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SHARE Anaheim
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Report on the System/390 Needs and Competencies Survey



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Outline

- Background and History
- Survey Questions
- Survey Results
- Findings and Conclusions
- Publications
- Contact Information
- Questions

Background and History

Starting Premise

- There appears to be a shortfall of S/390 professionals:
 - Is there a shortfall? How big? Why?
 - Will it get worse? How fast?
 - Are new graduates entering workforce?
 - How does this compare to all of IT?
 - What will be the effects?
 - What can be done about it?

IT Positions Overall

- Between 1996 and 2006 the number of IT positions will double (1,500,000 to 3,000,000)
- Plus an additional 250K people needed to replace those exiting the workforce

(Department of Labor and Department of Commerce reports)

Approach to Analysis

- Evaluate educational curricula to determine availability of System/390 education
- Survey a group of System/390 users (companies and organizations) to gain quantitative data

Educational Institutions

- Interview three schools in depth who offer System/390 oriented material
 - Dutchess Community College
 - Northern Illinois University
 - University of Nebraska at Omaha
- Search for S/390 teaching institutions via web search and profile matching

Educational Findings

- Very few institutions still offer System/390 courses or focus
- Those who do are mostly community college (2-year) CIS/MIS programs
- Some 4-year institutions offering 2-year MIS degrees
- No Computer Science orientation in these programs (except NIU)

Survey of System/390 Users

- Decision for In-depth survey
 - Ask detailed questions to get a variety of perspectives
 - Will result in comparatively few responses
- Plan for mini-survey at later time to gain specific additional data

Survey of System/390 Users

- Sent to all SHARE System/390 users
- About 43 respondents (represents 54K S390 IT personnel)
- Six “control” respondents interviewed
- Results not statistically significant
- But strongly indicative
 - Cautious conclusions can be drawn
 - Further substantiation can be sought

Survey Questions

Section I:

Company Profile

- Identification data
- Industry group
- Location
- Relative size of organization
 - Employees, IT employees
 - Revenue, IT budget
 - Industry Rank

Section I:

Company Profile

- **Workload Distribution**
 - Existing, New, in 2005
 - WinNT, Unix, S/390, Other
- **Most significant new applications or business solutions in next few years?**
 - What platforms?

Section II:

IT Employment Issues

- By platform and specialty
 - # IT professionals
 - # IT openings
- By platform
 - Overall # openings will rise or fall?
 - How difficult to fill IT positions?
 - How long to become productive?
- If any take much longer, why

Section II:

IT Employment Issues

- What skills wanted in new S/390 Systems and Application people?
- What are top S/390 skill shortages?
- How obtain S/390 education?
- Where do you get new employees?
- What are factors in selecting platform for an application?

Section II:

IT Employment Issues

- Ever moved an application off S/390 due to skills shortage?
- Ever chosen non-S/390 platform for new application due to skills shortage?
- Age distribution for employees in S/390 specialties

Section III:

CS/MIS Graduates

- Know of any college or university that prepares CS/MIS students in S/390?
- Any basis for salary premium for S/390 skills in graduates?
- If so, what percentage?

Section III:

CS/MIS Graduates

- Describe today's CS/MIS graduates
 - Good theory, little practical experience
 - Totally desktop/Unix focused, don't understand enterprise environment
 - Excellent skills, practical focus, just what we need
 - Broad based background on which I can build skills I need

Section III:

CS/MIS Graduates

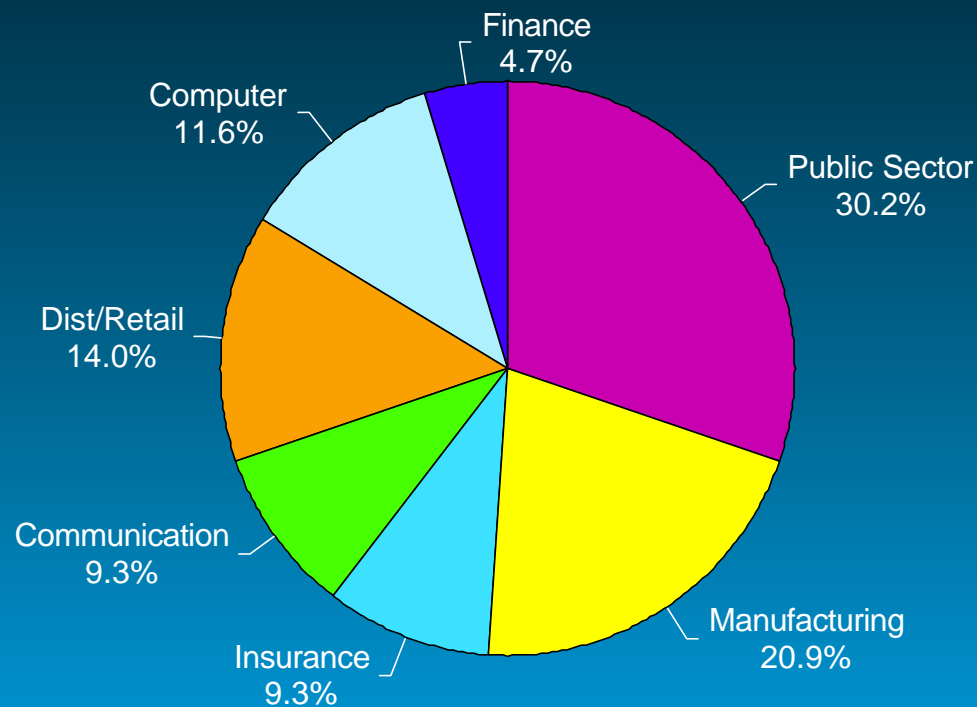
- Have any co-op or internship with local college or university?
- Be willing to work with local college or university on S/390 course content or internship program?
- How benefit your organization?

Survey Results

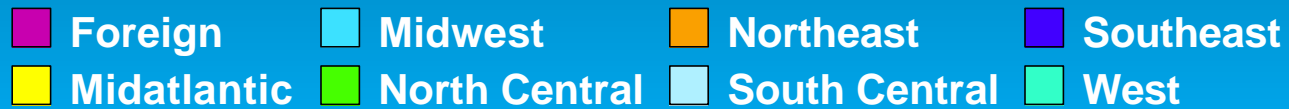
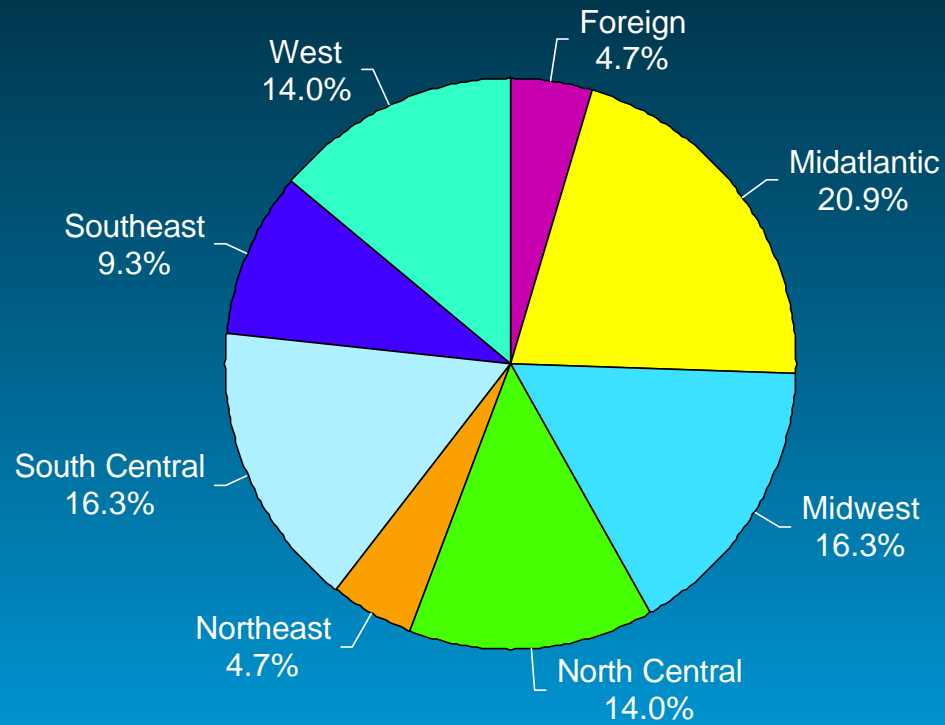
Demographics

