

CMPUT 401

Software Process and Product Management

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Measurement, Reviews and Metrics

Fall 2020

Building Better Software

1. The right product
2. Done right
3. Managed right



For the Right Product

- Demo the product early → gain feedback early
- Observe users and how they engage with the product
- Gauge the effectiveness and efficiency of the product
- Collect data on user satisfaction
- Collect information about the product success in the market

For the Product To Be Done Right

- Review and inspect the work products created in order to identify any repair issues as soon as possible
- Monitor data about important quality factors of work (e.g., defect rates)

To Manage Right

- Meet briefly each day to update and synchronize with other members
- Track measurements, such as velocity
- Monitor the completion of planned user stories or tasks within a sprint, in a way that is transparent to everyone

New Terminology

- **Monitoring**
 - Tracking, reviewing, and evaluation of the product and process
- **Metrics**
 - Quantifiable data and results to measure various aspects of a product, process, or project
- **Feedback**
 - Information or criticism that can be used to identify improvements in a product or process

RIGHT PRODUCT

User Research

Qualitative

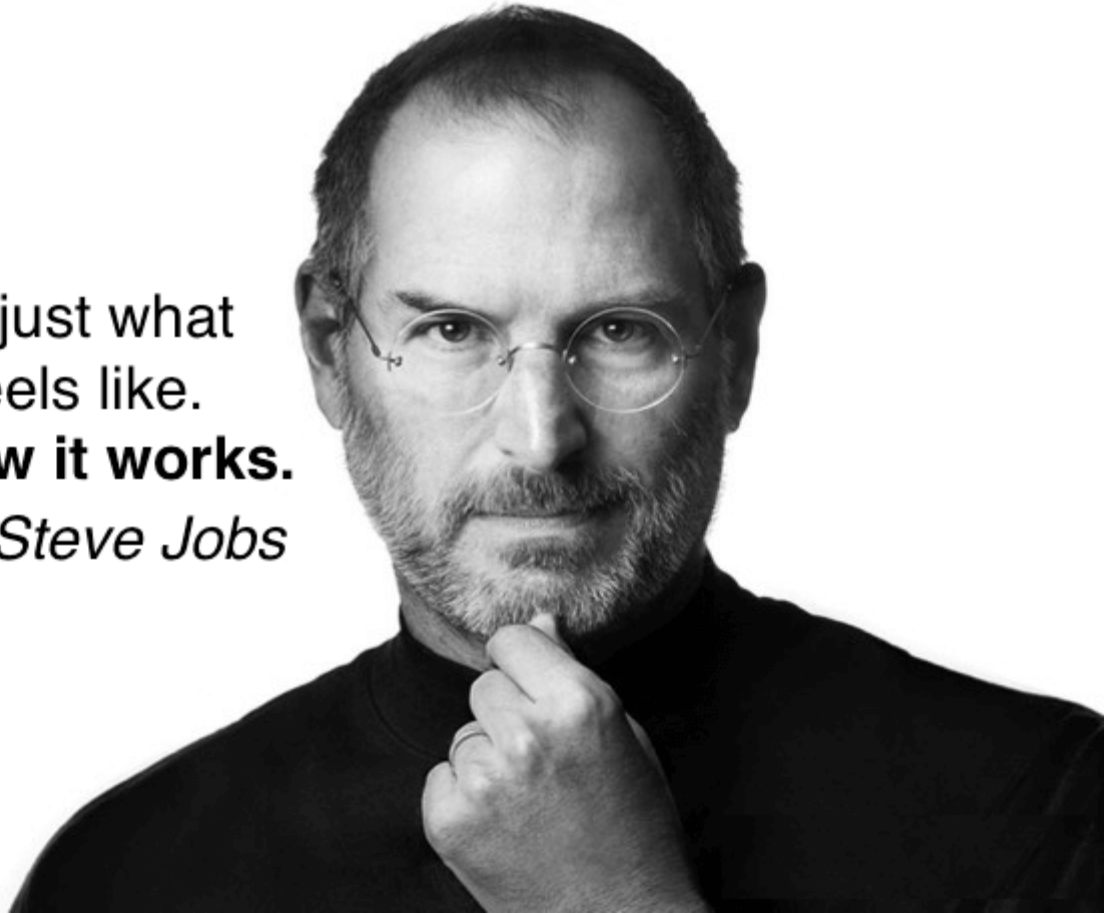
- User's emotional journey
- List of emojis (emotional states as the user performs a task)
- Plutchik's wheel of emotions
- Notes
- Quotes
- Sketchnotes

Quantitative

- Likert scales
- Time to completion of different tasks
- Error count
- Conversion numbers
- Cost-benefit analysis
- Web analytics (Google Analytics, ...)

