

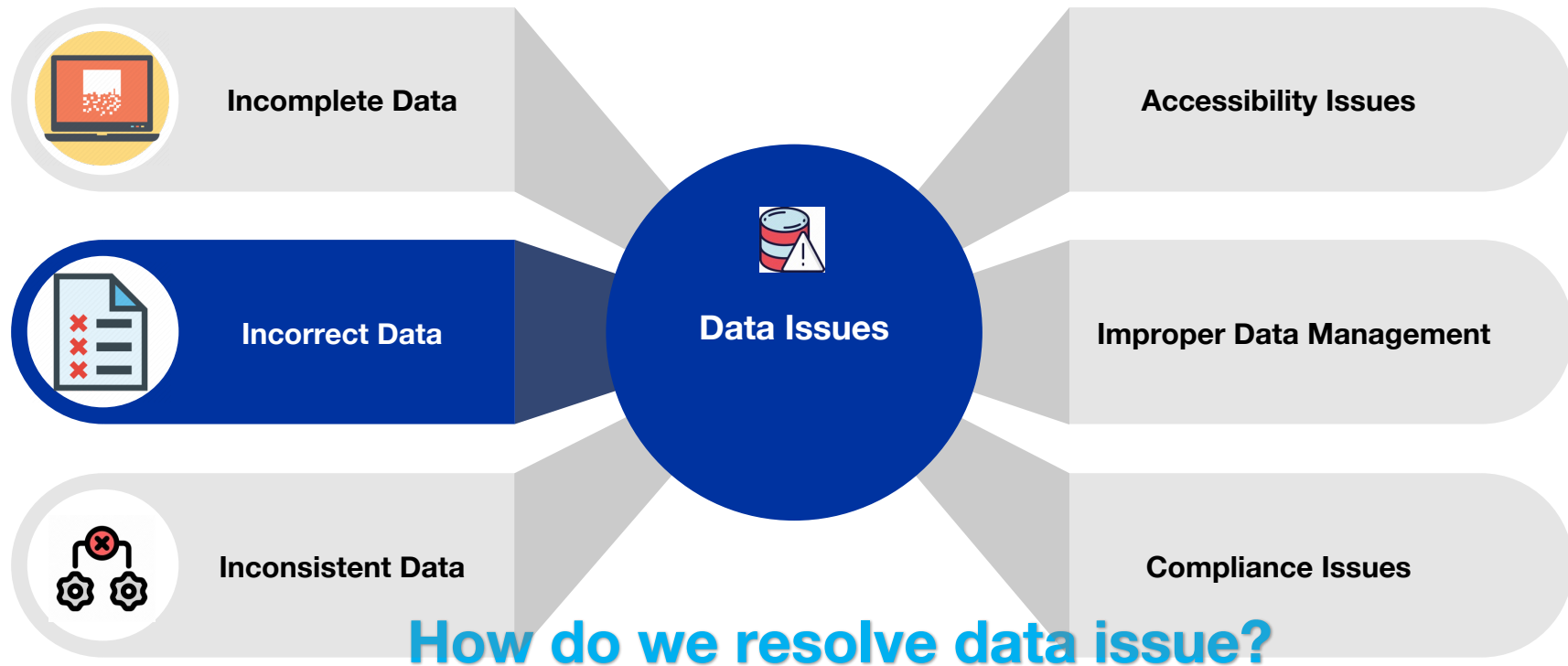
Single Day Event

Achieving Efficient Data Communication: An Automated Standard-Driven Approach

Gongzheng Yao,
Dizal Pharma



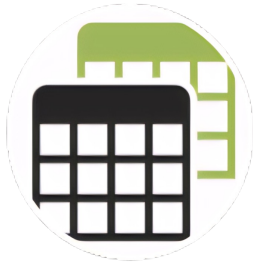
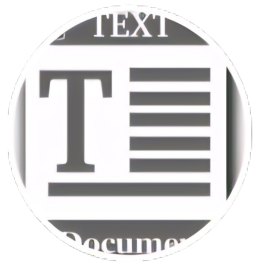
Background





Background

Typical Work Flow





Background

Locating
Problematic Data



Tedious !



Preparing
Corresponding Table

Make
Screen
Shots



Add
Descriptions...