	Total	Average	Median
Total Employees	988,998	24,122	8,000
IT Employees (Central Org)	54,992	1,309	240
Total Revenue (Millions)	\$147,273	\$4,909	\$1,600
IT Budget (Millions)	\$12,031	\$401	\$10.5

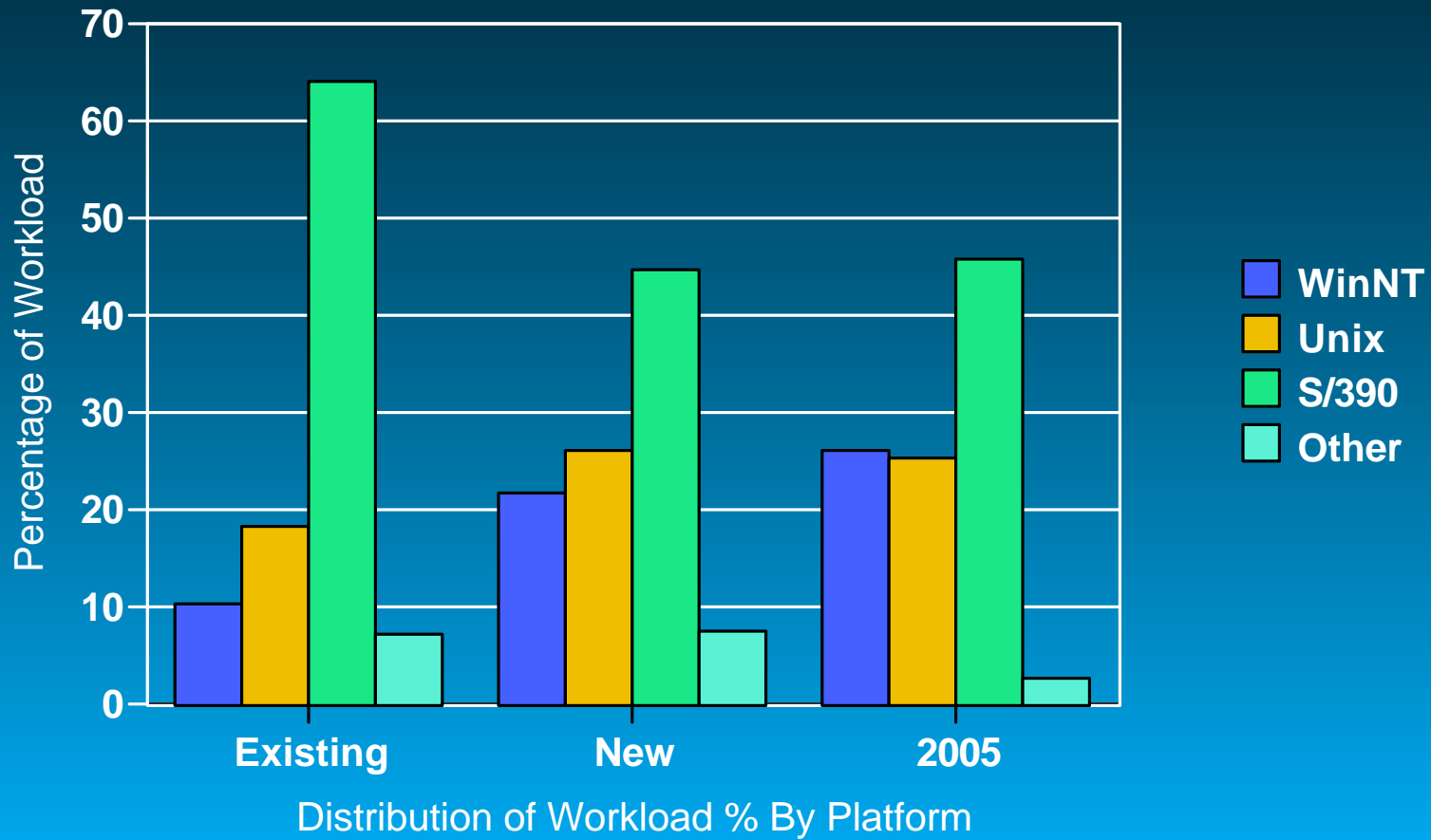
Industry Sector Distribution



