

Index

- Abstraction category, 163
- Abuse
 - Intentional, 229
 - Unintentional, 229
- Access, 239
- Access controls, 194
- Access to data, 229
- ACID, 174, 175
- Administrative and Audit Duties Risk, 244
- Adware, 233
- Affiliation management, 344
- Aiken, Peter, 41
- Aiken's pyramid, 42
- American National Standards Institute, 143
- Amsterdam Information Model, The, 36–37, 37
- Analytical model, 492–93
- ANSI Standard 859, 309
- Anti-virus software, 246
- Apache Mahout, 492
- Application coupling, 268
- Application DBA, 171
- Application security requirements, 248
- Architects, 102
- Architectural design diagrams, 116
- Architecture, 99
- Architecture designs, 116
- Architecture framework, 104
- Architecture initiation projects, 118–19
- Archiving process, 184, 266
- ARMA GARP® principles, 322, 324
- ARMA International, 290
- Assessments, 82
- Asset, 22
- Asset management software, 116
- Asset tracking, 207
- Asynchronous data flow, 264
- Authoritarian decree, 555
- Authority list, 295
- Backup and recovery activities, 309
- Backup files, 193
- Backup software, 193
- BASE, 174, 175
- Basel II Accord, 237
- Batch change data capture, 370–71
- Batch data integration, 263, 277
- Batch interaction, 263
- Belmont Principles, 54
- Bias
 - Data processing and, 60–61
 - Types of, 61
- Bi-Directional metadata architecture, 408
- Big data, 469–71, 474–76
 - Cloud storage and, 491
 - Principles of, 470
 - Sources of, 476
 - Tools for, 488–89
- Big data modeling, 493
- Big data strategy, 483
- Black Hat hackers, 232
- Blockchain databases, 173
- Bot, 221
- Brandeis, Louis, 55
- Brewer's Theorem, 176
- Bridges, William, 540–42
- Bridges's Transition Phases, 541
- Bring-your-own-devices (BYOD), 307
- Business alignment, 82
- Business bias, 61
- Business continuity group, 192
- Business Continuity Plan, 192, 268, 310
- Business data steward, 79, 323
- Business glossary, 92, 95, 402, 546
- Business growth, 212
- Business intelligence, 59, 65, 362
 - Portfolio for, 375
 - Self-service, 384–85
 - Tools for, 380
- Business intelligence and analytic functions, 42
- Business metadata, 398
- Business performance management, 382
- Business rules, 275–76
 - Data integration and, 281
- Business vocabulary, 153
- BYOA. See Bring Your Own Apps
- BYOD. See Bring-your-own-devices (BYOD)
- C, 73
- CAD / CAM. See Computer assisted design and manufacturing
- Canada Bill 198, 51, 299
- Canadian Privacy law (PIPEDA), 56–57, 227
- Candidate Identification, 341–42
- Canonical data model, 267
- CAP Theorem, 176
- Capacity and growth projections, 185
- CDMP, 67
- CDO Organizational touch points, 83
- Centralized databases, 172
- Change
 - Capacity to, 82
 - Checklist for managing, 542
 - Laws of, 540
 - Sustaining, 567
- Change management, 539
- Change agent, 540, 543, 555, 561
- Change data, 185
- Change data capture, 264
- Change management
 - Communication and, 555
 - Complacency and, 543
 - Errors of, 543–44, 547
 - Transition and, 540–42
 - Vision for, 544
- Change Management Institute, 87
- Change managers, 542, 543
- Change vision, 568
- Charts and graphs, 59
- Chief data officer, 83
- Chief information officer, 34
- Chisholm, Malcolm, 330
- Class words, 159
- Classification schemes, 296
- Cloud computing, 173, 251
- Cloud storage, 491
- Cloud-based integration, 272
- CobiT. See Control objectives for information and related technology.
