

IT Project Course 2016

Introductory lecture

Calendar, Summary

- 2 meetings on separate days, 4-8 April
- 1/2 book read + Definition of done, 11 April
- Whole book read, preparation done, 14 April
- Lecture 18 April 9-10, room 208 (obligatory)
- Project work, 19 April - 19 May (obligatory)
- Project Expo, 20 May (obligatory)
- Product Documentation, 20 May
- Individual Project Reflection, 26 May 2016

Calendar, up to Project Work

- 2 meetings on separate days, 4-8 April
 - project discussion or brainstorming
- 1/2 book read + Definition of done, 11 April
- All preparation done, 14 April
 - whole book read
 - git repository set up
 - product backlog ready
 - project web page up

Calendar Summary, Project Work

- 18 April 9:15-10:00 - Lecture (obligatory)
- 18 April - Sprint Planning meetings
- Project work, 19 April - 19 May (obligatory)
- Working hours, 8-17 with 1 hour lunch break
- Project Expo, 20 April (obligatory)
- Product Documentation, 20 May
- Individual Project Reflection, 26 May 2016

Calendar, Project Work

- Sprint 1: Tuesday 19 April - Monday 25 April
- Sprint 2: Tuesday 26 April - Monday 2 May
- Sprint 3: Tuesday 3 May - Wednesday 11 May
- Sprint 4: Thursday 12 May - Thursday 19 May
(except Tuesday 17 May)
- Project Expo: Friday, 20 May
- Documentation ready: Friday, 20 May

Working Hours, April

- Monday, 8:00-12:00 and 13:00–17:00
- Tuesday, 8:00-12:00 and 13:00–**18:00**
- Wednesday, 8:00-12:00 and 13:00–17:00
- Thursday, 8:00-12:00 and 13:00–**16:00**
 - Methodology course lecture starts at 16:15
- Friday, 8:00-12:00 and 13:00–17:00

Working Hours, May

- Monday, 8:00-12:00 and 13:00–17:00
- Tuesday, 8:00-12:00 and 13:00–**18:00**
- Wednesday, 8:00-12:00 and 13:00–**16:00**
 - Methodology course lecture starts at 16:15
- Thursday, 8:00-12:00 and 13:00–17:00
- Friday, 8:00-12:00 and 13:00–17:00

Project Expo, Friday, 20 May 2016

- Day before: Fully charge all batteries
- 08:00 – 09:30, Final tests and adjustments
- 09:30 – 11:00 Setup table, poster, demo space
- 11:00 – 13:00 Project Expo
- 13:00 – 14:00 Cleaning up after expo
- 14:00 – 16:00 Cleaning up rooms
 - noone leaves until room is approved by me

Product Documentation to be ready on Friday, 20 May

- Robot Projects: Service Manual + blueprints
 - Service Manual must be PDF
 - Blueprints must be JPGs
- Software Proj's: User Manual + Tech Report
 - Both must be PDFs
- Upload to project website
- E-mail me list of **links to each file**

Tidsredovisning

Vecka 1

Adam Bertil Cesar David Erik Filip

Måndag

24 april

Kom

Lunch

Åter

Gick

Diff

08:10	08:05	07:45	07:50	07:58	07:5
12	12	12	12	12	12
13	12:50	12:50	12:50	12:30	13
16:30	17:00	17:00	17:00	17:00	17:
-40	+0:05	+0:10	+0:20	+0:12	+0:5

Tisdag

25 april

Kom

Lunch

Åter

Gick

Diff

8	07:55	8	8	8	8
12:20	12:20	12:20	12:20	12:20	12:
13:10	13:10	12:55	12:55	12:55	13:
17:20	17:20	17:20	17:10	17:10	17:
17:10	+0:35	+0:45	+0:35	+0:35	+:

