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## **FOAR705 Week 3**

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# Minute card reflection



One major theme of feedback (from sticky notes, slack, and the jargon document) is that we need to discuss all of the assignments and how they fit together.

- Proof of Concept (Technology Demonstration)
  - Scoping (due sunday)
  - Elaboration plan (due before class, week 4)
  - Elaboration results (due before class week 6)
  - Proof of Concept Design or starting 'deployment' (Due before class week 7)
  - Proof of concept component demonstration (Due before class week 9)
  - Proof of concept linking demonstration (due before class week 11)
  - Final version (Due before class week 13)

- Learning Journal (Covered last week. Any technical work you do in this class should go into its own section). No formatting rules, though we disrecommend using word because it breaks things. (Due 4 times throughout semester)
- Lighting Talks (PICO Presentations) (Presenting your Proof of Concept (Tech Demo)) in a 2 minute mixed presentation/poster format. See EGU Pico presentation. (During exam time)
- Original Software Publication (Presenting your proof of concept as a paper which could be published in the SoftwareX Journal) (Due Week 13)



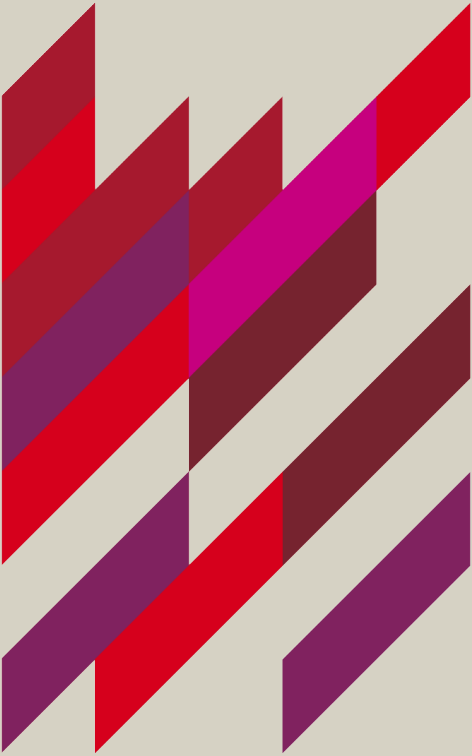
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# Jargon Busting

Via @sheri: <https://cloudstor.aarnet.edu.au/plus/f/3774955770>

Some terms of note:

- Proof of Concept (POC): ‘Assignment for FOAR705. See “Scoping”, “Elaboration”, “Deployment” A mechanism for describing, then creating a technology (tool and/or technique) workflow to assist your research.’ The major work you will be doing over this semester.
- Typesetting: ‘Typesetting is the careful arrangement of text in a typeface in order to achieve maximum legibility,’ [Newcomb, 2019]. The fourth step in the composition process (Preceded by Outlining (figuring out exactly what you want to say, and in what order, down to sub-paragraph detail), Writing, and Editing).



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# Data Carpentry



Discussion:

Episode 1:

What was wrong with the SAFI 'messy' data?

What metadata should be recorded for the 'clean' data?

Episode 2:

What dirty data sets did you find?

What errors did you find counterintuitive?

|   | A               | B         | C                        | D          | E            | F         | G          | H        | I      |
|---|-----------------|-----------|--------------------------|------------|--------------|-----------|------------|----------|--------|
| 1 | What I typed in | day-month | DOW, month, day, year    | month-year | Initial-year | M/D/YYYY  | DD/MM/YYYY | DD/MM/YY | number |
| 2 | 2-Jul           | 2-Jul     | Wednesday, July 02, 2014 | Jul-14     | J-14         | 7/2/2014  | 02/07/2014 | 07/02/14 | 41822  |
| 3 | Jul-14          | 14-Jul    | Monday, July 14, 2014    | Jul-14     | J-14         | 7/14/2014 | 14/07/2014 | 07/14/14 | 41834  |
| 4 | 1-Jan-1900      | 1-Jan     | Sunday, January 01, 1900 | Jan-00     | J-00         | 1/1/1900  | 01/01/1900 | 01/01/00 | 1      |

**Figure 1:** Actual value in cells: '41822', '41834', and '1'. Dates as data, Data Carpentry. CC-BY

Also beware: Regional Date formatting.

