PLEIADES

Smarter Plant Decommissioning

User stories presentations and demos: BCOT Use case US#3

Final Workshop Presentation

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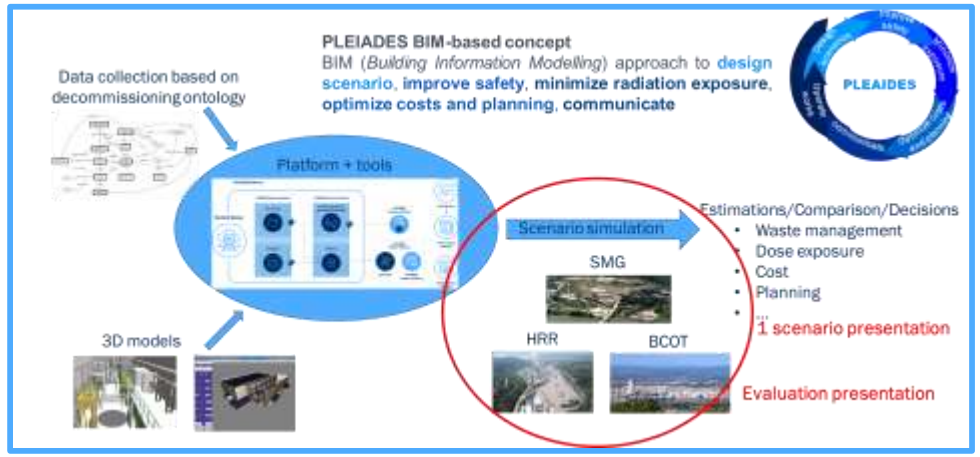
Summary



1 scenario presentation

1. Introduction
2. BCOT use case
3. User story applied on BCOT use case
4. Conclusion

1. Introduction

Implementation of PLEIADES platform on real use cases

- PLEIADES platform test and validation
- Highlight the contribution of the PLEIADES ecosystem
- Digital continuity between each software on realistic D&D use cases

Test and validation based on:

- 3 Use cases
- 6 User stories
- Use of PLEIADES Module software

2. BCOT Use Case

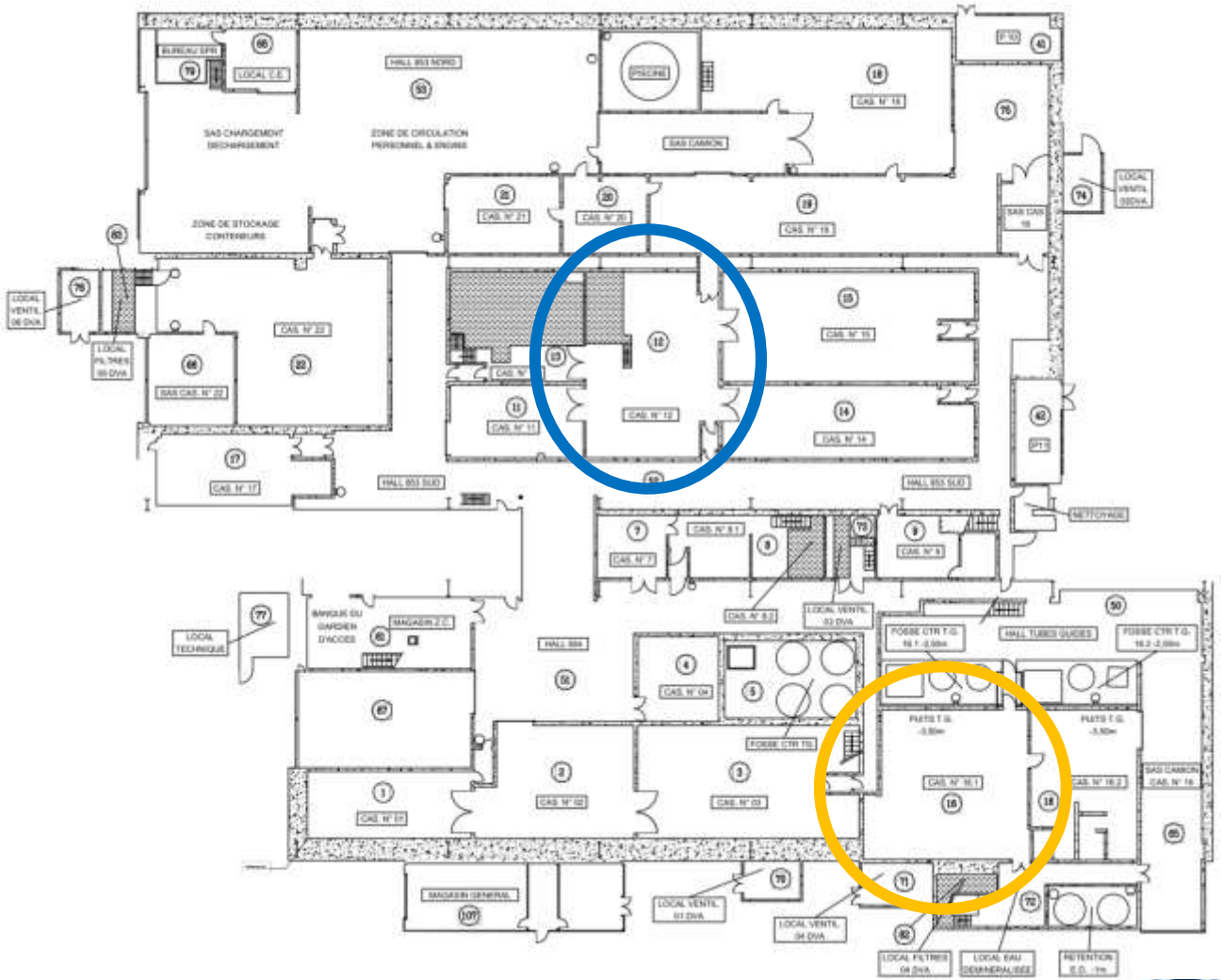
BCOT: “Base Chaude Opérationnelle du Tricastin” of EDF

- French nuclear facility located in Tricastin nuclear site
- Dedicated building in maintenance of contaminated tools and equipment, and as a storage facility
- Permanently closed in 2017. All waste removed from the facility and equipment in the different rooms are being dismantled

3. User story applied on BCOT use case

User story objectives:

- Simulation of the civil engineering remediation of a nuclear facility applied to rooms: casemate 12 and casemate 16.1
- Simulated operations: *airlock installation, walls remediation, scaffold set up, ceiling remediation, scaffold dismantling, floor remediation, airlock dismantling and end-of-job radiological mapping*
- Results in term of: time, cost, worker dose and waste generated though scenario simulations
- Comparison: 100% contact scenario versus remote scenario (involving a robot use)



3. User story applied on BCOT use case

Methodology

- Input data collection and integration in the PLEIADES database
- Software module configuration (Data collection from the PLEIADES platform and software set-up)
- Scenario simulations
- Results provided in terms of scenarios feasibility, Waste estimation, Radiation Exposure estimation and safety assessment and Cost and duration estimation

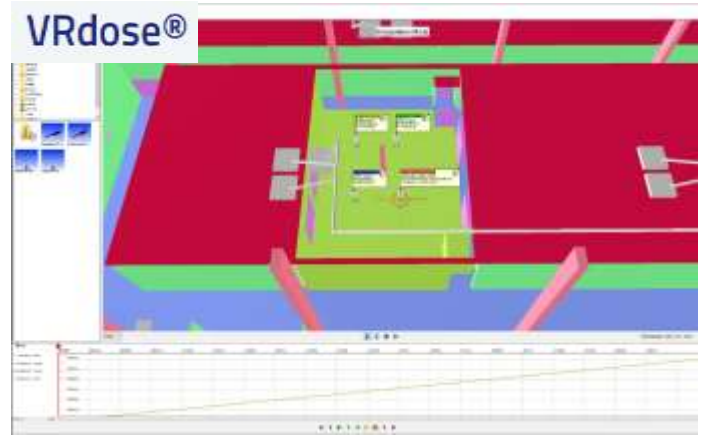
Use of PLEIADES platform with connected software tools:

- RiskBIM, VRdose (IFE)
- iDROP (CEA)
- AquilaCosting (WAI)
- DEMplus® *for nuclear* (Cyclife DS)

3. User story applied on BCOT use case

- **RiskBIM**
  - Risk analysis
  - Description of risk in terms of type, severity, probability and risk level

- **VRdose**
  - Initial scenario created in HVRC VRdose from specific task with the associated work team, etc
  - Resulting dose uptake per worker in the team for the task



3. User story applied on BCOT use case

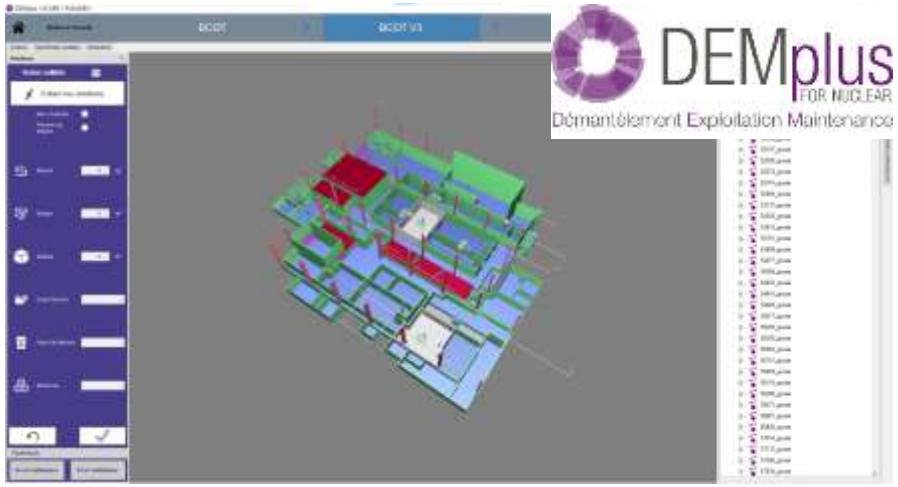
- **iDROP**
  - Test robot accessibility in a zone
  - Introduction of the robot 3D model supplied for BCOT into "Casemate 12“
  - Interactive simulation: simulation into an immersive environment, with manual control of the robot using iDROP

- **AquilaCosting**
  - Cost estimation for remediation activities of rooms “Casemate 12” and “Casemate 16.1” of the BCOT facility
  - Considering: labour costs, investments, expenses and contingency
  - Use data extracted from the BCOT 3D model and stored in the PLEIADES database

AquilaCosting

3. User story applied on BCOT use case

- **DEMplus®** ***for nuclear***
  - Scenario simulation and comparison
  - Results in terms of cost, duration, total waste, collective dose and atmospheric contamination
  - Overall results Manual VS Automated scenario



4. Conclusion

BCOT scenario simulation results

- Scenario comparison
  - Remote scenario is 3 times more expensive and longer than contact scenario
  - Collective dose is reduced only of 2% with remote scenario
- Test of scenario feasibility

Scenario simulations performed on 6 User stories applied on 3 use cases with several software tools

- **Inter-connection PLEIADES platform / software tools allowing the wide data exchange**
- **Test and validation**
  - Scenario feasibility
  - Results analysis in terms of waste estimation, dose, cost and duration
  - Results comparison between different software module used (for example dose or cost for 1 user story)
  - Sensitivity analysis
  - Safety assessment

Thank you!

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