



Wolfram's zWorld Version 2 z/OS Expertenforum

04./5. April 2022
Rigi-Kaltbad

— Wolfram Greis

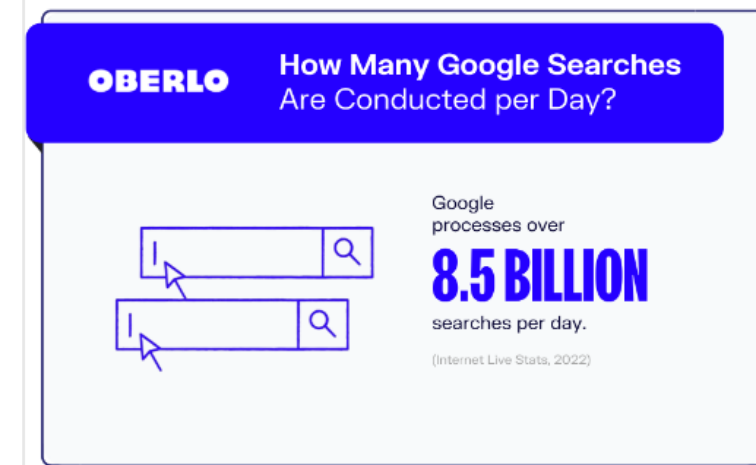
www.mainframe-academy.de

- Tune In V2
- Z Xplore & Master the Mainframe
- Open Mainframe Project (Update)
- Mainframe Modernization
- Ideen zu Reduktion des Fachkräftemangels (Update)

TUNE IN



- How many Google requests are processed daily (2022)?
- ~ 8,5 billion



- How many CICS transactions are processed daily (2022)?
- > 100 billion
- ... note: these are **ACID** transactions

CICS processes more than 1.1 million **transactions** per second – that's 100 billion **transactions** a day. So, is **CICS** security important? Absolutely. **CICS transactions** enable the world's economy, but not **many** people actually know what it is. 22.03.2018

CICS Security: Q&A with Mark Wilson - SHARE : Blogs
<https://www.share.org/blog/cics-security-q&a-with-mark-wilson>

- „IT Handbuch für Fachinformatiker“ by Sascha Kersken
9th Edition, 1379 Pages
- Just one sentence about Mainframes on page 42:

„Die Großrechner oder Mainframes – vor allem von IBM produziert – **bildeten** die Rechenzentren großer Behörden, Versicherungskonzerne und Universitäten.“

„Mainframes – mainly produced by IBM – **formed** the computing centers of big government organizations, insurance companies and universities.“



Z XPLORE & MASTER THE MAINFRAME (MTM)

IBM Z XPLORE LEARNING PLATFORM

Enterprise Computing Learning Experience



- Z Xplore is a learning and experience platform available year-round to individuals interested in developing and experiencing IBM zSystems skills.
- You can earn digital badges (Credly) and be part of a community (in Slack)
- Three progressive levels
 - Fundamentals & Concepts
Learn about datasets, JCL, Python, USS, VS Code
 - Advanced
Hands-on learning around REXX, COBOL, Linux, VSAM, SQL, and more
 - Extended
Hands-on learning around Node.js, Machine Learning, Docker, Ansible, and more
- Self-paced challenges

Difference between MTM and Z Xplore



Master the Mainframe	Z Xplore
Learning materials and the grand challenge (student contest) restarts every year.	Learning content is available year-round and is divided between three channels. Challenges are continuously added.
Student Contest: Accessible to anyone 18+ and at an accredited school, three month long.	If currently no student contest available, mini code-a-thons are available on request.

Note:

For access to the z/OS environment, you have to register with an email address and a password. If you start with Z Xplore fundamentals, you get a Z ID and RACF PW.

- Ports being used and have to be accessible:
 - IP address 204.90.115.200
 - Port 20/21 – FTP
 - Port 22 – SSH
 - Port 623 – TN3270
 - Port 5040 – Db2
 - Port 10443 – zOSMF
- Software downloads
 - VS Code
 - Node.js

- [Z Xplore Essentials](#)
- [IBM Z and LinuxOne Community](#)
- [Z Xplore Resource Kit](#)
- [Z Xplore Credly Badges](#)

LINUX FOUNDATION'S OPEN MAINFRAME PROJECT

- **John Mertic** is director of program management for Linux Foundation's Open Mainframe Project
www.openmainframeproject.org
- Bring **open source knowledge** to mainframe computing
- Thanks to ZOWE, a green-screen 3270 is no longer **the only way** to access mainframe data
- You can use SSH, REST APIs, JavaScript-powered desktops, IDEs ...



“Why would you want a mainframe?”



“Transportation, insurance, industry... really anywhere where you need computing that's extremely transactionable, highly scalable, top-end performance and immensely secure.”

