Quiz

1. Which are the five essential properties of software?
2. What are accidental properties of software?

1

The staged model of software evolution

CS 515, Spring 2020

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Traditional software life cycle models

Traditional software life cycle models

Product life cycle

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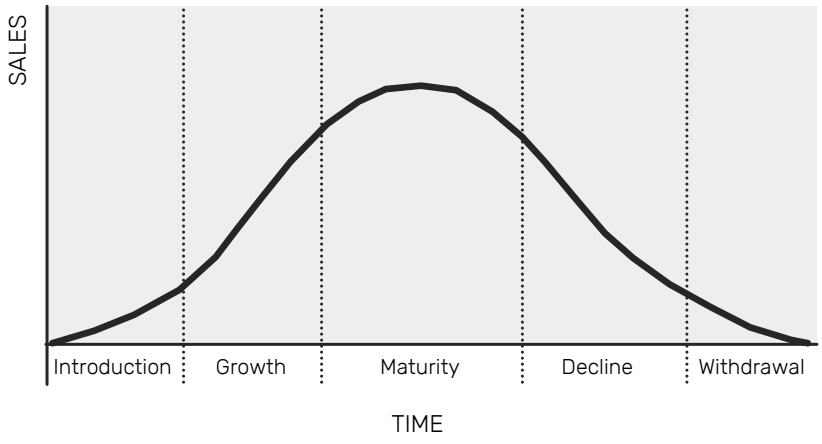
Product life cycle



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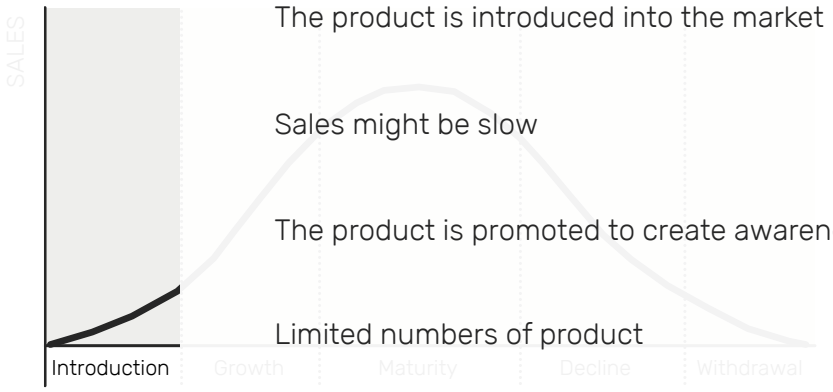
Product life cycle >> Introduction



The product is introduced into the market

Sales might be slow

The product is promoted to create awareness

Limited numbers of product

Patents and trademarks are obtained

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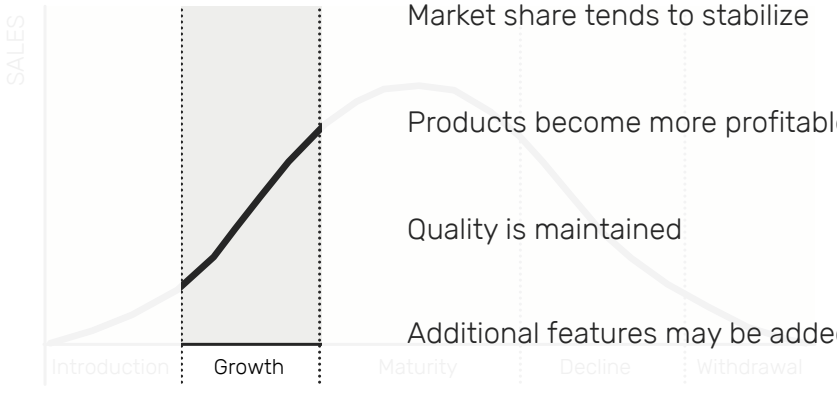
Product life cycle >> Growth