- Collaborative readiness, 82
- Collection, 302
- Columnar Appliance Architecture, 490
- Columnar-based databases, 177
- Column-oriented databases, 181–82
- Communication interrogatives, 105
- Communication plan, 569–70, 571–72
- Competitive advantage, 20, 228
- Complacency, 543, 549
- Completeness category, 163
- Complex event processing solutions (CEP), 271, 279
- Compliance activities, 244–46
- Computer assisted design and manufacturing, 184
- Computer worm, 234
- Confidentiality classification, 238
- Confidentiality data restrictions, 226
- Configuration management, 386
- Configuration management tools, 402
- Consistency category, 163
- Content
 - Capturing, 308
 - Definition of, 290
 - Lifecycle of, 290
- Content delivery channels, 311

- Content delivery methods, 292
- Content handling polices, 306
- Content information architecture, 308
- Content lifecycle, 291
- Content management, 291, 306
- Content management software, 294
- Content Management System (CMS), 305, 312, 314
- Content metadata, 291–92
- Content modeling, 292
- Context diagram, 39
 - Big data and data science, 471
 - Components of, 39–41
 - Data architecture, 102
 - Data governance and stewardship, 71
 - Data modeling, 124
 - Data quality, 424
 - Data security, 211
 - Data warehouse/business intelligence, 360
 - Defined, 39
 - Documents and content, 288
 - Knowledge area, 39
 - Metadata, 394
 - Reference and master data, 328
- Contractual restrictions, 228
- Control activity, 40
- Control objectives for information and related technology, 73
- Controlled vocabulary, 292, 295, 296, 315
- Coordinating data steward, 79
- Corporate Information Factory (CIF), 363–65, 365
- Correctness category, 162
- Covey, Stephen, 562
- Critical Risk Data (CRD), 215
- Cross-reference data sets, 333–34
- CRUD, 248
- Cultural change, 119
- Customer relationship management (CRM), 344, 346
- DAMA Data Management Function Framework, 37–41, 44
- DAMA Functional Area Dependencies, 43
- DAMA International, 66
- DAMA International's Certified Data Management Professional (CDMP)
 - certification, 67
- DAMA Knowledge Areas, 42
- DAMA Wheel, The, 37, 42, 45, 46
- DAMA's mission, 46
- DAMA-DMBOK, 37–41, 45–48
- Data
 - Analysis, 485
 - As an asset, 19, 22, 25, 54
 - Business acceptance of, 388–89
 - Ethical approach to, 22
 - Ethical principles of, 55
 - Monetary value of, 26
 - Ownership of, 58
 - Risks and, 30, 32
 - Sensitive, 211–12
 - Storage containers for, 195
 - Types of, 32
 - Understanding of, 21–22
 - Value of, 26–27
- Data access, 191
- Data access control, 239
- Data acquisition, 340
- Data administration, 167
- Data aggregation, 62
- Data and enterprise architecture, 111
- Data and information relationship, 22, 36
- Data architects, 103, 534
- Data architecture, 47, 100, 111
 - Goals of, 101
 - Implementation guidelines and, 117–18
- Data architecture governance, 120
- Data as a service (DaaS), 272
- Data asset, 93
- Data asset valuation, 79–81
- Data attribute, 154
- Data audits, 207
- Data availability, 219
- Data capture
 - Change, 264
- Data category, 163
- Data consistency, 239
- Data consumers, 377
- Data dictionary, 379, 404
- Data discovery, 274
- Data exchange specification design, 276
- Data Exchange Standards, 272–73
- Data Federation, 271
- Data flows, 109–10
 - Diagram, 110
 - Integration, 278
- Data governance, 47, 55, 67, 69, 75
 - Goals of, 73–74
 - Guiding principles for, 73, 75, 289, 396
 - Implementation of, 90
 - Issue management, 88
 - Issue management for, 87
 - Organizational culture and, 96
 - Organizations and, 81
 - Procedures for, 89
 - Readiness assessments and, 82
 - Regulatory compliance and, 72–73
 - Tools and techniques for, 94
- Data governance and data management, 74
- Data Governance Community of Interest, 94
- Data governance council, 34, 86, 88, 93, 95, 238
- Data governance operating framework, 85
- Data governance organization parts, 76
- Data governance organizations, 75, 93
- Data governance program
 - Implementation guidelines for, 95
 - Measurement and, 96
- Data governance scorecard, 95
- Data governance standards, 90–92
- Data Governance Steering Committees, 95
- Data governance strategy, 34, 84
- Data governance team, 419
- Data handling
 - Current state and, 63
 - Improvement strategies and, 64
 - Risk reduction and, 63–64
- Data handling ethics, 51, 53
- Data insights, 472, 488
- Data integration, 61–62, 285
 - Near-real time, 264
 - Profiling and, 274
 - Synchronous, 265
- Data integration & interoperability (DII), 47, 257–59, 260, 273
- Data integration activities, 273–76
- Data integration processes, 350, 354, 369–72
- Data integration solutions
 - Business rules and, 281
 - Design of, 276
 - Mapping sources and, 277
- Data integration tools, 380, 403
- Data integrity, 218
- Data issue escalation path, 89
- Data lake, 476
- Data lifecycle, 30–32, 43, 273
- Data lifecycle key activities, 31
- Data lineage, 251, 274, 284
- Data loading requirements, 196
- Data loss, 204
- Data management, 19, 33, 70
 - Challenges of, 22