Time reports

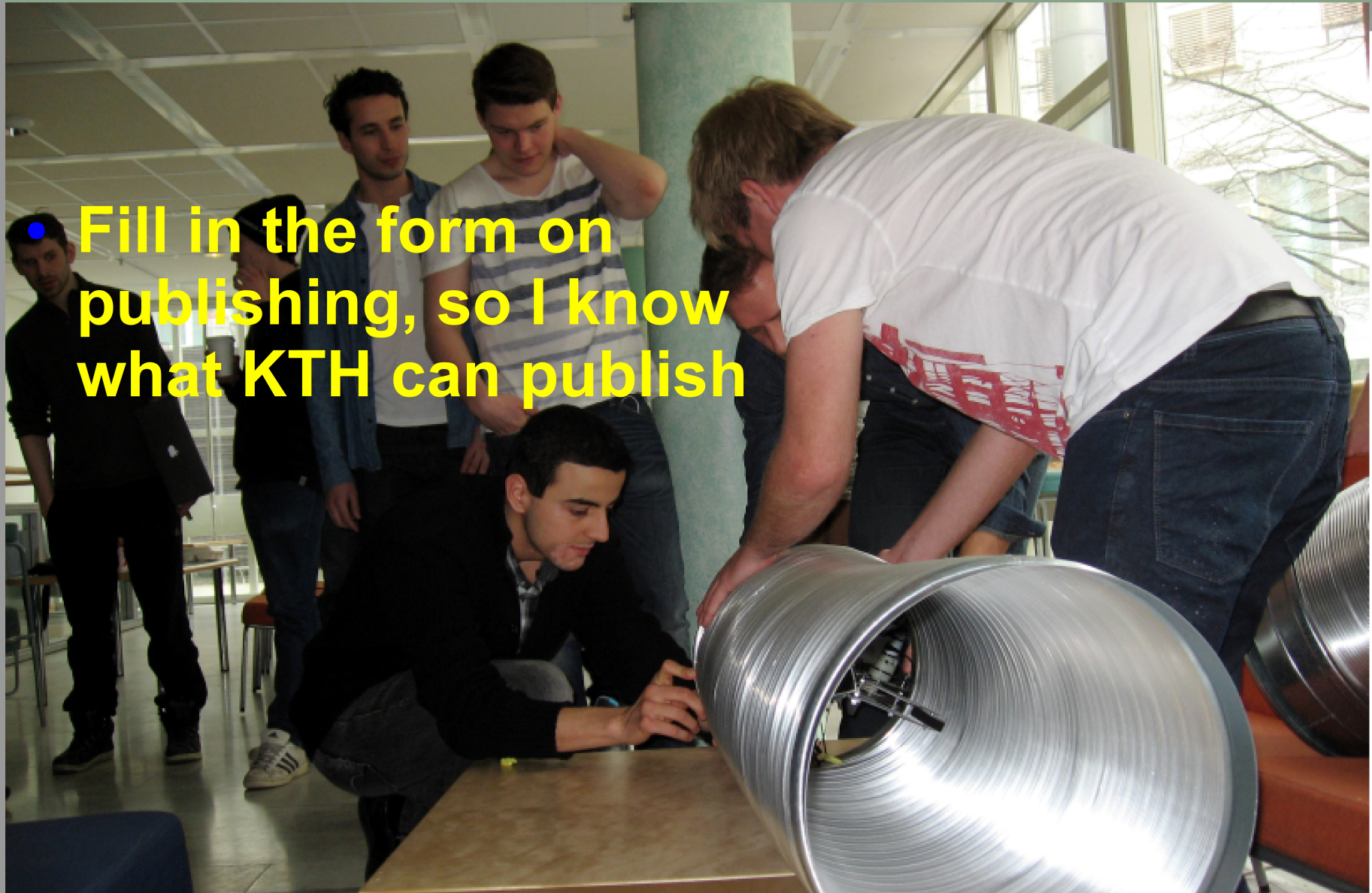
- One A4 per team, per sprint
- I've made a form for you to use
- Tape it by the door of the project room
- Write when you come, go to lunch, go home
- Add the total hours after each sprint
- After a sprint: start a new A4, hand in the old

Hand-ins

- Preparatory tasks, 11 April and 14 April
- Time report, after each sprint
- Robot (robot teams only), 20 May
- Borrowed stuff, 20 May
- Product Documentation, 20 May
- Individual Project Reflection, 26 May

