CSIA Best Practices and Benchmarks

csia

www.controlsys.org

A Guide to the CSIA's

Best Practices and Benchmarks

Sixth Revision

© Copyright 1997-2024 Control System Integrators Association - Revision 6.1
All rights reserved worldwide. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without the prior written permission of the Control System Integrators Association. This publication is provided for informational purposes only and should not be regarded as professional advice.

Release History

REV	DESCRIPTION	Approved DATE	Approved By
1	Original Release Rev. (01)	March 6, 2000	
2	Release Rev. (02)	April 4, 2003	
3b.1	Beta Pre-release Version	N/A	DDS
3b.2a	2nd Pre-release Version	N/A	DDS
3b.3	Pilot Audit Review Version	April 25, 2008	DDS
3.0	Release Rev. (03)	May 1, 2008	DDS
3.01	Release Rev. (3.01)	January 28, 2009	DDS
3.02	Release Rev. (3.02)	January 29,2010	CJM
4b.1	Beta Pre-release Version	N/A	CJM
4b.3	Pilot Audit Review Version	June 11, 2012	CJM
4.0	Release Rev. (04)	June 15, 2012	CJM
5.0u	Beta Pre-release Version	April 24, 2017	
5.0	Release Rev. (5.0)	March 23, 2018	EVS
6b.1	Beta Pre-release Version	N/A	CJM
6b.2	Beta Pre-release Version	November 11, 2022	TV
6b.3	Beta Pre-release Version	February 27, 2023	TV
6.1	Release Rev. (6.1)	December 22, 2023	TV

© Copyright 1997-2024 Control System Integrators Association - Revision 6.1
All rights reserved worldwide. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without the prior written permission of the Control System Integrators Association. This publication is provided for informational purposes only and should not be regarded as professional advice.

Contents

Best Practices and Benchmarks 1
Release History 2
Contents 3
List of Tables and Figures 6
Preface to the Sixth Revision 7
Section I 8
Introduction 9
Document Contents 9
Summary – Best Practices and Benchmarks 9
Section II 12
1.0 GENERAL MANAGEMENT 13
1.1 Strategic Management 13
1.2 Organizational Structure 16
1.3 Business Risk Management 18
1.4 Business Ethics 21
1.5 Environmental Responsibility and Sustainability 23
2.0 HUMAN RESOURCES MANAGEMENT 25
2.1 Administration 25
2.2 Recruitment and Selection 30
2.3 Performance Management 34
2.4 Training and Professional Development 37
2.5 Compensation and Benefits 44
2.6 Employee Relations/Communications 46
2.7 Health and Wellness 48
2.8 Safety 52
3.0 MARKETING, BUSINESS DEVELOPMENT, SALES, AND OPPORTUNITY MANAGEMENT 56
3.1 Marketing Management 61
3.2 Digital Marketing 65
3.3 Content Marketing 66

© Copyright 1997-2024 Control System Integrators Association - Revision 6.1
All rights reserved worldwide. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without the prior written permission of the Control System Integrators Association. This publication is provided for informational purposes only and should not be regarded as professional advice.

3.4 Branding 67
3.5 Public Relations 68
3.6 Sales Management 69
3.7 Proposal Development 73
3.8 Business Development....79
3.9 Account Management 80
4.0 FINANCIAL MANAGEMENT 81
4.1 Measures of Financial Performance 81
4.2 Financial Planning....85
4.3 Billing Procedures 87
4.4 Management of Credit, Expenses, Cash, Purchasing and Security 89
4.5 Project Financial Reporting 91
4.6 Taxation....93
5.0 PROJECT MANAGEMENT 95
5.1 Project Contract Management....97
5.2 Project Procurement Management....98
5.3 Project Planning....102
5.4 Project Risk Management....106
5.5 Project Resource Management....107
5.6 Project Communications Management....110
5.7 Project Scope Management....112
5.8 Project Schedule Management 114
5.9 Project Budget Management 115
5.10 Project Change Management 116
5.11 Project Quality Management....118
5.12 Project Quality Assurance 121
5.13 Project Closure 123
5.14 Agile Project Management Considerations 124
6.0 SYSTEM DEVELOPMENT LIFECYCLE 126
6.1 Internal and External Kickoff....127
6.2 Requirements 129
6.3 Design....132

© Copyright 1997-2024 Control System Integrators Association - Revision 6.1
All rights reserved worldwide. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without the prior written permission of the Control System Integrators Association. This publication is provided for informational purposes only and should not be regarded as professional advice.

