

A full-page photograph of a family sitting on a grassy hill in a park. A man is kneeling on the grass, interacting with a young child. A woman stands nearby, and another child is visible. In the background, there are trees and a city skyline under a bright sky. The Nokia logo is in the top left corner.

NOKIA

For an agile future

Nokia openness

November 2018

Degrees of open

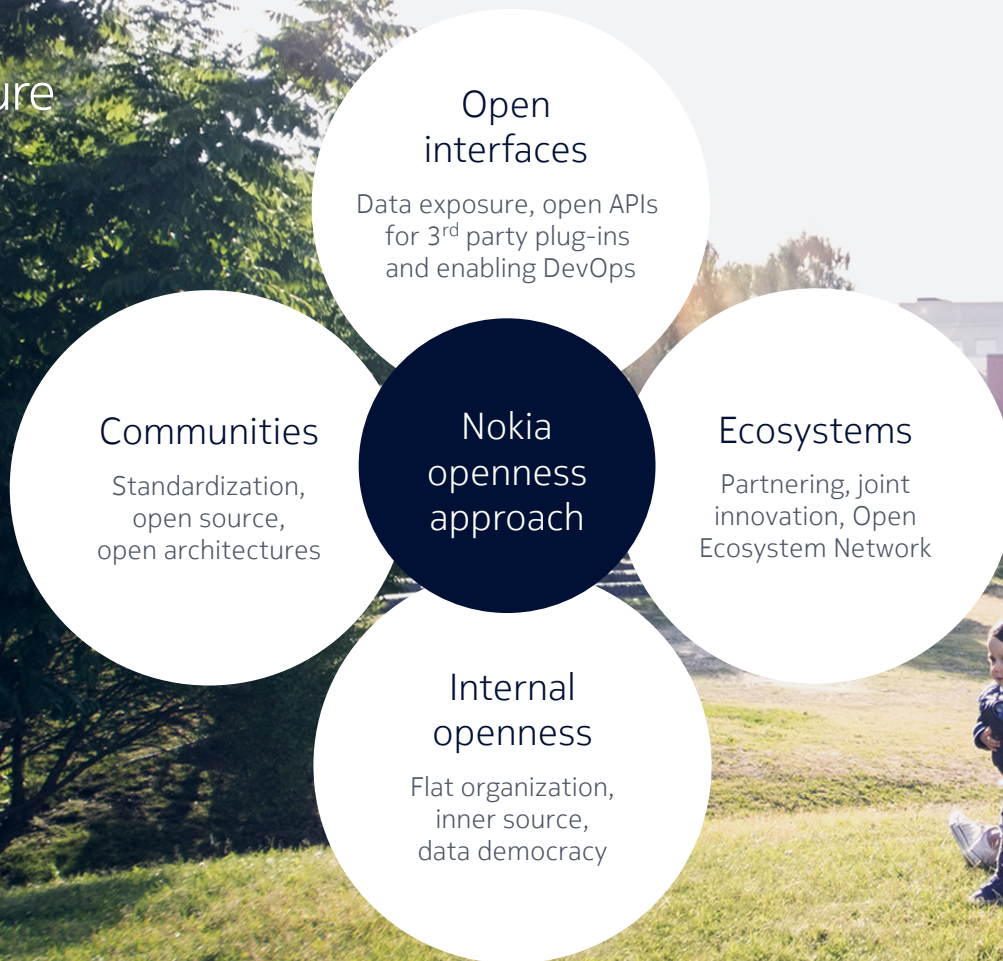
Openness is an overarching concept or philosophy that is characterized by an emphasis on **transparency** and free, unrestricted access to knowledge and **information**, as well as collaborative or cooperative management and **decision-making** rather than a central **authority**.

Openness can be said to be the opposite of secrecy.

<https://en.wikipedia.org/wiki/Openness>



Always open
For an agile future



Communities

Standardization

Network effects and reduced uncertainty.
Compatibility and interoperability between implementations.

Open source

Leverage for non-differentiating parts inside implementations. Free resources for value creation.

Open architectures

Modularity and re-use of innovation from other industries. Enable horizontalization of networking.



