

AS9100C Upgrade Journey

Goddard Space Flight Center

5th Annual NASA Supply Chain Quality Assurance Conference
“Managing Risks to Assure Mission Success”

19 October 2011

Dan Berry
Director - Quality Management Resources

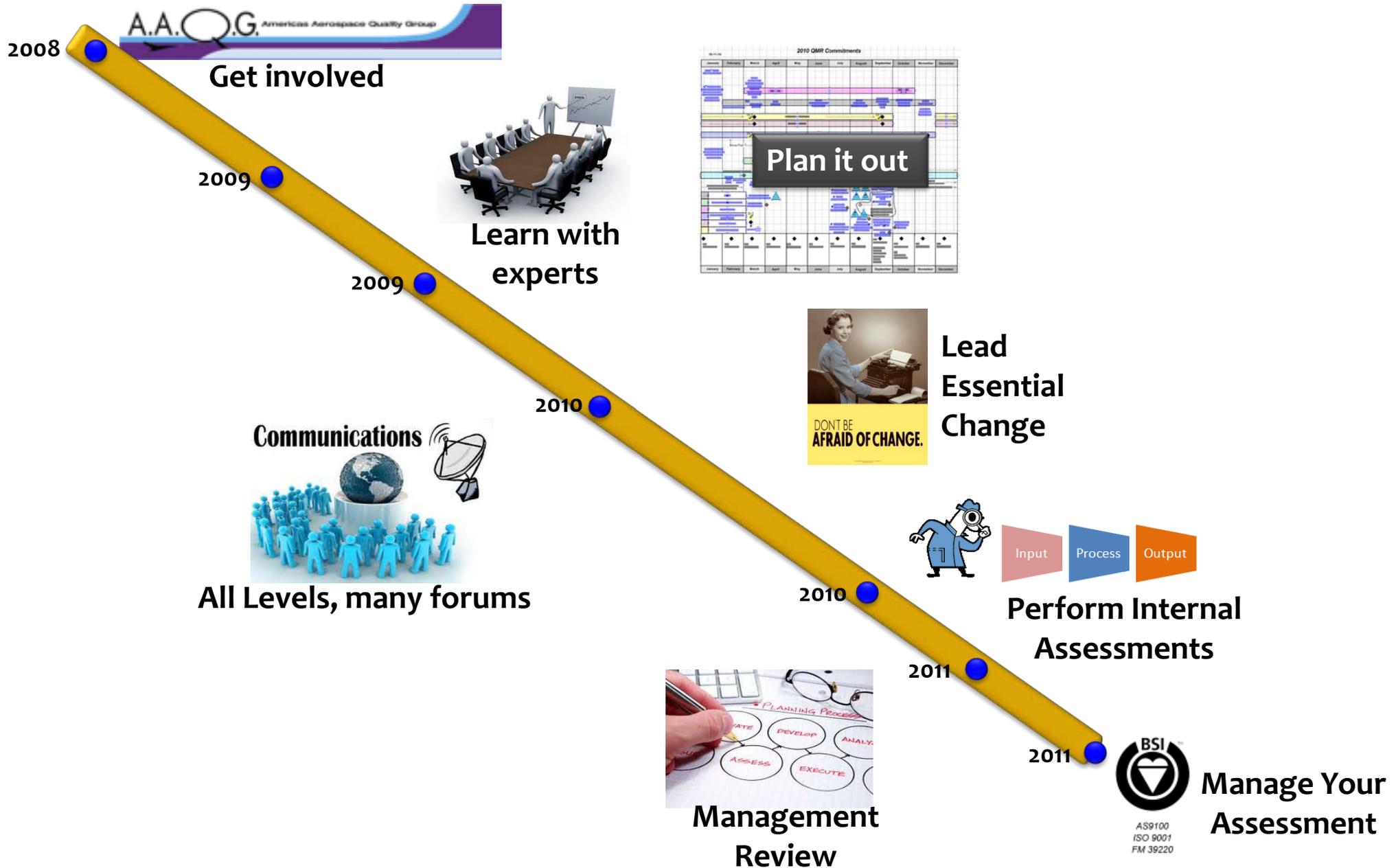
Agility to Innovate, Strength to Deliver



**Ball Aerospace
& Technologies Corp.**



Eight Essential Key Activities





Options to Learn With The Experts



AQS Management Systems, Inc.

