Intent-driven networks
Some challenges and research directions

Laurent Ciavaglia
NMRG Virtual Meeting May 2019

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Intent-driven networks
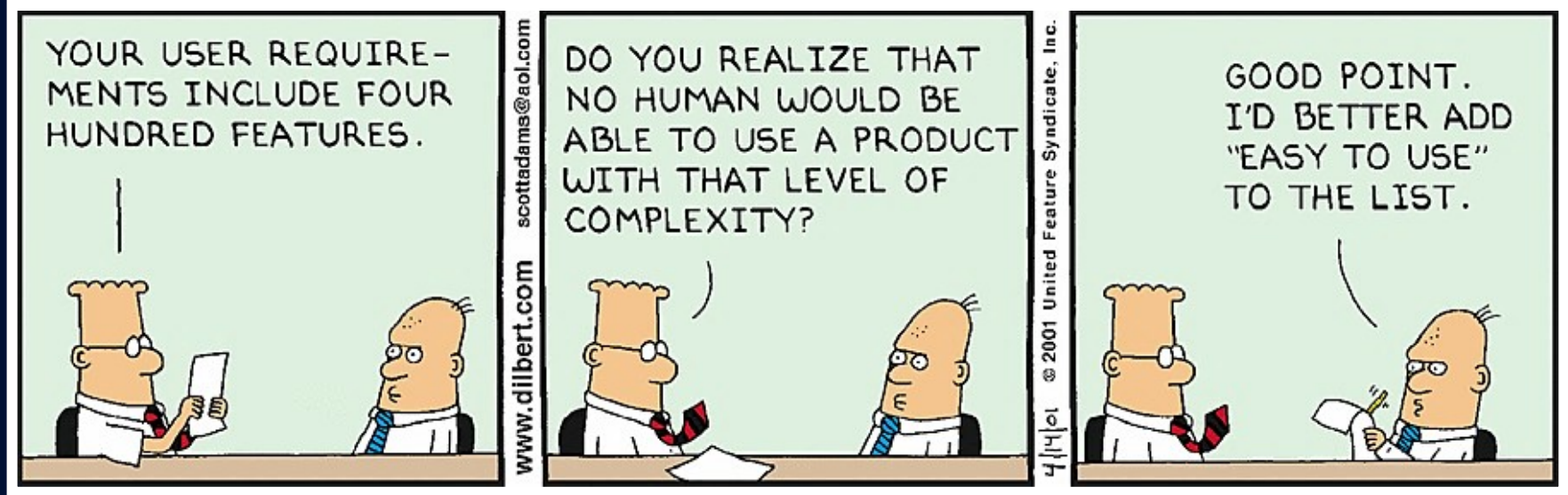## Some challenges and research directions

