Changing Alphabets

Migrating from Classic to SQL

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Microsoft Most Valuable Professional
Certified SQL Perform Consultant

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Agenda

- Introduction
- 10 Steps migration
  - Part 1 – Before the migration
  - Part 2 – During the migration
  - Part 3 – After the migration
- Tips and tricks
- Q & A

SQL Perform

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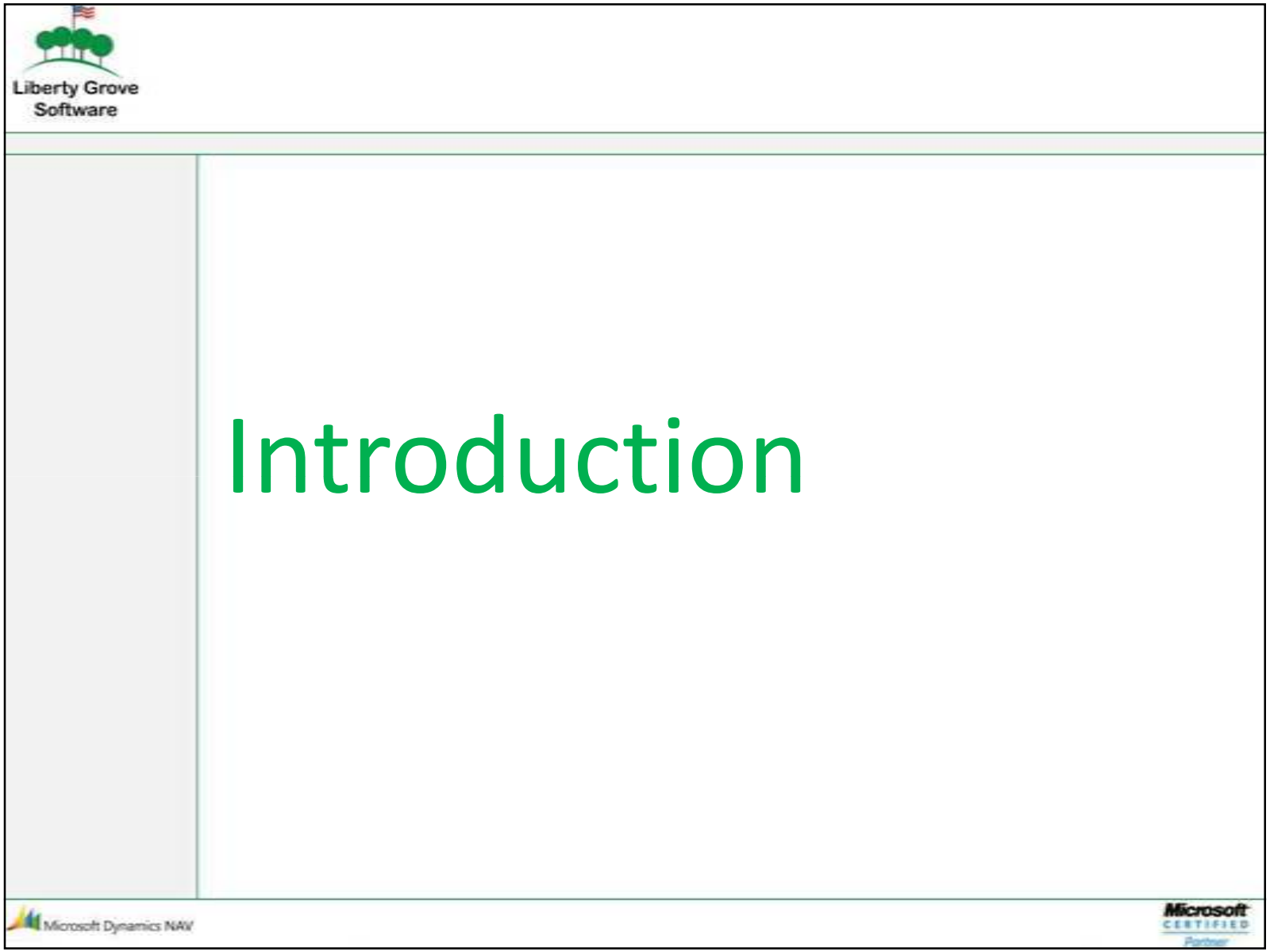
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Introduction
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- Upgrade Service Center
- Based in NA & EMEA
- Consulting services
  - Migration from Classic to SQL
  - Performance troubleshooting
- Training
- No. 1 SQL Perform partner

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SQL Benefits

- Better performance
- Higher availability
- Better Backup / recovery
- New technologies
  - Analysis Services
  - Reporting Services
  - Integration Services
- Flowfields trough ODBC in 5.0 SP 1

