FHIR TRAINING

CDC FOUNDATION

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SESSION 07-C

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Session 7 C – Who do you need?

1. BLOCK 3: Who do you need
   1. Team roles, skills and responsibilities

BLOCK 3 – Who do you need

1. Disclaimer
2. Team Roles
   1. Systems Engineer/ Full Stack Developer
   2. User Experience / User Interface (Ux/Ui) Designer
   3. Clinical Terminologist
   4. Solution Architect
   5. Health Enterprise Architect
   6. Information Security Officer
   7. Integrated Healthcare Expert
   8. Subject Matter Expert
   9. Project/Programme Manager
   10. Business/System Analyst
   11. Interoperability And Hl7 Fhir Expert
   12. Product Owner

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Disclaimer

- Do not think of these roles as people you need to hire, you may not need some of these, or this roles can be assigned to current staff if they can participate in each project and have the correct set of skills

Team building is boring….? So let's play...

Clue!

Instead of

"Whodunnit"...

Who will do it?

https://tinyurl.com/fhircluedo

If you need to discover more roles and skills they are after this slide

Systems Engineer/ Full Stack Developer

Design, develop and/or adapt digital health software (both web and mobile) and implements PH specifications structured in the HL7 FHIR Igs

- Conduct a comprehensive review of the latest FHIR specifications to ensure up-to-date compliance

- Design modular software components that can easily adapt to different FHIR versions and extensions

- Develop a robust testing framework to validate the interoperability of the software with other FHIR-compliant systems

- Work closely with domain experts (Subject Matter Experts, Business Analysts) to accurately consume clinical practice guidelines as a service and avoid custom coding it into the software logic, maintaining the integrity of the guidelines

- With the assistance of the Business Analyst, the Interoperability Expert and the Clinical Terminology Expert, create a repository of digital health standards, best practices and methodologies for easy access and reference during development

- Integrate the chosen terminologies in the reference software following the Clinical Terminologist advice and best practices, ensuring viability/sustainability: recognize required terminologies, where to find them, and how to get access; and decide which is the best way to store and retrieve them

Systems Engineer/ Full Stack Developer

JOB DESCRIPTION

Participate in HL7 Working Group (WG) weekly calls to get first hand experience experts and relevant stakeholders in the process of deploying functional FHIR based applications

- Whenever possible, implement cloud-based solutions to enhance scalability and accessibility across various health settings

- Develop user customization tools that allow health practitioners to adjust the software to local needs without extensive programming knowledge

- Identify and address bugs, errors, and performance bottlenecks to deliver high-quality software products

- Incorporate automated compliance checks into the development process to ensure ongoing adherence to the required standards

- Create detailed documentation for the software project, including code comments, inline documentation, README files, and user manuals

- Describe the logic and functionality of code modules, classes, functions, and methods in a clear and understandable manner

- Document APIs, interfaces, and integration points within the software system

- Maintain documentation in version control systems such as Git, ensuring that documentation updates are synchronized with code changes and version releases

- Work closely with other software developers, architects, and quality assurance teams to gather information and insights about the codebase

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Systems Engineer/ Full Stack Developer

– Proficiency in front-end technologies such as HTML, CSS, JavaScript, and frameworks like React or Angular

– Solid understanding of back-end technologies including Node

– Capability in designing, developing, and deploying high-quality mobile applications for Android and iOS platforms

– Management of database technologies such as SQL, NoSQL, and familiarity with ORM (Object Relational Mapping) frameworks

– Specific knowledge about interoperability and data transfer protocols: JSON, XML, RESTful APIs, Web Services

– Proficient understanding of HL7 FHIR, and ability to develop software code based on specific requirements and implementation guides

– Knowledge of other healthcare standards such as HL7, DICOM, or related protocols is highly desirable

– Strong problem-solving skills and attention to detail

– Excellent communication skills and the ability to explain technical concepts to non-technical stakeholders

– Must have a positive attitude, and the ability to find creative solutions to problems

Systems Engineer/ Full Stack Developer

EDUCATION

- Essential:
  - Bachelor's Degree in Computer Science, Software Engineering, or a related technical discipline
  - Specific training on interoperability standards like HL7 FHIR
- Desirable:
  - Master's Degree or above in Health Informatics, Digital Health, or related field
  - Certifications in HL7 and FHIR (Foundation, Developer, Analyst, Profiler, Architect)
  - Additional certifications in related health IT standards and technologies, such as CQL, CDSHooks, SNOMED CT implementation, and other specific health data exchange protocols

EXPERIENCE

- Essential:
  - At least 3-5 years of practical experience as a Full Stack Developer with expertise in developing web and mobile applications
  - At least 2 years of practical experience in designing, developing, and implementing software solutions within the healthcare industry
  - Experience implementing and working with HL7 FHIR

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User Experience / User Interface (Ux/Ui) Designer

Conduct comprehensive user research workshops and field observations to gather real-world insights into the user needs and challenges specific to digital health applications in diverse environments

- Organize collaborative design thinking sessions with stakeholders, including healthcare professionals and end-users, to ideate and prototype solutions that align with Public Health Guidelines and address country-specific needs

