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"Geospatial Information for a Smarter Life and Environmental Resilience"
Geo-Information Education in the Era of Big (GEO) Data

Marinus DE BAKKER, HAS University of Applied Sciences, ‘s-Hertogenbosch, the Netherlands
M.deBakker@has.nl

Session TS05B: Innovation in Surveying Pedagogy and Curriculum
Introduction

- Senior lecturer, Course Geo Media & Design, HAS University of Applied Sciences
- Programmanager Datalab Agrifood, GrowCampus
- Audience?
Why this topic? Some developments

- > 50 years LandSat
  - Number of satellites and increase in resolution
- Increase in sensors (IOT)
  - Types, numbers and location
  - Drones
- Connected “everywhere” → mobile
- Connection with Data Science
- 33 zettabytes (2018) → 175 zettabytes (2025)
Vision +: Geo Media & Design

geo + domain + data science ➔
New Curriculum (under development)

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<thead>
<tr>
<th>Year</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
<th>Term 4</th>
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<tbody>
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<td>1</td>
<td>mapping natural hazards</td>
<td>urban in sight</td>
<td>climate chances</td>
<td>dynamic landscape</td>
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<td>2</td>
<td>orientation internship</td>
<td>data driven farming</td>
<td>smart regions</td>
<td>eco-geo</td>
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<td>coaching</td>
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<td>geo-trends</td>
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<td>3</td>
<td>2 project internships</td>
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<td>minor (free choice)</td>
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<td>one abroad, one in the Netherlands</td>
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<td>4</td>
<td>Specialisation: Analyst, Designer or Engineer</td>
<td>Graduation Assignment (multidisciplinary)</td>
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<td>Business &amp; Consultancy</td>
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Increase with data science
Change in Competencies

- Knowledge $\rightarrow$ relation with data-science
- Skills $\rightarrow$ machine learning
- Attitude $\rightarrow$ continuous learning, curious

$\rightarrow$ (big) data wise

Source: [https://datawise.gse.harvard.edu/](https://datawise.gse.harvard.edu/)
Effect on (geo) spatial process

- Data collection $\rightarrow$ integration physical and virtual/digital reality
- Data management $\rightarrow$ real time data and monitoring, archiving, BIM
- Analysis $\rightarrow$ other techniques and cooperation with Data Science
- Visualisation $\rightarrow$ business intelligence

- From individual and one step to team and integration

Conclusion

• Students should think over the whole process
  – Outside data collection with a view to always changing use of data
• New techniques from Data Science should be included in the curricula
• Working (and studying!) in a team of
  – Data collectors
  – Data engineers (management, maintenance and share)
  – Data analysts and data-scientists
  – End-users
• Learn to understand each language and contributions
Discussion

- How do you integrate data science into your curricula?
- What is more important?
  - Bring Data scientists towards Geo professionals (spatial awareness)
  - Or
  - Inoculate Geo professionals with data science
Smart Surveyors for Land and Water Management