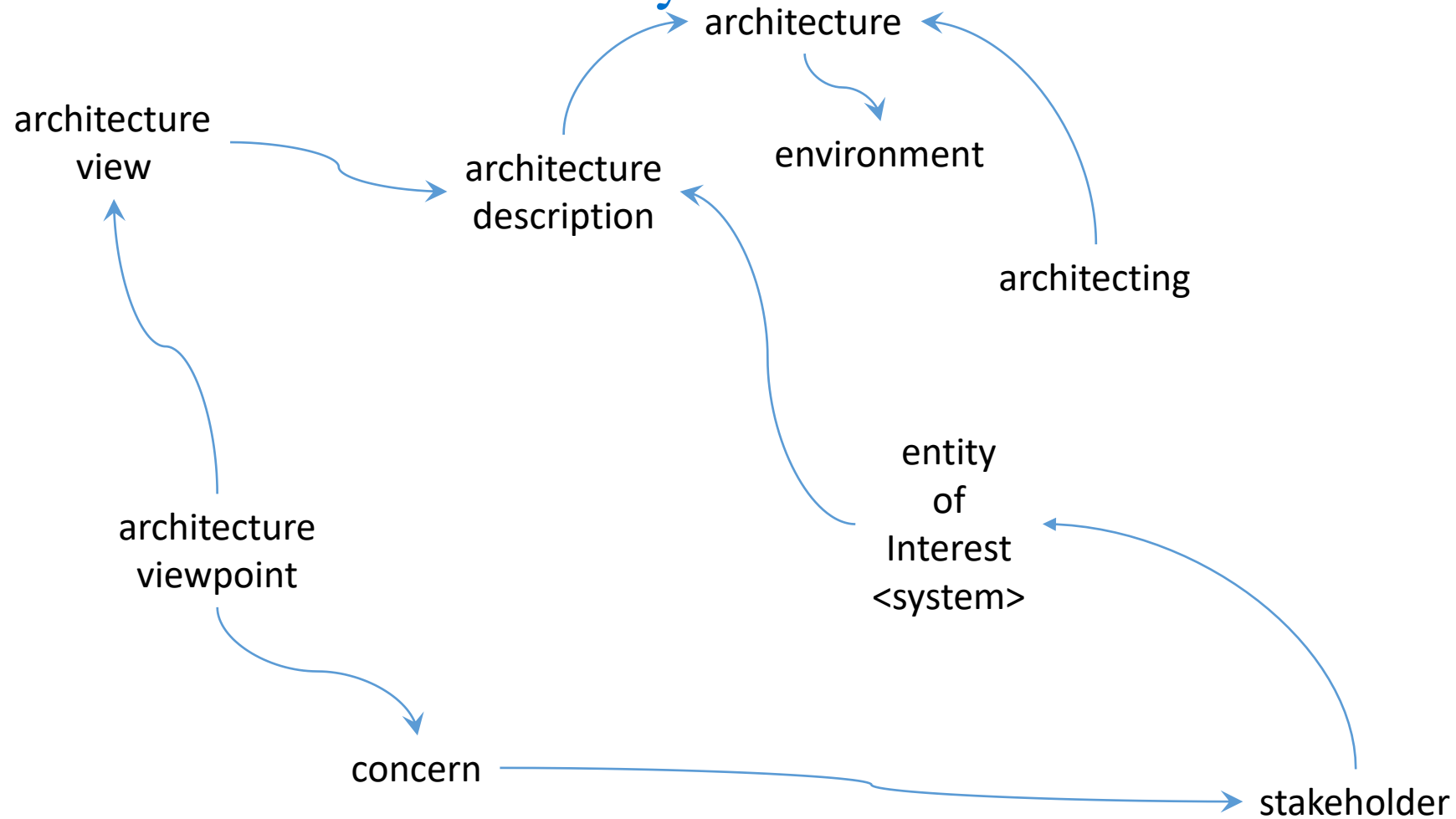
- ▶ Specifies requirements on **architecture description (AD)** for various entities
 - ▶ **Distinguishes the architecture of an entity of interest from an AD** expressing that architecture
 - ▶ Specifies requirements on an **architecture description framework (ADF)**, an **architecture description language (ADL)**, architecture viewpoints and model kinds
 - ▶ Specifies **conformance** to the requirements for an AD, ADF, ADL, architecture viewpoint and model kind
 - ▶ **Does not specify** processes, architecting methods, models, notations, techniques tools, format or media by which an AD is created, utilized or managed.
- IEEE Std 1471-2000
IEEE Recommended Practice for Architectural Description of Software-Intensive Systems
 - ISO/IEC/IEEE 42010:2011 Systems and software engineering — Architecture description
 - ISO/IEC/IEEE 42010 Edition 2 Software, systems and enterprise — Architecture description