 - Consumers for, 40
 - Data quality and, 27
 - Enterprise perspective and, 29
 - Goals of, 20
 - Initiatives and, 86
 - Inputs and, 40
 - Metadata and, 393–95
 - Participants in, 40
 - Specialized hardware for, 177
- Data management activities
 - Control, 40
 - Development, 40
 - Operational, 40
 - Planning, 40
- Data management framework, 35
- Data management implementation roadmap, 35
- Data management maturity, 82
- Data management plan, 569
- Data management practices, 91, 539
 - Assessment of, 83

- Data management procedures
 - Components, 91
- Data management professionals, 19, 539
- Data management program
 - Human resources and, 571
- Data management program charter, 34
- Data management scope statement, 35
- Data management strategy, 34–35, 96
 - Components of, 34
 - Deliverables from, 34
- Data map, 301, 318
- Data marking, 62
- Data marts, 369
- Data mashups, 482
- Data masking methods, 62, 219, 220, 243
- Data migration, 202, 278
- Data mining, 478–79
- Data mining snooping, 60
- Data model
 - Integration in, 161
 - Versioning of, 161
- Data model management, 339
- Data model repositories, 116
- Data modeler, 158
- Data modeling, 47, 123–25
 - Goals of, 125
 - Standards for, 159, 160
- Data modeling tools, 116, 203, 281, 404
- Data models
 - Evaluation of, 486
- Data movement, 260
- Data naming standards, 159
- Data operations and storage activities, 188–90
- Data orchestration, 277
- Data policy, 79, 86
- Data privacy laws, 55–58
- Data processing errors, 187
- Data producer, 160
- Data producing applications, 278
- Data product development lifecycle, 378
- Data professionals, 65, 160
- Data profiling processes, 274
- Data profiling tools, 281
- Data quality, 27–28, 48
 - Statistics about, 27
- Data quality analysis, 82
- Data recovery plan, 192
- Data recovery software, 193
- Data regulations, 212, 238
- Data remediation, 62, 374
- Data replication process, 186, 196
- Data retention plan, 188, 273
- Data scaling, 186
- Data science, 469–74, 485
- Data science tools, 488–89
- Data security, 47, 188, 211–12
 - Bill of Rights, 241
 - Business requirements, 211–12, 236
 - Goals of, 214
 - Monitoring of, 217, 242–44
 - Outsourcing, 250
 - Password for, 225
 - Regulatory requirements for, 236
 - Requirements for, 217
 - Risk assessment and, 249
- Data Security Bill of Rights, 241
- Data security governance, 252
- Data security management
 - Four A's of, 217
 - Guiding principles for, 214
- Data security policy, 237–38, 241
- Data security practices, 249
- Data security requirements, 210
- Data security restrictions, 225–28
- Data security risks, 212
- Data security standards, 235, 238
- Data security vocabulary, 220–23
- Data services, 277
- Data sharing agreements, 284, 355
- Data source governance, 389
- Data sources, 483–84
 - Evaluation of, 349–50
 - Ingesting, 483–84
- Data Standards Steering Committee, 91
- Data stewards, 78–79, 92, 237, 242, 244, 250, 335, 349
 - Coordinating, 79
 - Executive, 78
- Data stewardship, 77
 - Committee for, 88
 - Team for, 88, 93
- Data storage and operations, 47
- Data storage areas, 369
- Data storage environment, 195
- Data storage goals, 168, 176
- Data storage governance, 207
- Data storage metrics, 206
- Data storage systems, 179–84
- Data strategy, 34
 - Components of, 34
 - Ownership of, 34
- Data structures, 276
- Data technology requirements, 189
- Data transformation, 374
- Data transformation engine, 280
- Data validation, 207, 340
- Data valuation, 26–27
- Data vault, 370
- Data virtualization, 271
- Data virtualization servers, 280
- Data visualization, 481–82, 487, 491
- Data warehouse, 359–61, 362
 - Approaches to, 363
 - Batch change data capture for, 370–71
 - Critical success factors for, 494
 - Development tracks for, 373
 - Goals of, 361
 - Governance in, 387
 - Historical data and, 370
 - Population of, 374
 - Requirements of, 372
- Data warehousing, 48, 362
 - Critical success factors, 387
- Database, 169
 - Hierarchical, 180
 - Multidimensional, 180
 - Temporal, 181
 - Types of, 171
- Database abstraction, 169
- Database access control, 194
- Database administrator (DBA), 167, 170, 189, 190, 191, 195, 205–6
- Database as a service (DaaS), 174
- Database availability
 - Factors affecting, 198
 - Loss factors of, 198
 - Online criteria for, 198
- Database backup, 192
- Database catalogs, 403
- Database execution, 199
- Database log techniques, 370
- Database management
 - Organizational change and, 205–6
- Database management system (DBMS), 180
- Database management technology
 - Naming conventions and, 204
 - Script files and, 204
 - Software for, 189
 - Tools, 202–3
- Database management tools, 202–3
- Database monitoring tools, 203
- Database Organization Spectrum, 180
- Database performance
 - Monitoring to improve, 199
 - Tuning to improve, 170
- Database processes
 - Archiving, 184
 - Capacity and growth projections of, 185
 - Change data within, 185
 - Purging, 186
 - Replication of, 186
 - Resiliency of, 187
 - Retention of, 188
 - Sharding of, 188
