



Education

The Business Case for Database Information Management

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- **The Business Case for Database Information Management**
 - ◆ Databases consume significant resources in the data center. There are several information management strategies that when applied to these databases, significant savings and improved efficiencies can be realized. Users should walk away with a good understanding of the principles behind some of the more standard Data Information Management practices and how to look at the business case for justification
 - At this point we are only addressing a subset of the numerous Data Information Management practices and principles

About the SNIA DMF

This tutorial has been developed, reviewed and approved by members of the Data Management Forum (DMF)

- The DMF is an industry resource to those responsible for the accessibility and integrity of their organization's information
- The DMF focuses on the technologies and trends related to Data Protection, ILM and Long-term digital information retention

DMF Workgroups:		
Data Protection Initiative (DPI)	Information Lifecycle Management Initiative (ILMI)	Long-term Archive and Compliance Storage Initiative (LTACSI)
Defining best practices for data protection and recovery technologies such as Backup, CDP, Data deduplication and VTL	Developing, educating and promoting ILM practices, implementation methods, and benefits	Addressing the challenges of retaining, securing, and preserving digital information for the long-term

- What is Driving Enterprise Database Information Management
 - ◆ Basic Principles
- What is Database Information Management (D.I.M.)
 - ◆ How you can save with a D.I.M. Strategy
- The Benefits
 - ◆ Improve performance
 - ◆ Control costs
 - ◆ Mitigate risks
- Building your D.I.M. Return On Investment (ROI)
 - ◆ Getting Started

What is driving Enterprise Database Information Management?

Business Owners Need for:

- **Compliance**
 - ◆ Controls for SOX, GLB etc
 - ◆ Improve records retention
 - ◆ Ensure processes are in compliance
 - ◆ Allow records to be discovered for litigation
- **Business Information Needs**
 - ◆ Improve access to reference data
 - ◆ Facilitate information mining
 - ◆ Use info for organizational improvement
- **Reduced Cost of Ownership**
 - ◆ Optimize infrastructure costs
 - ◆ Minimize people costs
 - ◆ Improve efficiencies

IT & DBA's Need for:

- **Systems Efficiency**
 - ◆ Reduce high cost storage needs
 - ◆ Reduce load on servers and DB
 - ◆ Reduce backup resources
 - ◆ Reduce recovery resources
- **User Productivity**
 - ◆ Remove inactive data to improve application performance
 - ◆ Reduce backup time
 - ◆ Reduce recovery time
 - ◆ Improve availability
 - ◆ Ease of access to retained data
- **Cost Reduction**
 - ◆ Optimize storage costs
 - ◆ Minimize people costs
 - ◆ Improve Disaster Recovery
 - ◆ Improve and speed up dev/test/QA

D.I.M. Basic Principles

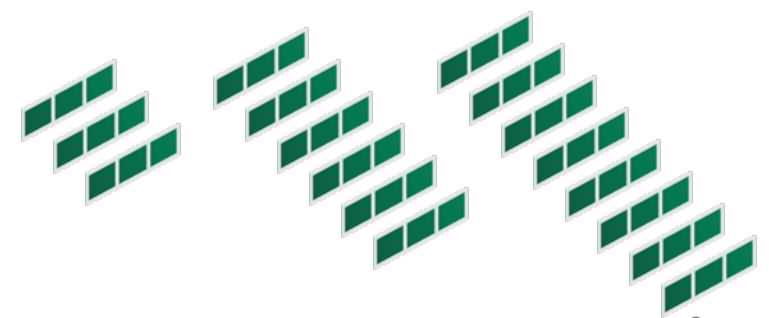
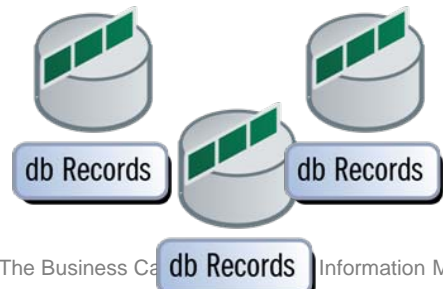
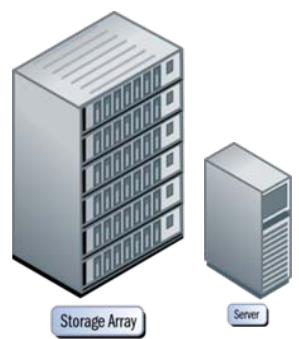
- **Assess & Define Requirements**
 - ◆ Assess Application types and storage tiers
 - ◆ Define tiered service level and access requirements
- **Classify based on Policy & Service Objectives**
 - ◆ Identify business objects to archive
 - ◆ Determine retention requirements
 - ◆ Identify use cases e.g. audit, eDiscovery, dev/test etc
- **Archive**
 - ◆ Develop operational practices
 - ◆ Define management architecture
- **Store**
 - ◆ Design hardware architecture and targets i.e. tiers etc.
 - ◆ Establish security requirements
- **Access**
 - ◆ Communicate access policies and capabilities e.g. SLAs etc
- **Delete**
 - ◆ Develop deletion policies with all stake holders

