IRIS -
International Railway Industry Standard
The Global Quality Standard for the Railway Industry

IRIS Conference – May 22
IRIS Conference

Day 2

Brussels, May 22nd, 2008

by Bernard Kaufmann
IRIS General Manager
Agenda of the day

4 Themes with 3 different views to let you understand why IRIS is an opportunity

► Success stories of the other industries.

► Strengths of IRIS’ certification process: an opportunity for continuous improvement.

► Project Management at the heart of IRIS.

► Risk management: the solution for safe projects.
Some current data about IRIS

- IRIS Standard Rev 01 applicable since November 1st, 2007
- 68 certificates
- 209 auditors
- 1231 booklets Rev 01
- 263 Audit-tool
- 13 global Certification Bodies
- 250 companies registered members in the IRIS Portal.

4 languages
Your contacts

UNIFE
Avenue Louise, 221
1050 Bruxelles
Belgium

Bernard Kaufmann
Giuseppe Greco
Nevena Petrova / Pavla Kampikova

Tel: +32 2 642 23 26
Fax: +32 2 626 12 61
Mail: iris@unife.org
Web: www.iris-rail.org
IRIS - International Railway Industry Standard
The Global Quality Standard for the Railway Industry

IRIS Conference – May 22
Implementation in a multi-industrial environment

Jacques Fleurat – General Director DUHAMEL
DUHAMEL’s activities are shared in 2 business units:

**Buses & Coaches**
- Coaches
  - Affordable
  - Integrated
  - Modular
  - Systems
- Buses
  - Specific
  - Integrable
  - Equipments

**Urban Rail Vehicles**
- Trains
  - Specific
  - Integrable
  - Equipments
- Tramways
  - Competitive
  - Integrable
  - Equipments

*Custom development*
The 3 ranges of products:

- **Displays range**

- **Multimedia range**

- **Vidéo range**
Key figures

46 people
- 14 engineers
- 12 technicians
- 3 salesmen
- 3 project managers


Key figures:
- 46 people
- 14 engineers
- 12 technicians
- 3 salesmen
- 3 project managers
The IRIS project: **WHY?**

- an explicit request from ALSTOM

- a need for development for the LRV BU
  + the idea that the LRV requirements are halfway between the buses ones and the rail ones
The IRIS project: **HOW?**

- **in the beginning** ISO 9001
- **1 year working on the processes**
  - With the help of customers (validation of actions plans)
  - In project management mod + everyone involved
  - With the help of a consultant
  - macro processes first
  - then specific LRV BU processes
The IRIS project results from our point of view

- a better mastering of our supply chain

- a better management of projects
  - obvious for conception & development activities
  - RAMS concern
  - better costs and expenses control
IRIS in DUHAMEL case

- it is affordable for a small size enterprise
- it scans processes that ISO does not check
- step by step the entire enterprise is adopting the IRIS certified processes of the LRV BU
IRIS - International Railway Industry Standard

How Certification Bodies deal with a new industry standard?

Peter Bonnaerens – Product Manager Railway Bureau Veritas
Bureau Veritas Certification
Tower Bridge Road 224 – 226, London SE1 2TX

• Bureau Veritas Certification (formerly BVQI)
• 700 offices and laboratories
• + 80,000 clients
• + 25,000 employees
• represented in more than 100 countries
• delivering over 100,000 certificates
IRIS
ISO 9001
ISO/TS 16949
ISO 14001
ISO 18000
AS-EN-JISQ 9100
ISO 9001
ISO/TS 16949
IMPLEMENTATION IN A MULTI–INDUSTRIAL ENVIRONMENT

• BE SURE YOU **UNDERSTAND THE STANDARD AND THE RULES**

• LOOK FOR **SYNERGIES IN THE STANDARDS TO AVOID NON-VALUE ADDED ACTIVITIES**

• SOME COMPANIES PRODUCE **MORE PAPER THAN PARTS**
  
  • INTERNAL REQUIREMENTS
  • LEGAL REQUIREMENTS
  • CUSTOMER SPECIFIC REQUIREMENTS
  • ISO REQUIREMENTS
IMPLEMENTATION IN A MULTI–INDUSTRIAL ENVIRONMENT

• DON’T MAKE TO MANY EFFORTS TO MAKE YOUR SYSTEM UNDERSTANDABLE FOR OTHERS, OTHERS SHALL ALSO MAKE EFFORTS TO UNDERSTAND YOUR SYSTEM

• UNDERSTAND AND FULFILL CUSTOMER SPECIFIC REQUIREMENTS BUT BE CAREFUL WITH “COMPANY SPECIFIC PROMISES”
HOW DOES BUREAU VERITAS CERTIFICATION DEAL WITH A NEW INDUSTRY STANDARD?

• **UNDERSTAND** THE NEW SCHEME SPECIFIC RULES

• WHAT ARE THE **SYNERGIES** WITH OTHER STANDARDS?

• **PUT A SYSTEM** IN PLACE TO RUN THE SCHEME

• SELECT AND QUALIFY EXPERIENCED AUDITORS WITH FOCUS ON MULTIPLE QUALIFICATIONS TO **PREVENT AUDIT TOURISM**
HOW THE AEROSPACE SUCCEEDED?

