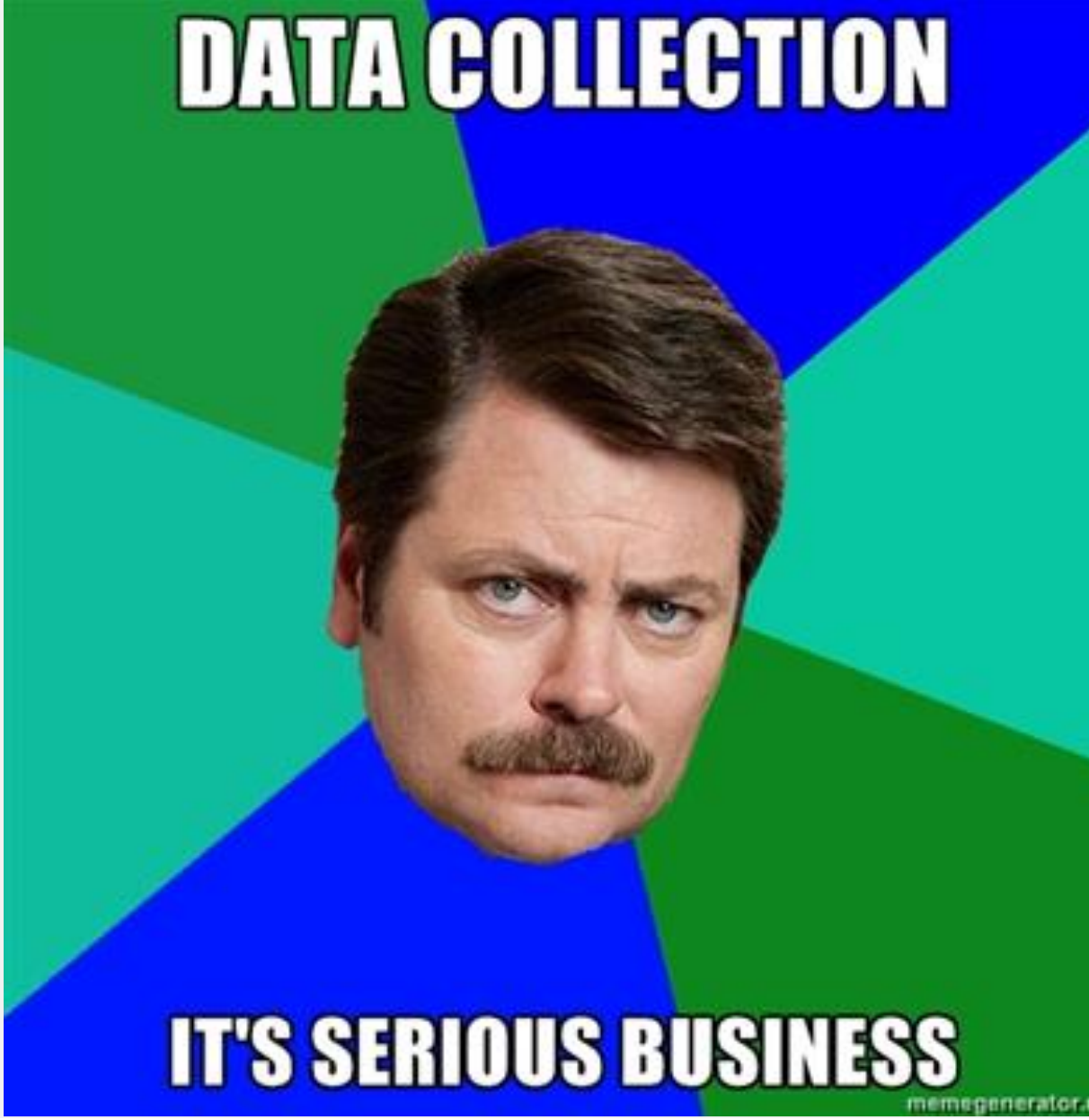
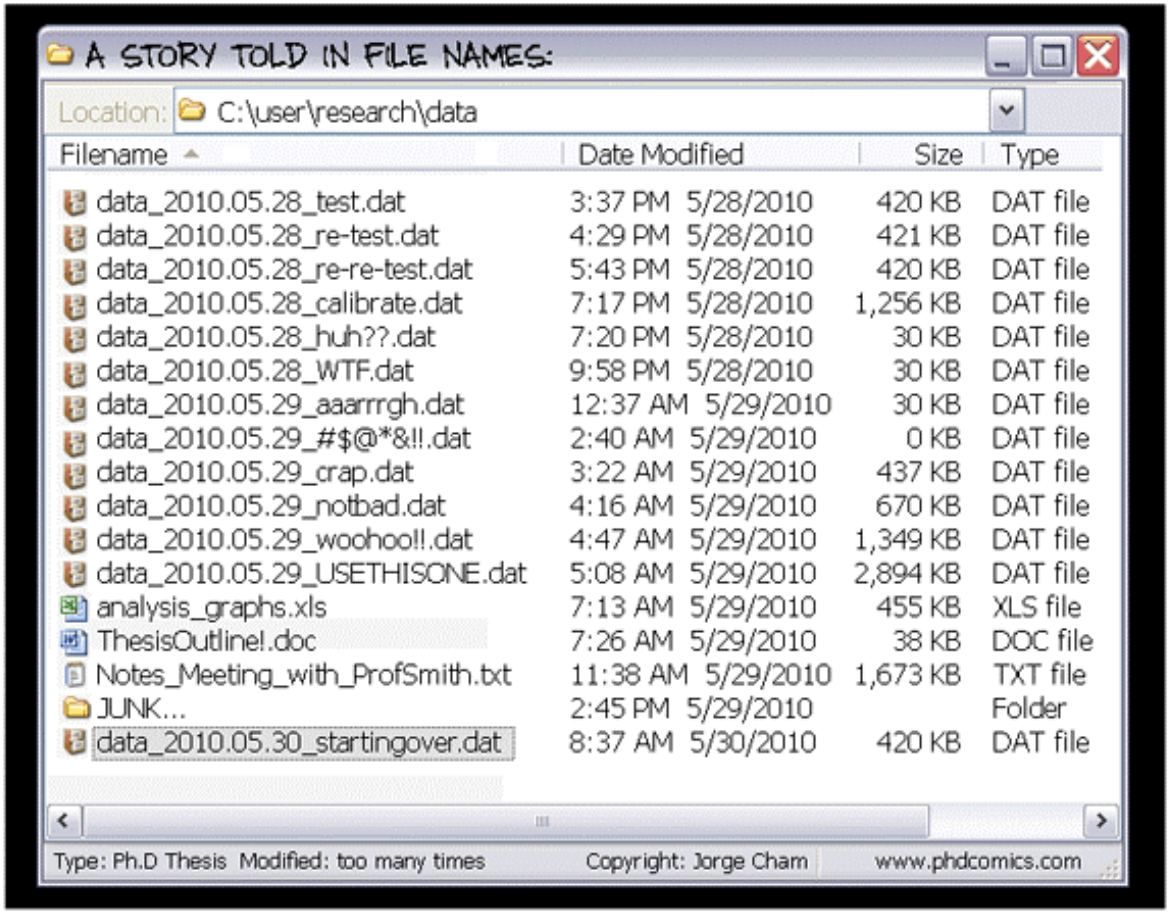