Laurent Ciavaglia
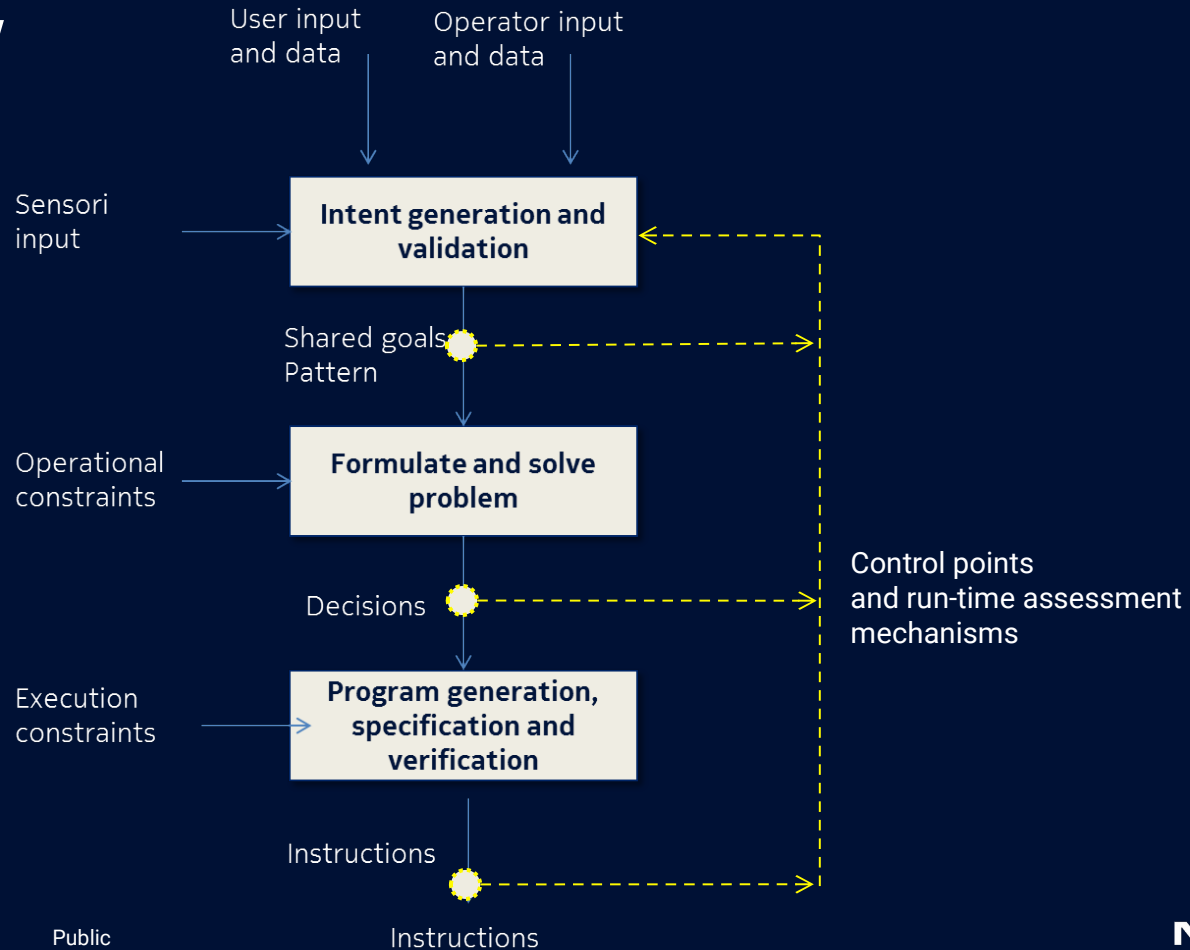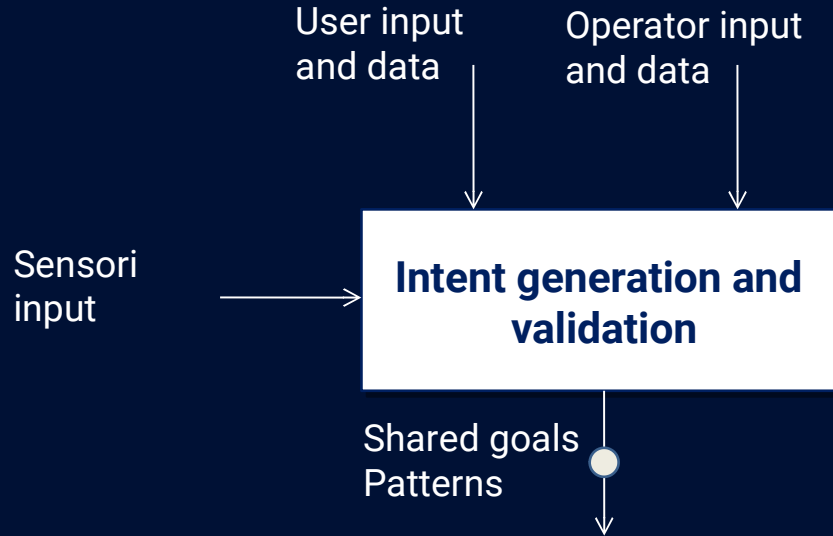NMRG Virtual Meeting May 2019

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Feature #401…?