AS AS9100 IS ESTABLISHED WITHIN THE AERO INDUSTRY, THE STANDARD’S BENEFITS ARE APPARENT. TWO OBVIOUS ONES ARE:

• A REDUCTION IN MULTIPLE EXPECTATIONS
• CONSISTENCY IN VERIFICATION METHODOLOGY

SUPPLIERS REPORT A REDUCTION IN VERIFICATION AUDITS AND AN INCREASED CONSISTENCY IN EXPECTATIONS

AS A DIRECT RESULT CUSTOMERS ARE SEEING A REDUCTION IN OVERSIGHT COSTS AND AN IMPROVEMENT IN SUPPLIER PERFORMANCE
WHY IRIS WILL SUCCEED?

IRIS, AEROSPACE AND AUTOMOTIVE INDUSTRY STANDARDS SYNERGIES

• STANDARD DEVELOPED BY THE INDUSTRY

• CERTIFICATION REQUIRED BY THE BIG PLAYERS

• AUDITOR QUALIFICATIONS

• AUDITOR EXAMS

• IRIS AUDIT RESULTS ARE VISIBLE FOR CUSTOMERS

• EFFECTIVENESS AND EFFICIENCY
IRIS - International Railway Industry Standard
Aerospace and Defence Quality Standard
AS, EN, JISQ 9100
IAQG Achievements / Benefits

- 1 single Forum with all Aerospace & Defense Industry working together

- Fully worldwide harmonized set of Requirements for the Aerospace & Defense Industry

- Supply Chain certification scheme preventing multiple audits

- Financial benefits estimated to over 100 M$ per year for the Aerospace & Defense Supply Chain
IRIS
International Railway Industry Standard

Hubert de BLAY
IRIS Steering Committee Chairman

The only worldwide railway Business management standard
Why IRIS?

- Operators have requested improvements to the *quality* of the supply chain for rolling stock.

- Railway Equipment Manufacturers have requested rationalization of the *quantity* of different requirements and audits from Rolling Stock manufacturers.

IRIS is an answer to these requests
Industry trends

- Globalisation
- Concentration
- Innovation
- Standardisation
Why IRIS?

- The goal of IRIS is to improve the quality of the railway industry supply chain.

- IRIS aims at global recognition and acceptance of audit results by all Railways stakeholders, which leads to the avoidance of multiple auditing, and therefore increases cost efficiency.

- Audit records and audit results are collected and stored in a central database.

- IRIS enables high quality in audits.
The Guiding principles

- The development of the standard is transparent and involve all market participants via UNIFE.

- The standard is owned and managed by UNIFE (ensure independency).

- Audit results are traced confidentially and published only with allowance of the Audit Client. Rules for protection of data privacy will be followed.

- Accreditation/Approval of certification bodies is fair and transparent.
What is IRIS?

- IRIS stands for International Railway Industry Standard.
- IRIS aims to implement a common global system for the evaluation of Business Management Systems specific to the railway industry, comprising:
  - an international standard based on the principles of ISO 9001, available in 4 languages (EN,FR,GE,IT)
  - an unique questionnaire with maturity level and scoring.
  - an evaluation process with an assessment guideline to be performed by IRIS approved certification bodies
    - Single site certification (with remote locations).
    - Defined railway scopes, e.g. railway equipments, rolling stock, signalling.
    - Pre-requisites: readiness review, KO questions, process & procedures.
  - a web-based IRIS Portal (database) and Audit-Tool (Software)
Opportunities to improve ISO level?

1. An **adequate level** of formalization:
   - 14 procedures to be documented (ISO 9001: 6)
   - 19 processes required (ISO 9001: 3)

2. A **pre-requisite** before starting the audit:
   - Readiness review
   - 12 KO questions

3. Defined **rules** controlling the:
   - Actors (CB, auditors)
   - Evaluation process
   - Assessment guidelines
IRIS vs ISO requirements

- General requirements
- Documentation requirements
- Knowledge management
- Management of multi site projects
- Management commitment
- Customer focus
- Quality policy
- Planning
- Responsibility, authority and communication
- Management review
- Provision of resources
- Human resources
- Infrastructure
- Contingency plan
- Work environment
- Planning of production realization
- Customer related processes
- RAMS / LCC
- Obsolescence Management
- Commissioning / customer service
- First article inspection
- Configuration management
- Project management
- Control of nonconforming processes
- Monitoring and measurement
- Control of monitoring and measuring devices
- Production scheduling
- Production and service provisions
- Purchasing
- Design and development
- Tender Management
- Measurement, analysis and improvement
- Analysis of data
- Improvement

Min ISO
Min IRIS Rev 01
Max IRIS Rev 01
KO questions: the basics are mandatory

1. Quality management system
2. Design and development (Sign)
3. Design and development inputs
4. Design and development validation
5. Design approval (Sign)
6. Validation of processes for production and service provision
7. Project Management
8. Quality Management (in projects)
9. Change Management
10. First Article Inspection
11. Commissioning / Customer service
12. Control of nonconforming processes
13 global Certification Bodies

- IRIS Certification
- Bureau Veritas
- TÜV NORD
- IMQ
- ESQ
- AENOR
- Asociación Española de Normalización y Certificación
- LQP
- LRQA
- TÜV Rheinland
- RINA
- AFAQ
- AFNOR Certification
- DEKRA
- DEKRA Certification
- TÜV SÜD
- BSI
- MANAGING RISK
- DNV
IRIS Worldwide development

- New translations under preparation
- Knowledge agreement with Russia
- Auditor training performed in Korea
- Seminars hold in Russia and China
  - Scheduled in Ukraine, US and India
- Certified companies in US, Brazil and China.
Conclusion

- IRIS shall give the **opportunity** to every railway stakeholder to **improve his performance**, 

- In all countries, **Quality shall push competition**, 

- **Continuous improvement** is key for the railway industry, 

- IRIS shall provide everybody **high added value**

**IRIS shall be an answer for Quality improvements in the Railway Sector.**
IRIS - International Railway Industry Standard
The Quality Standard for the Railway Industry

IRIS system: a way for continuous improvement

First IRIS Conference
Brussels, May 22\textsuperscript{nd}, 2008

\textbf{Andreas Heinzmann}
Head of Quality
Transportation
Bombardier Transportation has its global headquarters in Berlin, Germany with a presence in over 60 countries. It has an installed base of over 100,000 vehicles worldwide. The Group offers the broadest product portfolio and is recognized as the leader in the global rail sector.

