

SAFRAN

- Status and Further Development -

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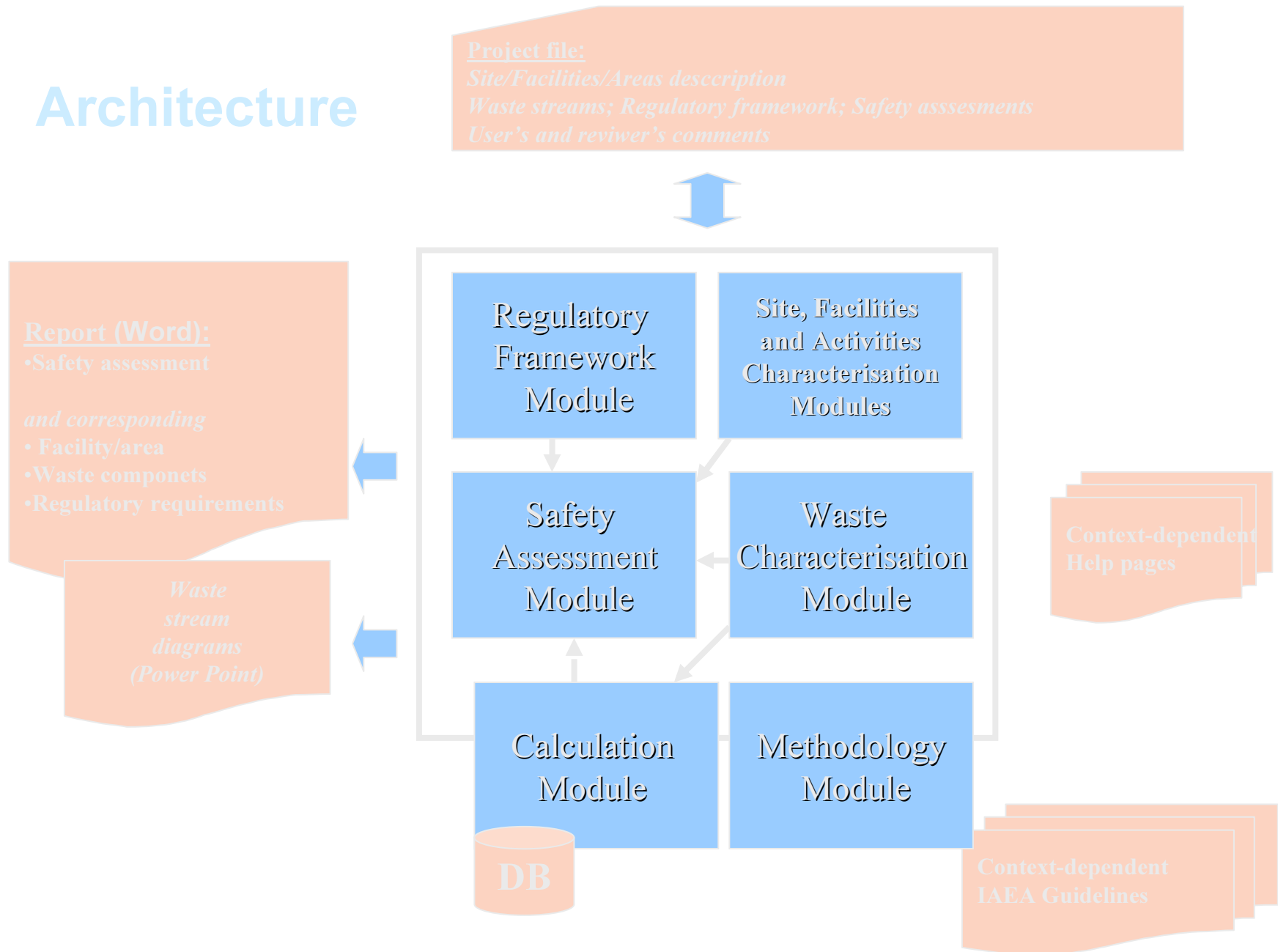
IAEA