- Getting ready for 6.0
  - SQL Mandatory
  - Web services

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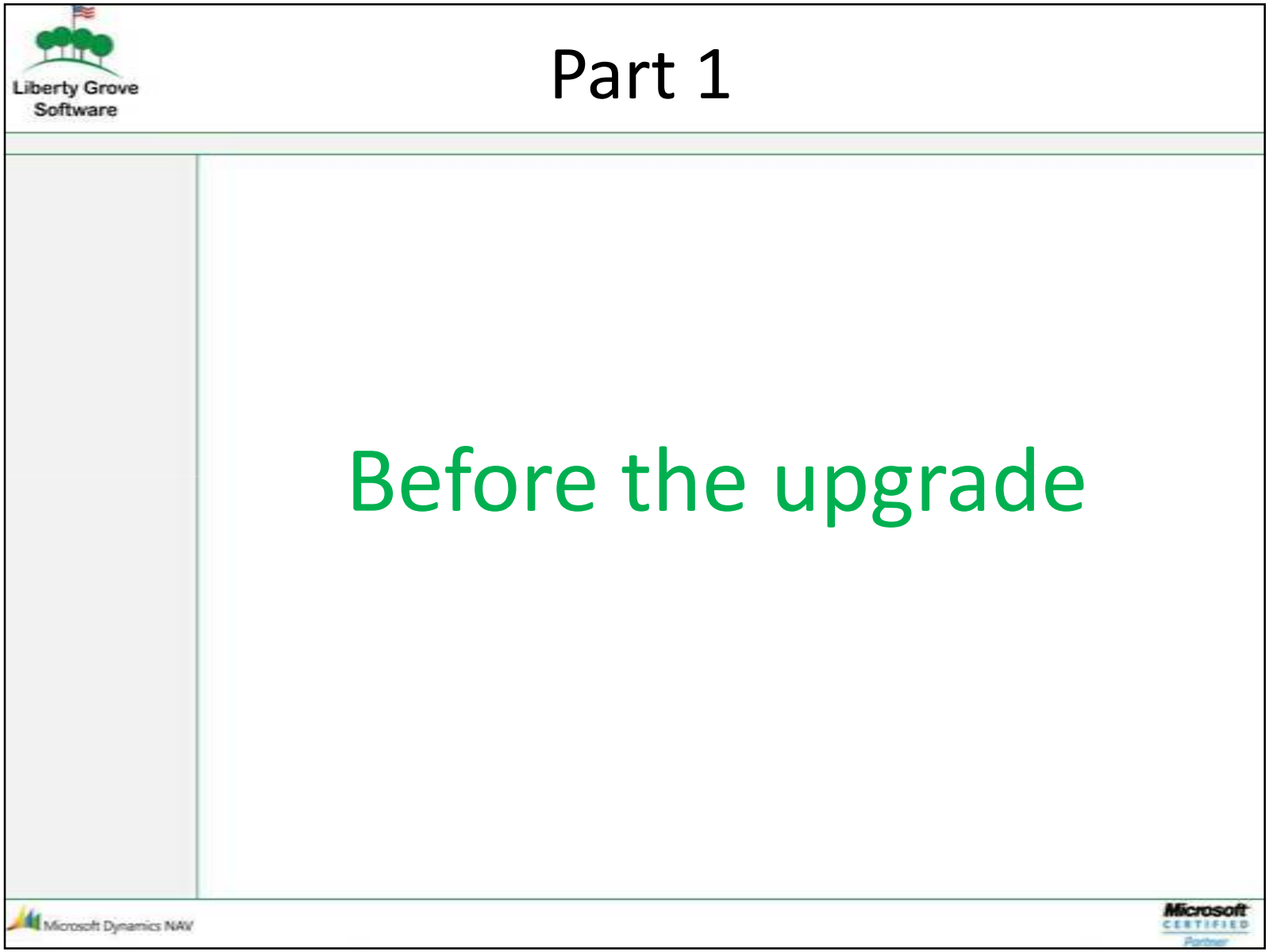
Upgrade Path for 6.0

Get as close as possible

- Step 1
  - Upgrade to 5.0
- Step 2
  - Migrate to SQL Server 2005

– Eliminate the risk of business disruption

You can do this today !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Part 1
Before the upgrade
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10 Steps migration

1. Define the upgrade/migration type
2. Choose hardware & correct SQL Version
3. Checking SQL Data types
4. Test conversion
5. Testing
6. Benchmarking
7. Fixing Issues
8. Go-Live
9. After Care
10. 3 Months after go life

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Step 1 – Upgrade or Migration

- Full
  - New Functionality
  - New Runtime
- Runtime Only
  - Objects stay the same
  - New finsql.exe
- SQL Only
  - Move from current fin.exe to finsql.exe

Step 1 – Upgrade or Migration

- 1.10 – 1.30
  - No experience, not used in NL due to euro conversion
- 2.01 – 2.60
  - Use 4.0 SP 3 Hotfix 6 runtime
- 3.01 – 3.60
  - Full upgrade recommended
- 3.70
  - Use 3.70 B, built 19868
- 4.0 – 5.0
  - Use 4.0 SP 3 Hotfix 6 or 5.0 Update 1
- 6.0
  - Full upgrade is inevitable

Step 1 – Upgrade or Migration

- Full
  - New Functionality
  - New Runtime
- Runtime Only
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  - Move from current fin.exe to finsql.exe

Step 2 - SQL Server Version

- SQL 2000
  - Desktop Engine = 2GB
  - Standard Edition = 2GB
  - Enterprise Edition = 64GB
- SQL2005
  - Express Edition = 1GB
  - Workgroup Edition = 3GB
  - Standard Edition = Operating System maximum
  - Enterprise Edition = Operating System maximum
- Windows 2000
  - Windows 2000 Server = 4GB
  - Windows 2000 Advanced Server = 8GB
  - Windows 2000 DataCenter = 64GB
- Windows 2003 (32bit)
  - Windows 2003 Standard = 4GB
  - Windows 2003 Enterprise = 64GB
  - Windows 2003 Datacenter = 128GB
- Windows 2003 (64bit)
  - Windows 2003 Standard = 64GB
  - Windows 2003 Enterprise = 1TB

Step 2 - Hardware

Components in order of importance

- Memory
- Disks
- Network
- CPU

64 bit computing highly recommended!

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  - **Windows 2003 Standard = 64GB**
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Step 3 - Checking SQL Datatypes

- Datetime
  - Date and time do not exist on SQL
- Migrate.fob

SQL starts at 1753; NAV at 0000

- Very time consuming

Step 3 - Checking SQL Datatypes

- Make table 104010 [Incorrect Data Value] Autoincrement
- Remove Deleteall from Codeunit 104011 [Data Check Management] and put in COMMIT
- Make several Field Check codeunits for smaller parts and run on different clients

Step 4 – Test conversion

- Check datetime and values
- Backup NAV classic Database
- Restore on future production server

Measure Time!!

Step 4 – Test conversion

- Turn off Always Rowlock
- Restore per company, data common to all companies first
- Turn off SIFT Levels
- Turn off indexes
- Make sure log files are big enough. Expanding those takes a lot of time

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Step 5 – Testing

- Manual testing
  - End user testing for functionality
- Define desired output
  - Test in old database
  - Test in new database

Compare results!