<table>
<thead>
<tr>
<th>Rail Vehicles</th>
<th>Total Transit Systems</th>
<th>Services</th>
<th>Rail Control Solutions</th>
<th>Transit Security Solutions</th>
<th>Propulsion &amp; Controls</th>
<th>Bogies</th>
</tr>
</thead>
</table>
| - Light Rail Vehicles  
- Metros  
- Commuter Trains  
- Regional Trains  
- Intercity Trains  
- High speed Trains  
- Locomotives | - Monorail Systems  
- APM Systems  
- GLT Systems  
- Light Rail Systems  
- ART Systems  
- Metro Systems  
- Intercity Systems | - Fleet Management  
- Operations & Maintenance  
- Material Solutions  
- Vehicle Refurbishment  
- Component Reengineering | - Integrated Control Systems  
- Automatic Train Protection and Operation: wayside and onboard  
- Interlocking systems  
- Wayside Equipment  
- Services | - Train-based broadband network  
- Sensor Systems  
- Security Systems Recording  | - Traction Converters  
- Auxiliary Converters  
- Traction Drives  
- Control and Communication | - Portfolio to match entire range of rail vehicles |

Bombardier Transportation - Products and services
A full spectrum of railway solutions
IRIS Strategy

- Operators
- System Integrators
- Equipment Manufacturers

Supply chain

- Rolling Stock
- Signalling
- Maintenance

2006 2007 2008 2009
IRIS Standard from Rev00 to Rev01

- Officially launched on November 1st, 2007.

- Application extended
  - Companies with activities in **design** and/or **manufacturing**.
  - Maintenance (June 2008)

- Scope of IRIS certification extended to
  - Rolling stock
  - **Signalling**
IRIS, more demanding railway specific requirements
# Assessment methodology

<table>
<thead>
<tr>
<th>Question</th>
<th>INSUFFICIENT</th>
<th>POOR</th>
<th>DEFINED</th>
<th>QUALIFIED</th>
<th>OPTIMIZED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliance</td>
<td>Non compliant</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

**Quality management system**

- **General requirements**

<table>
<thead>
<tr>
<th>Question</th>
<th>INSUFFICIENT</th>
<th>POOR</th>
<th>DEFINED</th>
<th>QUALIFIED</th>
<th>OPTIMIZED</th>
</tr>
</thead>
<tbody>
<tr>
<td>How does the organization a) identify the processes needed for the quality management system and their application throughout the organization?</td>
<td>No Evidence</td>
<td>Management manual</td>
<td>Management manual</td>
<td>Plus: implementation of action plans and follow up of actions</td>
<td>Plus: Efficiency of actions.</td>
</tr>
<tr>
<td>b) determine the sequence and interaction of these processes?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) determine criteria and methods needed to ensure that both the operation and control of these processes are effective?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**“Open” question**

**Has the organization established, documented, implemented and maintained a quality management system and continually improved its effectiveness in accordance with ISO 9001:2000?**

<table>
<thead>
<tr>
<th>INSUFFICIENT</th>
<th>POOR</th>
<th>DEFINED</th>
<th>QUALIFIED</th>
<th>OPTIMIZED</th>
</tr>
</thead>
<tbody>
<tr>
<td>No evidence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**“Closed” question**

**Action requested**

<table>
<thead>
<tr>
<th>corrective action mandatory; to be re-audit within 90 days</th>
<th>corrective action mandatory; to be closed within 90 days</th>
<th>improvement action to be requested</th>
<th>improvement action might be recommended</th>
<th>no specific action expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
Compensative and rewarding approach

Once certified, the client has to undergo “surveillance” audits at least once per year, but ...

if the global score $\geq 75\%$ than it depends:

<table>
<thead>
<tr>
<th>The better the result, the less time you will need to spend in audits over time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main clauses scored: 75-80%</td>
</tr>
<tr>
<td>Main clauses will be only partially audited.</td>
</tr>
<tr>
<td>Purpose to improve the related processes in order to achieve score $\geq 80%$</td>
</tr>
</tbody>
</table>
Summary

- The IRIS system is a opportunity for every railway company to measure the performance of its business processes.

- By standardized process requirements the efficiency in the whole supply chain will increase.
Andreas Heinzmann
Tel: +49 30 98607 1230
Fax: +49 30 98607 2030
Mail: andreas.heinzmann@de.transport.bombardier.com
Web: www.bombardier.com
www.theclimateisrightfortrains.com
IRIS - International Railway Industry Standard

The global Quality Standard for the Railway Industry
TÜV NORD CERT GmbH

Dipl.-Ing. (FH) Harald Brandt
Head of Department

Langemarckstraße 20
D-45141 Essen

Tel.: +49 (0) 201 825 3363
Mobile.: +49 (0) 160 888 2520
Fax.: +49 (0) 511 986 2899 3520

E-Mail: habrandt@tuev-nord.de
Web: www.tuev-nord-cert.de
TÜV NORD Group:
Your global Partner in Technical Services, Inspection, Certification…


