



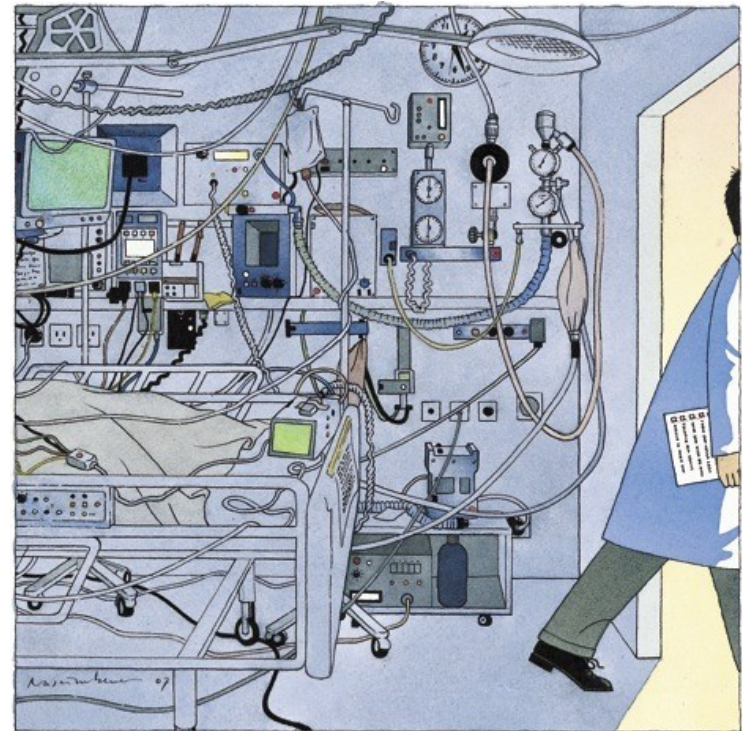
Engineering resilience into Intensive Care units

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Intensive Care Units Context

- § Production of high-risk care (pushing the boundaries)
- § Under-specified (land of the unexpected and of uncertainties)
- § Not sized for peak hours
- § The lack of care production may be more dangerous than the lack of care precaution
- § Lots of economical, political, psychological pressures



>> Recurrent overflow of operational capacities



§A “large” ICU (36 beds, about 350 staff)
§A major merging in 2006 triggering a major organizational **crisis** (turn-over, absenteeism, burn-out)

§**But:**

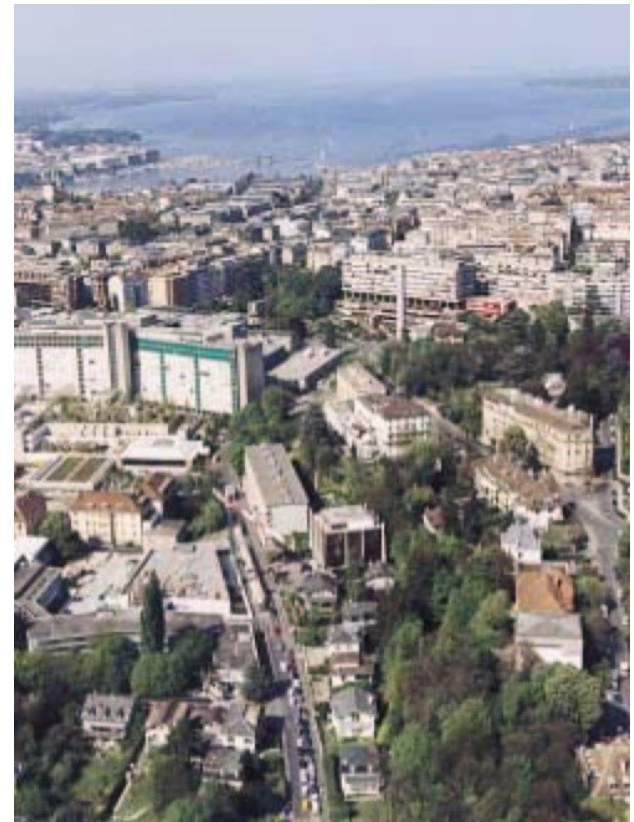
20% more patients admitted and treated

Peak hours properly handled

Decrease of readmission rates

Only 0.25 of the SAPS predicted deaths
(one of the best outcome in Switzerland for
one of the worse average SAPS)

§**The HUG-ICU has been resilient over the last period!**





Why has HUG-ICU been resilient ?

