

Hector

Highly Effective Computing Tool to Obtain Results

Matthijs Vink

23 March 2017

MRI scanner

Prepare

Quality
checks

Web
reports

Analysis

Group
analysis

ROI
analysis

Web
Reports

MRI scanner

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Prepare

Prepare

Prepare

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...

Prepare

Prepare

DATA

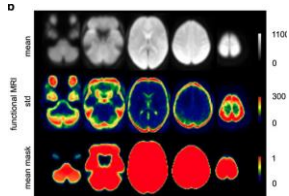
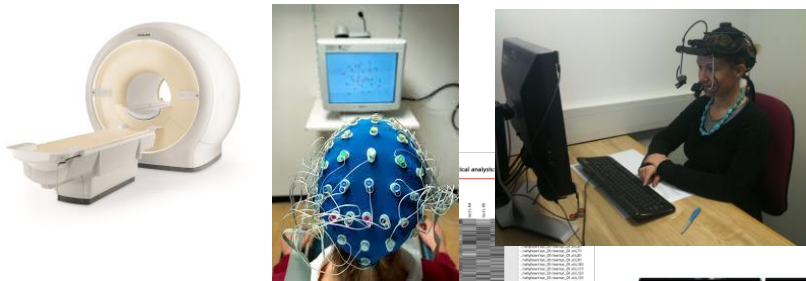
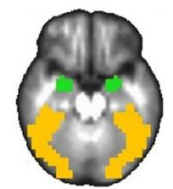
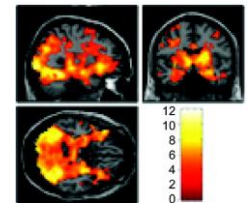


Table with columns: patient ID, age, sex, and other demographic data.



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QC

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Prepare

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Prepare

QC

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Analysis

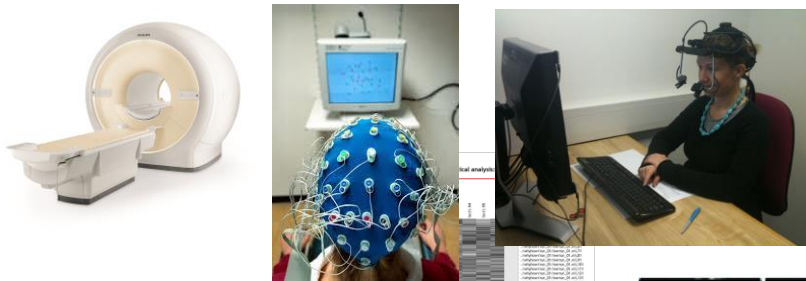
Group analysis

ROI

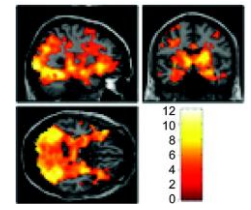
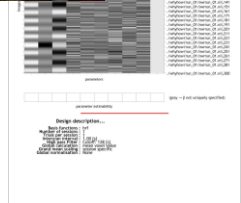
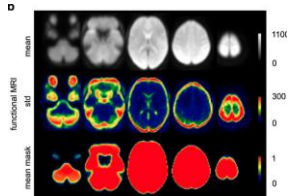
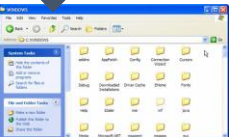
Web



DATA



12 domains



Prepare

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Group analysis

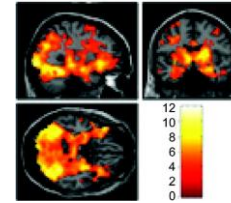
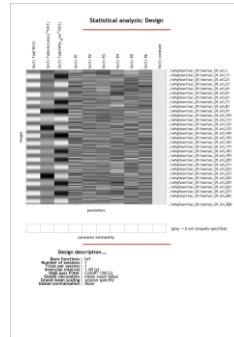
ROI analysis

Web Reports



- ⚡ **Accuracy** depends on how accurate you work
- ⚡ **Speed** depends on how fast you click (and specs of your laptop)
- ⚡ **Transparency** depends on your ability to publish data on the web
- ⚡ **Efficiency** depends on how structured you work

DATA



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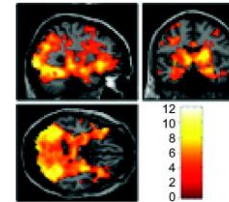
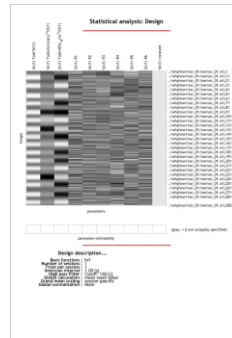
ROI analysis

