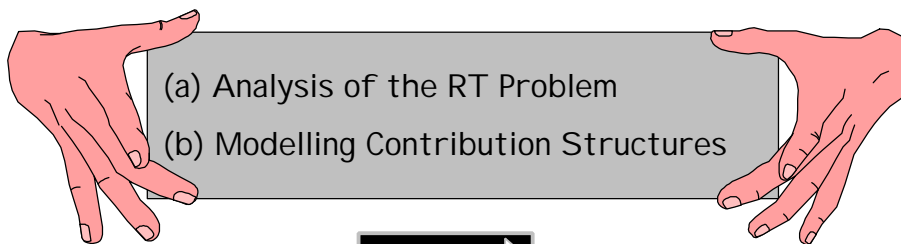


Contribution Structures

... Addressing the Crux of the Requirements Traceability Problem

Olly Gotel & Anthony Finkelstein



1

To Avoid Initial Questions...



“REQUIREMENTS TRACEABILITY (RT) refers to the ability to describe & follow the life of a requirement in both a forwards & backwards direction”

(i.e., from its origins, through its development & specification, to its subsequent deployment & use, & through all periods of on-going refinement & iteration in any of these phases)

2

To Avoid Even More...

"Post-requirements traceability is concerned with those aspects of a requirement's life that result from its inclusion in the RS"

(i.e., requirement deployment)



"Pre-requirements traceability is concerned with those aspects of a requirement's life prior to its inclusion in the RS"

(i.e., requirement production)

3

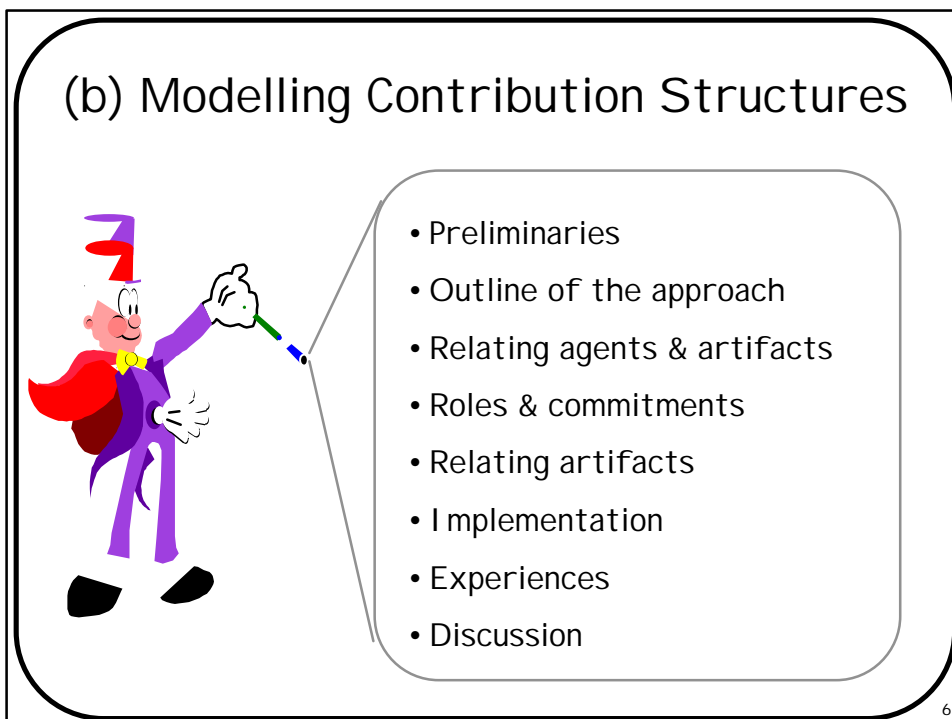
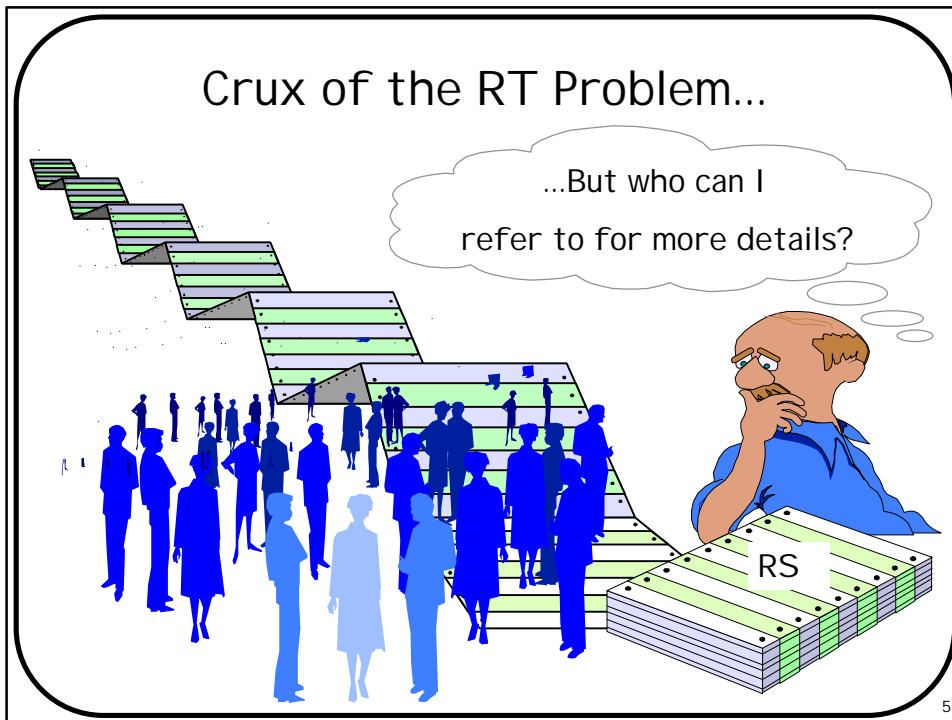
(a) Analysis of the RT Problem



