SMS Exemplar Ltd.

Designing Effective Systems

Abstract

- In this presentation Grant considers how quantitative methods support a disciplined engineering approach to designing effective systems.

- The role of the enterprise architect is to design systems that integrate people and technology to best support the purpose of the enterprise in which they are engaged.

- This crucially requires an evidence-based understanding of how the component parts of the enterprise work together to deliver value to its end customers.

- It also demands effective management focused on ensuring the system delivers, and will continue to deliver, the right results.

Your presenter

P. Grant Rule,

Managing Director, SMS

As a founder of the UK Rightshifting Network & Orchestrated Knowledge, with nearly 40 years experience in the field of software-intensive systems, I am committed to leading firms in learning how to be more effective at creating value and achieving the desired outcomes for all stakeholders.

SMS Exemplar (Group) Ltd.

- Established 1994, SMS provides selected clients with unique insights into the whole-life effectiveness and efficiency of software-intensive systems.
- We work on behalf of stakeholders with private and public sector decision-makers to improve outcomes, increasing value while reducing cost and risk.
- Using evidence-based methods and benchmarks, we coach business people and technologists to work as partners.
- We are dedicated to rightshifting the performance of outsourced services, along with those managed in-house. Returns can be £5 or more for every £1 invested.
- Our recognised subject matter experts are specialists. They have wide experience, enhanced by SMS' objectivity as an independent consultancy & trusted 3rd party.
- This definition-to-deployment know-how enables us to contribute authoritatively on the cost-effective use of softsystems to implement our clients' business strategies.

There is no shortage of EA Models !
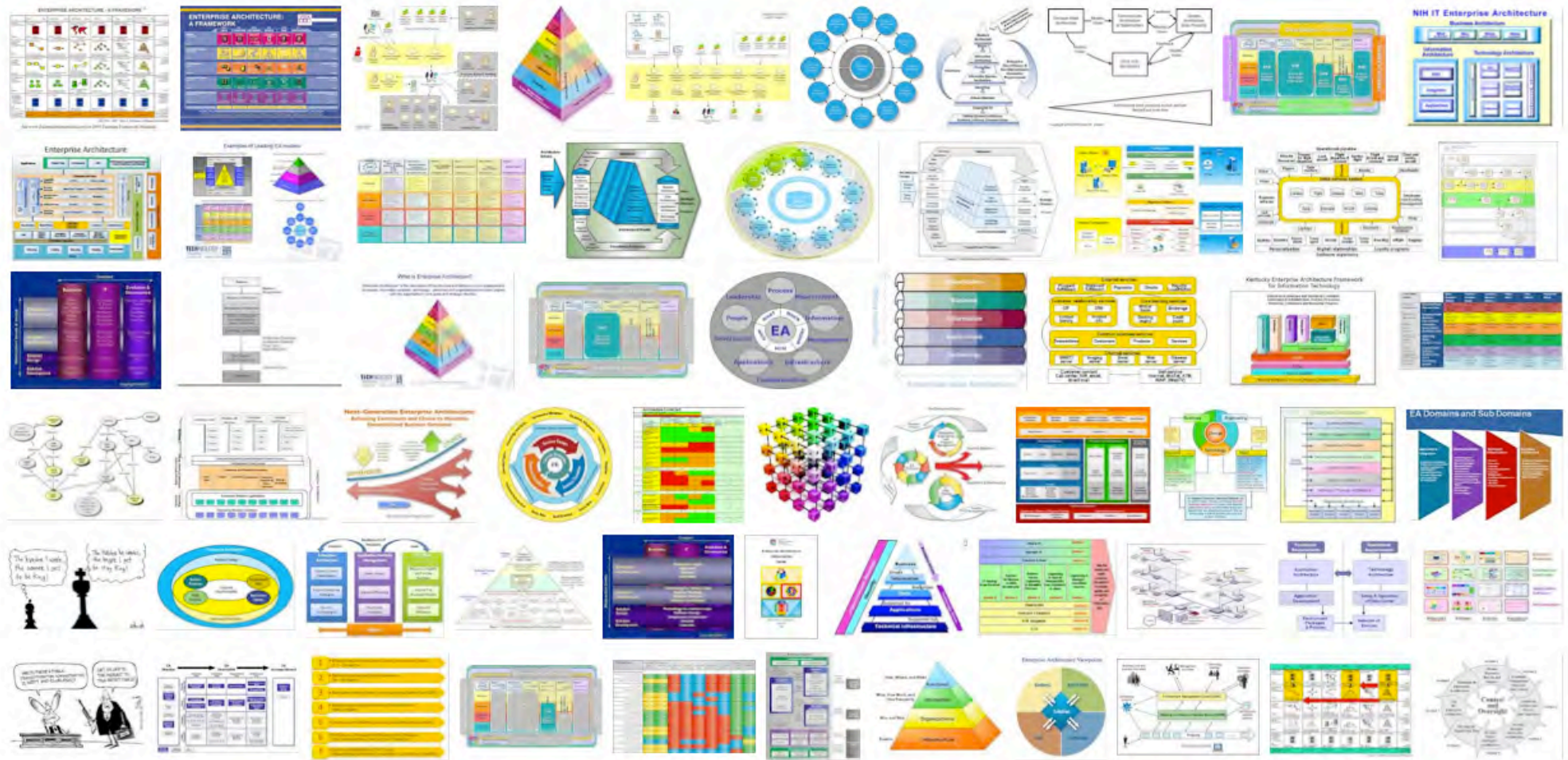
"The map is not the territory"

Neither is the EA model the enterprise

What do we mean by 'enterprise'?

- A private or public organisation, whether for- or not-for-profit, or an autonomous or semi-autonomous business unit or part of an organisation.
- *The whole complex, socio-technical system*, including:
  - People
  - Information
  - Technology
  - Processes
  - Business operations

What is purpose of 'enterprise architecture'?

- To provide a rigorous design for the structure of an enterprise, its components and the relationships between those components, *so that the enterprise may effectively achieve its strategic goals*.

What are the goals of an enterprise?

- To increase the net value delivered to all the stakeholders across all of the five capitals from which humans derive value.