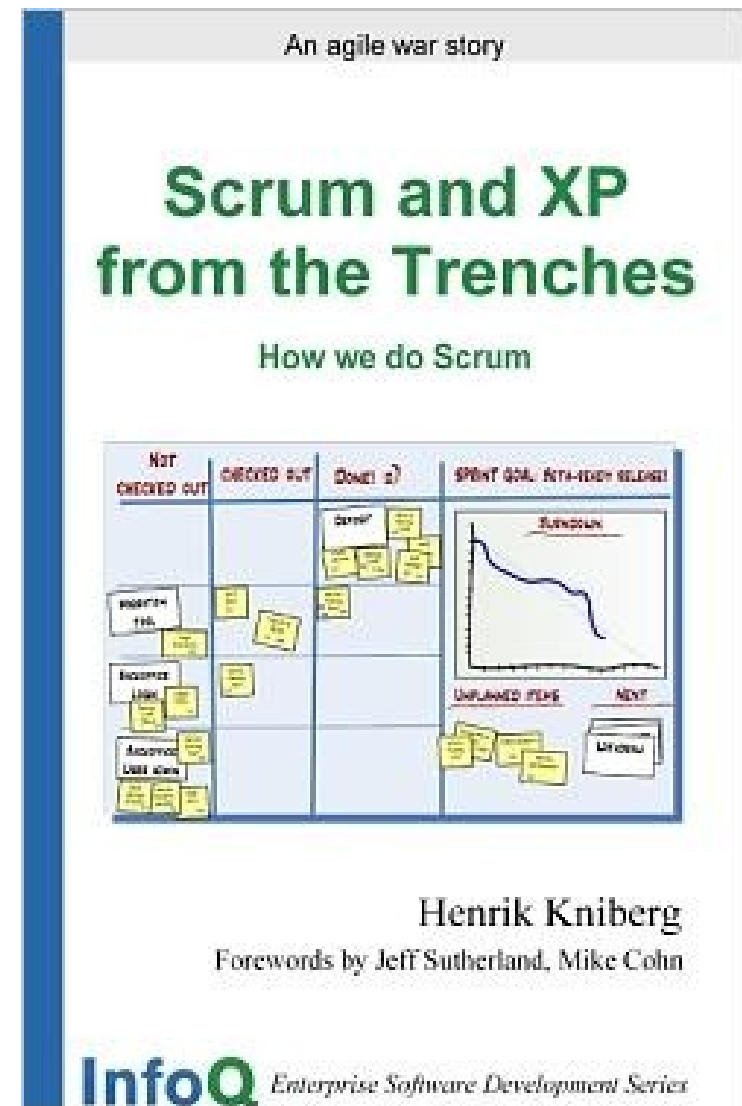
Publishing

- Fill in the form on publishing, so I know what KTH can publish



Course book

- Henrik Kniberg:
Scrum and XP from
the Trenches
- Zero-cost download,
www.infoq.com
(search for Kniberg)
- Easy to read,
enjoyable,
indispensable!



Scrum Master

- Makes sure daily scrum starts/ends on time
- Makes sure the backlog is updated
- Makes sure any problems get sorted
- Talks to visitors (so rest of team can work)
- Organizes the sprint demo
- Organizes the sprint retrospective
- **Coach the team to do all this without you**

Scrum Master

- Utses av kursledningen
- Ser till att alla har arbetsuppgifter
 - Leder ståuppmötet på morgonen
 - "How we do daily scrums" i Knibergs bok
- Tar hand om besökare
 - svarar på frågor, andra kan fortsätta jobba

Master of Accounts (robot projects only)

- Selected by team
- Team may buy material for up to SEK 2000
- Spend your own money, keep the receipts
- F Lundevall gets money after course
- F Lundevall transfers money to the team's Master of Accounts

Receipts (robot projects only)

- M of A tapes each receipt onto an A4,
- writes an item-number on that A4,
- writes down VAT and stuff in spreadsheet
- If you pay 43:87 by card, you pay 43:87 and you will get 43:87
- If you pay 43:87 in cash, you pay 44:00 and you will get 44:00
- Never do rounding that the store didn't do

After Project (robot projects only)

- Master of Accounts e-mails spreadsheet to F Lundevall
- Master of Accounts and F Lundevall meet
- Receipts are counted, checked, scanned
- A month later, F Lundevall gets money
- F Lundevall sends money to Master of Accounts in each team

Protect yourself!



- Use protective glasses
- When operating machinery such as drills
- All persons in the room must wear protection
- New protective glasses cost SEK 49, but a new eye can't be had for any money

A pair of red and black ear muffs is shown on a light-colored wooden surface. The muffs have a black headband and red ear cups with black padding. The text "Protect yourself!" is overlaid in white at the top. A list of safety instructions is overlaid in yellow at the bottom left.

Protect yourself!