6.4 Development 134
6.5 Unit/Module and Integration Testing 135
6.6 Factory Acceptance Test 136
6.7 System Shipping 138
6.8 Installation 139
6.9 Commissioning 139
6.10 Site Acceptance Test 140
6.11 Closure 143
7.0 SUPPORTING ACTIVITIES 145
7.1 Process Development and Maintenance 145
7.2 Standards and Templates 147
7.3 Project Methodologies 150
7.4 Procurement Management 153
7.5 Risk Management 154
7.6 Configuration Management 156
7.7 Reuse Management 163
7.8 Facilities and Equipment 166
8.0 QUALITY MANAGEMENT 168
8.1 Quality Management Organization 169
8.2 Quality Assurance and Quality Control 169
8.3 Continuous Improvement 171
8.4 Client Satisfaction 173
9.0 SERVICE AND SUPPORT 174
9.1 Strategy 175
9.2 Organizational Structure 176
9.3 Methodology 177
9.4 Service Management 181
9.5 Support and Service Quality Assurance 181
10.0 INFORMATION SYSTEMS MANAGEMENT AND CYBERSECURITY 182
10.1 Information Systems Management 182
10.2 Cybersecurity Management System 186
Section III 193

© Copyright 1997-2024 Control System Integrators Association - Revision 6.1
All rights reserved worldwide. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without the prior written permission of the Control System Integrators Association. This publication is provided for informational purposes only and should not be regarded as professional advice.

Appendices 194

Contributors and Reviewers to the BP&Bs – Sixth Revision 194
Trace to Sixth Revision 196
Additional Information Sources 245
CSIA Information 247
CSIA Guiding Principles 247
CSIA Best Practices Committee 248
Glossary 249
Definitions 252

List of Tables and Figures

Figure 1 - Organization of Best Practices 11
Figure 2 - Relationship Between Sales & Marketing 57
Figure 3 - HubSpot Customer Buying Journey 58
Figure 4 - Side by Side Comparison of Sales & Marketing 59
Figure 5 - The 7 Ps of Service Marketing 60
Figure 6 - Project Management Process Groups 95
Figure 7 - System Development Lifecycle 127

© Copyright 1997-2024 Control System Integrators Association - Revision 6.1
All rights reserved worldwide. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without the prior written permission of the Control System Integrators Association. This publication is provided for informational purposes only and should not be regarded as professional advice.

Preface to the Sixth Revision

CSIA's mission is to advance the industry of control system integration. To support that mission, in 1997, the first Best Practices and Benchmarks Manual was released. Every three to four years, another version is released. The process is involved and includes understanding the changing conditions for the control system integration industry, reviewing each section for its content and relevance, obtaining feedback from various stakeholders, reviewing audit and legal requirements, and performing pilot audits.

The Best Practices Committee is the team responsible for updating and revising this manual to meet the constantly evolving needs of the control system industry. This team is comprised of dedicated individuals whose mission is to attract industry leaders to actively participate and contribute towards the advancement and adoption of the best business and technical practices. They do this work voluntarily without compensation knowing that giving back to the community is their primary reward. Without the contributions of the many individuals that have served previously and continue to serve on this committee, the advancement of this body of knowledge would not have reached the place where we are today; the release of version 6 of the Best Practices and Benchmarks Manual.

This updated version advances all sections in general and significant improvements and additions have been made to general management to include a section on business ethics; sales and marketing to further differentiate between sales and marketing and expound upon the various facets of marketing; and cybersecurity to build upon and clarify this rapidly evolving segment of the industry. These improvements address the expanded needs of this maturing integration community where many of its companies continue to have different areas of their company at different levels of maturity in their processes.

Sincerely,

Tony Valasek

Tony Valasek

Chairman – Best Practices Committee, CSIA

© Copyright 1997-2024 Control System Integrators Association - Revision 6.1
All rights reserved worldwide. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without the prior written permission of the Control System Integrators Association. This publication is provided for informational purposes only and should not be regarded as professional advice.