IT Strategic Management

First contact

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Riigi Infosüsteemi Amet

Introduction

Today

- This introduction
  - Getting to know each other
  - How to get a grade
  - House rules
  - Structure of the course
- Relationship between business and IT strategy
- Architecture

Andres Kütt

- Building software for money since 1993
- An architect of some capacity for the past 15 years
- ≈MSc (UT, Statistics), MBA (EBS), MSc (MIT)
- Currently chief architect of Estonian information system
- Done Skype, a few banks, Estonian Tax and Customs etc.
- Variety of courses and seminars in various schools in Estonia and abroad

How to get a grade

- Lectures
  - Each contact has 6 30-minute blocks
  - Each block has
    - ≈20 minutes of me talking,
    - 5 minutes of discussion in pairs on a given topic
    - 5 minutes of joint discussion
  - Attending the lectures is not compulsory, attending the final seminar is
- **Group project:** As a group, develop and present an IT strategy
- **Exam:** Written analytic essay
- 70% of the grade comes from the group project

The Group Project

- Group size: $2 \leq N \leq 6$. **No exceptions!**
- That's how specific the assignment is going to get
- The result is to be presented to the class at the end seminar. Names on the slides are the subject of grading
- Success criteria: the organisation is plausibly doing better with the strategy than without
- Grading criteria: the people present have been assured this is so

Previous experience on group projects

- Don’t take on too complex tasks: the goal is to mock up the strategy process not solve complex problems
  - Imaginary organisations are harder than real ones
  - Public sector is harder than private sector
  - Big organisations are harder than a small ones
- Lean on the structure of the course: all topics we cover in class should be covered in the strategy
- Your strategy must be rooted in the business and its strategy
  - Don’t dictate business strategic choices
  - Do outline strategic restrictions in place
  - Don’t attempt to fix the company using IT
- Focus on the presentation. Information you don’t deliver does not exist

The exam

The exam consists of two short essays discussing topics covered in class

- The topics are from among the questions we discuss in class
- It is about content, not volume
- Experience should work: if the discussion is thorough, it does not matter where it comes from
- The exam gives 30% of the grade

Study materials

- The slides are available
- Some blog posts on adjacent topics will be posted about once a week at http://andreskytt.github.io/it_strateegia/
- If somebody wants to contribute to that or disseminate their good quality notes, I'm all ears
- https://github.com/andreskytt/it_strateegia
- I'll post the slides and the articles I have copies of to Moodle
- The (non-compulsory) bibliography will be included in the slides and posted at the blog

House rules

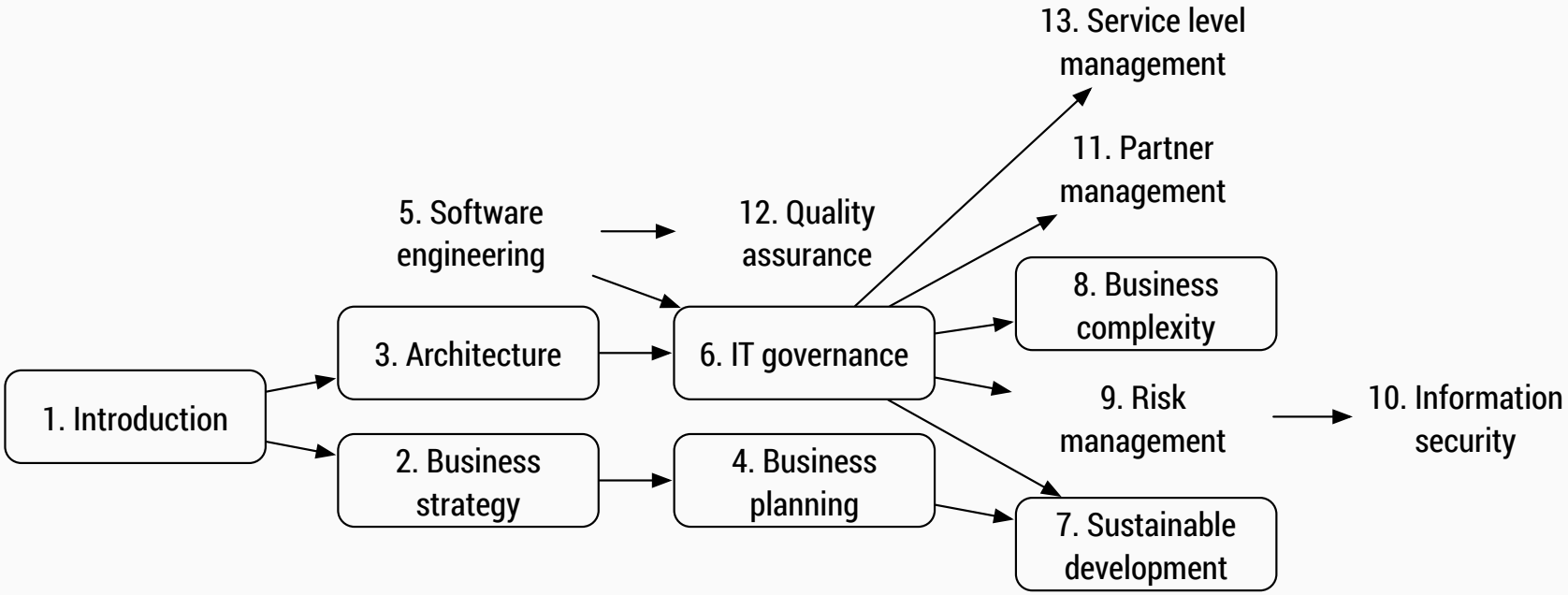
- Permitted are
  - Questions including questioning whatever I tell you
  - Moderate sharing of personal experience
  - Arrival and leaving whenever
- Wasting time is not OK. Neither yours nor mine

