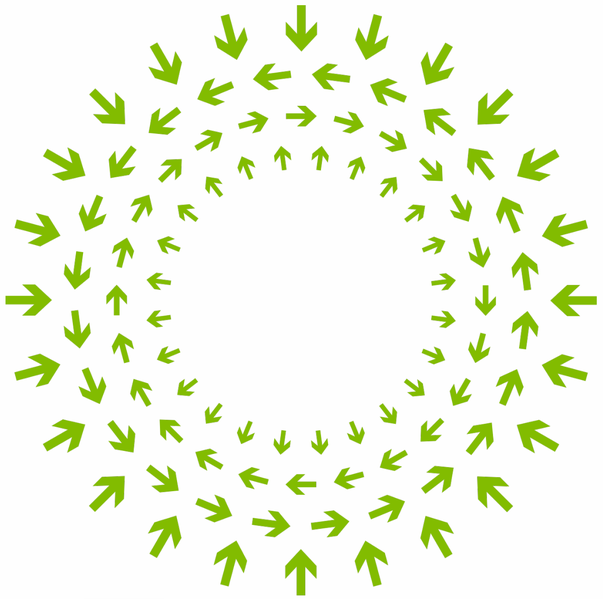
AT&T 16 Port G.fast Open DPU

OCP Telco Engineering Workshop 09.25.2017



OPEN Compute Project

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AT&T

Overview

- The 16-Port G.fast Open DPU is a high-performance access design focused on broadband deployments that support both symmetric and asymmetric speeds with a total bandwidth greater than 1Gbps per port with 212 MHz G.fast chipset.
- The ODPU is fed using an optical uplink, attached via SFP+ and supporting both Ethernet and PON technologies with speeds up to 10Gbps.
- The ODPU supports 16 customer-facing G.fast ports that can be adapted to either twisted pair or coax cables
- Applications of this design include some specific variations and considerations in order to address a broader market and set of collaborators for this project. Specifically, the set of variations considered include:
  - Deployment both indoors and outdoors
  - Use of twisted pair or coax wiring to the customers
  - Including reverse power feed

Reverse Power Feed (RPF)

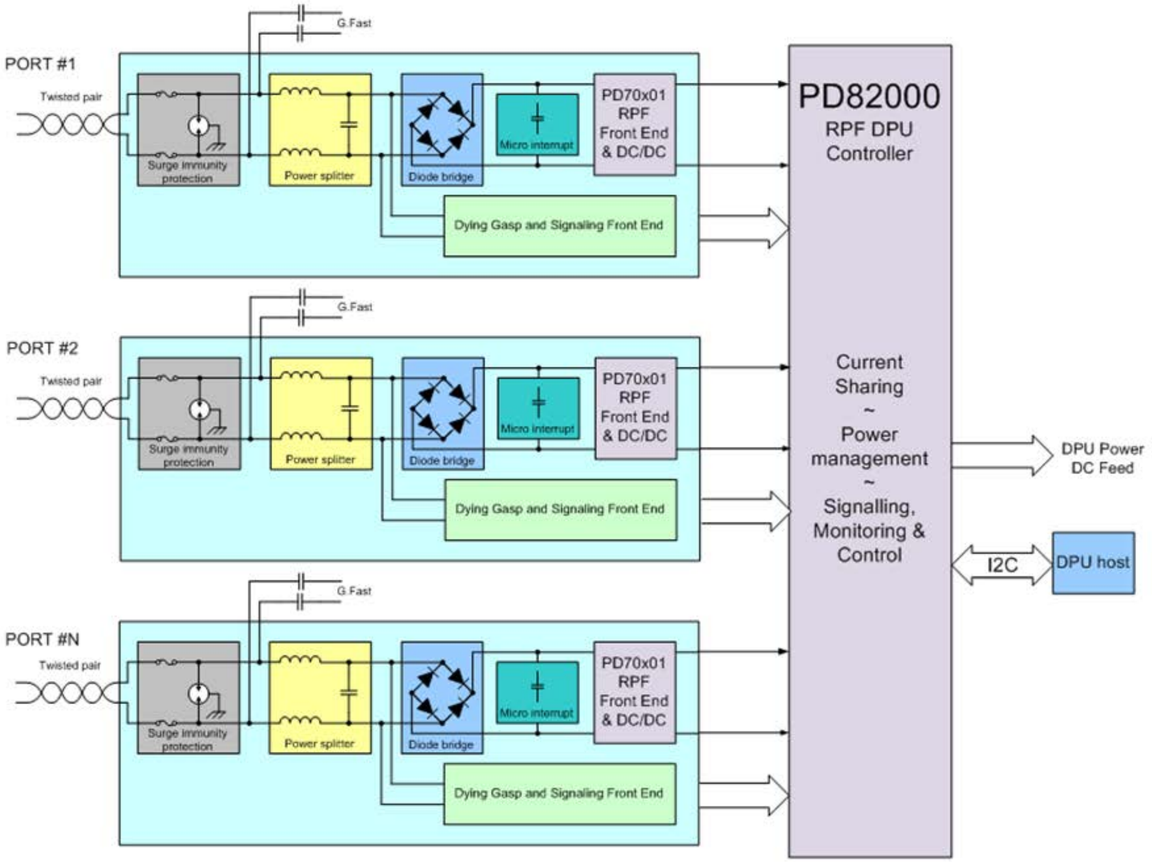
RPF allows the ODPU to draw its power from the customer premises via the copper lines between those premises and the ODPU.

