Relations between ICT Architectures and Organizational Complexity and Risk

Inter-institutional Information Exchange in Health Care in Norway 1987-2010

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The beginning

- 1987: Fürst's lab report transfer solution
- 1988: Telenor (Telemedicine in Northern Norway)
- Lab report transfer solutions
- Standardizing
- Statskonsult's Infrastructure programme: EDI
  - Physicians' invoices
- CEN TC/251, KITH

- **Consensus: EDI**

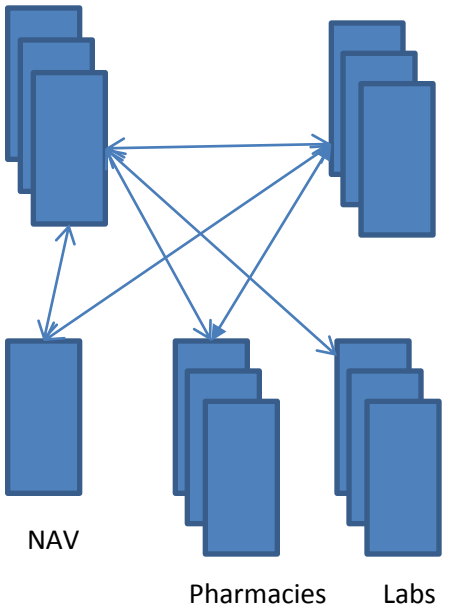
The continuation

- 90-ies:
  - Lab reports & orders, prescriptions, physicians and out-patient clinics' invoices, admission and discharge letters, ..

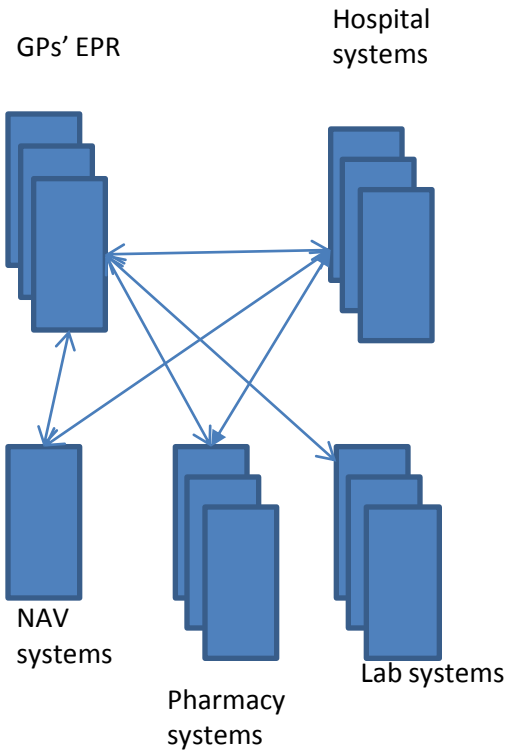
  00-ies:
  - Lab reports & orders, prescriptions, physicians and out-patient clinics' invoices, admission and discharge letters, ..
  - ELIN projects
  - The message effort (meldingsløftet)
  - ePrescription
- Status: Modest successes, coordination problems, always someone not doing as promised

