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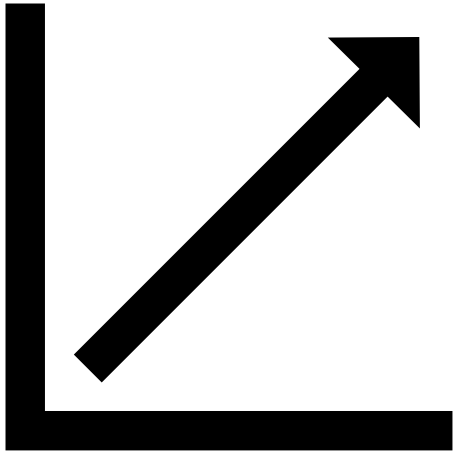
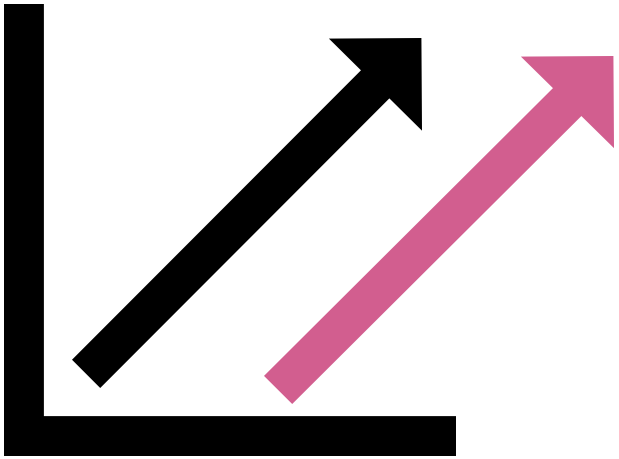
Single Day Event

Re-writing our global validation process for SAS programs using R, Azure DevOps and Git: a case study of code validation in a multi-lingual environment

Matthew Phelps & Nicolai Skov Johnsen
Novo Nordisk

Views and opinions expressed are those of the speakers and not necessarily Novo Nordisk





- Maintenance/Updates

- Maintenance/Updates
- Monolithic code

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- Monolithic code
- Manual versioning


DROWNING IN VALIDATION
STANDARD PROGRAMS
VALIDATE STANDARD PROGRAM
Gudim.
imgflip.com

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- Unit-testing
- Modularized code
- CI/CD infrastructure

UNIX

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UNIX

R Studio

python™

sas

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Tech landscape

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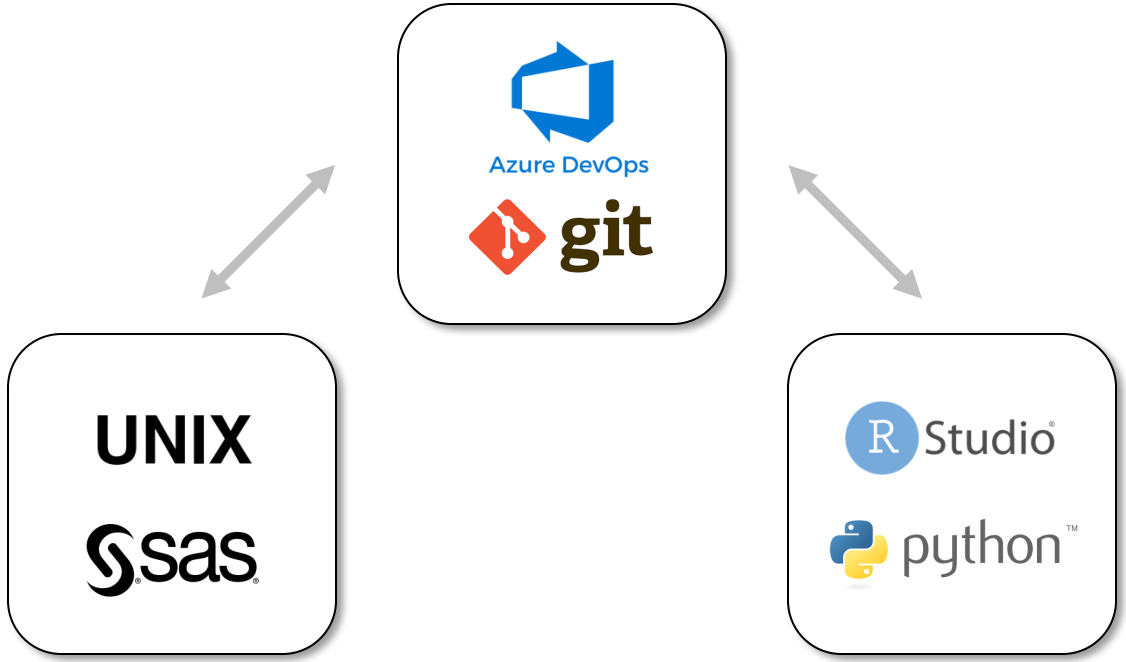