Web Reports

1. Formalize the procedures
2. Automatize the procedures

More **accurate**, **faster**,
more **transparent**
and more **efficient**

DATA



Prepare

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ROI analysis

Web Reports

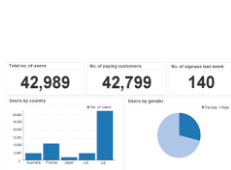
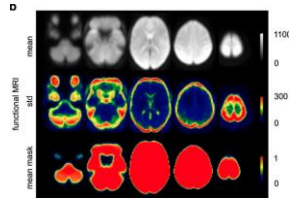
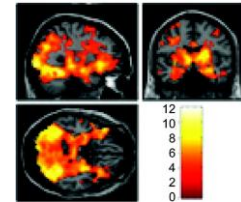
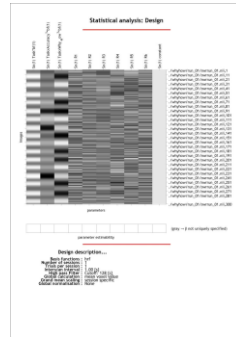
Module A

MODULE A – PROCESBESCHRIJVING

- **FASE 1:** Voorstel van een experiment – [online formulier](#) [INTERN]
- **FASE 2:** Ontwikkeling van een experiment – [online formulier](#) [INTERN]
- **FASE 3:** Implementatie van een experiment – [online formulier](#) [INTERN]
- **TEMPLATE:** Invoeren procesbeschrijving van een experiment – [online formulier](#) [INTERN]
- **TEMPLATE:** [Doorzoeken en bekijken van alle informatie per experiment](#) [EXTERN]
- **Technische specificities:** meetopstelling, meetapparatuur, software instellingen (voorbeeld: [MRI examcards](#)) (TECHNICAL) (pw: woef)

<http://www.matthijs-vink.com/showcase/>

DATA



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Module B
Quality

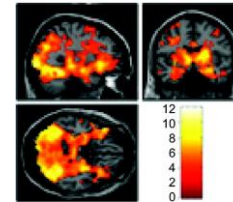
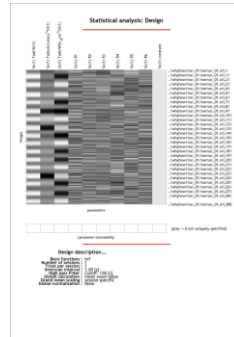
Module B
Data

MODULE B – OVERZICHT DATA, RESULTATEN EN KWALITEITSMATEN

- Kwaliteitsmeting van een individuele set – [MRI voorbeeld pagina](#) [INTERN]
- [Overzichten kwaliteitsmetingen](#) van alle experimenten en meetinstrumenten [EXTERN]
- [Overzicht data](#) – MRI aantallen gemaakte scans voorbeeld pagina [INTERN]
- Overzicht resultaten - [MRI resultaat voorbeeld pagina](#) [INTERN]

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DATA



Prepare

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Web Reports



Not similar to using the k-location

Use your own

monitor

keyboard

mouse

at the specs of the server

large discs

a lot of memory

many processors

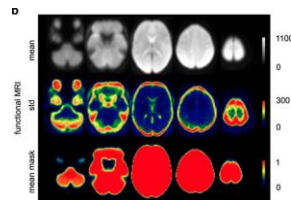
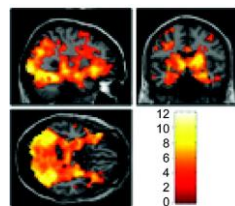
login via VNC viewer (office/home)

internet, no access to the server

DATA



patient	Analysis	QC	Prep
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Analysis

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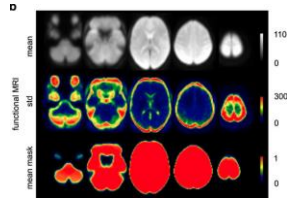
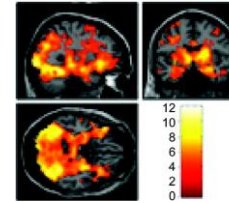
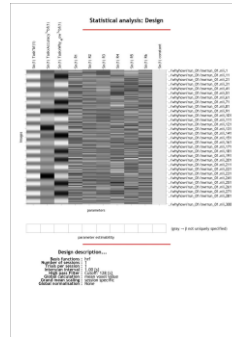
ROI analysis

