Databases using R

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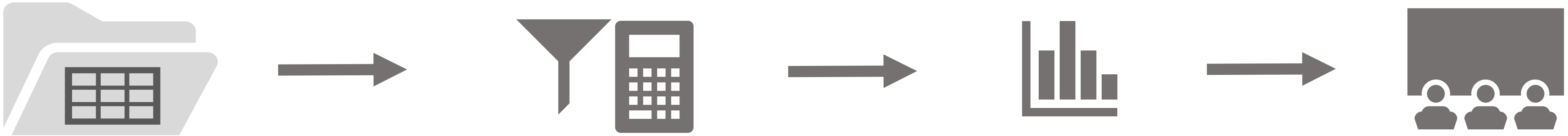
RStudio

#ODSC

Typical DS project



Import → Wrangle → Learn → Share

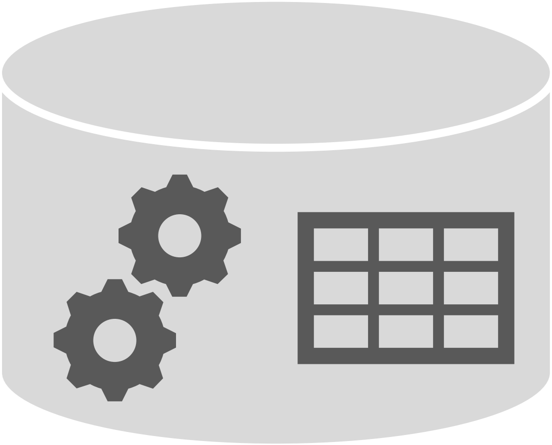
Databases vs Flat files

Flat files

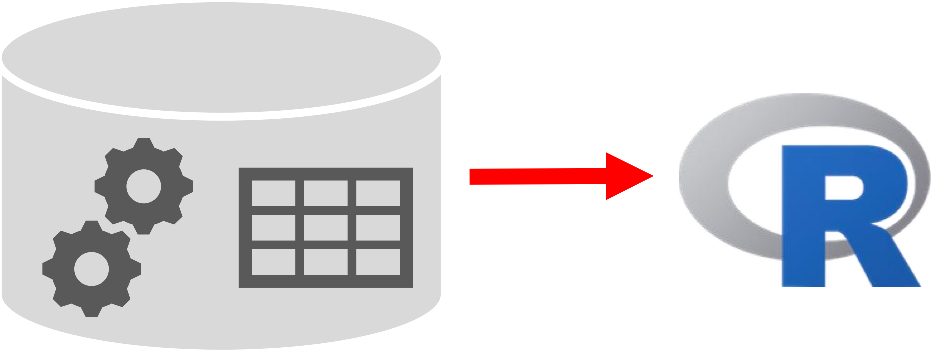
Data only

