# CZ3002 - Advanced Software Engineering

## Classic Mistakes

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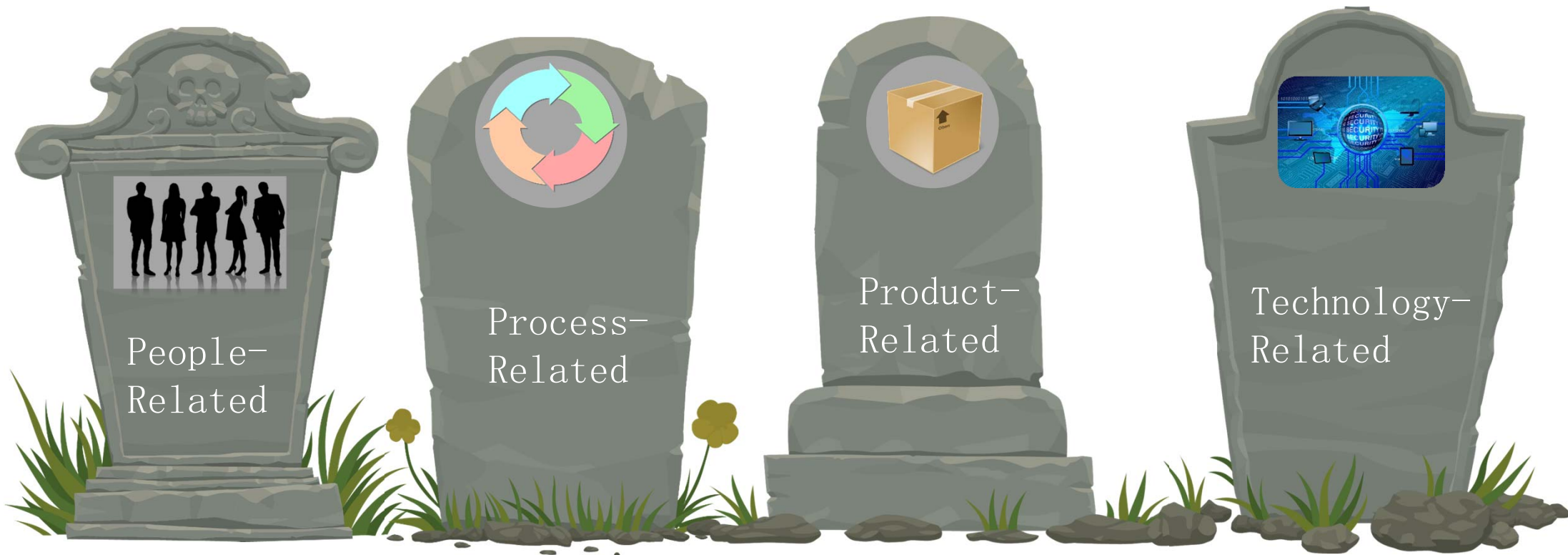Office     : N4-02B-43

# Lesson Objectives

At the end of the lesson, you should be able to:

► Identify the categories of software development mistakes

► Explain the categories of software development mistakes

▶ Four Classic Mistakes:



