

# Webinar@Lunchtime

CASL - Eine Einführung

Webinar@Lunchtime



# Herzlich Willkommen bei Webinar@Lunchtime



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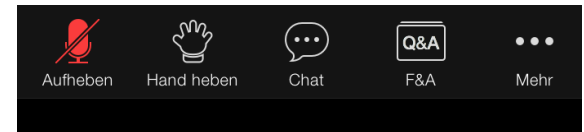
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## Hinweise zum Ablauf des Webinars:

Teilnehmer sind automatisch “stumm” geschaltet

Sie können die Hand heben oder eine Frage stellen

Die Veranstaltung wird aufgezeichnet und mit den Unterlagen auf [www.sas.de/lunchtime](http://www.sas.de/lunchtime) zur Verfügung gestellt





# Agenda

Basics

CASL Variables

CASL Functions

Running CAS Actions

Example, loading all files in CAS library



# Basics

New kid on the block with SAS9.4M5



# Basics

Where can it run

SAS side using Proc CAS

CAS Server Side

`sccasl.runCasl` action

Create udf CAS action  
`builtins.defineActionSet`

# Basics

## CASL programming components



# Basics

## Proc CAS

```
PROC CAS;  
    statement(s);  
RUN;  
    statement(s);  
RUN;  
QUIT;
```

### Statement(s):

- CASL Statements
- SAS Global Statements

# Basics

## CASL Statements

Some we know from the DATA Step

- IF THEN/ELSE, DO/END, SELECT, Assignment, ...

Some we know, but they do something different

- FILE, OUTPUT, DELETE, ...

Specific to CASL

- ACTION, DESCRIBE, SAVERESULT, SESSION, ...



# CASL Variables

## Most Common Data Types

Numeric

String

Boolean

Array

Dictionary

Table

# CASL Variables

## Data Type Details



### Array

Ordered list of values

Can be of mixed type

Dynamic in size

Accessed by index



### Dictionary

Unordered list of values

Can be of mixed type

Dynamic in size

Accessed by key

# CASL Variables

## Table Type Details

# Table

- A result table is a two-dimensional data representation
- Can be printed to ODS
- SAVERESULT statement to save either as CAS table, SAS dataset or CSV file
- Table can contain a subset of CASL data types: char, varchar, varbinary, double, int32, int64
- Each column has a name, a data type (optionally a label and format)
- Can be created using CASL functions

# CASL Variables

How to view type and content

Look at the type(s)

```
DESCRIBE variable | expression;
```

Print the value to the SAS log (table data type is printed to ODS)

```
PRINT variable | expression;
```

More on types, check the doc (search for sas casl data types)

# CASL Functions

## Overview

### Built-In Functions

- CASL only
- Some are client side only
- Some are server side only
- Use FUNCTIONLIST statement to get a list in the log

