



Boeing Knowledge Management NASA 2020

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Engineering, Operations & Technology
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The Boeing Company

Our History

- Founded in 1916 in Washington state
- Joining of Boeing, McDonnell Douglas, and more

We are a global company

- Recognized as the world's largest, most diversified aerospace company
- 165,000 employees in the U.S. and 65 countries
- Broad customer base across 150 countries
- Total revenue in 2014: \$90.8B

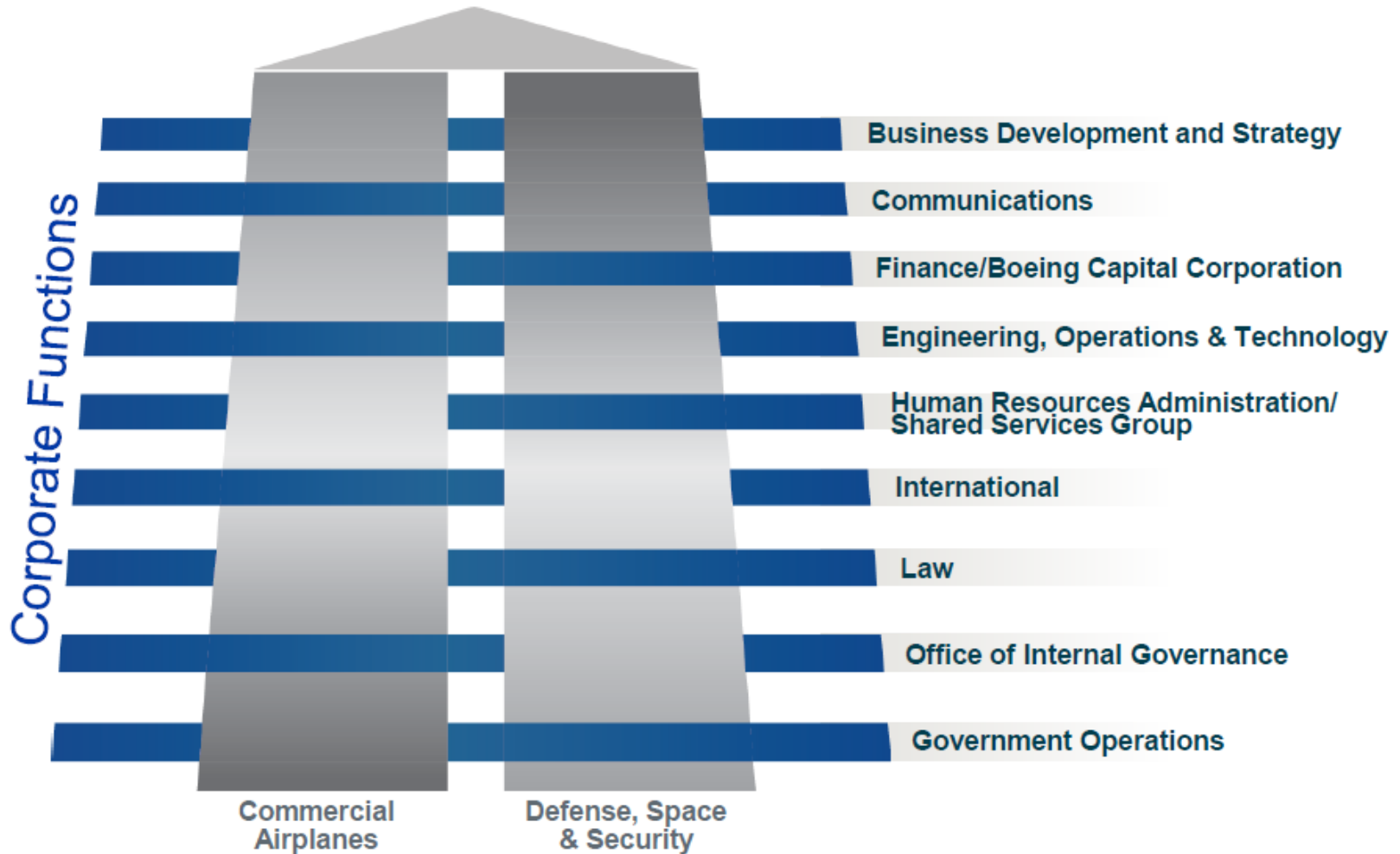
What we do today

- Design, assemble and support commercial jetliners, defense systems, satellites; integrate large-scale systems; develop networking technology and network-centric solutions



