Driver/Toolkit/Samples

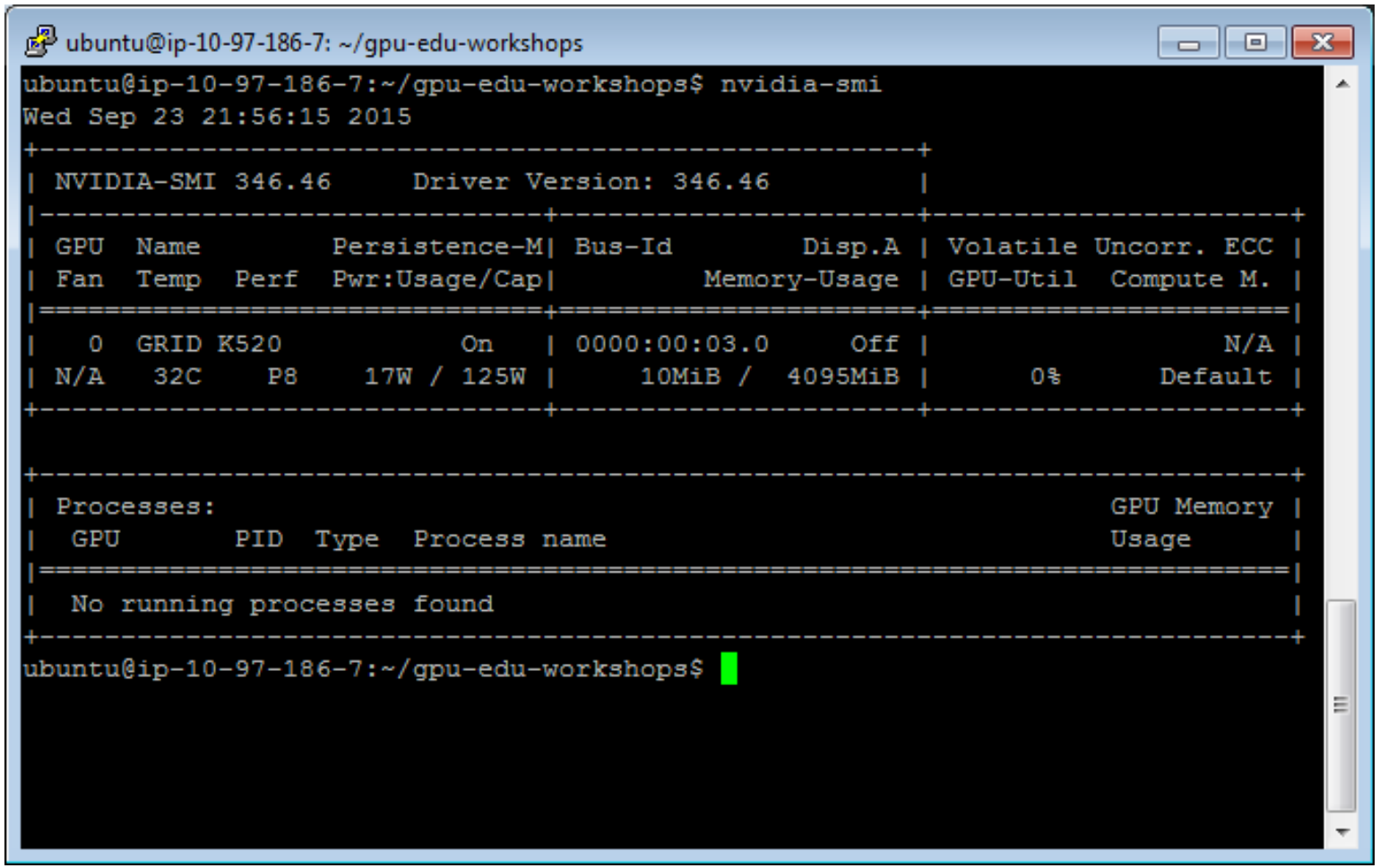
Software

- GPU Driver
- CUDA toolkit
  - Includes all the software necessary for developers to write applications
    - Compiler (nvcc), libraries, profiler, debugger, documentation
- CUDA Samples
  - Samples illustrating GPU functionality and performance
  - Examples illustrating important programming constructs and techniques.
- www.nvidia.com/getcuda -- all above software is free

Example GPU hardware and driver

- **`nvidia-smi`**
  - -h for help
  - -q for long query of all GPUs
  - PCIe Bus ID
  - Driver Version
  - ECC state
  - Power State/fans/temps/clockspeed
- **`runit.nvidia-smi`**

