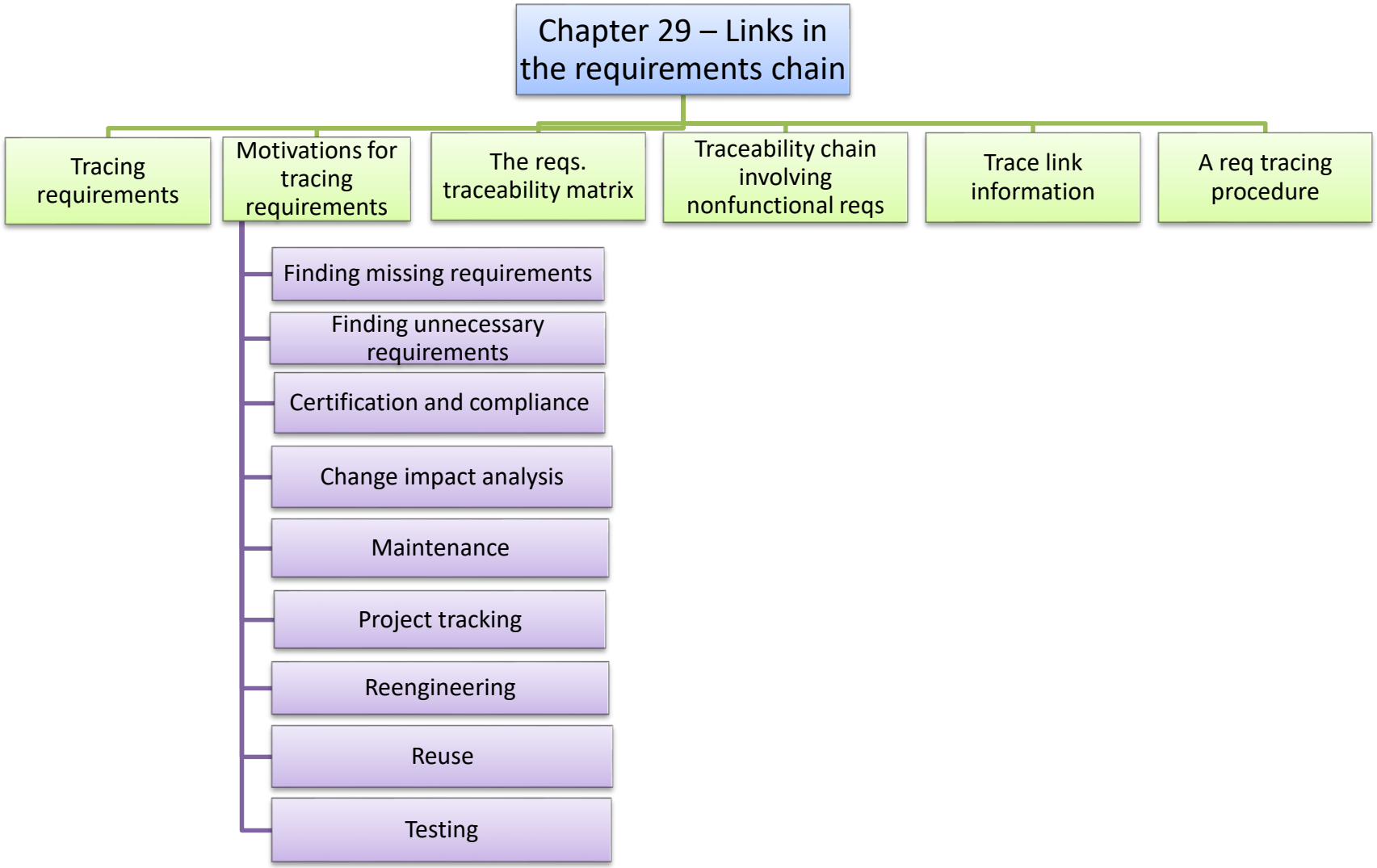
FPT UNIVERSITY

ĐẠI HỌC FPT CẦN THƠ

Chapter 30

Tools for requirements engineering

Review chapter 29



Objectives

- Present several benefits of using requirements tools and identifies some general capabilities you can expect to find in such products.
- Student should understand the purpose of these tools.
- Student should enhance that there are dozens of commercial requirements tools are available. However, choicing whatever tools we have to annual maintenance fees and periodic upgrades, software installation and configuration, administration, vendor support and consulting, and training for users