Bill Boeing, Dutch Kindelberger, John McDonnell, Donald Douglas

Organized for Excellence



Two businesses supported by nine corporate functions

Enterprise KM Strategic Objectives



Enhance business success by:

- **Leveraging Boeing's diverse knowledge through a collaborative “one company” environment**
- **Ensuring long term continuity of key knowledge within all functions and businesses**



Enterprise Knowledge Management Strategy



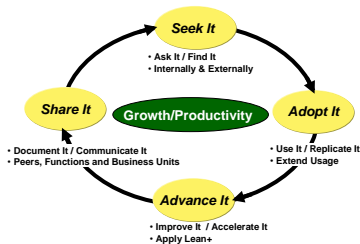
Improve Access to Expertise



Preserve Key Knowledge



Leverage Knowledge & Enhance Performance



Institutionalize the “Boeing Knowledge Network”

Boeing Knowledge Network



Boeing Designated Expert



Communities



BKN/KM CoP



KM Awards



Boeing Technical Journal



Productivity Network



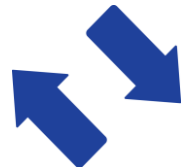
Enterprise Mentoring



Search



KM Gateways



Late Career Knowledge Transfer



inSite



Lessons Learned

Story

Program chief engineer

Cracked valve bracket

Boeing Designated Expert



Illustrative Example



**Boeing
Designated Expert**

<i>Engineering BDEs</i>	Q2 2012	Q4 2012	Q2 2013	Q4 2013	Q2 2014	Q4 2014
Utilization	53%	64%	66%	65%	67%	67%
Effectiveness	76%	87%	93%	87%	95%	93%

Requirements Quality

Lightning Testing

Crane Operations

*Aircraft Electrical
Power Systems*

Radar and Antenna Measurement

Engr BDE Results - Demonstrated value

BCA Examples

- Address signal continuity through connector during vibration
- 2.2 Hz LCO certification help
- Interior composite fabrication help
- Damage tolerance and maintenance help for aircraft structures

BDS Examples

- Analysis of rotor wind tunnel test data for V-22 Program and data analysis for CH-47 wind tunnel test
- A nozzle performance improvement for a proprietary program
- KC-46A exterior light lab simulation
- Valve bracket weld cracking in advanced material at high vibration

EO&T Examples

- Cyber Security/Network Invention Disclosure resolution
- Advanced drilling techniques for carbon fiber and titanium application
- Human Factors issues related to Radio Tower upgrade for Flight test organization
- Magnesium alloy for space flight application
- RFID related questions for passive and active technologies

**>4000
documented
success stories
spanning 2012-14**

Finance BDEs

[Home](#) > [How Do I Find an Expert? BDE Database](#) > [BDE Admin](#) > BDE Authority Tree

