Promotion guidelines for XSD scientific and technical staff

These guidelines complement Argonne's Research and Development Individual Contributor chart

Promotion candidates in RDx level would already be meeting most of the criteria in RDx+1 level

	RD1	RD2	RD3	RD4	RD5	RD6
Scope/Knowledge **Minimum Education & Experience requirements**	**Demonstrated knowledge and/or experience in technical or scientific field** Associate degree + 2 years, or Bachelor's and 0 years or Master's and 0 years.	**Demonstrated expertise in technical or science field with track record of contributions to technical or scientific programs** Bachelor's and 5+ years, or Master's and 3+ years, or Doctorate and 0 years.	**Demonstrated expertise in synchrotron radiation properties, interaction of x-rays with matter, beamline optics and instrumentation, with emphasis on one or more fields of x-ray science, or** **Demonstrated expertise in the design of beamline and ancillary instrumentation including end-stations, optics, detectors, software and mechanical components.** Bachelor's and 8+ years, or Master's and 5+ years, or Doctorate and 4+ years.	**Established contributor in technical or scientific field that achieved national recognition.** **Regularly sought-after within and outside APS by staff, users, and other scientists and engineers for advice as subject matter expert.** Bachelor's and 12+ years, or Master's and 7+ years, or Doctorate and 6+ years.	**Nationally recognized leader who may have also attained international recognition in technical or scientific field of x-ray science/instrumentation** Bachelor's and 15+ years, or Master's and 12+ years, or Doctorate and 10+ years.	**Internationally recognized leader in technical or scientific field of x-ray science/instrumentation** **Regularly sought after by external organizations and funding agencies for technical and/or scientific advice and for leadership roles in review panels and strategic planning** Bachelor's and 20+ years, or Master's and 15+ years, or Doctorate and 15+ years.
Problem Complexity	**Assists with implementation of technical solutions** **Executes day to day tasks in support of operations** *e.g. Assists BL scientist in deployment of instrument* *e.g. Repair of electrical and mechanical equipment* *e.g. Provides technical drawings for holders/adapters*	**Leverages advice and guidance from senior staff to implement technical solutions and upgrades that enhance instrument and beamline capabilities** **Develops plans and demonstrates concepts to lay ground for future developments that push state of the art** *e.g. Installation and/or commissioning of complex instrumentation/components* *e.g. Maintenance and repairs of complex instrumentation* *e.g. Contributes software developments or engineering designs that augment capabilities*	**Conceives or implements technical solutions, upgrades, or instrumentation that expand beamline technical capabilities and its user science programs** *e.g. Implements at APS an x-ray technique or instrumentation pioneered by another light source* *e.g. Conceives or implements software, detectors, optical, mechanical components that open up new opportunities for APS user and research programs*	**Conceives or plays a major role in the development and succesful implementation of instrumentation or techniques that push the state of the art for a given technical or scientific field in x-ray science** *e.g. Develops and implements novel x-ray techniques or novel sample environments not available elsewhere.* *e.g. Develops and implements new: software, x-ray optics, detectors, hardware, mechanical components that enable pushing the state of the art of an x-ray technique*	**Conceives new beamline concepts and designs** **Responsible for breakthroughs and providing solutions to long standing problems in x-ray science/instrumentation** *e.g. Conceives and implements a new x-ray measurement or computational technique that opens up new science opportunities* *e.g. Conceives and implements new instrumentation that enables a new scientific technique*	**Leads or major contributor to large-scale projects of high priority to the laboratory and DOE in x-ray science/instrumentation with world-leading results**
Level of Independence	**Mostly works under supervision** **Responsible for completion of day to day tasks in timely manner** *e.g. Receives instructions and executes task, oftentimes under supervision* *e.g. Maintains inventories of consumables*	**Works independently on technical tasks; under supervision for scientific plans and projects.** **Ability to lead and bring to completion projects of operational significance to group/division** *e.g. develops plans for, and leads commissioning of new instrumentation* *e.g. develops sowftare or engineering designs with minimal guidance*	**Implements technical upgrades and development projects with minimal input from senior staff or supervisor.** **Shows initiative and takes ownership of beamline or laboratory user programs, engineering, controls, or software projects** **Plans own and collaborative research** **Mentors students and postdocs** *e.g. Conceives and implements software or engineering designs impacting multiple beamlines*	**Develops new concepts and implements new instrumentation and techniques.