



HTMap

European HTCCondor Workshop 2020

Todd Tannenbaum
Center for High Throughput Computing

Goal: Bring distributed High Throughput Computing into the scientific Python environment

HTMap

Using Python Map



```
# Describe work
```

```
def double(x):  
    return 2 * x
```

```
# Do work
```

```
doubled = map(double, range(10))
```

```
# Use results!
```

```
print(list(doubled))
```

```
# [0, 2, 4, 6, 8, 10, 12, 14, 16, 18]
```

Using Python Map



What if this function takes
minutes/hours ?

Describe work

```
def double(x):  
    return 2 * x
```

Do work

```
doubled = map(double, range(10))
```

Use results!

```
print(list(doubled))
```

```
# [0, 2, 4, 6, 8, 10, 12, 14, 16, 18]
```

What if you had hundreds or
thousands of inputs ?

Using HTMap

```
import htmap

# Describe work
def double(x):
    return 2 * x

# Do work
doubled = htmap.map(double, range(10))

# Use results!
print(list(doubled))
# [0, 2, 4, 6, 8, 10, 12, 14, 16, 18]
```

Using HTMap

```
import htmap
```

```
# Describe work
```

```
def double(x):  
    return 2 * x
```

```
# Do work
```

```
doubled = htmap.map(double, range(10))
```

```
# Use results!
```

```
print(list(doubled))
```

```
# [0, 2, 4, 6, 8, 10, 12, 14, 16, 18]
```

