DBA Evolution

the Changing Role of the Database Administrator

Karen Jex | Senior Solutions Architect @ Crunchy Data

FOSDEM, Brussels | February 2023

Agenda

- Introduction
- Evolution of one DBA
- What is a DBA?
- Changing Landscape
- How Have Databases Changed
- How has the DBA Adapted?
- Is the DBA Role Obsolete?
- Conclusions

Agenda

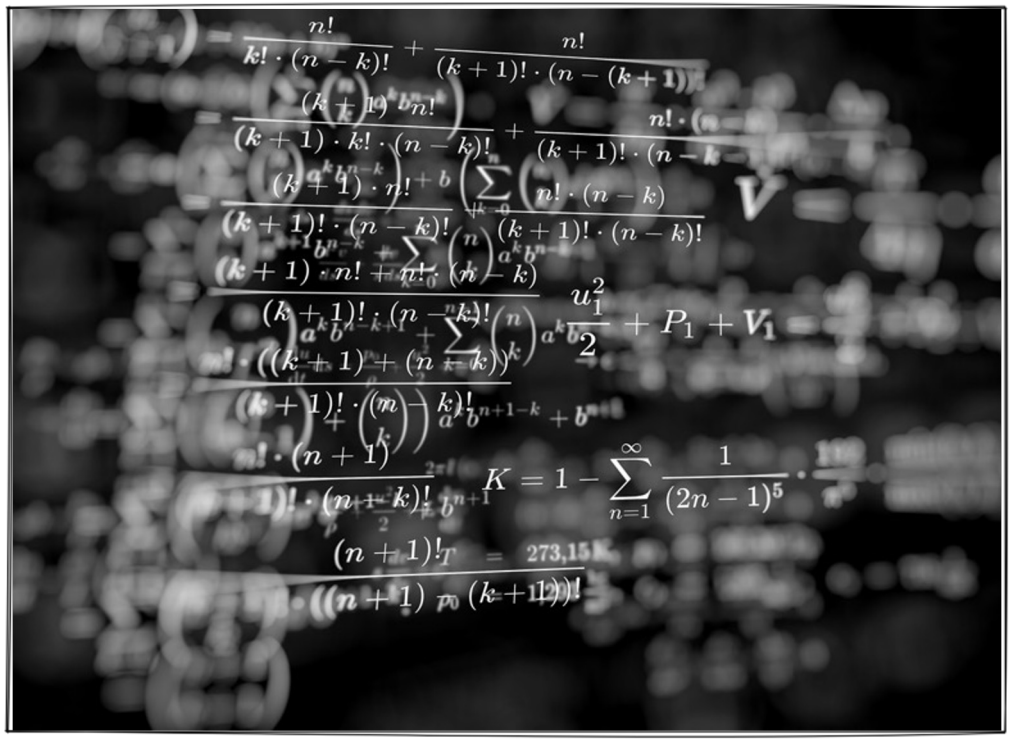
- **Introduction**
- Evolution of one DBA
- What is a DBA?
- Changing Landscape
- How Have Databases Changed
- How has the DBA Adapted?
- Is the DBA Role Obsolete?
- Conclusions

Agenda

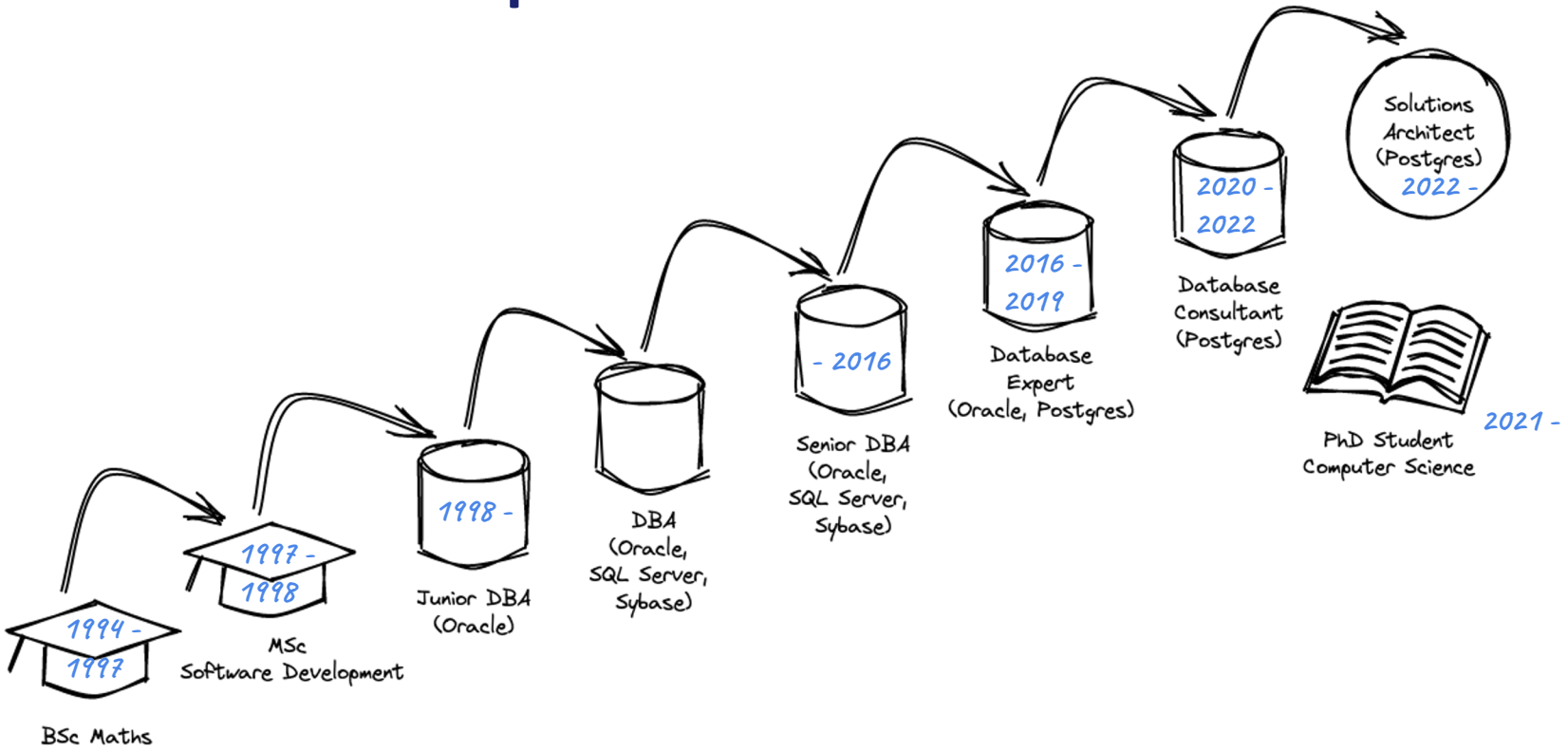
- Introduction
- **Evolution of one DBA**
- What is a DBA?
- Changing Landscape
- How Have Databases Changed
- How has the DBA Adapted?
- Is the DBA Role Obsolete?
- Conclusions