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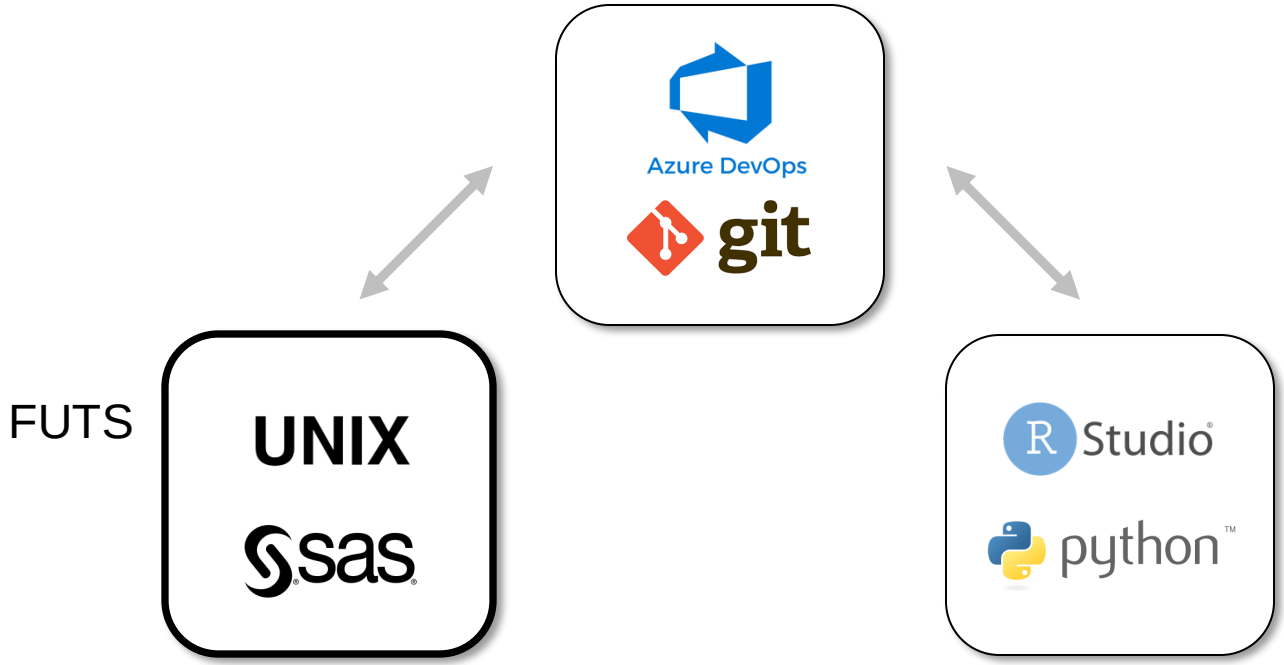

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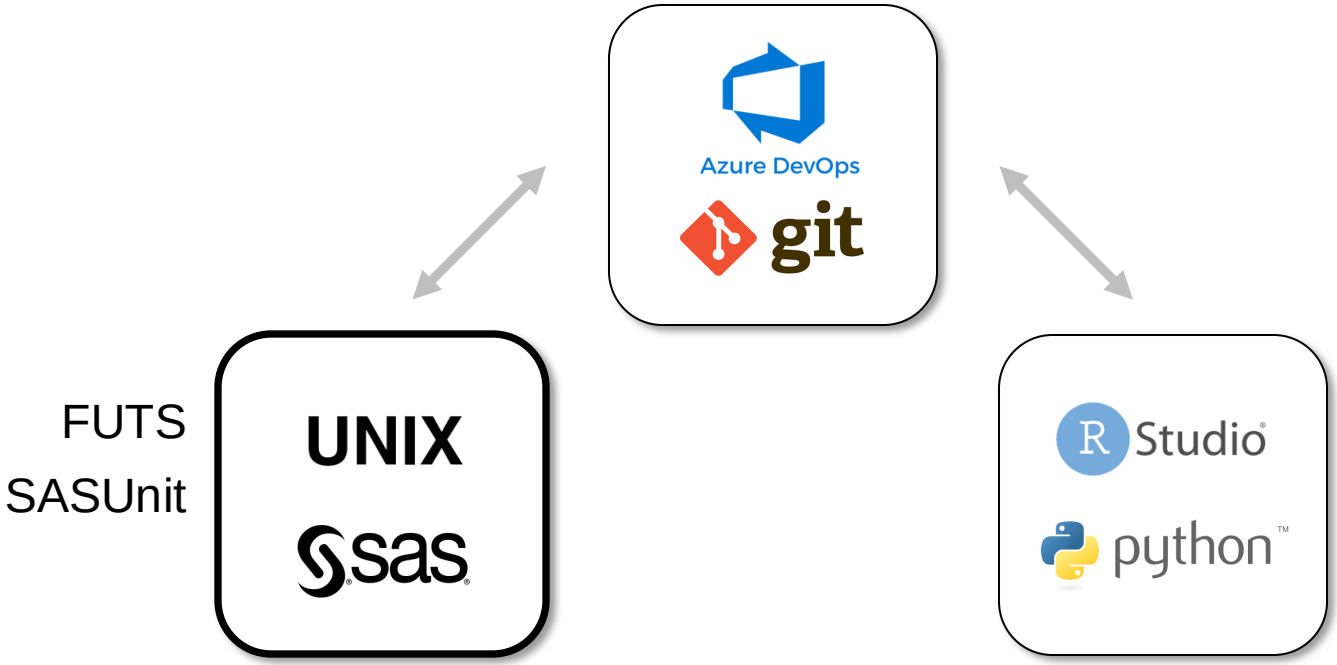

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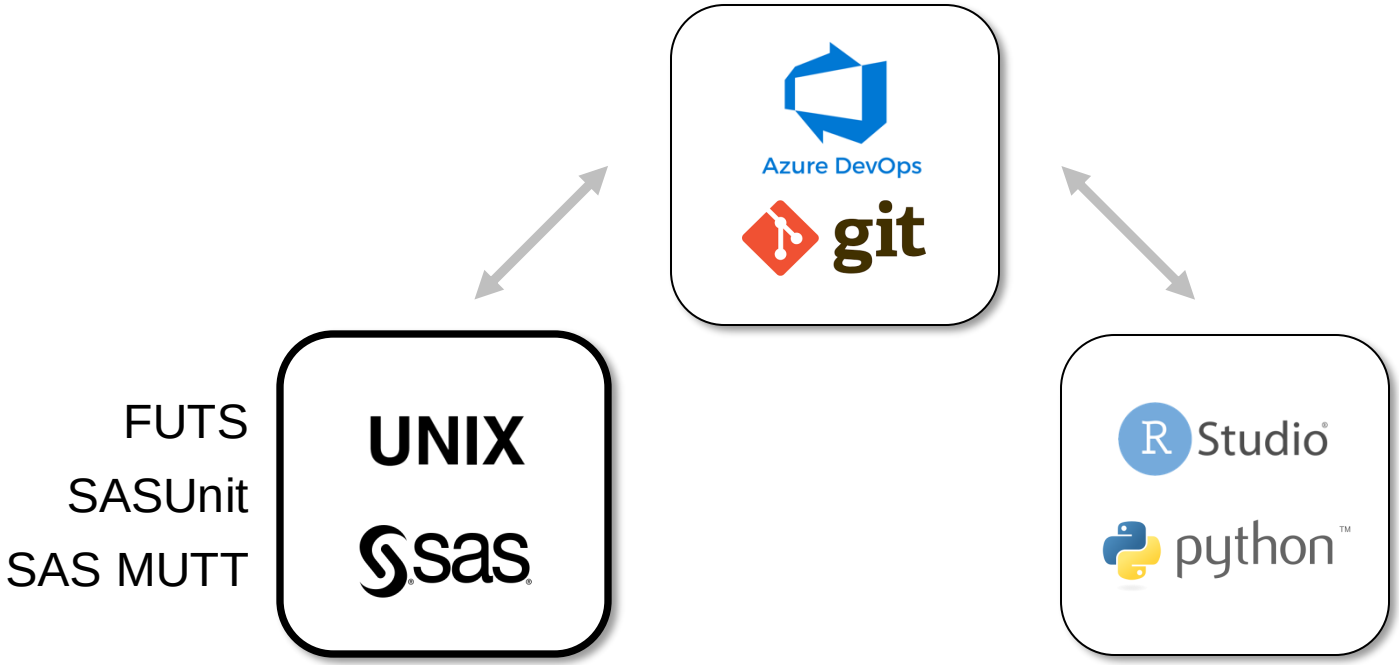