Download and open the dates.xlsx file. This file contains a subset of the data from the SAFI interviews, including the dates on which the interviews were conducted.

Choose the tab of the spreadsheet that corresponds to the way you format dates in your location (either day first DD\_MM\_YEAR , or month first MM\_DD\_YEAR ).

Extract the components of the date to new columns. For this we can use the built in Excel functions:

=MONTH( )

=DAY( )

=YEAR( )

Apply each of these formulas to its entire column. Make sure the new column is formatted as a number and not as a date.



Using the same spreadsheet you used for the previous exercise, add another data point in the `interview_date` column by typing either 11/17 (if your location uses MM/DD formatting) or 17/11 (if your location uses DD/MM formatting). The Day, Month, and Year columns should populate for this new data point. What year is shown in the Year column?

- Do one thing at a time.
- Constrain inputs as much as you can.
- Calculations should have validation/sanity checks.



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# Computational Thinking

Computers are good at some things. Mostly boring and repetitive things.

People are good at other things. Mostly creative and interesting things.

Computers are fast but stupid. They need clear, step-by-step instructions (which they can then execute quickly).

Computational thinking is an approach that lets you decide **what** computers are good for, and **how** to tell the computer to do what you want.

**Computational Thinking** (CT) is a problem solving process that includes a number of characteristics and dispositions. [Google, 2019]

- **Decomposition:** Breaking down data, processes, or problems into smaller, manageable parts.
- **Algorithm Design:** Developing the step by step instructions for solving this and similar problems.

Bonus points for:

**Pattern Recognition:** Observing patterns, trends, and regularities in data.

**Abstraction:** Identifying the general principles that generate these patterns.



'I need to produce properly formatted references and bibliography in my thesis'  
[Articulate process in groups]

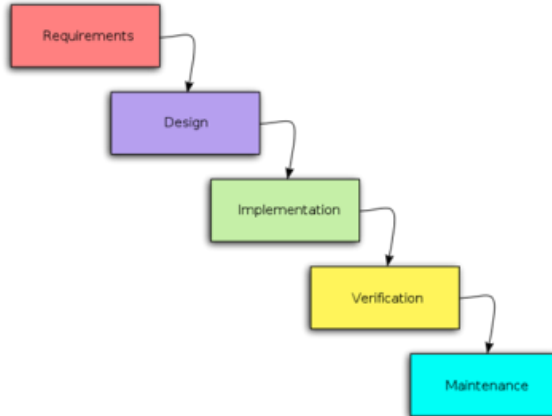


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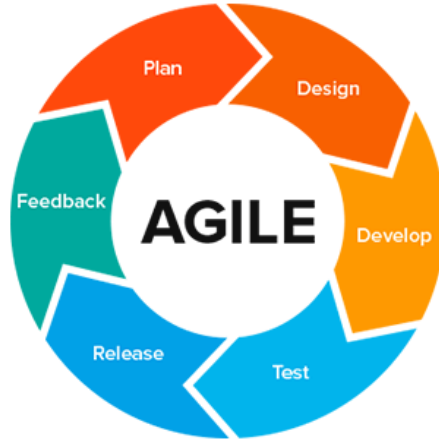
# Project management 101

So you have great ideas, what next?