§ Can a better understanding of the WHYs of this resilience allow for stabilizing gains?

§ further improvements?

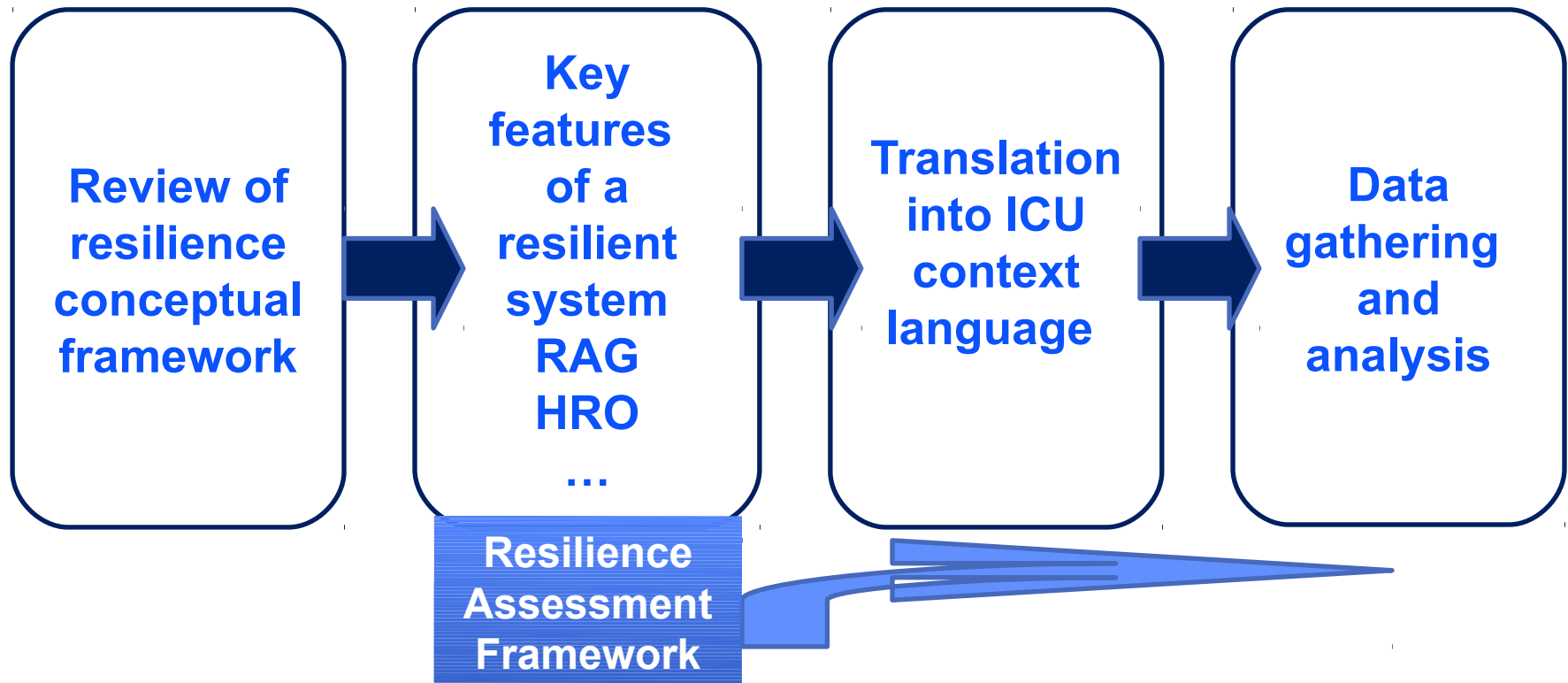
§ 24 months research project

§ Mixed team Dédale-HUG

§ Funded by HUG-ICU



Research phases





Data gathering

Observations:

« Nurse Resources
Manager »

Medical visit

Night activities

Nurses in charge of two
simultaneous serious patients

Analysis of responses to
unexpected situation development

Analysis of adverse events

Focus groups (1/2 day)