Daniel J. Berry

Has completed ISO 9001:2008 Transition training. This training was completed online on August 5, 2010

Mark Ames
President

Certificate

This document certifies that

Daniel J Berry

has completed

Changes in AS9100C

Understanding AS9100 Rev C Webinar

Produced by the SAE Continuing Professional Development Group

		RABQSA Certified	ISO 9000:2000 Auditor Quality System	AS9100:2000 Lead Assessor	Internal Auditor Training	ISO 9001:2008	Changes in AS9100C	Understanding AS9100 REV C	IAQG Certified AS9100 RevC	Process Based Auditing
Director	QMR	X		X		X	X			
Manager	QMR	X	X	X		X	X			
Manager	QMR	X		X		X	X			
Manager	QMR	X	X	X	X	X	X			X
Full Time Auditor	QMR	X		X		X	X			X
Full Time Auditor	QMR	Apply		X		X	X			X
Audit Agent	Supply Chain Quality As									X
Audit Agent	Systems Engineering									X
Audit Agent	Electrical Engineering									X
Audit Agent	Hardware Quality Assura									X
Audit Agent	Quality Inspection						X			X
Audit Agent	Configuration Management				X		X			X
Audit Agent	Configuration Management				X		X			X
Audit Agent	Manufacturing				X		X			X

Essential Staff Training Matrix
Including our Lead Internal Assessor passing her IAQG Sanctioned Aerospace Auditor Transition Training – 9100
Feb 2011