Aim is to keep scope and content up to date, with regards to the evolution of Architecting activities and practices in our organizations.

ISO/IEC 42010:2011 Context & Concept Model



42010 term taxonomy – term use in Ed 1 & Ed2



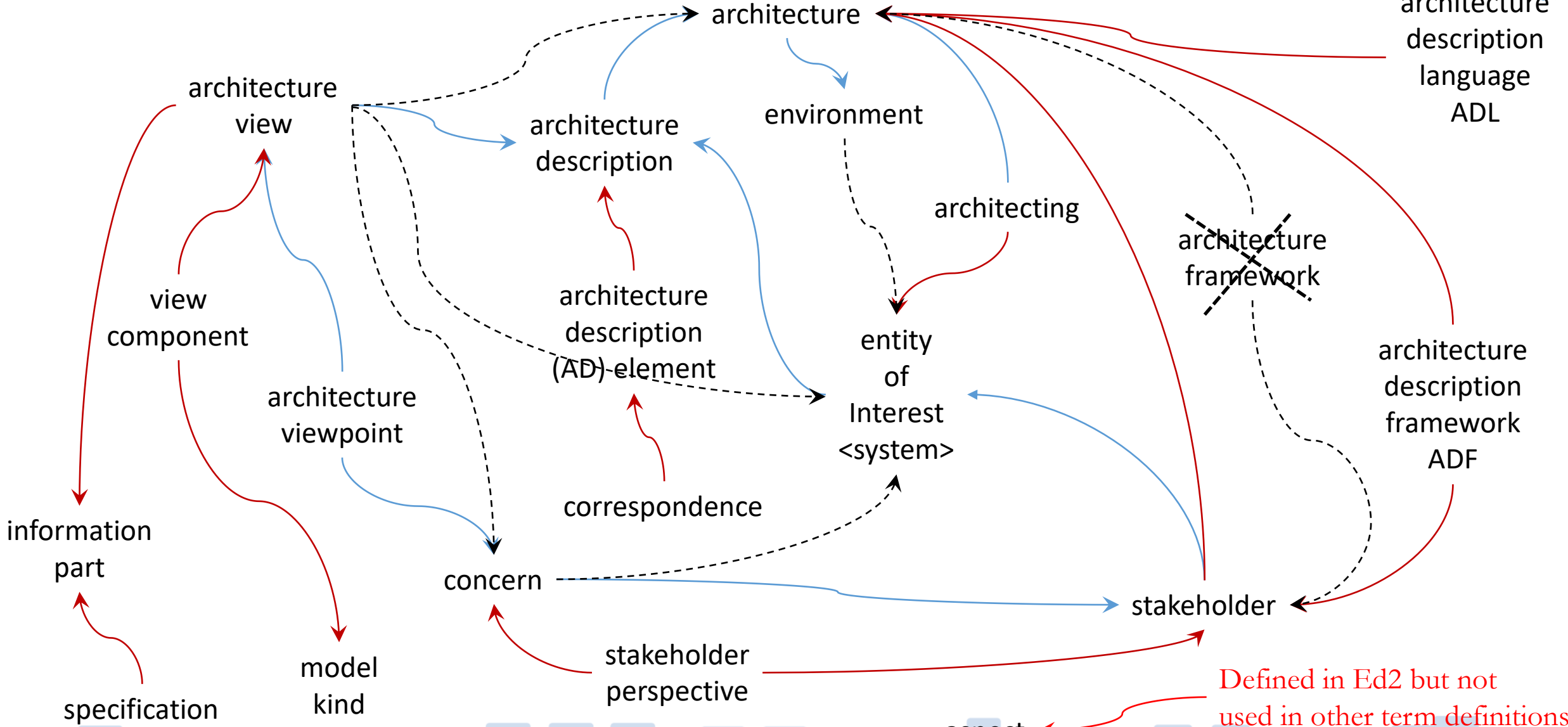
Defined terms use of other defined terms – all arcs are ‘uses’ relationship