ODPU should be fully operational when only a single customer is connected.

Reverse powering shall have two power splitters (one located at the customer premises and another at the remote node-ODPU) to enable power to be inserted at the customer end of a link and extracted at the remote node-ODPU.

The power load shared amongst all active lines

In accordance with ETSI standard



Optional Design consideration

Bonding of 212MHz channels

The DPU shall supports bonding of any two lines at their full 212MHz bandwidth to achieve the maximum available rate from the bonding capability. Any two lines within the ODPU can be bonded, even among lines from different DFEs.
When RPF is applicable, bonded CPE modems shall supply power on both pairs.

Daisy Chaining:

This design option shares a common uplink between 1 or more ODPU’s that are daisy chained. This option needs careful evaluation based on Network Processor capability and RPF implication.

DPU Stacking:

When two ODPUs are stacked together to increase capacity a dedicated connector is used to synchronize the clocks and pass vectoring information across the ODPUs implementing larger vectoring group, allowing both ODPUs to operate on the same copper binder. This option needs careful evaluation based on silicon capability for vectoring more than 16 lines and any RPF implication

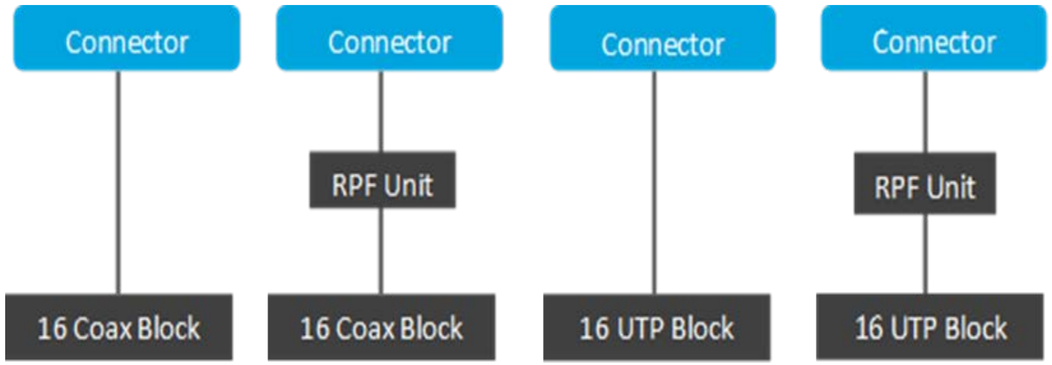
Optional Design consideration

Wiring Adaptation Modules

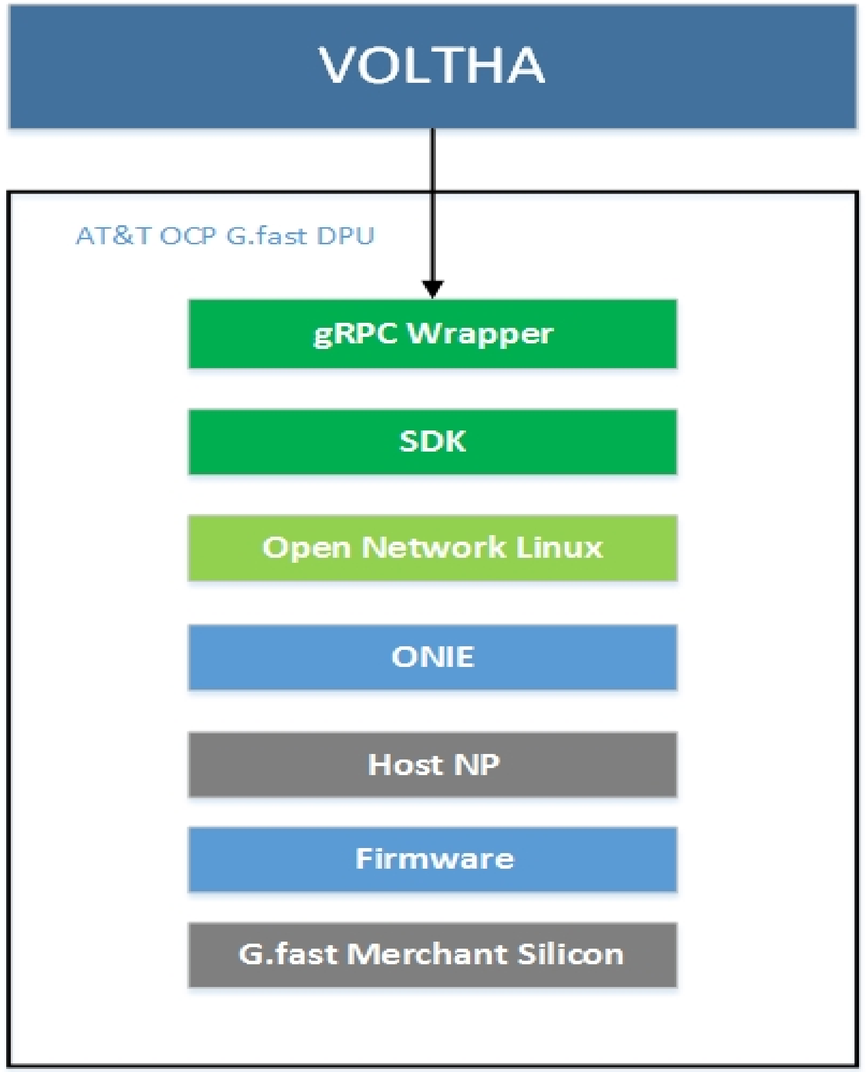
This Specification also supports an optional wiring adaptation module for the AT&T Open 16-Port G.fast DPU

This allows a single ODPU SKU to serve both applications by attaching either a twisted pair or coax module

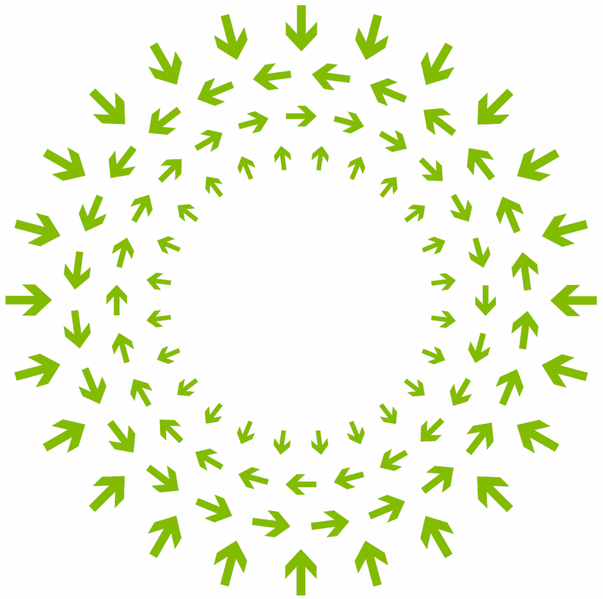
Wiring adaptation modules can be connected to the ODPU using a common connector. This module can be inside or outside of the ODPU, most likely an external unit due to challenge with performance on COAX that supports iDTA