This is an iterable object with methods to handle asynchronous properties



Using HTMap Tags

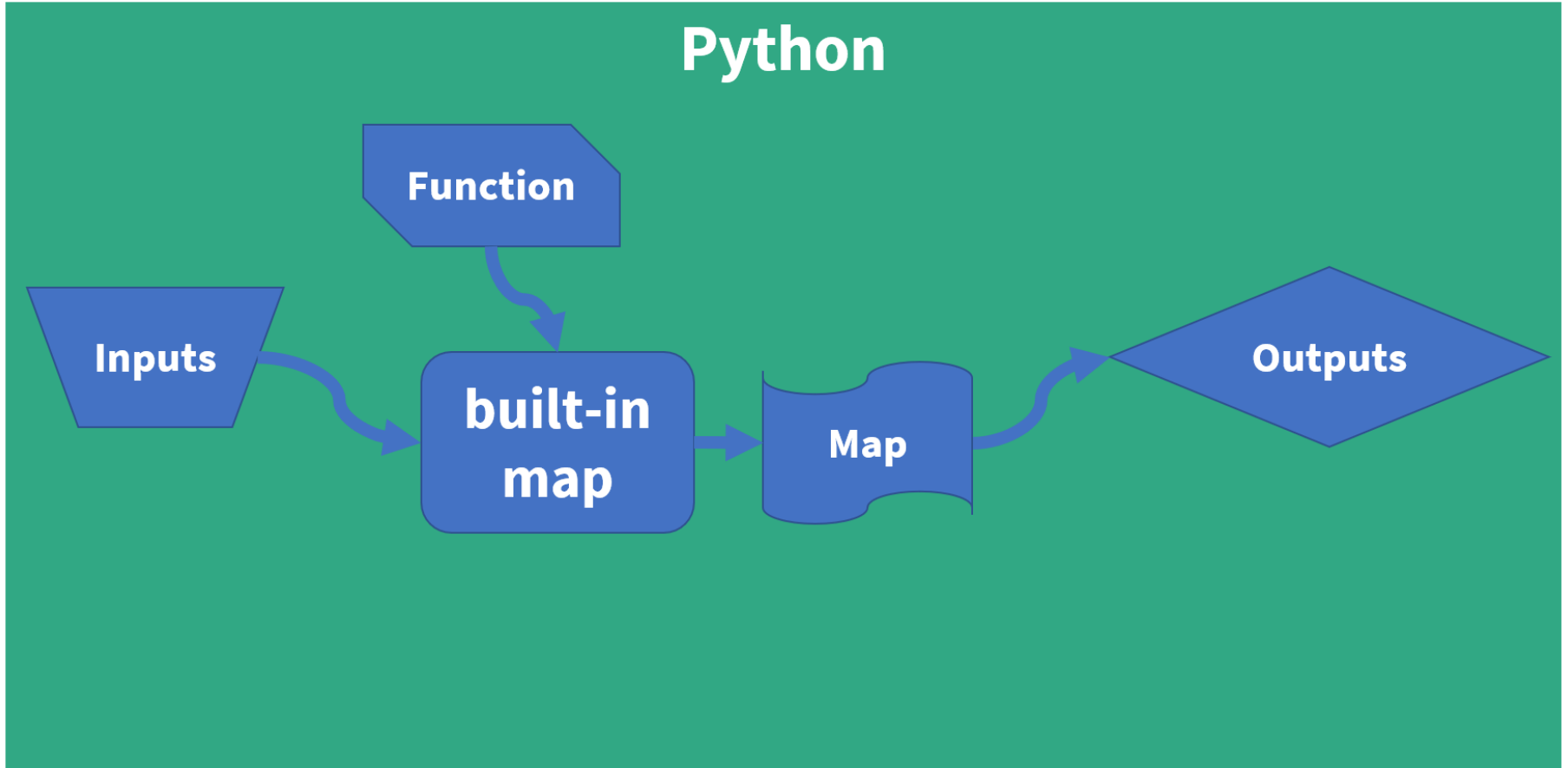
```
import htmmap

# Describe work
def double(x):
    return 2 * x

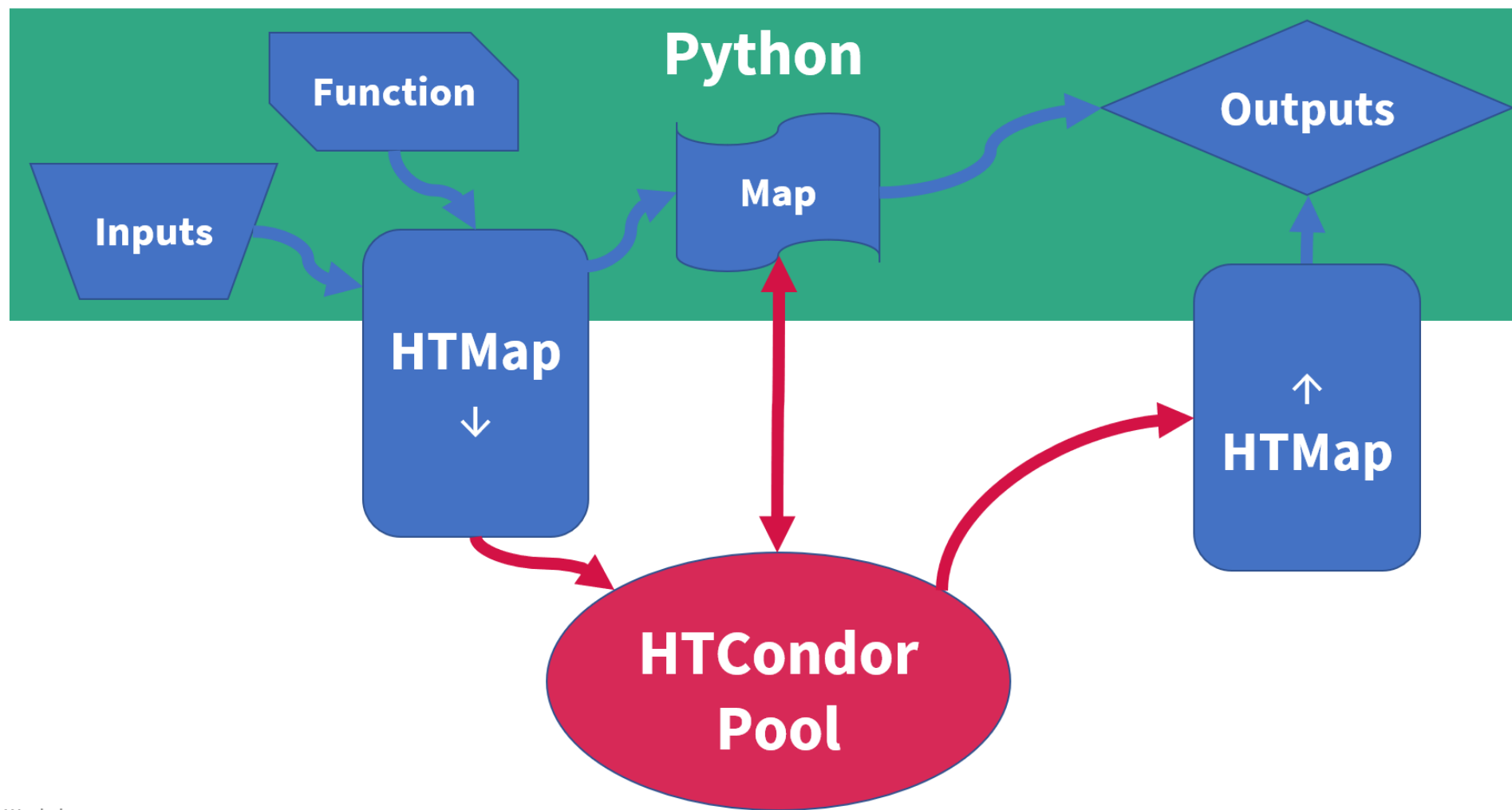
# Do work
doubled = htmmap.map(double, range(10), tag="Simulation1")

# Use results!
print(list(doubled))
# [0, 2, 4, 6, 8, 10, 12, 14, 16, 18]
```