Source: Linux Format Summer 2020

Open Mainframe Project



4

years since launch

36

Supporting Organizations

9

Hosted Projects

36

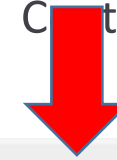
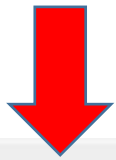
Mentees Sponsored

100+

Students Impacted

200+

Project Contributors



Academic Mainframe Consortium		UNIVERSITY SYSTEM OF GEORGIA	A Broadcom Company	Canon	Coburg University of Applied Sciences and Arts	Docker	East Carolina University	EPSI	European Mainframe Academy	Guide Share Europe	
<p>Member Authorization:</p> <p><u>AMC</u> (Print Applicant Name)</p> <p>By: <u>[Signature]</u> (signature)</p> <p>Name: <u>W. GREIS</u></p> <p>Title: <u>President</u></p> <p>Date: <u>Nov 10, 2016</u></p>		<p>Accepted:</p> <p>THE LINUX FOUNDATION</p> <p>By: <u>Russell Farnell</u></p> <p>Name: <u>Russell Farnell</u></p> <p>Title: <u>VP Finance</u></p> <p>Date: <u>Nov 14, 2016</u></p>									
		Goethe University Frankfurt	Marist College	North Carolina A & T State University	Phoenix Software International	Rocket Software	SHARE	Sine Nomine Associates			
SUSE	Syncsort	University of Bedfordshire	University of Washington	University of Wolverhampton	Leipzig University	Vicom Infinity	Virginia Commonwealth University	University of Western Ontario	William Paterson University of New Jersey	Zoss Team	

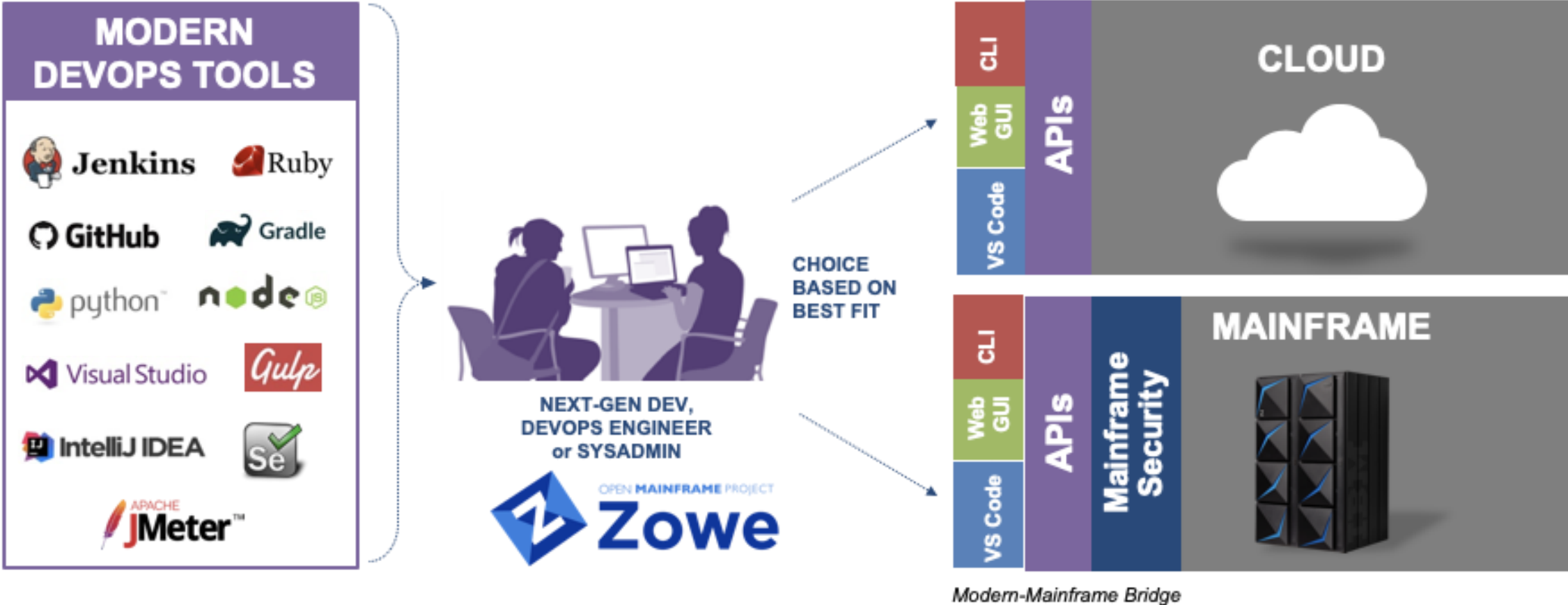
Mainframe-centric projects hosted



Learn about all Open Mainframe projects at <https://www.openmainframeproject.org/projects>

Zowe Wins DevOps Award For Second Year in a Row!

By Open Mainframe Project | January 23, 2023 | Blog, Zowe



- COBOL Check – a Unit Test for COBOL

... our AMC system in Germany



Installing IBM Open Enterprise Python 3.8 for z/OS



Petr Plavjanik Follow
Jul 20, 2020 · 5 min read



Python has been popular for a long time, and in the last few years, its popularity reached the top level. It is typically used for web application development, automation, data analysis, and machine learning. It can run well on mainframes and z/OS for a few last years and we will see more Python on z/OS in the future.