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Step 6 - Benchmarking

- Only way to test performance without go-live
- Simulate User Input
- Activate Interfaces

- Don’t forget to test reporting !

- Combine manual testing and benchmarking

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Tools to use

- Benchmark Toolkit
- Client Monitor
- SQL Profiler
- SQL Perform Tools
- Windows Performance monitor

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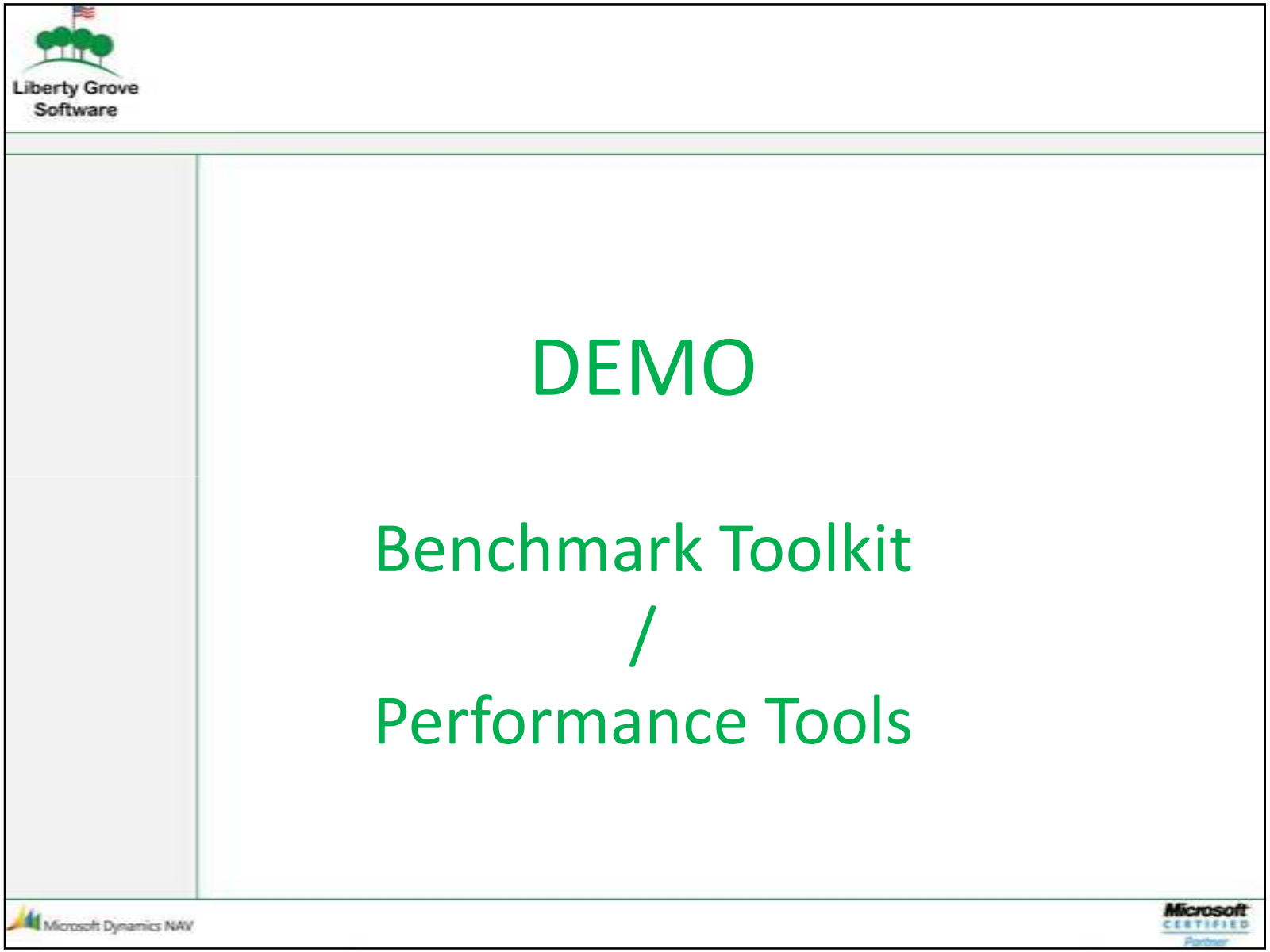
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Benchmark Toolkit
/
Performance Tools
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What have we seen