➤ Managing **Structured Content**

- ◆ Policies & Best Practices
- ◆ Classifications & Taxonomies
- ◆ Efficient Storage Pools & Service Levels
- ◆ Archiving & Deletion
- ◆ Test Data Management
- ◆ Confidentiality & Privacy

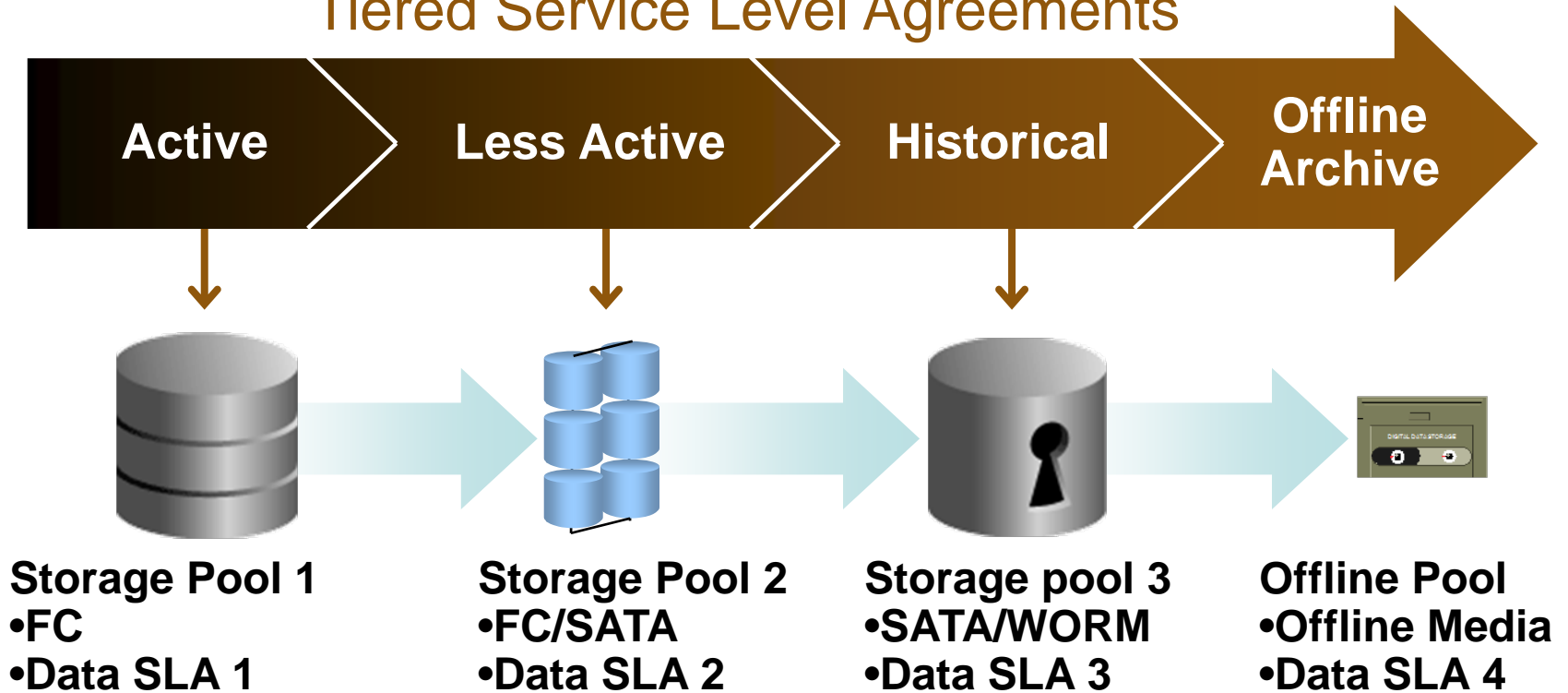
Database Information Classification?

- Classifying content in a database based on an Information-Centric Taxonomy
 - ◆ By Legal, Business, Security, Compliance Classifications
 - Classified, Public, Sensitive, Regulated, Aged, Transaction Status
 - ◆ By Business Object defined by Database Entities
 - Database, Table, Row, Partition, System
 - Business Object Status & Sensitivity
 - ◆ By usage
 - Production, Test & Dev, Training, Reporting, Backup, D/R



Matching SLA's to Information Lifecycle **SNIA**

Tiered Service Level Agreements



Use ITIL-style ILM service catalogs and processes to develop a dynamic and consolidated storage service & Save \$

Benefits of SLAs

➤ Arrest Spiraling Storage Costs

- ◆ Inefficient asset utilization due to point solutions or project based acquisition
- ◆ Keeping pace with compound annual storage growth rates of 50-100%

