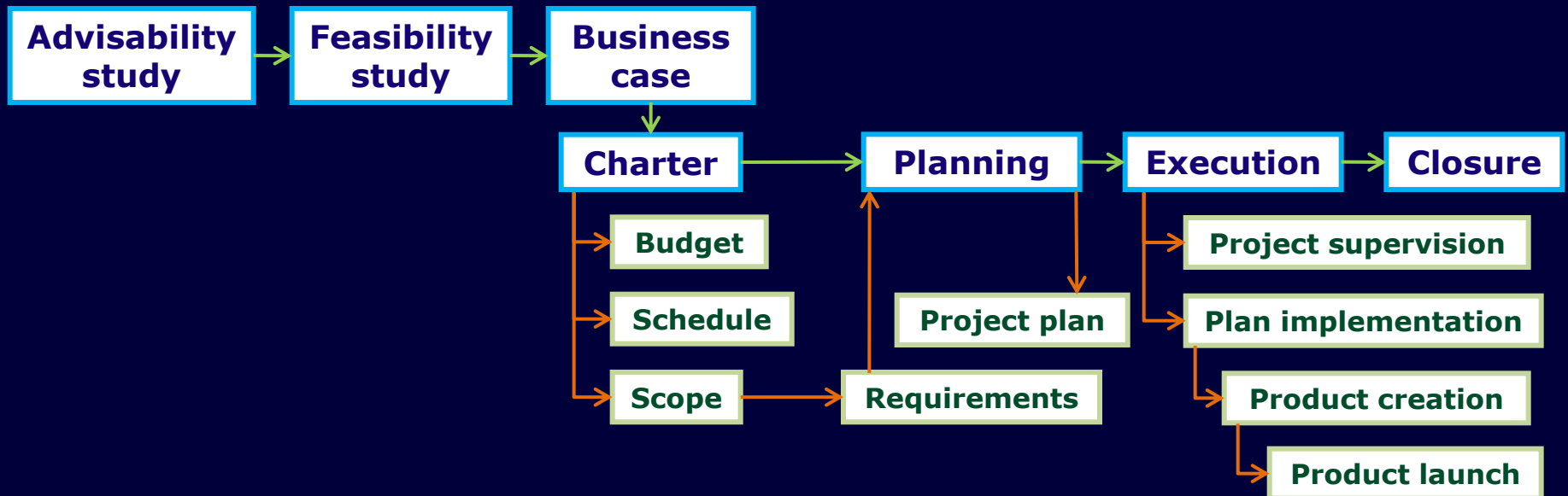


# Project Management

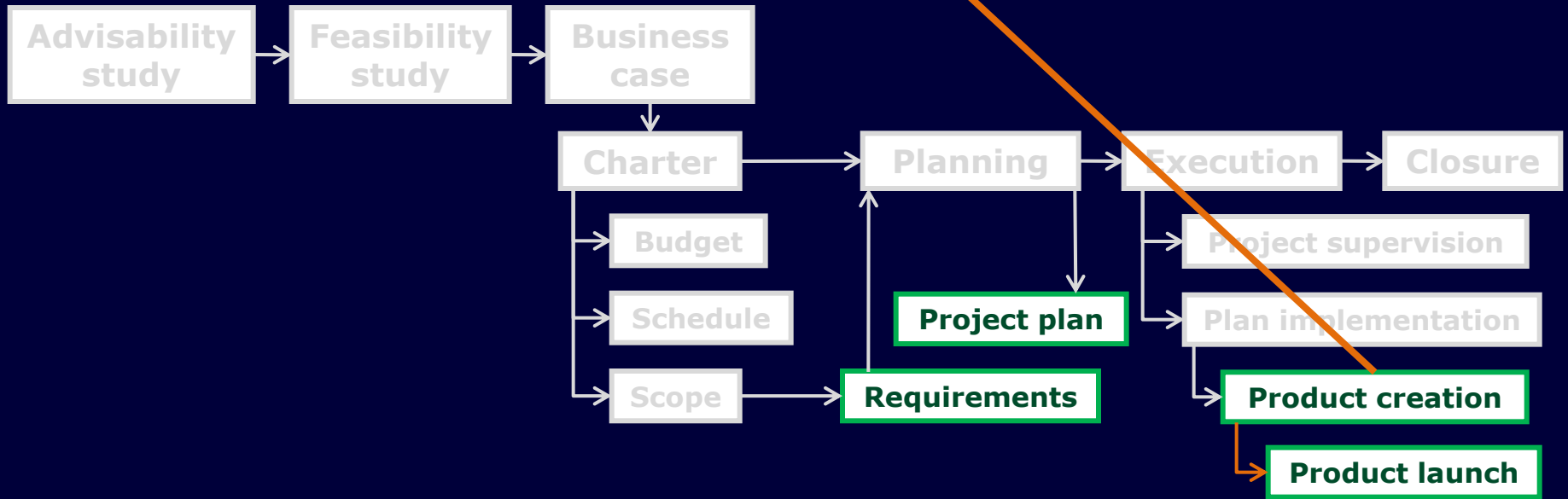
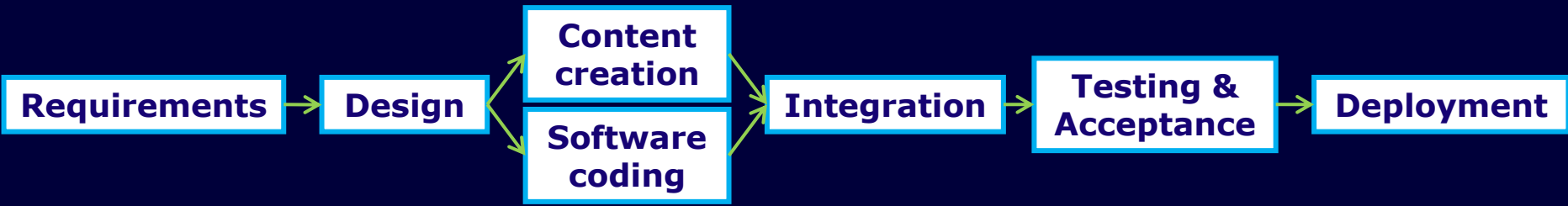
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Development & developers

