

Friends are better with Everything

Using PROC FCMP Python Objects in Base SAS

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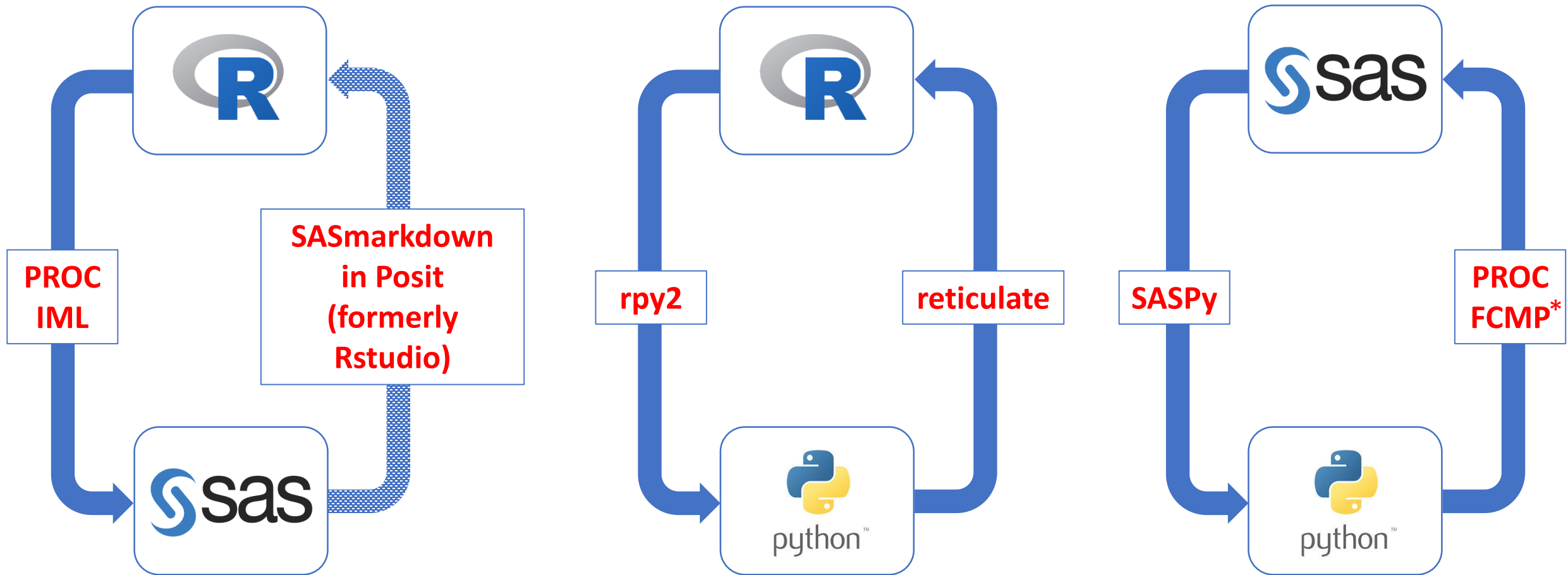
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Open Source Section • WUSS 2022 • 3:30 p.m. on 15SEP2022

Data Work in a Polyglot World



* SAS Viya also provides PROC PYTHON

Embedding SAS in Python Scripts

sas

```
import saspy  
sas = saspy.SASsession()
```

```
sas.df2sd(  
    python_df, libref=..., table=...)
```