See ICRE '94
for more...

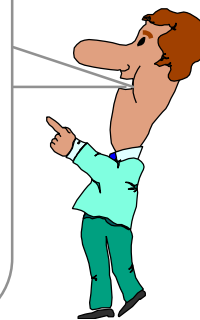
- Little real progress as poor understanding of RT
- Multifaceted nature of RT problem
- Framework - pre-RT & post-RT
- Focus on pre-RT issues - informational emphasis
- Intrinsic need to locate & access personnel

4



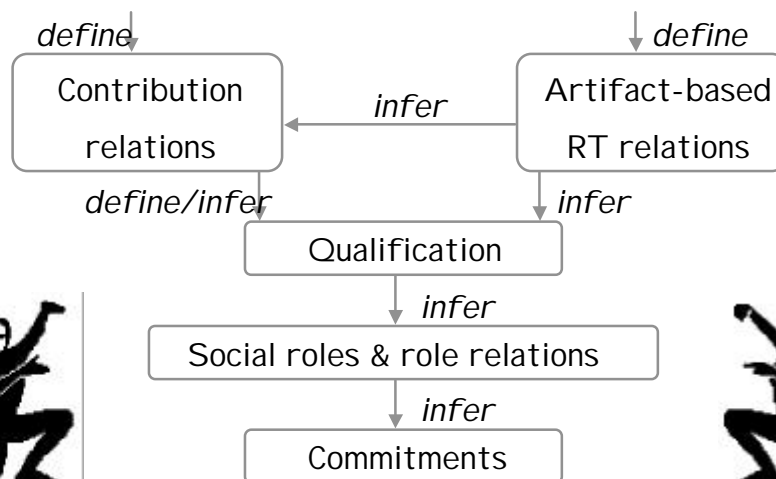
Some Preliminaries...

