Americas' SAP Users' Group

MIT Lincoln Laboratory's Journey to the Secure HANA Cloud

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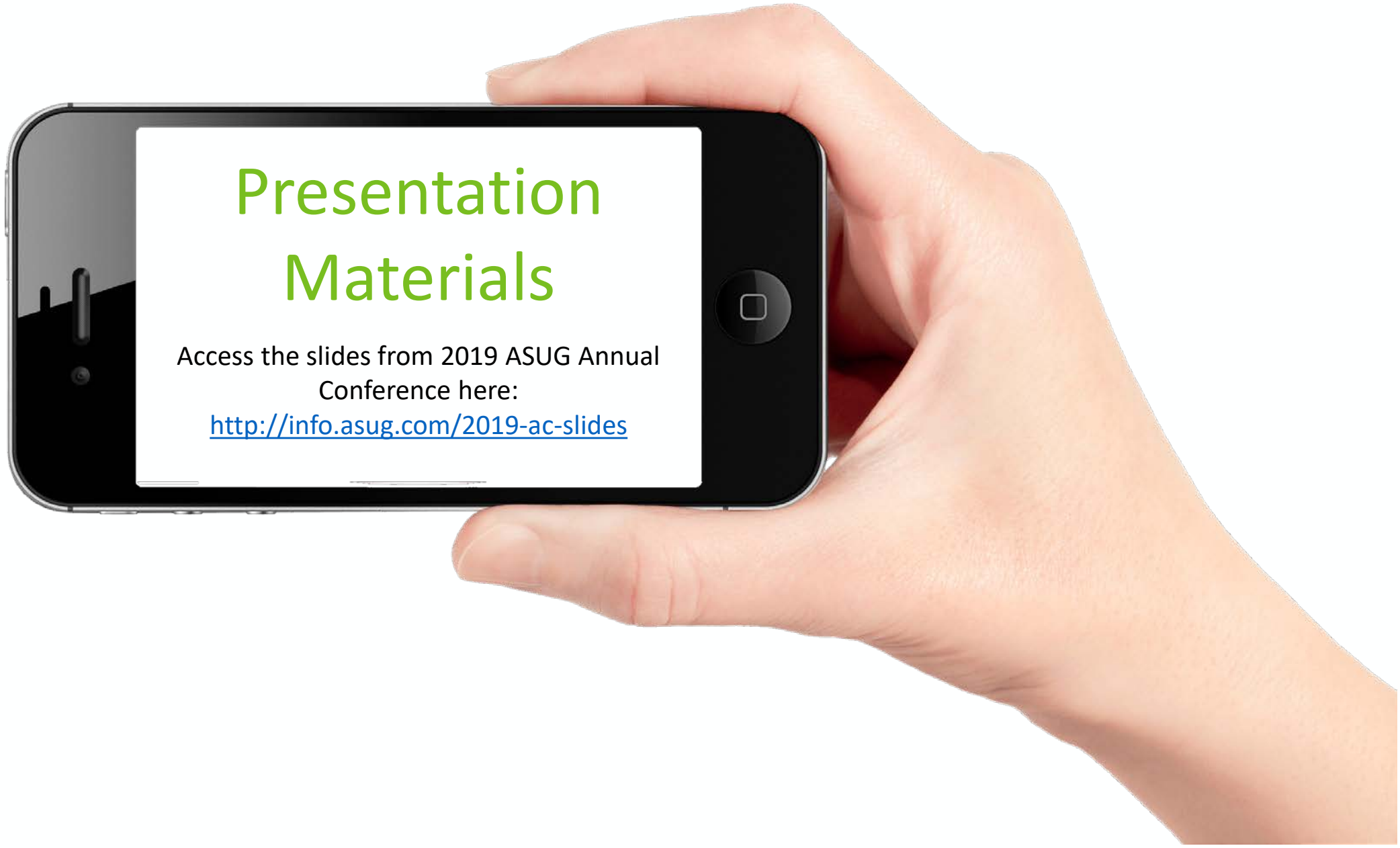
Presentation Materials
Access the slides from 2019 ASUG Annual Conference here:
http://info.asug.com/2019-ac-slides