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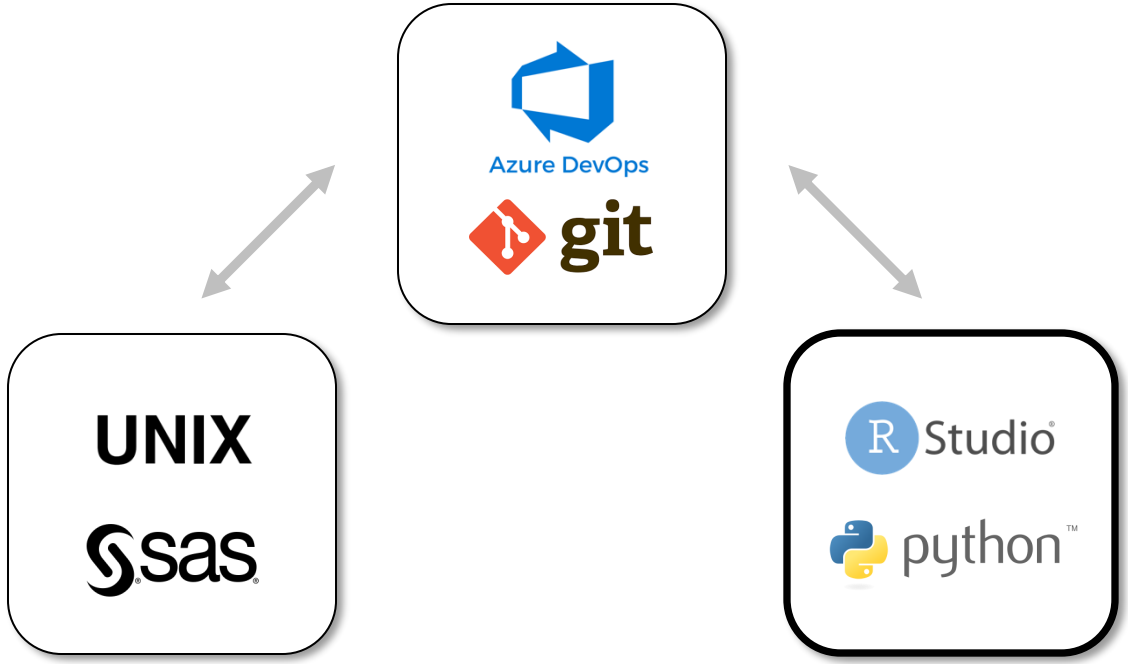

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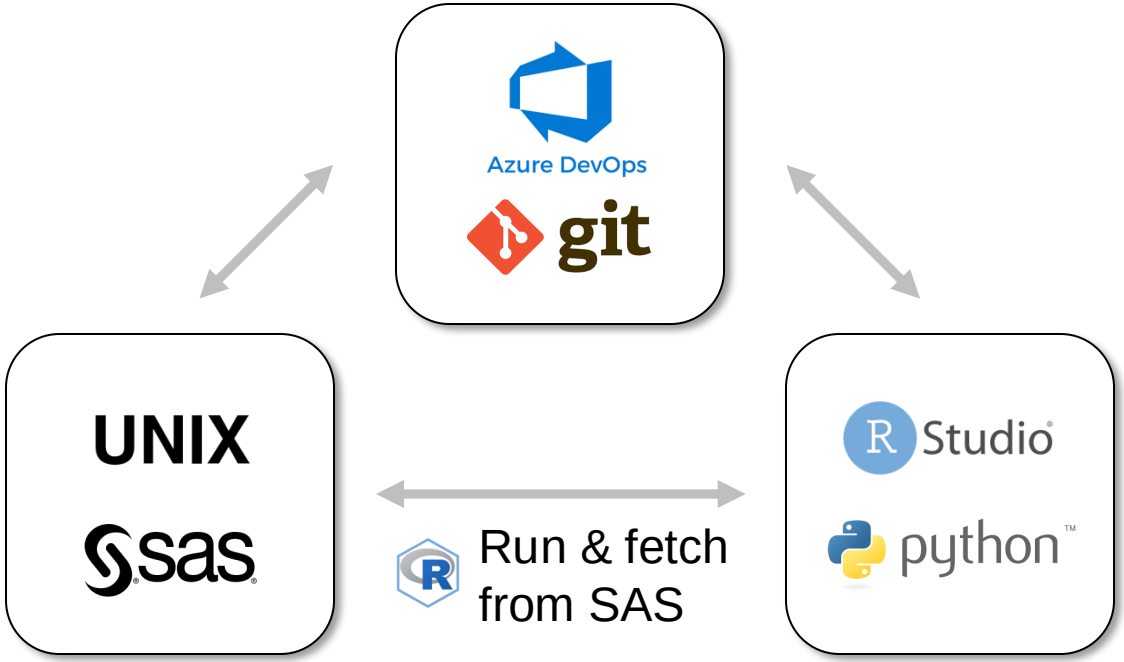