Background

dm.sas7bdat

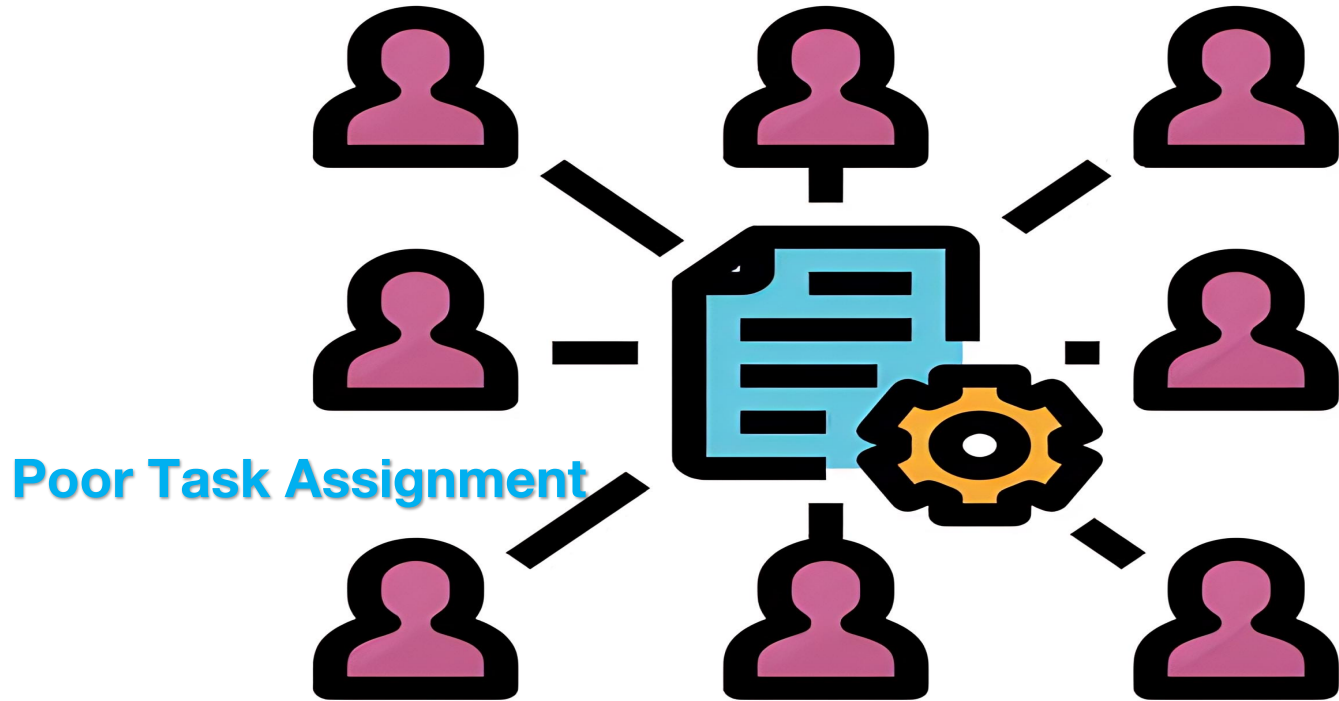
dm - ver3.sas7bdat

dm - ver2.sas7bdat

STUDYID	DOMAIN	USUBJID	SUBJID	RFSTDTCT	RFENDTCT	RFXSTDTCT	RFXENDTCT	RFICDTCT	RFPENDTCT	DTHDTCT	DTHFL
CDISCPIL001	DM	CDISC001	1115	2012-11-30	2013-01-23	2012-11-30	2013-01-23	2012-11-30	2013-01-23	2012-11-23	2013-05-20
CDISCPIL001	DM	CDISC002	1211	2012-11-15	2013-01-14	2012-11-15	2013-01-12	2012-10-30	2013-01-14	2013-01-14	Y
CDISCPIL001	DM	CDISC003	1302	2013-08-29	2013-11-05	2013-08-29	2013-11-05	2013-08-20	2014-02-13		
CDISCPIL001	DM	CDISC004	1345	2013-10-08	2014-03-18	2013-10-08	2014-03-18	2013-10-01	2014-03-18		
CDISCPIL001	DM	CDISC005	1383	2013-02-04	2013-08-06	2013-02-04	2013-08-06	2013-01-22	2013-08-06		
CDISCPIL001	DM	CDISC006	1429	2013-03-19	2013-04-30	2013-03-19	2013-04-30	2013-02-25	2013-04-30		
CDISCPIL001	DM	CDISC007	1444	2013-01-05	2013-02-13	2013-01-05	2013-02-12	2012-12-31	2013-06-20		
CDISCPIL001	DM	CDISC008	1445	2014-05-11	2014-11-01	2014-05-11	2014-11-01	2014-05-01	2014-11-01	2014-11-01	Y
CDISCPIL001	DM	CDISC009	1087	2012-10-22	2013-04-28	2012-10-22	2013-04-28	2012-10-06	2013-04-28		
CDISCPIL001	DM	CDISC001	1115	2012-11-30	2013-01-23	2012-11-30	2013-01-23	2012-11-23	2013-05-21		
CDISCPIL001	DM	CDISC002	1211	2012-11-15	2013-01-14	2012-11-15	2013-01-12	2012-10-30	2013-01-14	2013-01-14	Y
CDISCPIL001	DM	CDISC003	1302	2013-08-29	2013-11-05	2013-08-29	2013-11-05	2013-08-20	2014-02-13		
CDISCPIL001	DM	CDISC004	1345	2013-10-08	2014-03-18	2013-10-08	2014-03-18	2013-10-01	2014-03-19		
CDISCPIL001	DM	CDISC005	1383	2013-02-04	2013-08-06	2013-02-04	2013-08-06	2013-01-22	2013-08-06		
CDISCPIL001	DM	CDISC006	1429	2013-03-19	2013-04-30	2013-03-19	2013-04-30	2013-02-25	2013-04-30		