Design is not just what
it looks and feels like.
Design is how it works.

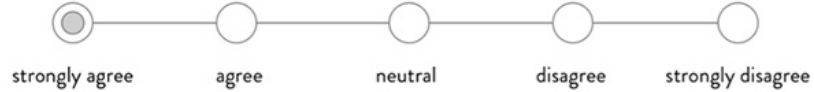
—*Steve Jobs*



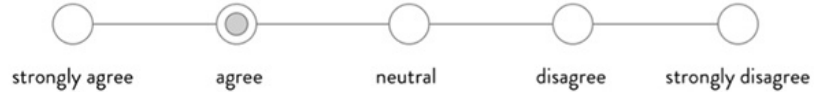
Source: <https://www.conferencesthatwork.com/index.php/event-design/2018/12/event-design-works/>

Likert Scale Example

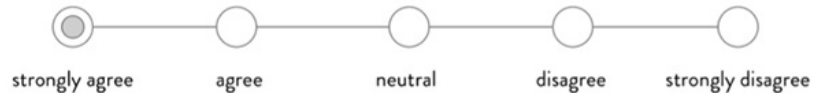
1. This website is easy to navigate



2. The images used on this website are appropriate



3. The website uses word I understand



Sketchnote Example

Interview with Jack
UX TESTING

WE LOVE IT
SHOPIFY ALL DAY!

EXAMPLE OF SECURE SITE
BBT.COM banking

2 STEP auth.

What's secure? → **ENCRYPTED**
can't access my data

SSL → not familiar

SECURITY **1** **IS BECOMING MORE IMPORTANT**

LET'S DO THIS: **SSL Certificates**

WARNINGS From browser **Double red flag!**

1st paragraph +1

2nd paragraph → confused

WHAT DOES IT MEAN? http → https?

products / pages
theme
why posts / sections } that's my entire site
Is there a section missing?

Activate

VERIFY?
More details?
A guide? Step by step?

Done! Great
Shopify does it automatically

When...
Why 5 URLs weren't converted?

link → Didn't look like a button

look for any "http" manually
Ctrl + F

Straight forward
feeling of being guided

2 VERIFICATION COMPLETE
no hiccups!
double comforting

no more steps
COOL

Why was the entire URL replaced?
http → https

Cues To Recognize User's Emotions

- The tone of voice (aggressive, evasive, embarrassed, cynical, confused, bitter, angry, or passive)
- The words used to describe their actions (e.g.: "I have to enter the same information again")
- Sighs (try counting them)
- Laughter