People-Related
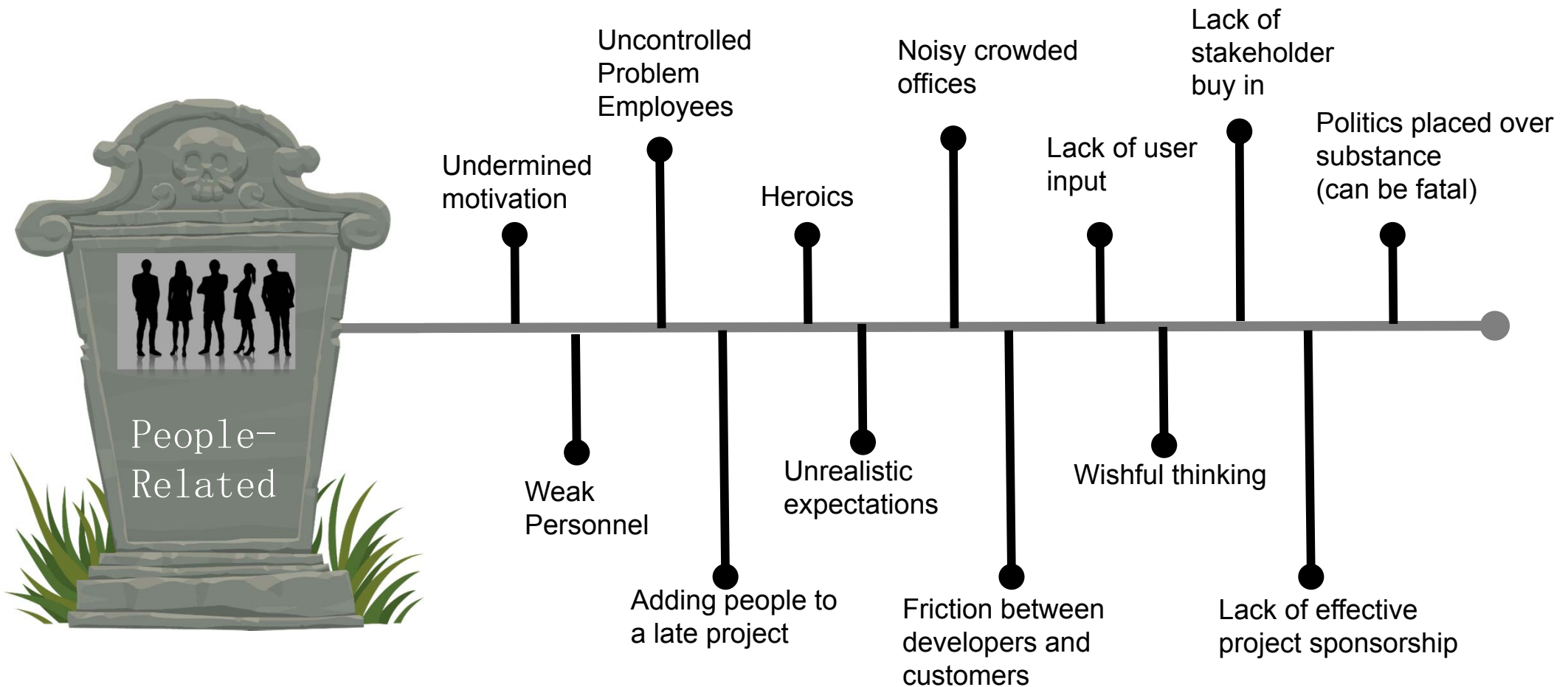
Process-Related

Product-Related

Technology-Related

# The People Dimension

► Results of studies indicate a 10-to-1 difference in productivity among different developers

► "Peopleware" issues have more impact on software productivity than any other factor

► Studies indicate that effects of individual ability, individual motivation, team ability and team motivation dwarf other productivity factors

# Summary on Variations in Productivity

▶ Greater than 10-to-1 differences in productivity among individuals with different depths and breadths of experience

▶ 10-to-1 differences in productivity among individuals with the same levels of experience

▶ 5-to-1 differences in productivity among groups with different levels of experience

▶ 2.5-to-1 differences in productivity among groups with similar levels of experience

# People-Related Mistakes



People-Related

- Undermined motivation
- Weak Personnel
- Uncontrolled Problem Employees
- Adding people to a late project
- Heroics
- Unrealistic expectations
- Noisy crowded offices
- Friction between developers and customers
- Lack of user input
- Wishful thinking
- Lack of stakeholder buy in
- Lack of effective project sponsorship
- Politics placed over substance (can be fatal)

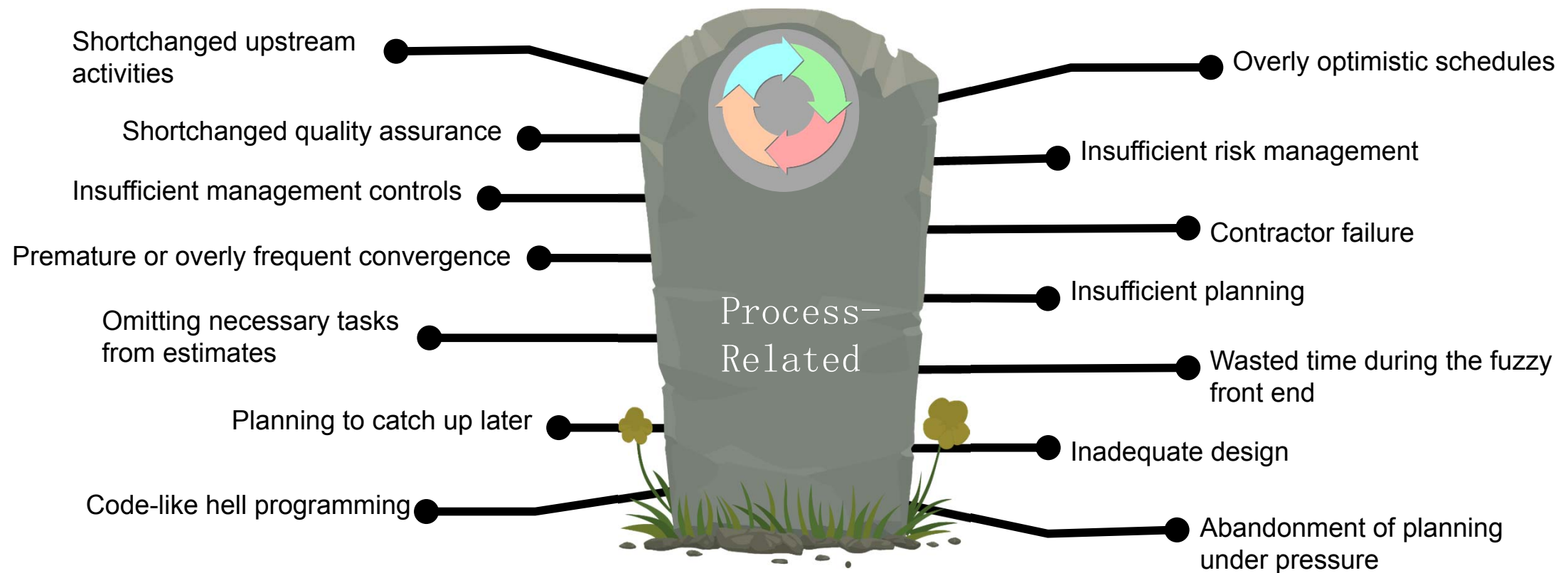► "Process" includes both management and technical methodologies