Databases

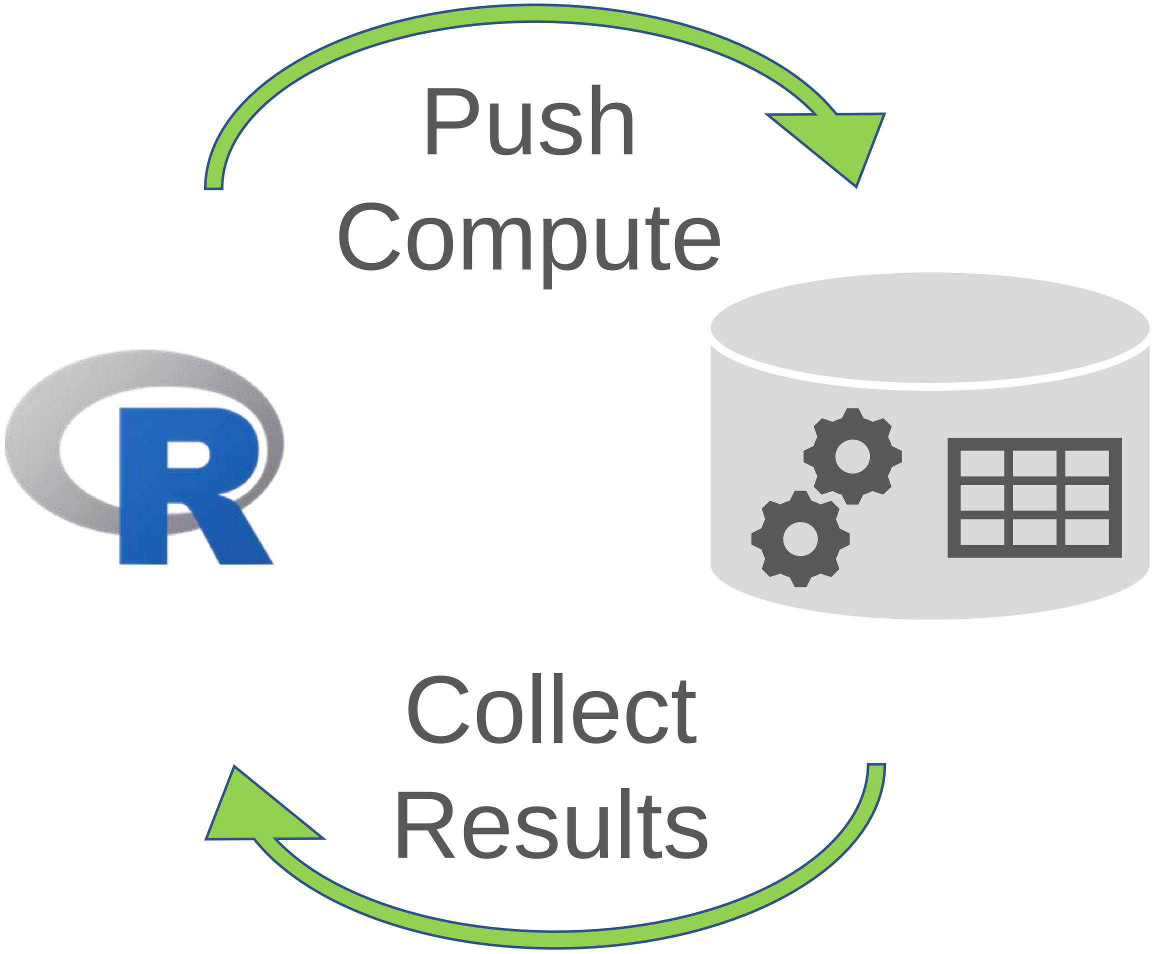
Data & SQL engine



Wrangle inside the DB



Extract
Data



Push
Compute

Collect
Results

Options to Push Compute

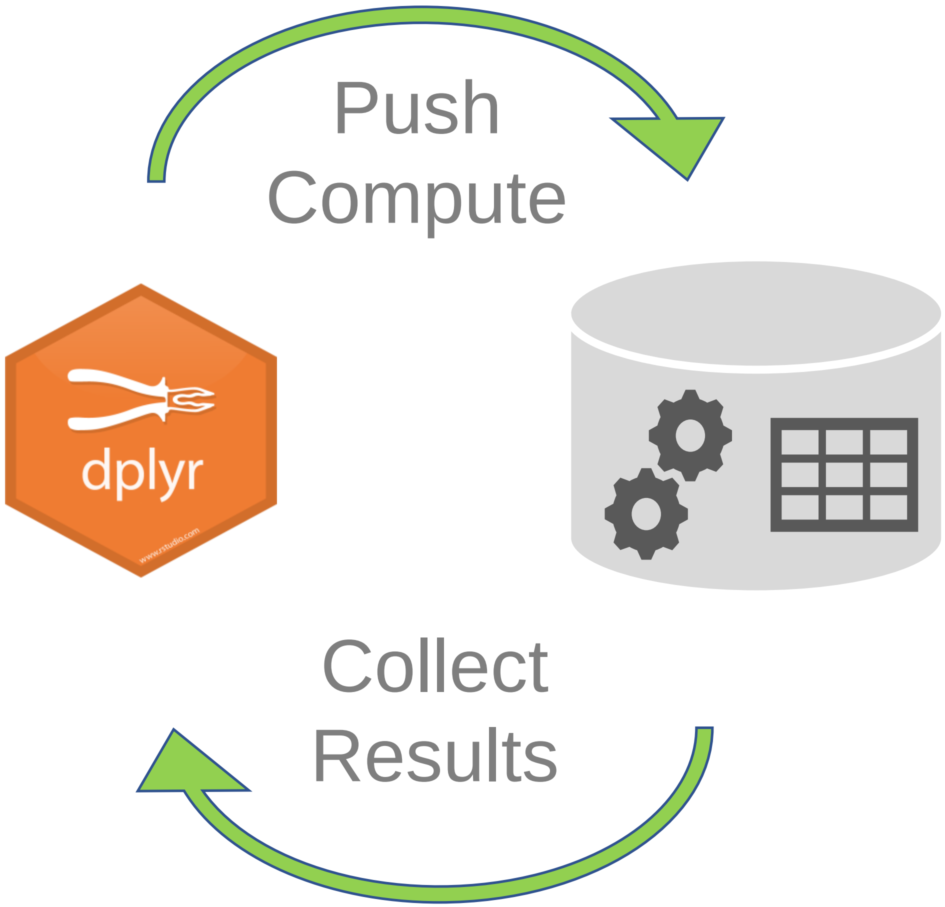
Write SQL statements

```
SELECT "name",
COUNT(*) AS "n"
FROM "vwFlights"
GROUP BY "name"
```