The EDI Paradigm

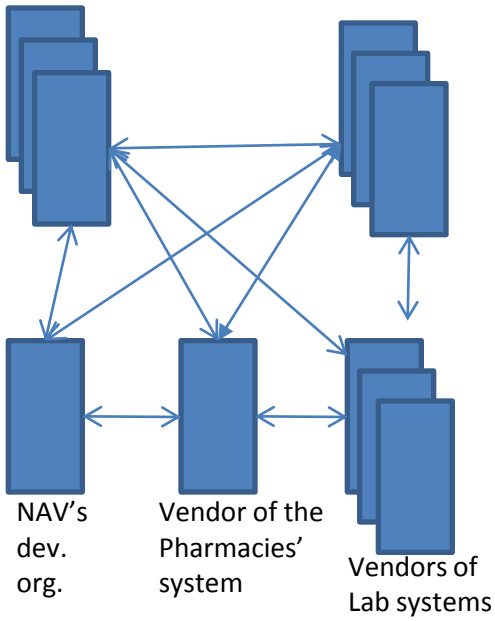
Information flow



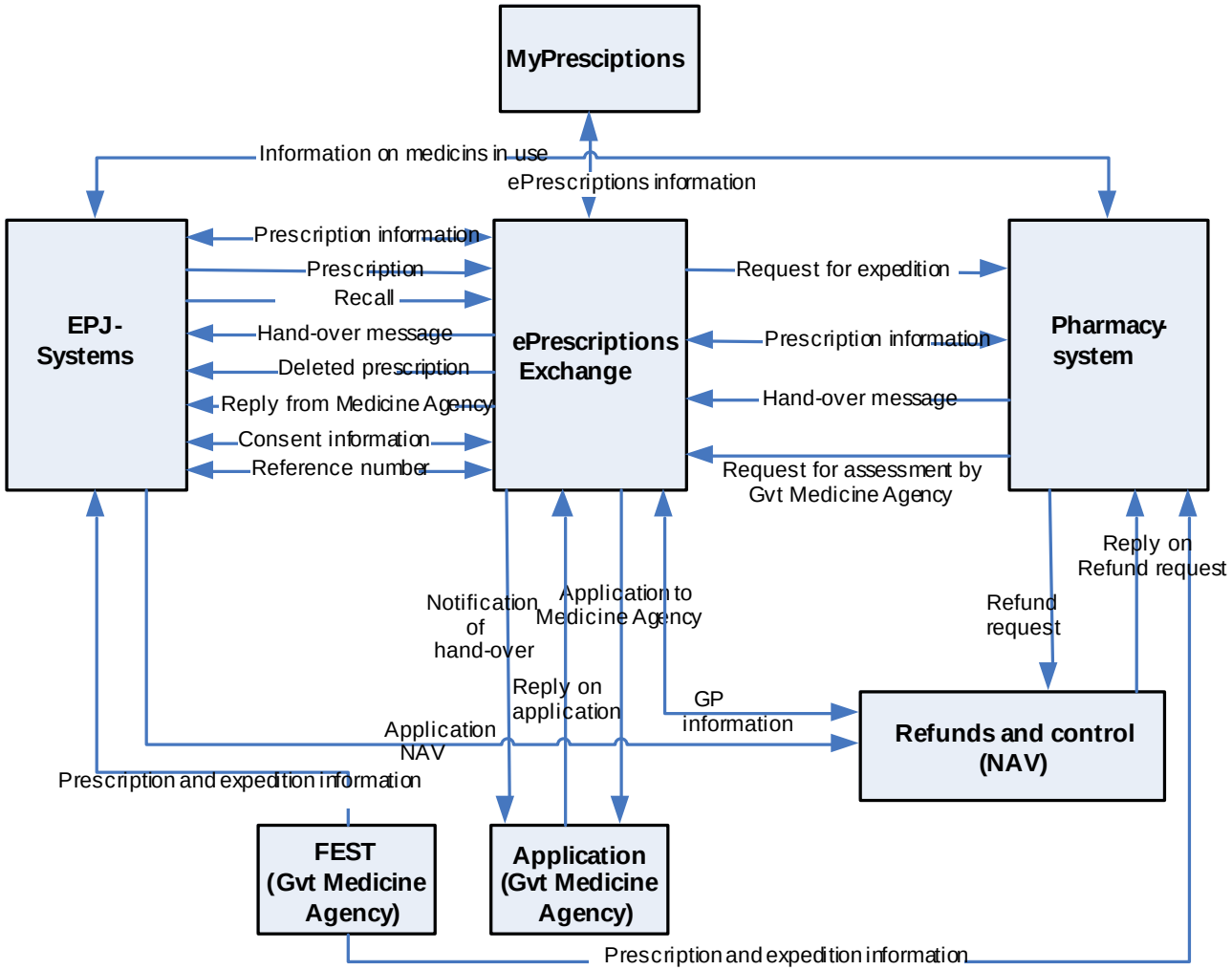
ICT architecture



Project organization



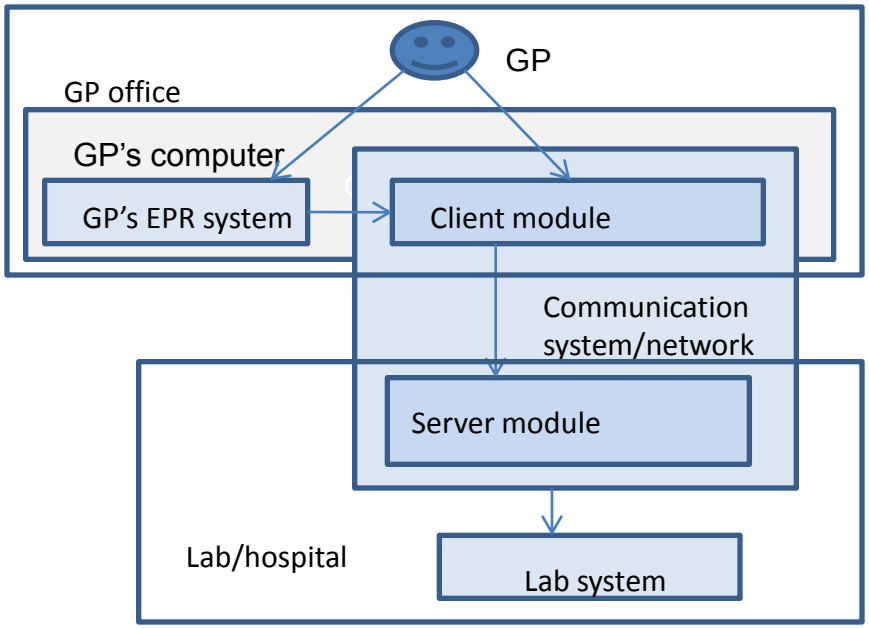
ePrescription



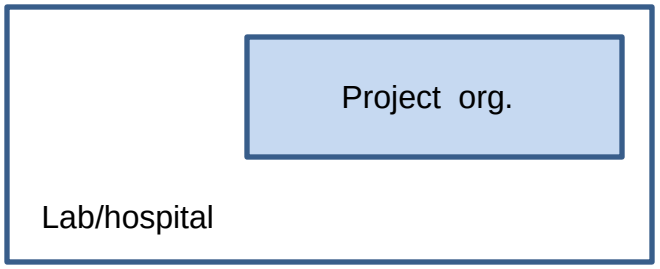
A few other projects

- Fürst
  - Lab report transfer solution, 1987, 3 man weeks + 1 evening
  - Lab ordering solution
- Northern Norwegian Health Care
- Well/Dips Interactor
  - Interactive admission letters
- BlueFox

An alternative architecture



ICT architecture



Project organization

Summary Care Record Systems

- Scotland:
  - 3 MGBP (4M Euros, 4 M USD)
- Denmark:
  - Official, top-down
    - 10 M Euros,
    - Faded out after about 4 years, officially cancelled after 8
  - Unofficial, bottom-up
    - Great success
- Norway (ePrescription)
  - 500 MNOK, currently piloted in one GP office
- UK
  - Started 2004, early adoption 2007, further deployment is frozen
  - Spent 240 MGBP

Conclusion

Institutional Interface Architecture

- Complex technical solution
  - Inflexible, cannot be maintained
- Very complex project organization
- Top-down
- Escalating complexity (destabilizing)
- Stabilizing (freezing) user practices
- Failure

Application Service Provider Architecture

- Simple technical solution
  - Flexible, easy to maintain
- Very simple project organization
- Bottom-up, evolutionary
- Stable complexity
- Destabilizing user practices (stimulating organizational innovation)
- Success

What needs to be done

- Bring learning (and research) into the projects
- Start working on the design of a SOA for national infrastructures (ePrescription, Summary Care Records and other solutions supporting (necessary for improved) collaboration (samhandling)
- And for Primary Care

Top-down

- All stakeholders involved
  - Each has separate requirements
- The more stakeholders involved, the more new requirements will be generated
- Each change: all stakeholders have their requirements ..

- Aims at stability – generates destabilizing processes

Thank you!