About the Speakers

Trina Miller

- Project IT Lead
- Almost 25 years implementing SAP
- Experienced in functional, process, interface design, project management

Niral Gandhi

- SAP Basis Lead
- Over 15 years of Basis Administration experience
- Seasoned SAP GRC and Security admin

Key Outcomes/Objectives

1. What was involved in our migration project
2. Recommendations from our experience

Agenda

- About Lincoln Laboratory
- About the migration project
- Lessons learned/recommendations

ABOUT LINCOLN LABORATORY

MIT Lincoln Laboratory

Federally-Funded Research and Development Center

MIT
Cambridge,
Massachusetts

MIT Lincoln
Laboratory
Lexington,
Massachusetts

Mission: Technology in Support of National Security

Mission Areas:

Advanced Technology	Air, Missile and Maritime Defense	Air Traffic Control	Communications Systems	Cyber Security and Information Sciences
Engineering	Homeland Protection	ISR Systems and Technology	Space Systems and Technology	Tactical Systems

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ABOUT THE PROJECT

Migration Project Context

Digital Enterprise Transformation Roadmap

Phase 1: Create the Roadmap (Apr – Aug 2017)

Selected Vendor to help the Laboratory re-design its business processes.

- Benchmarked processes against industry (Master Data, Finance, Procurement, HR, Planning, Reporting, etc.)
- Recommended process improvements
- Developed Transformation Roadmap of improvements

Phase 2: SAP HANA/ Cloud Migration (Jul 2017 – April 2018)

Migrated SAP systems from Oracle database to SAP HANA in NS2 Private Cloud

- Pilot
- Unit, Integration, Regression Testing
- Disaster Recovery Testing
- Mock Cut Over 1 & 2
- Go Live

Phase 3: Business Process Simplification (Feb 2018 –)

