Addressing the Mainframe Skills Shortage:
What Happens When all the Boomers Retire?

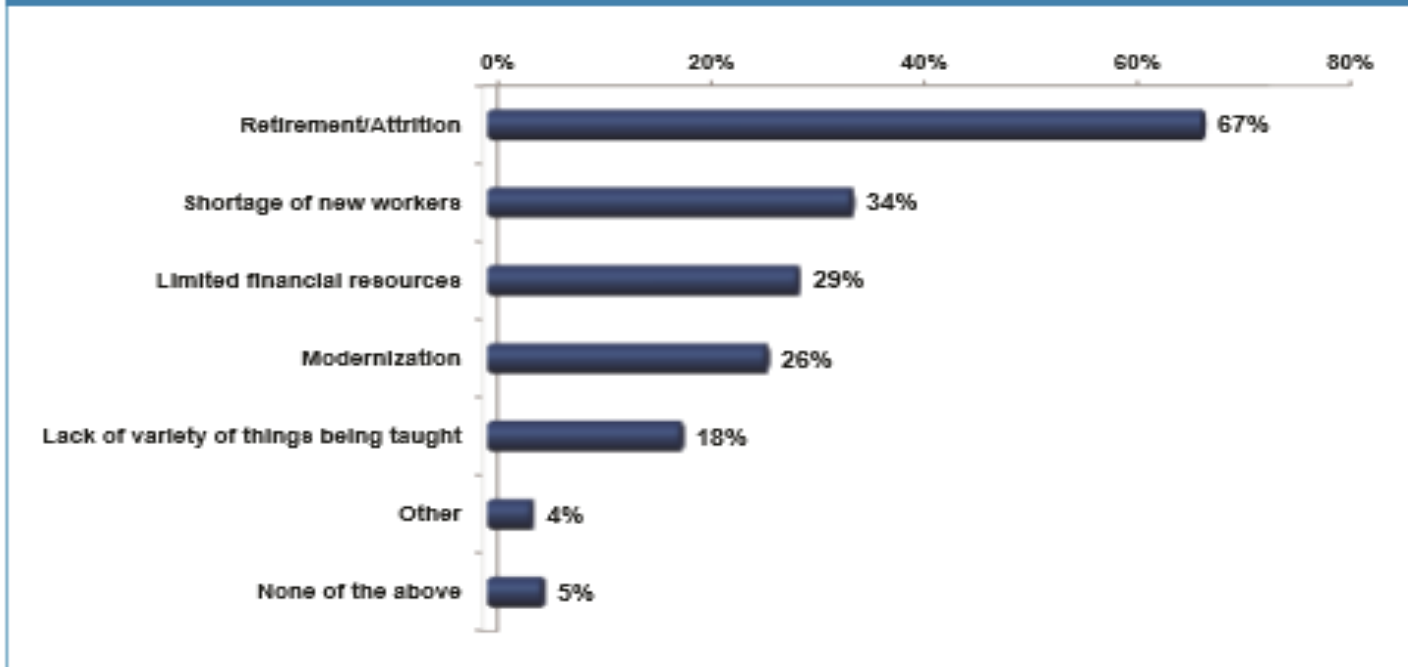ProTech
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The Problem

- 96 of the world's top 100 banks, 23 of the 25 top US retailers, and nine out of 10 of the world's largest insurance companies run IBM mainframes.

- Seventy-one percent of global Fortune 500 companies are mainframe clients,

- Nine out of the top 10 global life and health insurance providers process their high-volume transactions on a mainframe,

- IBM Mainframes process roughly 30 billion business transactions per day, including "most major credit card transactions and stock trades, money transfers, manufacturing processes, and ERP systems

The Problem (cont.)

- The oldest of the Baby Boomers reached the traditional retirement age of 65 in 2011, and approximately 10,000 Baby Boomers now turn 65 every day, according to the Pew Research Center.

- The percentage of the population aged 65 was just 4% in 1900, in 2010 is was 13.9% and by 2030 it will be 20.9%, according to the US Census.

