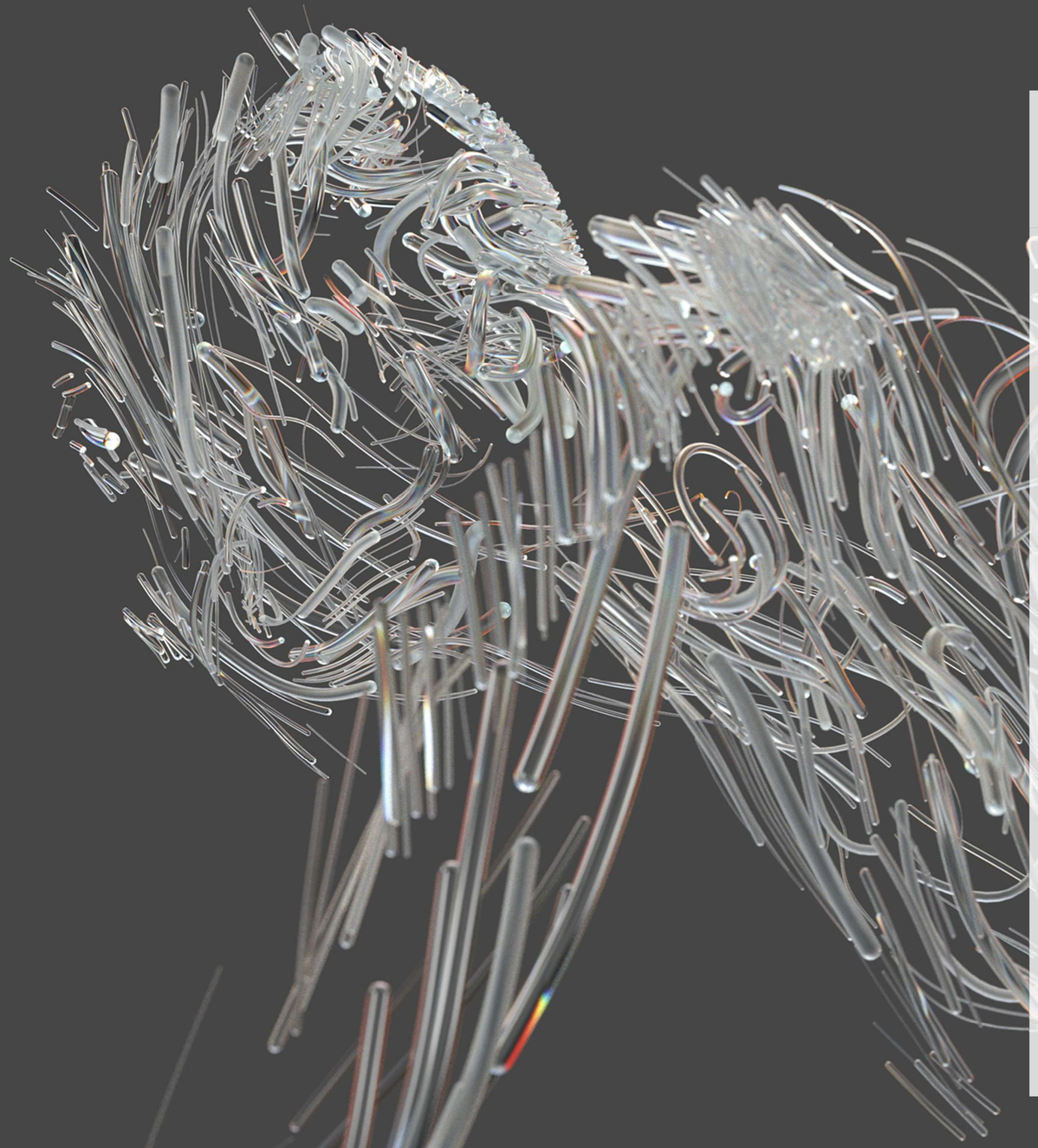

Agile Meets Architecture 2025, April 3, Berlin

Evolutionary Software Quality

May contain traces of Wardley Mapping

Markus Harrer

Software Evolutionist

INNOQ

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Leanpub

Developing great software without all the drama.

Markus Harrer
Senior Consultant / Roth, Germany
INNOQ

- Architecture Development and Review
- Software Modernization and Rightsizing
- Data-Driven Analysis of Software Systems

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https://markusharrer.de/

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Software Quality

Why is it so complicated?

Quality

is all about the

How

- fast
- maintainable
- usable
- correct
- secure
- ...

not the

What

- contracts
- customers
- orders
- reports
- accounts
- ...

What Does Good Software Quality Mean?

The right amount of quality is there, at the right time.

Actually pretty simple, isn't it?

Challenges

and first solutions

There are so many qualities

Source: https://en.wikipedia.org/wiki/List_of_system_quality_attributes

Reliability

Performs consistently under specified conditions over time.

Security

Protects information and systems against unauthorized access and modification.

Functional Suitability

Provides functionality that meets the specified and implied needs

Maintainability

Allows the system to be modified, improved, corrected or adapted to changes.

Use a common language

Portability

Allows the system to be transferred and run in different environments.

Performance Efficiency

Delivers appropriate response times and resource usage under given conditions.

Usability

Supports users in achieving their goals effectively, efficiently, and satisfactorily.

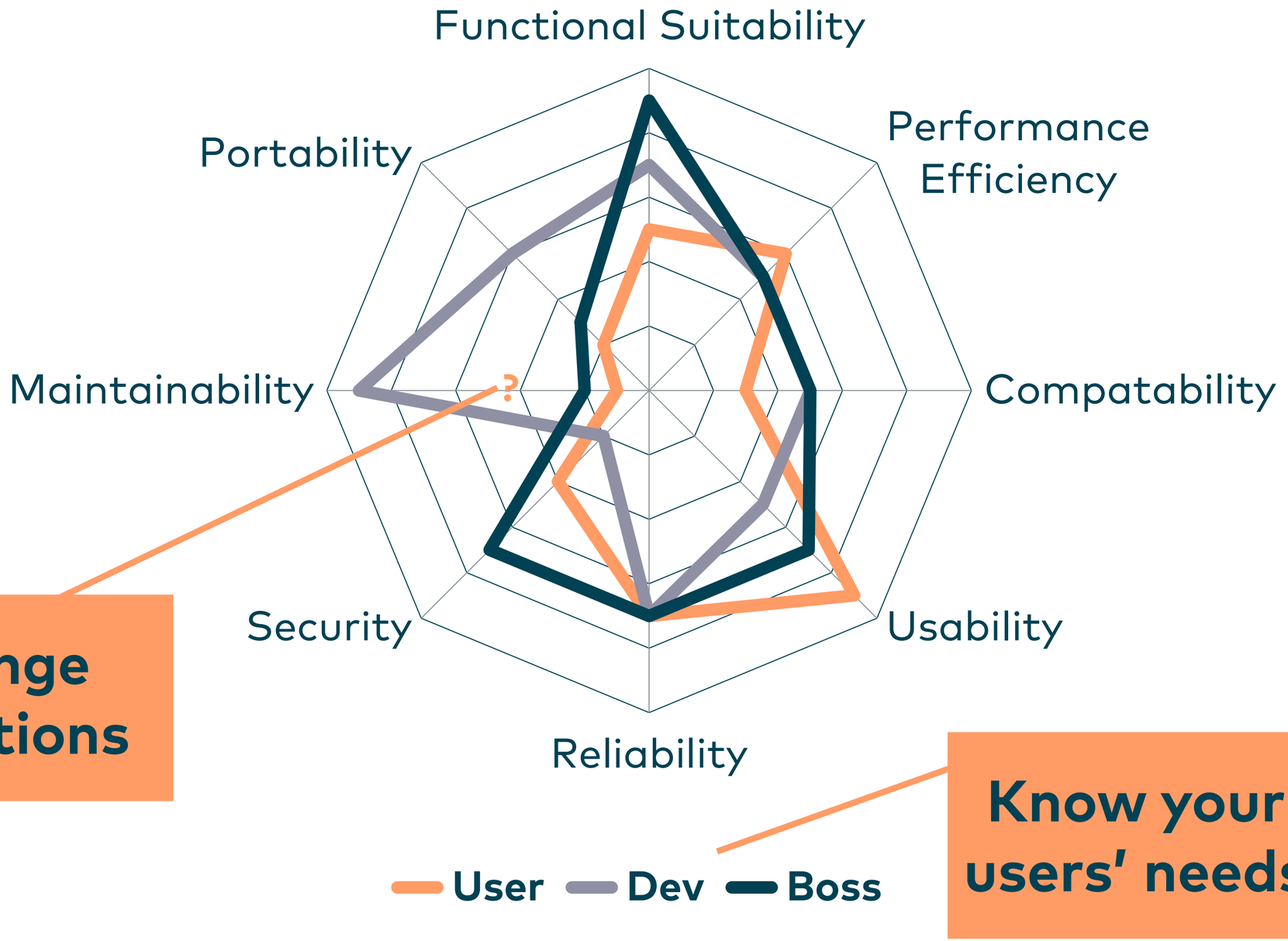
Compatibility

Enables interaction and data exchange with other systems or components.

For example, the ISO 25010:2011* qualities

*yes, there is a newer version of it, but I don't like the new one

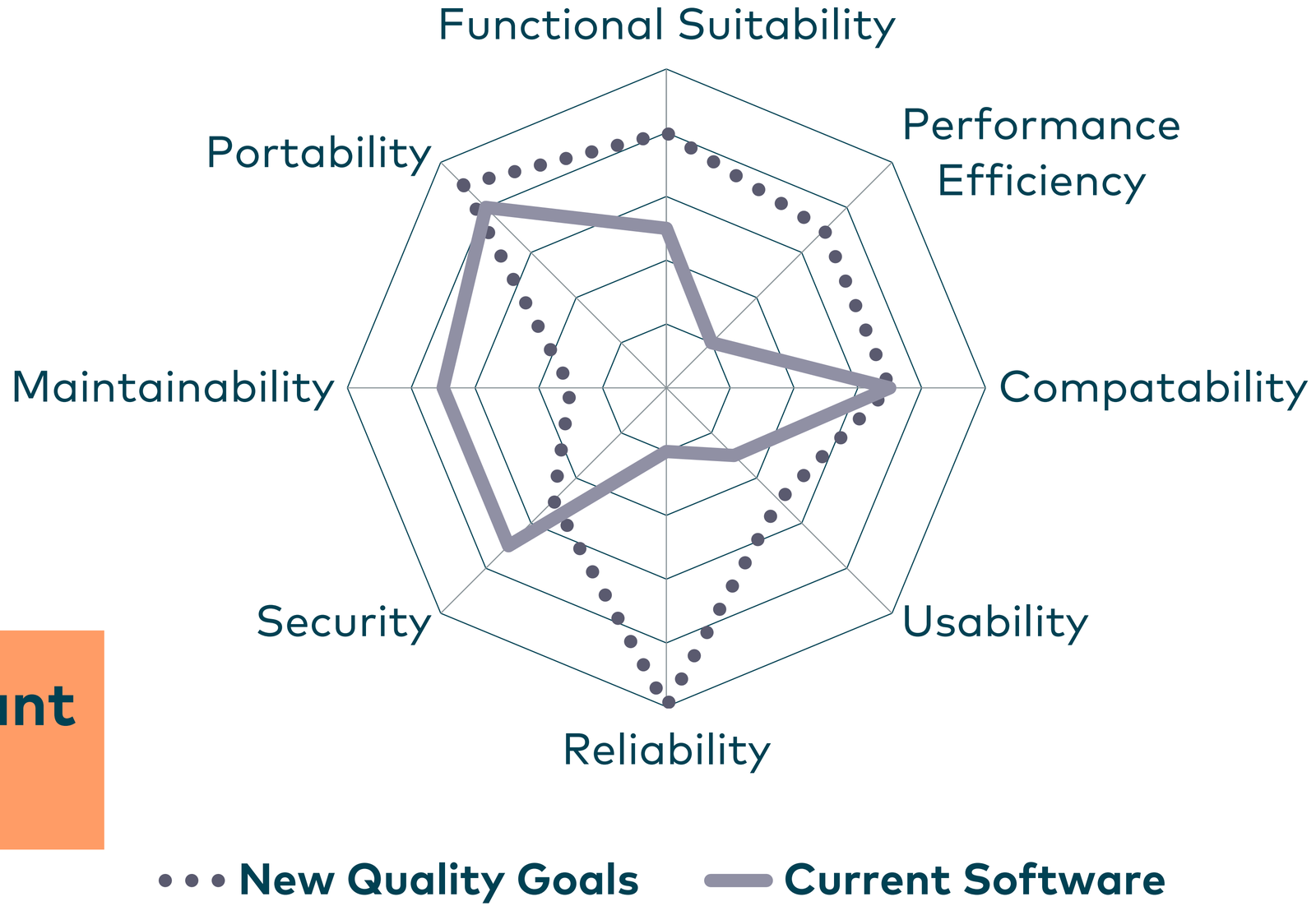
Finding what's needed is hard



Challenge assumptions

Know your users' needs

Quality needs change over time



Design for constant evolution

But why is it still so hard?