EXAMPLE - **architecture viewpoint** work product establishing the conventions for the construction, interpretation and use of **architecture views** to frame specific system **concerns**

42010 term taxonomy – change from Ed1 to Ed2



architecture
description
language
ADL

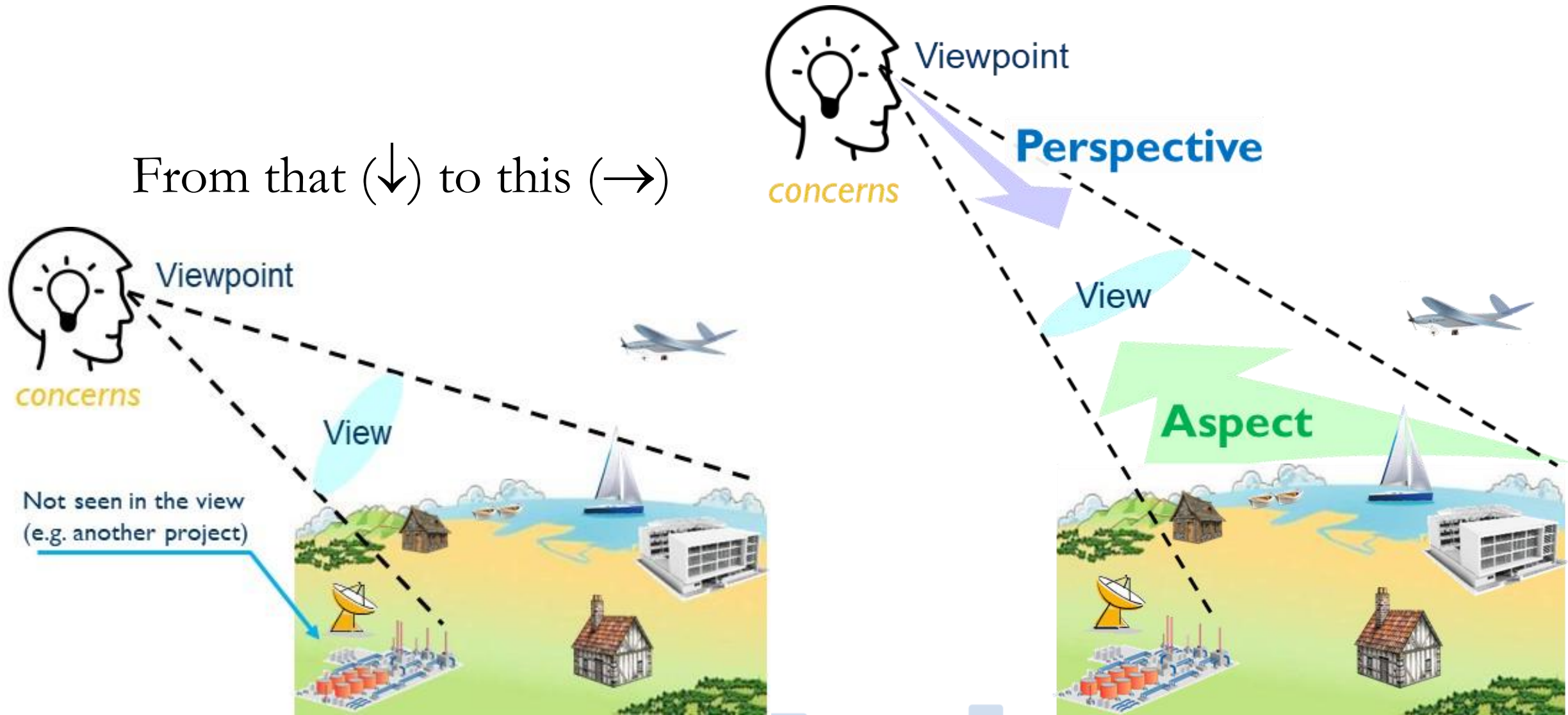


Defined in Ed2 but not used in other term definitions

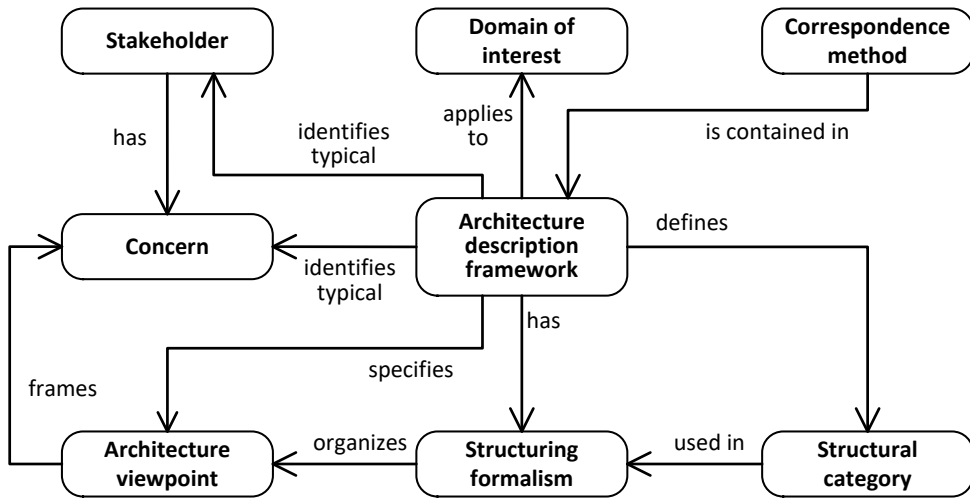
Ed2 proper use of aspect and perspective



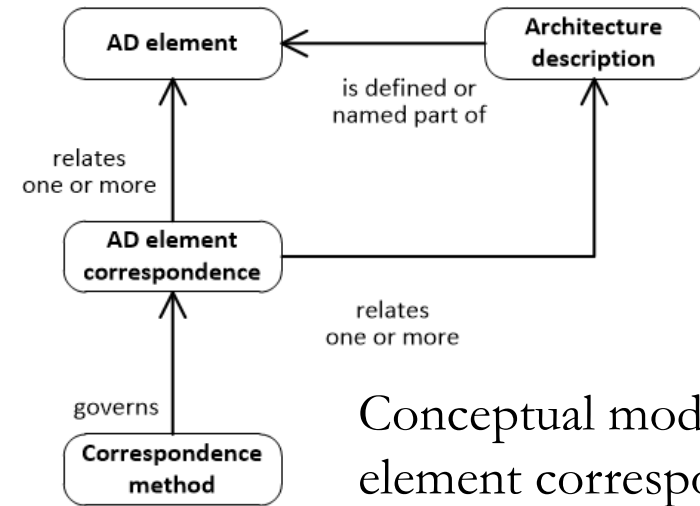
From that (↓) to this (→)