Open interfaces

Data exposure

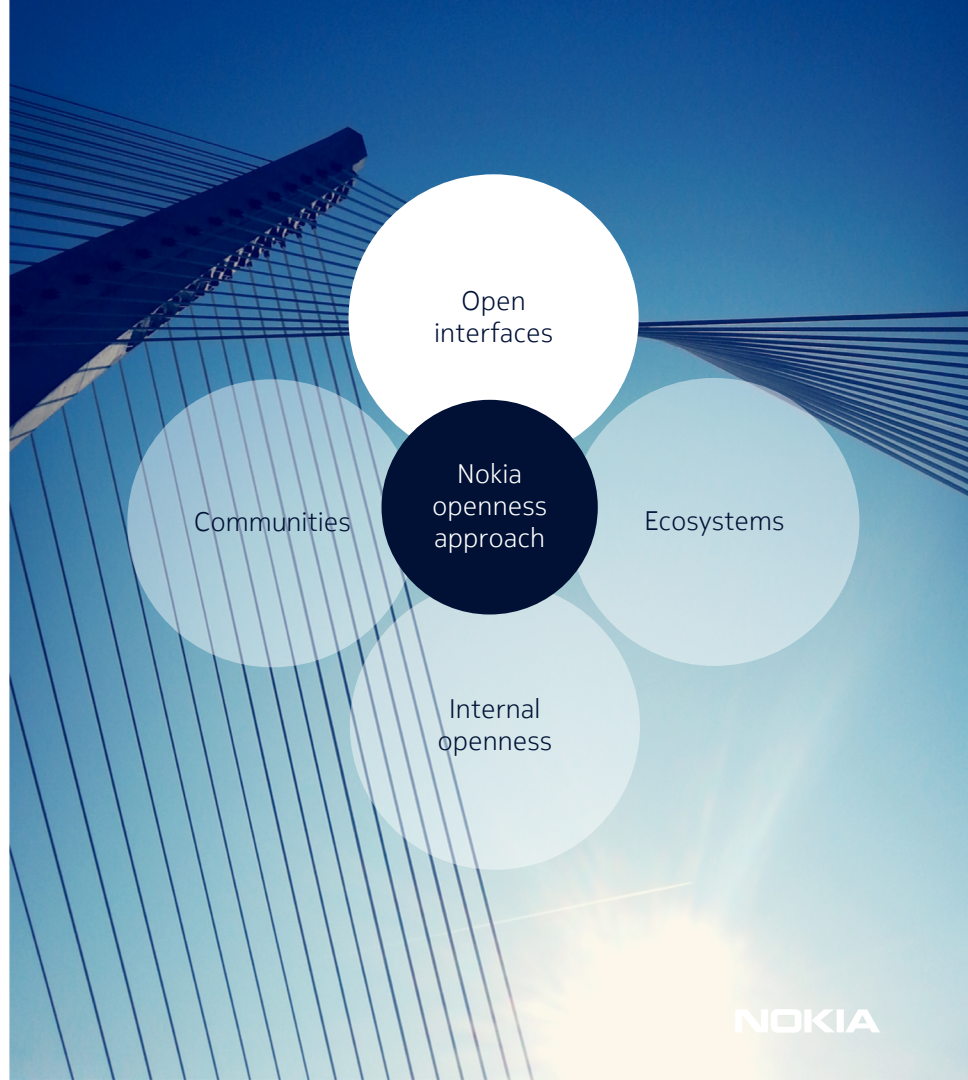
Leverage network data and context for new applications and analytics, feed machine learning applications.

3rd party plugins

Enable creation of new features with plugins running inside and on top of our platforms.

DevOps

Develop new features both internally and jointly together with customers in a much faster way.