And what can be do to make it easier?

Part I

Evolutionary Thinking

to become more aware of changing quality priorities

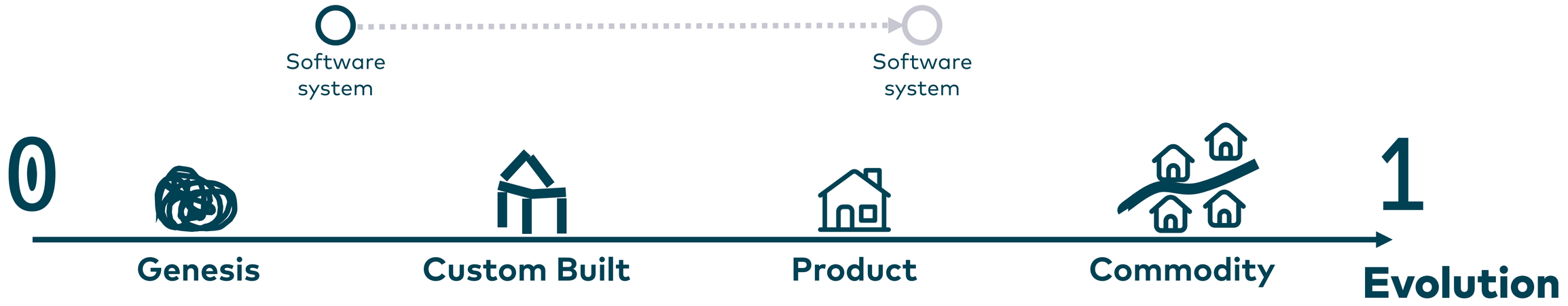
Code is just 0's and 1's

Architecture is in-between

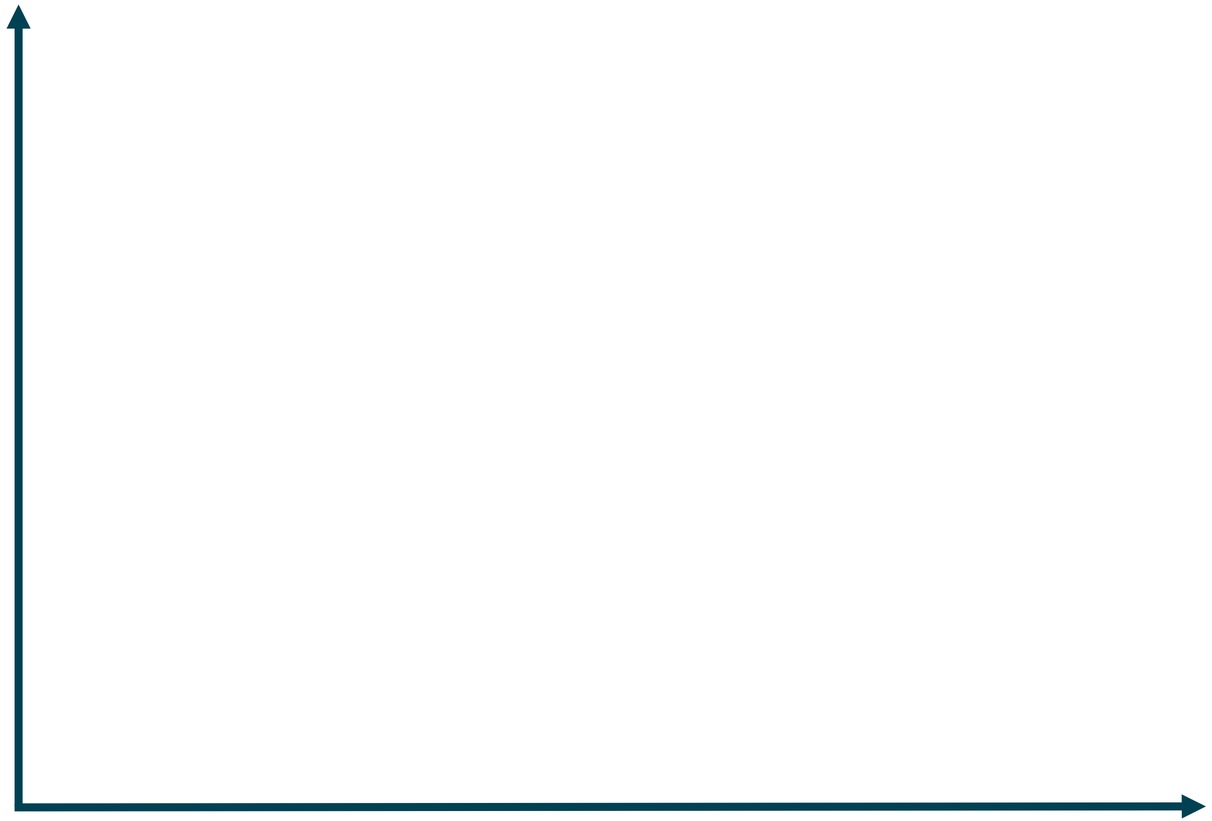
Wardley Maps "Evolution"

"Everything evolves through supply and demand competition."

Simon Wardley

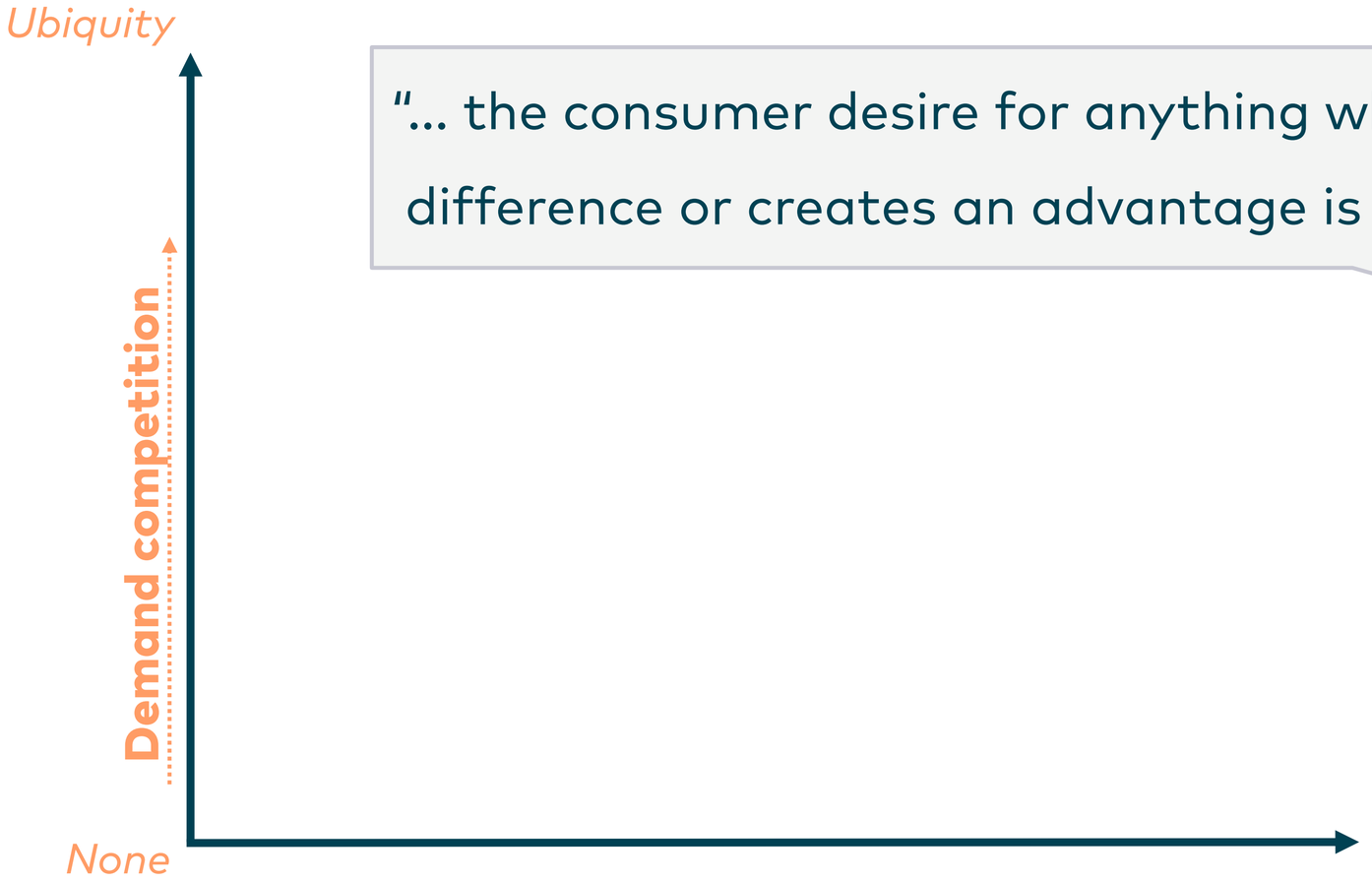


Evolution Axis in Detail



Concept of "Evolution" and quote from Simon Wardley / Wardley Maps, CC BY-SA 4.0 license

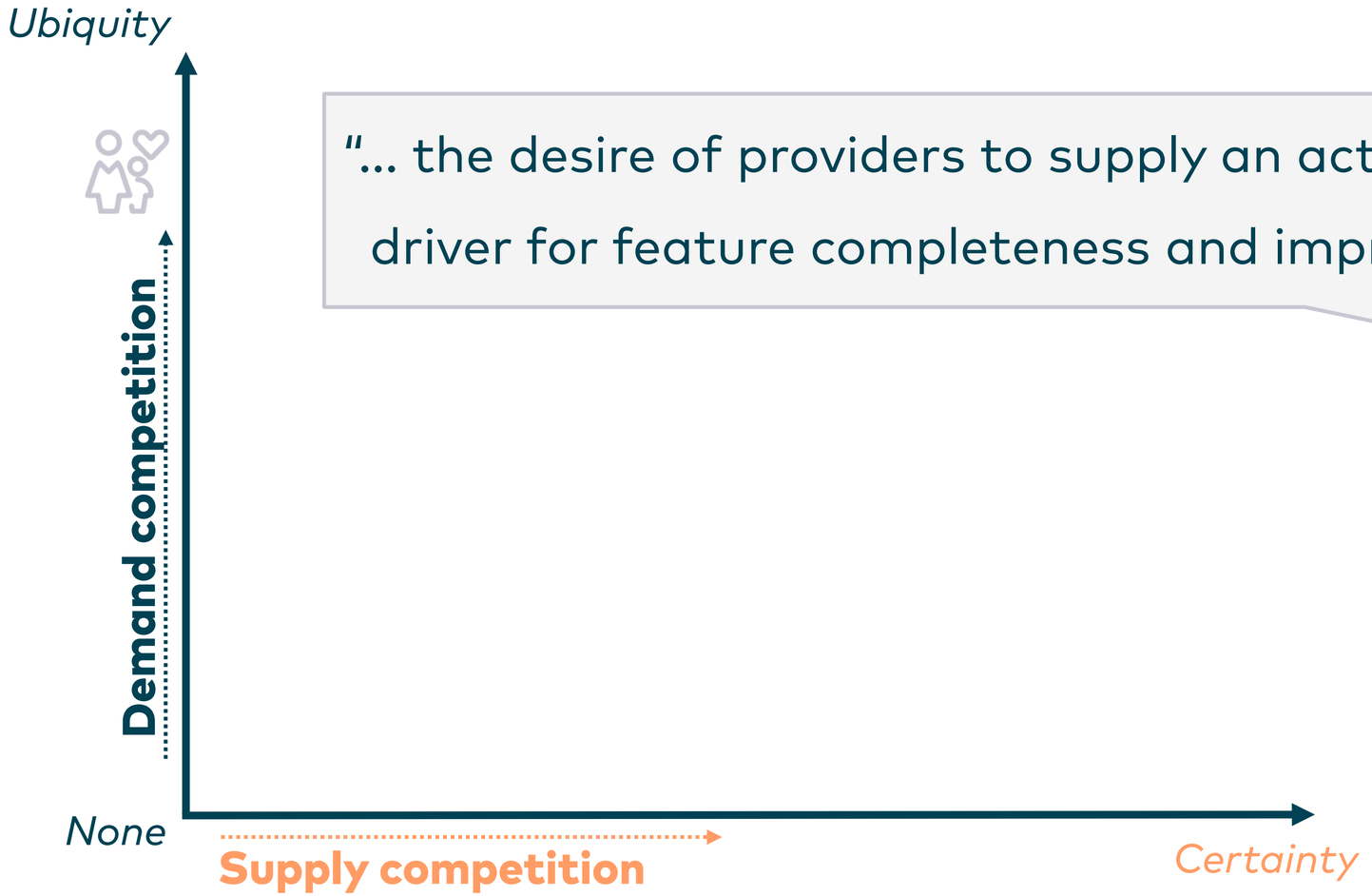
Evolution Axis in Detail



"... the consumer desire for anything which is useful or makes a difference or creates an advantage is the driver for ubiquity ... "

