



CM & DevOps

Software process for systems and applications build, package and deployment.

Bob Aiello - Founder, CTO Principal Consultant CM Best Practices Consulting

- Envisioned the need for and led the international team to create IEEE 2675 now ISO 32675
- Coauthored IEEE 828 CM Standard - working group chair of the IEEE P828 CM working group
- Consultant for engineering companies working in many industries including aerospace, defense and automotive fields.
- Authored several books on CM, ALM, and DevOps
- Awarded the IEEE Standards Association Medallion for his outstanding achievement in the development and implementation of standards.
- IEEE liaison to ISO, focusing on DevOps and agile/lean methodology as well as serving on the Society of Automotive Engineers (SAE) G33 Configuration Management committee.

ISO 32675 – DevOps

- Build, Package and Deployment
- Full lifecycle
- Systems and applications
- Focus on improving communication and collaboration
- Security and reliability
- Currently study group – determining scope of revisions
 - SRE - emerging
- Alignment and differentiation from CM

P828 – Configuration Management

- Full lifecycle focusing on four core processes:
 - Configuration identification
 - Status accounting
 - Change control
 - Configuration audit (physical and functional)
- Planning aligned to software methodology
- Software bill of materials (SBOM)
 - SBOM of SBOMs
- Security and reliability
- Alignment and differentiation from DevOps

ISO 32675 Aligns with ISO 12207 and 15288

- Full lifecycle aligned to :
 - ISO 12207 Software life cycle processes
 - ISO 15288 System life cycle processes
- Answers the question
 - How does DevOps change the game?
- Extensive detail on
 - Agreement processes
 - Organizational Project-Enabling processes
 - Technical Management processes
 - Technical processes

What the standard does not do

- It was not our intent to define DevOps
- We defined the requirements for implementing DevOps in highly regulated environments – like aerospace
- We do give a clear and widely accepted definition of DevOps

DevOps. (1) set of principles and practices which enable better communication and collaboration between relevant stakeholders for the purpose of specifying, developing, and operating software and systems products and services, and continuous improvements in all aspects of the life cycle

IEEE 2675 or ISO 32675 ?

- The ISO version of the standard is identical to the original IEEE 2675 version.
- ISO Cross adoption does not allow for changes
- Going forward we are creating a new family of IEEE DevOps standards that will cover key topics including SRE, Observability etc.
- IEEE DevOps standards will be created in collaboration with ISO SC7 WG29
- We could potentially update ISO 32675 as well

But isn't DevOps about culture?

- DevOps does indeed focus on culture including communication and collaboration
- DevOps must be adapted to the organizational culture
- DevOps in an organization of veterans serving the defense industry
- DevOps in a startup with MIT grads
- DevOps in medical pharmaceutical during Covid

5.3 DevOps and organizational culture

- 5.3.1 Leadership
- 5.3.2 Organizational structure and dynamics
- 5.3.3 Effective communication and collaboration
- 5.3.4 Learning organizations and knowledge management
- 5.3.5 Adaptation, resilience, and organizational change
- 5.4 DevOps and life cycle processes

What will we tell you?

- Include relevant stakeholders
- Automate everything
- Left shift – start doing the right things sooner
- Continuous everything
 - Delivery, Deployment, Integration, testing etc
- Thrive on risk
- Feedback loops including retrospectives and postmortems
- Quality and testing

6.1 Agreement processes

- 6.1.1 Acquisition process
 - used by organizations for acquiring products or services
- 6.1.2 Supply process
 - used by organizations for supplying products or services

6.2 Organizational Project-Enabling processes

- 6.2.1 Life Cycle Model Management process
 - define, maintain, and assure availability of policies, life cycle processes, life cycle models, and procedures
- 6.2.2 Infrastructure Management process
- 6.2.3 Portfolio Management process

6.2 Organizational Project-Enabling processes

- 6.2.4 Human Resource Management process
 - provide the organization with necessary human resources and to maintain their competencies, consistent with business needs
 - a) Soft skills:
 - 1) Team-oriented working skills
 - b) Technical skills:
 - 1) Understanding of security issues affecting computer systems, networks, databases, and applications

6.2 Organizational Project-Enabling processes

- 6.2.5 Quality Management process

- assure that products, services and implementations of the quality management process meet organizational and project quality objectives and achieve customer satisfaction

A DevOps mindset ...

- a) Achieving the customer's objectives, and in turn, the business or mission goals and values

- b) Accelerating delivery through continuous QM

- c) Collecting and sharing evidence to make informed decisions and achieve customer satisfaction

6.2 Organizational Project-Enabling processes

- 6.2.6 Knowledge Management process

create the capability and assets that enable the organization to exploit opportunities to re-apply existing knowledge.

For DevOps, Knowledge Management focuses on software development, testing, quality, infrastructure, security, and operations, with particular interest in areas such as:

- Establishing the automation of just-in-time processes (development, infrastructure, and operations together)
- Workflow orchestration and scripting
- Developer and infrastructure tool stacks
- Cybersecurity, test, and safety engineering

6.3 Technical Management processes

- 6.3.1 Project Planning process
- 6.3.2 Project Assessment and Control process
- 6.3.3 Decision Management process
- 6.3.4 Risk Management process
- 6.3.5 Configuration Management process
- 6.3.6 Information Management process
- 6.3.7 Measurement process
- 6.3.8 Quality Assurance process

6.4 Technical processes

- 6.4.1 Business or Mission Analysis process
- 6.4.2 Stakeholder Needs and Requirements Definition
- 6.4.3 Systems/Software Requirements Definition
- 6.4.4 Architecture Definition
- 6.4.5 Design Definition
- 6.4.6 System Analysis
- 6.4.7 Implementation

6.4 more Technical processes

- 6.4.8 Integration
- 6.4.9 Verification
- 6.4.10 Transition
- 6.4.11 Validation
- 6.4.12 Operation
- 6.4.13 Maintenance
- 6.4.14 Disposal

How do I implement ISO 32675

- Assess existing practices
- Compare to industry standards and frameworks
- Pick a few easy items to improve
- Create the long-term plan

Next steps – all are welcomed

- P2675 – DevOps study group
- P828 – Configuration management
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