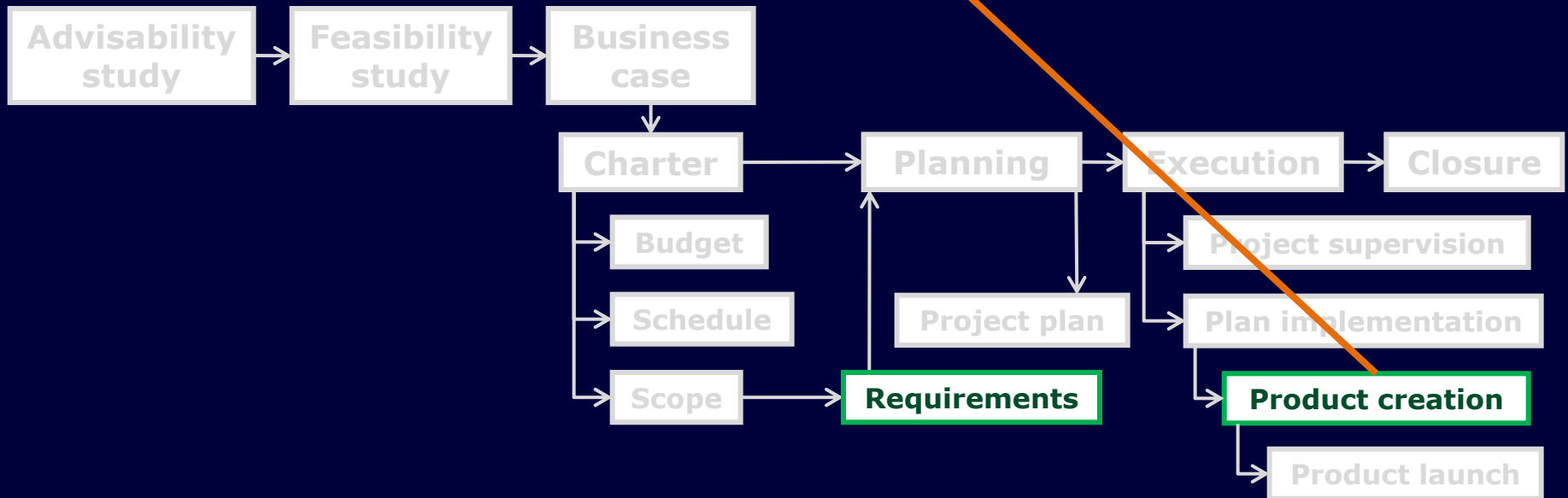
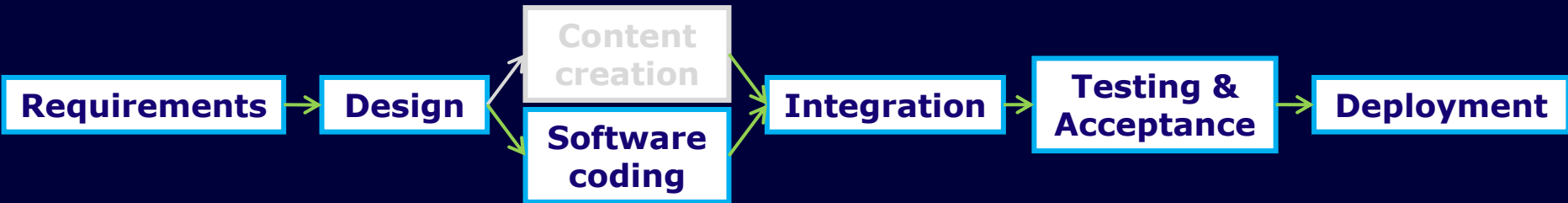
# Project life cycle