Market share tends to stabilize

Products become more profitable

Quality is maintained

Additional features may be added

Competition might appear

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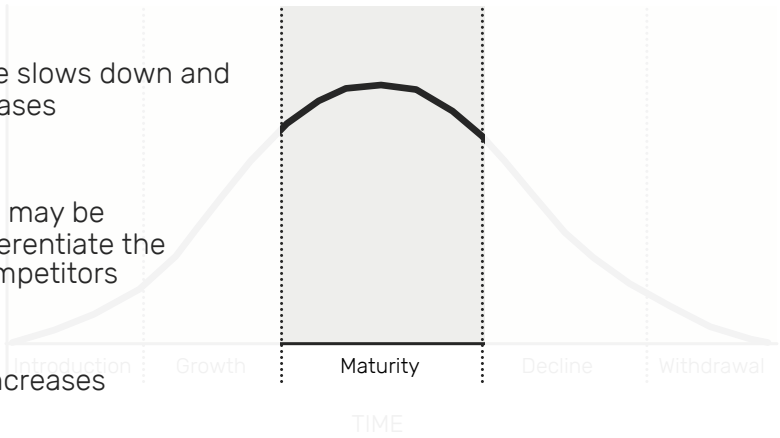
Product life cycle >> Maturity

Sales growth rate slows down and eventually decreases

Product features may be enhanced to differentiate the product from competitors

Advertisement increases



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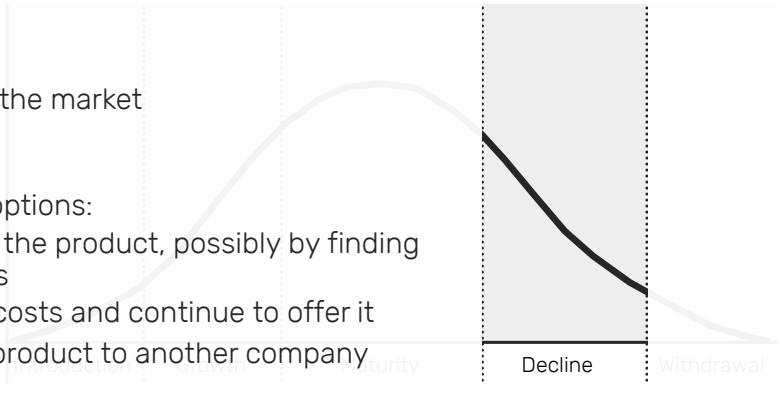
Product life cycle >> Decline

A downturn in the market

Management options:

- Maintain the product, possibly by finding new uses
- Reduce costs and continue to offer it
- Sell the product to another company



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Product life cycle >> Withdrawal

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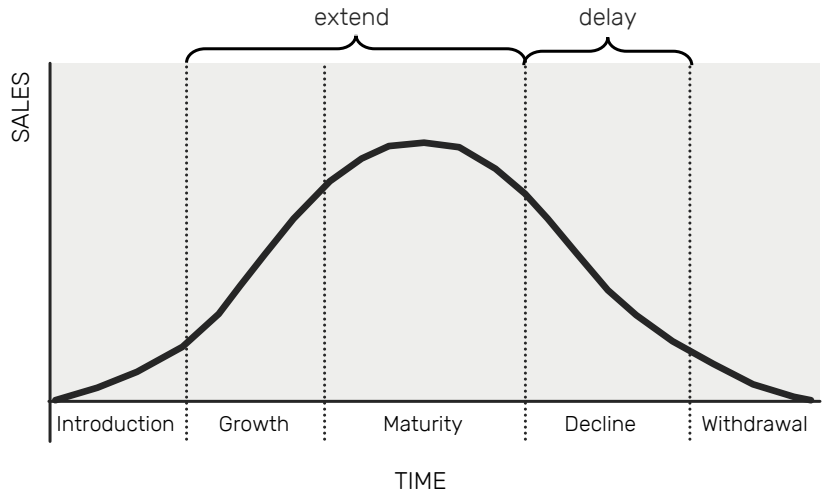
Sale strategies



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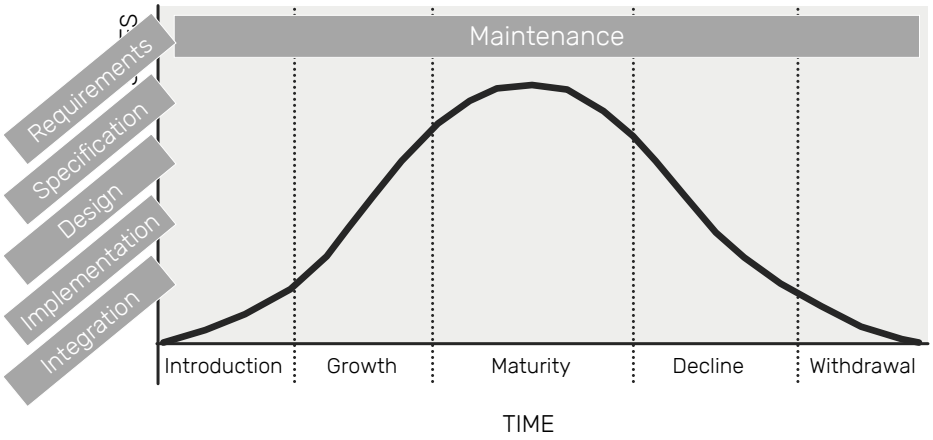
Product life cycle vs. Traditional software models



