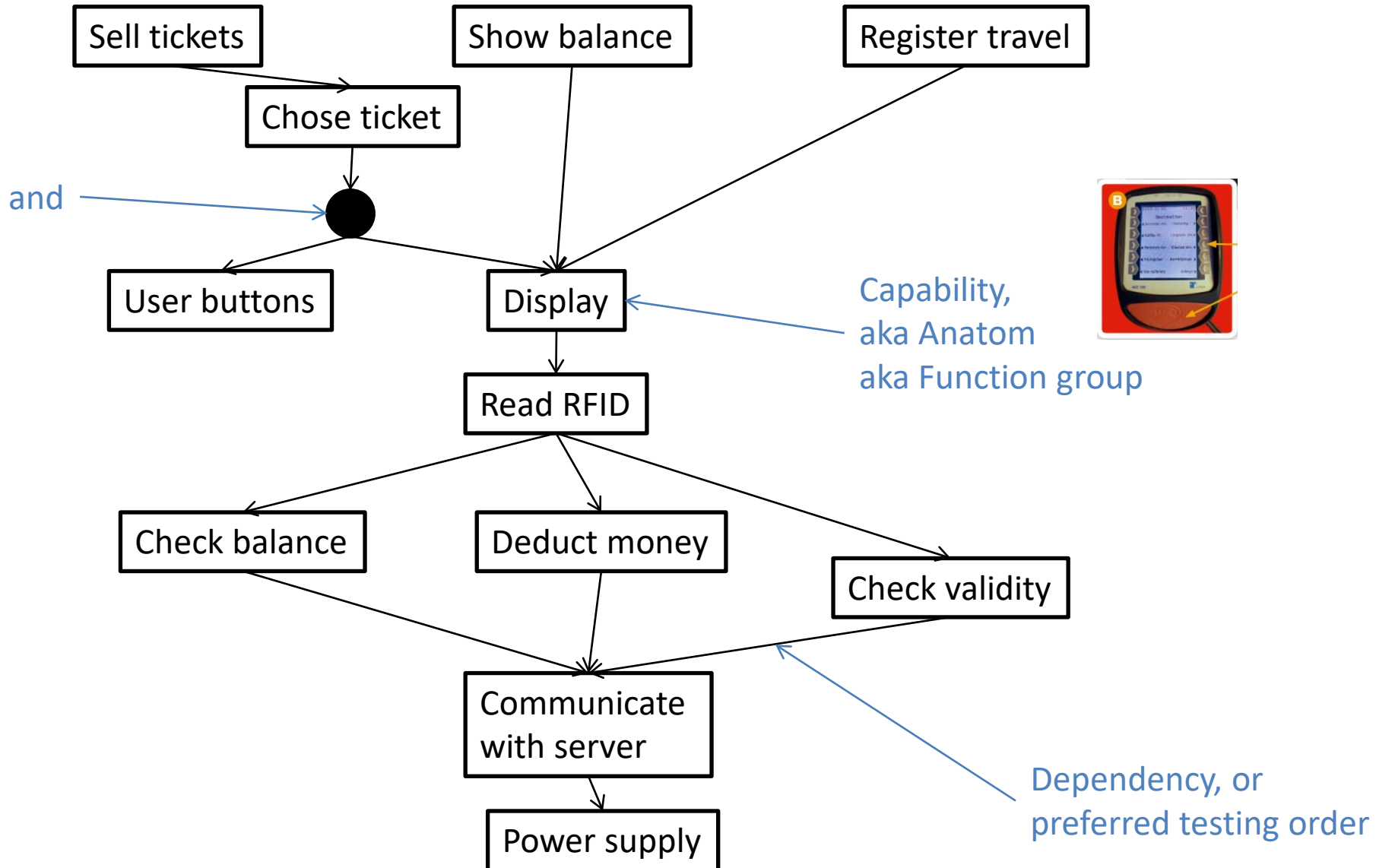# What is a system anatomy?