# Product creation phases

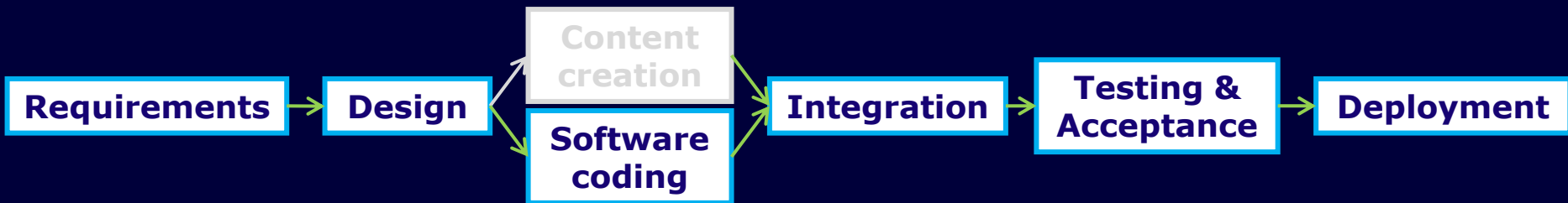


# Software development phases



# Development & developers: outline

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General remarks

Internal vs external development

Communicating with developers

Monitoring & controlling development work

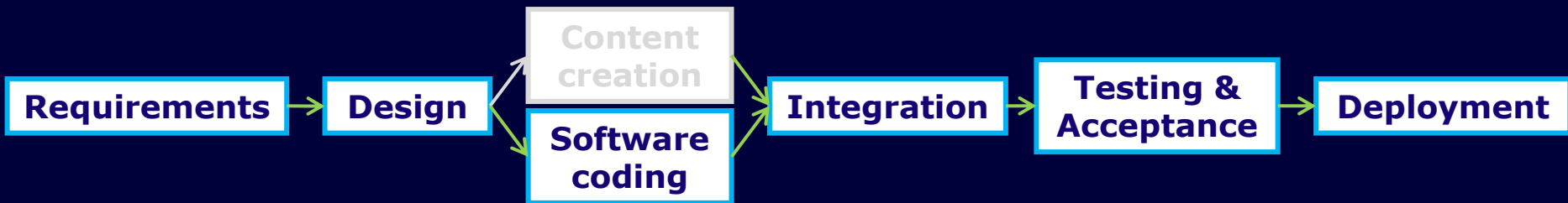
Successive versions of software

Documentation & source code

Warranty & maintenance

# Developers: general remarks (1)

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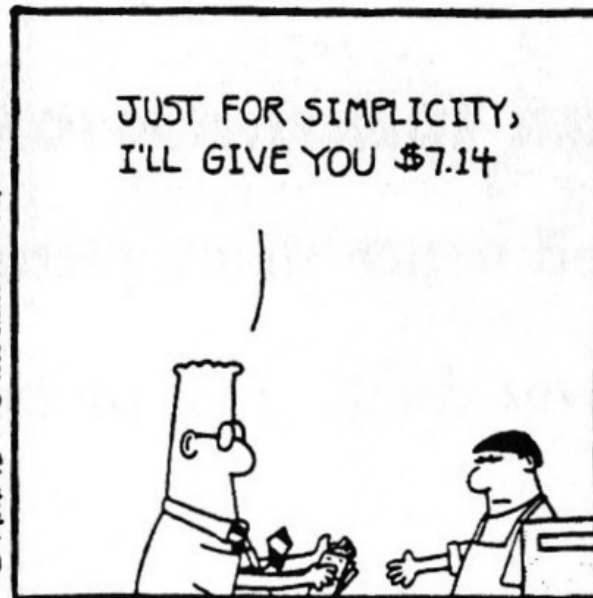
## Developer(s):

- ✓ individual(s)
- ✓ external development company
- ✓ intra-company development department
- ✓ development team within overall project team

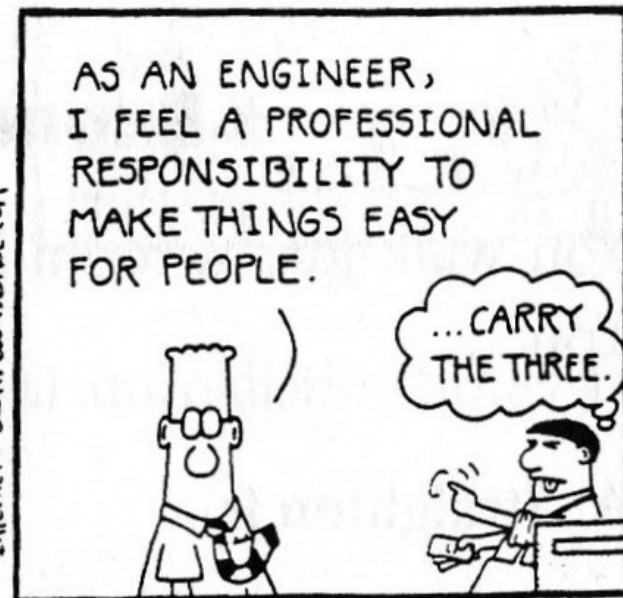
# Developers (1)



S. Adams © 1993 United Feature Syndicate, Inc.



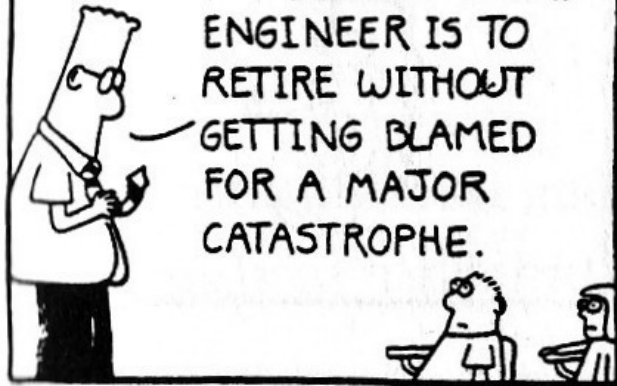
Internet: scottadams@aol.com



# Developers (2)

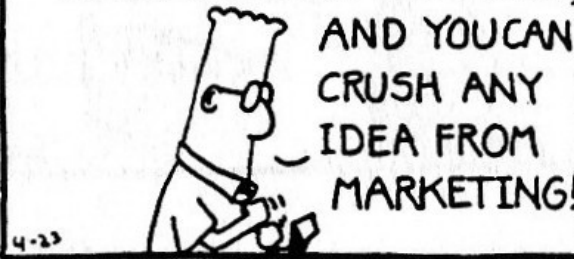
DILBERT TALKS TO A CLASS ABOUT CAREER OPTIONS.

THE GOAL OF EVERY ENGINEER IS TO RETIRE WITHOUT GETTING BLAMED FOR A MAJOR CATASTROPHE.



S. Adams E-Mail: SCOTTADAMS@aol.com

ENGINEERS PREFER TO WORK AS "CONSULTANTS" ON PROJECT TEAMS. THAT WAY THERE'S NO REAL WORK, BLAME IS SPREAD ACROSS THE GROUP, AND YOU CAN CRUSH ANY IDEA FROM MARKETING!



4-23

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...AND SOMETIMES YOU GET FREE DONUTS JUST FOR SHOWING UP!



GET OUT OF MY CLASSROOM.



# Developers (3)

... SO I KNEW IT  
WAS EITHER A LAYER  
THREE PROTOCOL ERROR  
OR ELSE IT WAS TIME  
TO RECALIBRATE  
THE SCOPE.



S. Adams E-Mail: SCOTTADAMS@AOL.COM

HA HA! I'LL AVOID  
THE OBVIOUS PUN  
ABOUT D-CHANNEL  
PACKET ADDRESSING!



I DON'T THINK SHE'S  
DONE WITH HER KNIFE.  
I KNOW. I LOST THREE  
ENGINEERS THIS WAY.