- Closely collaborate with a multidisciplinary team, including clinical terminologists, interoperability experts, project managers, developers, and information security experts for ensuring that the design of digital health interfaces is not only user-friendly and aesthetically pleasing but also clinically accurate, technically interoperable, securely developed, and compliant with information security standards

- Develop detailed user personas and journey maps as key outputs, which will guide the design of user-centered digital health interfaces

- Execute usability testing sessions with a diverse user base to validate and refine interface designs, ensuring they are intuitive, accessible, and effective across different contexts

- Produce a suite of design documents, including high-fidelity prototypes, wireframes, and user flow diagrams, that clearly communicate design decisions and can be used by development teams to implement the solutions

- Support other project team members with closely related activities, like the Business Analyst and Clinical Terminologist roles i

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User Experience / User Interface (Ux/Ui) Designer

SKILLS AND KNOWLEDGE

- Skills on human centered design practices, user flows, wireframes, and low/high-fidelity prototypes
- Expert-level knowledge and skills in using design tools such as Figma, Adobe XD, Sketch, Adobe CC, and Invision
- Detailed knowledge of web and mobile app accessibility standards and their implementation, catering to users with diverse abilities
- Collaboration and Communication skills to work within an interdisciplinary team, including product management, strategy, software engineering, and external stakeholders
- Excellent communication skills to articulate design decisions and gather feedback
- Strong understanding of design systems and front-end architecture for products, websites, mobile applications, data visualization, and content management systems
- Problem-solving skills and knowledge of web-based technologies such as HTML, JavaScript, CSS
- Ability to find creative solutions to problems

EDUCATION

- Essential:
  - Bachelor's degree in a relevant field such as interaction design, product design, human-computer interaction, information design, or information architecture
- Desirable:
  - An advanced university degree (Master's or higher) in interaction design, product design, human-computer interaction, information design, and information architecture, or another relevant field, is highly desirable to deepen the expertise and understanding necessary for this role
  - Specific education on UX/UI for healthcare and/or digital health would be an asset

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User Experience / User Interface (Ux/Ui) Designer

EXPERIENCE

- Essential:

  – A minimum of 3 (three) years of relevant professional experience in progressively responsible UX/UI product design experience, some of which should be in a healthcare setting

  – Strong expertise in user experience and interaction design, research and consultation for web-based designs, apps, and data information systems, information architecture and systems mapping design

  – Experience with mobile design principles and responsive user interfaces that adapt seamlessly across various devices and screen sizes

  – Experience in creating interactive prototypes in tools like Sketch, Adobe CC, Invision, etc

  – Experience in coordinating activities within and across teams, including project teams for specific initiatives and use of current project management and tracking platforms and tools

  – Experience conducting usability tests, gathering user feedback, and iterating designs based on user research findings to improve the usability and effectiveness of health information systems

  – Proficiency in rapid prototyping and iterative design processes to quickly validate design concepts, gather feedback, and refine designs based on user input and stakeholder requirements

  – Demonstrated ability to extrapolate information from team members that can be translated in a simplified and articulate way

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User Experience / User Interface (Ux/Ui) Designer

EXPERIENCE

• Desirable:

– Proficiency in applying user-centered design methodologies to create intuitive and efficient user interfaces for healthcare professionals, patients, and other stakeholders

– Preferred experience in the use of Web technologies such as HTML, JavaScript, and CSS, assessing their capabilities and limitations

– Experience with adaptive complex systems like healthcare

– Experience designing digital health applications or platforms, with a focus on user-centered design principles for accessibility and usability within healthcare contexts

– Understanding of common design patterns and best practices specific to healthcare UX/UI design, including clinical decision support, care coordination, and patient engagement strategies

– Understanding of behavioral psychology principles and user behavior analysis to design interfaces that encourage positive user interactions, adherence to clinical protocols, and engagement with health information systems

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Clinical Terminologist

- Assess current national health information systems to identify existing clinical terminologies and data standards
- Map out a foundational strategy for the incorporation of standardized clinical terminologies in line with national uses
- Collaborate with health informatics teams to ensure a solid understanding of terminological requirements
- Curate the Core data data dictionary in a collaborative manner, based on guidance documents and ensuring that the content is consistent with classifion for terminology mappings and FHIR Resource alignment in mind
- Create concept mappings from a set of concepts defined in a code system to one or more concepts defined in other code systems, as required to incorporate local terminologies
- Work closely with project managers, Subject Matter Expert (SME) and other stakeholders to implement chosen clinical terminologies across digital health solutions
- Work closely with the Health Enterprise Architect and Business/System Analysts to align terminological standards with overall project goals
- Evaluate the adoption and usage of standardized terminologies in health programs, making adjustments as needed
- Achieve a standardized approach to clinical terminologies within targeted health programs
- Support the incorporation of proper codesystems and value sets in the national FHIR implementation guide

JOB DESCRIPTION

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Clinical Terminologist

- Strong understanding of healthcare data interoperability standards and how they apply in various healthcare settings
- Proficiency in navigating and applying terminologies such as ICD-11, ICD-10, SNOMED CT, LOINC, and others to ensure accurate and consistent health data representation
- Strong understanding on implementation approaches for terminology in clinical systems including the use of terminology service, catalogs, mappings, etc
- A deep grasp of the foundational and emerging principles in health informatics, including data interoperability, privacy, and security within healthcare systems
- Ability to work collaboratively with multidisciplinary teams including healthcare professionals, IT specialists, and policy makers
- Excellent communication and training skills, with the ability to convey complex terminological concepts in an understandable manner