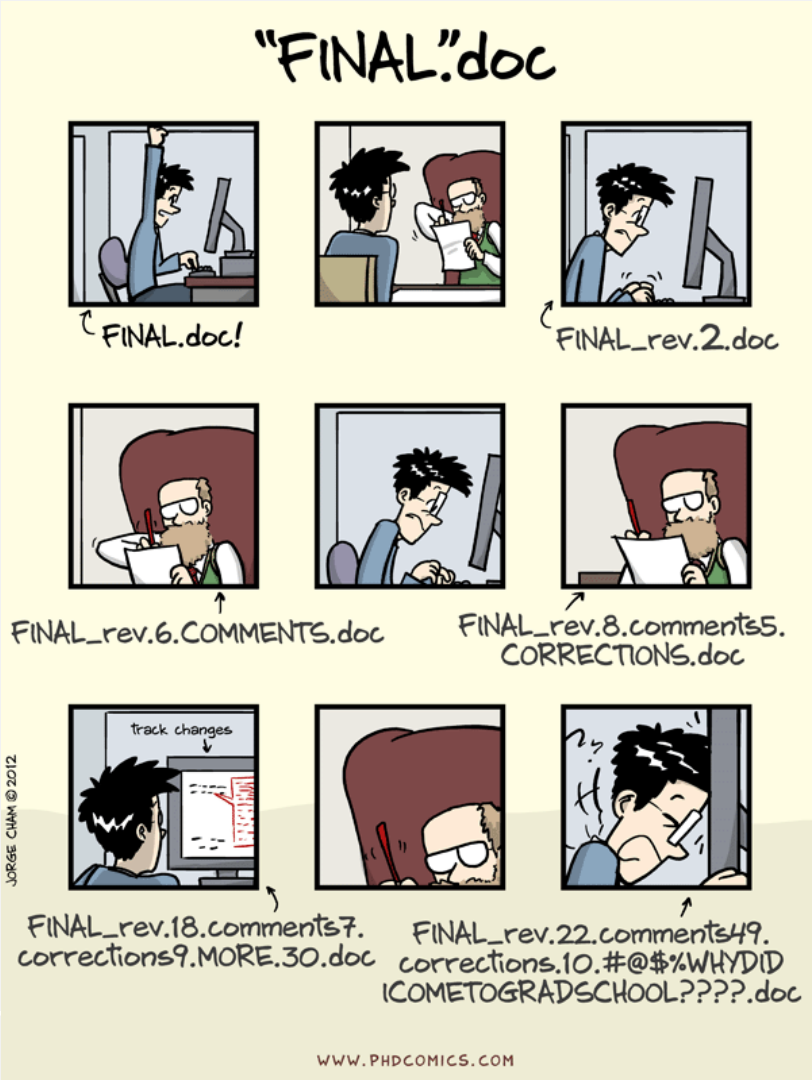
Data packaging:
A practical approach