This story provides instructions on how to install IBM Python to z/OS and how to use it.

<https://levelup.gitconnected.com/installing-ibm-open-enterprise-python-3-8-for-z-os-dbe4e701be47>

The screenshot shows the Visual Studio Code interface. The file explorer on the left displays a directory structure for 'ZOWE' with subfolders like 'DATA SETS' and 'JOBS'. The main editor window shows a COBOL program named 'UWGR.TEST.COBOL(HELLO).cbl' with the following code:

```

1  000100 ID DIVISION.
2  000200 PROGRAM-ID. HELLO.
3  000300 PROCEDURE DIVISION.
4  000400     DISPLAY "HELLO MAINFRAME FROM EMA EDUCATION".
5  000500     STOP RUN.
6

```

The status bar at the bottom indicates 'Ln 1, Col 1 Spaces: 3 UTF-8 CRLF COBOL'.

```

UWGR:/u/uwgr:>git --version
git version 2.14.4_zos_b09
UWGR:/u/uwgr:>

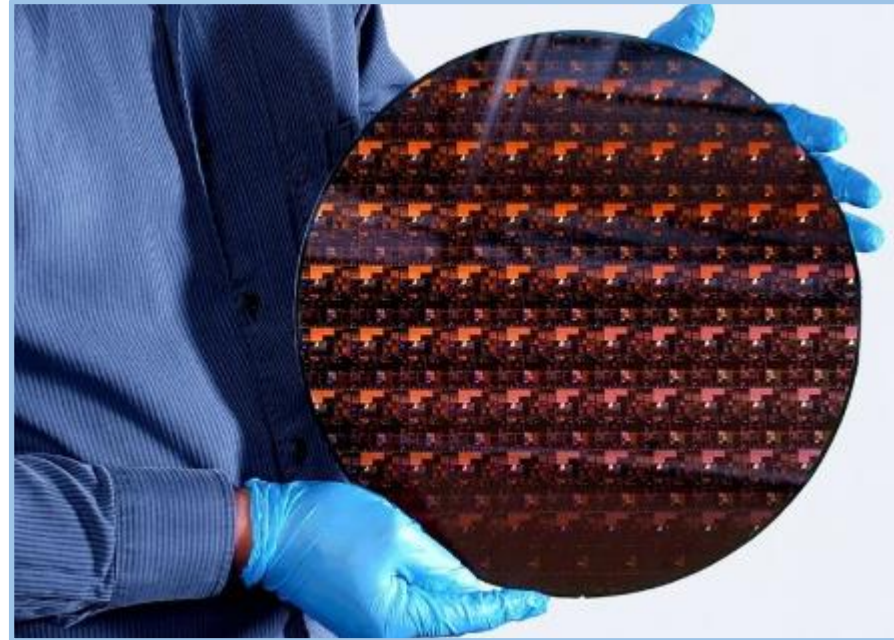
```

- Open Mainframe Website
<https://www.openmainframeproject.org/>
- Open Mainframe Project Blog
<https://www.openmainframeproject.org/blog/>
- GitHub
<https://github.com/openmainframeproject>
- Open Mainframe Project in the Press
<https://www.openmainframeproject.org/news/press>
- COBOL Programming Course
<https://www.openmainframeproject.org/all-projects/cobolprogrammingcourse>
- COBOL Working Group
<https://www.openmainframeproject.org/all-projects/cobol-working-group>
- ZOWE Conformance Program
<https://www.openmainframeproject.org/all-projects/zowe/conformance>

NEW TECHNOLOGIES ON MAINFRAMES

→ HARDWARE

- The world's first 2-nanometer chip
- Increased chip performance
- Energy efficiency
- Era of
 - Hybrid cloud
 - AI
 - Internet of Things
- 45 percent higher performance
- 75 percent lower energy use
- 50 billion transistors on a fingernail chip



PROGRAMMING LANGUAGES



- Wer kennt den Tiobe Index?
- Was sagt der aus?
- Wo ist COBOL?
- ... und wo Java, Python, C, ...?
- <https://www.tiobe.com/tiobe-index/>

The TIOBE Programming Community index is an *indicator of the popularity of programming languages*.

Popular search engines such as Google, Bing, Yahoo!, Wikipedia, Amazon, YouTube and Baidu are used to calculate the ratings.