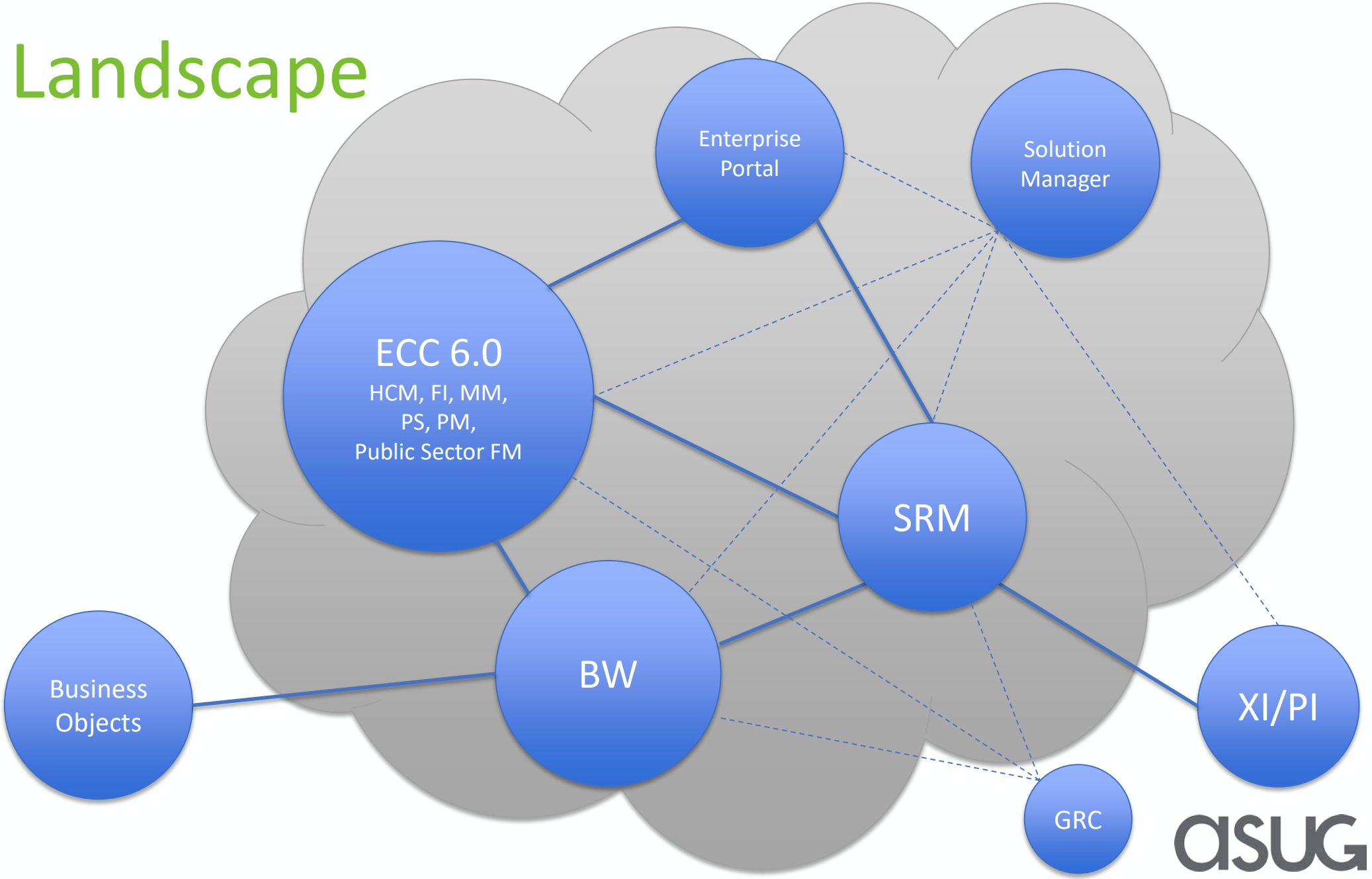
Implement Transformation Roadmap projects

- Master Data
- Finance
- Procurement
- HR
- Planning
- Reporting
- etc.

A Step Toward Digital Enterprise Transformation

- **Migrating SAP to the Secure HANA Cloud was a step toward longer-term DET goals:**
  - √ Improve disaster recovery and business continuity
  - √ Improve performance
  - – Simplify IT and allow more focus on Innovation
  - – Increase IT business applications agility
  - – Simplify business operations and improve productivity
  - – Reporting and analytics in near real-time
  - – Take advantage of the numerous SAP HANA innovations being introduced
- **Migrating from legacy reporting to BusinessObjects was a step toward enabling:**
  - – Standard business intelligence and reporting
  - – Self-service business intelligence and reporting capabilities
  - – Advance online analytics and dashboard tools
  - – Mobile analytics capabilities

SAP Landscape



Project Scope:

Extra-Big-Bang Approach

- On-prem → cloud (PaaS)
  - Sandbox, Dev, QA, Production for ECC, BW, SRM, Portal
    - Also training systems for ECC, SRM, Portal
  - SolMan and HANA Cockpit
- Oracle → HANA 2.0
- Upgraded ECC, BW, SRM, Portal
- Unicode for ECC and SRM
- Legacy reporting → BusinessObjects (on-prem)

Why this Approach?

- Minimize disruption to the business
  - One large technical migration vs. several smaller
  - Consolidated test periods
- Legacy reporting was incompatible with HANA
- First time Unicode was required