Contents

- Requirements development tools
- Requirements management tools
- RM tool capabilities
- Selecting and implementing a requirements tool

Requirements development tools

- Requirements development (RD) tools are used by business analysts to work with stakeholders to elicit and document requirements more effectively and more efficiently than with manual methods. Stakeholders will vary in how they best consume and share information: textually, visually, or audibly.
- This section subdivides the development tools into elicitation, prototyping, and modeling tools. Some of the tools in the RD category provide all of these services.
  - Elicitation tools
  - Prototyping tools
  - Modeling tools

Requirements development tools

- Elicitation tools:
  - Elicitation tools include those used for recording notes during elicitation sessions. These enable the BA to quickly organize ideas and to annotate follow-up questions, action items, core terms, and the like.
  - Mind-mapping tools facilitate brainstorming as well as organizing the information produced. Audio pens and other recording tools allow playback of conversations or provide visual reminders of what happened during an elicitation session.
  - Some recording devices also tie the audio directly to the text that was written at the same time, enabling you to hear specific portions of the audio conversation as needed.

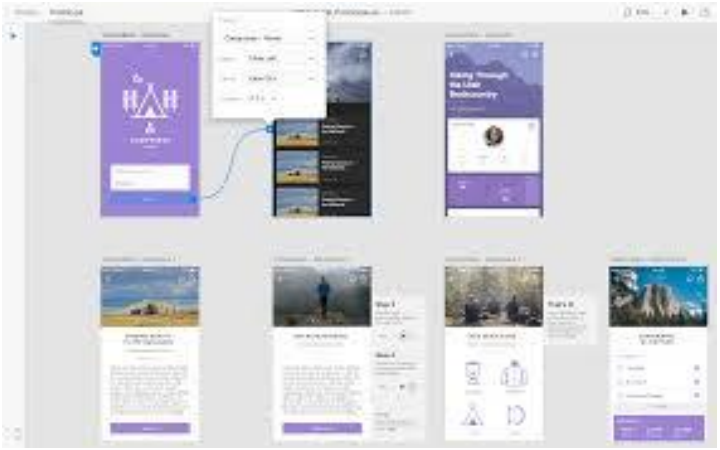
Audio pens

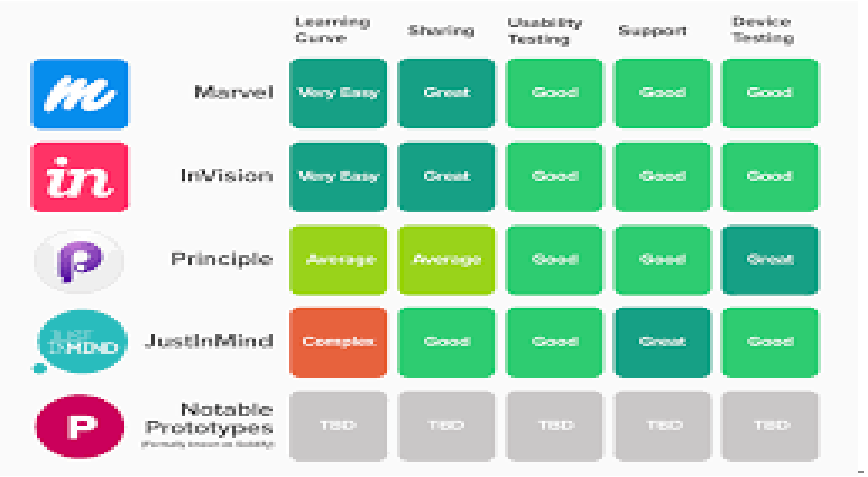
Audio & Video pens

Mindmap

Requirements development tools

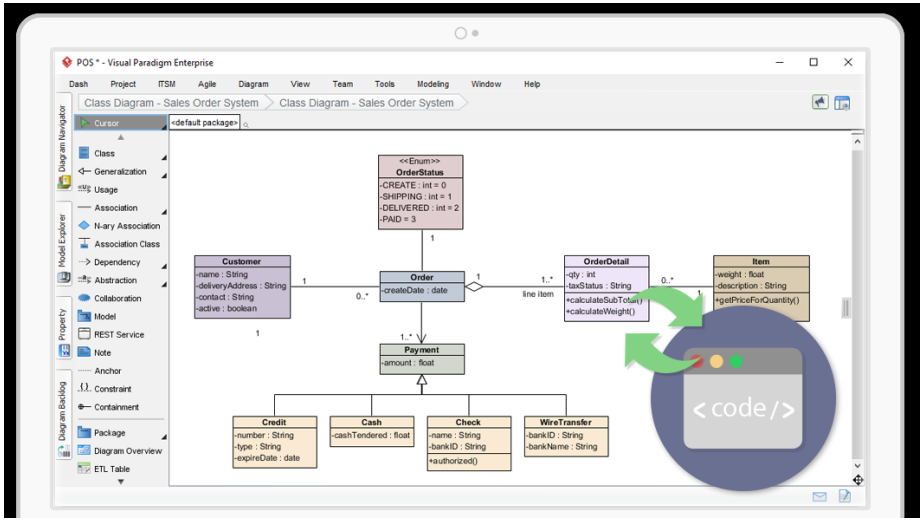
- Prototyping tools:
  - Prototyping tools facilitate the creation of work products that range from electronic mock-ups to full application simulations.
  - Simple prototyping tools come with basic shapes and designs to create low-fidelity wireframes.
  - Common applications such as Microsoft PowerPoint can be used to quickly mock up screens and the navigations between them or to annotate existing screen shots.
  - Sophisticated tools might enable mocked-up functionality that a user can click through to see just how the application would work.





Requirements development tools

- Modeling tools:
  - Requirements modeling tools help the BA create diagrams, such as DFD, ERD, Swimlane diagram,…
  - These tools support the use of standard shapes, notations, and syntax for drawing diagrams according to established conventions.