Stakeholders derive value from five types of capital that sustain & improve the quality of life
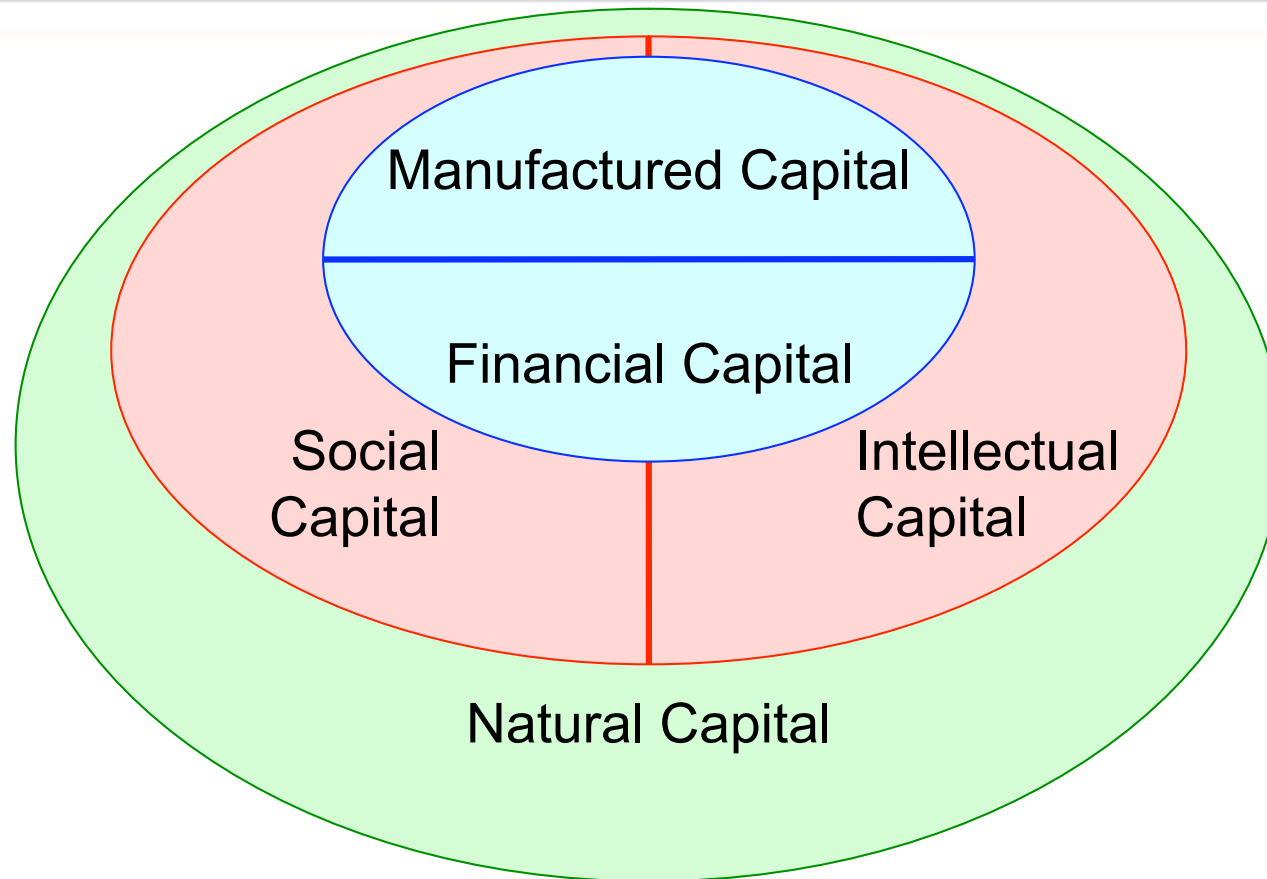
Acknowledgements: The Forum for the Future

Who are the stakeholders?

Who are your stakeholders?

- All those constituencies with a stake in the fortunes of the company.

- The enterprise's primary mission is to create value for its stakeholders.

John H. Patterson-Founder

John H. Patterson, Founder of NCR, 1887

What really matters depends on your corporate strategy

Customer intimacy
(one-stop shop, domain knowledge)

The organisation provides domain knowledge & integrates with customers to deliver tailored solutions to meet precise needs

Promise: "Superior business knowledge to predict & maximise opportunities"

The organisation invests in R&D, moving new products, services, & features to market as quickly as possible

Promise: "The latest, most innovative, feature-rich products"

What's your value proposition?

The organisation provides high-quality, standard products very quickly with the lowest total cost

Promise: "Unbeatable value-for-money for a restricted range of commodities"

Product leadership
(innovation, pioneering R&D)

Operational excellence
(low cost, reliable, WYSIWYG)

Vision, goals & strategy determine the stakeholders

- It is the *stakeholders' perception* of value that must be considered when designing an enterprise architecture that will *create the desired value* with *minimal waste or debt*.

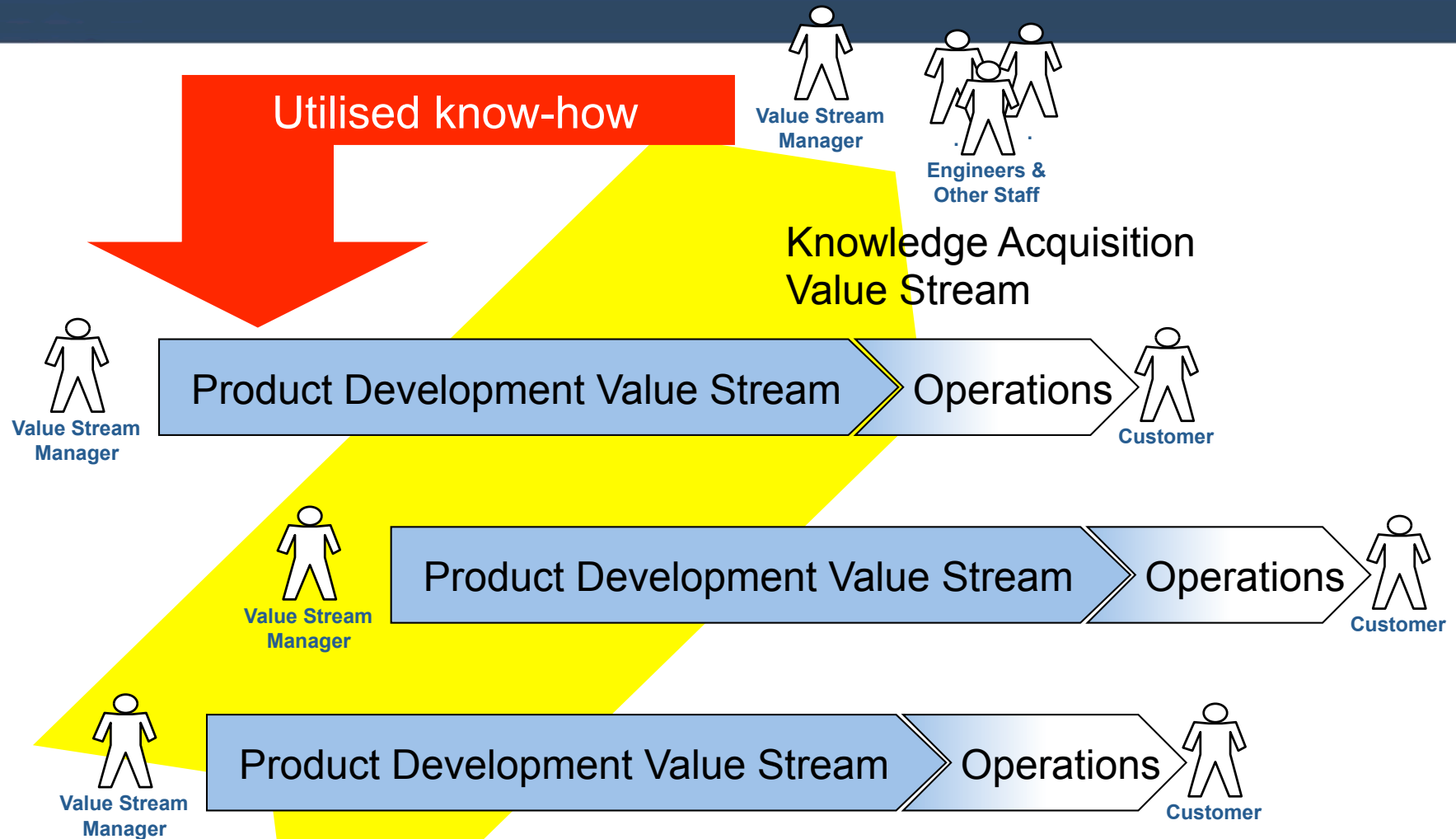# 'True North' quantifies a common direction & goals

