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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

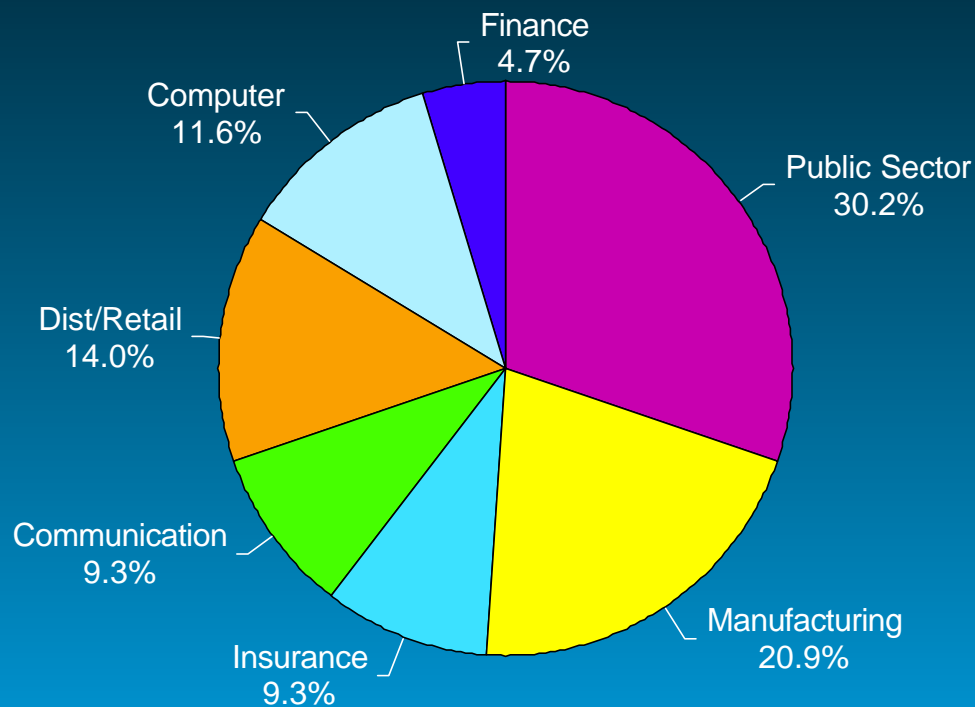
- Have any co-op or internship with local college or university?
- Be willing to work with local college or university on S/390 course content or internship program?
- How benefit your organization?

Survey Results

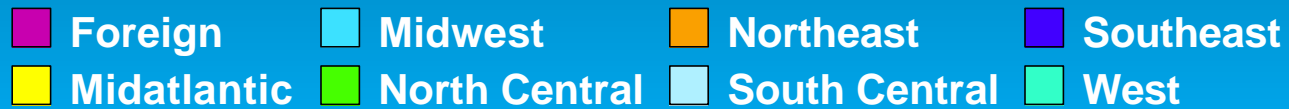
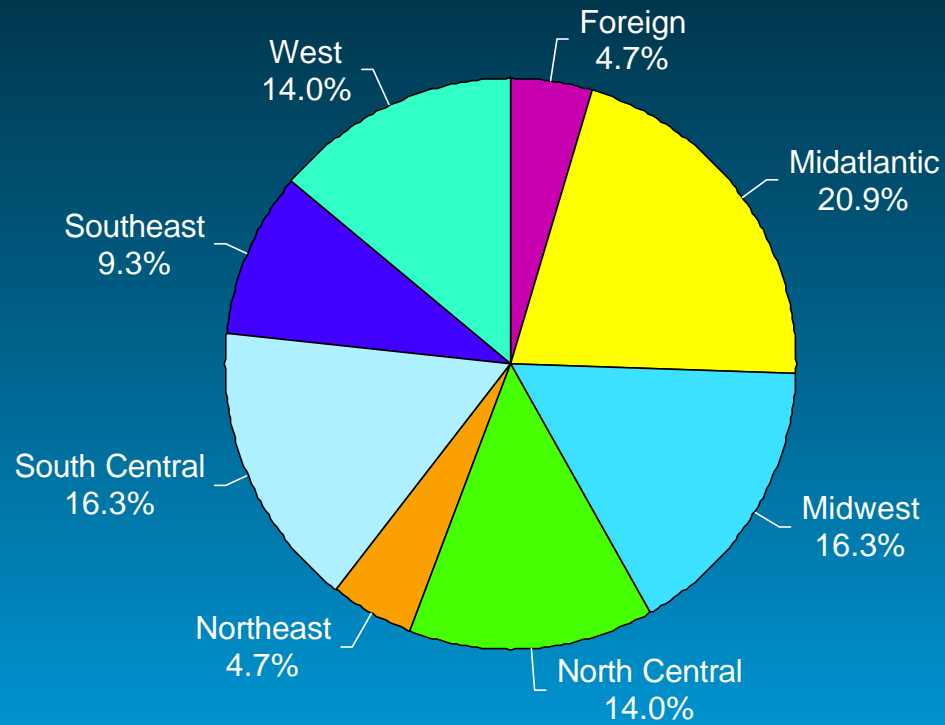
Demographics