- Problems:
 - Artifact-based RT
 - Coarse labels/ snap shots/ little use
- Scope of concern & assumptions
- Requirements:
 - Differentiate how agents contribute
 - Account for artifact-based relations
 - Basis for modelling & reasoning
 - Acceptance issues



7

Outline of the Approach...

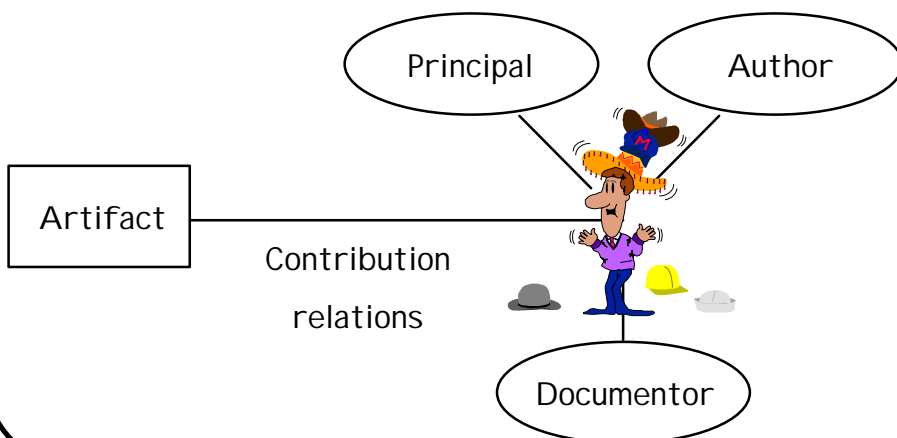


Augments artifact-based RT with contribution structures

8

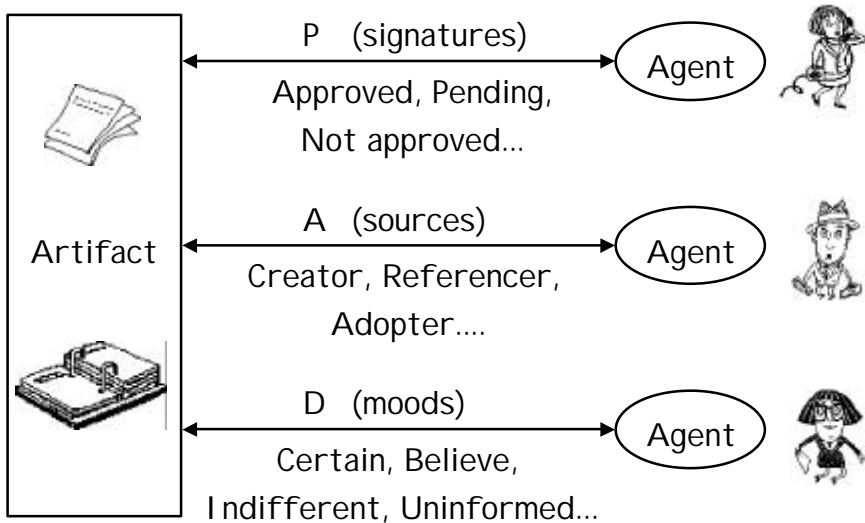
Relating Agents & Artifacts...

- Goffman's "participant roles" → Contribution format



9

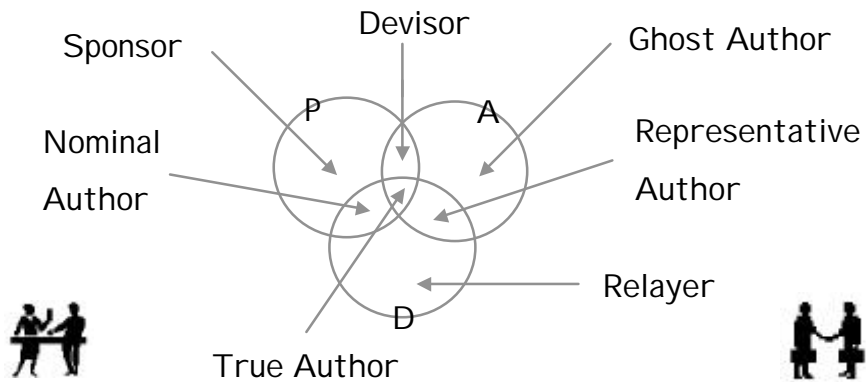
Qualifying Contribution Relations...



