Tutorial | Leverage the Software Development Lifecycle

IT METHODOLOGY WEBINAR

Things to know...

- All participants will be on mute
- Questions are welcome
- Ask questions in the question box
- We DO NOT send out PDU certificates
- May be valid for PDU credit (self-report session)
- Recording and slides sent by tomorrow

Moderator

Denise Rodriguez

Project Insight

Marketing

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Presenter

Cameron Watson

President, QAIassist

cwatson@qaiassist.com

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Who's on the call?

- I am a Project Manager
- I am a Business or Operational Manager
- I am a software developer or software tester
- I am a member of an organizational PMO, governance or quality assurance function
- I want a better understanding of IT Methodology

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Who is QAIassist?

- Established 2007 – Ottawa, Canada
- Nurturing organizational efficiency through IT Methodology knowledge & expertise
- Support and promote a community with evolving IT Methodology knowledge and expertise
- Maintain, optimize, promote and support the delivery of IT methodology products and lifecycles proven to increase operational performance
- Administration and oversight of QAIassist Integrated Methodology (QAIassist-IM) and formal certifications – “Foundation” & “Practitioner”
- Support practitioners and authorized affiliates in acquiring and delivering IT Methodology knowledge and expertise

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IT Methodology Webinar Audience

- **Nurturing efficiency through IT Methodology knowledge & expertise across the globe**
  - Over 200 countries
  - Wide array of industries (manufacturing, banking, health, insurance, consulting)
  - More than 50 unique webinars
- **Over 10,000 webinar registrants**
  - Executives
  - Operational & Delivery Managers
  - Project Managers
  - Business Analysts and Architects
  - Application Developers & Testers
  - Corporate PMO, Quality Assurance, Continuous Improvement
  - Consultants

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QAIassist 2017 Series - Goals

- Share IT Methodology knowledge
- Develop IT methodology understanding & expertise
- Provide additional insight into several IT (project management, software development, software testing) methodologies
- Discuss best practices on incorporating an organizational IT methodology
- Promote ongoing dialog and feedback with webinar audience (questions, email, survey)

2017 Schedule

- **The 3rd Wednesday of Every Month**
  - 8:00 am Pacific - 11:00 am Eastern Time
- **IT Methodology Concepts (60 mins)**
  - This series of six webinars will be presented on a bi-monthly basis. Each webinar will provide you with a context, overview, terminology and general understanding of information technology (IT) methodology.
- **IT Methodology – Tutorials (60 mins)**
  - This series of five webinars will be presented on a bi-monthly basis. Each session is designed to offer a more “hands on” perspective – bridging the concepts into a practical utilization.

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2017 Concept Sessions

- **The 3rd Wednesday of Month (Jan, Mar, May, Jul, Sept, Nov)**
  - 8:00 am Pacific - 11:00 am Eastern Time
- **IT Methodology Concepts (60 mins)**
  - A Context for IT Methodology - (Jan)
  - Apply PM Fundamentals to IT - (Mar)
  - Leverage the Software Development Lifecycle - (May)
  - Explore the Software Testing Lifecycle - (Jul)
  - Incorporate Organizational Process Governance - (Sept)
  - Implementing IT Methodology - (Nov)

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2017 Tutorial Sessions

- **The 3rd Wednesday of Month (Feb, Apr, Jun, Aug, Oct)**
  - 8:00 am Pacific - 11:00 am Eastern Time
- **IT Methodology Tutorials (60 mins)**
  - Applying IT Methodology to Project Initiation - (Feb)
  - Project Planning & Design with IT in Mind - (Apr)
  - Executing Projects with IT Methodologies - (Jun)
  - Project Control & Verification - (Aug)
  - Project Close & Delivery - (Oct)

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Leverage the Software Development Lifecycle
Concepts III

- **Webinar Goals**
  - Review previous IT Methodology Concepts Sessions (Jan, Mar)
  - Define a context for Software Development Lifecycle (SDLC)
  - Discuss significance of Requirements and Traceability
  - Identify the purpose and objectives of SDLC phases

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Leverage the Software Development Lifecycle Concepts III - Agenda

- Establish webinar context - review previous “Concepts” sessions
  - Jan - A Context for IT Methodology
  - Mar- Apply PM Fundamentals to IT
- Software Development Lifecycle (SDLC) – Context and Premise
- SDLC - Requirements (Identification and Definition)
- SDLC Phases - Objectives, Iterations, Traceability
- SDLC – Internal Dynamics (PMLC and STLC interfaces)
- Recap

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Terms, Terms and more Terms

- IT Framework, IT Methodology, IT Lifecycle
  - Non Standard usage in terminology
  - Terms are used interchangeably between organizations and across the IT industry
  - Examples include
    - Project Management — Methodology/Lifecycle/Framework
    - Software Development — Methodology/Lifecycle (SDLC)/Framework
    - Software Testing — Methodology/Lifecycle/Framework
  - **Every IT organization is using an IT Methodology or IT Lifecycle or IT Framework**

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IT Methodology Context

- Organizational Frameworks
  - ISO(900XXX), CMMI, Six-Sigma, ITIL, COBIT
- Methodologies/Lifecycles (noun)
  - Rational Unified Process (RUP), QAIassist (IM), PMI, Prince2
- Methodologies/Lifecycles (verb)
  - Waterfall, Spiral, Agile, RAD, etc

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IT Methodology – Map & Journey

- Methodologies/Lifecycles - “noun”
  - The roadmap
  - Rational Unified Process (RUP), QAIassist (IM) , PMI, Prince2
- Methodologies/Lifecycles - “verb”
  - The journey taken along the road
  - Waterfall, Spiral, Agile, RAD , Prototyping, etc

IT Methodology/Lifecycle - Noun

- All Methodologies/Lifecycles (RUP, QAIassist-IM, PMI, Prince2) define, utilize and rely on their own pre-defined structure, naming conventions, and terminology
- Hierarchy/Structure
  - Methodology/Lifecycle (ie Project Management, Software Development , Software Testing)
  - Phase/Stage (ie Initiate, Planning, Design, Closeout)
  - Deliverable/Artifact/Work Product (ie Project Charter, Testing Strategy)
  - Activity (tasks performed to complete deliverables, artifacts, work products)

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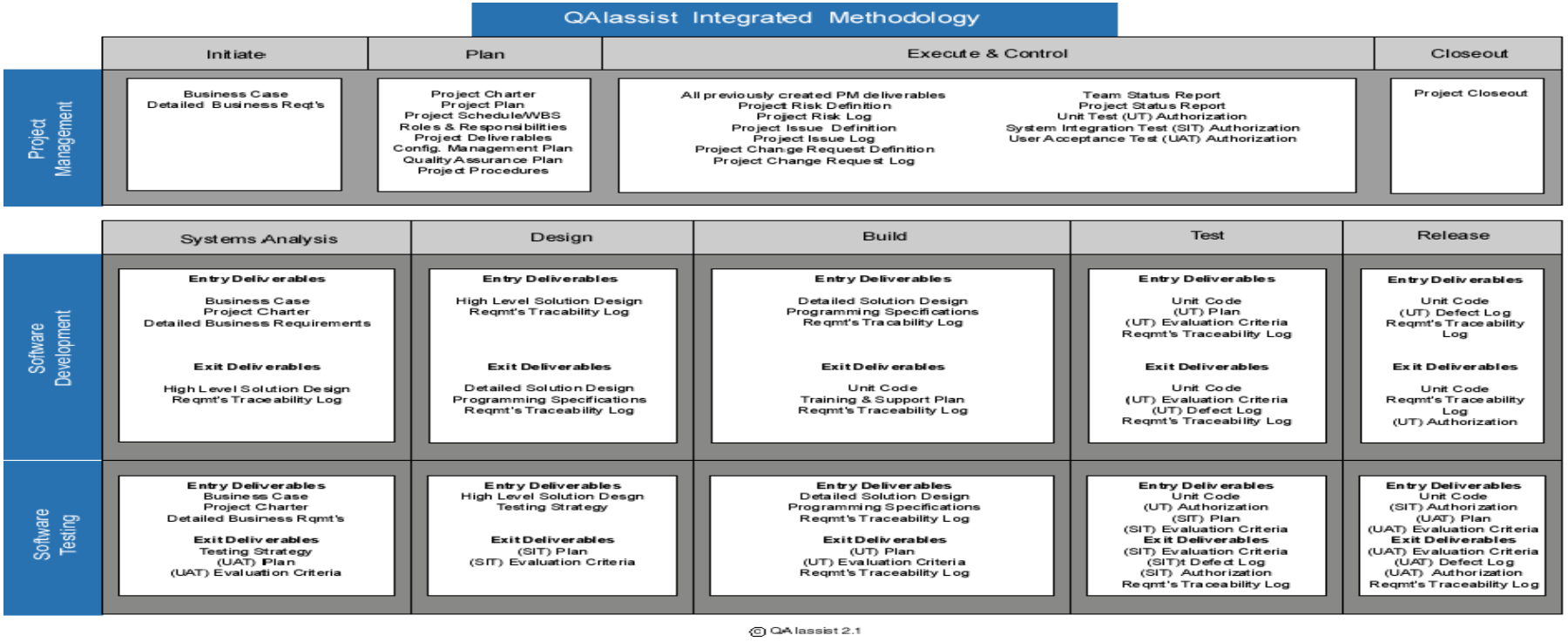
QAIassist Integrated Methodology



“Deliverable/Artifact/Work Product” versus “Activity”

Building an IT Application

- Deliverable (Artifact, Work Product)
  - Business Case
  - Project Plan
  - User Acceptance Test Plan
- Activity (non-Deliverable, non-Artifact, non Work Product)
  - Reviewing business need with Operational Management, Business Analysts and End-Users
  - Meeting with Stakeholders to acquire approval of Project Plan
  - Discussing User Acceptance Testing objectives and priorities with testing team

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Deliverable/Artifact/Work Product Construct/Format

- Fixed Sections (always populated)
  - Title Page
  - Deliverable Details (Author, Creation Date, Version, Status, etc)
  - Deliverable History, Reviewers, Sign Off
  - Table of Contents (as per deliverable)
  - Context (purpose of the deliverable)
- Variable Sections (based on pre-defined informational requirements)
  - Structure/format defined as per deliverable (ie a Project Charter deliverable does not have the same pre-defined informational requirements as a Testing Strategy deliverable)

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Deliverable/Artifact/Work Product Status

- **Draft** - Deliverable has been identified, assigned and is in the process of being drafted/completed
- **Review** - "Draft" deliverable has been completed and submitted for "review" and "authorization"
- **Approved/Archived** - "Reviewed" deliverable has been "Authorized" by designated stakeholders and put under configuration management
- **Applied** - Information within "Authorized" deliverable is being referenced and/or utilized within another deliverable

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“Deliverable/Artifact/Work Product” Attributes

- **Tangible (pre-defined informational requirements)**
  - Can be identified and defined (completion dates, cost) on Project Schedule
  - Can be assigned (populating information requirements) to project team member(s)
  - Can be referenced by project team members to support creation of other deliverables
  - Can be formally reviewed and officially authorized
  - Will alter in status (authored, reviewed, approved, archived, referenced) throughout life of project
  - Will reflect evolving deliverable and project status/progress (risks, issues, percentage complete)
  - Can be placed under formal configuration management – re: with evolving status
  - Can be accessed for future reference (application support and maintenance)

Methodology Fundamentals 101

- Viable IT methodologies (noun and verb) are designed to help not hinder
- IT methodologies (noun) are applicable for a wide range of IT Methodologies (verb) and delivery approaches (waterfall, spiral, agile, RAD, prototyping, etc)
- No hard or specific rules (ie iterations, frequency of iterations, deliverables to be completed) of how an IT methodology (noun) can best be applied or leveraged by an organization or project team
- No silver bullet - if the perfect combination of IT Methodology (noun) and IT Methodology (verb) existed, every project team and organization would be using it

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Methodology Fundamentals 102

- Deliverables (and content) may be re-usable from one project to another
- Not every deliverable of every phase has to be completed for every project - any and every deliverable to be completed must add value (cost, schedule, quality) to the project
- Not every section or sub-section of every deliverable has to be completed for every project - information used to populate every deliverable must add value (cost, schedule, quality) to the project

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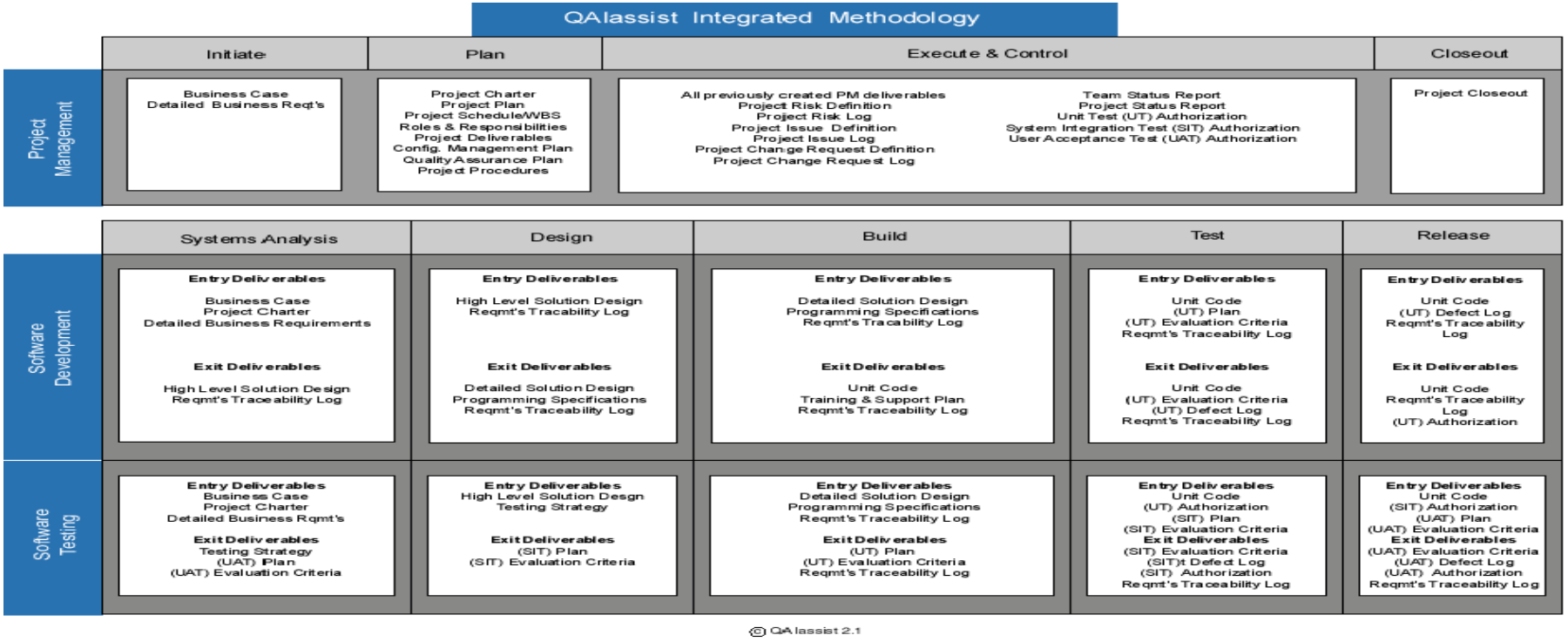
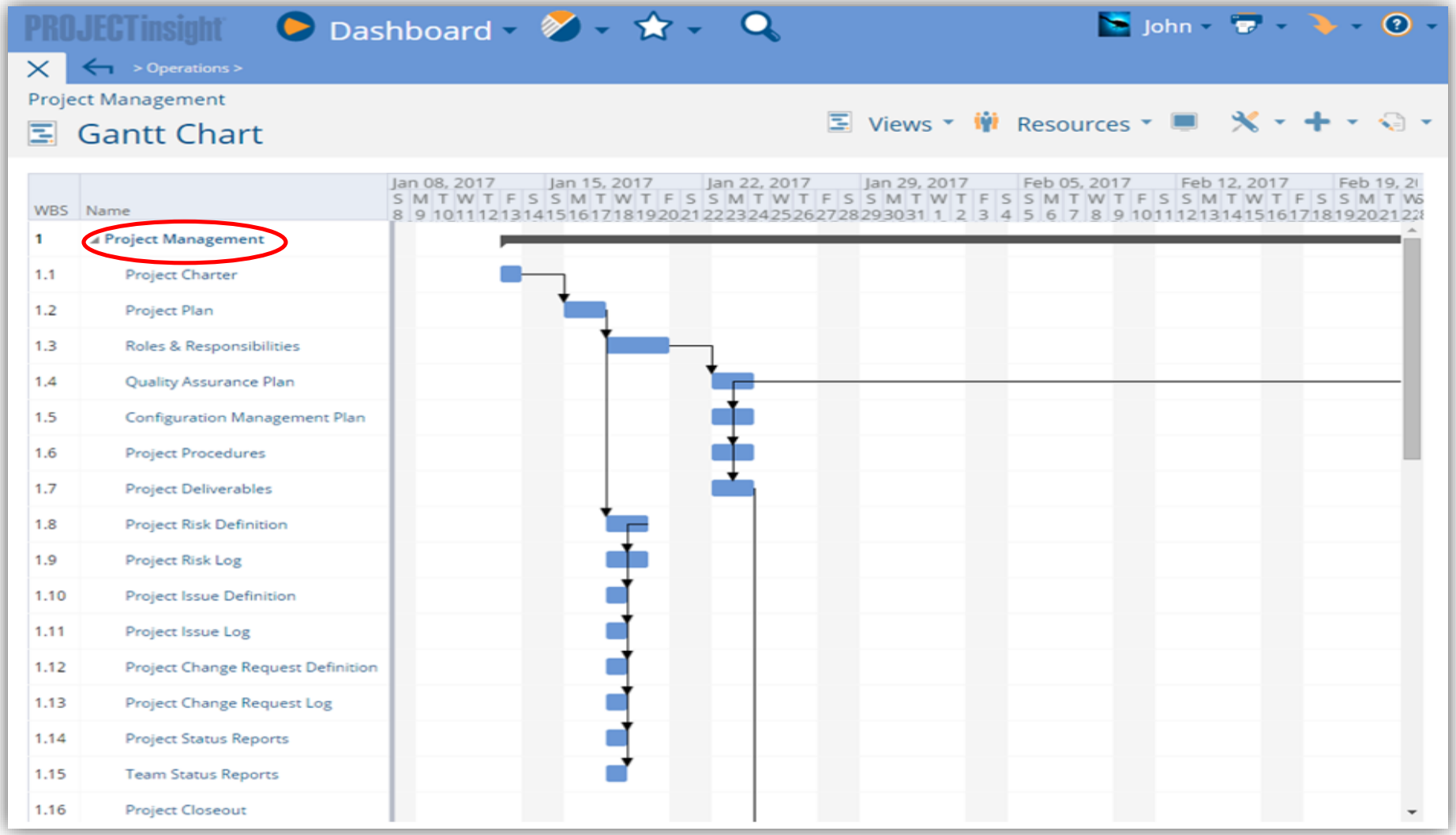
QAIassist Integrated Methodology

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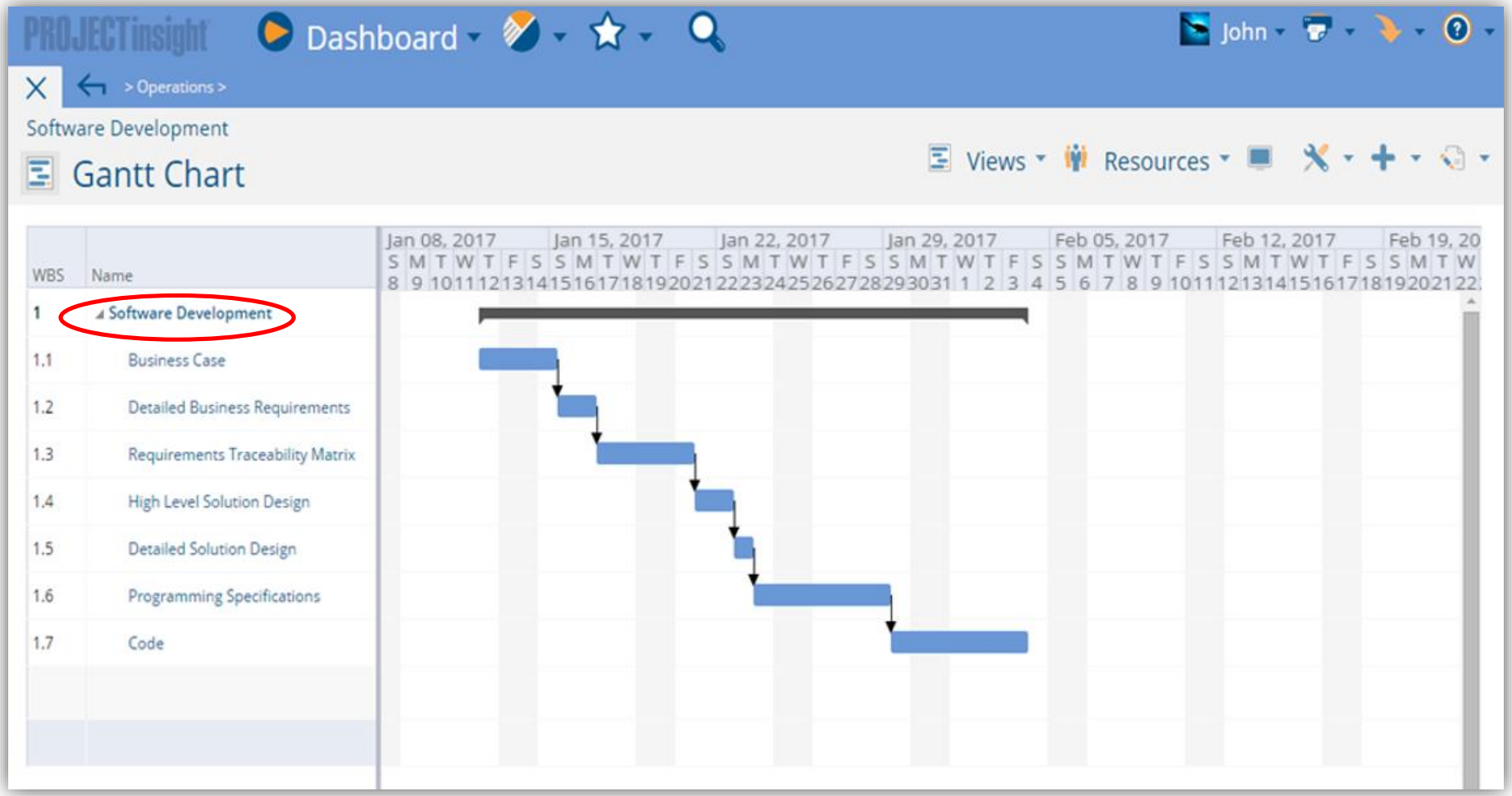
Jan 08, 2017
Jan 15, 2017
Jan 22, 2017
Jan 29, 2017
Feb 05, 2017
Feb 12, 2017
1 Project Management
1.1 Project Charter
1.2 Project Plan
1.3 Roles & Responsibilities
1.4 Quality Assurance Plan
1.5 Configuration Management Plan
1.6 Project Procedures
1.7 Project Deliverables
1.8 Project Risk Definition
1.9 Project Risk Log
1.10 Project Issue Definition
1.11 Project Issue Log
1.12 Project Change Request Definition
1.13 Project Change Request Log
1.14 Project Status Reports
1.15 Team Status Reports
1.16 Project Closeout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1
Software Development
1.1
Business Case
1.2
Detailed Business Requirements
1.3
Requirements Traceability Matrix
1.4
High Level Solution Design
1.5
Detailed Solution Design
1.6
Programming Specifications
1.7
Code
Jan 08, 2017
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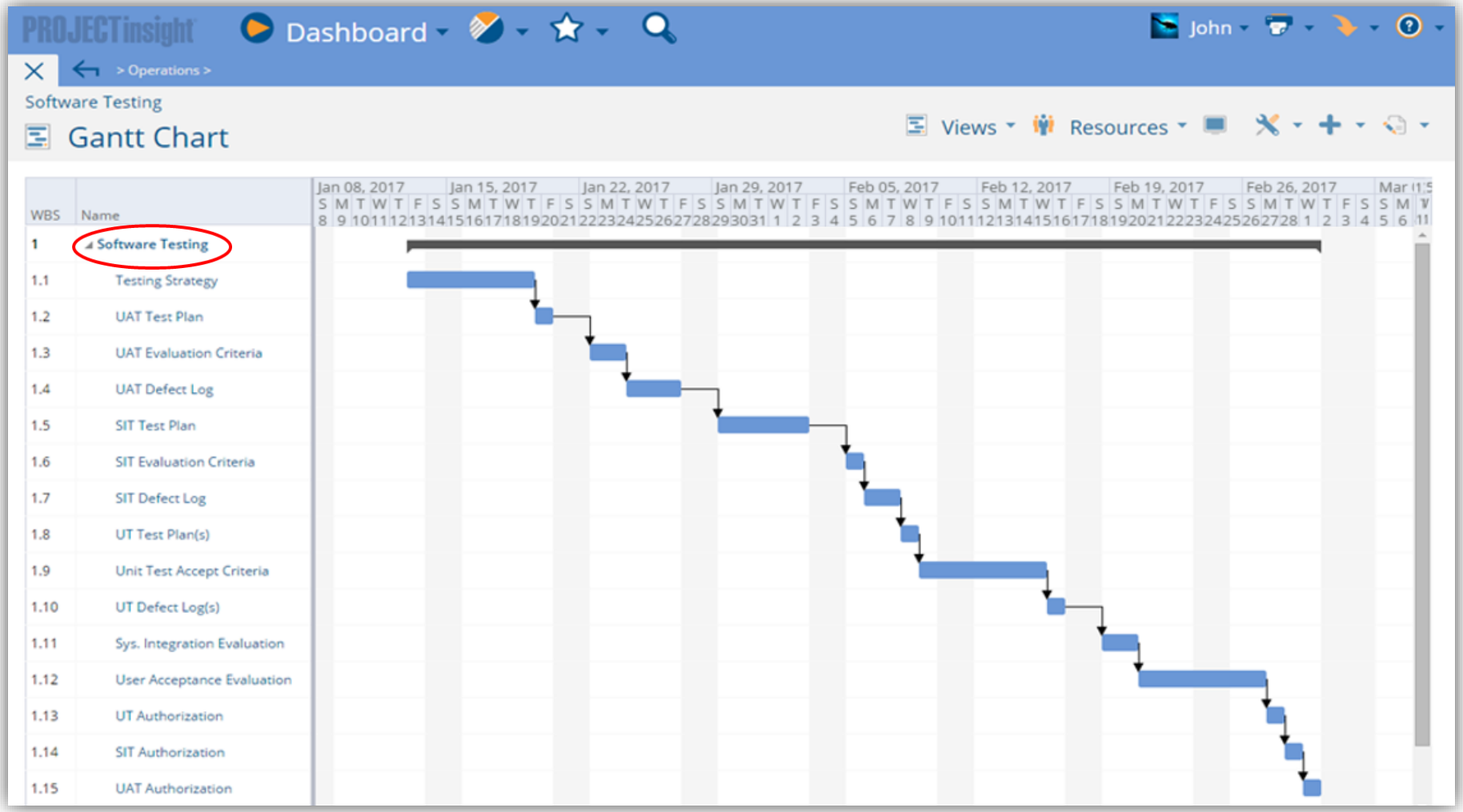
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1 Software Testing
1.1 Testing Strategy
1.2 UAT Test Plan
1.3 UAT Evaluation Criteria
1.4 UAT Defect Log
1.5 SIT Test Plan
1.6 SIT Evaluation Criteria
1.7 SIT Defect Log
1.8 UT Test Plan(s)
1.9 Unit Test Accept Criteria
1.10 UT Defect Log(s)
1.11 Sys. Integration Evaluation
1.12 User Acceptance Evaluation
1.13 UT Authorization
1.14 SIT Authorization
1.15 UAT Authorization
Jan 08, 2017
Jan 15, 2017
Jan 22, 2017
Jan 29, 2017
Feb 05, 2017
Feb 12, 2017
Feb 19, 2017
Feb 26, 2017
Mar

Leverage the Software Development Lifecycle Concepts III - Agenda

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SDLC – Business Context

- **Development Environment**
  - New Products
  - New Operational Business Applications (ie HR, Accounting, Sales, etc)

- **Maintenance/Support Environment**
  - Existing Products
  - Existing Operational Business Applications (HR, Accounting, Sales, etc)
  - Off the Shelf Applications

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SDLC – IT Context

- Multiple IT Environments
  - Mainframe, Distributed, Web Based
- Multiple Delivery Approaches – Methodology (verb)
  - Waterfall
  - Agile
  - Prototyping
- Integrations
  - Project Management Lifecycle
  - Software Testing Lifecycle

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SDLC – Inherent Principle

- How many requirements (and associated functionality) should/can be developed ?
  - Too Few – leads to a solution that does not satisfy the business need
  - Too Many – leads to a solution that is over priced, over built, over budget and past due (and may still not satisfy the business need)

How can a project team know when they are best leveraging an SDLC to develop the appropriate level of functionality ?