Concept of "Evolution" and quote from Simon Wardley / Wardley Maps, CC BY-SA 4.0 license

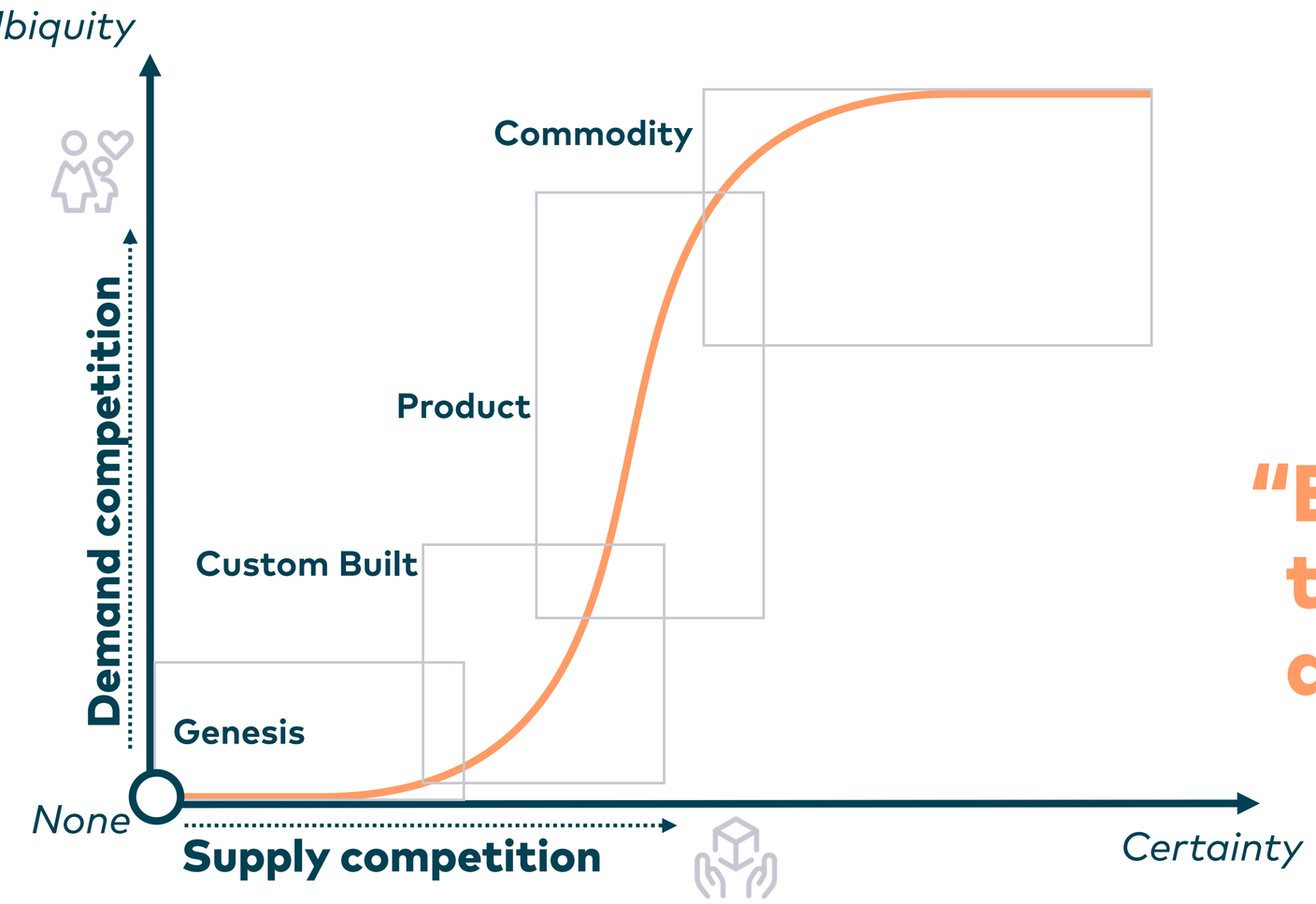
Evolution Axis in Detail



"... the desire of providers to supply an activity to consumers is the driver for feature completeness and improvement of an activity."

Concept of "Evolution" and quote from Simon Wardley / Wardley Maps, CC BY-SA 4.0 license

Evolution Axis & Stages



"Everything evolves through supply and demand competition."

Concept of "Evolution" and quote from Simon Wardley / Wardley Maps, CC BY-SA 4.0 license

Now we can get started!

Security

Functional Suitability

Reliability

Portability

Which qualities become particularly relevant during the different phases of evolution?

