

A decorative graphic on the left side of the slide, consisting of a network of light blue lines and small circles, resembling a circuit board or a neural network, set against a dark blue gradient background.

CAT 1 – QUANTUM COMPUTING AND SIMULATION

NGF PHASE 3 PLANS – SUMMARY

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DISCLAIMERS

- This session will be recorded (and made available online)
- All information shared is 90% draft and for discussion
- Nothing is a given

CONTENTS

- Process
- Ambition, focus and strategy
- Structure
- Way of working (fixed costs, grants, open calls, tenders)
- Budget and co-financing
- Commercialization and internationalization

PROCESS

- 2023 Input collection, brainstorming, roadmapping
- 2023 Talks with EU, chips act considerations, ...
- January : finalize draft plans (cat lead)
- February : Present plans and interview with task force (cat lead + representants)
- February : Evaluation by MTR committee
- March – April : Update and consolidate all plans and detailed budget
- May? : Present to ministry

AMBITION

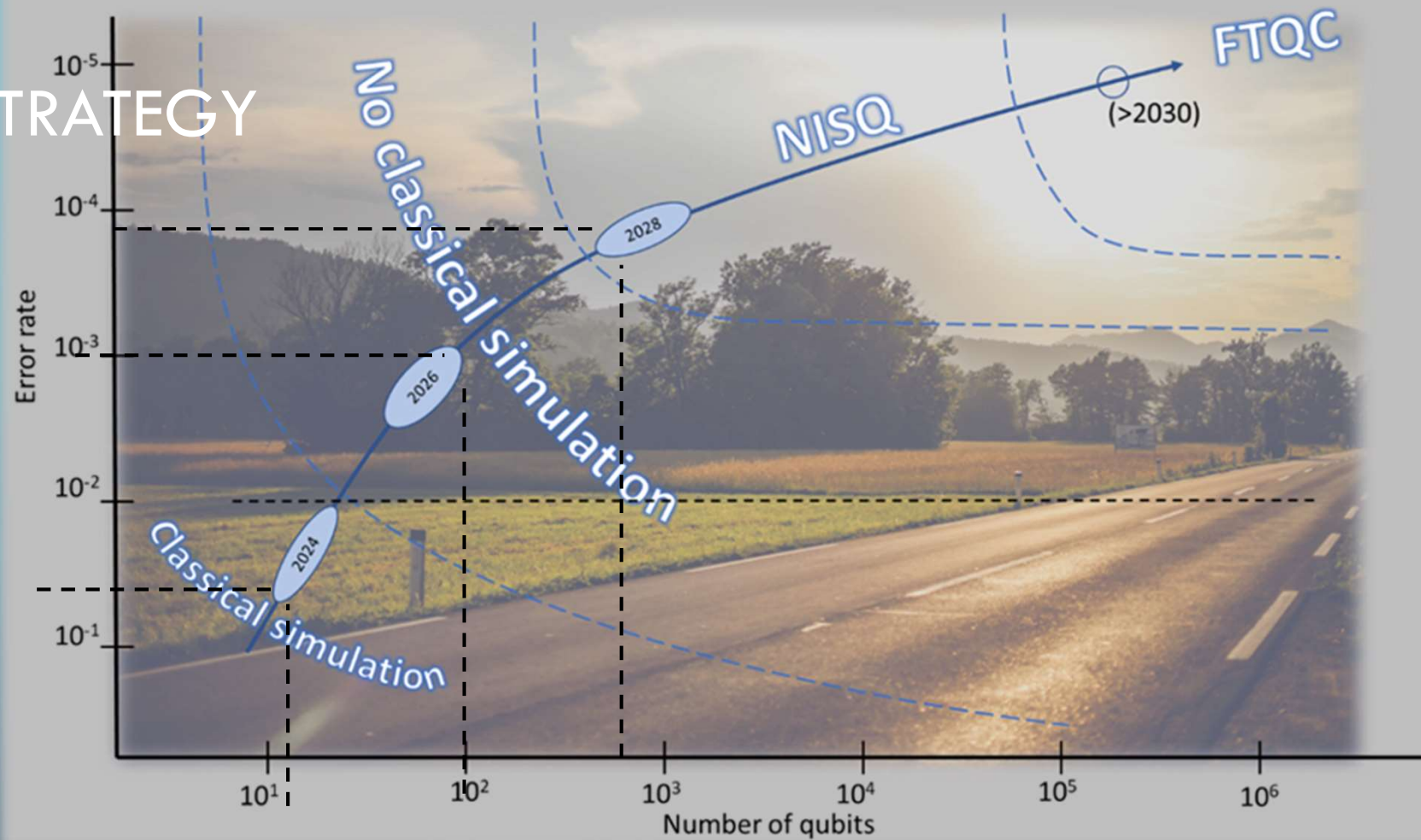
Reach the NISQ application era (stage 3 in our four stages of quantum computing) and thereby **deliver advantages over classical computer on real-world problems and economic end user value**,
by delivering quantum computers with at least
100 qubits and single- and two-qubit error rates better than 10^{-3} .