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SDLC – Premise

Identifying, Designing, Building and Unit Testing functionality

**** Functionality cannot be delivered in a vacuum ***

- **Manual Functionality**
  - Processes that deliver or administer the delivery of products and/or services (often leverages automated functionality)

- **Automated Functionality**
  - IT Systems/Applications that interface and support the delivery of **Manual Functionality**

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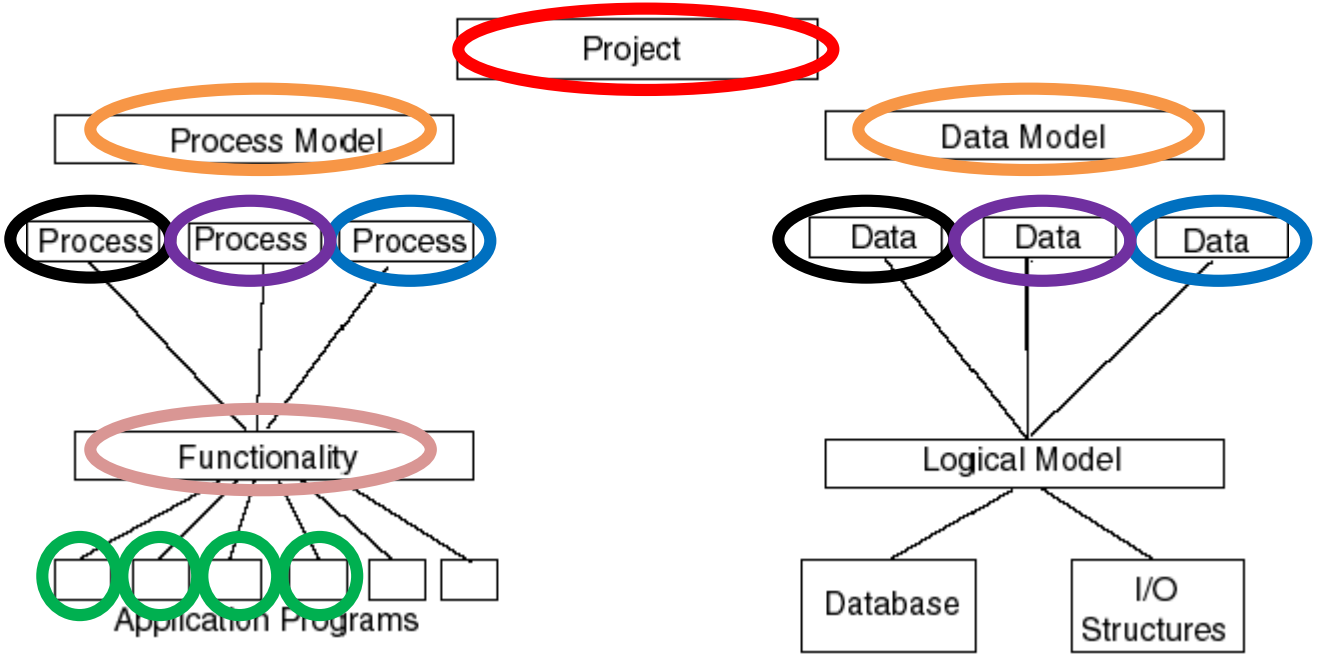
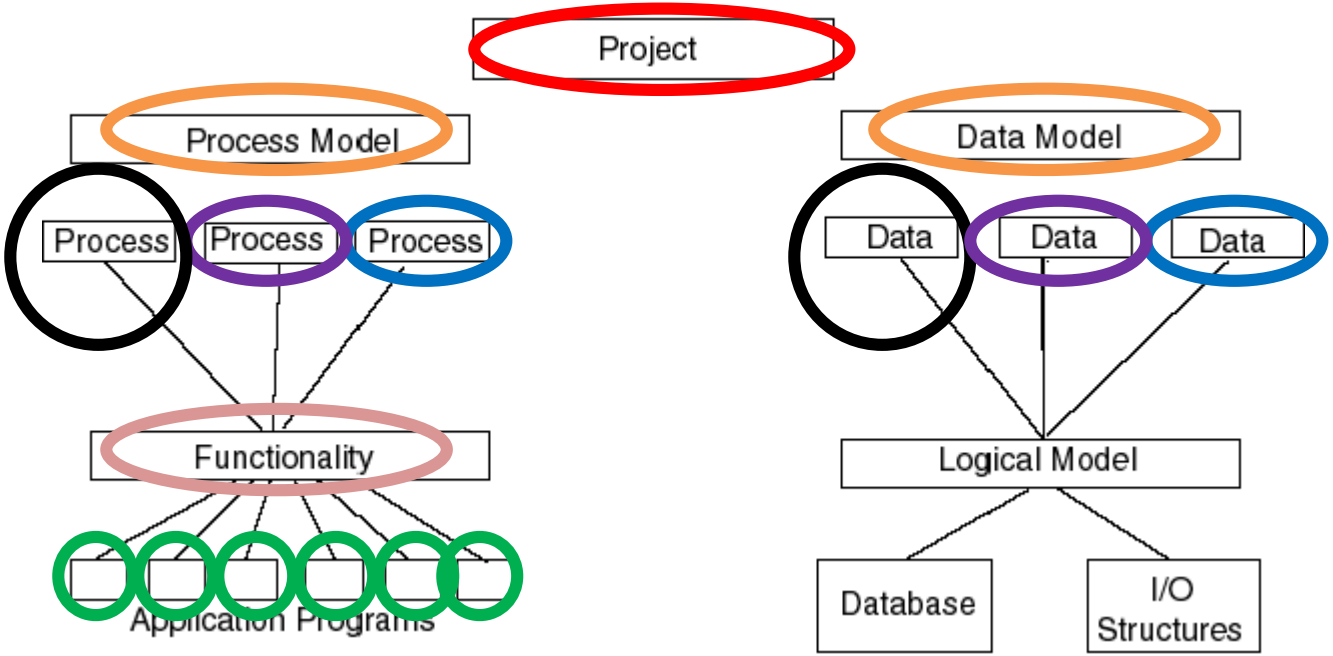
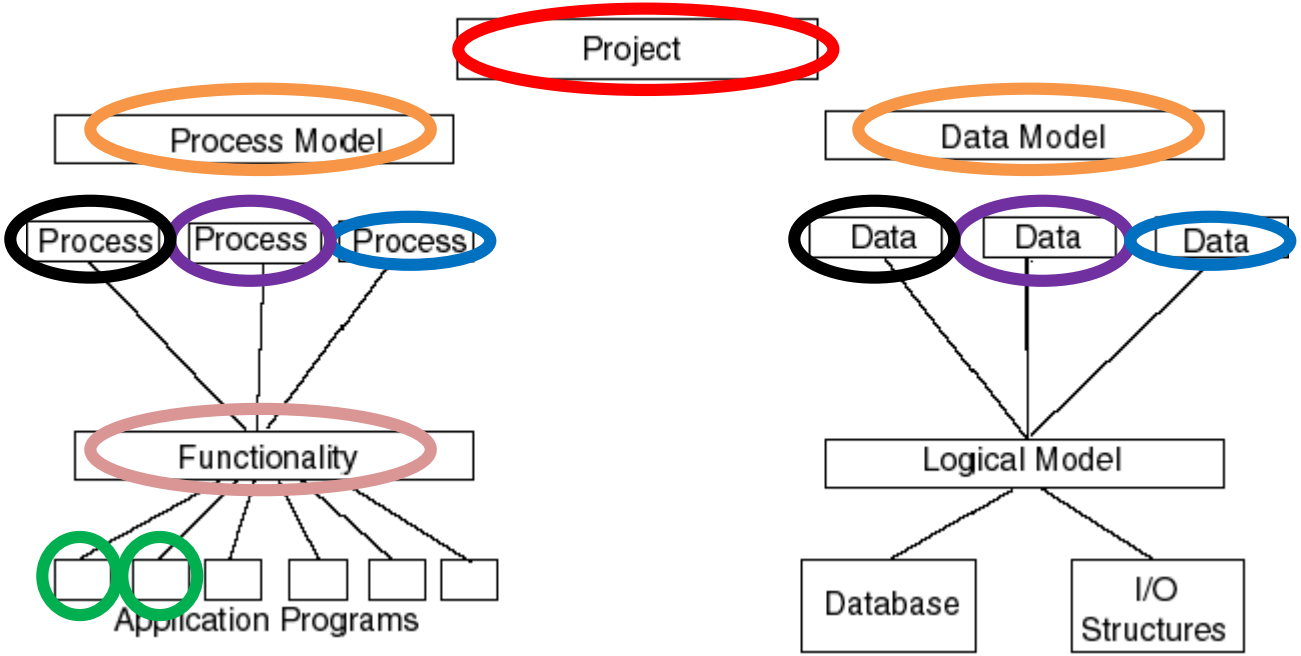
SDLC – Premise



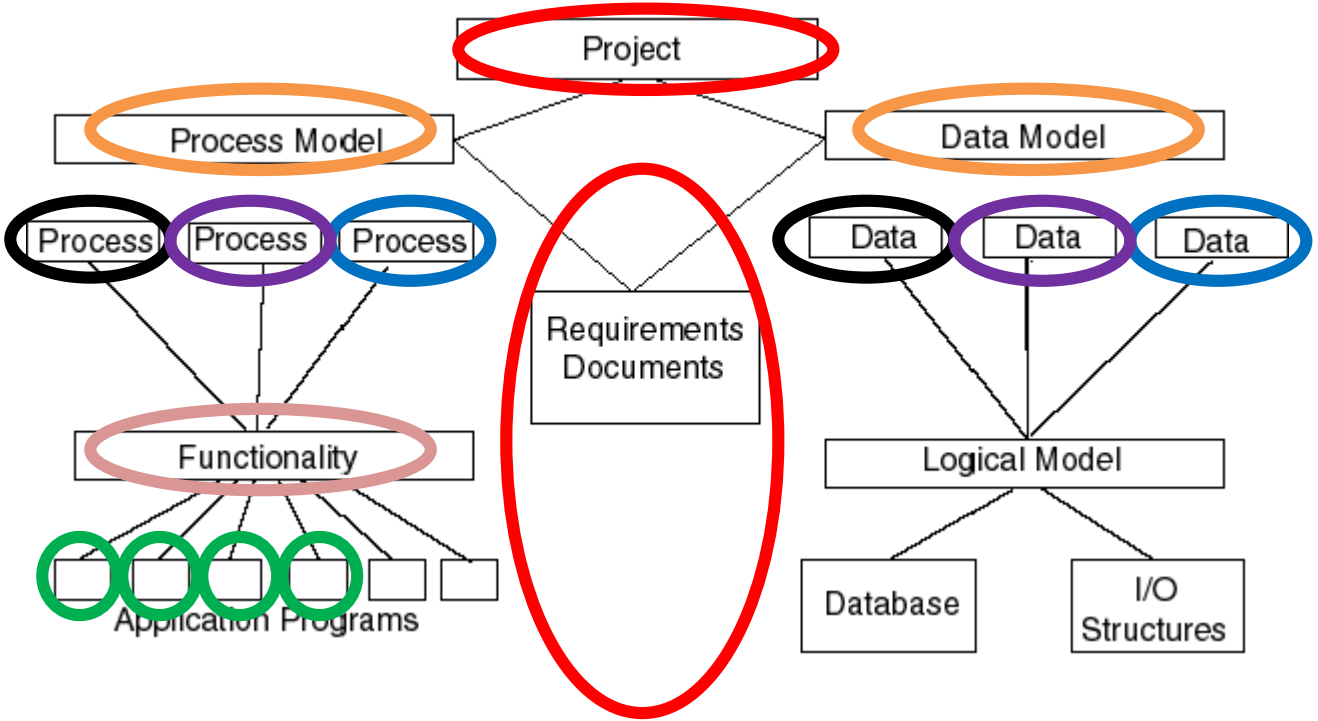
SDLC – Premise



SDLC – Premise



SDLC – Premise



SDLC – Premise

- Generic Cohesion
  - “Data” and “Process” exist – a correlation exists between them
  - “Data” identifies and defines the information that will be utilized by the application to satisfy the business need
  - “Process” defines how the “Data” will be utilized/leveraged to satisfy the business need
- Data
  - **“Subject”** – highest level definition of user requirement - correlation with “System”
  - **“Topics”** – breakdown of “Subject” - correlation with “Sub-Systems”
  - **“Entities”** - breakdown of “Topics” - correlation with “Functions”
- Process
  - **“System”** – highest level “process” – correlation with “Subject”
  - **“Sub-System(s)”** – breakdown of “System” – correlation with “Topics”
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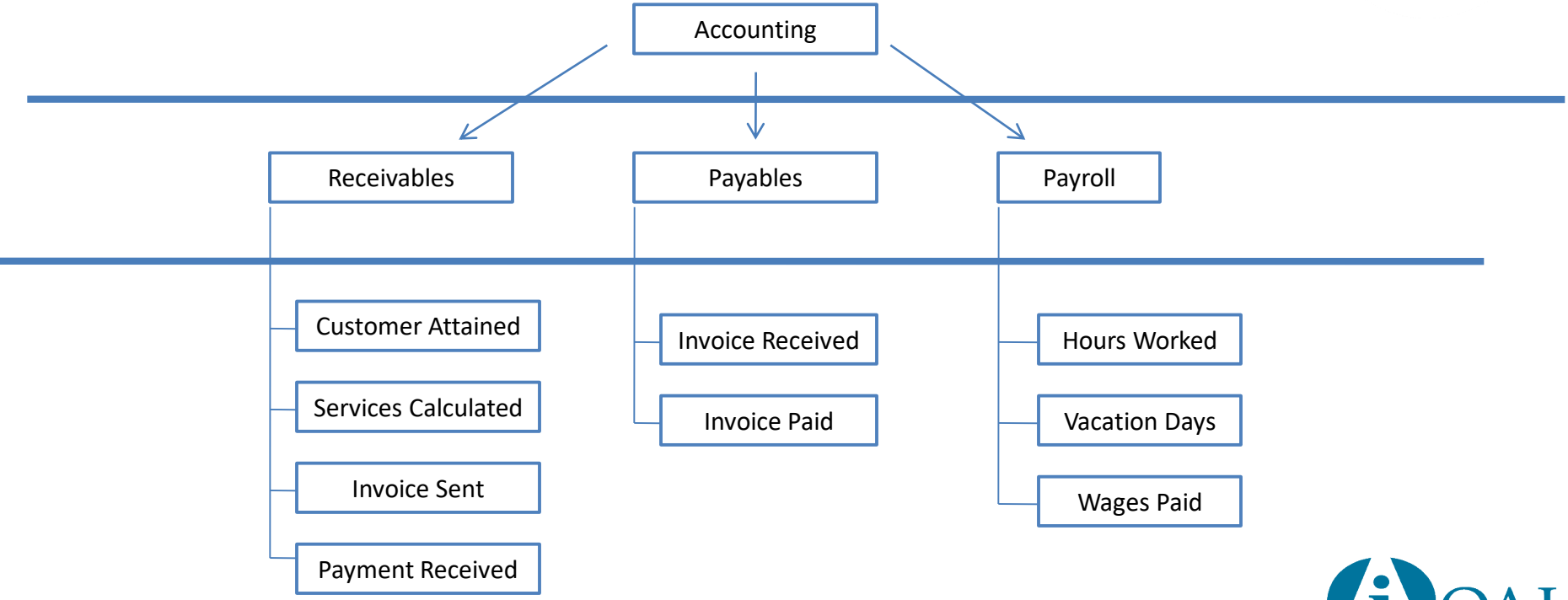
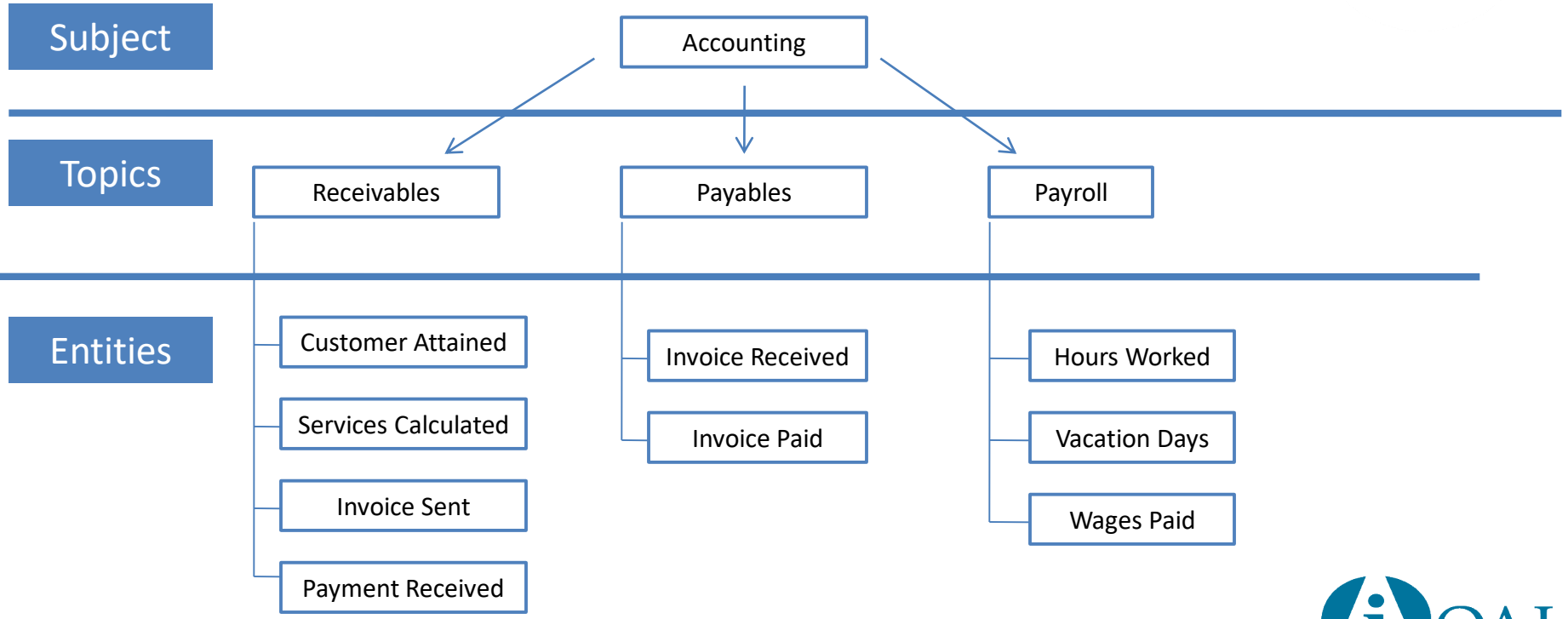
SDLC – Requirements (Identification and Definition)
Sample Application



SDLC – Requirements (Identification & Definition)
"Data" Context



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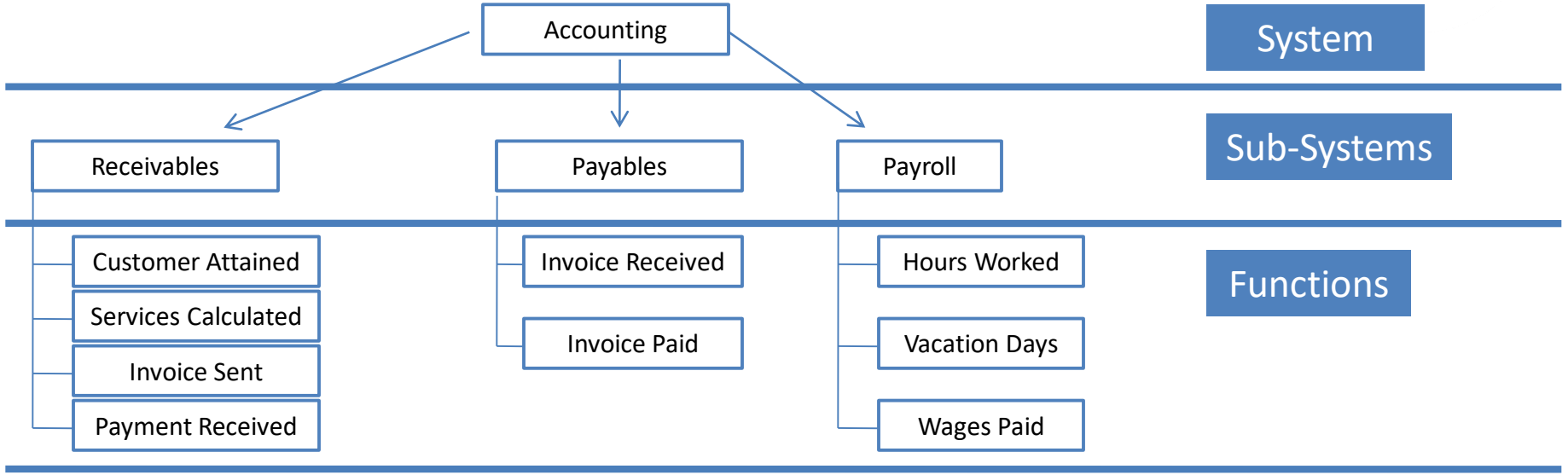
"Process" Context