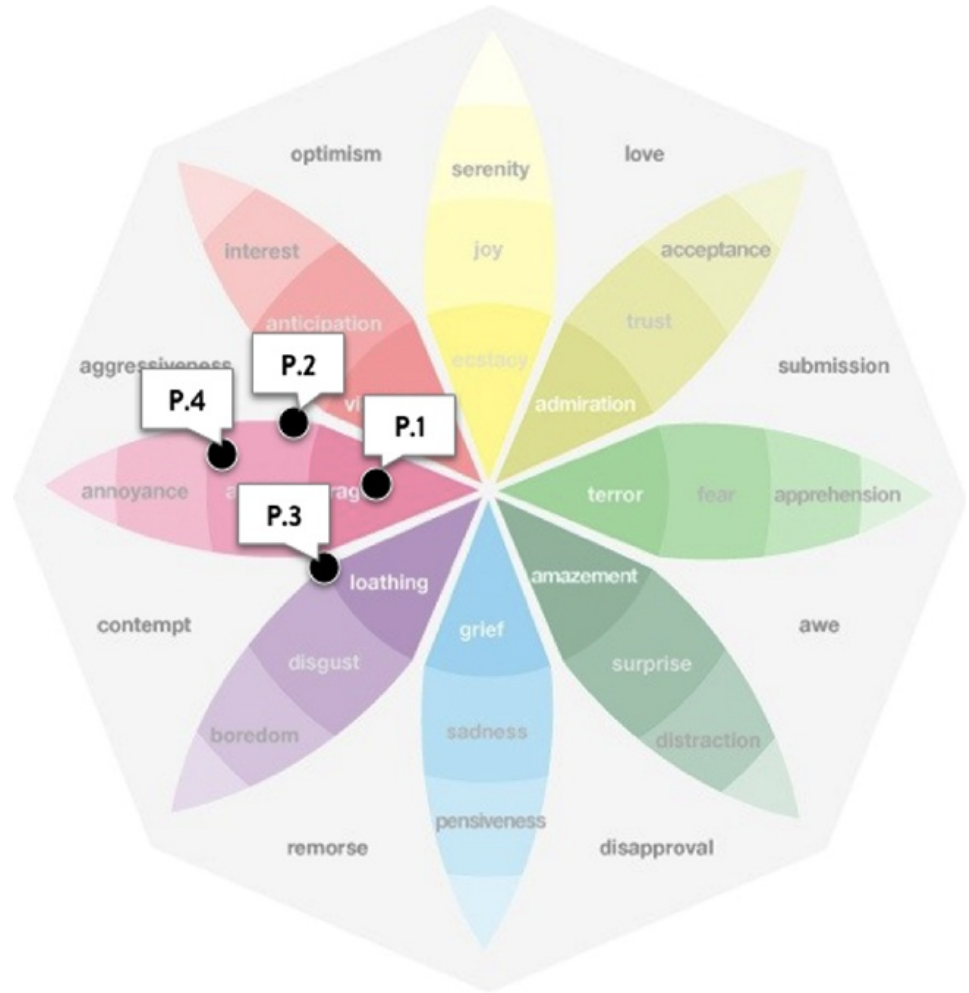
Look and Listen for Nonverbal Clues

- Suddenly typing louder on the keyboard after making an error
- Rolling their eyes
- Making circular motions with the cursor on the screen, as if they had lost it
- Nervous tics such as replacing their glasses, touching a ring, running their hands through their hair, etc.
- Redness in the face or in the neck
- Change of position on the chair
- Sighing, grunting, or other noises
- Scrunching of the nose or eyes

How to Map Emotional Data

Plutchik's Wheel

<https://www.6seconds.org/2020/08/11/plutchik-wheel-emotions/>



Customer Journey



Source: <http://thisisservicedesignthinking.com/> (free PDF canvas)

DONE RIGHT

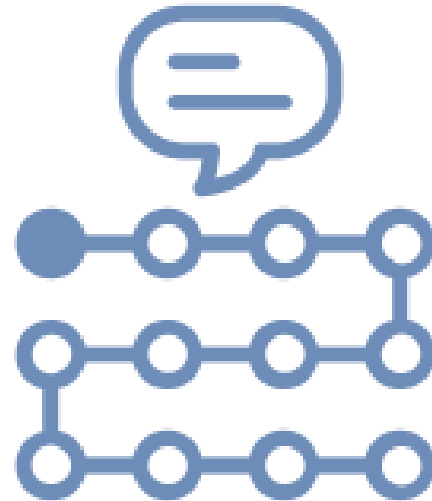
Review Techniques

- Software walkthroughs
- Software technical reviews
- Software inspections
- Requirements technical reviews
- Requirements inspection



Software Walkthroughs

- The least formal of all types of software peer reviews
- The code is demonstrated, and peers can ask questions
- Quick, focus on major issues
- Peers' suggestions can be quickly applied to code



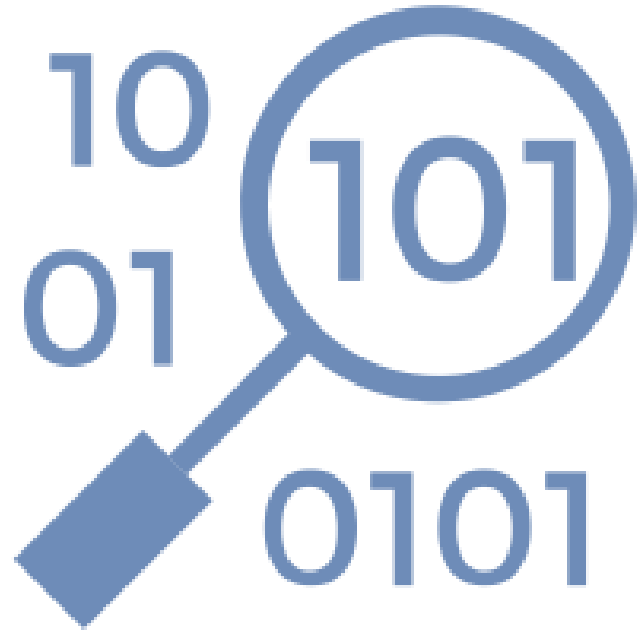
Software Technical Reviews

- More formal review
- Addresses technical aspects of the product
- Discussion oriented
- Three roles:
 - Decision maker
 - Review leader
 - Recorder