The path to this goal will already **provide economic value** to The Netherlands,
by creating **a strong value chain** for quantum computing.

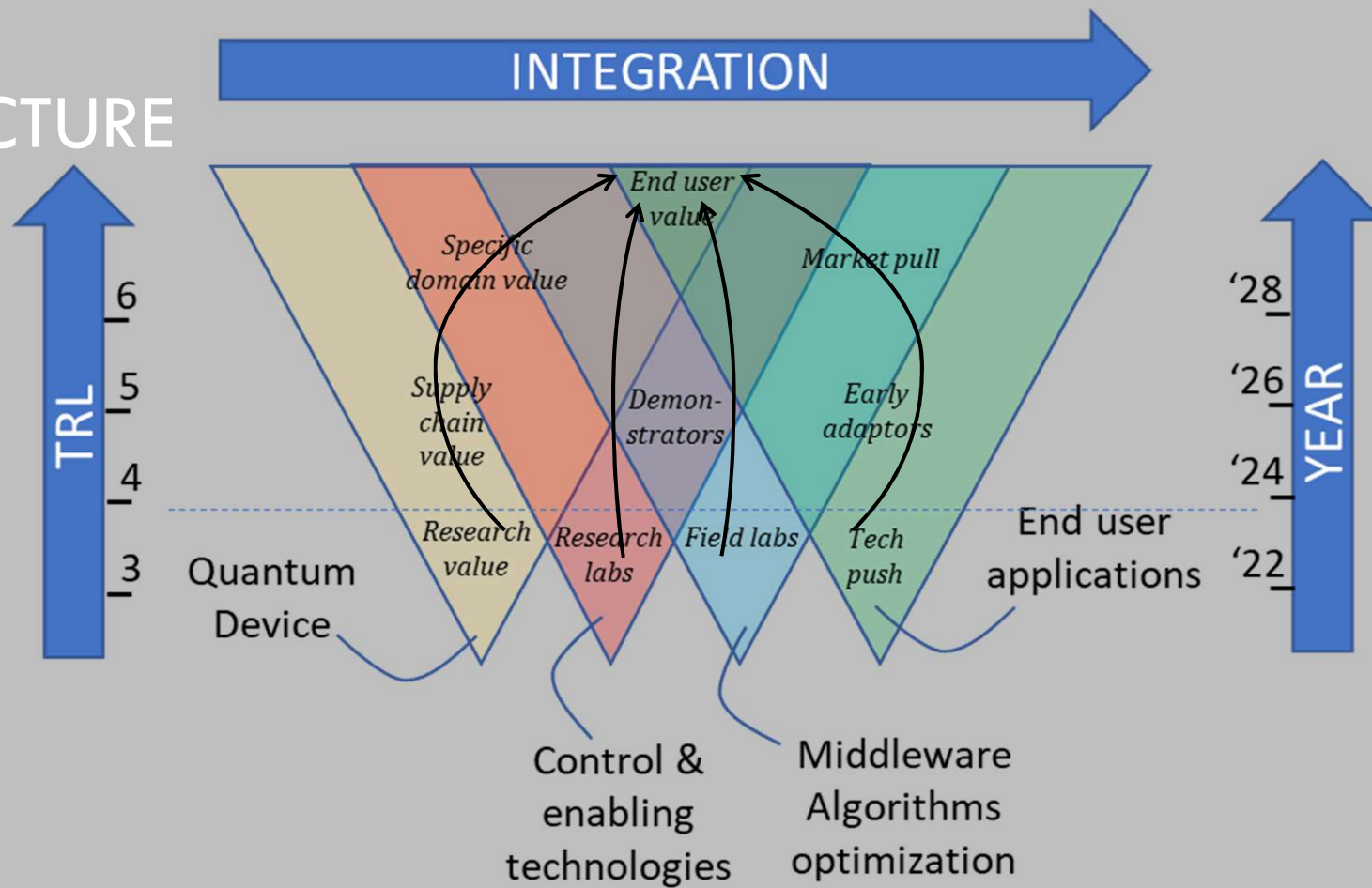
FOCUS

- De-verticalized stack (components, layers) empowering SME's, OEM's, RTO's and academic institutes, working as integrated systems, validated in a relevant environment
- Towards commercialization (less research, more engineering, more industry involvement, value chain creation)
- Supportive of Dutch economy, talent and IP
- Delivering on the promises