Migration Details

Item	From	To
Database	Oracle 12.1.0.2	HANA 2.0 SPS01
OS – DB Servers	RHEL Version 6.10	RHEL 7.2 on DB and 7.3 on App servers
ECC	SAP ERP 6.0, EhP7, SPS11 NW 7.4, SPS13	SAP ERP on HANA EhP8 SPS06 NW 7.5, SPS07
BW	NW 7.4, SPS12 EhP 7 for SAP SEM 600 SPS10 EhP 8 for SAP FSCM 6.0 SPS6	NW 7.5 SPS07 EhP8 for SAP SEM 6.0 SPS06
SRM	SAP SRM 7.0, EhP3 SPS11 NW 7.4 SPS13	SAP SRM 7.0, EhP4 SPS06 NW 7.5 SPS07
Enterprise Portal	NW 7.4 SPS13 EhP3 for SAP SRM 7.0 SPS08 EhP7 for SAP ERP 6.0 SPS11	NW 7.5 SPS07 EhP8 for SAP ERP 6.0 SPS06 EhP4 for SAP SRM 7.0 SPS06
Solution Manager	Retired on-prem instance	Created new instance SolMan 7.2

Multi-step process

1. Exported databases from on-prem systems to built hardware in cloud
2. Isolated the cloud systems
3. Performed UNICODE conversions for ECC and SRM
4. Performed Managed System Setup on new SolMan
5. Upgraded systems to HANA databases and NW7.5
6. Imported UNICODE conversion specific transports

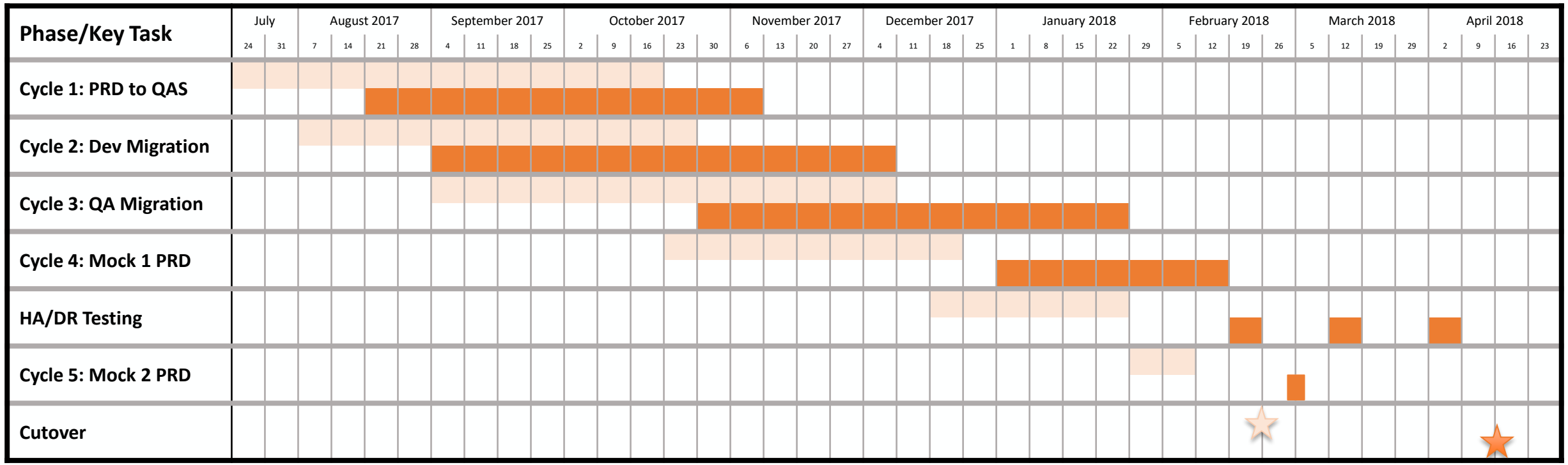
Oracle “Database Link” Issue

- We had connections from SAP BW to non-SAP Oracle databases using this method
- Unplanned effort to re-design and migrate these connections
- We replaced these connections with OData services

SAPGUI and services file

- Various versions of SAPGUI for Windows
- SAPGUI for Java environment
- ASCS vs PAS port numbers updates in services file

Project Timeline



Planned

Actual

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RECOMMENDATIONS

Chances are, you've done this before.