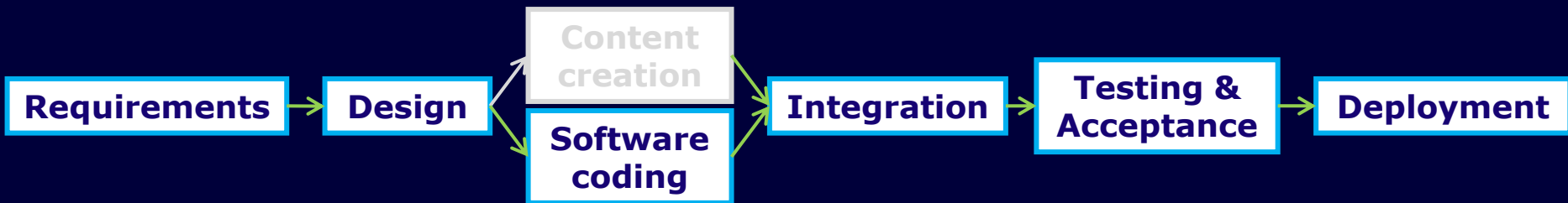
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# Developers (4)



# Developers: general remarks (2)

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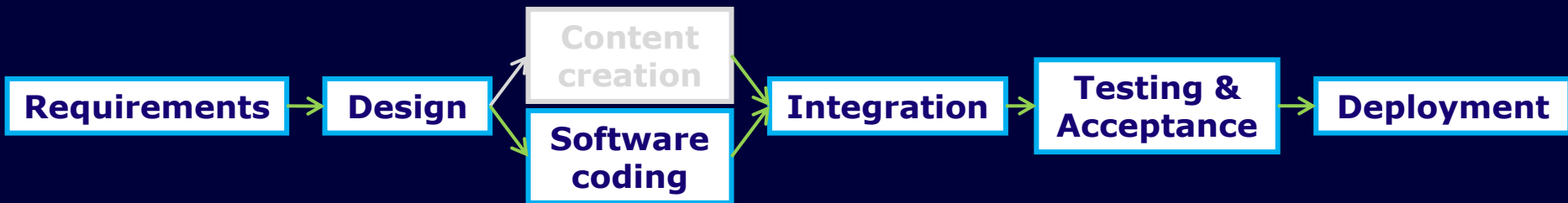


The **technical skills** required of developers for a given project depend on the **complexity** of the software to be developed.

Developers must have the experience and skills required to meet the **specific needs** of the project.

# Internal (in-house) development (1)

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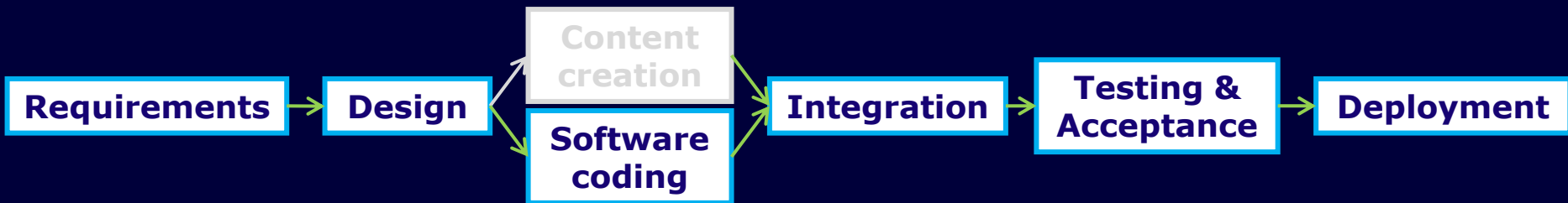


## Advantages:

- ✓ development can be monitored and controlled on a day-to-day basis,
- ✓ the PM can ensure that developers are focused on the project, can identify problems or risks on the spot and react immediately.

# Internal (in-house) development (2)

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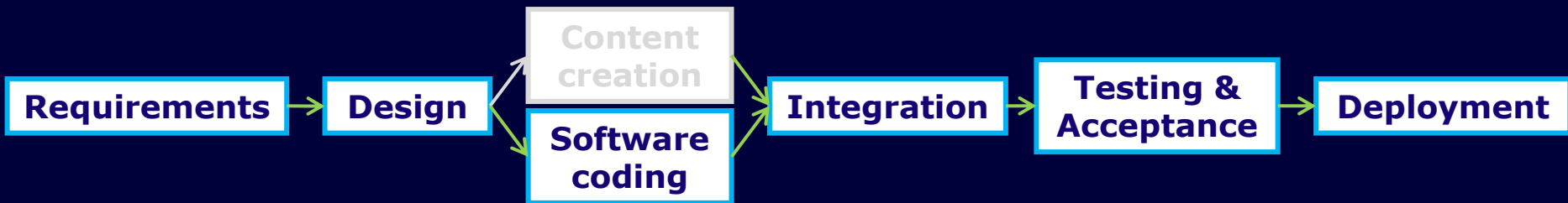


## Advantages:

- ✓ interaction between in-house developers and other project team members is easy and can happen as frequently as necessary,
- ✓ meetings are easy to organize, at no expense,
- ✓ changes to requirements and/or design specifications are easy to “negotiate”.

# External (outsourced) development

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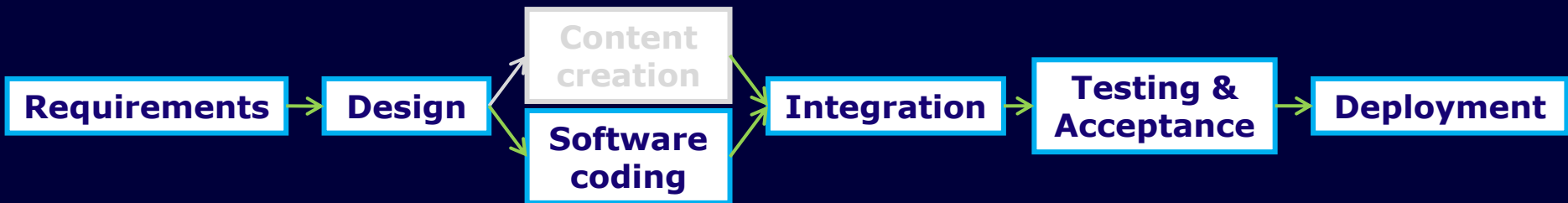
**Geographical location:** major criterion for the selection of a development contractor.

Externalizing development does not necessarily mean using offshore companies.