➤ Respond Faster – Accelerate Business

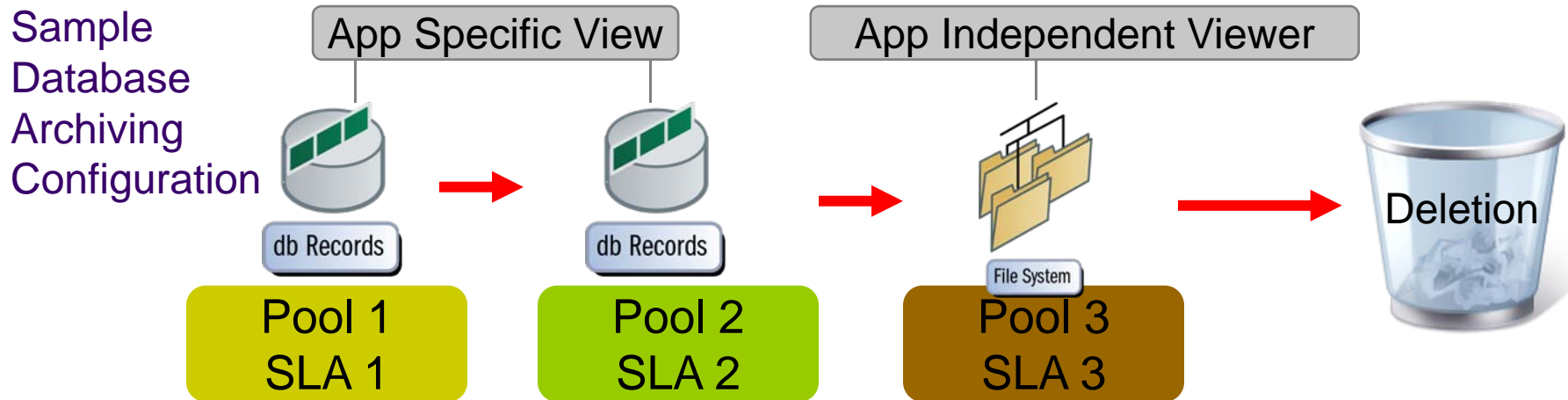
- ◆ Provision new projects and applications faster than ever
- ◆ Rapid and reliable recovery across all application tiers

➤ Remove Risk

- ◆ Repeatable processes, standardized designs and the ITIL aligned management framework drives down risk, support costs, and time to market.

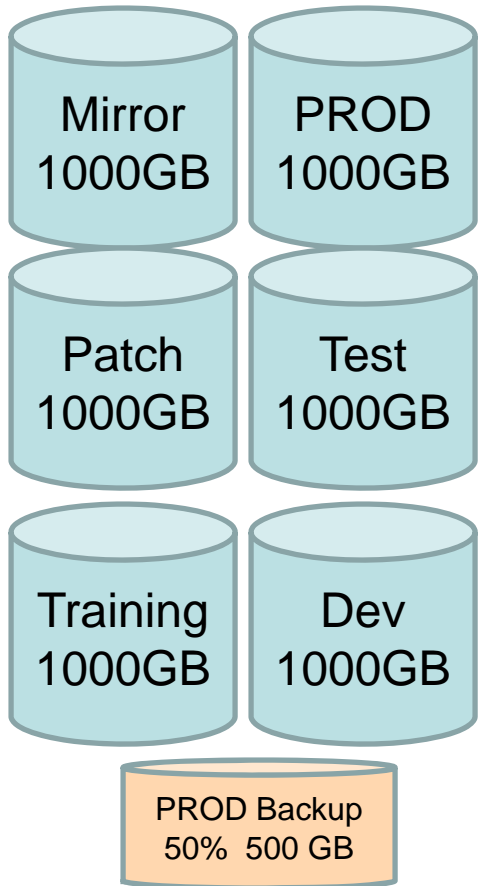
Database Archiving Principles

- Migrate Business Object to Archive based on Policy
 - ◆ I.e. Closed Transaction Older than 2 Years
- Maintain appropriate levels of access to archived data
 - ◆ Determines online / offline archive
 - ◆ Native access, separate reporting system, SQL
- Database Archiving Tools are available to assist
 - ◆ Database features, independent vendors, application tools



Reduce Cost & Improve Performance

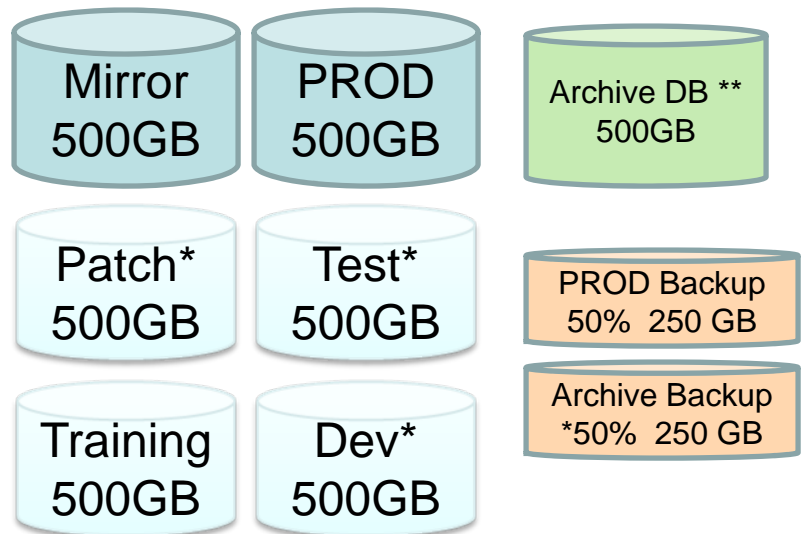
Before



Prod (1000 GB) x 6.5 =
6.5 TB



After



Prod (500 GB) x 6.5 + Archive DB (500) x 1.5
 =
4 TB → ~40% reduction

- * Additional storage efficiency solutions also available, i.e. dedup & snapshots
- ** Archive can be stored on WORM media, lower cost storage