BOEING DESIGNATED EXPERTS (BDE) - AUTHORITY TREE

Choose an Authority



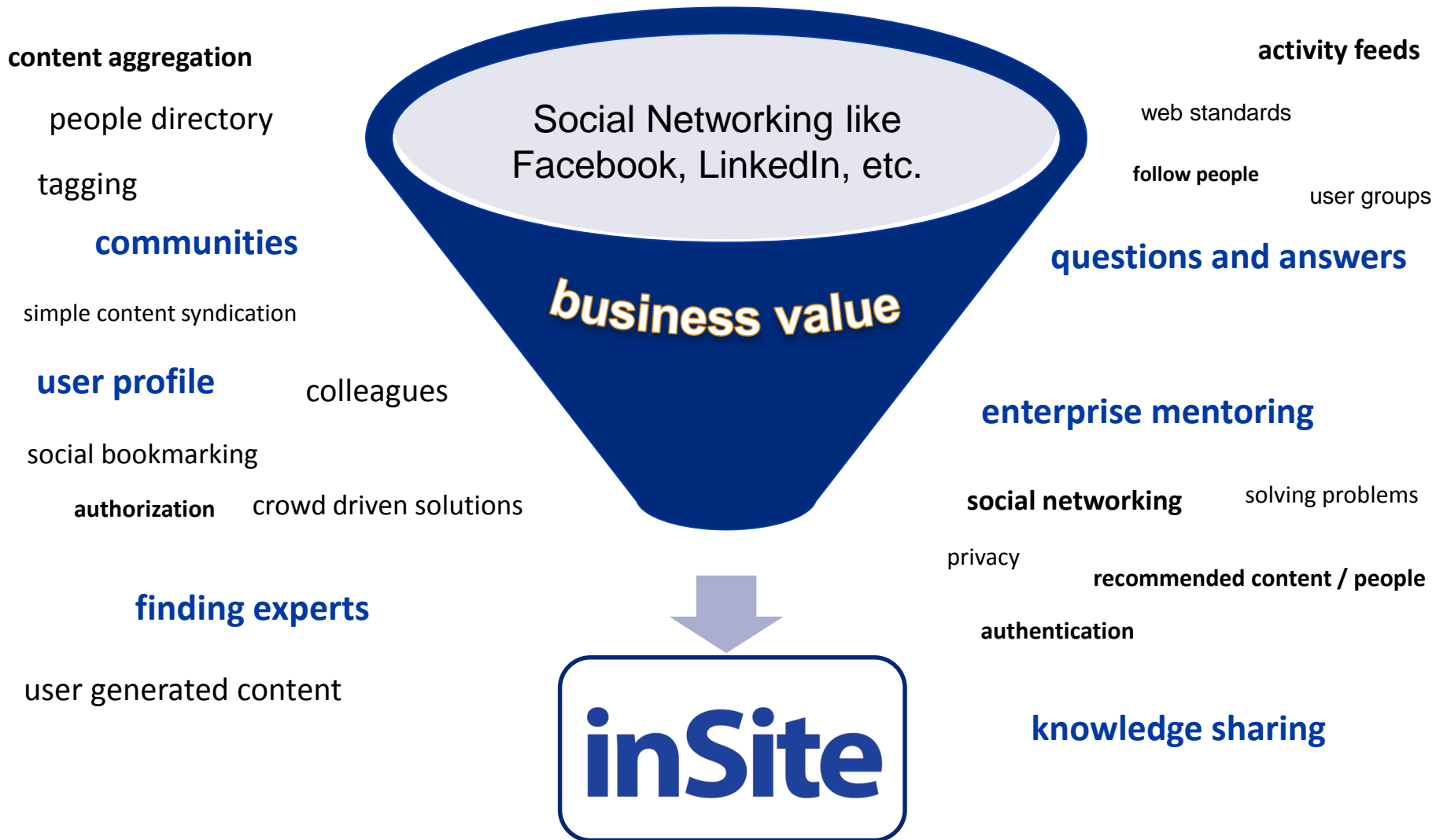
Expand All

Collapse All



- Finance
 - + Accounting
 - + Contracts and Pricing
 - + Estimating and Pricing
 - + Estimating and Pricing / Procurement Financial Analysis (PFA)
 - + Financial Planning and Analysis
 - + Integrated Scheduling
 - + Procurement Financial Analysis (PFA)

inSite- built from the best of the web



Community of Excellence



Communities ▸ Electromechanical Packaging [CoE] ▸ Home

The ElectroMechanical CoE will be a venue for sharing best business practices, standardizing design processes, and providing a basis for knowledge transfer to fellow technologists.



I Like It



Tags & Notes

Communities of Excellence



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- [BDS MSE](#)
- [BDS EE](#)
- [Enterprise EE](#)

Mentoring

[All Site Content](#)

Electromechanical Packaging CoE



Welcome

The ElectroMechanical CoE will be a venue for sharing best business practices, standardizing design processes, and providing a basis for knowledge transfer to fellow technologists. It will foster a "One Boeing" environment that values the contributions of its participants..

Questions for the CoE? Start with "Search this Site..."
Please check the Q&A archive before submitting a question.