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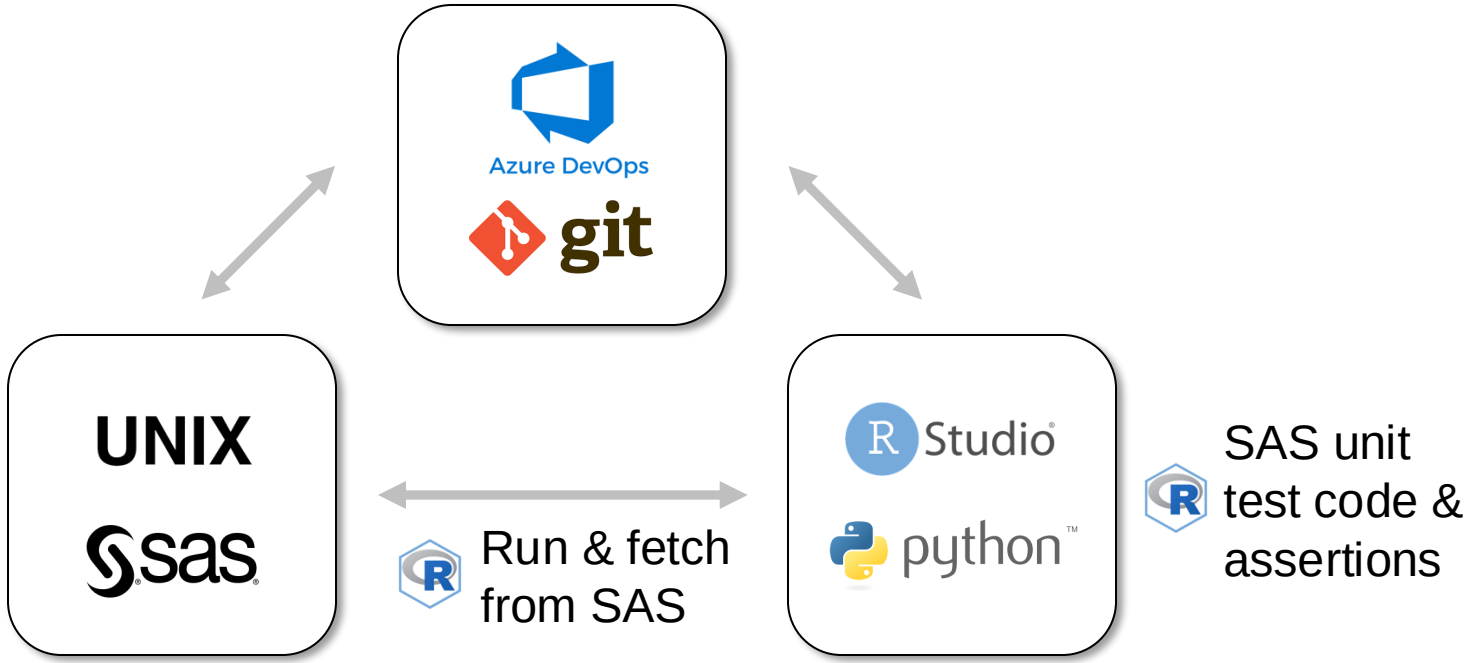

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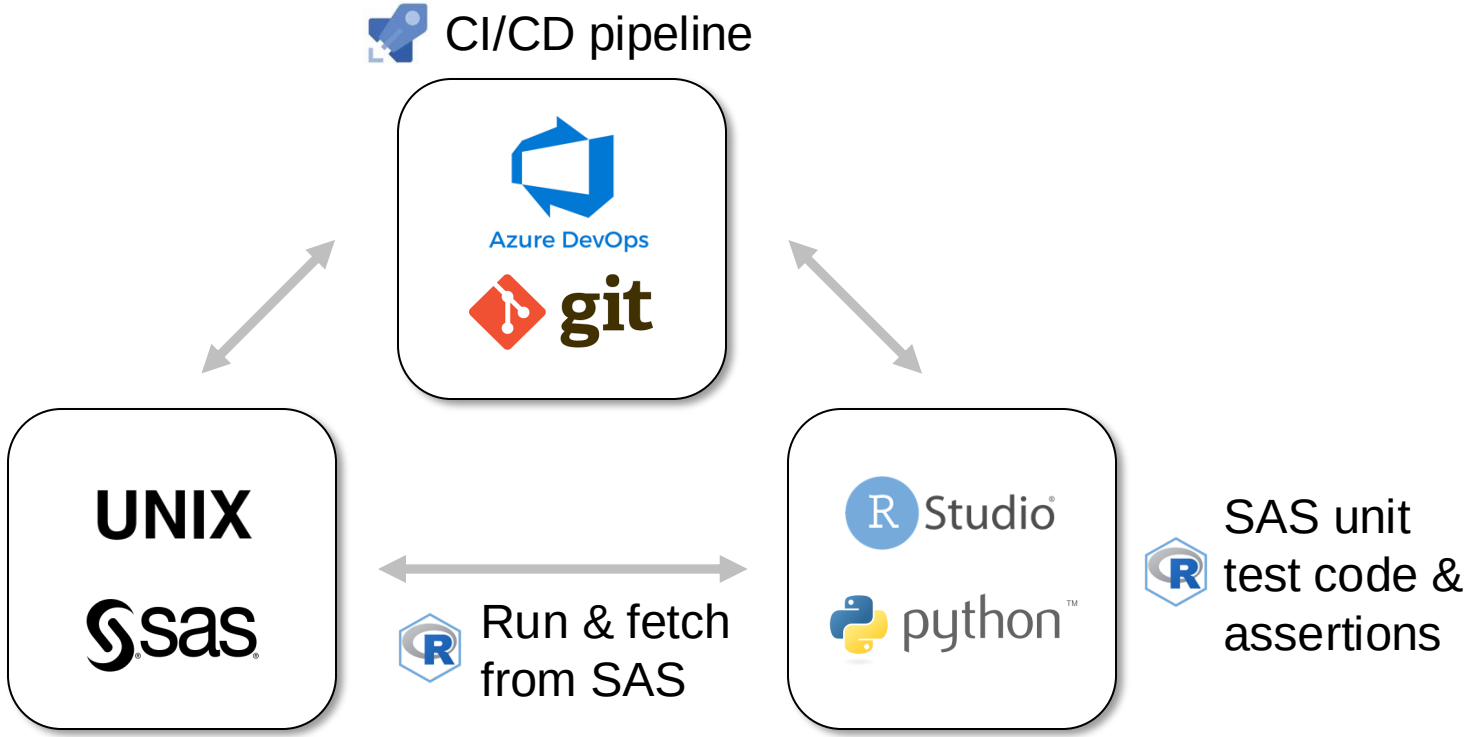