e.g.
speed – margin – market share

e.g.
accurate budgets – on-time delivery – effective standards – quantified capability
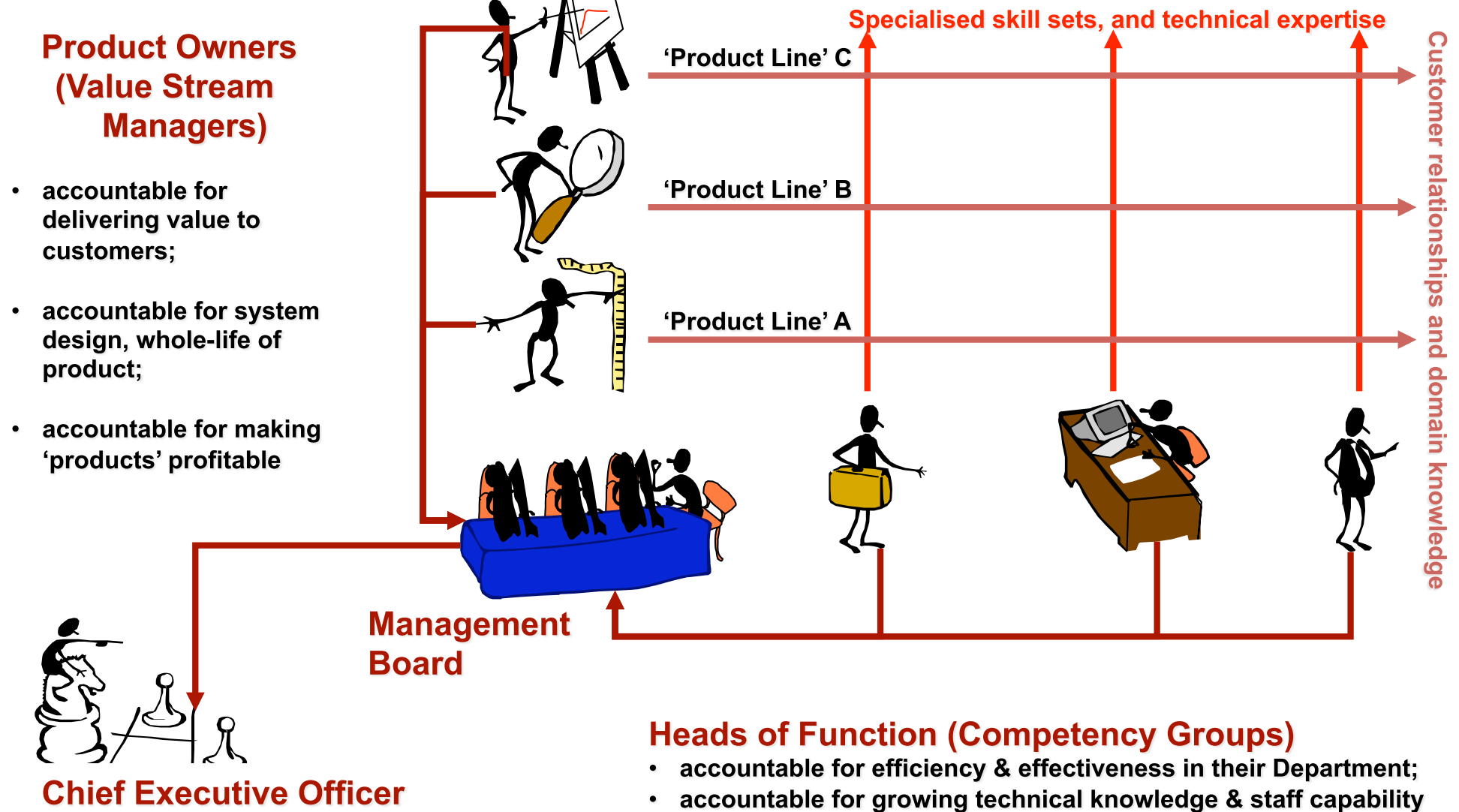
- A simple pungent phrase that expresses the critical success factors that must be achieved, an organisation's 'True North'…
  - Exerts a 'pull' toward which everyone in the organisation, whatever their rank or role, can align themselves and their activities
  - Accounts for the needs of all stakeholders
  - Provides a basis for constructing a balanced scorecard
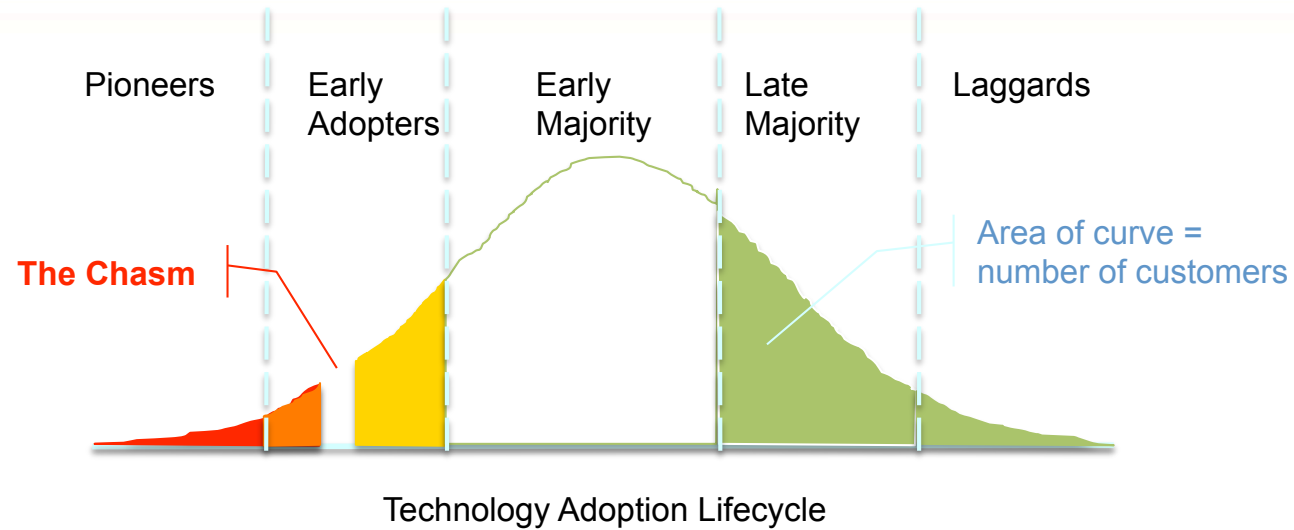 - Documents targets as a basis for measuring success

Developers design & deliver the product designs, the operational value streams & new know-how