[Submit a new Question](#)

[View the Q&A Archive](#)

Announcements

[CSUF/Boeing LTP Engineer's Mathematics Refresher Course \(Next to Start on July 11, 2012\)](#)

6/24/2012 11:02 AM

by Coombes, Stephen D

This course in Engineering Mathematics Refresher provides the engineer with the necessary mathematical tools to solve various problems encountered in Engineering. This class includes mathematical modeling and analysis of simple engineering problems....

[Electronics Packaging Course by Cal State Fullerton and Boeing LTP \(Next to Start on Sept 11, 2012\)](#)

6/24/2012 11:02 AM

by Coombes, Stephen D

This course in Electronics Packaging is geared toward providing the design engineers with the tools needed to understand how their design will perform in various environments. This class includes modeling, analysis, and design of simple electronic systems,...

Contact Us

COE Leader

[Steve](#)

Steering Committee Focals

[Richard N](#)

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[Jason H](#)

[Michael Z](#)

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Story

Airborne Electronic Flat Panel Displays

SAE ARP 4260 display test procedures

One Boeing approach

Knowledge capture / transfer



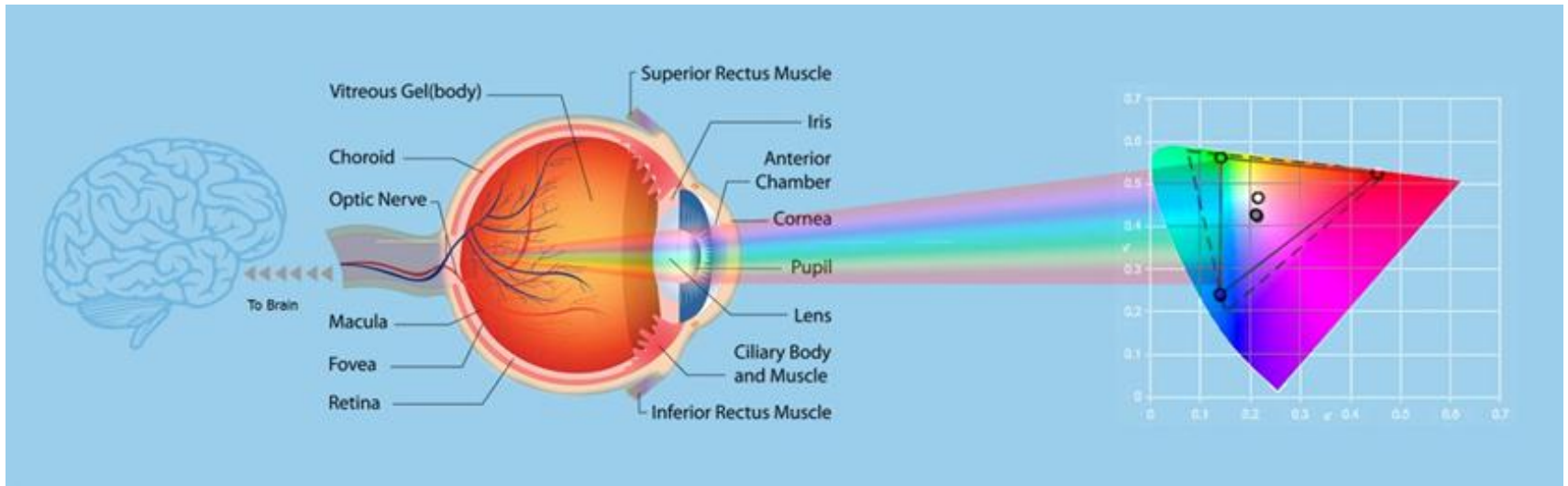
Communities

**Project
Management**

**Data
Analytics**

Electromechanical Packaging

Lighting Displays & Optics



“Steady State” KM

Obtain leadership support

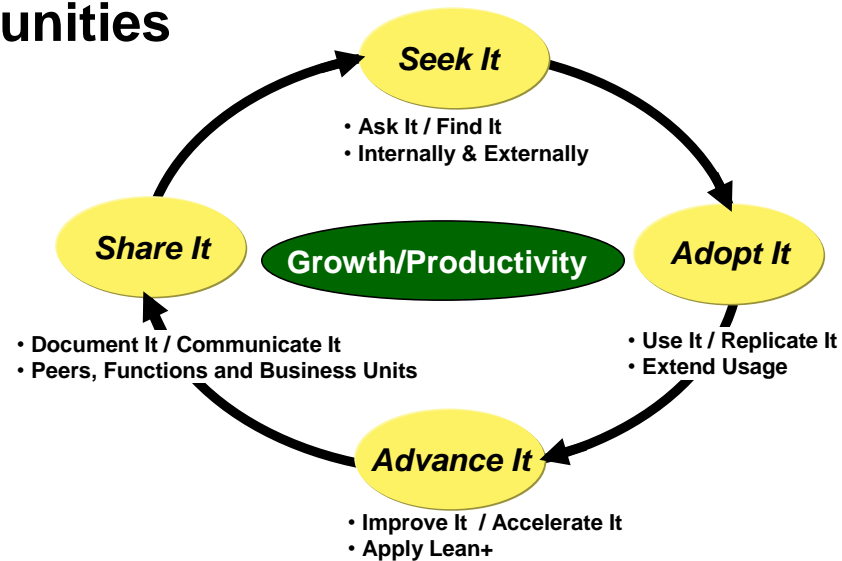
Understand your critical knowledge

Establish anchors with BDEs / Communities

Connect vertically and horizontally

Realize business gains

Institutionalize it



Standard Work, One Boeing Approach

Story

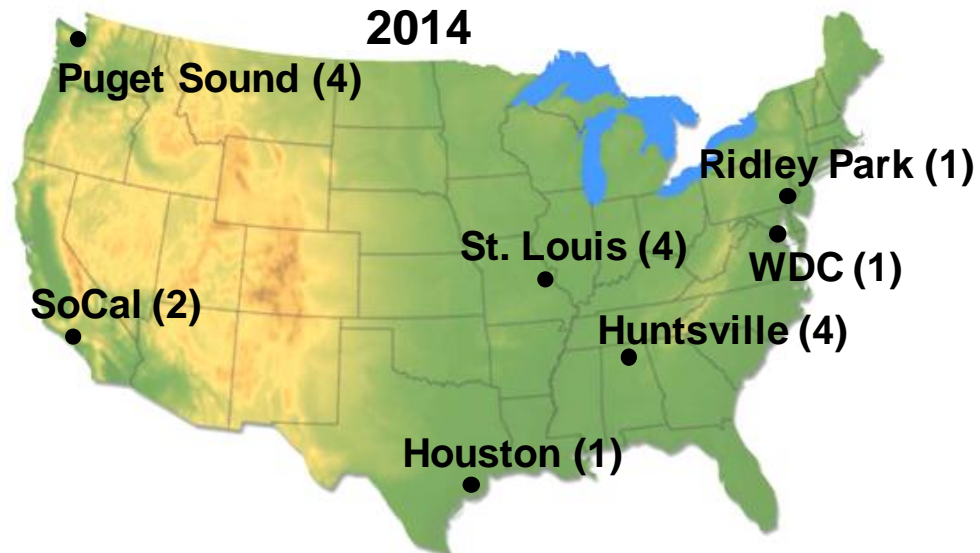
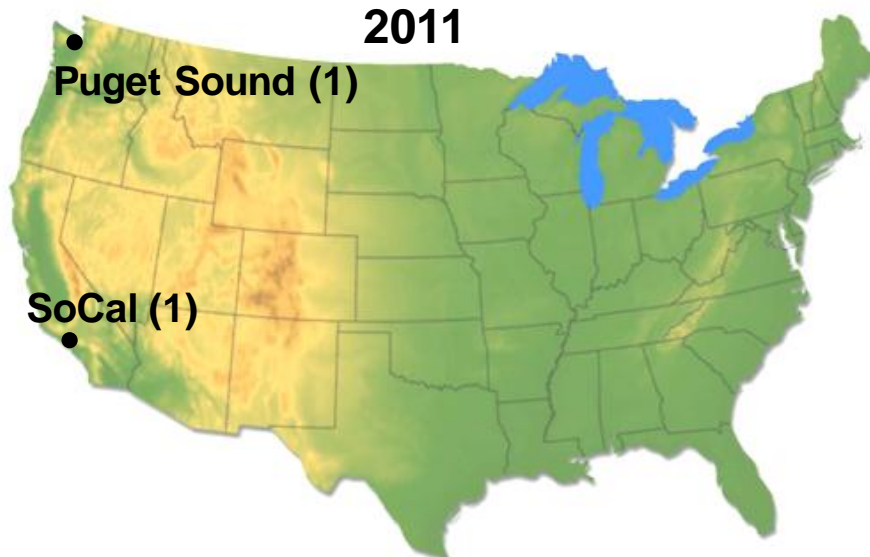
“Steady State” knowledge transfer