Documents review

Analysis of relevant performance,
quality and safety indicators

Interviews with all levels of
hierarchy and all main jobs

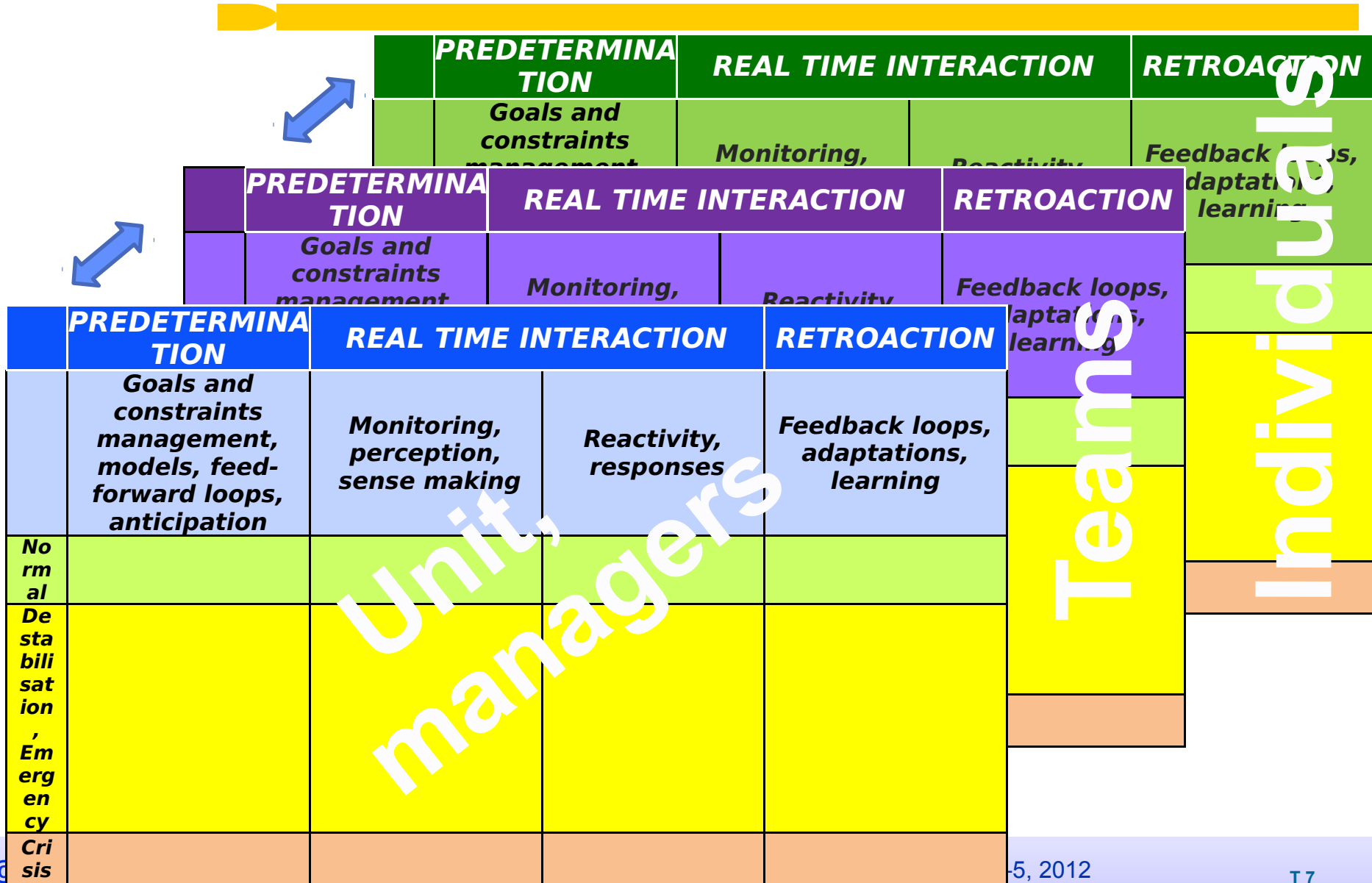
120 hours of
observation

36 individual
interviews

4 focus groups



The resilience observation framework





Observed organizational resilience features

§High level of anticipation

§High uncertainty management skills :