DATA COLLECTION
IT'S SERIOUS BUSINESS
memegenerator.


A STORY TOLD IN FILE NAMES:
Location: C:\user\research\data
Filename
Date Modified
Size
Type
data_2010.05.28_test.dat 3:37 PM 5/28/2010 420 KB DAT file
data_2010.05.28_re-test.dat 4:29 PM 5/28/2010 421 KB DAT file
data_2010.05.28_re-re-test.dat 5:43 PM 5/28/2010 420 KB DAT file
data_2010.05.28_calibrate.dat 7:17 PM 5/28/2010 1,256 KB DAT file
data_2010.05.28_huh??.dat 7:20 PM 5/28/2010 30 KB DAT file
data_2010.05.28_WTF.dat 9:58 PM 5/28/2010 30 KB DAT file
data_2010.05.29_aaarrrgh.dat 12:37 AM 5/29/2010 30 KB DAT file
data_2010.05.29_#$@*&!!.dat 2:40 AM 5/29/2010 0 KB DAT file
data_2010.05.29_crap.dat 3:22 AM 5/29/2010 437 KB DAT file
data_2010.05.29_notbad.dat 4:16 AM 5/29/2010 670 KB DAT file
data_2010.05.29_woohoo!!.dat 4:47 AM 5/29/2010 1,349 KB DAT file
data_2010.05.29_USETHISONE.dat 5:08 AM 5/29/2010 2,894 KB DAT file
analysis_graphs.xls 7:13 AM 5/29/2010 455 KB XLS file
ThesisOutline!.doc 7:26 AM 5/29/2010 38 KB DOC file
Notes_Meeting_with_ProfSmith.txt 11:38 AM 5/29/2010 1,673 KB TXT file
JUNK... 2:45 PM 5/29/2010 Folder
data_2010.05.30_startingover.dat 8:37 AM 5/30/2010 420 KB DAT file
Type: Ph.D Thesis Modified: too many times
Copyright: Jorge Cham
www.phdcomics.com


