Impact Analysis

1. Impact Analysis (IA)
   1. Determines the strategy and impact of change
   2. Classes identified in concept location make up the initial impact set
   3. Class dependencies are analyzed, and impacted classes are added to the impact set
   4. Produces estimated impact set
2. Impact set
3. Change request
   1. Record cashier sessions
   2. A cashier session
4. Class interactions
   1. Two classes interact if they have something in common
      1. One depends on the other
         1. There is a contract between them
      2. They coordinate
         1. They share the same coding, schedule, etc.
   2. Interactions propagate change
      1. In both directions
         1. From A to B or from B to A
5. Class interaction graph
   1. G = (X, I)
      1. X … set of classes
      2. I … set of interactions
   2. Neighborhood of class A
      1. N(A) = {B | (A, B) in I}
6. Status of Components
   1. Blank
      1. The class was never inspected and is not scheduled for an inspection
   2. Changed
      1. The programmers inspected the class and found that it is impacted by the change
   3. Unchanged
      1. The programmers inspected the class and found that it is not impacted by the change
   4. Next
      1. The class is scheduled for inspection
7. A Simplified IA processes
   1. Create interaction diagram and mark all classes as BLANK
   2. Mark the class located during concept location as Changed
   3. Mark all Black neighbors as NEXT
   4. …
8. IA including propagating classes
   1. Create interaction diagram and mark all classes as BLANK
   2. Mark the class located during concept location as Changed
   3. Mark all Black neighbors as NEXT
   4. Are there any classes marked as NEXT?
   5. Mark class as INSPECTED
   6. Mark class as Propagating
   7. Mark class as Changed
9. Alternative in Software Change
   1. Program displaying a temperature in Fahrenheit
   2. Change request: display it in Celsius
      1. Two separate locations deal with temperature
         1. Sensor data converted to the temperature
         2. Temperature displayed to the user
      2. The change can be done in either place
         1. Impact analysis weight these alternatives
10. The criteria
    1. Required effort of the change
    2. Clarity of the resulting code
       1. Very often these 2 criteria contradict each other
       2. It is easier to adjust the user interface
       3. It is better to have all calculations of the temperature in on place
    3. Conflict between short-term and long-term goals