- Locking
- Slow INSERT, UPDATE, DELETE
- Slow SELECT

When doing a full upgrade to 5.0

- Especially in Customized parts

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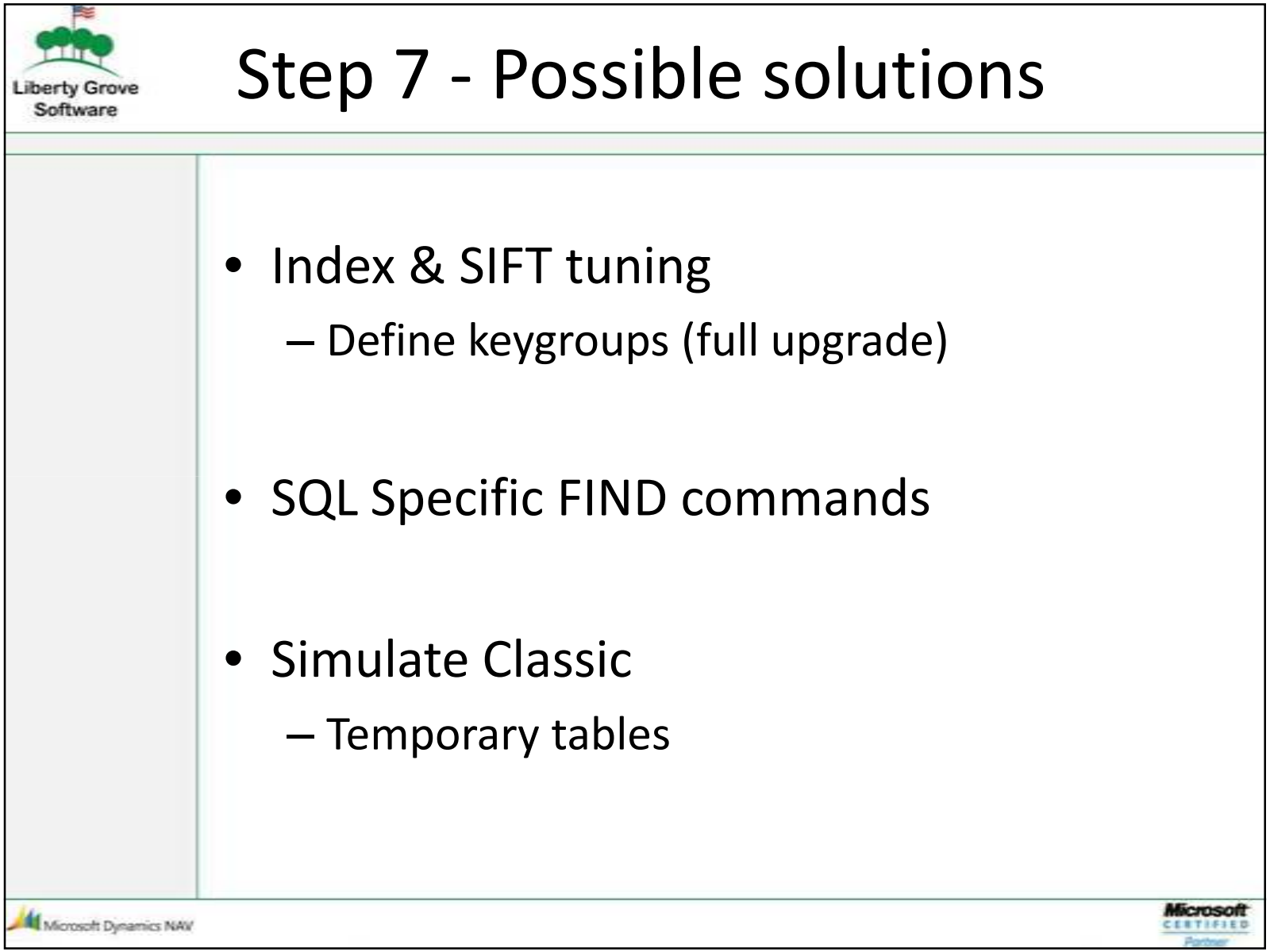
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Step 7 - Possible solutions
• Index & SIFT tuning
– Define keygroups (full upgrade)
• SQL Specific FIND commands
• Simulate Classic
– Temporary tables
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Index and SIFT tuning

- Eliminate SIFT overhead
- Disable overlapping indexes
- Make better selective indexes

Go to the SQL Perform class

or

Watch the SQL Perform webcast from partner source

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SQL Specific Commands

- FINDFIRST
- FINDLAST
- FINDSET(,)
- ISEMPTY

Not a miracle, but can solve cursor (memory) issues

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Simulate Native

- Using Temp Tables
  - Temp tables behave like classic, not SQL
- New property in 5.0
  - SourceTableTemporary

  Eliminate markedonly

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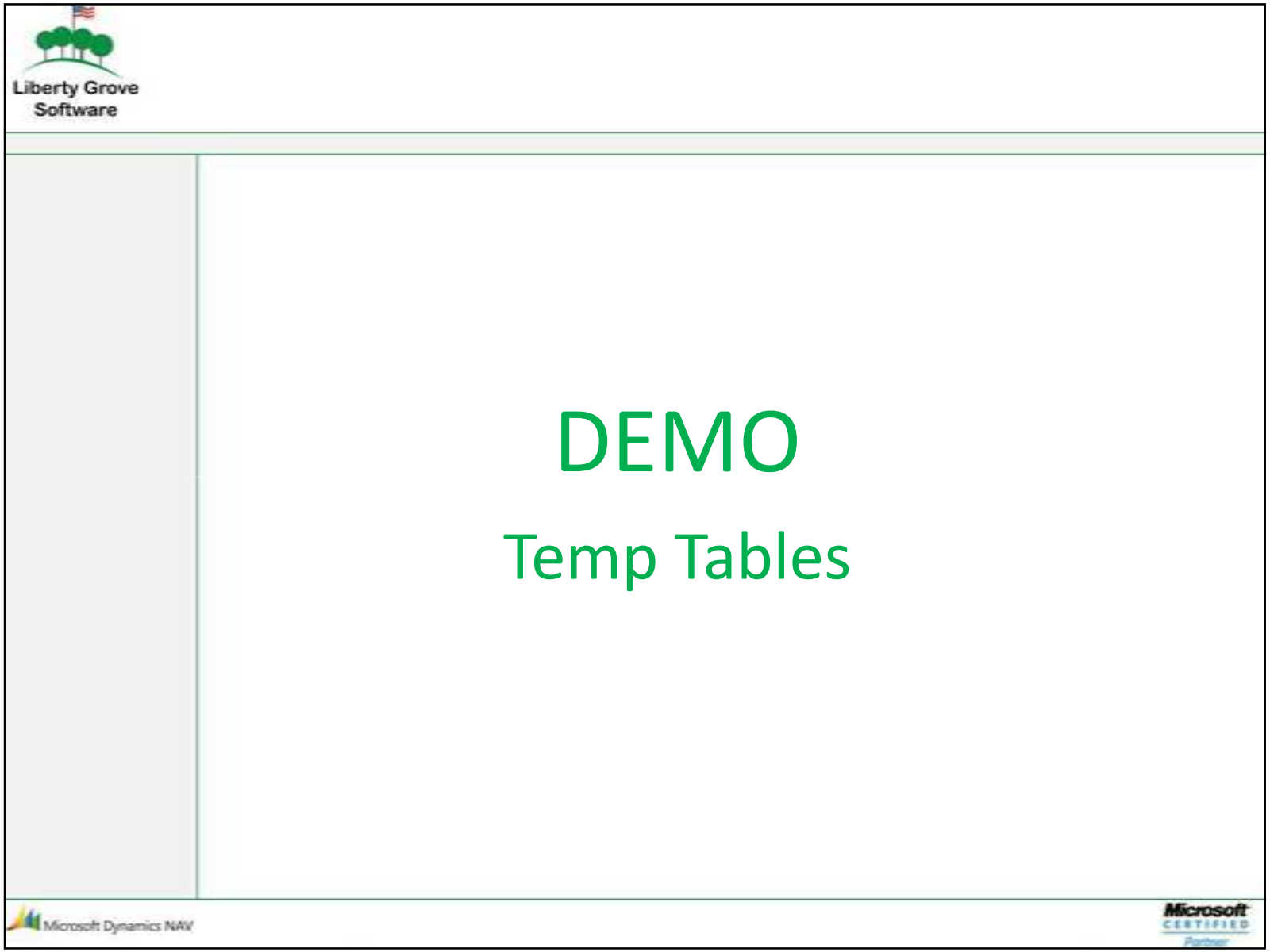
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Temp Tables
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What have we seen

