

MAPPING REQUIREMENTS
INTO A

SOFTWARE ARCHITECTURE

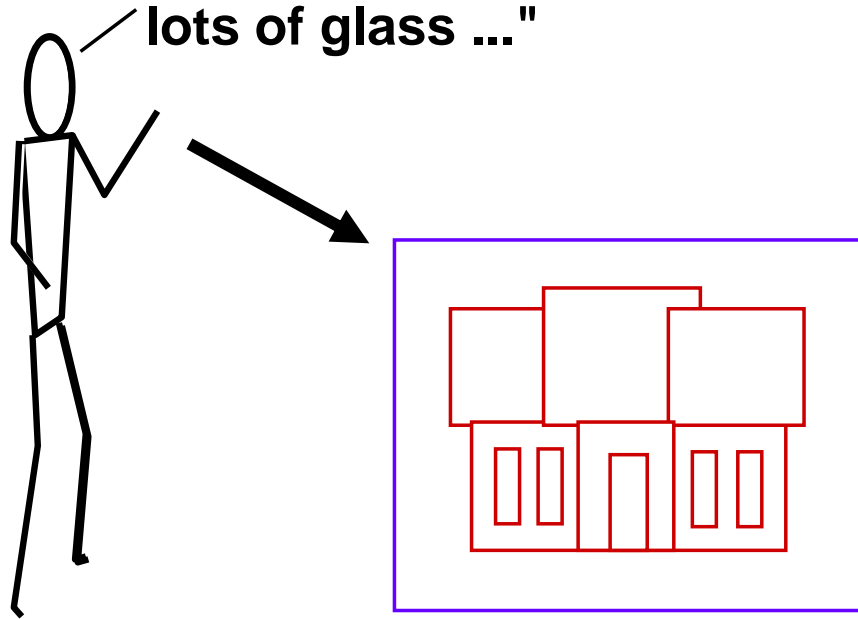


AN ARCHITECTURAL DESIGN METHOD

Customer Requirements

"four bedrooms, lounge, drawing & dining,

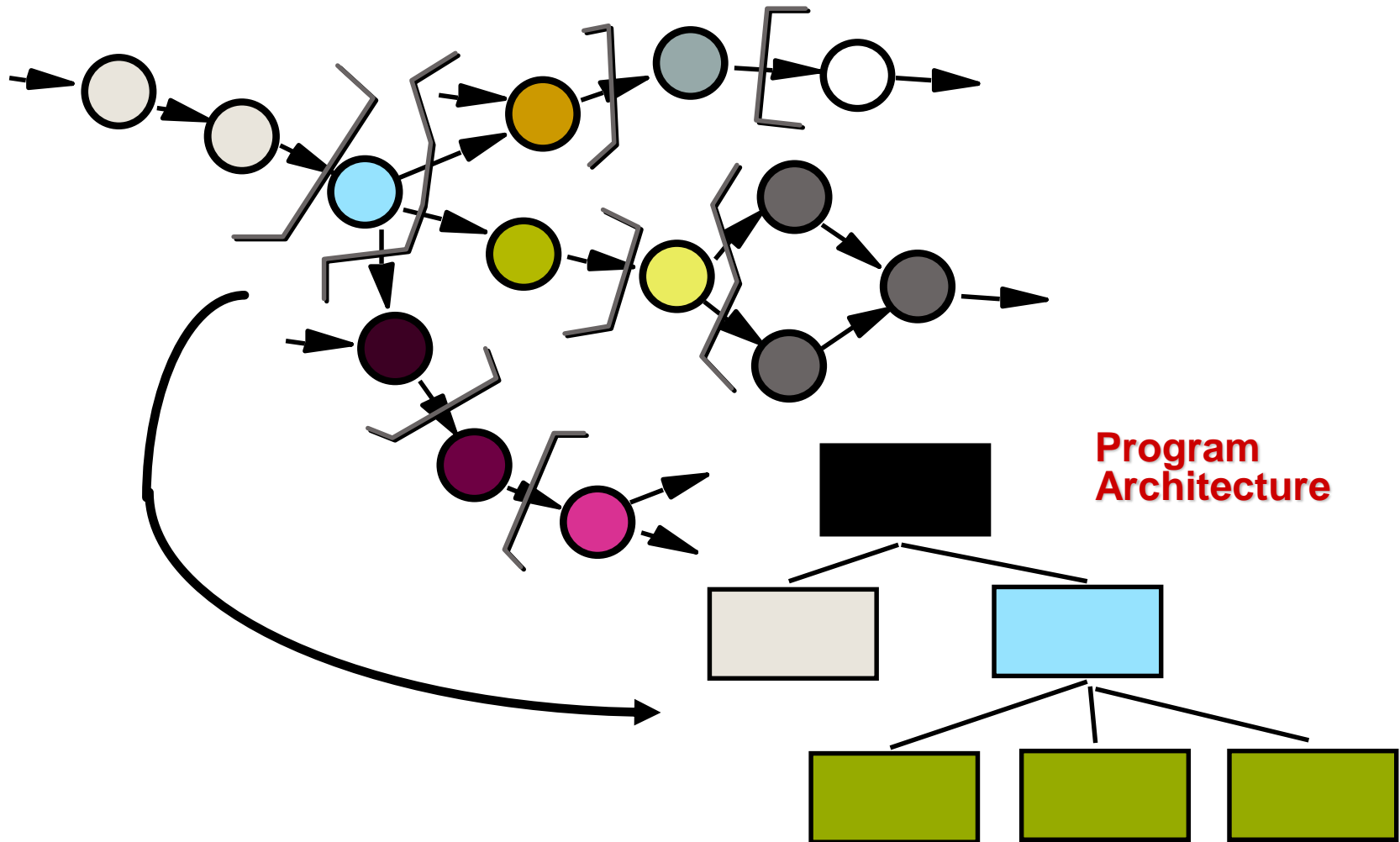
lots of glass ..."