- Bulgaria
- Brazil
- China / Hong Kong
- Denmark
- Estonia
- France
- Finland
- Greece
- Great Britain
- India
- Indonesia
- Iran

- Russia
- Saudi Arabia
- Sweden
- Slovakia
- Spain
- Taiwan
- Thailand
- Czech Republic
- Turkey
- Ukraine

- Italy
- Yugoslavia
- Kazakhstan
- Korea
- Croatia
- Latvia
- Lithuania
- Malaysia
- Netherlands
- Poland
- Romania

- Hungary
- UAE
- USA
- Vietnam
- etc.
Strength of the Certification Bodies and Auditors
Management System Certification:
How confidence is ensured in the global Supply Chain

- IRIS-Certification is a global approach, carried out
  - based on IRIS as an International Standard valid for all participants in the Railway Supply Chain
  - by IMC approved and contracted Certification bodies
  - a common Certification process that have to be fulfilled by all recognized Certification bodies and which includes mutual recognition of audit-results
  - by an IMC, Accreditation Body and CB internal Quality Management-System approach including initial recognition and accreditation as well as ongoing surveillance
  - by independent IRIS Auditors, who are trained and approved by IMC
The Accreditation and IRIS-Recognition Basis

- The competence and recognition for IRIS Certification bodies is related to acceptance and fulfillment of
  - the Framework Agreement between UNIFE/IMC and the CB as well as the current Framework Agreement addendums
The International Accreditation scheme

IAF International Accreditation Forum (Certification bodies/registrar, Inspection bodies)

Source: IAF, 2007
The International Accreditation System and Multilateral Agreement (MLA) Scheme

- MLA (Multilateral Recognition Arrangement) is the abbreviation for Multilateral Agreement (mutual recognition agreement). It is an Agreement that has been concluded among accreditation bodies for mutual recognition of accreditations in the voluntary, ie legally non-regulated area.
- All IMC recognized Certification Bodies (CB) like TÜV NORD CERT have to be accredited based on ISO 17021 as a CB for QM-System Certification according to ISO 9001.
- To fulfill the accreditation requirements, all CB have to be compliant, beside other issues, with the requirements on:
  - Maintaining an own QM-System
  - Auditors skills and competences
  - Auditors evaluation
  - Auditors Training (initial and ongoing)
  - Auditors ongoing performance monitoring
**Auditor Competence**

- **TUEV NORD CERT** fulfills these requirements by
  - formalized Initial Training on Auditor qualification and skills
  - formalized Initial examination of the Auditors Qualification and Skills acc. to International standards and IRIS-requirements
  - regularly planned and carried out Auditors Exchange of Experience (EoE) meetings (at least in minimum once per year per recognized certification scheme)
  - regularly planned and conducted Auditor witness-audit process (carried out at least once in three years per auditor and recognized certification scheme)
IRIS Specifities to CBs and Auditors

IRIS-Auditors

- shall have participated in at least 4 certification Audits with a minimum of 20 on-site audit days covering all ISO 9001 requirements within the last 4 years
- have to have a minimum of 4 years of railway industry experience in the last 10 years
- have to demonstrate there IRIS scope expertise
- shall have passed the IMC IRIS Training and examination.
The CB Organization

- Based on the Contracts with UNIFE/IMC **TUEV NORD CERT** has
  - one Lead Office as contact and responsible office to IMC
  - established an technical responsible person with global IRIS-Veto Power on all IRIS related issues like i.e.
    - Auditor-nomination and internal approval
    - Audit-day calculation,
    - Audit-planning activities
    - Audit-results evaluation
    - Final Audit Approval and
    - Certification Decision
Certification Body of TÜV NORD CERT GmbH

Certifying Branch Office I
Certifying Branch Office II
Certifying Branch Office n

Auditing Branch Office I
Auditing Branch Office II
Auditing Branch Office n

Office I
Office n
Office ..
The CB Organization and Quality Management

- All local and foreign offices / auditors involved in the IRIS Certification Process
  - receive technical advice and decisions from the IRIS Veto-Person at TÜV NORD CERT lead office in Germany
  - request and receiving approval (as appropriate and in line with the IRIS certification rules) on
    - Audit-day calculation
    - Audit-team establishment
  - use the TÜV NORD CERT procedures and forms
  - send their IRIS-auditors for EoE-(Exchange of experience) Meetings
  - are incorporated in the TUEV NORD CERT QM-System processes including internal Office Assessments and auditors witness-audits
IRIS - International Railway Industry Standard

Project Management - An important element of IRIS

Dr. Holger Schmidt
Siemens
Industry Sector, Division Mobility
Vice President Quality Management Improvement & Monitoring
Excellent Project Management is a central success factor in the railway business

- Divide Project into Phases
- Better Management Control and Tracking
- Review Deliverables and Performance
One characteristic of project business is that the origin of faults are in the early stages of projects.
Accurate and realistic planning is one of the main levers for a successful project. A lack of consistency and accuracy during the planning phase leads to the "Principle of hope" in the execution phase.

Good Work but I think we might need just a little more detail right here.
There are no detailed requirements in the ISO 9000 about Project Management. Therefore it is a knock out criteria in IRIS
Excerpt of the IRIS Standard

“The Organization shall implement a project management approach or system or new product development process addressing the applicable areas of project management, describing roles and responsibilities, integrating all relevant functions of the organization into a multidisciplinary team.”
By standardizing Project Management, the effectiveness throughout the entire supply chain is increased.....

System Integrator Processes

Supplier Industry Processes

In a common understanding of efficient processes and competent methods, lies the potential for an increase in product quality.