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Staged model for software life cycle

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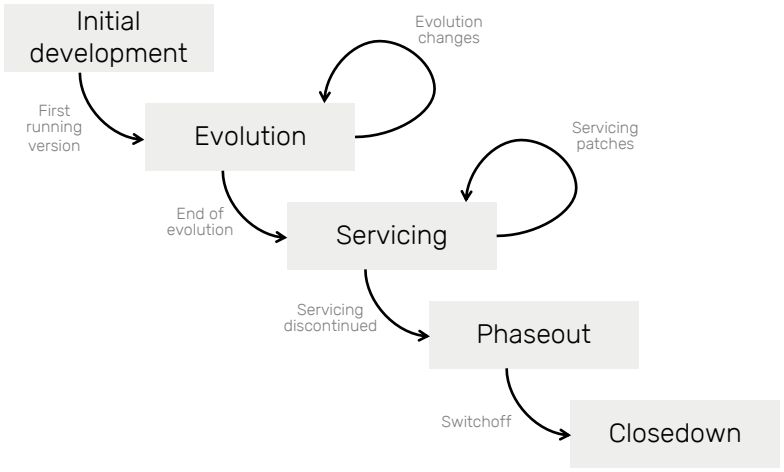
Simple staged model



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Stage 1 >> Initial Development

Initial development

Develop the first functioning version

Establish software team expertise

Establish system architecture

Heavy investment

Impending deadline

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Stage 2 >> Evolution

Most often the software is released during evolution

Adapt/correct the capabilities and functionality of the system based on experience with software

Architecture slowly loses its original lucidity and integrity

Market demand is strong, and revenue is good

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Stage 3 >> Servicing

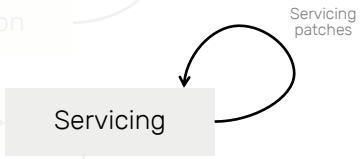
Coherent architecture or/and expertise are lost

Architecture limits the scope of possible changes

Minor repairs and simple functional changes

Revenue begins to fall

Whether to improve the code depends on cost/profit ratio



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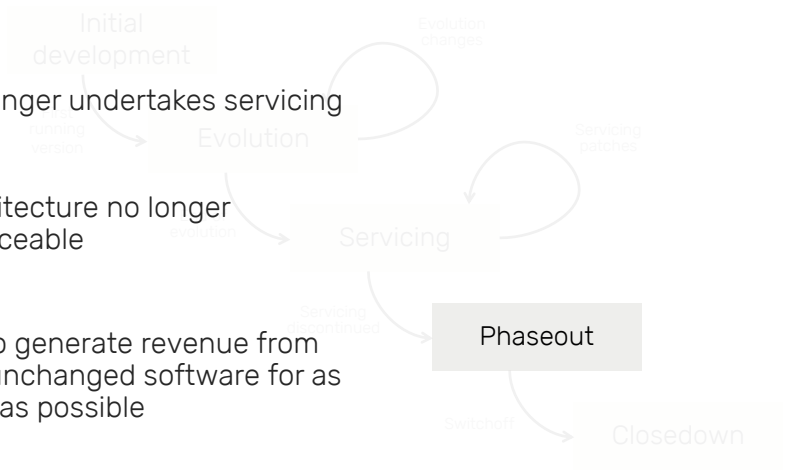
Stage 4 >> Phaseout

