

Project Funding and License Agreement

The State Office for Nuclear Safety

20015961

“Integrated Risk Technologies User Group”

EPRI Project ID: 1-108535

This EPRI Project Funding and License Agreement for Non-Members (“Agreement”) is entered into as of the Effective Date between the **Electric Power Research Institute, Inc.**, a non-profit corporation organized under the laws of the District of Columbia (“EPRI”), and **The State Office for Nuclear Safety** (“Funder”). EPRI and Funder agree as follows:

Article 1. Purpose of Agreement

1.01 EPRI is a non-profit corporation engaged in research and development with respect to the production, transmission, distribution and utilization of electric power.

1.02 EPRI is conducting, or intends to conduct, a research project (the “Project”) as more particularly described in the attached Exhibit B.

1.03 Funder is not a member of EPRI, but wishes to participate in funding the Project and receiving certain rights to the results of the Project research. EPRI is willing to accept such funding, and to grant certain research result rights in accordance with the terms of this Agreement.

Article 2. Definitions.

2.01 This Agreement incorporates by this reference the Additional Agreement Terms of the attached Exhibit A and any subsequent amendments as may be entered into by the parties hereunder.

2.02 **Reserved.**

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2.04 **“Deliverables”** means the version of Research Results and other EPRI Materials anticipated to be delivered to Funder as described in Exhibit B.

2.05 **“Derivative Works”** means any form into which EPRI Materials may be recast, transformed or adapted including the modification, revision, condensation, translation, abridgment and/or expansion of EPRI Materials.

2.06 **“Effective Date”** of this Agreement shall be the date of signature of the last of the parties to execute this Agreement.

2.07 **“EPRI Intellectual Property Rights”** means any patent, copyright, trademark, trade secret, know-how, or other intellectual property rights of EPRI.

2.08 **“EPRI Materials”** means all materials provided to Funder from time to time under this Agreement, including without limitation Research Results, Derivative Works, Deliverables, and EPRI Intellectual Property Rights.

2.09 **“License”** means the non-exclusive internal use license granted Funder under Article 7 of this Agreement in consideration for payment of the Project Funding.

2.10 **“Project”** means the research and development activities and/or services described in Exhibit B.

2.11 **“Project Funding”** means the funding to be provided by Funder under Exhibit A.

2.12 **“Project Participation Period”** means the period of time for which Funder is committed to and actually does provide Project Funding

2.13 **“Research Results”** means all inventions, discoveries, data, reports, documentation, and software which is machine or human readable (“Object Code” and “Source Code” respectively), generated, developed, conceived and/or first reduced to practice in the Project.

2.14 **“Territory”** means the geographical areas in which Funder is entitled to exercise its License, as indicated on Exhibit A.

Article 3. Project Funding and EPRI Project Services.

3.01 Project Funding. Funder agrees to pay EPRI the Project Funding as shown on Exhibit A. Except as may be set forth in Exhibit A, Funder’s Project Funding commitments hereunder are due and payable in US dollars, with the initial funding payment due within thirty days following receipt of an invoice from EPRI. Future annual Project Funding commitments, if any, are due no later than January 31st of each succeeding year. The fees payable under this Agreement are net of, and shall not be reduced by, charges, taxes or offsets of any kind or nature imposed by any governmental agency or authority of Funder’s domiciliary country or of any other country other than the United States of America; Funder shall be solely responsible for payment of any such charges, taxes or offsets imposed on EPRI hereunder. If physical items are shipped, Funder shall be responsible for transportation (FOB Shipping Point/Ex Works) and insurance costs.

3.02 EPRI Project Services. EPRI agrees to use reasonable efforts to perform (or cause to be performed by outside contractors) the Project described in Exhibit B and to provide Funder with the Deliverables. Funder understands that the conduct of scientific research is inherently uncertain. Accordingly, EPRI does not guarantee or warrant the outcome of the Project results or the anticipated Deliverables to Funder. EPRI, in its discretion after consultation with all Project participants, may modify the Project, its related results, and the anticipated Deliverables at any time.