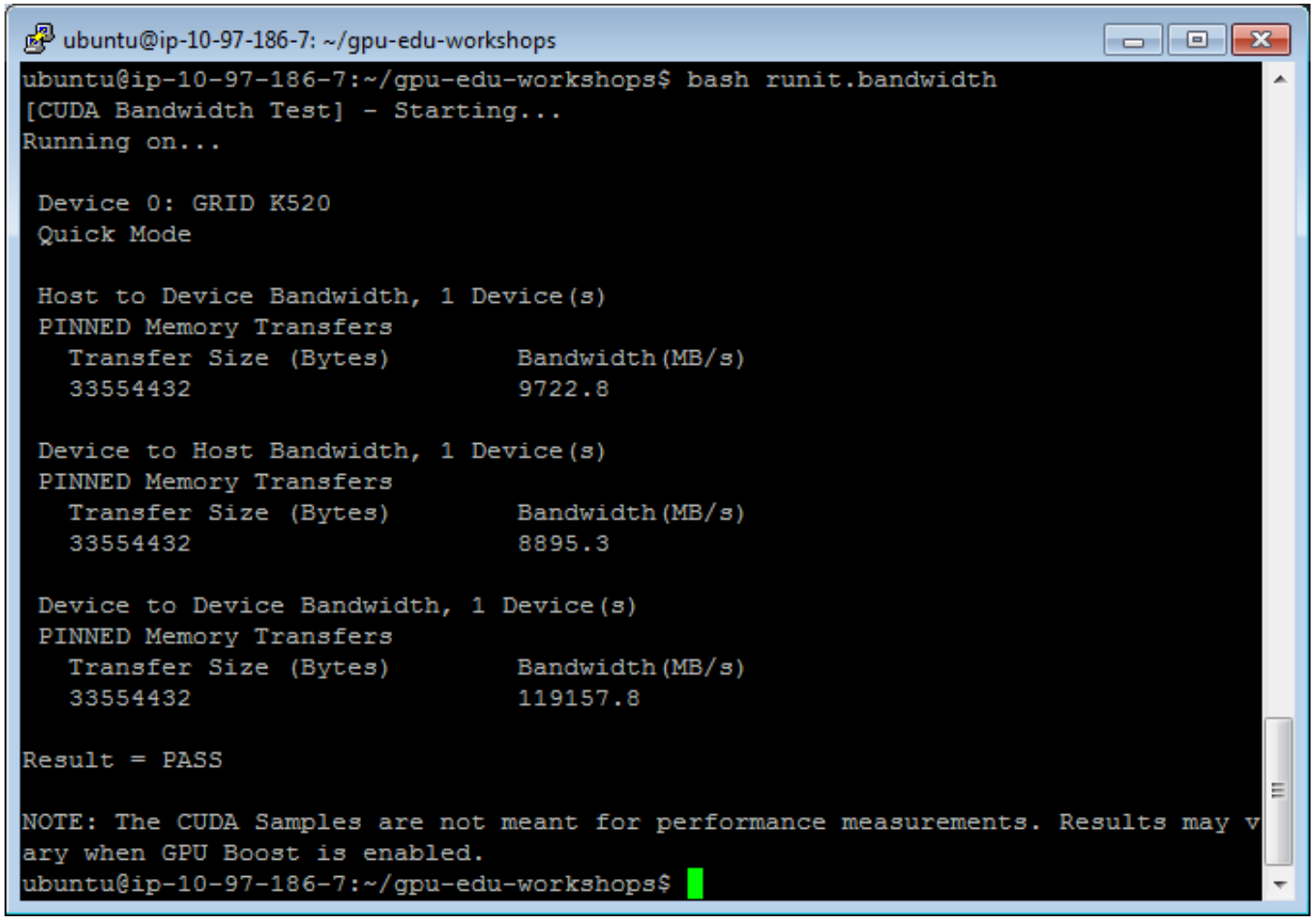
nvidia-smi


ubuntu@ip-10-97-186-7: ~/gpu-edu-workshops
ubuntu@ip-10-97-186-7:~/gpu-edu-workshops$ nvidia-smi
Wed Sep 23 21:56:15 2015
+--+
| NVIDIA-SMI 346.46   Driver Version: 346.46 |
|-------------------------------+----------------------+----------------------+
| GPU Name   Persistence-M| Bus-Id   Disp.A | Volatile Uncorr. ECC |
| Fan Temp Perf Pwr:Usage/Cap| Memory-Usage | GPU-Util Compute M. |
|===============================+======================+======================|
| 0 GRID K520   On | 0000:00:03.0   Off | N/A |
| N/A   32C   P8   17W / 125W | 10MiB / 4095MiB | 0%   Default |
+-------------------------------+----------------------+----------------------+
+---+
| Processes: GPU Memory |
| GPU   PID Type Process name   Usage |
|===|
| No running processes found |
+---+
ubuntu@ip-10-97-186-7:~/gpu-edu-workshops$