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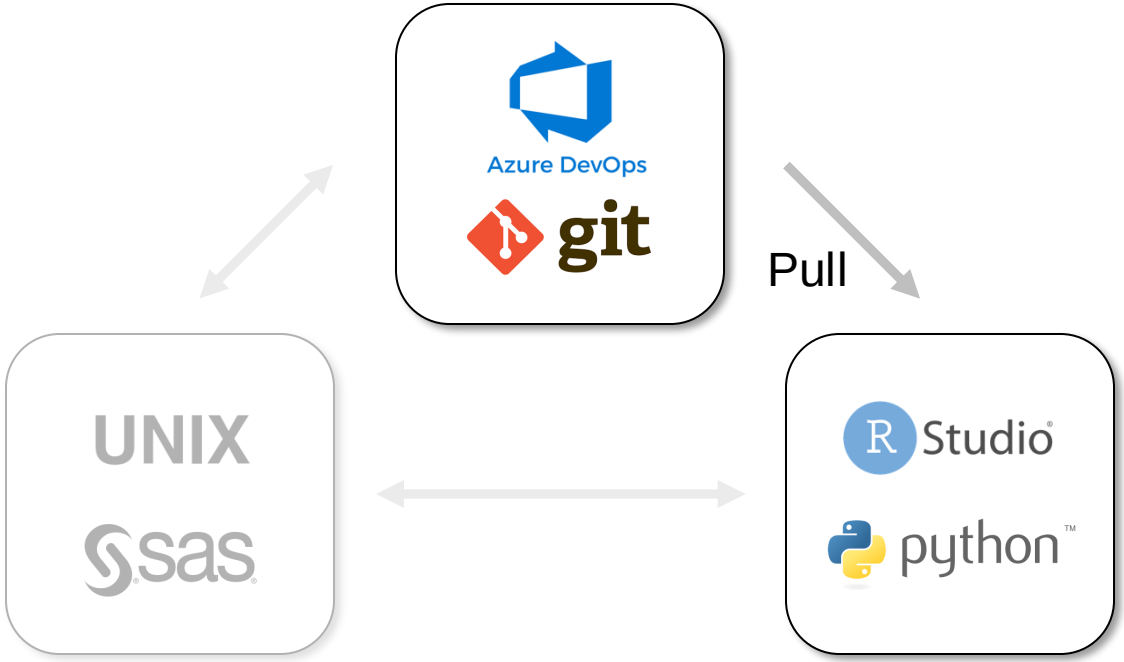

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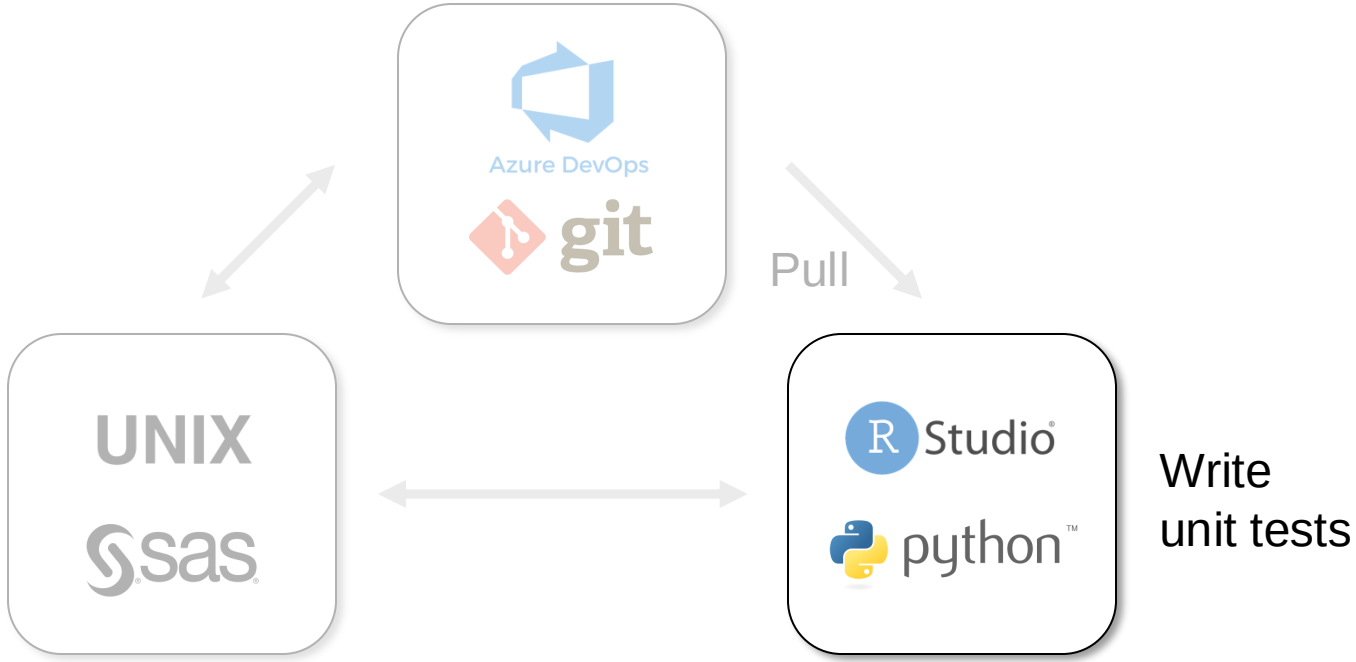