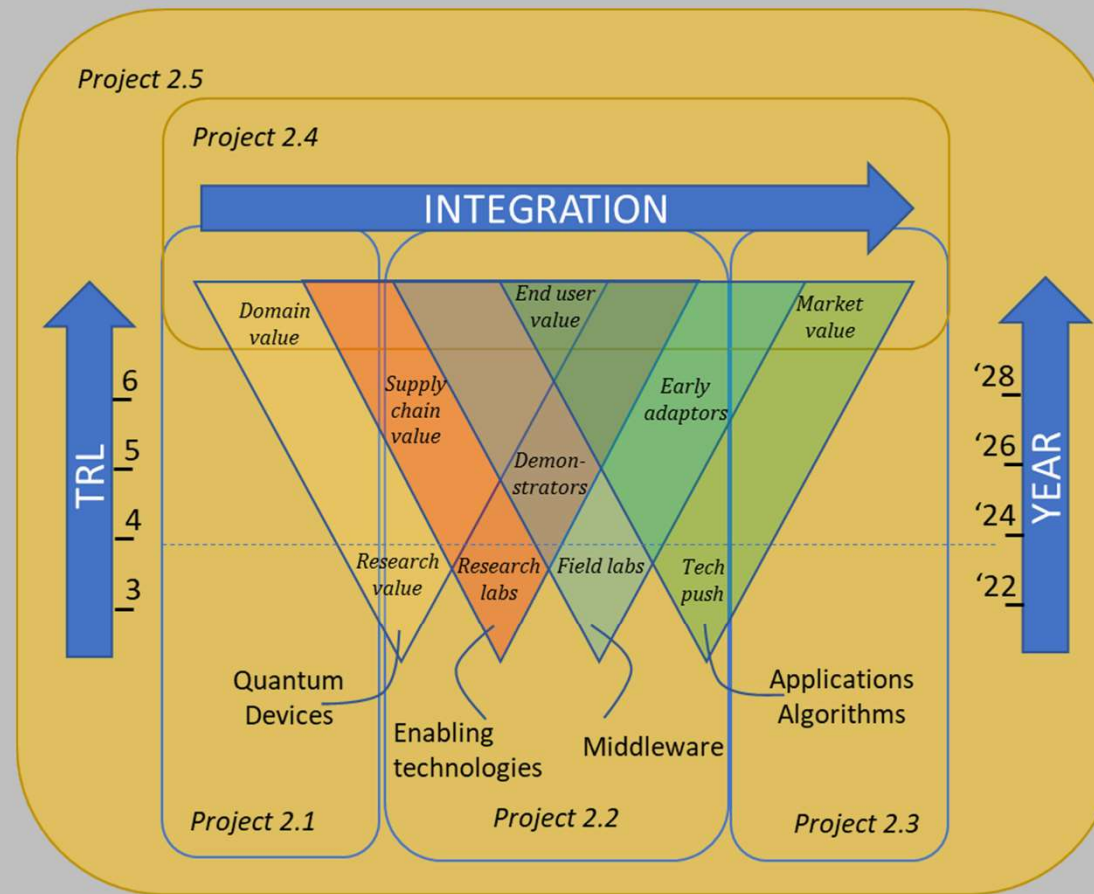
STRATEGY



STRUCTURE



STRUCTURE



STRUCTURE

2.1 High quality and powerful devices – from lab to fab

Goal of this project is to design and demonstrate functional quantum processors with at least 100 qubits in a relevant environment, with performance required for NISQ applications, using a full supply chain.

2.2 A strong and viable value chain – enabling a quantum future

The goal of this project is to strengthen the Dutch supply chain for quantum computing components and modules

2.3 Best value for end users – from fab to app

Goal of this project is the development & application of quantum algorithms and procedures/methods to optimize the execution of such algorithms for NISQ quantum computers.

2.4 World class quantum computers for The Netherlands – demonstrating the Dutch approach