**Offshore development** is however more and more frequent.

# Communicating with developers (1)

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Meetings & videoconferences

Phone (including VoIP)

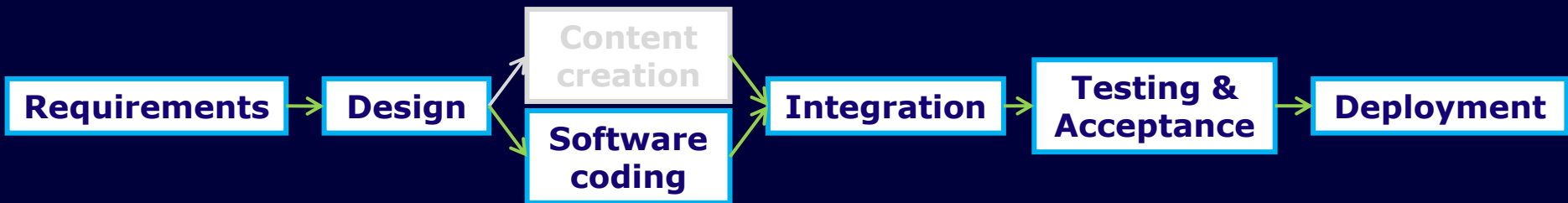
E-mail

Instant messaging

Etc.

# Communicating with developers (2)

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Intranet/Extranet site (may be a “wiki”)

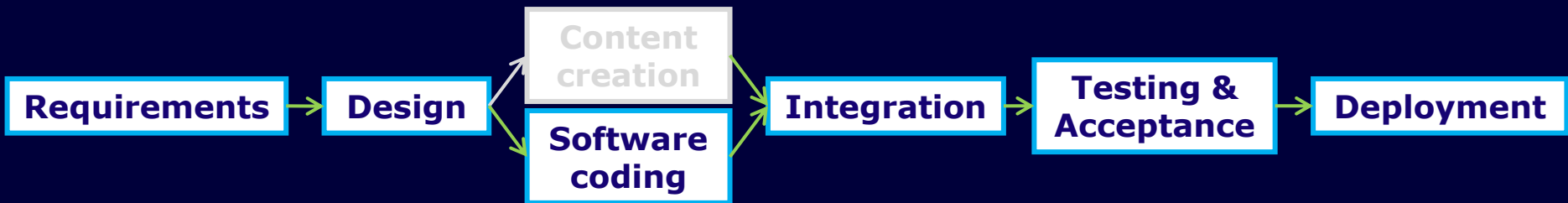
FTP server (or other data transfer channels)

Bug reporting and tracking system



# Development monitoring/control (1)

---



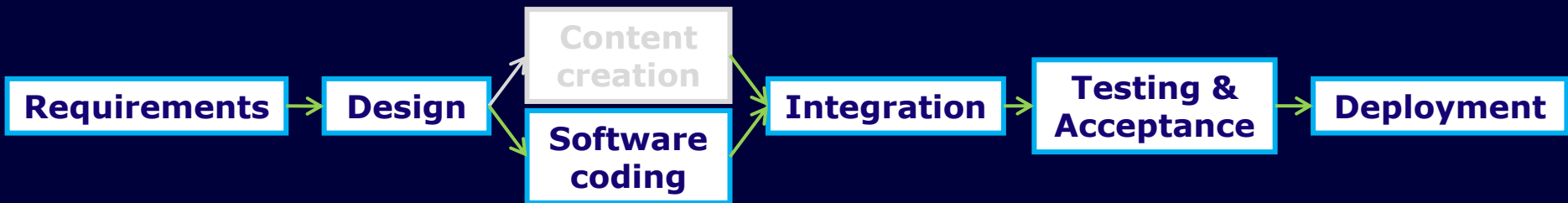
Pay regular “**courtesy visits**” to the developer

Include **checkpoints** in the development calendar:

- **milestone dates** at which the developer is expected to show part(s) of the software

# Development monitoring/control (2)

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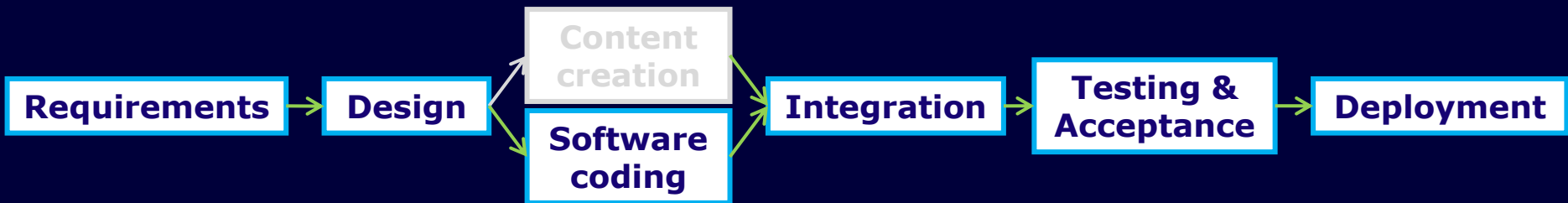


**In-house** development has a clear **advantage** over external development.

As soon as **testing** begins, controlling development work can be performed directly on its result.

# Software versions (1)

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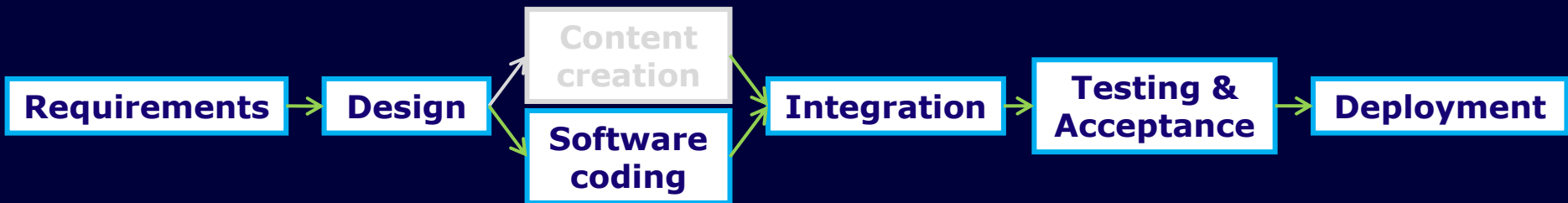
Software development is performed in **stages and increments**.

An application or system is progressively created by developing **building blocks** and assembling them.

Each building block must be “**rock-solid**” and **compliant** with the design specifications.

