

Practice of Enterprise Modelling Conference, Vienna 2018
Practicing Open Enterprise Modelling with OMiLAB Workshop

Enterprise Adaptability Using a Capability-oriented Methodology and Tool Support

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Dimensions for analysing and evaluating enterprise adaptability

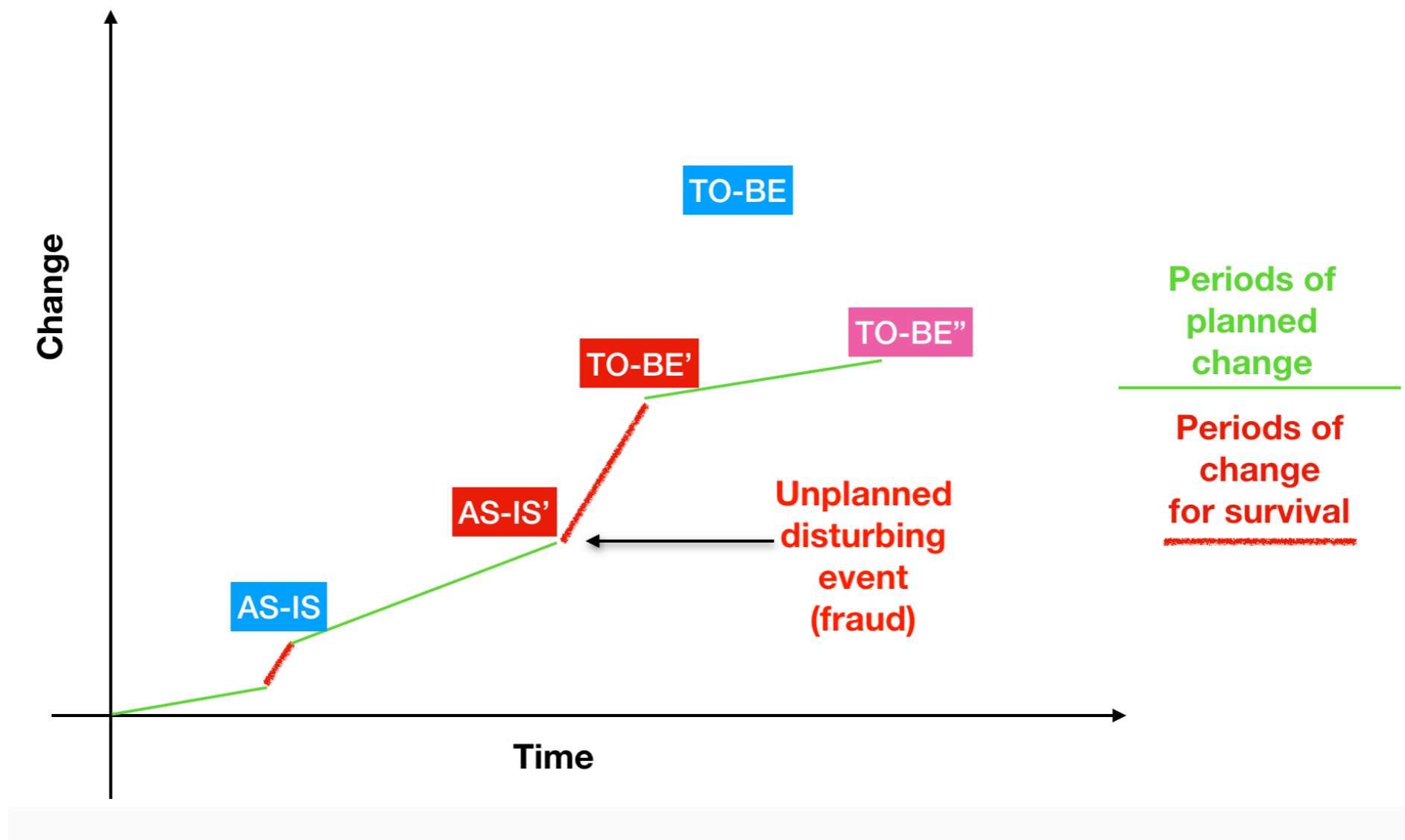
Dimension 1: Complexity of the environment (external & internal)	Dimension 2: Managerial (Strategic, Tactical, Operational) Profiling	<i>Dimension 3: Artifact-integrated components</i>
Probe-Sense-Respond strategy CAS characteristics Broad business ecology Multifaceted context capture SIDA & PDCA loops Top-down/bottom-up/lateral learning	Clarification and proper addressing of strategy, tactics, operations Purposeful/Purposive system Outcomes/Outputs Qualitative/Quantitative information	<i>Adaptability transformations Variability support Modularity Positive and negative feedback Patterns</i>

Adaptability - degree to which adjustments in practices, processes or structures of an entity are possible, to projected or actual changes of its environment (Frizke, Schulz, 2005). Those changes are incorporated by context, representing current situational environment of an entity, such as an enterprise.

Capability - the ability and capacity that enable an enterprise to achieve business goals in certain context (Grabis et al., 2016)

CDD methodology (Bērziša et al., 2015) (Grabis et al. 2016) (España et al., 2015), ... is consisted of: a **capability design process** that describes how to design capabilities by using process models, goal models and other types of **enterprise models**, which origin from the 4EM framework (Sandkuhl et al., 2014); **context modelling** describes the variations in the enterprise environment; and **run-time adjustment** for enabling adaptation by actualization of adequate capabilities

Planned and unplanned change - and adaptability



Planned and unplanned change - and adaptability for combining planned transition and alternatives (of 4EM process) and unplanned ones