  - They might provide templates as starting points and examples to help the BA learn more about each model.



Requirements management tools

- An RM tool that stores information in a multiuser database provides a robust solution to the limitations of storing requirements in documents.
- Larger project teams will benefit from letting users import requirements from source documents, define attribute values, filter and display the database contents, export requirements in various formats, define traceability links, and connect requirements to items stored in other software development tools.
- Benefits of using an RM tool
  - Manage versions and changes: The tools help you to maintain a history of the changes made to each requirement when they are baselined.
  - Store requirements attributes: RM tools generate several system-defined attributes, such as the date a requirement was created and its current version number, and they let you define additional attributes of various data types. Everyone working on the project must be able to view the attributes, and selected individuals will be permitted to update attribute values.

Requirements management tools

- Benefits of using an RM tool
  - Facilitate impact analysis: RM tools enable requirements tracing by letting you define links between different types of requirements, between requirements in different subsystems, and between individual requirements and related system components (for example, designs, code modules, tests, and user documentation). These links help you analyze the impact that a proposed change to a specific requirement will have on other system elements.
  - Identify missing and extraneous (ko liên quan) requirements: The tracing functionality in RM tools helps stakeholders identify requirements that are missing, such as user requirements that have no mapped functional requirements. Similarly, they can reveal requirements that cannot be traced back to a reasonable origin, raising the question of whether those requirements are necessary.
  - Track requirements status: RM tools help you tracking the status of each requirement during development supports the overall status tracking of the project.
  - Control access: RM tools let you define access permissions for individuals or groups of users and share information with a geographically dispersed team through a web interface to the database.