Architectural Design



DERIVING PROGRAM ARCHITECTURE



STRUCTURED DESIGN

- **objective:** develop a modular program structure and represent control relationships between modules
- **approach:**
 - the DFD is mapped into a program architecture
 - the PSPEC and STD are used to indicate the content of each module
- **notation:** structure chart



STRUCTURED DESIGN

It provides a convenient transition from a data flow diagram to software Architecture

- 1. The type of information flow is established**
- 2. Flow boundaries are indicated**
- 3. The DFD is mapped into program structure**
- 4. Control hierarchy is defined**
- 5. Resultant structure is refined using design measures and heuristics**
- 6. The architectural description is refined and elaborated**



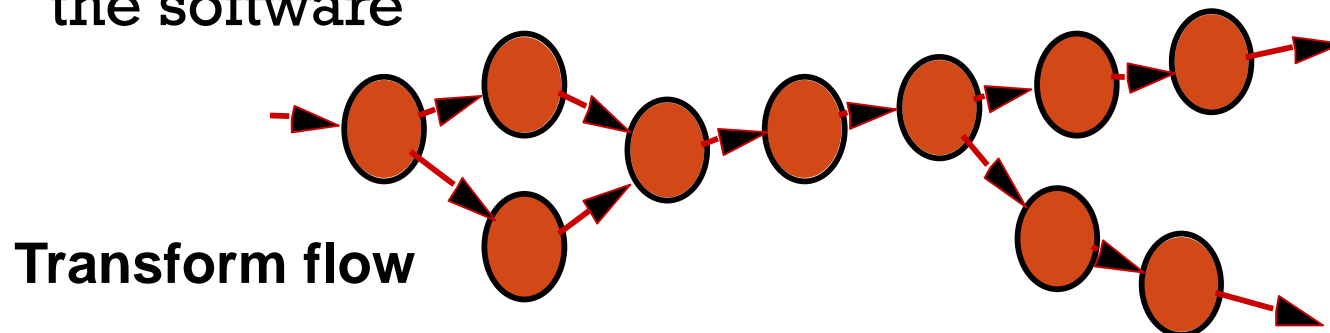
TYPES OF INFORMATION FLOW

- **There are 2 different types of information flow that have different treatments**
 - ***Transform flow*** - Overall DF in sequential manner and follows one, or only a few, “straight line” paths. (incoming, transform, output)
 - ***Transaction Flow*** - Info flow has a single transaction node that *triggers* other data flow