Structure of the course

- The structure relies on the IT Manager occupational standard [1] built on top of EU standards
  - Less focus on topics covered in other classes
  - The goal is to provide a holistic picture including developing relationships between topics
- We'll focus on fundamentals
  - The strategy is about answering "How do we do things better than others" (De Kluyver and Pearce, 2012)
  - To do things better, there must be understanding of *why* we do things in addition to *what* we do
  - Internal validation: can what I teach be out of fashion in 15 years?
  - As much personal examples and cases as I can squeeze in and am at liberty of discussing

[1] http://www.kutsekoda.ee/et/kutseregister/kutsestandardid/10443037

Course structure



Discussion point

What are your expectations towards this course?

Business and IT Strategy

On breakfast

Culture eats strategy for breakfast

Peter Drucker

What is strategy?

Strategy is not well defined. Much that is thought of as strategy has little to do with it (De Kluyver and Pearce, 2012; Rumelt, 2011). Some themes are fairly common, however:

- Positioning of the organisation for competitive advantage
- Choice of markets and economic sectors to participate in
- Choice of goods and services offered
- Management and dedication of resources

Goal: Creation of value for owners and other stakeholders via providing value to the customers.

The art of war

”Strategos” - ”army leader” in Greek. Sun Tzu ”The Art of War” (Sun Tzu, 2013) is still widely applicable: The victory has five ”essentials”. He will win

1. who knows when to fight and when not
2. who knows how to handle both superior and inferior forces
3. whose army is animated by the same spirit throughout all its ranks
4. who, prepared himself, waits to take the enemy unprepared
5. who has military capacity and is not interfered with by the sovereign

The art of war

All warfare is based on deception

Strategy in a wider context

Strategy is part of a larger managerial system that, among others, contains at least

Vision as a dream of a common bright future

Mission as a reason to exist

Culture as a set of values enabling coexistance

vision = mission + strategy + culture

(Lipton, 1996)

Dynamics of strategy

It is clear that

- There is constant internal and external change not least brought about by execution of the strategy itself
- People change
- The concept of ”value” changes for the owners and stakeholders
- Entropy tends to grow as reason requires more energy than randomness

Therefore strategy is dynamic and

- Gets outdated sooner or later
- If not changed, leads to cognitive dissonance within the organisation

Consequences of the dynamic strategy

The process of developing a strategy is as important as the end result

- Due to the dynamic nature of strategy, there must be a (hopefully systemic) way to
  - realise we need to change it
  - ignore it as changes might happen too fast to fall back to it
  - keep respecting it despite it being constantly challenged and occasionally ignored
- Development of a joint direction assumes the ability of an organisation to deal with differences of opinion
- It is easier to face a danger shoulder to shoulder. Strategy discussion provides assurance we are still in it together

Strategy as a sequence of decisions

Strategy can be seen as a sequence of decisions. What do we do and what do we *don't* do.

