This document was is a sample Skills Map, as developed through the Skills Mapping process. This tool was developed by IBM in 2014. This document serves as one key tool related to the P-TECH 9-14 model.

SAMPLE SKILLS MAP

P-TECH 9-14 Model Taxonomy

Eligible Job Categories

- **Manufacturing:** Manufacturing is a worldwide operation. Manufacturing supports every systems product that IBM sells, including low-end servers, large storage systems, mainframes, and everything in between. It also covers semiconductor fabrication. The manufacturing organization manages everything required to get finished systems to our clients: parts supply, assembly and test processes, the delivery network, as well as recovering equipment for reuse, redistribution, or disposal.
- **Product Services:** Employees with responsibility for on-site installation, maintenance and repair of IBM and multi-vendor systems/components, including hardware, software, networking products, operating systems. Support and advise others in specific product area when assigned. Ensure customer satisfaction by advising customers of preventive maintenance, configuration, operation and environmental factors which may impact product performance or impair customer's IT operation. Manages the customer by developing a support plan with the customer and coordinating other support resources. Takes responsibility to inform the customer of additional support services or refers product and services sales opportunities to the sales team.
- **Software Development & Support:** Software Development and Support professionals design, develop, test and provide technical support on a wide range of IBM product software for large, medium, and small businesses including operating systems, networks, middleware, security, and IBM software solutions.
- **Technical Services:** Employees who perform a variety of technical services including installing, operating, planning and configuring complex client information systems, products, or networking systems/components. Services may also include the integrating and testing of hardware/software solutions. Often found in an environment where IBM has a long-term relationship to provide IT services, or in a multi-vendor environment in support of a client's business. Typically involved in the management of live production systems and/or testing environment performing systems level configuration or analyzing business requirements to define, install and maintain computer systems, network applications/systems and workstation services.

Job Category Demand

Job Category	IBM US Job Category Demand (Low to High)
Manufacturing	LOW
Product Services	MEDIUM
Software Development & Support	HIGH
Technical Services	MEDIUM

Strategic Growth Areas

The strategic growth areas should form a foundation for all roles

- **Cloud**
  SaaS: Software as a Service
  PaaS: Platform as a Service
  IaaS: Infrastructure as a Service
- **Analytics**
  Business Intelligence
  Performance Management
  Predictive Analytics
  Risk Analytics
  Regulatory Compliance
- **Mobile**
  Integrate mobile into the fabric of your organization. Enable your employees to work anytime and anywhere. Provide trusted mobile interactions as you manage and add greater security to your infrastructure, and optimize performance.
- **Social**
  Solutions and strategic consulting services enable authentic engagement between the people who drive your business.
- **Security**
  Address the challenges of securing their people, data, applications and infrastructure.

Software Development and Support Roles

- **Information Developers:** Employees in this role complete information development projects, lead teams, and keep information deliverables organized and on schedule. They apply appropriate technical writing, editing, multimedia, visual design and tools skills, as required. They design and develop elements for user interface (UI), web, multimedia delivery, print, and other linear and non-linear information deliverables.
- **Software Developers:** Employees in this role use design documentation, such as Functional Programming Specifications and high-level design documents to implement the identified components. They also ensure that the implemented components are unit tested and ready to be integrated into the product. Software developers also provide fixes to defects identified by the verification team during the software development life cycle.
- **Software Test Specialists:** This role executes the tasks required to fully test an IBM product or system to ensure it functions according to specifications and client requirements and meets the business needs. Testing activities cover all aspects of the product/system including function/component, performance, system, regression, and service. People in this role must demonstrate knowledge of the domain that they are responsible for testing. For example, a functional tester must have deep knowledge of the function that they are responsible for. A solution tester must have knowledge of the overall solution. Knowledge of the target market for the product and the client environment is necessary. They must also be familiar with testing methodologies, tools and techniques. Software Testers may set up test environments, design and plan testing activity, develop test cases/scenarios/use cases, and/or execute required testing. Testers also investigate problems uncovered during testing, recreating those problems

as appropriate and executing fix validations. They provide feedback on usability, serviceability and documentation and report status to the appropriate audience.

