



GUIDELINES FOR RTK

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*Volunteering
for the future –
Geospatial excellence
for a better living*

Working with best practice guidelines – ways to enhance the value of the surveyor

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WHY DOES LANTMÄTERIET WORK WITH USER GUIDELINES?

- One of Lantmäteriet's main responsibilities
- Contribute to uniformity, coordination and quality within the areas of surveying and mapping
- This is a challenge in Sweden, a country with different 290 municipalities in charge of most urban planning and development.



THE FUTURE OF THE SURVEYING PROFESSION?

- Dwindling number of students within surveying for many years
- Coming up: more autonomous and integrated sensors, high-end GNSS capabilities and LiDAR in smart phones, AI/VR, and so on...
- Is the surveying profession becoming obsolete?

A common prediction from Swedish surveyors and educators:

**It will be less about collecting coordinates,
and more about adding quality!**

Value

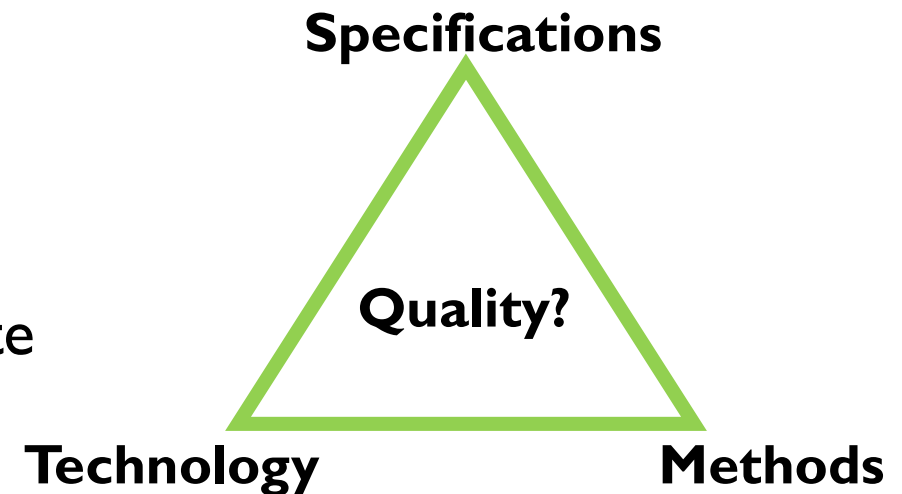


WHY BOTHER WITH GUIDELINES?

Quality assurance is a big issue and obstacle for costs and lead times.

Some challenges:

- How do we pick the right tools?
- How can surveyor and client communicate clearly and effectively?
- How can we tell if the working process is “good”?



PREVIOUS EXPERIENCES

Lantmäteriet published a set of best practice guidelines during the 1990's. A boost for the surveying community, but unfortunately not long-lasting...



Pros

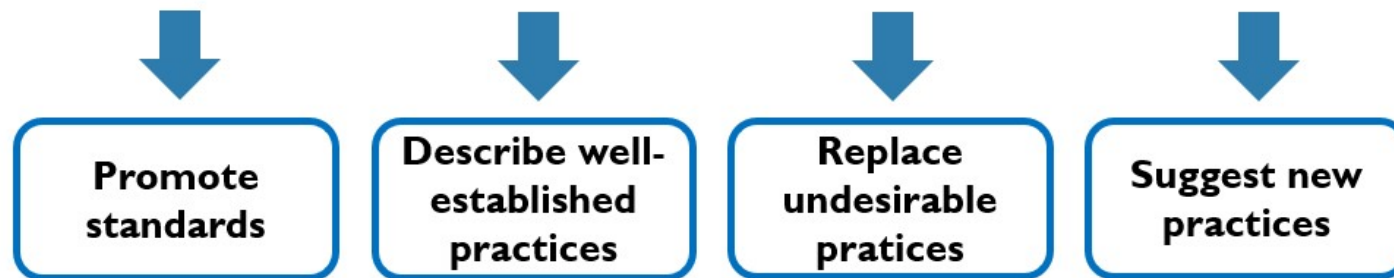
- ✓ Used by professionals and students
- ✓ A common reference
- ✓ A foundation for more purpose-oriented specifications

Cons

- ✓ Described techniques soon became old/obsolete
- ✓ Expensive and time-consuming to revise and republish
- ✓ Difficult to pick up new ideas from the user community

PURPOSE #1: STREAMLINING METHODOLOGY

Best practice guidelines can be used to streamline professional working methods and terminology



PURPOSE #2: BRIDGING THE GAP

Best practice guidelines can be helpful to bridge the gap between surveyor and client



PURPOSE #3: STAKEHOLDER COOPERATION

Best practice guidelines can bring many “soft” benefits to the surveying community



HANDBOOK OF MEASUREMENT AND MAP ISSUES (HMK)

- Guidelines for professional geodata collection, geodetic surveying and cartography
- Purpose: to contribute to increased uniformity and quality in the field of surveying and mapping
- About 15 pdf handbooks and a handful of online courses

**HMK –
Geodetic
infrastructure
2021**

**HMK –
Reference
network
surveying
2024**

**HMK –
GNSS-based
detail
surveying
2021**

**HMK –
Terrestrial
detail
surveying
2021**

**HMK –
Terrestrial
laser scanning
2021**

HMK: Detaljmätning med GNSS, E-kurs (Löpande)

Kursadministration

Du är Kursskapare och kan redigera Kursomgången här.