Evolution of one particular DBA

Evolution of one particular DBA

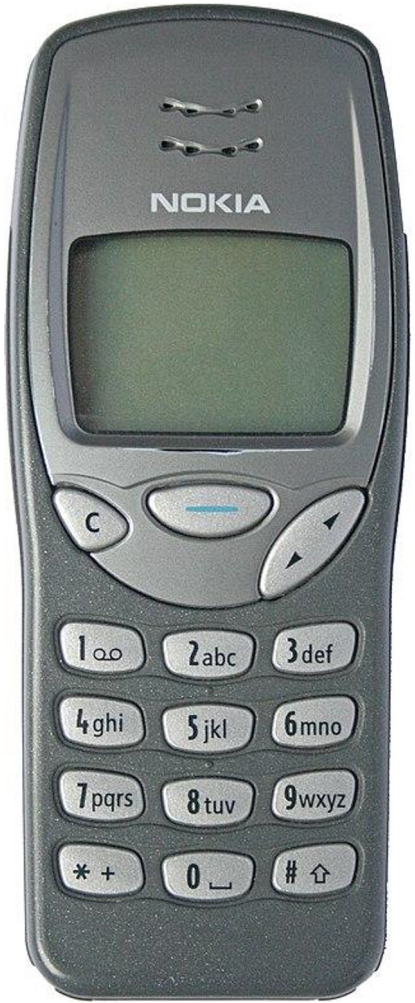


Evolution of one particular DBA



Evolution of one particular DBA

Setting the Scene



Agenda

- Introduction
- Evolution of one DBA
- **What is a DBA?**
- Changing Landscape
- How Have Databases Changed
- How has the DBA Adapted?
- Is the DBA Role Obsolete?
- Conclusions

What is a DBA?

"Database administrators create, organise and look after computer systems that store data for a company." https://nationalcareers.service.gov.uk/job-profiles/database-administrator

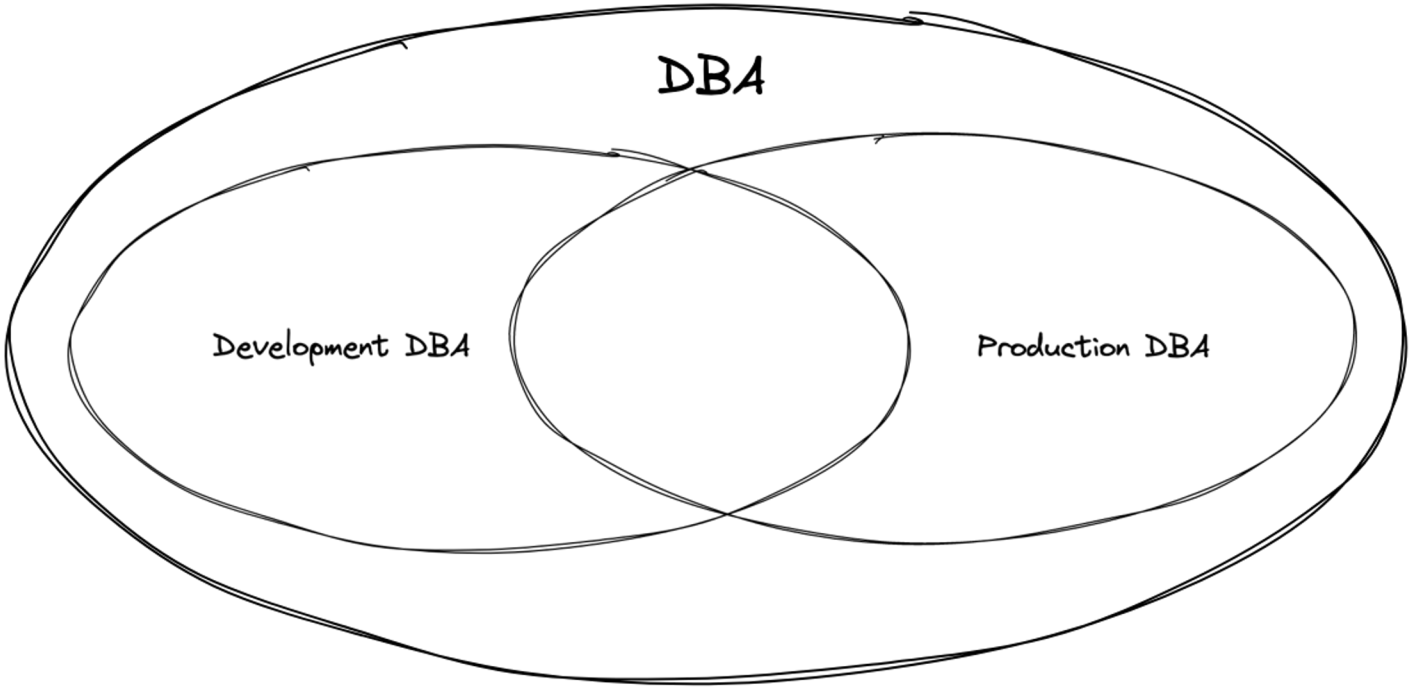
"A database administrator, or DBA, is responsible for maintaining, securing, and operating databases and also ensures that data is correctly stored and retrieved." https://www.oracle.com/database/what-is-a-dba/

"Database administrators use specialist software to organise and maintain a secure database." https://www.prospects.ac.uk/job-profiles/database-administrator

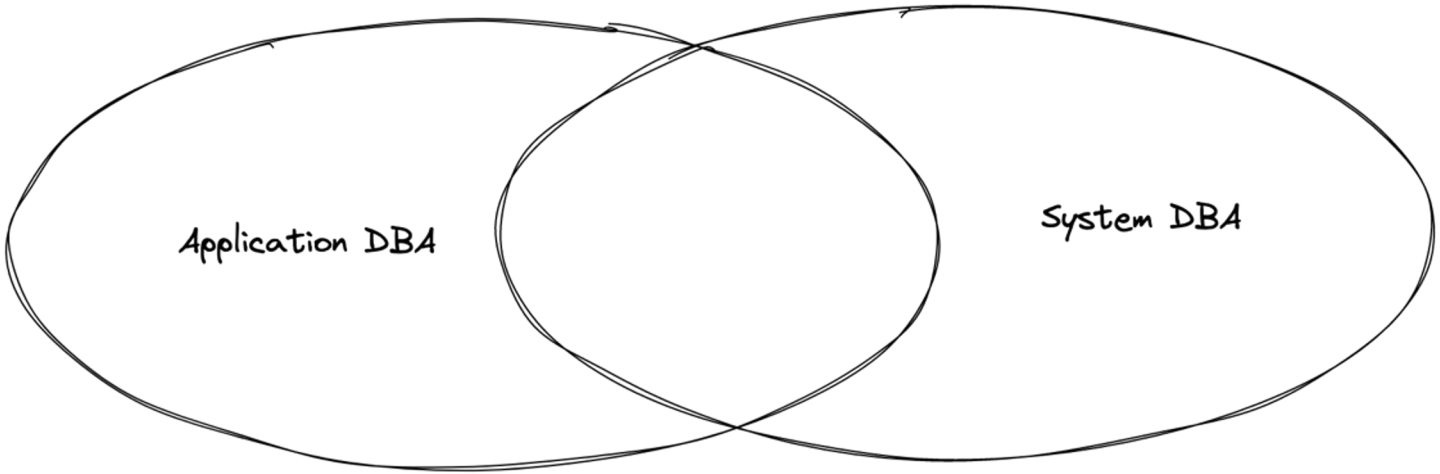
"A Database Administrator, or Database Manager is responsible for managing computer systems that store and organise data for companies. Their duties include… securing data and identifying areas for improvement with the infrastructure." https://www.indeed.com/career/database-administrator