- **Use ear muffs**
- When doing loud stuff such as drilling
- All persons in the room must wear protection
- New ear muffs cost SEK 49,
but a new ear can't be had for any money

Protect your room

- Protect walls with plastic
 - use blue-tape on the wall
 - standard tape peels the paint off
- Protect furniture with cork (robot projects)
 - drilling or sawing must not damage furniture
- Protect your stuff
 - take home stuff that is or looks expensive
 - pack small things, our cleaners are thorough

Don't bring your own robot stuff

- If it's dirt cheap, give it away to your project
 - an LED, or some cables, max SEK 50
- If it's not, talk to F Lundevall
 - lending stuff to the project is not good
 - there is no insurance
 - the robot is incomplete afterwards
- You can't buy stuff from KTH

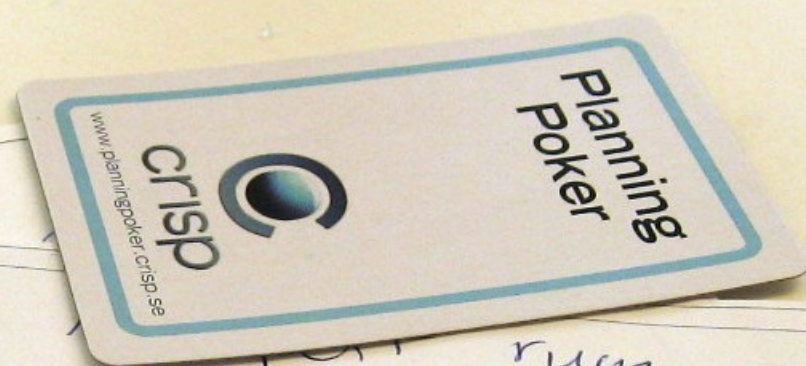
Sprint planning priorities

- Sprint goal and demo date
- List of stories accepted by team, for sprint
- *Estimate* filled in for each story in sprint
- *How to demo* filled in for each story in sprint
- Velocity/resources checked for sprint
- Time and place for daily scrum specified
- Stories broken down into tasks

Form for user-story

STORY NAME (in block letters)		Story ID: Must be unique
Importance: Greater number = more important	Estimate: Greater number = more work	
How to demo this story		
Notes		

Planning Poker



Rubrik (skriv stort)

Mäta rum
och hitta utrymme

Hur viktig:
Högre tal =
mera viktig.

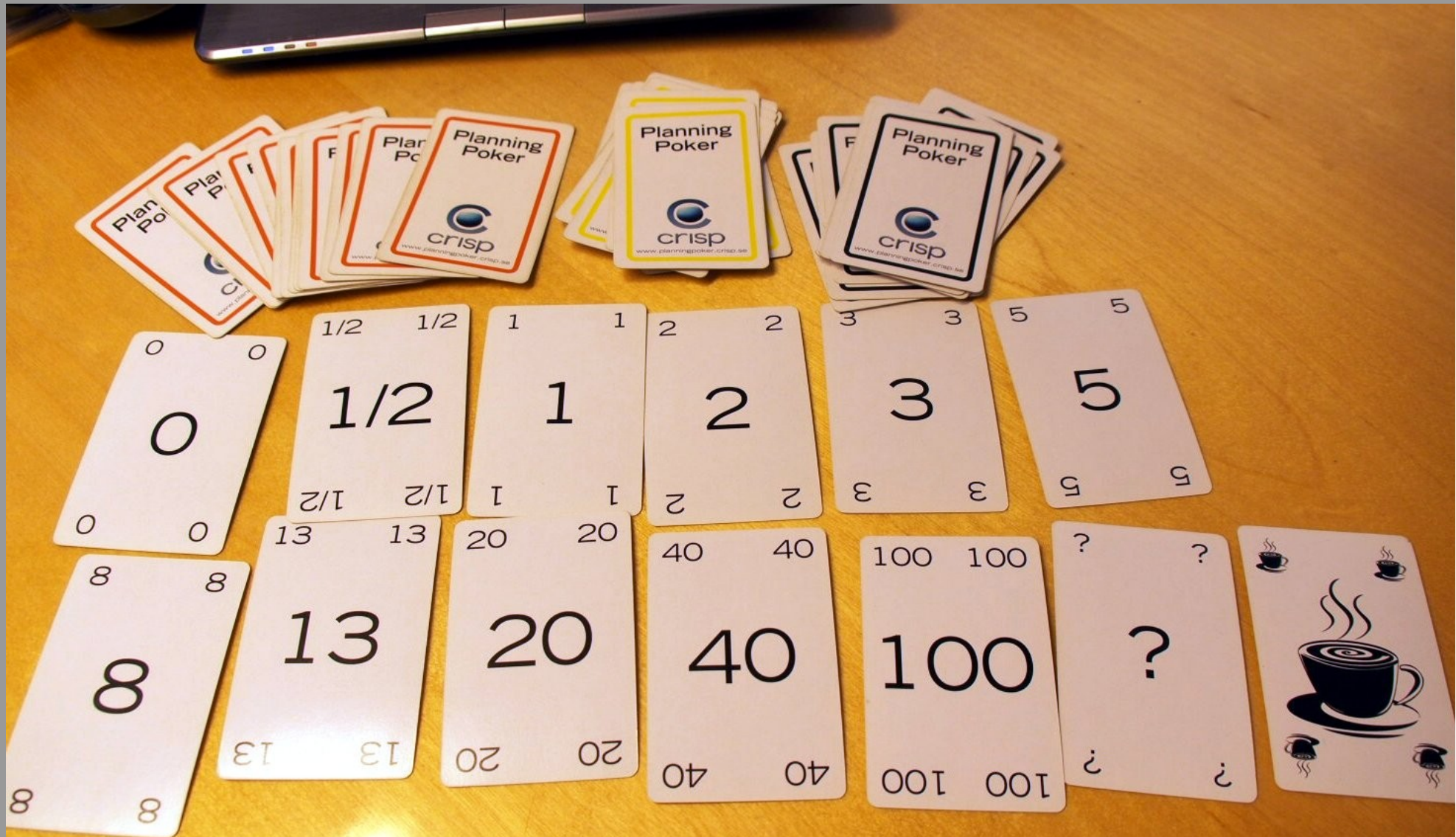
Hur visar man upp detta för kunden?