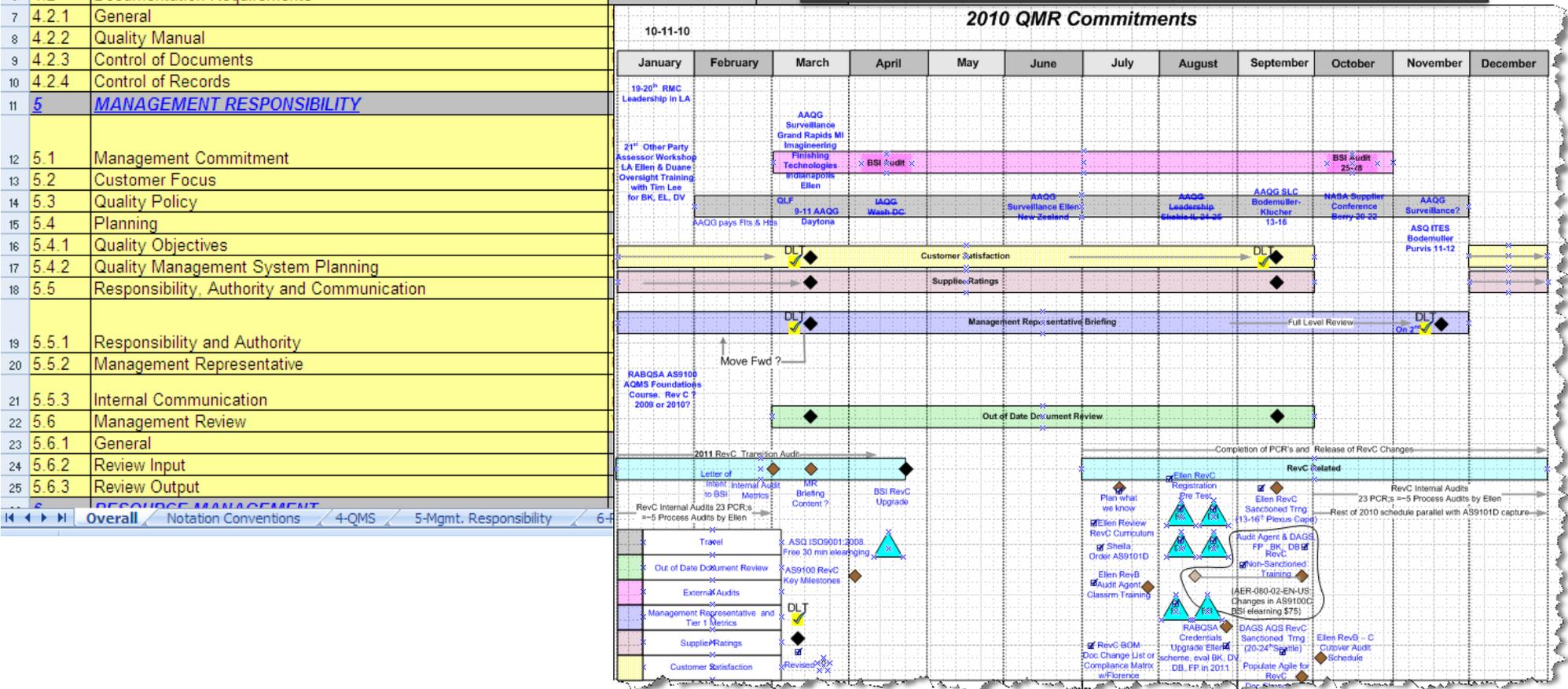
Planning and Timing Is Pivotal



Matrix of AS9100C Clause vs. how Ball Aerospace generates compliance

	C	D	E	F	G	H	I	J
	<u>QSM Reference</u> (exact references)	<u>% Complete</u> (e.g Mapping complete)						
2	INTRODUCTION SECTION							
3	Introduction	PCY0000001						
4	QUALITY MANAGEMENT SYSTEM		100%					
		PCY0000023, PCY0000039, PCY0000041, PCY0000042, PCY0000045, QSP21.15, QSP25.1, QSP25.2, QSP25.4						
5	4.1	General Requirements						
6	4.2	Documentation Requirements						
7	4.2.1	General						
8	4.2.2	Quality Manual						
9	4.2.3	Control of Documents						
10	4.2.4	Control of Records						
11	MANAGEMENT RESPONSIBILITY							
12	5.1	Management Commitment						
13	5.2	Customer Focus						
14	5.3	Quality Policy						
15	5.4	Planning						
16	5.4.1	Quality Objectives						
17	5.4.2	Quality Management System Planning						
18	5.5	Responsibility, Authority and Communication						
19	5.5.1	Responsibility and Authority						
20	5.5.2	Management Representative						
21	5.5.3	Internal Communication						
22	5.6	Management Review						
23	5.6.1	General						
24	5.6.2	Review Input						
25	5.6.3	Review Output						

Coordinating the actions and timing is everything





Managing Risks to Assure This Mission's Success

Performed RevB to RevC Gap Analysis using our Preventive Action System to manage actions (~29 PA's)

ballpcr#2838	AS9100C Communication	completed_pcr
ballpcr#2908	AS9100C Customer Satisfaction - 8	completed_pcr
ballpcr#2911	AS9100C Delivery documents	completed_pcr
ballpcr#2874	AS9100C QMS communication	completed_pcr
ballpcr#2877	AS9100C Records	completed_pcr
ballpcr#3575	Need a BATC Concept of Operations Document	completed_pcr



Customer Focus AS9100 Rev C
PCR-PA 2837 2-14-10

Top Management Requirement
Top Management shall ensure that product conformity and on-time delivery performance are measured and the appropriate action is taken if planned results are not, or will not be, achieved.

On-Time Deliveries

Measurement System:	AUT Sales Order System
Area:	AUT Business Area
Description:	Monitors on-time deliveries
How Reviewed:	Business Unit Reviews
Process Area:	AUT

• High Volume Manufacturing Area •

Product Conformity

Measurement System:	Anomaly Corrective Action System (ACTS)
Area:	AUT Business Area
Description:	Monitors non-conforming product
How Reviewed:	Business Unit Quarterly Reviews
Process Area:	Mission Assurance

Program Status Tracker (PST)

Measurement System:	Program Status Tracker (PST)
Area:	Programs & Business Units During program life
Description:	Monitors cost and schedule (delivery)
How Reviewed:	During life of program
Process Area:	Business Management

Periodic Value

Measurement System:	Periodic Value
Area:	Company Wide
Description:	Monitors cost and schedule (delivery)
How Reviewed:	During life of program
Process Area:	Business Management

Customer Focus

Measurement System:	Customer Focus Review
Area:	Company Wide
Description:	Evaluates readiness to deliver product
How Reviewed:	Customer Focus review meetings
Process Area:	Mission Assurance

• Customer Engagement with Product Delivery/Conformity •

Measurement System:	Supplier Findings Management
Area:	Company Wide
Description:	Monitors Product Conformity / Delivery of Productive Customer Strategic Business Units Areas
How Reviewed:	Customer Focus Review
Process Area:	Mission Assurance