- Temp tables behave like classic, also for sorting
- No cursor on forms
- No roundtrips to server

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Part 2

During the upgrade

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Step 8 - Conversion

- Date checking
  - Speeding up by tweaking code
- One Company at a time
  - First “Data Common to all companies”
- Restore (Be Patient)
  - SQL Restores in small batches via temporary tables and commits and only using one processor

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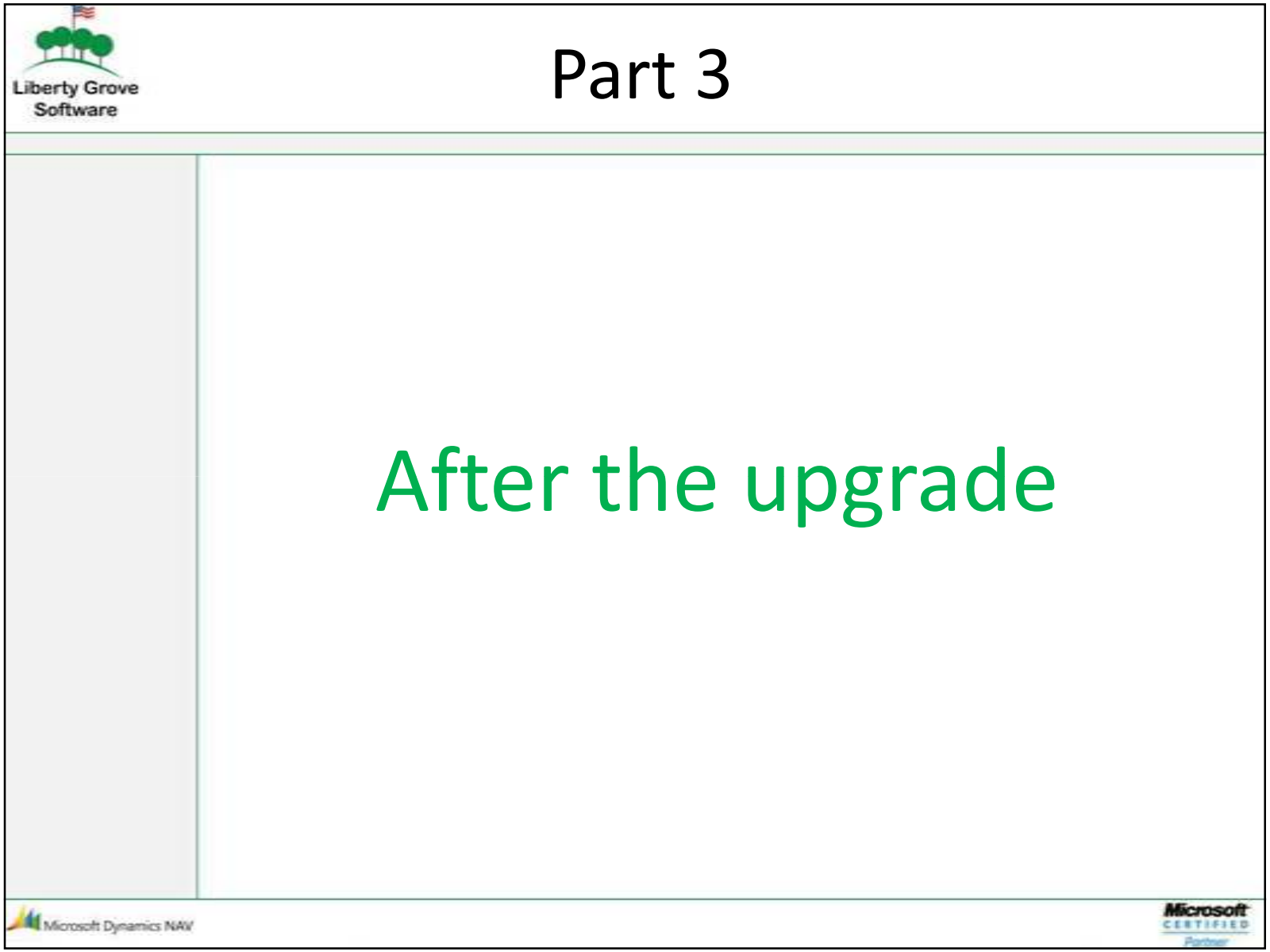
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Part 3
After the upgrade
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Step 9 - After Go-Live