Clinical Terminologist

- Essential:

  – Bachelor's degree in Health Informatics, Medical Informatics, Nursing, Pharmacy, Public Health, or a closely related healthcare field

  – Specific training in clinical terminology standards such as ICD-11, ICD-10, ICF, ATC, SNOMED CT, LOINC, NANDA, NIC, NOC, WHODrug, MedDRA, etc

- Desirable:

  – Certifications in one or more of the mentioned terminologies and semantic standards

  – Certifications in HL7 FHIR (from basic to advanced)

  – Participation in workshops, seminars, and continuing education courses focusing on the latest developments in clinical terminologies, health informatics trends, and digital health innovations

EDUCATION

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Clinical Terminologist

EXPERIENCE

- Essential:
    - Direct experience in the implementation, management, and use of clinical terminologies within healthcare IT systems
    - Participation in health informatics projects, with a focus on data standardization, interoperability, and quality improvement initiatives
- Desirable:
    - Experience with national health projects, especially those focusing on digital health, public health informatics, or similar initiatives that require local data harmonization and collaboration
    - Experience working with FHIR value sets and terminology bindings with information models
    - Previous involvement in Healthcare Standards Working Groups like HL7 Public Health, SNOMED CT, ICD, HL7, OpenHIE, ISO, among others, would be an asset

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Solution Architect

- Analyze business, information, and technology elements to devise solutions that solve specific healthcare challenges, leveraging previous IGs, collaborating with stakeholders to analyze requirements and constraints
- Identify and propose a combination of building blocks that provide the best possible solution, considering both enterprise architecture and technical architecture
- Oversee tasks and activities involved in the successful implementation of proposed solutions, ensuring consistency and meeting all necessary requirements
- Identify and mitigate technological risks throughout the solution design and implementation process, ensuring a consistent and effective approach
- Coordinate ongoing technical activities and translate design concepts into IT operations, ensuring alignment and collaboration among stakeholders
- Ensure that the described solution remains consistent and meets all necessary requirements throughout the development and implementation phases
- Serve as a leader and coordinator, resembling a project manager, to ensure alignment, collaboration, and progress across all phases of solution design and implementation
- Select appropriate technologies and frameworks to support the scalability and adaptability of the Solution Architecture, aligned with the overarching Enterprise Architecture

JOB DESCRIPTION

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Solution Architect

- Consider factors such as interoperability, security, and scalability during technology selection
- Create detailed architectural documentation, including system diagrams, data flow diagrams, and technology stack documentation
- Document key architectural decisions and rationale
- Work closely with development teams to ensure the effective implementation of the designed architecture
- Provide guidance and support during the development and testing phases
- Implement quality assurance checks to ensure that the architecture meets the specified requirements
- Address any technical issues or challenges that arise during the implementation
- Design the architecture to be scalable and adaptable to different health settings, from urban hospitals to remote clinics
- Ensure that the architecture supports the evolving nature of clinical practice guidelines (living guidelines)
- Ensure that the implemented solution complies with relevant standards and guidelines
- Adhere to best practices in software architecture and development
- Whenever possible, implement cloud-based solutions to enhance scalability and accessibility across various health settings
- Effectively communicate technical concepts to both technical and non-technical stakeholders
- Collaborate with Subject Matter Experts and Business Analysts to align technical decisions with clinical and healthcare requirements

JOB DESCRIPTION

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Solution Architect

- Strong understanding of solution architecture principles and practices
- Proficiency in a variety of programming languages such as JavaScript, Kotlin, Java, Python,
- In-depth knowledge of interoperability standards and protocols, including HL7 FHIR, JSON, XML, REST, and Web Services
- Proficiency with cloud platforms, such as AWS, Azure, or Google Cloud
- Strong knowledge of DevOps principles and practices, including continuous integration and deployment
- Excellent problem-solving, analytical, and critical thinking skills
- Knowledge of agile methods and human-centered design thinking
- Excellent communication and collaboration skills
- Understanding of clinical decision support systems, clinical practice guidelines, and healthcare terminology standards is a plus
- Must have a positive attitude, and the ability to find creative solutions to problems

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Solution Architect

- Essential:
  - Bachelor's degree in Software Engineering, Computer Engineering, Information Technology, or related field
- Desirable:
  - Advanced university degree (Masters or higher) in Software Engineering, Computer Engineering, Information Technology, Health Informatics, or related field
  - Certifications in software development and cloud technologies
  - Certifications in project management
  - Certifications in HL7 and FHIR (Foundation, Developer, Analyst, Profiler, Architect)
  - Additional certifications in related health IT standards and technologies, such as CQL, CDSHooks, SNOMED CT implementation, and other specific health data exchange protocols

- Essential:
  - At least 5 (five) years of relevant and recent experience as an application architect or main developer, leading technical software development teams and coordinating activities
  - Proven experience in software architecture, software development lifecycle and DevOps principles and practices, including the design and support of continuous delivery pipelines

