

# TiiQu – Trust Quotient

## IT Expert Example

weight (fixed)  
sample (fixed)  
range (fixed)  
value (variable:  
set in child node,  
computed in node)

TQ  
(1-1000)  
 $V = (1000 + 39.14)/2*$   
 $v = 519.57$

\* will always be a  
division by 4 later

### NODE

IDENTITY  
(2, 1-1000)  
wr = 1  
wv = 1.1  
 $v = 1000$

**weighting ratio wr:**  
wr = 1 if # child nodes >= sample || sample = 0  
else wr = # child nodes / sample

**weight value wv:**  
wv = sum(weights)/100 if sum(weights) >= 100  
else wv = 1

### NODE

REPUTATION  
(10, 1-1000)  
wr = 0.2  
wv = 1  
 $V = 39.14$

### CHILD NODES

CREDIT AGENCY  
(85, 1, 0-1)  
ru = 1  
P = 1/1  
WP = 85/1.1

**range unit ru:**  
ru = max(range) - min(range)  
(+ 1 if min(range) = 1)

**percentage P:**  
P = value / ru

**weighted percentage WP:**  
WP = P \* weight \* (wr / wv)

### CHILD NODES

TIIQU RATING  
(20, 4, 1-5)  
ru = 5  
P = 4/5  
WP = 4/5 \* 20 \* 0.2  
= 3.2

UNIVERSITY  
(20, 1, 0-1)  
ru = 1  
P = 1/1  
WP = 20/1.1

STACK OVERFLOW  
(5, 1, 0-1)  
ru = 1  
P = 1/1  
WP = 5/1.1

**Apply summed results to node range:**  
ru / 100 = range ratio  
v \* ratio = applied ratio  
applied ratio + vrf = applied value

1000 / 100 = 10  
100 \* 10 = 1000  
1000 + 1 = 1001

1000 / 100 = 10  
3.814 \* 10 = 38.14  
38.14 + 1 = 39.14

+ 1 not necessary

STACK OVERFLOW  
(5, 1596, 0-2600)  
ru = 2600  
P = 1596/2600  
WP = P \* 5 \* 0.2  
= 0.614

sum(WP) = 100  
= 110/1.1  
(= sum(weights)/wv)

sum(WP) = 3.814  
3.814/1  
(= sum(weights)/wv)

## Analysis

- 1) The impact of the reputation node (39.14) is very small compared to the impact of the identity node (1000) even though the values on the reputation node are not as bad (4 from 5 and 1596 from 2600). This makes sense if
  - we expect much more reputation sources and/or
  - we set the weights of other reputation sources higher and/or
  - we want the impact of the reputation node stay very low
- 2) The + 1 in the step “Apply summed results to node range is not necessary. It has a constant but minor impact on the values of the nodes which completely independent from other mechanisms.
- 3) The last step of building the average (or any average) of the node values for the TQ value has to be reconsidered. Now it is  $(1000 + 39.14)/2 = 519.57$ .

Imagine that we have the same example, but another node with a contribution of a value 200. Then the TQ value would be  $(1000 + 200 + 39.14)/3 = 413$ . So the user would have increased his trust sources but lowered his TQ score.

A better solution would be to give fixed ranges for all nodes and add them up for the TQ score. E.g. every node could have a range from 0 to 250. Then the max. sum of their values would be 1000, same as now, but more trust sources would result in a better score.

**The solution is that we will always expect the presence of 4 nodes. If only 2 or 3 nodes are delivering values, the last step of building the average will still be a division by 4.**