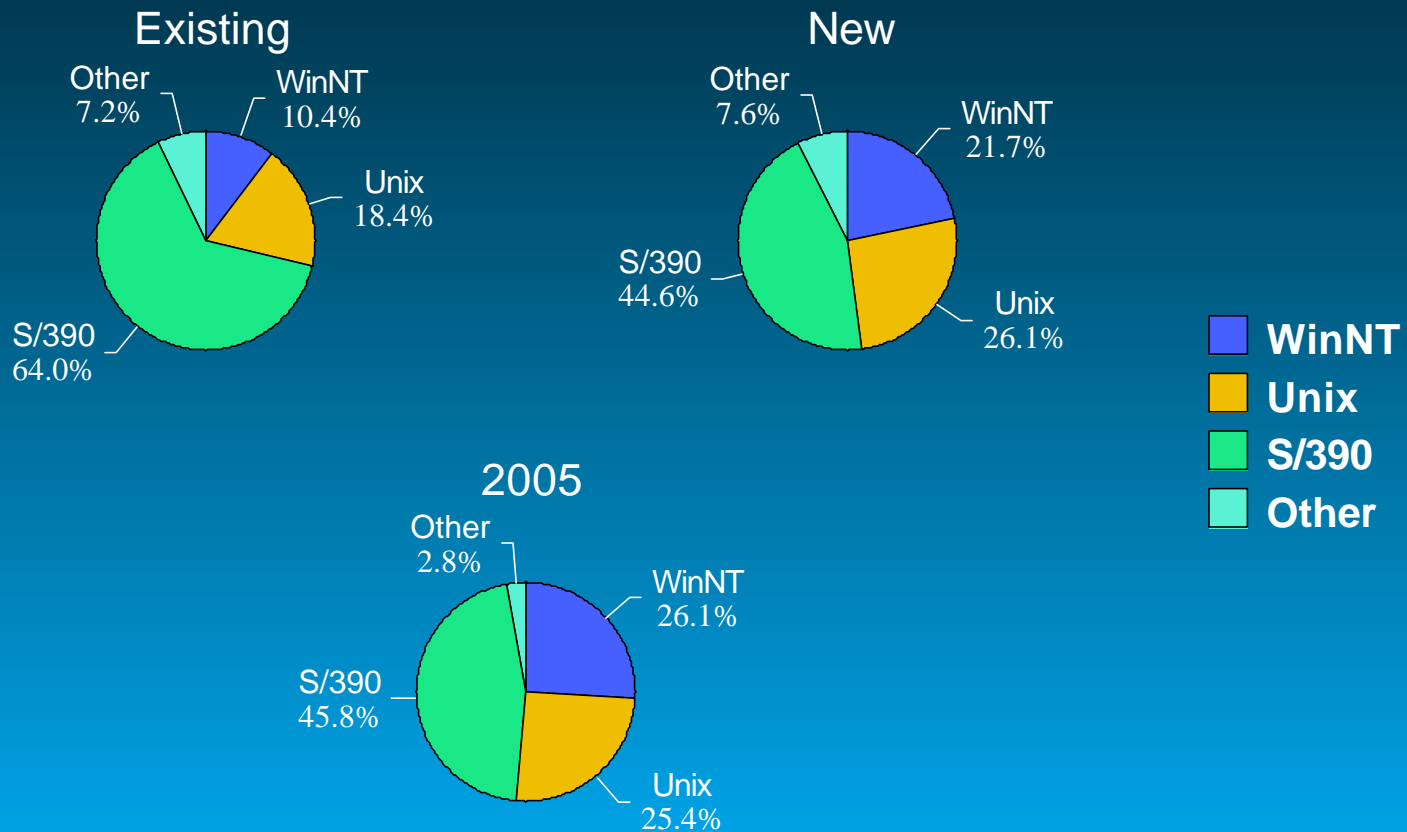
Location



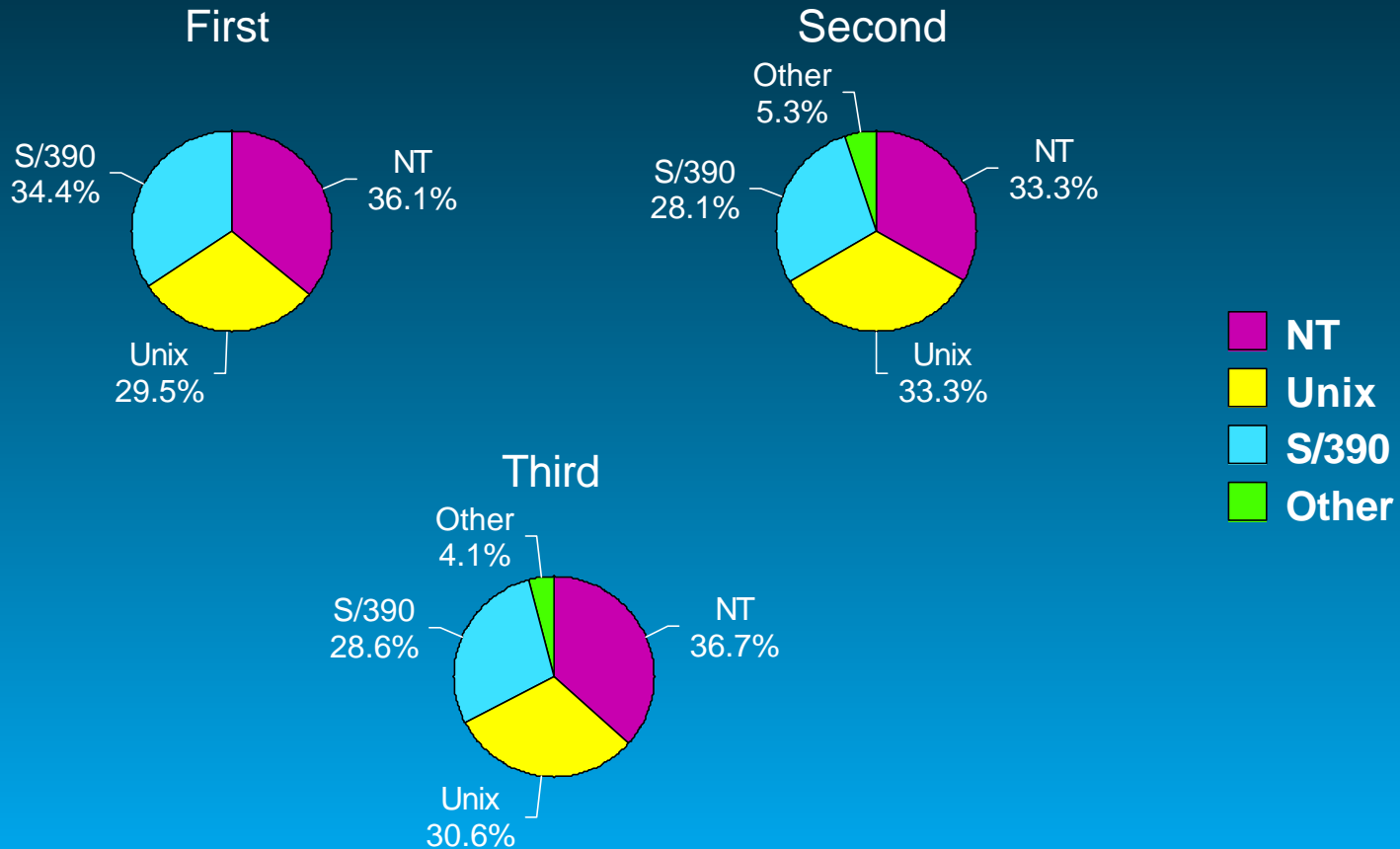
IT Workload Distribution



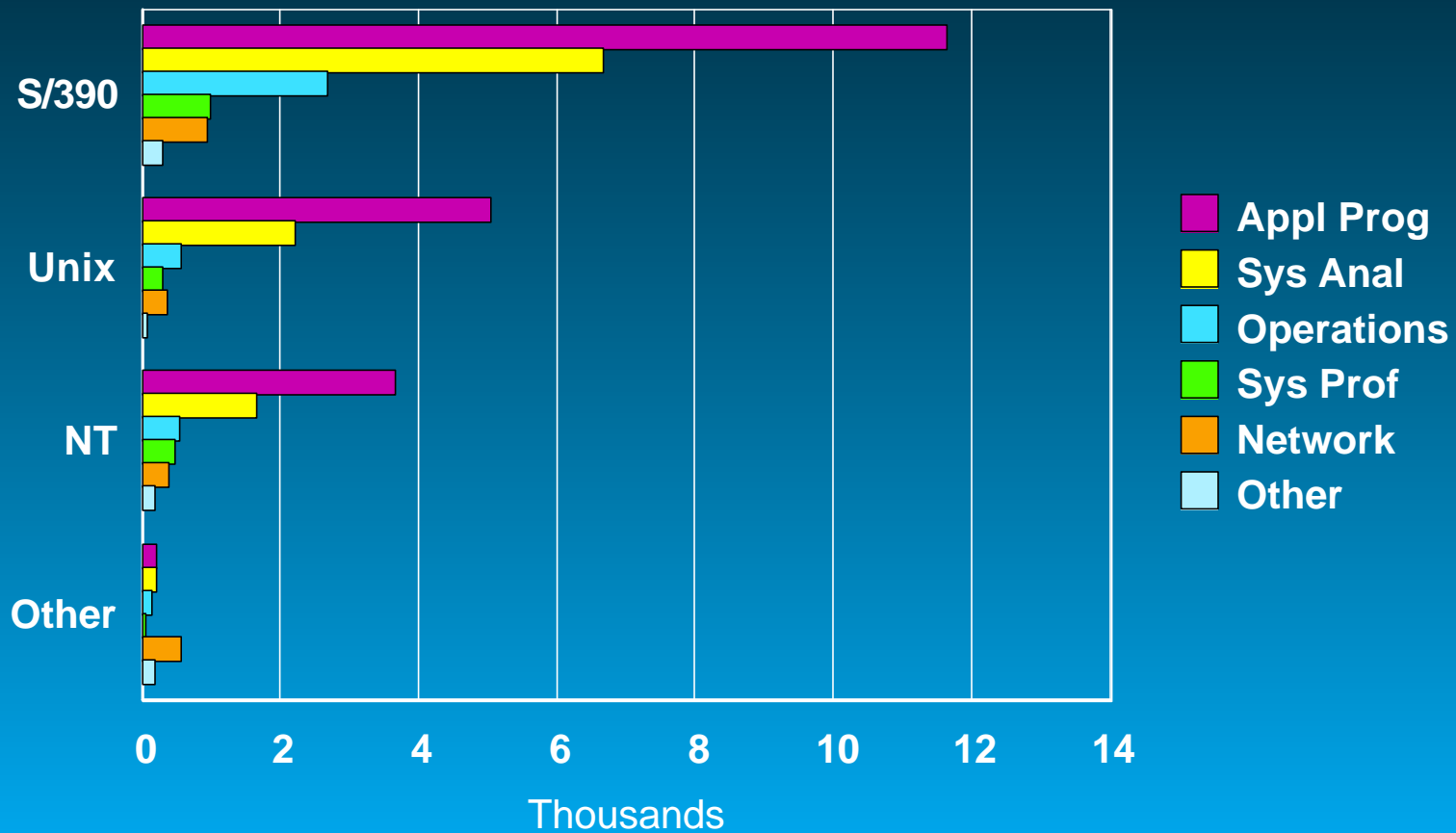
IT Workload Distribution



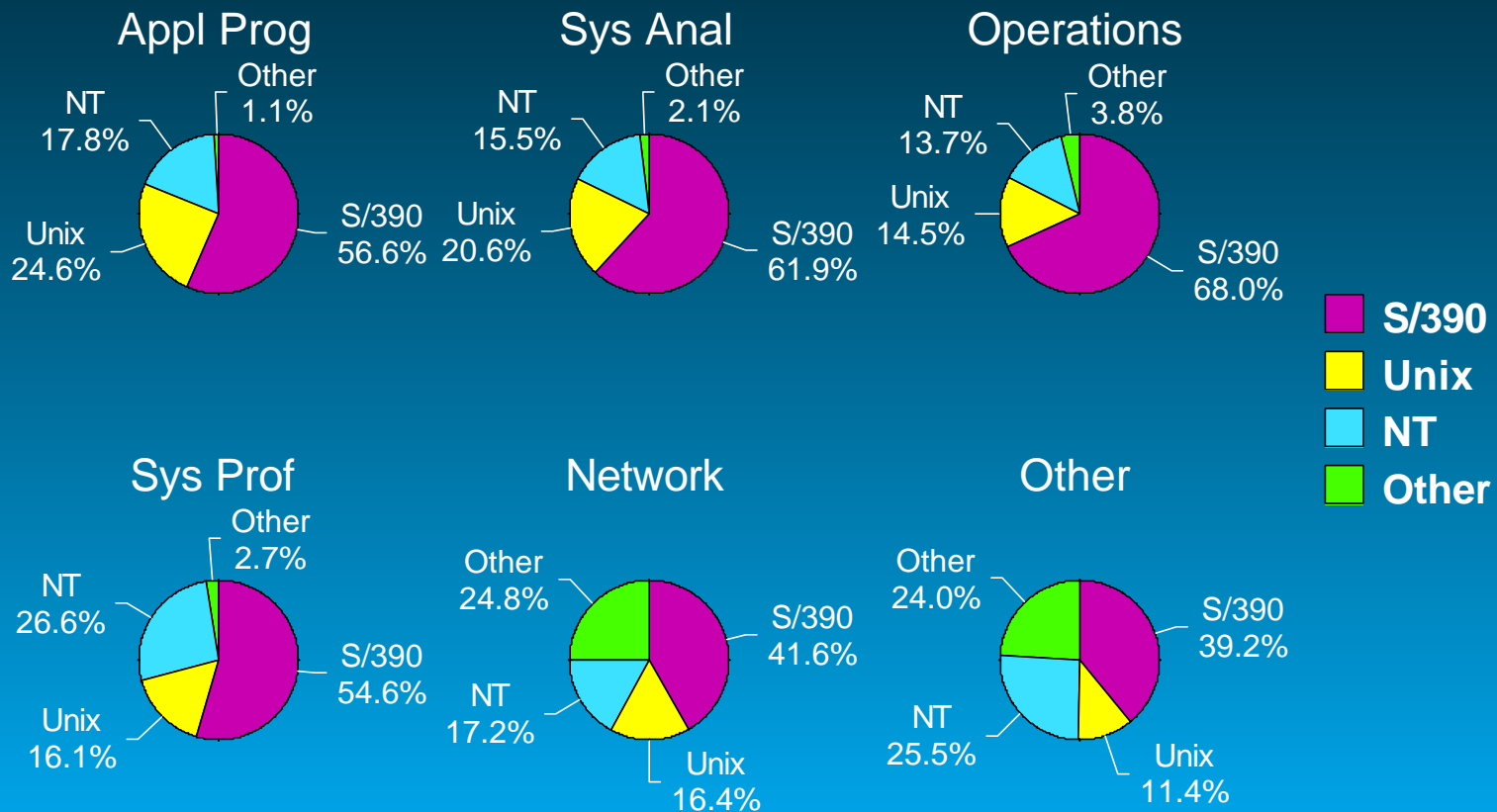
Platform for top three new applications or solutions