** **Provides technical or scientific leadership to small teams in projects of significance to the group and/or division** **Develops long-term plans for technique and beamline developments** **Leads proposals seeking internal funding; role in collaborative proposals for external funding** **Mentors students and postdocs** *e.g. leads post-docs and/or junior staff in projects impacting multiple beamlines*	**Provides technical or scientific leadership to large teams in projects of significance to division** **Mentors junior staff** **Plays major role in proposals seeking external funding** **Leads strategic planning for scientific/technical area** *e.g. builds totally new user communities* *e.g. leads scientists and engineers in projects impacting multiple beamlines*	**Provides technical or scientific leadership to large teams in projects of significance to division and laboratory** **Mentors junior staff and new generation of leaders** **Advisor to laboratory leaders on strategic directions and new opportunities** *e.g. Provides technical or scientific leadership in projects impacting multiple light sources*
Impact	**Facilitates efficient operations by timely completion of daily tasks** **Assists with testing and deployment of new technical capabilities**	**Enhances reliability and augments capabilities of user and research programs** **Lays ground for future developments that push the state of the art** *e.g. Optimizes end station for high-throughput data collection* *e.g. Software development enables more efficient data acquisition/analysis* *e.g. User manuals/videos for user friendly operations*	**Developments push state of the art at one or more beamlines** **Developments lead to recognition of beamline user and research programs as strongly competitive with equivalent programs nationally and internationally.** *e.g. Deployment of new sample environments enabling new classes of experiments* *e.g. Establishes new technique/program that positions the APS among the top players in the field*	**Developments lead to recognition of beamline user and research programs as world class or leading internationally** **Ideas and developments create opportunities to attract internal and external funding to division** *e.g. Development leads to RD100 award, patent* *e.g. Developments are adopted at other light sources* *e.g. Establishes the APS among the best facilities to carry out research using a specific technique*	**Developments lead to international recognition and contribute to APS status as world leader in x-ray science/instrumentation** **Concepts or developments form core basis of succesful bids to attract external funding** *e.g. Development anchors funding for new beamline* *e.g. New concept adopted by other light sources*	**Mentors next generation of leaders** **Guides division and laboratory strategies impacting ability to compete for large scale funding opportunities** **Helps advance career opportunities and research programs of junior staff**
Interaction	**Interacts primarily with scientific and technical staff in a support role** *e.g. supports beamline scientist during installation and testing of new detector* *e.g. supports senior engineer with deployment of vibration testing equipment*	**Interacts with staff within and across PSC groups to enhance reliability and capabilities of user and research programs** **Interacts with users and collaborators in the design, execution and interpretation of experiments** **Interacts with vendors and senior technical staff in design optimization for beamline components** *e.g. coordinates effort across technical/support groups to implement new capabilly requested by users* *e.g. leverages advise from senior engineer in optimization of mechanical component*	**Interacts with technical and scientific staff at APS and other light sources to advance state of the art of user and R&D programs, engineering designs, software, controls.** **Plays primary role in guiding user experiment planning and execution** **Contributes to funding calls** **Serves in proposal review panels, PSC committees. Engages in educational outreach. May play leading role in these activities.** *e.g . guides effort across technical groups to address future needs of the user community and contributes to solutions that meet these needs*	**Sought-after by users and collaborators as leader in technical/science field** **Leads small technical or scientific teams in projects of significance to the group/division** **Interacts with staff and managers across ANL divisions in projects of significance to the division** **Interacts with division management in shaping strategies and priorities to position division to lead in technical or scientific field** **Leading role in PSC committees, x-ray schools, tutorials**	**Provides technical or scientific leadership to large teams in projects of significance to the division** **Interacts across ANL divisions in projects of significance to the laboratory and DOE** **Participates in panels and reviews sponsored by major funding agencies (DOE, NSF, ...)** **Plays major role in funding calls** **Mentors junior staff**	**Provides technical or scientific leadesrship to large teams in projects of significance to the laboratory** **Mentors next generation of leaders** **Advisor to laboratory leaders on strategic directions and new technical and scientific opportunities** *e.g. Plays major role in major laboratory initiatives*