➤ Determine Test Data Set based on Usage Classification

- ◆ Full copies
 - Staging environment, performance benchmarking
- ◆ Subset copies
 - Training, Functional testing
- ◆ Replication & Cloning options
 - Full clones / app / data, sync / async, etc.

Sample Testing Configuration

Production, DR, Staging



QA, Training, Patch

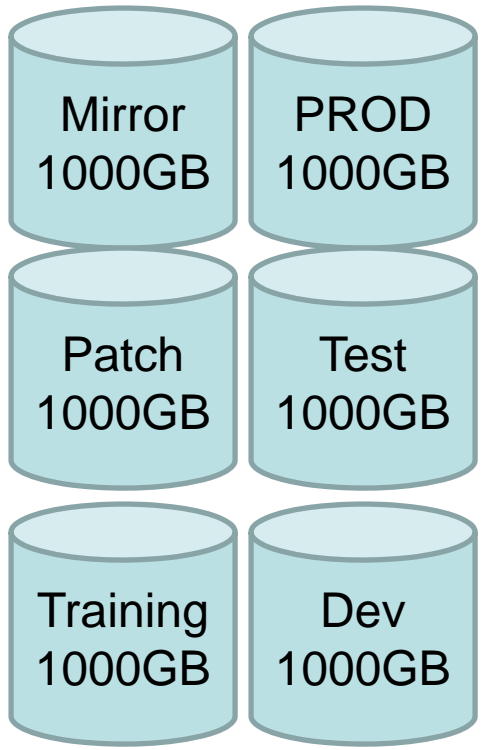


Full Copies with highest SLA

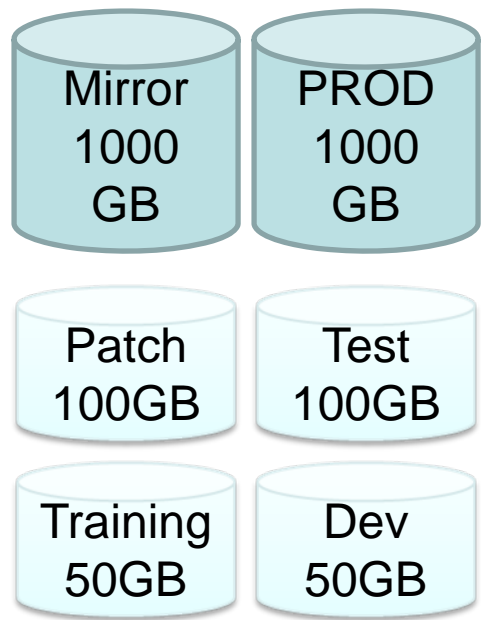
Data Subsets on lower SLA Pools

Reduce Cost & Test Cycles

Before Test Data Management



After Test Data Management



Test Storage Requirements

1000GB x 4 = 4TB

Cloning Time

1to3 Days x 4 = 1to3 Man Weeks

Test Storage Requirements

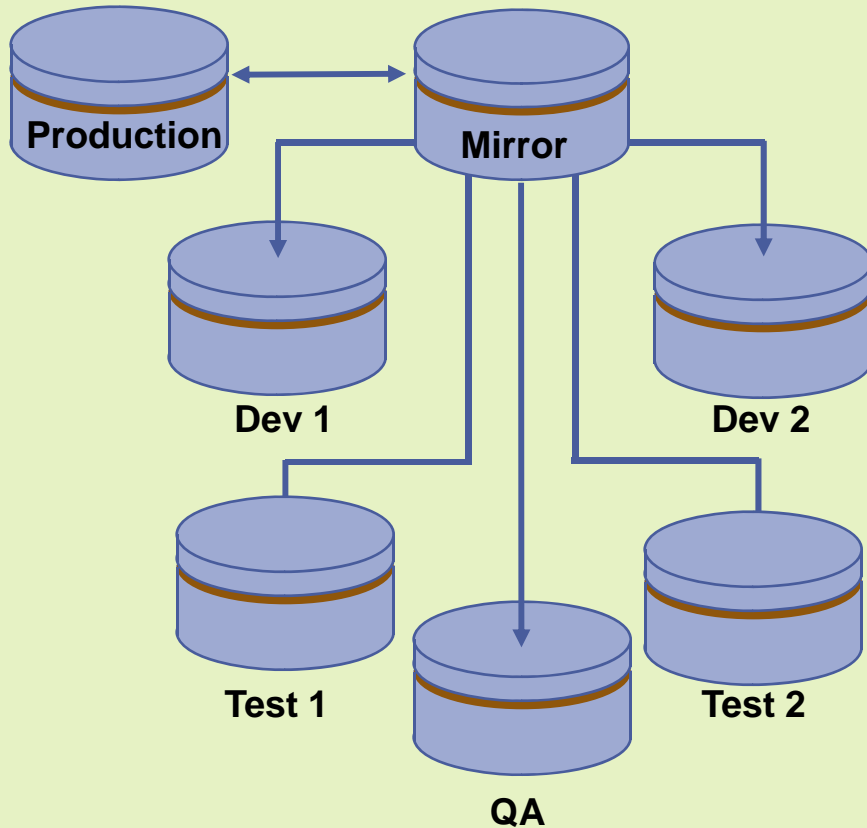
300GB (90% reduction in storage)