	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

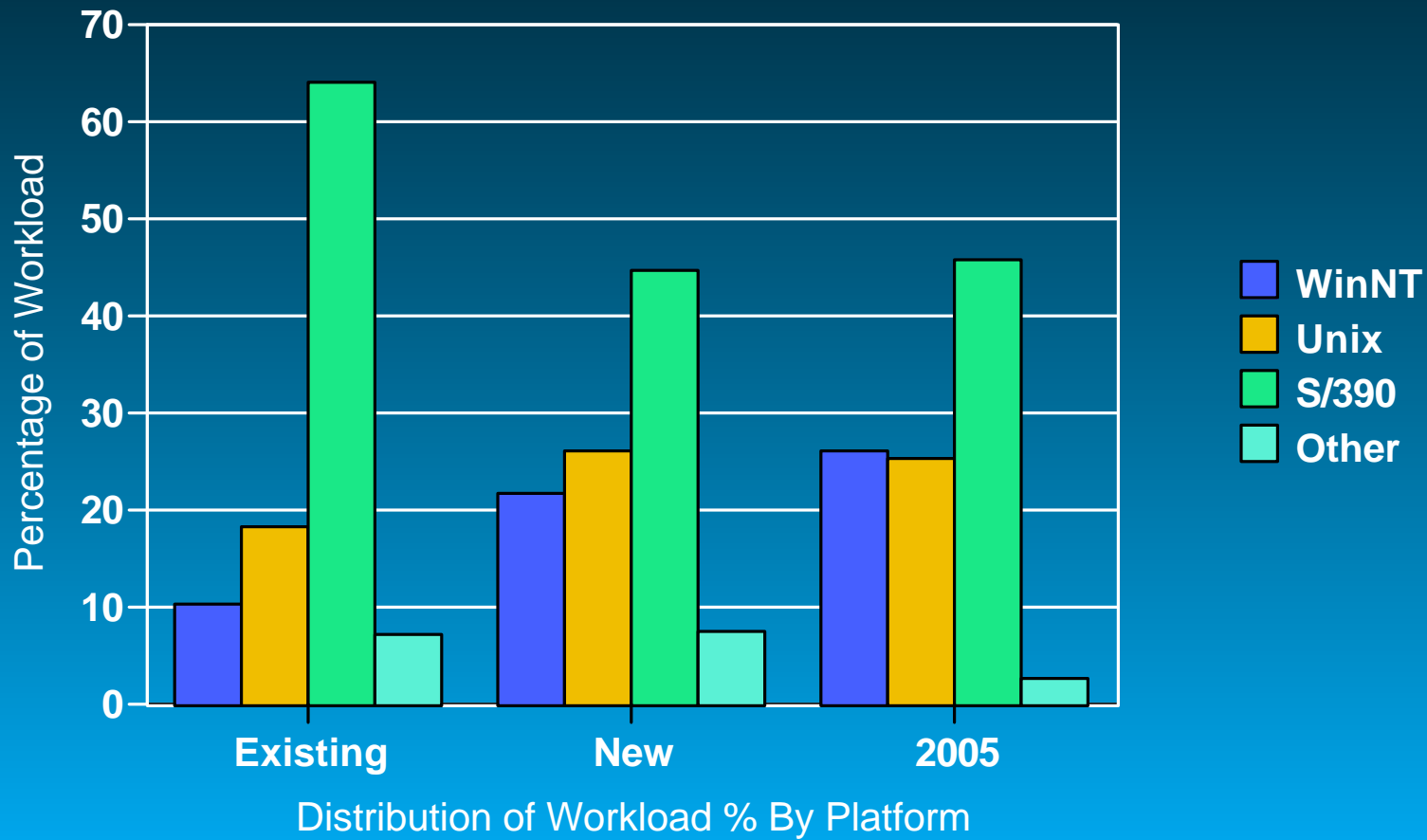
Industry Sector Distribution



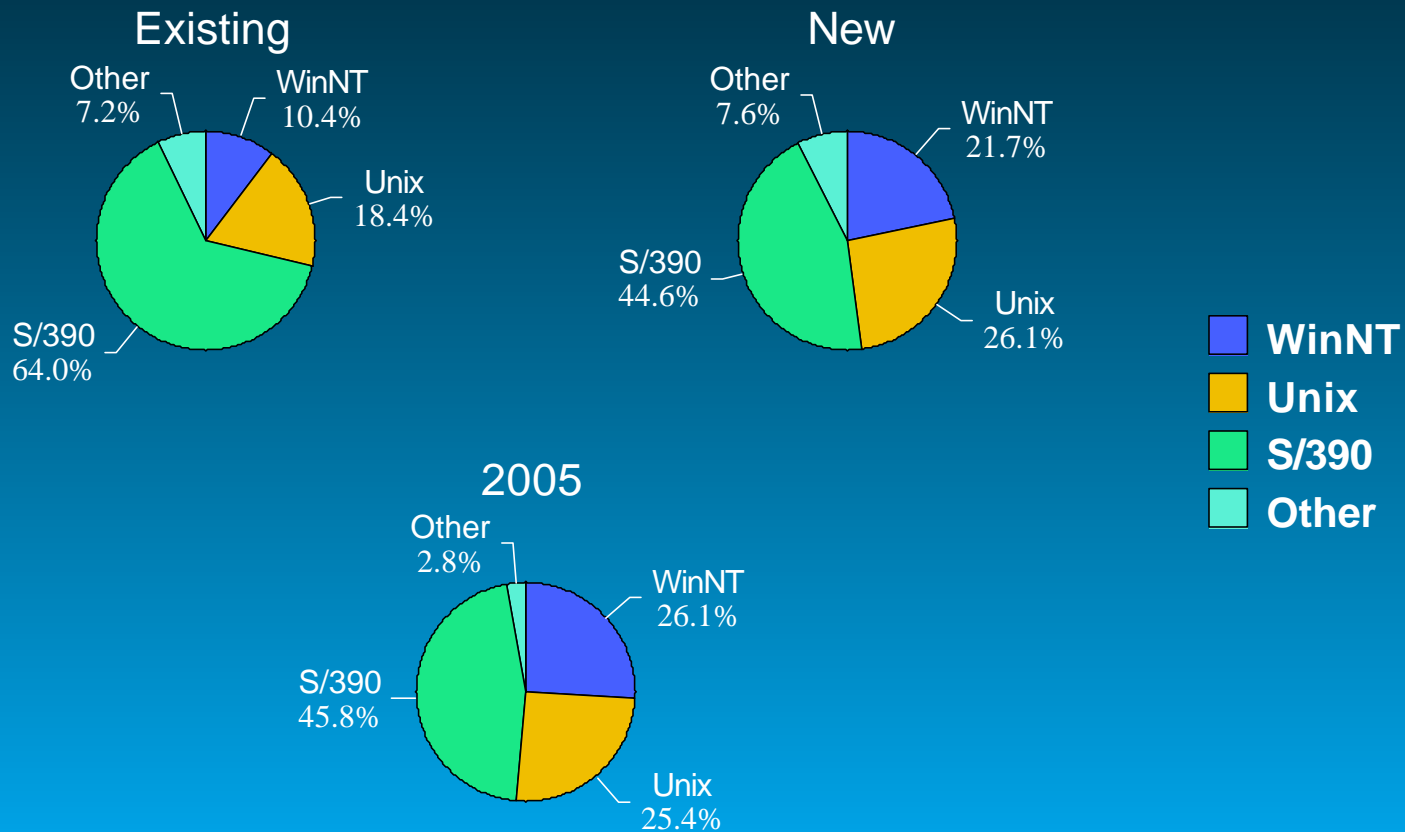
Location



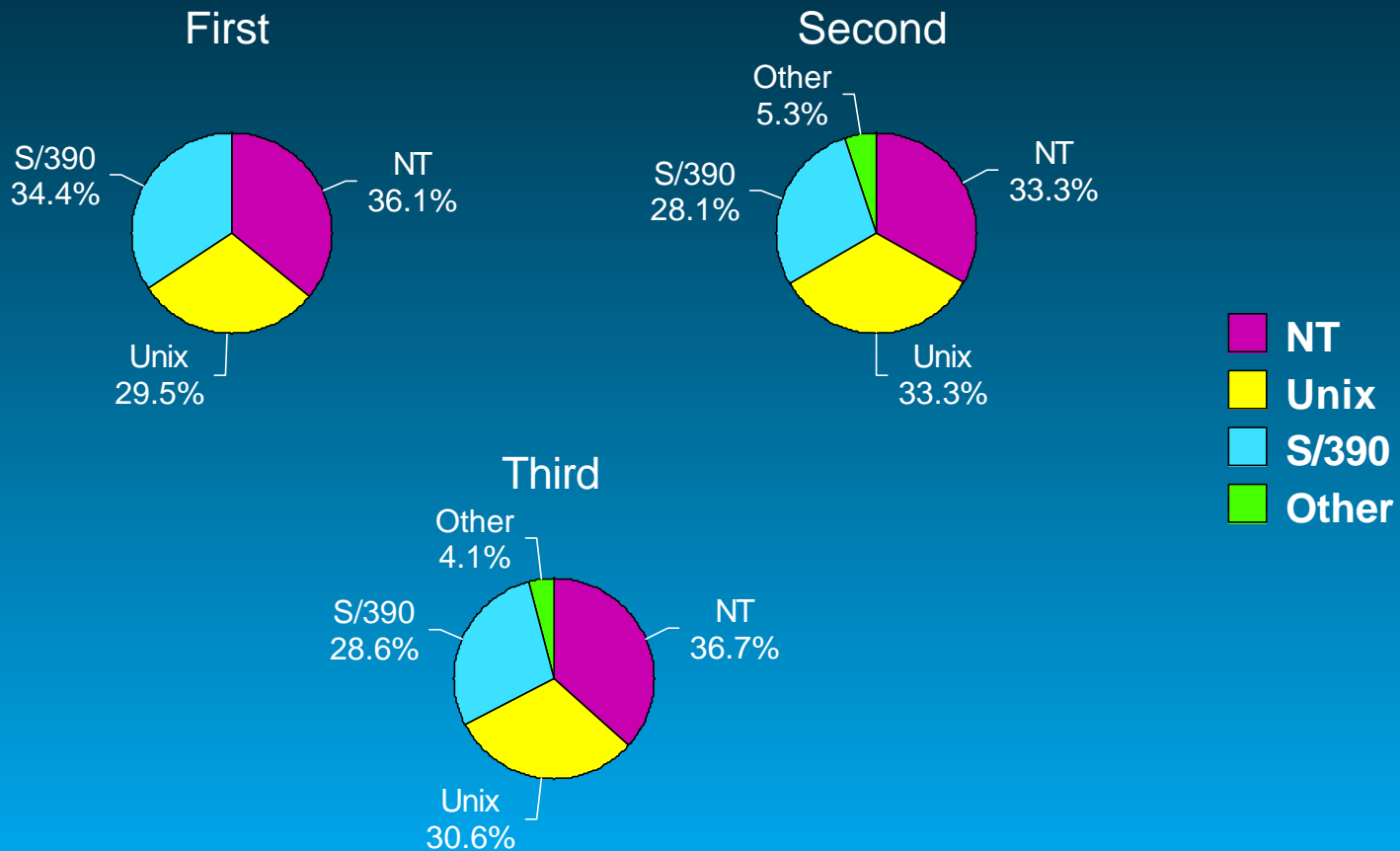