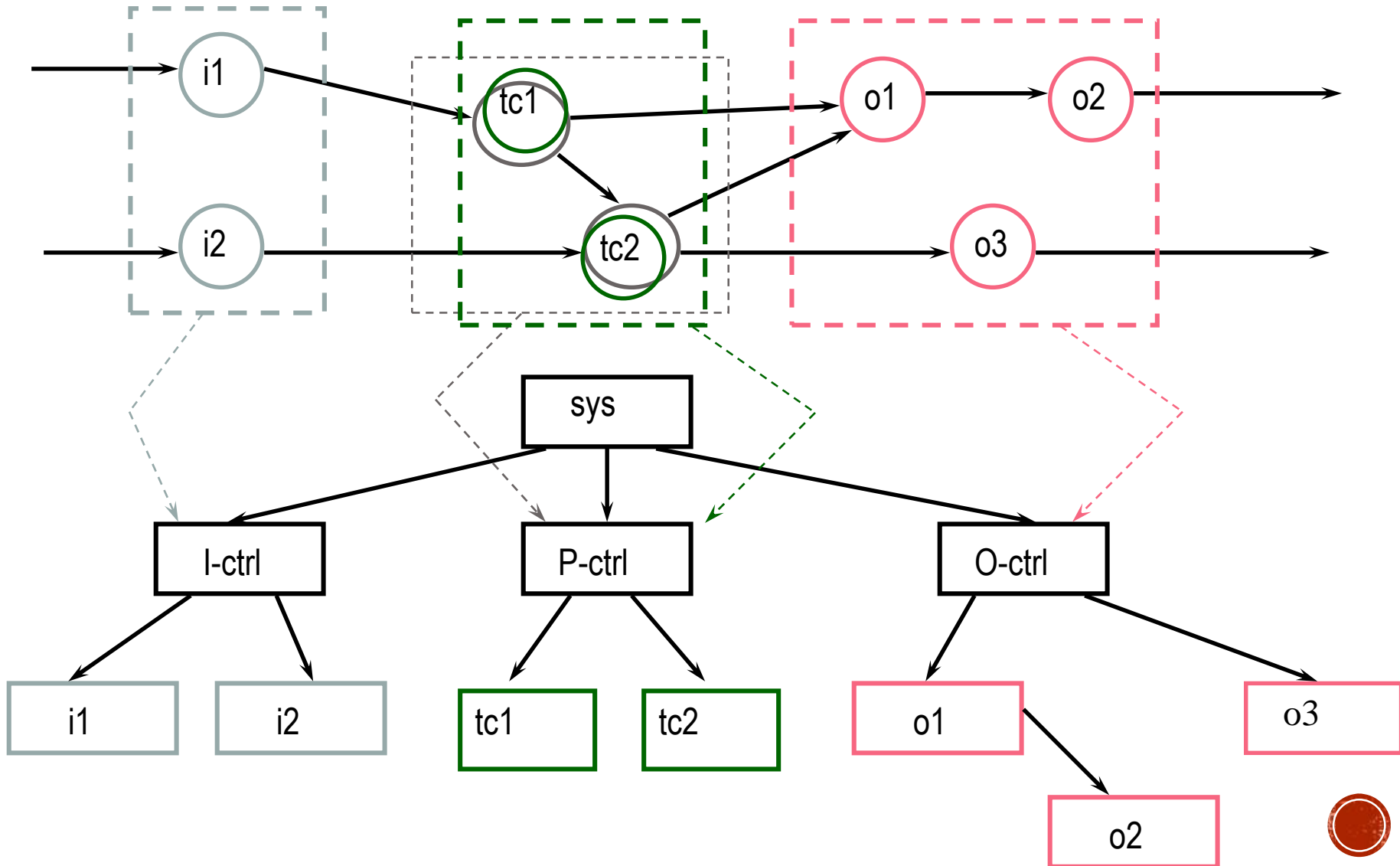


Transform Flow

- ***Incoming Flow:*** The paths that transform the external data into an internal form
- ***Transform Center:*** The incoming data are passed through a transform center and begin to move along paths that lead it out of the software
- ***Outgoing Flow:*** The paths that move the data out of the software