"FINAL".doc
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FINAL_rev.6.COMMENTS.doc
FINAL_rev.8.comments5.
CORRECTIONS.doc
track changes
JORGE CHAM © 2012
FINAL_rev.18.comments7.
corrections9.MORE.30.doc
FINAL_rev.22.comments49.
corrections.10.#@$%WHYDID
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WWW.PHDCOMICS.COM

Responsible research conduct: data management/packaging

‘Inadequate record keeping or data management related to research projects’

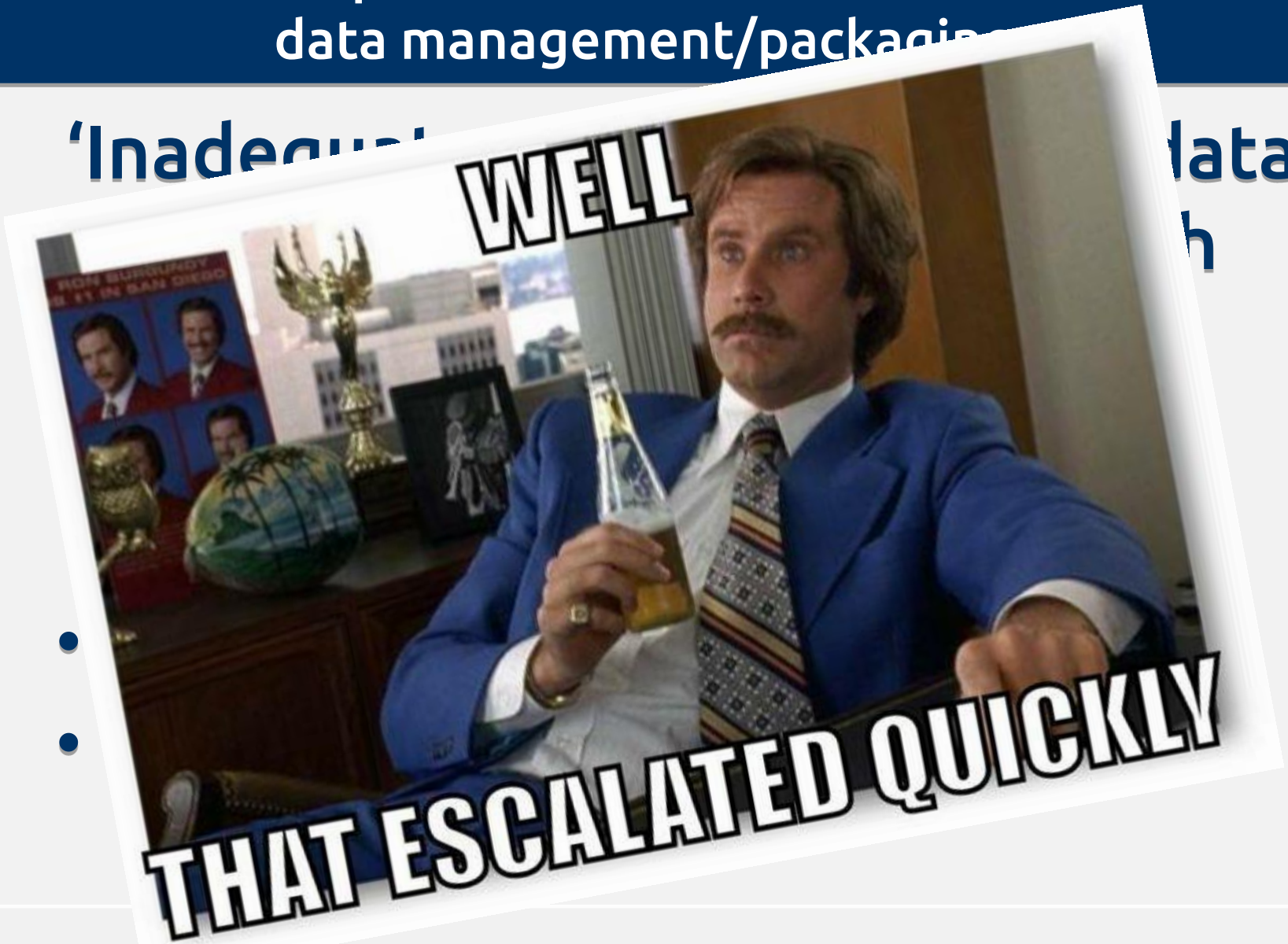
Responsible research conduct: data management/packaging