...... and the IRIS goal to improve the whole supply chain is achieved
Project Management at the heart of IRIS

- How to implement the process
- Voith Turbo Rail Division as example

Marcus Schmid – Director Quality Management
Voith Turbo Rail
Marcus Schmid

- Director Quality Management
  Voith Turbo Rail Division

- Project support Voith Turbo

- WG Leader of Iris Joint Working Group
One of the large family-owned companies in Europe

- founded in 1867
- 37,000 employees
- 270 locations
- Euro 4.2 billion in sales
## Voith Turbo – Market Division Rail Products and Services

<table>
<thead>
<tr>
<th>Locomotive technology</th>
<th>Hydro-dynamical drives</th>
<th>Mechanical drives</th>
<th>Cooling Systems</th>
<th>Scharfenberg Couplers</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development</td>
<td>Turbo (reversing) transmissions</td>
<td>Final drive units</td>
<td>Cooling networks</td>
<td>Automatic couplers</td>
<td>Spare parts</td>
</tr>
<tr>
<td>Engineering</td>
<td>Systems engineering and control technology</td>
<td>Mechanical couplings</td>
<td>Complete systems</td>
<td>Safety bumpers</td>
<td>Repairs</td>
</tr>
<tr>
<td>Prototype construction</td>
<td>Automatic transmissions</td>
<td>Hydrolock</td>
<td>Fan technology</td>
<td>Frontend systems</td>
<td>Major overhauls</td>
</tr>
<tr>
<td></td>
<td>Cardan shafts</td>
<td>Retarders</td>
<td>Accessoires</td>
<td>Joints</td>
<td>Consulting/training</td>
</tr>
</tbody>
</table>

- Automatic couplers
- Safety bumpers
- Frontend systems
- Joints
- Spare parts
- After-sales service
- Spare parts
- Repairs
- Major overhauls
- Consulting/training
- Service agreements
Project Management at the heart of IRIS
How to implement the process

Content

Evolution of the basic ISO project management approach

Weighting of project management

Implementing project management
Project Management at the heart of IRIS
How to implement the process

1. Evolution of the basic ISO project management approach

- ISO 9000:2000  
  - already defines the „project“ (clause 3.4.3)

- ISO 10006:2003(E)  
  - supplements the guidance given in ISO 9004 (annex B)

- IRIS  
  - implements project management as a basic requirement ...
2. Weighting of project management (1/3)

IRIS questions chapter 3 (Rev 01 without maintenance)
Project Management at the heart of IRIS
How to implement the process

2. Weighting of project management (2/3)

IRIS Knock-Out questions (Rev. 01 without maintenance)

- Project management clause 7.7: 25%
- All others clauses: 75%
Project Management at the heart of IRIS
How to implement the process

2. Weighting of project management (3/3)

Processes required by IRIS (Rev. 01 without maintenance)

- Project management clause 7.7: 4, 21%
- All others clauses: 15, 79%
Project Management at the heart of IRIS
How to implement the process

3. Implementing project management (1/5)

- ... using existing ISO 9001 tools
  - into the process landscape of the company
  - into the „Competence, awareness and training“
  - into the „Measurement, analysis and improvement“
- describing already existing (?) project management tools
3. Implementing project management (2/5)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PM</td>
<td>7.7</td>
<td>182</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PP</td>
<td>7.7.1</td>
<td>183</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scope</td>
<td>7.7.2</td>
<td>184</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>7.7.3</td>
<td>185</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td>7.7.4</td>
<td>189</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QM</td>
<td>7.7.5</td>
<td>190</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HR</td>
<td>7.7.6</td>
<td>193</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comm.</td>
<td>7.7.7</td>
<td>195</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk</td>
<td>7.7.8</td>
<td>196</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change</td>
<td>7.7.9</td>
<td>198</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Applicability | 67 % | 33 % | 81 % | 52 % | 19 % | 14 % | 38 % | 10 % | 10 % |
Project Management at the heart of IRIS
How to implement the process

3. Implementing project management (3/5)
Project Management at the heart of IRIS
How to implement the process

### 3. Implementing project management (4/5)

<table>
<thead>
<tr>
<th>Customer</th>
<th>PL customer</th>
<th>Current milestone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A B C D E F G</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project name</th>
<th>SAP Reference #</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project leader</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Project description**

<table>
<thead>
<tr>
<th>Project targets and goals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Status**

<table>
<thead>
<tr>
<th>Functionality</th>
<th>Cost</th>
<th>Timing</th>
<th>Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Example:
Project Management at the heart of IRIS
How to implement the process

3. Implementing project management (5/5)
Project Management at the heart of IRIS
How to implement the process

Thank you very much for paying attention!
Project Management at the heart of IRIS
How to implement the process

Author:

- NAME, first name: SCHMID, Marcus
- Title: Dipl.-Ing. (FH)
- Function: Director Quality Management Rail Division
- Company: Voith Turbo GmbH & Co. KG
- Department: Quality Management Rail Division
- Postal address: Alexanderstr. 2, D-89522 Heidenheim
- Phone: +49(0) 7321 37 8155
- Fax: +49(0) 7321 37 7076
- Email: Marcus.Schmid@voith.com
LRQA: A certification organisation

- 13 multi-lingual auditors, accessible to our offices globally.
- Extensive knowledge of the Railway industry and management assessment.
- Capable of linking IRIS, rail notified body, RISAS and all management systems standards in one cohesive audit approach.
HOW TO AUDIT PROJECT MANAGEMENT?
YEARS
MONTHS
DAYS
HOURS
WEEKS
MINUTES
10
Understanding

Trust

Facts

Experience

Confidence

Confidence

Partnership

Responsibility

Competence

Behaviour

10
Question

How to audit Project Management?

