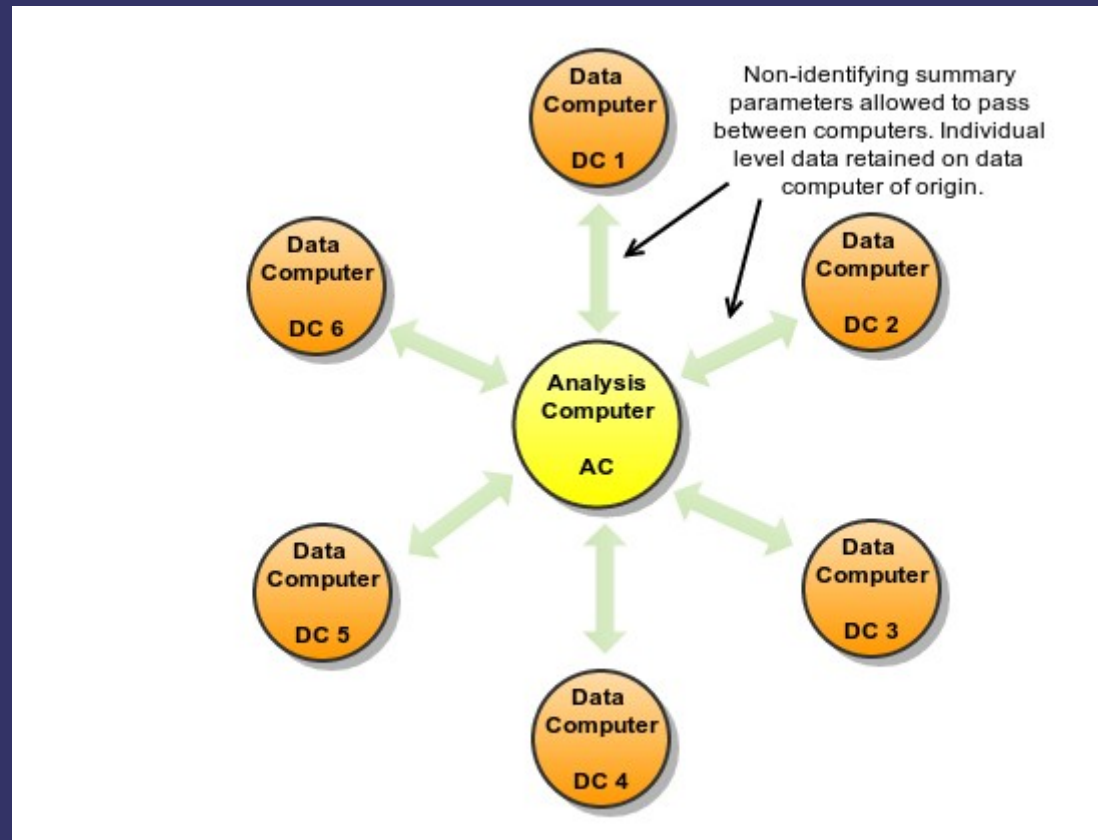


# *DataSHIELD BioSHaRE*

DataSHIELD IT infrastructure  
for BioSHaRE

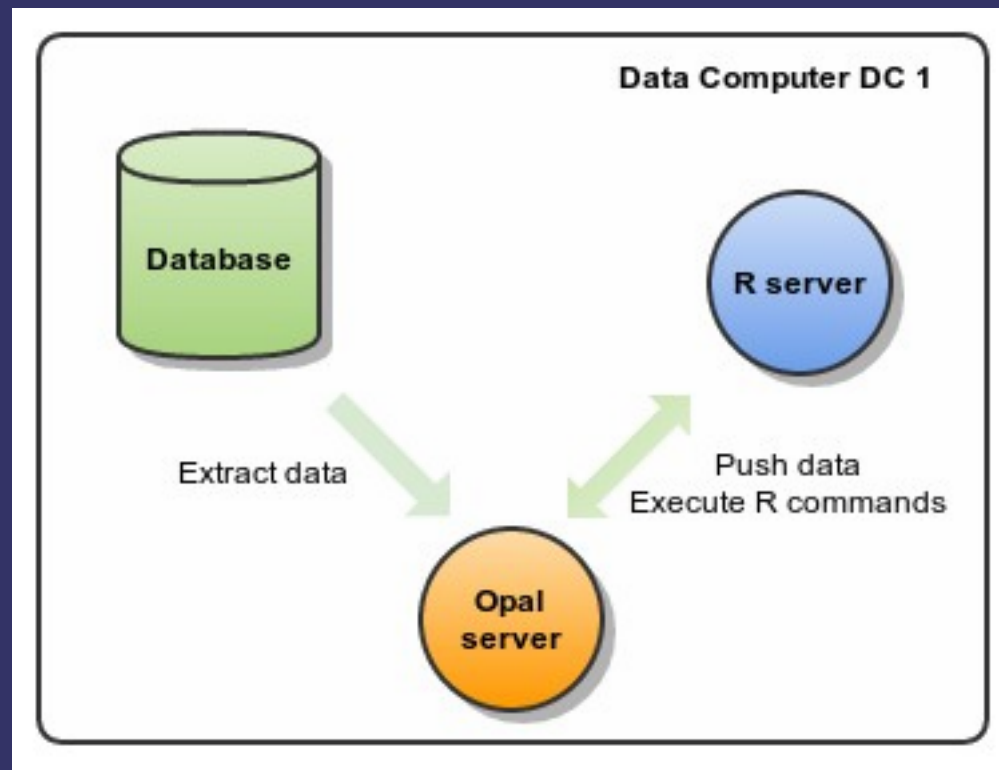
# *DataSHIELD IT*

## ➡ DataSHIELD basics



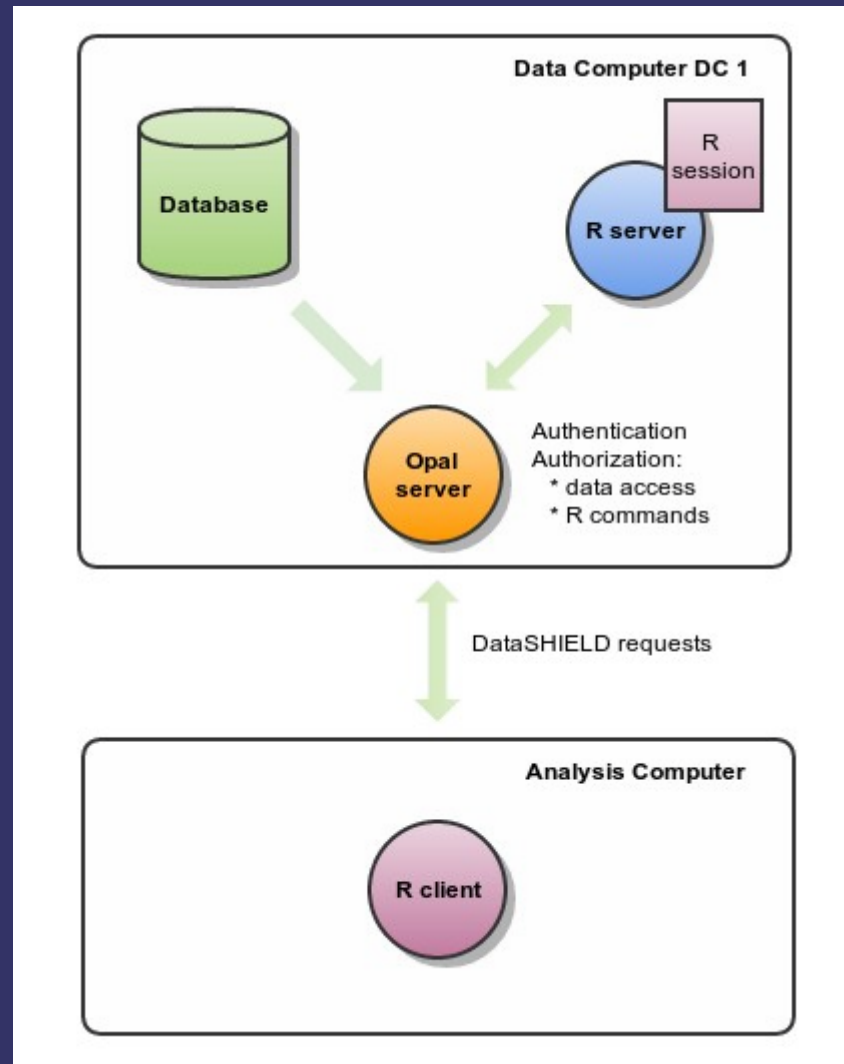