## Approach #1: Top-down design ('Waterfall')



**Figure 2:** Traditional and linear approach [Parody, 2018]

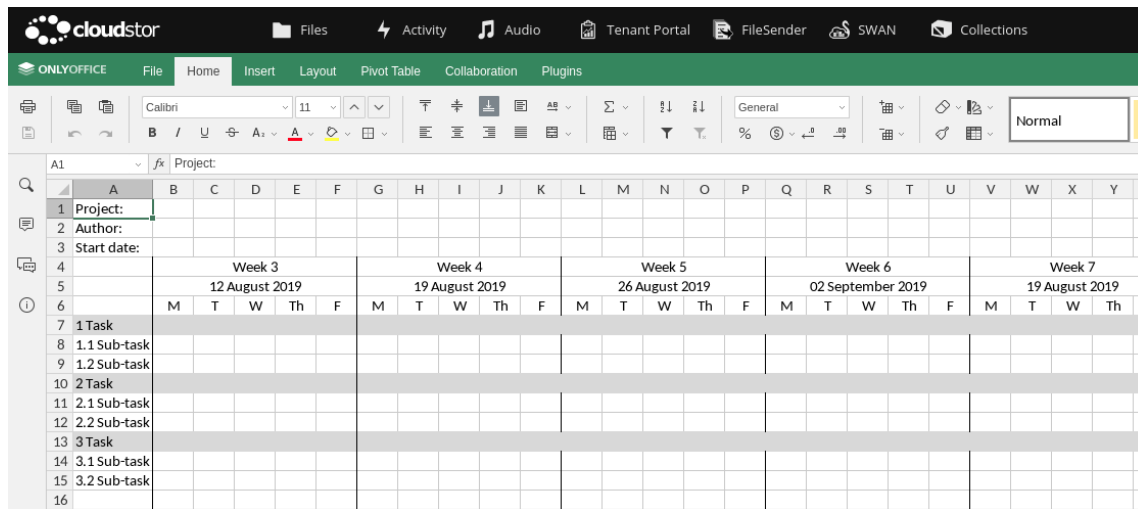


**Figure 3:** Design-test-repeat approach to PM [Parody, 2018]

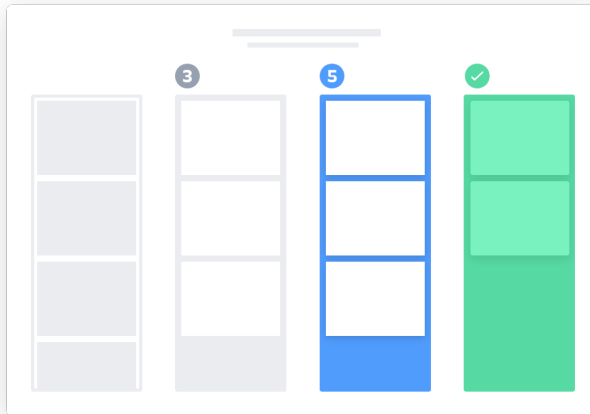
We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:

- **Individuals and interactions** over processes and tools
- **Working software** over comprehensive documentation
- **Customer collaboration** over contract negotiation
- **Responding to change** over following a plan

That is, while there is value in the items on the right, we value the items on the left more. [Atlassian, 2019a]



**Figure 4:** A Gantt Chart template (on Cloudstor)



**Figure 5:** Schematic Kanban board [Atlassian, 2019b]



- Visualise your work
- Limit work in progress

Kanban boards often have columns like: Backlog (wish list), To do, In progress, Done, with the 'To do' and 'In progress' columns having work limits (e.g., 3-5 tasks).

Trello is a popular application for Kanban. Atlassian has Kanban learning materials online [Atlassian, 2019b].

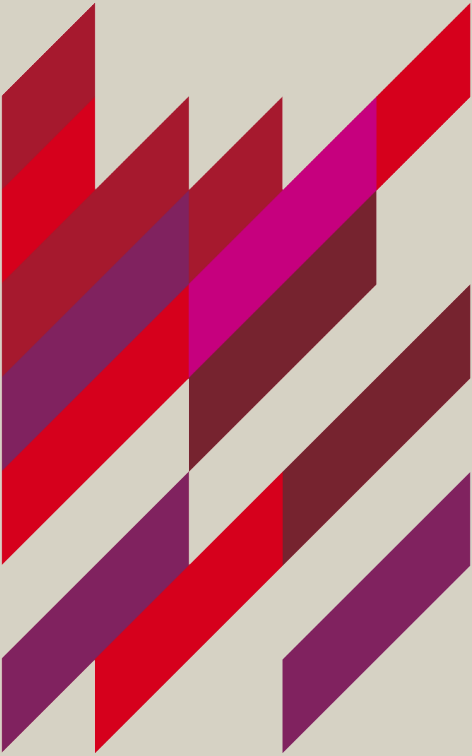


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# Minute cards!

On your green sticky, write one thing we did well today.

On your red sticky, write one thing we could improve upon for next time. Be specific.



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Source code for this presentation is available at:

<https://github.com/MQ-FOAR705/MQ-FOAR705-Week3>

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