International Atomic Energy Agency

Overview

- History of SAFRAN development
- Scope of SAFRAN
- Issues identified for improvements
- Object oriented user interface

Architecture



Scope of SAFRAN

- Predisposal waste management:
 - Treatment
 - Storage
 - Clearance
 - (Old situations – retrieval of waste)
 - (Transport)
- Decommissioning

History

- January 2006: Development started initiated by SADRWMS
- June 2006: First version tested in Vinca
- November 2006: improved version including calculation tool based on the NIREX Generic SA
- April 2007: Decision of extend SAFRAN to decommissioning (DeSa project)
- June 2007 – February 2008: Test cases as decided by the SADRWMS plenary meeting
- September 2007: Merging of predisposal and decommissioning versions
- March 2008: Decision to improve calculation modules and user interface

Site and Facility Characterization Module

- Collates information of the site and facilities:
 - Site features
 - Facilities and areas
 - Physical elements and their properties
 - Existing safety elements
 - Radioactive elements to be decommissioned

Classes of facilities

- Waste Management facility
- Waste producer
- Facility to be decommissioned

The specific type of waste management facilities are defined by the activities going on in the facility

Types of safety elements

- Site selection
- Safety functions
- Limits and conditions
- Maintenance requirements
- Operational procedures
- Emergency procedures
- Management systems

Can be linked to physical elements and assessments

Module Activities

- Provides information about activities:
 - Type and description of activity
 - Output(s) from activity
 - Default reduction factors

Types of waste management activities

- Pretreatment
- Treatment
- Conditioning
- Storage
- Check for clearance
- Retrieval
- Disposal
- Transport
- Others

Types of decommissioning activities

- Preparatory
- Characterisation
- Decontamination
- Dismantling
- Others

Regulatory Framework

- Regulatory requirements
- Criteria – limits and constrains
- Clearance levels – IAEA and user-defined values

Safety Assessment

- Safety assessments addressing:
 - Normal operation and accidents
 - Impact on workers and members of the public
 - Impact outside and inside the facilities

Possible Extensions of SAFRAN Scope

- Disposal
- Experience feedback module
 - Modifications of design
 - Issues and concerns
 - Results of inspections
 - Events
 - Experience feedback (this and similar facilities)
- Additional tools to assist regulators (e.g. on expert judgement)

Issues identified in current version

- SA module is not sufficiently flexible to accommodate iterative and tiered assessments for all types of analyses that may be required – such as comparison of options
- The possibilities of the calculation tool are limited
- User interface needs to be more user friendly

SAFRAN User Interface Issues

- Complexity caused by the number of elements, waste components, activities, assessment case etc.
- Input/modification of properties or other operations (e.g. screening of PIE's) for many elements
- Establish and manage links between elements

Complexity

- The large number of elements, activities, end points, assessment cases etc. cannot be handled well by the current interface:
 - Retaining an overview gets increasingly difficult
 - Time consuming to find specific elements
 - The user may loose track

Input of Information

- The elements, activities etc. have many properties which are required for the safety assessment (at least for more in-depth assessments)
- Changing the properties can only be done one-by-one which is extremely time consuming and error prone
- Certain operations (e.g. check for clearance, screening of PIE's, calculation of doses) affect many elements – this cannot be represented easily

Links

- An extremely important input as well as output of safety assessments describes the links between different elements (e.g. links between safety elements, links between safety elements and assessment cases ...)
- These links cannot be represented in an overview fashion in the current user interface
- As a result, it becomes tedious to administer these links and difficult to make use of the full potential of the software in this regard

Suggested Improvements (1)