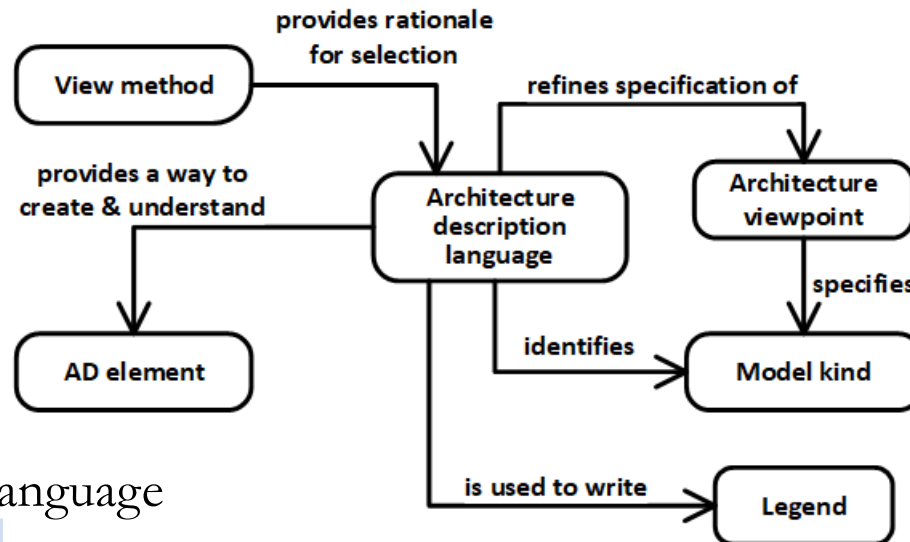
ISO/IEC/IEEE 42010 – Other conceptual models