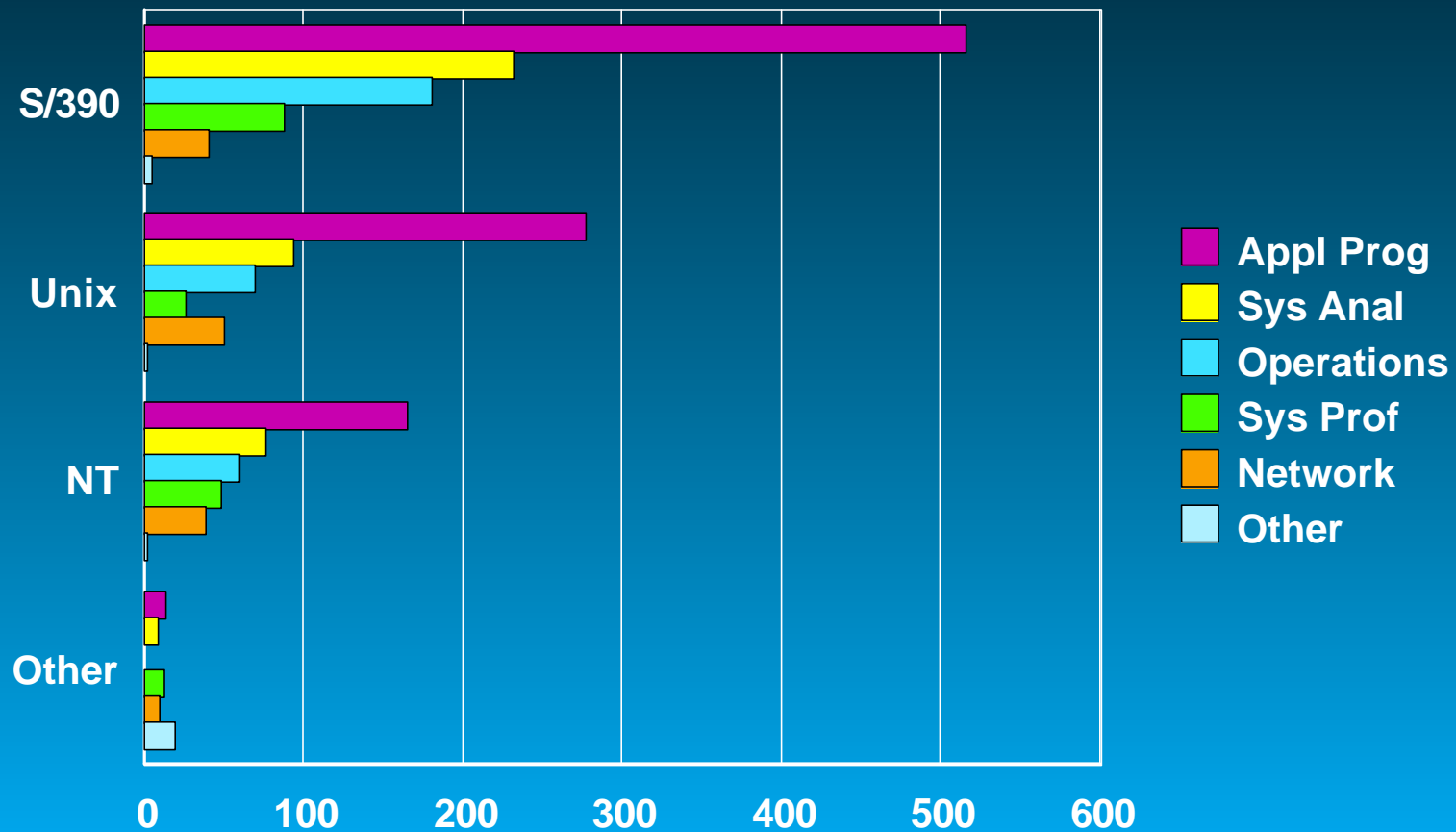
IT Employees by profession and platform



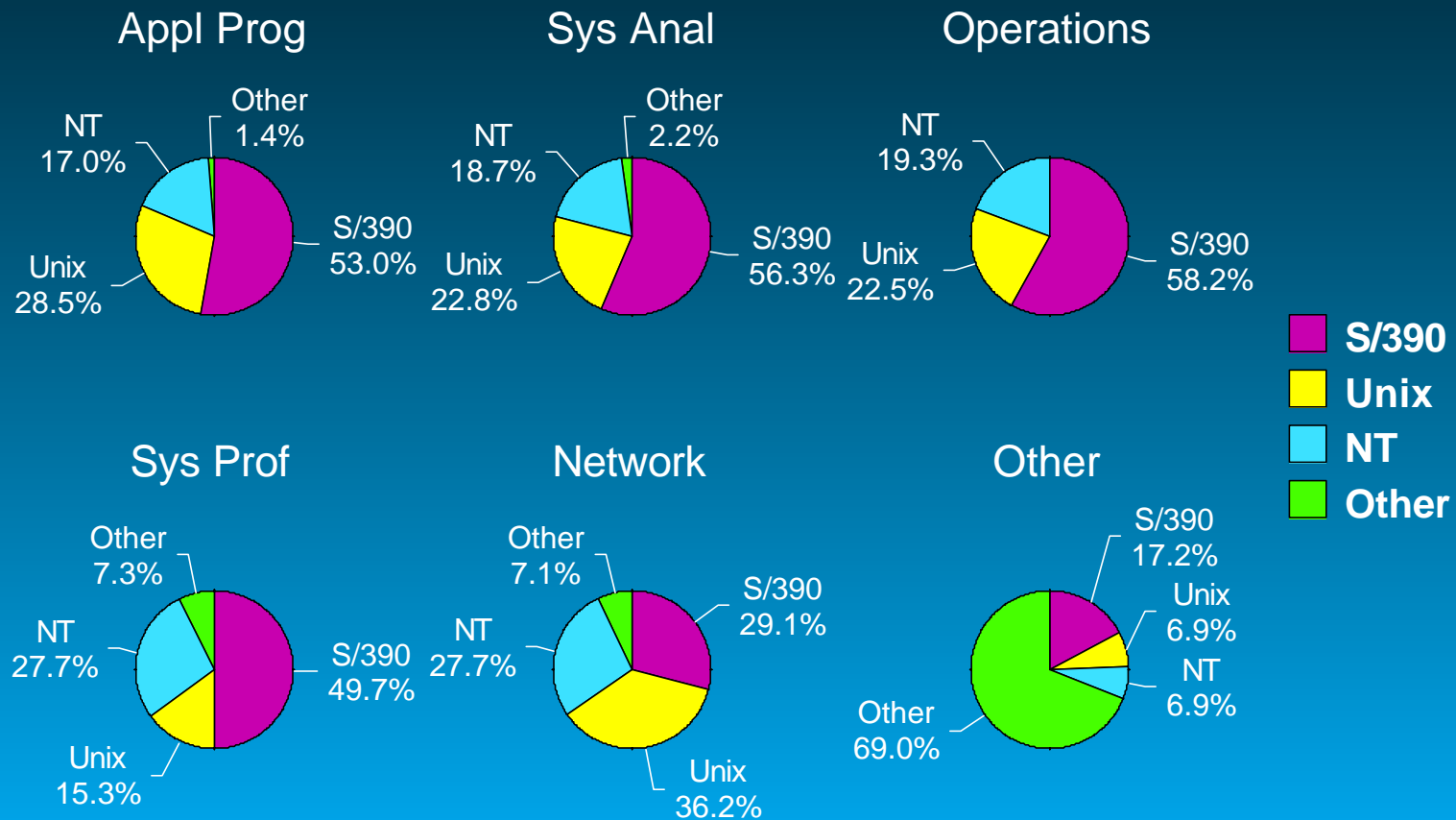
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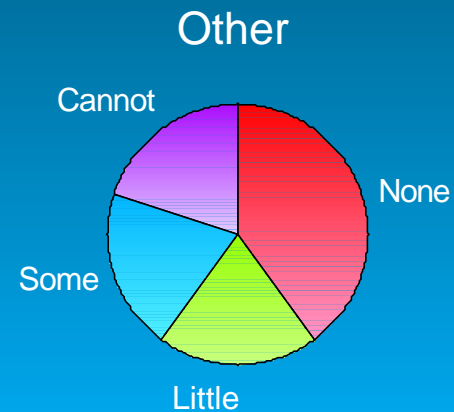
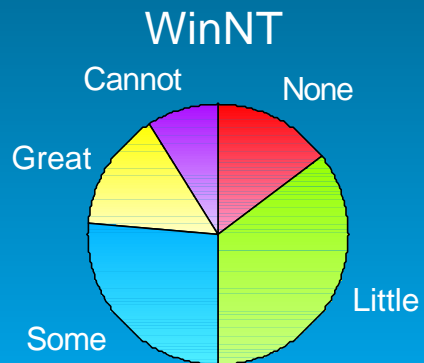
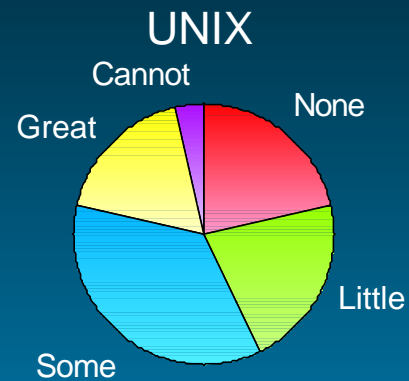
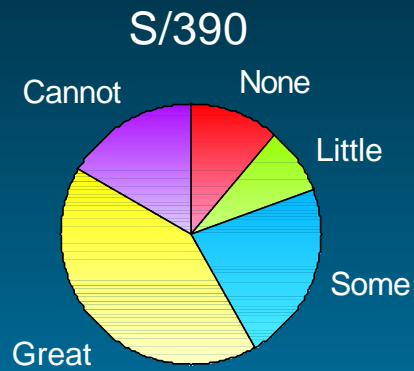
