

LECTURE

11

**Today's management
methods
– Systems engineering
applications**

LECTURE 11 - OVERVIEW

Examples of today's management methods

- Quality management
- Process management
- Product management
- Risk management
- and many others

QUALITY MANAGEMENT – methods - examples

- APQP (Advanced Product Quality Planning)
- CAF
- Deming cycle (PDCA)
- DMAIC
- EFQM Excellence Model
- Kaizen
- Quality circle
- Lean
- Poka-yoke
- Six Sigma
- TQM – Total Quality Management
- 5S method

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QUALITY MANAGEMENT – analytical tools - examples

- DOE (Design of Experiments)
- Ishikawa diagram
- Kano model
- Pareto charts
- FMEA (Failure Mode and Effect Analysis)
- FTA (Fault Tree Analysis) -
- QFD (Quality Function Deployment)
- Global Eight Disciplines
- Measurement System Analysis
- Production Part Approval Process
- Statistical process Control
- Flowchart
- Histogram
- Run chart
- Control chart
- Scatter diagram
- Regression Analysis
- WIBI (Would I Buy It?)

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QUALITY MANAGEMENT – standards - examples

- ISO 9001 Quality management systems
- ISO/TS 10004:2010 - Quality management -- Customer satisfaction -- Guidelines for monitoring and measuring
- ISO 13485 - Medical devices -- Quality management systems -- Requirements for regulatory purposes
- ISO/TS 16949 - Quality management systems -- Particular requirements for the application of ISO 9001:2008 for automotive production and relevant service part organizations

- QS 9000
- MSA (Measurement System Analysis)

- VDA (VDA 1, VDA 2, VDA 3, VDA 4, VDA 5, VDA 6, VDA 7) - German *quality* management system standard - extension of ISO 9001 for automotive industry requested of automotive

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PROCESS MANAGEMENT – methods - examples

- BCM (Business Continuity Management)
- BPM (Business Process Management)
- ITIL (ICT process management)
- Six Sigma
- Deming cycle (PDCA cycle)
- DMAIC – improvement cycle
- Statistical methods
- ISO 9001
- Total Quality Management (TQM)

Source: <https://managementmania.com/en/process-management>

PRODUCTION MANAGEMENT – methods - examples

- ABC-D
- BOA (Belastungsorientierte Auftragsfreigabe)
- CIM (Computer Integrated Management)
- CRP (Capacity Resource Planning)
- DBR
- JIT (Just-in-Time)
- MRP (Manufacturing Resource Planning)
- ERP (Enterprise Resource Planning)
- KANBAN (management system of production logistics (material flow in production) using simple cards for material flow management)
- Lean Production

<https://managementmania.com/en/production-management>

RISK MANAGEMENT – Frameworks - examples

- RMF (Risk Management Framework) - National Institute of Standard and Technology -
- M_o_R ® (Management of Risk) - framework for the management of risk across all parts of an organisation - strategic, programme, project and operational, to identify and control the exposure to any type of risk, positive or negative, which may have an impact on the achievement of your organisation's business objectives
- RiskIT (Risk IT Framework)

<https://managementmania.com/en/risk-management>

RISK MANAGEMENT

– methods - examples

- BASEL I, BASEL II, BASEL III - capital adequacy rules for banks' operational risk
- CCA (Cause-Consequence Analysis) - FTA and ETA Combination
- CLA (Checklist analysis)
- Cognitive modeling structures in the identification and risk assessment
- CorIA (Core Impact Assessment)
- CPQRA (Chemical Process Quantitative Risk Analysis)
- CRAMM (CCTA Risk Analysis and Management Method)
- CRI (Continuous Risk Improvement)
- ETA (Event Tree Analysis)
- EWRM (Enterprise-Wide Risk Management)
- FMEA (Failure Modes and Effects Analysis)
- FMECA (Failure Mode, Effects and Critically Analysis)
- Forecasting
- FTA (Fault Tree Analysis)
- HAZID (Hazard Identification Study)
- HAZOP (Hazard and Operability Study)
- HRA (Human Reliability Analysis)
- PHA (Preliminary Hazard Analysis)
- PPAP (Production Part Approval Process)
- Probabilistic Methods
- RIPRAN (RIsk PRoject ANalysis)
- RR (Relative ranking)
- SA (Safety Audit)
- SR (Safety Review)
- VaR (Value at Risk)
- W-I (What-if Analysis)
- Winterling Crisis Matrix

<https://managementmania.com/en/risk-management>

RISK MANAGEMENT

– analytical techniques - examples

- Five Forces Analysis (Five Forces Model)
- Brainstorming
- Brainwriting
- Forecasting
- Pareto Principle
- PESTLE Analysis
- Scenario technique
- SMART – objectives suggestion
- SWOT Analysis
- VRIO Analysis
- Winterling Crisis Matrix

<https://managementmania.com/en/risk-management>

RISK MANAGEMENT

– standards - examples

- ISO 14971 (Medical devices) - Global Harmonization Task Force (GHTF)
- ISO 16085:2006 - Systems and software engineering - Life cycle processes - Risk management
- ISO 31000 Risk management – Principles and guidelines
- IEC/ISO 31010 Risk management – Risk assessment techniques
- ISO Guide 73:2009 Risk management – Vocabulary
- ISO/IEC TR 13335-1:1999
- ISO/IEC Guide 73:2002
- OHSAS 18001 Occupational Health and Safety Assessment Series
- AS/NZS 4360:2004 - Risk Management
- SOX (Sarbanes-Oxley Act)

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FURTHER USAGE OF SYSTEMS ENGINEERING PRINCIPLES

- Human Resources Management
- Economy & Finance Management
- Informatics & IT Management
- Facility Management
- Organizational Management
- Crisis Management
- Innovation Management

FURTHER USAGE OF SYSTEMS ENGINEERING PRINCIPLES

- Service Management
- Project Management (e.g. PRINCE2 methodology, PMBOK (Project Management Body of Knowledge), Agile Project Management™ (AgilePM®), Managing Successful Programmes (MSP®))
- Change Management
- Knowledge Management
- Strategic Management
- Security Management

EXAMPLES OF MORE METHODOLOGIES

Management of Value (MoV®) - value management across many sectors

Management of Portfolios (MoP) how to apply principles, practices and techniques which help to optimise an organisation investment in change

Thank you for your attention

REFERENCES

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