Ecosystems

Partnering

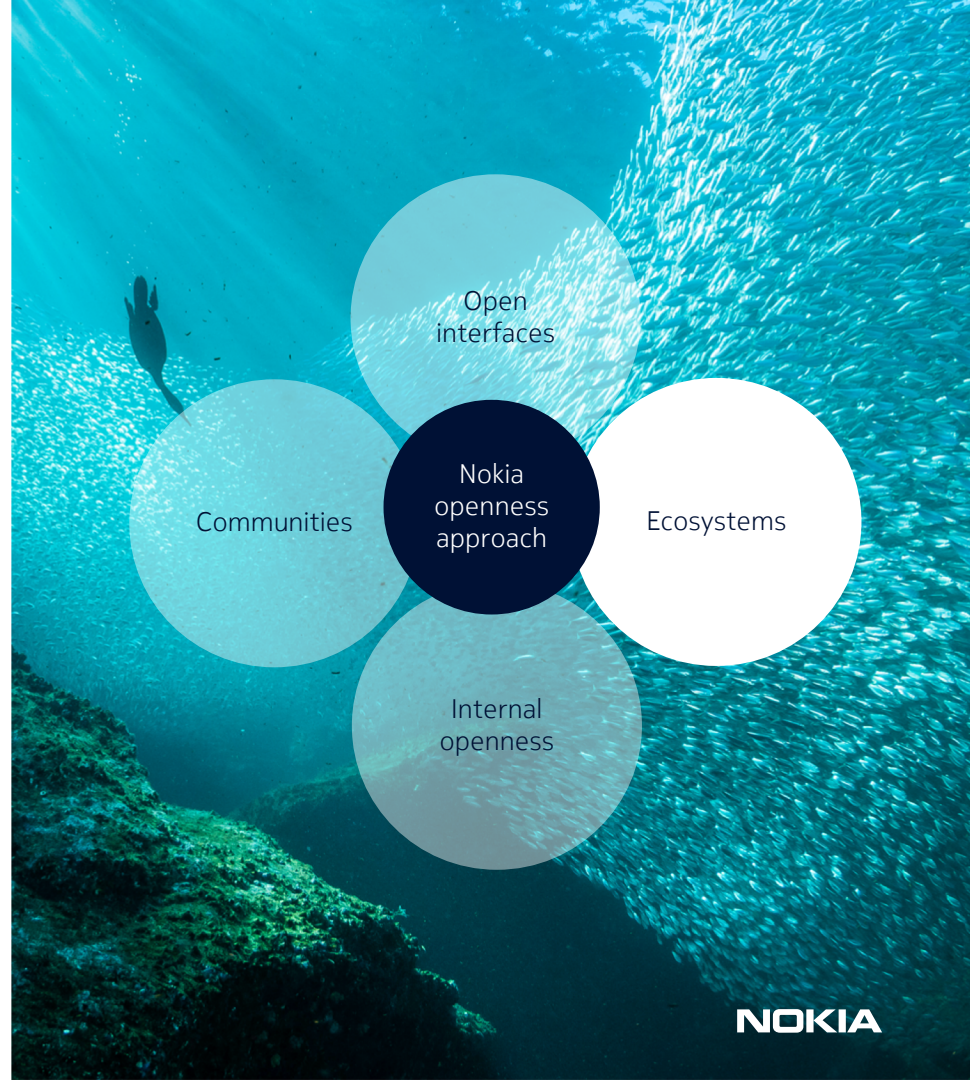
Enable best of breed networks, complement own offering. Reduced time to market.

Joint Innovation

Let customers and suppliers share innovation and value between us and themselves.

Open Ecosystem Network

Open co-creation environment for innovating bigger, better and faster



Internal openness

Flat organization

Scaled Agile Framework. Faster development with less overhead. Give power to individuals and teams.

Inner source

Open source culture; open collaboration & communication. Common software foundation.

Data democracy

Provide everyone access to data, share assets between products.



Future X architecture – built on openness

Openness and
standardization
in collaboration

Acumos

ETSI ZSM

ONAP

ETSI NFV

3GPP

CPRI

O-RAN

OB-BAA

OCP

TIP

Akraino

ETSI MEC

OPNFV

Kubernetes

OpenStack

External data sources

Open APIs



Web, Enterprise
& Vertical apps



Analytics



Machine
learning



Dynamic
Data Security

- New trust framework
- Ecosystem sharing
- Mass edge monitoring



Dynamic customer
services

Management &
Orchestration
SDN NFV

Dynamic network
optimization



Multi-operator
federation



Access agnostic
converged core



Modular, decomposed
network functions



Common
data layer

Benefits

Focus on your core business

Agility

Faster time to market and revenue. Reduce waste.

Freedom

Joint innovation, best of breed, avoid lock-in.

Trust

Open, transparent and secure solutions.

Technology and innovation do best in the open,
where people are able to share their own ideas
and build on the work of others.



NOKIA