Article 4. Funder Rights and Restrictions.

4.01 Funder Rights. Subject to the terms hereof, Funder shall be entitled to participate on Project management teams and receive the Deliverables completed during Funder’s Project Participation Period. Funder agrees that EPRI shall not be obligated to pay Funder any fees based upon royalties received by EPRI for Research Results, or future Derivative Works, regardless of Funder’s monetary participation, including, without limitation, later versions of Research Results or value-added products into which

Research Results are merged by EPRI or any authorized licensees.

4.02 Restrictions on Funder's Rights. Notwithstanding the License granted in Article 7 herein below, Funder shall not, without EPRI's prior written consent, directly or indirectly: (i) except as provided in Article 5.02, disclose EPRI Materials to any third party, (ii) prepare or have prepared Derivative Works, (iii) copy EPRI Materials, (iv) reverse engineer or use any other method to obtain the Source Code version of any EPRI Materials, (v) install or use any Source Code which may be provided hereunder on any computer system other than as expressly permitted in Exhibit A, (vi) use any EPRI Materials to create materials the same as or substantially similar to EPRI Materials, or (vii) remove, alter or otherwise cover any EPRI's proprietary rights notices from the EPRI Materials.

4.03 Title to EPRI Materials. Except for rights expressly granted in the License, EPRI shall retain all right, title and interest in EPRI Materials and EPRI Intellectual Property Rights, and Funder hereby waives any ownership right therein. Except for the limited License granted to Funder pursuant to this Agreement, EPRI reserves all rights and remedies under copyright, trademark, patent, service mark, trade secret, unfair competition and other applicable laws.

Article 5. Confidentiality.

5.01 Confidential Information. Each party may provide to one another information that is confidential in nature ("Confidential Information"). The parties agree that all EPRI Materials and EPRI Intellectual Property Rights that are not publicly known are Confidential Information. All information which is considered Confidential Information by Funder must, prior to its disclosure, (a) be labeled as "Confidential" or otherwise clearly identified as confidential, or (b) if disclosed orally, be identified as confidential when disclosed, and be reduced to writing, marked as "Confidential" and delivered to EPRI within twenty days of such disclosure. Confidential Information shall not include information which: (i) is or becomes a part of the public domain through no act or omission of the receiving party; (ii) was in the receiving party's lawful possession prior to the disclosure and had not been obtained by the receiving party either directly or indirectly from the disclosing party; (iii) is lawfully disclosed to the receiving party by a third party without restriction on disclosure; (iv) is independently developed by the receiving party; or (v) is disclosed by operation of law.

5.02 Protection of Confidential Information. EPRI agrees to hold Funder's Confidential Information in confidence for five years following disclosure. Funder agrees to hold the EPRI Materials in confidence in perpetuity. Disclosure of the EPRI Materials shall be strictly limited to Funder's employees, consultants, contractors, and governmental agencies for regulatory compliance purposes, on a need to know basis only and subject to a written agreement which protects the EPRI Materials at least as well as this Agreement. Funder shall provide EPRI with an English copy of each nondisclosure agreement related hereto upon EPRI's request. Funder grants EPRI an unrestricted license to publish a summary report regarding services, provided that it does not contain Confidential Information of Funder.

Article 6. Limitation of Warranties; Indemnity Obligations.

6.01 Limited Warranty. EPRI warrants only that it has the right to grant the License and other rights as set forth herein. EPRI does not warrant that the EPRI Materials do not infringe third party intellectual property rights and shall have no obligation to

indemnify Funder for infringement claims or expenses incurred therewith.