IT Workload Distribution



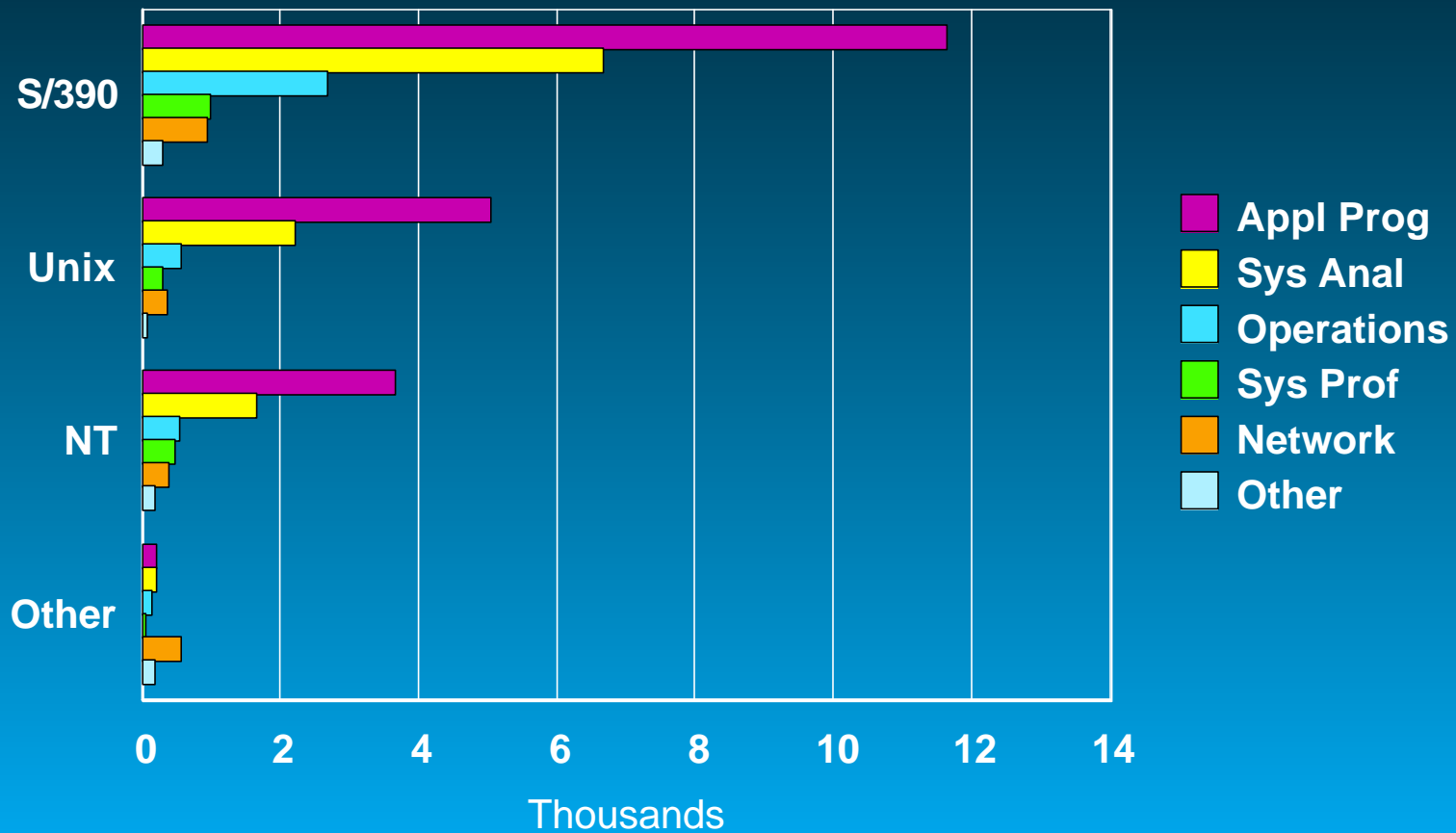
IT Workload Distribution



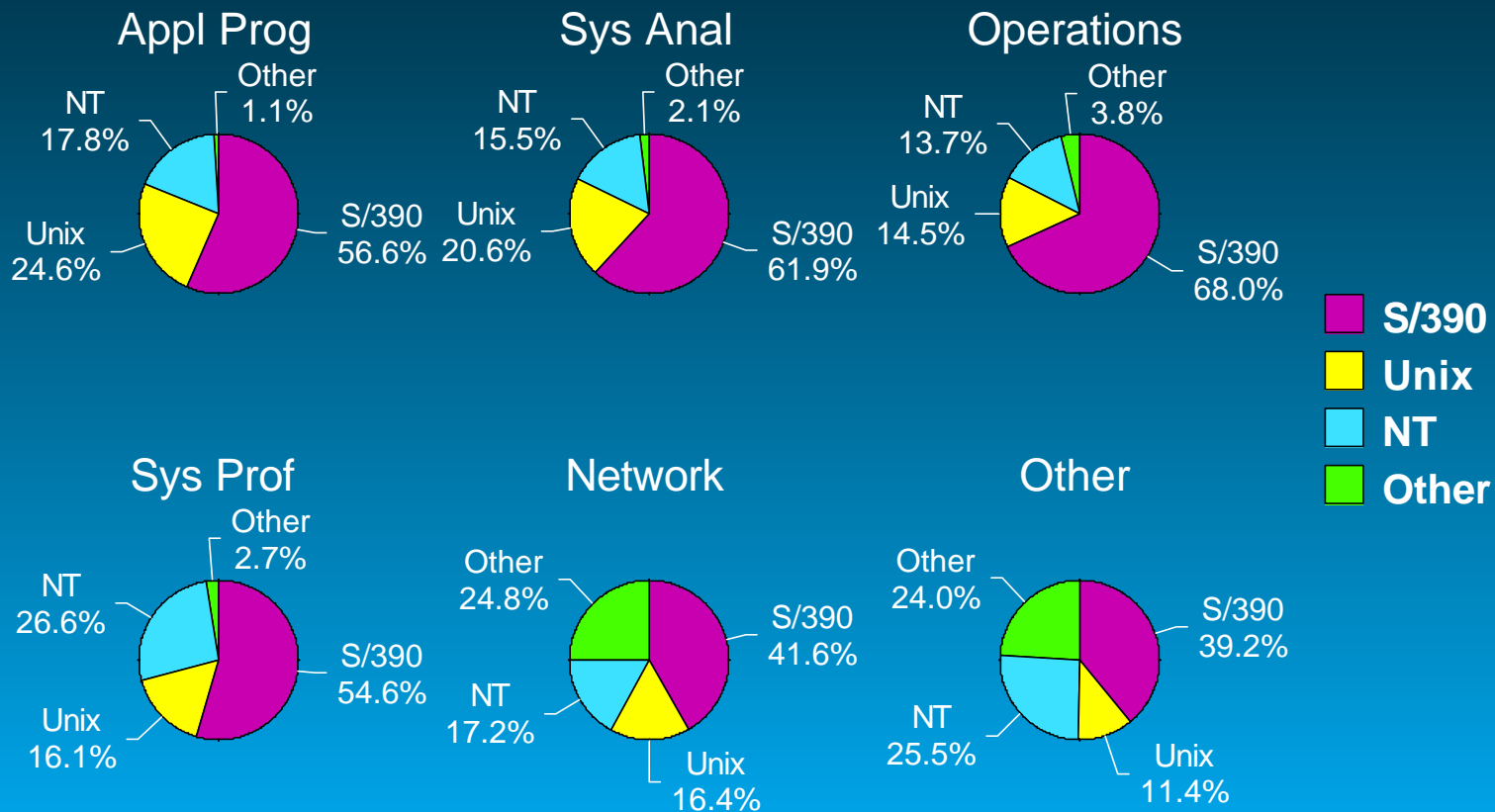
Platform for top three new applications or solutions