‘Inadequate record keeping or data management related to research projects’

- 27,5% (Martinson et al., 2005)
- 48%! (Godecharle et al., 2017)

Responsible research conduct: data management/packagi

‘Inadequ data
h



Say that you wake up one morning with full amnesia related to your current project, but you are still a very capable scientist. Are you able to understand what you did the day before?

Data package: Metadata and materials

- 1. Metadata and data collection
  - Author roles
  - Who collected data/where/when/how
  - ERB protocol number

- 2. Material
  - All digital material that can be used to replicate project.
    - Surveys/Stimuli/interview protocols/experiment leader protocol/computer scripts/etc. etc.

Data package: Raw data and analyses

- 3. Raw database
  - Raw, time-marked datafile
  - "Any information that could lead to the identification of participants (direct and indirect identifiers) must be removed from the data files."
  - In case you are not allowed to store these data in a repository: clearly explain and document the reasons for absence
- 4. Data processing and analyses
  - Contain all information that allows others to replicate your study
    - Coding schemes, syntaxes, computer scripts, statistical logbooks of raw data processing
    - A sufficiently documented processed database

How does one achieve all these easily?

How does one achieve all these easily?

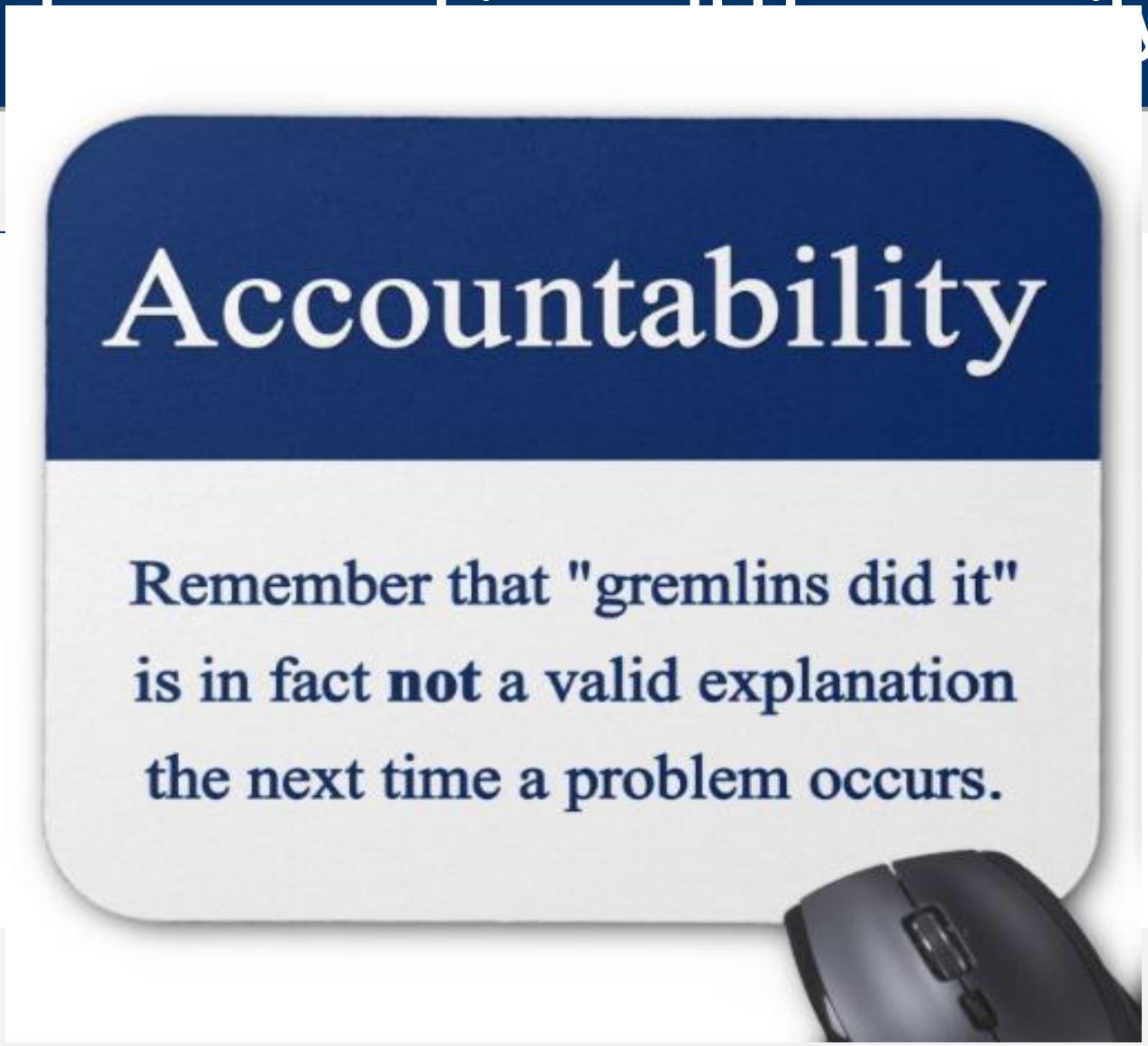
Transparency & Accountability

How does one achieve all these easily?

High transparency

No transparency

How


Accountability