By
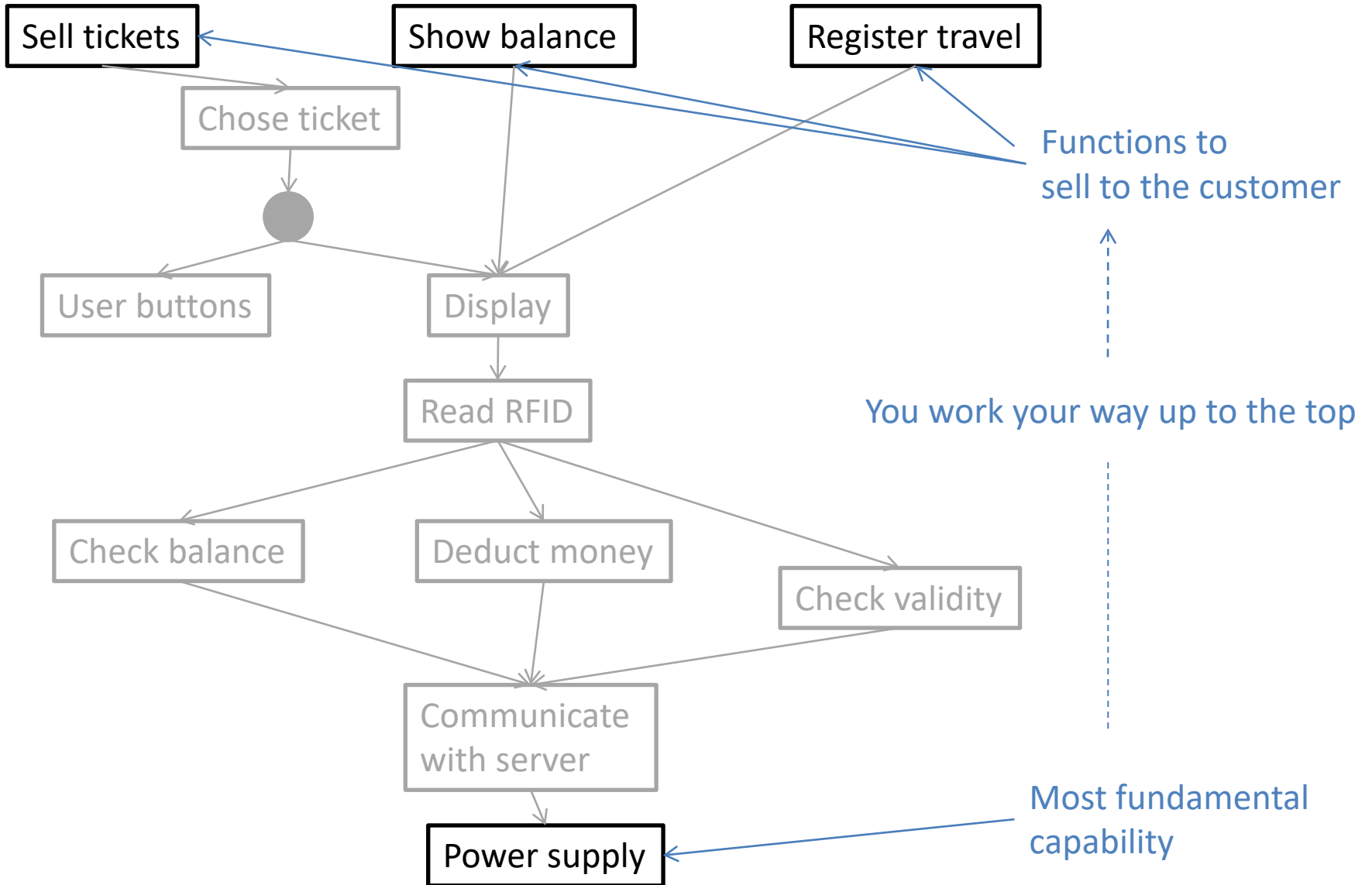
Kristian Sandahl

What is a system anatomy?

- A directed, acyclic graph of functional capabilities from a usage perspective
- A common understanding of a large product
    - Aligns the co-workers' inner pictures of the system
    - A means for communication
    - A means for decision making
- A basis for integration planning
- A basis for project planning
- A social accomplishment
- It is **not** an exact, unique, formal description
- Works in both agile and stage-gate project models
- Term coined by Jack Järkvik in early 1990's