Health Enterprise Architect

- Collaborate with national healthcare authorities, government agencies, and stakeholders to understand overarching strategic goals and objectives for healthcare, public health and health information technologies at the national level

- Assist in the development and maintenance of a robust enterprise architecture framework that encompasses business architecture, data architecture, application architecture, and technology architecture tailored to the national healthcare context

- Support other project team members (Business Analyst, Clinical Terminologists, FHIR Expert) in using existing enterprise services

- Identify health information exchange (HIE) adoption levers, barriers, and success factors

- Develop and maintain the HIE framework, standards, and principles, including modeling, metadata, security, authorization, reference data, and master data

- Engage with Outsourced Service Providers (OSPs) and other providers to evaluate IT products acquisition and implementation paths in alignment with the country's enterprise architecture framework

- Engage with digital transformation initiatives across the Ministry of health and the country, and provide advice on topics such as systems integration, solutions sustainability, and IT risks, to ensure the products delivered are in compliance with the defined IT standards

- Lead the development of integrated designs that meet HIE requirements and align with enterprise strategy guided by the OpenHIE framework or similar

- Plan the scalability, historic management and backups of the platforms and tools being used

- Participate in the definition and implementation of training and change management activities related to the area of work;

- Coordinate with Project Manager, Healthcare Integrated Expert and technical teams in defining application requirements and resolving project issues
  - Collaborate effectively with teams in an national and multicultural environment

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Health Enterprise Architect

- Knowledge of HIE standards and functionality

- Understanding of the architecture, design, and development of data warehouse and business intelligence solutions

- Knowledge of data center infrastructure, cloud services, and network security (firewalls, load balancers) is vital for maintaining the integrity and availability of health information systems

- Strategies for data management and data production and use

- Knowledge of international semantic standards for information exchange in the health domain, such as LOINC, ICD-11, and/or SNOMED

- Understanding of the cloud, databases, and applications and programs used by those databases in the country

- Practical knowledge of data modeling, including conceptualization and database optimization

- Understand the organization of health data in records, and aggregate them into collections for efficient processing

- Recognize different data storage mechanisms (like relational databases, document-oriented storage, key/value stores, and data lakes) suitable for diverse health data types

- Comprehend processing approaches (SQL, NoSQL, data pipelines, streaming, map/reduce) to make informed decisions on data architecture in health programs, considering the unique requirements of health data like patient confidentiality and real-time processing needs

Health Enterprise Architect

- Understand the role of APIs in healthcare for processes, user interaction, and data interchange formats like JSON/REST

- Understand the concepts of regions, availability zones, and infrastructure-as-code (IaC) to visualize and plan the robust, scalable, and secure IT infrastructure needed for health data systems

- Comprehend the full Systems Development Life Cycle (SDLC), emphasizing DevOps and DevSecOps, to ensure agile, secure, and efficient development and maintenance of health software systems

- Knowledge of containerization technologies: Docker, Kubernetes, and the level of support of the different proprietary or open source cloud technologies

- Understand the requirements and mechanisms for the different FHIR technologies used

- Excellent written and verbal communication skills

- Ability to present technical ideas to decision-makers

- Must have a positive attitude, and the ability to find creative solutions to problems

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Health Enterprise Architect

- Essential:
    - Bachelor's degree in computer science, and/or master's degree in computer sciences, information management, information technology or a related field from a recognized university
    - Specific training on Enterprise Architecture
- Desirable:
    - Certification in Enterprise Architecture would be an asset:
    - TOGAF: Foundation; Certified; Enterprise Architecture Foundation; Enterprise Architecture Practitioner; Business Architecture Foundation
    - Zachman Certified - Enterprise Architect
    - Participation in workshops, seminars and courses related to Enterprise Architecture in healthcare environments
    - Interoperability standards courses and certifications are recommended, like HL7 FHIR (Foundation, Developer, Analyst, Profiler, Architect)

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Health Enterprise Architect

Essential:

– A minimum of 7 (seven) years of national and/or international professional experience in information technology, in areas such as Systems Analysis, Software Engineering, or similar, including at least three years of experience as Systems Integrator or Enterprise/Solutions/ Data Architect

– Experience working with architecture frameworks and tools, such as TOGAF or Zachman

• Desirable:

– Experience working on Digital Health Platforms (DHP) and Health Information Exchange (HIE) projects or similar, that involve collaboration with diverse stakeholders, including healthcare professionals, government authorities, and technology teams across various cultural and real world healthcare contexts

– Previous involvement in Healthcare Standards Working Groups like SNOMED CT, ICD, HL7, OpenHIE, ISO, among others, would be an asset

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Information Security Officer