Conceptual model for an architecture description framework

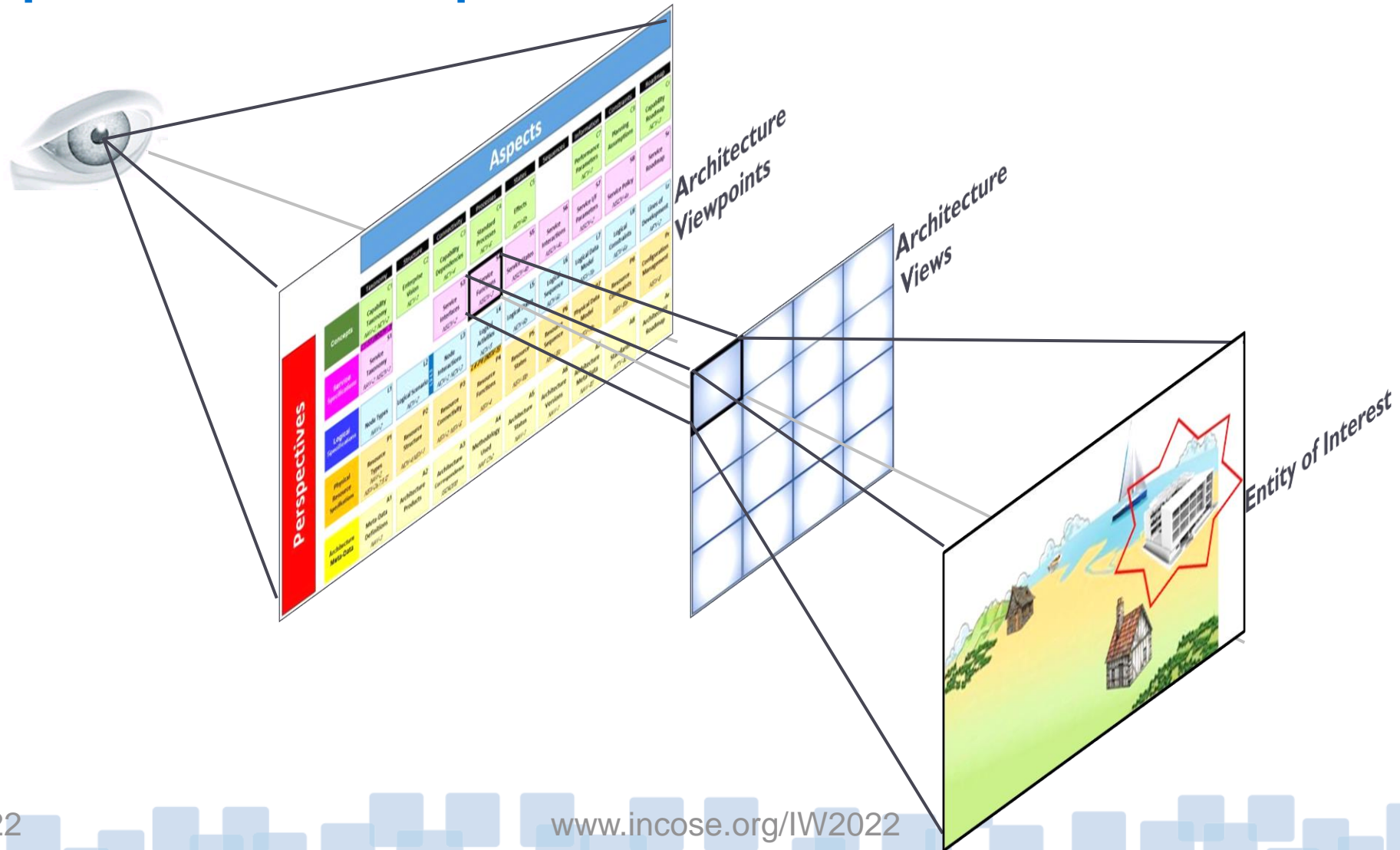


Conceptual model of AD element correspondences



Conceptual model of an architecture description language