6.02 DISCLAIMER OF OTHER WARRANTIES. EXCEPT FOR THE FOREGOING EXPRESS LIMITED WARRANTIES, FUNDER ACCEPTS THE EPRI MATERIALS "AS IS," WITH NO OTHER WARRANTIES OR CONDITIONS OF ANY KIND, EXPRESS OR IMPLIED INCLUDING, WITHOUT LIMITATION, WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. EPRI'S LIABILITY TO FUNDER OR ANY THIRD PARTY FOR A CLAIM OF ANY KIND RELATED TO THIS AGREEMENT, ANY EPRI MATERIALS OR ANY EPRI SERVICE, WHETHER FOR BREACH OF CONTRACT OR WARRANTY, STRICT LIABILITY, NEGLIGENCE OR OTHERWISE, SHALL NOT EXCEED THE AGGREGATE OF PROJECT FUNDING PAID TO EPRI BY FUNDER FOR THE PROJECT. IN NO EVENT WILL EPRI, NOR ANY SUBSIDIARY, SUPPLIER, OR SUBCONTRACTOR OF EPRI BE LIABLE FOR INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING, WITHOUT LIMITATION, LOST REVENUES OR PROFITS, LOST DATA, WORK STOPPAGE, COMPUTER FAILURE OR MALFUNCTION), EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. NO ACTION, REGARDLESS OF FORM, ARISING OUT OF THE TRANSACTIONS UNDER THIS AGREEMENT MAY BE BROUGHT BY FUNDER MORE THAN ONE YEAR AFTER THE EVENTS WHICH GAVE RISE TO THE CAUSE OF ACTION OCCURRED. FUNDER'S EXCLUSIVE REMEDY FOR BREACH OF ANY WARRANTY BY EPRI SHALL BE TERMINATION OF THIS AGREEMENT AS SET FORTH HEREIN.

6.03 Funder Representations, Warranties and Indemnity.

(a) Funder represents and warrants that before it provides any third party proprietary or confidential information to EPRI for use in connection with any research activity, it will secure all necessary rights and licenses on behalf of EPRI.

(b) Funder agrees to indemnify, defend and hold EPRI, EPRI's subsidiaries, and EPRI's suppliers of every type and tier harmless from and against all damages, costs, fees, claims, loss, expense (including reasonable attorney fees) or judgment arising from use of EPRI Materials by Funder and/or breach of Funder's obligations under this Agreement.

Article 7. License; Restrictions on Use.

7.01 Conditional Grant of Internal Use License. Provided that Funder remains in full compliance with this Agreement (including but not limited to its funding obligations) and subject to the terms of this Agreement, EPRI grants Funder an internal use, personal, nonexclusive, nontransferable license to use the EPRI Materials and EPRI Intellectual Property Rights in the Territory solely for the uses described in this Agreement (the "License"). No sale, lease, loan, or transfer of the EPRI Materials is granted herein. The use of EPRI Materials licensed herein is limited solely to Funder's own internal use and does not extend to any subsidiary, affiliate or other third party, unless otherwise provided for in Exhibit A. Funder shall have no rights to sublicense, sell, or otherwise commercialize the EPRI Materials or EPRI Intellectual Property Rights.

7.02 No License Support by EPRI. EPRI shall have no obligation to provide support or maintenance to Funder in connection with the License, unless otherwise provided for in Exhibit A.

7.03 No Limitation on EPRI's Rights. EPRI's performance of the Project may be based upon inventions, trade secrets and other intellectual property rights, and derivations thereof, in certain concepts, ideas, training materials, industry practices and techniques, owned or licensed by EPRI ("EPRI Know-How").

Funder acknowledges that EPRI Know-How may be enhanced in EPRI's performance of the Project, and agrees that EPRI's rights in EPRI Know-How and EPRI's ability to use EPRI Know-How to provide similar services or licenses to third parties or conduct research activities shall not be limited by this Agreement or the License granted herein.

7.04 Term of License. The term of the License shall be from the Effective Date and shall continue for a period of ten (10) years, or as otherwise provided for in Exhibit A, unless this Agreement is terminated by EPRI for cause or for uncured breach as provided in Section 8.01 below. The right to receive any further EPRI Materials, including Deliverables, shall automatically terminate at the conclusion of the Project Participation Period, and upon such termination, Funder shall have no further right to receive or use any of the EPRI Materials not previously licensed and actually delivered to Funder, or any subsequent Derivative Work of an EPRI Material previously licensed and delivered to Funder hereunder.