Different Types of DBA

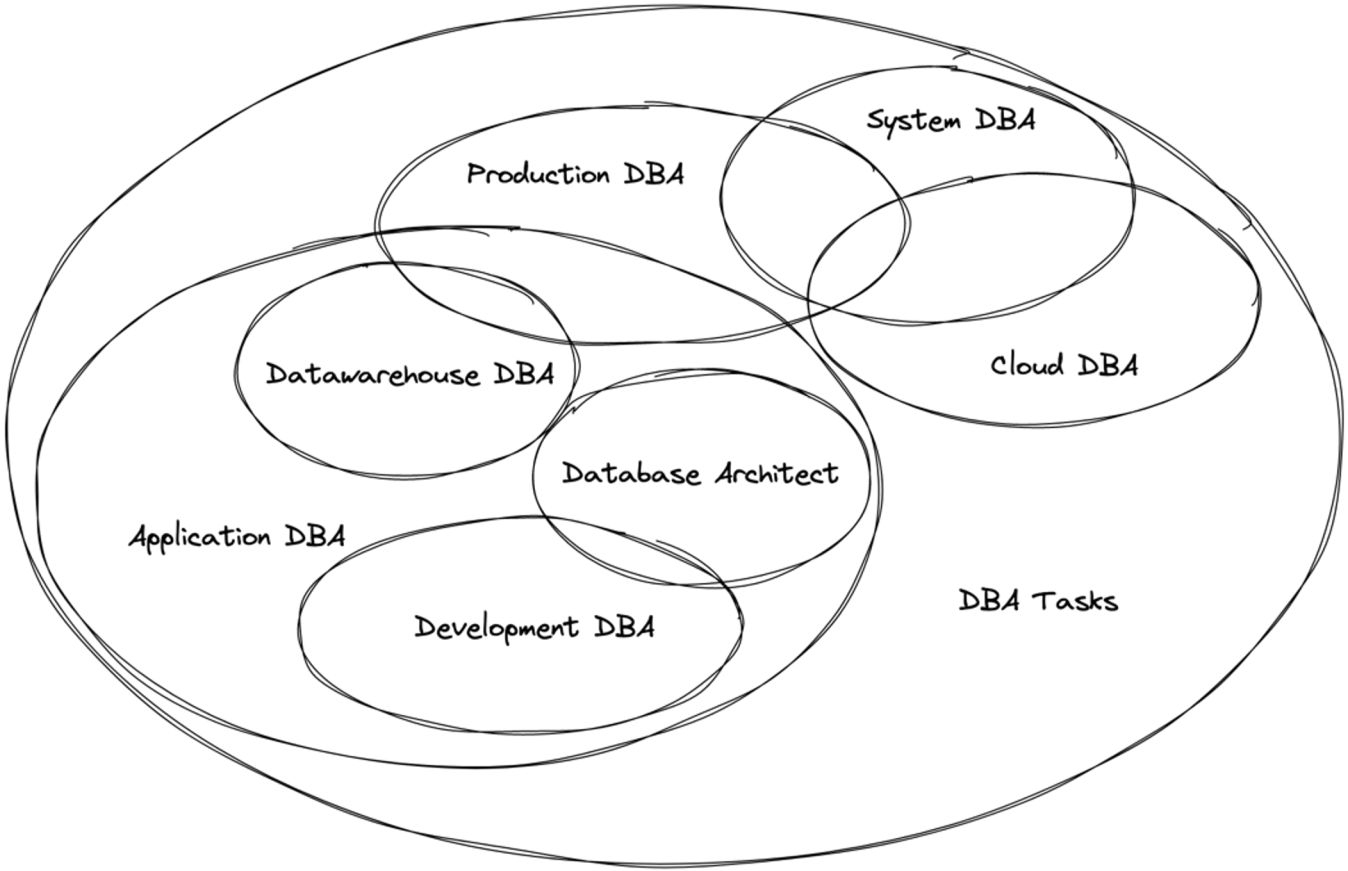
Different Types of DBA



Different Types of DBA



Different Types of DBA



What does a DBA do in 2023?

What does a DBA do in 2023?

Responsibilities (i)

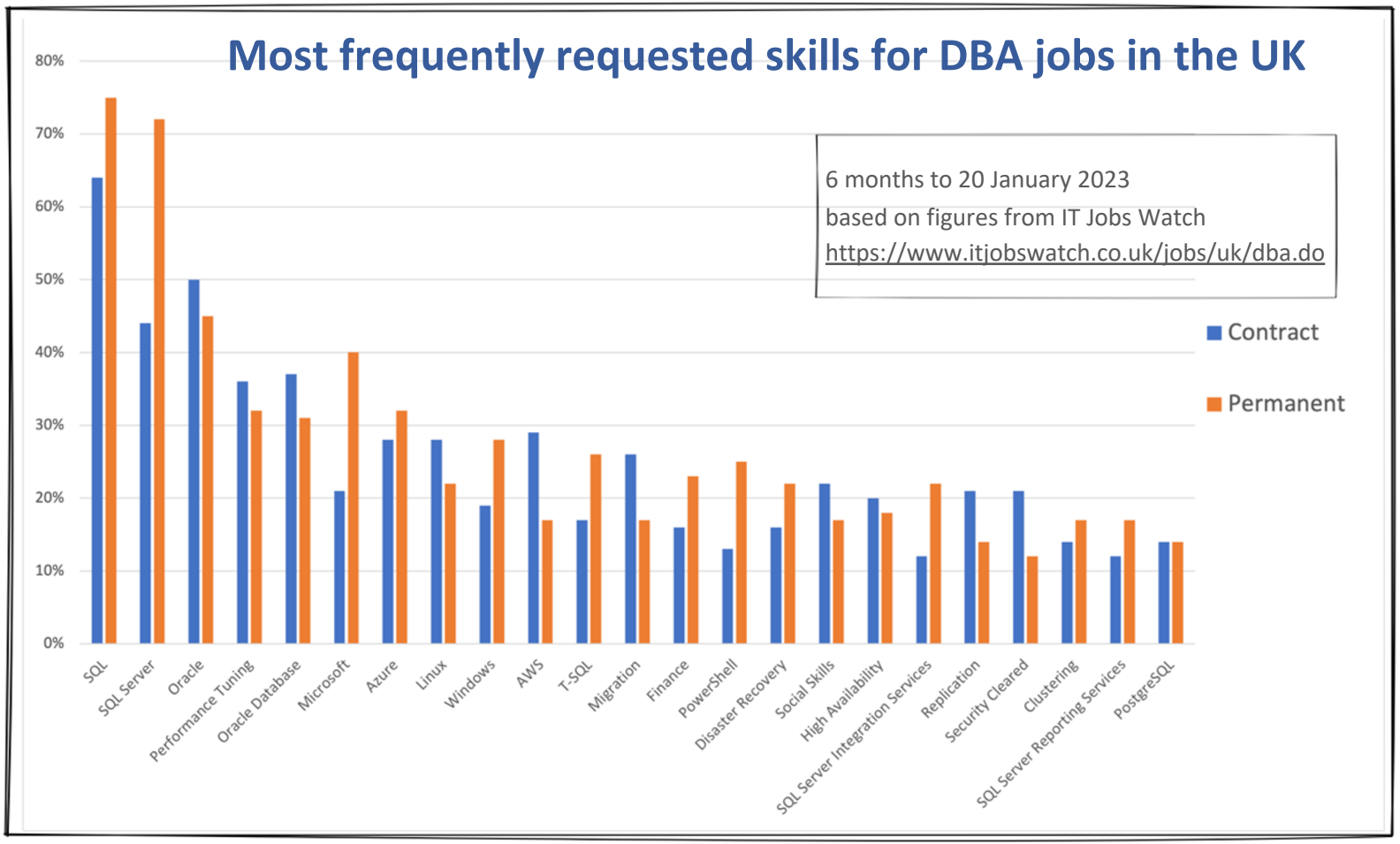
- Backup and Recovery
- Security
- Monitoring
- DB Design/Data Modelling
- Support/Troubleshooting
- DB Software install/upgrade

What does a DBA do in 2023?