Typical success metrics: Scientific contributors	**Impact on operations as reflected in deliverables and evaluations by supported scientific staff and users** **Enables smooth operations by maintaining and reparing critical vacuum and electrical components**	**Impact on user program reflected in end of experiment forms and user publications** **Deployment of reliable user friendly instrumentation, software, including comprehensive documentation.** **Impact on research programs reflected in technical and/or scientific publications and presentations** **Community service (e.g. committees) and educational outreach (e.g. schools)**	**Impact on user program reflected in user publications** **Impact on research programs reflected in technical and/or scientific publications which may include lead or corresponding author role** **Recognition of research programs or technical developments reflected in invited technical and/or scientific presentations at national conferences** **Contributor to funded proposals (LDRD, SBIR, EERE, etc)** **Community service (peer review, commitees), educational outreach, workshop organizer.**	**Impact on user programs reflected in user publications** **Impact on research programs reflected in technical and/or scientific publications with lead or corresponding author role.** **Recognition of research programs or technical developments reflected in invited technical and/or scientific presentations at international conferences** **PI or co-PI in succesfull funding calls (LDRD, SBIR, EERE, ...)** **Recognition as leader in field reflected by invitations to serve in review panels, editorial boards, organizing committees of major domestic conferences** **Community service (lead role in committees); educational outreach (lead role in schools/tutorials)**	**Impact on technical/scientific field reflected in other facilities adopting concepts and techniques developed at APS** **Impact of research programs reflected in invited technical/scientific presentations at major domestic and international conferences** **Standing in field recognized with invitations to serve in technical/scientific advisory committees and DOE/NSF sponsored review panels** **Recognition with laboratory and other awards** **Extensive list of lead or corresponding author publications** **Plays significant role in attracting major funding to the division** **Leadership in community, educational outreach**	**Impact reflected in the realization of new facilities and/or programs that bring international recognition to the laboratory and/or realize a critical DOE mission** **Standing in field recognized with invitations to present at major international conferences; serves in high-profile advisory panels and reviews** **Mentorship impact as evidenced in succesful careers of mentored staff and leaders** **Recognition with laboratory and external awards** **Extensive list of lead or corresponding author publications** **Leadership in community, educational outreach**
Typical success metrics: Engineering/ Technology contributors	**Impact on beamline operations and technical projects as reflected in deliverables and evaluations by supported technical and scientific staff** **Effectively responds to operational needs by providing timely and professional support to beamline and other technical projects**	**Implementation of reliable controls, software packages, optics, including comprehensive documentation.** **Develops engineering designs that augment beamline capabilities** **Community service (e.g. committees) and educational outreach (e.g. schools)**	**Innovative engineering designs, control systems, software, which advance state of the art at one or more beamlines or ancilliary facilities** **Recognition of technical developments reflected in invited presentations at national conferences** **Contributor to funded proposals (LDRD, SBIR, etc)** **Community service (peer review, commitees), educational outreach** **Patents, conference proceedings, RD100 awards**	**Technical contributions key for programs gaining world-class status and international recognition** **Recognition as leader in field reflected by invitations to serve in review panels, editorial boards, organizing committees of major domestic conferences** **PI or co-PI in funded proposals (LDRD, SBIR, EERE,...)** **Community service (lead role in committees); educational outreach (lead role in schools/tutorials)** **Patents, conference proceedings, RD100 awards**	**Impact on technical field reflected in other facilities adopting concepts and techniques developed at APS** **Standing in field recognized with invitations to serve in technical/scientific advisory committees and DOE/NSF sponsored review panels** **Recognition with laboratory and other awards; invited technical presentations at major domestic and international conferences** **Plays significant role in attracting major funding to the division**	**Impact reflected in realization of new technical capabilities that bring international recognition to the laboratory and/or realize a critical DOE mission** **Standing in field recognized with invitations to present at major international conferences; serves in high-profile advisory panels and reviews** **Mentorship impact as evidenced in succesful careers of mentored staff and leaders** **Recognition with laboratory and external awards**