Article 8. Termination of Agreement

8.01 Termination for Cause. EPRI may, on notice and with immediate effect, cancel orders, stop shipment of EPRI Materials and/or terminate this Agreement, including termination of the License itself, if: (i) Funder breaches the funding, confidentiality, proprietary rights or license provisions hereof, (ii) insolvency or bankruptcy proceedings are voluntarily or involuntarily instituted against Funder (Funder shall give immediate notice to EPRI of its knowledge of such proceedings), (iii) Funder attempts to assign this Agreement without EPRI's written approval, or (iv) Funder substantially discontinues its business. In addition, EPRI may terminate this Agreement, including termination of the License itself, if Funder breaches any other term of this Agreement and Funder fails to cure the breach within sixty days after being notified by EPRI of such breach. Funder may terminate this Agreement, including the License itself, if EPRI breaches any other term of this Agreement and EPRI fails to cure the breach within sixty days after being notified by Funder of such breach.

8.02 Effect of Termination. If this Agreement is terminated by EPRI for cause or for uncured breach as described in Section 8.01 above, the License shall immediately terminate, Funder shall cease use of the EPRI Materials, and within thirty (30) days of termination, Funder shall return all EPRI Materials and any reproductions thereof, and uninstall or otherwise permanently delete all EPRI Materials from Funder's computer systems, and provide EPRI with written certification of such actions. Funder shall have no right to receive any compensation for any goodwill relating to this Agreement, the EPRI Materials, any other amounts from EPRI, or ownership or other right whatsoever in or to the EPRI Materials.

8.03 Termination for Convenience. Either EPRI or Funder may terminate this Agreement or participation in the Project on sixty (60) days written notice to the other party. Prior to termination by Funder, Funder must pay any Project Funding due to EPRI as of the effective date of termination. Termination for convenience shall not affect any rights previously granted under the License, but Funder shall not be entitled to receive or license to use Deliverables completed after the effective date of Funder's termination. If EPRI cancels a Project because of deemed insufficient funding to achieve Project completion, EPRI shall refund Funder's pro-rata share of total Project funding remaining on the effective date of Project cancellation, if any, in accordance with existing EPRI policies.

8.04 Survival of Certain Obligations Upon Termination. Any termination shall be without prejudice to the rights of the parties

hereunder. Regardless of the reason for termination, neither party shall be relieved of its obligations of confidentiality with respect to any Confidential Information. At termination, all outstanding obligations to pay fees due EPRI will become immediately due and payable.

Article 9. Miscellaneous.

9.01 Integration; Interpretation. The English version of this Agreement constitutes the complete agreement between the parties, supersedes all previous and contemporaneous agreements, written or oral, concerning the subject matter hereof, and may only be amended in a duly executed writing. Waiver by a party of any breach shall only be in writing, and shall not constitute a waiver of any other or subsequent breach. This Agreement and any cause of action available to EPRI shall survive termination hereof. If a provision of this Agreement is held to be invalid or unenforceable, the remaining provisions of this Agreement will remain in full force.

9.02 Notices. Notices shall be sent by registered or certified mail, return receipt requested, postage paid, or by facsimile transmission or overnight courier service, to the recipient's address or fax number as set forth in Exhibit A, or such other address or fax number as a party may subsequently furnish to the other party. A copy of any legal notice from Funder shall be sent to the attention of EPRI's IP Department. Any faxed notices shall be duplicated by courier delivery to insure receipt. Notices shall be deemed effective as of received fax transmission, or the actual delivery date by mail or courier.

9.03 Dispute Resolution.

(a) Mediation. If a dispute arises out of or relating to this Agreement, or any breach thereof, and if such dispute cannot be settled through direct negotiation between the parties, the parties shall submit the dispute to mediation with a mediator to be mutually agreed upon by the parties. The mediation may be initiated by the written request of either party and sent to the other party, and shall be concluded within six (6) months of receipt of such notice, unless otherwise agreed by the parties.