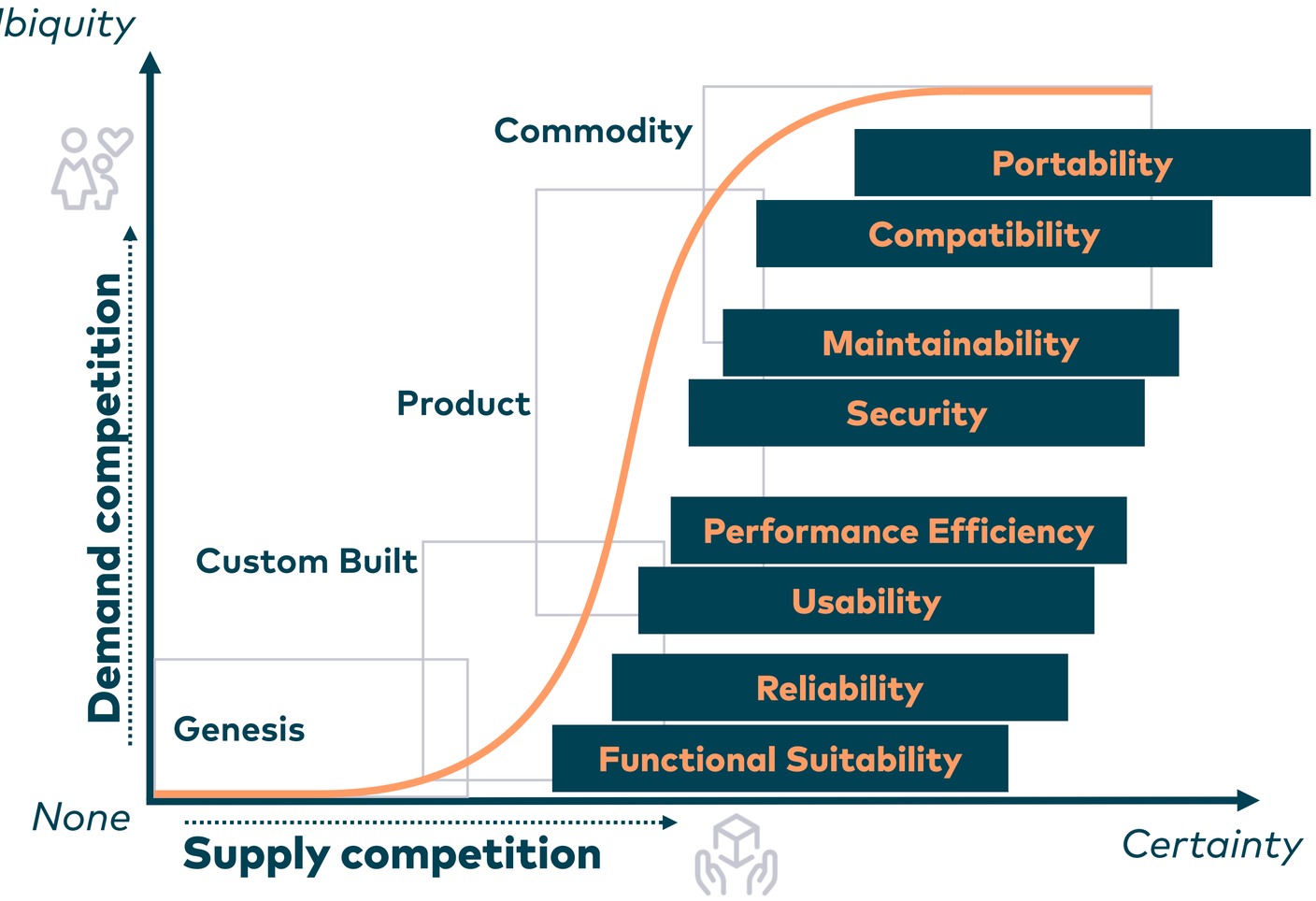
Performance Efficiency

Maintainability

Usability

Compatibility

Evolution and Software Quality



Supply competition

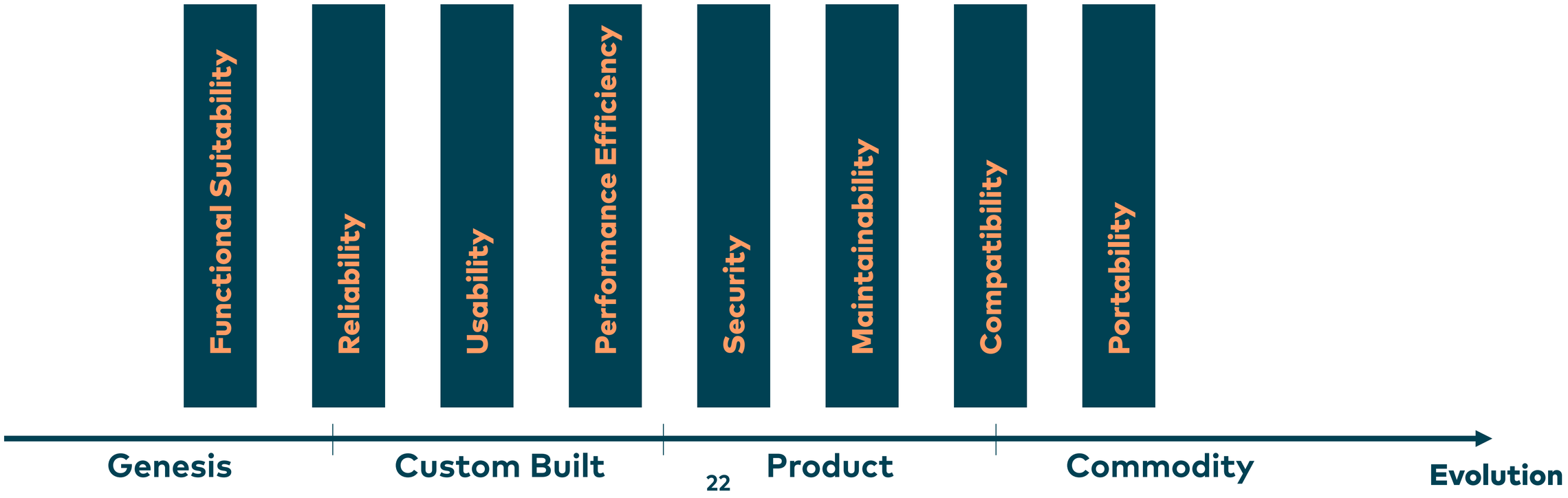
Demand competition

Quality Characteristics

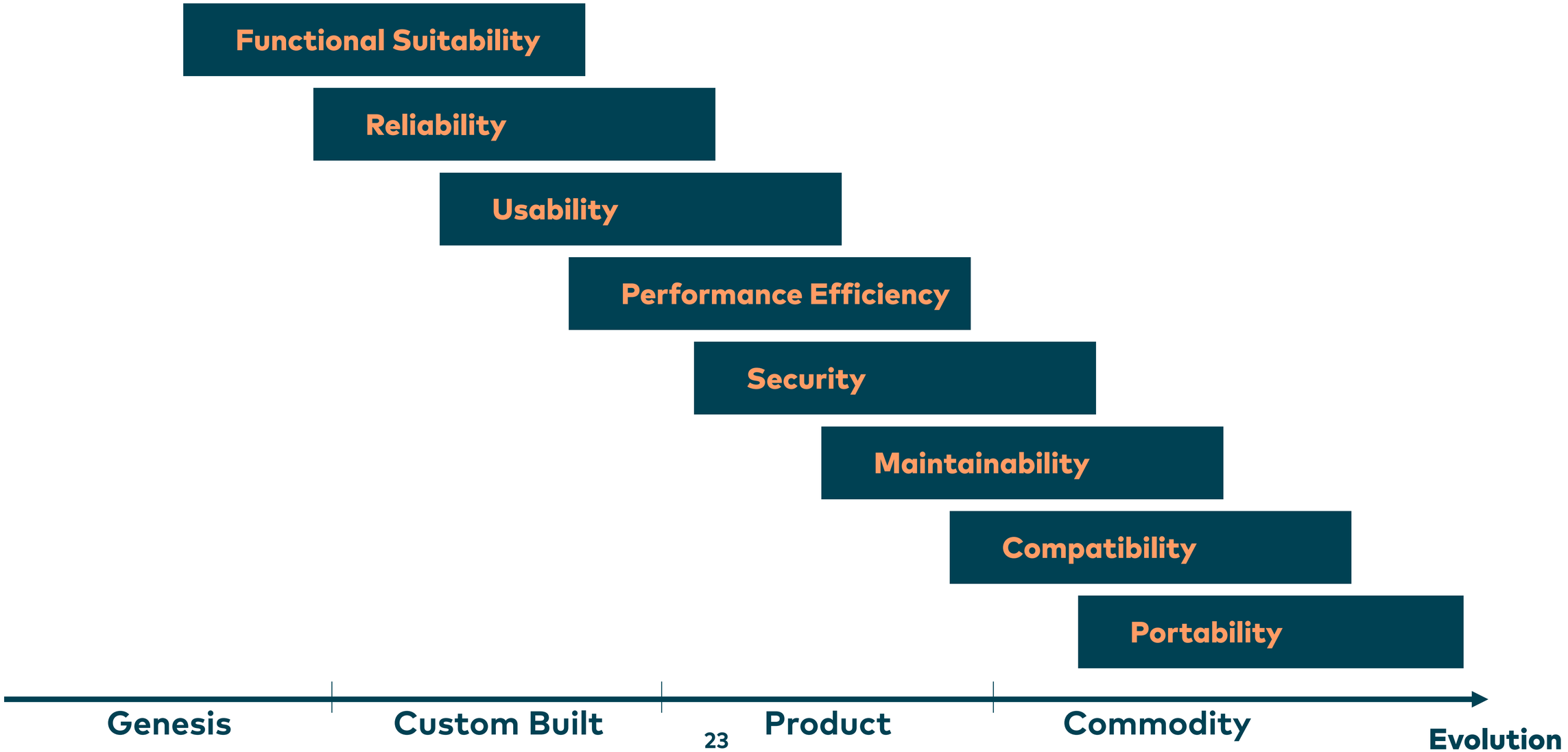
Functional Suitability	Performance Efficiency
Compatibility	Usability
Reliability	Security
Maintainability	Portability

Concept of "Evolution" and quote from Simon Wardley / Wardley Maps, CC BY-SA 4.0 license

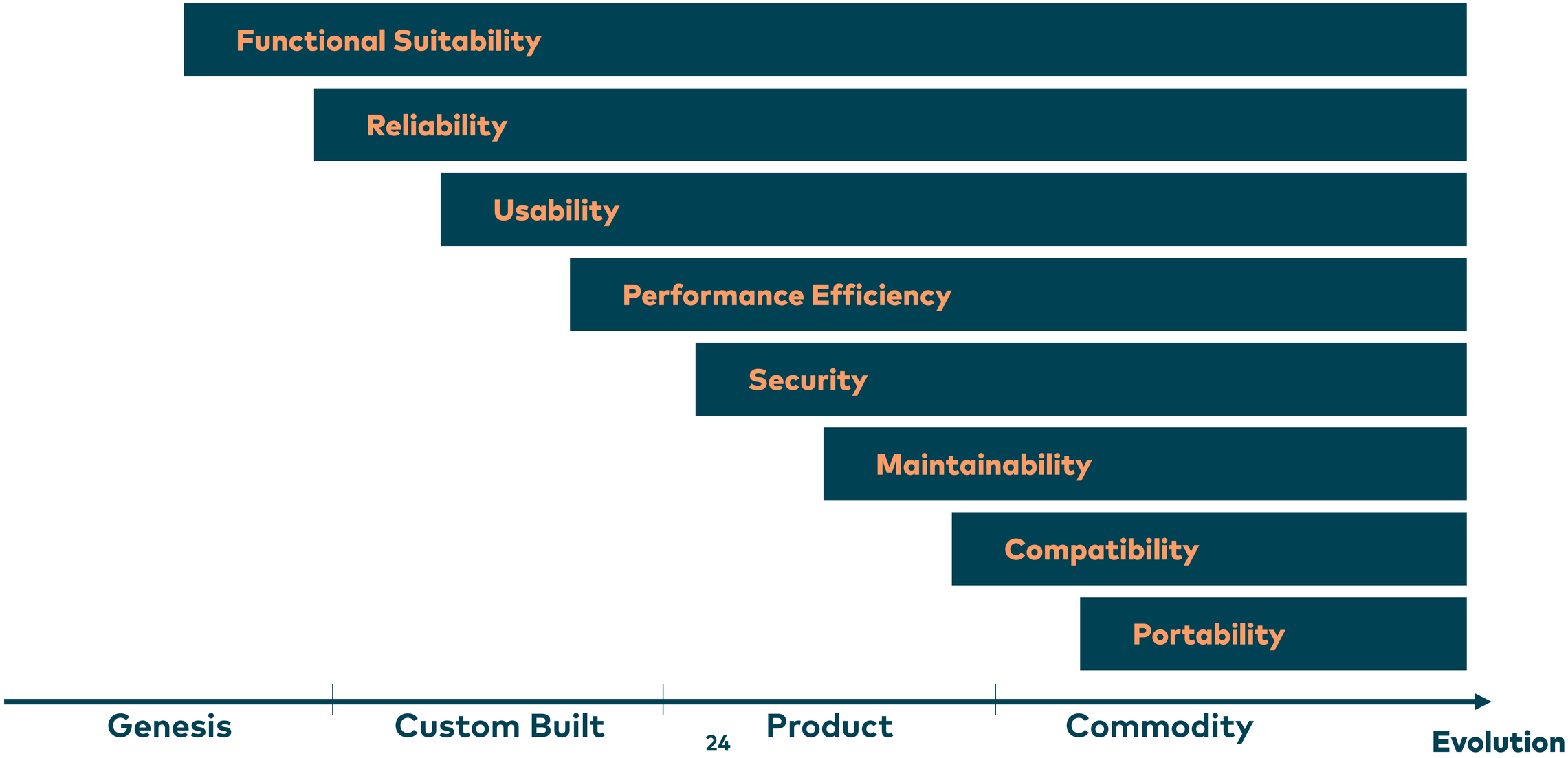
Evolution and Software Quality



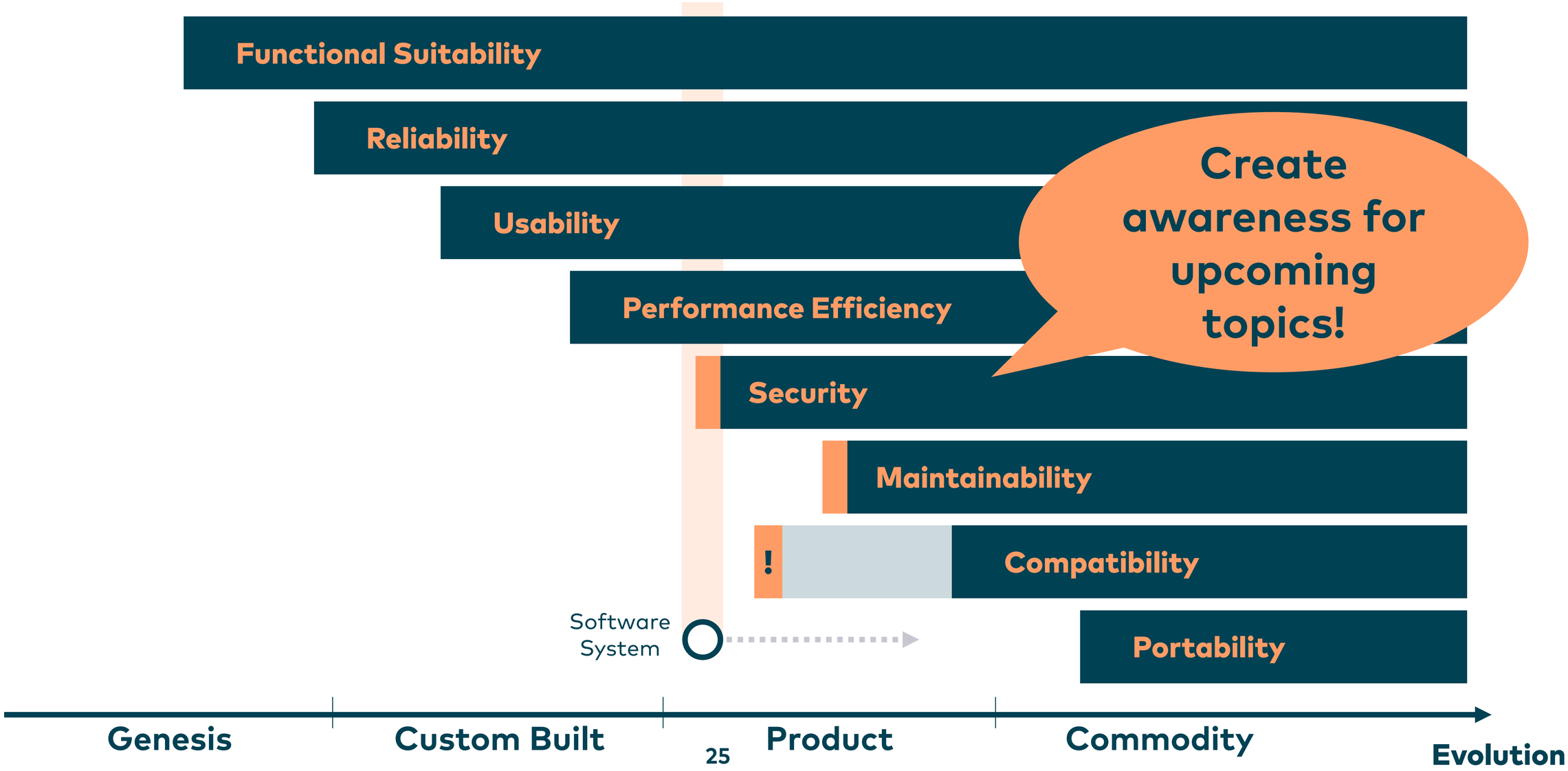
Evolution and Software Quality



Evolution and Software Quality



What's the Point of All of This?