- Some estimates say there will be more than 85,000 open mainframe positions by 2024, with nearly 5mil open general IT positions

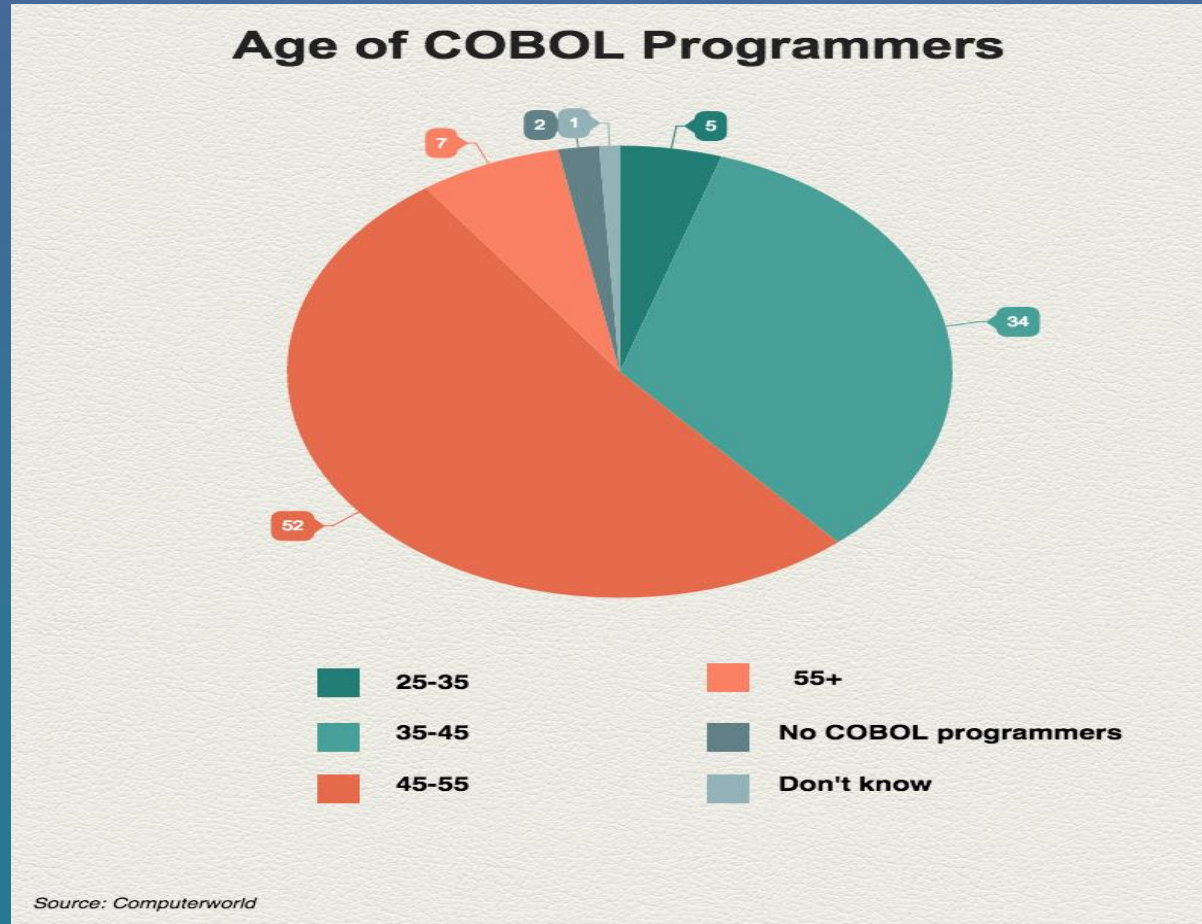- Many companies have ignored this problem, a few have been proactive.

The Problem (cont.)

FIGURE 2   Top Challenges Within Company Regarding a Skills Gap

Challenge	Percentage
Retirement/Attrition	67%
Shortage of new workers	34%
Limited financial resources	29%
Modernization	26%
Lack of variety of things being taught	18%
Other	4%
None of the above	5%

- *Source: IBM Systems Magazine Survey*

The Problem (cont.)