Robot kör in i
storlek 2-6 x 3-10 m,
och kör ut ur rummet
kommer ut ur rummet

Anteckningar

roboten rör sig i rummet

Deck of cards for Planning Poker



Yellow sticky note with handwritten text, partially obscured.

Card with the number 3 written in the center and smaller 3s at the corners.

Card with the number 5 written in the center and smaller 5s at the corners.

Rubrik (skriv)

Rubrik (skriv stort)

Mäta 1 simpelt rum
och hitta ut ur det

Hur viktig?
Högre tal =
mera viktig.

Hur viktig:
Högre tal =
mera viktig.

Hur visar man upp detta för kun

Robot kör in
storlek 2-6 x 3
och kör ut ur
kommer ut +

Anteckningar

Card with the number 13 written in the center and smaller 13s at the corners.

Teveeras

Daily Scrum

- What's the best “today” we can have?
- All team-members stand up, for each person
 - what did I do yesterday to meet sprint goal?
 - what will I do today to meet sprint goal?
 - what could stop us from meeting sprint goal?
- Write on whiteboard for each person
- Team checks that taskboard is up-to-date

Robot Software

- Keep It Simple, Sweetheart (KISS)
- Use periodical timer interrupts, **don't use other interrupts**
- Event-loop:
 - if a happened, then do x;
 - if b happened, then do y;
 - ...
 - goto Event-loop
- Arduino: use setup() and loop()

Solder (robot projects only)

- Solder (Swedish: lödtenn)
- Solder is **fragile** and breaks easily
- Solder is a **bad** conductor
- Solder is **not sticky** in itself
- ...but solder can protect against corrosion
- ...and solder keeps things in place, unless of course you push/pull/turn