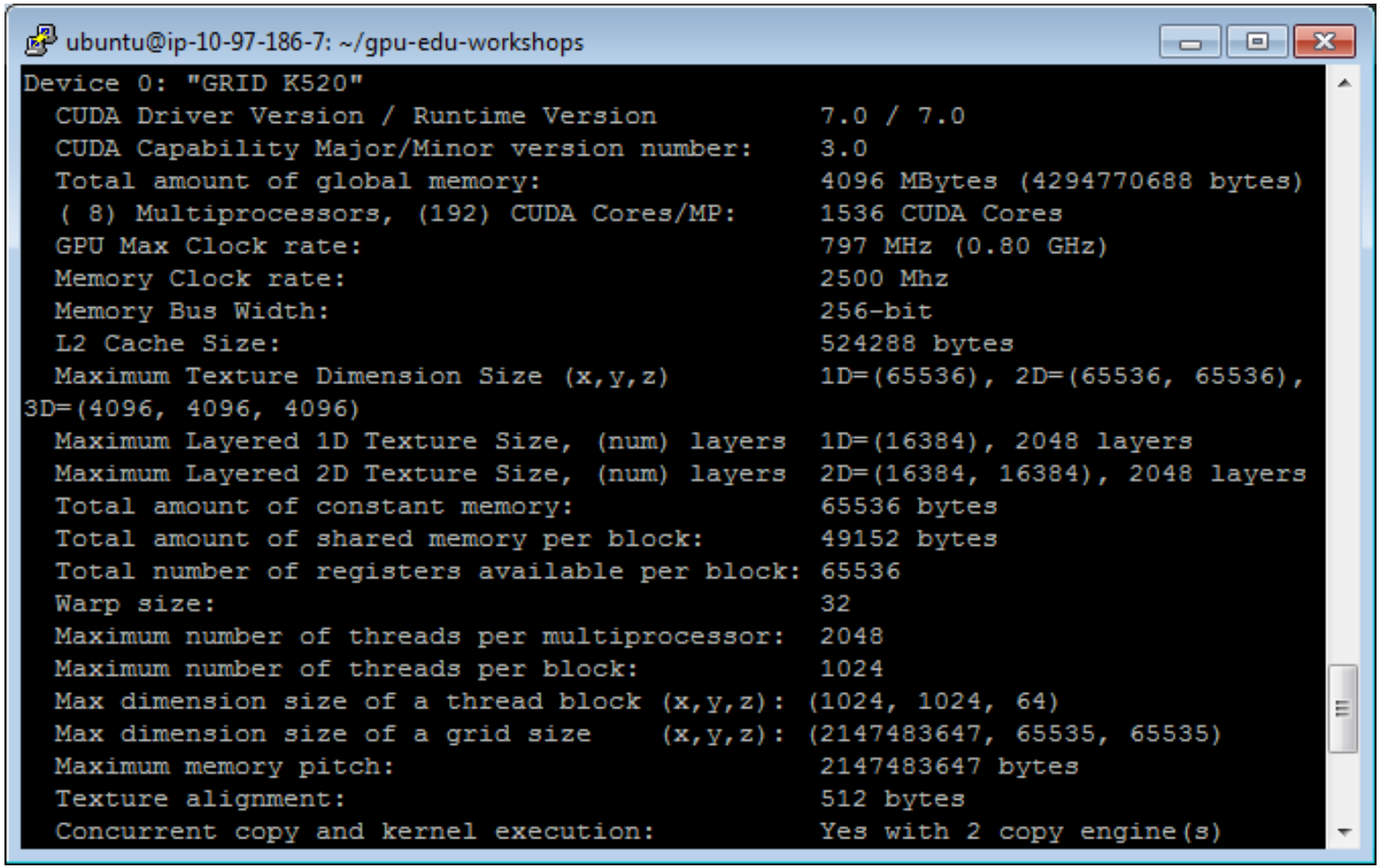
CUDA Toolkit

- Compiler (nvcc)
- Libraries
  - BLAS, FFT, cuSPARSE, cuSOLVER, cuDNN, RNG, NPP
- Debuggers
  - cuda-gdb, cuda-memcheck
- Profilers
  - NVVP (GUI), nvprof (command-line)