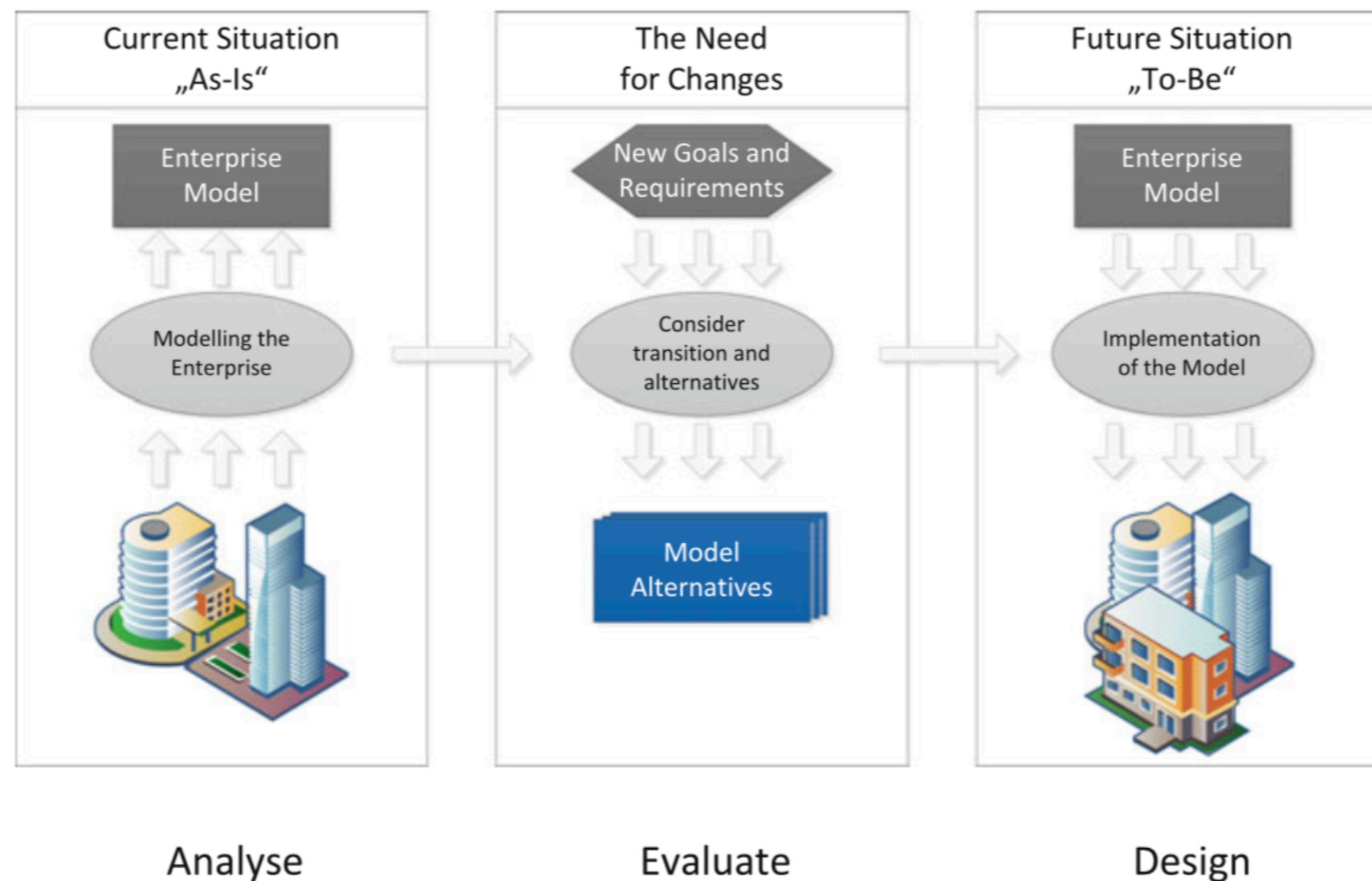
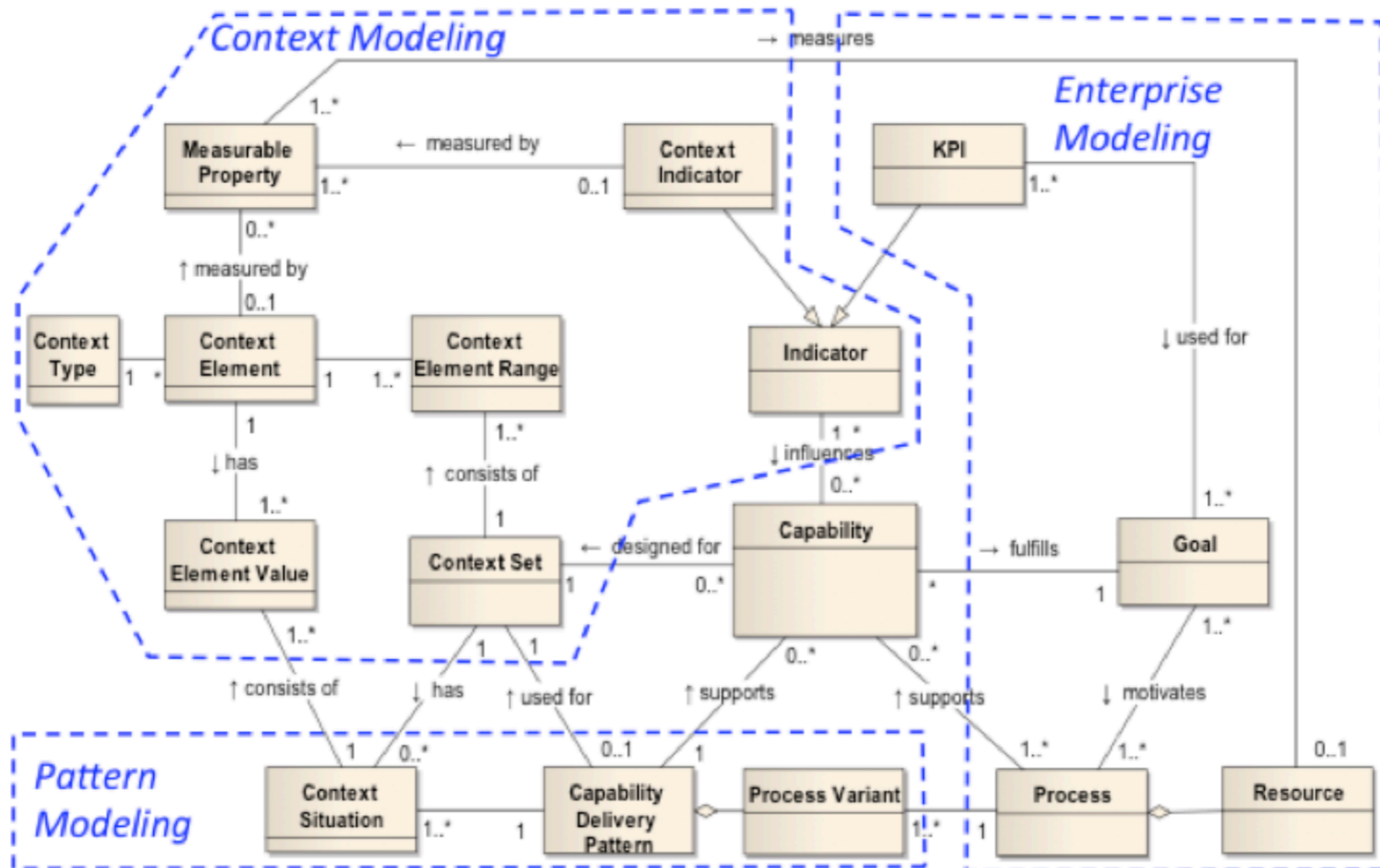