Cloning Time

1to3 Hours x 4 = ¼ to ½ Man Days
(83% reduction in time)

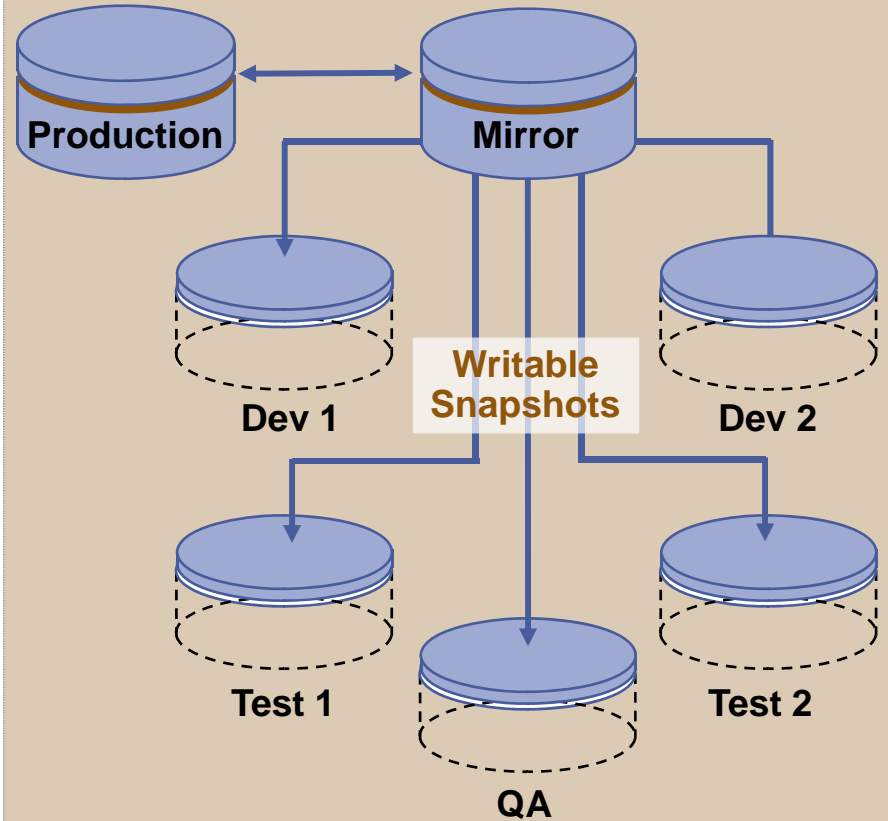
Providing Developers DB Copies

The Old Way



Lengthy cloning, requires extra storage

The New Way



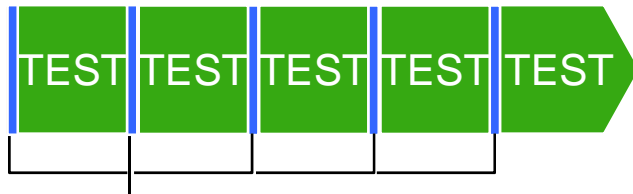
Fast cloning, requires less storage

Time →

The Old Way



The New Way



Create Writable Snapshot
Copies

➤ Improved Speed

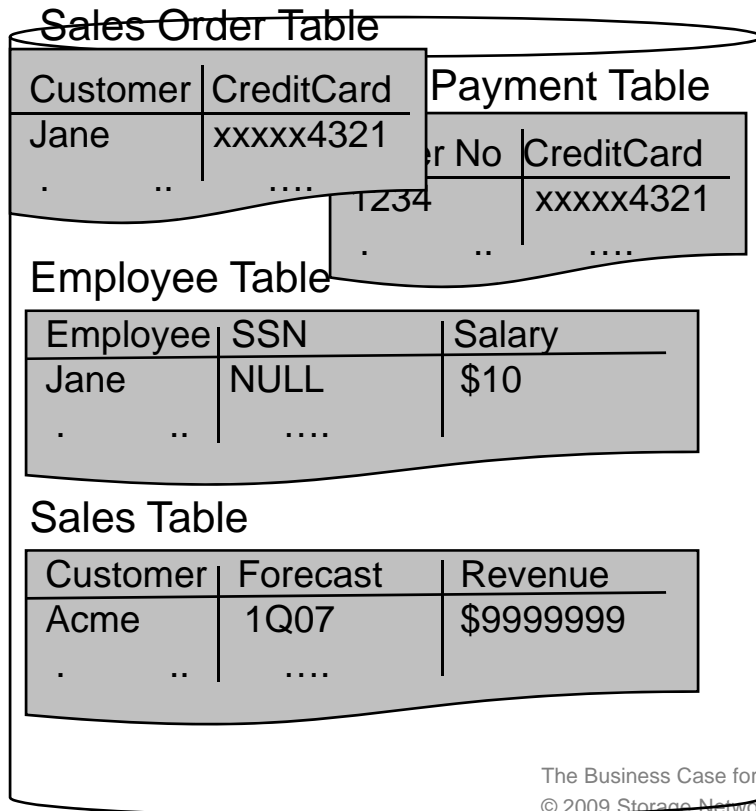
- ◆ DB copies made in minutes

➤ Improved Quality

- ◆ More copies to more people
- ◆ Time to do more testing

Maintain Confidentiality

- Assign Masking Policies to Business Objects based on Usage (i.e. Production) and Sensitivity
 - ◆ Understand testing requirements as well
 - ◆ Encryption alone is not a comprehensive masking strategy



Sample Data Masking Policy

Data	Type	Policy	Masking Algorithm
Customer	Credit Card (string)	Sensitive	PCI standards - Encryption or Masking
Employee	SSN (string)	Sensitive	Null
Employee	Salary (number)	Sensitive	Substitution
Corporate	Sales Forecast	Confidential	Mask

➤ Tiering & Archiving

- ◆ By removing aged data from production, all copies will be smaller

➤ Test Data Management

- ◆ By creating subsets or snapshots, additional copies will be smaller & test cycles will be faster

➤ Security & Confidentiality

- ◆ By masking sensitive data, risk of unauthorized access is more easily controlled

➤ Optimize Infrastructure to Meet Business Requirements

- ◆ Storage - both disk and tape backup
- ◆ Server requirements – CPU usage and utilization
- ◆ Software licenses – CPU based licenses

➤ Tiering & Archiving

- ◆ Reduced cloning times, smaller backup / recovery windows
- ◆ Reduced upgrade and patching downtime
- ◆ Reduced performance related maintenance costs