Requirements management tools

- Benefits of using an RM tool
  - Communicate with stakeholders: An RM tool serves as a master repository so that all stakeholders work from the same set of requirements. Automatically triggered email messages notify affected individuals when a new discussion entry is made or when a specific requirement is modified.
  - Reuse requirements: Storing requirements in a database facilitates the reuse of them in multiple projects or subprojects.
  - Track issue status: Some RM tools have functionality for tracking open issues and linking each issue to its related requirements. As issues are resolved, it's easy to determine whether any requirements must be updated.
  - Generate tailored subsets (sinh tập con phù hợp): RM tools allow you to extract and view a set of requirements that fits a particular purpose. For example, you might want a report that contains all of the requirements for a specific development iteration, all of the requirements that relate to a particular feature, or a set of requirements that needs to be inspected.

Requirements management tools

- The feature tree in Figure 30-1 presents a summary of the types of capabilities commonly found in RM tools

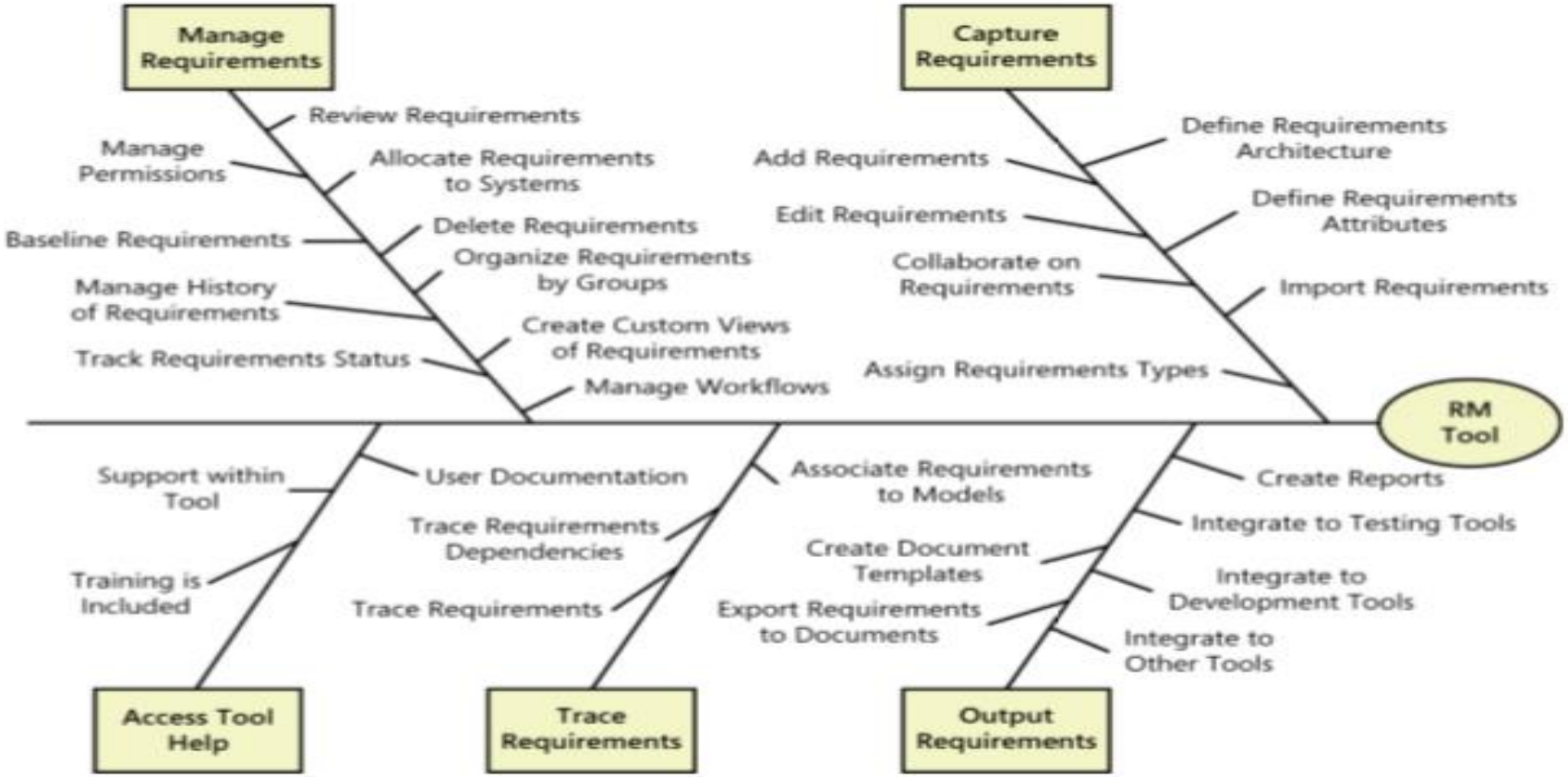


FIGURE 30-1 Common RM tool features.

Requirements management tools

- RM tools let you define (xác định) different requirement types, such as business requirements, use cases, functional requirements, hardware requirements, and constraints.
- RM tools typically support hierarchical numeric requirement labels, in addition to maintaining a unique internal identifier for each requirement. These identifiers often consist of a short text prefix that indicates the requirement type—such as UR for a user requirement—followed by a unique integer.
- Requirements can be imported into an RM tool from various source document formats.
- Output capabilities from the tools generally include the ability to generate a requirements document in a variety of formats, including predefined or user-specified documents, spreadsheets, and webpages.
- With some tools, you can create an SRS that contains all the functional requirements that are allocated to a specific release and assigned to a particular developer.
- Requirements management tools generally have robust tracing features.

RM tool capabilities

- RM tools often integrate with other tools used in application development.
- For instance, you might be able to trace specific requirements to individual design elements stored in a design modeling tool, or to tests stored in a test management tool.
- When you are selecting an RM product, determine whether the tool will be able to exchange data with the other tools you use. Think about how you'll take advantage of these product integrations as you perform your requirements engineering, testing, project tracking, and other processes.