(b) Arbitration. In the event of the failure of any such mediation as provided for under Subarticle 9.03(a) above, the parties shall then settle the dispute by binding arbitration to be conducted in the city and county of San Francisco, California, in accordance with the rules then in effect of the American Arbitration Association (or if the Funder is located in a non-U.S. territory, the International Chamber of Commerce), by one (1) arbitrator appointed in accordance with such rules. The award rendered by the arbitrator shall be final and binding, and judgment may be entered upon it in any court having jurisdiction thereof. The proceedings shall be conducted in English. The parties consent to the jurisdiction of the state and federal courts located in the city and county of San Francisco, California, for matters related to the arbitration or the seeking of any injunctive relief as described below. Any arbitration award shall be enforceable in any court of competent jurisdiction and shall be enforceable under the terms of the United Nations Convention on the Recognition and Enforceability of Foreign Arbitration Awards. Any cash award shall be payable in U.S. Dollars through a bank in the United States. Notwithstanding the foregoing, the parties may apply to any court of competent jurisdiction for a temporary restraining order, preliminary injunction, or other interim or conservatory relief, as necessary, without breach of this arbitration agreement and without any abridgment of the powers of the arbitrator.

(c) Expenses. Each party shall bear its own expense (including attorneys' fees) of such mediation or arbitration proceeding, unless otherwise agreed by the parties.

(d) Governing Law. All matters arising out of or relating to this Agreement shall be governed by the laws of the State of California, USA, without reference to conflict of laws principles.

9.04 Compliance. Funder and EPRI shall comply with all laws, rules and regulations including, without limitation, all U.S. and foreign export laws and regulations. The parties agree that access to and use of EPRI Materials is hereby granted with the specific understanding and requirement that responsibility for ensuring compliance with all applicable U.S. and foreign export laws and regulations are being undertaken by Funder. This includes an obligation to ensure that any individual receiving access hereunder who is not a U.S. citizen or permanent U.S. resident is permitted access under applicable U.S. and foreign export laws and regulations. The parties further agree that access to and use of EPRI Materials by Funder's employees should be limited to a need to know basis, and subject to an executed confidentiality agreement between Funder and said employee. Although EPRI may make an informal assessment of the applicable U.S. export classification for specific EPRI Materials, Funder acknowledges that this assessment is solely for informational purposes and not for reliance purposes. Funder acknowledges that it is still the obligation of Funder to make its own assessment of the applicable U.S. export classification and ensure compliance accordingly. Funder further understands and acknowledges its obligations to make a prompt report to EPRI and the appropriate authorities regarding any access to or use of EPRI Materials hereunder that may be in violation of applicable U.S. and foreign export laws or regulations.

9.05 Government Rights. If Funder is an agency of the United States Government, EPRI Materials are provided hereunder with Restricted Rights. Use, duplication, or disclosure by the United States Government is subject to restrictions as set forth in

subparagraph (g)(3)(i), excluding section (g)(3)(i)(b)(5), of the Rights in Technical Data and Computer Software clause at FAR 52.227-14, Alternate III, as amended

9.06 Independent Contractors; No Agency. EPRI and Funder are independent contractors and shall so represent themselves in all regards. Neither party shall represent itself as an agent of the other party, or attempt to bid the other in any way.

9.07 Successors and Assigns. Funder shall not assign its rights and/or obligations under this Agreement without EPRI's prior written consent which consent shall not be unreasonably withheld. The terms of this Agreement shall bind and inure to the benefit of permitted assigns.