CDISCPIL001	DM	CDISC007	1444	2013-01-05	2013-02-13	2013-01-05	2013-02-12	2012-12-31	2013-06-20		
CDISCPIL001	DM	CDISC008	1445	2014-05-11	2014-11-01	2014-05-11	2014-11-01	2014-05-01	2014-11-01	2014-11-01	Y
CDISCPIL001	DM	CDISC009	1087	2012-10-22	2013-04-28	2012-10-22	2013-04-28	2012-10-06	2013-04-28		
CDISCPIL001	DM	CDISC010	1236	2013-09-21	2013-09-26	2013-09-21	2013-09-21	2013-09-08	2013-09-26		
CDISCPIL001	DM	CDISC011	1336	2012-12-07	2013-06-05	2012-12-07	2013-06-05	2012-11-21	2013-07-05		
CDISCPIL001	DM	CDISC012	1378	2013-09-03	2014-01-28	2013-09-03	2014-01-28	2013-08-24	2014-01-28		
CDISCPIL001	DM	CDISC013	1083	2013-07-22	2013-08-03	2013-07-22	2013-08-01	2013-07-09	2013-08-03	2013-08-03	Y
CDISCPIL001	DM	CDISC014	1012	2013-04-03	2013-05-02	2013-04-03	2013-04-29	2013-03-20	2013-09-18		
CDISCPIL001	DM	CDISC015	1022					2014-03-17	2014-03-17		
CDISCPIL001	DM	CDISC016	1143	2013-04-03	2013-06-01	2013-04-03	2013-05-30	2013-03-30	2013-09-22		
CDISCPIL001	DM	CDISC017	1250	2013-09-21	2014-02-08	2013-09-21	2014-01-31	2013-08-21	2014-03-08		
CDISCPIL001	DM	CDISC018	1427	2012-12-17	2013-02-18	2012-12-17	2013-02-11	2012-12-13	2013-06-03		

Easy to Lose Traceability

Background





Better Task Assignment



Web-Based Communication Platform

**Auto
Highlighting
Problematic
Cells**

**Directly
Comment**

	STUDYID		DOMAIN		USUBJID		SUBJID	
☒	ABC123		DM		ABC12301001		01001	
☐	ABC123		DM		ABC12301001		01001	
☐	ABC123		DM		ABC12301001		01001	
☐	ABC123		DM		ABC12301001		01001	
☐	ABC123		DM		ABC12301001	.	01001	.
☐	ABC123		DM		ABC12301001		01001	
☐	ABC123		DM		ABC12301001		01001	
☐	ABC123		DM		ABC12301001		01001	
☐	ABC123		DM		ABC12301001		01001	
☐	ABC123		DM		ABC12301001		01001	