10

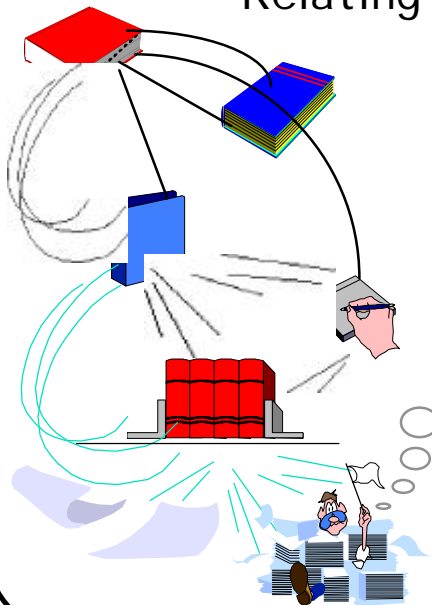
Roles & Commitments...

- Individual & collective commitment to artifacts
- Role relations & social commitment to each other



11

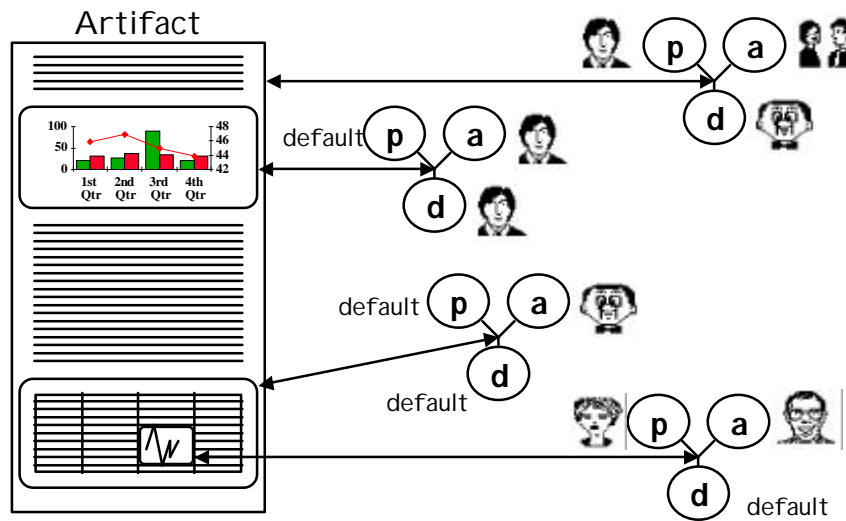
Relating Artifacts...



- Temporal
- Developmental
- Auxiliary:
 - Containment
(layering & nesting)
 - Connectivity
(cohesion & coherence)

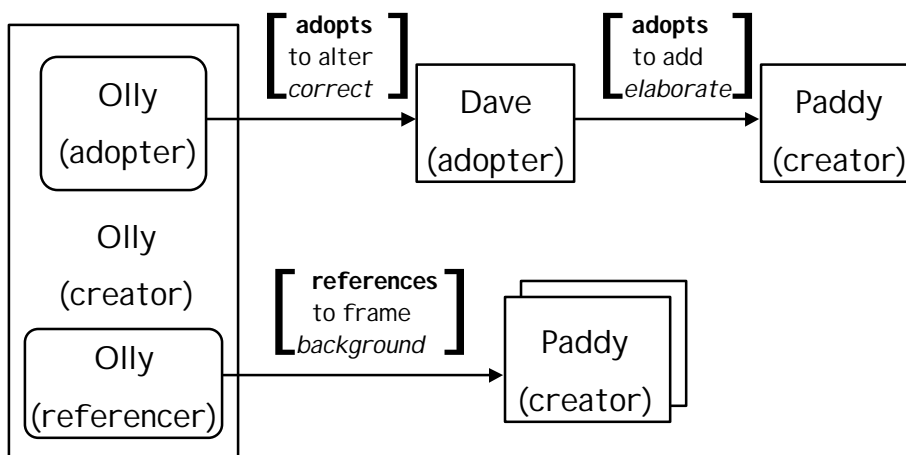
12

Containment: Default Contributors...