IT openings by profession and platform



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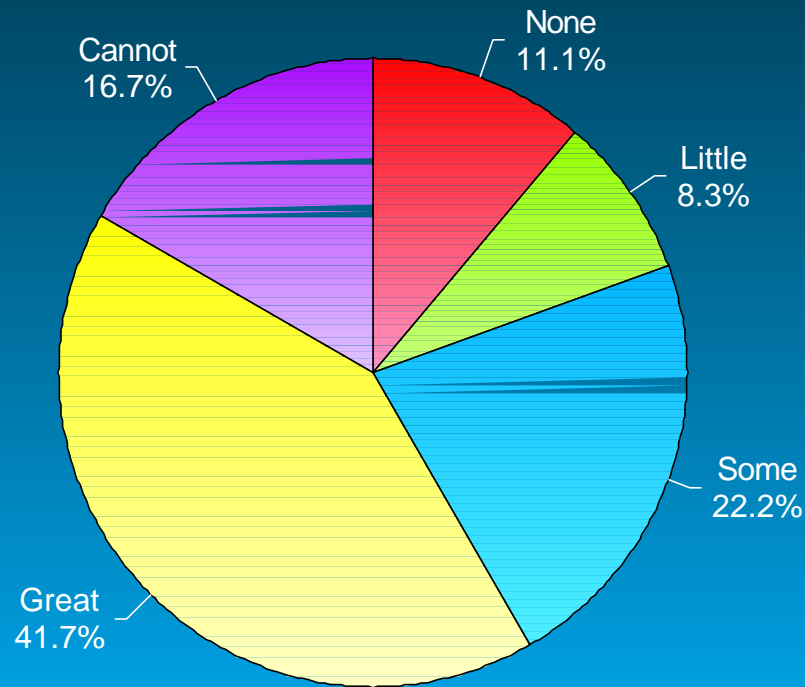


Difficulty in finding IT Personnel



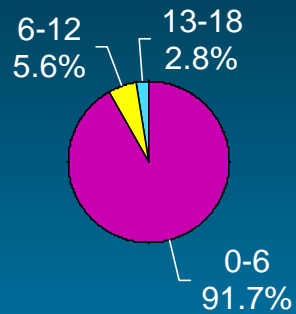
Difficulty in finding S/390 Personnel

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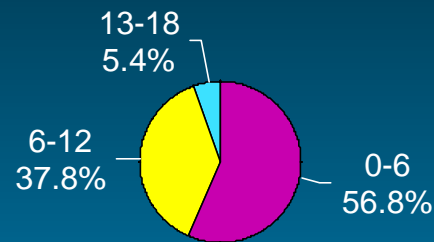


How long to become productive?