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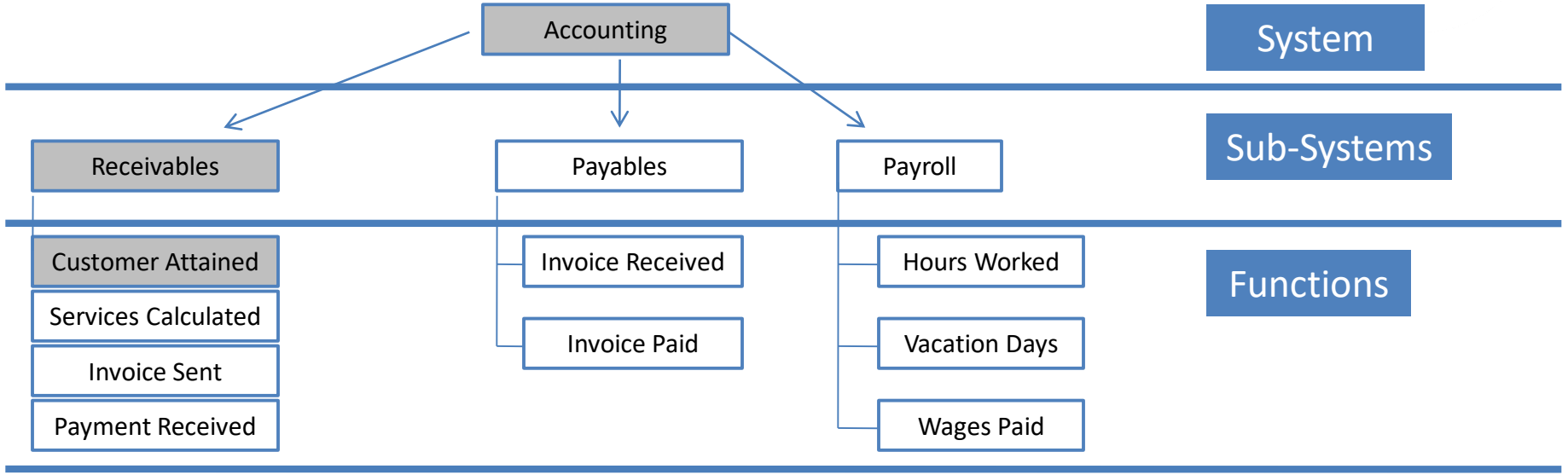

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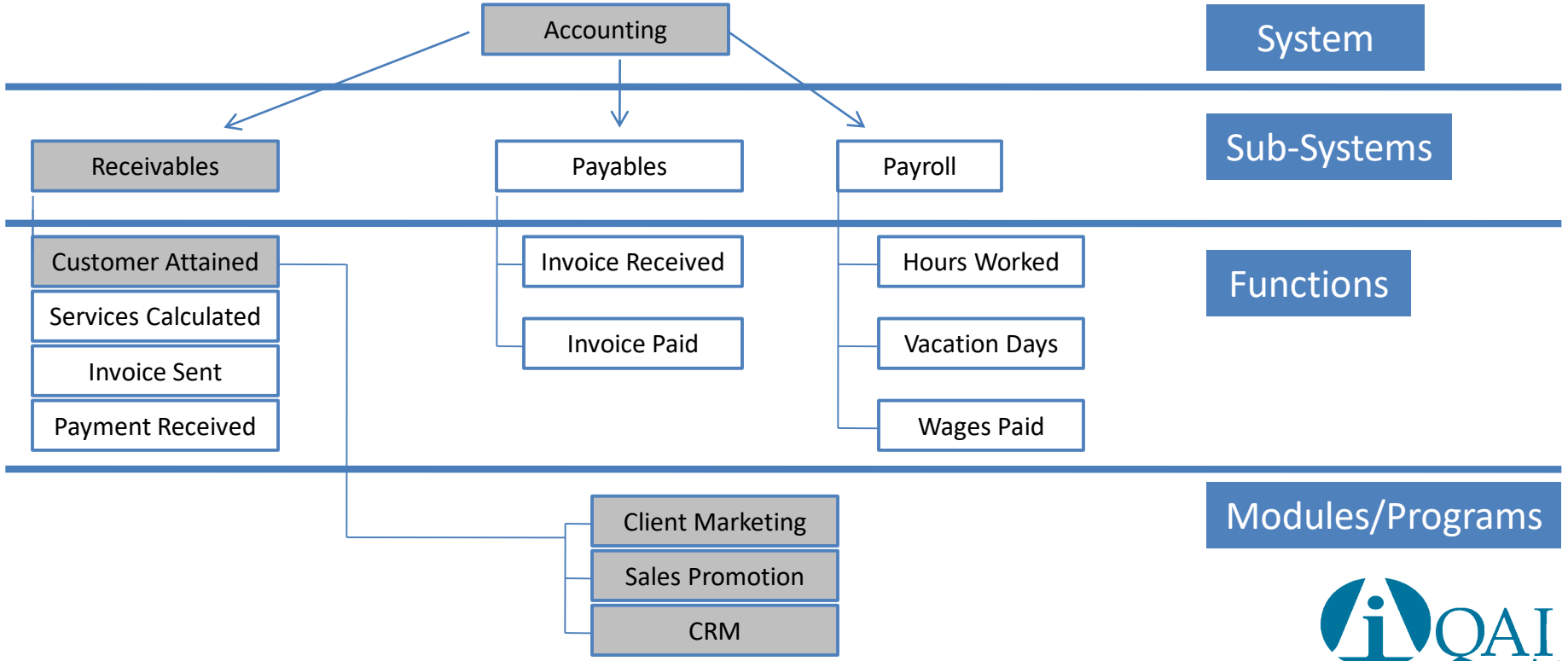
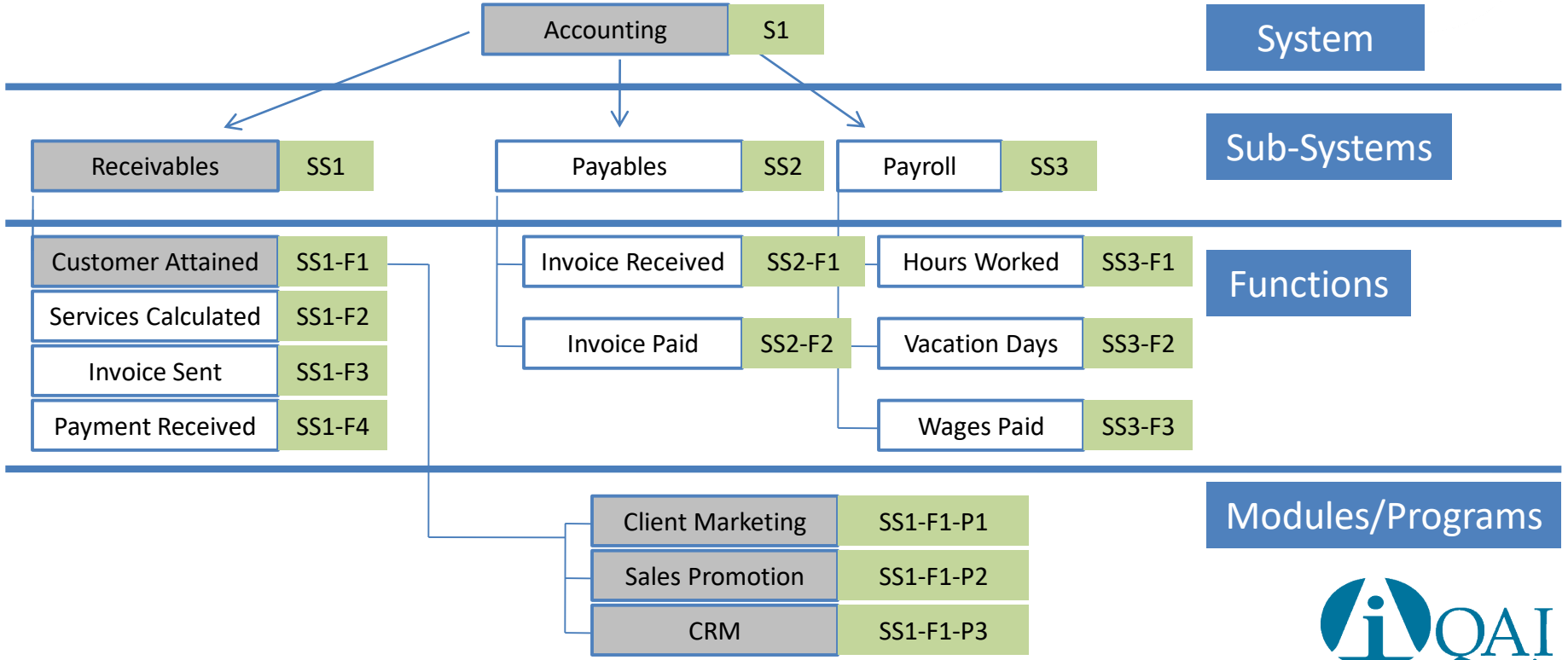


SDLC – Requirements (Identification & Definition)
"Process" – Naming Convention



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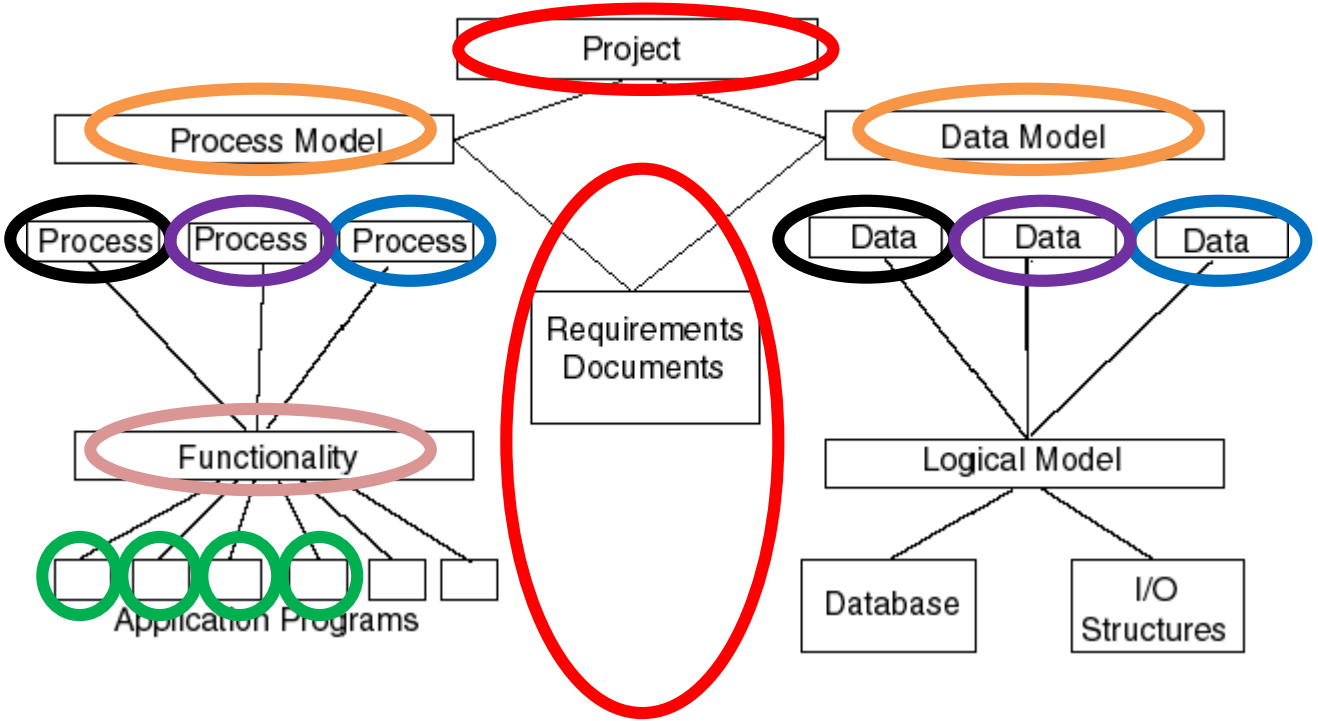
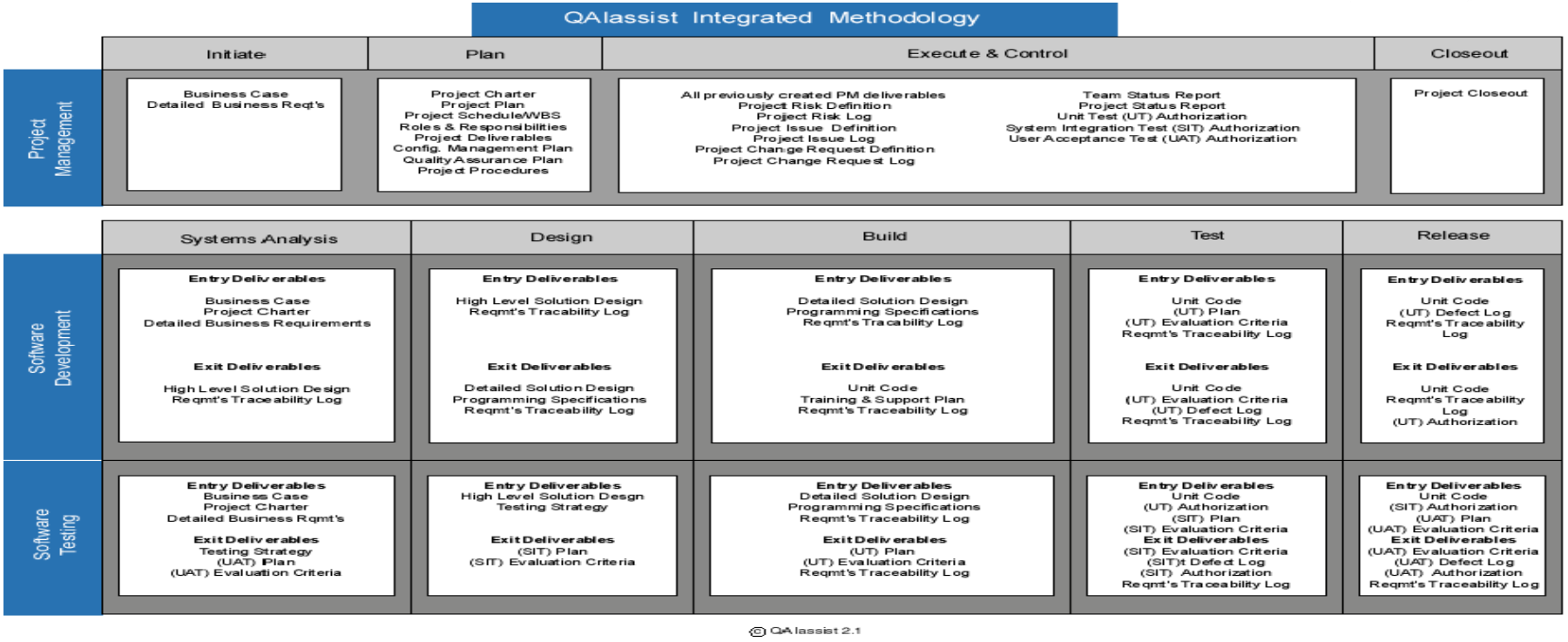
SDLC – Premise



QAIassist Integrated Methodology



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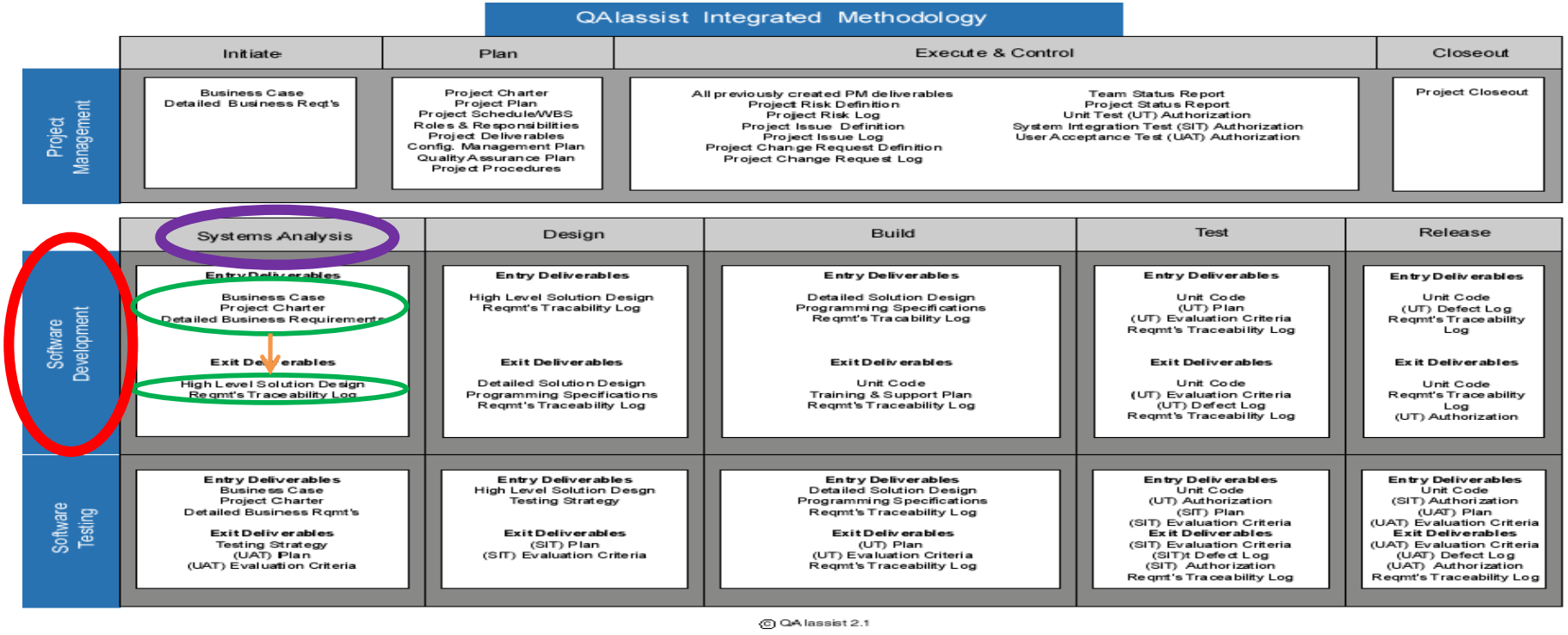
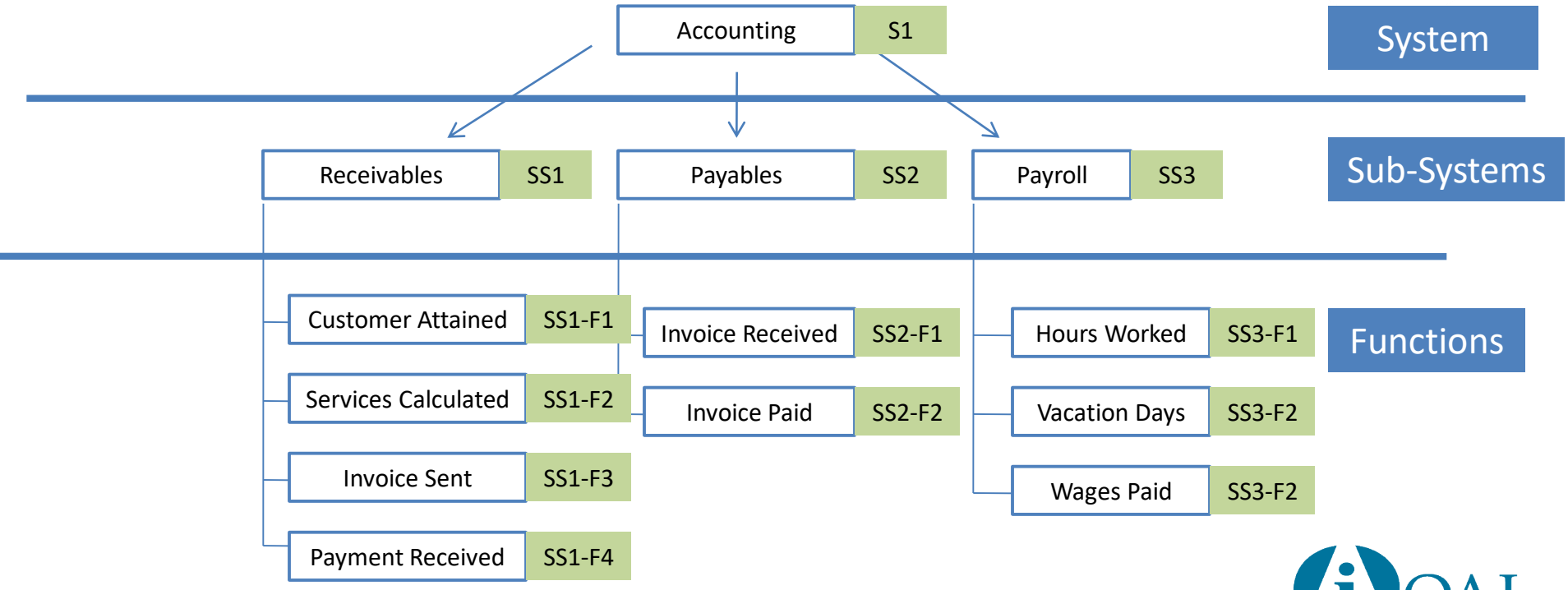
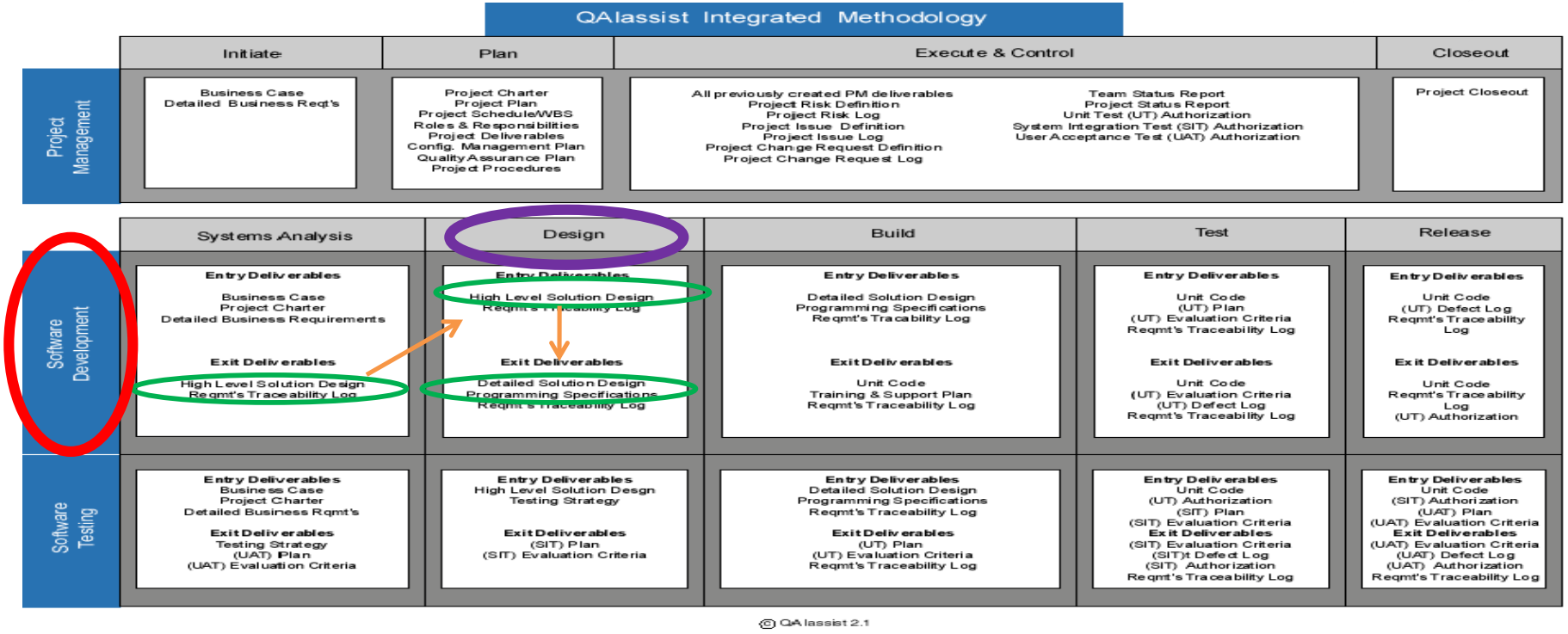


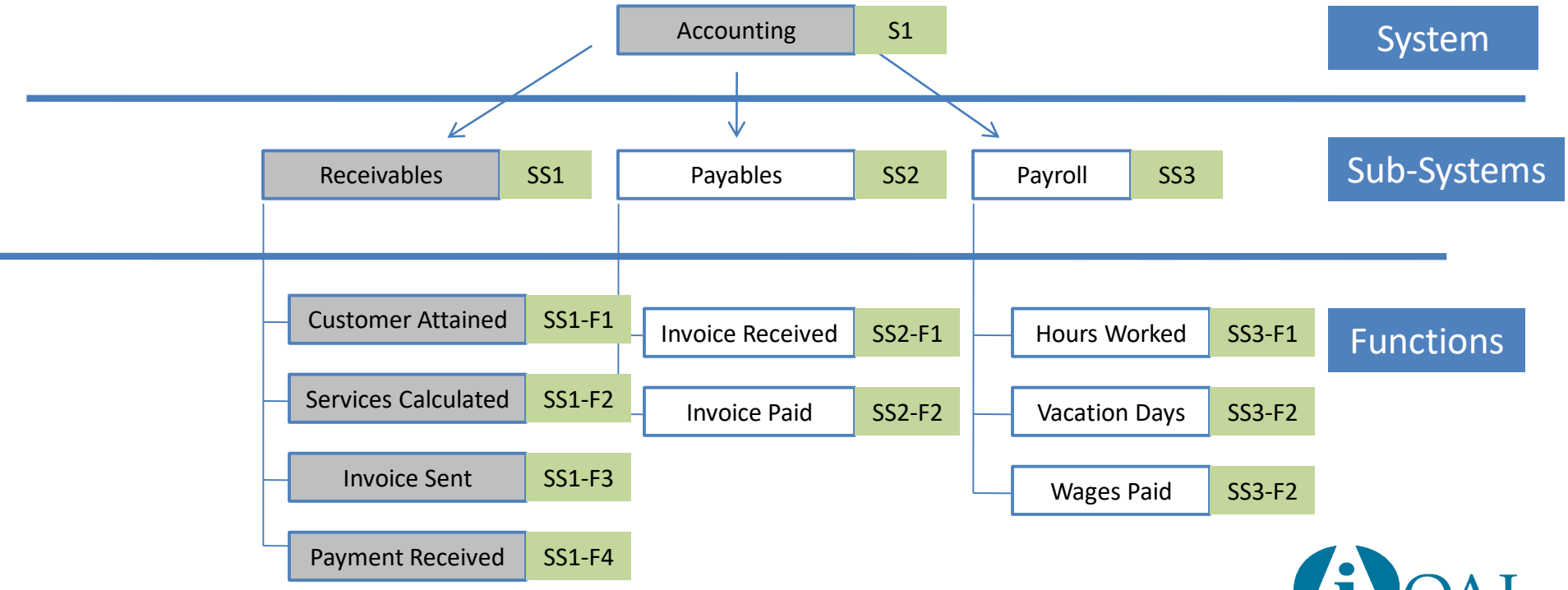
SDLC - Mechanics
High Level Solution Design Deliverable (S1, SSX, SSX-FX)