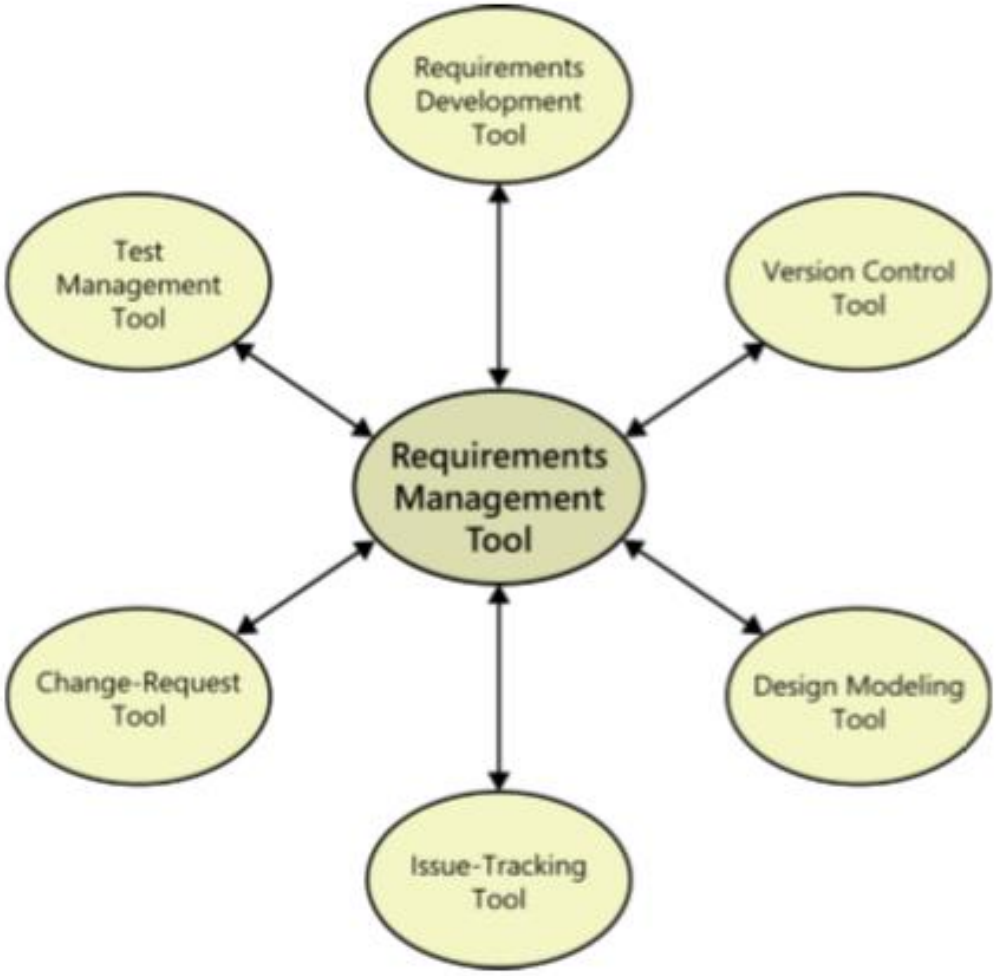


FIGURE 30-2 RM tools integrate with other kinds of software tools.

Selecting and implementing a requirements tool

- Selecting a tool: Select a tool based on the combination of desired features, platform, and pricing that best fits your development environment and culture. To summarize the selection process:
  - Identify your organization's requirements for the tool to serve as evaluation criteria.
  - Prioritize and weight the criteria according to what capabilities or other factors matter most to your organization.
  - Set up demos or acquire evaluation copies of the tools you want to consider.
  - Score each tool against the criteria in a consistent manner
  - Calculate a total score for each tool by using your criteria scores and the weights you assigned to them.
  - For each tool that scored well, use it on an actual project to see if it behaves as you anticipated from the objective scores.