Utilised know-how

Value Stream Manager

Engineers & Other Staff

Knowledge Acquisition Value Stream

Value Stream Manager

Product Development Value Stream | Operations

Customer

Value Stream Manager

Product Development Value Stream | Operations

Customer

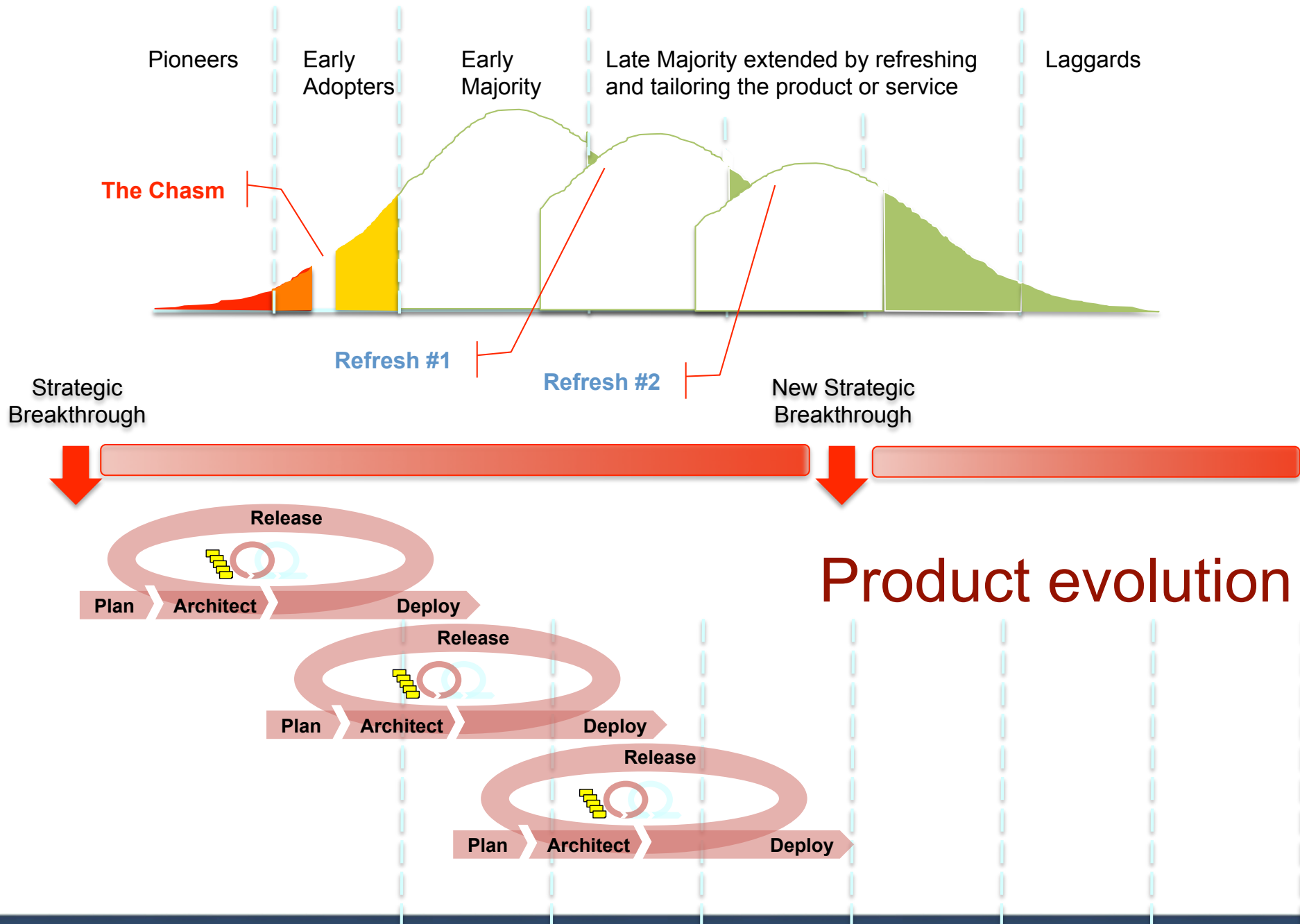Value Stream Manager

Product Development Value Stream | Operations

Customer

Product Owners are the 'customers' of, & in tension with, the Heads Of Function – the CEO ensures the balance

Product Owners (Value Stream Managers)

- accountable for delivering value to customers;

- accountable for system design, whole-life of product;

- accountable for making 'products' profitable

Specialised skill sets, and technical expertise

'Product Line' C

'Product Line' B

'Product Line' A

Customer relationships and domain knowledge

Management Board

Chief Executive Officer

Heads of Function (Competency Groups)
- accountable for efficiency & effectiveness in their Department;
- accountable for growing technical knowledge & staff capability

Products (and software) have a life history

Pioneers | Early Adopters | Early Majority | Late Majority | Laggards

The Chasm

Area of curve = number of customers

Technology Adoption Lifecycle

Pioneers   Early Adopters   Early Majority   Late Majority extended by refreshing and tailoring the product or service   Laggards

The Chasm

Refresh #1

Refresh #2

Strategic Breakthrough

New Strategic Breakthrough

Release

Plan   Architect   Deploy

Release

Plan   Architect   Deploy

Release

Plan   Architect   Deploy

Product evolution

Engelbart's ABC Model of Work embraces an organisation's ability to improve itself over time

Ref: Denise Caruso, New York Times, Oct. 7, 1996, p. D4 See also: www.bootstrap.org

- A-work:
  - The primary value-creating mission
- B-work:
  - Ways of improving A-work
  - B-work is similar in similar domains
- C-work:
  - Ways of improving A-work & B-work: examples include:
  - Help-desk processes for recording & resolving customer complaints
  - C-work is common across domains
  - Improvements to activities
  - Action plans to change process