Remember that "gremlins did it" is in fact **not** a valid explanation the next time a problem occurs.

How does one achieve T&A?

Today:

Transparency

How does one achieve transparency?

Open Science Framework

- Online environment
- Collaborative
- Preregistration
- Can make files public but not mandatory
- Watch out: privacy!
- More advanced? Github/Bitbucket

Assignment time

1) Will you be capable of reproducing your own results in half a year from now?

3) Will a colleague that is not a co-author be able to do this?

Assignment on OSF: https://osf.io/hz6an/

Data audit guidelines
https://www.tilburguniversity.edu/research/social-and-behavioral-sciences/download-guideline-datapackage-tsb/

Find me if you want help with making your work (more) reproducible!

- J.m.vanzelst@uvt.nl
- @mzelst
- S6.04

How does one achieve T&A?

Version control

=

Track changes for files

Recent Activity

Marino van Zelst added file S5. Meta-regression operationalization.pdf to OSF Storage in supplements
2016-05-10 06:07 PM

Marino van Zelst added file S1. Papers by journal.pdf to OSF Storage in supplements
2016-05-10 06:07 PM

Marino van Zelst added file S3. Results of HOMA.pdf to OSF Storage in supplements
2016-05-10 06:07 PM

Marino van Zelst removed file S1. Appendix Outlier Analyses.docx from OSF Storage in supplements
2016-05-10 06:02 PM

Marino van Zelst updated file 20150701thesis.docx in OSF Storage in Convenience-driven interorganizational tie formation: A meta-analysis.
2016-05-10 06:02 PM

Marino van Zelst updated file 20150701thesis.docx in OSF Storage in Convenience-driven interorganizational tie formation: A meta-analysis.
2016-05-09 08:26 PM