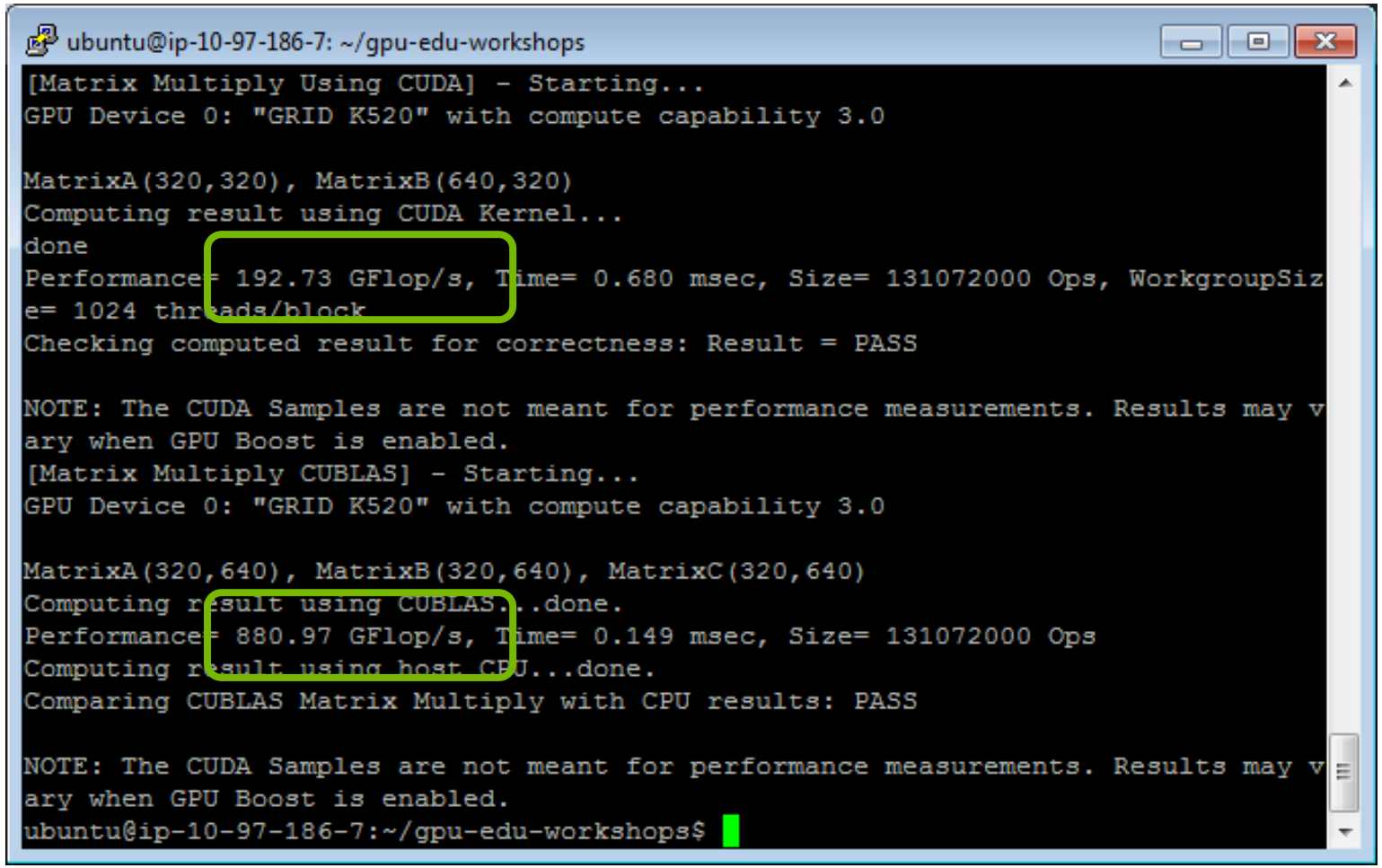
bash runit.bandwidth



bash runit.query

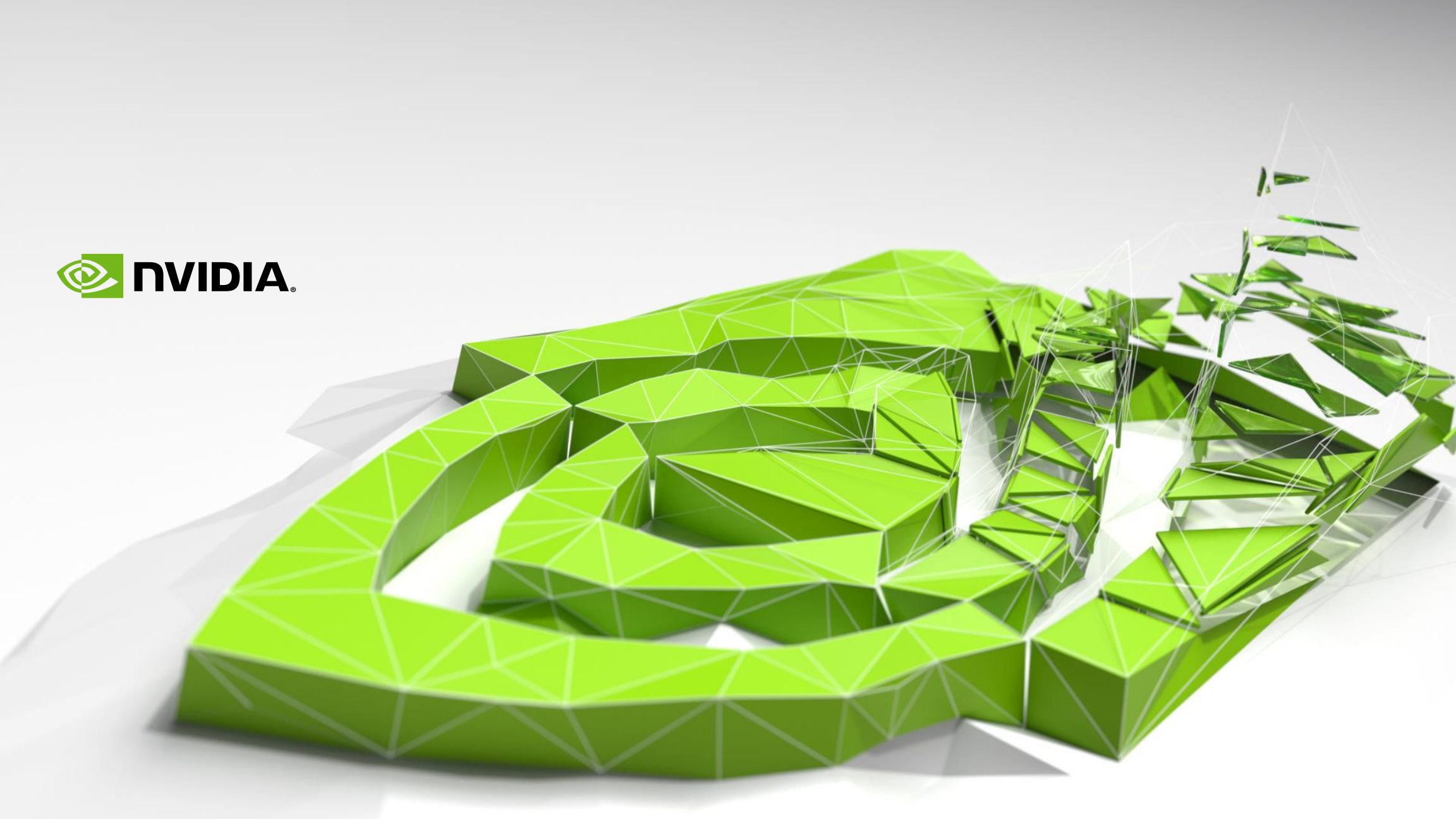


bash runit.matmul



Recap

- Driver
  - **`nvidia-smi`** to query GPU hardware and state
- CUDA Toolkit
  - Development tools for GPU software development
- CUDA Samples
  - Sample code and diagnostic tests


