LTP proposal in development:

Enabling Next Generation Batteries for Mobility
Battery R&D national/international

- In energy transition, energy storage/battery technology is one of the key challenges
- Annual value battery market expected ~250B€ by 2025, growing demand in EV/mobility, stationary storage and portables
- Research and Innovation challenges in energy density, charging rate, lifetime, 2\textsuperscript{nd} life use, safety, cost reductions along value chain, sustainability/circularity
- European ambition to develop sustainable production for next generation batteries
  - Example initiatives: European Batteries Alliance (EBA), Batteries Europe Partnership Association (Horizon Europe)
- Netherlands to develop strategy for leading role and aims to align R&D activities
  - 2018/2019: RVO report by TNO, PWC Netherlands strategy, “Strategische aanpak batterijen” (min I&W lead interdepartmental group)
NWO-LTP (PPP) proposal in development
Enabling Next Gen Batteries

- 4TU to develop NWO Long Term Program (LTP) “Enabling Next Gen Batteries”

- address the key challenges in future battery demand (high-capacity, fast-charging, long-life, safety, sustainability, cost-efficiency), by joining the material developments in next generation battery chemistries, advanced design and manufacturing for cell and packs up to the design of electrical vehicles and related applications (maritime, automotive, aerospace and e-bikes)

- LTP characteristics:
  - Public Private Partnership 10yrs
  - Targeted total budget proposed: 80Meu
  - requiring cash/in-kind contributions from industry as well as academic partners
  - private commitment required pre-proposal 2.5Meu/yr for first 5 yrs
  - pre-proposal deadline April 22nd 2021 (final proposal June/July 2022)
Enabling Next Generation Batteries for Mobility

- High-capacity
- Fast-charging
- Long-life
- Safe
- Sustainable
- Cost-efficient

2nd Life and Recycling
Life Cycle Analysis, human capital, and Knowledge transfer

Future materials and battery designs

TU/e
UNIVERSITY OF TWENTTE.

Mobility
Intelligent applications
Advanced Manufacturing
## Program lines (concept)

<table>
<thead>
<tr>
<th>Program Line</th>
<th>Automotive</th>
<th>Maritime</th>
<th>Aerospace</th>
<th>Heavy Duty</th>
<th>Bikes</th>
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<tbody>
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<td>1. Human Capital, Knowledge transfer</td>
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<td>2. Future Material Chemistries</td>
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<td>Prof. M. Wagemaker (TUD), Prof. M. Huijben, (UT)</td>
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<td>3. Innovative Battery designs</td>
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<td>Prof. P. Bauer (TUD), Prof. B. Ferreira (UT), T. Donkers (TU/e)</td>
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<td>4. Advanced Manufacturing</td>
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<td>Prof. S. Thiede, (UT), K. van Rijswijk (TUD)</td>
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<td>5. Intelligent applications and systems</td>
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<td>Prof. M. Bonnema (UT), Prof. P. Bauer (TUD), Prof. T. Hofman (TU/e)</td>
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<td>6. Recycling and 2nd Life</td>
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<td>Prof. Y. Yang, Prof. E. Kelder (TUD)</td>
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<td>7. Life cycle analysis</td>
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<td>Prof. A Hoekstra (TUE), Prof. A. Dijkstra (UT)</td>
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Core of Consortium

Names of core PIs and support

- **UT - Twente Centre for Advanced Battery Technology (TCABT)**
  - Lead PIs: Mark Huijben, Sebastian Thiede, Maarten Bonnema
  - Support: Janneke Hoedemaekers (SBD, coordinator TCABT), Maarten Emmerich

- **TUD**
  - Lead PIs: Marnix Wagemaker, Pavol Bauer, Erik Kelder
  - Support: Steven Lohle (bus relations, battery TUD platform), Anne vd Poel

- **TU/e**
  - Lead PIs: Auke Hoekstra, Tijs Donkers
  - Support: Margriet van Schijndel (programme coordinator smart mobility)
Timeline Proposal

- 22 April 2021: Submission pre-proposal
- End June 2021: Decision whether pre-proposal is accepted
- End August 2021: Submission project plan for elaboration pre-proposal
- End June 2022: Latest date for submission full proposal

The evaluation of the full proposal starts as soon as it is handed in, so handing it in sooner ensures the project can also start sooner.