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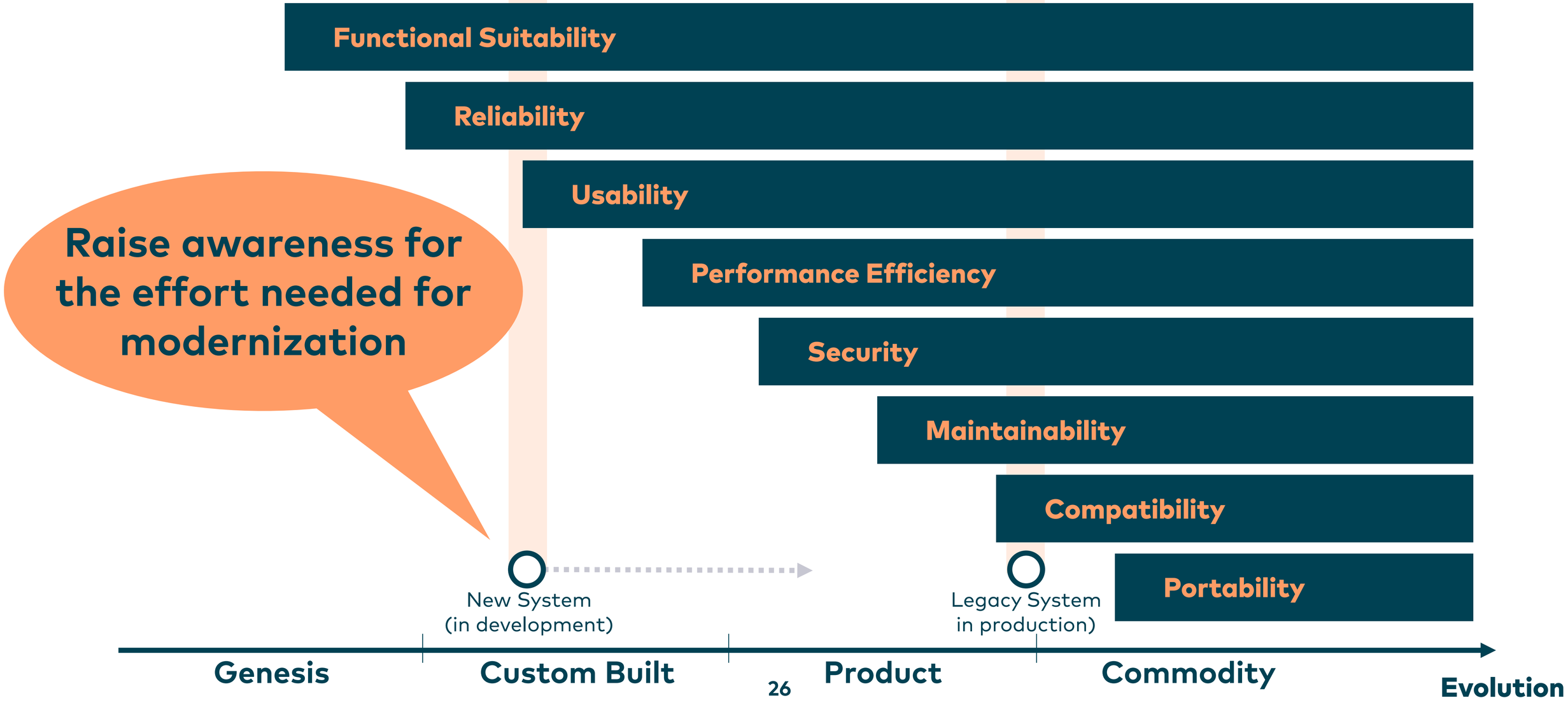

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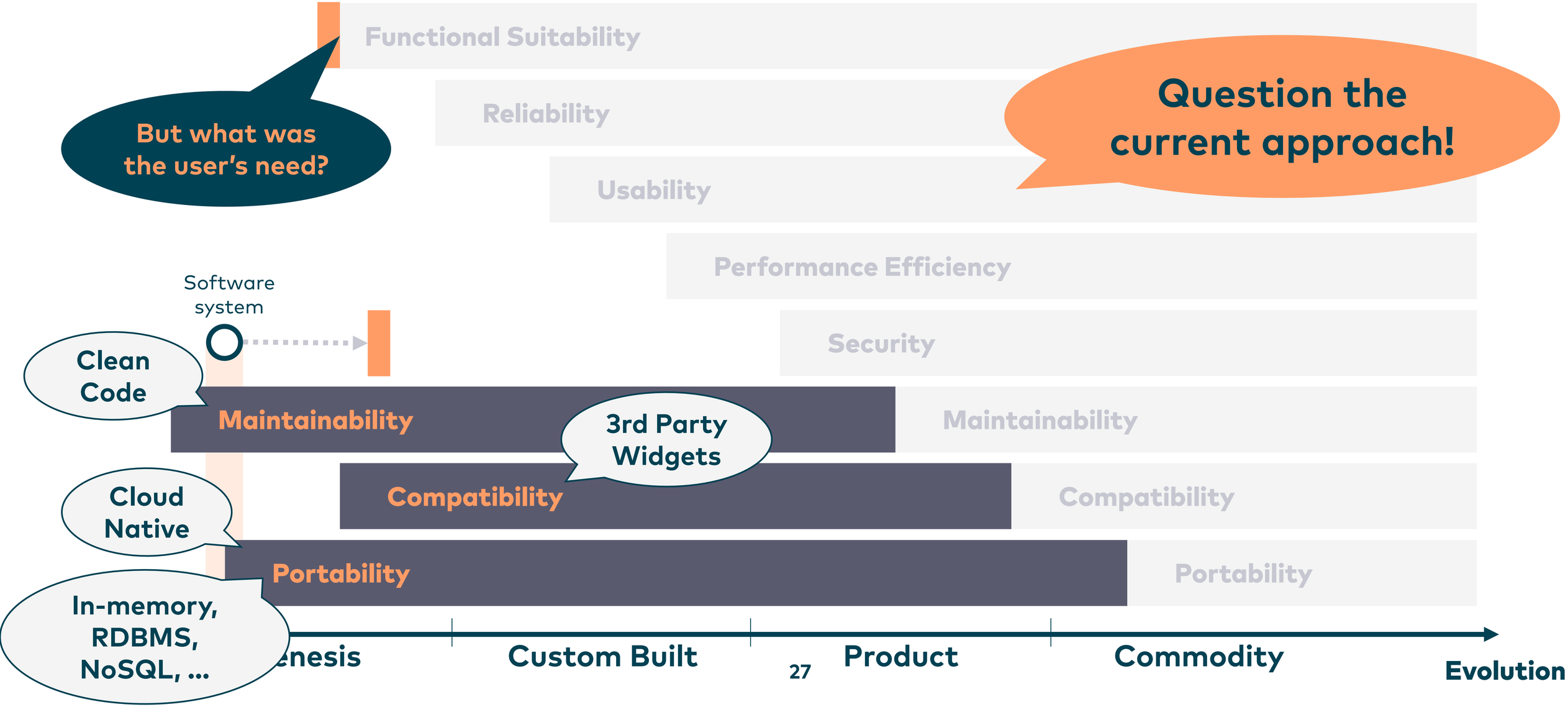


Convinced?

Or was that just a nice story?

Part II

Value Chains

for finding the right communication approach

Wardley Maps "Chain of Needs"

Legend

- component
- needs

visible

Value Chain

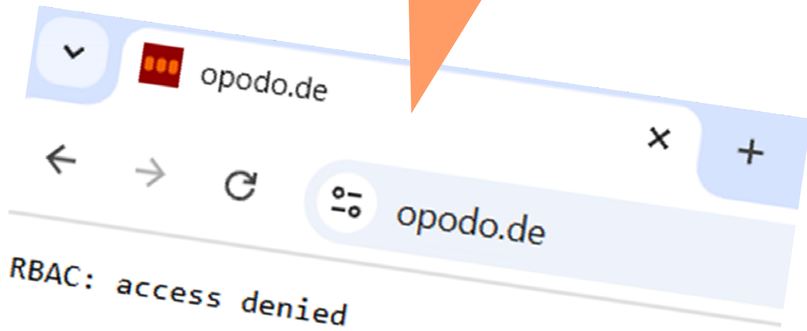
invisible

Gamer

- **Better gaming experience**
- **New Graphics Card**
- **Shopping App**
- **REST Services**
- **Backend**
- **Runtime**
- **Database**
- **Virtual Machines**
- **Hardware**
- **Power**

30

Sometimes you also can see those details



Which qualities provide value to Stakeholders?

User

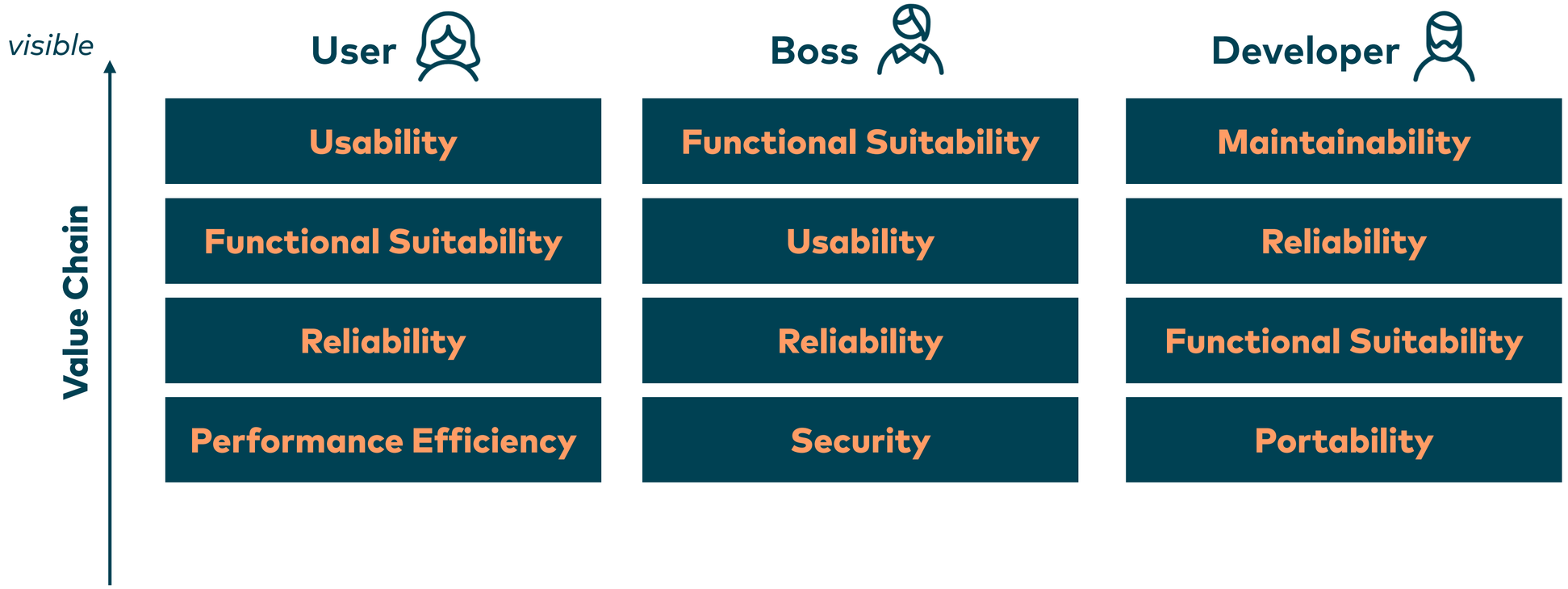
Boss

Developer

- Performance Efficiency
- Security
- Usability
- Compatibility
- Maintainability
- Functional Suitability
- Reliability
- Portability