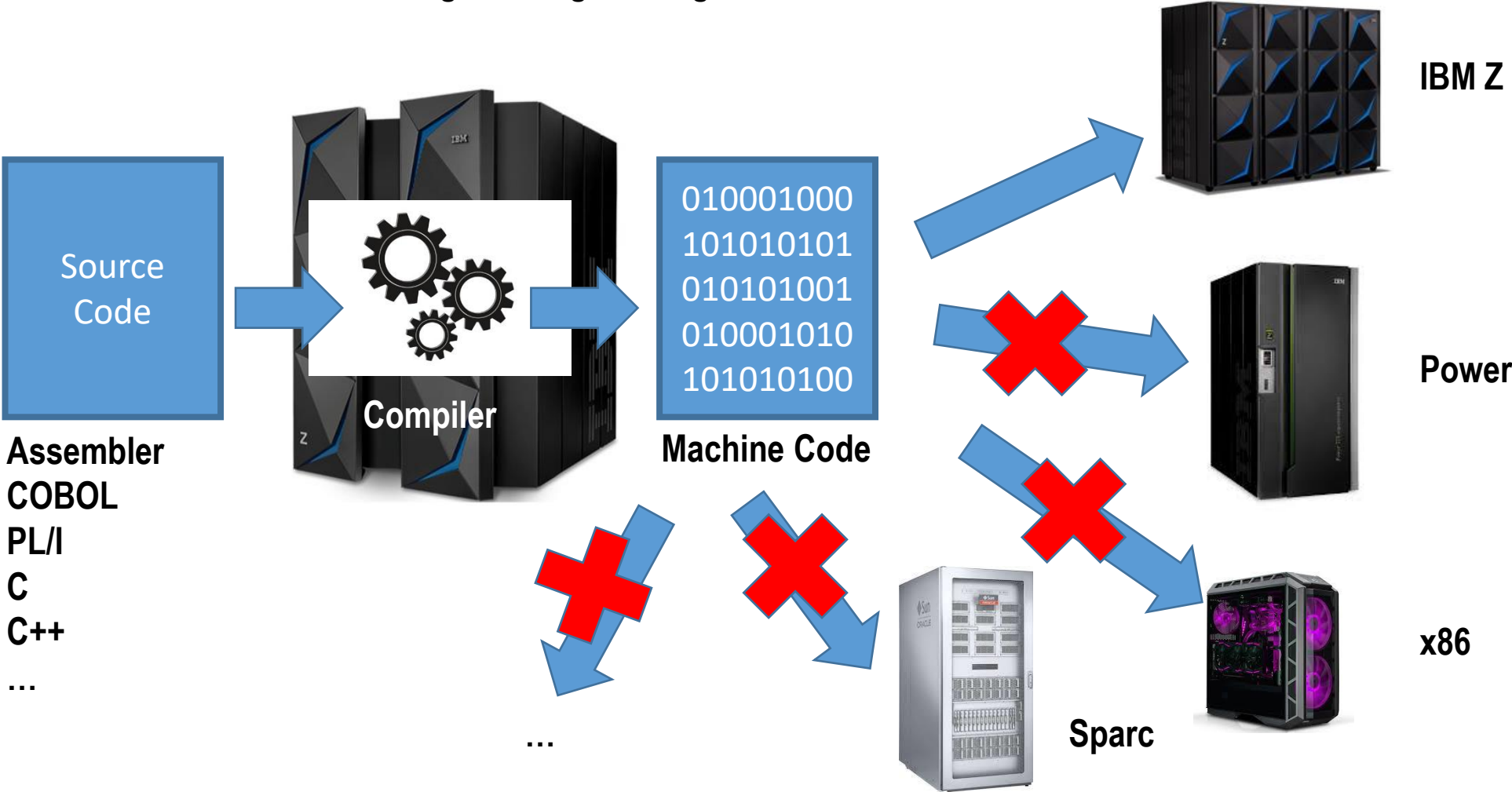
It is important to note that the TIOBE index is *not about the best programming language* or the language in which *most lines of code have been written*.