► Companies that have focused on process have cut their time-to-market by about one half and reduced cost and defects by factors of 3 to 10

► Rework avoidance

  ❖ Orient your process so you avoid doing things twice

► Quality assurance

  ❖ To ensure product has acceptable level of quality

  ❖ To detect errors at the stage they are least time consuming and costly to fix

► Development fundamentals

► Risk management

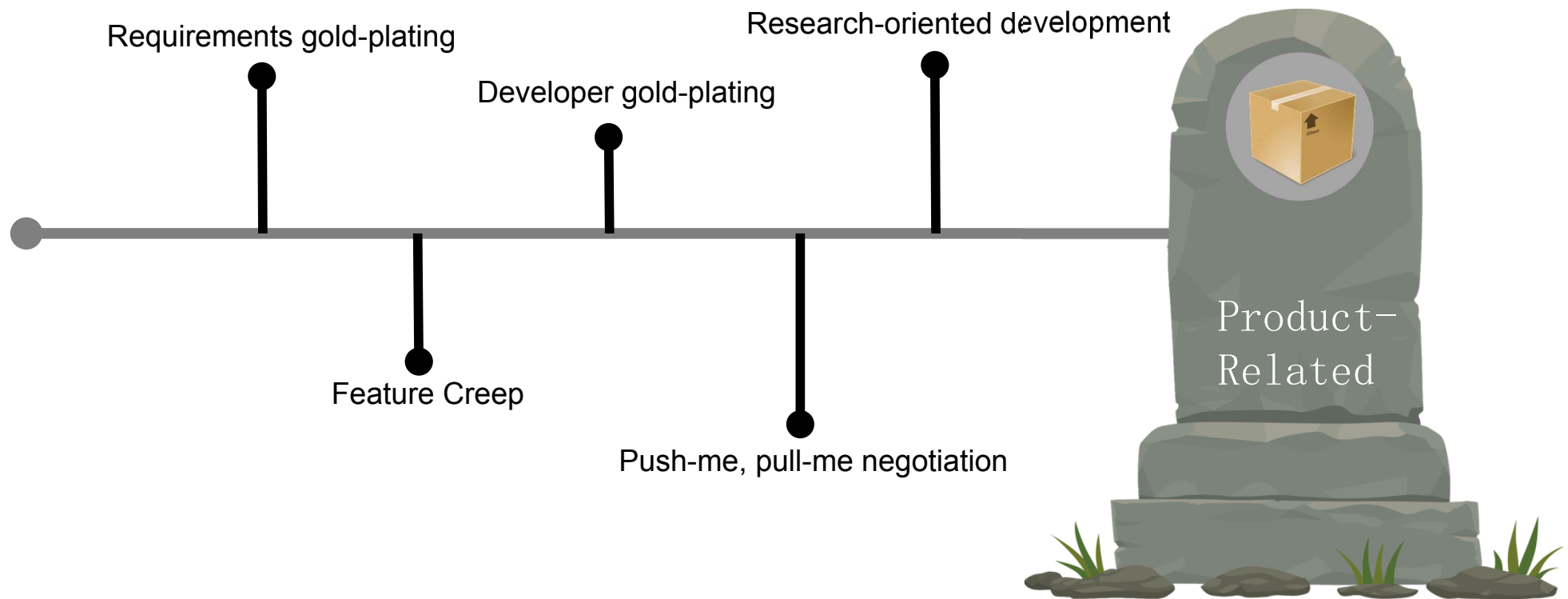► Resource targeting

► Life cycle planning

► Customer orientation

Shortchanged upstream activities

Shortchanged quality assurance

Insufficient management controls

Premature or overly frequent convergence

Omitting necessary tasks from estimates

Planning to catch up later

Code-like hell programming

Process-Related

Overly optimistic schedules

Insufficient risk management

Contractor failure

Insufficient planning

Wasted time during the fuzzy front end

Inadequate design

Abandonment of planning under pressure

# The Product Dimension

► If you can reduce a product's feature set, you can reduce the product's schedule

► 80/20 rule – 80% of the product takes only 20% of the time