Reply (evident):

Audit the management of projects

In detail:

Audit the management (efficiency)

PLUS

Audit the project (conformity)
Audit the management (efficiency)

**RESOURCES**
- 6.1-6.4 outputs (Human & Material)

**INPUTS**
- 7.2 output (Contract review)

**PROJECT**

**CONTROLS**
- 8.2.3 & 8.4 Outputs
  (Process review and analysis)

**OUTPUTS**
- 8.2.1 output
  (Customer feedback)
Audit the project (conformity)  
IRIS requirements

- 7.7.1 Integration management
- 7.7.2 Scope management
- 7.7.3 Time management
- 7.7.4 Cost management
- 7.7.5 Quality management
- 7.7.6 Human resource management
- 7.7.7 Communication management
- 7.7.8 Risk & Opportunity management
- 7.7.9 Change management
Audit the project (conformity)
Audit approach

<table>
<thead>
<tr>
<th>Component</th>
<th>PROJECT 1</th>
<th>PROJECT 2</th>
<th>PROJECT 3</th>
<th>PROJECT 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.7.1 Integration management</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.7.2 Scope management</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.7.3 Time management</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.7.4 Cost management</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>7.7.5 Quality management</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>7.7.6 Human resource management</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>7.7.7 Communication management</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.7.8 Risk &amp; Opportunity management</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>7.7.9 Change management</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>
TIME IS MONEY!

Scoping, Preparation, Obtaining Evidence
Management of Assessment
Conformity Assessment
Certification
Peer/Technical Review

Scoping, Preparation, Obtaining Evidence
Management of Assessment
Conformity Assessment
Certification
Peer/Technical Review
IRIS - International Railway Industry Standard
The Global Quality Standard for the Railway Industry
IRIS Conference – May 22
IRIS - International Railway Industry Standard
The global Quality Standard for the Railway Industry
Why risk analysis?

DNV’s experiences with risk management and IRIS

DNV Industry
22.05.2008
What does DNV do?

**Classification**
- A worldwide leading classification society

**Certification**
- A worldwide leading supplier of certification services

**Technical support**
- Innovative technologies for a safe and reliable operation of offshore and other oil and gas producing companies.

**Consulting**
- Technological and management consultancy for a safe and responsible increase of the performance of companies.
What would happen, when….

.....your know-how is lost?
.....your project planning has hidden faults?
.....your specifications are not adequate?
.....your suppliers stop delivering?
.....your deliveries are delayed?
.....you need to call back your products?
.....machines are unable to produce?
A risk matrix

Probability

1 x per year

1 x per 10 years

1 x per 10/20 years

1 x per > 20 years

Damage

Specs incomplete

Supply stop

Late delivery

Product called back

Project planning faulty

Know how missing

1

2

3

4

500 k€ - 1000 k€

10 - 20 Million

100 - 500 k€

1 - 10 Million

File: IRIS presentation DNV
An example from an IT risk analysis

- Determining criticality
- Determining necessary buffer times
Cost vs. benefit balance
ALARP concept (As Low As Reasonably Practicable)

Area of non-acceptable risk
- Risk cannot be justified

ALARP area: risk can be minimised, when costs are acceptable

Area of acceptable risks
- Risks here can only be accepted, if the costs for minimising them are not acceptable

Negligible risks

What do you do, to prevent all this?

.....human resource management
.....using planning tools
.....checking and testing
.....second sourcing
.....and ... pay the penalties....
Worst practices in risk management

- Treating and assessing different risk subjects totally differently (e.g. IT-risks, fire risks, security risks …)
- Limited view on availability and re-start
- No quantification of risks (in €!)
- No direct involvement of employees concerned
- No structured verification
- No Integration in the Management System of the Organisation
And what can IRIS do in this perspective?

**K.O. - Questions**
- QMS (transfer or outsourcing)
- Project management
- Commissioning / customer service
- Control of nonconforming processes

**Non-K.O., still important:**
- Purchasing process
- Monitoring, measurement, analysis and improvement ….
Risks on the level of management systems

- We see that processes are being improved, process indicators are applied.
- Investments in software for a.o. project management, complaint and audit management, FMEA and KPIs.
- Reducing resources often leads to weaknesses.
- When production capacities are built up in “Low Cost Countries”, the design of the management system and the transfer of production are often not managed as projects.
- Qualification profiles for project managers, designer, purchasers etc., are not up-to-date, or simply ill-defined, or only exist on paper.
Results of 82 DNV certification audits

Totals (987 Findings)
Findings from certification audits

We often find problems in these areas:
- Process landscape and documentation requirements
- Management review, HR
- Development, purchasing, production and labs
- Monitoring and measurement plus improvement processes.

Main clauses where problems are found:
- Monitoring and measurement (8.2)
- Production (7.5)
- Development (7.3)
- Improvement (8.5)
Development area

**Recommendation**

- Apply indicators, e.g. for adherence to budget, adherence to due dates, number of iterations before everything is right, number of open points after formal completion, etc.

- Do not treat FMEAs as …. documents this … auditor wants to see, but as tool for structuring and safeguarding your know how.