- Database processing, 174
- Database storage systems, 191

- Database support, 166, 190
- Database systems administration tasks, 193
- Database technology
 - Managing, 188, 189–90
 - Monitoring of, 190
 - Support of, 166
- Databases
 - Alternative environments for, 201
 - Centralized, 172
 - Columnar-based, 177
 - Column-oriented, 181–82
 - Data loading and, 196
 - Development environment and, 177
 - Distributed, 172
 - Flat file, 182
 - Key-value pair, 183
 - Multimedia, 182
 - Non-relational, 181
 - Object/Multimedia, 182
 - Processes of, 184–88
 - Relational, 180
 - Spatial, 182
 - Specialized, 183
 - Triplestore, 183
 - Types of, 179–84
 - Usage patterns of, 191
- Databases process, 184–88
- Data-centric organization, 75
- DBA. See Database administrator
- Decision support systems (DSS), 359
- Default passwords, 232
- Definitions category, 163
- Deming, W. Edward, 53
- Denormalization, 148
- Design review, 161
- Destination (VISION), 542
- Detection and recovery risk, 244
- Developer support tools, 203
- Developers, 178
- Development activity, 40
- Development DBAs, 171
- Development environment, 177, 178
- Device access policies, 307
- Dewey Decimal System, 296
- Dice, 383
- Diffie-Hellman Key Agreement, 219
- Diffusion of Innovations theory, 563
- Digital asset management (DAM), 300, 313
- DII governance, 283–84
- DII solutions, 279
- Dimensional data warehouse, 366–67
- Directory, 403, 404, 405
- Disaster Recovery Plan, 310
- Disasters, 187
- Discovery, 82, 274, 301–2
- Disk storage, 176
- Distributed databases, 172
- Distributed file-based solutions technologies, 490–91
- DMBOK Pyramid, 41–42
- Document / record, 298
 - Audit of, 311
 - Management of, 310
 - Retention of, 310
- Document and content knowledge, 289–90
- Document and content management, 47, 287
 - Regulatory compliance and, 288–89
- Document library system, 312
- Document management, 289, 298–300, 305, 313
- Document management system, 312
- Document management tool, 95
- Document repository, 313
- Document sanitization, 249
- Drill down, 383
- Dublin Core, 293
- DW usage metrics, 390
- DW/BI architecture, 372
- Dynamic data masking method, 219
- ECM. See Enterprise Content Management Systems
- ECM readiness assessment, 319
- E-discovery, 289, 317
 - Key Performance Indicators (KPIs) and, 324–25
- E-discovery assessment, 320
- EDM. See Enterprise Data Model
- EDRM. See Electronic Discovery Reference Model (EDRM)
- Electronic data interchange (EDI), 253
- Electronic Discovery Reference Model (EDRM), 301
- Electronic documents, 301
- Electronic point of sale (EPOS) apps, 292
- Electronic records, 289, 306
- Electronic technology and business growth, 213
- ELT. See Extract-Load-Transform
- ELT Process Flow, 263
- Encryption, 218, 232, 247, 248
- Enrichment, 341
- Enterprise application integration model (EAI), 269
- Enterprise architectural framework, 104–5
- Enterprise architecture, 100, 111, 252
- Enterprise asset, 19
- Enterprise Content Management (ECM), 291
 - Cultural change and, 321
 - Guidelines for, 319
 - Key Performance Indicators (KPIs) and, 325
- Enterprise data architecture, 120–23
- Enterprise data architecture steering committee, 93
- Enterprise data governance council, 76
- Enterprise data model, 93, 106–9, 107
- Enterprise data warehouse, 362
- Enterprise integration tool, 282–83
- Enterprise message format, 267
- Enterprise perspective and data management, 29
- Enterprise resource planning (ERP), 195, 258, 346
- Enterprise service bus (ESB), 268, 270, 281
- Enterprise standards, 276
- Entity resolution, 341
- Environmental factors hexagon, 38
- Equivalent term relationship, 295
- Ethical data handling, 51, 53, 63–64, 64, 67
- Ethical data management, 51, 59
- Ethical Risk Model, 66
- Ethical risks, 61
- Ethics, 51
- ETL data flows, 278
- ETL process flow, 262
- EU Basel II Accord, 237
- EU Privacy Directives, 227
- European Convention of Human Rights, 55
- European Data Protection Supervisor, 54
- Event processing method, 271, 279
- Event-driven data integration, 264
- Everett Rogers Diffusion of Innovations, 564
- Excessive privileges, 229
- Executive data stewards, 78
- Extensible markup interface, 316
- Extensible markup language, 315
- External data, 196
- Extract-Load-Transform (ELT), 262
- Extract process, the, 261
- Extract-Transform-Load (ETL), 199, 260, 263
- Faceted taxonomies, 294, 296
- Family Educational Rights and Privacy Act, 228
- FASB. See Financial Accounting Standards Board
- Fast data integration, 265
- Federal Rules of Civil Procedure, 299
- Federal Trade Commission, 57
- Federated architectures, 172
- Federation provisions data, 172
- FERPA. See Family Educational Rights and Privacy Act
- Financial Accounting Standards Board, 89
- Financial assets, 25
- Financial master data, 345
- Financially sensitive data, 227
- Firewalls, 221, 247
- Flash memory, 177
- Flat file databases, 182
- Folksonomies, 293, 296
- Frameworks. See Data management frameworks
- Freedom of speech, 59
- GASB. See Government Accounting Standards Board (U.S.)