- **Technical Support Professional:** This role specializes in performing and enabling remote technical support of IBM software, hardware and solutions. Provides technical support assistance to clients and/or IBM field support (SSRs) using problem determination/problem source identification skills. Uses technical and negotiation skills in collaboration with other support operations/organizations to prioritize and diagnose problems to resolution. Communicates action plans to the client or IBM representative as appropriate. Recommends and implements new or improvements to existing technical support tools, procedures, and processes. May provide training for and mentor others on the team. Contributes to department attainment of organizational objectives and high client satisfaction.

Software Development and Support Specialties

Information Developer

Expertise	Description
Design Information	Design information, based on a task and audience analysis and according to the information plan. Verify the information design through an iterative process that includes input from clients and other disciplines. The design can be limited to one information unit or can comprise entire information sets (higher skill levels). Design accessible user information by providing other members of the design team with resources needed to design, implement, and validate the agreed-upon degree of accessibility. Develop a prototype, if necessary, to augment understanding of the proposed design. Ensure that other information deliverables complement each other and are easy for users to find across information sets. Validate approach with clients. The higher the skill level, the more complex the information might be to design and execute. For example, the full range of user assistance for a product might include deliverables such as information center topics, online help, wizards, printed material, and Web based content Base final design on a thorough analysis and

Expertise	Description
	validation of user needs and preferences for finding and using information.
Develop Documentation for International Audience	Implement general Globalization concepts when developing information (such as avoiding jargon, developing glossaries, and developing clear English text that is easy to translate). Use the acrolinx IQ tool (when possible) on newly developed information. Analyze information to ensure compliance with accessibility requirements for information. Use the TermExt tool to create term lists for translation and to check information for new terms, forbidden terms, and inconsistencies.
Develop Information	Develop information based on a task and audience analysis and according to the information plan. Information may be in book metaphor, article- or topic-based help system, information center, e-learning modules, tutorials, or any other suitable form. Develop accessible user information by encapsulating appropriate resource information as needed by other members of the team including checklists, availability of audit tools, etc. Validate information with clients. The design can be limited to one information unit or can comprise entire libraries, help systems or information centers (higher skill levels). Develop a prototype, if necessary. Ensure that information deliverables complement each other. Validate approach with clients. The higher the skill level, the more complex the information might be.
Perform Technical Writing	Analyze user needs, create document designs, draft and write documents and written education material supporting an application or software product. Conform to standards of user interface and

Expertise	Description
	presentation. Apply minimalist and task-supportive writing principles. Clearly distinguish between conceptual, procedural and reference information. Develop accessible product information for different roles of users that meet particular sensory and physical restrictions.
Use Information Development Tools	Use tools to produce information in required media such as print, Web and interactive. Suggested tools/technologies are: ID Workbench, SGML, HTML, XML, DITA, Eclipse, Epic, IDCMS, ClearCase, JavaScript, Java, ISPF, BookManager, UNIX, Easy English Analyzer, CMVC, Frame Maker, Adobe Acrobat, CorelDraw, Photoshop, Paint Shop Pro, and TermEXT. This list may vary as corporate ID strategy evolves.
Apply Project Management Methodologies	Apply appropriate project management methodologies to supervising a business undertaking from start to completion, managing assigned resources, meeting objectives, and reducing the risk of failure.
Develop Information Usability Tests	Plan and prepare scenarios that test information deliverables, such as printed documents, online documents, InfoCenters, Helps, and graphical user interfaces. The scenarios should test information (individually or collectively) for accuracy, applicability, retrievability, navigation, and accessibility. Test scenarios identify test objectives, entry criteria, test procedures, and exit criteria. The scenarios should be reviewed by the product test teams and integrated into existing testing where appropriate. Test scenarios can be independent or synchronized with usability tests or in combination with other test efforts. After testing, analyze test results to establish action plans.