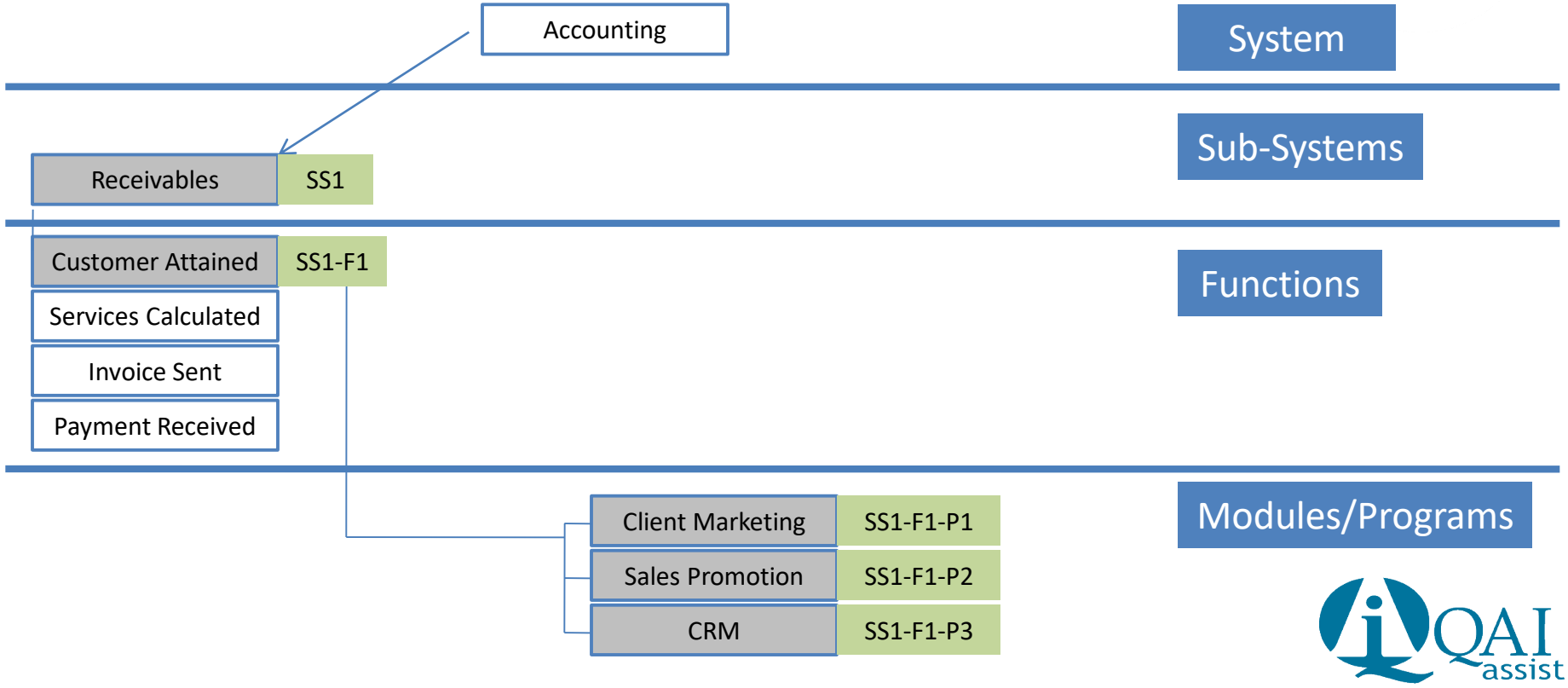
QAIassist Integrated Methodology



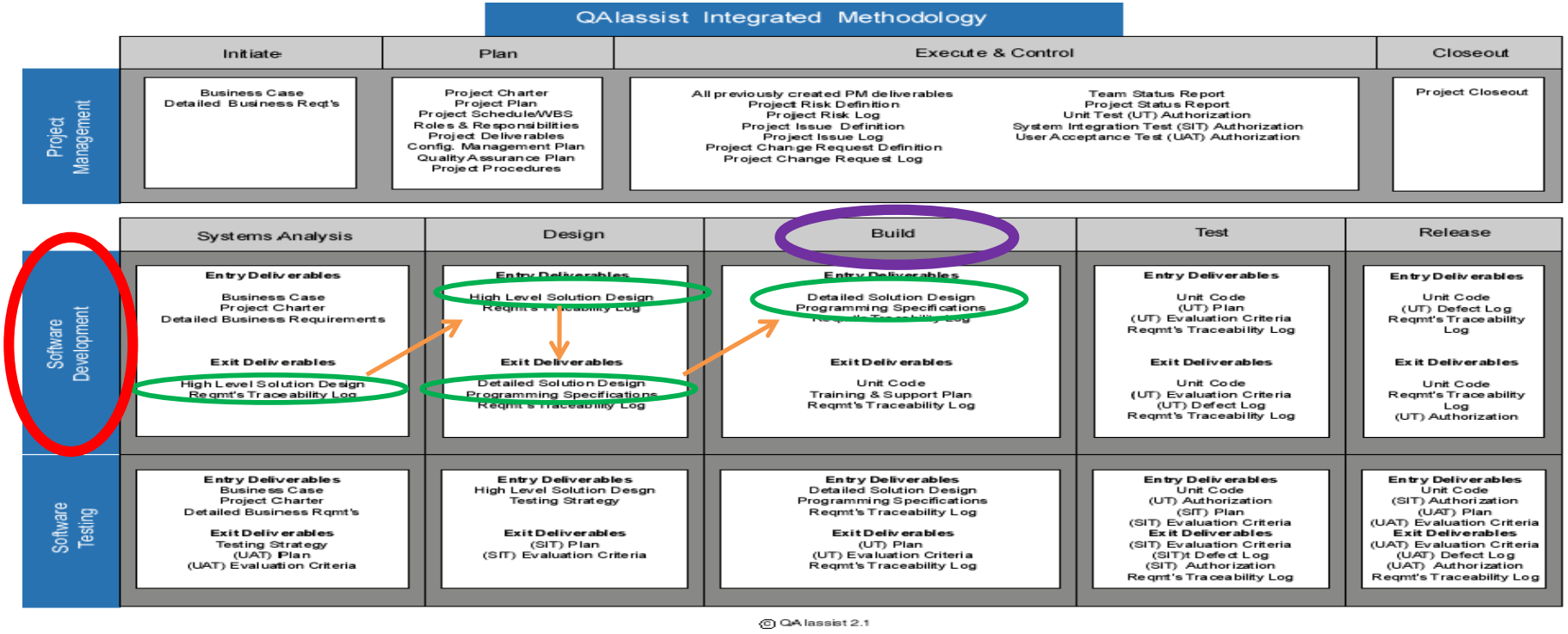
SDLC - Mechanics
Detail Solution Design Deliverables (SSX-FX one per)



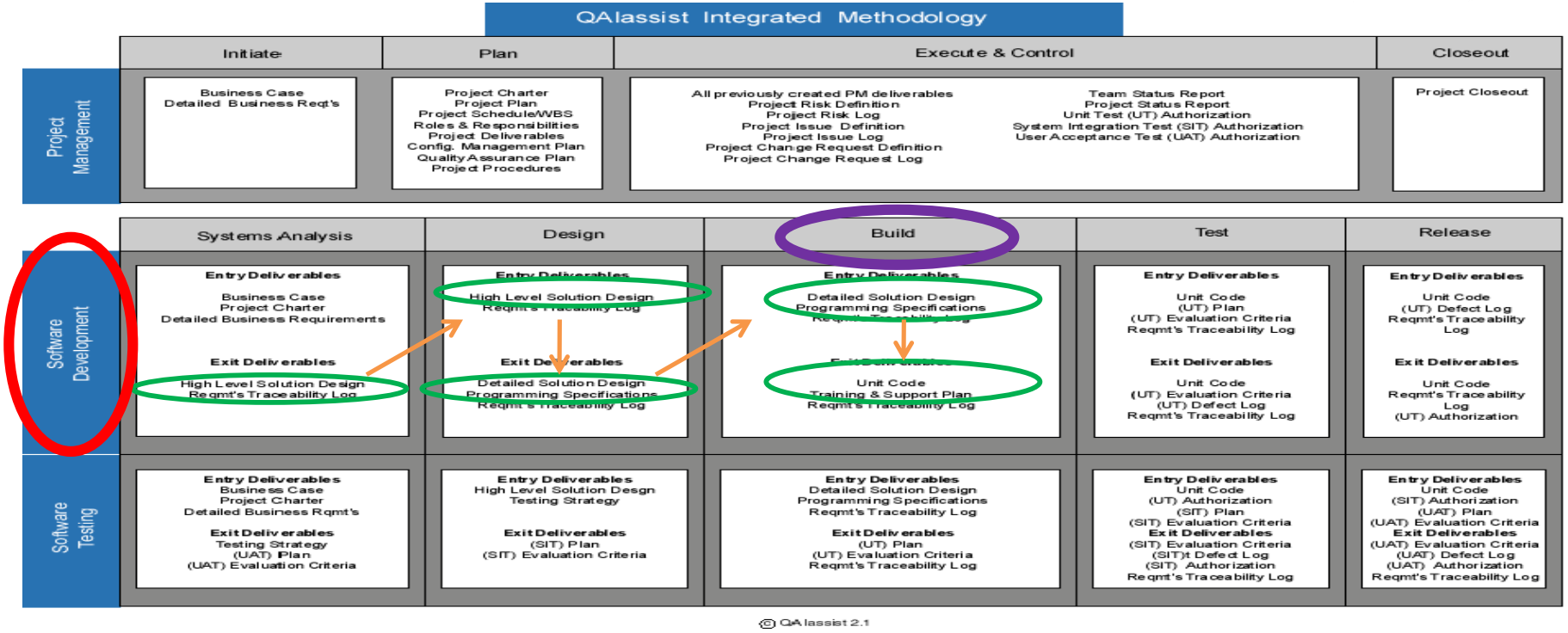
SDLC - Mechanics
Programming Specifications (SSX-FX-PX one per)

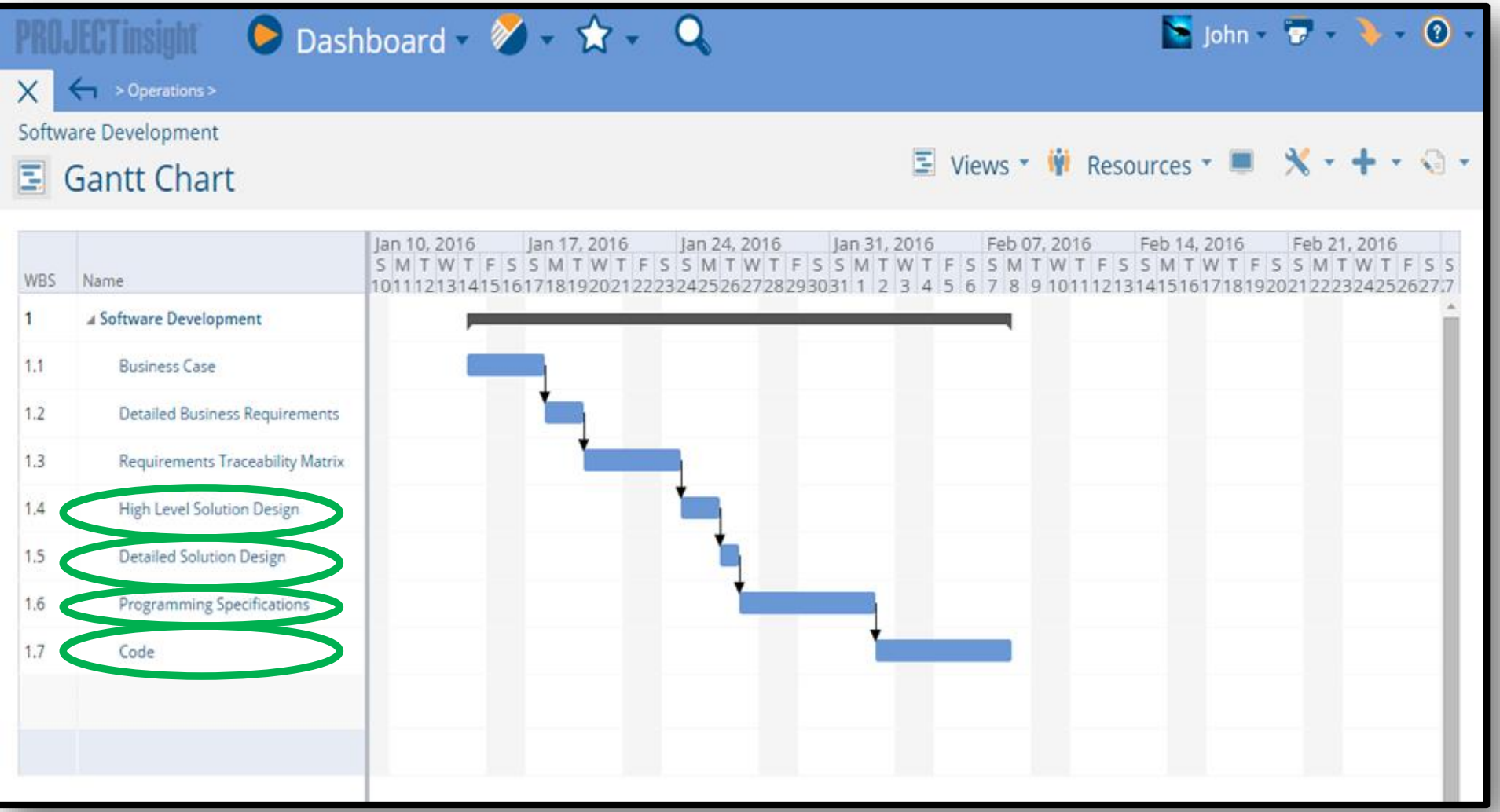


QAIassist Integrated Methodology



QAIassist Integrated Methodology

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> Operations >
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Jan 24, 2016
Jan 31, 2016
Feb 07, 2016
Feb 14, 2016
Feb 21, 2016
1 Software Development
1.1 Business Case
1.2 Detailed Business Requirements
1.3 Requirements Traceability Matrix
1.4 High Level Solution Design
1.5 Detailed Solution Design
1.6 Programming Specifications
1.7 Code

Software Development
Requirements Deliverables & Dependencies

- High Level Solution Design deliverable
  - Identifies data “Subject” and process “Systems”
  - Identifies data “Topics” and process “Subsystems”
  - Identifies data “Entities” and process “Functions”
- Detailed Solution Design deliverable(s)
  - One deliverable for every “Function” as identified in the **High Level Solution Design** deliverable
  - Functionality defined (Manual and Automated)
  - All required “Unit Modules/Programs” are identified
- Programming Specification deliverable(s)
  - One deliverable for every “Unit Module/Program” as identified in the **Detailed Solution Design** deliverables
  - Specifics for each “Unit Module/Program” are described

QAI assist

Leverage the Software Development Lifecycle Concepts III - Agenda

- Establish webinar context - review previous “Concepts” sessions
  - Jan - A Context for IT Methodology
  - Mar- Apply PM Fundamentals to IT
- Software Development Lifecycle (SDLC) – Context and Premise
- **SDLC - Requirements (Identification and Definition)**
- SDLC Phases - Objectives, Iterations, Traceability
- SDLC – Internal Dynamics (PMLC and STLC interfaces)
- Recap

QAI assist

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QAI assist

Software Development Lifecycle (SDLC) Objectives

- Establish a foundation for ongoing collaboration and communication between Business/User Community and Information Technology/IT resources
- Business/User community contributes to and authorizes formal requirements and deliverables throughout the completion of the project – necessary documentation
- Computer **Unit Code** is developed/built to reflect the authorized and required functionality (design and business requirements)
- Computer **Unit Code** is successfully **unit tested** against the authorized design and business requirements - satisfactory code is made available for additional testing
- End User training is planned and delivered

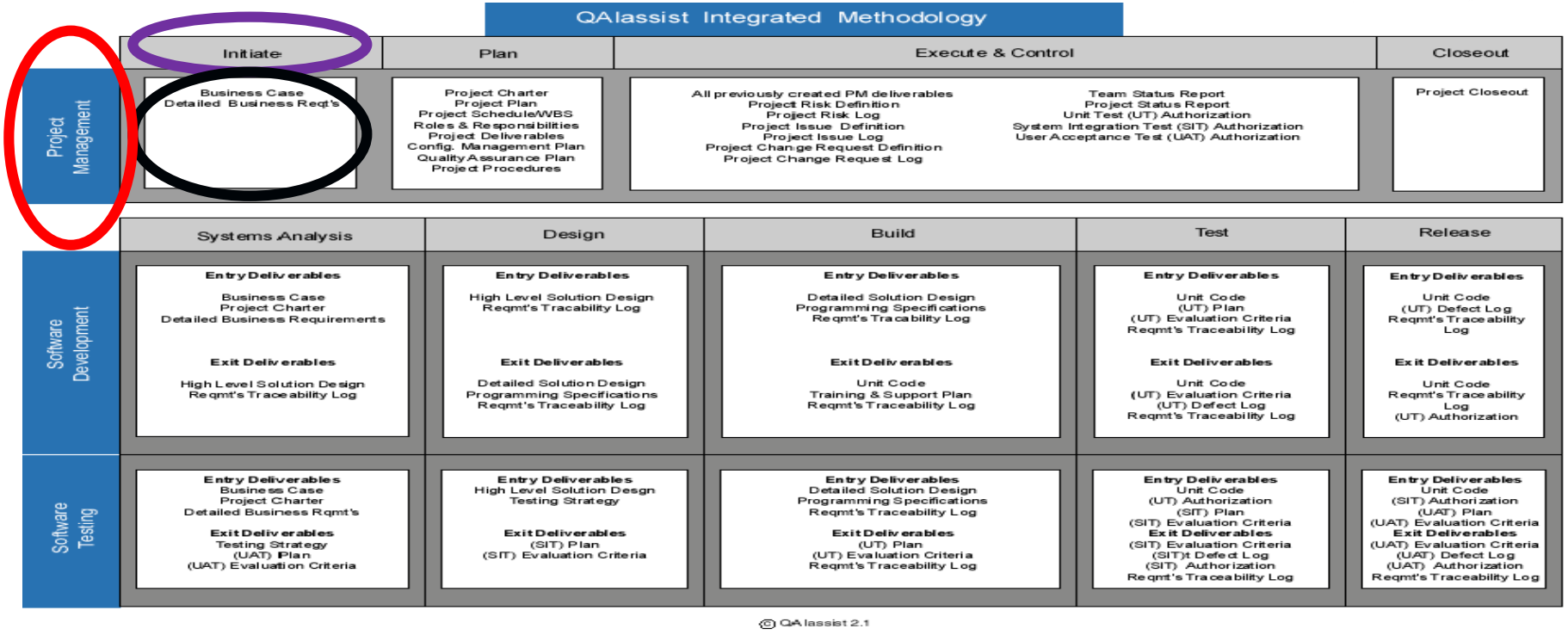
QAI assist

Software Development Lifecycle (SDLC) Phases

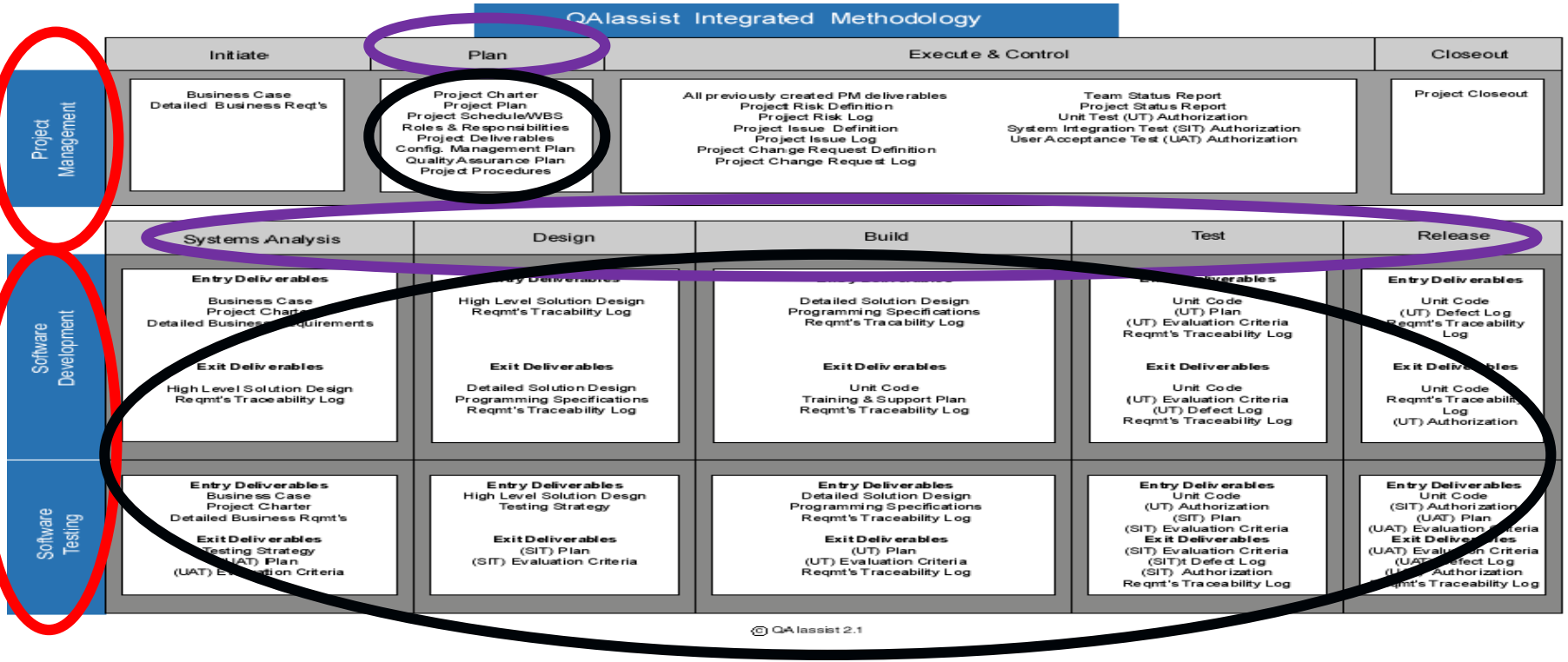
- SDLC objectives (see previous page) are achieved utilizing five phases, they are :
  - Systems Analysis
  - Design
  - Build
  - Test (Unit)
  - Release