- Use profiler to collect data
- Find “Bad Queries”
- SQL 2005 issues
  - MaxRds

```
SELECT TOP 30
st.text,
    SUBSTRING(st.text, (qs.statement_start_offset/2) + 1,
    ((CASE statement_end_offset
        WHEN -1 THEN DATALENGTH(st.text)
        ELSE qs.statement_end_offset END
            - qs.statement_start_offset)/2) + 1) as statement_text,
    execution_count,
          case
                when execution_count = 0 then null
                else total_logical_reads/execution_count
          end as avg_logical_reads,
      last_logical_reads,
      min_logical_reads,
      max_logical_reads,
      max_elapsed_time,
          case
                when min_logical_reads = 0 then null
                else max_logical_reads / min_logical_reads
          end as diff_quota
FROM sys.dm_exec_query_stats as qs
CROSS APPLY sys.dm_exec_sql_text(qs.sql_handle) as st
--WHERE max_logical_reads > 50000 and max_logical_reads > 5*
min_logical_reads
ORDER BY max_logical_reads DESC
```

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Step 9 - After Go-Live

http://www.mibuso.com/dlinfo.asp?FileID=896

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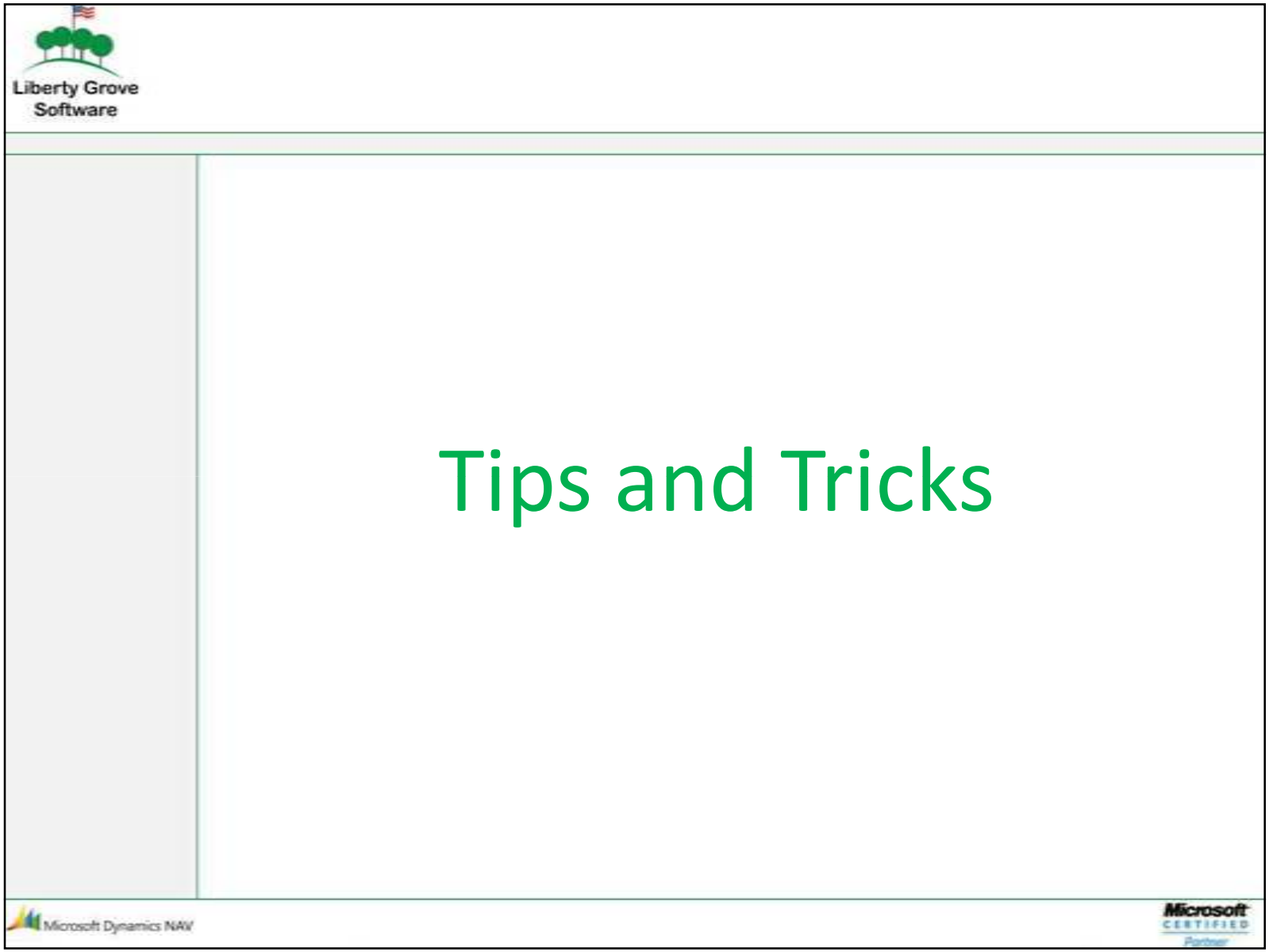
Step 10 – 3 months after go-live

- Manage expectations → Prepare the customer for issues

- Go back to the customer
- Measure times
- Measure (b)locks
- Disable unused indexes
- Fix issues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Changing Datatypes

- Code for sorting
  - VarChar to Variant
- Datetime for calculation
  - Decimal to DateTime
- DateTime functions behave slightly different in Classic and SQL