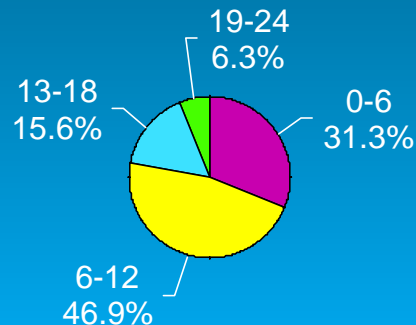
Desktop



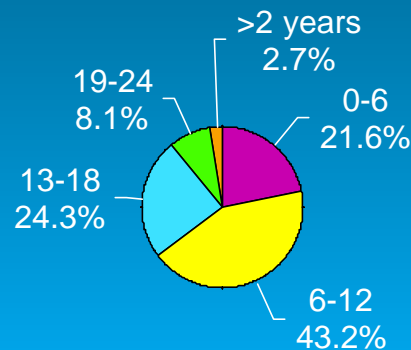
NT



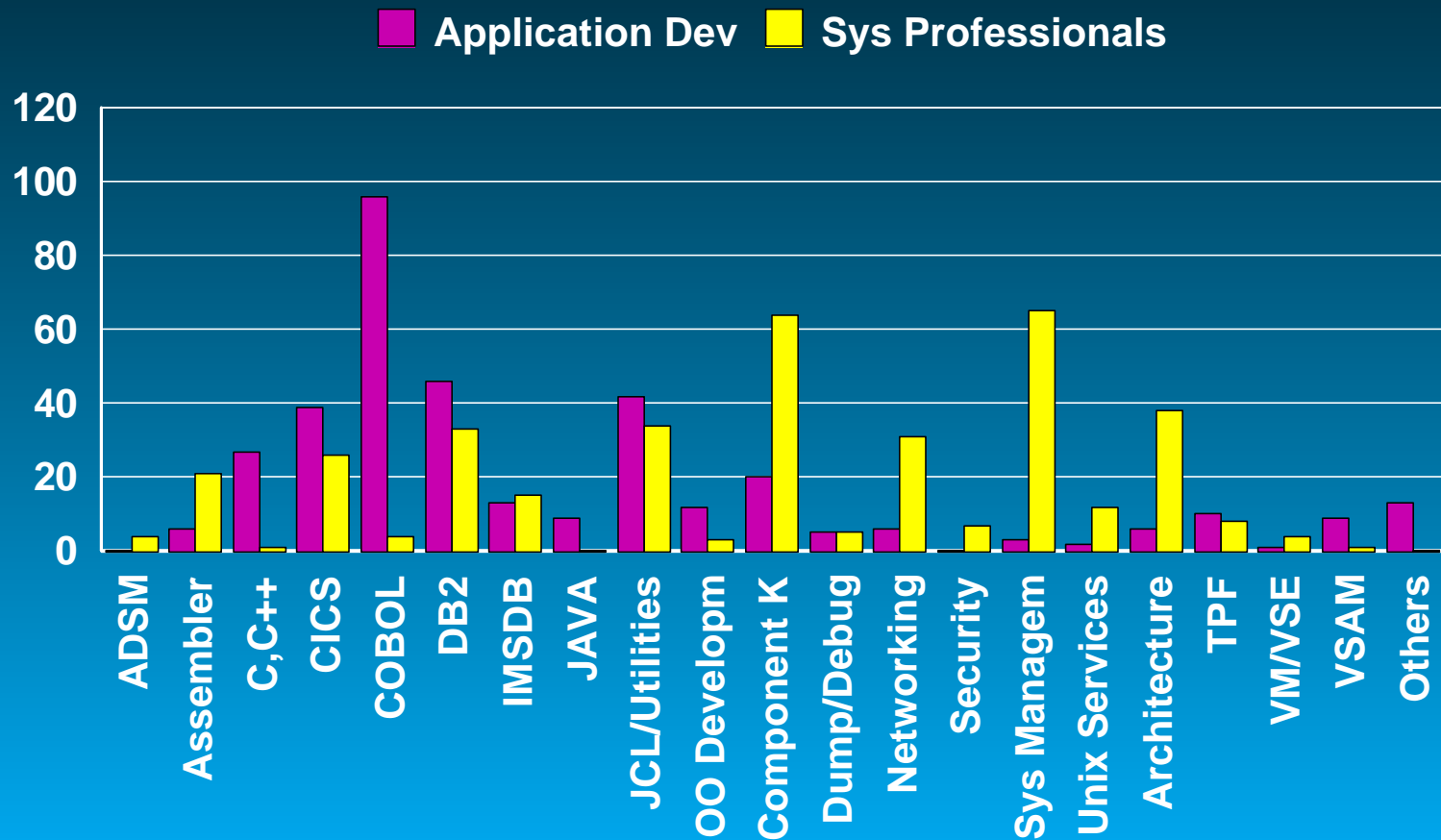
Unix



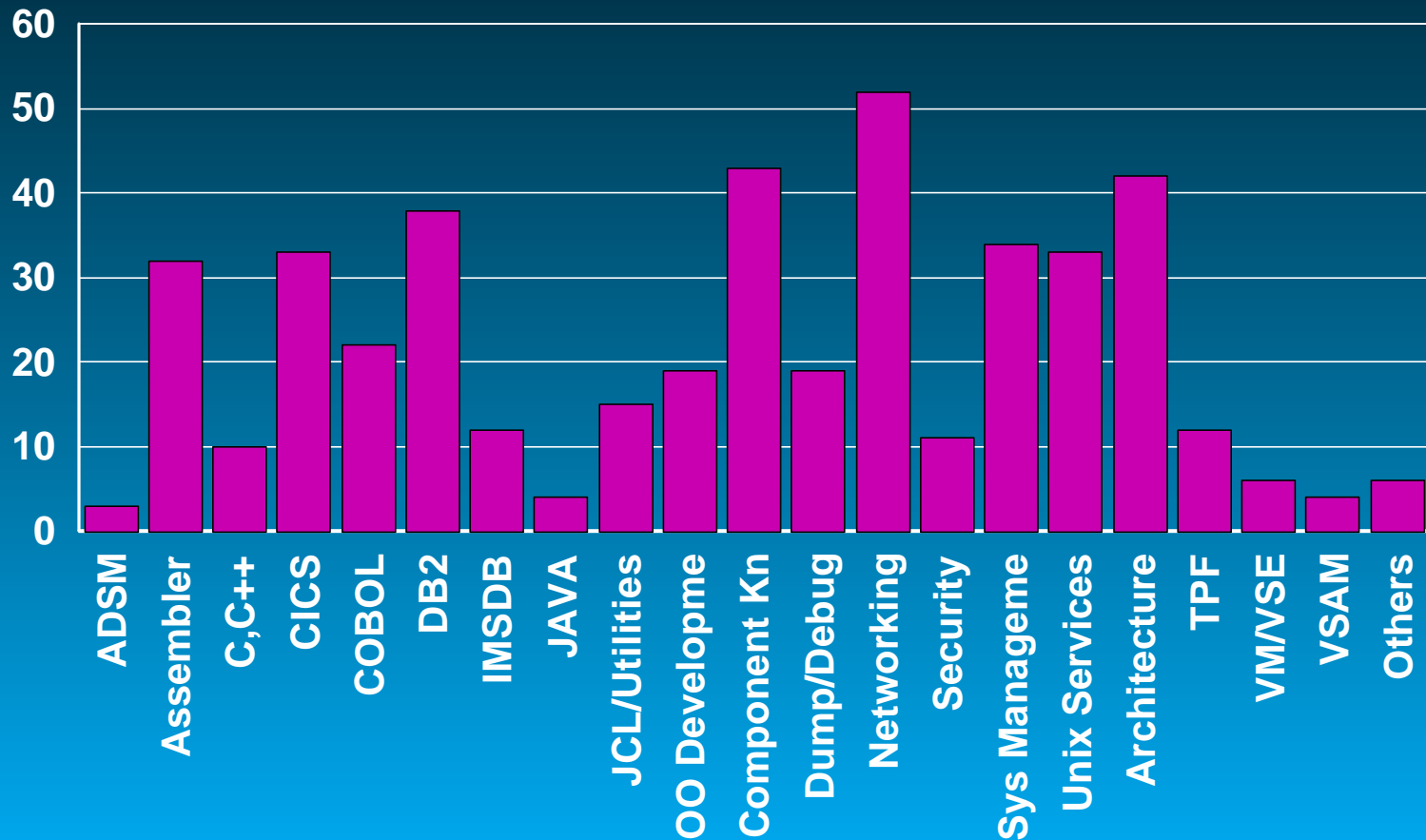