- Define clear rules for FMEA (criteria, responsibilities).
Define rules for, a.o.:

- Supplier risk analysis (portfolio analysis, Supplier FMEA)
- Supplier release process (when do you audit, what do audit results mean, how to treat non-conformities)
- Supplier evaluation (what do you do after the evaluation, action plans)
- Supplier development

KPIs for supplier management

- Trend in supplier related quality costs (ConQ)
- Percentage of released suppliers vs. Total, maturity models
- Percentage of 2nd source vs. single source
Your risks and opportunities

- Investments in management systems improve:
  - Your productivity,
  - The satisfaction of your customers,
  - The value of your image and brand.

- And that is at the basis of DNV’s services.
What does IRIS do for risk management?

- IRIS adequately addresses the critical elements in a management system.
- IRIS provides a systematic framework for controlling risks.
- It is important to stick to a flexible approach (n.a. questions etc.)
- The user of the system must assess these risks in order to determine what level of control is needed.
- As with all management systems, the effect depends on the intelligent application and implementation.
Jan Bert Hoekman
Technical Manager
DNV Zert – Essen (D).
What can a good risk-management bring?

Susanne Schaub – Quality Manager CFF/SBB/FSS
Management of risks?

► Can you avoid risks?
► Is avoiding risks all you want?
► Is there a possibility to change risks into something better?
► Risks – a chance to improve?
► What comes next?
Process – and risk-landscape OP
March 2008

environment
- politics and regulations
- supply market
- competition
- internal development
- customers and society

governance and organisation
- strategic planning
- budget, controlling
- management by objectives
- communication

value creating processus
- sales and KAM
- conduct trains
- preparation
- strategic supply and logistics
- maintenance
- management of resources

support and improvement
- Human Resources
- Risk-, Safety-, Quality-Management
- IT
- supply
- incident-management
  - development, optimization, processus, systems, audits
<table>
<thead>
<tr>
<th>Prozent</th>
<th>Häufigkeit</th>
<th>Häufigkeitsklasse</th>
<th>Risikoklassen</th>
</tr>
</thead>
</table>
| 66-100% | Ein Schadensfall tritt wahrscheinlich innerhalb des Beurteilungshorizonts oft ein | VI | Rm1: ETR 47
| 33-66% | Ein Schadensfall tritt wahrscheinlich innerhalb des Beurteilungshorizonts mehrmals ein | V | Inv1: operativer C
| <33% | Ein Schadensfall tritt wahrscheinlich über mehrere Beurteilungshorizonts hinweg ein Mal ein | IV | Personelle Schäden
| | Ein Schadensfall tritt wahrscheinlich über viele Beurteilungshorizonts hinweg ein Mal ein | III |

**Ausmaßklasse**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Ausmaßklasse</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1 Mio. CHF</td>
<td>1 - 5 Mio. CHF</td>
<td>5-10 Mio. CHF</td>
<td>&gt; 10 Mio. CHF</td>
<td>Finanzielle Schäden</td>
</tr>
<tr>
<td>Lokal beschränkter, kurzfristiger Ausfall (Stunden)</td>
<td>Lokal beschränkter Ausfall (1 Tag)</td>
<td>Regionaler kurzfristiger Ausfall</td>
<td>Regionaler Ausfall (1 und mehrere Tage) oder nationaler kurzfristiger Ausfall</td>
<td></td>
</tr>
<tr>
<td>Eine bis mehrere Leichtverletzte oder eine mittelschwer verletzte Person</td>
<td>Ein Schwerverletzter oder mehrere mittelschwer verletzte Personen</td>
<td>Ein Todesopfer oder mehrere Schwerverletzte</td>
<td>Mehrere Todesopfer und Schwererleistete</td>
<td></td>
</tr>
<tr>
<td>Kurzfristiger Imageverlust</td>
<td>Örtlicher Imageverlust</td>
<td>Regionaler Imageverlust</td>
<td>Nationaler Imageverlust und/ oder anhaltender Imageverlust</td>
<td></td>
</tr>
<tr>
<td>marginal</td>
<td>zu beachten</td>
<td>kritisch</td>
<td>gravierend</td>
<td></td>
</tr>
</tbody>
</table>

**SCHADENSAUSMASS**
### controlling of actions

<table>
<thead>
<tr>
<th>Einzelrisiko/Risikobeschrieb</th>
<th>Massnahme</th>
<th>Stand der Umsetzung</th>
<th>Verantwortlich</th>
<th>Status</th>
</tr>
</thead>
</table>

**Risikotyp xy**

**Risikotyp xy**

*grün = ergriffene Massnahmen reichen aus und werden zur Zeit nach angestrebten Risikoreduktion*

*gelb = Ergriffene Massnahmen reichen zur angestrebten Risikoreduktion*

*rot = Akuter Handlungsbedarf*
Veränderungen gegenüber 24. August 2007:
- zwei Risiken aus rotem Bereich verschoben
- ein neues Risiko formuliert
- ein Risiko eliminiert
- diverse Risken vermindert (s. Geschäftsberiche)

Risk-Matrix SBB-P-OP
March 2008

<table>
<thead>
<tr>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Occurrence probability

Measure of damages

- Hohe der Fix-Kosten verhindern die Konkurrenz-Fähigkeit
- Schwere Rahmenbedingungen (GAV) verhindern die Konkurrenz-Fähigkeit
- Kuppeln ZSS unter Spannung
- Signalfälle / Unfälle
- Personalgewinnung
- Bremsprobe nicht konform oder vergessen
- Brand-/Chemieunfall, Wasser in Anlagen und Gebäuden

Veränderungen gegenüber 24. August 2007:
- zwei Risiken aus rotem Bereich verschoben
- ein neues Risiko formuliert
- ein Risiko eliminiert
- diverse Risken vermindert (s. Geschäftsberiche)
Findings