Drop statistics when changing a data type

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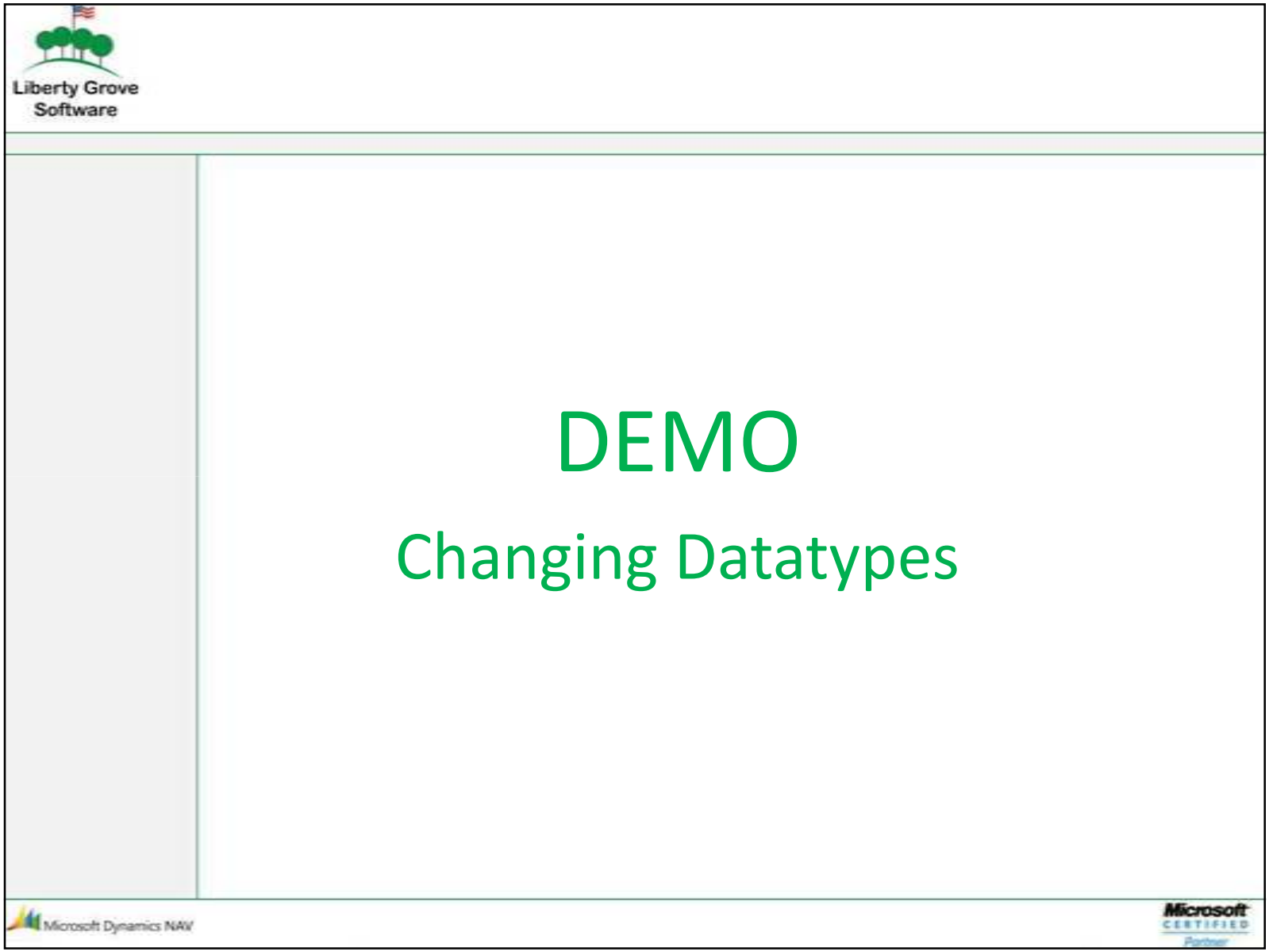
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Performance Tips

- Use empty database to change indexes
- Be careful with SQL 2005
  - Index Hinting
  - Recompile
  - Covering Indexes
    - IsEmpty
    - Count
    - Reports
- SQL Checkpoint can slow down batch posting

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Hardware Tips

- Virus scanner
- 64 Bit
  - "Unlimited Memory"
    - More locking memory
- 32 Bit
  - Memory mapping
  - 3GB/AWE Switches for memory
    - Only for data, not for locks
- RAID Configuration
  - Temp database (SQL2005)

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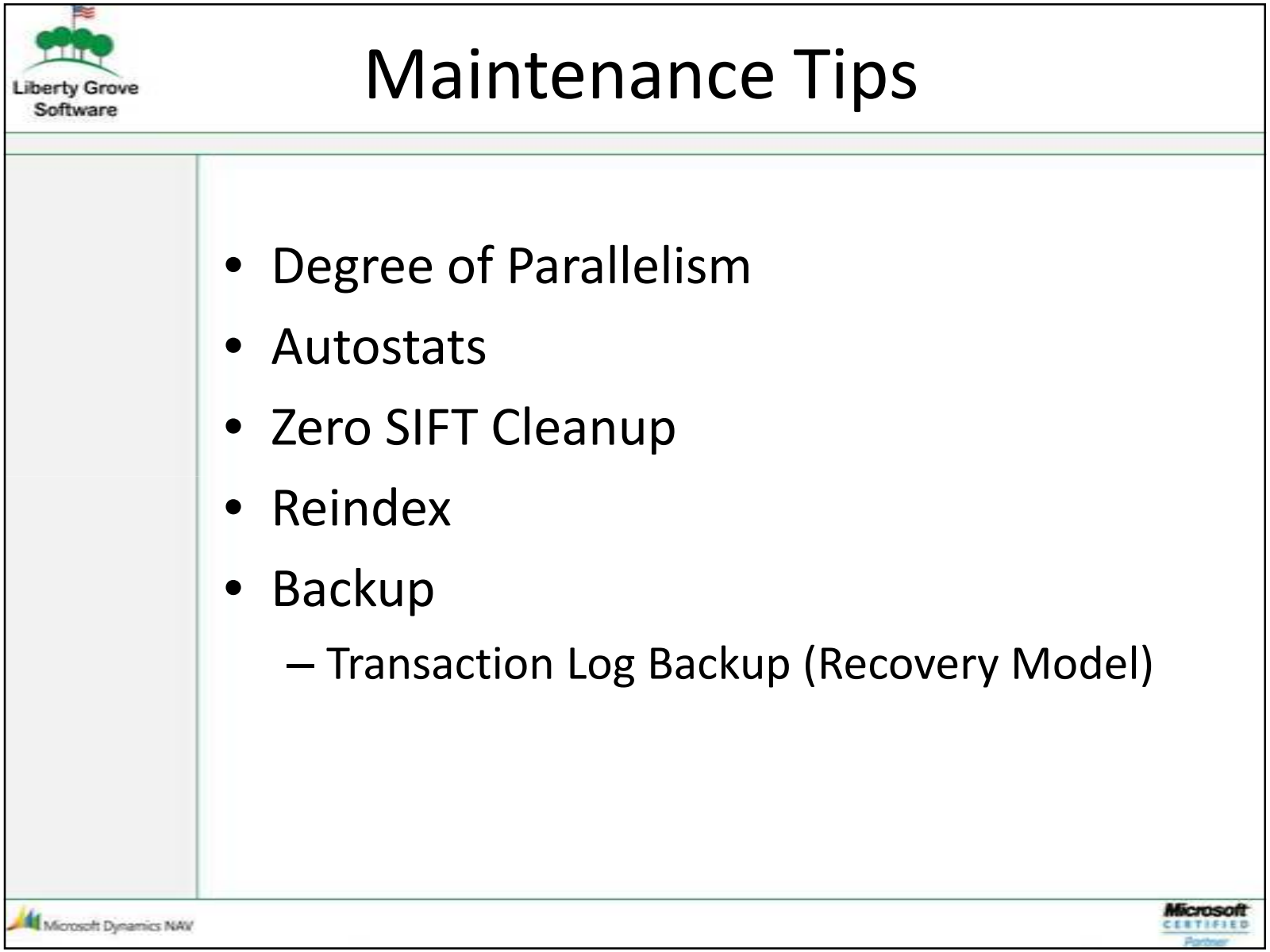
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Maintenance Tips
• Degree of Parallelism
• Autostats
• Zero SIFT Cleanup
• Reindex
• Backup
– Transaction Log Backup (Recovery Model)
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Backup Tips

