

Gentle Radiotherapy = MRI in RT

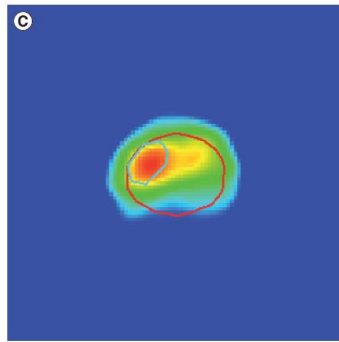
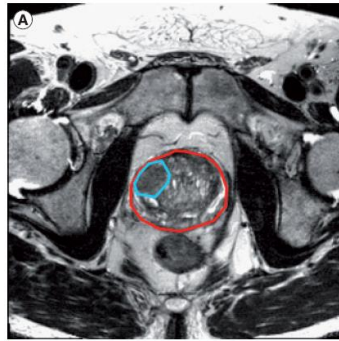
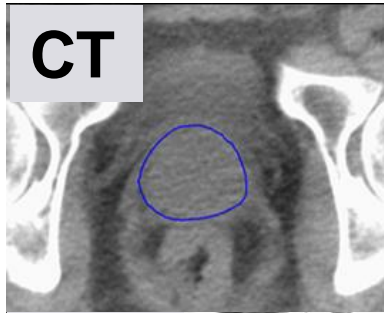
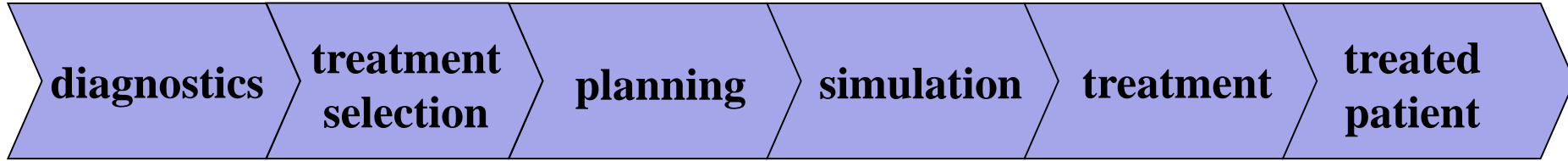
Lars E. Olsson

Lund University

and the Gentle Radiotherapy Project

<http://gentleradiotherapy.se/>

MRI in RT workflow



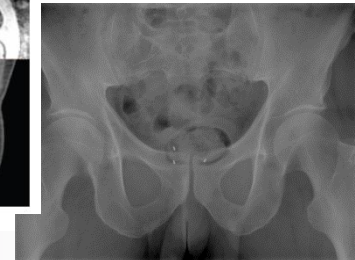
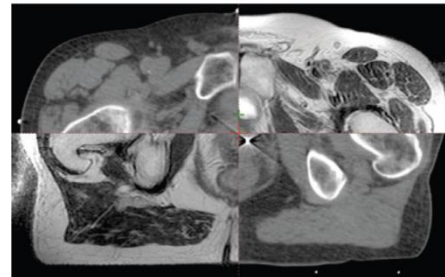
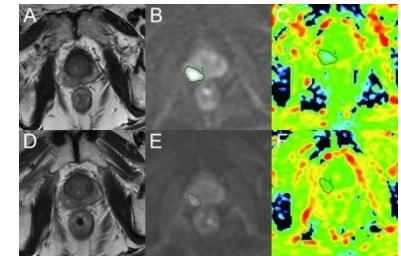
CT, Hounsfield units

DRR images created from CT matched to x-ray scans at accelerator.