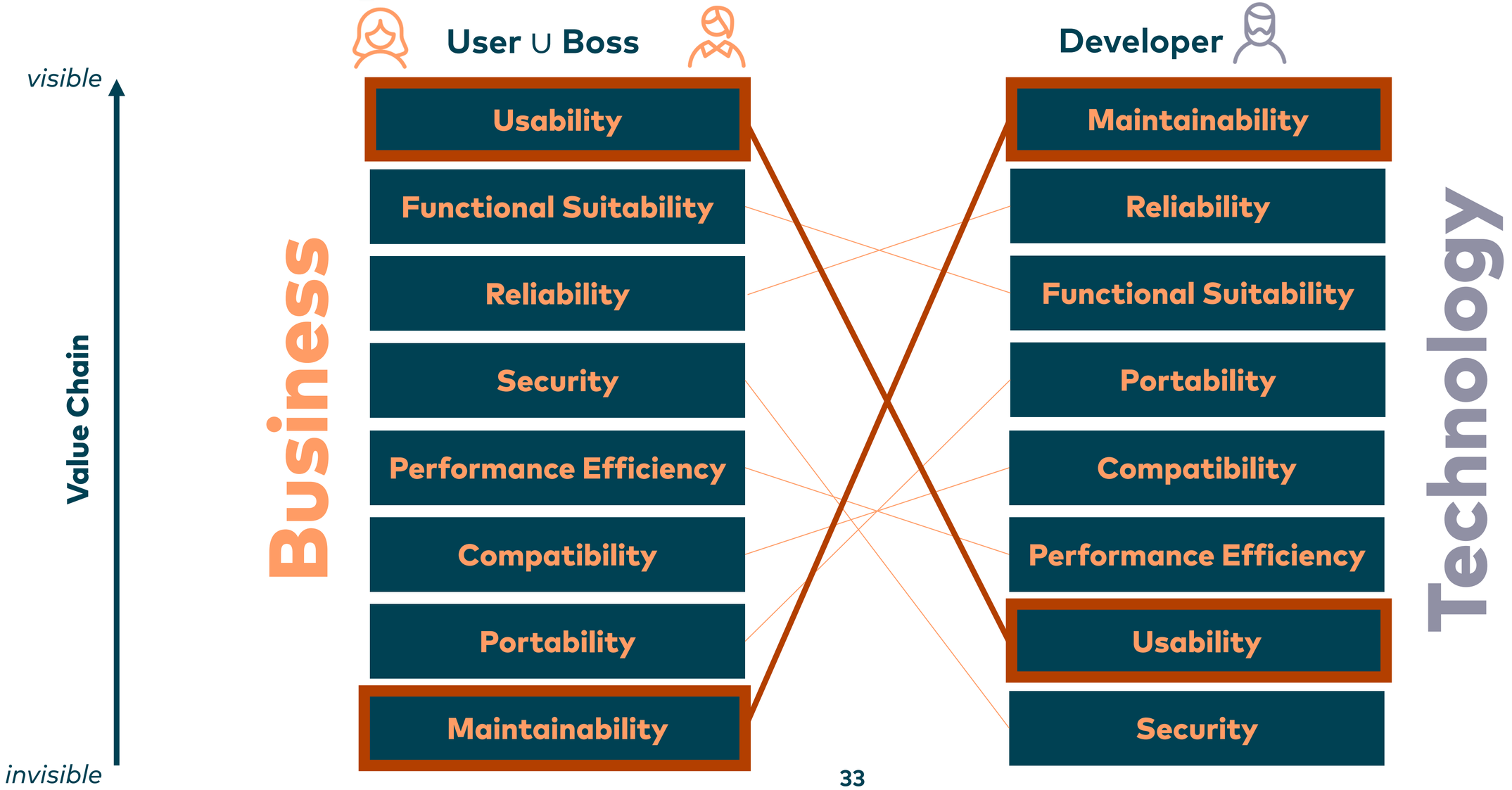
Needs for Quality are very subjective

Typical result of prioritized quality goals*

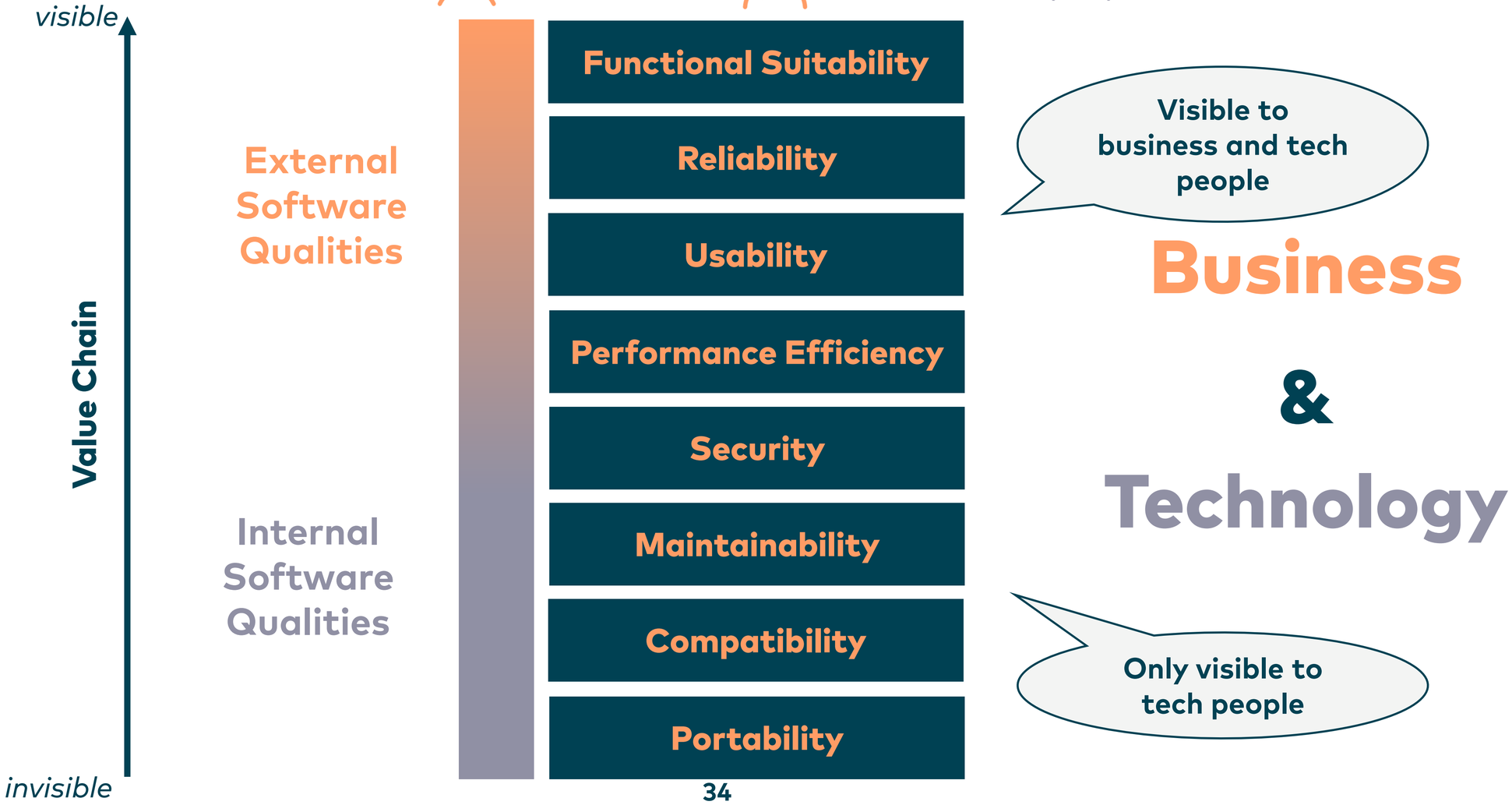


*Results show the averaged prioritization of quality goals from 21 case studies completed by participants in software architecture training sessions.