Fig. 7.3 Essential tasks of the 4EM process

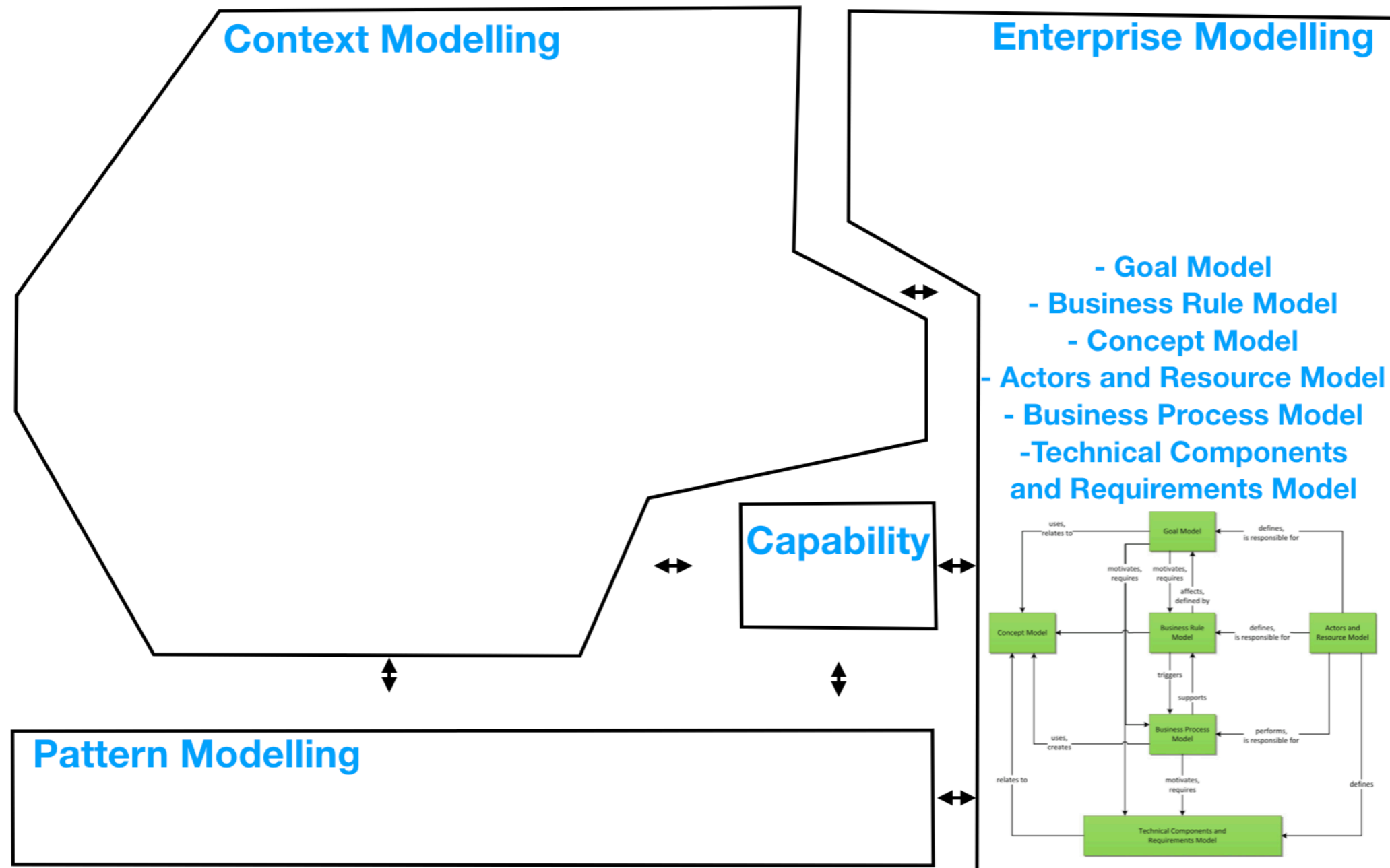
(Sandkuhl et al., 2014)

Main components of CDD methodology



(Bērziša et al., 2015) (Grabis et al. 2016) (España et al., 2015)

Generic use of the main components of CDD methodology



The 4EM sub-models

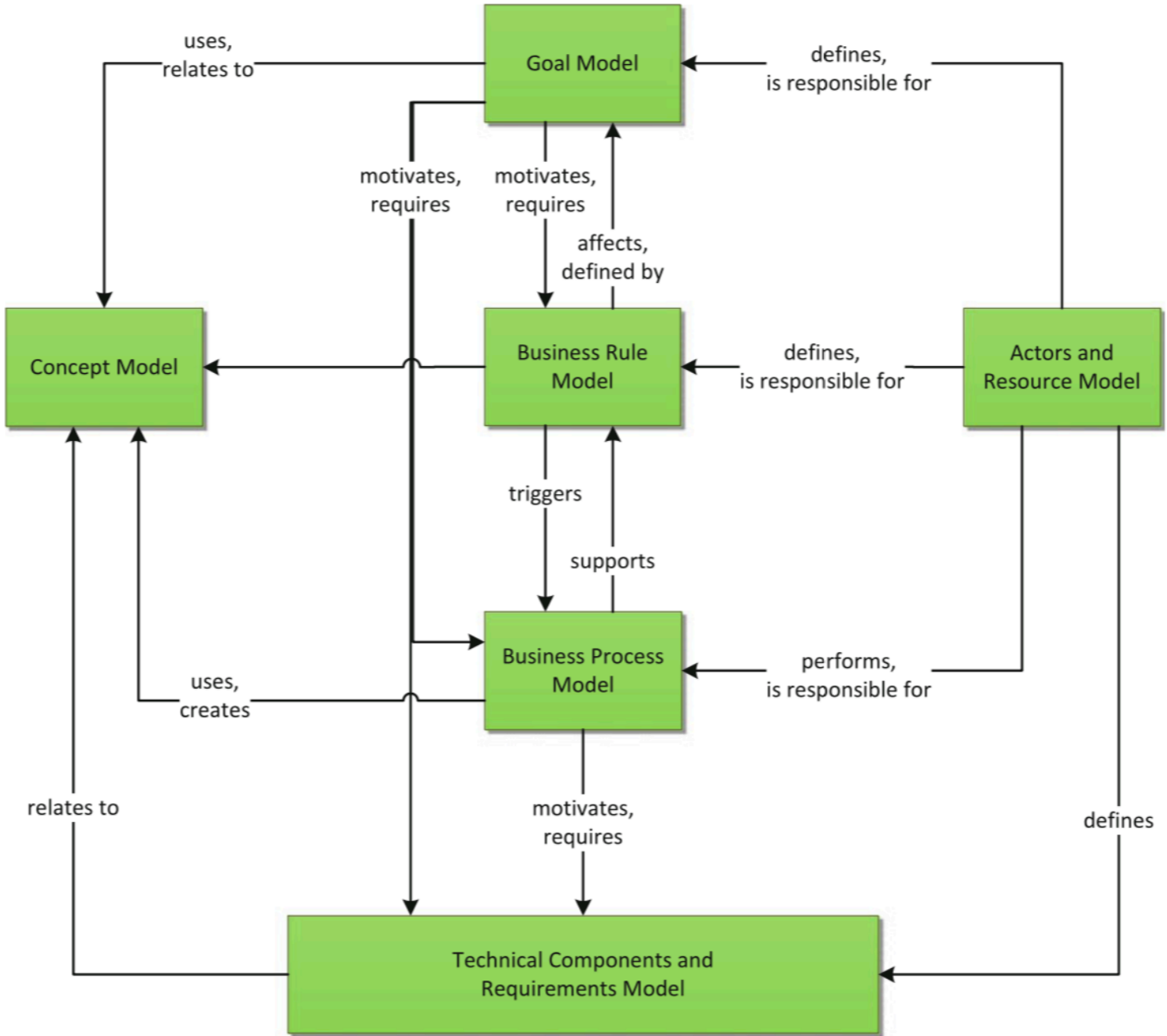


Fig. 7.2 Sub-models of the 4EM approach and their relationships

(Sandkuhl et al., 2014)

The timeline of actual developments ...

The AS-IS state

(AS-IS state):

BUSINESS DESCRIPTION, STRATEGY, BUSINESS RULES, CURRENT DEVELOPMENT AND CONTEXT

International financial institution with HQ in developed EU is opening micro-finance banks in developing countries across the globe. Up to the moment it has 23 banks (acting as sister-banks), each with different maturity on the market, all started from Greenfield operations.

Strategic position is:

- Microfinance bank
- Responsible lending
- Combining traditional banking principles to highly-risky subprime clients through own human-intensive technology of the lending process management
- Educational role to the population in the countries
- Specific HR technology for staff (induction and on-the-job training, coaching, academies, ...) as well as recruitment
- Annual staff turnover of 25% (to attract and keep the best, in country with high unemployment rate)
- Up-or-out HR policy
- First-on-market penetration and market share
- Sister-banks learn from the experience of the other sister-banks and the HQ
- The bank accepts feedback from known persons (external or internal) (doesn't act upon anonymous complaints and reporting)

In one of the developing countries the bank has already established 20 fully-fledged branches in the past 5 years (fully-fledged branches: branches that offer payment services, deposits, lending, cards, ... and have own decision limits up to certain levels). The bank in this country doesn't plan to have any service-points (only payments, or only deposits, or only loans) or self-service points (ATMs for cash deposit/withdrawal in various currencies and e-banking transactions).