**C-work is team-work; collaborative, analytical**
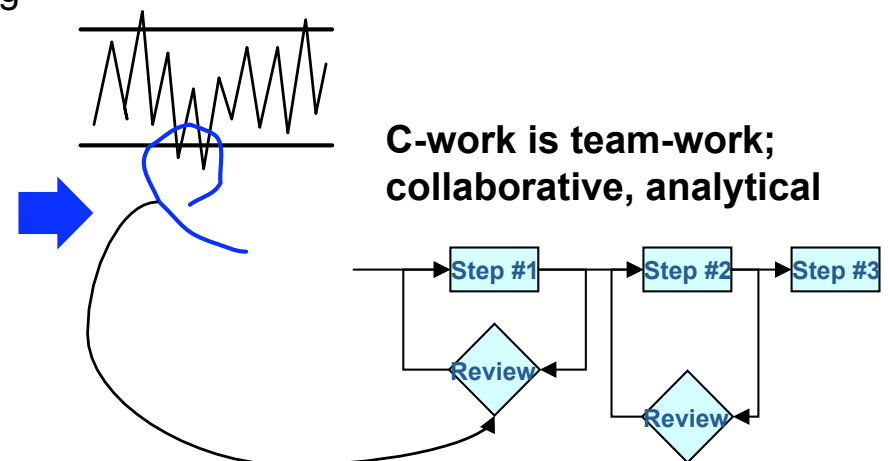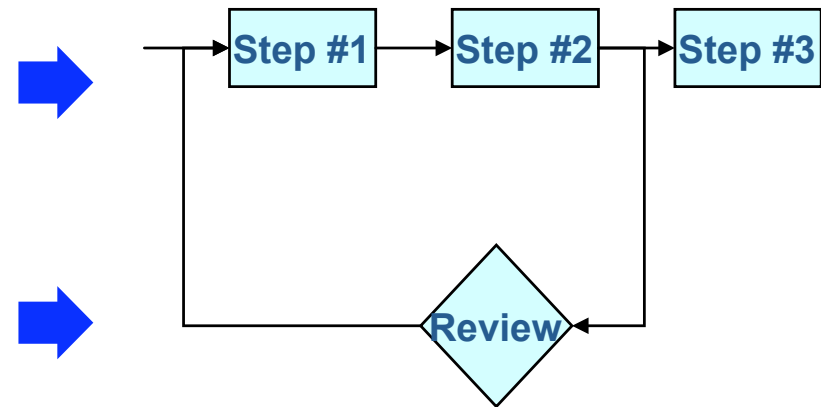
Enterprise Architecture involves coordinating continuous change with business-as-usual
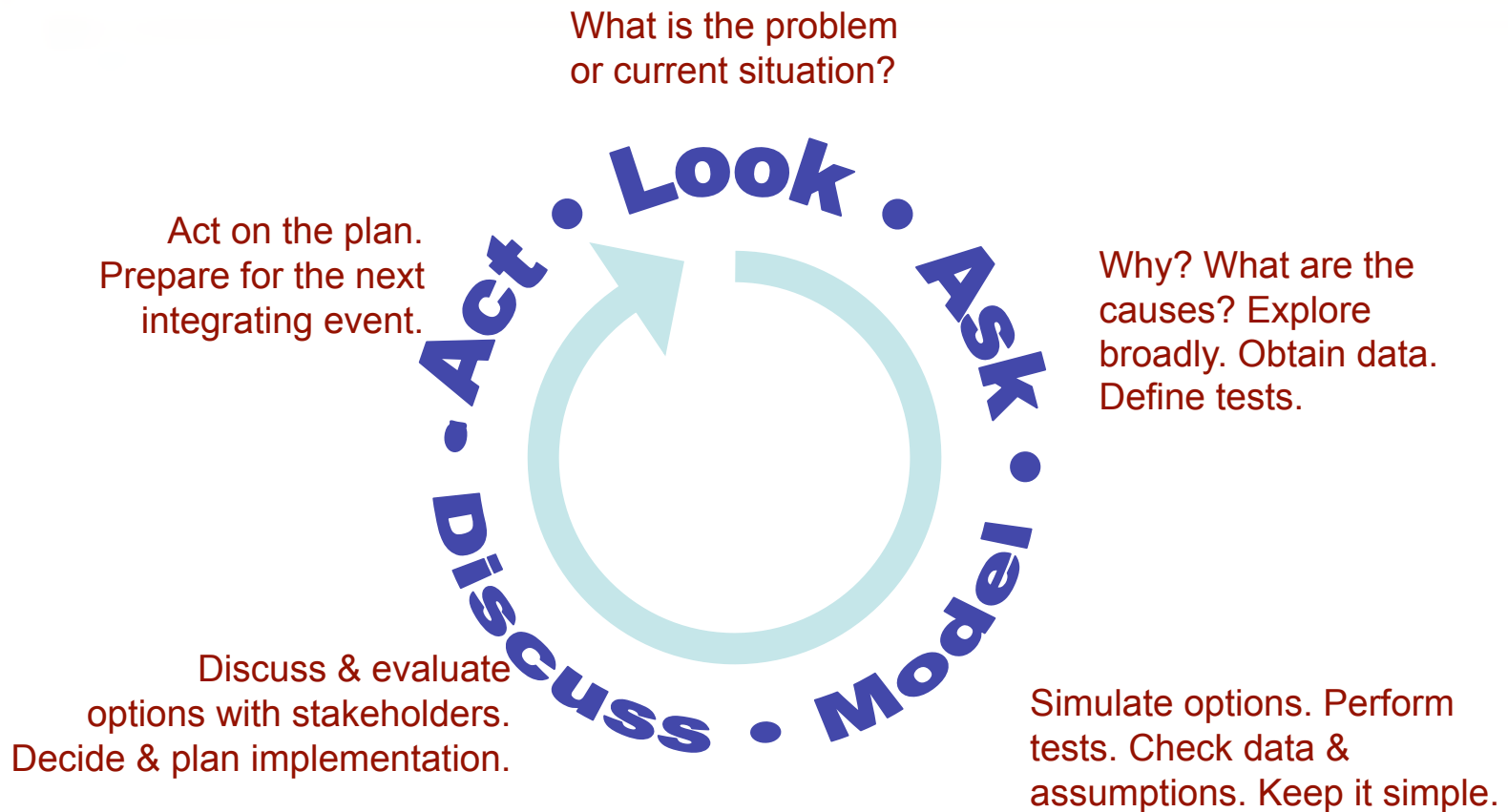
- Effective change to the *system-of-work* is based on *quantitative analysis* of *process performance* & evaluation of the *impact of the solution options*

You need to understand & quantify performance of the existing value streams – which steps add value, which do not

Greatly simplified
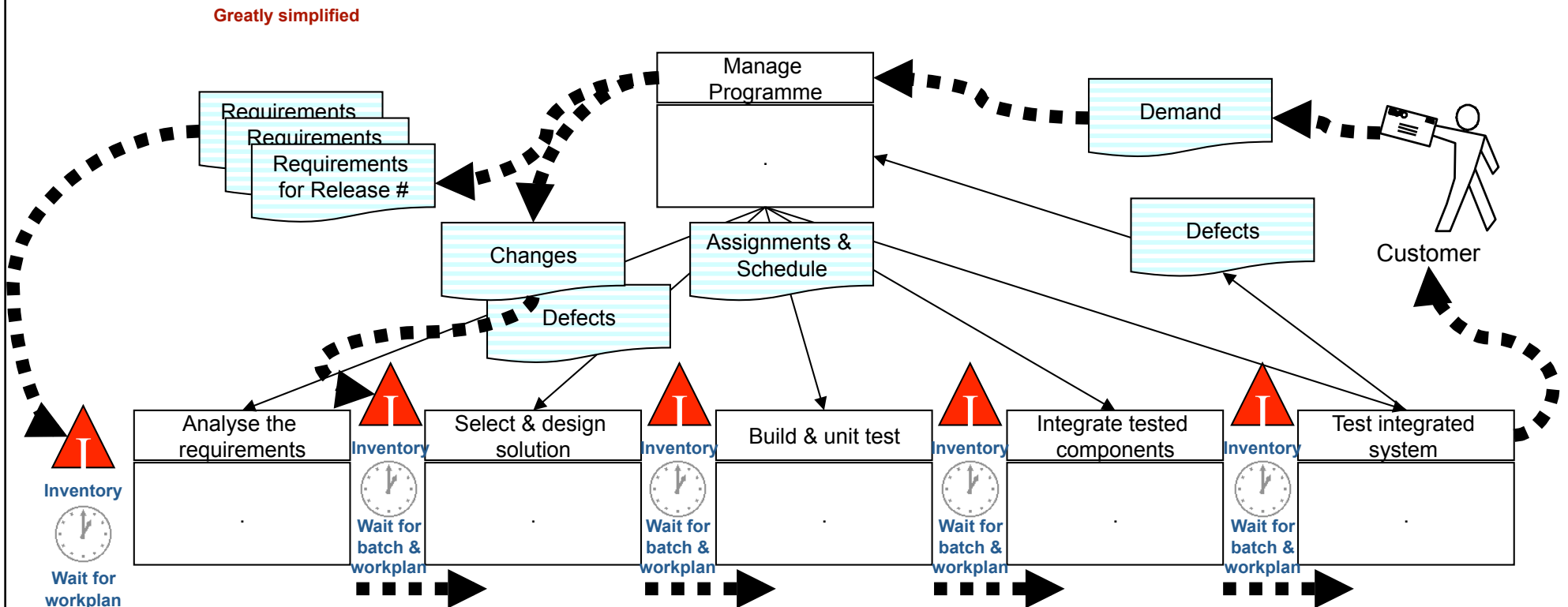
- Work is 'pushed' in batches (i.e. as 'releases' or projects within 'releases')
- Staff wait to be given work instructions & schedules by programme/project management
- Assignments & schedules have to be updated regularly to maintain synchronisation – but they are always out-of-date
- Late work, change requests & fault fixing is expedited, disrupting planned work – urgency overrides importance
- Much work is non-productive 'coordination' across work groups – communication is needed because the work status is not visible to all
- 'Failure demand' is not distinguished from 'value demand', so the wrong things are done better !

What is the problem or current situation?

Act on the plan. Prepare for the next integrating event.

Why? What are the causes? Explore broadly. Obtain data. Define tests.

Discuss & evaluate options with stakeholders. Decide & plan implementation.