Developer in Unfortunate Position



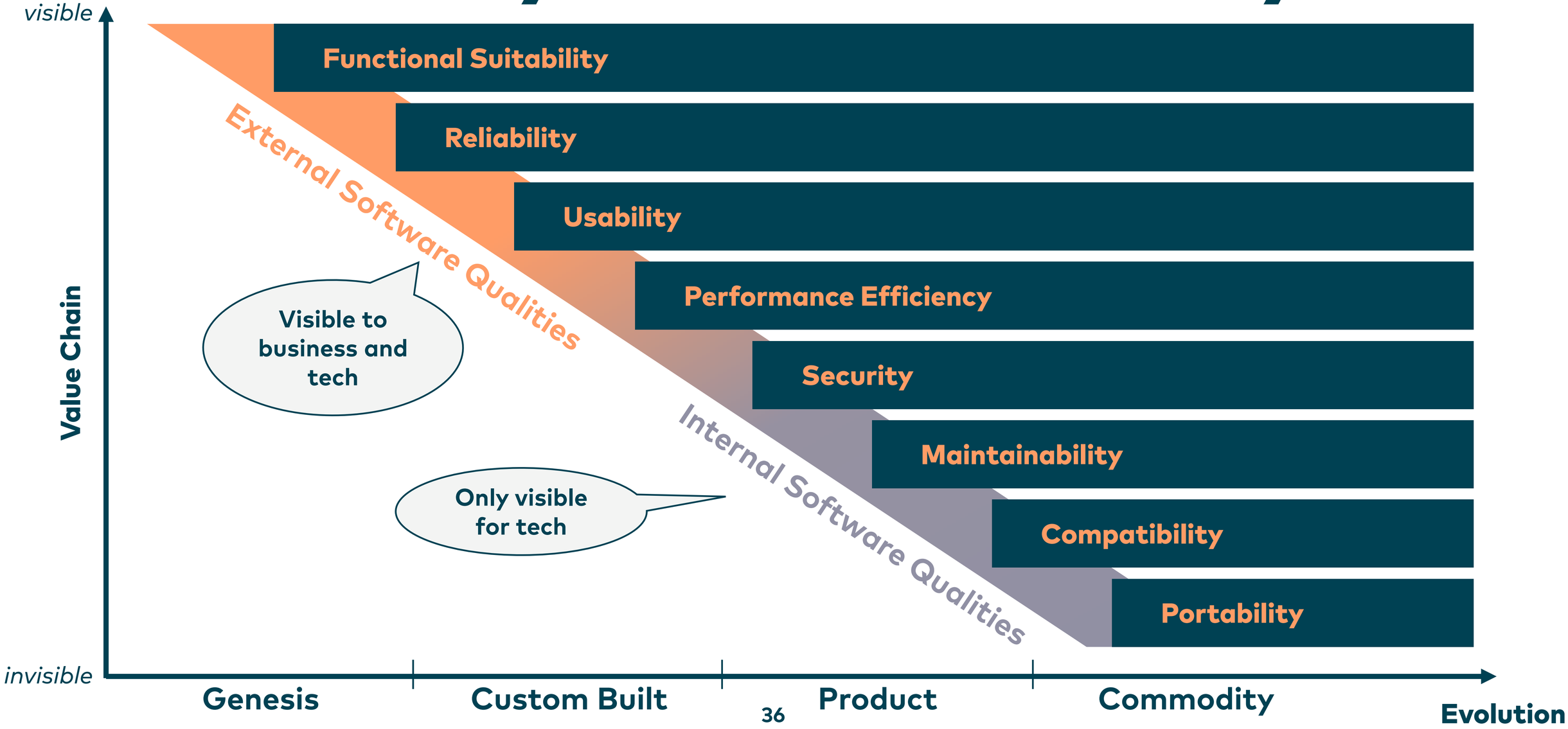
Consolidated Quality Goals



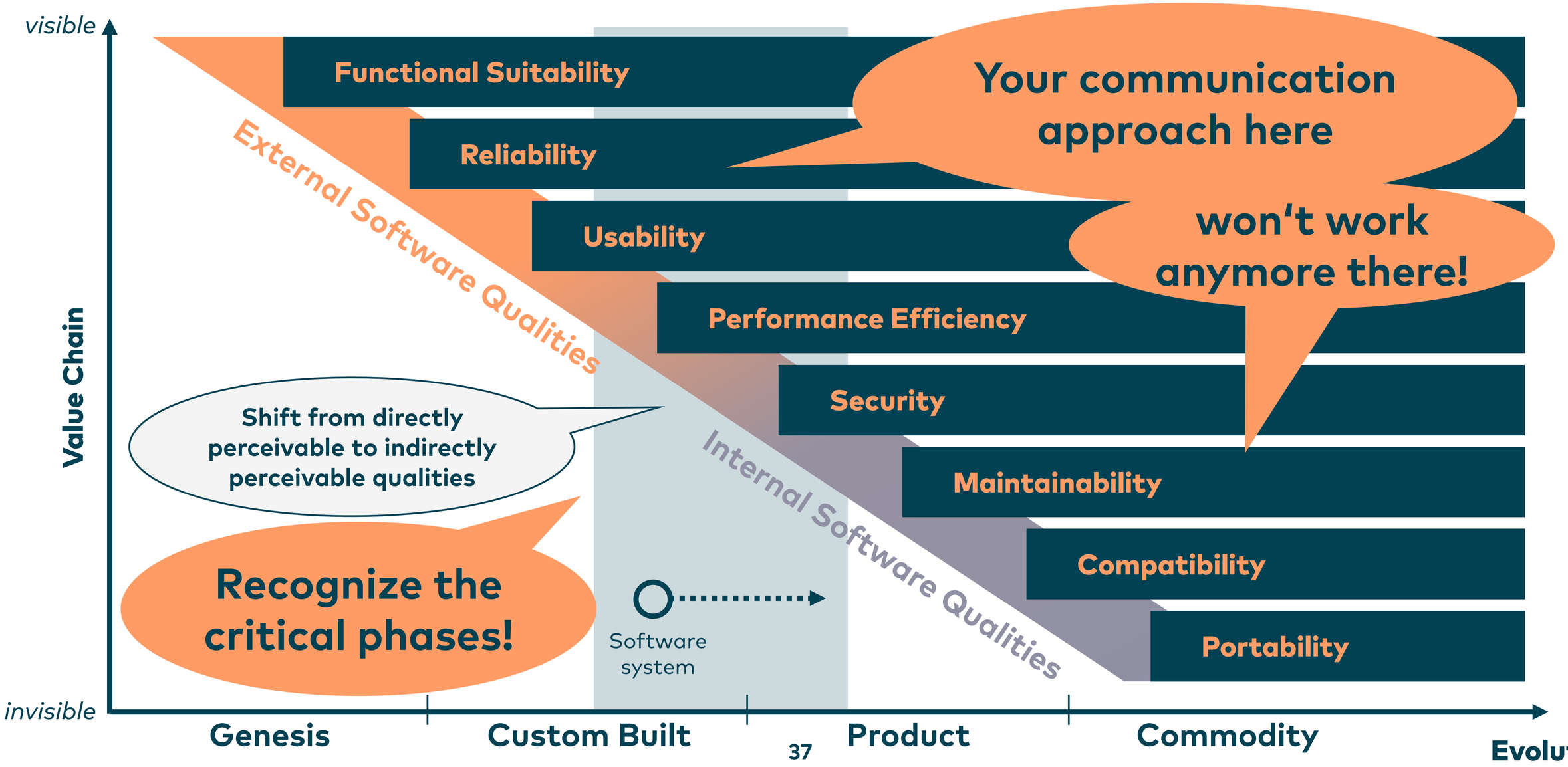
That Might Look Somehow Familiar

- Functional Suitability
- Reliability
- Usability
- Performance Efficiency
- Security
- Maintainability
- Compatibility
- Portability

Evolutionary Software Quality

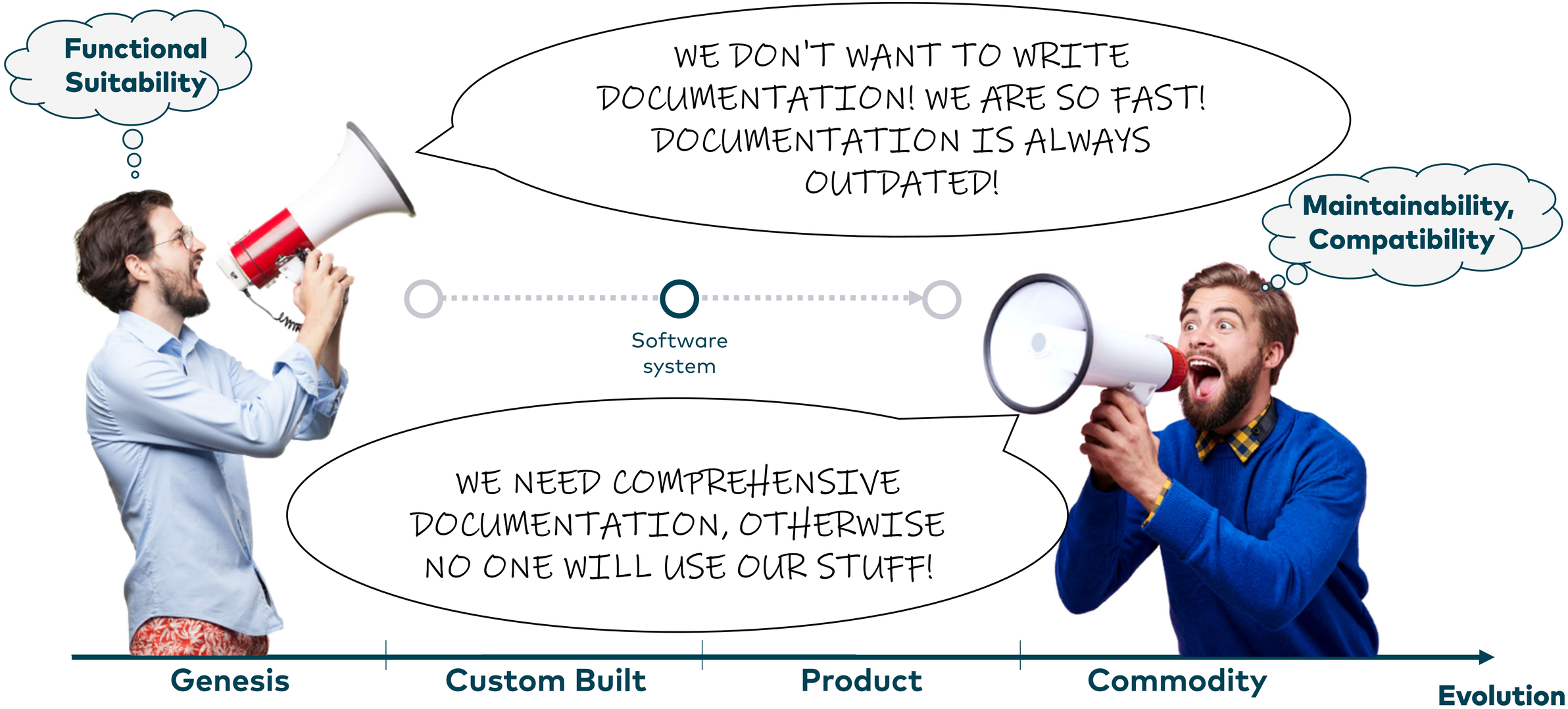


What's the Point of All of This?



Summary

Without Evolutionary Software Quality



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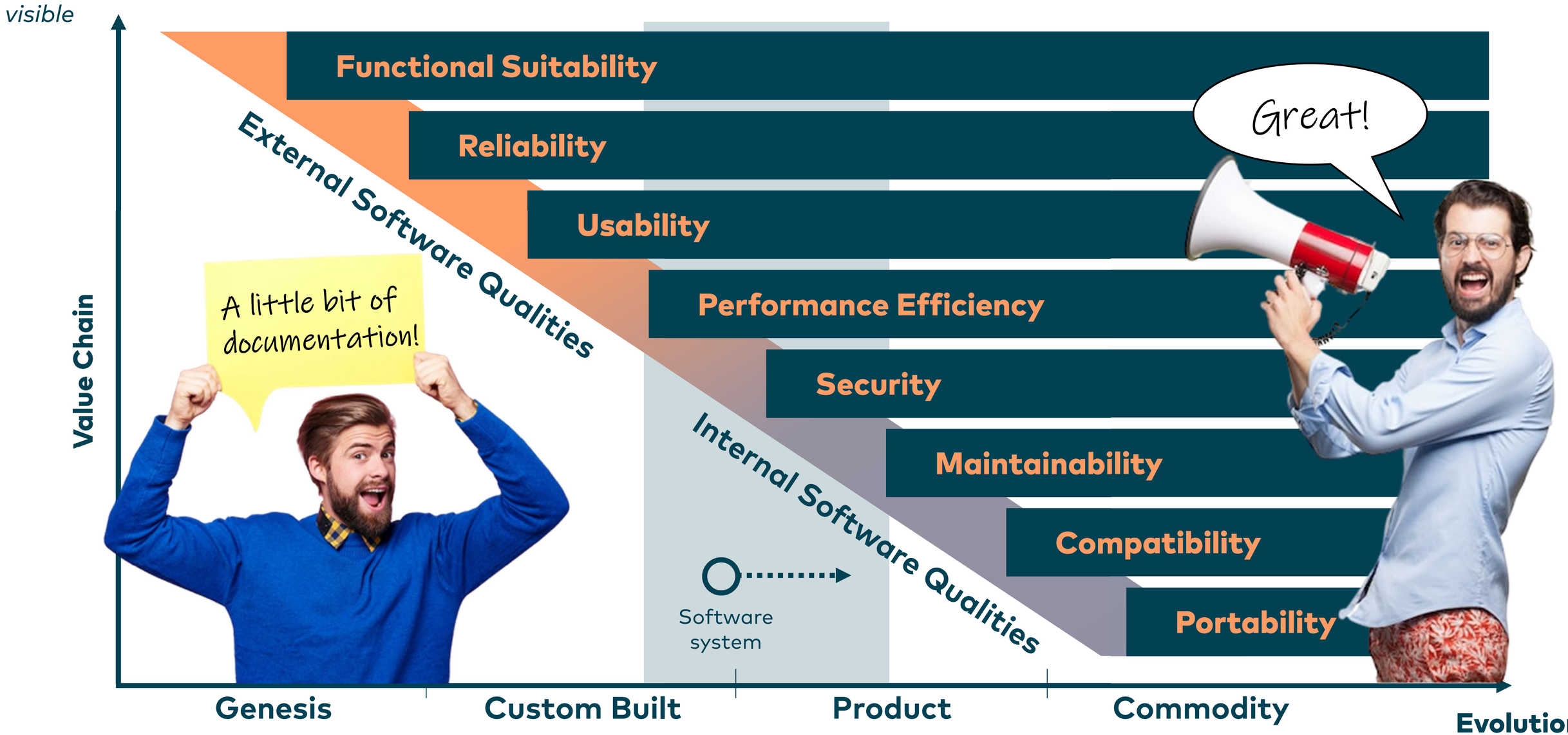
With Evolutionary Software Quality



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Final (obvious) Warning

"All models are wrong,
but some are useful."

George Box

Thank you!

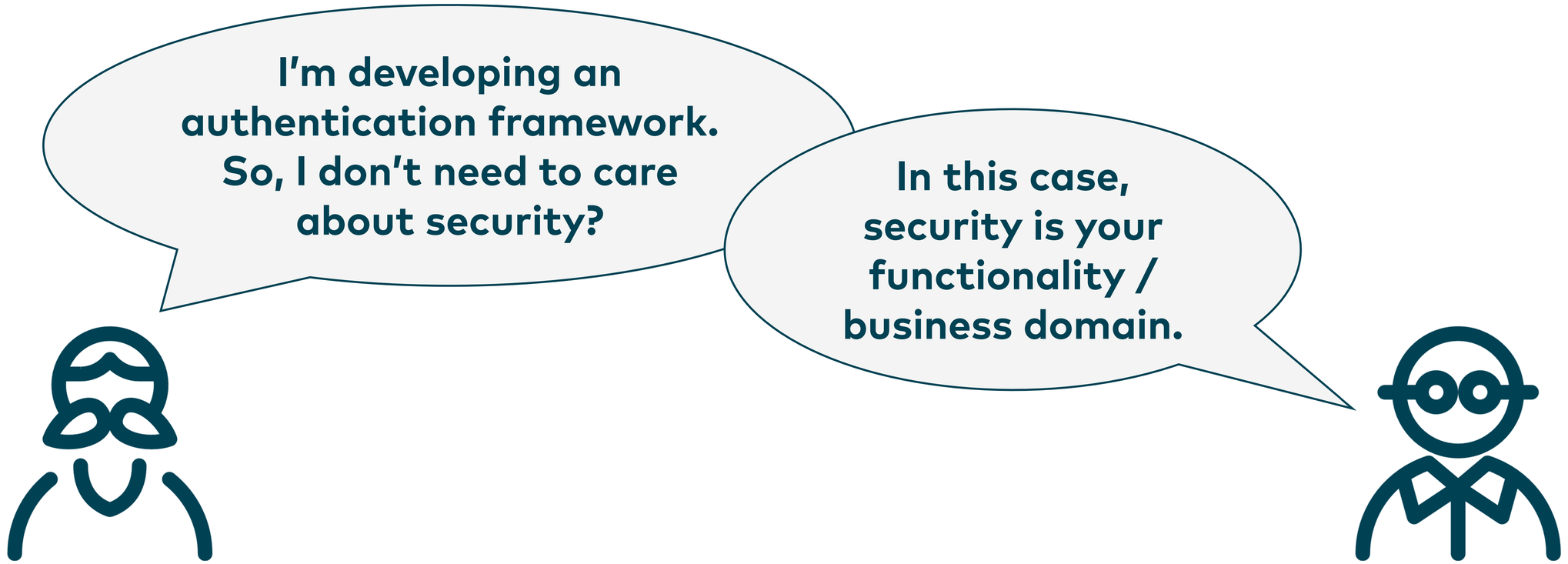
What Do You Think?