- Apply robust security measures to protect sensitive health information and mitigate cybersecurity risks in the project
- Evaluate the cybersecurity preparedness and risk assessment of national digital health systems prior to implementing FHIR IGs
- Identify potential security threats and vulnerabilities and develop strategies to mitigate identified risks and manage the organization's risk profile
- Provide the project participants with applicable information security policies and procedures, in line with industry standards and regulations
- Organize training sessions for team members to raise awareness about security policies, data protection practices, and the importance of information security
- Monitor compliance with regulatory requirements, like relevant information security laws, regulations, and standards (e
- Coordinate internal and external audits to assess compliance with security policies and regulatory requirements
- Oversee the deployment and management of security technologies such as firewalls, intrusion detection systems, encryption, and access control systems for the developed applications and services
- Define authorization methods and rules regarding web service use, and establish the relationship between FHIR APIs and the security schema
- Monitor security systems and logs to identify and respond to potential security threats
- Respond to security incidents in a timely manner, leading the investigation, containment, eradication, and recovery activities
- Develop and maintain an incident response plan, ensuring rapid and effective action in the event of a breach

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Information Security Officer

- In-depth knowledge of cybersecurity principles, technologies, and standards
- Strong analytical and problem-solving skills, with the ability to assess complex security risks and develop effective mitigation strategies
- Effective collaboration with healthcare professionals, understanding their workflows, and ensuring security measures complement rather than hinder clinical processes
- Proficient in conducting risk assessments tailored to health systems
- Expertise in conducting security audits, identifying vulnerabilities and recommending corrective actions
- Familiarity with health interoperability frameworks and standards such as HL7 FHIR, OpenHIE, IHE, is a plus
- Excellent communication and interpersonal skills, with the ability to collaborate effectively with diverse stakeholders
- Ability to work independently and as part of a team in a dynamic and fast-paced environment
- Must have a positive attitude, and the ability to find creative solutions to problems

SKILLS AND KNOWLEDGE

Information Security Officer

EDUCATION

- Essential:
    - Bachelor's degree in Information Security, Cybersecurity, Computer Science, or related field
    - Specific training in Information Security
- Desirable:
    - Master's Degree or above in Information Security, Cybersecurity, or related field
    - Certified Information Systems Security Professional (CISSP, CISM, CEH) or equivalent certification preferred
    - Specialized Certifications

EXPERIENCE

- Essential:
    - At least 3-5 years of experience in conducting risk assessments, developing mitigation strategies, and managing an organization's risk profile in a relevant sector
    - Minimum of 3 years of experience in developing and implementing comprehensive information security policies and procedures, ensuring their compliance, and leading the prevention and response to security incidents

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Integrated Healthcare Expert

- Work in strong collaboration with the Product Owner, Legal Officer, Health Economist, and Security Officer

- Advocate for integrated health services networks as one of the principal operational expressions of Primary Health Care-based health systems, helping to pursue its most essential elements such as universal coverage and access, first contact, comprehensive, integrated and continuing care, appropriate care, optimal organization and management, family and community orientation, and intersectoral action, among others

- Assess the current health system needs and existing digital capabilities, and identify potential gaps and challenges that should be addressed by digital health interventions, looking for an integrated healthcare approach

- Achieve integrated management of clinical, administrative and logistical support systems

- Together with the Health Enterprise Architect, advocate and coordinate among various stakeholders, including government agencies, health IT providers, healthcare professionals, and international organizations to avoid a siloed intervention approach, and instead use interoperability standards to join a Digital Health Platform for easy registry service provision and seamless information exchange between different systems and devices

- Push for an integrated information system that allows certified users to securely access patient data disaggregated by relevant variables

- Enhance collaboration and consensus among different actors to ensure an effective, scalable and sustainable adoption of the FHIR

- Raise awareness at all levels of the health system about the importance and benefits of adopting the guidelines, within a comprehensive digital health strategy, to improve healthcare

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Integrated Healthcare Expert

- Ability to ensure organizational coherence by collaborating with different technical programs, fostering collective efficiency, and harmonizing efforts

- Proven skills to provide strategic and technical support to countries, aligning with the principles of strengthening integrated healthcare services and focusing on impact at the primary healthcare level

- In-depth understanding of health program management within the context of integrated health services

- Knowledge about broad clinical pathways and patient journeys, and ability to drill down into the required details to promote integrated healthcare services, moving away from siloed programme approaches

- Familiarity with program management frameworks like PMP or agile methodology

- Familiarity with interoperability standards, especially HL7 FHIR and clinical terminologies, to promote information exchange and therefore integrating the healthcare enterprise

- Understanding of the localization and customization of software applications to specific operational contexts within integrated health systems

- Familiarity with the use of terminology services for consistent data representation

- Must have a positive attitude, and the ability to find creative solutions to problems

Integrated Healthcare Expert

EDUCATION

- Essential:
    - Bachelor's degree in Medicine, Nursing, Epidemiology, Public Health, Healthcare Management, Health Informatics, or a related field
- Desirable:
    - Master's degree or PhD in Public Health, Healthcare Management, Health Informatics, or a related field
    - Additional certifications in healthcare management, informatics, digital health, integrated service management and value based care

EXPERIENCE

- Essential:
    - Minimum 5 years of experience in integrated healthcare services, health management and health policy analysis
    - Demonstrated experience in stakeholder engagement and strategic planning
- Desirable:
    - Experience working with nationwide healthcare initiatives, international organizations or government agencies, following strategic and operational goals
    - Previous involvement in implementing integrated digital health interventions or quality improvement programs
    - Experience in developing and promoting global public health goods that enhance country capacity to design, plan, manage, and evaluate health services within the context

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Public Health Subject Matter Expert