CT MR registration

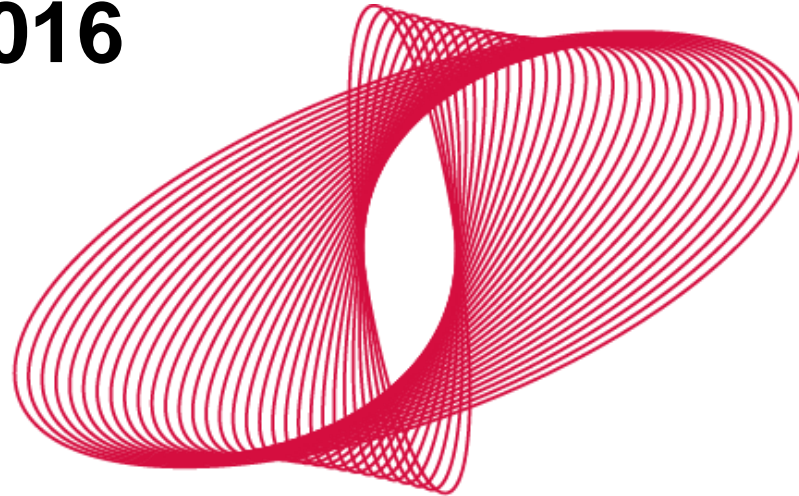
Fixation/coils

early response adaptive process



A Swedish national consortium

2014- 2016



GENTIL
RADIOTA

*Utmaningsdriven
innovation
Framtidens hälsa och sjukvård*



Sweden's innovation agency

Partners

University Hospitals - Industry



5 WORKPACKAGES



ELEK

Research
Laboratories



SIEMENS
Healthcare

SPECTRONIC



Gold Anchor™
The fine needle marker



Sweden's innovation agency



Work packages

Project leaders, Tufve Nyholm, Umeå & Lars E. Olsson, Lund

- WP1 – Optimisation of sequences and markers for MR imaging for RT
 - Lars Filipsson, Siemens
- WP2 - MR Treatment planning
 - Joakim Jonsson, Norrlands universitetssjukhus
- WP3 - Registering and automatic segmentation
 - Stina Svensson, Raysearch Laboratories
- WP4 - QA och geometric distorsion
 - Peter Lundberg, Linköpings Universitetssjukhus.
- WP5 – Clinical methods/Functional MR
 - Adalsteinn Gunnlaugsson, Skånes universitetssjukhus

Communication key to success

- Work packages

• TC
intra

- MR in RT (top) of the agenda
- Hospital/Univ collaborate
- Hospital/Univ/Industry collaborate
- Industry/Industry collaborate