< 1 ... 4 5 6 ... 75 >

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2016-05-09 08:26 PM

< 1 ... 4 5 6 ... 75 >

Revisions

Version ID	Date	User	Download
13	2016-07-15 02:54 PM	Marino van Zelst	0
12	2016-05-27 09:13 PM	Marino van Zelst	2
11	2016-05-25 08:36 PM	Marino van Zelst	1
10	2016-05-10 06:09 PM	Marino van Zelst	3
9	2016-05-10 06:02 PM	Marino van Zelst	0
8	2016-05-09 08:26 PM	Marino van Zelst	0
7	2016-05-08 12:30 PM	Marino van Zelst	0
6	2016-05-04 09:18 PM	Marino van Zelst	0
5	2016-05-03 09:21 PM	Marino van Zelst	0
4	2016-05-03 11:29 AM	Marino van Zelst	0
3	2016-04-29 08:07 PM	Marino van Zelst	0
2	2016-04-25 07:38 PM	Marino van Zelst	0
1	2016-04-25 04:50 PM	Marino van Zelst	0

‘Normal’ version control

manuscript.pdf

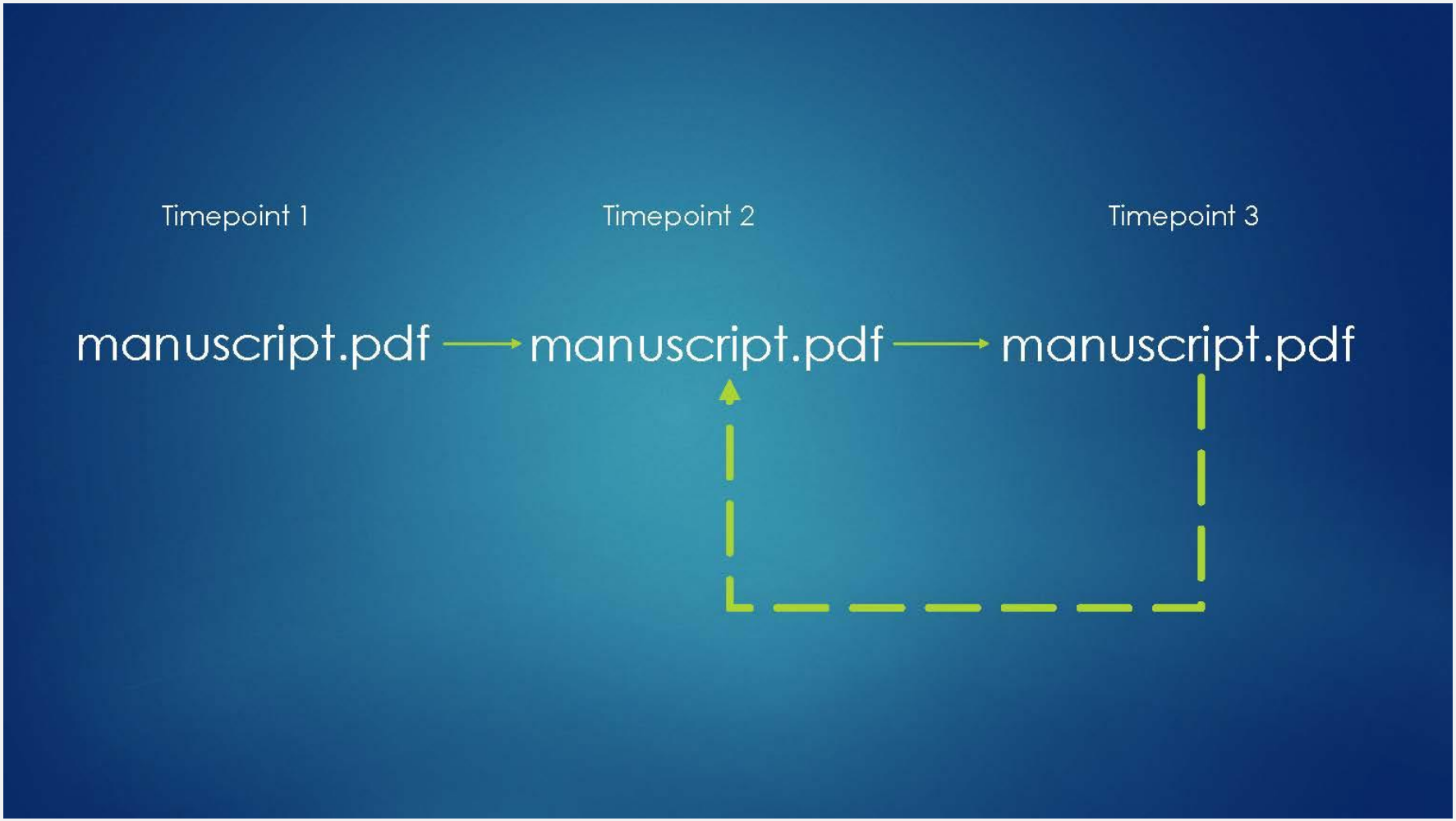
manuscript_final.pdf

manuscript_final2.pdf

manuscript_final3.pdf

Adapted from Hartgerink (2016):
http://bit.ly/chrisPM101

Actual version control



Adapted from Hartgerink (2016):
http://bit.ly/chrisPM101

How does one achieve transparency?

Ask ourselves continuously:

Can my future-self or anyone else reproduce this result within a reasonable amount of time?

Reproducibility

Data package requires you to:

- **Be able to reproduce all your results in reasonable amounts of time**

Reproducibility

Data package requires you to:

- **Be able to reproduce all your results in reasonable amounts of time**

- **Use syntax for everything!**
- **Log WHY you use specific syntax**

Reproducibility

```
dat <- read.csv("masterdata.csv",header=TRUE)
# Splined + separates #
dat <- dat[ which(dat$perf_mix < 4 & dat$spline==1 & dat$spline_correct ==1),]
dat$var <- 1/(dat$sample_size_firm-3)

# Preparing moderators to be included in models. Model-specific moderators are prepared within separate sections. #
# Rescale median sample year by subtracting minimum year in sample for ease of interpretation #
dat$medyear <- ((dat$sample_start+dat$sample_end)/2-(min(dat$sample_start,na.rm=TRUE)))