S/390



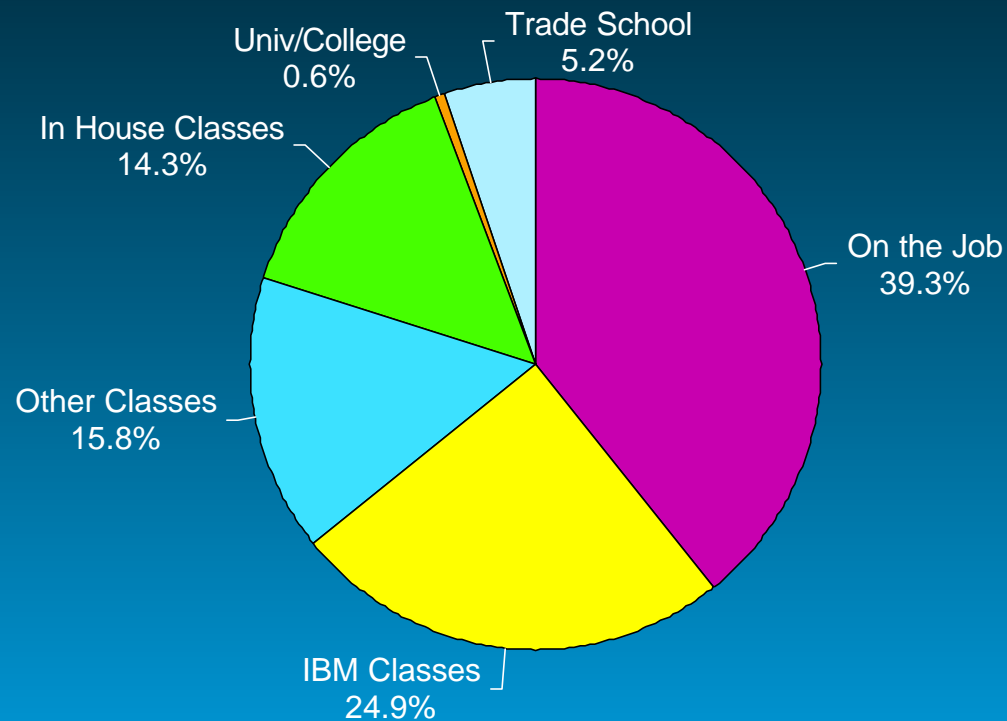
Skills wanted in new hires



Top S/390 Skills Shortages

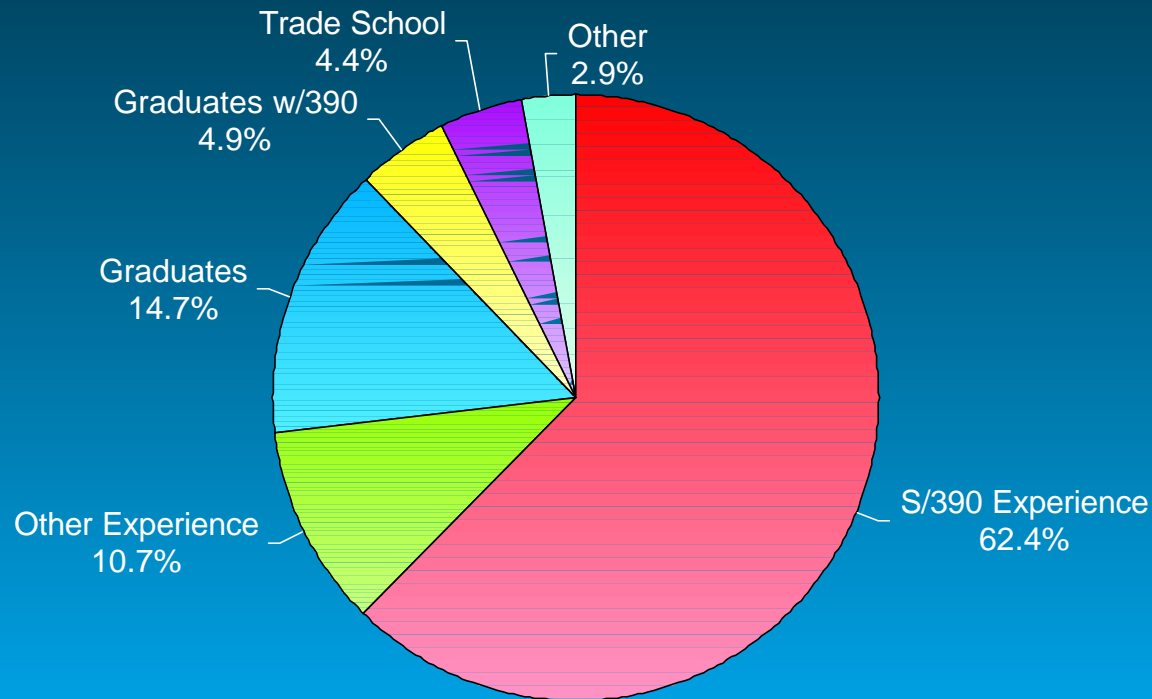


How obtain S/390 education?