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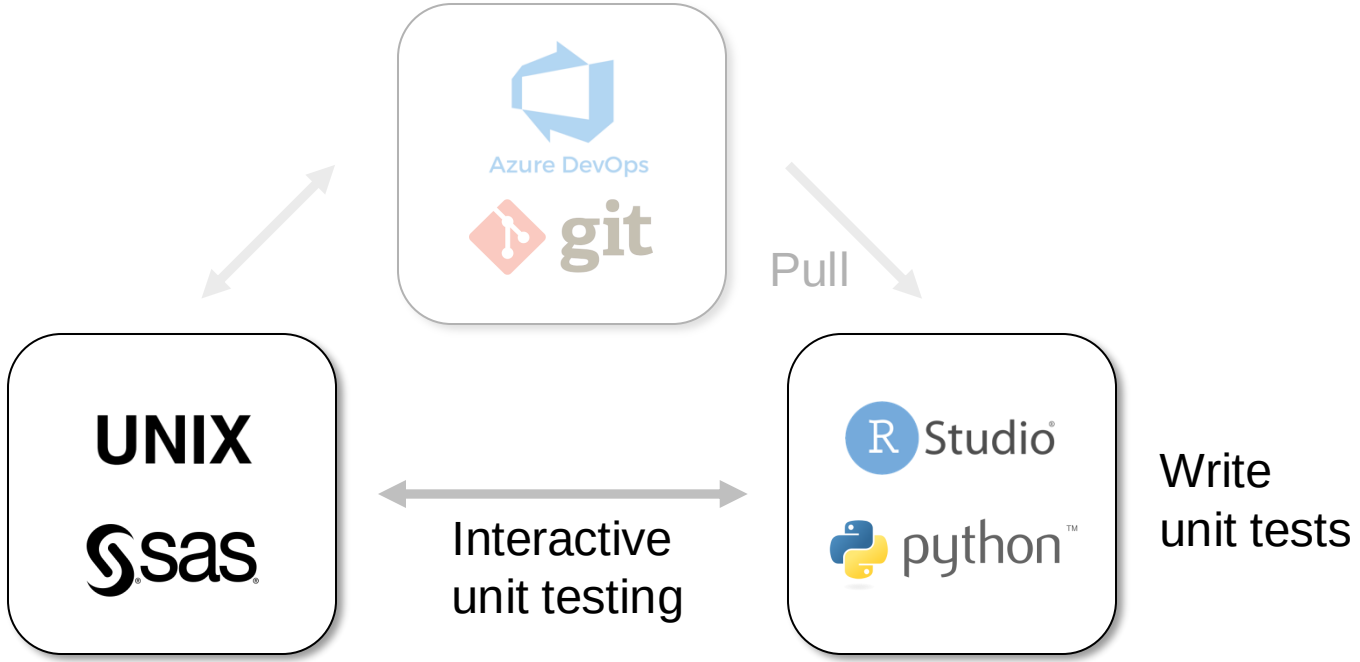

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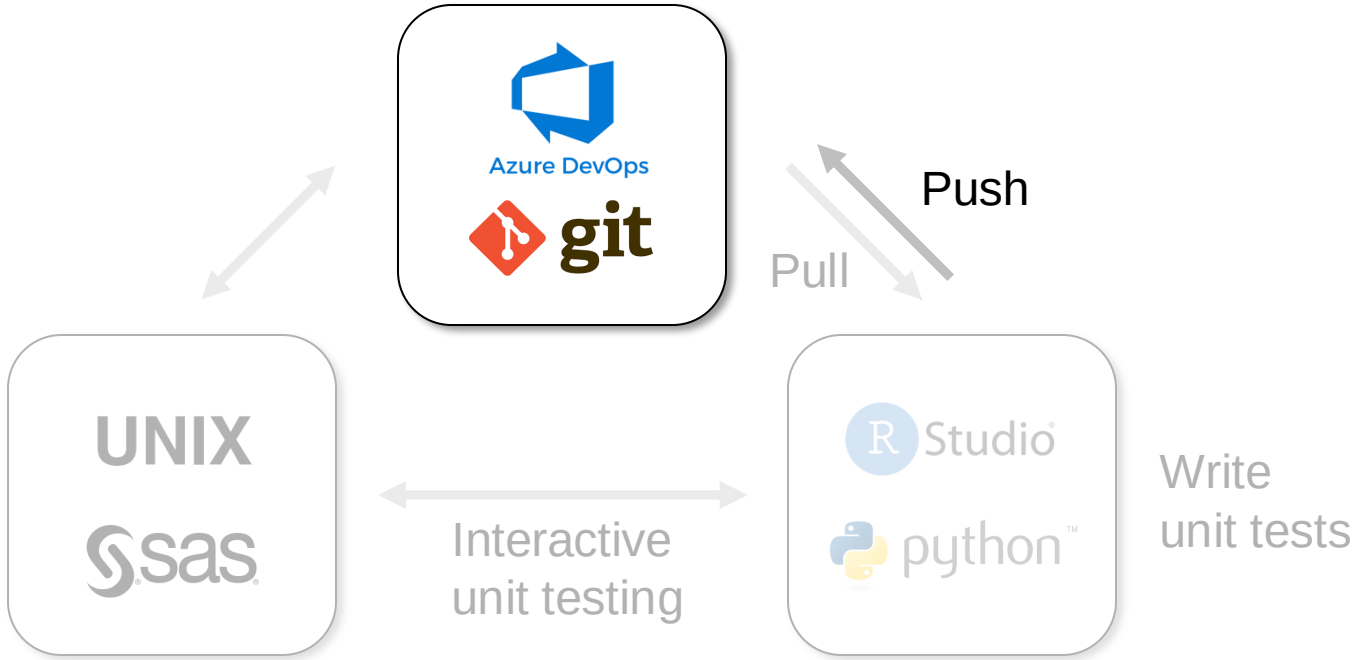