NVIDIA

Title Goes Here

Speaker, Date

CUDA Samples (bundled with Toolkit)

- **`~/NVIDIA_CUDA-7.0_Samples/bin/x86_64/linux/release`**
- Sample programs to illustrate GPU programming constructs and algorithms

- Useful diagnostic tests to query GPU and its performance

- **`cd gpu-edu-workshops`**

Content slide: 36 pt black, trebuchet font, up to 2 lines maximum, capitalize only first word

Subtitle: 24 pt, one line maximum

Body/bullet text no longer has a bullet icon

Use 20 pt font

No sub-bullets allowed

No more than five bullets; one idea per bullet

Example of **highlighted** text

Same as previous slide

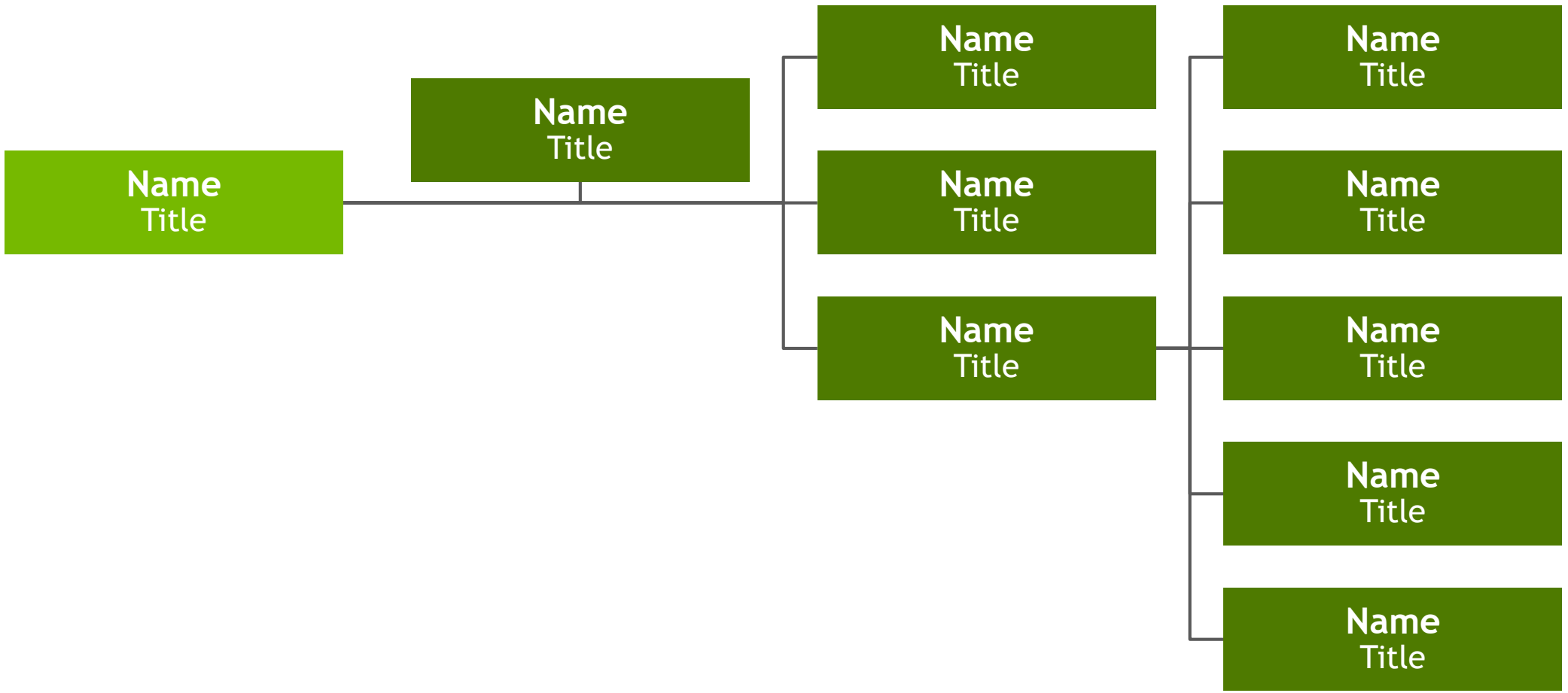
But includes logo and page number in lower right corner