- General Data Protection Regulation, 56
- Generally Accepted Recordkeeping Principles, 319
- Geographic classification, 335
- Geographic information systems (GIS), 308
- Geo-statistical reference data, 335
- Geuens, Sue, 42

- Gleicher formula, 543
- Glossary, 92
- Godin, Seth, 563
- Golden record, 337
- Goodwill, 22
- Governance. *See also* Data Governance
- Government Accounting Standards Board (U.S.), 89
- Graphical design applications, 116
- Group Think, 554
- Guiding principles
 - Data governance, 73, 75, 289, 396
 - Data security management, 214
- Hacking/Hacker, 232
- Hadoop, 490
- Hash algorithms, 173
- Hash encryption, 218
- Health Information Protection and Portability Act (U.S.), 51
- Healthcare Information Portability and Accountability Act (HIPAA), 244
- Hierarchical database organization, 180
- Hierarchical relationship, 295
- Hierarchical Storage Management System, 182
- Hierarchical taxonomy, 296
- High Risk Data (HRD), 216
- Historical data, 370
- HOLAP. *See* Hybrid online analytical processing
- Hot backups, 193
- Hub-and-spoke data pattern, 267
- Hub-and-spoke interaction model, 267–68
- Hybrid online analytical processing, 384
- Identity, 58
- Identity management technology, 246
- Identity resolution, 342
- IM. *See* Instant messaging (IM)
- Image processing technology, 313–14
- Imhoff, Claudia, 364
- Inconsistencies
 - Explaining, 561–62
- In-database algorithm, 491
- Indexing, 156
- Industry reference data, 335
- Industry-based regulations, 228
- Information and Communication Technology Research, 54
- Information and data relationship, 22
- Information architecture, 303
- Information asset, 32
- Information asset tracking, 207
- Information consumer, 160
- Information content architecture, 311
- Information Council, 323
- Information economy, 19
- Information gaps, 32, 93
- Information governance, 322–23
- Information Governance Maturity Model (IGMM), 320
- Information Governance Reference Model (IGRM), 323
- Information management change initiative, 553
- Information management context, 561
- Information management disciplines, 54
- Information quality change, 563
- Information security
 - Data classification and, 212
 - Techniques for managing, 247–49
 - Tools used in, 246–47
 - Vocabulary for, 216
- Information Security and Corporate Counsel, 244
- Information security team, 216
- Information Systems Planning (ISP) method, 109
- Information technology and data management, 33
- Information technology infrastructure library (ITIL), 189, 194
- In-Memory databases (IMDB), 177
- Inmon, Bill, 363
- Innovation, 565
- Instant messaging (IM), 234
- Integration cloud-based system, 272
- Integration testing, 179
- Intentional abuse, 229
- Interaction, 267–68, 276
 - Hub-and-spoke, 267–68
 - point-to-point, 267
 - Publish and subscribe, 268
- Internal integration requirements, 272
- Intrusion detection system (IDS), 231, 247
- Intrusion prevention system (IPS), 230, 231, 247
- Islands of data, 239
- ISO 15489, 299
- ISO State Code, 333
- Issues management, 88–89
- IT governance, 73
- ITIL. *See* Information technology infrastructure library (ITIL)
- JSON. *See* JavaScript Object Notation (JSON)
- Justice/Fairness ethical principle, 60
- Key exchange, 219
- Key performance indicators (KPIs), 324
- Key-value, 142
- Key-value pair database, 183
- Kimball, Ralph, 366
- K-Means clustering, 485
- knowledge, 20
- Kohonen M., 479
- Kotter, John P., 544, 546, 547, 549, 551, 557
- Lambda architecture design, 176
- Latency, 263
- Laws of change, 540
- Leader's Data Manifesto, The, 33
- Leadership, 553
- Leadership alignment, 527
- Legal master data, 345
- Legitimate database privileges abuse, 229–30
- Licensing agreements compliance, 207
- Lifecycle management, 43, 305
- List, 332–33
- Litigation playbook, 318
- Load processes, 262, 378
- Location master data, 346
- Log shipping vs. mirroring, 187
- Logical data names, 159
- Lone CEO scenario, 552
- Loosely-coupled systems, 172
- Loshin, David, 330
- Low Credibility Committee, 552
- Machine learning, 477–78, 478
- Machine readable catalog, 312
- Malicious hacker, 232
- Malware, 233
- Managed database hosting, 174
- Management lifecycle, 299
- Managers, 551
- Mapping management tools, 404
- Mapping process, 263
- MapQuest, 184
- MapReduce, 172
- MARC. *See* Machine Readable Catalog
- Market timing, 59
- Martin, James, 109