No longer undertakes servicing

Architecture no longer serviceable

Try to generate revenue from the unchanged software for as long as possible



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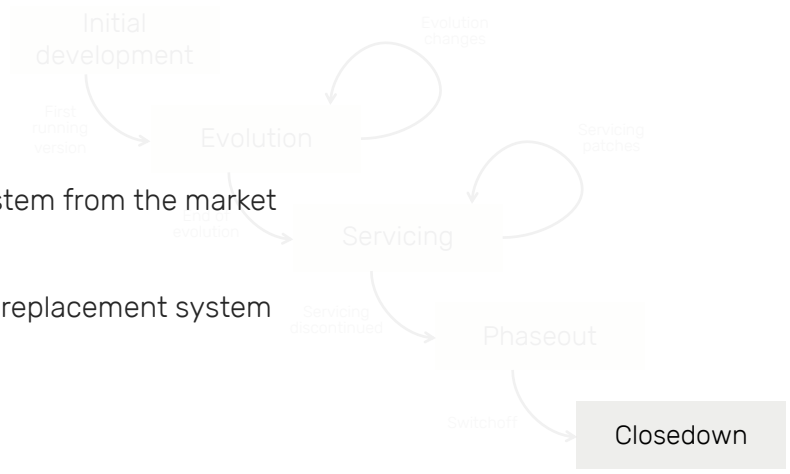
Stage 5 >> Closedown

Withdraw the system from the market

Direct users to a replacement system



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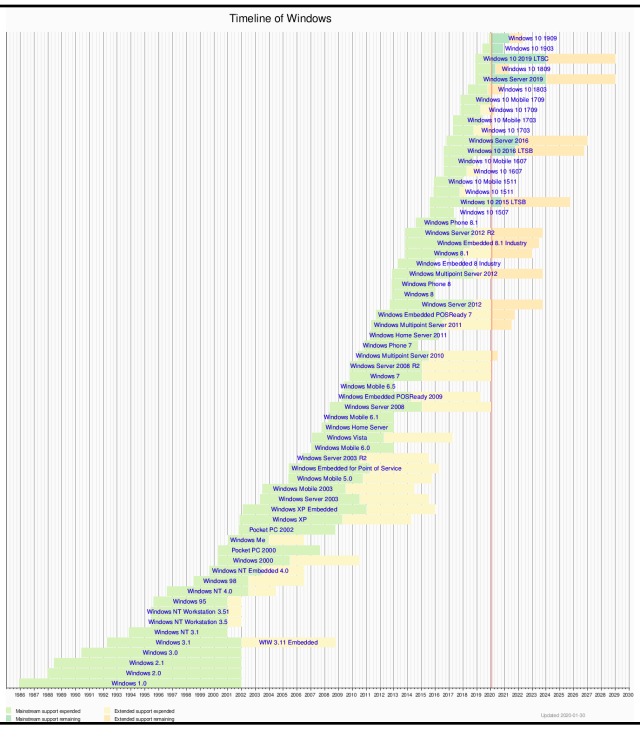
An example: MS Windows



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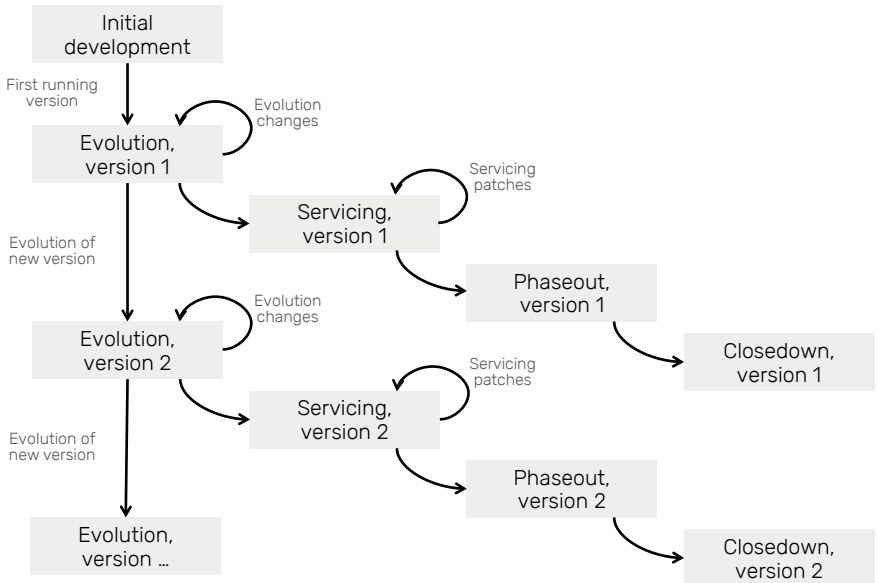
Versioned staged model