► Product size – the biggest single contributor to development schedule (effort required to build software increases disproportionately faster than the size of the software)

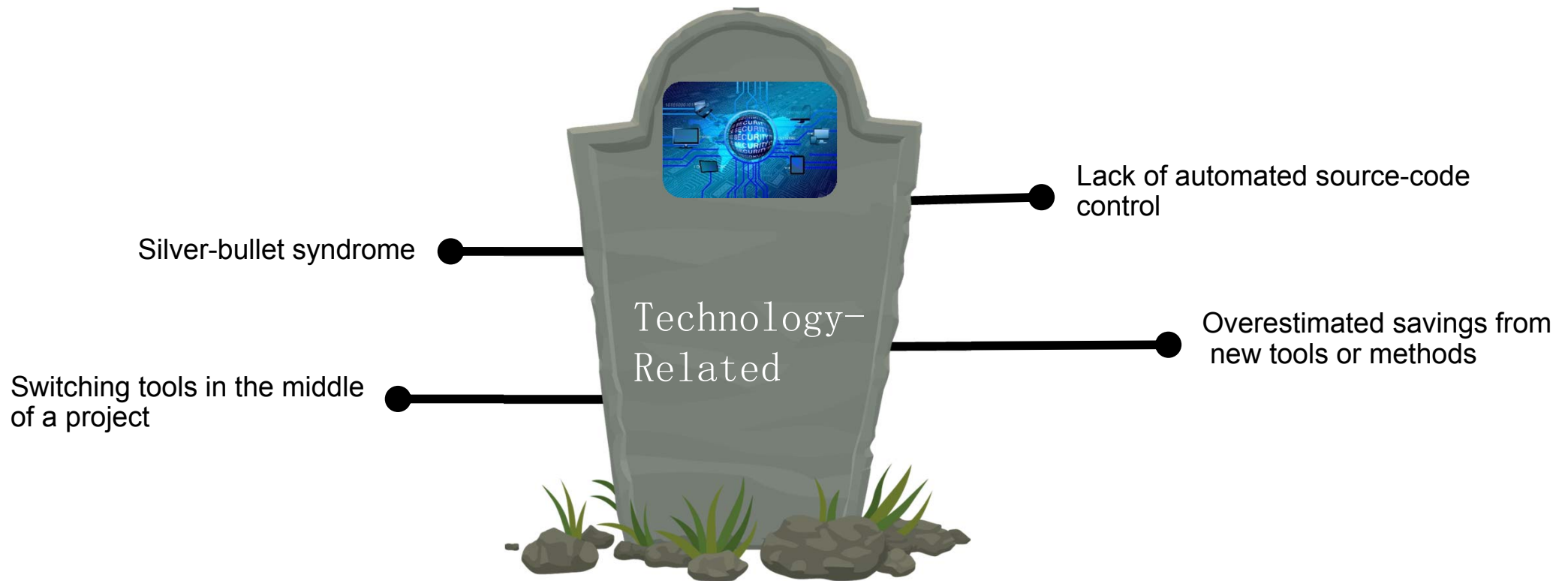► Product characteristics – hard to reach goals regarding performance, memory use, etc. will take longer

Requirements gold-plating

Developer gold-plating

Research-oriented development

Feature Creep

Push-me, pull-me negotiation

Product-Related

# The Technology Dimension

▶ Changing from less effective tools to more effective tools can be a fast way to improve development speed

▶ The change from low-level languages to high-level languages was one of the most important changes in software development

▶ Choosing tools effectively and managing the risks involved are important

# Technology-Related Mistakes



Technology-Related

Silver-bullet syndrome

Switching tools in the middle of a project

Lack of automated source-code control

Overestimated savings from new tools or methods

Classic Mistakes

"We learn from failure, not from success!"
— Bram Stoker

Process related classic mistakes

Product related classic mistakes

People related classic mistakes

Technology related classic mistakes