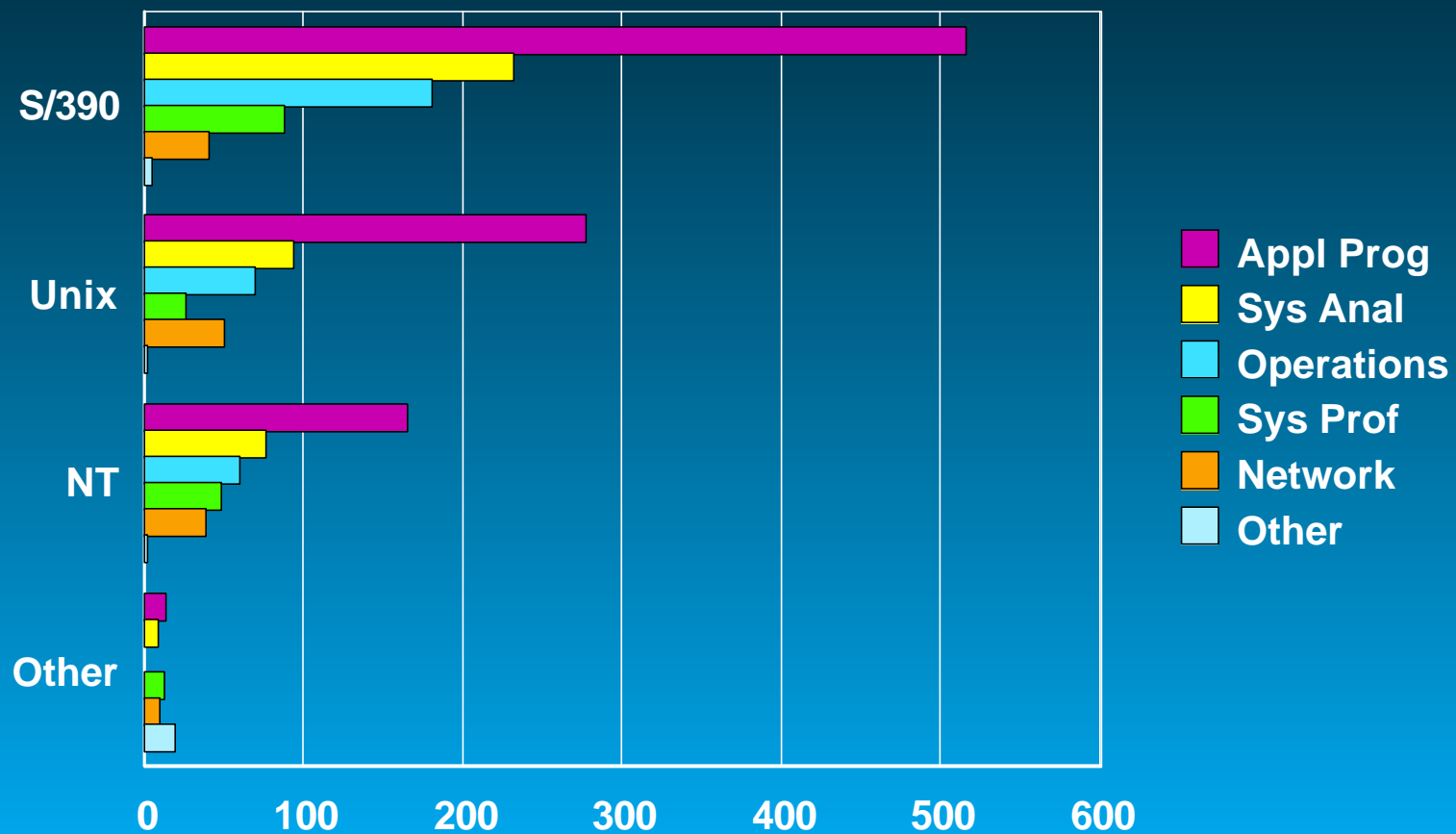
IT Employees by profession and platform



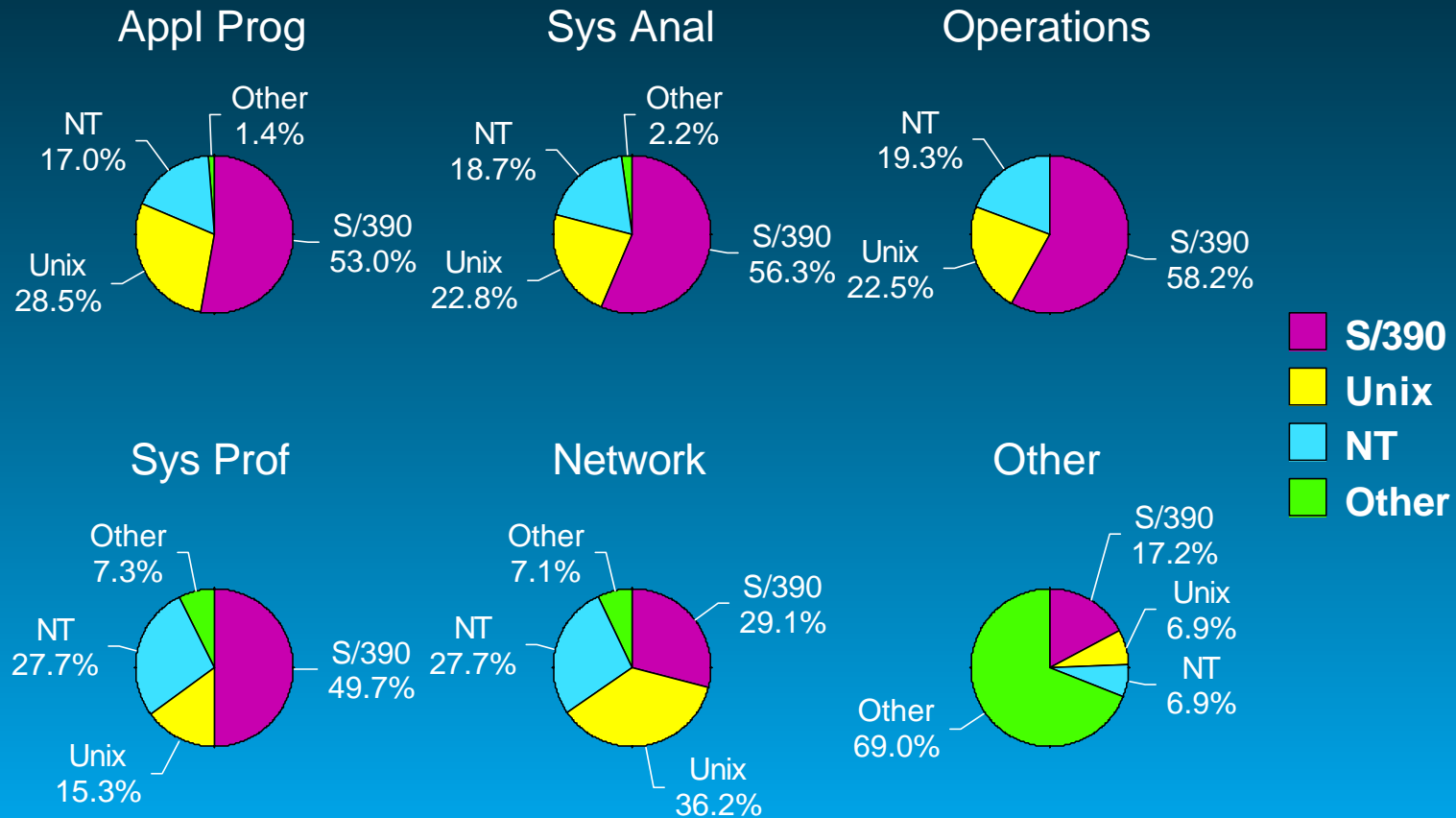
IT Employees by profession and platform



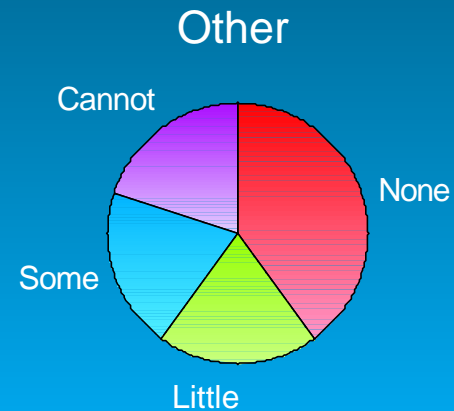
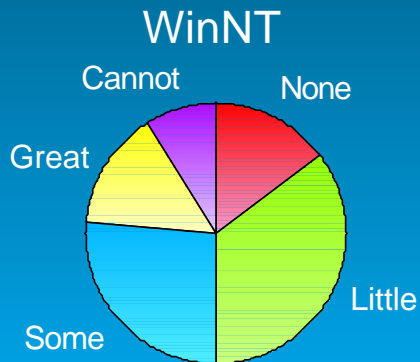
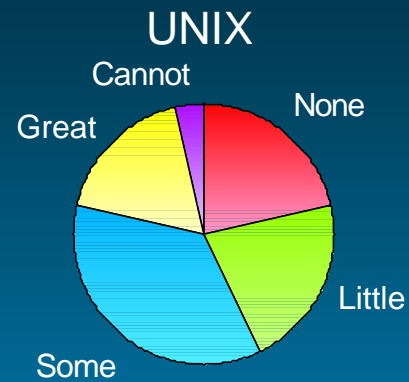
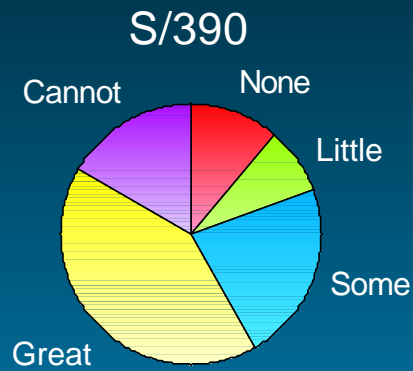
IT openings by profession and platform