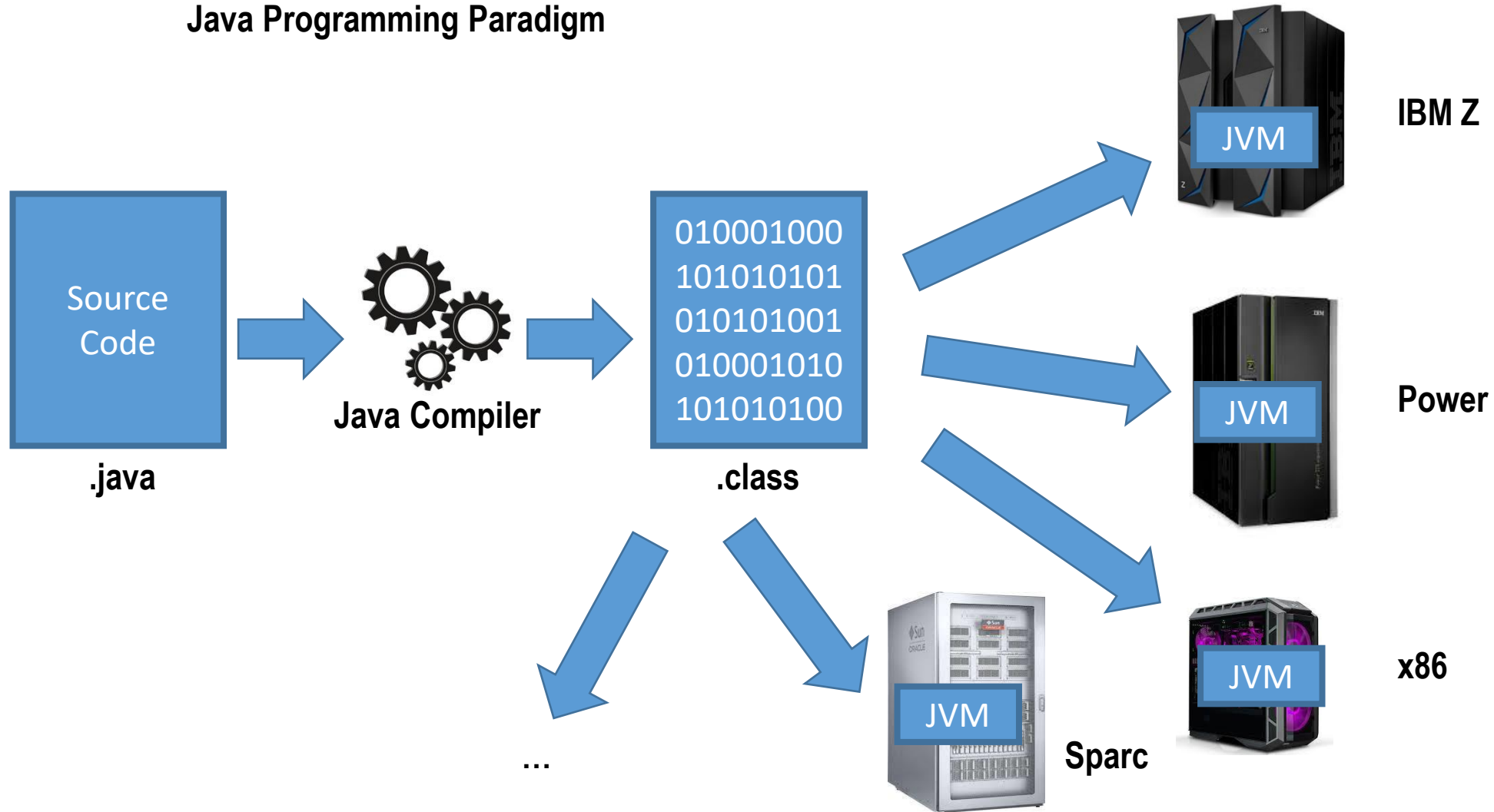
- Enterprise COBOL is a premier, enterprise-class COBOL compiler for the z/OS system.
- COBOL for z/OS can interoperate with transactional and data systems such as IBM CICS, IBM Db2, and IBM IMS.
- The COBOL compiler helps your existing COBOL applications work with modern infrastructure technologies, such as mobile, web, and cloud
- Native support for JSON, XML, and Java.

- New capabilities in Enterprise COBOL for z/OS 6.4 include:
 - Support of the latest IBM z/Architecture to maximize your IBM z16 investment, reduce CPU usage, and improve performance of critical COBOL applications (ARCH(14)).
 - Improved Java/COBOL interoperability to easily extend the capabilities of your COBOL program with Java
 - Interoperability between AMODE 31 (31-bit) and AMODE 64 (64-bit) COBOL programs to handle your growing COBOL program data without converting the entire application to run in AMODE 64
 - Support for user-defined functions to enable you to write your own functions and invoke them like intrinsic functions, improving code modularity and maintainability
 - Improved integration with IBM Automatic Binary Optimizer for z/OS to invest in your future so that modules you compile today take advantage of future IBM Z hardware enhancements, without having to be recompiled
 - The ability to define, move and compare UTF-8 data items (COBOL 6.3)

Conventional Programming Paradigm



Java Programming Paradigm



- Improved Java/COBOL interoperability to easily extend the capabilities of your COBOL program with Java.
- Three COBOL/Java communication features are provided:
 - Enabling a COBOL program to be callable from Java
 - Enabling the CALL statement in COBOL to call a static Java method
 - Enabling Java applications to easily access the working-storage memory of a COBOL program