9.08 Electronic Transactions: The Parties acknowledge that EPRI may transmit and receive documents electronically in substitution for conventional paper-based documents. This Agreement may be executed in two (2) or more counterparts, and the Agreement may be manually-executed or executed using an electronic or digital signature, and manually-executed counterparts may be delivered in faxed or scanned electronic form, each of which (whether originally executed or faxed or scanned electronically) will be deemed an original, and all of which together will constitute one and the same instrument. The Parties further acknowledge that such transactions are not rendered legally invalid or unenforceable solely by virtue of such transmission or reception and that the Parties may treat documents emailed or faxed as original documents. A copy of this Agreement bearing both Parties' signatures shall have the same force and effect as an original agreement with inked original signatures. Once signed by both Parties, any reproduction of this Agreement made by reliable means (e.g., photocopy, scan, facsimile) is considered an original.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their duly authorized representatives.

<p>Approval / The State Office for Nuclear Safety ("Funder") Senovážné náměstí 1585/9 Prague, 1-New Town 110 00, Czech Republic</p> <p>Signature: _____ Name: <u>Ing. Dana Drábová, Ph.D.</u> Title: <u>Chairperson</u> Date: _____</p>	<p>Approval / Electric Power Research Institute, Inc. ("EPRI") 3420 Hillview Avenue, Palo Alto, CA 94303</p> <p>Signature: _____ Name: _____ Title: <u>Sr. Contract Negotiator</u> Date: _____</p>
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Please return this Agreement to:

EPRI
 Attn: Carla Castanos
 201 E John Carpenter Freeway, Ste 800
 Irving, TX 75062

E-mail: ccastanos@epri.com
 Tel/Fax: 972-556-6560

Exhibit A

Additional Agreement Terms

1. **Project Title, Agreement, Funder and Transaction Numbers:** This Project Funding and License Agreement with The State Office for Nuclear Safety, EPRI Funder No. 10007546, applies to the EPRI Project ID entitled: “*Integrated Risk Technologies User Group*”. The Parties will reference EPRI Contract ID 20015961 in all correspondence. Any Purchase Order issued by Funder pursuant to this Agreement is solely for Funder’s internal accounting requirements and, as such, the terms and conditions of such Purchase Order are superseded by the terms and conditions set forth in this Agreement.

2. **Contact Information:**

Contact	Name	Tel/Fax	Email
Funder Contracts:	Petr Adamec	+420-221-624-278	petr.adamec@subj.cz
Funder Project Manager:	Petr Adamec	+420-221-624-278	petr.adamec@subj.cz
EPRI Project Manager:	Francis Bolger	+1-704-595-2403	fbolger@epri.com
EPRI Contracts Negotiator:	Carla Castanos	+1-972-556-6560	ccastanos@epri.com
EPRI Sector Technical Advisor:	Vaclav Vyskocil	+420-603-576-579	vvyskoci@epri.com

3. **Project Funding:**

FUNDING TYPE ↓ / YEAR →	-2023-	-2024-	-2025-	TOTAL FUNDS
Cofunding	\$11,750	\$11,750	\$11,750	\$35,250
Total Funding	\$11,750	\$11,750	\$11,750	\$35,250

4. **Statement of Work, Tasks and Deliverables:** See Exhibit B, which is incorporated herein by reference.

5. **Territory:** Funder is authorized to use the EPRI materials in Czech Republic.

6. **Invoicing:** Current year payment enclosed (This form is the invoice for the current year).

Address invoices to: The State Office for Nuclear Safety
 Attn: Petr Adamec
Senovážné náměstí 1585/9
Prague, 1-New Town 110 00, Czech Republic
 Tel/Fax: +420-221-624-278
 Email: podatelna@subj.cz

Funder requires Purchase Order No. **03/220044** to appear on invoice(s).

Exhibit B

Funding Statement of Work

The State Office for Nuclear Safety

20015961

“Integrated Risk Technologies User Group”

EPRI Project ID: 1-108535

Key Research Question

Risk assessment technology has become an essential element of the decision-making process for commercial nuclear power plants because of its ability to provide a unique perspective on nuclear safety.

Risk practitioners rely on tools such as those provided by EPRI's Integrated Risk Technologies Project to achieve substantial efficiencies when performing risk analyses for probabilistic risk assessment (PRA) applications. Maintaining and upgrading a PRA, however, is resource intensive. Tools and technologies included in the Integrated Risk Technologies suite enable end users to develop, maintain, and update PRAs efficiently and effectively. Feedback and active participation from users can help define needed improvements, enhance training effectiveness, and increase industry application.