The goal of this project is to deliver fully functional quantum computers for The Netherlands, with enough compute power to run NISQ algorithms.

2.5 Program execution, exposure and business development

The goal of this project is the overall steering and management of the CAT1 program, as well the continuous exposure and business development to create additional co-funding and increase the visibility and awareness of the program outcomes.

WAY OF WORKING

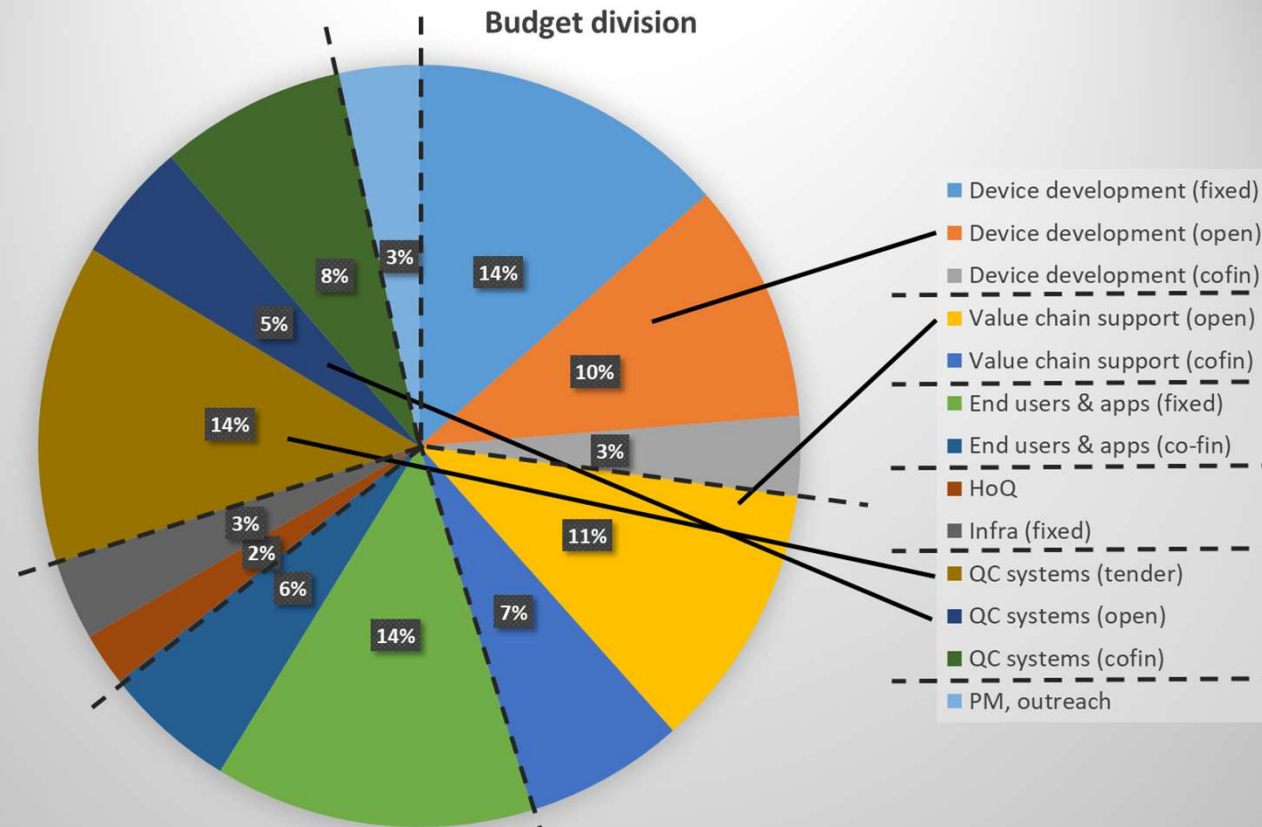
- Fixed costs
(outreach, pm, yearly conference, ...)
- Pre-defined projects (device developments, HoQ. Infra SW and HW, end user involvement, algorithm development and optimization)
- Open calls (components, technology, apps)
 - Will follow a “RFI and RFP” procedure
 - Always consortia
 - IP arrangements per activity
- Tenders for complete systems
 - Public tenders
 - Assumption: no foreground IP