Example: The old local bus card reader

Sell tickets

Show balance

Register travel

Chose ticket

and

User buttons

Display

Capability,
aka Anatom
aka Function group

Read RFID

Check balance

Deduct money

Check validity

Communicate
with server

Dependency, or
preferred testing order

Power supply

Layout of an anatomy

Sell tickets

Chose ticket

User buttons

Display

Read RFID

Check balance

Deduct money

Check validity

Communicate with server

Power supply

Show balance

Register travel

Functions to
sell to the customer

You work your way up to the top

Most fundamental
capability
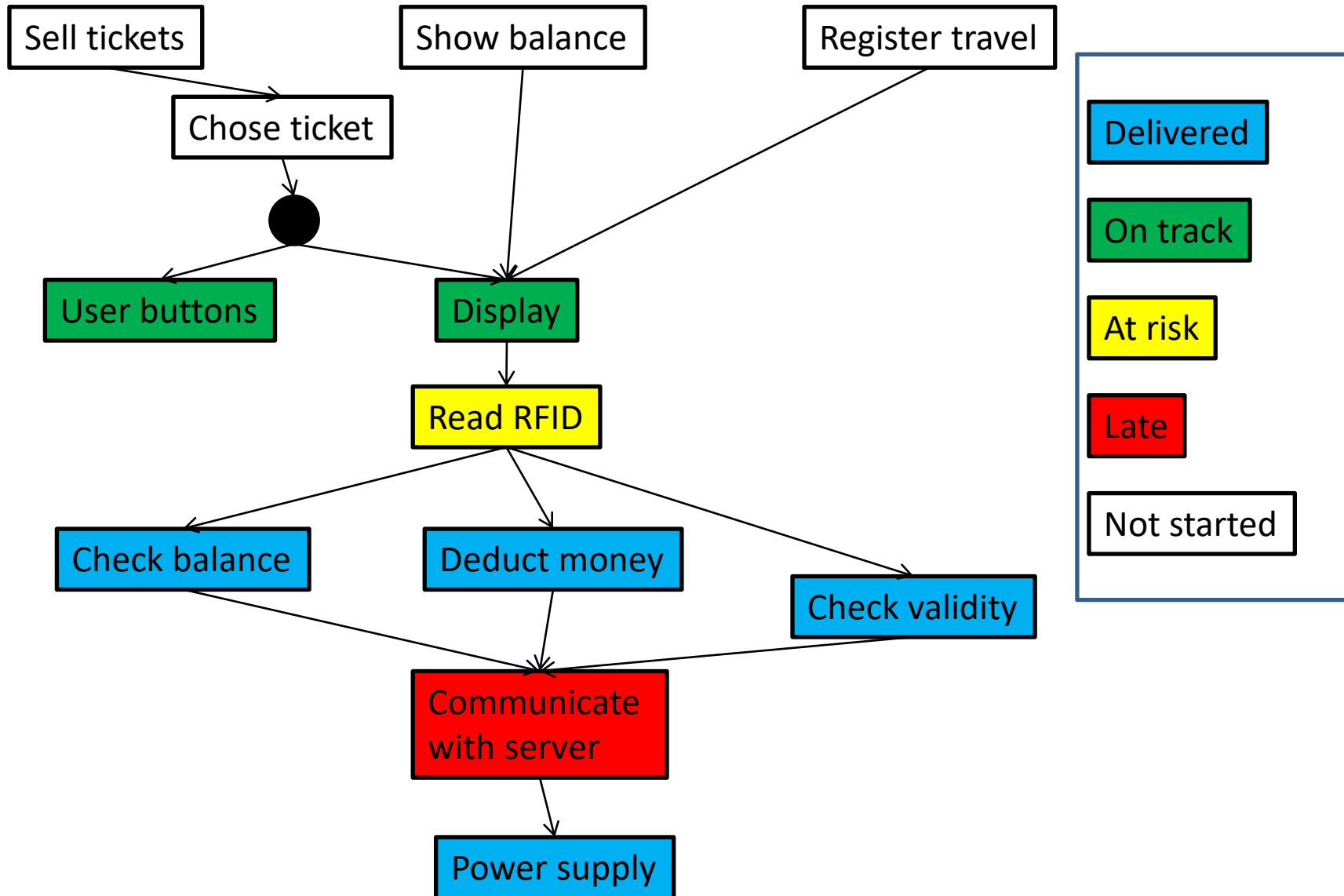
Example: Organic integration plan
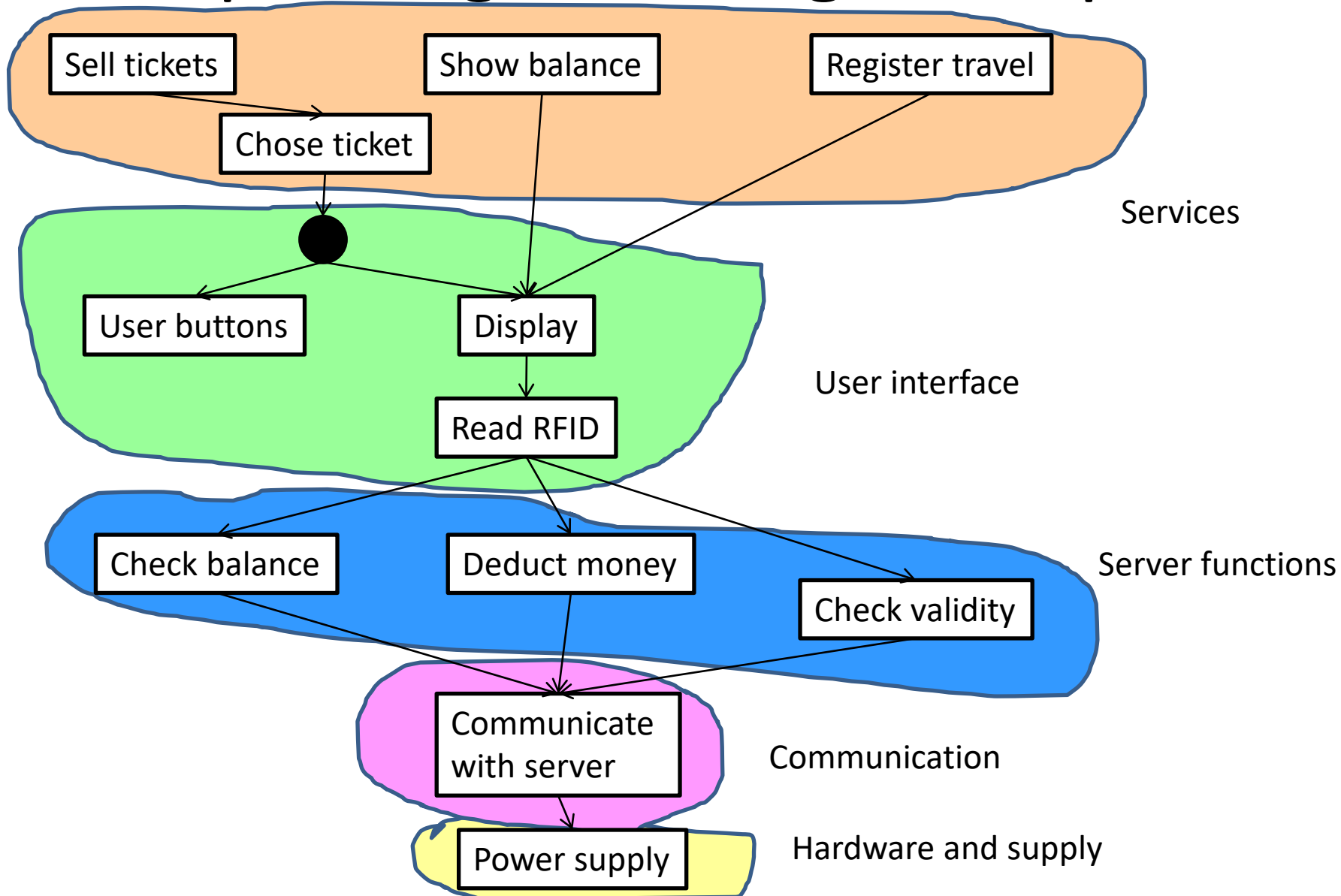
Example: Twist the figure for a development plan
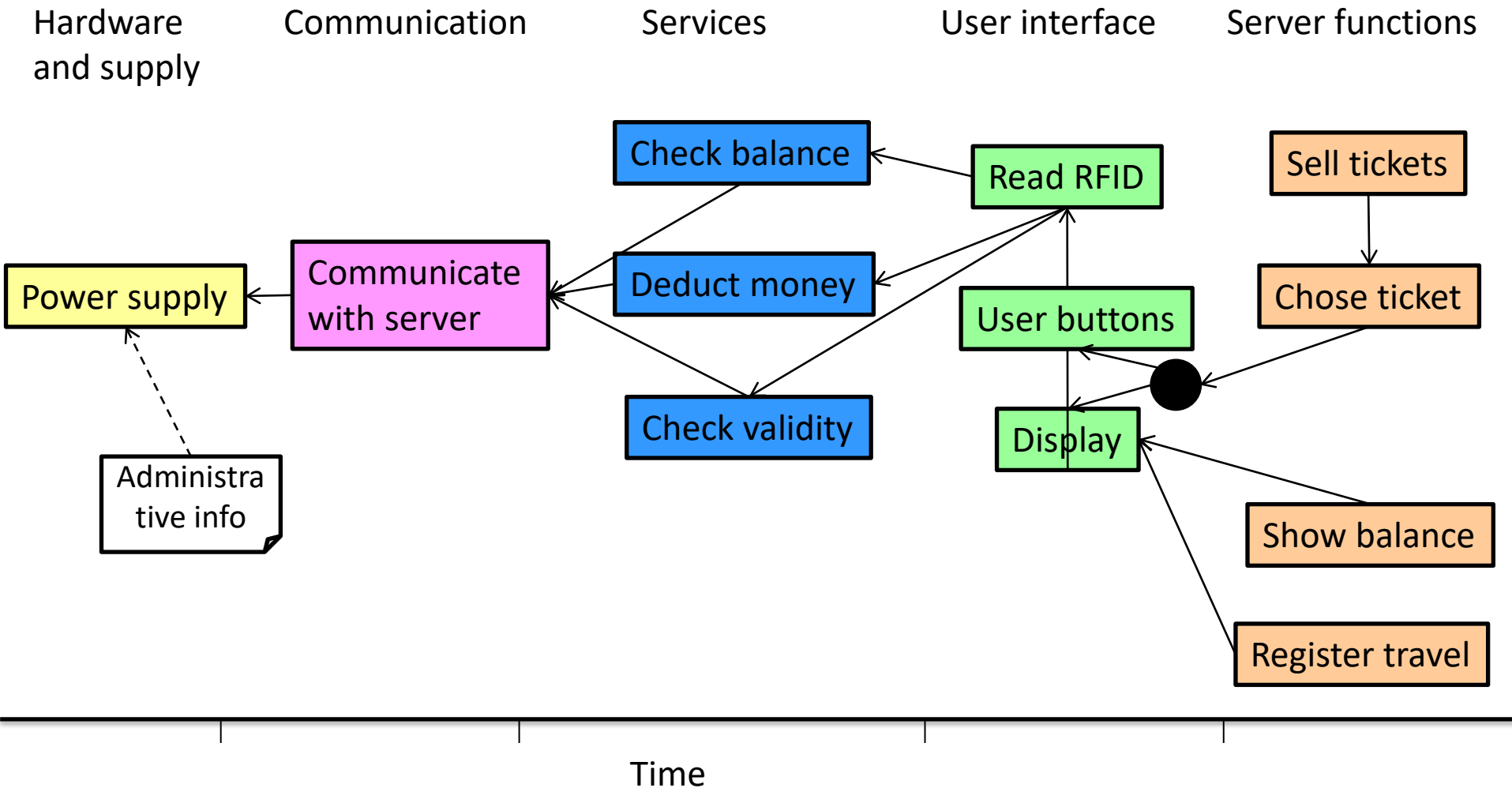
Example: Use colour code for progress tracking