contacts

• Host on

- National workshops
- www.gentleradiotherapy.com

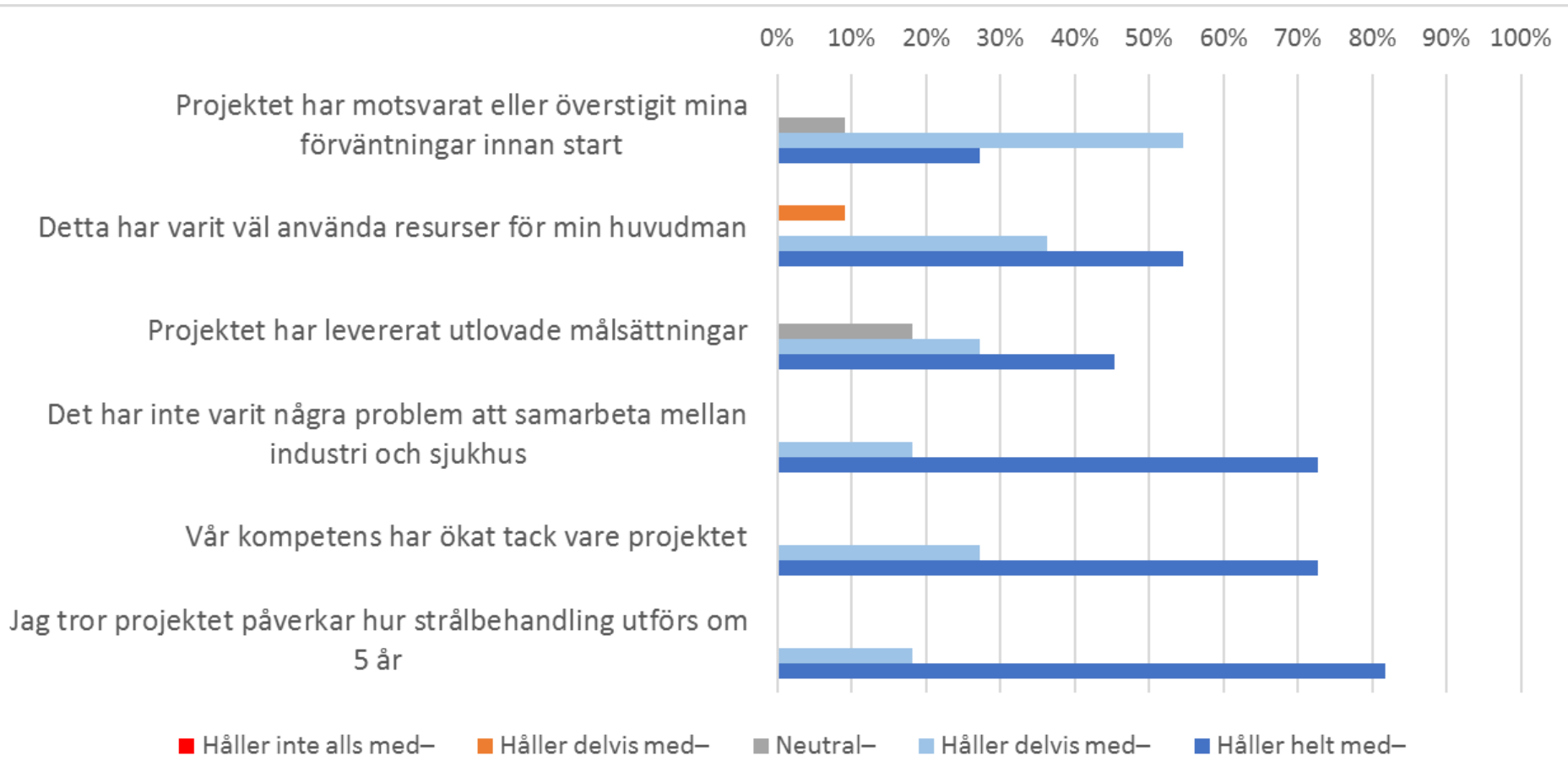
Outcome

- **Industrial products**
 - syntetic CT (Spectronic)
 - new and improved fiducial markers (Naslund)
 - new and improved computer algoritms (RaySearch)
 - improved design and workflow of RT MRI-suite (GE, Siemens)
 - MICE, image analysis software (TBD)
 - GOLD atlas
- **Health Products**
 - Manual for MR in RT procedures
 - MIQA, RT patient data base for research and QA
 - Standardized data base nomenclature

Outcome - 2

- Research groups
- Conference
 - 1 organized international meeting
 - ~30 invited talks
 - ~30 abstracts on meetings
- Papers
 - ~20 papers in peer reviewed journals
- MSc-exams, other reports

Feedback



Next step

- Gentle radiotherapy – step 3
- Implementation of MR-only RT
 - Lund, prostate
 - Umeå, rectum, cervix
 - Uppsala, brain
 - Göteborg, head&neck
- Funded VINNOVA project (11/11 2016)
 - 11.2 Mkr