Fortsätt redigera kursomgång

Aktivitet

- Mål & Framsteg
- Innehåll
 - Välkommen
 - Del 1: Om HMK
 - Användning av HMK
 - Användning av handboken
 - Kontrollfärdigheter, del 1
 - Del 2: Om mättekniken
 - Tillämpningsområden
 - Hur RTK-tekniken fungerar
 - Felkällor och måtosäkerhet
 - Kvalitetsäkring av arbetet
 - Del 3: Att tänka på inför mätning
 - Del 4: Genomförande av mätning
 - Del 5: Övrigt stöd i handboken
 - Kurskasttest
 - Kursvärdering
 - Dokument

Tillämpningsområden

Detaljämätning med noggrann GNSS (RTK-teknik) är ett mycket vanligt sätt att lägsbestämma punkter på mark som är utspridda över stora öppna ytor. På motsvarande sätt är RTK-tekniken mindre lämplig i miljöer med hög punkttäthet krävs.

Mycket av RTK-teknikens popularitet beror på att den möjliggör relativt enkel men samtidigt noggrann lägs 99. Vanliga tillämpningsområden inom samhällsbyggnad är bl.a. inmätning av topografiska objekt och stöd.

<https://www.lantmateriet.se/hmk>

OUTLINE OF THE HMK-DOCUMENTS

- Introduction, preparation, surveying, quality control, documentation
- Boxes with Requirements and Recommendations
 - The requirements are not requirements in juridical sense
 - It is requirements to full fill good surveying practice
- Support for both clients and surveyors

EXAMPLE FROM HMK GNSS BASED DETAIL SURVEYING

Repeated measurement with time separation is recommended in HMK:

**HMK –
GNSS-based
detail
surveying
2021**

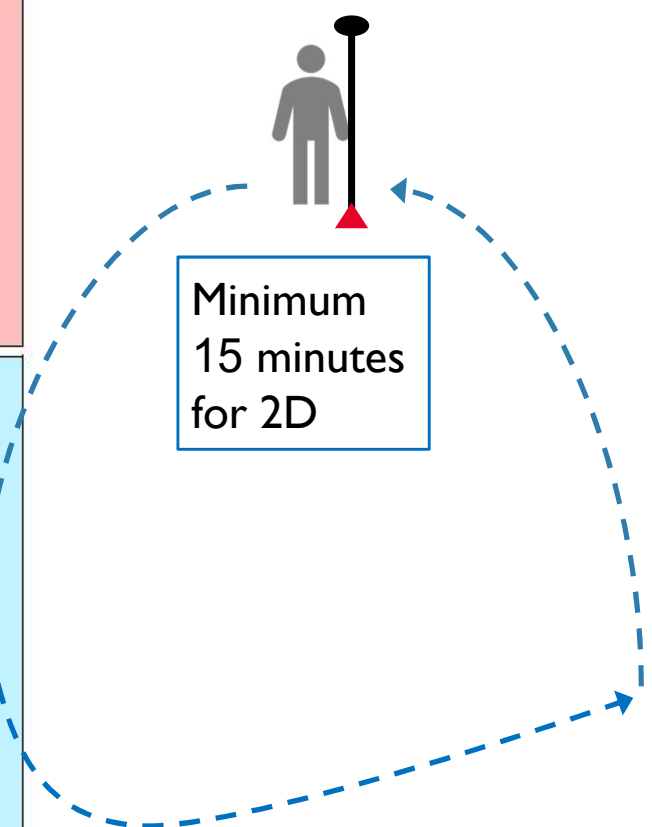
Krav

Upprepad mätning

- ska endast utföras på väldefinierade detaljer/punkter.
- ska ske med tillräcklig tidsseparation och med ny fixlösning.
- ska kontrolleras mot specificerad tolerans innan mätningarna medeltalsbildas.

Rekommendation

- Vid behov av god kontrollerbarhet i mätprocessen bör upprepad mätning övervägas.
- Vid detaljmätning i plan bör tidsseparationen vara minst 15 minuter.
- Vid detaljmätning i höjd bör tidsseparationen vara minst 30 minuter.
- Vid upprepad mätning bör detaljerna mätas in i samma inbördes ordning för att få god tidsseparation mellan mätningarna.



Minimum
15 minutes
for 2D

Requirements

Repeated measurements

- a) shall only be performed on well-defined points.
- b) shall be done with sufficient time separation and with a new fixed solution.
- c) shall be checked against the specified tolerance before the measurements are averaged.

Recommendations

- d) Where good controllability of the measurement process is needed, Repeated measurement should be considered.
- e) In the case of detailed measurement in plane, the time separation should be at least 15 minutes.
- f) In the case of detailed measurement in height, the time separation should be at least 30 minutes.
- g) In the case of repeated measurements, the points should be measured in the same order to get good time separation between the measurements.

HOW DO YOU WORK WITH USER GUIDELINES?

TACK! VI FINNS PÅ...

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