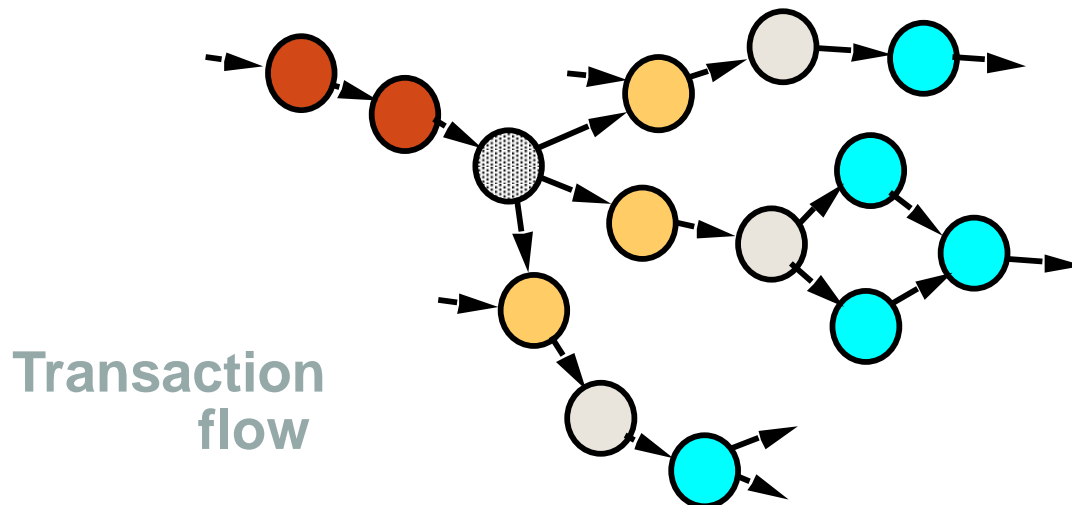


TRANSFORM ANALYSIS: MAPPING HEURISTIC