ODPU SW Architecture



Design with Sckipio Silicon



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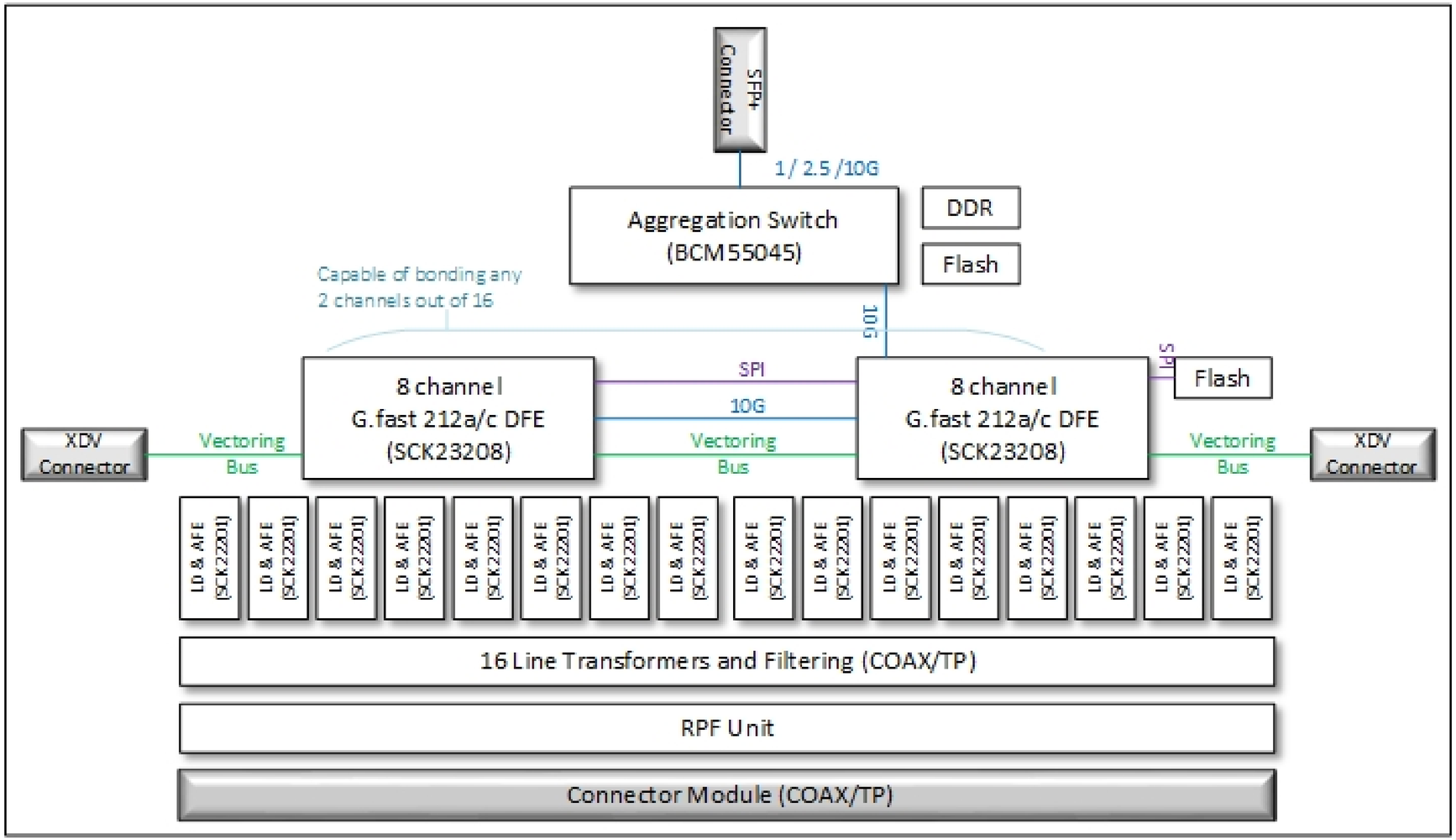
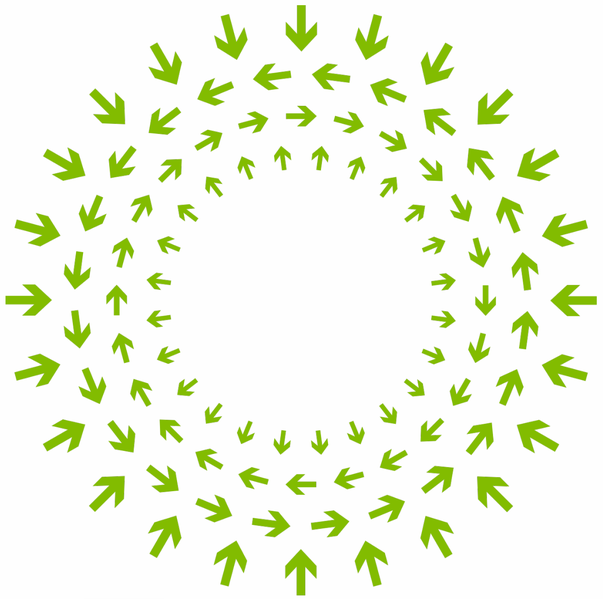
Main System Block Diagram