NVIDIA confidential

Use this for slides that include “confidential” information/data

Title only slide

Org chart example



Agenda

Action item number one

Action item number two

Action item number three

Action item number four

Action item number five

Agenda

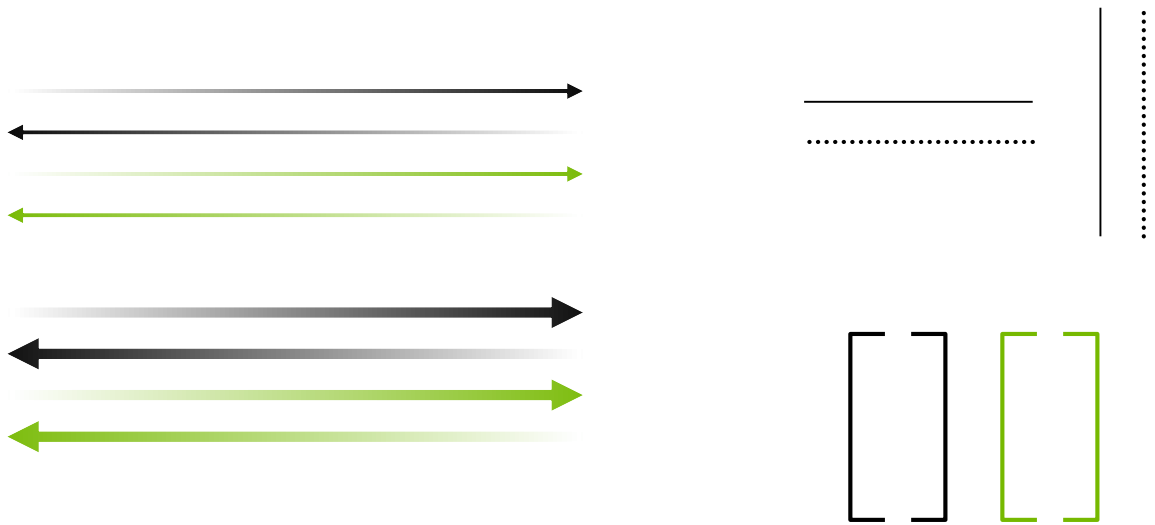
9:00 am	–	9:30 am	Welcome	Presenter Name
9:30 am	–	10:30 am	Keynote	Presenter Name
10:30 am	–	11:30 am	GPU/gaming	Presenter Name
11:30 am	–	12:30 pm	Break	All
12:30 pm	–	1:30 pm	Automotive	Presenter Name
1:30 pm	–	2:30 pm	Enterprise	Presenter Name
2:30 pm	–	3:30 pm	Financials	Presenter Name
3:30 pm	–	5:00 pm	Q&A	All