Simulate options. Perform tests. Check data & assumptions. Keep it simple.

Act · Look · Ask · Model · Discuss

* Attributed to Prof. Allen Ward - the learning cycle within Plan, Do, Check, Adjust
Ref: 'Ready, Set, Dominate', Michael Kennedy, Kent Harmon, Ed Minnock

What is the shape of the population distribution curve of organisations cf. effectiveness ?

% of organisations (y-axis)
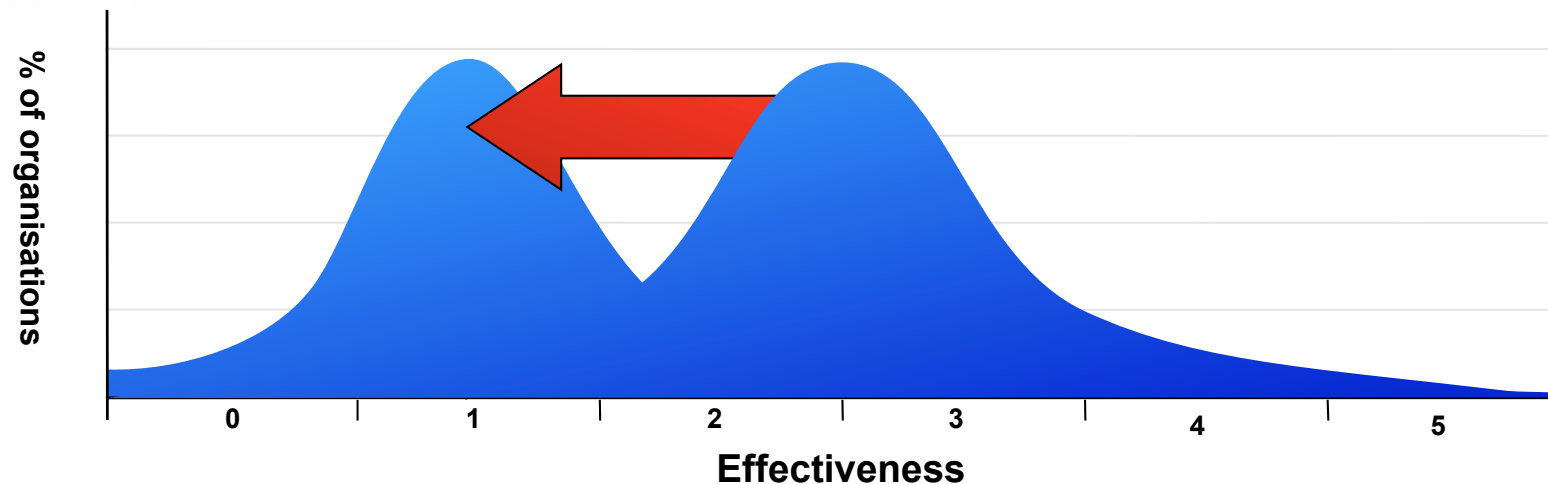
1
Effectiveness (x-axis)
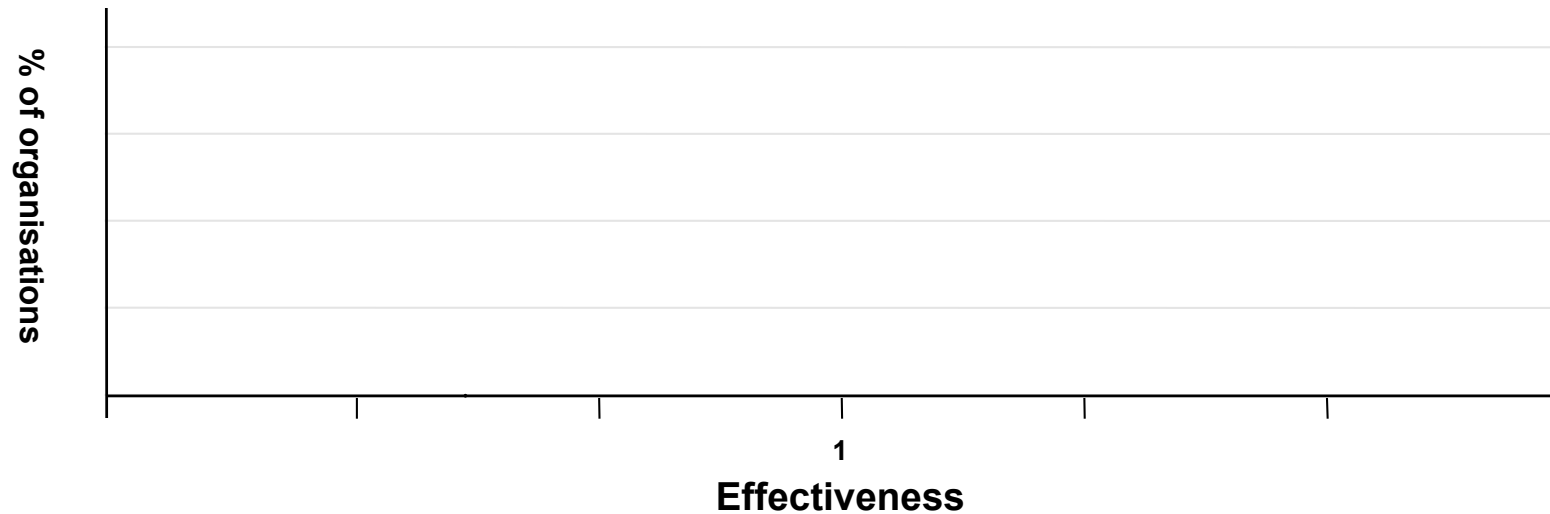
What do YOU think this distribution looks like?
– Please sketch now

Many people hold the opinion that the distribution of Organisations vs. Effectiveness is Gaussian
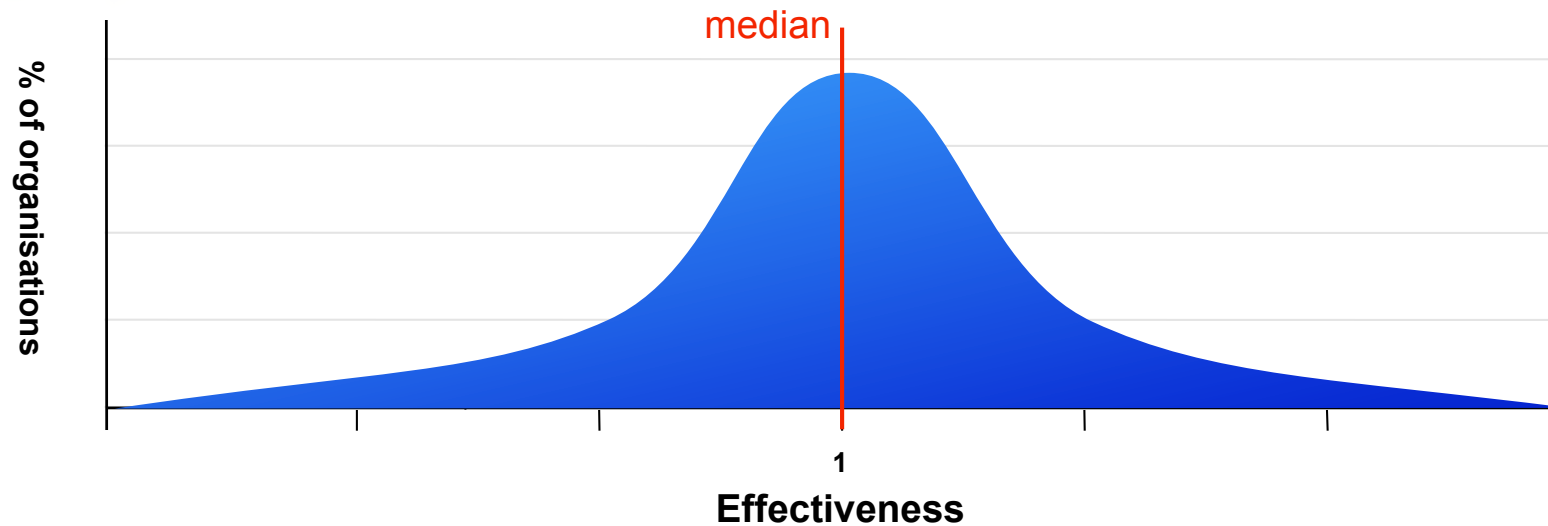
The software development industry worldwide
- as generally perceived