ADF provides predefined viewpoints, perspectives, aspects and model kinds



AD Frameworks propose multi-dimensional

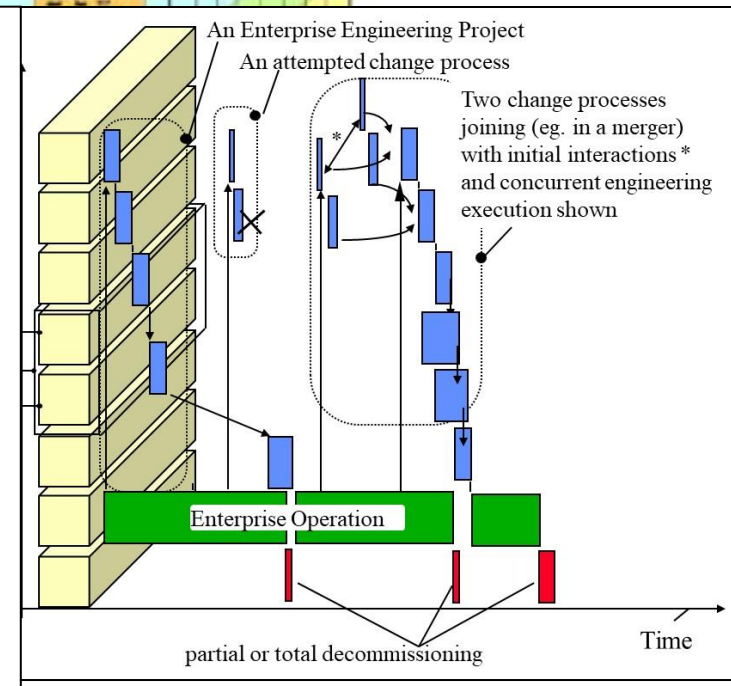
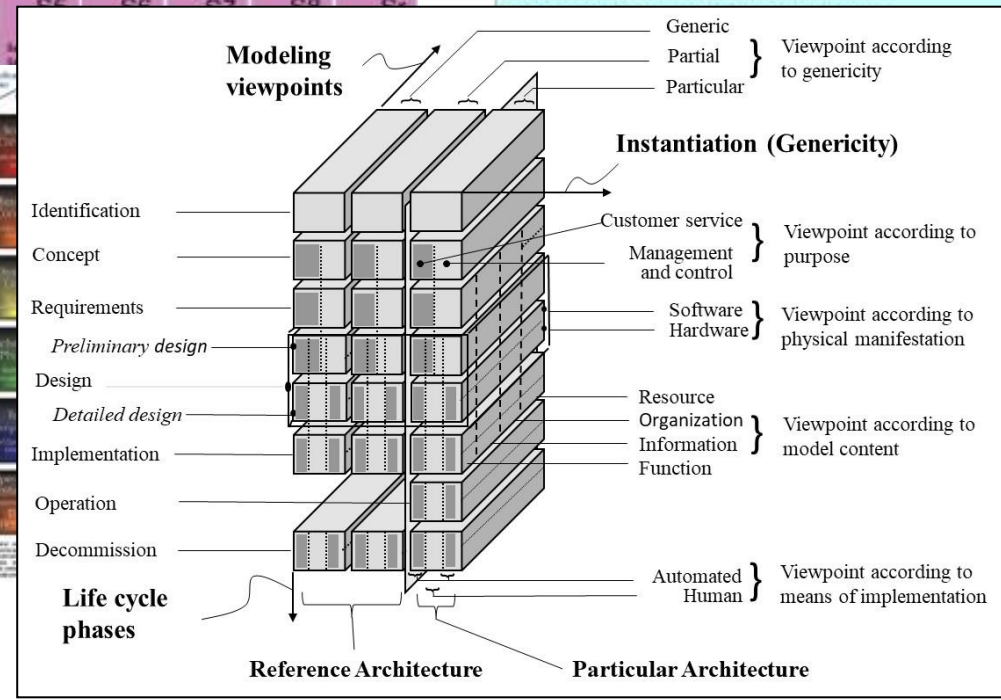
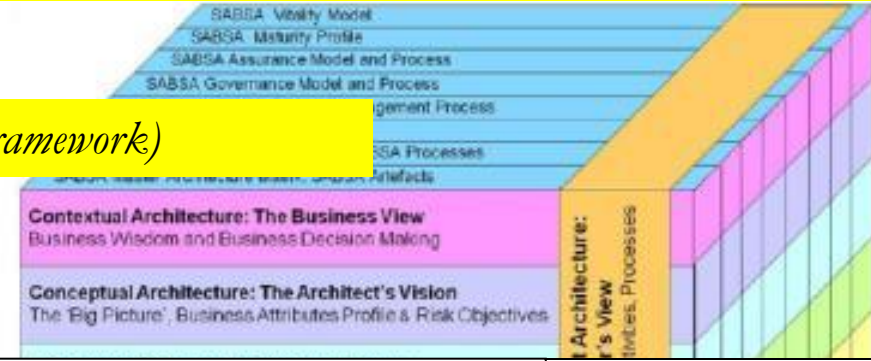