- Mashups, 482
- Massively parallel processing (MPP), 488, 489–90
- Master data, 327–28, 336
 - Business drivers and, 329
 - Governance policy and, 351
- Master data ID management, 343–44
- Master data integration, 347
- Master data management (MDM), 338–39, 349, 350
 - Goals of, 329–30
 - Tools and techniques of, 353
- Master data sharing architecture, 348, 354
- Matching. *See* Candidate identification
- Matching workflows, 343
- Media monitoring, 478
- Medically sensitive data, 228
- Menlo Report, 54
- Messaging interaction, 371
- Metadata, 21, 29, 48, 213, 393
 - Categorization and, 306
 - Content, 291–92
 - Data risks and, 395
 - Definition of, 393
 - Delivery mechanisms for, 414
 - Directory of, 404
 - Impact analysis of, 415–17
 - Importance of, 393–95
 - Integration of, 413
 - Managed environment for, 410
 - Management of, 292
 - Repository for, 401, 414

- Repository model for, 412
- Scope of, 409
- Sources of, 400–401
- Types of, 397–99
- Unreliable, 62
- Unstructured data and, 291, 400
- Uses of, 414
- Metadata architecture, 405, 408
 - Centralized, 406
 - Distributed, 407
- Metadata environment, 418
- Metadata governance, 419
- Metadata initiatives, 418
- Metadata leveraging, 395
- Metadata management system, 410
- Metadata management tools, 415
- Metadata registries (MDR), 204
- Metadata registry standard, 399
- Metadata repository, 379
- Metadata repository metamodel, 411
- Metadata repository model, 248, 282, 411
- Metadata requirements, 410
- Metadata standards, 411, 420
- Metadata stores, 405
- Metadata strategy, 409
 - Phases, 409
 - Risk assessment and, 418
- Metadata tags, 417
- Metadata, 421
- Metrics, 96, 253
 - Data protection, 255
 - Security, 253–54
 - Security awareness, 254
- Micro-controlled vocabulary, 294
- Micromanagement, 555
- Misleading visualizations, 59
- Mission accomplished syndrome, 546
- Models and diagrams
 - Clarity of, 117
- Moderate risk data (MRD), 216
- MOLAP. See Multi-dimensional online analytical processing
- Monitoring authentication, 243
- Morris, Henry, 382
- Multidimensional database technologies, 180
- Multidimensional eXpression, 180
- Multi-dimensional online analytical processing, 384
- Multi-master replication, 186
- Multimedia database, 182
- Multi-temporal database, 181
- National Information Exchange Model (NIEM), 273
- Near real-time model, 281
- Near-real-time data, 371–72
- Network storage administrators (NSAs), 190
- Network taxonomy, 296
- Network-based audit appliance, 244
- Neutral zone, 541
- NIST risk management framework, 216
- Node, 169
- Non-relational database, 181
- NoSQL, 123, 128, 130, 135, 136, 142, 143, 151, 152, 163, 183, 191, 316
- Nullability, 163
- Obfuscation data, 62, 219, 220
- Object to processing of personal data, 56
- Observability, 567
- OCM. See Organizational change management (OCM)
- OCR software, 312
- ODBC. See Open Database Connectivity
- OLAP. See Online analytical processing
- OLTP. See Online transaction processing (OLTP)
- Online analytical processing, 382
- Online data
 - Ethical uses of, 58
- Online freedom of speech, 59
- Online transaction processing (OLTP), 184
- Ontology, 105, 297, 335
- Open Database Connectivity, 169
- Open Geospatial Consortium standard, 182
- Operating framework, 73
- Operational activity, 40
- Operational analytics, 481
- Operational data store (ODS), 369
- Operational metadata, 399
- Operational reports, 365, 372, 381
- Orchestration data, 277
- Orchestration process, 269
- Organization
 - Cultural change and, 119
 - Data-centric, 75
- Organization for Economic Co-operation and Development (OECD), 55
- Organizational behavior, 94
- Organizational change management (OCM), 87–88
- Organizations and cultural change, 250, 283
- Outsourcing and data security, 250
- OWL. See W3C Web Ontology Language
- Ownership of data, 58
- Party master data, 344–45
- Password, 225, 246
- Payment Card Industry Data Security Standard (PCI-DSS), 90, 228, 237
- PCI contractual obligations, 227
- PCI-DSS. See Payment Card Industry Data Security Standard (PCI-DSS)
- Performance metrics, 120–23
- Performance testing, 179
- Perimeter, 222
- Persistent data masking method, 219
- Personal data, 56
- Personal health information (PHI), 228
- Personal Information Protection and Electronic Documentation Act, 51
- Personally private information (PPI), 227
- PGP (Pretty Good Privacy), 219