The AS-IS state

GOALS OF THE BRANCHES (AS-IS state):

Each branch needs to achieve the following **measurable, quantitative goals**:

- Monthly growth of outstanding deposit portfolio of 100.000 EUR per month
- Monthly growth of outstanding loan portfolio of 200.000 EUR per month
- Absolute amount of loan disbursements per month of 1.5 million EUR
- Percentage of arrears in loan portfolio over 30 days of less than 2%
- Newly attracted customers (private individuals and legal entities) of at least 20 per month

Each branch needs to achieve the following **unmeasurable, qualitative goals**:

- Corporate presence
- Positive reputation
- Word of mouth referral (marketing activities for brand awareness are on HO level)
- Corporate-social responsibility in the region
- Motivated staff

The AS-IS state

BUSINESS PROCESSES (AS-IS state):

Bank level processes:

- Own technology for credit risk assessment process
- Own technology for micro-finance lending process
- Process for acquisition and retention of private individuals as customers
- Process for acquisition and retention of micro and SME legal entities as customers
- Process for acquisition and retention of corporate clients
- Process for corporate-social events
- Process for Head-Office driven marketing activities
- Process for recruitment and selection
- Process for internal audit
- Compliance processes
- Process for branch opening
- Risk management processes
- ...

Branch level processes:

- Process for front office customer service on one-stop-shop (non-cash, cash, services, ...)
- Branch side of lending process
- Branch side of deposit attraction
- Credit risk assessment on branch level
- Process for arrears management (up to 30 days, above 30 days, non-functional portfolio, ...)
- Process for Branch-driven marketing activities
- ...

ORGANISATIONAL STRUCTURE (AS-IS state):

- General Managers
- Management Board
- Shareholders
- Global Audit Committee
- Head Office staff (Heads of Departments, Specialists)
- Branch staff (Branch Managers, Supervisors, Officers)

The TO-BE state and planned TRANSITIONING state

(TO-BE state):

To have opened 32 branches within the next 3 years, including the trained staff, to acquire as much of the market as possible - preferably rank in the first 5 banks in the country according high-quality loan portfolio.

(Includes outstanding loan portfolio, arrears, growth in loan disbursements, growth in outstanding deposit portfolio, growth in number of employees, staff turnover %, motivated staff, corporate presence, high reputation and first-choice-bank from PI, LE from micro&SME category, ...) - qualitative and quantitative

Migration of core banking software to new environment in the next 2 years.

NEED FOR PLANNED CHANGE (TRANSITIONING state):

- Manage efficiency in further branch opening (from 20 to 32) in terms of logistics (renting premisses, negotiations, licences, ...)
- Improve HR recruitment and induction training process for new staff
- Provide mixture of existing and new staff in new branches in the first 3 years
- Raise culture of flexibility of existing staff to temporary relocate to new cities
- Grow middle managers from internal staff
- Focus on 2 biggest competitor branches of other banks in each city and fight to surpass them
- Train staff on new software for zero-mistakes or uncertainty upon core software migration

Orientation through the stages of Prevention and Early Detection, Case Management, Repair and Remediation and 1st, 2nd, 3rd line of fraud prevention

The AS-IS' state

THE UNPLANNED DISTURBING EVENT (AS-IS' state)

One of the branches has been established two years ago in region shaken by pyramidal-savings scheme scams and the population have lost significantly their savings. The problem is fresh and the state hasn't tackled it appropriately. The branch has established itself as an EU bank that can be trusted. The first branch manager was also from a developed EU country and the staff was hand-picked by the General Managers in order to relate to the population of potential customers in highest quality, capability and professionalism.

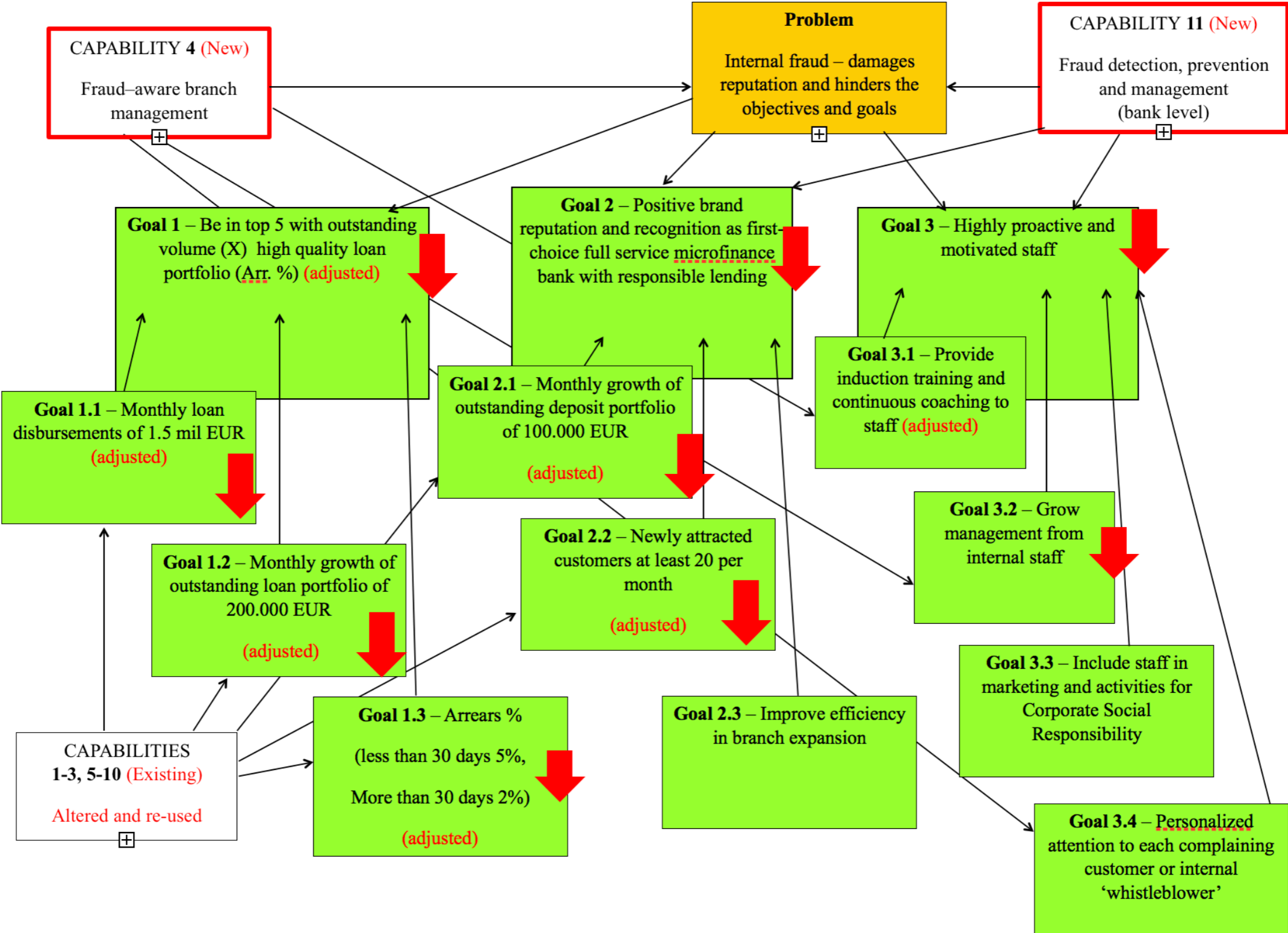
However, one year after the bank appointed local person as a manager, there are rumours for his fraudulent behaviour (corruption, refinancing of loans which is prohibited with new disbursements, imaginary customers, imaginary businesses, ...). These rumours are spreading through the population and some of the branch employees. The communication channels in the bank are horizontal, vertical, but very few lateral ones exist (only to report sexual harassment and money laundering). The Heads of departments communicate with the Branch Managers, senior with middle management, official meetings with clients are established on occasional level, upon recommendation of branch managers. There is little 'safe' line for a whistleblower or anonymous customer to push the information to Head Office and respective management. Any such attempt usually stops with the doubtful branch manager. The branch goals are delivered according KPIs and eventually there come first external complaints from known customers (directed to HO) and up-or-out promoted manager acting as whistleblower, to uncover the fraud.