# Software versions (2)

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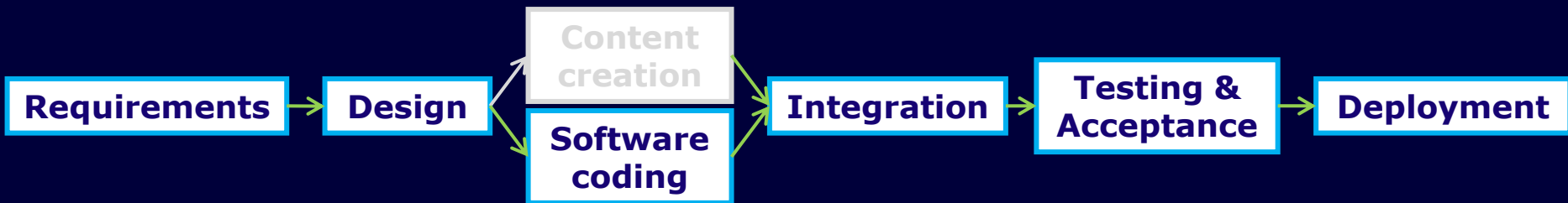


**Unit testing** is done by the developers themselves and/or by the development subproject manager and/or by "internal" testers.

An early version of very important components may be made available to the **client** for **testing and feedback**.

# Software versions (3)

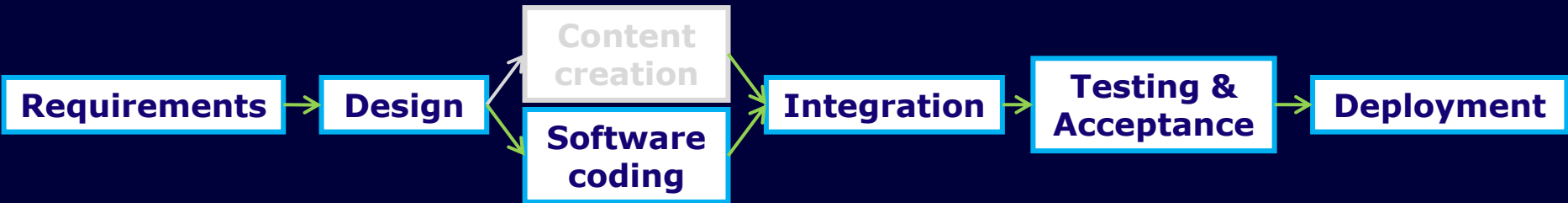
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## “Official” versions of software:

- ✓ predefined sets of functions, features and data, as specified in the requirements
- ✓ should be thoroughly tested by the developer before delivery to the project owner / client for testing and feedback (**but don't count on it!**)

# Software versions (4)



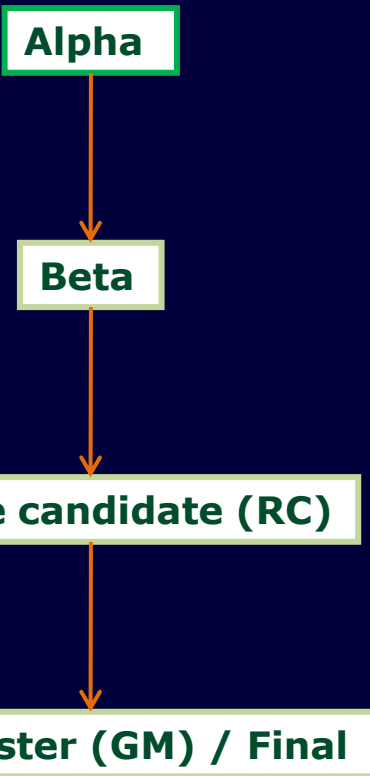
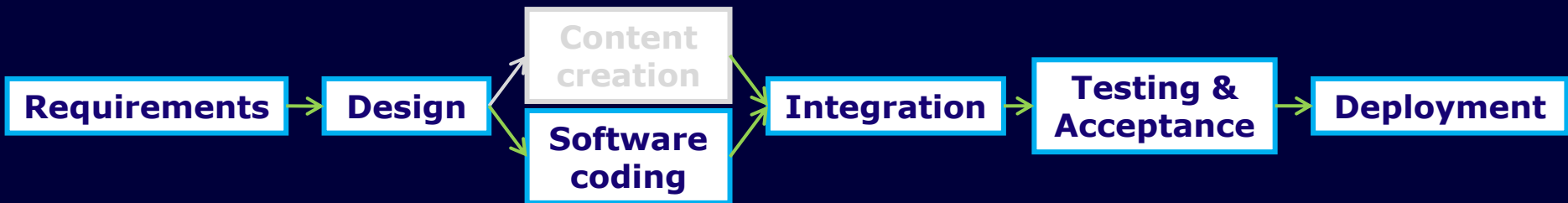
Alpha

Beta

Release candidate (RC)

Gold Master (GM) / Final

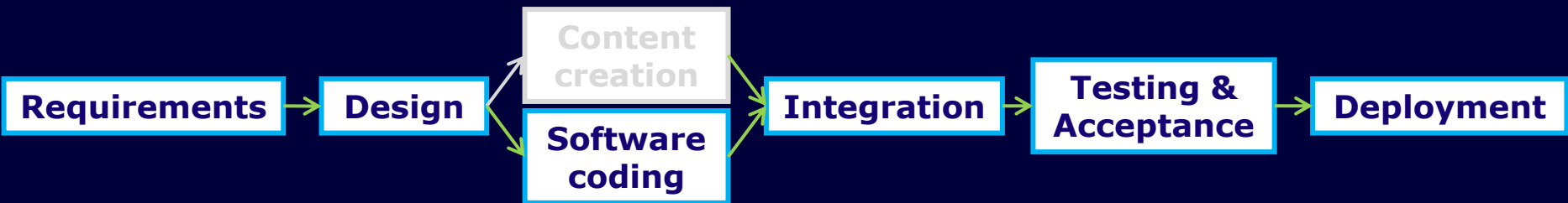
# Software versions (5)



## Alpha:

- consistent subset of the application's user interface, functions, features and content

# Software versions (6)



Alpha

Beta

Release candidate (RC)

