Support for quality metrics in metamodelling

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Agenda

How to evaluate visual notation?
How to apply Physics of Notations?
Our proposition
Agenda

How to evaluate visual notation?

How to apply Physics of Notations?

Our proposition
Nadia - PhD Student
Smartphone and interaction devices
Mobile Multimodal applications

- Proximity sensor
- Gyroscope
- Orientation sensor
- Light sensor
MDE Chain
Finding a more efficient visual notation...
Which one?
Several scientific works exist
Existing frameworks

• SEQUAL
• Cognitive Dimensions
• Physics of Notations
• 7 Process Modelling Guidelines
• GoBPM
Physics of Notations

- 9 principles
- Clear guidelines
Agenda

How to evaluate visual notation?

How to apply Physics of Notations?

Our proposition
Applying PoN ... manually?
Manually?

Perceptual discriminability from Visual distance

\[ \frac{n \times (n-1)}{2} \times 7 \text{ tests} \]

n = 6

105 tests

\[ \frac{n \times (n-1)}{2} \times 7 \text{ tests} \]
Software!
But there is no tool to evaluate visual notation
Courageous meta-designers have to do the job

- 9 principles... may be more, or sub-principles
- Translate them to code
  - Still abstract
- Test implementation on material
Abstract principles

Perceptual discriminability:

«Discriminability is primarily determined by the visual distance between symbols. This is measured by the number of visual variables on which they differ and the size of these differences» 
Moody

«In general, the greater the visual distance between symbols, the faster and more accurately they will be recognized» 
Moody

«A l'intérieur d'un code, l'efficacité des signes dépendra moins de leur capacité évocatrice que des distances visuelles que l'on parviendra à obtenir entre les formes pour éviter l'ambiguïté et exclure la confusion.» 
Bertin
What do «we» need?
On *Semiotic clarity*

Simple principle
A Meta-Case Tools

- To define metamodels
- To associate one or more visual notations
A way to code principles/metrics

For each concept of the metamodel
  if (visualRep(concept).length>1) Symb. Redundancy
For each visual_rep of the concrete syntax
  For each visual_rep2 of the concrete syntax
    if visuallySimilar(visual_rep, visual_rep2) Symb. Overload

visuallySimilar tests if both representations share the same shape, color, brightness, size...

(For what kind of differences they are not similar ?)
A way to display score

8/10

5/10
A way to quickly test implementation

For each concept of the metamodel
  if (visualRep(concept).length>1) NOT GOOD
   For each visual_rep of the concrete syntax
     For each visual_rep2 of the concrete syntax
       if visuallySimilar(visual_rep, visual_rep2) NOT GOOD

Short cycle to test the implementation of a principle/metric
So we need...

- API to access visual entities/features
  
  visualRep, color, shape...

- Visual box to display results

- Easy/quick way to implement principles/metrics
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How to evaluate visual notation?
How to apply Physics of Notations?

Our proposition
ModX

- Metamodelling tool
- Metrics / Visual notation: API, visual box, short cycle
- Also for diagrams
Demo
Thank you