➤ Test Data Management

- ◆ Reduced cloning times, smaller replication windows
- ◆ Reduced test cycles
- ◆ Faster time to market with new features

➤ Security

- ◆ Cost avoidance – risk mitigation

➤ Improve Performance

- ◆ Improved availability
- ◆ Speed backup and recover and dev/test
- ◆ Improve application performance

➤ Control Costs

- ◆ Reduce expensive production storage
- ◆ Reduce license fees and hardware costs
- ◆ Reduce labor overhead
- ◆ Reduce app decommissioning and dev/test costs

➤ Mitigate Risks

- ◆ Store in an immutable format that cannot be altered
- ◆ Index for easy retrieval for e-Discovery

Building an ROI

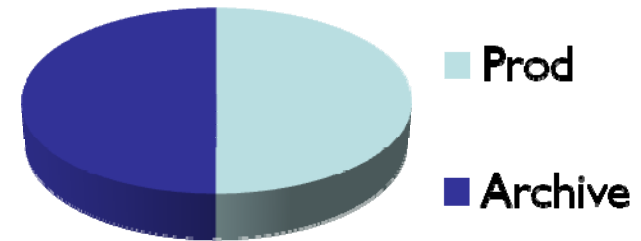
- **Getting Started – Assess what you have**
 - ◆ Inventory all databases
 - › For each database, determine total annual cost
 - › Include License, Server, Storage, & People costs
 - ◆ Factor in Database Growth Rates
 - › Future annual costs need to consider growth of production and how it impacts all copies

- **Define classifications & Business Objects**
 - ◆ Quantify how much the Business Objects are consuming
 - › As a percentage of the total cost
 - › Typically does not include Master / Setup objects
 - › Only those tables that contain data that could be archived or subset

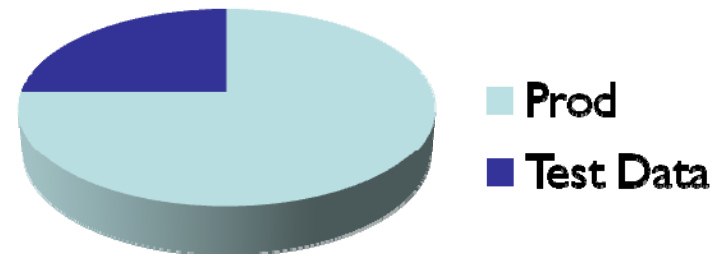
Determine D.I.M. Policies

- Define what is needed –
 - ◆ For **Each Business Object**
- **Production Systems**
 - ◆ Define Retention & Archive Policies w/ Business Owners
 - ◆ Quantify how much could be archived
- **Non-Production Systems**
 - ◆ Define Test Data Policies w/ Developers
 - ◆ Quantify how much could be used for testing
 - ◆ Quantify how much sensitive data resides in copies