- Phishing, 233
- Physical assets, 25
- Physical data names, 159
- Pick lists, 294
- PIPEDA. See Personal Information Protection and Electronic Documentation Act
- Pivot, 384
- Planning activity, 40
- POC. See Proof of concept
- Point-to-point interaction model, 267
- Policies and content handling, 306
- Policy
 - Data security, 237
- Political governance, 75
- Polyhierarchy, 296
- Portability, 56
- Predictive algorithms, 61
- Predictive analytics, 479–80, 486
- Predictive Model Markup Language (PMML), 492
- Predictive models, 485
- Pre-production environments, 178
- Prescriptive analytics, 480
- Preservation, 302
- PRISM, 159
- Privacy law
 - Canadian, 56–57
- Private-key encryption, 218
- Privileges
 - Legitimate database, 229–30
 - Unauthorized, 230
- Procedural DBAs, 171
- Process controls, 269
- Product data in manufacturing execution systems (MES), 346
- Product data management (PDM), 346
- Product lifecycle management (PLM), 346
- Production DBA, 170
- Production environment, 177–78
- Project management office, 86
- Proof of concept, 190
- Proprietary reference data, 335
- Public policy and law, 55
- Public-key encryption, 218
- Publish and subscribe model, 268
- Purging, 186
- Quality assurance certification, 169
- Quality assurance testing (QA), 179
- Queryable audit data, 385
- Query-level access control, 229
- RACI. See Responsible, Accountable, Consulted, and Informed
- RDBMS. See Relational database management system (RDBMS)
- RDF. See Resource description framework (RDF)
- Readability category, 163
- Readiness assessment, 204
- Really Simple Syndication (RSS), 292
- Real-time data, 371–72

- Real-time data integration flows, 278
- Real-time data processing solution, 279
- Realtime data synchronization, 265
- Record quality, 323
- Record system of, 337
- Records, 298
- Records management, 289, 300, 306, 314
 - Electronic documents and, 301
 - Key Performance Indicators (KPIs) and, 324
 - Maturity model for, 319–20
 - Principles of, 290
- Recovery types, 187
- Redacting data, 62
- Reference and master data, 48
- Reference data, 331, 330–36
 - Change and, 354–55
 - Geo-statistical, 335
 - Industry, 335
 - Ontologies and, 335
 - Proprietary, 335
 - Standard, 336
 - Structure, 332
 - Taxonomies in, 334
- Reference data management, 405
- Reference data sets
 - Assessment of, 351
 - Governance and, 353
- Reference directories, 347
- Regulated data, 226
- Regulated information, 238
- Regulatory classification, 242
- Regulatory compliance, 89
 - Data governance and, 72
 - Questions on, 90
- Regulatory requirements and data security, 236
- Regulatory risk, 243
- Reification transformations, 105
- Related term relationship, 295
- Relational database, 180
- Relational database management system (RDBMS), 180
- Relational OLAP, 384
- Relative advantage, 566
- Release management, 376
- Remediation, 374
- Replication, 186
- Replication patterns
 - Log shipping, 186
 - Mirroring, 186
- Replication process, 196
- Replication scheme, 188
- Replication solutions, 266
- Reporting strategies, 389–90
- Repository scanning, 413
- Requirements analysis, 153
- Resiliency, 187
- Resource description framework (RDF), 316–17
- Resource description framework schema (RDFS), 297
- Responsible, Accountable, Consulted, and Informed, 251
- Retrieve response or performance metrics, 390–93
- Right to be Forgotten, 58
- Risk, 215
- Risk assessment, 204
- Risk classifications, 215
- Risk model, 66
- Risk of Reliance on Inadequate Native Audit Tools, 244
- Risk reduction and data security and, 212
- Rivest-Shamir-Adelman (RSA), 219
- Roadmap, 112–13, 386
- Rogers, Everett, 563
- ROLAP. *See* Relational online analytical processing
- Role assignment grid, 240
- Role assignment hierarchy, 240
- Roll up, 383
- SaaS applications. *See also* Data as a Service (SaaS)
- SAN. *See* Storage area network
- Sandbox, 179
- Sarbanes-Oxley Act, 32, 51, 73, 243, 299
- Scaling. *See* Data scaling
- Scanning repositories, 413
- Schema, 169
- Schema.org, 317
- Schema category, 163
- Search engine optimization (SEO), 303, 306
- Security Breach of Information Acts, 227
- Security compliance managers, 243
- Security metrics, 253–54
- Security patches, 248
- Security Policy Compliance, 244–46
- Security restrictions data, 225–28
- Security risks assessment of, 240
- Self-organizing maps, 479
- Semantic modeling, 303