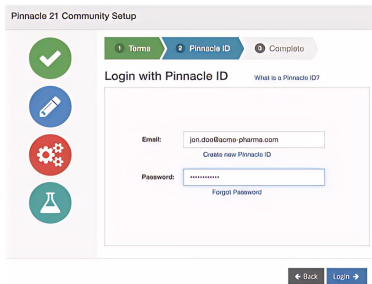
comment

Programmer A 1 hour
There is an issue here.
 Accept
 Reply

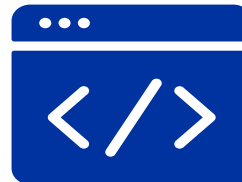
Programmer B 1 hour
There is an another issue here.
 Accept
 Reply



Web-Based Communication Platform



Validation Engine





Web-Based Communication Platform

Auto Reporting Template

Issue A: Duplication

Source Engine: Pinnalce 21 Community

Version: 22.04

Issue Code: SD2002

Comment: -----(To fill)

☒	STUDYID	DOMAIN	USUBJID	SUBJID
☒	ABC123	DM	ABC12301001	01001
☐	ABC123	DM	ABC12301001	01001
☐	ABC123	DM	ABC12301001	01001
☐	ABC123	DM	ABC12301001	01001
☐	ABC123	DM	ABC12301001	01001
☐	ABC123	DM	ABC12301001	01001
☐	ABC123	DM	ABC12301001	01001
☐	ABC123	DM	ABC12301001	01001
☐	ABC123	DM	ABC12301001	01001
☐	ABC123	DM	ABC12301001	01001
☐	ABC123	DM	ABC12301001	01001

...

Online Markdown Editor

Auto Generated
Reporting Template



Web-Based Communication Platform

Show Difference Between Previous Version

Git	Version 1.1			
☒	STUDYID	DOMAIN	USUBJID	SUBJID
☒	ABC123	DM	ABC12301001	01001
☐	ABC123	DM	ABC12301002 (ABC12301001)	01002 (01001)
☐	ABC123	DM	ABC12301003 (ABC12301001)	01003 (01001)
☐	ABC123	DM	ABC12301004 (ABC12301001)	01004 (01001)
☐	ABC123	DM	ABC12301005 (ABC12301001)	01005 (01001)
☐	ABC123	DM	ABC12301006 (ABC12301001)	01006 (01001)
☐	ABC123	DM	ABC12301007 (ABC12301001)	01007 (01001)
☐	ABC123	DM	ABC12301008 (ABC12301001)	01008 (01001)
☐	ABC123	DM	ABC12301009 (ABC12301001)	01009 (01001)
☐	ABC123	DM	ABC12301010 (ABC12301001)	01010 (01001)



Web-Based Communication Platform

timepoint
time interval
ongoing event

Event Type

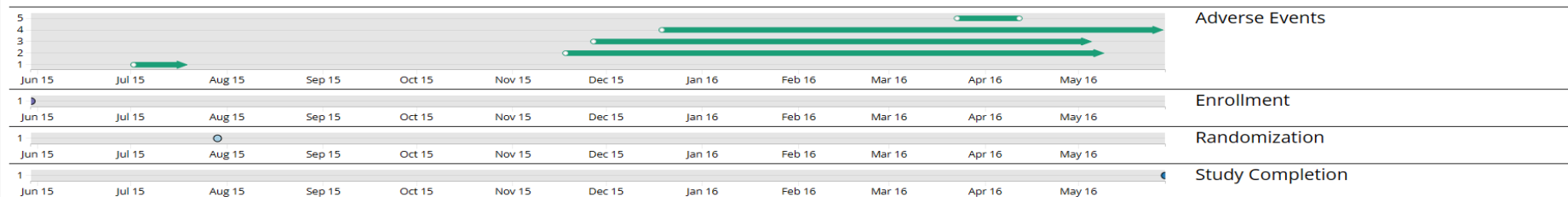
Adverse Events

Concomitant Medications

Enrollment

Randomization

Study Completion



Click column headers to sort.