% Archive

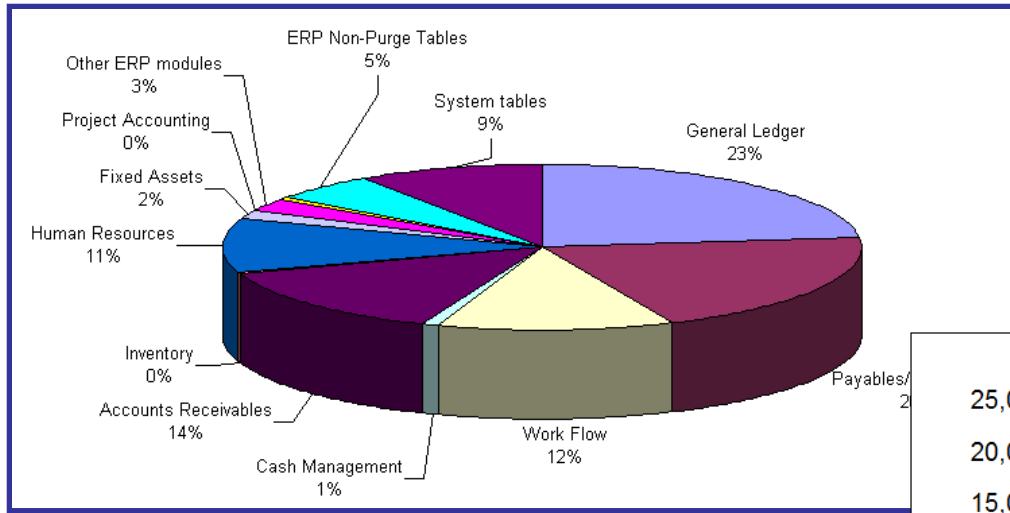


% Test Data



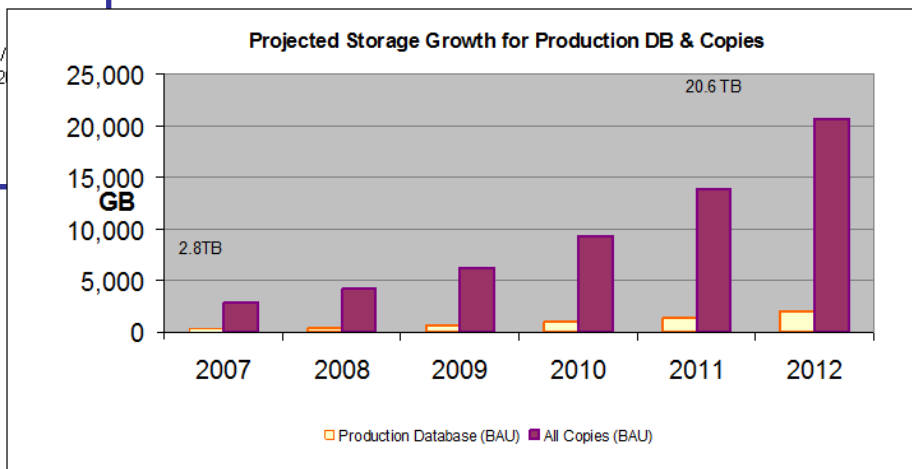
Prioritize Projects Based on Business

- Risk of Not Applying D.I.M. Principles
- Cost / Benefit Analysis
- Readiness of organization to support & enforce policies



Distribution reports show data volumes by business process

Growth charts illustrate forecast requirements for storage

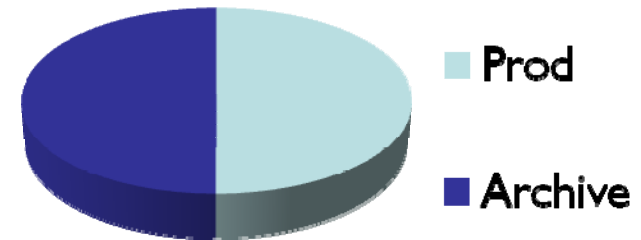


Cost Savings Estimates

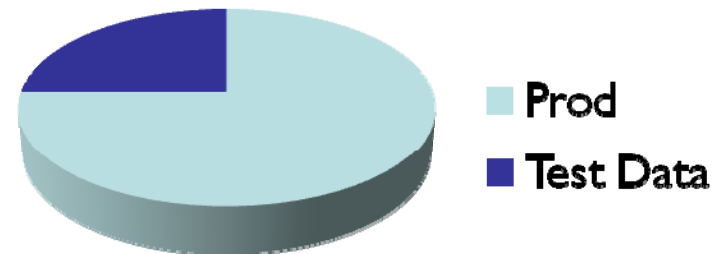
Business As Usual –vs. – with Database Information Management

- **Storage Savings**
 - ◆ \$\$/GB savings
 - ◆ Cost Avoidance
- **Server Savings**
 - ◆ Server consolidation
 - ◆ Avoid server upgrade costs
- **Software license Savings**
 - ◆ CPU based license costs
- **People Savings**
 - ◆ DBA time spent performance tuning or waiting around for a clone
- **D.I.M Investments**
 - ◆ Determine what tools / costs need to be deployed to implement D.I.M.
 - ◆ Need to factor in these costs for a true ROI calculation