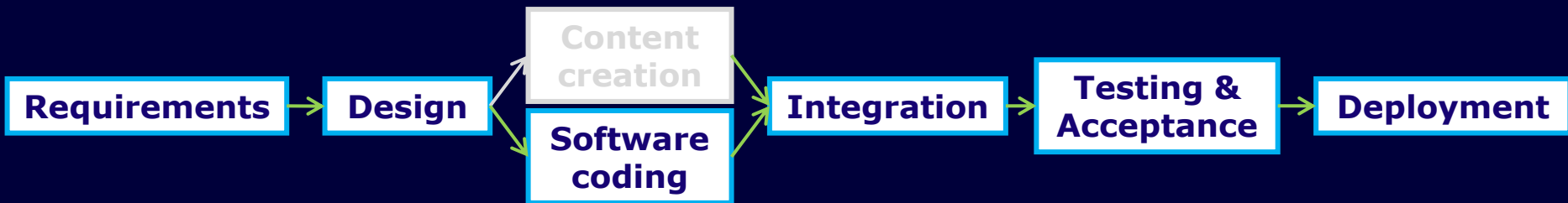
Gold Master (GM) / Final

**Beta:**

- complete user interface, function & feature set and “final” content



# Software versions (7)



Alpha

Beta

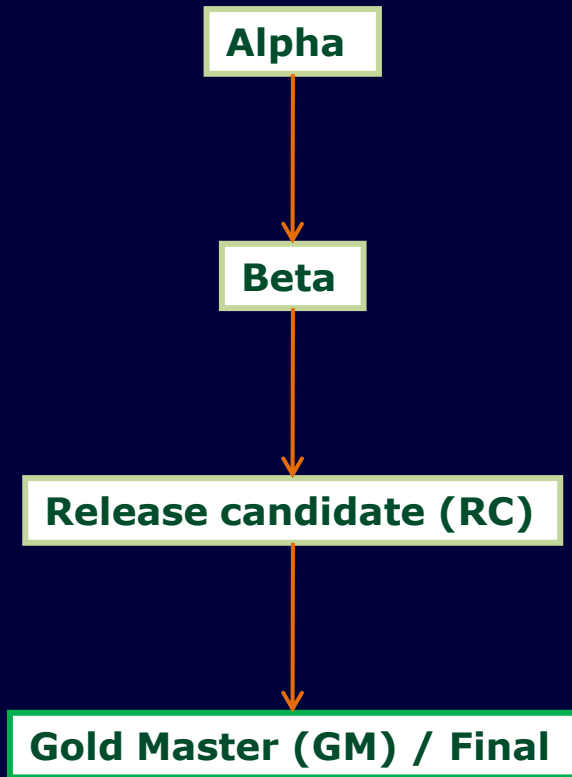
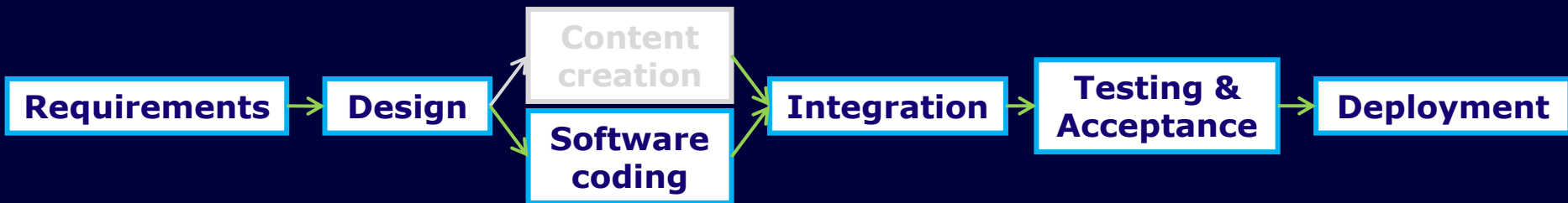
Release candidate (RC)

Gold Master (GM) / Final

**RC:**

- complete application
- integrating the correction of problems in the final Beta

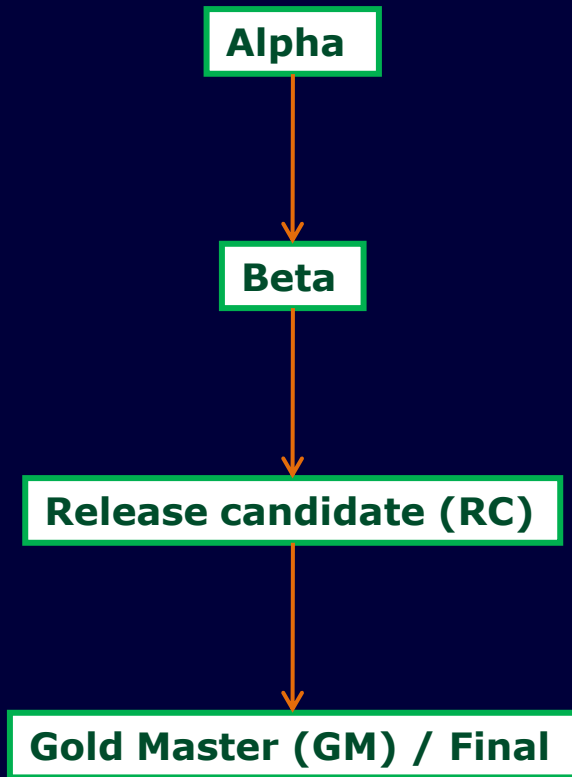
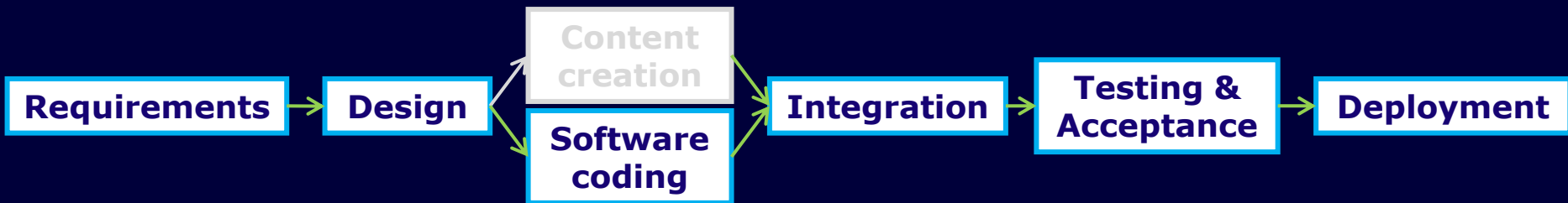
# Software versions (8)