Responsibilities (ii)

- Database Expertise
- Performance Tuning
- Capacity Planning
- Database Creation
- Database maintenance
- Data Protection / GDPR

Most frequently requested skills for DBA jobs in the UK



What does a DBA do in 2023?

Skills

- SQL
- DBMS (specifically RDBMS)
- Operating Systems
- Performance Tuning
- Database Migration
- Disaster Recovery
- Social Skills
- High Availability
- Replication
- Clustering
- DevOps
- Automation

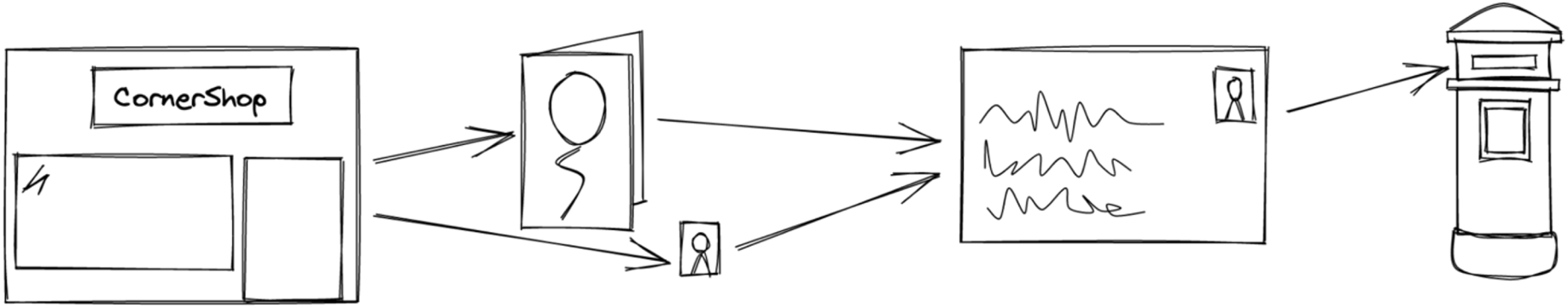
What did a DBA do in 1998?

What did a DBA do in 1998?

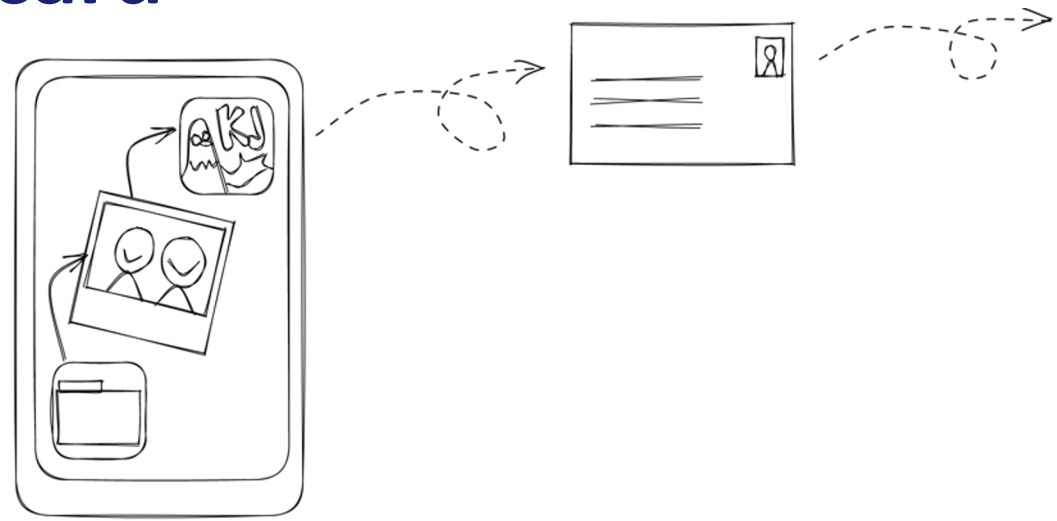
Responsibilities

- Backup and Recovery
- Security
- Monitoring
- DB Design/Data Modelling
- Support/Troubleshooting
- DB Software install/upgrade
- Database Expertise
- Performance Tuning
- Capacity Planning
- Database Creation
- Database maintenance
- Data Protection / ~~GDPR~~

So Nothing’s Changed?



“Send a birthday card”



What did a DBA do in 1998?

Day-to-day

Where Do I Begin?

See the appropriate instructions below for your distribution medium.

CD-ROM Distribution

The CD-ROM distribution of Oracle comes with a minimum of two CD-ROM disks. See the jewel box inserts for instructions.

- The Installation CD-ROM Insert provides instructions for mounting the CD-ROM on your UNIX system and viewing the *Oracle7 Installation Guide* for your platform online.
- The Documentation Library CD-ROM Insert provides instructions for reading the documentation library on a PC running Microsoft Windows.

  To view the Documentation Library on UNIX, you need to run the Oracle Installer before you can view the documentation library.

Chapter 2 of this guide lists the contents of the CD-ROMs, and provides instructions on choosing, browsing, and printing Oracle online documentation.

Tape Distribution

If you have the tape distribution of Oracle, begin with Chapter 1 of this guide and proceed to the *Oracle7 Installation Guide* for your platform.

What did a DBA do in 1998?