JOB DESCRIPTION

- Act as the final decision-maker for clinical and/or surveillance normative recommendations within the country's health program
- Ensure decisions are evidence-based and align with international standards and local needs
- Work closely with the Project Manager and Product Owner to oversee the process
    - Accuracy: Verify the factual correctness of the content
    - Completeness: Ensure all necessary information is included
    - Relevance: Assess the applicability to local contexts
    - Conduct iterative reviews with feedback incorporation
- Participate in on-site or virtual workshops with other stakeholders to provide feedback on draft requirements based on current national policies, and agree on paths forward
- Collaborate with the Business Analyst, Clinical terminologists, Interoperability experts and Architects
- Ensure continuous refinement based on national policies and real-world application
- Act as a liaison between scientific organizations, government agencies, and healthcare institutions to facilitate knowledge exchange and collaboration in the programs implementation
- Collaborate with development teams and technical experts for ongoing guideline interpretation and implementation monitoring, ensuring that adaptations remain aligned with evolving health standards and technologies

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Public Health Subject Matter Expert

- Demonstrated expertise and experience in Public Health, with a deep understanding of relevant guidelines, best practices, and evidence-based interventions
- Strong analytical and problem-solving skills, with the ability to assess complex healthcare challenges and develop effective evidence-based solutions
- Excellent communication and interpersonal skills, with the ability to collaborate effectively with diverse stakeholders
- Ability to work independently and as part of a team in a dynamic and fast-paced environment
- Proficiency in interpreting and utilizing health data and research findings to inform practice, policy, and public health interventions
- Ability to articulate complex medical and public health concepts clearly and concisely to a diverse range of stakeholders, including healthcare professionals, policymakers, and the general public
- Ability to adapt to new information, guidelines, and health technologies as they evolve, ensuring practices remain aligned with current evidence and standards
- Must have a positive attitude, and the ability to find creative solutions to problems

SKILLS AND KNOWLEDGE

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Public Health Subject Matter Expert

EDUCATION

- Essential:
  - Masters degree or above in a relevant field such as Public Health, Epidemiology, Healthcare Management, clinical practice, or a closely related discipline
  - Additional certifications or specialized training related to [Program]
- Desirable:
  - Coursework or certifications in complementary fields such as health informatics, data science, or technology management
  - Additional training in collaboration-oriented fields such as team dynamics, collaborative problem-solving, or project collaboration methodologies

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Project Manager

- Work in strong collaboration with the Product Owner and the Integrated Healthcare expert to secure an integrated vision of the digital interventions aligned with the healthcare requirements

- Work in partnership with the Digital Health Transformation Office and other technical partners

- Develop a comprehensive and realistic work plan, including a Responsibility Assignment Matrix (RACI matrix), outlining timelines, resources, and milestones for successful implementation

- Coordinate resources, including personnel, equipment, and materials, to ensure project deliverables are met on time and within budget, supervising their alignment with the overarching goals and objectives and country's priorities, and keeping track of their quality

- Lead project meetings, including kick-off, status updates, and reviews

- Monitor and track project progress using appropriate tools and techniques, identifying and managing potential risks, and implementing corrective actions as needed

- Engage in continuous dialogue and ensure feedback is received from all key stakeholders
  - Establish and maintain communication channels with all project stakeholders, ensuring transparent and regular updates on project progress and outcomes

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Project Manager

- Proficiency in project management methodologies, software and tools
- Strong leadership and communication skills, with the ability to effectively engage and influence stakeholders at all levels
- Excellent organizational and time management skills, with the ability to prioritize and manage multiple projects simultaneously
- Problem-solving and decision-making abilities, with a focus on delivering results in a fast-paced environment
- Experience working in cross-functional teams and managing diverse stakeholders
- Proactive and ability to anticipate risks, problems and stakeholder needs and expectations
- Negotiation and conflict resolution skills
- Highly organized and detail oriented
- Knowledge of Agile methodologies is a plus
- Must have a positive attitude, and the ability to find creative solutions to problems

SKILLS AND KNOWLEDGE

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Project Manager

- Essential:
  - Bachelor's degree in Business Administration, Project Management, Public Health, Health Informatics, or related field required
  - Project management education through specific courses or careers
- Desirable:
  - Master's or other advanced degree in Business Administration, Project Management, Public Health, Health Informatics, or related field
  - Project management certifications like Project Management Professional (PMP)® from Project Management International (PMI), or others:
  - Certified Associate in Project Management (CAPM)® - PMI
  - Program Management Professional (PgMP)® - PMI
  - Agile Certified Practitioner (PMI-ACP)® - PMI
  - Certified ScrumMaster (CSM) – Scrum Alliance
  - Disciplined Agile Scrum Master (DASM)® - PMI
  - Certified Project Manager (IAPM) – International Association of Project Managers
  - Master Project Management (MPM) – American Academy of Project Management
  - Certified Information Systems Project Manager (CISPM) – Information Systems Audit and Control Association (ISACA)

EDUCATION

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Project Manager

- Essential:

    – Minimum three (3) years of relevant experience in project management, applying adequate methodologies, software and tools

    – Proven experience in project management and process improvement related to digital technology implementations

- Desirable:

    – Five (5) years of relevant experience in project management, preferably in digital health interventions

    – Experience using Agile-Scrum methodologies

    – Previous experience working in national scale projects

    – Experience in multi stakeholders projects and international collaborations is a plus

    – Experience in strategic planning, risk management and change management

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Business/System Analyst

- Gather and review national policies and documents
- Understand the landscape of existing or new tools planned for adoption of Public Health IG content, as well as the broader national enabling environment
- Engage national key stakeholders and stewards of the guidelines, and define clear roles and responsibilities
- Lead on-site or virtual workshops with SMEs and other stakeholders to gather feedback on drafted requirements
- Conduct ground truthing exercises through site visits and observations of health workers executing key workflows
- Conduct interviews and observations based on human-centered design methods

HL7 International

Business/System Analyst

- Proficiency in business and system analysis methodologies, software and tools

- Strong stakeholder engagement skills and ability to establish effective working relationships with subject matter experts, conduct interviews, and lead focus groups and workshops

- Able to produce user stories, Business Process Model and Notation (BPMN) business process workflows, wireframes and mock-ups, and other aides for validating requirements and informing the technical design phase

- Some familiarity with clinical workflows, general, or in the specific country would be beneficial

- Generic awareness about the technical capabilities of the HL7 FHIR Toolbox: SMART-on-FHIR, CDS-Hooks, PlanDefinition resources, CQL are also important

SKILLS AND KNOWLEDGE

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International

Business/System Analyst

- Working knowledge of classifications and terminologies for health
- Comfort with IT processes for project management, change management, and the system development life cycle
- Agile methods and human-centered design thinking skills
- Computer literacy (creating surveys, proficiency in using Office suite software tools, including Visio or other business process modeling tools)
- Excellent writing skills and ability to produce documentation to a high standard
- Ability to communicate and explain complex technical concepts to a non-technical audience
- Ability to develop presentations to provide an overview of the work to high-level stakeholders
- Open to feedback and effectively incorporates feedback while balancing the perspectives of multiple stakeholders
- Proactive and self-motivated to push work forward to meet deadlines
- Must have a positive attitude, and the ability to find creative solutions to problems

SKILLS AND KNOWLEDGE

Business/System Analyst

- Essential:
    - Bachelor's degree in business administration, management, computer or information science/engineering, information systems/technology, medicine, nursing or other healthcare fields
    - Business analysis education through specific courses or careers
- Desirable:
    - Additional training in public health, health informatics, or health-related fields is a plus
- **Business/System Analyst certifications like:**
    - Object Management Group (OMG)-Certified Expert in Business Process Management (BPM) 2: OCEB 2, Fundamentals, Intermediate or Advanced
    - International Institute of Business Analysis (IIBA): Entry (ECBA), Competency (CCBA), Professional (CBAP)
    - Project Management Institute (PMI) Professional in Business Analysis (PMI-PBA)
    - Health Informatics Classifications and Terminology Standards courses like ICD-11 Training Package, SNOMED CT Foundation, LOINC, etc
    - Interoperability standards courses and certifications like HL7 FHIR (Foundation, Analyst), SNOMED CT Foundation, OpenHIE, etc

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Interoperability/HL7 FHIR Expert

- Review the business process workflows, if some steps are repeated could they be converted to sub-flows and referenced from the main flows
- Encode decision support logic, clinical quality measures, and indicators into FHIR resources using FHIR-specific technologies and standards
- Develop FHIR-based technical implementation guides to encode clinical guidelines into FHIR resources
- Work in close collaboration with Health Enterprise Architect, Clinical Terminologist, Solution Architects and Developers
- Utilize Clinical Quality Language (CQL) to articulate the logic of the guidelines in a structured, interoperable format for quality measures and clinical decision support
- Integrate with Android SDK for adaptation to native software, ensuring the guidelines can be effectively implemented in mobile health applications
  - Implement FHIR-based software applications and services for healthcare systems that adhere to interoperability standards
  - Create software functionalities that interact with FHIR APIs to retrieve, exchange, and update health data across different systems

Interoperability/HL7 FHIR Expert

EXPERIENCE

- Essential:
  - At least three (3) years of professional experience as a business analyst documenting requirements and seeing them transformed into successful solutions
  - Previous experience applying BPM notation methodology
  - Experience with agile and human-centered design methods
  - Experience interacting closely with IT colleagues within a project framework (PMI or Prince2)

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Interoperability/HL7 FHIR Expert

- Broad knowledge of healthcare interoperability standards, such as Health Level Seven (HL7 v2/v3, FHIR, CDA, etc
- Specialized knowledge of interoperability standards and frameworks such as HL7 FHIR, IHE, OpenHIE, and how to deal with interoperability API (FHIR-API; CQL; CDS Hooks; etc)
- Understanding of healthcare workflow, data connectivity, interoperability principles and standards, and related communication protocols
- Proficiency in Clinical Quality Language (CQL) for expressing logic within clinical guidelines and decision support systems
- Knowledge about health reference registries (patient, practitioners, organizations, etc) and terminology services functionality (validation, query)
- Ability to design, manage, and oversee technical roadmaps, taking into account strategic implications and cross-program impact
- Organizational, business communication, and stakeholder relationship management skills
- Proficiency in JSON and XML for data representation and exchange in health IT systems
- Knowledge of Agile methodologies for software development, ensuring flexible and efficient project management
- Must have a positive attitude, and the ability to find creative solutions to problems