Questions, discussions, comments?

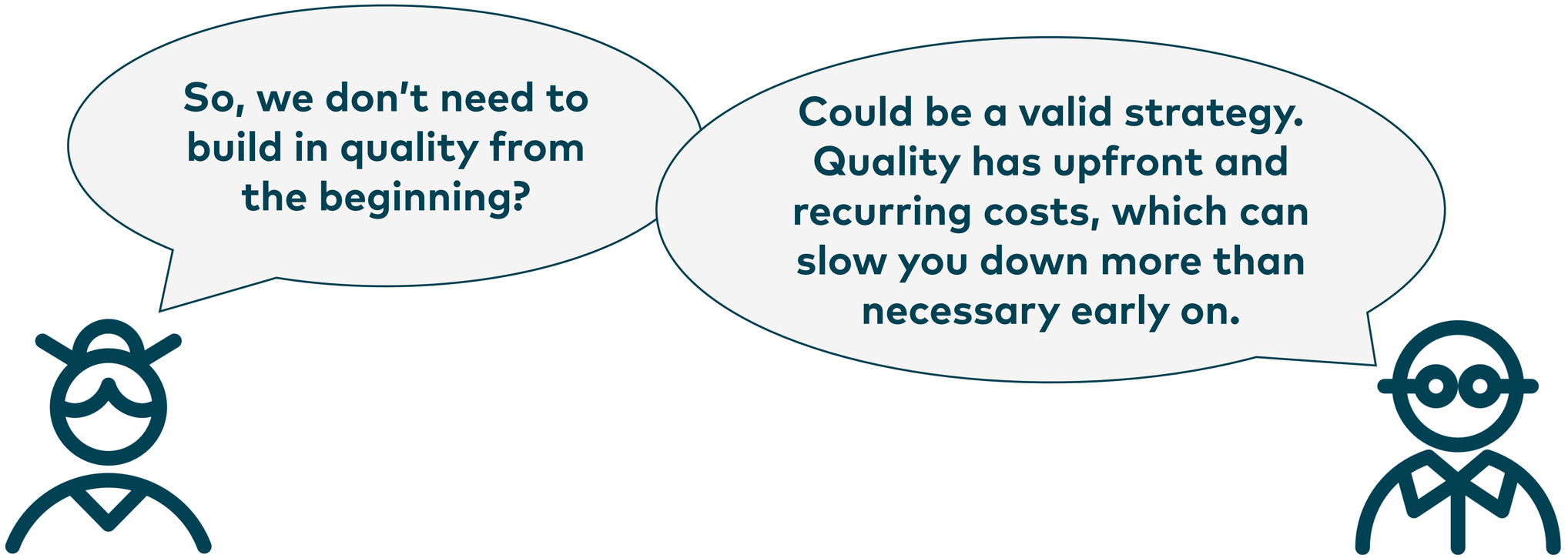
Appendix

Challenging the model

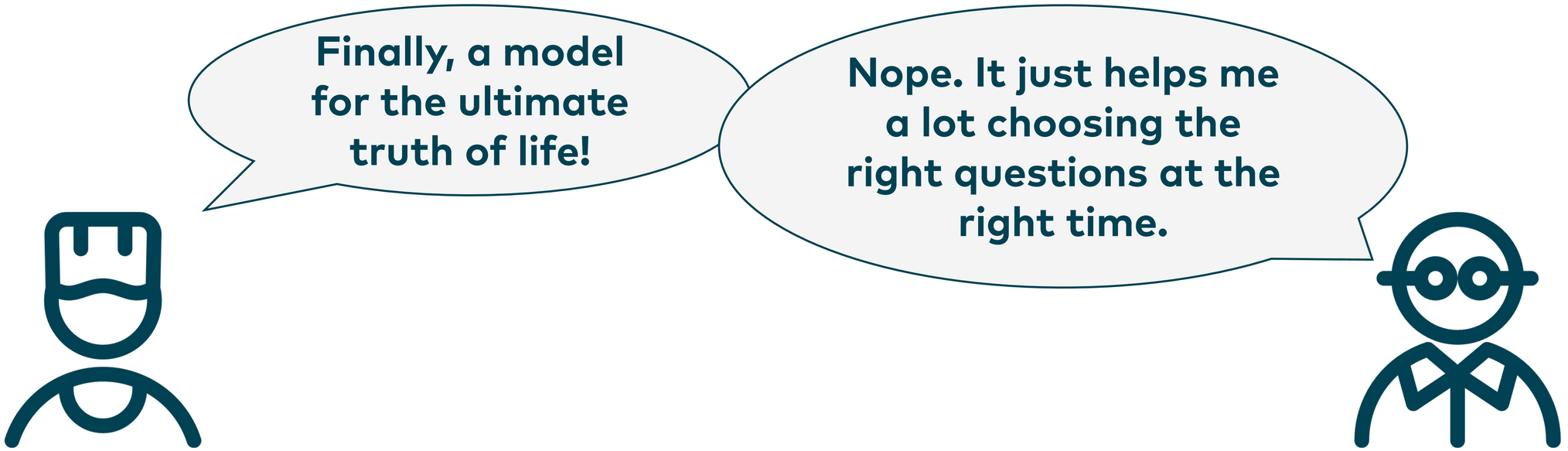
Typical situations where it works



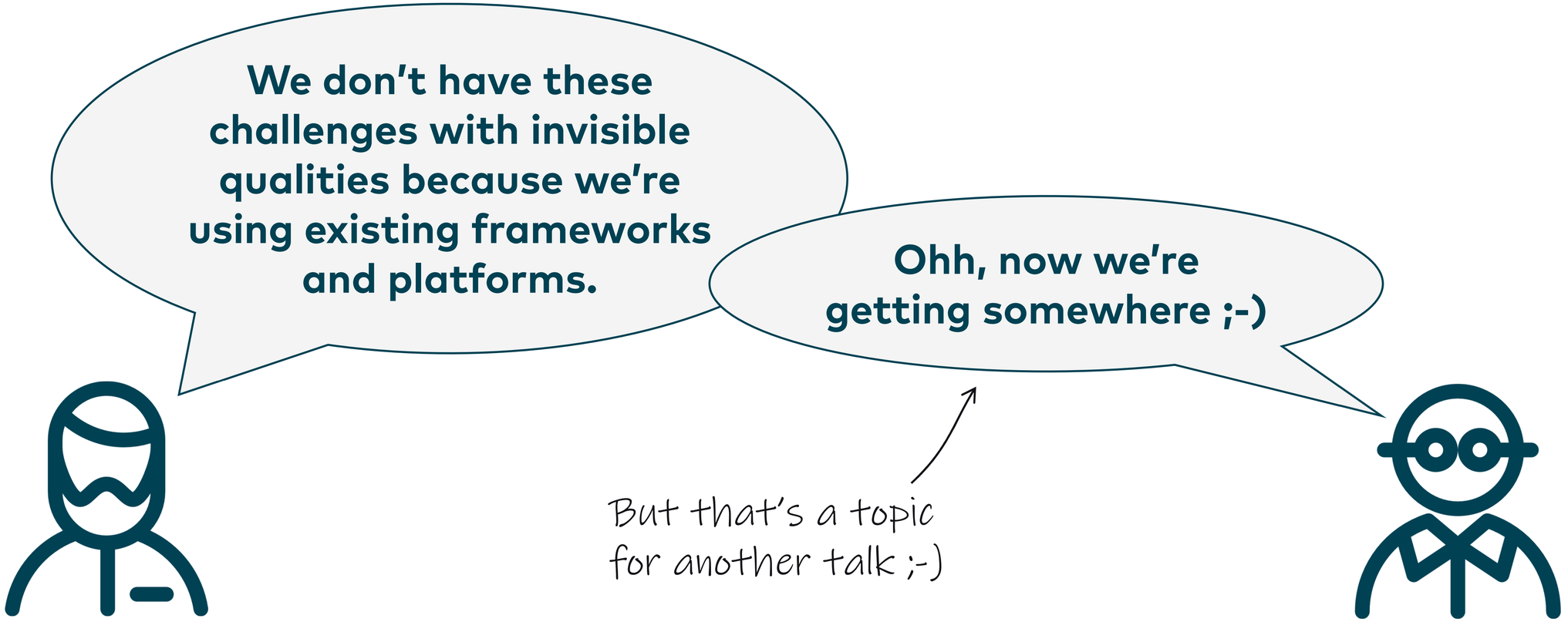
Typical situations where it works



Typical situations where it won't



But typical situation can also be



Resources

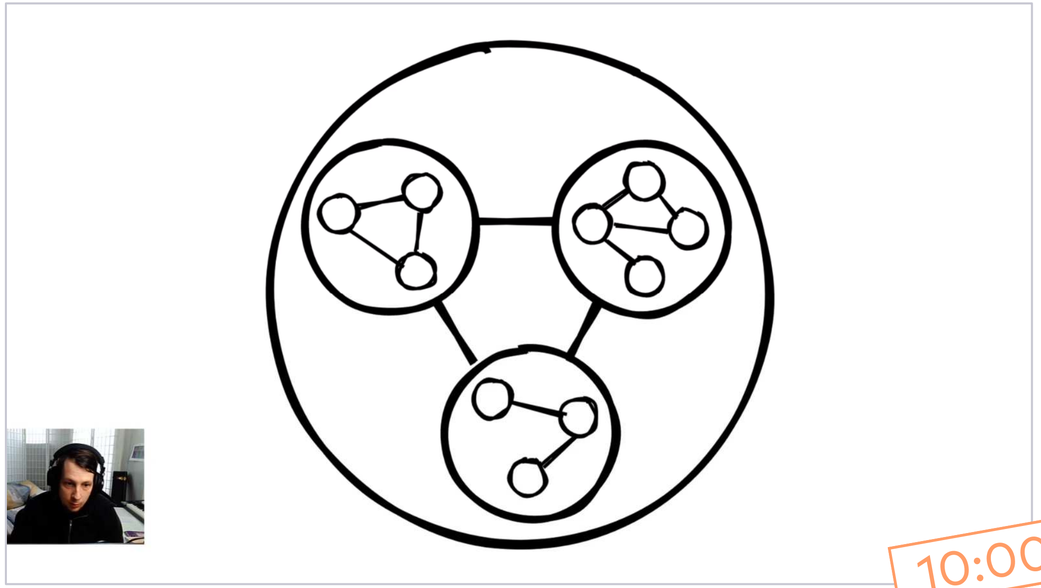
Earlier version of these contents

https://www.innoq.com/en/blog/quality-value-chain-evolution/

Wardley Mapping Quick Start

Investing in Innovation: How Situational Awareness Can Put Your Business on the Map

https://www.youtube.com/watch?v=Gfq3ocmadZo



Ben Mosier: The Easiest Way to Do Wardley Mapping

https://www.youtube.com/watch?v=IJcLmoKR6v8

Introduction to Wardley Maps

- My personal TOP 5 for getting started
  - https://www.feststelltaste.de/top-5-learning-wardley-maps/
- Beginner's page by Ben Mosior
  - https://learnwardleymapping.com/
- My favorite presentation by Simon Wardley
  - https://www.youtube.com/watch?v=Ty6pOVEc3bA
- Book "Wardley Maps" by Simon Wardley
  - https://medium.com/wardleymaps
- Wardley Maps Awesome List (resource collection)
  - https://list.wardleymaps.com

Thanks again!

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Software Evolutionist

#softwaremodernization #architectureassessment #training #wardleymapping #softwareanalytics

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