Sell tickets

Show balance

Register travel

Chose ticket

User buttons

Display

Read RFID

Check balance

Deduct money

Check validity

Communicate with server

Power supply

Delivered

On track

At risk

Late

Not started

Anatomy for a telecom-processor

ERICSSON

SFC SW (33)

MASFault handling SFC (HW) (33)

MASfault handling SFC (SW) (33)

MIP for SFC (33)

LA for SFC (SW) (33)

AXE Parameter CPS-SW (20, 30, 33)

MASFault handling capacity (HW)(33)

MIP I-test for SFC (33)

SFC APS (33)

AXE Parameter DBS-SW (20, 30, 33)

SerialRP bus at FC (20, 30, 33)

FCSUC with new FURAX interface (20, 30, 33)

IPU HW for SFC (33)

Loading functions (SW) (33)

No StopCopy (20, 30)

Communication buffer (Restart) (30, 33)

Communication buffer CPS-SW (20)

SYREI Initiated reload (30, 33)

Backup in 212 33

MASfault handling capacity (SW) (33)

AXE Parameter APS (20, 30, 33)

MIP Support for No StopCopy(20)

Increase number of blocks to 4K (SW) (30, 33)

ParallelStart (33)

TestMeasurement (SW) (33)

MAS CPT for capacity (33)

APS Support for Communication buffer (20, 30, 33)

OCS over IPNA (30, 33)

IPNA Error handling (30, 33)

CPS Kernel (SW) (33)

MAS (SW) 100Mbit Ethernet termination 212 30

StartUp, Single CP (33)

CPT Initiate reload (30, 33)

Initialload (33)

MAS (SW) Increase of MIP Program store (30, 33)

CP Reload from IPNA (30, 33)

IPNA Load from AP (30, 33)

CreateInitial dump (33)

MIP for Capacity (33)

De-Compress dump in CP (20, 30, 33)

MIP I-test for IPNA (30, 33)

MIP I-test for Capacity (33)

DSU HW (30, 33)

Compress dump in I/O (IO 20, 30, 40)

IPNA Start (30, 33)

IPU HW for Capacity (33)

APG 40

Originator: Lars Taxén
Linköpings Universitet

How do we create an anatomy?

- All participants bring functional requriement material

- Work in teams of 6 - 12 people, compare and negotiate results periodically

- Identify function groups as anatoms

- Brainstorm with yellow stickers

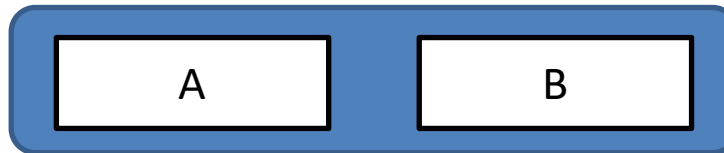- One sheet-of-paper => 30-60 anatoms

- Check soundness

Originator: Joakim Pilborg, KnowIT
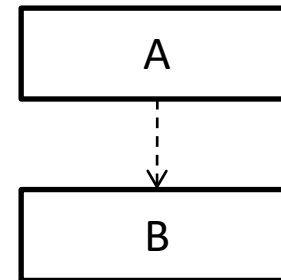
Check soundness

- Alignment with use-case model (if any)
- Alignment with architecture
- Money-making functions at top
- Fundamental functions at bottom
- Integration and test realistic
- Some more notations:

(>=1)

OR-symbol

[A | B]

A and B depends on each other

[A]
↓
[B]

Outstanding question regarding dependency between A and B

Possible agenda

Tis 6	Ons 7	Tors 8
	Technical introduction 08:00–09:00	**Write 4-8 lines descriptions plus references** 08:00–10:00
	Method rehersal 09:00–09:45	
	Identify anatoms in groups 10:00–11:15	**Compile information share anatomy** 10:15–11:45
	Evaluate anatoms 11:15–12:00	
What is an anatomy? 13:00–14:00	**Develop anatomies in groups** 13:00–15:00	
	Unify anatomies 15:15–16:15	
	Distribute homework 16:15–17:00	

Grounding

- Strong experience base

- Theoretical evaluation in:

Taxén, L. and Lilliesköld, J. (2008). Images as action instruments in complex projects, *International Journal of Project Management*, **26**(5), 527-536.

DOI: doi:10.1016/j.ijproman.2008.05.009

Create an Anatomy for an ATM

Automated Teller Machine, ATM. A computer-based system in a kiosk allowing the user to conduct banking transactions. Functionality:

1. The ATM shall allow the user to withdraw cash and to check the balance of his/her account but only if the ATM card is OK and the PIN-code is correct.
2. The ATM-card is kept if wrong PIN is entered three times in a row.
3. A receipt shall be given for all transactions.
4. There shall be a possibility for the user to change his/her PIN-code.
5. If there are too few bank-notes left or the connection to the bank is lost, the ATM shall be automatically closed

Plan

Time	Major activity
13:15-13:40	Introduction, All
13:40-13:50	Identify functions, in Teams rooms
13:50-14:00	Evaluate and agree on functions, in Teams rooms
14:00-14:15	"Lunch break"
14:15-14:45	Produce anatomies, in Teams rooms
14:45-15:00	Summary, All

Suggestion: Create a common PowerPoint and draw in that one.