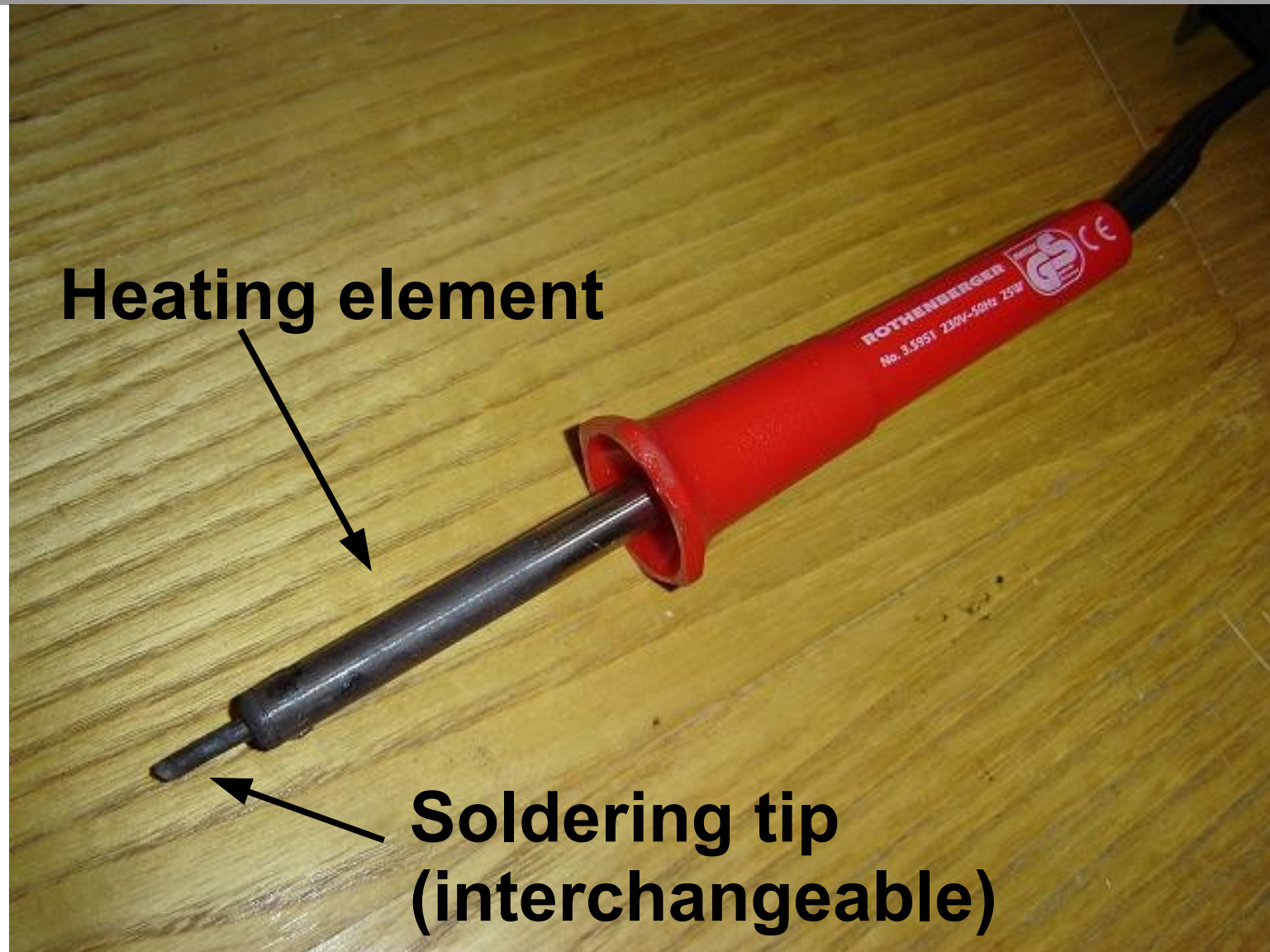
Commercially-available solder

- Get solder with *flux* (Swedish: flussmedel)
- Flux is in channels inside the solder, cleans the soldering joint
- Leaded solder is poisonous
 - don't eat it, don't throw it in the bin
- Unleaded solder requires higher temperature
 - components get damaged more easily

Soldering iron (Swedish: lödkolv)

Photo: Peter Trieb.
Public Domain.
<http://commons.wikimedia.org/wiki/File:Loetkolben.jpg>

Text: F Lundevall
Public Domain.



Heating element

**Soldering tip
(interchangeable)**

Preparations before soldering

- Moisturize the sponge
- Heat up the soldering iron
- Put a tiny amount of solder on the tip
 - the flux will clean off any dirt from the tip
- Tie leads together, fasten, turn so that the two metal surfaces are in contact

The process of soldering

- Put soldering iron to one of the surfaces
- Let the other surface heat up from the first
- Put solder on other surface
 - when surfaces are hot enough, solder melts
 - when solder melts, flux cleans surfaces
- When surfaces full of solder, remove iron