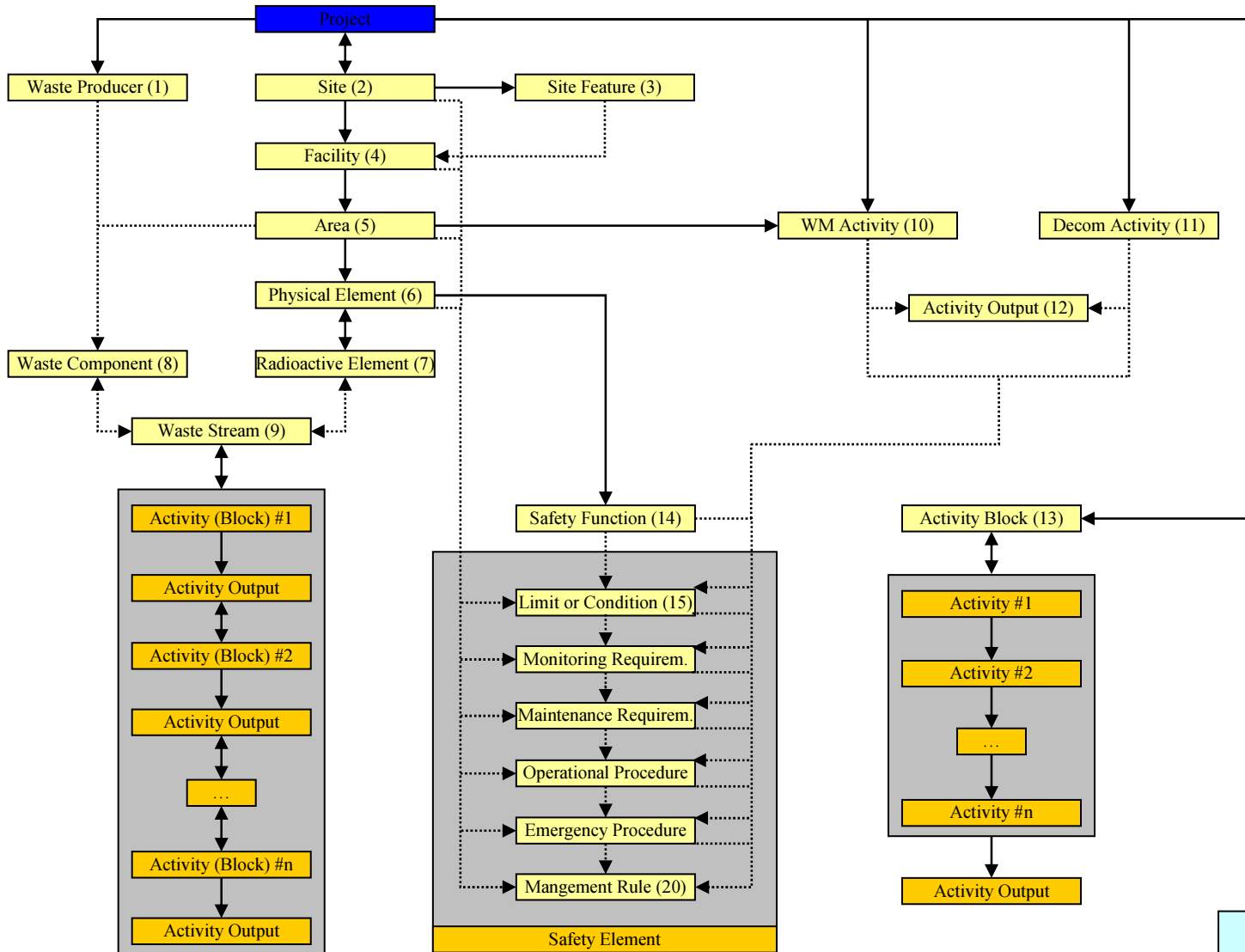
- Everything (facilities/areas/elements, activities, streams, SA, scenarios ...) is seen as objects within an object hierarchy
- The objects have properties (pre-defined and user-defined) and can be subject to actions like copying, PIE screening, calculations ...
- Objects can be linked to other objects (to the extent that this makes sense)
- Objects and their links can be represented in some kind of matrix structure in different views

Suggested Improvements (2)

- Particular features to facilitate the use of the interface:
 - Visual representation (to the extent possible)
 - Common look-and-feel in all areas
 - Possibility to manipulate (delete, copy, paste, change properties) of several selected objects at once
 - Use of an approach which can be extended (further improvements of the usability and also application to other areas)

SAFRAN Objects

– Facilities, Activities, Waste Streams –



SAFRAN Objects – Safety Assessment –