Search

8 records displayed

Event Type	Start Date (Day)	Stop Date (Day)	Sequence Number	Ongoing?	Details
Adverse Events	2015-07-02 (34)	2015-07-16 (48)	1	Y	This mark definitely represents the Adverse Events domain
Adverse Events	2015-11-18 (173)	2016-05-06 (343)	2	Y	This mark definitely represents the Adverse Events domain
Adverse Events	2015-11-27 (182)	2016-05-02 (339)	3	Y	This mark definitely represents the Adverse Events domain
Adverse Events	2015-12-19 (204)	2016-05-25 (362)	4	Y	This mark definitely represents the Adverse Events domain
Adverse Events	2016-03-23 (299)	2016-04-12 (319)	5	N	This mark definitely represents the Adverse Events domain
Enrollment	2015-05-30 (1)	2015-05-30 (1)	1		This mark definitely represents the Enrollment domain
Randomization	2015-07-29 (61)	2015-07-29 (61)	1		This mark definitely represents the Randomization domain
Study Completion	2016-05-29 (366)	2016-05-29 (366)	1		This mark definitely represents the Study Completion domain

Export: CSV

Clinical Timelines



Web-Based Communication Platform

Population Explorer

Study ID: CDISCILOT01

Filter Data

Type of Chart:

- ☒ Kaplan-Meier Curve
- ☐ Line plot - mean over time
- ☐ Heatmap - endpoint correlations
- ☐ Box Plot
- ☐ Scatter Plot
- ☐ Spaghetti Plot

Select axes:

Select param

TTDE

Response Variable

AVAL

Group By

NONE

Censor Variable (0,1)

CNSR

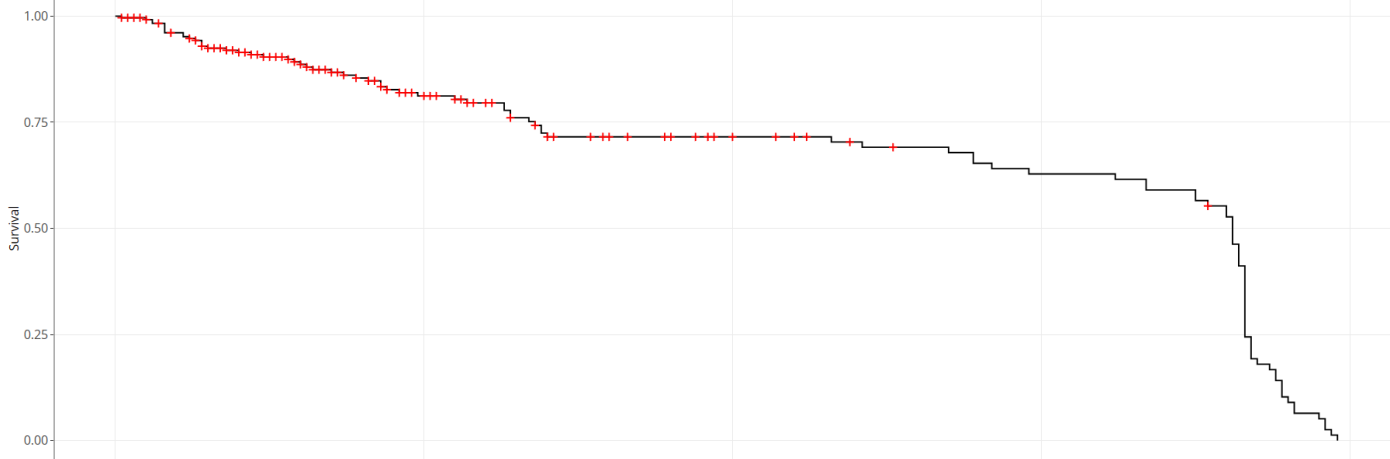
Mark censored observations?



Include 95% confidence interval?