Section divider or transition slide

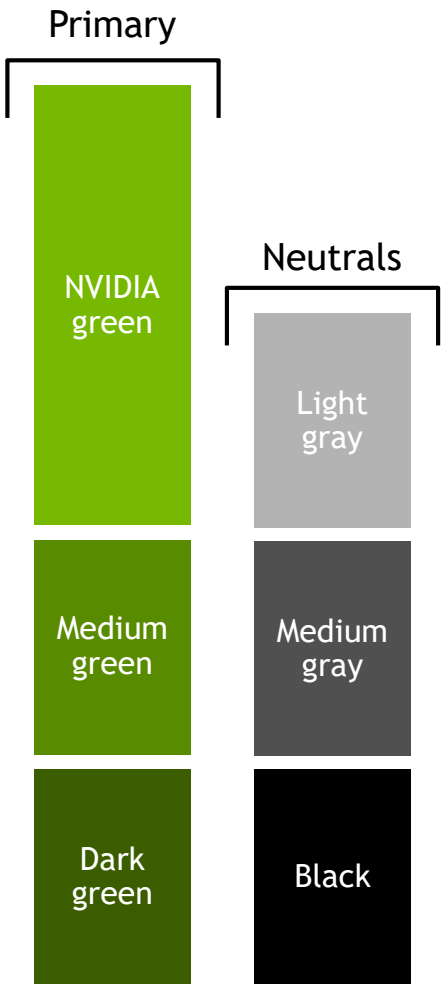
Graphic styles

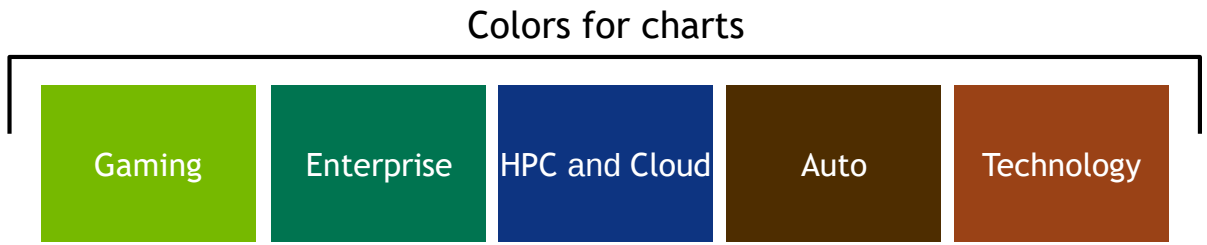
Green Box Style

Gray Box Style



Color palette





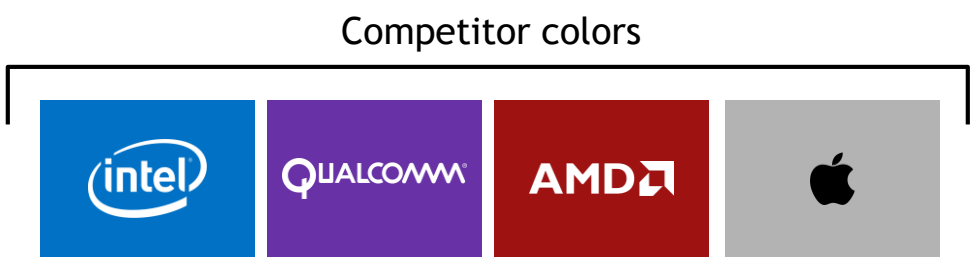
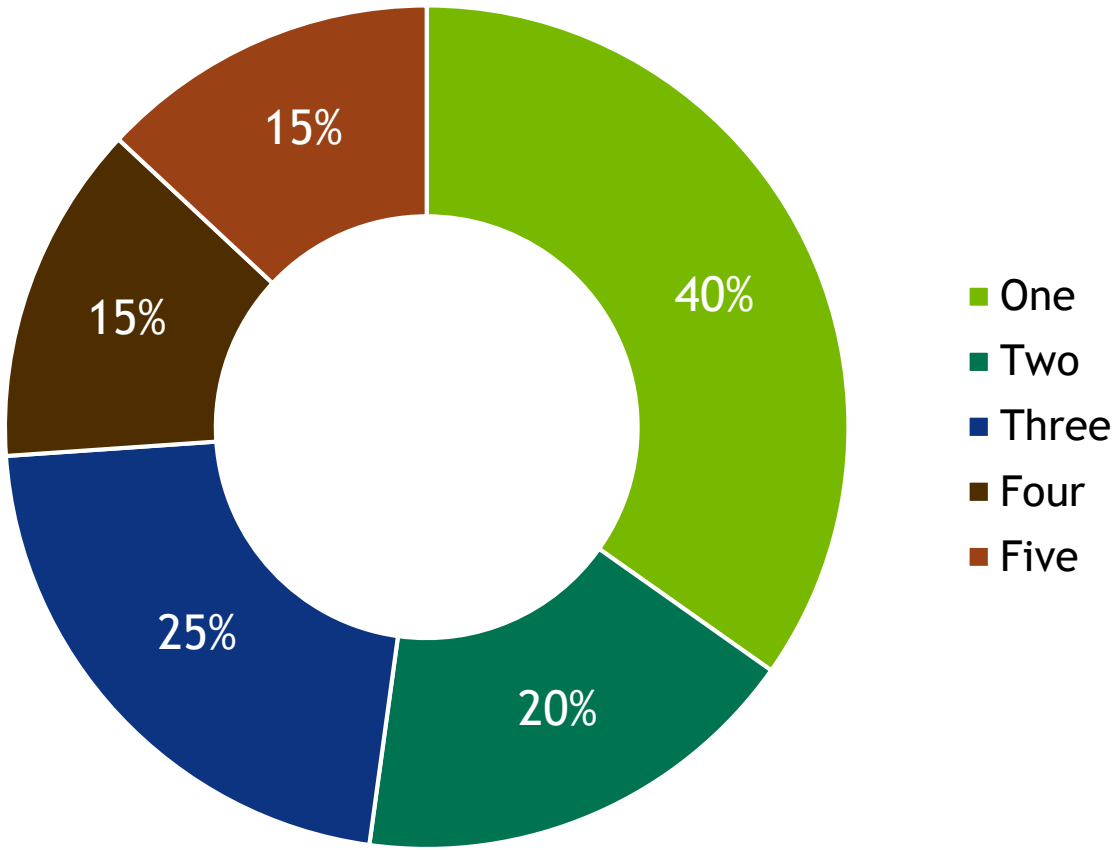


Table sample

	CATEGORY ONE	CATEGORY TWO	CATEGORY THREE
Trebuchet bold, 18 pt	Trebuchet, 16 pt	Text	Text
Row one	Text	Text	Text
Row two	Text	Text	Text
Row three	Text	Text	Text

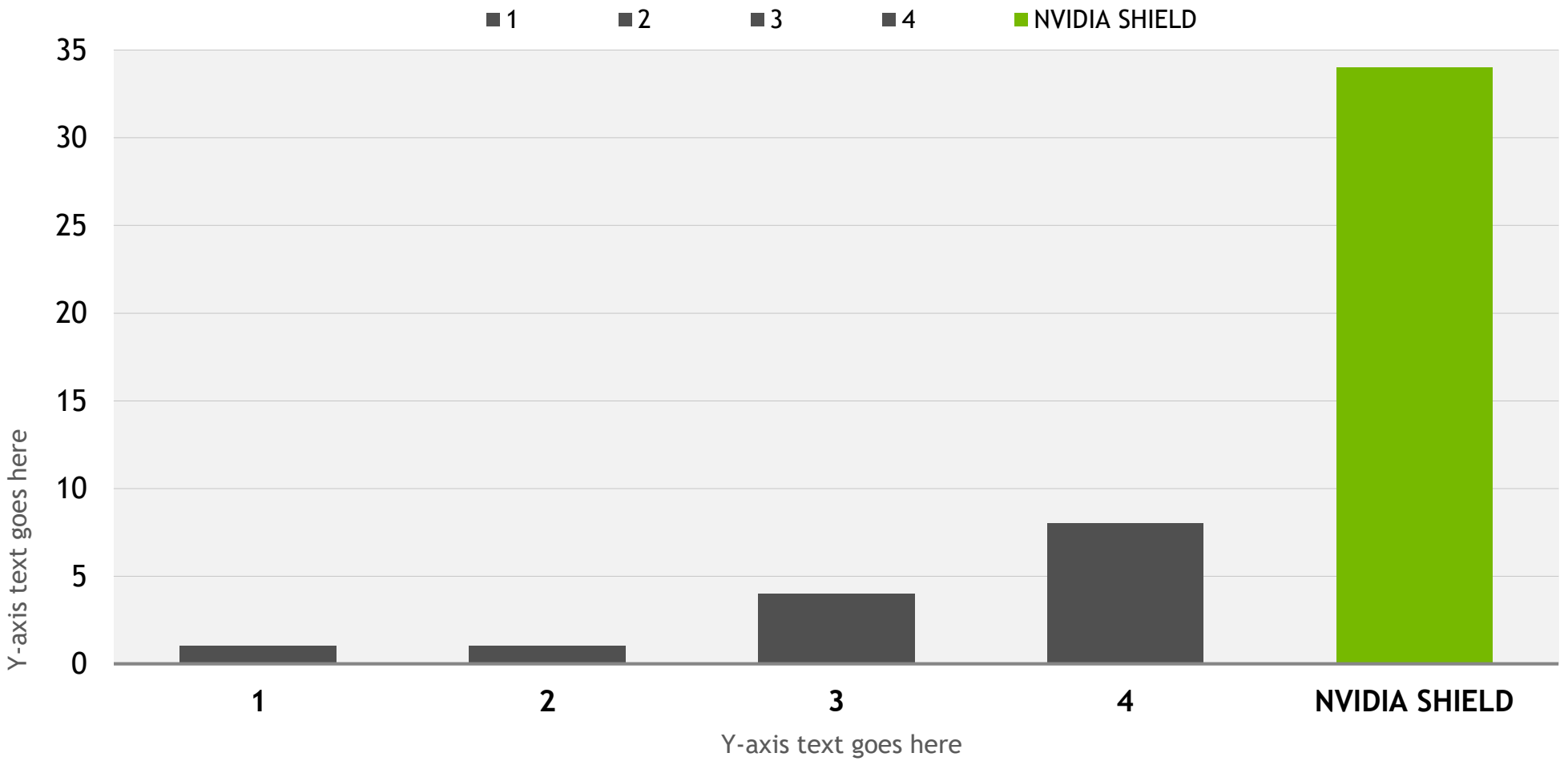
Source: Source information is 8 pt, italic