- Use Backup device
  - First to HDD
- Append Log Backups
- Create a restore plan/script

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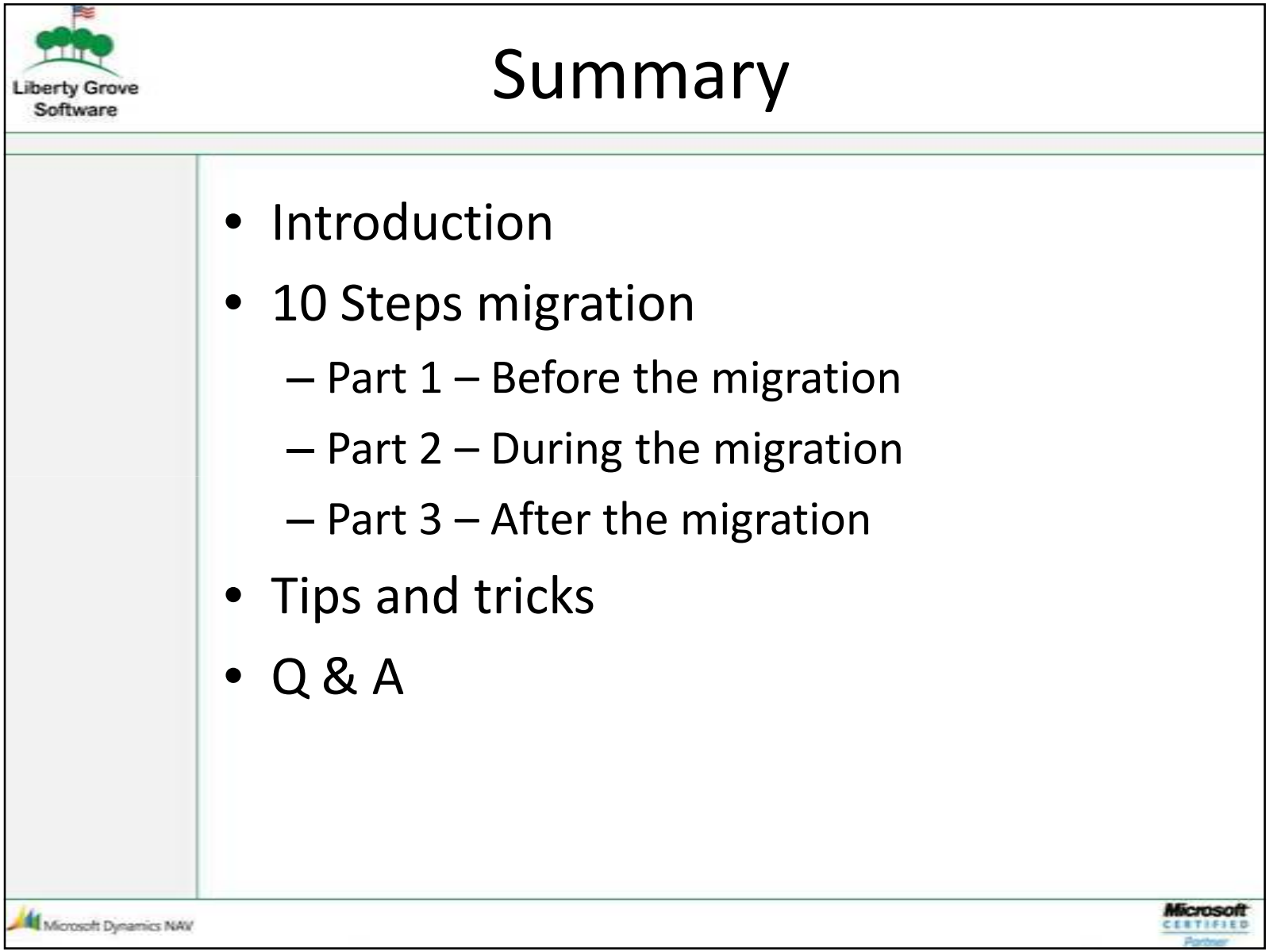
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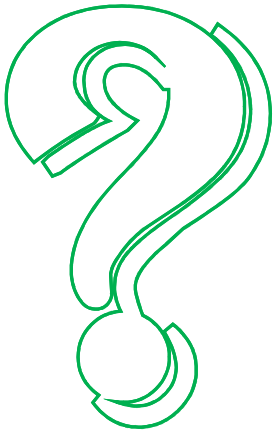
Q & A



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