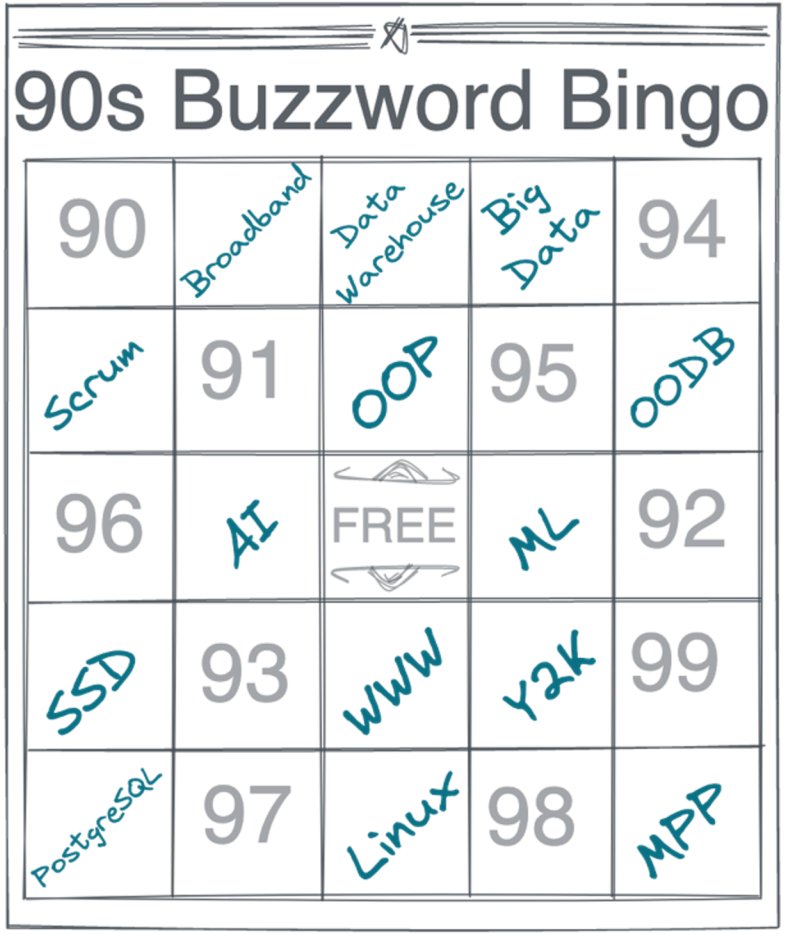
Skills

- SQL
- RDBMS
- Unix
- Performance Tuning
- Disaster Recovery


What will a DBA do in 2048?

Agenda

- Introduction
- Evolution of one DBA
- What is a DBA?
- **Changing Landscape**
- How Have Databases Changed
- How has the DBA Adapted?
- Is the DBA Role Obsolete?
- Conclusions


90s Buzzword Bingo
90
Broadband
Data Warehouse
Big Data
94
Scrum
91
OOP
95
OODB
96
AI
FREE
ML
92
SSD
93
WWW
Y2K
99
PostgreSQL
97
Linux
98
MPP


00s Buzzword Bingo
00
SaaS
PaaS
JSON
04
WiFi
01
Exadata
05
Cloud
06
Agile
FREE
DevOps
02
NoSQL
03
BASE
IoT
09
CI/CD
07
Blockchain
08
Hadoop


10s Buzzword Bingo
10
IaaS
NFTs
Autonomous Database
14
Data Lake
11
Data Swamp
15
K8S
16
Micro services
FREE
Docker
12
Multi-Cloud
13
Cloud Native
Net Neutrality
19
Columnar
17
GDPR
18
Siri Alexa

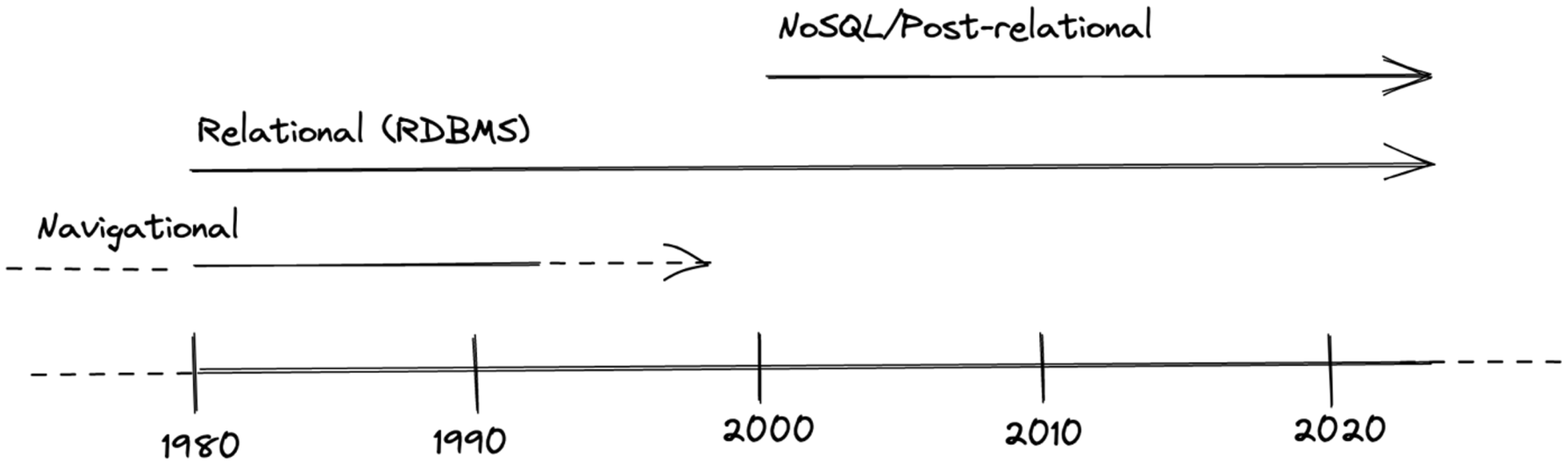

20s Buzzword Bingo
20
Covid
Remote
Zoom
24
Layoffs
21
Metaverse
25
ChatGPT
26
Mastodon
FREE
5G
22
?
23
?
?
29
?
27
?
28
?

Agenda

- Introduction
- Evolution of one DBA
- What is a DBA?
- Changing Landscape
- **How Have Databases Changed**
- How has the DBA Adapted?
- Is the DBA Role Obsolete?
- Conclusions

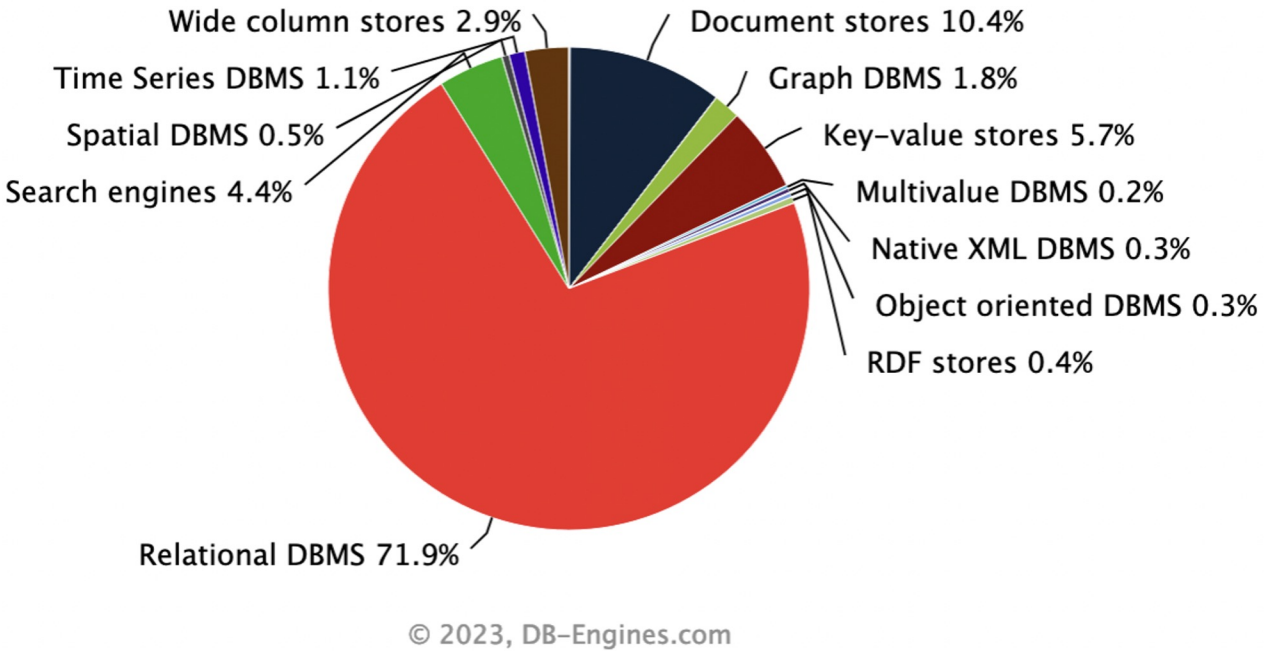
How have Databases Changed?