QAI assist

IT Methodology
SDLC

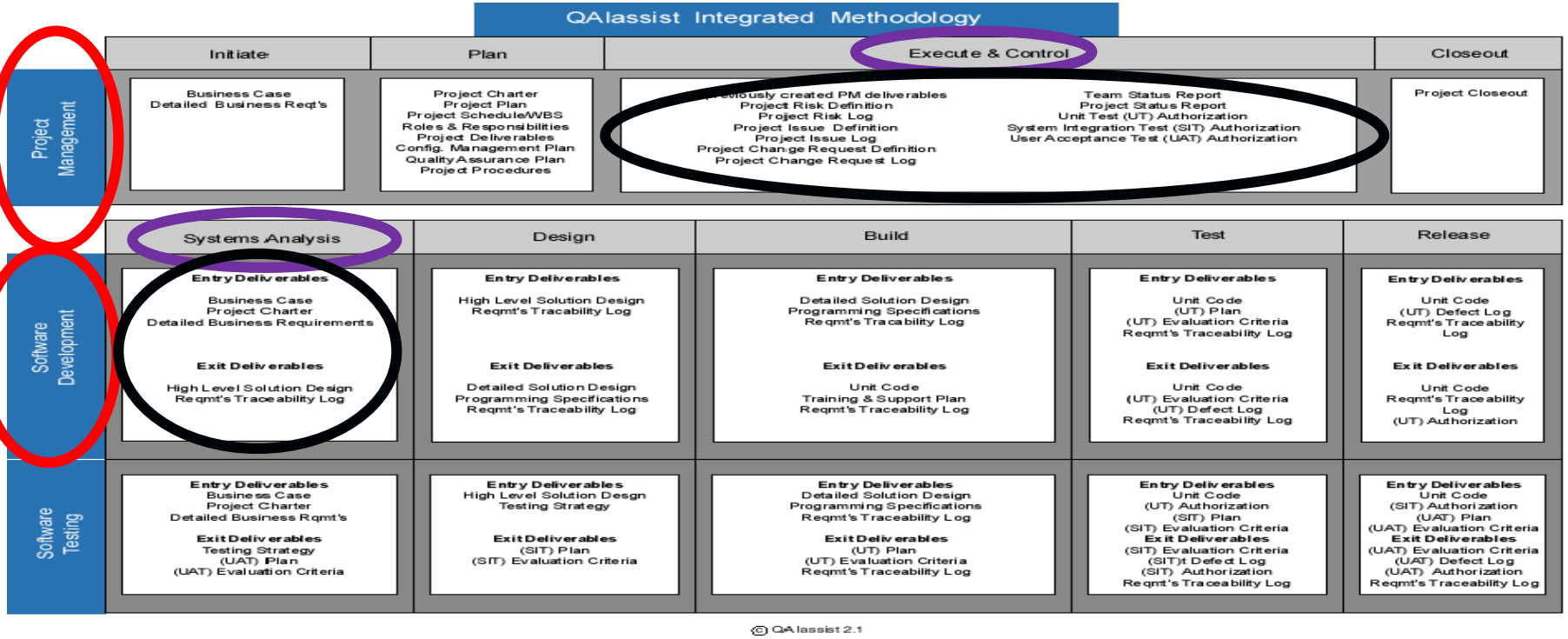


IT Methodology
SDLC



IT Methodology

SDLC – Systems Analysis Phase



SDLC – Systems Analysis Phase

Objectives

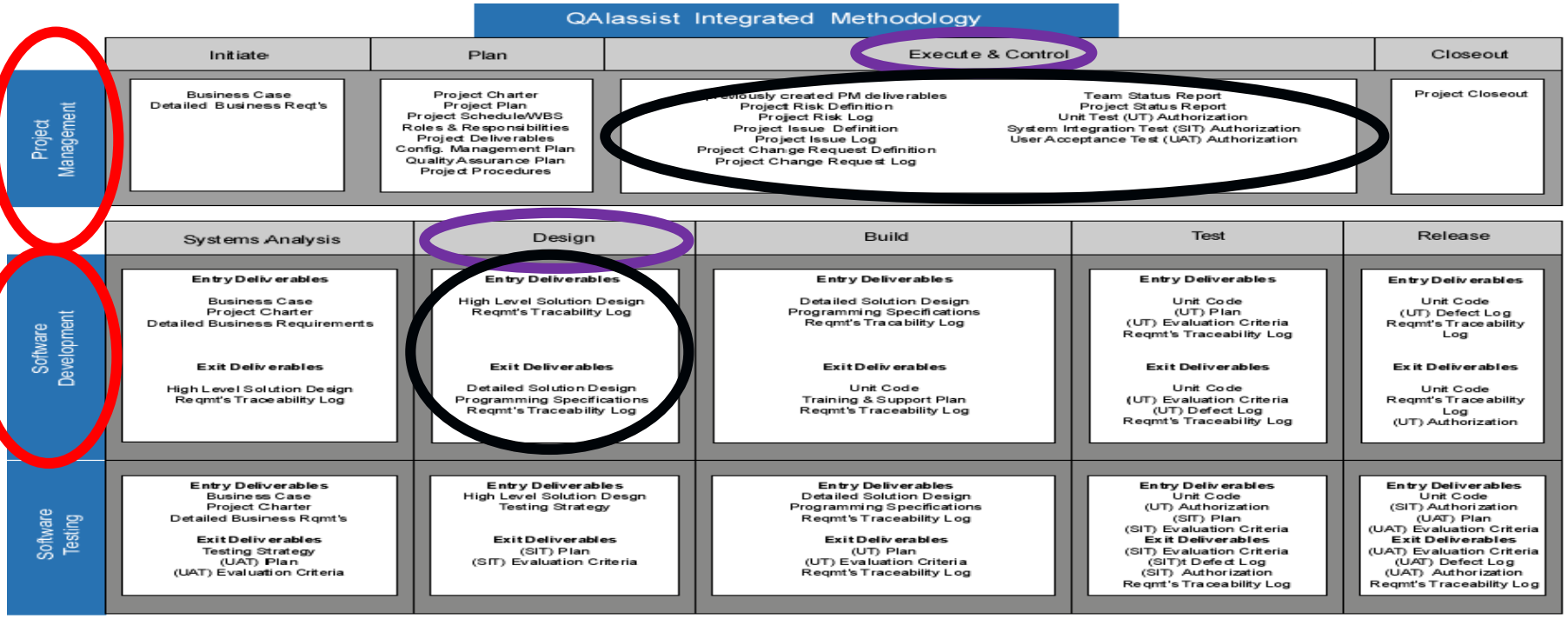
- ensure a formal project exists and has been authorized (**Business Case** established)
- project team members review and understand project context (deliverables)
- identify/refine initial business requirements
- establish (**High Level Solution Design)**
- establish (**Requirements Traceability Log)**

Iterations

- iterative within the phase (waterfall)
- iterative within the lifecycle (agile)

QAI assist

IT Methodology
SDLC – Design Phase



SDLC – Design Phase

Objectives

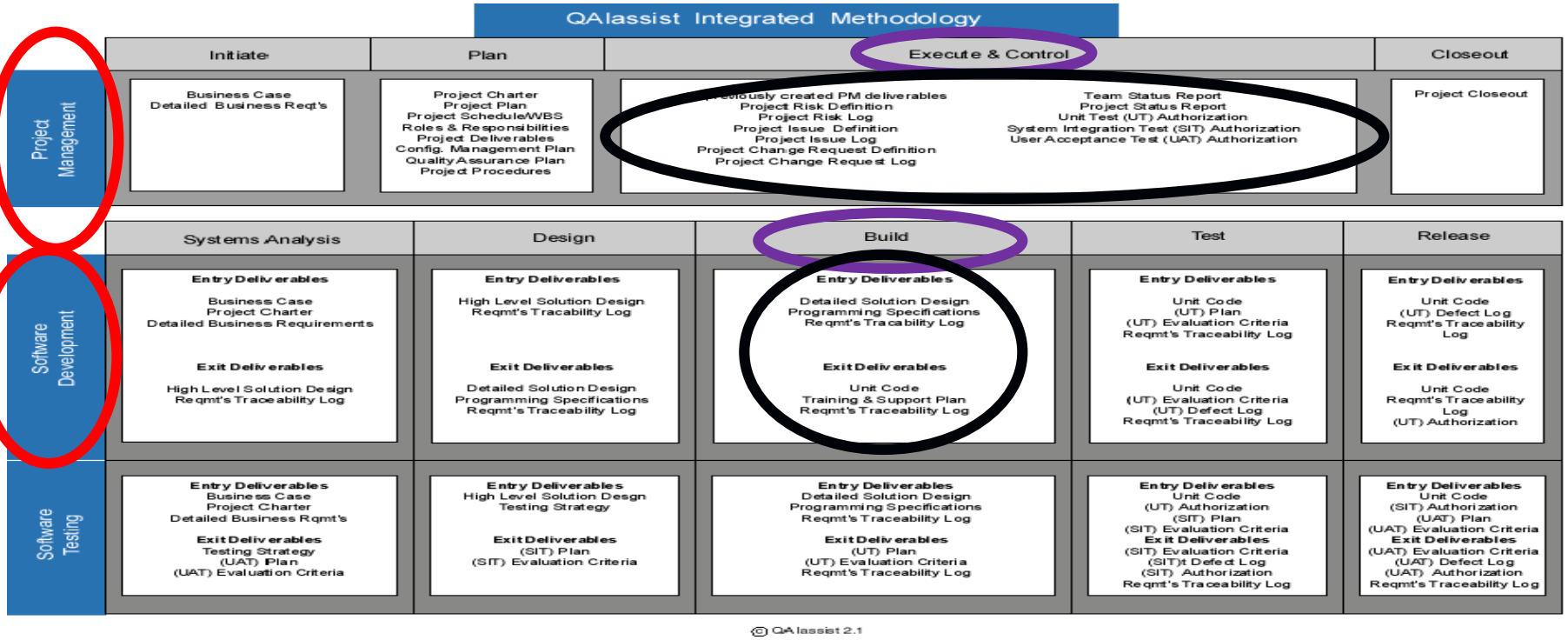
- ensure the application is designed in accordance with the authorized requirements defined during the System Analysis phase – (**High Level Solution Design)**
- complete the design of the application – (**Detailed Solution Design)**
- create specifications that reflect the authorized design & business requirements - (**Programming Specification (s))**
- maintain (**Requirements Traceability Log)**

Iterations

- iterative within the phase (waterfall)
- iterative within the lifecycle (agile)

QAI assist

IT Methodology
SDLC – Build Phase



SDLC – Build Phase

Objectives

- develop the required functionality according to the authorized design and business requirements **(High Level Solution Design, Detailed Solution Design, Programming Specifications)**
- create (**Unit Code)** of the application according to the programming specifications
- develop the (**User Training and Support Plan)**
- maintain (**Requirements Traceability Log)**

Iterations

- iterative within the phase (waterfall)
- iterative within the lifecycle (agile)

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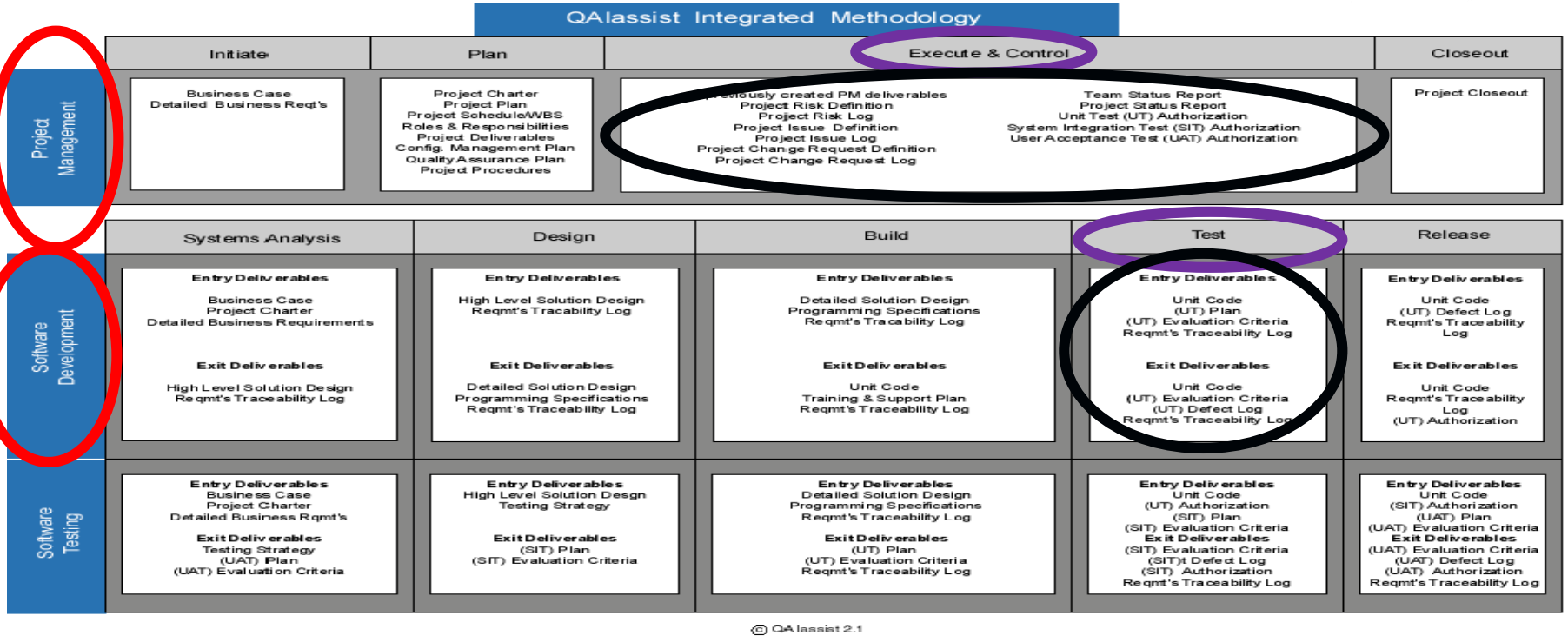
IT Methodology
SDLC – Test Phase



SDLC – Test Phase

Objectives

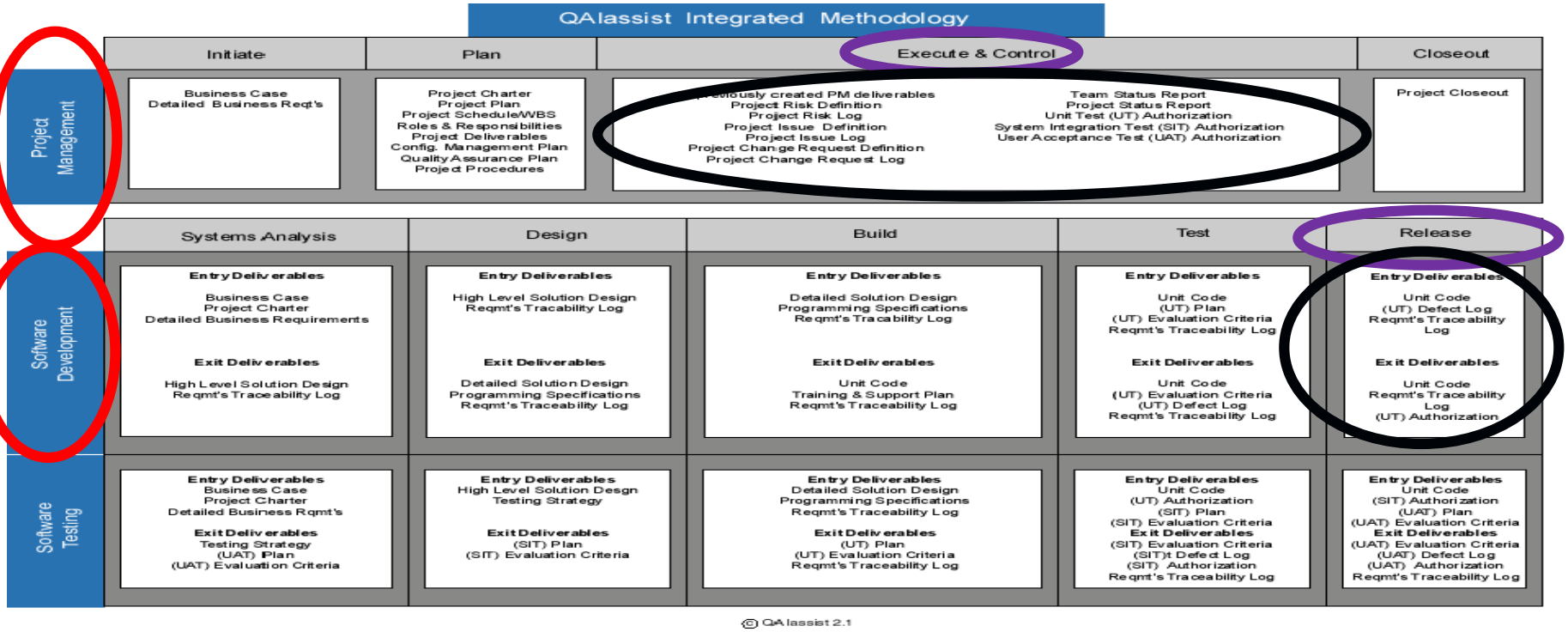
- perform all unit testing according to (**Unit Test Plans** - from STLC)
- Identify, log (**Unit Test Defect Log**) and address all conditions that do not satisfy unit testing criteria
- ensure the application/product has been built in accordance with the authorized design, business requirements, (**Unit Test Evaluation Criteria -** from STLC)
- ensure all unit testing deliverables/work products are under configuration management
- maintain **Requirements Traceability Log**

Iterations

- iterative within the phase (waterfall)
- iterative within the lifecycle (agile)

QAI assist

IT Methodology
SDLC – Release Phase



SDLC – Release Phase

Objectives

- authorize that all necessary “unit” testing is complete - promote the newly built and unit tested functionality/application for additional testing (**Unit Test Authorization**)
- ensure all unit testing deliverables and work products under configuration management
- maintain **Requirements Traceability Log**
- migrate the application for additional (SIT, UAT) testing

Iterations

- iterative within the phase (waterfall)
- iterative within the lifecycle (agile)

QAI assist

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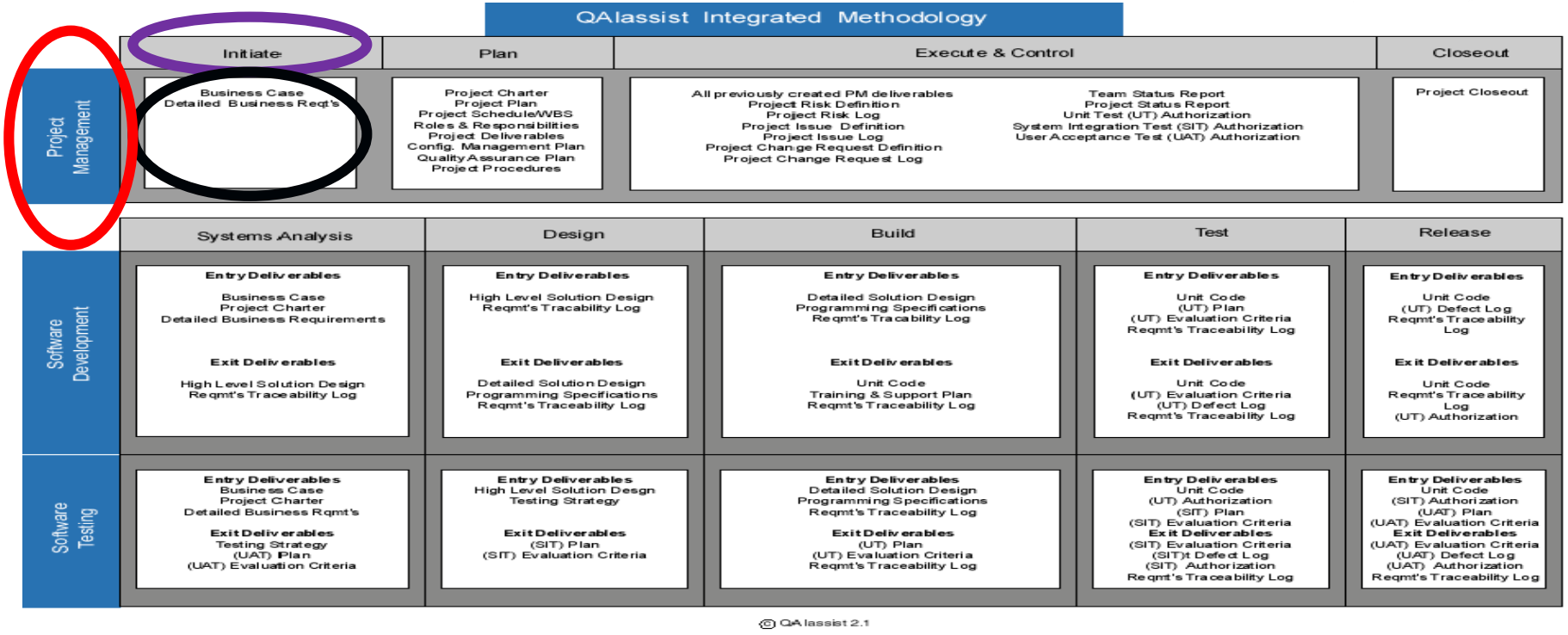
IT Methodology
SDLC



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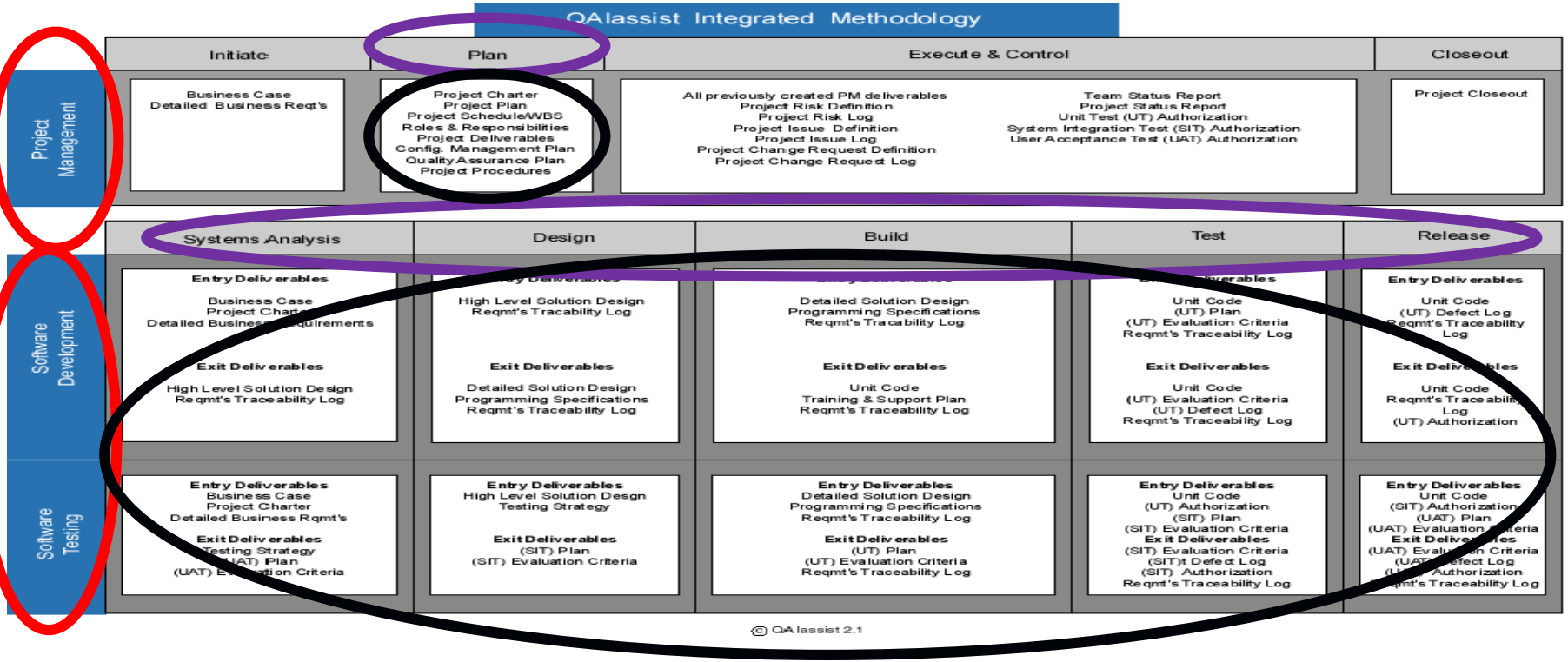
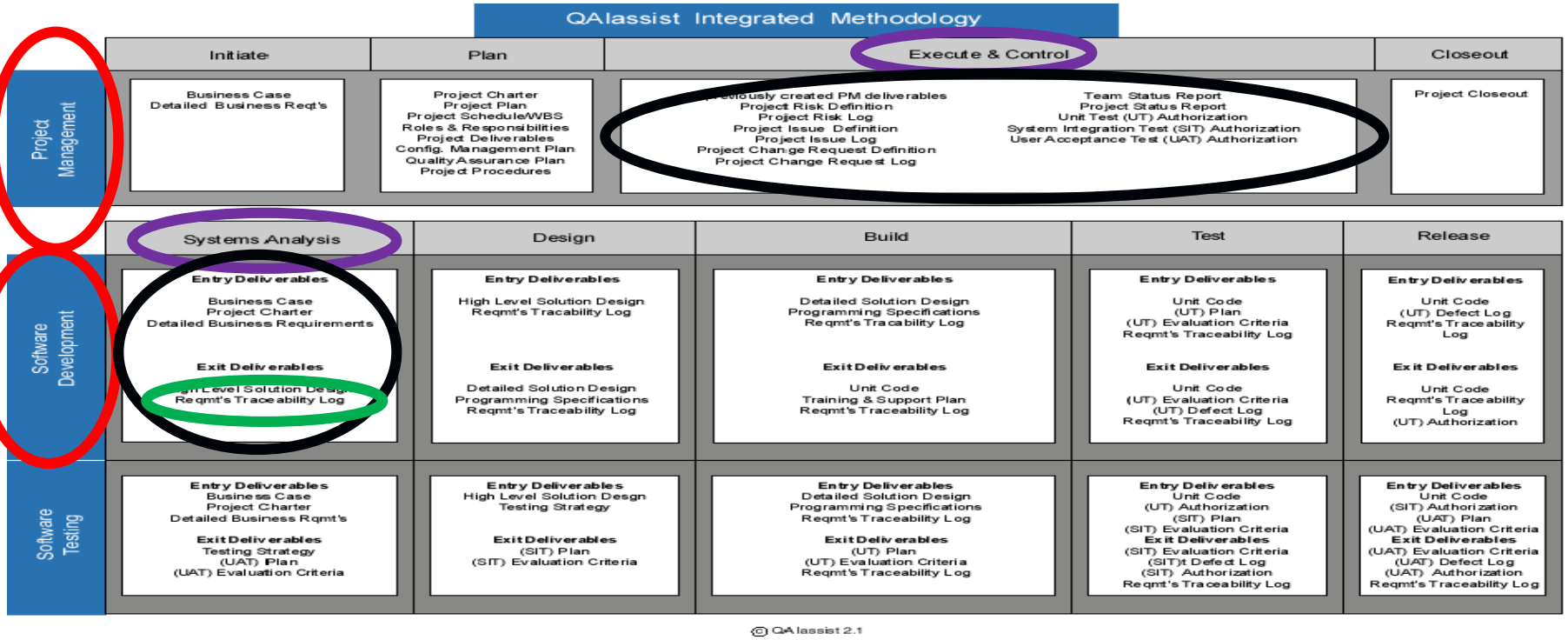