The reputation risk is horrific. Customers withdraw deposits, do not repay or prematurely close loans, do not perform payments through the branch. New local highly reputable branch manager is appointed. Goals for the specific branch are reformulated in quantitative and qualitative terms. The reputation risk may cascade through all the bank and endanger its existence as a whole.

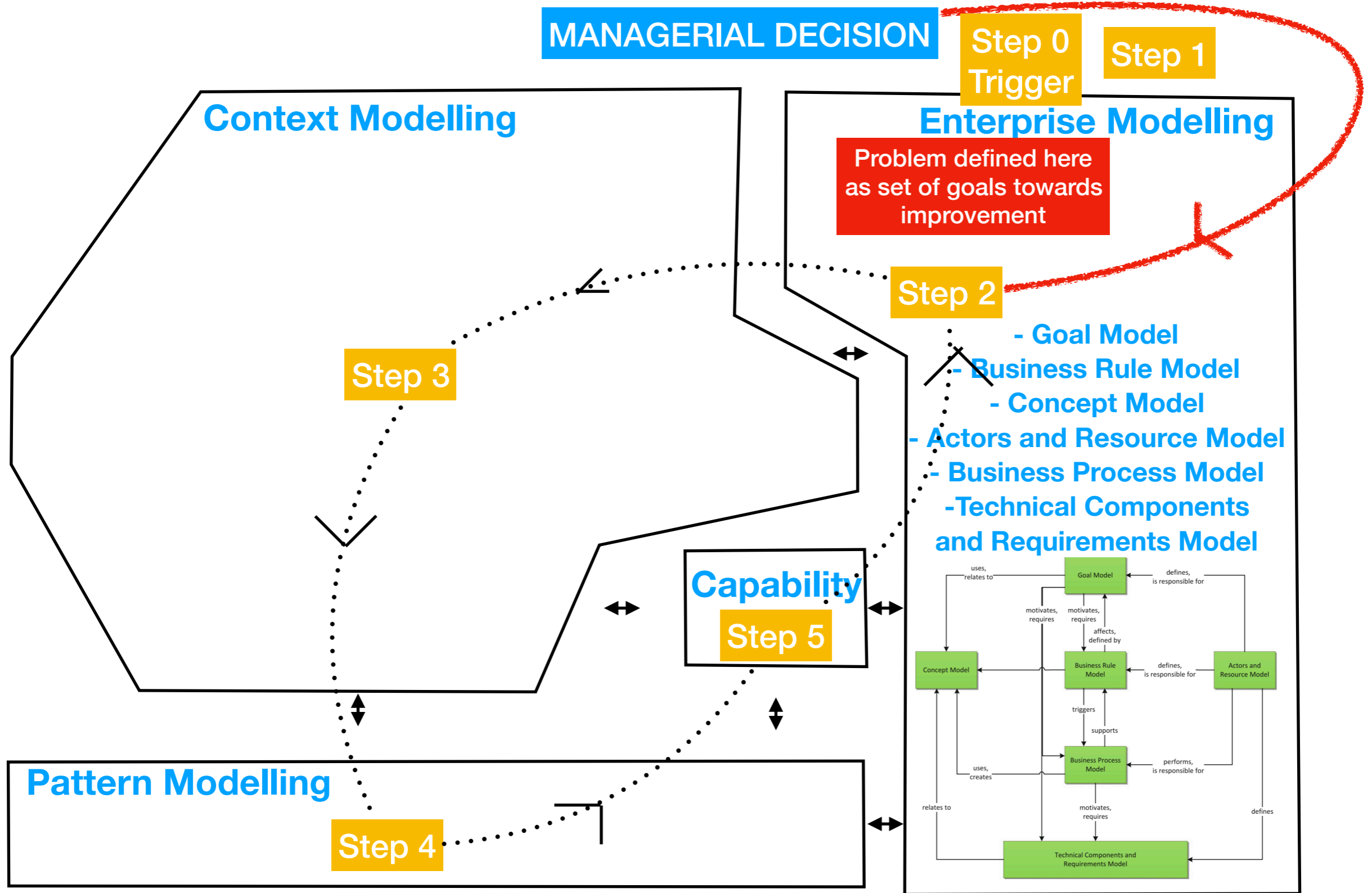
Towards the TO-BE' state

1. Alterations in the **GOAL MODEL** of the respective branch and the bank as a whole
 - This branch now needed to achieve the following **measurable, quantitative goals**:
 - Monthly growth of outstanding deposit portfolio of 10.000 EUR per month (previously 100.000 EUR)
 - Monthly growth of outstanding loan portfolio of 20.000 EUR per month (previously 200.000 EUR)
 - Absolute amount of loan disbursements per month of 250.000 EUR (previously 1.500.000 EUR)
 - Percentage of arrears in loan portfolio over 30 days of less than 5% (previously 2%)
 - Newly attracted customers (private individuals and legal entities) of at least 2 per month (previously 20 per month)
 - And additional one: Retaining of number of clients as-is (not drop towards loss of customers in numbers)
 - This branch needed to achieve the following **unmeasurable, qualitative goals**:
 - Corporate presence - to be minimised in the first 6 months after the fraud
 - Positive reputation - Damaged to the extent that influence the bank as a whole - all efforts are in this direction to improve
 - Word of mouth referral (marketing activities for brand awareness are on HO level) - to pay personalised attention to each complaining customer
 - Corporate-social responsibility in the region - increase as much as possible
 - Motivated staff - from being highly demotivated because of bad reputation, firings, resignations,
2. Alterations in the **BUSINESS RULES MODEL** of the bank
 - The governing principle stated: 'The bank accepts feedback from known persons (external or internal) (doesn't act upon anonymous complaints and reporting)' has been altered with: 'Anonymous complaints (internal and external) are to be considered'.
3. Alterations in the **CONCEPT MODEL** on bank level
 - Introduction of the concepts of 'whistleblower', 'external information source regarding fraud', 'whistleblower protection'
4. Alterations of the **ACTORS AND RESOURCES MODEL** on bank and branch level
 - The roles of Head office and Branch staff have been reconfigured in the relations with the specific branch; and/or re-populated to address the new situation
 - Some of these changes have later on expanded and been introduced to bank level, as result of the institutional learning towards fraud
5. Alterations of the **BUSINESS PROCESSES MODEL** have occurred both in bank and branch processes
 - New modelling and instantiations took place - 80% of the branch processes have been altered for this specific branch only and some have influenced into changing the business processes for certain aspects in fraud recognition, management and prevention on bank level, some even on international sister-bank level. Examples:
 - The local marketing budget has been used to perform CSR activities in the local hospital, kindergartens, schools
 - Instead of hiring external providers for the various activities, the branch staff, performed the activities
 - New lowered decision limits in the branch, and every time a HO member needed to be present
 - Arrears management has been done by HO staff temporary present on the ground
 - The local staff could not train newcomers within the next year, focusing on solving the problems
 - The BM and the supervisors ought to be present on managerial meetings with peers and senior management (not just branch manager)
 - The HO marketing capabilities have been deployed to train and support local branch staff in the what-used-to-be centralised marketing activities
 - Many open channels of communication have been established in terms of deliberate information flow
 - Process for whistleblower protection has been introduced.
6. Alterations of the **TECHNICAL COMPONENTS AND REQUIREMENTS MODEL**
 - The institution had very up-to-date own technology dependent information systems and components in place for the core banking business, as well as broad ecosystem of various components serving diverse non-core-banking needs. The situation resulted with implications in redesigning the top-management information flows towards multimodal sensing and response for fraudulent activities
 - The requirements have been re-set in being stated as (1) managerial need and (2) outcome to be achieved first, and (3) information system design second. This helped clarify situations where due to IS limitations the management couldn't properly assess or react to prompt situations.