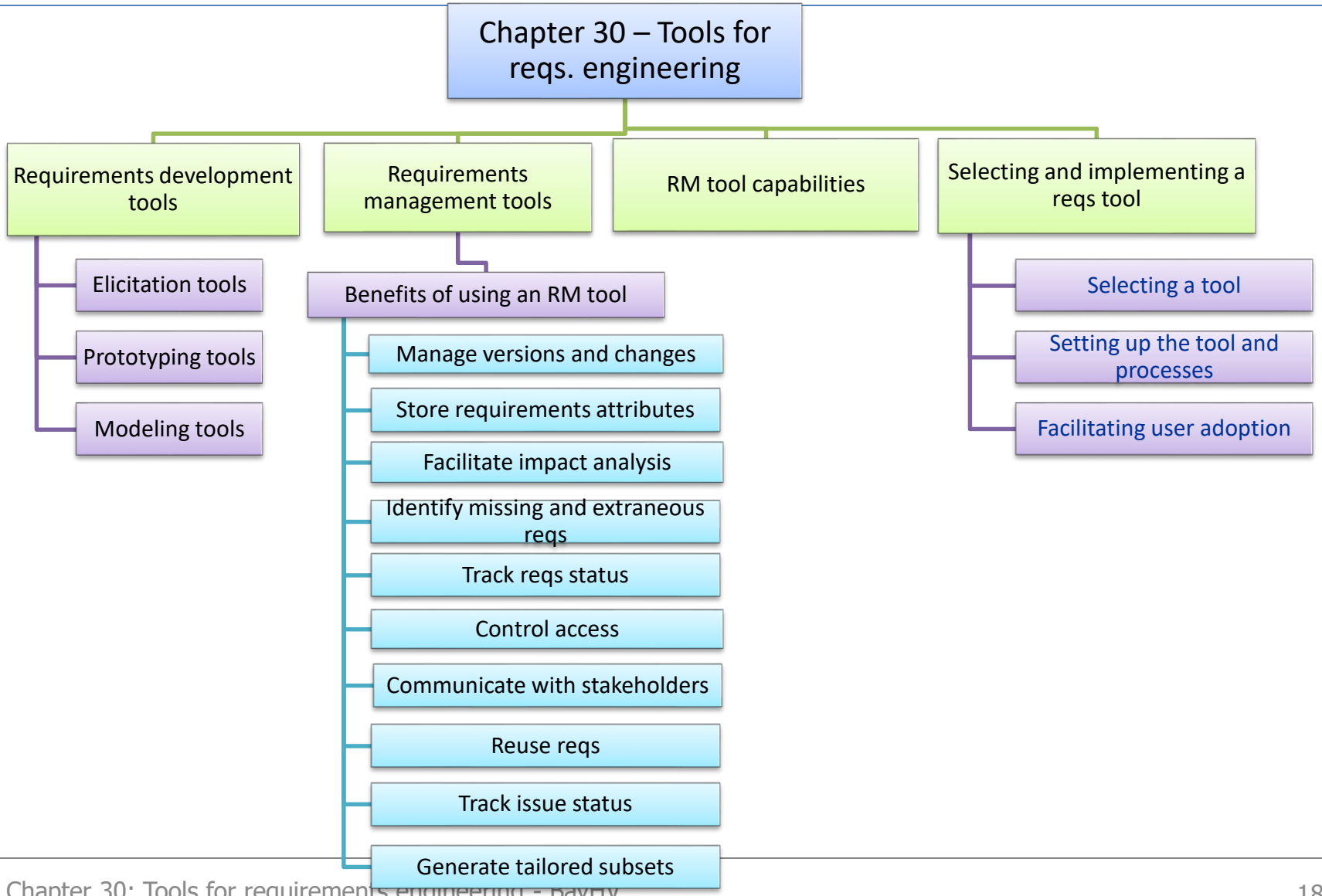
Selecting and implementing a requirements tool

- Setting up the tool and processes: Recognize that it will take effort to install a tool, load a project's requirements into it, define attributes and trace links, keep the contents current, define access groups and their privileges, and adapt your processes to use the tool.
  - Configuring the tool can be complex.
  - Even if you select the best available tool, it doesn't necessarily provide every capability that your organization wants or needs. It might not support your existing requirements templates or processes.
  - Consider the following suggestions to overcome process issues as you strive to maximize your return on investment from a requirements tool:
    - Assign an experienced BA to own the tool setup and process adaptations.
    - Think carefully about the various requirement types that you define.
    - Use the tool to facilitate communication with project stakeholders in various locations.
    - …

Selecting and implementing a requirements tool

- Facilitating user adoption:
  - The diligence of the users of your requirements tools is a critical success factor.
  - Buying a tool is easy; changing your culture and processes to accept the tool and take best advantage of it is much harder.
  - People are often resistant to change things that they're familiar with, and they usually have a comfort level with working on requirements in documents.
  - Following are some suggestions to help you deal with issues regarding user adoption and culture change:
    - Identify a tool advocate (ủng hộ), a local enthusiast who learns the tool's ins and outs, mentors other users, and sees that it gets employed as intended.
    - One of the biggest adoption challenges to overcome is that users don't believe the tool will actually add any value.
    - Your team members are smart, but it's better to train them than to expect them to figure out how best to use the tool on their own.
    - Begin with a pilot application of the tool on a noncritical project. This will help the organization learn how much effort it takes to administer and support the tool.

Review chapter 30



THE END
THANK YOU!