IDEEN ZUR REDUZIERUNG DES FACHKRÄFTEMANGELS

PART 1 – POWERCODERS – MAINFRAME CODERS

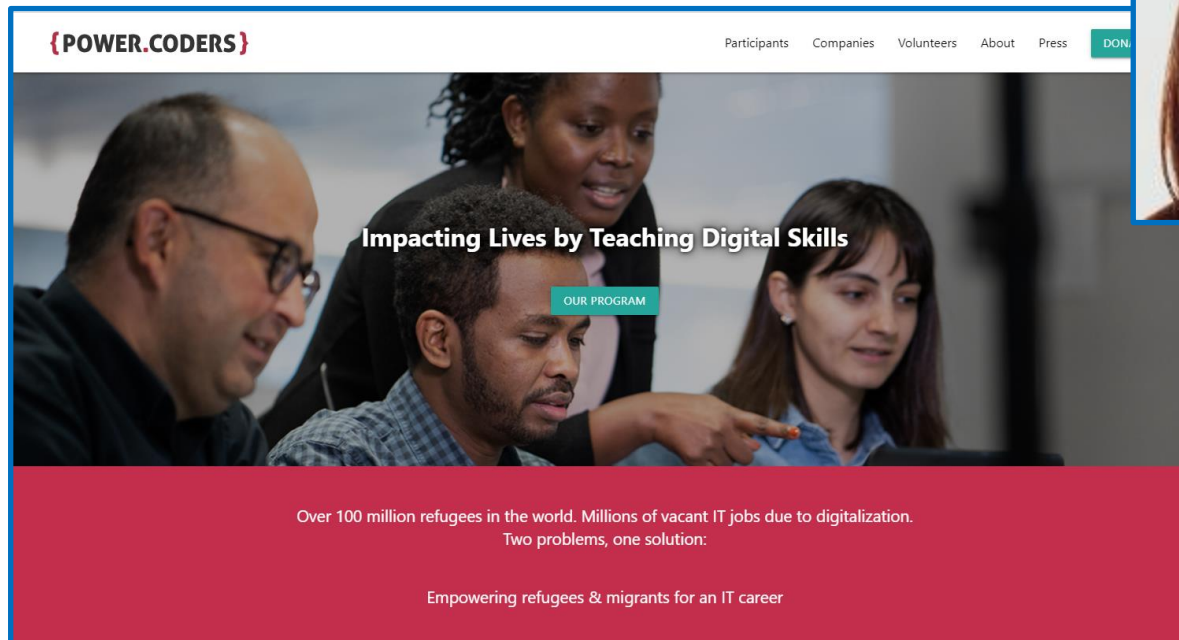
- Mehr als 100 Millionen Flüchtlinge weltweit. Millionen vakanter IT Jobs.

Zwei Probleme, eine Lösung:

„Geben wir den Flüchtlingen und uns eine Chance!“



Bettina Hirsig, CEO



The screenshot shows the website for Power.Coders. At the top left is the logo {POWER.CODERS}. The navigation menu includes links for Participants, Companies, Volunteers, About, Press, and a green button labeled DON. The main content area features a large image of four people (three men and one woman) looking at a laptop. Overlaid on this image is the text "Impacting Lives by Teaching Digital Skills" and a teal button that says "OUR PROGRAM". Below the image is a red banner with white text: "Over 100 million refugees in the world. Millions of vacant IT jobs due to digitalization. Two problems, one solution: Empowering refugees & migrants for an IT career".

- Angelehnt an [Powercoders](#): **Mainframe Coders**
- Zusammenarbeit mit [SocialBee](#)
- Start am 3. Mai 2023 mit Finanz Informatik, Commerzbank und S&N Invent
- Stoff von 4 Wochen (160 Stunden) verteilt auf 5 Wochen (200 Stunden)
- Themen:
 - Mainframe Praxis (TSO/ISPF, JCL, SDSF, ...)
 - Architektur
 - COBOL & Db2
 - Transaktionen

IDEEN ZUR REDUZIERUNG DES FACHKRÄFTEMANGELS

PART 2 – ACADEMIC MAINFRAME CONSORTIUM

ACADEMIC MAINFRAME CONSORTIUM E.V.

DER VEREIN



Vorstand bei der Vereinsgründung 2017



Aktueller Vorstand v.l.n.r.:

- Prof. Dr. Martin Bogan, Uni Leipzig
- Prof. Dr. Udo Keschull, Uni Frankfurt
- Gerhard Hauser, Rentner, ehem. Atruvia
- Prof Dr. Philipp Brune, Hochschule Neu-Ulm
- Dr. Ernst Lugert, Rentner, ehem. Datev
- Wolfram Greis, European Mainframe Academy

ACADEMIC MAINFRAME CONSORTIUM E.V.

AKTUELLE HARDWARE

- Das AMC bekam eine zEC12 und eine zBC12 von T-Systems geschenkt damit wurde eine z114 (von Atruvia) ersetzt. Die läuft schon lange mit z/OS 2.4
- Aktuell haben wir eine z13 auch wieder von **T-Systems** bekommen
 - Bereits installiert an der Uni Tübingen zusammen mit einer DS8K von der **Stuttgarter Versicherung**
 - z/OS 2.5 läuft bereits
 - Erzeugt viel Power und Wärme
 - Darum wird einer von vier Drawern deaktiviert

