Requirements

System Design
(Architecture, High-level Design)

Module Design
(Program Design, Detailed Design)

Implementation of Units (classes, procedures, functions)

Unit testing

Acceptance Test
(Release testing)

System Testing
(Integration testing of modules)

Module Testing
(Integration testing of units)

Validate Requirements, Verify Specification

Verify System Design

Verify Module Design

Verify Implementation

Maintenance

Project Management, Software Quality Assurance (SQA), Supporting Tools, Education

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Role catalogue

Roles are needed to:

- identify and develop knowledge
- make sure that nothing is forgotten
- plan hiring and personal development
- avoid detailing everything
Overview
Management(1)

- **Product managers**
  - Strategic product manager:
    (aka Product Owner or Project Sponsor)
    - Is responsible for market communication and analysis.
    - Has the budget responsibility both in long and short term.
    - Decides which features that shall be scheduled when from a customers perspective.
    - Often needs to negotiate with other roles since it might be hard and costly to provide everything at the time wished.
Management (2)

• Product managers
  • Operational product manager:
    • Is responsible for the technical management of a coherent product.
    • Acts as a technical expert to the Strategic product manager.
    • Collects effort estimation of features.
    • Decides which features that shall be implemented when from a development and maintenance perspective.
Management(3)

• Project manager
  • Ensures that the project goals are met by planning and leading the work.
  • Manages resources given to the project.
  • Communicates with company leadership.
  • Must be a great motivator, but also have high technical competence.
  • Has the final word in all matters.
Management (4)

- Configuration manager
  - Decides on which work-products to be put under version control.
  - Decides which work-product that are in a release.
  - Selects and maintains tools for SCM.
  - Ensures that the tools are used properly.
  - Works closely with development manager.
Management(5)

- Line manager
  - Represents the legal employer.
  - Recruits people to the projects.
  - Ensures competence development and good working environment.
  - Makes sure that the competence provided is suited to the current and future projects.
  - Handles formal communication with the company leadership such as bookkeeping.
Management(6)

• Process manager
  • Decides on which processes to use for different work.
  • Educates people in the process.
  • Collects data on process adherence.
  • Alters the processes when needed.
  • Works closely with project leader, development manager, and quality coordinator.
Analysis

• Lead analyst

(aka Requirements engineer)
• Defines and describes the requirements to be met by the system.
• Handles contacts with customers, end-users, product managers, and other stakeholders.
• Interprets the requirements when needed.
• Selects tools and methods for elicitation and analysis.

• Analyst
• Assists the lead analyst.
• Can be specialized for certain tasks, such as, working with technical standards.
Overview
Development(1)

• **Architect**
  • Specifies and decides on the target environment, components to be used, and the high-level architecture.
  • Ensures that functional and non-functional requirements are met, by simulations, review and experiments.
  • Must be a technical expert with good judgment of future capabilities of the selected solutions.
  • Has the final word in technical matters.

• **Lead designer**
  • Decides on design issues not covered in the architecture, for instance, the realization of individual components.
  • Designs and implements prototypes.
  • Works closely with the architect.
Development manager

- Plans and controls the development effort.
- Works closely with the project leader in handling development resources.
- Decides on implementation rules.
- Manages technical risks.

Specialised organisation

Depending on the process framework used several new roles come close to the development manager, for example:

- Team leader
- SCRUM master
- Kanban master
Development(3)

- Environment manager
  - Creates and maintains the development and test environments.
  - Keeps the technical environment under configuration control.

- Developer
  (aka Designer, Implementer or Programmer)
  - Develops the system. Informs managers about technical risks.
  - There is sometimes a need for developers who are specialized in certain important technical systems. It depends on the domain, but can be:
    - Database
    - GUI
    - Network
Development(4)

• Procurement responsible
  • Buys components and acquires free-ware.
  • Specialized in licenses and contracts.
  • Must know a lot about the market.

• Component adaptor
  • Adapts reused or procured components to their use in the system.

• Integrator
  • Puts the various pieces of the software together to a complete system.
  • Can be the creator of "glueware".
  • Works closely with testers.
Overview
Validation(1)

• Test leader
  • Evaluates requirements.
  • Feeds information back to the team.
  • Decides on the tested status of the product.
  • Organizes the testing work.
  • Selects and maintains testing tools.
  • Works closely with development manager, environment manager, and integrator.