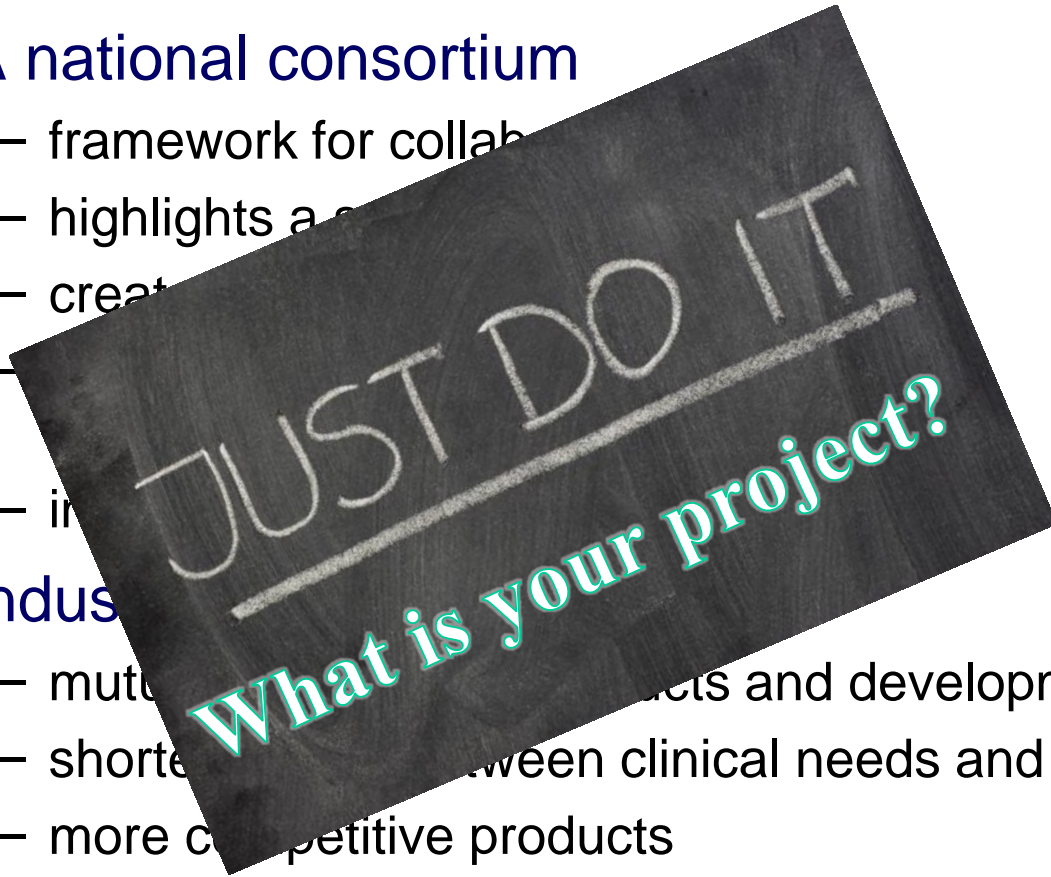
Conclusion

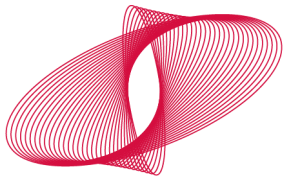
- A national consortium

- framework for collaboration
- highlights a common goal
- create a shared vision
- improve communication
- increase transparency
- increase accountability
- increase efficiency
- increase effectiveness

- Industry

- mutual interests and development
- shorter time between clinical needs and product
- more competitive products
- national standardization





Acknowledgements

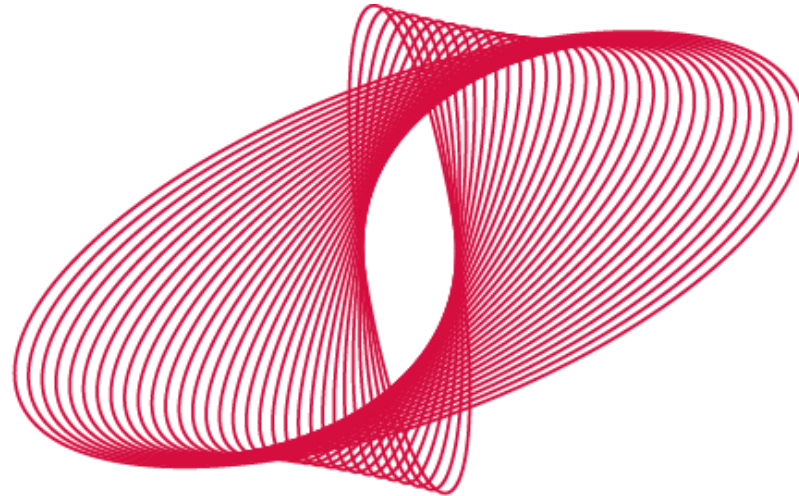
GENTLE
RADIOTHERAPY

- T. Nyholm, Umeå University
- S. Lindgren, Umeå University
- L. Filipsson, Siemens Healthcare AB
- J. Jonsson, Umeå University
- S. Svensson, RaySearch Laboratories
- P. Lundberg, Linköping University
- A. Gunnlaugsson, Lund University
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