YTMC

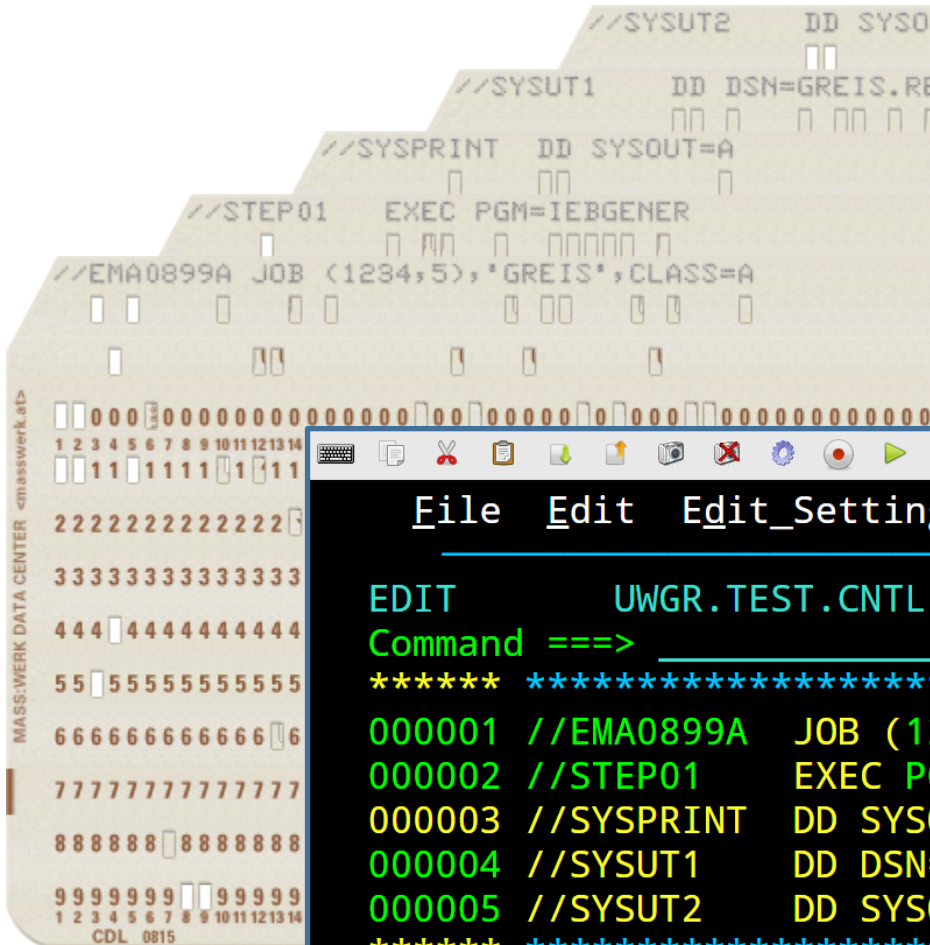
YOUNG TALENTS MAINFRAME COMMUNITY

- Es geht um Austausch und Kommunikation → nicht nur für Nachwuchs!
- Jeden dritten Donnerstag im Monat ab 18:30 Uhr
- Spannende Diskussionen
- Bei Interesse bitte über unsere AMC Homepage melden!