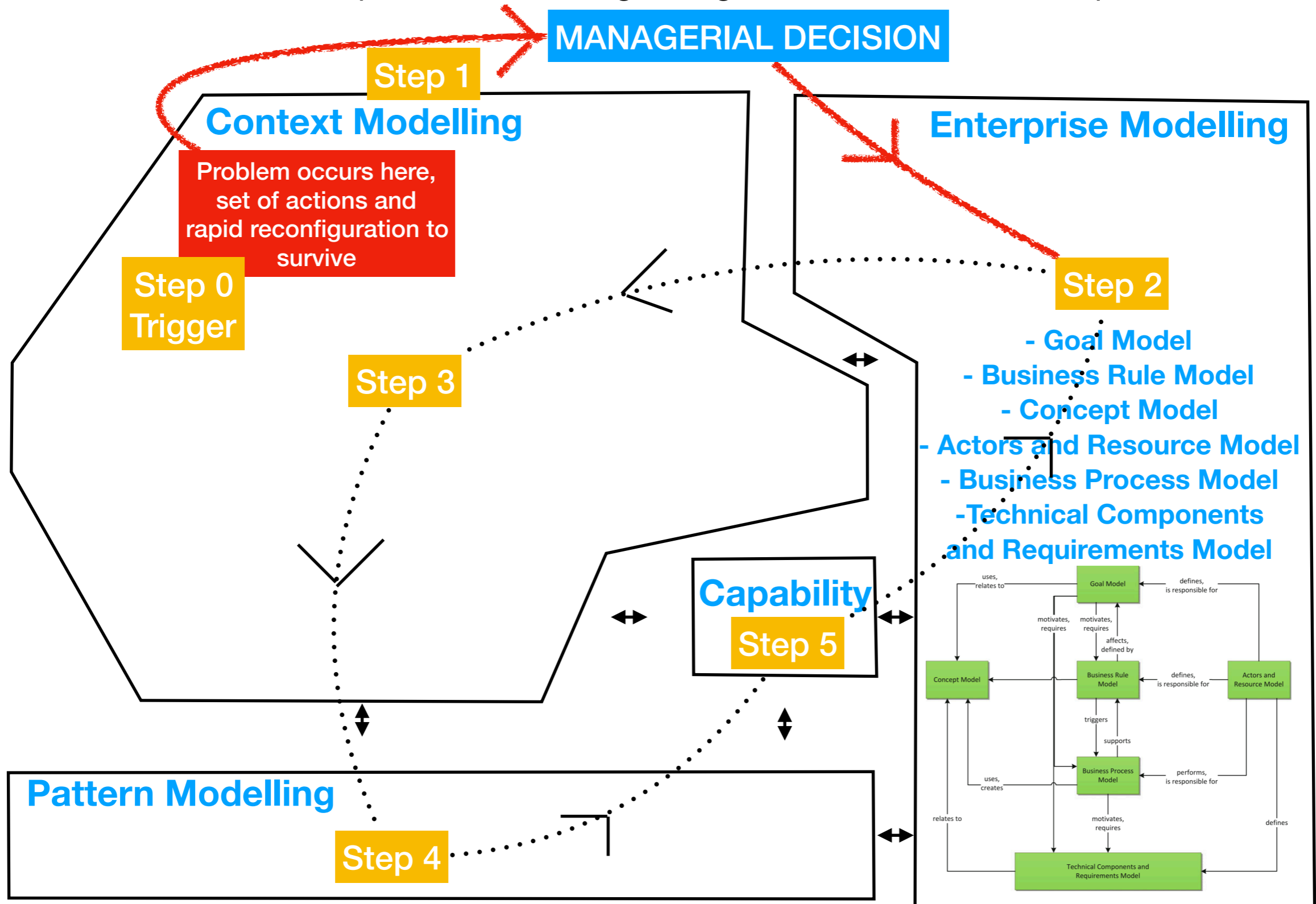
Influence of the problem (adverse event) on objectives and goals – and use of capabilities (existing and new) to address the changed context



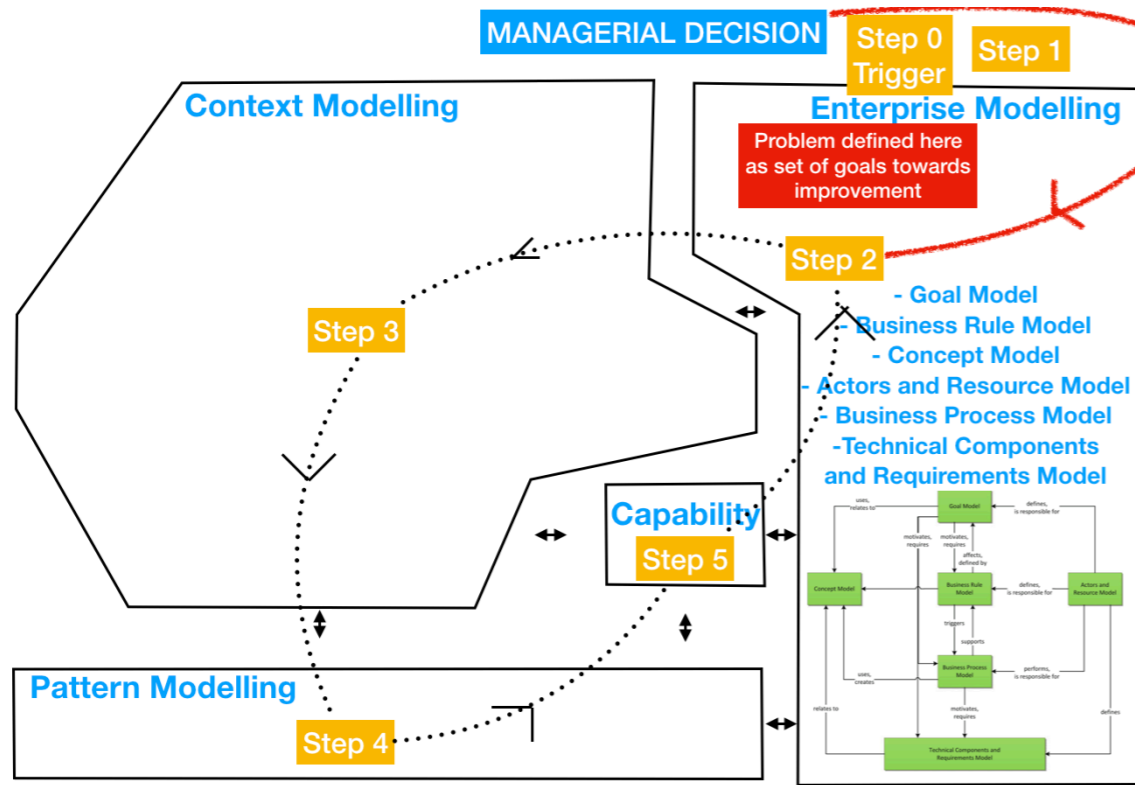
PLANNED change management flow (AS-IS transitioning towards TO-BE)