### Common Functions

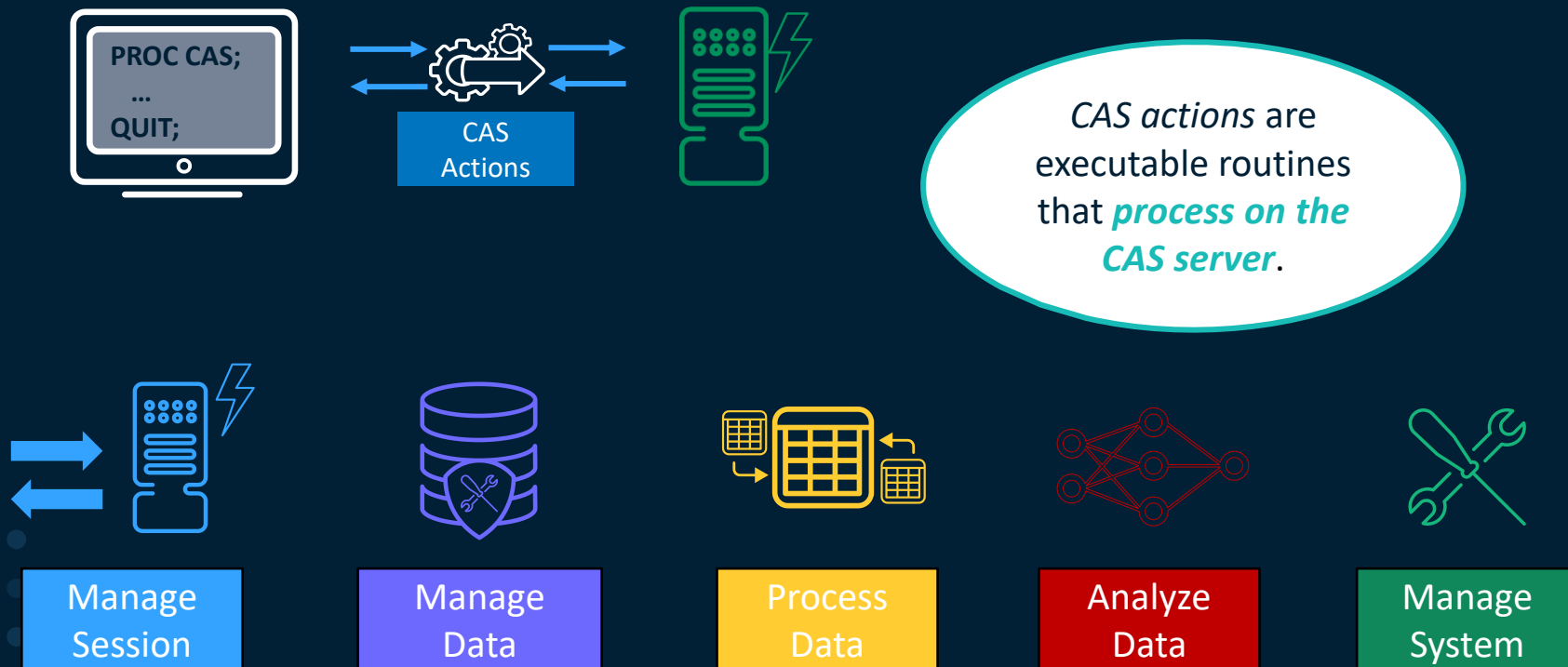
- DATA Step functions as we know them
- Not all of them! (among them: file and SAS data set IO functions)
- Use FNC statement to get a list in the log

# DEMO

Examples using Arrays and Dictionaries

# Running CAS Actions

## Basics



# Running CAS Actions

## Basics

Most actions return a dictionary with the result of the action

123  
ABC 

Result  
Objects

There is additional  
Information



Messages



Return  
Status



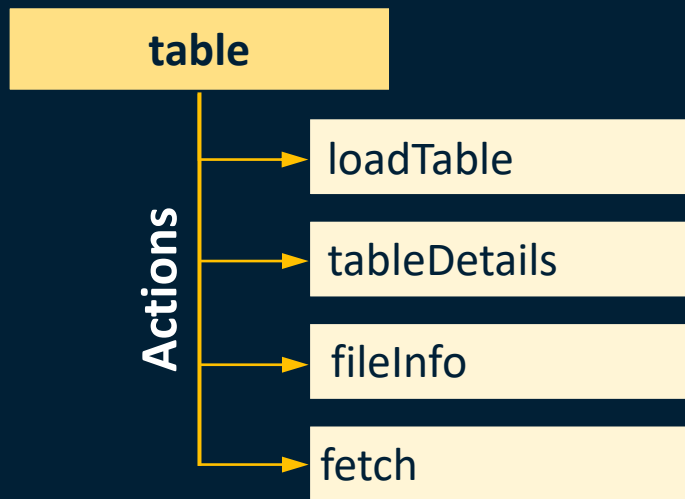
Performance  
Statistics



# Running CAS Actions

CAS Action Name

Action Set Name



The *table* action set provides actions for accessing and managing data.