2D: (Source: *OMG/Unified Architecture Framework (UAF)*)

3D: (Source: *Sherwood Applied Business Security Architecture (SABSA) institute*)

Modifiable	Modifiable	Architecture	Modifiable	Modifiable	Modifiable	Modifiable	Modifiable	Modifiable	Modifiable
MI	MI To	Viewpoint	MI-TO	MI-TO	MI-TO	MI-TO	MI-TO	MI-TO	MI-TO
Strategic	Strategic	Strategic	Strategic	Strategic	Strategic	Strategic	Strategic	Strategic	Strategic
SI	SI To	Structure	SI-TO	SI-TO	SI-TO	SI-TO	SI-TO	SI-TO	SI-TO
Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational
OS	OS To	Structure	OS-TO	OS-TO	OS-TO	OS-TO	OS-TO	OS-TO	OS-TO
Services	Services	Services	Services	Services	Services	Services	Services	Services	Services
SS	SS To	Structure	SS-TO	SS-TO	SS-TO	SS-TO	SS-TO	SS-TO	SS-TO
Personal	Personal	Personal	Personal	Personal	Personal	Personal	Personal	Personal	Personal
PS	PS To	Structure	PS-TO	PS-TO	PS-TO	PS-TO	PS-TO	PS-TO	PS-TO
Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource
RS	RS To	Structure	RS-TO	RS-TO	RS-TO	RS-TO	RS-TO	RS-TO	RS-TO
Security	Security	Security	Security	Security	Security	Security	Security	Security	Security
SS	SS To	Structure	SS-TO	SS-TO	SS-TO	SS-TO	SS-TO	SS-TO	SS-TO
Business	Business	Business	Business	Business	Business	Business	Business	Business	Business
BS	BS To	Structure	BS-TO	BS-TO	BS-TO	BS-TO	BS-TO	BS-TO	BS-TO

2D: (Source: *NATO Architecture Framework*)



2D: (Source: *Zachman Framework*)

4D: (Source: *ISO 15704 Ed2 (Generalized Enterprise Reference Architecture and Methodology)*)