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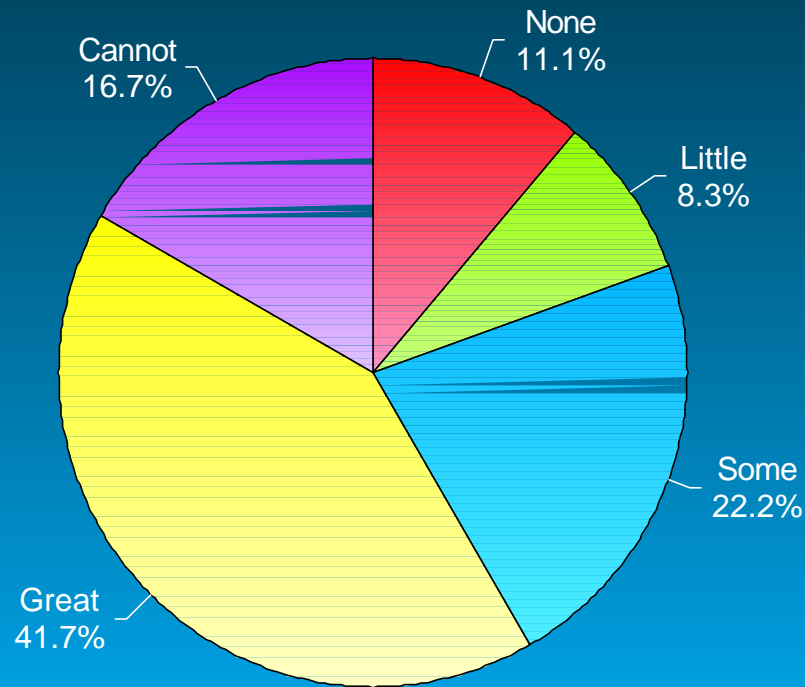


Difficulty in finding IT Personnel



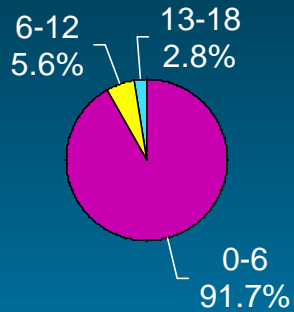
Difficulty in finding S/390 Personnel

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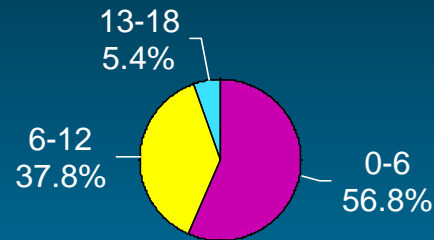


How long to become productive?