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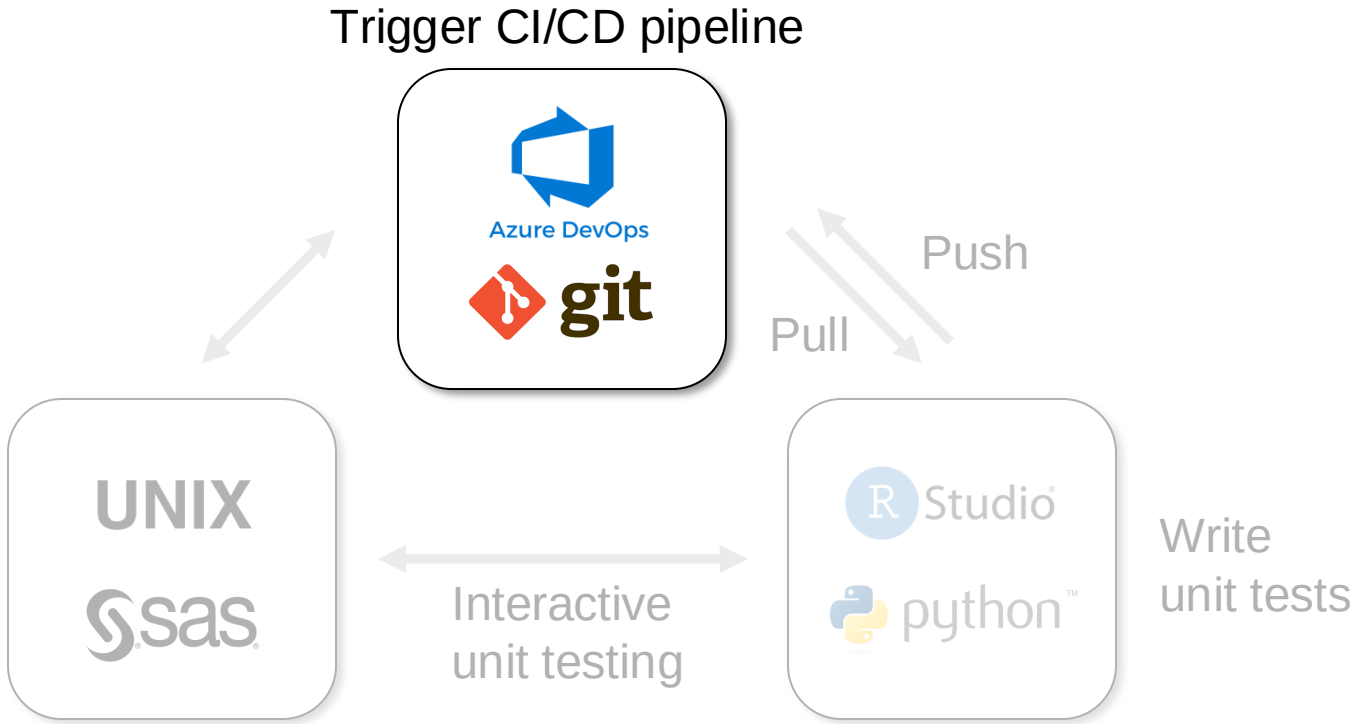

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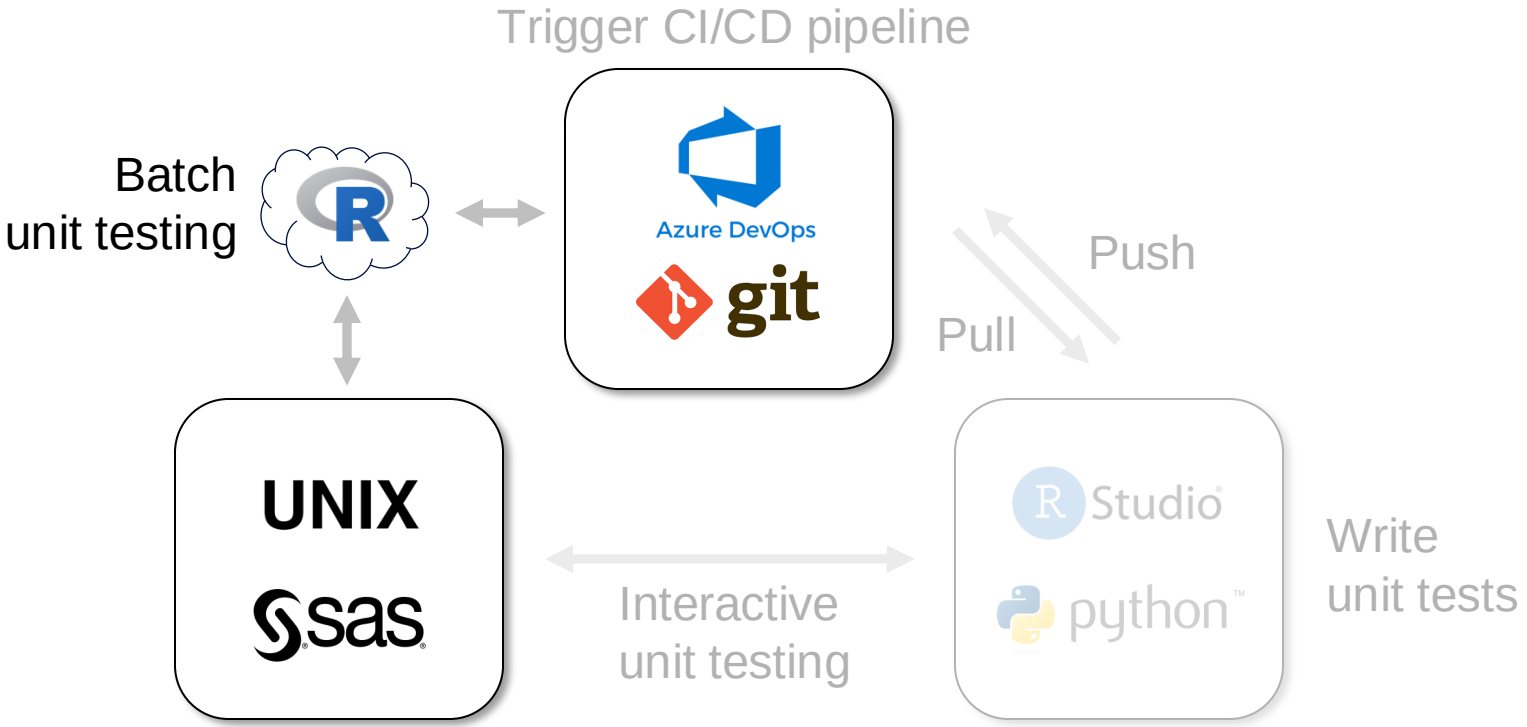