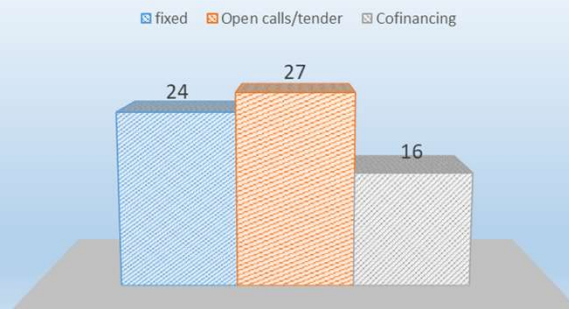
BUDGET AND CO-FUNDING

- Original budget ~50 MEuro for 4 years
 - Budget cuts due to HoQ developments, trilateral calls, ...
- Aim for 25% co-funding (increasing from 15% in yr1 to 50% in yr4)
 - In cash, in-kind, EU, ERC
 - Co-funding is realizing extra funds to execute projects that would not have been possible to execute otherwise

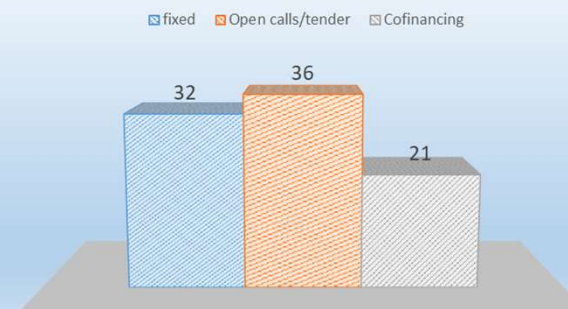
BUDGET



BUDGET REQUEST (MINIMAL)



BUDGET REQUEST (OPTIMAL)



COMMERCIALIZATION AND INTERNATIONALIZATION

- Validation as an integrated system (collaboration and co-development) in a relevant environment (data center, HoQ) running actual use cases
- Value chain support (de-verticalized approach, focus on functionality and interfaces, not on implementation, empower market conform solutions)
- Open calls for technology development support
- Leveraging European programs (EU flagship programs, EuroHPC JU, ...)
- Tri-lateral call

The background is a blue gradient. In the corners, there are white line-art designs resembling circuit boards or neural networks, with lines and small circles connecting them.

QUESTIONS ?