Therefore

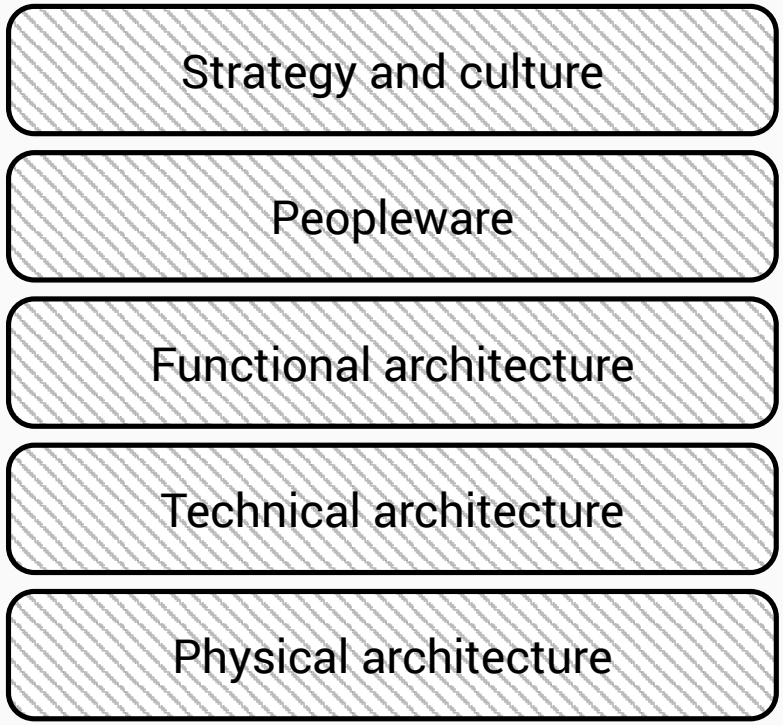
- is the process of strategy creation inherently conflicted, just like any decision
- must strategy provide a recipe for making decisions as not all of them can be foreseen
- the strategy document must not be ”fluffy”

Discussion point

How to separate the IT strategy from the business strategy?

Layered model of the organisation

- Every layer is linked to the one below and above it
- Illustrates position of technology from an architects perspective
- Similar approach to the one found in TOGAF but wider in concept



Layers

Strategy and culture Strategic, legal and cultural setup and context of the organisation

Peopleware The structures, processes and systems implementing the strategy

Functional architecture The functional components supporting the processes and structures (e.g. e-mail, ERP, webstore, production line)

Technical architecture The concrete technical implementation of the functional architecture

Physical architecture The physical infrastructure everything else is running on including server rooms but also office spaces

Implications of the model

All models are wrong but some models are useful (Box, 1976)

- All layers are in *constant* change, organisation is (or needs to be) a dynamic construct
- No change can take place in one layer alone
- Isolated changes create ”tectonic” tension between layers
- Changes propagate down- and upwards with decreasing impact

Technical and business architectures are commonly the only ones with explicit architecture governance in place

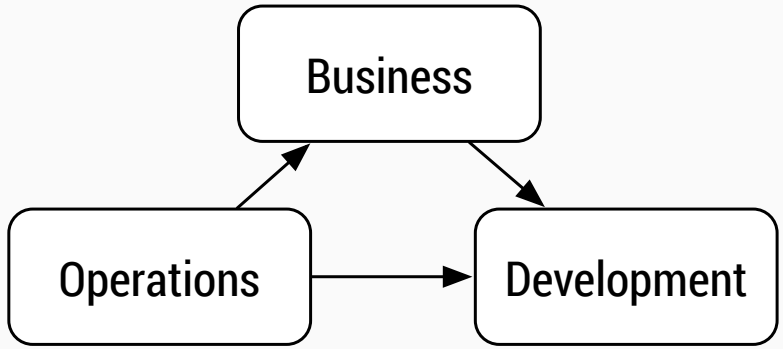
Discussion point

How rapidly do changes abate? Can a change in business strategy cause a change in the hosting architecture?