Use dplyr verbs

```
flights %>%
  group_by(name) %>%
  tally()
```

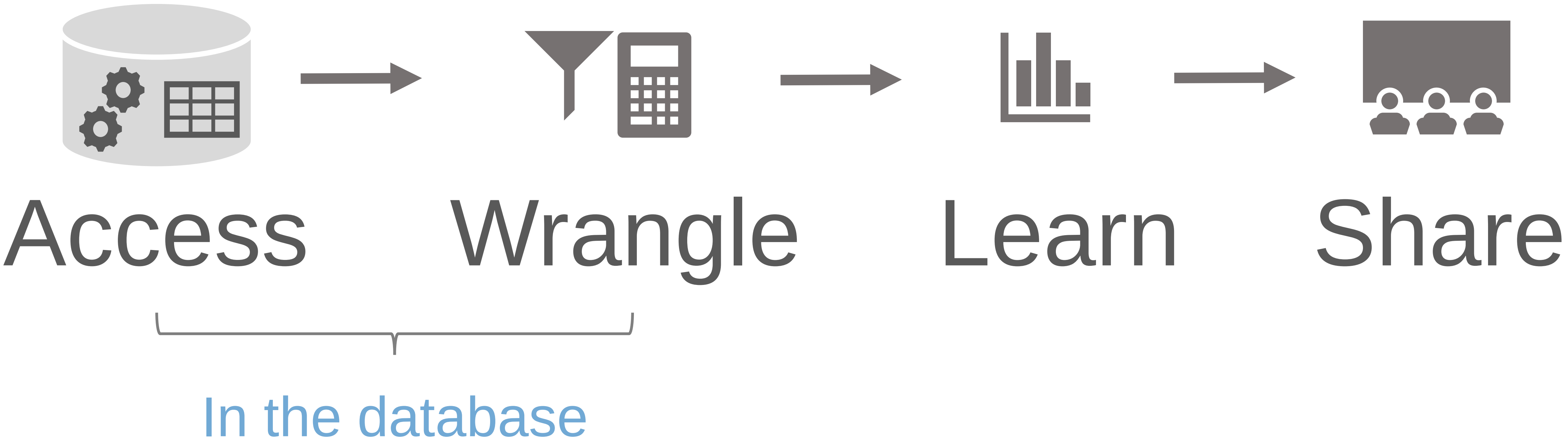
Advantages



1. dplyr translates to SQL
2. Take advantage of piped code
3. All your code is in R!