Design with Broadcom Silicon



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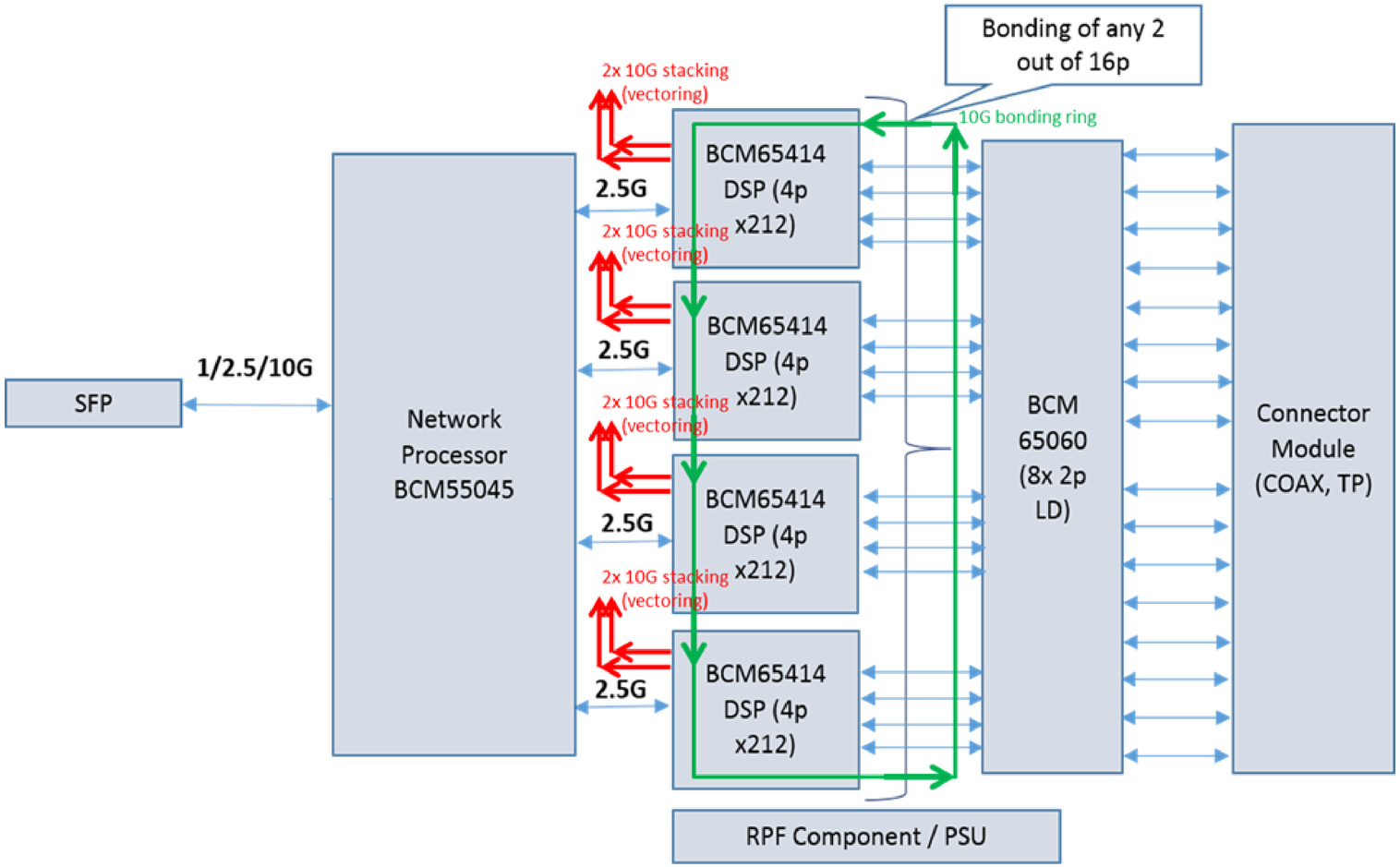

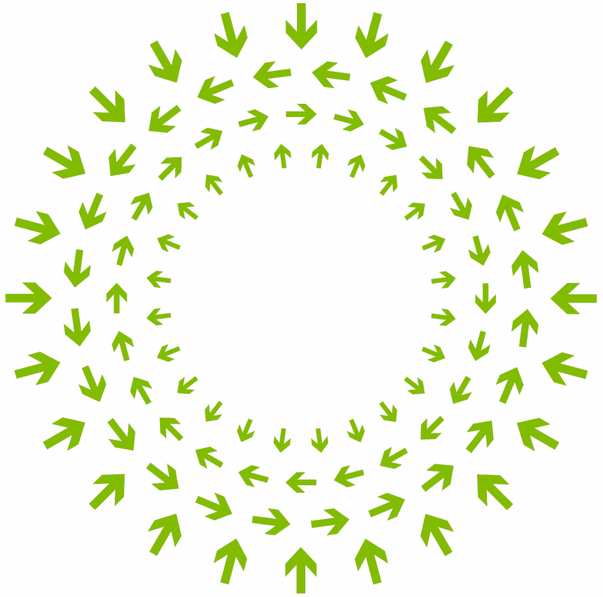

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