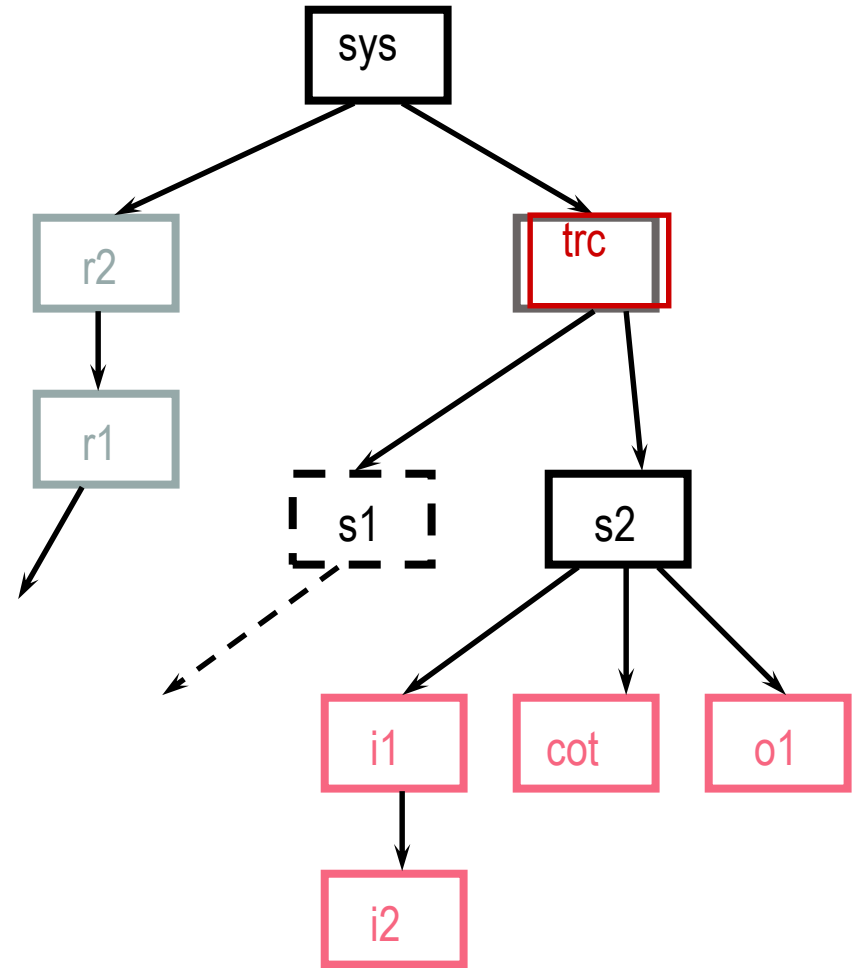
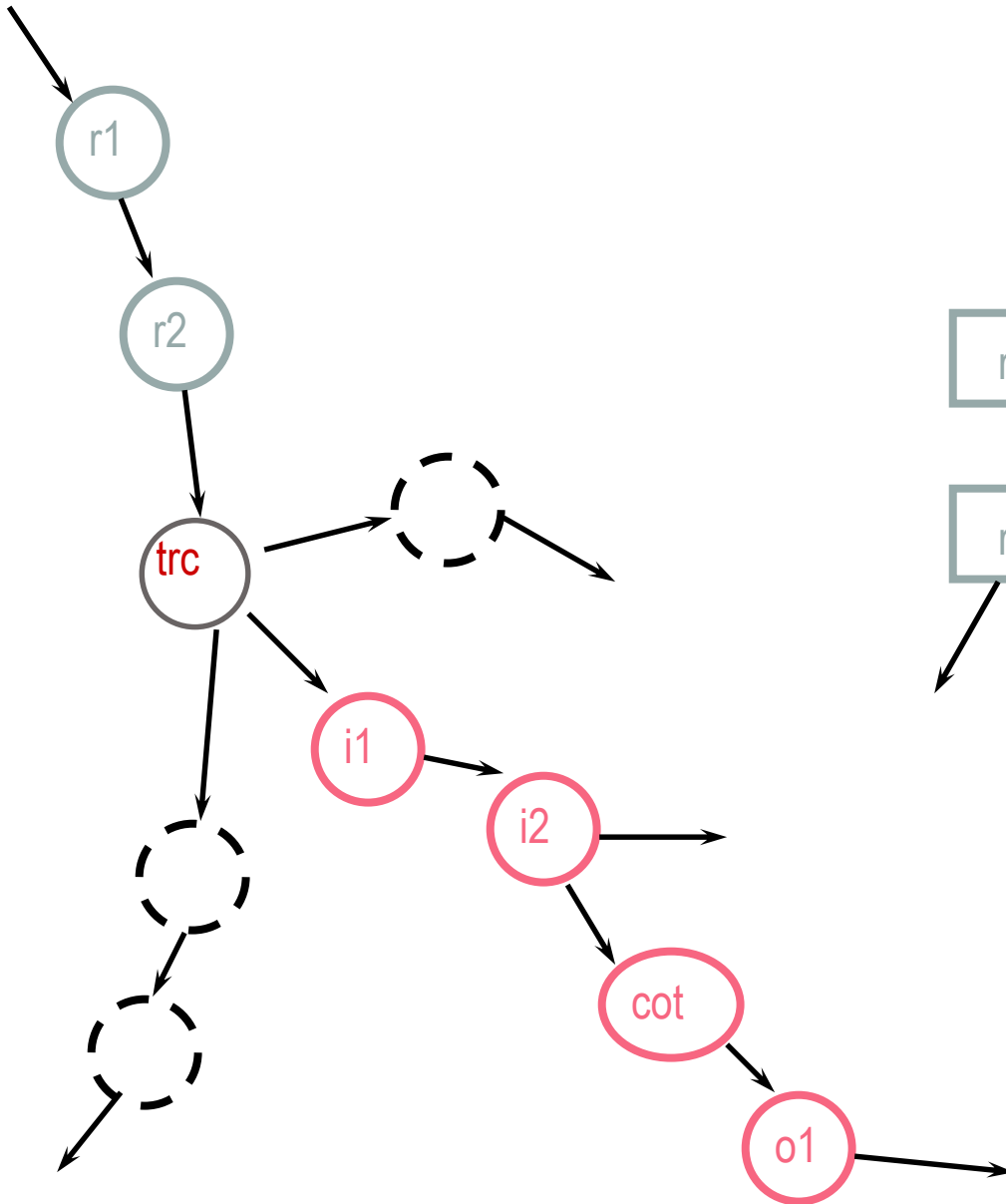