Correspondences



42010 [2nd edition] Correspondence

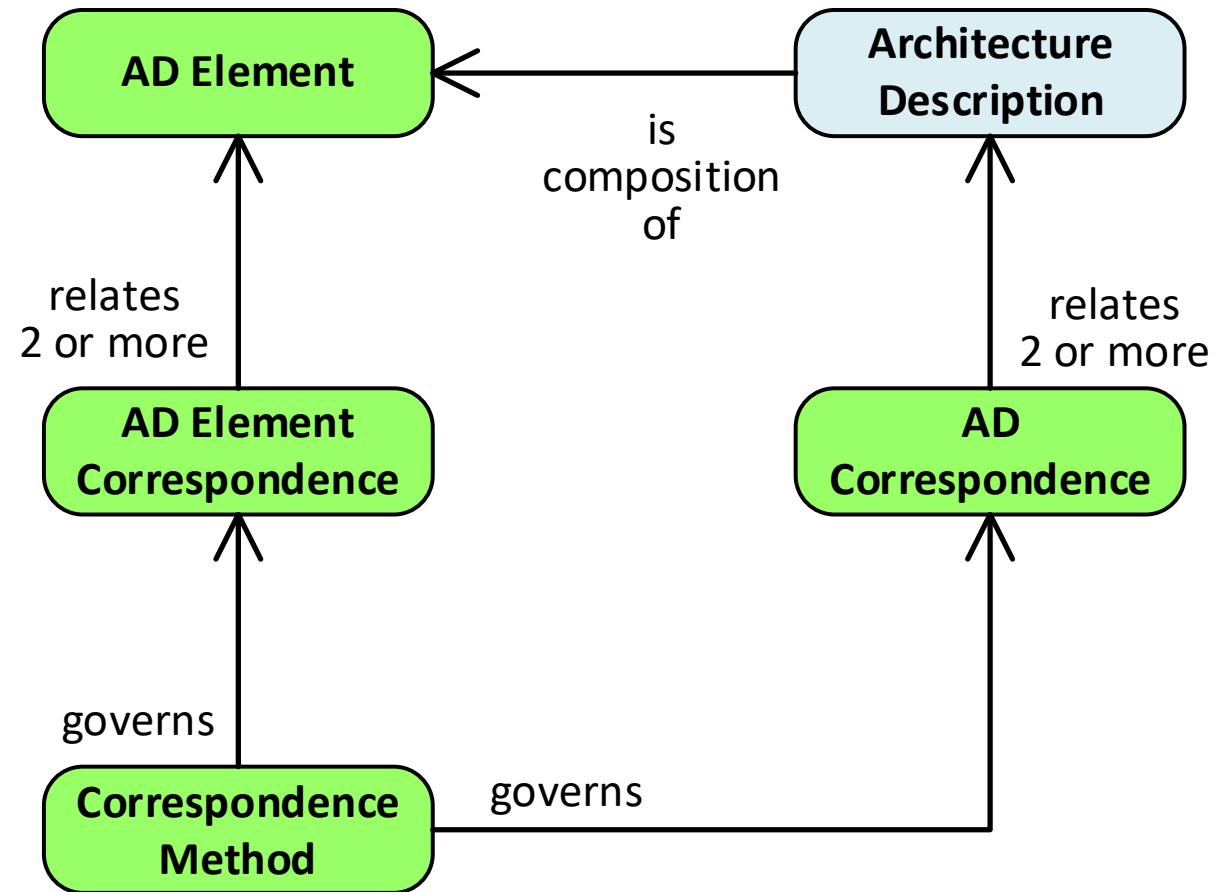
relationship between architecture description elements or between architecture descriptions

Examples: Correspondences can include a wide range or relationship types, such as equivalence, composition, refinement, consistency, traceability, dependency, constraint, satisfaction, and obligation.

42010 [2nd edition] AD element

part of an architecture description that expresses concepts or properties of the architecture

Note to entry: AD elements include stakeholders, concerns, perspectives, aspects, identified in an AD and views, view components, viewpoints and model kinds included in an AD



An AD can be an AD element in another architecture.



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www.incose.org/IW2022