IT-business alignment

Various aspects of IT and the organisation are in constant dynamic equilibrium (see Luftman (2004))

- The parties have conflicting interests
- It is about balancing interests not winning
- The balance is achieved via organisational structures and processes



On organisational equilibrium

This is a dynamic equilibrium that depends on mutual trust and can deteriorate rapidly

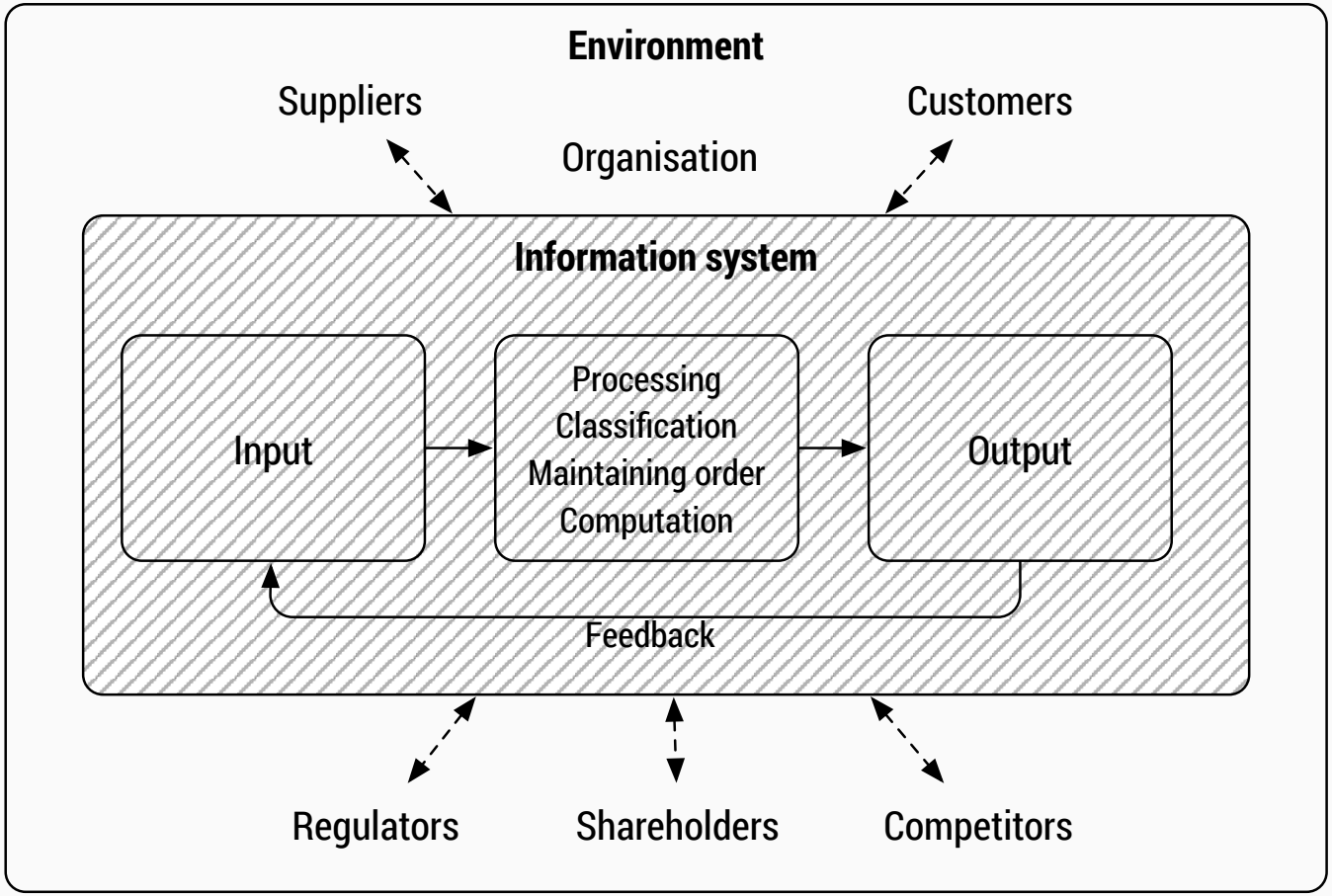
- The Business
  - Seeks to maximise ”bang-per-buck” at the time horizon they are measured against
  - They pay the bills, they order the music
- The Development
  - Love to build complex things regardless of practicality
  - Dread the mundane (and thus build elaborate tools to avoid it)
- The Operations
  - Would like to see everything remain exactly as it is now
  - They know, that they are responsible for everything while controlling nothing