Type



How have Databases Changed?

Type



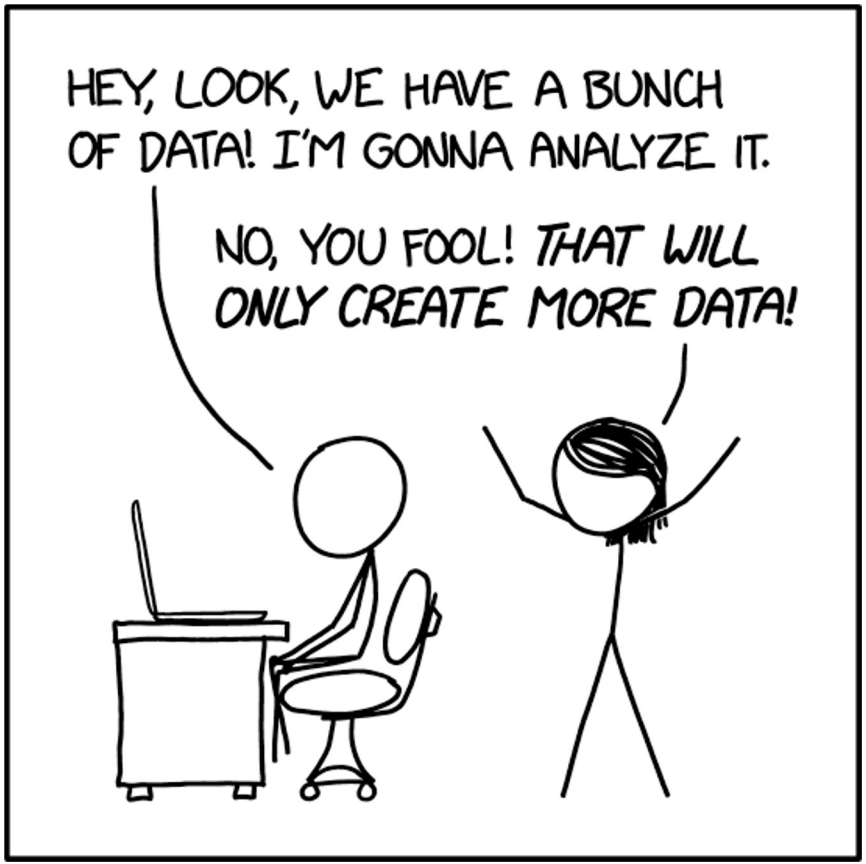
DBMS popularity broken down by database model (ranking scores per category in percent)

How have Databases Changed?

Variety

How have Databases Changed?

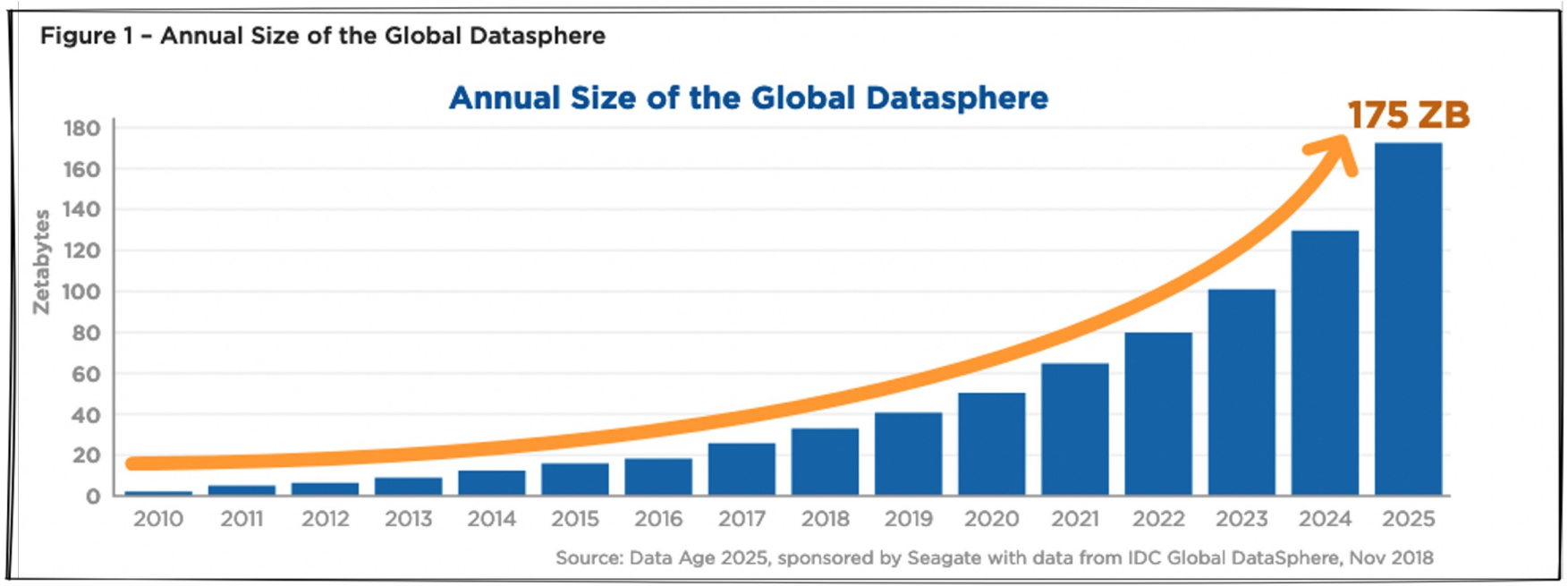
Size



xkcd.com

How have Databases Changed?

Size



From: IDC whitepaper "The Digitization of the World From Edge to Core" (David Reinsel – John Gantz – John Rydning) 2018

How have Databases Changed?