IT Methodology

SDLC – Requirements Traceability



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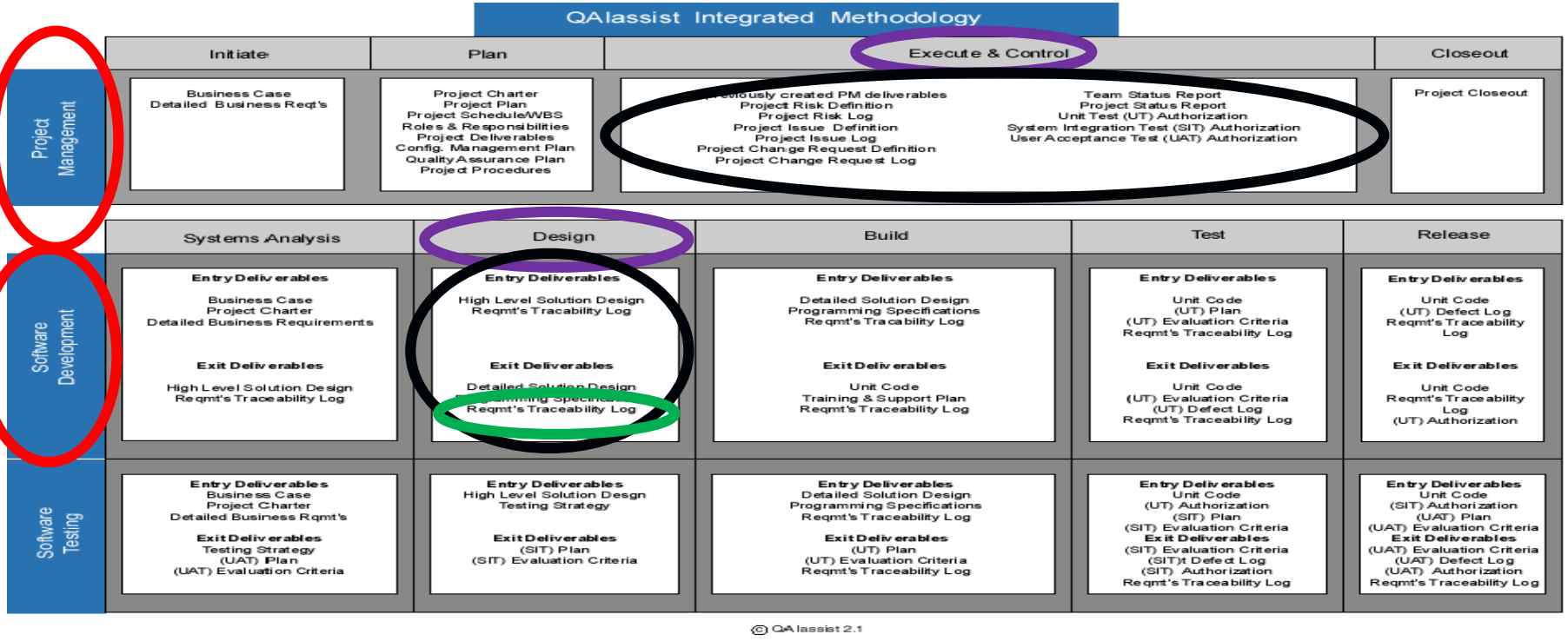

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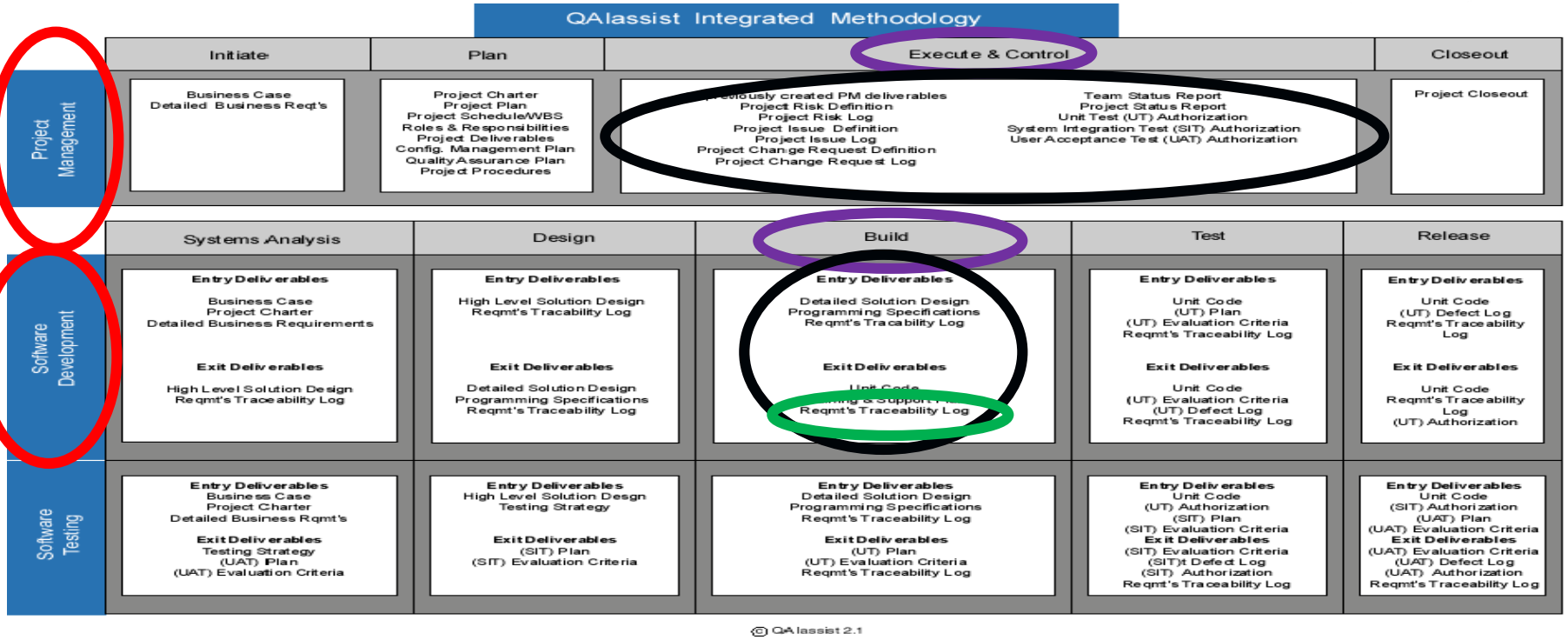

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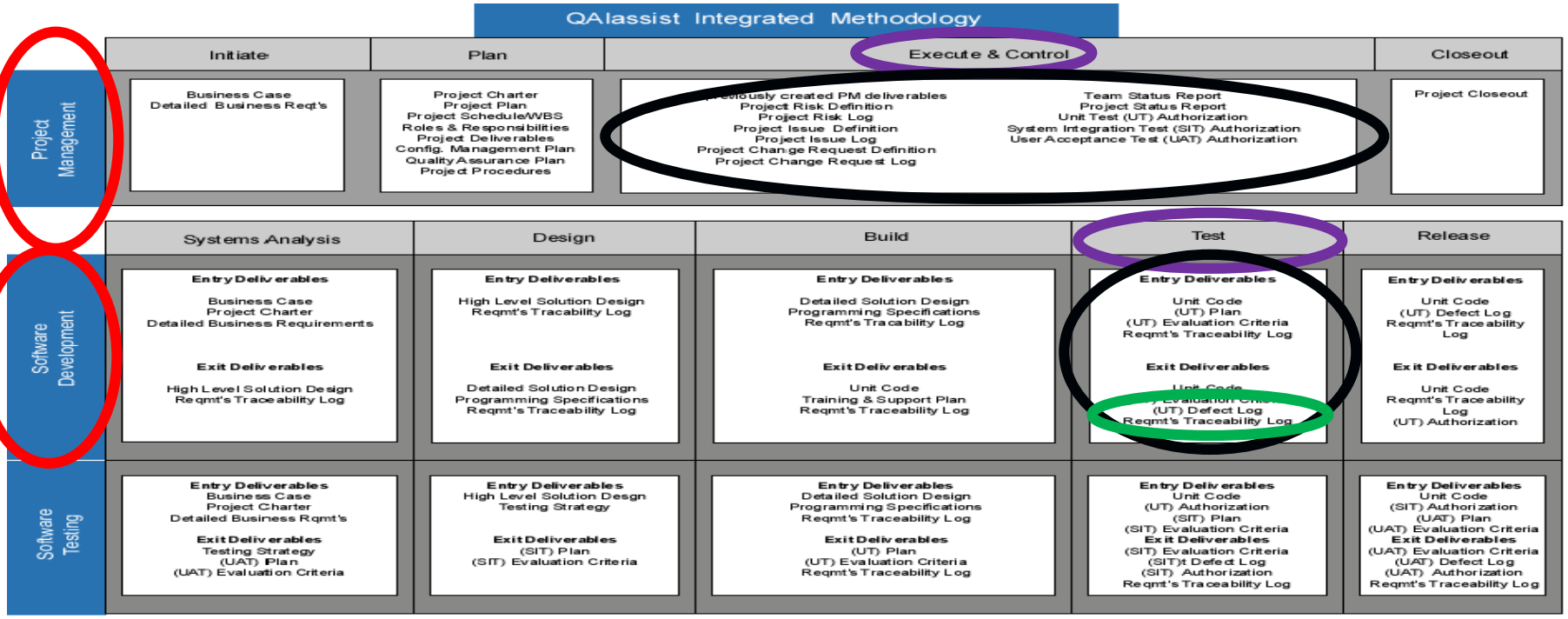

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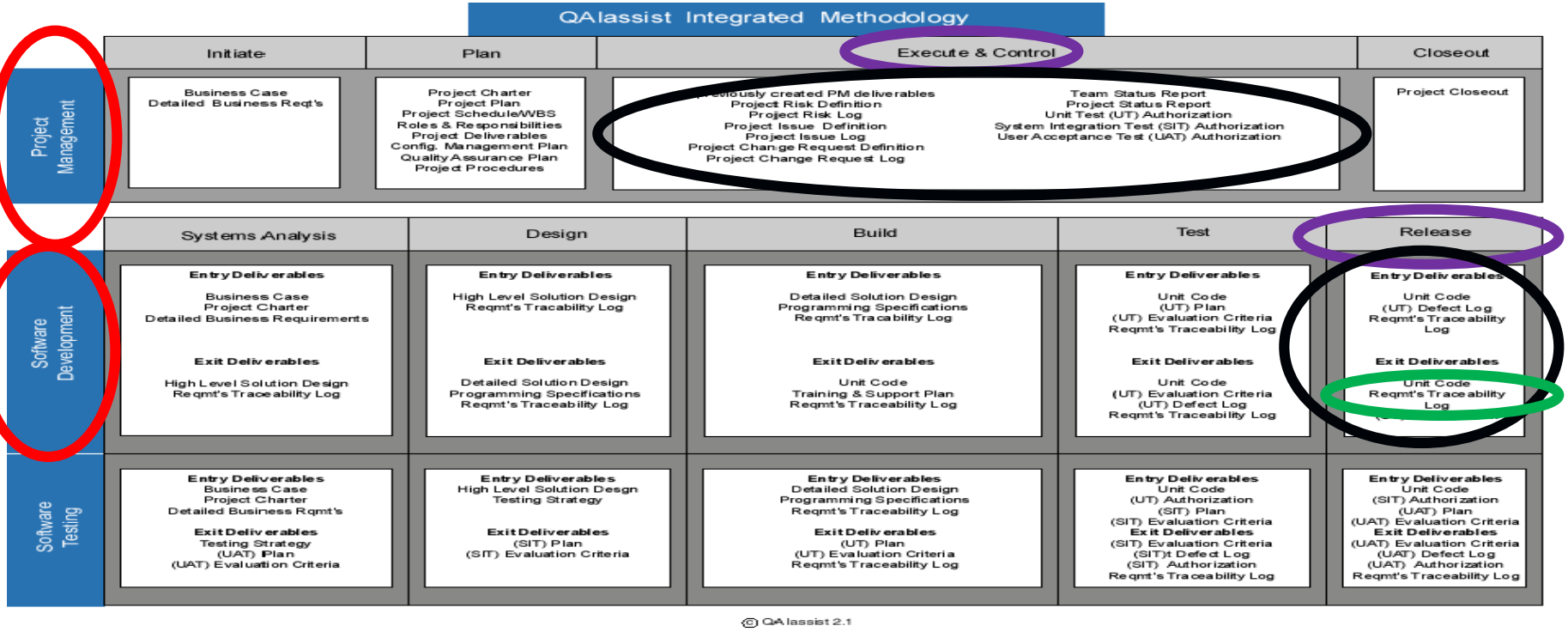

Software Development Lifecycle (SDLC) Requirements Traceability

- User Requirements are dynamic – they are defined, clarified and authorized as project evolves
- User Requirements are calibrated (large to small) – calibration reflected in deliverables
- User Requirements are maintained throughout life of project – documented accordingly
- User Requirements created/established (by SDLC Phase)
  - Systems Analysis (Detailed Requirements, High Level Solution Design)
  - Design (Detailed Solution Design)
  - Build (Programming Specifications)
- User Requirements may be revised/altered/appended to during
  - Unit Testing
  - Integration Testing
  - User Acceptance Testing

QAI assist

Requirements Traceability Log (Matrix) Reference/Access/Updating

- **SDLC**
  - Systems Analysis Phase (Detailed Requirements, High Level Solution Design)
  - Design Phase (Detailed Solution Design)
  - Build Phase (Programming Specification)
  - Test Phase (Unit Test Defect Log) ***

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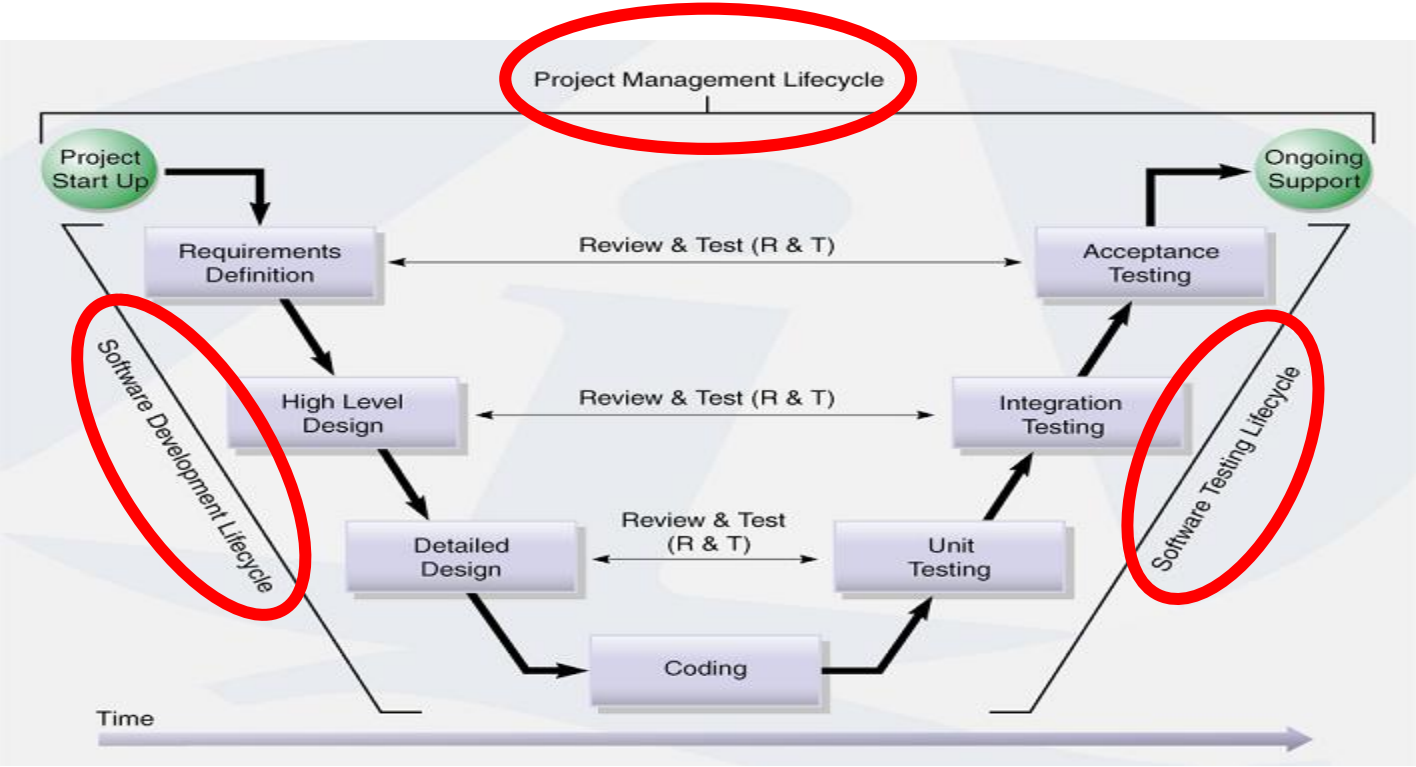
SDLC Integration



Internal Dynamics - SDLC Interfaces

- Project Management Lifecycle
  - Initial Project Planning (Project Plan and Project Schedule)
  - Ongoing Project Execution (Issue Log, Risk Log, Change Request, Status)

- Software Testing Lifecycle
  - Unit Test Planning, Execution & Authorization

QAI assist

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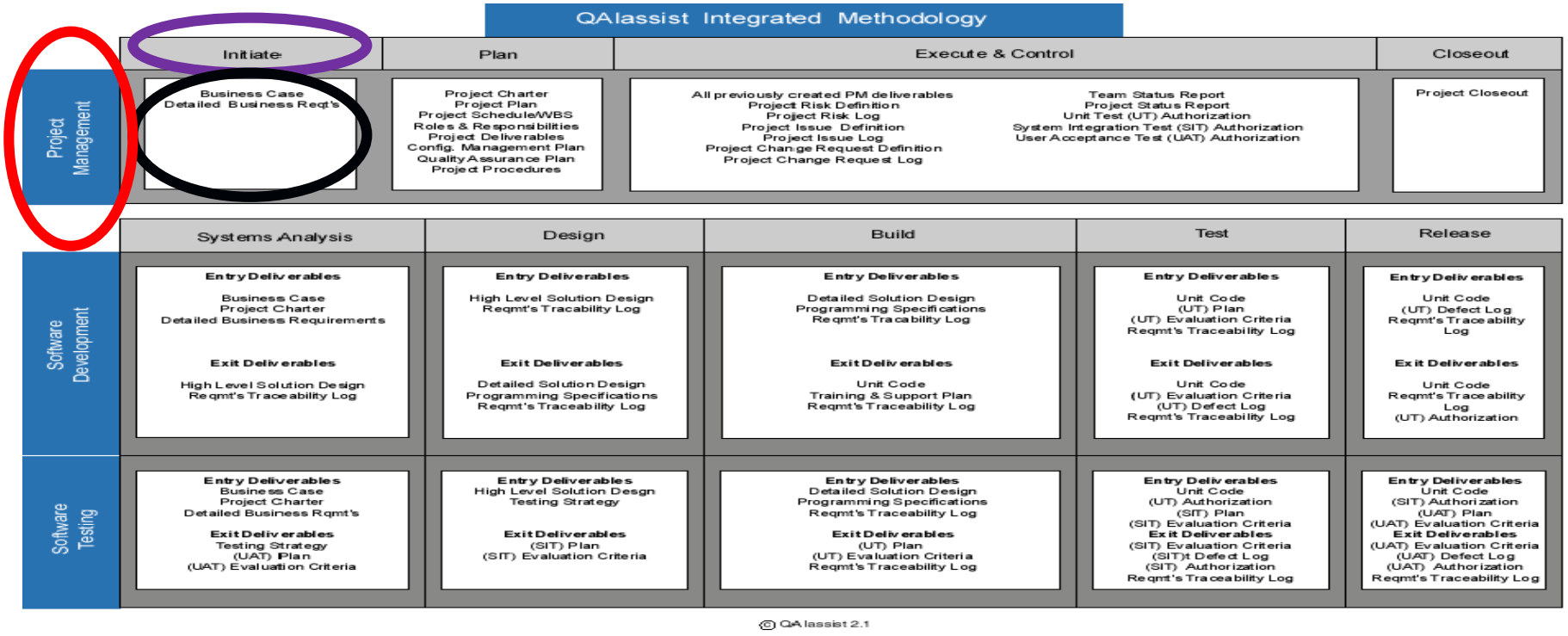
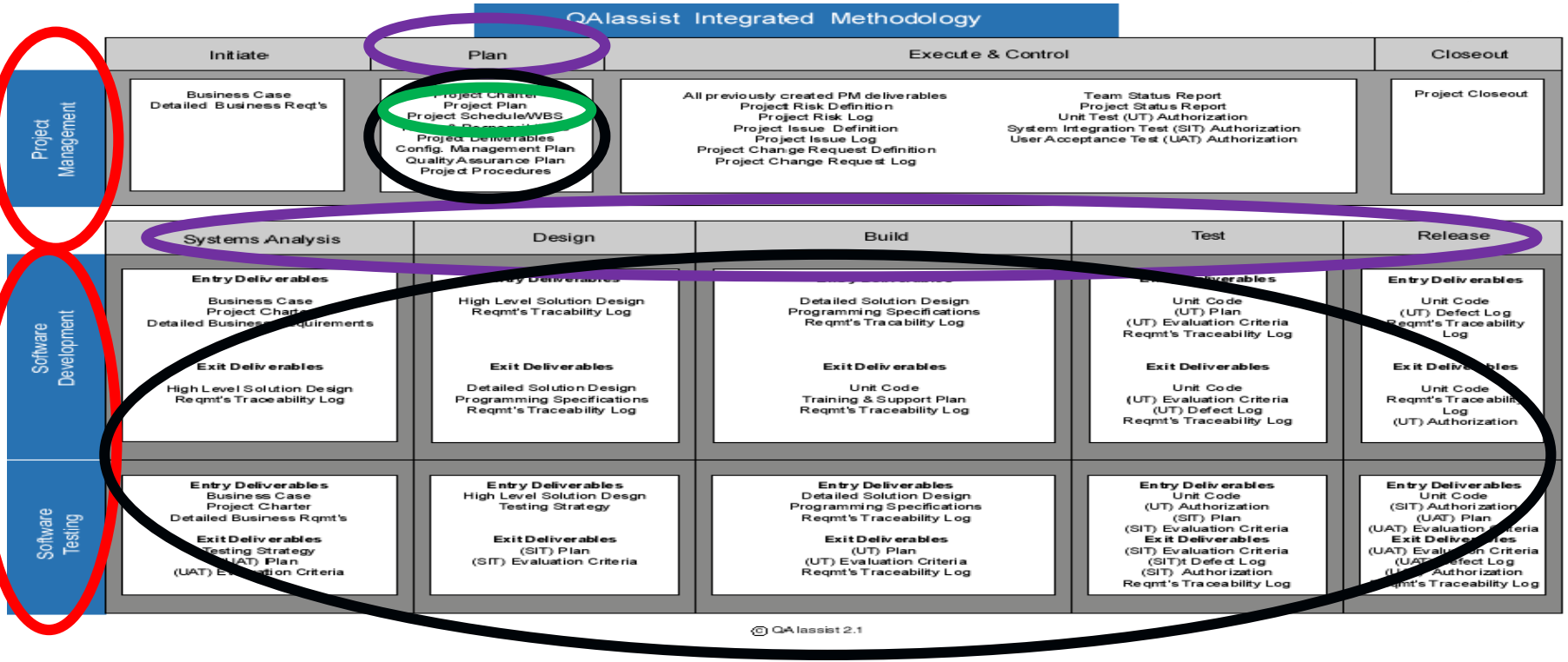
QAI assist