Impact of IT via knowledge management

The ability to generate, retain and distribute knowledge is a key competitive advantage (David and Fahey, 2000). Knowledge management is not doable without information technology

- On knowledge management and its technical aspects read here: (Almossawi et al., 2011)
  - we don't understand how knowledge works
  - it seems to be critical for organisations to be able to function
- Therefore: **do not mess with it!**

Impact of IT via process management



Laudon and Laudon (2000)

Discussion point

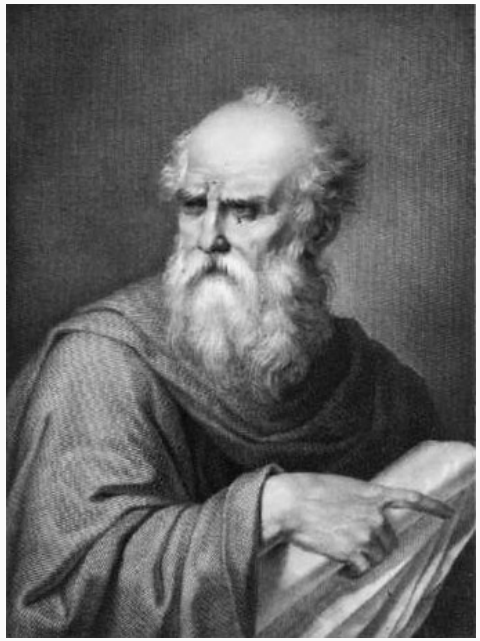
How to do sensible IT management when the organisation itself is not sensibly managed?

Architecture

Vitruvius Pollio

...all these must be built with due reference to durability, convenience and beauty

Marcus Vitruvius Pollio, 80-70 eKr.- 15 pKr (Pollio, 1914)



Architecture definitions

Classical

- The **fundamental organisation** of a system, embodied in its components, their relationships to each other and to the environment and the principles governing its design and evolution. (*ISO/IEC/IEEE Standard 42010*)
- A formal description of a system, or a **detailed plan** of the system at component level to guide its **implementation** (*TOGAF*)

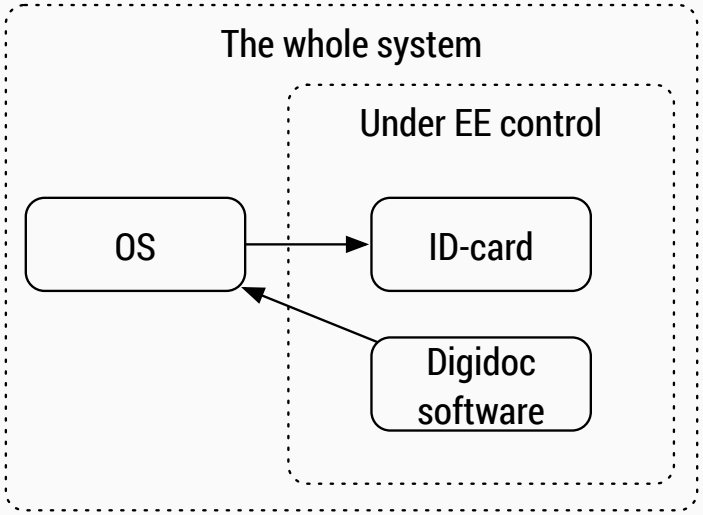
Modern

- The arrangement of the functional elements into physical blocks. (*Ulrich & Eppinger*)
- The whole consists of parts; the parts have relationships to each other; when put together, the whole has a designed purpose and fills a need (*Reekie & McAdam*)

An example of system boundaries

In Q3 2014, Apple fundamentally changed the chip card driver architecture of OS X

- Estonian digital signature software could not be updated in time between announcement and launch
- First e-residents joined on 1st of December
- A nerve-wrecking mayhem ensued