Demo

Code to test

```
%macro update_students(new_students, min_height);

    /* Check that min_height is positive */
    %if &min_height. <= 0 %then %do;
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    /* Combine tables and add session_tag variable */
    data new_class;
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Unit test

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test_that("update_students - basic test", {
  # SETUP ---------------------------------------------------------------------

  # Test data
  data_from_r <- data.frame(Name = "Peter", Height = 61)

  # Macro function
  update_students <- SASunittest::r_function_from_sas_macro("update_students")

  # Prepare SAS code
  macro_code <- update_students(new_students = "rin.data_from_r",
                                min_height = 0)

  # ACT -----------------------------------------------------------------------

  # Run SAS code
  out <- NNremote::SAS(main_code  = macro_code,
                       data_input = list("data_from_r" = data_from_r))

  # EXPECT --------------------------------------------------------------------

  # Extract new_class
  test_out <- out[["tables"]][["new_class"]]

  # Check number of rows
  testthat::expect_equal(nrow(test_out), 20)

  # Check length of Name
  testthat::expect_equal(attr(test_out[["Name"]], "length"), "8")

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People

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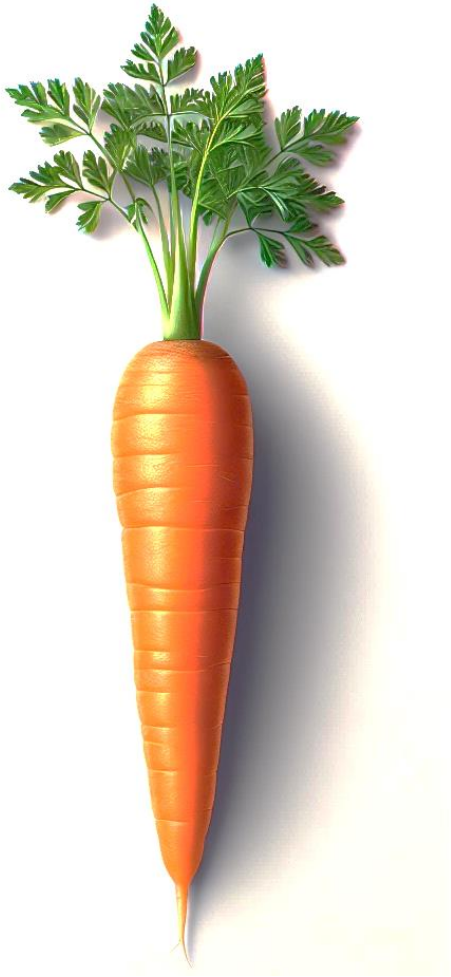
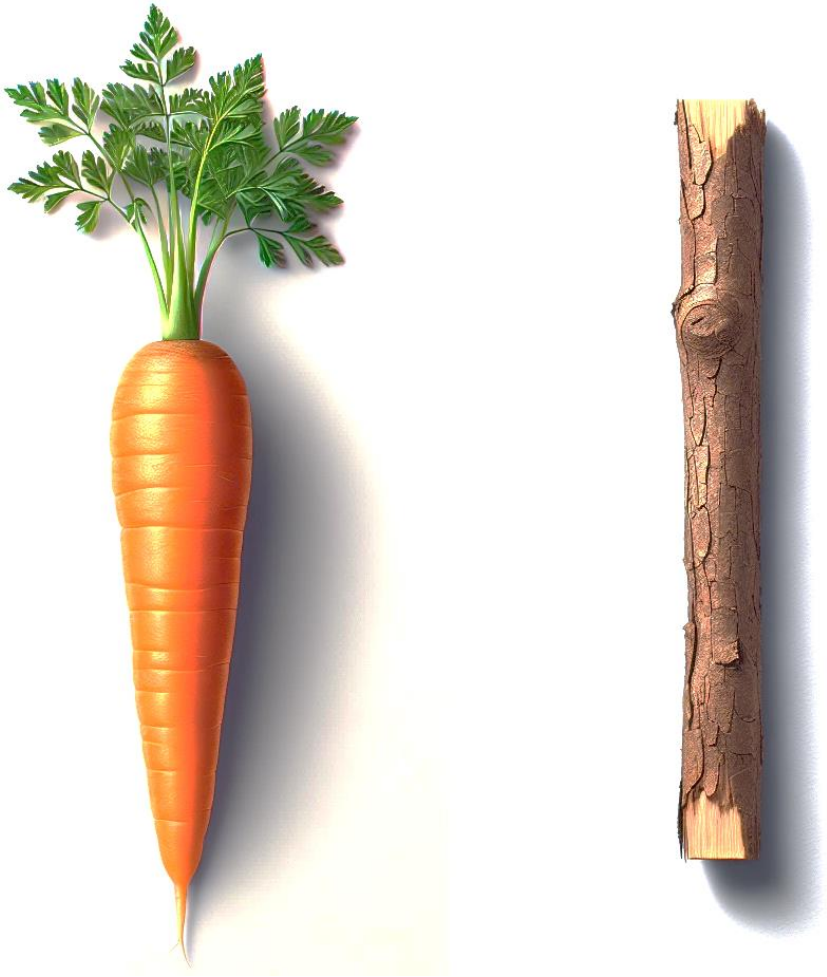


People



People

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Perspectives

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Perspectives

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Perspectives

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- Foundation for future?

Matthew Phelps
mewp@novonordisk.com

Michael Hedegaard Thomsen
mhzt@novonordisk.com

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The Global Healthcare Data Science Community