E.g. ability to act without a diagnosis (clinical misunderstanding)

§High tactical flexibility: frequent shifts of perspective
from care to resuscitation, from care to withdrawal

§High degree of operational flexibility

a lot of expert technical gestures but few binding protocols

§High resources management skills

Dynamic reallocation of experienced people to difficult cases

§High level of performance and stress monitoring

A rich set of indicators monitored

§High level of learning activities



Some interesting additional items

- §“Polycentric governance”
- §The role of shared values
- §“Margins of manoeuver”
- §“Constraints that deconstraint”
- §The benefits of “coopetition”
- §Trust and confidence
- §The role of individual commitment



From organizational crisis to “polycentric governance”?

§2006 merging triggered an organizational crisis

§Top management layer: disagreements, lack of legitimacy

§Self organization among the physicians staff to cope with daily needs

§Physicians had to manage admission decisions: potential conflicts with other Departments in the hospital

§Minimum conflict line: admit anyone “deserving” intensive care

§Merging > more beds > more flexibility



High level values

§ Developed corresponding high level goals and values

§ Key paradigm: “Distributive justice”

Anyone deserving intensive care must be admitted

Redistribution of available care resources

No privilege for patients already admitted: one in, one out

§ High solidarity among physicians, high degree of adherence to that goal

§ Supported by management, extended to the whole staff

§ Shared values that make sense of the job (decisions)

§ Patient flow management becomes a critical issue



management of “margins of manoeuvre”

§ Permanent anticipation of potentially available beds during staff meetings, pre-visit, etc.

Continuous update of “jokers” list

§ Nurse Resource Manager: a senior nurse in charge of dispatching nurse resources,

anticipating potential admission requests (in contact with other departments in the hospital)

monitoring response capacities

visiting nurse teams at work to check state and potential

talking to physicians, attending staff meetings

§ Update of back up solutions within other departments: agreements with trustable staff (ex ICU) to accept “delocated” IC



Constraints that deconstraint

§Rules for autonomy:

flexible roles and levels of delegation (to residents, to trainee nurses, to new comers)

depends on workload and individual competence image

protection envelopes: sentinel events, deviation from target margins, alerting signals, call back rules, ...

Cross-jobs monitoring (e.g. senior nurses on residents)

§Rules for adapting rules:

High level values (“patient interest”) drives risk management

“Sacrificing” decisions principles

Team involved in decisions, not a solo exercise

Senior or additional expert advice taken when needed



The benefits of “coopetition”

§Very strong, binding team work culture

strong values of solidarity and mutual support among caregivers

strong group pressure on individuals

§But different roles still have different interests and visions

E.g: difficult case admission during night: interesting case for doctors, lot of disturbance and additional work for nurses and caregivers

§This “coopetition” is a moderator of decision making

binds decision makers to play the consensus game, to adhere to accepted values and principles

§Collibration (Dunsire): the expression of different interests is encouraged to facilitate a balanced decision



Trust and confidence

§ Because of the flexibility of tasks and roles definition, a critical condition of robustness is the coherence between allocated competences and needed competences

§ A permanent, dynamic, competence allocation process
A thorough competence management process at the unit level

Also implies that individual and collective competence images be accurately tuned, far beyond official and formal qualifications

§ In other words mutual trust and self confidence are a core issue

§ There are many formal and informal mechanisms to establish the relevant levels of trust and confidence



The role of individual commitment

- § High degree of personal commitment (for a proportion of staff) and devotion to the job and to the team
- § Resilience at the organization level partially gained through individual “heroism”
- § A high individual price justified by shared values & team solidarity, and rewarded (compensated) by social recognition
- § People who cannot sustain it for a long time leave the Unit
- § Turn over as a “resilience” factor at the organization level !
 - But a high price to pay: long and difficult-to-build expertise is lost as well



Conclusion

§ Most resilience features (+ HRO) as described by theory can be easily observed

§ ... but most have not been intentionally « engineered » into the ICU

§ Rather emerged from empirical evolution, and were facilitated by self organization processes through the organizational crisis

Are they just the “natural” response of an organization facing the kind of constraints an ICU faces?

§ Could they be more intentionally engineered ?

§ Is crisis a good strategy to design a resilient system?



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Thanks for your attention