Pass Values in

```
sas.submit(  
    <actual SAS code>)
```

**Execute
Arbitrary Code**

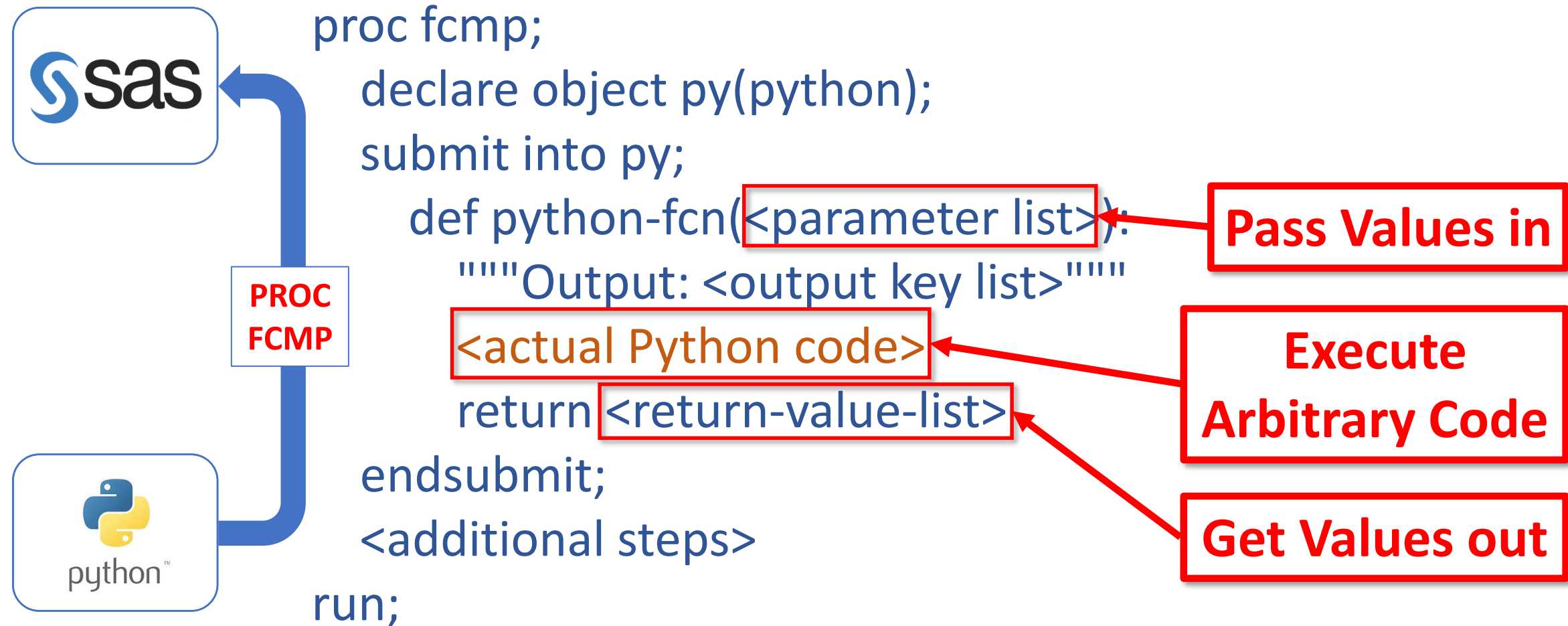
```
python_df = sas.sd2df(  
    libref=..., table=...)
```

Get Values out

SASPy


python™

Embedding Python in SAS Programs



Functions

vs

Call Routines

```
options cmplib=work.funcs;
proc fcmp outlib=work.funcs;
```

```
function hello (name $
```

```
msg = 'Hello, ' || name;
```

```
return(msg);
```

```
endfunc;
```

```
run;
```

```
data _null_;
```

```
message = hello ('WUSS');
```

```
put message=;
```

```
run;
```

```
%put %sysfunc(hello (WUSS));
```

```
proc sql; select hello(...) into ...
```

**one or more
input values**

**only one
output value**

**usable
in many
places**

```
options cmplib=work.funcs;
```

```
proc fcmp outlib=work.funcs.sas;
```

```
subroutine hello_goodbye(name $, msg1 $, msg2 $);
```

```
outargs msg1, msg2;
```

```
msg1 = 'Hello, ' || name;
```

```
msg2 = name || ', Goodbye!';
```

```
endsub;
```

```
run;
```

```
data _null_;
```

```
call hello_goodbye(
  'WUSS', msg1, msg2);
```

```
put msg1=;
```

```
put msg2=;
```

```
run;
```

**one or more
output values**

**only usable in
DATA steps**

Code Vignettes

Theme. Strategically using Python to enhance SAS programming

Example 1. Python in PROC FCMP hello-world (as a function)

Example 2. Email Validation (using Python inside a function)

Example 3. Python in PROC FCMP hello-world (as a call routine)

Example 4. Geocoding (using Python inside a call routine)

Example 5. Turning YAML into a SAS Dataset

(using Python with SASPy inside of PROC FCMP)

Call to Action!

- **Takeaway.** Using SAS and Python, each according to its strengths, gives us the best of both worlds
- **Read.** No. 93 in WUSS 2022 Proceedings for more about Python in SAS (via PROC FCMP)
- **Read.** No. 142 in WUSS 2019 Proceedings for more about SAS in Python (via SASPy)
- **Replicate.** Full Conference Paper with more examples and downloadable code on GitHub