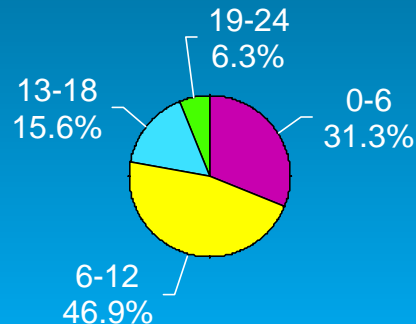
Desktop



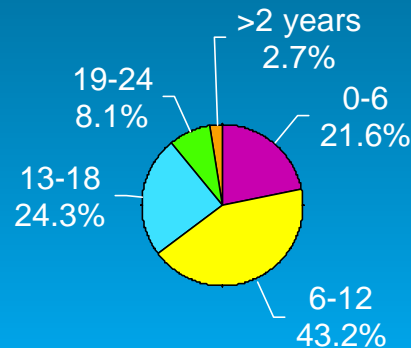
NT



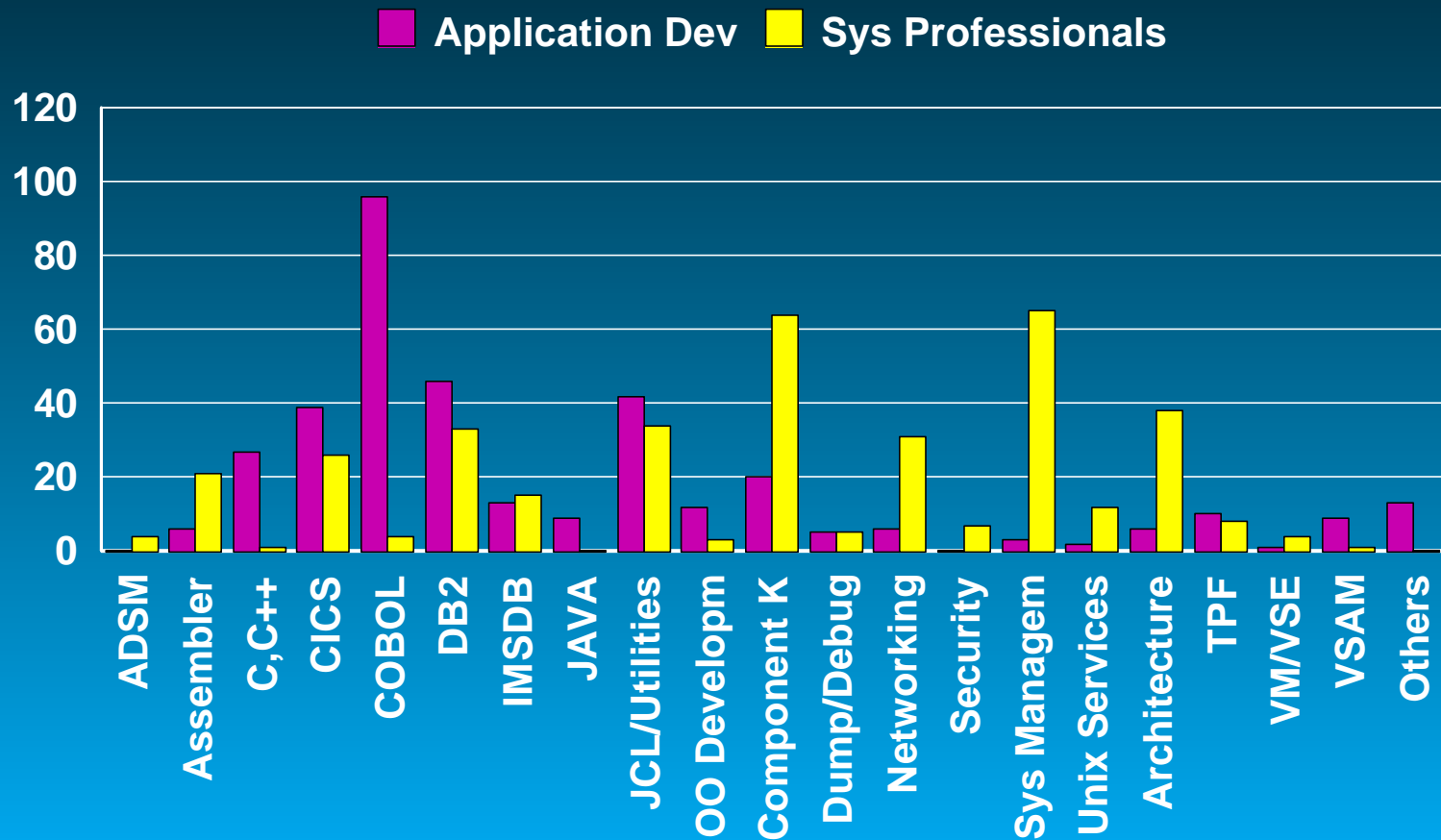
Unix



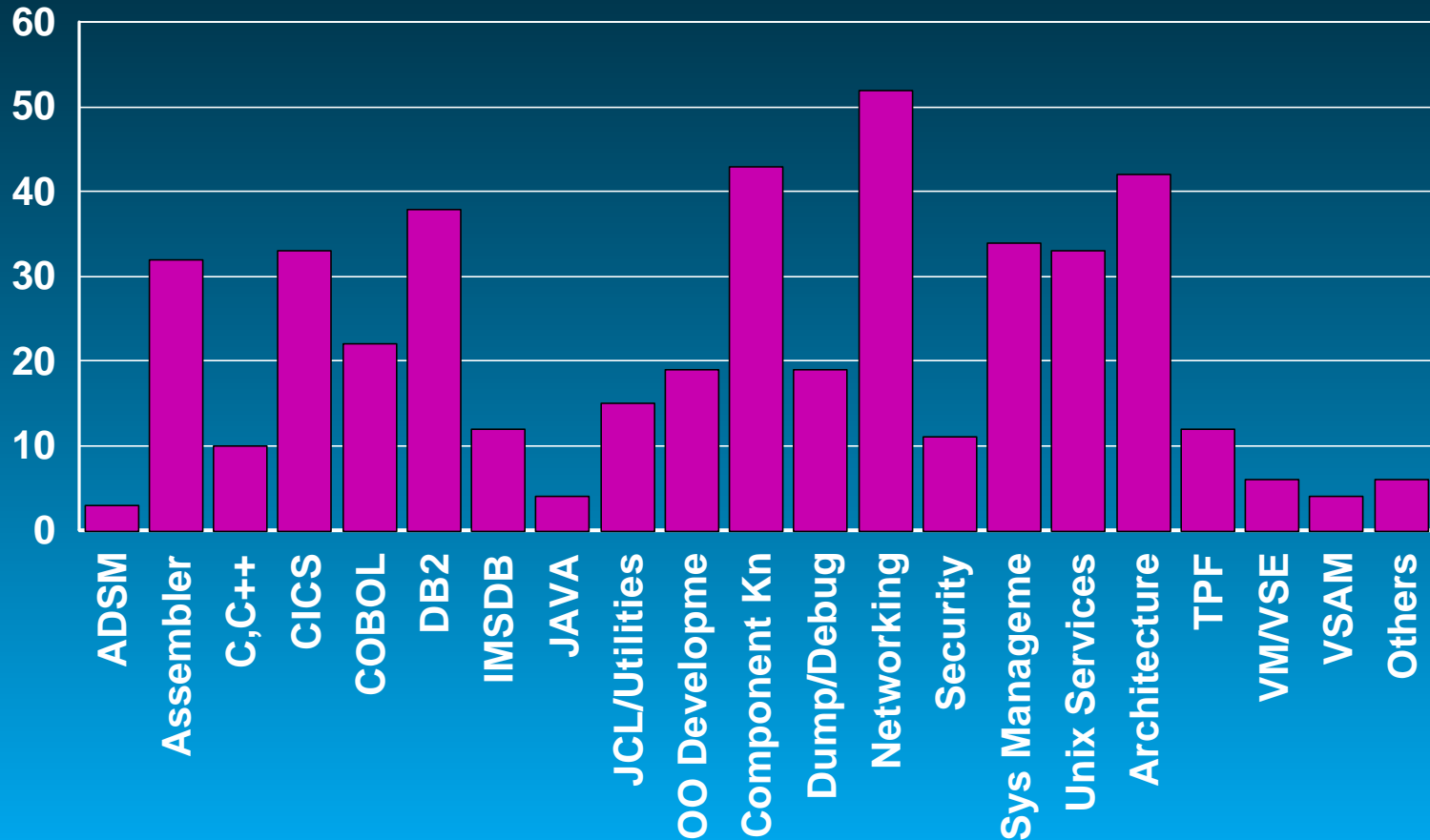