Project Management with SDLC
Initial Project Planning



Project Management with SDLC
Initial Project Planning



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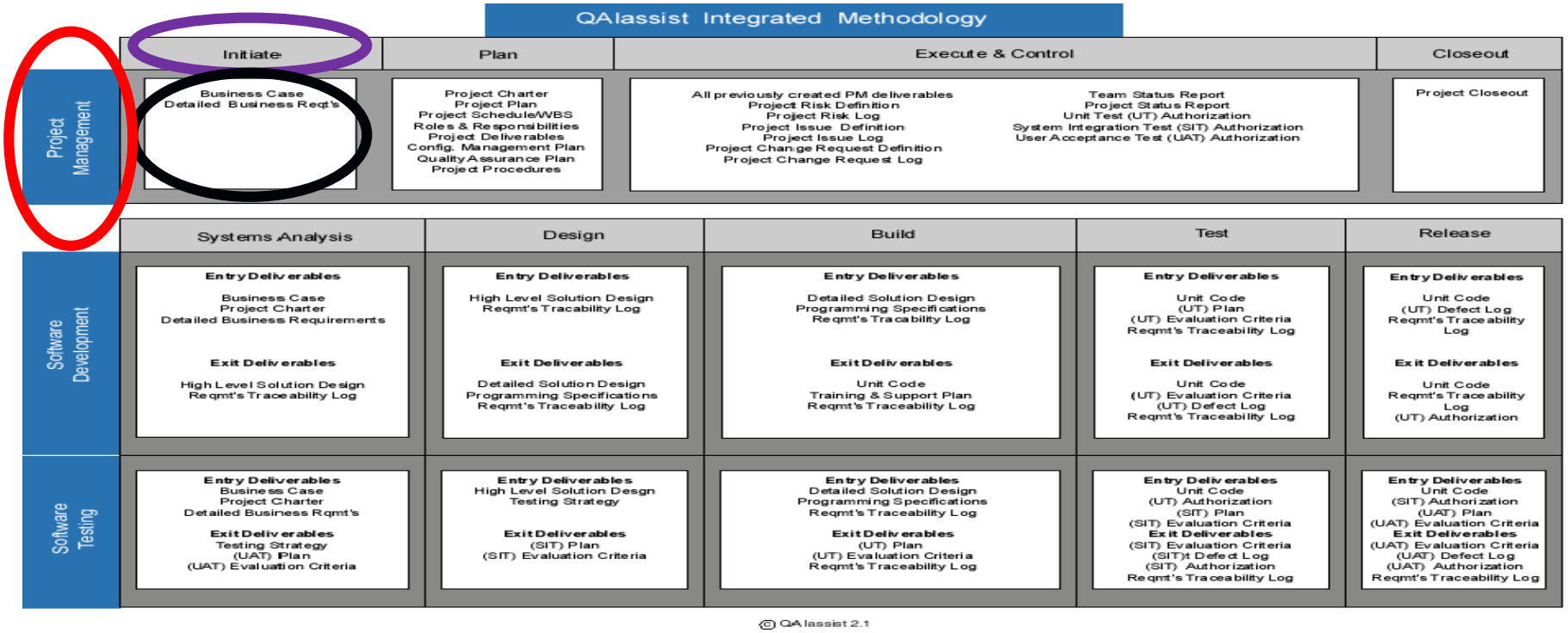
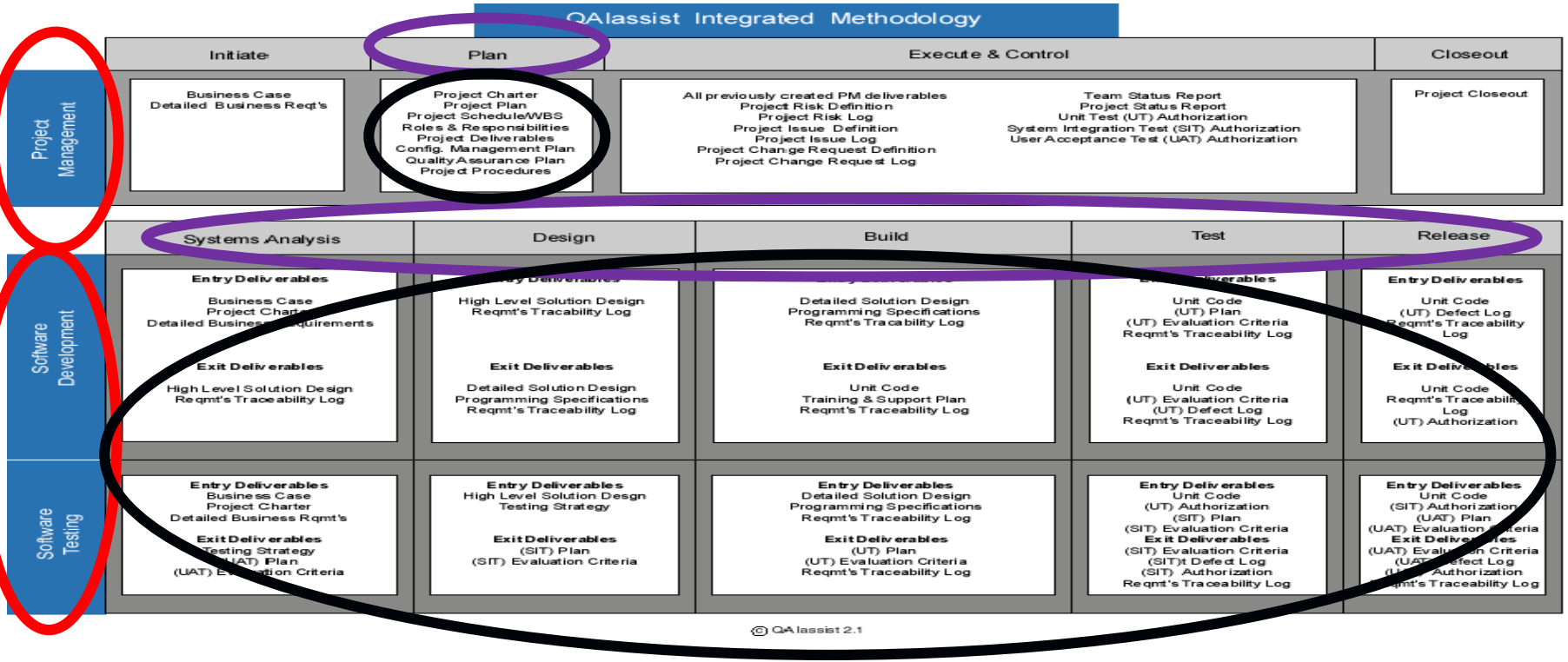
Project Management with SDLC
Ongoing Project Execution



Project Management with SDLC
Ongoing Project Execution



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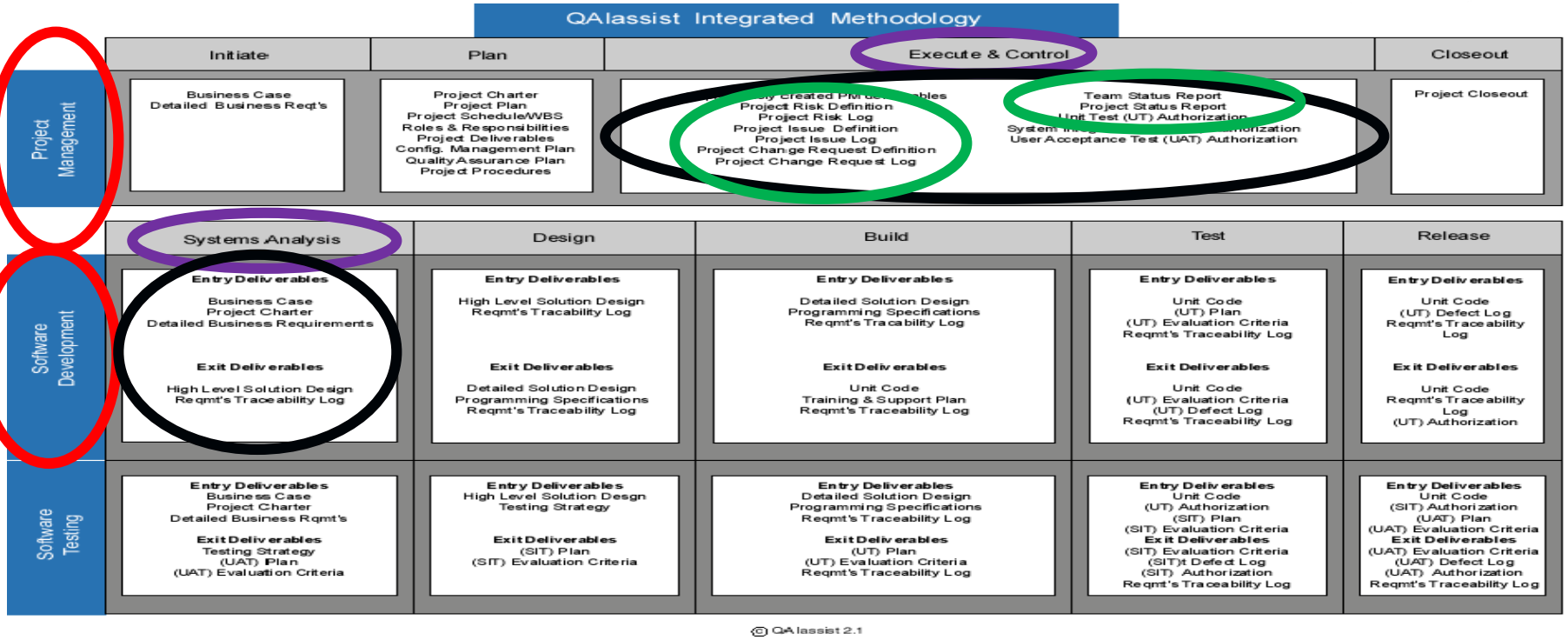
Ongoing Project Execution



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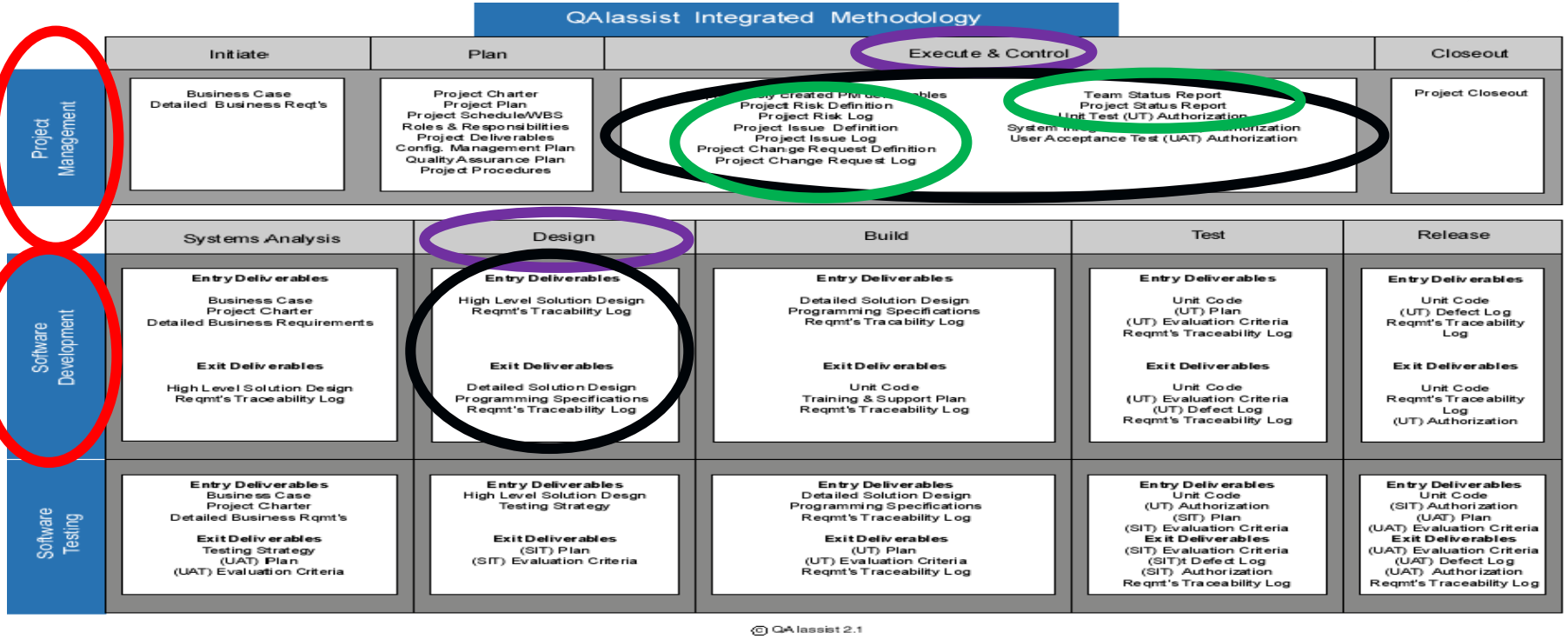

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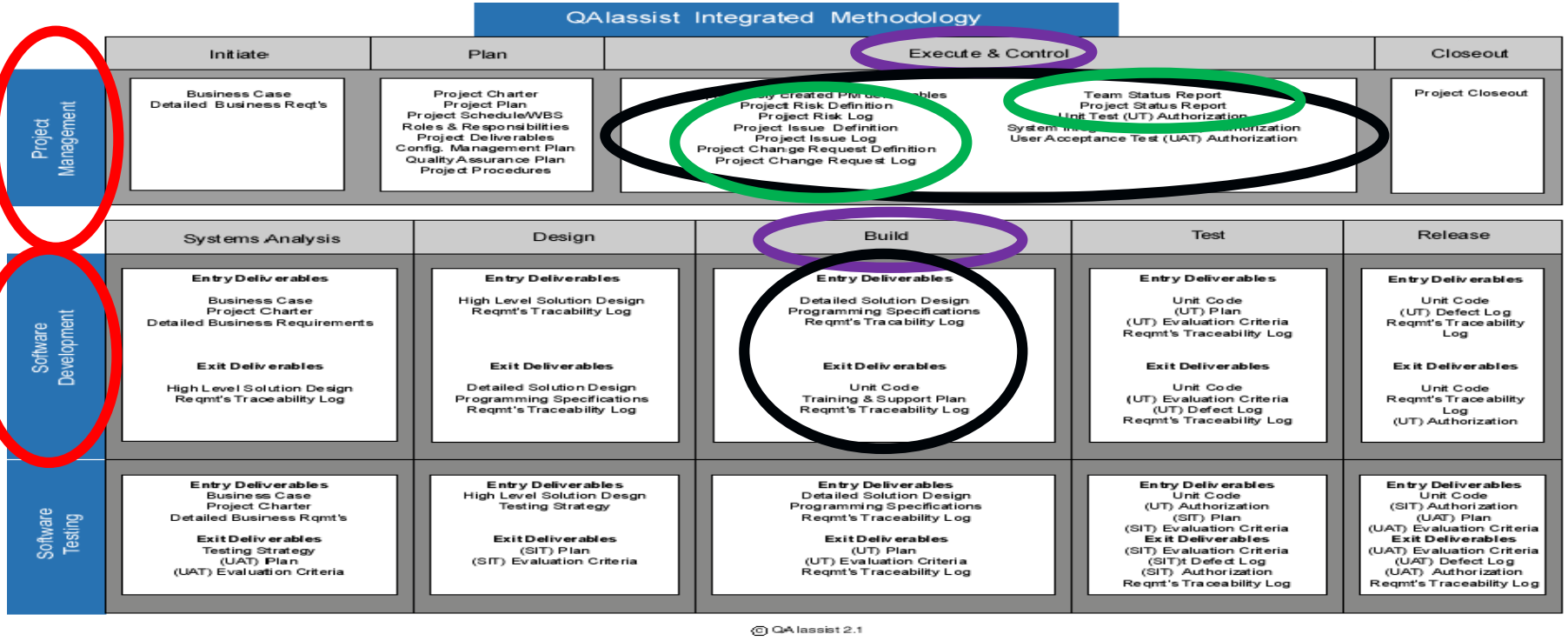

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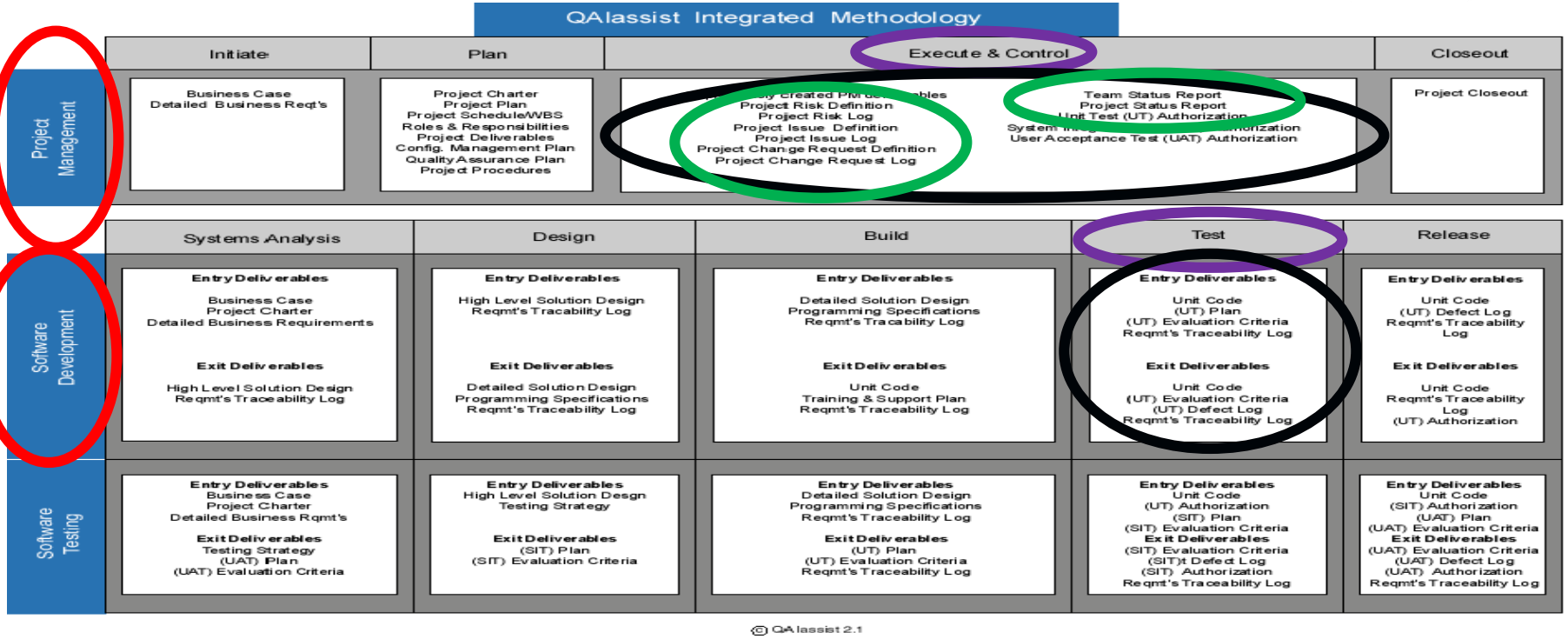

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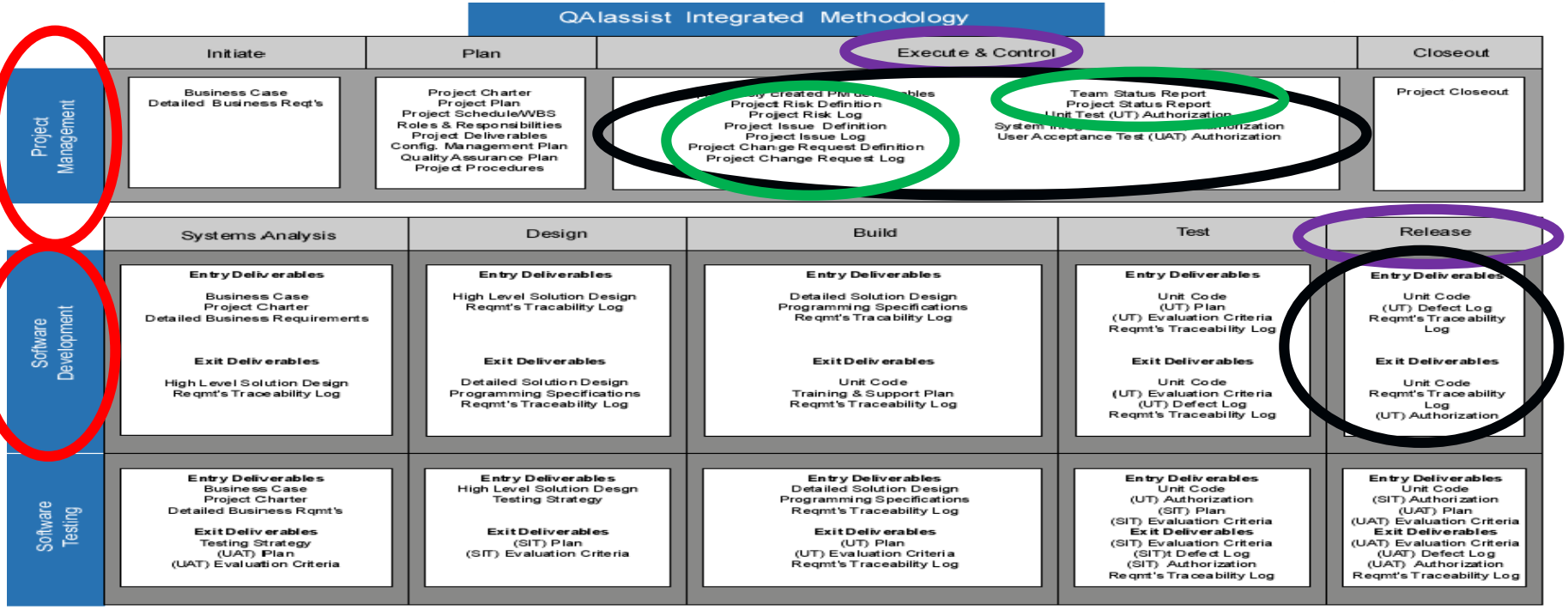

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QAI assist

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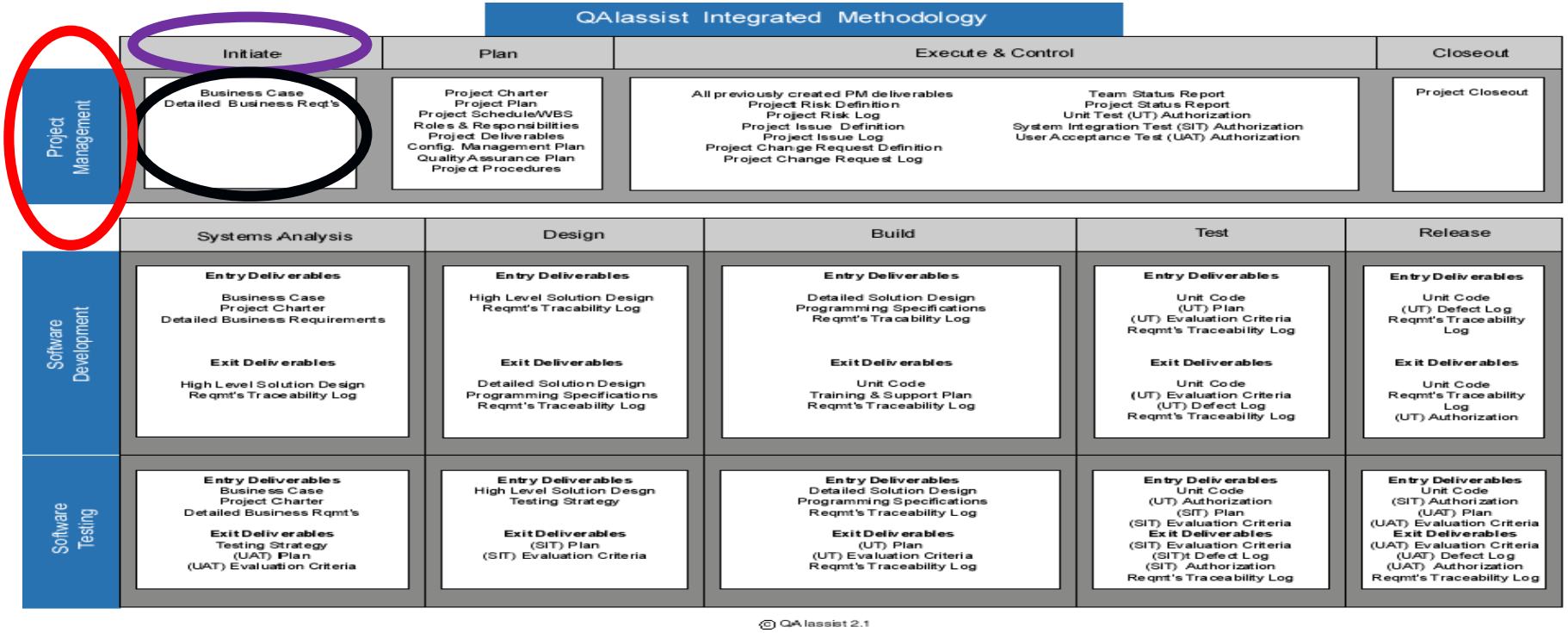
SDLC with Software Testing Lifecycle (STLC)