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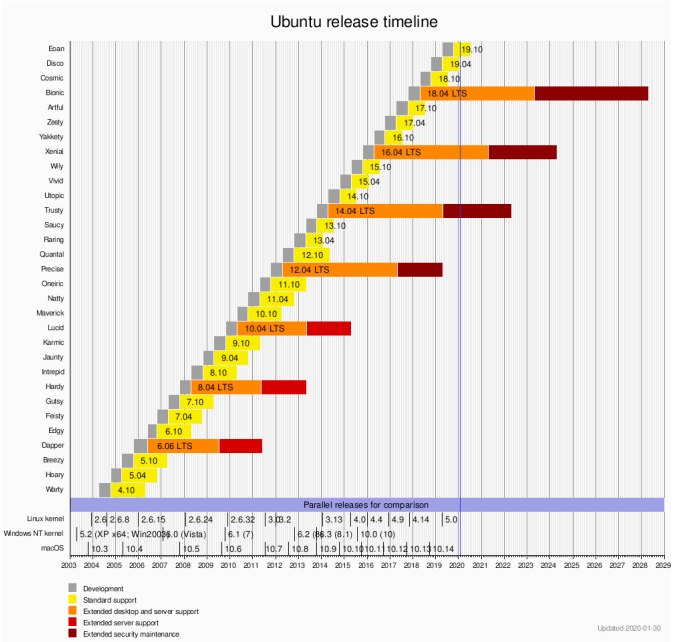
Another example: Ubuntu



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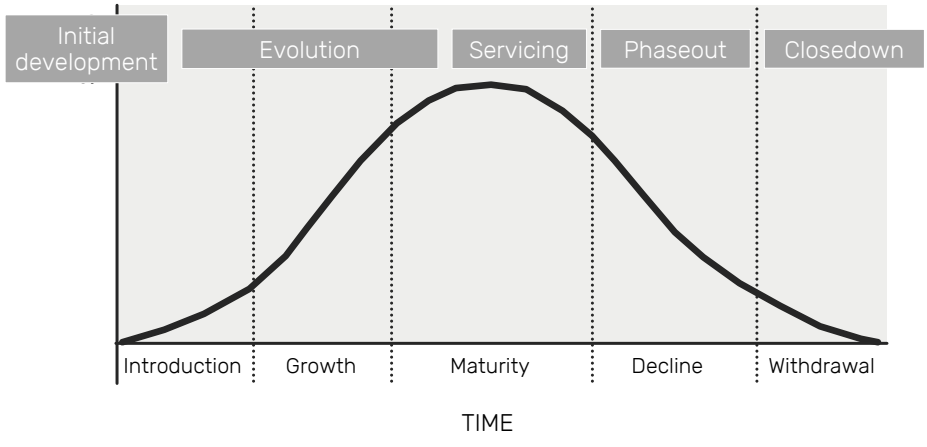
Staged model vs. Product life cycle



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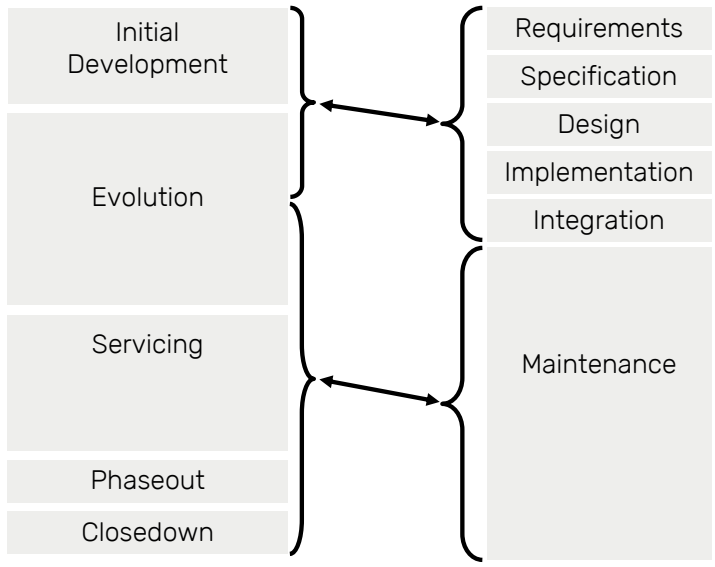
Staged model vs. Traditional models



Importance of (better) software models

Each stage has different needs

- Technical
- Procedural
- Staff
- Management

Once we understand the nature and needs of each stage, we can:

- Identify best solutions for each stage
- Explore the boundaries of each stage
- Analyze the information flow, which will enable managers to plan better
- Explore options to keep a system in a particular stage for as long as possible

Reading

Rajlich, V, Bennett, K, A Staged Model for the Software Life Cycle, IEEE Computer, July 2000, pp 66-71