Complexity

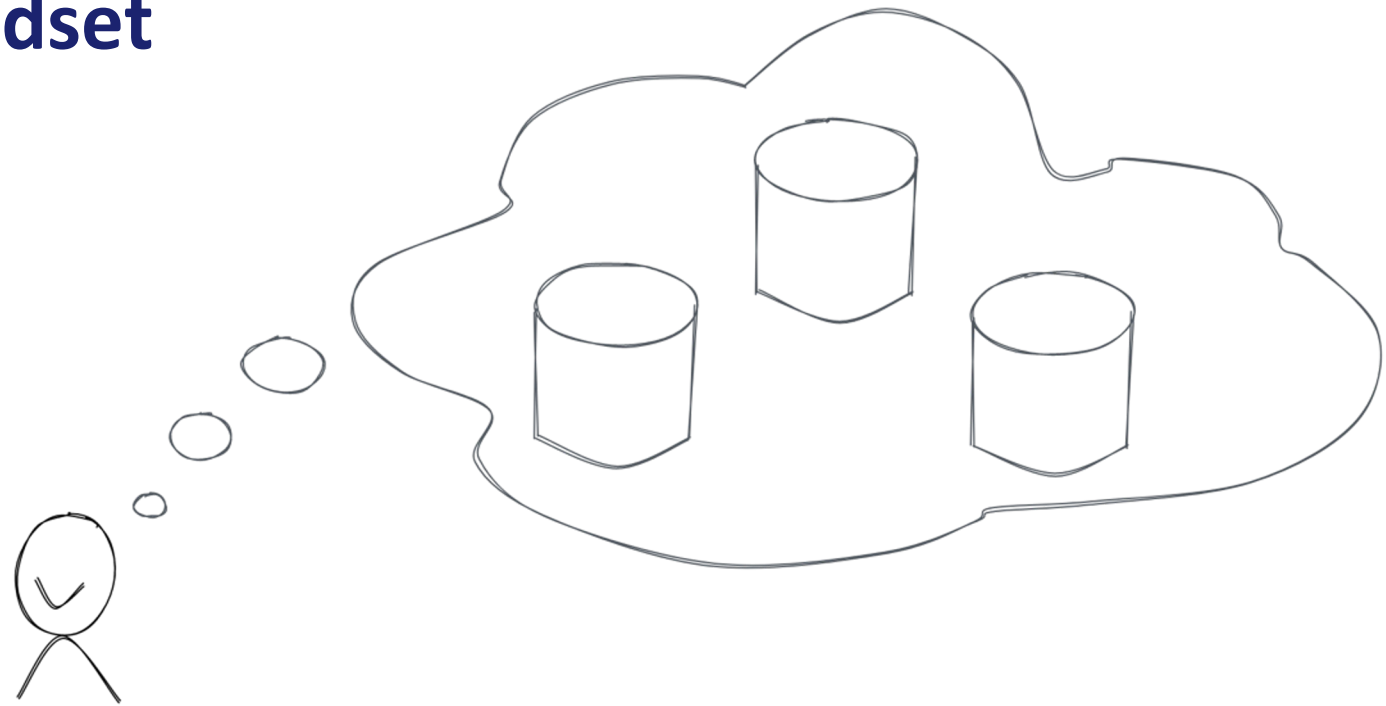
- Multi-DBMS
- Multi-Cloud
- Containers
- Distributed

Agenda

- Introduction
- Evolution of one DBA
- What is a DBA?
- Changing Landscape
- How Have Databases Changed
- **How has the DBA Adapted?**
- Is the DBA Role Obsolete?
- Conclusions

How has the DBA Adapted?

Cloud Mindset



How has the DBA Adapted?

Flexibility

- Multiple DBMS
- Various Environments
- Many Tools and Platforms
- Rapid Change

How has the DBA Adapted?

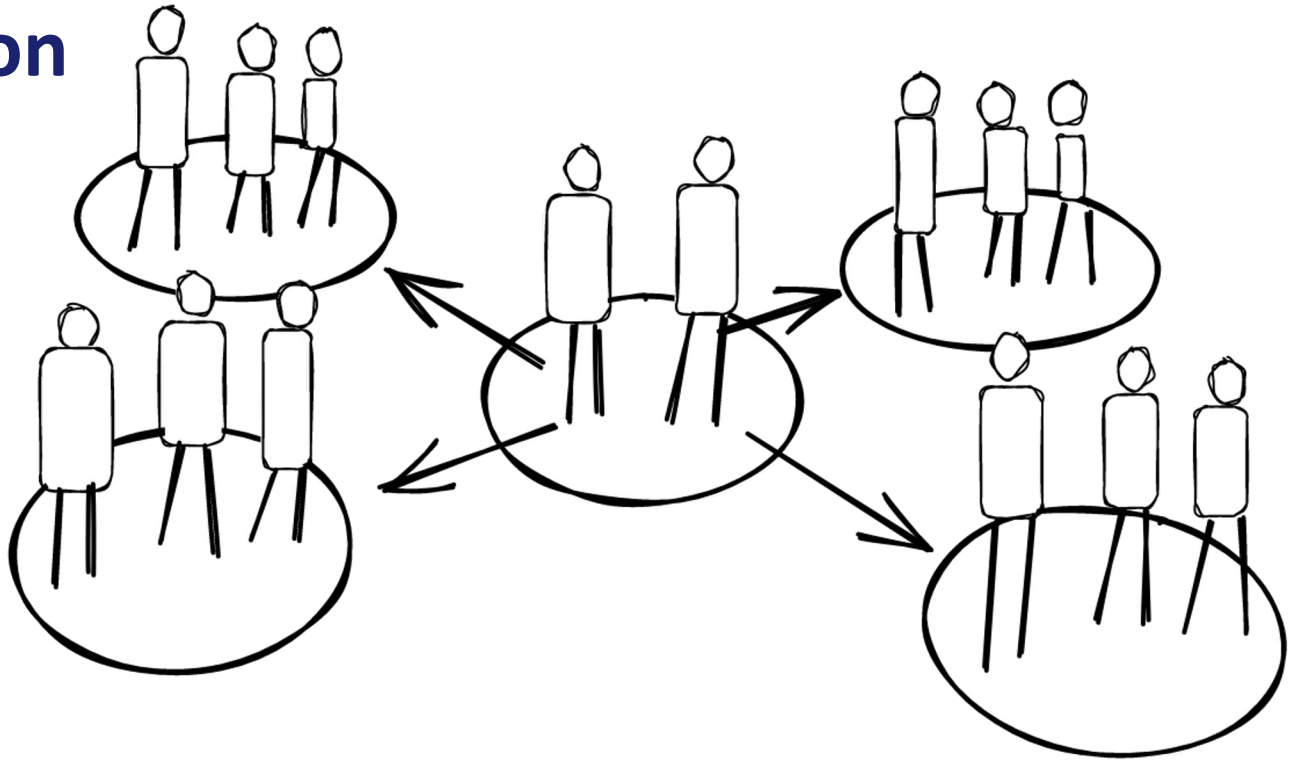
Separation of Duties

- Infrastructure
- Data
- Security
- Application

- Data Architect
- Analytics Director
- Data Engineer
- Business Intelligence Developer
- Data Analyst
- Data Scientist
- Information Security Analyst
- Database Architect
- Data Protection Engineer
- Database Security Officer
- …