Soldering iron heats surfaces, then surfaces heats the solder

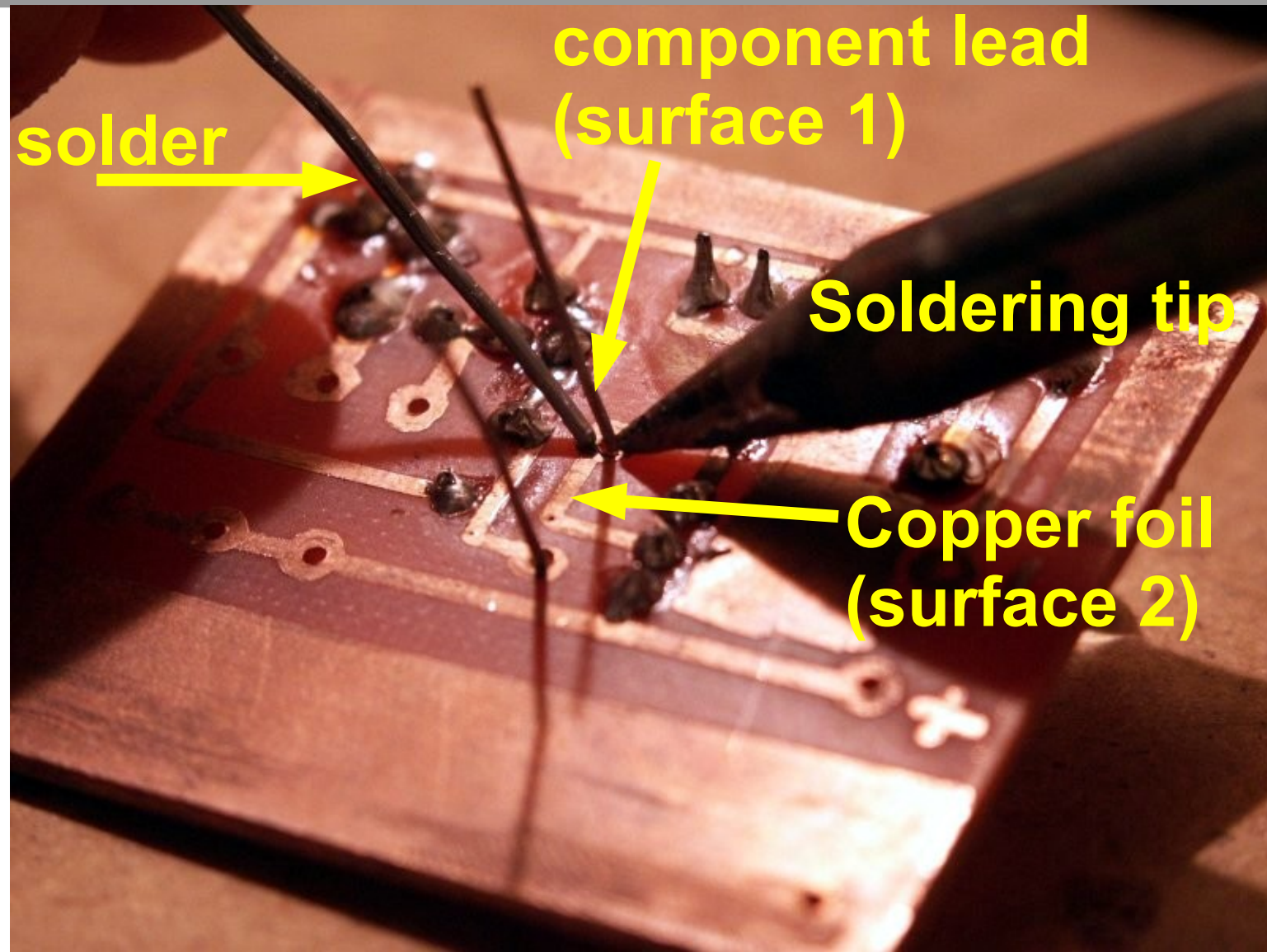


Photo: Vlastní Dílo.
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[http://commons.
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File:Soldering-PCB-
a.jpg](http://commons.wikimedia.org/wiki/File:Soldering-PCB-a.jpg)