Time to First Dermatologic Event



**Visualization for Analysis-
Enabled By tidyCDISC**



Web-Based Communication Platform

Run code

```
1 fit <- lm(mpg ~ am, data=mtcars)
2 summary(fit)
```

Call:

```
lm(formula = mpg ~ am, data = mtcars)
```

Residuals:

	Min	1Q	Median	3Q	Max
	-9.3923	-3.0923	-0.2974	3.2439	9.5077

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	17.147	1.125	15.247	1.13e-15 ***
am	7.245	1.764	4.106	0.000285 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 4.902 on 30 degrees of freedom

Multiple R-squared: 0.3598, Adjusted R-squared: 0.3385

F-statistic: 16.86 on 1 and 30 DF, p-value: 0.000285

Interactive R code editor



WHY?

---- Avoid Learning

HTML+CSS+JS

---- **BUT IT DOES NOT LIMIT
YOU !**



Technical Part



by Appilon



Rhino
by Appilon



...



Technical Part

WebR - R in the Browser

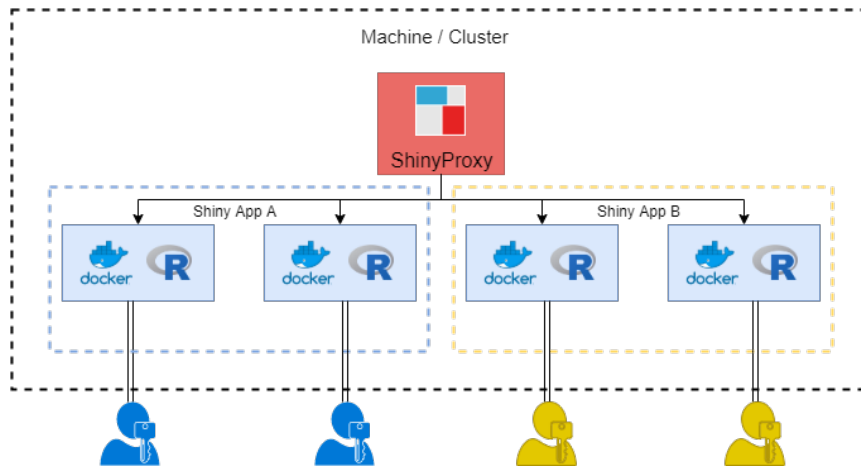
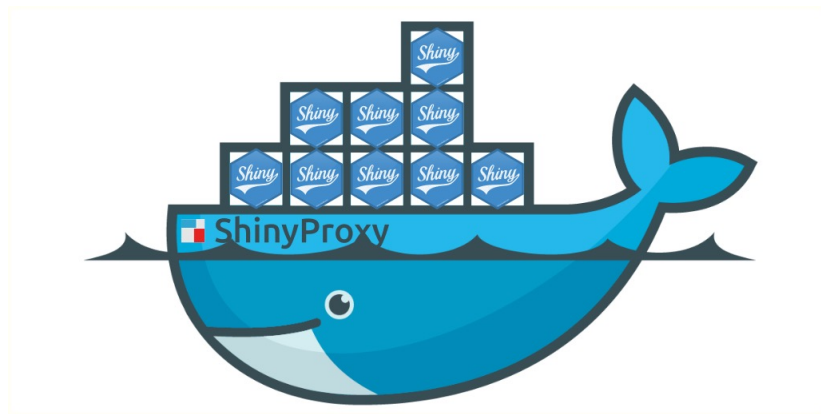
1. WebR is a version of the statistical language [R](#) compiled for the browser and [Node.js](#) using [WebAssembly](#), via [Emscripten](#).
2. [WebAssembly](#) (abbreviated *Wasm*) is a binary instruction format for a stack-based virtual machine. Wasm is designed as a portable compilation target for programming languages, enabling deployment on the web for client and server applications.

Reduce the server load!



Technical Part

Deployment – ShinyProxy and Docker



Thank You!



**The Global Healthcare
Data Science Community**

Contact Channels

📞 UK +44 1843 609600
✉ office@phuse.global
🌐 phuse.global

Social Media

🐦 [@phusetwitta](https://twitter.com/phusetwitta)
📘 [/phusebook](https://facebook.com/phusebook)
▶ [/phusetube](https://youtube.com/phusetube)
🌐 [/company/phuse](https://company.phuse.com)