Transaction Flow

- Information flow is often characterized by a single data item, called a **transaction** that triggers other data flow along one of many paths
- **Action Paths** :The transaction is evaluated and based on its value flow along one of many action paths
- **Transaction center** :The hub of info flow from which many action paths originate



Transaction Analysis: mapping heuristic



TRANSACTION MAPPING

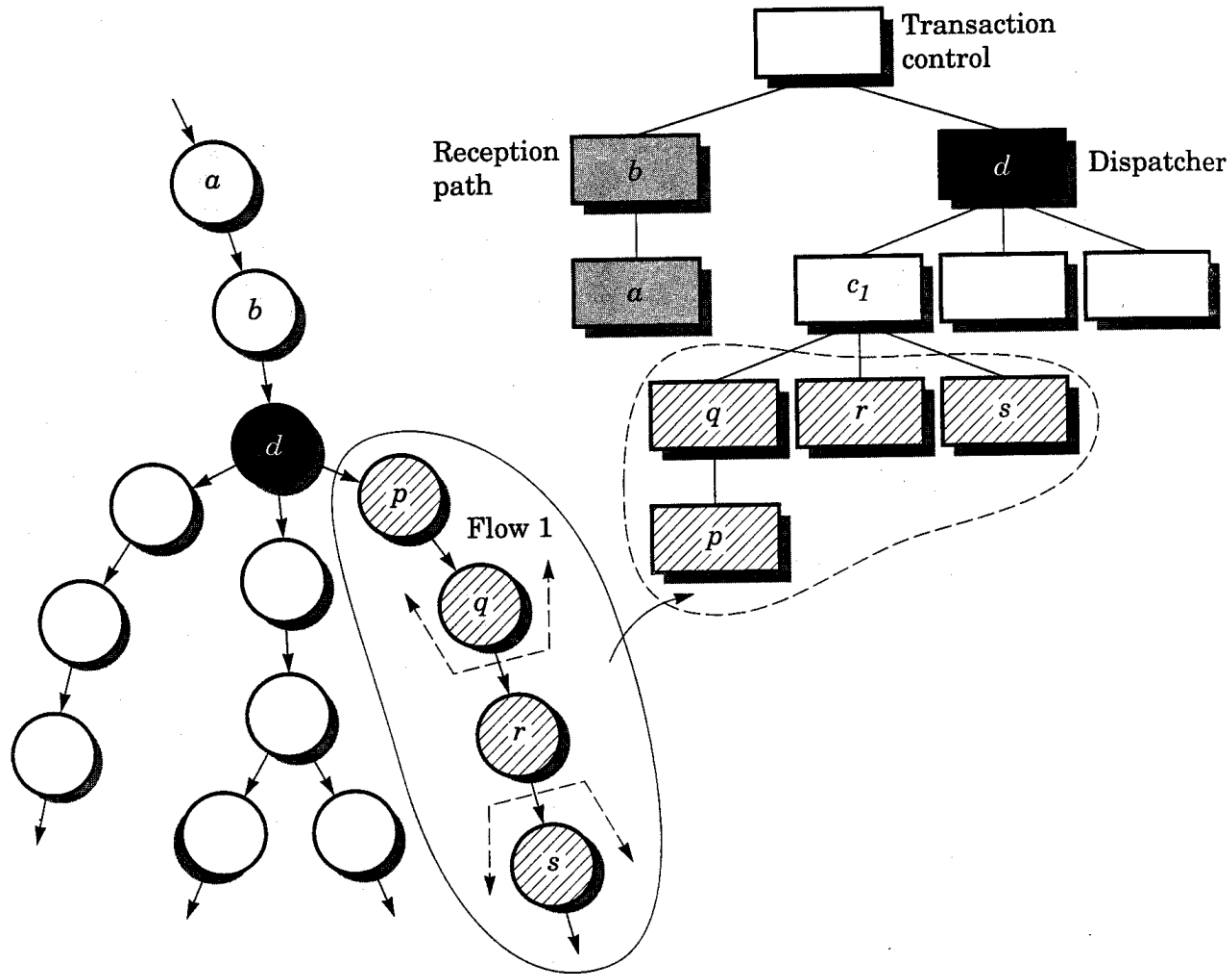


FIGURE 14.12. Transaction mapping