Python Map

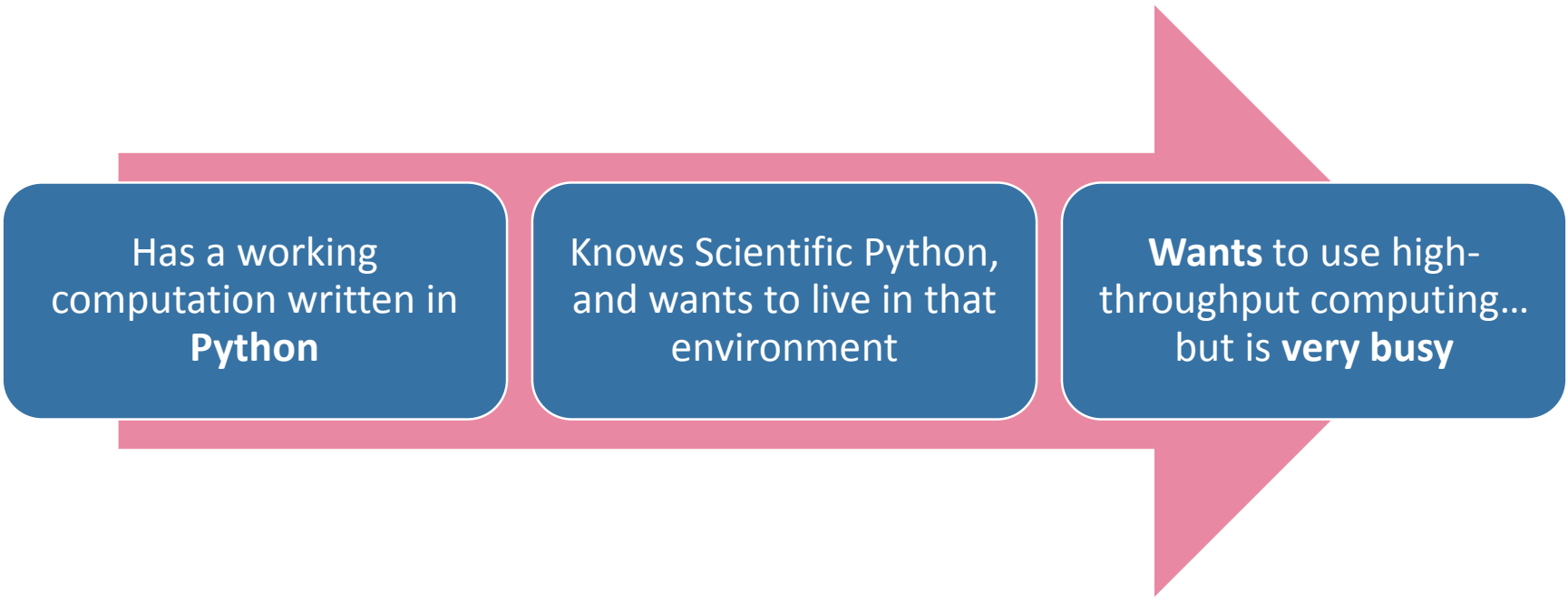


HTMap



Workshop 2019 9 16

Who is HTMap ideal for?