S/390



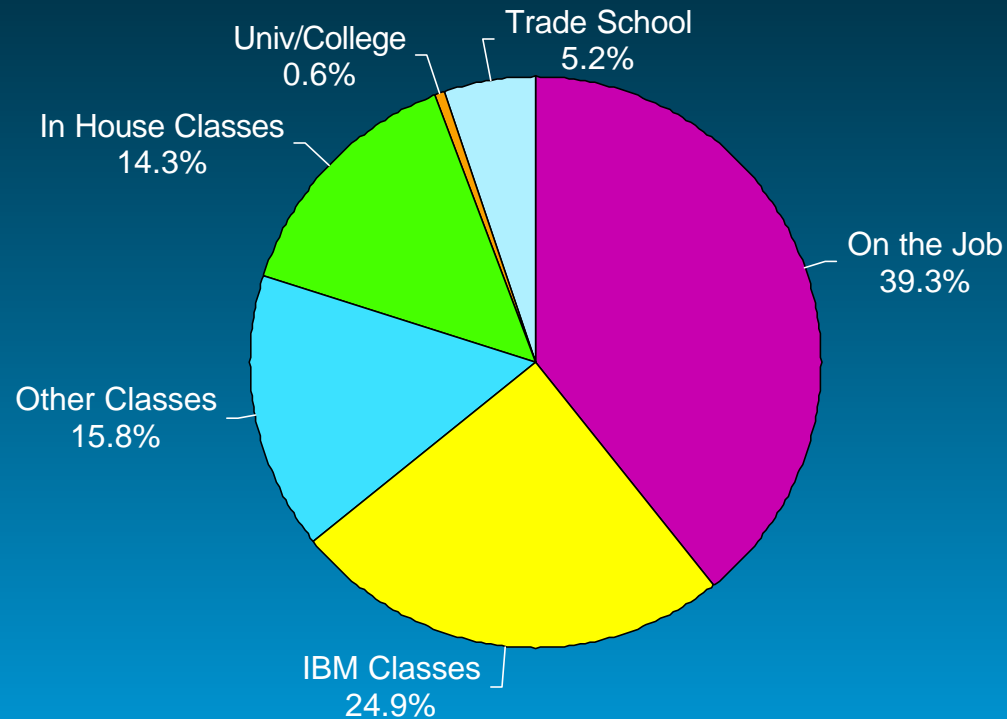
Skills wanted in new hires



Top S/390 Skills Shortages

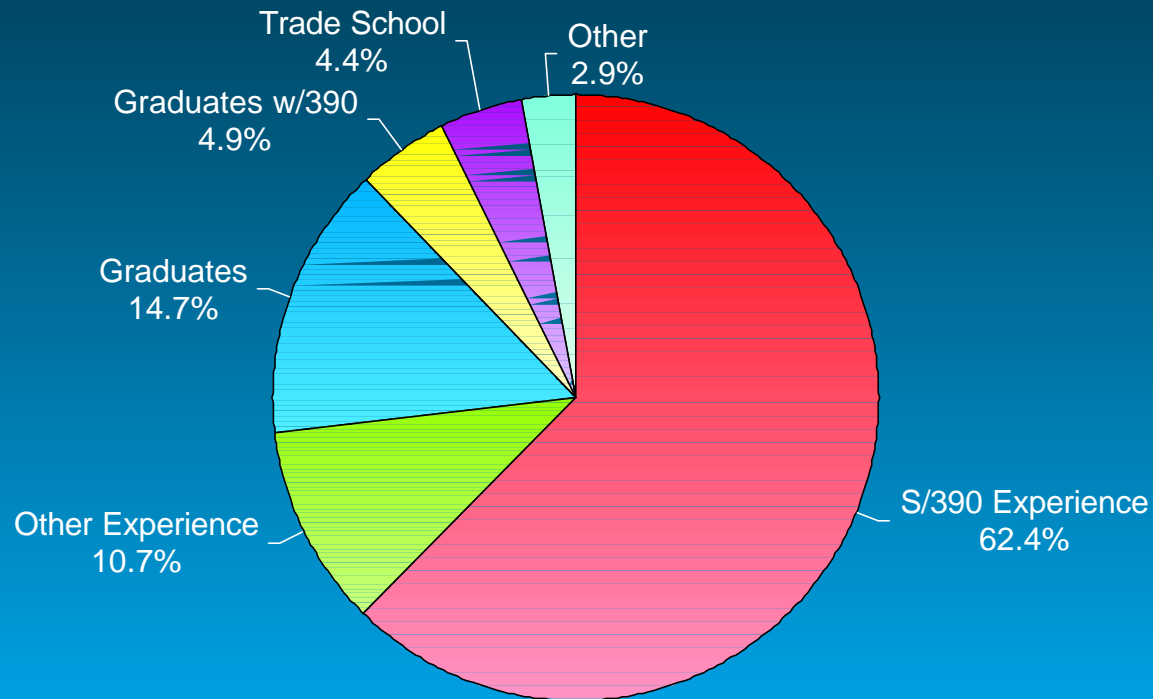


How obtain S/390 education?