• Top Management Engagement of customer/Supplier Conformity/Delivery •

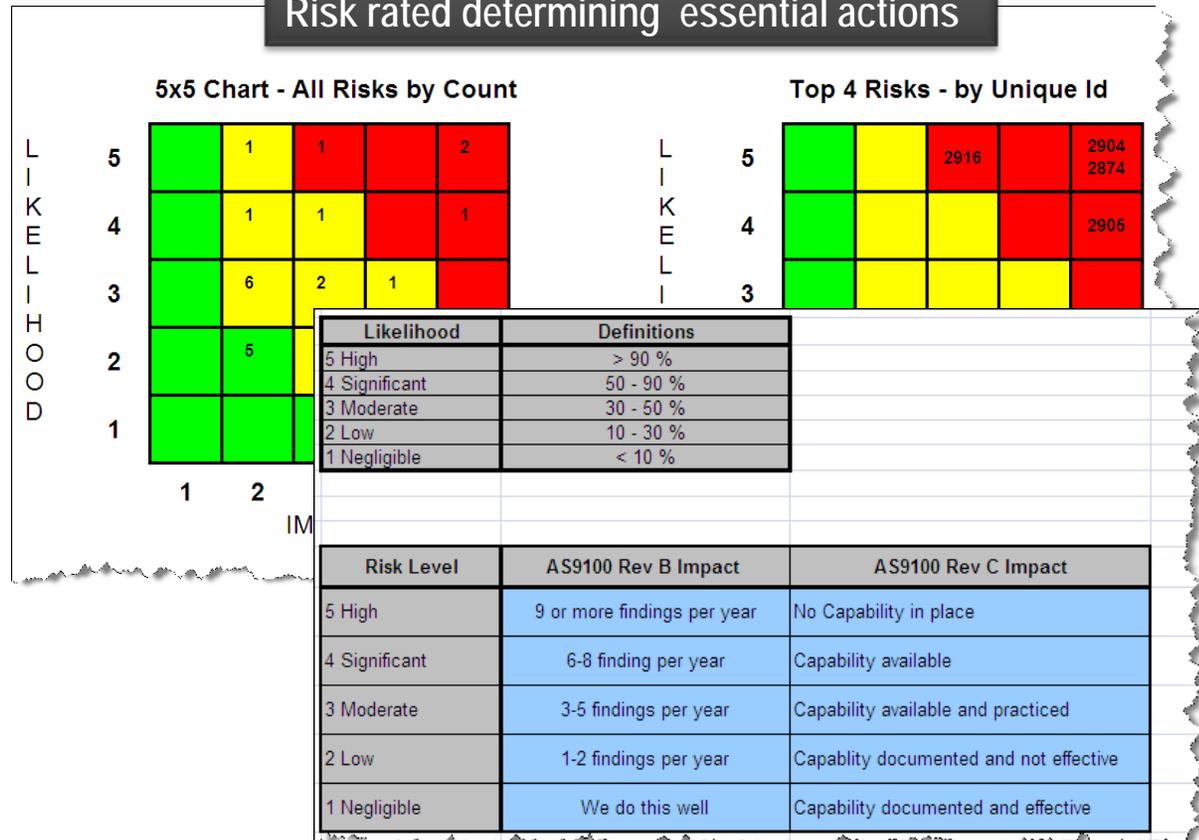
Measurement System:	Customer Satisfaction Monitoring
Area:	Company Wide
Description:	Monitors Customer Satisfaction
How Reviewed:	Customer Focus Review
Process Area:	Business Mission Assurance