On system boundaries

Any declaration of system boundaries is to an extent arbitrary

- Usually this is done based on either control or competences/technology
- The system might contain hardware, software and people as well as their relationships
- Therefore it is not reasonable to limit discussion of architecture to software

More generally on the paradigm shift

The following statements hold less and less frequently for organisations

1. Organisations are culturally, technically etc. homogenous
2. Organisational and legal boundaries are well-defined
3. Organisations are relatively independent of global problems
4. The information systems in use have clear tightly controlled boundaries

Both internal and external complexity of organisations has increased to a point where it needs to be actively and holistically managed

Definition of a system

System is a set of entities the function of which is larger than the sum of the functions of individual ones

System thinking is a way of thinking of a question, circumstance or a problem explicitly as a system

Crawley et al. (2015)

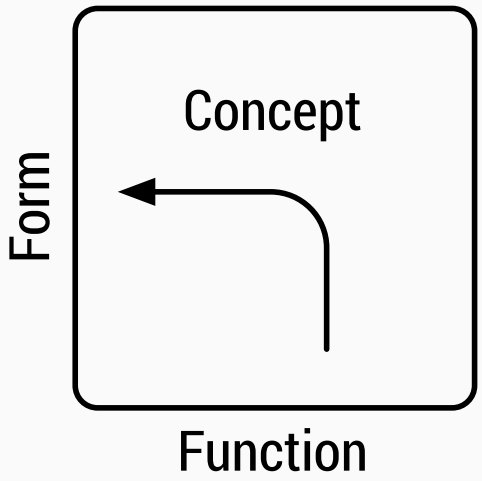
Discussion point

What value is added by dealing with architecture?

Systems Engineering approach to architecture

An approach rooted in system thinking that overcomes the challenges described previously

- Thinking of systems, we inevitably also think of system architecture
- A holistic approach encompassing both functional and technical aspects of a system
- Context is taken into account
- Well-used in practice, especially in non-software fields



Architecture is...

> *The embodiment of* ***concept****, and the allocation of physical/informational* ***function*** *to elements of* ***form****, and definition of* ***interfaces*** *among the elements and with the surrounding* ***context****.*

Crawley et al. (2015)

Definitions

Form That, what *is* + its structure

Function That, what is being *done*, mainly structured around a value creation process

Concept A *mental model* of a system that links form to function by that embodying the main principles of the system

Notes on the model

- Architecture determines design and operational parameters, design provides their values
- Because the model contains structure of things, it is deeply linked with the concept of complexity
- Very multidisciplinary approach (engineering, management, leadership, cybernetics, mathematics etc.)
- Intrinsically holistic and linked to system thinking

Discussion point

What are the key differences between system architecture and how architecture is commonly seen?

Bibliography

References

Ali Almossawi, Genevieve Flanagan, Joshua Eaton, José Manuel Arias Calvo, Andres Kütt, and Pankaj Kashyap. Knowledge Management and Diffusion. 15.905 – Technology Strategy Assignment # 2. ÕIS, April 2011.

George E. P. Box. Science and statistics. *Journal of the American Statistical Association*, 71(356):791–799, 1976.

Edward Crawley, Bruce Cameron, and Daniel Selva. *Systems Architecture: Strategy and Product Development for Complex Systems*. Prentice Hall, 2015.

W David and Liam Fahey. Diagnosing cultural barriers to knowledge management. *The Academy of management executive*, 14(4): 113–127, 2000.

Cornelis A De Kluyver and John A Pearce. *Strategy: a view from the top*. Prentice Hall, fourth edition, 2012.

Kenneth C Laudon and Jane Price Laudon. *Management information systems*, volume 6. Prentice Hall New Jersey, 2000.

Mark Lipton. Demystifying the development of an organizational vision. *Sloan Management Review*, 37:83–92, 1996.

Jerry Luftman. Assessing business-it alignment maturity. *Strategies for information technology governance*, 4:99, 2004.

Vitruvius Pollio. *Vitruvius: The Ten Books on Architecture*. Harvard university press, 1914.

Richard Rumelt. *Good strategy/bad strategy: The difference and why it matters*. Profile books, 2011.

Sun Tzu. *The art of war*. Orange Publishing, 2013.

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Questions?