Has a working
computation written in
Python

Knows Scientific Python,
and wants to live in that
environment

Wants to use high-
throughput computing...
but is **very busy**

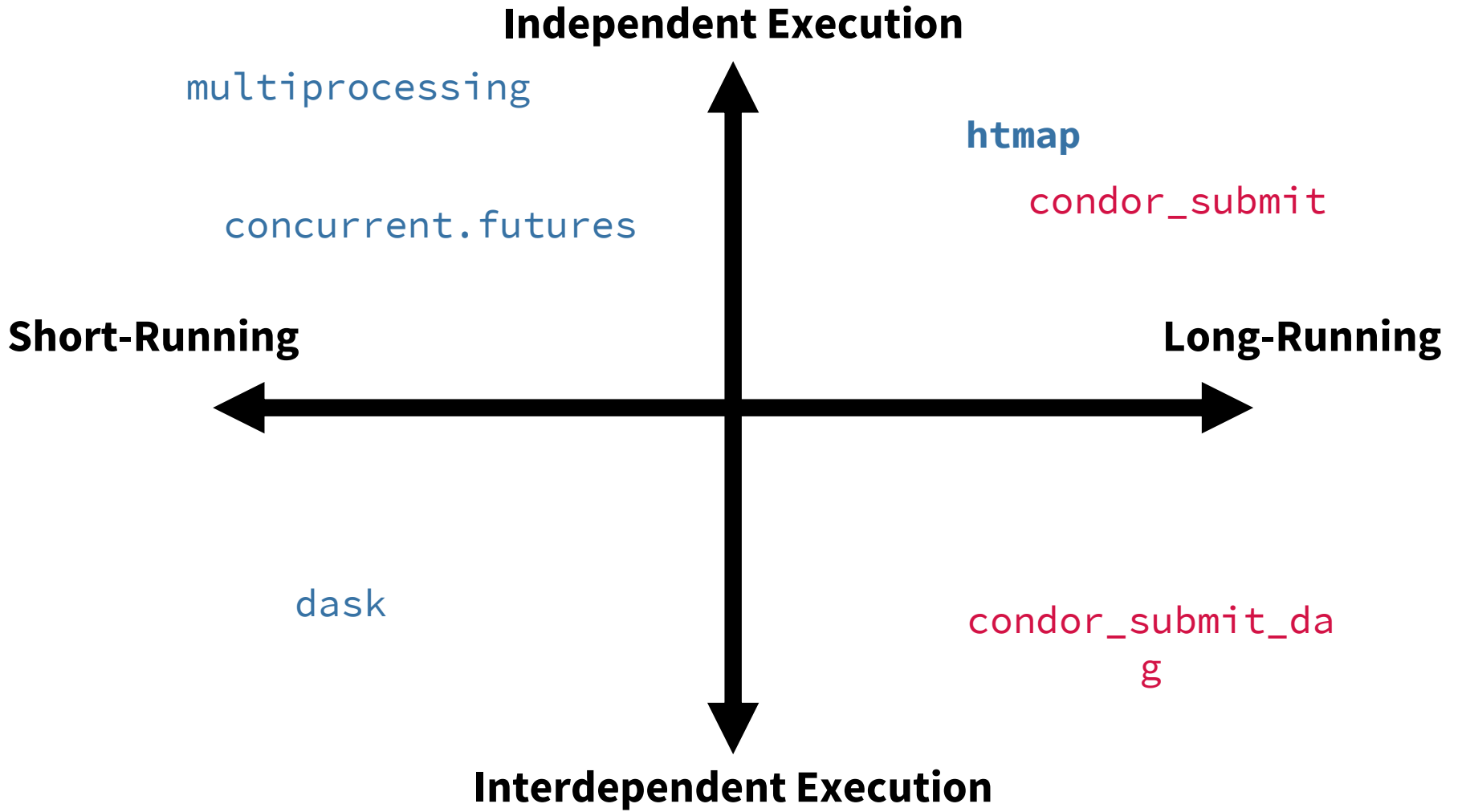
Who is HTMap **NOT** ideal for?



“The output of my analysis isn't a Python object”

“My function takes a millisecond to run”

“But I don't use Python...”



Interested?
Live tutorials and full
documentation at URL:

<https://github.com/htcondor/htmap>

(and you also may be interested in our High-Throughput Computing Notebooks : see <https://github.com/htcondor/htc-notebook>)