% Archive



% Test Data



➤ Archive Potential by Business Object

Application	Retention Policy (months)	Data Volume Before Archiving (GB)	Data Volume Eligible for Archive (GB)	Data Volume After Archiving (GB)
General Ledger	24	54	15.84	38.16
Accounts Payables	12	47.93	13.14	34.79
Workflow	1	28.42	4.38	24.04
Content Management	12	1.77	0.77	1
Accounts Receivables	12	32.54	11.9	20.64
Inventory	12	0.11	0	0.11
Human Resources	12	25	10	15
Fixed Assets	12	4.12	0.4	3.72
Project Accounting	12	0.1	0	0.1
Other ERP Apps	95	6.07	0	6.07
Custom Tables	95	0.97	0	0.97
ERP Non-Archive Tables	95	12.75	0	12.75
System Tables	95	22	0	22
	Totals --->	235.78	56.43	179.35

<u>Before</u>	<u>After</u>	=	<u>Savings</u>
236 GB	179 GB		56 GB

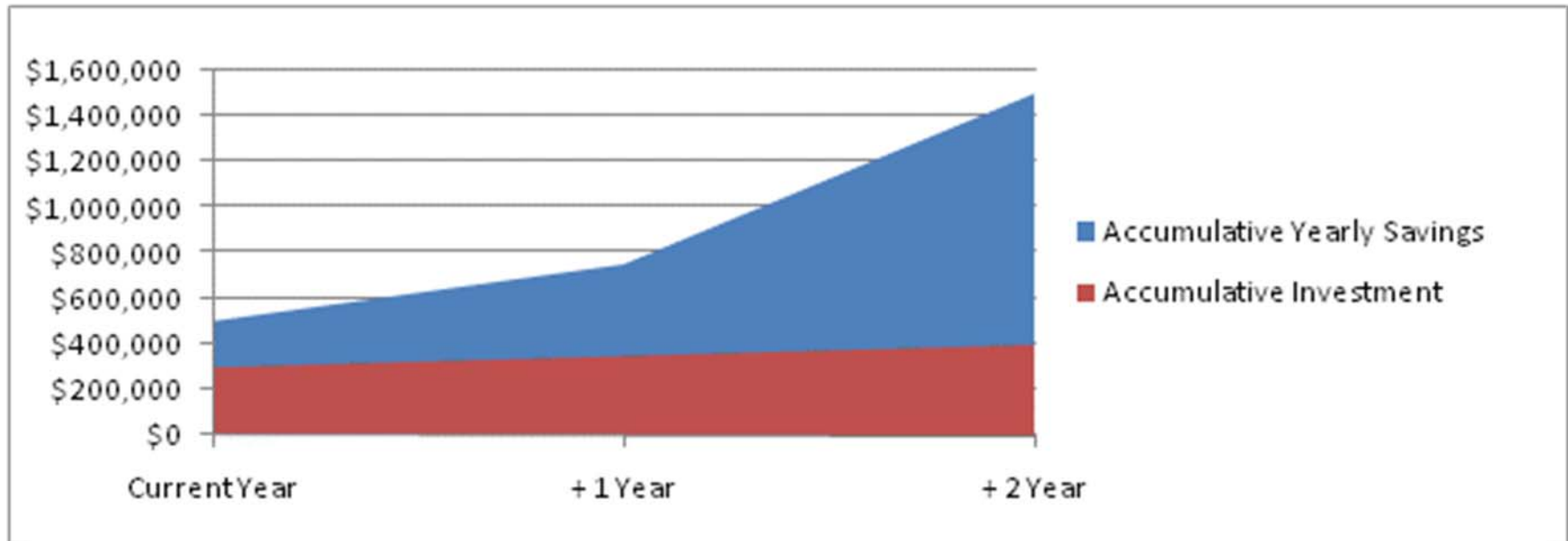
Make It happen

➤ Typical benefits

- ◆ 100 to 500% ROI
- ◆ Payback period < 12 months

➤ Calculate your ROI

- ◆ Look for tools from vendors & software features that can help



Interested in Getting Involved?

- Join the Database Information Management Special Interest Group

http://www.snia.org/forums/dmf/programs/ltacsi/dim_sig/

- Participation will provide many opportunities for you and your company:
 - ◆ Ground-floor leadership role in developing database information management best practices and standards
 - ◆ Collaboration on educational, marketing, and outreach activities
 - ◆ Learn from academic and industry research, and to keep up-to-date on this rapidly-evolving area of our industry
 - ◆ An opportunity to be informed, to help frame research and standards development, and to help influence projects that SNIA will undertake

Please send any comments on this tutorial to SNIA at:
trackdatamgmt@snia.org

The DMF would like to thank the following individuals for their contributions to the development of this tutorial:

**Julie Lockner
Gary Zasman
Michael Peterson
Jan Rosenberg**



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