# *DataSHIELD IT*

⇒ Data Computer = Opal + R



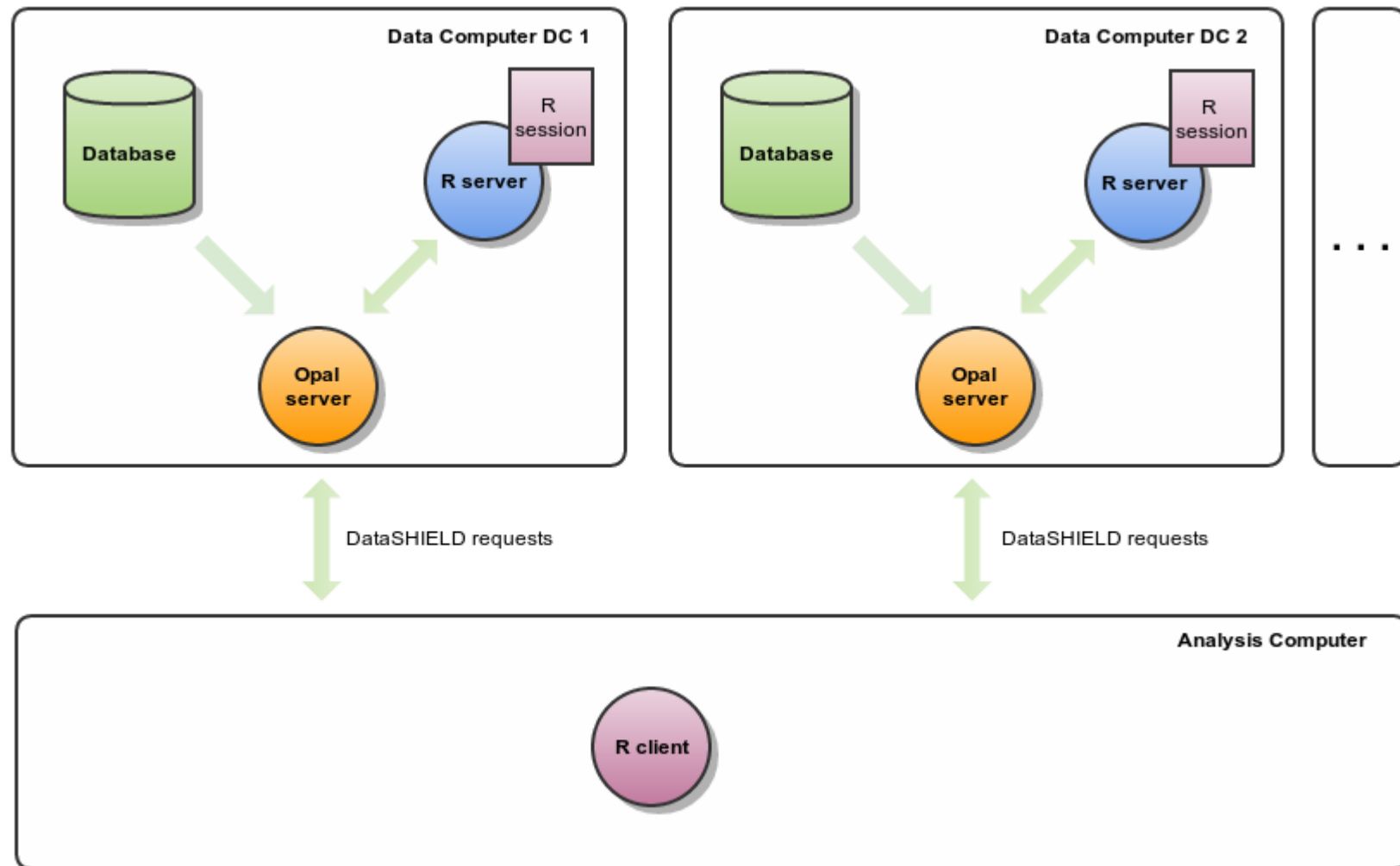
# *DataSHIELD IT*

## ➡ Data Computer + Analysis Computer

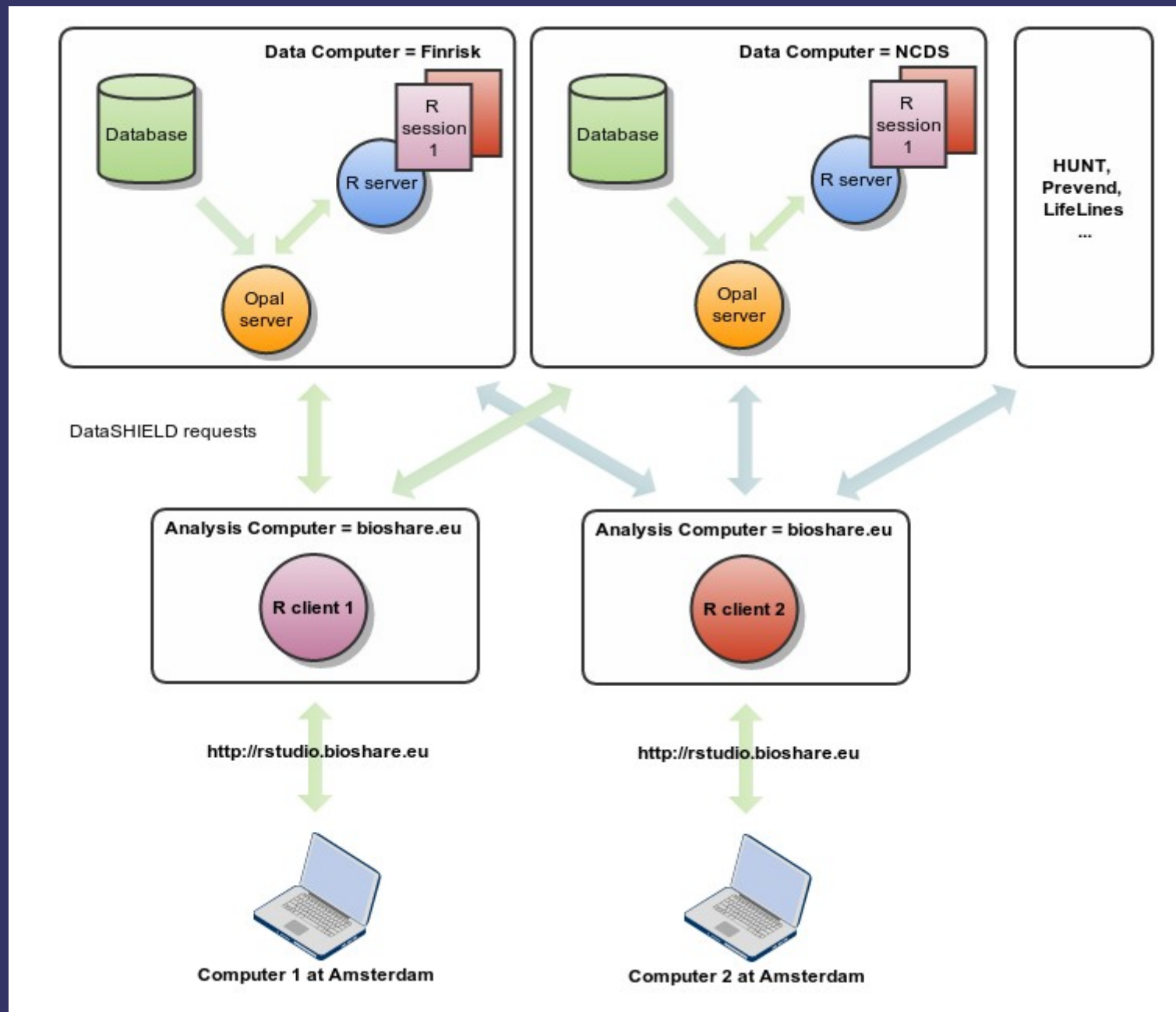


# *DataSHIELD IT*

➡  $n$  Data Computers + Analysis Computer



# DataSHIELD BioSHaRE IT



# BioSHaRE Rstudio

The screenshot displays the BioSHaRE Rstudio environment. The top toolbar includes navigation icons and the URL `rstudio.bioshare.eu`. The menu bar contains **File**, **Edit**, **Code**, **View**, **Plots**, **Session**, **Project**, **Build**, **Tools**, and **Help**. The user `ymaron` is logged in, with a **Sign Out** link and the project name `workshop-amsterdam` shown in the top right.

