Skyra → Prisma Town Hall
Siemens 3T Prisma

Siemens state-of-the-art 3T system

- FDA compliant but targeted towards research
- NX cryostat
  - lower boil-off
  - more homogeneous $B_0$
- XR 80/200 Gradient
  - $80\text{mT/m} @ 200\text{T/m/s}$
  - Skyra: 45\text{mT/m} 
  - Vida: 60\text{mT/m}
- XA30 electronics
  - high-performance MARS
  - improved 2\text{nd} order shimset
- SyngoMR XA30 software
  - improved user interface
  - advanced MRI applications
Siemens 3T Prisma

Siemens state-of-the-art 3T system
- improved SNR (esp. in hard to shim regions)
- enhanced gradient performance
  - faster / more powerful
  - improved spatial and/or temporal resolution
  - enhanced DWI/DTI
    e.g. ability to match ABCD protocols
- high-performance sequences
  - pTx, cSENSE
- 60cm bore
  vs 70cm on Skyra and Vida
Siemens 3T Prisma: user needs

- System should support anticipated user-needs for next 10+ years

**Hardware**
- RF Coils
- 2nd-order shims
- fMRI triggering
- Physiological monitoring
- High-performance electronics e.g. GPU-GPU MARS (real-time)
- X-nucleus Tx/Rx
- Spectro-shim

**RF Coils**
- 32ch Head Coil
- 64ch Head/Neck Coil
- Body18 Coil
- 15ch Extremity Coil
- Breast Coil

**Software**
- SMS (multi-band)
- Advanced Diffusion (inc DTI)
- QuietSuite
- ASL / pcASL
- ZoomIt
- MRS
- cSENSE
- MEMPRAGE

**Siemens Training**
- On-site training (research scanning)
- IDEA course credits
Siemens 3T Prisma: install / siting

Physical Characteristics

- larger footprint
  Skyra: 7'7” x 5'11” x 7’7”
  Prisma: 8’3” x 8’3” x 7’11”

- heavier
  Skyra: 15,700 lbs
  Prisma: 28,500 lbs

- stray field (3mT)
  Skyra: 7’ x 11’
  Prisma: 8’ x 13’

⇒ impact on upgrade process
⇒ siting within magnet room
3T Upgrade Process

- full feasibility study performed by Datum Engineers (Fall / Winter '21)

- can BIC-NHB site a Prisma system?
- egress / install path?
- what renovations necessary?
- approx. duration for project
- future requirements
3T Install Path: corridor option

- existing infrastructure impractical for current MRI replacement
3T Install Path: corridor option

- existing infrastructure impractical for current and future MRI replacement
3T Install Path: shaft option

- alternative option ⇒ construct a new access shaft directly into BIC
- external and internal designs considered
- internal access shaft (through NHB patio) is preferred option
Skyra → Prisma upgrade: timeline

- preliminary timeline for the project has been established

- entire renovation and install: ~ 5mo
- initial site prep ~10wk ⇒ Skyra operational
  - brief interruption to relocate quench duct
- ramp-down / remove Skyra: ~ 2wk
- prep scanner room for Prisma: ~ 2wk
- install Prisma + Siemens QA/QC: ~ 3wk
- re-install MRI protocols + BIC QA/QC: ~ 2wk
- user training / protocol testing ⇒ SyngoMR XA
- total MRI down-time: ~ 2-3 months
Skyra → Prisma upgrade: timeframe

Timeframe for the project dependent on:
- NHB occupants (ARC, NMR facility)
- BIC Users
- construction timeline
- Siemens delivery
Skyra → Prisma upgrade: next steps

Design Team:
- Keith Westmoreland – UT (CPC)
- Doug Befroy – BIC
- Ann Harasimowitz – NHB
- Datum – Prime & Structural
- BGK/CO – Architectural & Interiors
- Gonzalez Shah Smith – MEP
- Garza EMC – Civil
- SLR – Vibrations & acoustics
- WJE – Waterproofing
- MRI Corporation – shielding consultant
- Tim Watt - Siemens

Information dissemination:
- communication strategies
  - email / website / wiki / slack?
Skyra → Prisma Town Hall

Q & A

11th Mar 2022