Requirements quality

2 experts became 17 experts

Program Phase Completed	Relative Cost
Design	1
Unit Test	5
Integration Test	16
System Test	40
Acceptance Test	110

Relative Cost to Correct Errors¹



1. Mike Phillips, “V&V Principles”, Verification and Validation Summit 2010

“Reactionary” Knowledge Transfer

Experience shows Knowledge WILL NOT be transferred without a Knowledge Transfer Plan and executing to that plan

Even if the recipient of the knowledge has not been identified we can START NOW



Story

Commercial Aviation Services: fleet support, technical support

1000 employees between 2014 and 2015

Top down approach

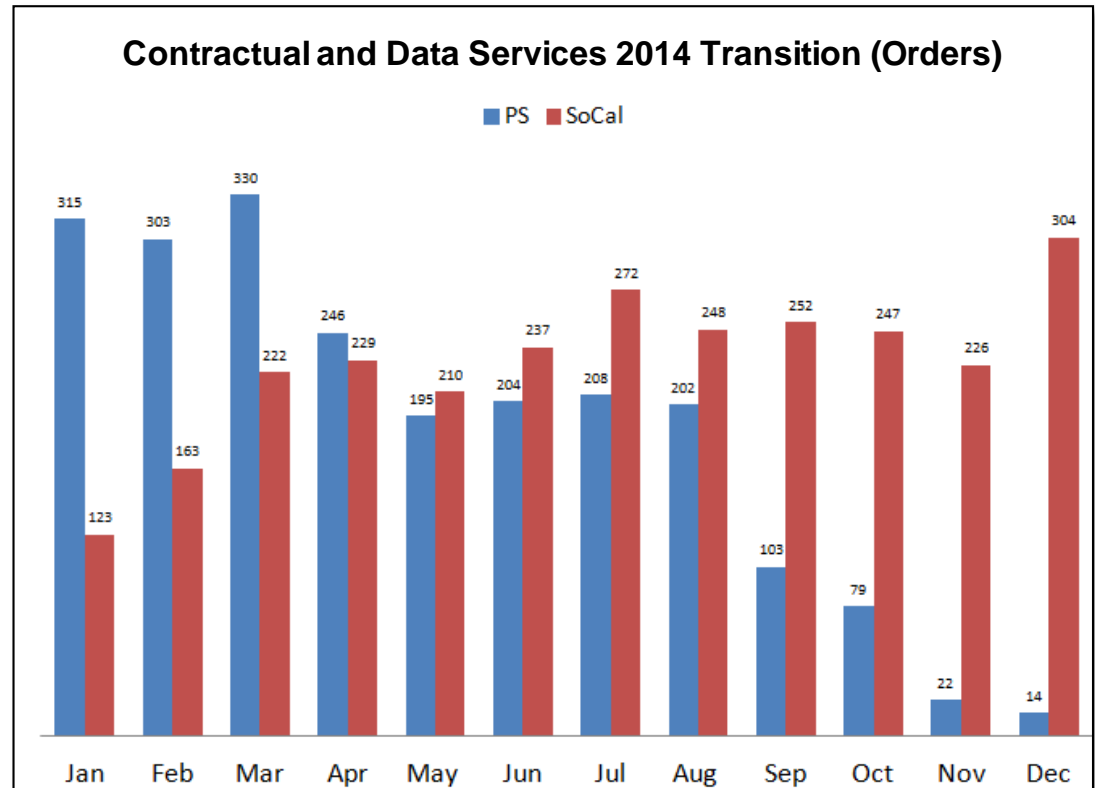
No impact to operations

1500 boxes of paper digitally captured

Digital data collected

Content analytics to quickly find answers

Legacy



KM / Program Mgmt / Project Mgmt

Drive culture

Encourage KT, job rotations, mentor / mentee relations

Ask questions



Integrate into day to day operations

PEP, TEP, risk management

Gated process

	2014			2015	
	Q2	Q3	Q4	Q1	Q2
Gated process	▲ Gate 2 5/8		▲ Gate 3 11/13	▲ Gate 4 3/12	
Program Management	▲ LRBP Update	▲ 2015 LRBP Update	▲ Initial PEP	▲ Updated Bus Case	▲ Final PEP