- Risks can be reduced if appropriate actions are taken
- Risks have to be observed regularly
- Risks have to be evaluated regularly
next steps

Risk-management should be:
► part of the management review
► controlling of actions
► use of standardized evaluation-matrix

implementation of a risk-management-process
► strategy, governance, review
► definition (objectives, limits, rules)
► evaluation of risks
  ► identification of risks (completeness, methods)
  ► analyse of risks (occurrence probability, measure of damages, interconnection and interdependency
  ► evaluation of risks (justifiable risks, rest risks, risk-benefit-analyse)
► coping with risks (avoidance and diminution of risks, incident management)
► risk- and system-surveillance (enlargement of risk-portfolio, system improvements)
conclusion

Yes, a good risk-management can bring a profit
if integrated in the (quality)management-system

Impact on
- costs
- time (supply chain, mtbf...)
- product quality (reliable, available, maintainable, safe)
Brussels, May 21st – May 22nd

Riskmanagement

IRIS-Conference

Christian Sahr – Quality Assurance Manager Hübner
Close to Our Customers – Worldwide

1,600 employees worldwide (as of December 2007)
Diverse components from a single source – HÜBNER rail products.
Folding Bellows & Gangway Systems

From local to high speed - worldwide.

- Trams (LRV)
- Metro (subway and rapid transit trains)
- Regional and long-distance traffic
- High-speed trains (starting at 200 km/h)
A wide range of solutions for safe and convenient passage between cars.

- Comfort gangways
- Front gangways
- Middle gangways
- Folding bellows
- Single and double corrugated bellows
Risk management – What does it mean for Hübner?

Risk identification → Risk evaluation → Risk validation

Corporate structure <-> Divisions <-> Departments <-> Processes <-> Products

© HÜBNER GmbH 2008
Why Riskmanagement?

- Economical necessity – to manage changes
- Early-warning-system – proactivity versus corrective actions
- Increase of sustainability – processes and product
- Improvement of competitiveness
- Mitigation of capital expenditure – raise efficiency
- Implementation in a corporate scheme – effective rise in value
Why Riskmanagement?

- Creation of a superordinate framework for a structured implementation of a riskmanagement
- Usage of existing and integrated management tools (FMEA / SWOT)
- Integration of existing isolated applications in a corporate general concept
- Integration in Management System
Realization steps for risk management at Hübner

- Initiation of an interdisciplinary project team
- Definition of risk management as a management process and integration in process landscape
- Creation of risk matrices for
  - Corporate structure
  - Processes
  - Products
- Definition of early-warning indicators / emergency planning
- Summarization as Risk Management Manual (integration in Management Manual)
Riskmanagement at Hübner

- Feasibility study – enquiry phase
- Contract review
- Realization of customer requirements
- Design phase – risk assessment with „Riskman“
- Packaging – risk assessment per product and carrier
  (rail / street / water / air)
**Riskmanagement at Hübner (Risk evaluation)**

<table>
<thead>
<tr>
<th>Frequency of a hazardous event</th>
<th>Risk Levels</th>
<th>Severity Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intolerable</td>
<td>Undesirable</td>
</tr>
<tr>
<td>A Frequent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B Probable</td>
<td>Tolerable</td>
<td>Undesirable</td>
</tr>
<tr>
<td>C Occasional</td>
<td>Tolerable</td>
<td>Undesirable</td>
</tr>
<tr>
<td>D Remote</td>
<td>Negligible</td>
<td>Tolerable</td>
</tr>
<tr>
<td>E Improbable</td>
<td>Negligible</td>
<td>Negligible</td>
</tr>
<tr>
<td>F Incredible</td>
<td>Negligible</td>
<td>Negligible</td>
</tr>
</tbody>
</table>

Acc. to: EN 50126:1999 / 4.6  Stand: 5.08.2007
Riskmanagement at Hübner (Riskman)
### History critical complaints 2006 / 2007

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Percentage of total costs in %</th>
<th>Percentage of total complaints</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>85.5%</td>
<td>6%</td>
</tr>
<tr>
<td>2</td>
<td>15.0%</td>
<td>2%</td>
</tr>
</tbody>
</table>

![Bar chart showing the percentage of total costs and complaints for 2006 and 2007](chart.png)
IRIS -
International Railway Industry Standard
The global Quality Standard for the Railway Industry

Olivier PEYRAT, AFNOR Groupe CEO,
Chair of the Conformity Assessment Committee of ISO (ISO/CASCO)
VISION FROM A STANDARD POINT OF VIEW (1/2)

- Each sector is by definition the most specific and the most difficult of all the sectors. And yet there are commonalities…
- 80% fully generic 15% sector specific 5% company specific
- Sectors must have achieved critical mass
- The ISO standards are designed to capture and codify good practices. Experience sharing is key
- Cost of variety, cost of measurement, cost of monitoring
- Cost of late problem detections
- Minimize transaction costs, maximize trust
- ISO dream: once assessed, trusted everywhere.
VISION FROM A STANDARD POINT OF VIEW (2/2)


ISO>ISO/CASCO>STAR Group: identify needs and concerns from Sectors and Regulators (Global approach: same tools) template for audit reports control plans project handling (ISO 10006 under systematic review (E)) business continuity… Risk assessment…

Standardize requirements, not the companies. Equivalences Dream? No realistic dream can be based on a single standard encompassing ALL the needs. Rather one core standard+add-ons (e.g:project handling) leading in turn to standards

In the mean time: IRIS must secure critical mass. Talk together, Talk with other sectors. Be active in International Standardization