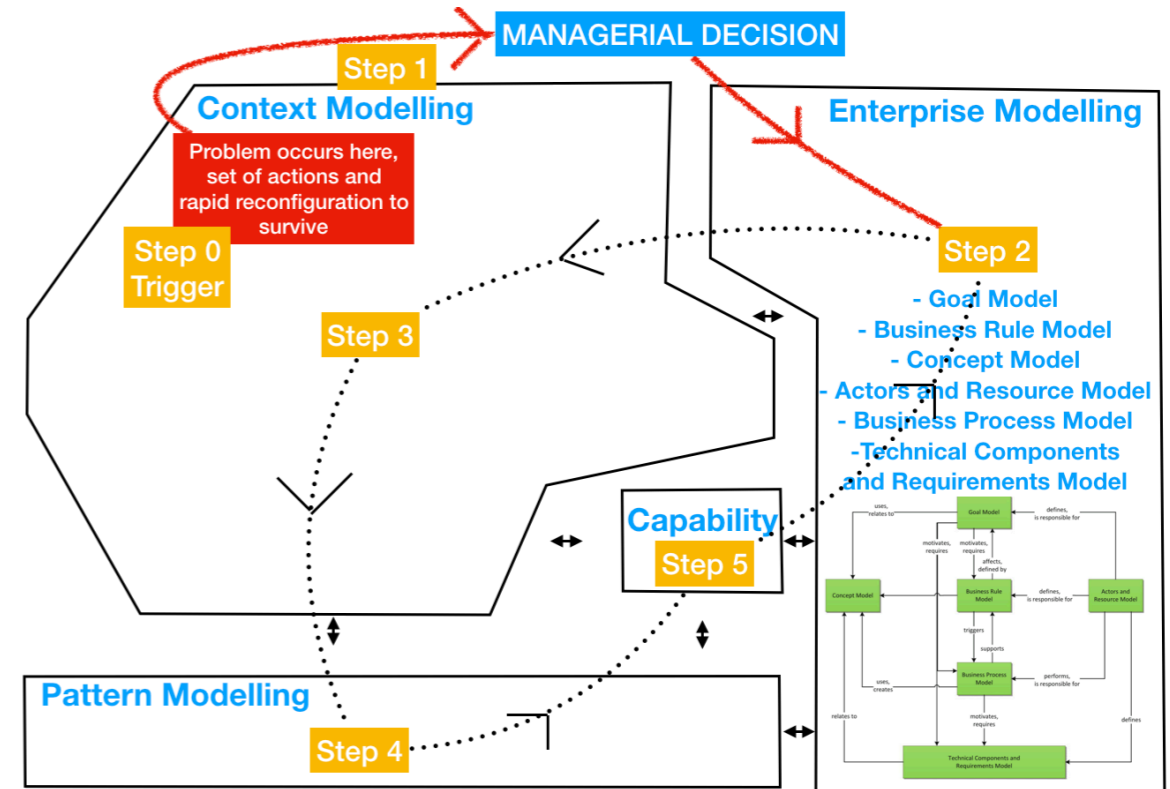
Change management flow after UNPLANNED DISTURBING EVENT that hinders enterprise existence (AS-IS' transitioning through TO-BE' towards TO-BE")



Visualising planned and unplanned change management flow for differentiation - DIFFERENT TRIGGERS AND MANAGERIAL INPUT EMPHASIS