• Top Management Engagement of Customer Satisfaction •

Generated Interpretation Sheets

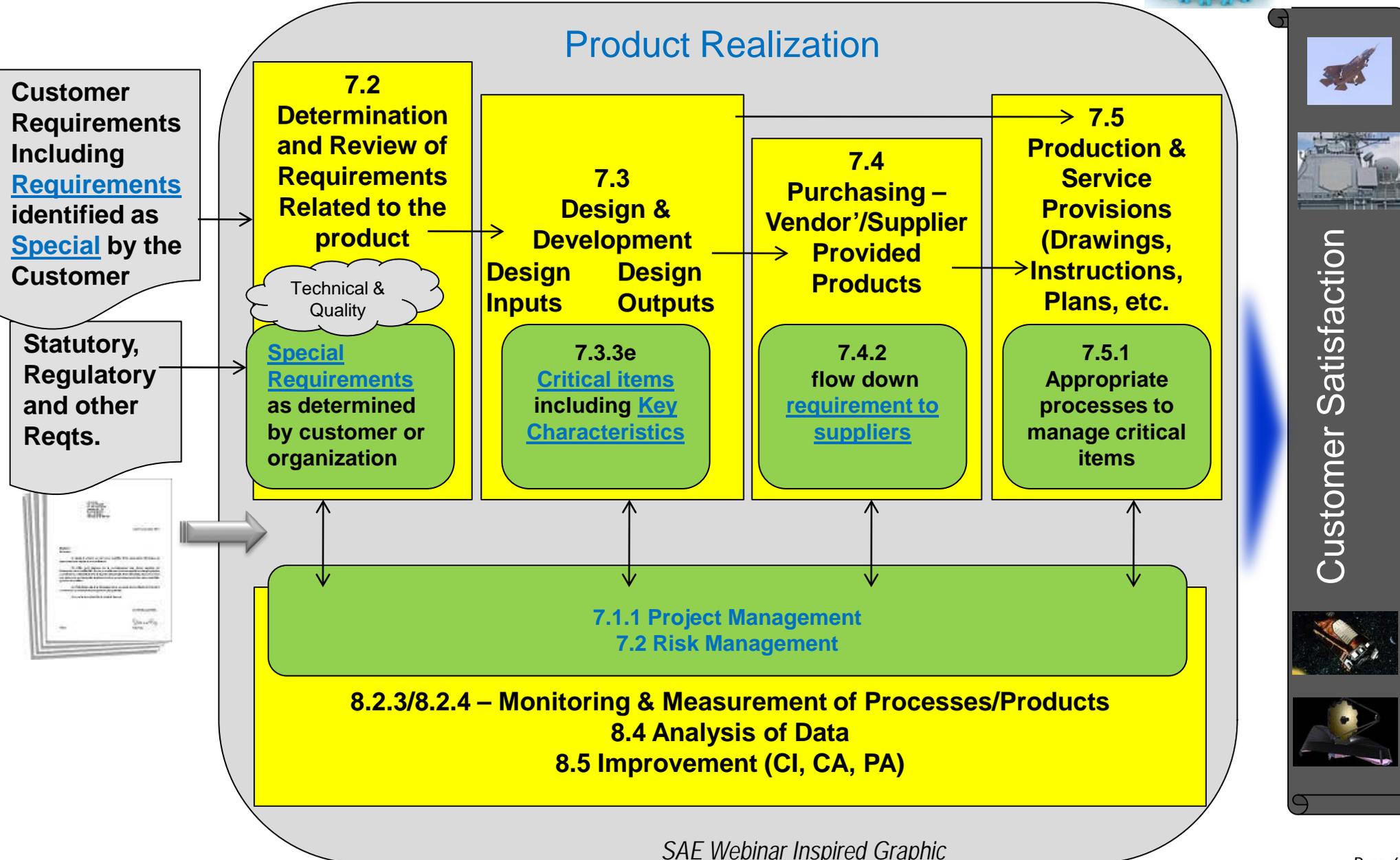
Top Management Has Customer Focus with Aim of Enhancing Customer Satisfaction

Risk rated determining essential actions





Connecting and Communicating Interrelationships





Business Flow Positioned Us Well For AS9101D



Vision
To be the first choice for innovation and performance, from information to tactical and space systems.

Strategic Objectives

- Satisfy customer requirements
- Grow our business profitably
- Be an employer of choice
- Improve the efficiency of our operations
- Provide a safe and healthy workplace and environment

Top Management Sets Strategic Objectives

Objectives link into Process Flows

Measure: On time deliveries
System: Sales Order System

Measure: On time deliveries
System: Program Status Tracker

Measure: Failures
System: Failure Review Board Documented Processes

Measure: Product Conformity
System: ACTS Documented Processes



Measure: Cost & Schedule (deliveries)
System: Earned Value Measurement Documented Process

Measure: Delivery Readiness
System: CEO Pre-Ship review Documented Process

Measure: Supplier ratings (How our customers rate us)
System: Supplier Ratings Reporting