Look back at what went well in previous upgrades, and keep those practices!

Improve on areas that need it.

Minimize other projects and work.

When development must continue, ensure that dual-development procedures are followed.

Decision charts and central tracking can help.

Ensure collaboration between applications and infrastructure.

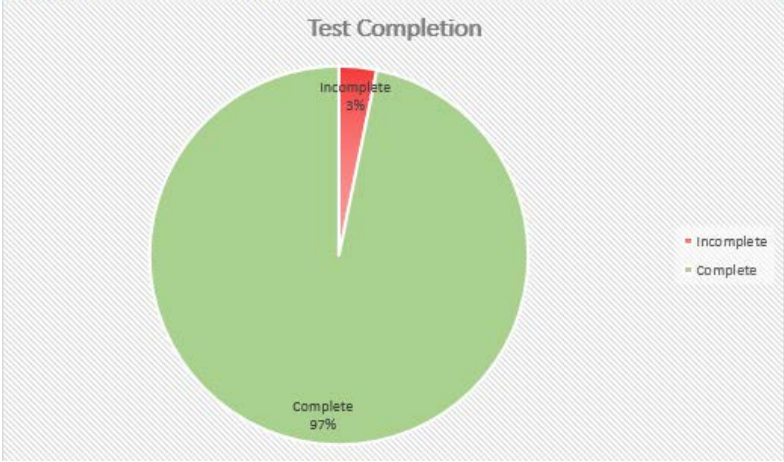
Even when infrastructure responsibility is moving out-of-house, they will be heavily involved during design and transition.

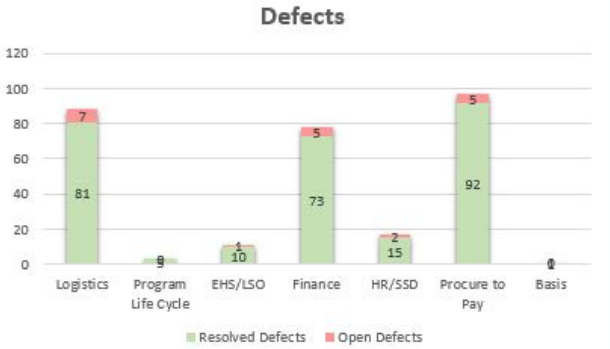
Engagement with in-house networking team is critical!

Keep control of your testing.

Although we don’t have a dedicated QA team we designated a Test Manager. He provided metrics on a weekly basis to keep us on track.

Team	Percent complete	Number of Defects Found	Resolved Defects	Open Defects
Logistics	100.00%	88	81	7
Program Life Cycle	100.00%	3	3	0
EHS/LSO	99.10%	11	10	1
Finance	94.41%	78	73	5
HR/SSD	85.16%	17	15	2
Procure to Pay	98.86%	97	92	5
Basis	100.00%	1	1	0
Incomplete	3.21%			
Complete	96.79%			





Practice makes perfect!

Plan to do at least two mock cutovers, and do one in real time. If your production cutover will fall on a weekend, do your mock on a weekend too.

Perform EVERYTHING as you would for production.

Keep track of all the actuals and refine your estimates and plan for next time.

Plan for workforce contingencies.

Make sure you are at least two-deep for every expert.

Prepare business resources for the testing time commitment.

Keep your partners straight!

We used SAP NS2 as our cloud provider and our migration partner.

Sometimes the boundaries were unclear, causing incorrect expectations from our team on what the cloud service would include.

Know your SLAs.

The contract may not be accessible or may have excess legalese.

Require your cloud partner to provide SLAs for every service, and review them prior to cutover.

Maybe don’t make it quite so big.

Although we did much of our Unicode mitigation ahead of time, we didn’t actually move to Unicode on ECC and SRM until the migration.

If we could have de-coupled the BusinessObjects migration, complexity would have been reduced.

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Q&A

For questions after this session, contact us at trina.miller@ll.mit.edu and ngandhi@ll.mit.edu.

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