Interoperability/HL7 FHIR Expert

- Essential:
  - Bachelor's degree in Computer Science, Engineering, or a related technical discipline
  - Certifications in HL7 and FHIR (Foundation, Developer, Analyst, Profiler, Architect)
- Desirable:
  - Master's or advanced degree in Computer Science, Engineering, Health Informatics, Public Health or a related technical discipline
  - Additional certifications in related health IT standards and technologies, such as CQL or specific health data exchange protocols

Interoperability/HL7 FHIR Expert

- Essential:

  – 5 to 10 years of experience applying recognized interoperability standards, such as HL7 FHIR (REST - Interaction Patterns)

  – Experience in Electronic Health Record (EHR) / Health Information Exchange (HIE) technology and implementation, with working knowledge of Health IT standards (HL7 v2/v3, FHIR, CDA, etc

- Desirable:

  – Implementing FHIR standards in national health information systems for enhanced interoperability and data sharing across healthcare facilities

  – Expertise in Android FHIR SDK for developing native health applications, ensuring guidelines are accessible and implementable on mobile platforms

  – Previous involvement in Healthcare Standards Working Groups like SNOMED CT, ICD, HL7, OpenHIE, ISO, among others, would be an asset

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Product Owner

JOB DESCRIPTION

- Collaborate with the project manager to ensure that the project's goals align with the agency overall objectives and healthcare needs

- Provide an integrated vision of the current and future digital health interventions and products, jointly with the Health Enterprise Architect, and look for improvement spaces and best practices adoption

- Support the project manager in the planification, execution and implementation of interoperability projects, leveraging the product being developed in order to keep the integration with the broader digital health strategy and existing tools

- Synthesizing requirements from diverse healthcare environments

- Ensuring alignment with stakeholder needs and expert advice

- Facilitating seamless integration into the healthcare system

- Develop the product backlog, task management, and ensure the deliverables adhere to the "Done" requirements

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Product Owner

- Facilitate and relieve useful information for mapping CDC recommendations to current policies and practices taking in consideration local specifications

- Oversee the entire process of collecting, analyzing, and utilizing source documents to adapt IGs, being consulted by the project team

- Collaborate with Clinical terminologists, Interoperability experts and Solution Architects for accurate interpretation, and iteratively refining the implementation based on real-world insights and stakeholder feedback

- Verify compliance with interoperability standards

- Encompass ensuring the software's adaptation to specific operational contexts in a country level base

- Understand and fulfill user and health system requirements, and aligning the application with CDC recommendations

- Supervise the creation of additional digital products like terminology services, software libraries, APIs, and FHIR content support, crucial for consistent data representation and system updates across subscribed digital platforms

Product Owner

- Familiarity with international regulatory standards for medical devices and software
- Ability to grasp complex healthcare systems and procedures
- Proficiency in Agile and Scrum methodologies to effectively manage product development cycles
- Deep understanding of health informatics and healthcare systems to align product features with healthcare workflows
- Familiarity with healthcare standards such as HL7 FHIR to ensure product compliance and interoperability
- Knowledge of regulatory requirements in healthcare to navigate compliance and certification processes
- Strong communication skills for effective stakeholder engagement and team collaboration
- Leadership abilities to guide and motivate multidisciplinary teams
- Excellent problem-solving skills to address product challenges and obstacles
- Capability for data-driven decision-making to prioritize product features and improvements
- Skills to manage product backlogs and prioritizing tasks based on stakeholder needs
- Awareness of current digital health technologies and trends to keep the product at the forefront of innovation
- Must have a positive attitude, and the ability to find creative solutions to problems

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Product Owner

EXPERIENCE

- Essential:
  - Proven experience of at least 5 (five) years as a Product Owner, preferably in the healthcare or medical software sector
  - Demonstrated experience of 3 to 5 years in leading Agile or Scrum-based projects within the healthcare sector
- Desirable:
  - Practical experience in health informatics, including the deployment of healthcare information systems
  - Experience navigating regulatory compliance and certifications in healthcare IT
  - Proven ability to manage stakeholder relationships across diverse healthcare environments

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Product Owner

EDUCATION

Essential:

- Bachelor's degree in a relevant field such as Health Informatics, Healthcare Administration, Computer Science, Information Technology, Business Administration, Public Health or a related discipline

• Specific courses for Scrum/Agile Product OwnersDesirable:

- Master's degree in Health Informatics, Public Health, or Business Administration with a focus on healthcare management
- Health IT or informatics certifications, such as Certified Professional in Healthcare Information and Management Systems (CPHIMS), to validate expertise in health IT standards and practices
- Product Owner or Agile equivalent certification:
- Certified Scrum Product Owner (CSPO) by Scrum Alliance
- Professional Scrum Product Owner (PSPO)
- Scrum Product Owner Accredited Certification by International Scrum Institute
- APMG International Agile Project Management (AgilePM)
- PMI Agile Certified Practitioner (PMI-ACP)