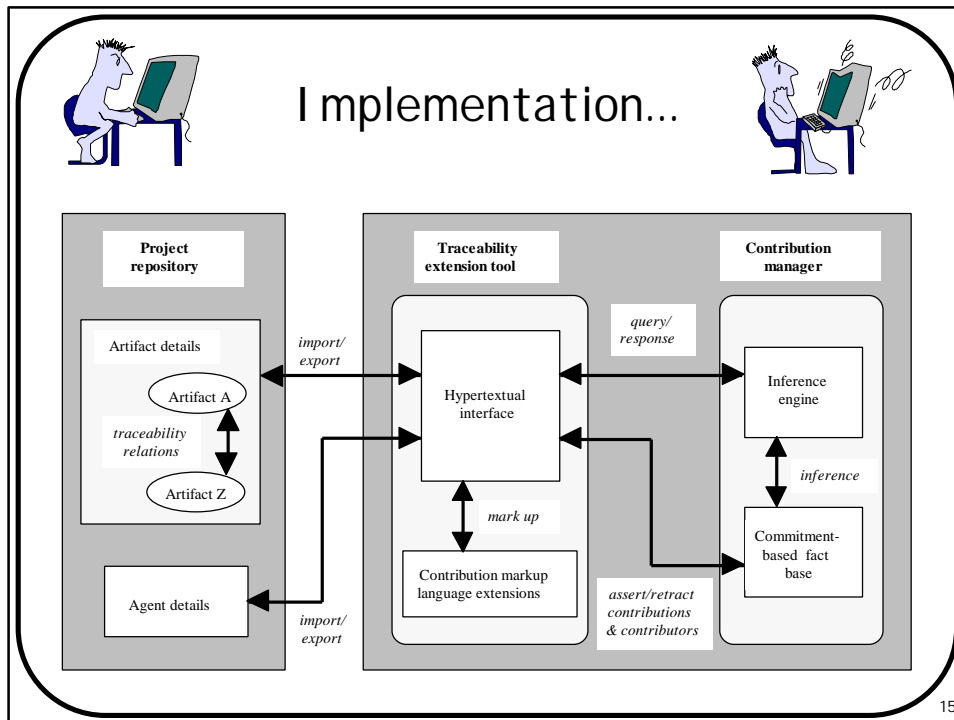


13

Connectivity: Authorial Trails...



14



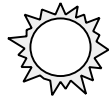
Experiences...

- Scenarios & what they show:
 - Agent & artifact profiles
 - Original source & trails of contributors
 - Changing work arrangements
 - Possible backups
 - Many forms of social analyses
- WIP:
 - Case studies & technology transfer

16

Discussion...

Benefits?



- Deal with:
 - Info absence
 - Supplementary info
 - Human aspects
 - Continuous change
- Project management
- Education
- Firmest anchor

Issues?



- Resistance
 - Buy-in & automate
- Accountability:
 - +ve = learn & share
 - -ve = blame & hide
- Categories
- Coverage
- Scaleability

17

Full Time Recap...



- Crux of RT problem is location & access of personnel
- Model "contribution structures" underlying requirements artifacts
- Use to augment artifact-based RT, provide personnel-based RT, & more...
- Most leverage with RT problem by tying PEOPLE into RT equation

18

For Further Details...

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Papers can be found at: <ftp://dse.doc.ic.ac.uk>
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19