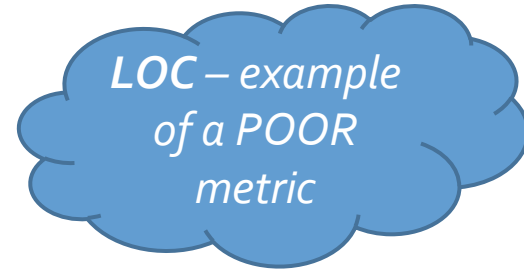
Software Inspections

- The most formal type
- Follows rigid structure, involves multiple roles
 - Author
 - Moderator
 - Reader
 - Inspectors
 - Recorder
- Multiple stages



Software Metrics: Why NOT Use?

- Time!
- In Agile environment, using metrics seem like a step back
- Lack of industry standards
- Lack of knowledge
- Use of ineffective metrics



Lines of Code – Poor Metric

When a measure becomes a target, it ceases to be a good measure.

Goodhart's Law

GOODHART'S LAW

WHEN A MEASURE BECOMES A TARGET,
IT CEASES TO BE A GOOD MEASURE

IF YOU
MEASURE
PEOPLE ON...

NUMBER OF
NAILS MADE

WEIGHT OF
NAILS MADE

THEN YOU
MIGHT GET

1000'S OF
TINY NAILS

A FEW GIANT,
HEAVY NAILS



sketchplanations

Source: <https://troyafredde.blog/2019/03/03/goodharts-law/>

Goodhart's Law

When a measure becomes a target, it ceases to be a good measure.



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Source: <https://troyafredde.blog/2019/03/03/goodharts-law/>

What Makes a Good Metric?

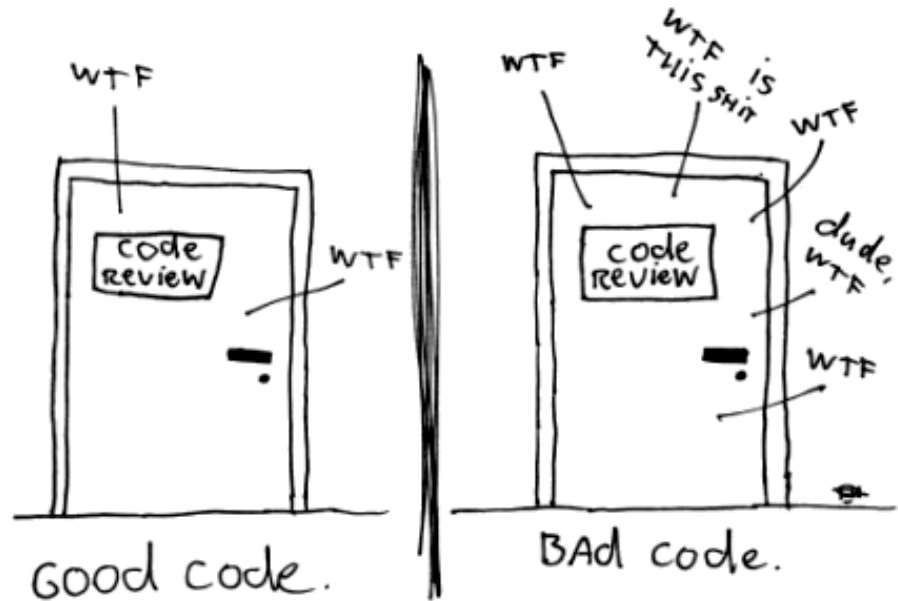
- Simple and computable
- Intuitively persuasive
- Objective
- Consistent in the use of units and dimensions
- Programming language-independent
- Improves software quality

Number of Defects Per Week – Good Metric

- Simple calculation
- Intuitively persuasive (because defects are clearly negative!)
- Consistent across units and programming languages
- Not based on someone's opinion → consistent
- Effective mechanism for improvement

Good Metric:
WTFs/Minute
(joke 😊)

The ONLY valid measurement
of code quality: WTFs/minute



Other Useful Metrics

Non-Functional Requirement	Metric
Maintainability	Complexity
Performance	Response time
Reliability	Project uptime
Product success	Customer satisfaction

Quiz

- Available on eClass
- Submit until the end of this week (Sunday 11:59 pm)

Final Exam Logistics

- Take home exam
- 24 hours to complete
- **Dec 10 (Thu), 10:00 am – Dec 11 (Fri), 10:00 am**
- Let me know if you have other exams on the same day!