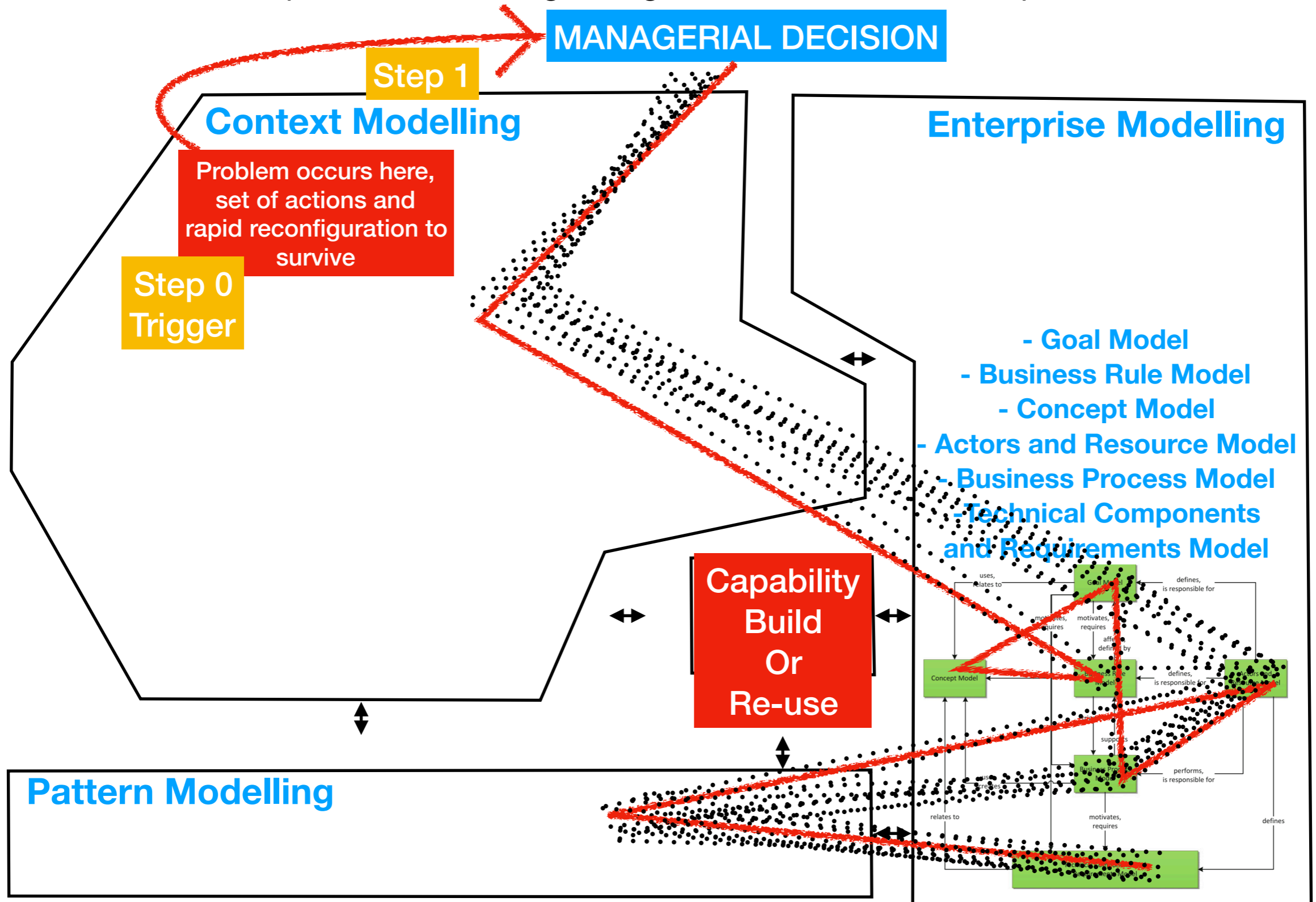


**Planned change management flow
(AS-IS transitioning towards TO-BE)**

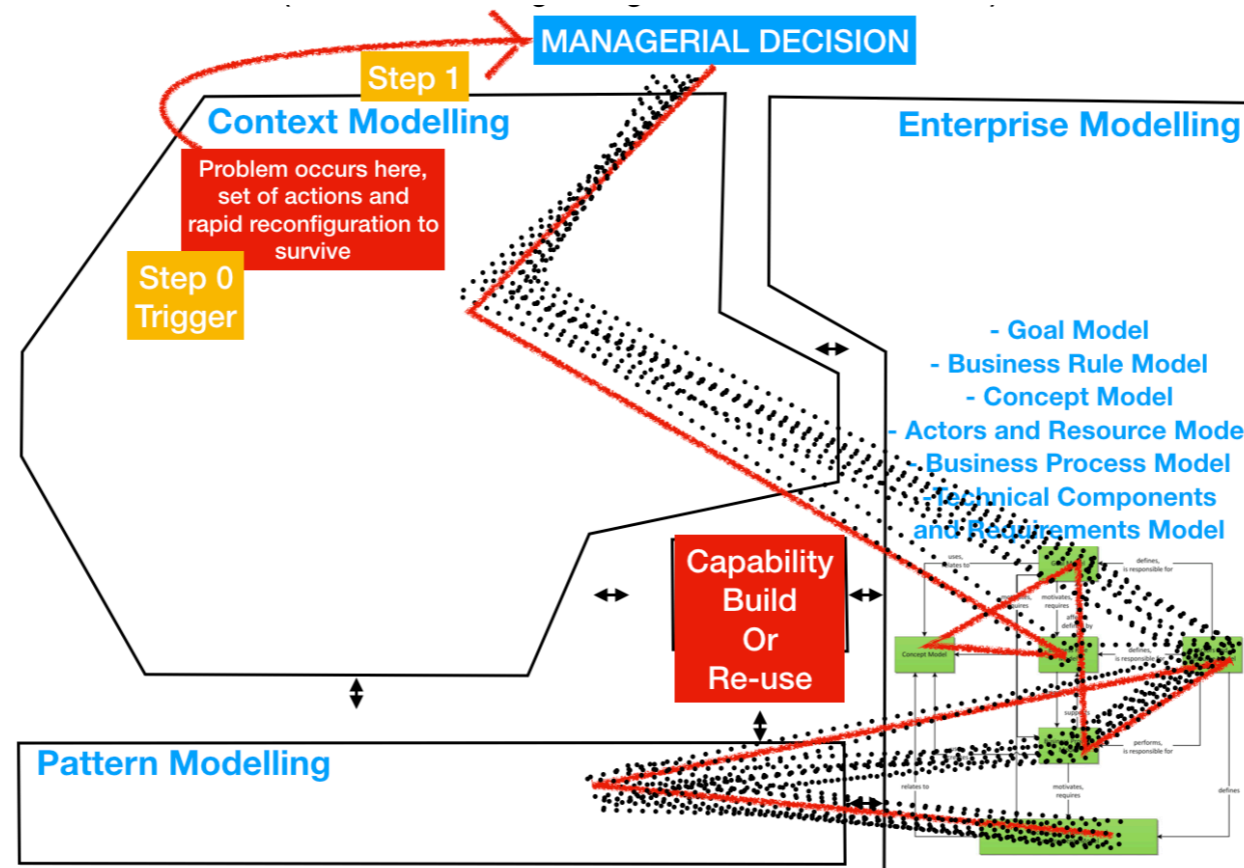


**Change management flow after unplanned disturbing event
(AS-IS' transitioning through TO-BE' > TO-BE")**

Change management flow after unplanned disturbing event that hinders enterprise existence
(AS-IS' transitioning through TO-BE' towards TO-BE")



Change management flow after unplanned disturbing event that hinders enterprise existence
 (AS-IS' transitioning through TO-BE' towards TO-BE")



Pattern of the adaptation process for alteration and re-use of existing capabilities

Managerial Decision (New context) -> (any of the 4EM sub-models except Technical&Req.) – (any of the dimension 3 aspects) – Technical&Requirements -> Information System (in general) (processes with dotted black line on Fig. 3).

Pattern of the adaptation process for newly designed and implemented capabilities

Managerial Decision (New context) -> (all of the 4EM sub-models except Technical&Req.) – (all of the dimension 3 aspects) – Technical&Requirements -> Information System (in general) (process with red line on Fig 3.)

Necessary requirements for software tool support, during the capability development, modification and re-use

Input from participants (socio-material) and their interrelatedness	Artefacts integration and their interrelatedness	Adaptation roadmap (capability development/re-use depending on triggers)
Management Contextual participants Modeling team Information Systems team	4EM sub-models Context model Pattern model Managerial decisions	Capability development for planned/unplanned events Capability modification and re-use

From our thought experiment and adaptation roadmap ...

- The *main participants* (Management, CDD+4EM artefact and team-in-place, Contextual participants and occurrences, the Information System on generic level)
- The *route* on how the enterprise behaves when introducing deliberate, planned change and when adapting to unplanned change, differentiating:
 - The *difference* between the two routes in *triggers* – planned change triggered by managerial decisions and carried out to dynamic completion by CDD+4EM; and unplanned change triggered in context, necessitating managerial decisions and being carried out to dynamic completion by CDD+4EM
 - The *difference* between the *adaptation process* flows when existing *capabilities* are *re-used/altered* for changing needs; with the situations when capabilities are *newly* designed, built and put in place, on two different levels (bank and branch)

We are deliberately *incorporating participation of management in the roadmap*, since there is little to no automatism when facilitating enterprises upwards. With this perspective, we can advise (i) managers on what happens when an entire IS mechanism of CDD+4EM is in place at their disposal for various planned/unplanned circumstances, what they can expect and do with it; and (ii) modelers, on the managerial entry-points to be considered (not omitted) to support enterprises in adaptability in dynamic environments using capability-oriented methodology.

Regarding the tool support

How the metamodeling platform ADOxx supports the hollistic, multi-participant case developments and adaptation roadmap along with the managerial needs and enterprise evolution through planned and unplanned triggers?

- the tool provides support for the **enterprise modelling** (Goal Model, Business Rules Model, Concepts Model, Actors & Resources Model, Business Processes Model, Technical Components and Requirements Model), **separately, as well as congruently** using a recently developed 4EM AdoXX module.

Suggestions for enhancements of ADOxx with:

- the modules that **support capability and context components** to help easier communication through unified modelling format, and the **method- templates** for their elicitation

The adaptation roadmap suggests towards designing **process flows** that **capture triggers** either *in context or from management* and **effectuate into new capabilities developments**; or **trace capability modification and re- use** regarding the triggers from management, context or automated ones (as prescribed in the CDD methodology).

In direction to enabling traceability and validation of a **more holistic and encompassing nature**.

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Thank you for your attention!

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<http://ceur-ws.org/Vol-2238/paper6.pdf>