dat$medyear <- dat$medyear - min(dat$medyear,na.rm=TRUE)
dat$medyearsq <- dat$medyear^2
```

```r
## Meta-regression for prior ties. Moderator analysis with tie purpose, median sample year, and full risk set. #
# Tests for difference in ES between R&D ties and investment ties (btt) #
dat$priorrtoz <- 0.5*log((1+dat$prior_form_r)/(1-dat$prior_form_r))
# Model 1. Includes omnibus-test (H0:B1=B2=B3=0) for R&D, manufacturing and investment ties #
prior_wls <- rma(priorrtoz,var,mods=~ resanddev + investment + manufacturing + medyear +fullrisk,method="DL",
  data=dat,btt=c(6,7))
summary(prior_wls,digits=3)

prior2_wls <- rma(priorrtoz,var,mods=~ priordicho + priorcount + published,method="DL",data=dat)
summary(prior2_wls,digits=3)
anova(prior2_wls,L=c(0,1,-1,0))

# Chisquare-test for difference between coefficients of manufacturing (2) and investment (3) ties #
anova(prior_wls,L=c(0,1,-1,0,0,0)) #Omnibus: R&D vs. Manufacturing
anova(prior_wls,L=c(0,0,1,-1,0,0)) #Omnibus: Manufacturing vs. Investment
anova(prior_wls,L=c(0,1,0,-1,0,0)) #Omnibus: Manufacturing vs. R&D
```

The future: dynamic documenting

- knitR, Rmarkdown

- **Code: Responses to historical performance feedback are heterogeneous, as the Q-statistic is** *`r round(all.hpfb_dv$QE,3)` (*p*-value = `r round(all.hpfb_dv$QEp,3)`)*
- **Text: Responses to historical performance feedback are heterogeneous, as the Q-statistic is 392.468 (p-value = 0.003)**

1) Will you be capable of reproducing your own results in half a year from now?

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2) Will your co-authors be able to do this?

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1) Will you be capable of reproducing your own results in half a year from now?

2) Will your co-authors be able to do this?

3) Will a colleague that is not a co-author be able to do this?

4) Will an independent researcher, who is in your area of expertise, be able to do this?