Web Reports



processors

DATA



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Instead of **serially processing** subjects (or calculations)
Use the power of the server for **parallel computing**

processors

DATA



Automated manager

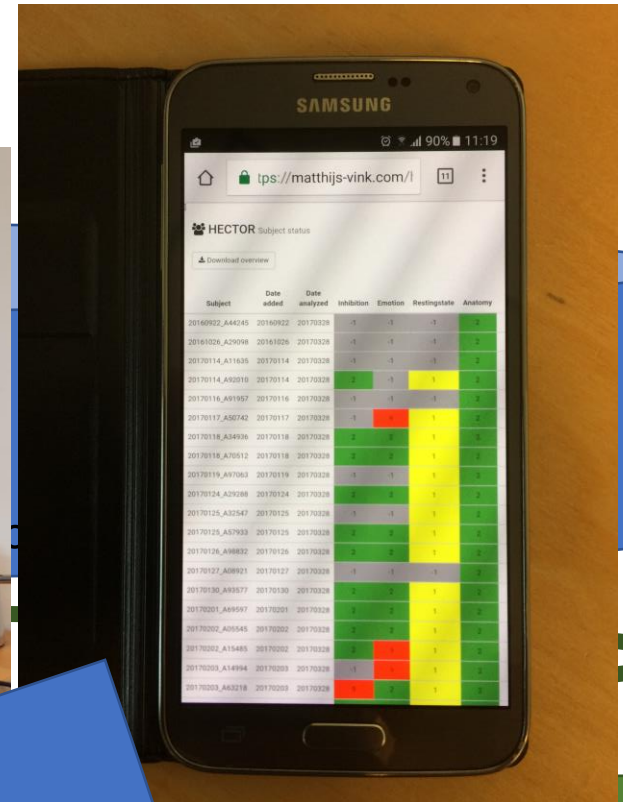
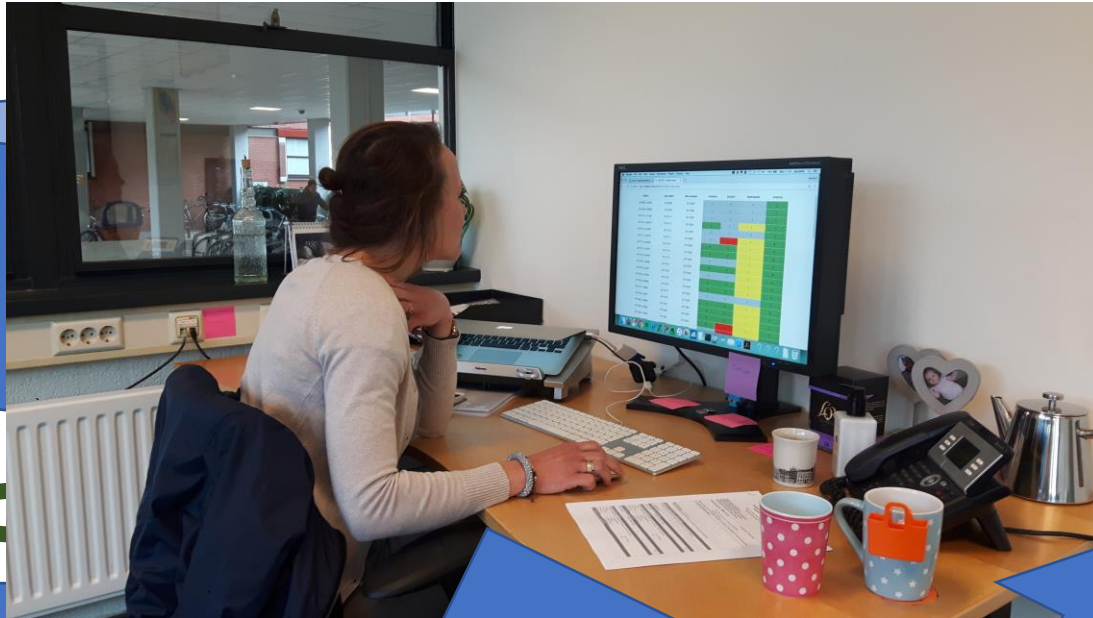
Searches for jobs
Distribute jobs among processors

“Job market”

- ✓ **Fully automated:** work process is structured as each job is standardized
 - ✓ No human errors or human variation affecting the process
- ✓ **Saves time:** determined by the number of processors
 - ✓ No point-and-click-and-wait but continuous processing
- ✓ **Maximum transparency:** tracking of job progress via email or website
 - ✓ Detect and share trends to facilitate high level of quality of people and equipment
- ✓ **Maximum efficiency:** both in time and availability of data
 - ✓ Allows for each pooling of data-sets with partners within and outside lab

servers

DATA



- ✓ **Fully automated:** workflow is structured as end-to-end standardized
 - ✓ No human errors or human intervention affecting the process
- ✓ **Saves time:** determined number of projects
 - ✓ No point-and-click-and-wait continuous process.
- ✓ **Maximum transparency:** tracking of job progress via email or website
 - ✓ Detect and share trends to facilitate high level of quality of people and equipment
- ✓ **Maximum efficiency:** both in time and availability of data
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servers