## GM/Final:

- complete product ready to be installed or duplicated or published online
- validated and accepted by the project owner / client

# Software versions (9)



## Prototype:

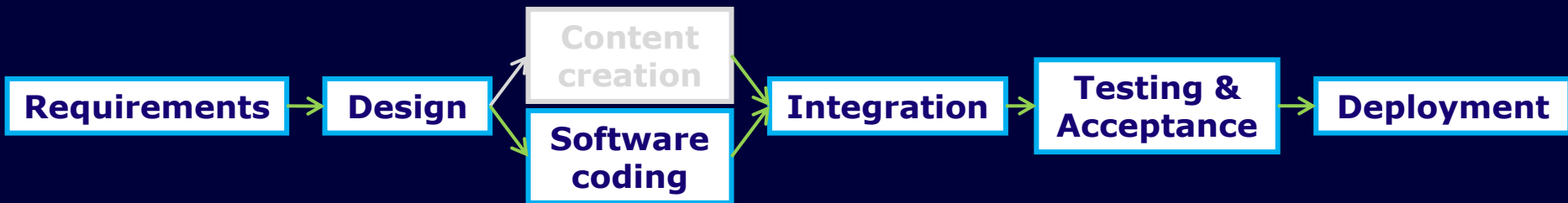
- proof of concept
- minimizes technical risks and tests the specifications

## Real product:

- based on revised version of requirements and design

# Documentation & source code (1)

---

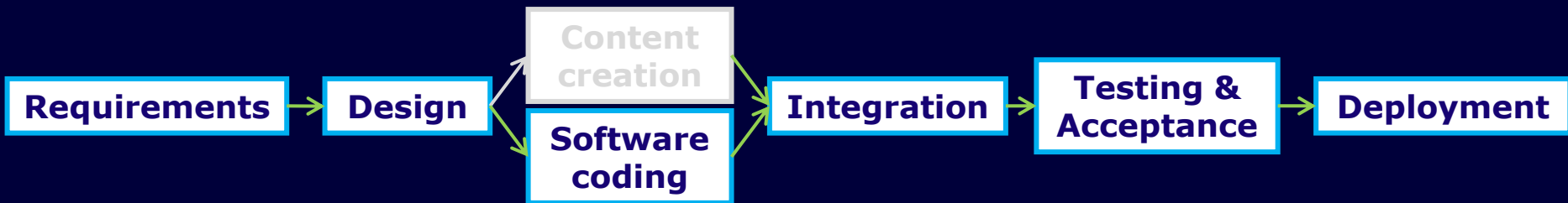


A **development contract** generally requires the developer to deliver not only software but also its documentation and source code.

Those elements may be used in a situation where the software requires additional work that can't be performed by the original developer.

# Documentation & source code (2)

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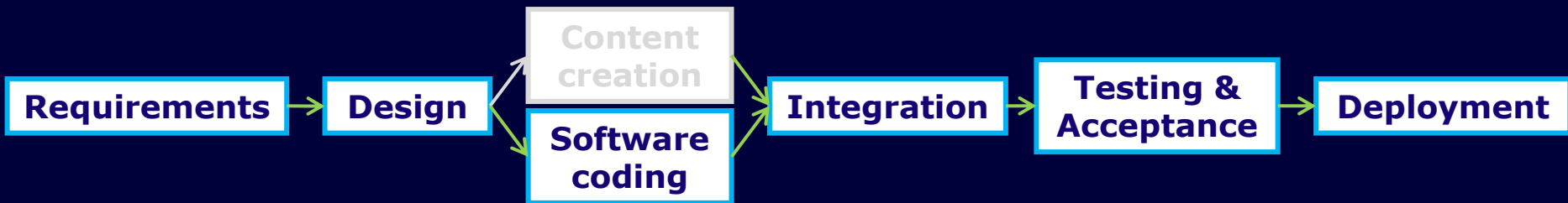


The contract may however stipulate that the developer should retain **ownership** of all or part of the software, and therefore of the corresponding source code.

Software owned by the developer is generally used by the client under **licence**, for which there may be a **fee**.

# Warranty & maintenance (1)

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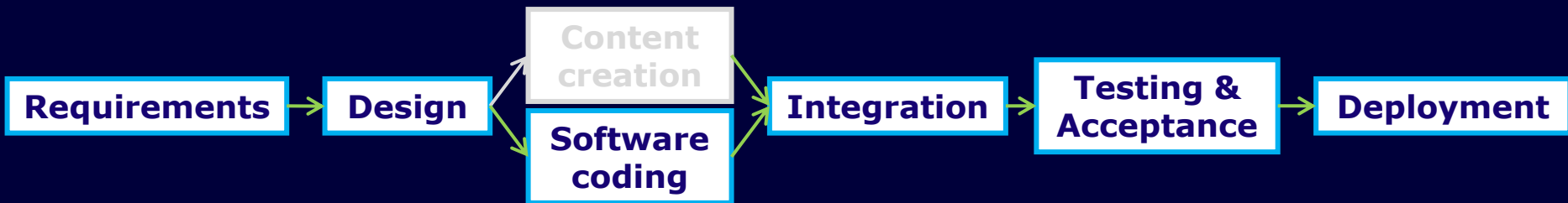
A development contract should include a **warranty** clause whereby the developer is obligated to fix bugs at no additional expense with the shortest possible delay during a determined period.

The contract should also include provisions for **maintenance** beyond the warranty period.

- “Corrective” and “evolutive” maintenance

# Warranty & maintenance (2)

---



A maximum response time may be specified for each category of problem.

## Compensation:

- ✓ global flat fee
- ✓ flat fee per intervention
- ✓ fixed fee per hour or per day

**Questions?**