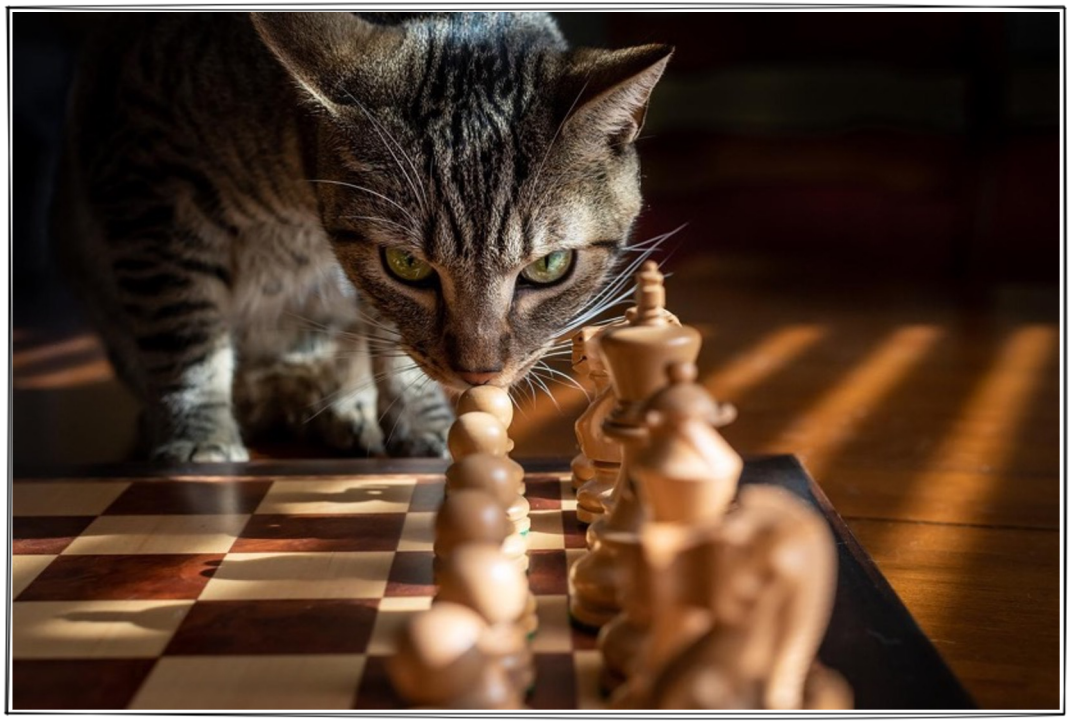
How has the DBA Adapted?

Collaboration



How has the DBA Adapted?

Strategy



How has the DBA Adapted?

Glad to be rid of…

"having to schedule PostgreSQL VACUUM cron jobs"

"constantly reorganising my database to make sure I had enough contiguous free space"

"Commuting to work"

"writing complicated backup scripts"

"installing PostGIS by running a bunch of scripts instead of single CREATE EXTENSION"

Agenda

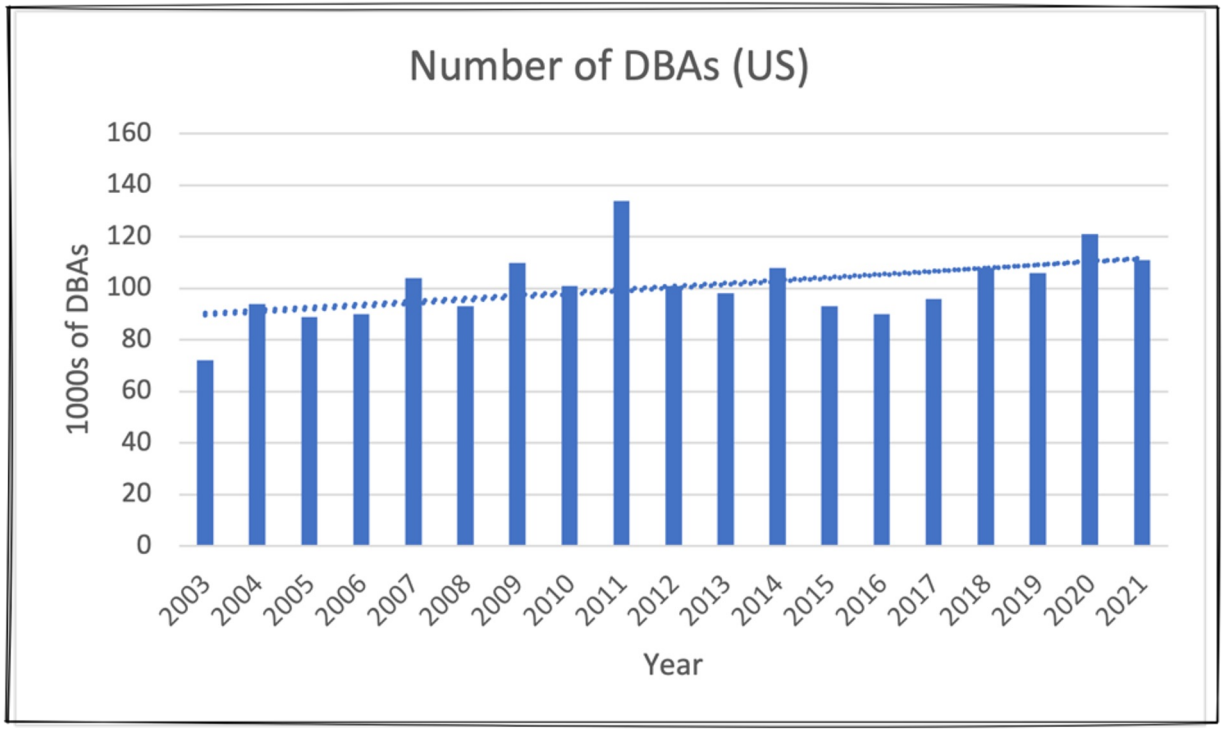
- Introduction
- Evolution of one DBA
- What is a DBA?
- Changing Landscape
- How Have Databases Changed
- How has the DBA Adapted?
- **Is the DBA Role Obsolete?**
- Conclusions

Is the DBA Role Obsolete?

The Clock Winder of the Future?

Is the DBA Role Obsolete?

How Many DBAs?



Is the DBA Role Obsolete?

How Many DBA jobs?

	6 months to Jan 23	Same period 2022	Same period 2021
Permanent	624	765	427
Contract	462	466	294
Total	1086	1231	721


Is the DBA Role Obsolete?
Everything's Automated

Is the DBA Role Obsolete?

What about the Junior DBAs?

- Automation replacing Junior DBA tasks?
- Fewer Junior DBA roles?
- Changing DBA career path (how to become a Senior DBA?)

Is the DBA Role Obsolete?

Autonomous Databases

Oracle statement (2017)

"With total automation based on machine learning, Oracle Autonomous Database Cloud eliminates the human labour required to manage a database by enabling a database to automatically upgrade, patch and tune itself while running.

Recent customer reviews:

"it is only possible to configure it with the assistance of a panel of experts"

"It has complex architecture that takes a lot of effort to configure in the first time"

Agenda

- Introduction
- Evolution of one DBA
- What is a DBA?
- Changing Landscape
- How Have Databases Changed
- How has the DBA Adapted?
- Is the DBA Role Obsolete?
- **Conclusions**

Conclusions

- DBA role has changed, and will continue to change
- Relational databases are still going strong
- Data volumes are growing exponentially
- Cloud, Cloud, Cloud

Conclusions

Conclusions

Karen Jex 2023

Thank You!

@karenhjex | @karenhjex@mastodon.online | karen.jex@crunchydata.com

Slides: https://karenjex.blogspot.com

Image acknowledgements

- Mathematical equations Image par Elchinator de Pixabay
- Web/Future Image par Gerd Altmann de Pixabay
- Sweets Image par Pexels de Pixabay
- Spider web Image par Brigitte Werner de Pixabay
- Tabby/Chess Image by Rick Brown from Pixabay
- Clocks Image par Joshua Choate de Pixabay
- Aeroplane Controls Image par Olaf de Pixabay
- Don’t Panic Image par _Fritz_ de Pixabay
- Elephants Image by molly allen from Pixabay