Unit Test Planning, Execution & Authorization



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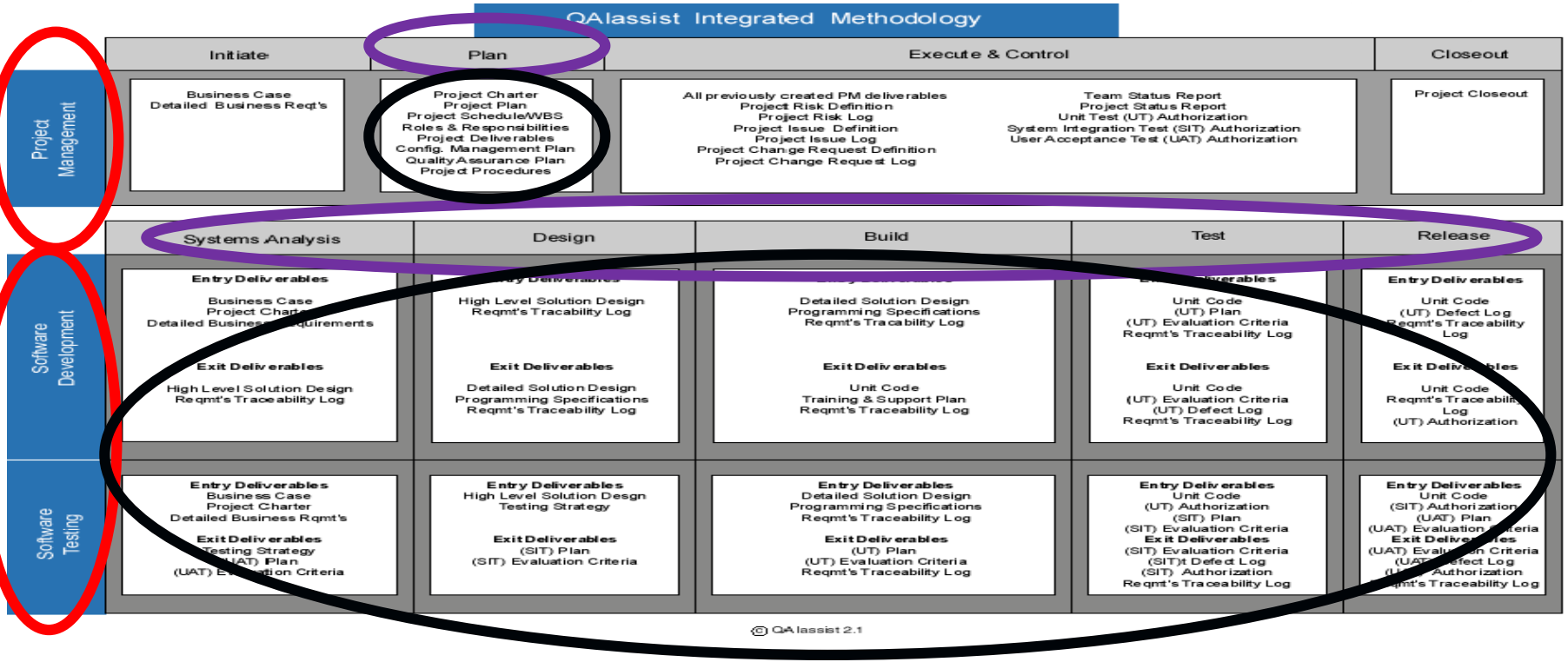

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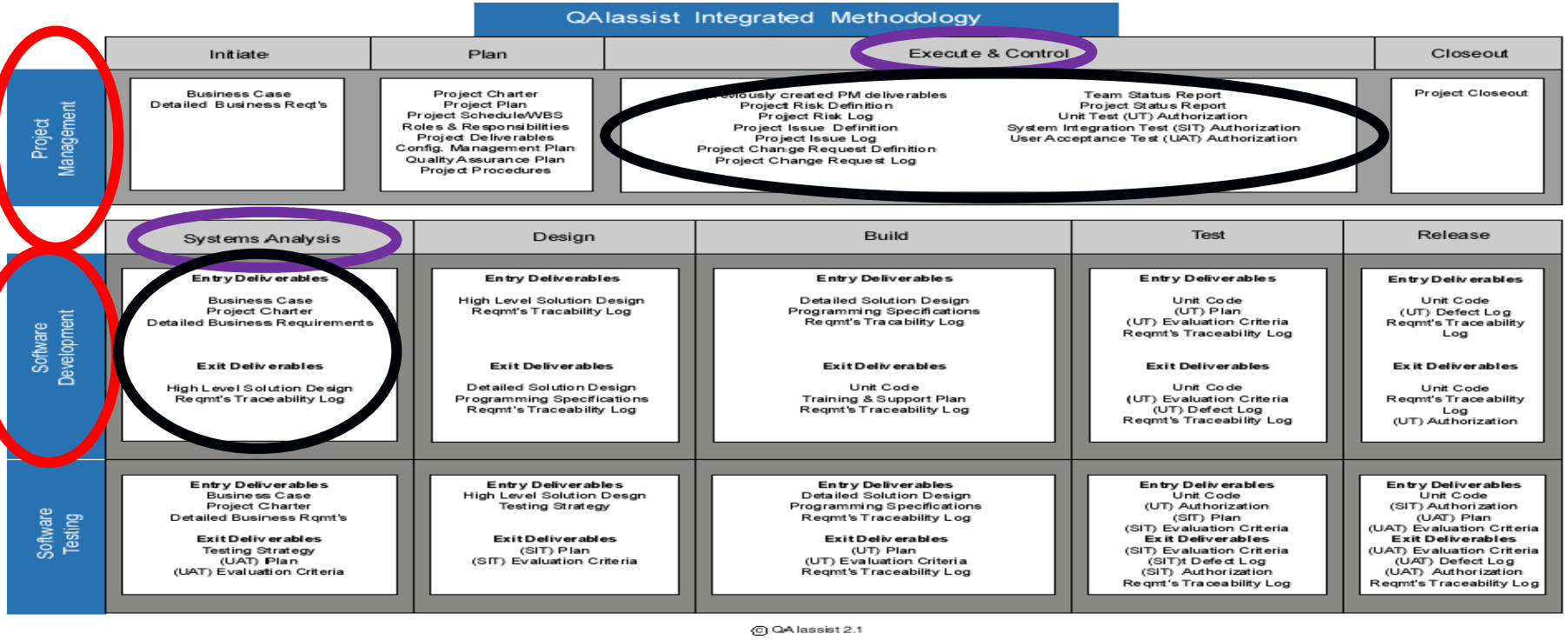

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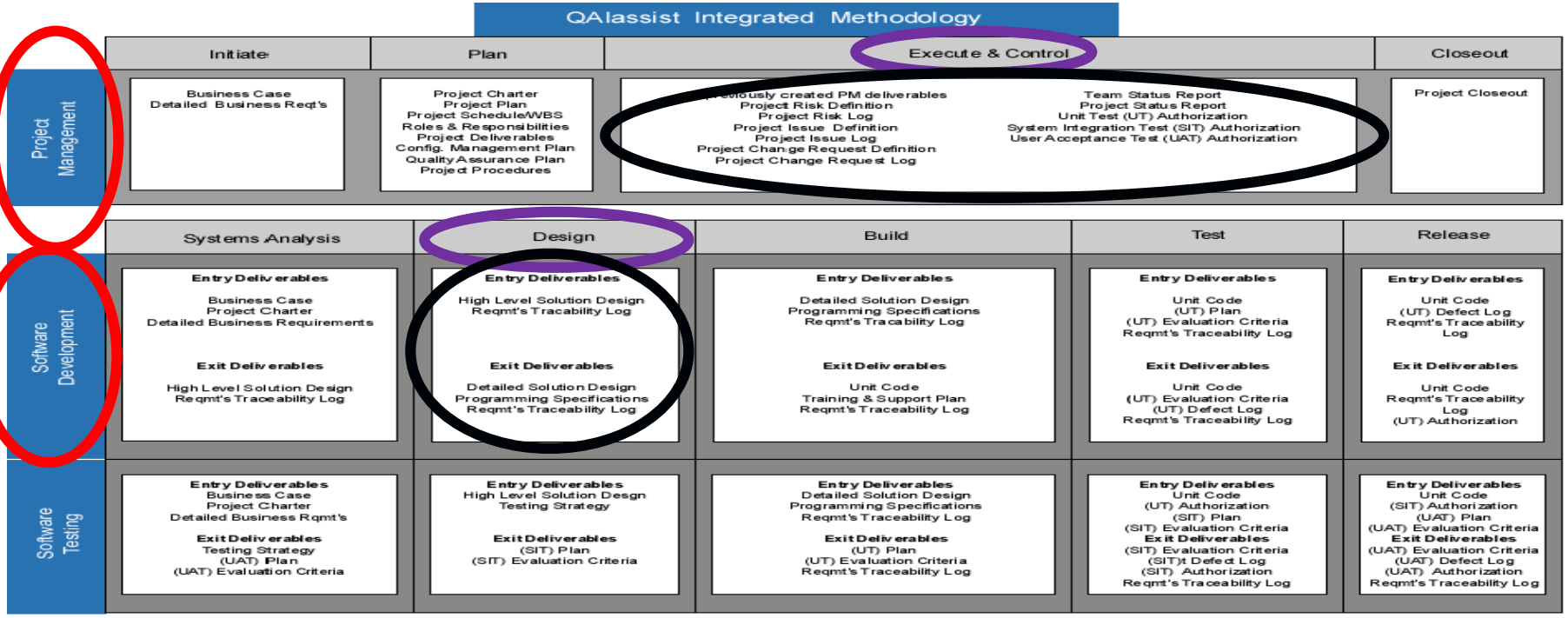

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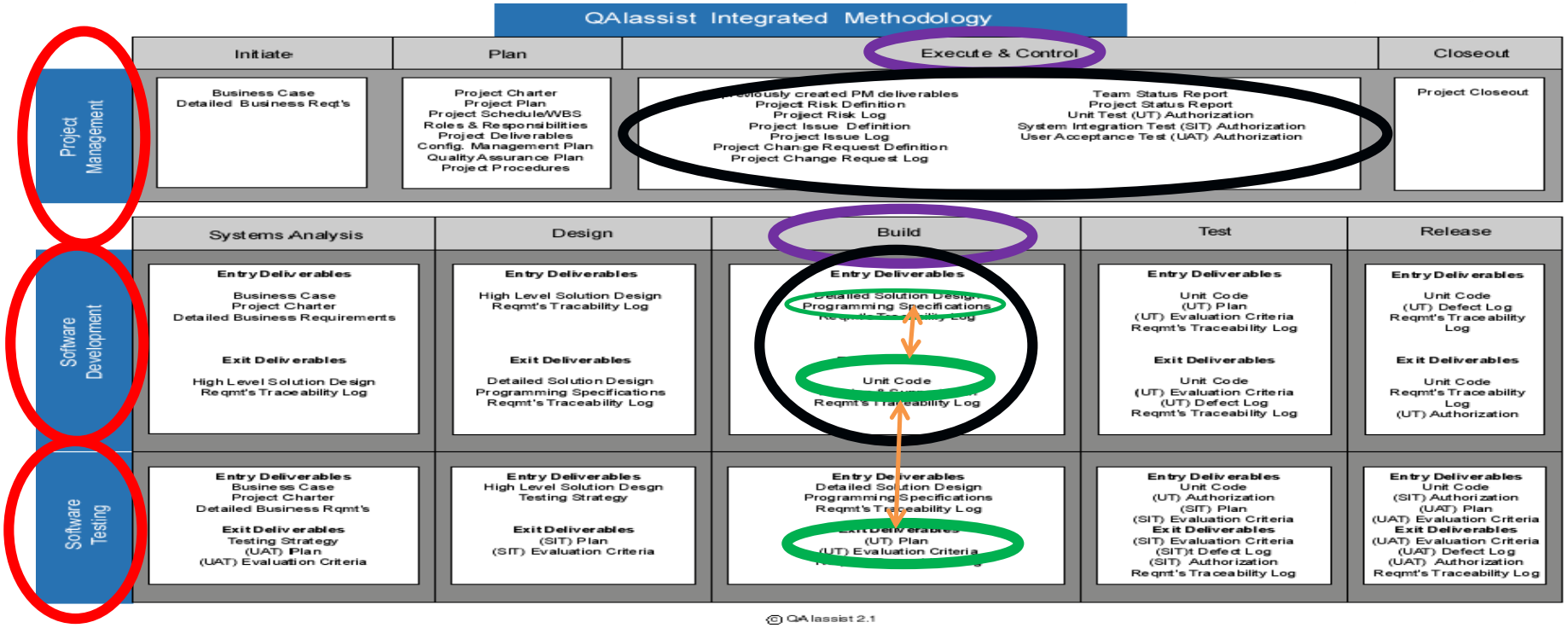

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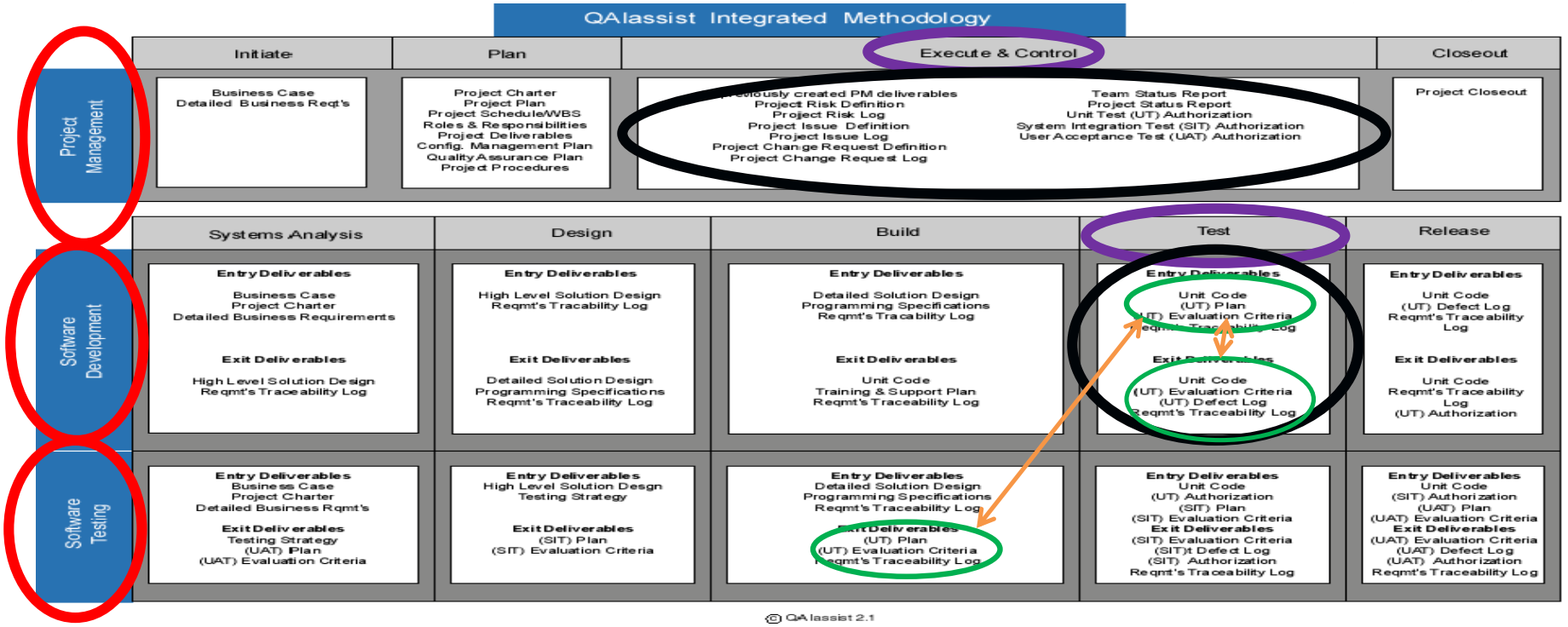

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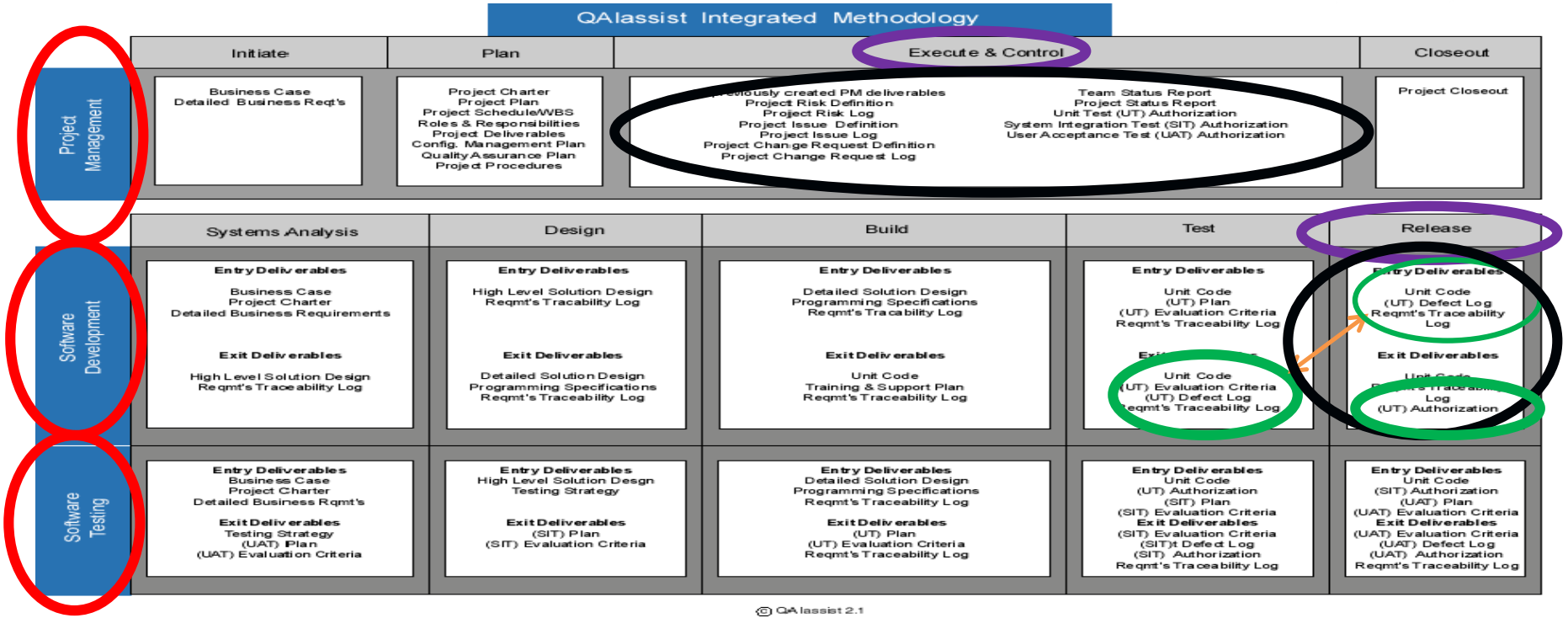
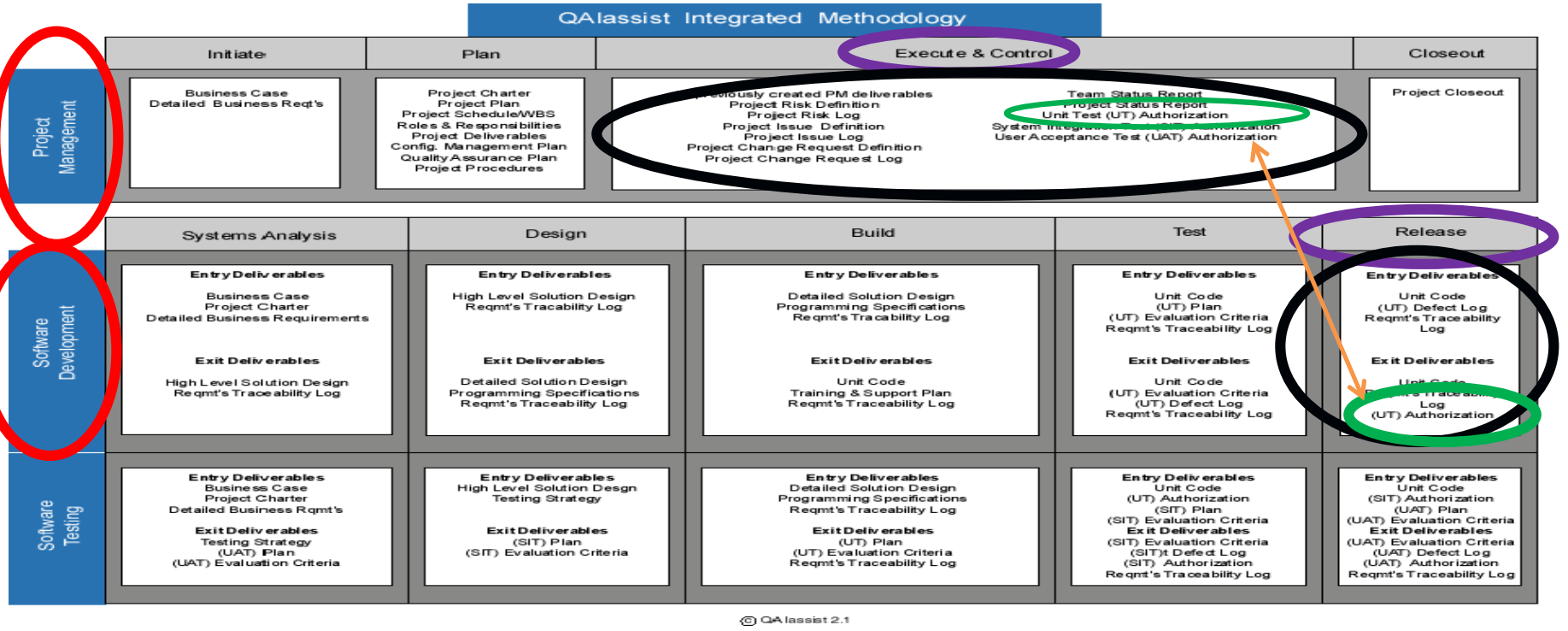
Unit Test Planning, Execution & Authorization



Project Management with SDLC
Unit Test Authorization



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QAI assist

Body of Knowledge

- Methodology/Lifecycle/Deliverables – www.qaiassist.com
  - Project Management, Software Development, Software Testing
- Body of Knowledge (Library) – www.qaiassist.com
  - **Methodology Origin** – origins of methodology – identifies the differences between the path we take (noun) and how we proceed (verb) down that path
  - **Context & Overview** – provides a general overview of IT Methodology and how it can be applied within an organization
  - **Deliverable Descriptions** - provides general descriptions for all the deliverables of the QAIassist Integrated Methodology

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Until Next Session…

- **Keep Posing your Questions** – call or send your questions in (Denise and/or Cameron)
- **Explore the QAIassist Body of Knowledge** – refer to the QAIassist Body of Knowledge (sample deliverables, whitepapers, blog articles) – (www-qaiassist.com)
- **QAIassist Practitioner** - find out more about becoming QAIassist certified "Foundation", "Practitioner"
- **Tell your friends** - tell your friends, coworkers and colleagues about the Project Insight/QAIassist webinars – invite them to join us at the next session

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2017 Schedule

- **The 3rd Wednesday of Every Month**
  - 8:00 am Pacific - 11:00 am Eastern Time
- **IT Methodology Concepts (60 mins)**
  - This series of six webinars will be presented on a bi-monthly basis. Each webinar will provide you with a context, overview, terminology and general understanding of information technology (IT) methodology.
- **IT Methodology – Tutorials (60 mins)**
  - This series of five webinars will be presented on a bi-monthly basis. Each session is designed to offer a more “hands on” perspective – bridging the concepts into a practical utilization.

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2017 “Concepts” Schedule

- **The 3rd Wednesday of Month (Jan, Mar, May, Jul, Sept, Nov)**
  - 8:00 am Pacific - 11:00 am Eastern Time
- **IT Methodology Concepts (60 mins)**
  - Methodology for the IT Landscape - (Jan)
  - Apply PM Fundamentals to IT - (Mar)
  - Leverage the Software Development Lifecycle - (May)
  - **Explore the Software Testing Lifecycle - (Jul)**
  - Incorporate Organizational Process Governance - (Sept)
  - Implementing IT Methodology - (Nov)

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2017 “Tutorials” Schedule

- **The 3rd Wednesday of Month (Feb, Apr, Jun, Aug, Oct)**
  - 8:00 am Pacific - 11:00 am Eastern Time
- **IT Methodology Tutorials (60 mins)**
  - Applying IT Methodology to Project Initiation - (Feb)
  - Project Planning & Design with IT in Mind - (Apr)
  - **Executing Projects with IT Methodologies - (Jun)**
  - Project Control & Verification - (Aug)
  - Project Close & Delivery - (Oct)

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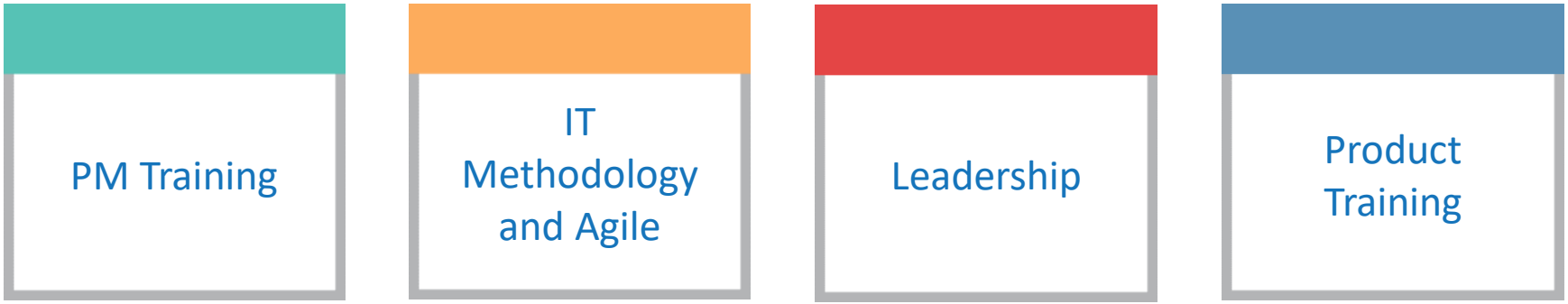

See you next time!