Age of COBOL Programmers

25-35, 35-45, 45-55, 55+, No COBOL programmers, Don't know

Source: Computerworld

- *Source: 2005 Computerworld customer survey*

Developing Employees Mainframe Skills

"Top 10 Strategies to Ensure You Have Mainframe Skills Through 2025"

1. Work with human resources to determine how deficient your mainframe workforce might be and how soon.
2. Mine the z Systems Job Connector board.
3. Provision skills from third parties to fill gaps and supplement existing staff.
4. Get involved with IBM's Academic Initiative & Master the Mainframe programs.
5. Launch a formal intern or co-op program with one of your local schools.
6. Bring IBM's course material in-house and tailor it to do your own training.
7. Cross-train current staff.
8. Continue to automate wherever possible in order to reduce the need for labor.
9. Actively participate in user organizations, such as Share (z Systems user group), to nurture next-generation talent.
10. Selectively migrate away from products that there may be no way to support in the future.

Source: Gartner https://www.gartner.com/doc/3143717/top--strategies-ensure-mainframe

Possible Solutions

1. Migrate to distributed systems

2. Hire additional experienced mainframe staff or use third-party consultants

3. Developing internal employees mainframe skills

4. Outsource the mainframe

Developing Employees Mainframe Skills

1) Train existing staff on mainframe systems

or

2) Recruit new employees and train them

Developing Employees Mainframe Skills

Various Resources:

- Free IBM Learning

- Open Badges & Talent Match

- On Demand Learning

- Classroom Learning

- Virtual Learning

- Mentoring, Internship & Co-Op Programs *(Franklin, Launchcode, GenSpark,etc.)*

Developing Employees Mainframe Skills

1) Communication of employees role & feedback loop

2) Defined career plans (recommended 2yrs w/milestones)

3) Assign a mentor as a goal

4) Use award programs and/or bonuses

5) Group new employees by stage levels

6) Invest by providing ongoing training & exposure (SHARE, zNextGen, IBM, etc)

Developing Employees Mainframe Skills

Training Options: Bootcamps versus Course Learning Plan

<u>Mainframe Bootcamps (SysProg or AppDev)</u>
Pros: Continuity, each weeks builds on each other
                 Building peer relationships
                 High levels of skills developed (individual needs addressed)
                 Can't be planned around a project or hiring plan
Cons: Time away from work
                 Higher cost than OJT & Mentoring

<u>Course Learning Plan (attending several courses just-in time)</u>
Pros: Flexibility & adaptability
                 Can utilize OJT & mentoring between classes (can lower cost)
                 Losing students to other opportunities
Cons: Lack of continuity class-to-class, less customization to student needs
                 Classes aren't always available as needed

<u>On-Demand training should be utilized in either approach</u>

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Case Study #1: Mainframe ISV

- Originally Associate Software Engineer (ASE) started over 15 years ago taught internally

- Now vendor delivered and combined ASE & Vitality Programs

- Hundreds hired/trained since inception (ASE, MF Foundation & SysProg Foundation)

- 7-week MF Foundation program, 5-week SysProg Foundation, 4-week ISV Products

- All new hires attend together in Pittsburgh, Europe in Prague and Asia in Hyderabad offices each Summer for team building exercised and activities (Pre-covid) now virtual.

- Success stories... product sustainability, "maturing workforce" addressed... nice mix of early, middle and senior tenure expertise, invigorates entire office, skills transfer (senior to junior and even junior to senior with new technologies!

Case Study #2: Large Insurance Company

- Run mainframe developer bootcamp every 12-18 months for last four years.

- Recruit new hires with non-IT degrees but with critical thinking skills, solid academic history and willingness to learn new things.

- 8-week training program taught as a live classroom.

- Integrate self-paced, on-demand elearning as prerequisite learning for blended approach.

- Adapted new programs for systems programmers and operations staff now too.

- High level of success with 98% finishing the program and becoming mainframe professionals.

Case Study #3: A BCBS Company

- Run several mainframe developer six-week bootcamps per year with rotational program for new hires.

- Recruit New Hires with Enterprise IT degrees from local University (IBM Academic Initiative).

- Train mainframe new sysprogs with custom workshops designed for IBM AI grads with specifically designed homework assignments, quizzes and capstone projects.

- Compliment classroom learning with formalized mentorship programs and rotational advocates or sponsors from previous cohorts.

- Support classroom learning with access to self-paced content thru LMS and access to instructors thru office hours and post-class support (email, phone, etc)

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