

Nuclear I-Stream Digital Solution

Ageing
Management
entering
the digital era

I-Stream is a lightweight digital solution for efficient Ageing Management Evaluation studies, compliant with IAEA standards, easily interfaced with your IT landscape

Introduction

Ageing Management Evaluation is a real data management challenge, a high number of components and characteristics need to be processed throughout the evaluation process, requiring a lot of rigor to ensure consistency, maintainability, traceability and usability of the evaluation outcomes. Without appropriate support solutions, such evaluation becomes a data management nightmare leading to increased implementation risks and efficiency issues that could jeopardize the project goal.

Tractebel has developed a simple pragmatic dedicated digital tool, namely I-Stream (Integrated - Software Tool for Review and Evaluation of Ageing Management).

I-Stream is a lightweight web based application built on SQL server database that can be set up either locally on premise or in the cloud. It is not an ERP system. It can smoothly integrate into the existing IT landscape to bring specific functionalities dedicated to Ageing Management Evaluation making it agile and cost efficient. Some of outstanding features include:

- Multi-user and collaborative solution with full user management.
- Complete data centric (database) approach allowing cross analysis and all kinds of reporting.
- Embedded processing facilities allowing users to focus on the evaluation work rather than on the data management aspects.
- Integrated validation workflow to guarantee full end-to-end traceability.
- Import/export mechanisms with Excel, also allowing to transfer the study outcomes to the operational ageing management organization.

Strengths

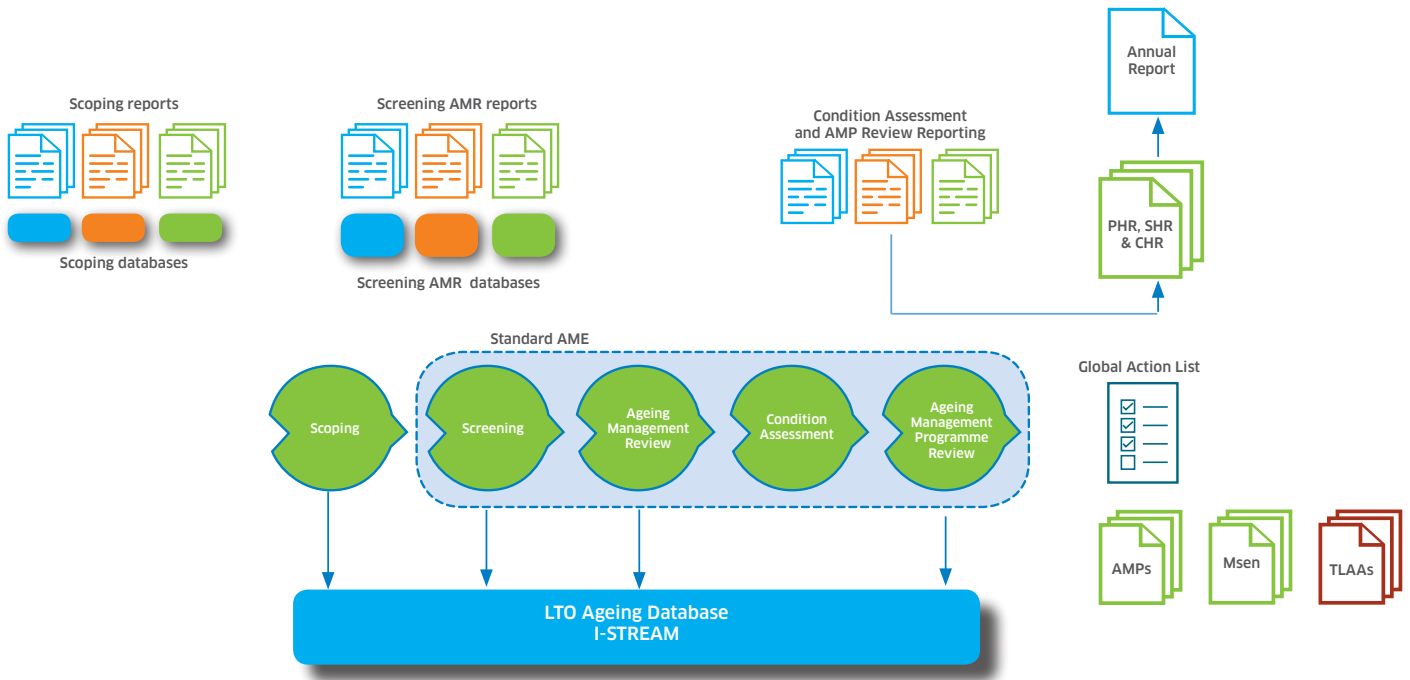
- Full alignment with proven Tractebel's Ageing Management Evaluation (AME) methodology, supporting the different IPA steps.
- Independence from manufacturers: overall independent review of developed strategies and plans for LTO. Based on the experience and lessons learned from the LTO program successfully developed and implemented in Belgium.
- Data consistency enforcement based on validation lists (standardized vocabulary).
- Embedded Ageing Mechanism Library (based on official references like IGALL, GALL).
- Proven Track Record
- I-Stream has been successfully used for the ageing management of 2 units in Belgium and is being actively used by Electrabel. The use of the tool is being considered to address living ageing management during the long term operation of the plant after the LTO program has been implemented.