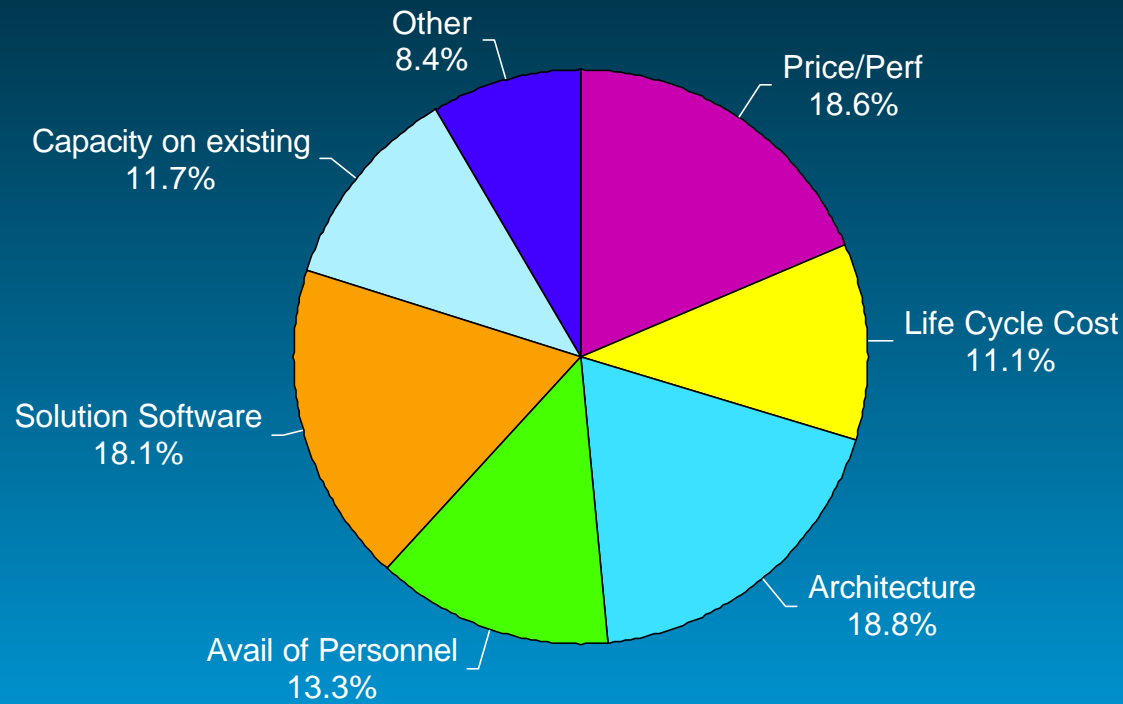


Source of S/390 Hires

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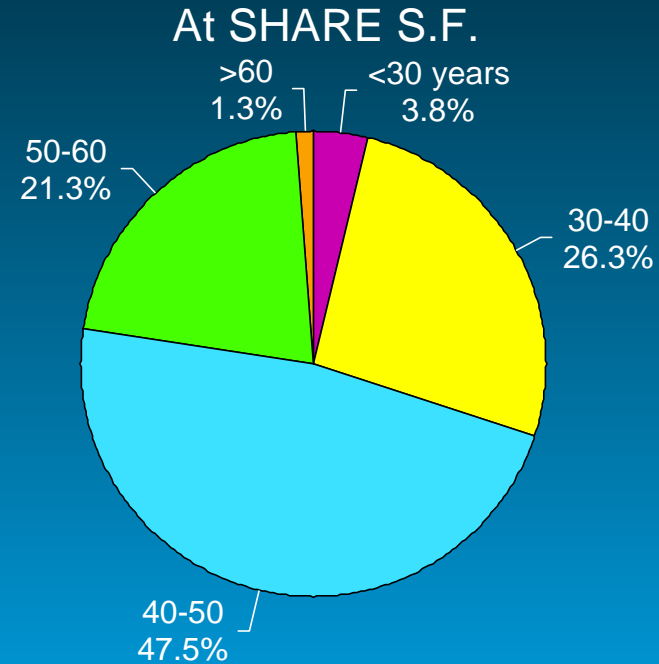
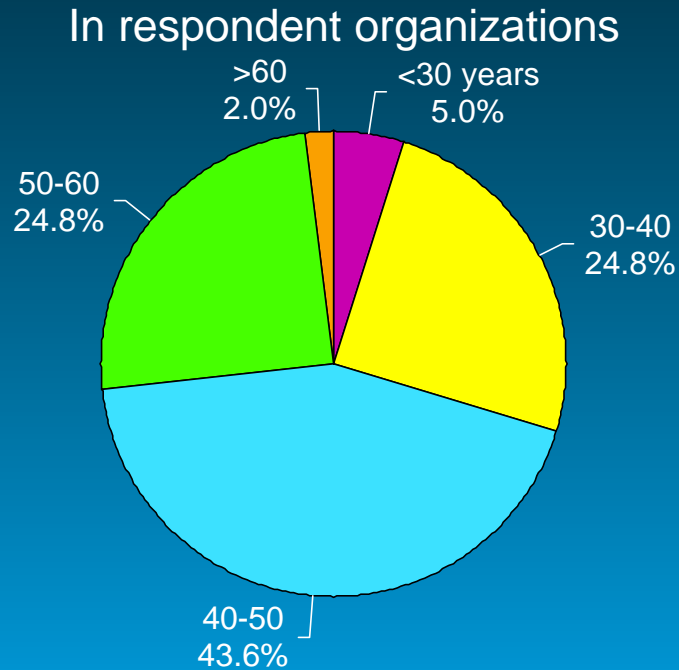
Platform selection for new applications



S/390 skills shortage affecting platform choice

- 9.5% of respondents have moved an application off of S/390 due to skills shortage
- 7.3% of respondents have chosen a non-S/390 platform for a new application because they couldn't find S/390 skills

Age of S/390 Professionals



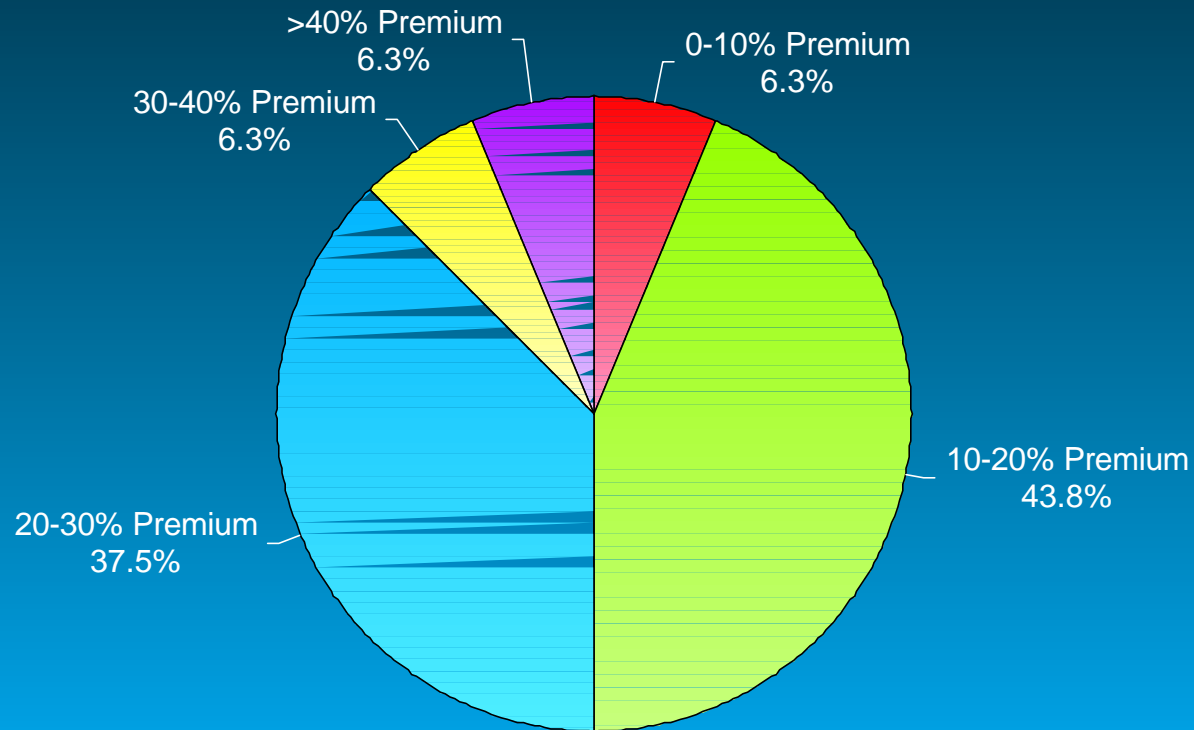
■ <30 years ■ 30-40 ■ 40-50 ■ 50-60 ■ >60

Age of S/390 Professionals

- Assuming distribution between 40 and 50 is even in our data, 50% of S/390 workforce is > 45 years old and 20-25% are older than 50
- The Department of Commerce says that 75% of computer systems analysts and scientists and nearly 80% of programmers are under 45

Premium for S/390 Expertise

(Among companies offering a premium)



Schools teaching S/390

- Less than 20% knew of any Universities or Colleges teaching CS/MIS courses focussed on S/390 or with S/390 content

Describe today's CS/MIS graduate

	1st	2nd	3rd	4th	5th
Good theoretical background, little practical experience	8	14	0	0	0
Totally desktop or UNIX focused, don't understand enterprise environment	24	6	0	0	0
Excellent skills, practical focus, exactly what we need	0	0	0	5	0
Broadly based, good background upon which I can build the skills I need	2	5	7	0	0
Other	1	0	0	0	0

Co-op or Internship Programs

- 46% of respondents have some form of co-op or internship program with a local college or university (or, if an educational institution, have one with a local business)
- 56% would be willing to work with a local college or university if they were interested in developing S/390 course content or internship programs

Findings and Conclusions

Findings and Conclusions

- The S/390 workforce is shrinking:
 - 5% openings industry-wide
- We are mostly hiring from one another
- Few new IT graduates entering S/390
 - Schools not teaching
 - Not glamorous or new
- Competition from general industry:
 - positions doubling in 10 years

Findings and Conclusions

- Biggest companies do more cross-training and internal education
- Most of the rest do without or "hire from the fringes"
- This strategy won't work for long: losing more of the existing workforce each year

Findings and Conclusions

- If support becomes a big enough problem companies will be forced off S/390 even if it is the best answer
- 5-10% of respondents had made such a decision

Findings and Conclusions

- Need schools to turn out more graduates with CIS/MIS orientation and S/390 familiarity
- Most of us would support internship, partnerships, co-op programs
- Position S/390 as "part of the real business world" to students and graduates

Publications

Publications

- *The Future of System/390: Successes, Threats and Remedies*
 - ▶ DCTA, Inc., July 1999
- White paper based on survey data which examines magnitude of problem and proposes remedies to be undertaken by users, academia and vendor(s)

Publications

- *The Five Waves of Enterprise Computing*
 - ▶ Burgoyne & Associates, July 1999
- White paper by John Burgoyne, the other principal on the project, discussing the possible reemergence of the mainframe

Copies of Material

- This presentation and both papers may be downloaded in PDF format from the DCTA website at:

<http://www.dcta.com/pub/>

- Hardcopies of the presentation or the reports are available from DCTA

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Questions?

Thank you for your attention.

Don't forget the session evaluation forms.

Stay for the next presentation by Dave Connors from IBM System/390 Division University Programs and hear how IBM is addressing these issues.