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Overview

User input and data

Operator input and data

Sensori input

Intent generation and validation

Shared goals
Pattern

Operational constraints

Formulate and solve problem

Decisions

Execution constraints

Program generation, specification and verification

Instructions

Instructions

Control points and run-time assessment mechanisms

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Challenge 1

User input and data

Operator input and data

Sensori input → **Intent generation and validation**

Shared goals Patterns

Ability to learn and reason on intent sets

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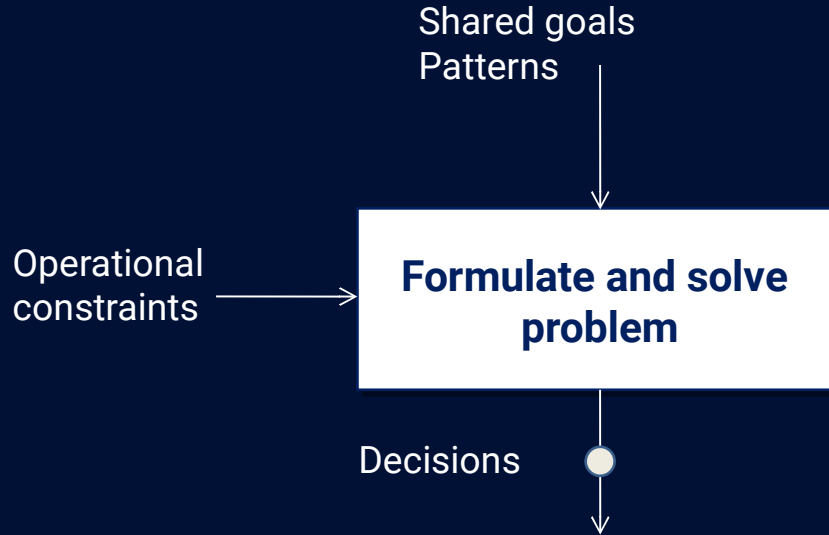# (some) Research directions

Natural Language Processing (NLP)

Ontologies and semantic analysis

Lazy learning

Knowledge representation and building:

- Languages, templates, models…

- graph databases, data dependencies…

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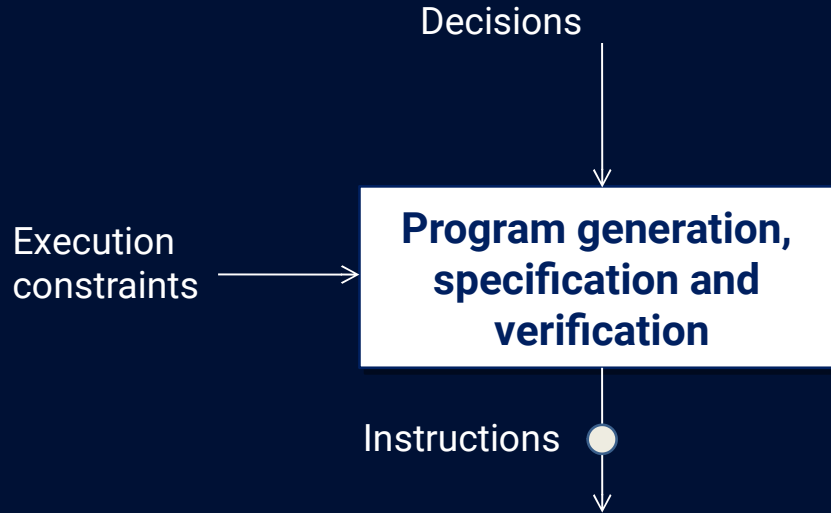**NOKIA**

Challenge 2

Shared goals
Patterns

Operational
constraints

**Formulate and solve
problem**

Decisions

Ability to optimize and re-optimize decisions

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(some) Research directions

Automatization of the generation of resolution methods (by decomposition)

Learning on choice of resolution method based on theoretical gain

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Challenge 3

Decisions

Program generation, specification and verification

Execution constraints →

Instructions ○

↓

Ability to generate and verify programs

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(some) Research directions

Automatic program generation

Program distribution towards agents and collective decision process on resolution approach considering local/global variables and constraints