Functional use of KM

911 / 411 (help needed)

Capture / transfer for
best practices



Phantom Eye



Paint Automation

Driving Ownership

EOT
Leadership



Strategic Risk



Functional
and Bus.
Reviews
Include KM
Scorecards

Strategic Risk



BU KM
Activities

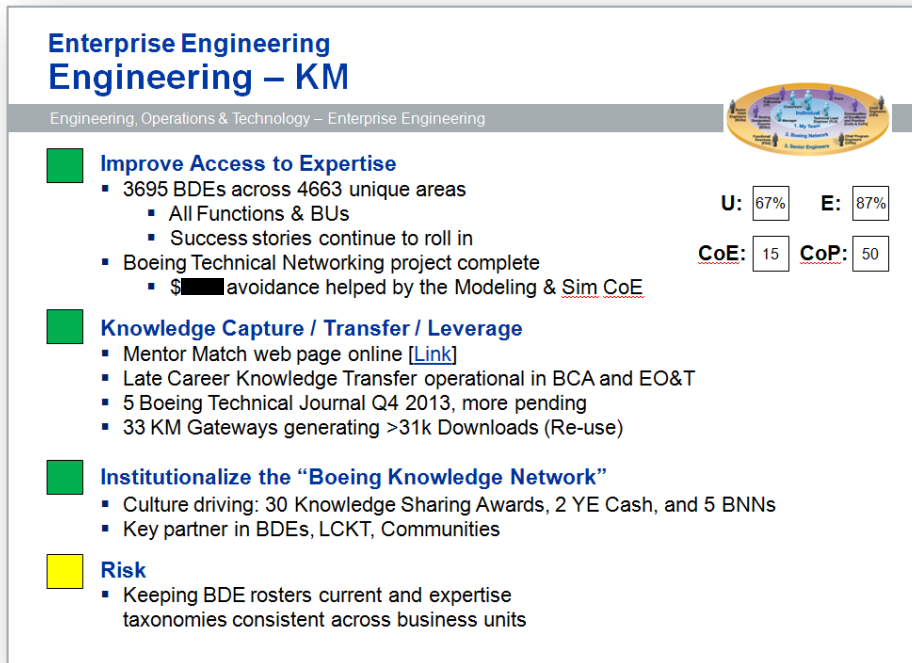
Functional KM
Activities

KM Products and Services

KM Team &
Functional
Partners
Provide Data

Aligned One Boeing KM Metrics

Example Scorecard



- Addresses key strategic areas
- Linked to overall company risk
- Standard format for all functions
- Owned by the functions / operating groups

Recognition & Leadership

Business benefit

Preserving knowledge

Certificate personally signed

**Sr. VP of Engineering,
Operations, and
Technology**

**Sr. VP of HR and
Administration**

Coin

Eligible for annual cash award



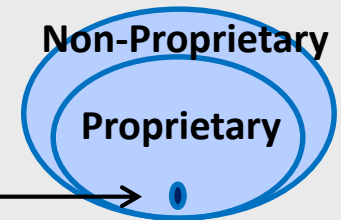
Challenges

Challenges

- Distaste of “KM”
- People don't want to share knowledge
- Legitimate internal sharing restrictions
- Getting started as a change agent

Response

- Energize and inspire around our legacy and responsibility to be stewards of what we inherited. And to build upon it tomorrow
- Policy language, followed by dialog
- Recognize desired behavior
- Recognize compliance rqmts
- Stratify controls
- Partner with your most leveraged and visible organization, then expand



Summary

Improve access to the Boeing “Knowledge Portfolio”

Drive culture through a business value message

Facilitate alignment across the company by leveraging the growing enterprise pull for KM

Stay focused on the strategic objective: Enhancing Business Success





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