- Semantic search, 304
- Semi-structured data, 305
- Sensitive data, 213, 307
- Sentiment analysis, 478
- Server administration teams, 199
- Server virtualization, 174
- Service accounts, 230–31
- Service level agreements (SLAs), 197, 389
- Service registry, 405
- Services-based architecture (SBA), 476–77
- Sharding process, 188
- Shared accounts, 231
- Shared-nothing database technologies, 489
- Simple knowledge organization system (SKOS), 317
- Single family regulations, 227–28
- SKOS. *See* Simple knowledge organization system
- SLAs. *See* Service level agreements
- Slice-and-dice, 383
- SMART, 34
- Smartphone, 566
- Social engineering, 232
- Social media policies, 307
- Social networking sites, 234
- Social system, 565
- Social threats, 232–33
- Software as a Service (SaaS), 272
- Software configuration management (SCM), 194
- Software testing process, 201
- Solid state drives (SSDs), 177
- Solvency II, 32, 90
- Source-to-target mapping, 374
- Sousa, Ryan, 364
- Spam, 235
- Spatial database, 182
- Specialized database, 183
- Specialized hardware, 177
- Spyware, 233
- SQL injection attack, 231
- Stages of adoption, 565–66
- Stakeholder analysis and communication planning, 570
- Standard, 91
- Standard markup languages, 315–16
- Standard reference data, 336
- Standardization, 341
- Standards category, 163
- Standards, data security, 235, 238
- Star schema, 366
- Statistical ‘smoothing’, 60
- Stewardship, 344, 351, 352
- Storage area network (SAN), 177, 190
- Storage environment management, 193–94
- Storage solutions, 266
- Strategic alignment model, 35–37
- Strategic plan, 34
- Strategy, 34
- Streaming, 372
- Structure category, 163
- Structured query language (SQL), 180
- Subject area coverage and data warehouse, 390
- Subject area discriminator, 109
- Subject area model, 108
- Sustainability data governance and, 94
- Sustainability Data Governance and, 96
- Syndication, 292
- Synonym ring, 295
- System database, 195
- System development lifecycle (SDLC), 126, 284
- System of record, 337
- System security risks, 228
- Taxonomy, 295, 334, 374
 - Facet, 296
 - Faceted, 294

- Hierarchical, 296
- Network, 296
- TCO, 207
- Team collaboration tools, 315
- Team, building a, 554
- Technical metadata, 398
- Technology readiness, 204
- Temporal database, 181
- Term management, 294–95
- Terms, 294
- Test data, 201
- Test environment, 178–79
- Text mining, 478–79
- The four As of data security management, 217
- The General Data Protection Regulation of the EU, (GDPR), 56
- Third party data, 196
- Threats, 215, 232–33
- Tightly-coupled systems, 172
- Timing, 59
- Total cost of ownership (TCO), 207
- Trade secrets, 228
- Transaction log
 - Backup, 193
 - Dump, 193
- Transform process, the, 261
- Transition management. *See also* Change management
- Transition, checklist for managing, 542
- Trickle feeds, 371
- Triplestore database, 183
- Trojan horse, 234
- Trusted source, 337
- Unauthorized privilege elevation, 230
- Uniform resource locators (URLs), 303
- Unintentional abuse, 229
- Unstructured data, 304
 - Governance and, 323
 - Management of, 323
 - Metadata for, 291
- Unstructured data analytics, 480
- Urgency, 548, 549
- US Federal Rules of Civil Procedure (FRCP), 301
- US FTC requirements, 227
- US Library of Congress Classification, 296
- US Postal Service State Codes, 333
- US Privacy Act, 55
- User acceptance testing (UAT), 179
- User data entitlement, 250
- Utility computing, 174
- Validation, 341
- Value of data, 19
- Virtual machine image, 174
- Virtual machines (VMs), 179
- Virtualization, 173–74
- Virus, 234
- Vision
 - Communicating the, 551–53, 559–60
 - Effective, 556–58
 - Framing, 568
 - Importance of, 556
- Visualization, 59, 481–82, 487
- Vital record, 299
- Vocabulary
 - Controlled, 292, 295, 296, 315
 - Micro-controlled, 294
- Vocabulary management. *See also* Controlled vocabulary
- Vocabulary view, 294
- Vulnerability, 214
- W3C Web Ontology Language (OWL), 317
- Warren, Samuel, 55
- Wear-your-own-devices (WYOD), 307
- Web address, 246
- Websites, 94
- White hat hacker, 232
- Workflow content development and, 305
- Workflow tools, 95, 314
- Worm, computer, 234
- WYOD. *See* Wear-your-own-devices (WYOD)
- XML. *See* Extensible markup interface
- XML. *See* Extensible markup language
- XML databases, 184
- Zachman Framework, 104, 105
- Zachman, John A., 104