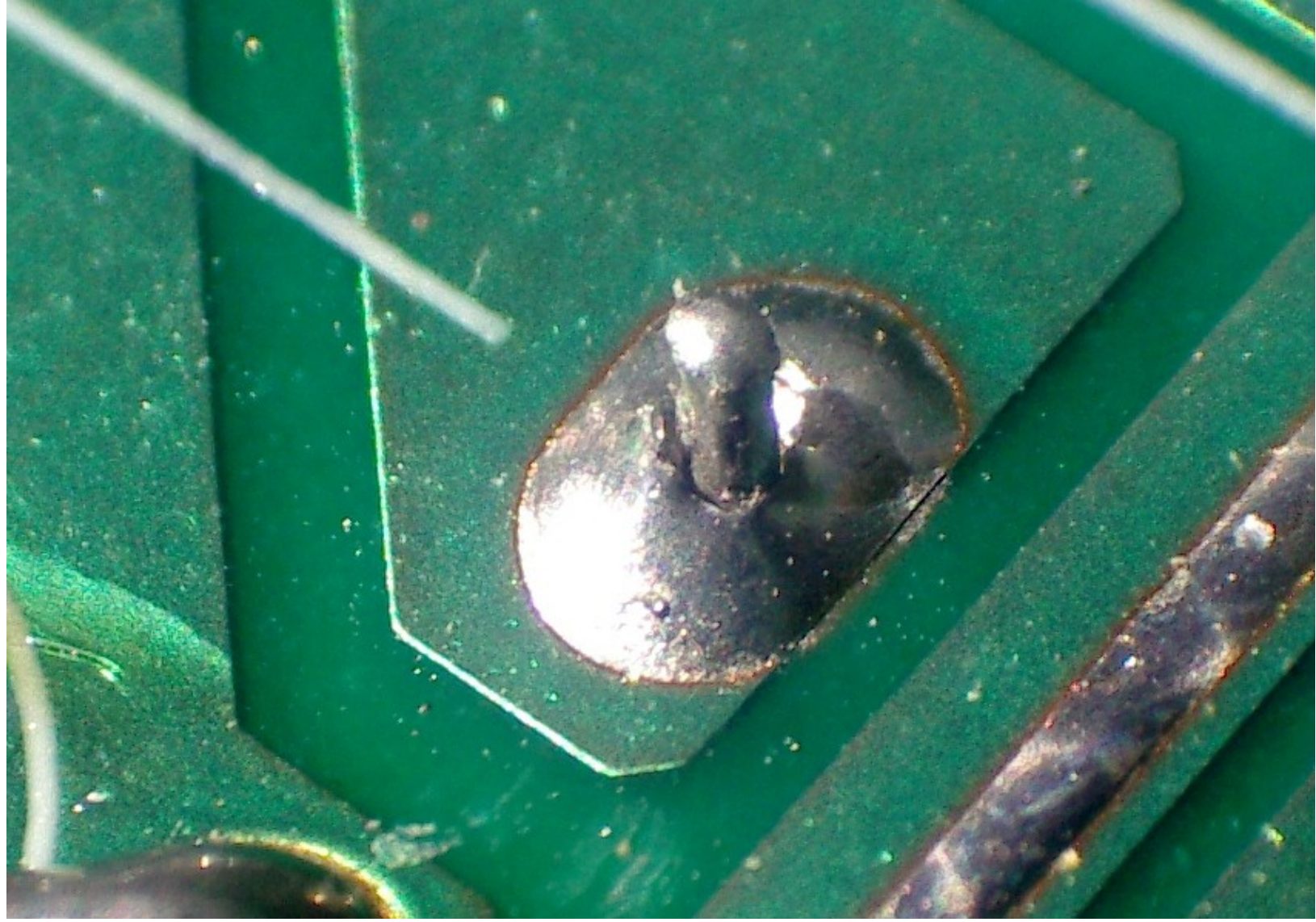
Text, arrows:
F Lundevall.
Public Domain.

ALWAYS

- Iron should heat up surface 1,
 - surface 1 should heat up surface 2,
 - surface 2 should heat up the solder
- This ensures both surfaces are hot enough
- BUT: be quick, don't fry your components

A “cold” joint - when you've failed

Photo: Coronium. Creative Commons,
Attribution ShareAlike Unported 3.0.
[http://commons.wikimedia.org/wiki/
File:Cold_solder_joint2.jpg](http://commons.wikimedia.org/wiki/File:Cold_solder_joint2.jpg)



NEVER

- NEVER put solder on the tip while soldering
- The flux will clean the tip, not the surfaces
- The surfaces will not be hot enough, so they will not stick to the solder
- “Cold” joints look mostly like any joint
- A “cold” joint may work for an hour, or a day
- You move your robot, and it stops working