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Challenge 4

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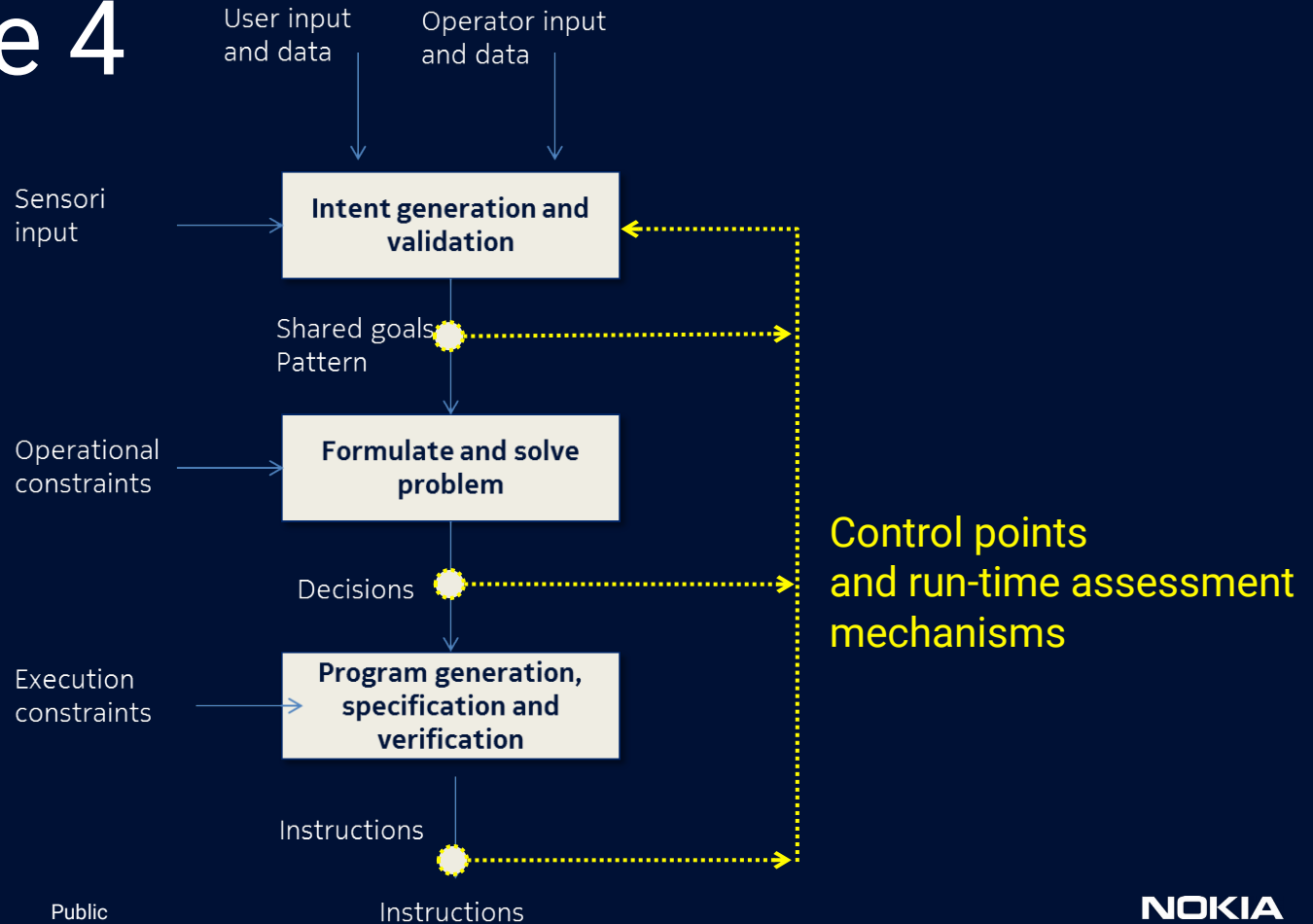
(some) Research directions

Quality of Intent (QoI) evaluation framework
Self-evaluation, self-testing mechanisms
Increased role for telemetry and analytics

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and many other interesting things

Intent checking, normalization

Intent recommendation, learning, optimization

Intent extraction out of CLIs...

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