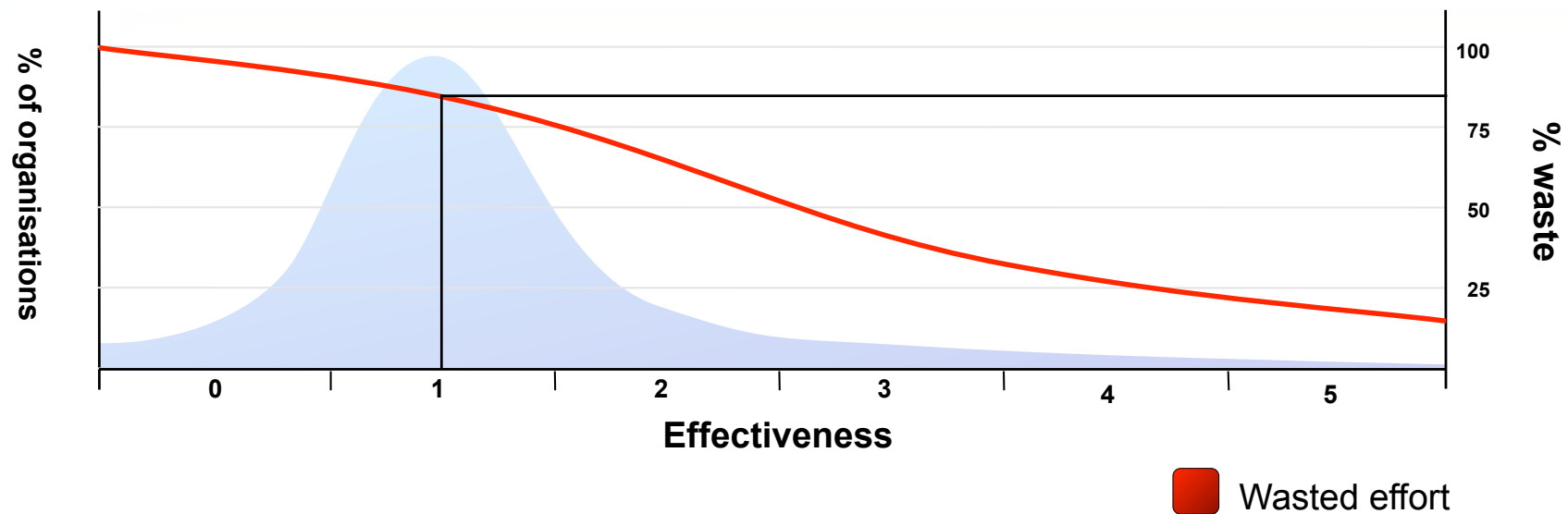# Reality: the Basic Rightshifting Curve

Distribution of effectiveness is severely *Left*-shifted.

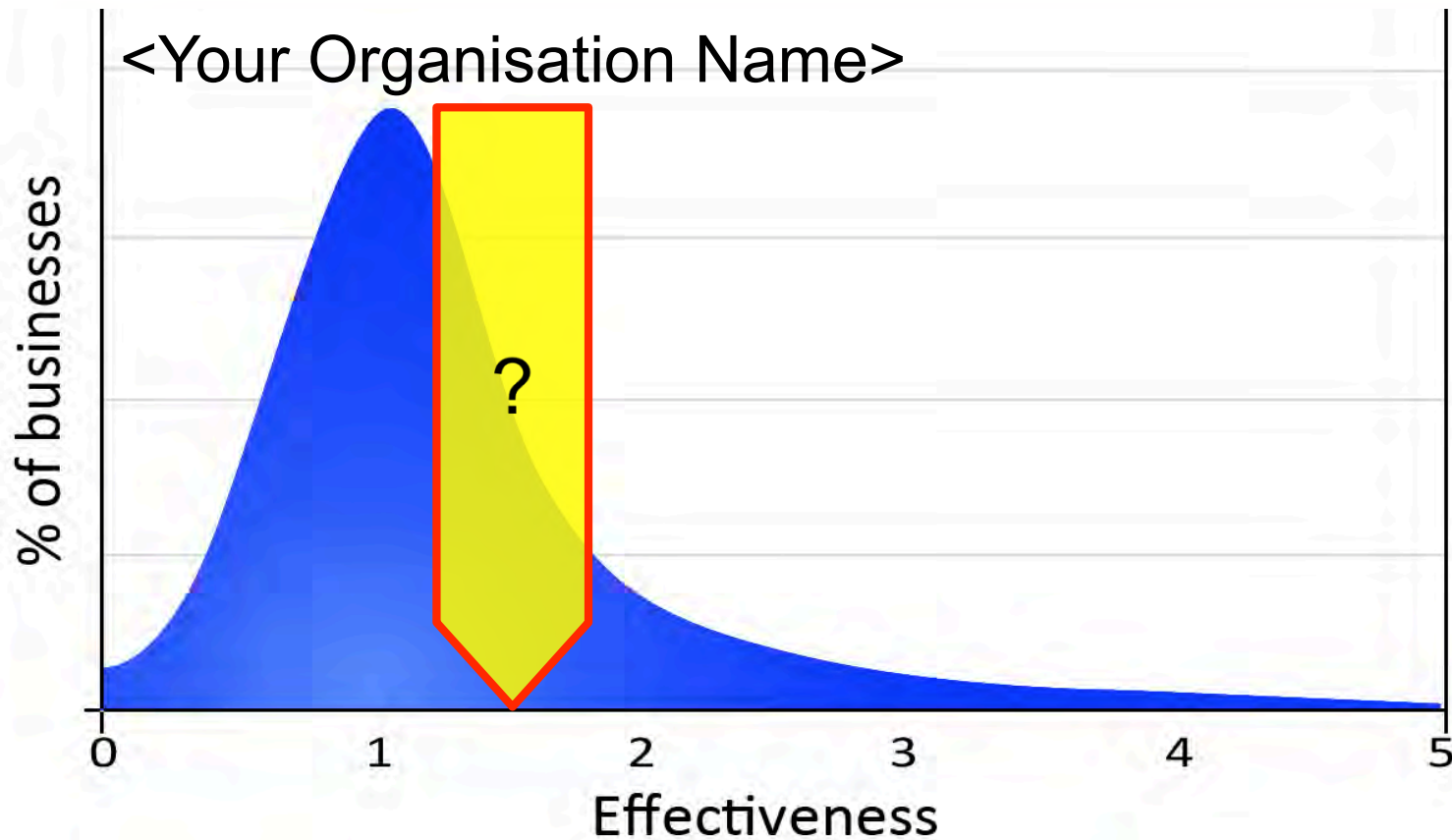Benefits derive from shifting to the *Right*.