Software Development and Support Specialties
Software Developer

Expertise	Description
Apply Knowledge of DB2	Thorough applied or technical knowledge of DB2. This includes an understanding of DB2 functions, capabilities and uses. One should also have knowledge in the areas of administration, operation, recovery, tuning and application programming.
Apply Knowledge of JAVA & JavaScript	Thorough applied or technical knowledge of JavaScript, including functions and capabilities. The individual should have knowledge and be capable of addressing technical aspects of JavaScript in the areas of installation, customization and operation.
Apply Knowledge of Lean/Agile Principles	Understand and apply the practices of lean and agile, including stakeholder feedback, use cases, user stories, iterative development, stable/consumable code, continuous integration, TDD, and value stream maps.
Apply Knowledge of Python Scripting	Thorough applied or technical knowledge of Python Shell scripting, including functions and capabilities. The individual should have knowledge and be capable of addressing technical aspects of scripting in the areas of installation, customization and operation.
Apply Knowledge of XML Schema, XPath, and XSLT	Possess thorough technical knowledge, including functions and capabilities. Address technical aspects associated with requirements, usage, and solutions opportunities. Individual should have knowledge and be capable of installation, customization and operation.
Code C++	Analyze, code and debug applications written in C++ language. Review and

Expertise	Description
	analyze application program abends and failures on the various platforms or environments. Use relevant dumps, traces and other diagnostic material and tools to identify the probable failing component or source of the defect. May be able to code a fix or workaround.
Code HTML	Understand and use the features and functions of HTML interface and pages.
Develop Code Using Eclipse	Understand the features and functions of the Eclipse workbench. Understand how Eclipse functions relate to WSAD (WebSphere Application Developer Product). Use Eclipse in integrating function to create a development environment.
Develop Web Applications Using CSS	Develop Web applications using Cascading Stylesheets. Cascading Stylesheets (CSS) is a stylesheet language used to describe the presentation of a document written in a markup language. Its most common application is to style web pages written in HTML and XHTML, but the language can be applied to any kind of XML document.
Develop Web Applications Using Dojo	Develop web applications using Dojo. Dojo enables you to easily build dynamic sites. It provides a rich widget library you can use to compose your pages. You can use Dojo's aspect-based event system to attach events to components to create a rich interaction experience.
Develop XML Applications	Design, code, test, debug and document applications using XML.

Software Development and Support Specialties
Software Test Specialist

Expertise	Description
Analyze Code	Be familiar with common programming languages and methods in order to understand code flow and paths, specifically error handling, message logging and tracing. Follow the execution flow through a software routine. Work in a basic code development tooling environment to use software debugging tools (online debuggers, trace handlers and decoders) and to develop and support problem determination tools and utilities.
Analyze Test Results	Analyze test results to evaluate the quality. If indictors show that there is a problem, take appropriate action.
Apply RAS Best Practices	Understand the first principles of problem determination and debugging across an appropriate set of platforms or technologies to be able to determine the needs of a given product that will allow these activities to occur easily. Have a basic understanding of client information technology operations, deployment practices and availability requirements so as to appropriately propose or specify related product requirements or goals.
Implement Testing Goals	Plan the implementation of the test environment to ensure test plans represent the way the client uses the product. Provide advice and guidance to the project team by representing the client's point of view.
Perform Integration Test	Execute the tasks that relate to Integration Test activities. These include the ability to understand and test new/enhanced function and its interaction within the system, the ability to create, run, monitor, and diagnose workloads running on the system, and the ability to understand the

Expertise	Description
	test new/enhanced functions on a platform level.
Perform System Programming	Execute the tasks that relate to system programming which include software installation, system configuration, customization, system operation, performance tuning, problem diagnostics and system and data recovery. Install PTFs and other changes. Work with the customer to understand their needs.
Perform System Test	Execute the tasks that relate to System Test activities that involve the ability to understand and test new/enhanced function and its interaction within the system.
Test Software Across Multi OS & Hardware Platforms	Applied knowledge and abilities to design, code and execute tests across multiple operating systems and hardware platforms.
Develop Test Automation Tools	Create test automation tools needed for execution of test cases. Provide input into business case for use, purchase, or deployment of test tools.
Use Programming Languages	Apply knowledge of features and functions of Programming Languages (for example: C, C++, APIs, COBOL, Java, PL/X Technology, SQL, Visual Basic, XML, etc.). Have an understanding of open standards and how those programming languages are best used within that environment.

Software Development and Support Specialties
Technical Support Specialist