The **Source Viewer** on the left shows the `opals.R` script with the following R code:

```
52 datashield.assign(ncds, 'PM_BMI_CONTINUOUS', 'hop.hop.PM_BMI_CONTINUOUS')
53 datashield.assign(finrisk, 'PM_BMI_CONTINUOUS', 'HOPcopy.HOP:PM_BMI_CONTINUOUS')
54 datashield.assign(hunt, 'PM_BMI_CONTINUOUS', 'bioshare.HOP:PM_BMI_CONTINUOUS')
55 datashield.assign(prevend, 'PM_BMI_CONTINUOUS', 'hop-prevend.HOP:PM_BMI_CONTINUOUS')
56 datashield.assign(kora, 'PM_BMI_CONTINUOUS', 'bioshare.HOP:PM_BMI_CONTINUOUS')
57
58 datashield.assign(ncds, 'PM_HEIGHT_MEASURE', 'hop.HOP:PM_HEIGHT_MEASURE')
59 datashield.assign(finrisk, 'PM_HEIGHT_MEASURE', 'HOPcopy.HOP:PM_HEIGHT_MEASURE')
60 datashield.assign(hunt, 'PM_HEIGHT_MEASURE', 'bioshare.HOP:PM_HEIGHT_MEASURE')
61 datashield.assign(prevend, 'PM_HEIGHT_MEASURE', 'hop-prevend.HOP:PM_HEIGHT_MEASURE')
62 datashield.assign(kora, 'PM_HEIGHT_MEASURE', 'bioshare.HOP:PM_HEIGHT_MEASURE')
63
64 datashield.assign(ncds, 'PM_WEIGHT_MEASURE', 'hop.HOP:PM_WEIGHT_MEASURE')
65 datashield.assign(finrisk, 'PM_WEIGHT_MEASURE', 'HOPcopy.HOP:PM_WEIGHT_MEASURE')
66 datashield.assign(hunt, 'PM_WEIGHT_MEASURE', 'bioshare.HOP:PM_WEIGHT_MEASURE')
67 datashield.assign(prevend, 'PM_WEIGHT_MEASURE', 'hop-prevend.HOP:PM_WEIGHT_MEASURE')
68 datashield.assign(kora, 'PM_WEIGHT_MEASURE', 'bioshare.HOP:PM_WEIGHT_MEASURE')
69
70 datashield.glm(opals, PM_BMI_CONTINUOUS ~ PM_HEIGHT_MEASURE + PM_WEIGHT_MEASURE, as.name("gaus"))
71
```

The **Console** at the bottom shows the output of the `datashield.glm` function:

```
$formula
PM_BMI_CONTINUOUS ~ PM_HEIGHT_MEASURE + PM_WEIGHT_MEASURE

$coefficients
              Estimate Std. Error z-value p-value
(Intercept)  53.7358901  0.0304469319 1764.903    0
PM_HEIGHT_MEASURE -0.3174931  0.0002035067 -1560.111    0
PM_WEIGHT_MEASURE  0.3485004  0.0001332702  2614.991    0

$dev
[1] 20428.63

$nsubs
[1] 88134

$df
[1] 88131

$iter
[1] 3
```

The **Workspace** pane on the right lists the following objects:

Object	Class
credentials	list[5]
credentials2	list[4]
finrisk	opal[5]
hunt	opal[5]
kora	opal[5]
ncds	opal[5]
opals	list[5]
prevend	opal[5]

The **Files** pane shows the project structure:

- Home > workshop-amsterdam > tests
  - opals.R (2.8 KB, May 14, 2013, 4:34 PM)

# Opal Data Structure

## ⇒ Table

- Column = variable (name, type, categories...)
- Row = data of a participant

Datasource1.Table1				
	VAR1	VAR2	...	VARn
1	11	a		x
2	23	g		y
...				



# *DataSHIELD Opal API*

## ⇒ Opal R package: *opal functions*

- *opal.login* : opal connection
- *opal.datasources* : list the datasources
- *opal.datasource* : description of a datasource
- *opal.tables* : list the tables of a datasource
- *opal.table* : description of a table
- *opal.variables* : list the variables of a table
- *opal.variable* : description of a variable
- ...

# *DataSHIELD Opal API*

## ⇒ Opal R package: *datashield functions*

- *datashield.assign* : assign a data (from Opal or result of a R expression) to a R symbol
- *datashield.symbols* : list all R symbols on server
- *datashield.aggregate* : returns result of an aggregation
- *datashield.methods* : list authorized aggregate and assign methods
- ...