[Courtesy: Steve McConnell, 'After the Gold Rush']

Waste is… resource expended on activities or products that add no value for any stakeholder

NB. Some non value-adding activities always remain
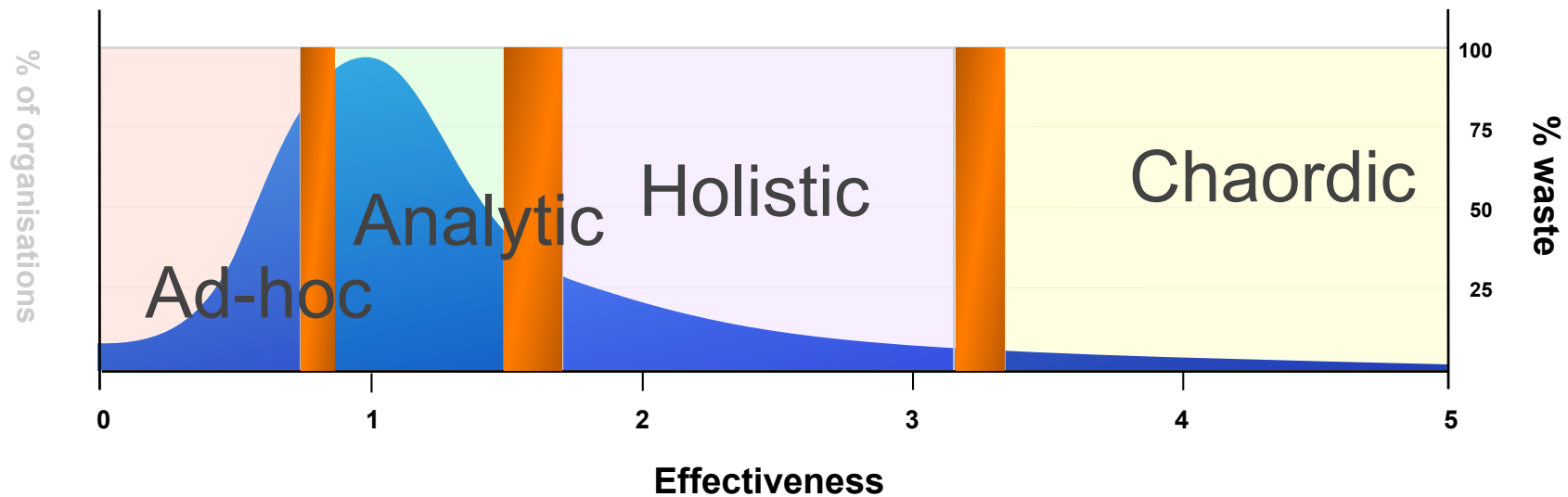
How do you score on the 0-5 Rightshifting Scale?

The term 'Rightshifting' and the 'Rightshifting Scale' were originated by Bob Marshall aka @Flowchainsensei

# The transitions between modes are critical to sustaining the transformation of performance

The Four Modes of Thinking

% of organisations

Ad-hoc

Analytic

Holistic

Chaordic

% waste

100

75

50

25

Effectiveness

0   1   2   3   4   5

Rightshifting effectiveness – the size of the prize

NPS = Net Promoter Score (Ref: 2008 RRC Associates, 2007 Bain & Company, Satmetrix Inc. 2008)
Function Point data courtesy International Software Benchmarking Standards Group (ISBSG r10 2007)
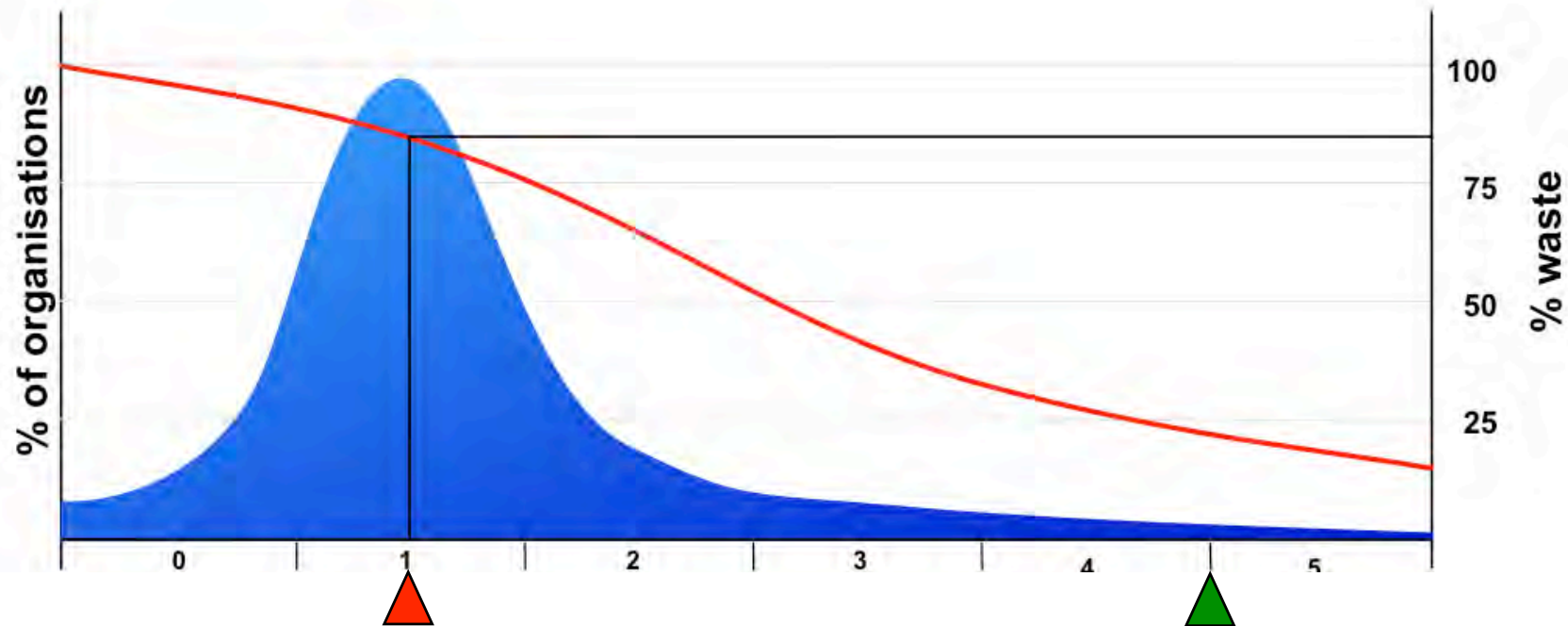
Productivity	**~ 0.11 fp/wh**	**~ 1 fp/wh**
…	**~ 120 fp/FTE pa**	**~ 1000 fp/FTE pa**
Velocity	**~ 36 fp/mth**	**~ 360 fp/mth**
Unit Cost	**~ £666 GBP/fp**	**~ £80 GBP/fp**
Customer Loyalty	**~ 11% NPS**	**~ 80% NPS**

What you should do, starting today

1. Understand your organisations vision & goals
2. Identify your 'market discipline' & stakeholders
3. Analyse stakeholder value – identify 'True North'
4. Quantitatively evaluate your value streams
5. Focus on adding value & removing waste
6. Architect the enterprise around the product lines
7. Coordinate change with BAU operations
- Only use models & tools where they contribute

Questions?

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If you have been…
…thanks for listening

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SMS are specialists at improving business outcomes from software-intensive systems