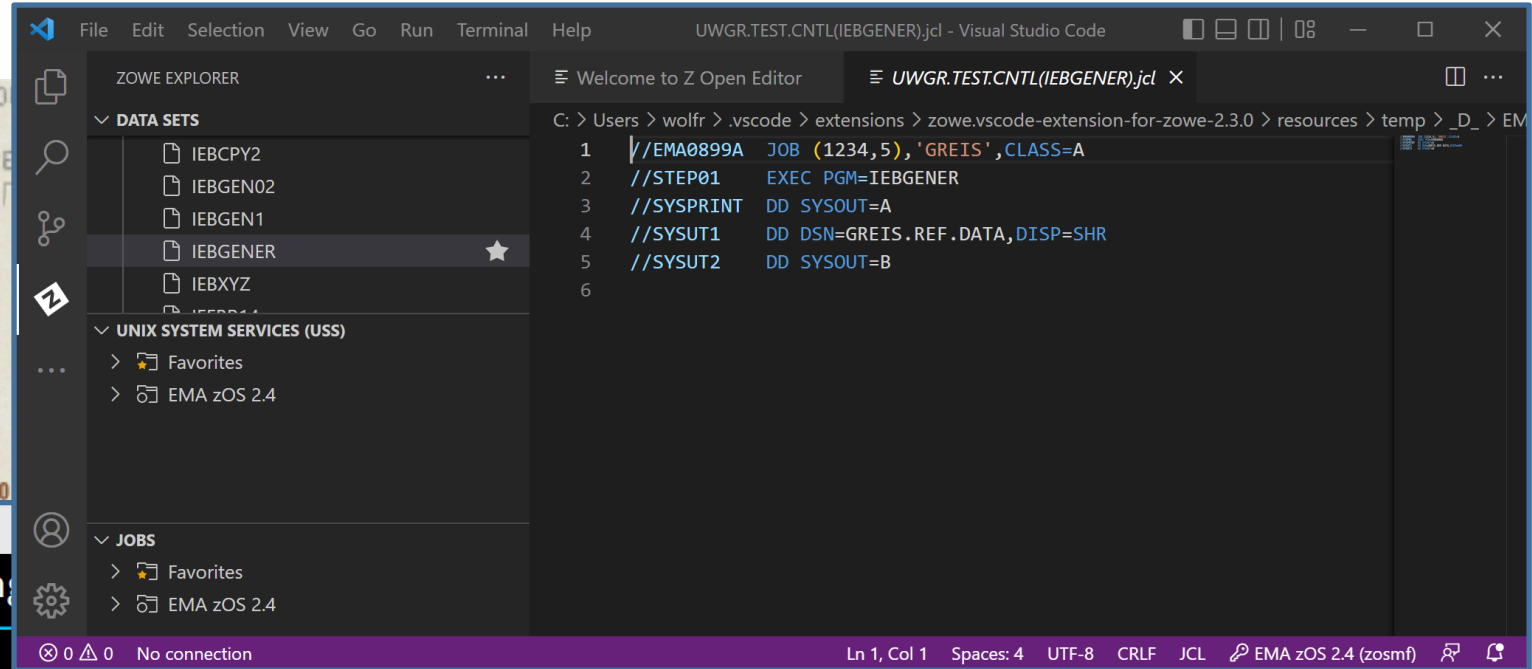
www.amc-ev.org

The Virtual Key Punch (etwas Nostalgie ;-))

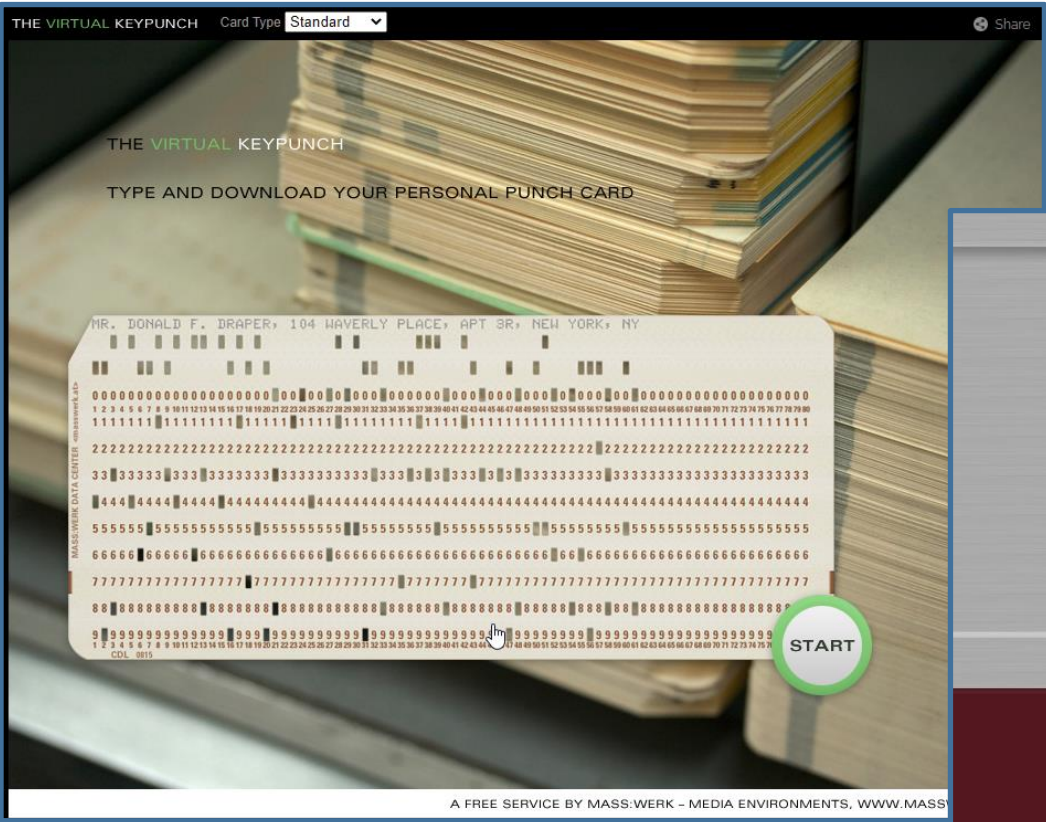
The so called „Job stream“



```
File Edit Edit_Settings
EDIT UWGR.TEST.CNTL(IEBGENER) - 01.05 Columns 0001-00072
Command ==> Scroll ==> CSR
***** Top of Data *****
000001 //EMA0899A JOB (1234,5), 'GREIS', CLASS=A
000002 //STEP01 EXEC PGM=IEBGENER
000003 //SYSPRINT DD SYSOUT=A
000004 //SYSUT1 DD DSN=GREIS.REF.DATA, DISP=SHR
000005 //SYSUT2 DD SYSOUT=B
***** Bottom of Data *****
```



The Virtual Key Punch



<https://www.masswerk.at/keypunch/>

- European Mainframe Academy
<https://www.mainframe-academy.de>
- OpenHPI Mainframe MOOC auf Deutsch
<https://open.hpi.de/courses/mainframes2017>
- OpenHPI Mainframe MOOC auf Englisch
<https://open.hpi.de/courses/mainframes2018>
- Academic Mainframe Consortium e.V.
<https://amc-ev.org>
- YouTube Channel fit4mainframe:
<https://www.youtube.com/channel/UCiafs3ZVc4XC8Q-ETLMaA0g>
- Blog:
<https://fit4mainframe.com/>

QUESTIONS? REMARKS?