RStudio

DS project using DBs



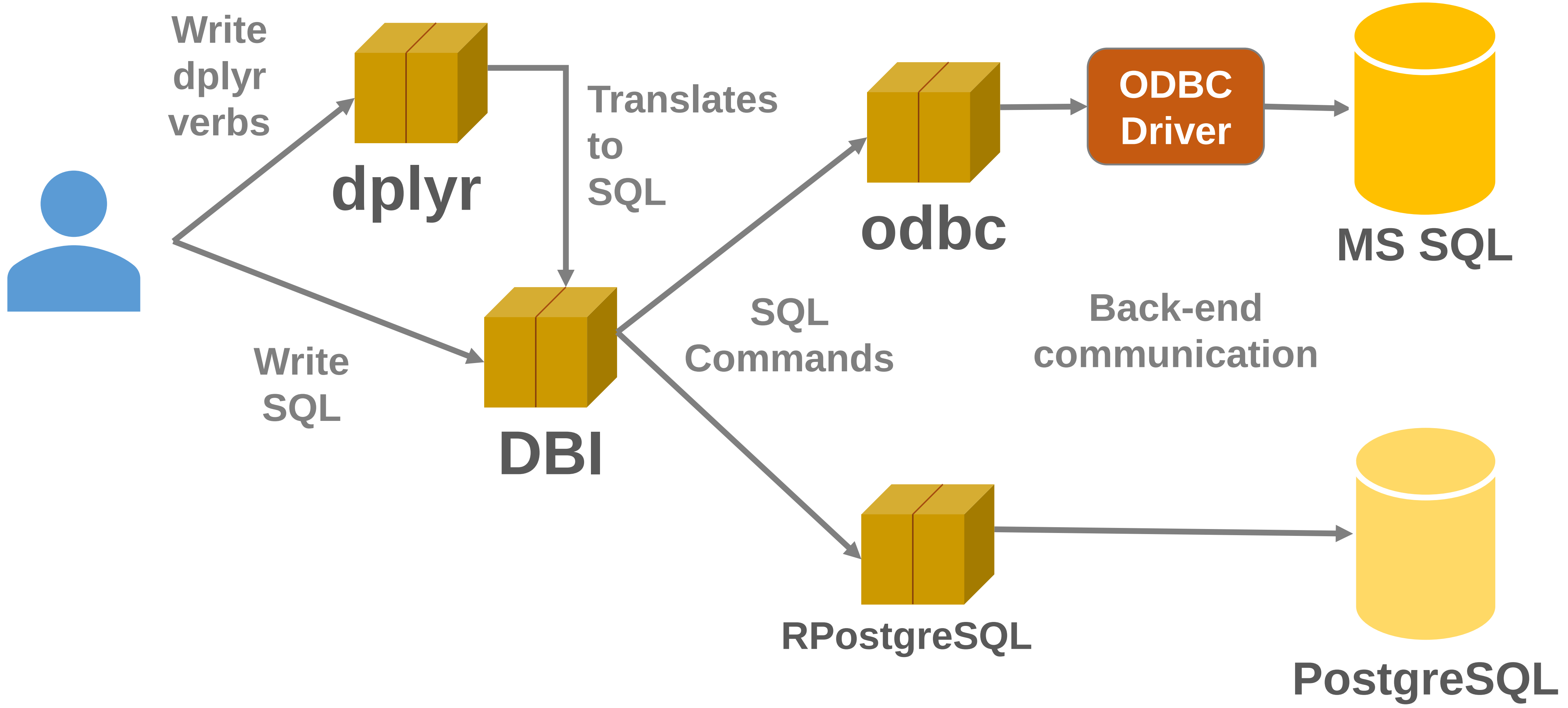
Access → Wrangle → Learn → Share

In the database

Packages

1. **dplyr** – Simplifies data wrangling
2. **dbplyr** – Provides database specific translation
3. **DBI** – Common interface for Databases and R
4. **DB R Package** – Provides a back-end interface for a specific database, such as **RPostgreSQL**
5. **odbc** – Provides a back-end interface to a database using an ODBC driver

Architecture



Studio

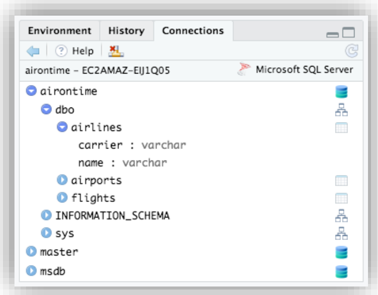
Translations available in *dbplyr*

1. Microsoft SQL Server
2. Oracle
3. Apache Hive
4. Apache Impala
5. PostgreSQL
6. MS Access (GitHub)
7. MariaDB (MySQL)
8. SQLite
9. Amazon Redshift (GitHub)
10. Teradata (GitHub)

How to access a database

1. **R Package** – As implemented by *RPostgreSQL and others*
2. **ODBC** - As implemented in *odbc* package
3. **JDBC** - As implemented in *RJDBC* and other

RStudio’s approach to Databases

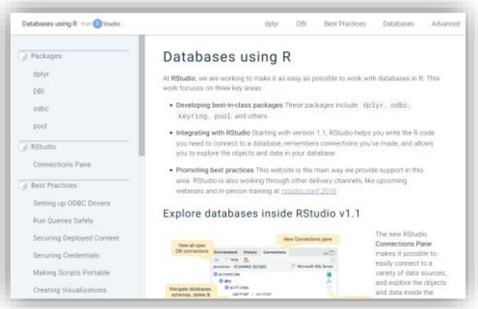


1. RStudio v1.1 Integration

- View databases, schemas, tables, and fields
- Explore data in tables or views
- Remembers connections you’ve made

2. Utilize best-in-class packages

- dplyr
- odbc
- DBI



Databases using R

At **RStudio**, we are working to make it as easy as possible to work with databases in R. This work focuses on three key areas:

- **Developing best-in-class packages** These packages include: `dplyr`, `odbc`, `keyring`, `pool` and others.
- **Integrating with RStudio** Starting with version 1.1, RStudio helps you write the R code you need to connect to a database, remembers connections you've made, and allows you to explore the objects and data in your database.
- **Promoting best practices** This website is the main way we provide support in this area. RStudio is also working through other delivery channels, like upcoming webinars and in-person training at rstudio::conf 2018

Explore databases inside RStudio v1.1

The new RStudio **Connections Pane** makes it possible to easily connect to a variety of data sources, and explore the objects and data inside the

3. Promoting best practices

- db.rstudio.com
- Training & presentations
- Blog posts (rviews.rstudio.com)

Links

- Materials: https://github.com/edgararuiz/odsc-2017
- DB site: http://db.rstudio.com/
- DB posts: https://rviews.rstudio.com/categories/databases/