*table.loadTable*

# Running CAS Actions

CASL statement to run an action

```
PROC CAS;
```

```
  <ACTION> action-set.action-name < / parameter=value, parameter=value...>;
```

```
QUIT;
```

```
proc cas;
```

```
  action table.fileInfo / caslib='public', path='%i%', wildsensitive=false;
```

```
run;
```

```
quit;
```

# DEMO

Example, loading all files in CAS library

# Further reading

- CASL Data Types

[https://go.documentation.sas.com/?cdclid=pgmsascdc&cdcVersion=v\\_006&docsetId=cas|pg&docsetTarget=n0civefipu008en18jmmntncwpql.htm&locale=en](https://go.documentation.sas.com/?cdclid=pgmsascdc&cdcVersion=v_006&docsetId=cas|pg&docsetTarget=n0civefipu008en18jmmntncwpql.htm&locale=en)

- CASL Expressions

[https://go.documentation.sas.com/?cdclid=pgmsascdc&cdcVersion=v\\_006&docsetId=cas|pg&docsetTarget=p1ezjposzlm8ion1dwr85cslkrjh.htm&locale=en](https://go.documentation.sas.com/?cdclid=pgmsascdc&cdcVersion=v_006&docsetId=cas|pg&docsetTarget=p1ezjposzlm8ion1dwr85cslkrjh.htm&locale=en)

- CASL Built-In Functions

[https://go.documentation.sas.com/?cdclid=pgmsascdc&cdcVersion=v\\_006&docsetId=proccas&docsetTarget=n04cgm5s8rx4zun1eb0vyd07npbr.htm&locale=en](https://go.documentation.sas.com/?cdclid=pgmsascdc&cdcVersion=v_006&docsetId=proccas&docsetTarget=n04cgm5s8rx4zun1eb0vyd07npbr.htm&locale=en)

## Further Resources

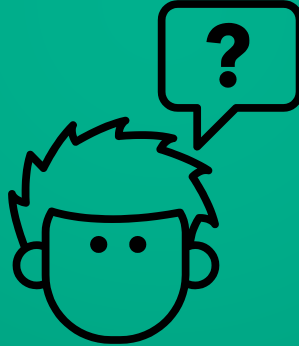
- CASL, a Language Specifically Designed for Interacting with SAS® Viya®

<https://www.sas.com/content/dam/SAS/support/en/sas-global-forum-proceedings/2020/4454-2020.pdf>

- CAS Action Sets

<https://go.documentation.sas.com/?cdclid=pgmsascdc&cdcVersion=v006&docsetId=allprodsactions&docsetTarget=actionSetsByName.htm&locale=en>

Fragen?



# SAS Kurse zum Thema CASL



## Programming for SAS® Viya®

- 16. April, 9 – 17 Uhr (Deutsch)
- 19. April, 9:30 – 17:30 Uhr (Englisch)
- 31. Mai, 9:30 – 17:30 Uhr (Englisch)
- 14. Juni, 9 – 17 Uhr (Deutsch)

Im zweiten Quartal wird es einen Kurs zu CASL geben, Dauer 2 Tage

# SAS® Global Forum (virtuell) am 25.–26. Mai



Das SAS Global Forum bringt jedes Jahr die klügsten Köpfe zum Thema Analytics zusammen. Es erwarten Sie spannende Keynotes, Expertenvorträge, Demos und die Möglichkeiten zum Lernen und Networking. Be curious!

Die Registrierung öffnet im April.





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Nächstes Webinar@Lunchtime:

28. April 2021

[www.sas.de/lunchtime](http://www.sas.de/lunchtime)



Folien zum Download unter [www.sas.de/lunchtime](http://www.sas.de/lunchtime)

Besten Dank für Ihr Feedback 😊

[sas.com](http://sas.com)