Services

I-Stream can be proposed as a software solution tool to perform the AME study itself. Additional services can be proposed to:

- Host the solution on premise.
- Take in charge the initial loading of the application's database with the list of components and characteristics specific to your plant coming from your reference systems.
- Help integrate I-Stream with the existing IT environment of reference systems.
- Develop specific functionalities.

Ageing Management entering the digital era



Zoom in Integrated AMR library

Integrated AMR library

One particular characteristic that makes I-Stream so unique on the market is that it embeds an Ageing Mechanism Library of the Official IGALL references. As the Ageing Mechanism are documented in those references, these are locked into the documents and cannot be used in a digital way as input data.

Tractebel has extracted all data from these references and compiled them into a standardized format embedded into I-Stream for users to have all necessary information available at their fingertips augmented with lookup and filtering facilities to gain optimized efficiency.

Currently the following references are available: IGALL 2019, IGALL 2017, NUREG 1801 Rev 01, NUREG 1801 Rev 02, NUREG 2191 Rev 00.

Tractebel experience has shown that :

- Lessons learned are a corner stone for Ageing Management and Nuclear Plant Operations;
- the International lessons learned, such as the studies performed by Electric Power Research Institute (EPRI), are necessary to carry out proper Ageing Management Evaluations as a whole.

Therefore, I-Stream includes a specific module that is dedicated to the integration of international best practices integrated directly into the database in a structured way allowing accessibility from the various domains.

Reference selection: Nureg1801 - Rev02, IGALL_Master Table 2017, Nureg1801 - Rev01, Nureg1801 - Rev00, REX

Reference content: Table IGALL Systems

Item	Chapter	Section	Component type	Material	Ending
108_565	All systems	External surface of piping, piping co.	External surface	Stainless steel	Air - in
108_104	Auxiliary systems	Closed-cycle cooling water system	Heat exchanger components	Stainless steel	Closed
108_104	Auxiliary systems	Waste water systems	Heat exchanger components	Stainless steel	Hot/cold
104_89	Auxiliary systems	Chemical and volume control system	Heat exchanger components	Stainless steel	Treatable
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Commodity group	Level 1 component	Level 2 component	Component_type	Material
PND-D4-ST1-7080a6	Internal structures	Basemat	Reinforced concrete: foundation	Reinforced concrete
PND-D4-ST1-a6a32	Internal structures	Beam, pillar, floor, wall	Reinforced concrete: interior	Reinforced concrete
PND-D4-ST1-7080a9	Internal structures	Basemat	Reinforced concrete: foundation	Reinforced concrete
PND-D4-ST1-7080a9	Internal structures	Basemat	Reinforced concrete: foundation	Reinforced concrete
PND-D4-ST1-7080a9	Internal structures	Basemat	Reinforced concrete: foundation	Reinforced concrete
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