• Tester
  • Assists the test leader and performs the actual testing work.
  • Can be specialized.
  • Nowadays these persons have to have programming skills.
Validation(2)

- Quality coordinator
  - Measures the product quality and initiate necessary changes of product and process.
  - Determines the quality of the final product.
  - Organizes software reviews.
  - Collects all means of quality work and makes sure that they fit together.
Overview

Role catalogue

- Customer services
  - Deployment manager
  - Technical writer
  - Course developer
  - Course leader
  - Helpdesk
  - Operations manager
  - Systems engineer
  - Librarian
  - Document responsible
- Validation
  - Test leader
  - Tester
  - Quality coordinator
- Management
  - Product manager
  - Project manager
  - Configuration manager
  - Line manager
  - Process manager
- Analysis
  - Lead analyst
  - Analyst
  - Architect
  - Lead designer
- Development
  - Development manager
  - Environment manager
  - Developer
  - Specialised development
  - Specialised organisation
  - Team leader
- Asset management

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Customer services(1)

• **Deployment manager**
  • Ensures that the product is made available to the customer.
  • Coordinates manufacturing, installation, distribution, and training.
  • Cooperates much with architects, development manager, environment manager, and test leader.

• **Technical writer**
  • Decides the format and style of the documentation delivered to the customer.
  • Ensures good readability and correct content of user documentation. Works closely with developers with help texts.
Customer services(2)

- **Course developer**
  - Creates training material and plans training of customers, operators, and users.

- **Course leader**
  - Performs and assures training to customer, end-user and operation personnel.

- **Helpdesk**
  - Supports intended usage of the product.
  - Documents customer issues.
Customer services (3)

- **Operations manager**
  - Ensures that customer services are provided on the agreed service level.
  - Acquires hardware and software necessary for the service.
  - Works proactively.
  - Cooperates with or leads the helpdesk workers.

- **Systems engineer**
  - Performs maintenance and monitoring of systems providing customer services on in-house or third party systems.
  - Handles emergencies. Works together with the customer operators.
  - Assists the Operations manager.
Overview

Role catalogue

- Test leader
- Tester
- Quality coordinator
- Deployment manager
- Technical writer
- Course developer
- Course leader
- Helpdesk
- Operations manager
- Systems engineer
- Librarian
- Document responsible

- Asset management

- Product manager
- Project manager
- Configuration manager
- Line manager
- Process manager

- Lead analyst
- Analyst
- Architect
- Lead designer

- Development manager
- Environment manager
- Developer
- Specialised organisation

- Specialised development
- GLII
- Network
- Procurement responsible
- Component adaptor
- Integrator

- Strategic product manager
- Operational product manager

- Team leader
- SCRUM master
- Kanban master

- Database
- GLII
- Network
Asset management

• Librarian
  • Identifies reusable components.
  • Manages the component library.
  • Makes sure that there is an archive of relevant documentation.
  • Works closely together with the configuration manager.

• Document responsible
  • Decides on document and information standards.
  • Makes sure that responsible persons have access to templates and tools.
  • Today much on database modelling.
Process

• Select your favorite role
• Write a short application for that role, ½ A4
• Append a CV, 1-2 pages
• Prepare a 30 sec pitch for yourself
• Think of your second best choice
• Go to the meeting, TDDC88: already on Thursday
Process TDDC88

- Make a place on the wall or white board, or on a table where you put applications for a particular role.
- Walk around and watch the applications for 5-10 minutes
- Select a moderator for the meeting
- Start by appointing a project leader. If more people apply, let them give their 30 sec pitch and have a closed voting.
- The project leader now helps the moderator. Start with positions that have more applicants than places. Let people shift their applications before or after voting.
- Change or merge roles if you think it is a good idea
- It is highly recommended that leading roles are given to people with experience
Some typical roles of TDDC88

- Line Managers (2)
- Project Manager (1)
- Analyst (3-4)
- Product Manager (1)
- Test Leader (1)
- Tester (4-5?)
- Operations Manager (1)
- Quality Coordinator (1)
- Architect (1)
- Developer (5-8)
- Configuration Manager (1)
- Process manager (1)
- Technical Writers (2-3)
Roles of TDDD77 (Vt1-2)

- Team leader
- Lead analyst
- Architect
- Development manager
- Test leader
- Quality coordinator
- Document responsible
- Specialist designer
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expanding reality

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