Measure: Customer Satisfaction
System: Customer Satisfaction Documented Process

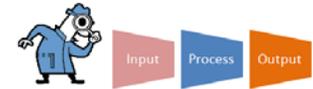
Actions Flow back into Process Flow and Strategic Objectives

Process Flow Metrics & Measurements

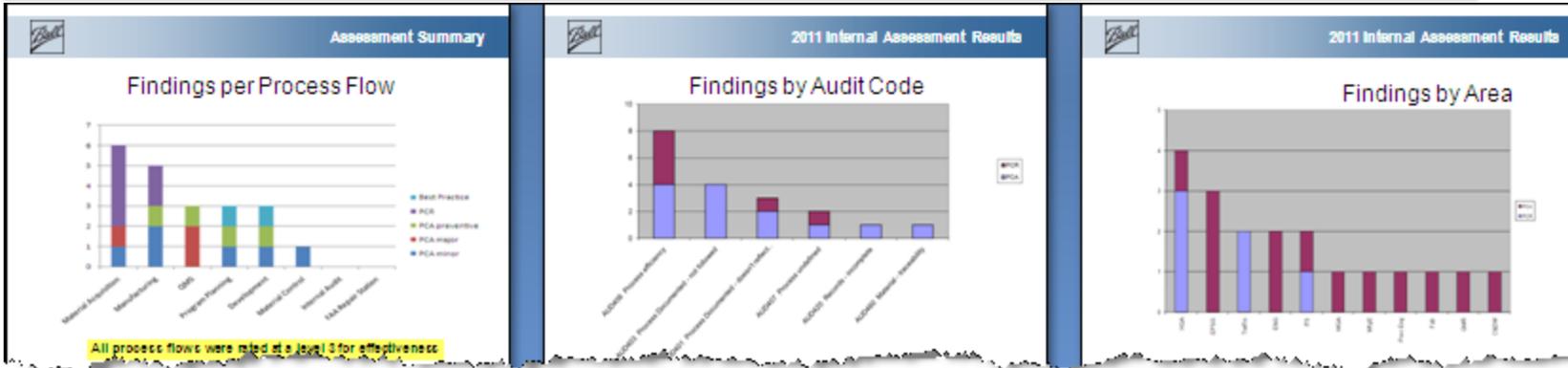
Strategic Objectives	Tier One Metrics
Satisfy customer requirements	• Customer Satisfaction
Grow our business profitably	• Compound Annual Growth Rate Sales (4-yr rolling average) • Compound Annual Growth Rate Orders (4-yr rolling average) • EBIT Margin • After Tax Return on Invested Capital (ROIC) • EVA (401K Performance)
Be an employer of choice	• Voluntary Attrition • Year-to-Year Improvement in Diversity Hiring
Improve the efficiency of our operations	• Cost Performance • Schedule Performance • Technical Performance
Provide a safe and healthy workplace and environment	• OSHA Recordable Cases • OSHA Lost Time Cases • Environmental Leadership Program Status



Transparent Assessments Matured Process Flows



Process Flows Assessed for Effectiveness per AS9101D and we used the PEAR forms



Quality Management System Management Review Meeting

March 2011

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Agility to Innovate, Strength to Deliver

Ball
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Excellent Transition Results

- Dates: 25-29 April
 - 19 Day Audit

- Scope of the Assessment
 - Transition to AS9100 surveillance audit

Effectiveness Rating scale

- 1 - Not implemented; planned
- 2 - Implemented; planned
- 3 - Implemented; planned
- 4 - Implemented; planned

- Results
 - 6 minor non-conformities
 - 9 PEAR forms written

- Corrective Action

Certificate of Registration

QUALITY MANAGEMENT SYSTEM - AS9100 REV C AND ISO 9001:2008

This is to certify that:

Ball Aerospace & Technologies Corp.
 1600 Commerce Street
 Boulder
 Colorado
 80301
 USA

Hold Certificate No: **FM 39220**
 and operates a Quality Management System which complies with the requirements of AS9100 REV C AND ISO 9001:2008 for the following scope:

Design, manufacture, integration, test, and delivery of hardware, software, and service for the space and ground based commercial, civil, and defense markets. Products include full range of advanced imaging, communications and information solutions.

For and on behalf of BSI:

 VP Regulatory Affairs, BSI Group America Inc.

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Eight Essential Key Activities