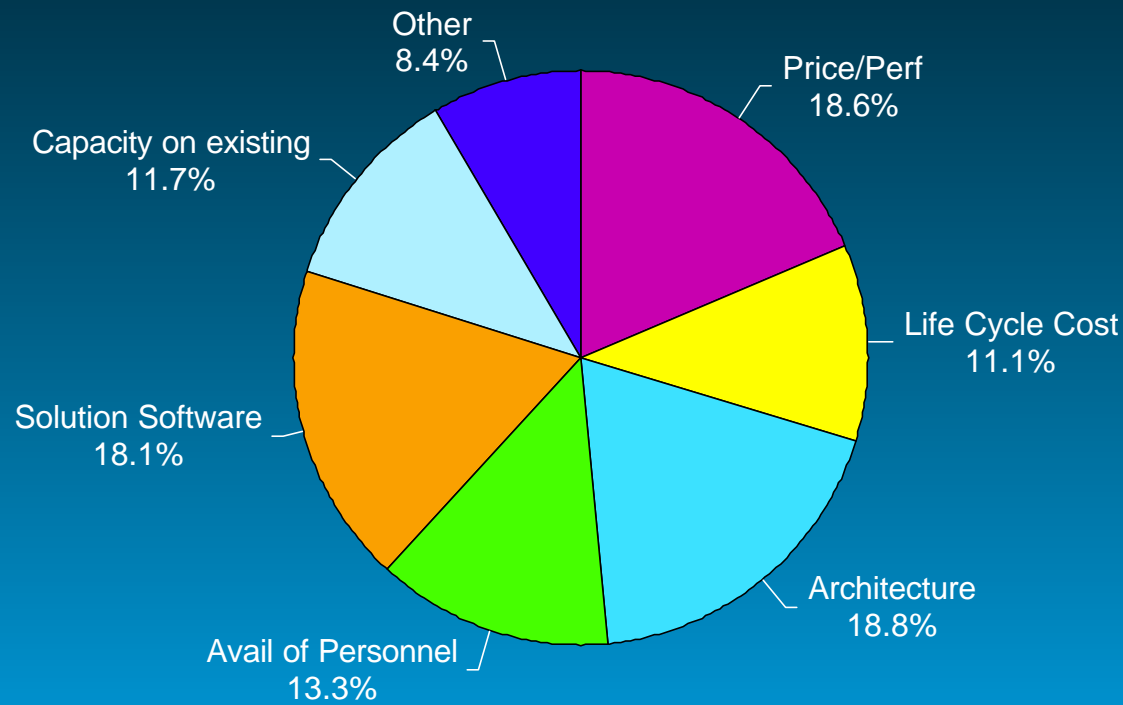


Source of S/390 Hires

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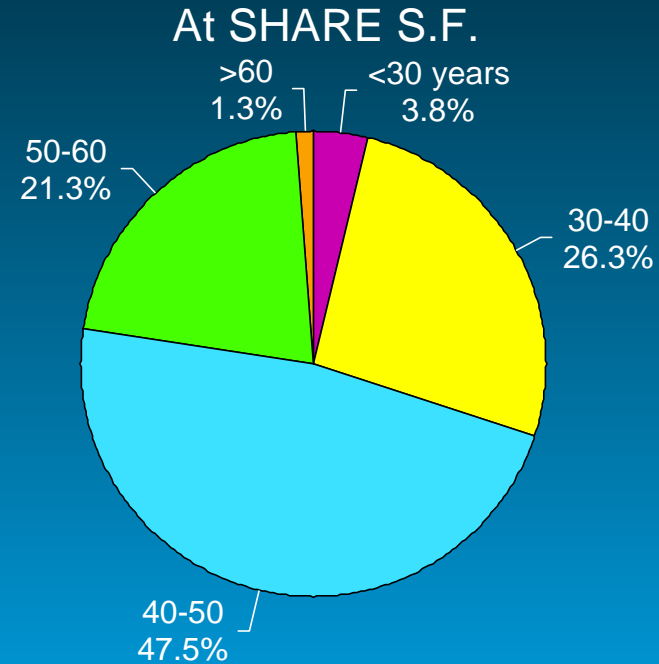
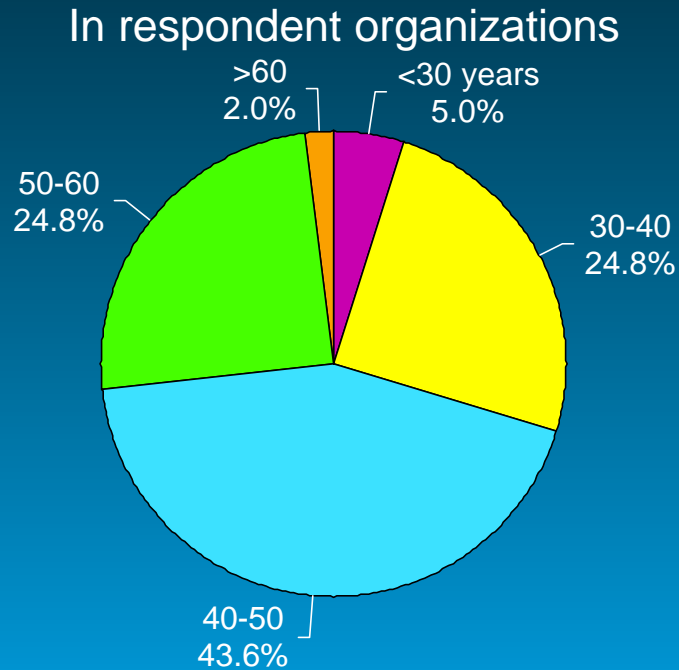
Platform selection for new applications



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



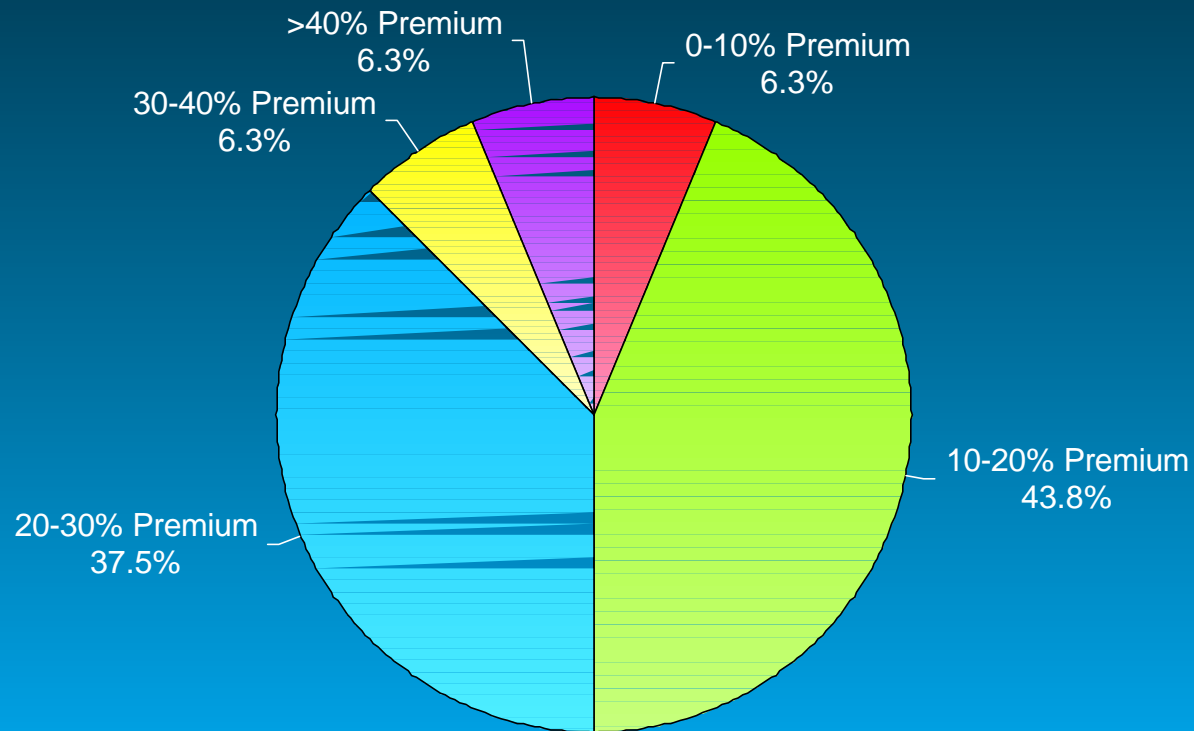
■ <30 years ■ 30-40 ■ 40-50 ■ 50-60 ■ >60

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.