Objective

Funders have access to the suite of risk software tools for creating and editing fault trees and event trees (CAFTA), scheduling and risk mitigation tools (Phoenix Risk Monitor), and software for specialized analyses (for example, PRAQuant for accident sequence analysis; UNCERT for uncertainty analysis; SYSIMP for system and group importance calculation; and FRANX for fire, seismic, internal flooding, and high winds PRA). Advanced calculators have been developed to quantify the PRA models, such as DPC (direct probability calculator) and ACUBE (advanced cutset quantification). Advanced quantification programs are provided to support the evaluation process in each code.

The Phoenix Risk Monitor tool is fully enterprise-based and offers the following capabilities:

- Merges features from several existing risk monitors
- Provides defense-in-depth support
- Addresses potential fire impacts for online risk management
- Supports large event tree quantification

The Phoenix Architect contains the latest versions of CAFTA, PRAQuant, FRANX, SysImp, UNCERT, ACUBE, and DPC.

The Integrated Risk Technologies project will continue to develop new risk tools and capabilities to support the needs of the industry.

Approach

The IRTUG will build upon the existing EPRI software, taking advantage of the broad utility application experience to develop the next generation of risk tools. The IRTUG project provides user support and maintenance for a suite of risk analysis tools including:

- Phoenix Architect, which combines CAFTA, PRAQuant, UNCERT, FRANX, SysImp, ACUBE, and DPC into a single software installation
 - CAFTA: Fault tree and event tree analysis
 - FRANX: Scenario-dependent (e.g., fire, seismic, and flooding) PRA quantification
 - PRAQUANT: Accident sequence analysis
 - UNCERT: Uncertainty analysis
 - SysImp: System importance calculator
 - ACUBE: Advanced Cutset Upper Bound Estimator
 - DPC: Direct Probability Calculator
- Phoenix Risk Monitor (PRM): Online and shutdown risk monitoring tool
- PRA DocAssist: PRA documentation assistant
- ePSA - Standard Self Assessments (SSA): PRA standard tracking tool

The vision for Phoenix Architect is to combine most of the PRA software tools into a single platform so that users are not required to switch between tools to perform different functions with the PRA model.

User support provided to IRT members includes updated versions of the software, technical troubleshooting, user education and training, webcasts, error reporting, and support in justifying the use and applicability of the software. Guidelines are produced to aid the engineer, and regular training sessions are conducted. Meetings are held several times per year to promote training on the use of the software and provide a forum for sharing results and methods among peers.

The major activities planned for this project in 2023 include:

- Release of a beta for Phoenix Risk Monitor 3.1
- Release of Phoenix Architect 2.0a
- Release of Tesseract 1.0
- One international and several domestic training workshops

Research Value

The suite of codes provided by the Integrated Risk Technologies project are used by most U.S. plants, by many international nuclear units, and is also used in other industries. The project offers a cost-effective method for providing input into and prioritizing needed enhancements to the risk tools. It also provides a useful forum in which experiences from the user community can be shared.

Ready access to integrated software codes and documentation can potentially reduce the resource burden associated with implementing risk-informed applications (for example, Significance Determination Process [SDP], Maintenance Rule [(a)(4)], Mitigating Systems Performance Index [MSPI], and others) and peer review, as well as enhance the ability to demonstrate compliance with PRA standards.

Anticipated Deliverables

The planned deliverable for this project in 2023 will be beta test and final (production) release versions of the IRT software codes. Code versions are made available to members of the IRT Users Group on a periodic

basis after completing V&V testing and EPRI SQA processes.

Related Research

Past products produced by this long-standing RSM project are related to the current research in this project.

Other EPRI projects with a strong relationship to this project include:

- 1-063727 - FTREX Users Group
- 1-049250 - HRA Users Group

Project Lead: John Weglian; (704) 595-2763; jweglian@epri.com