Pie chart sample



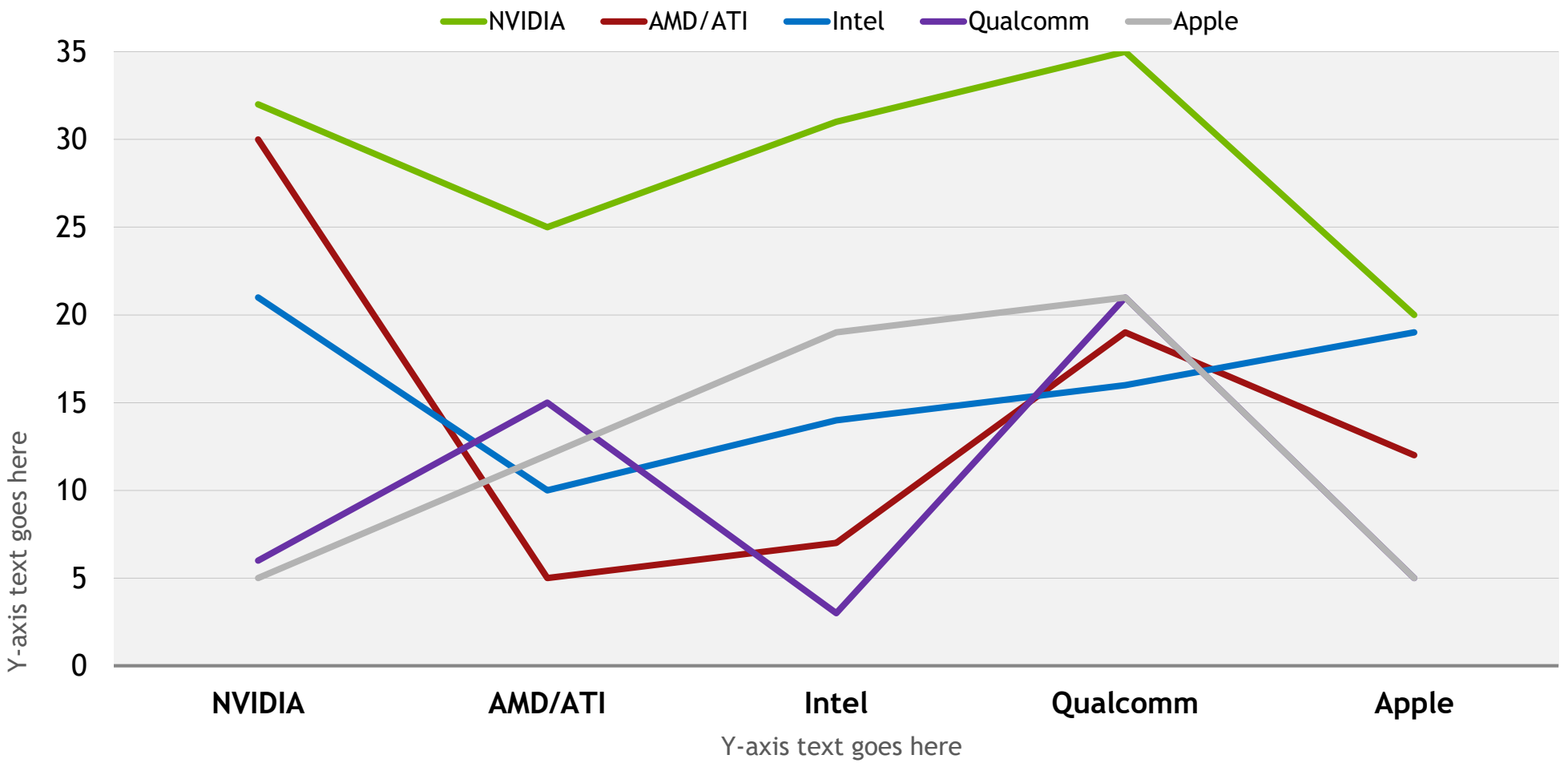
Source: Source information is 8 pt, italic

Bar chart sample



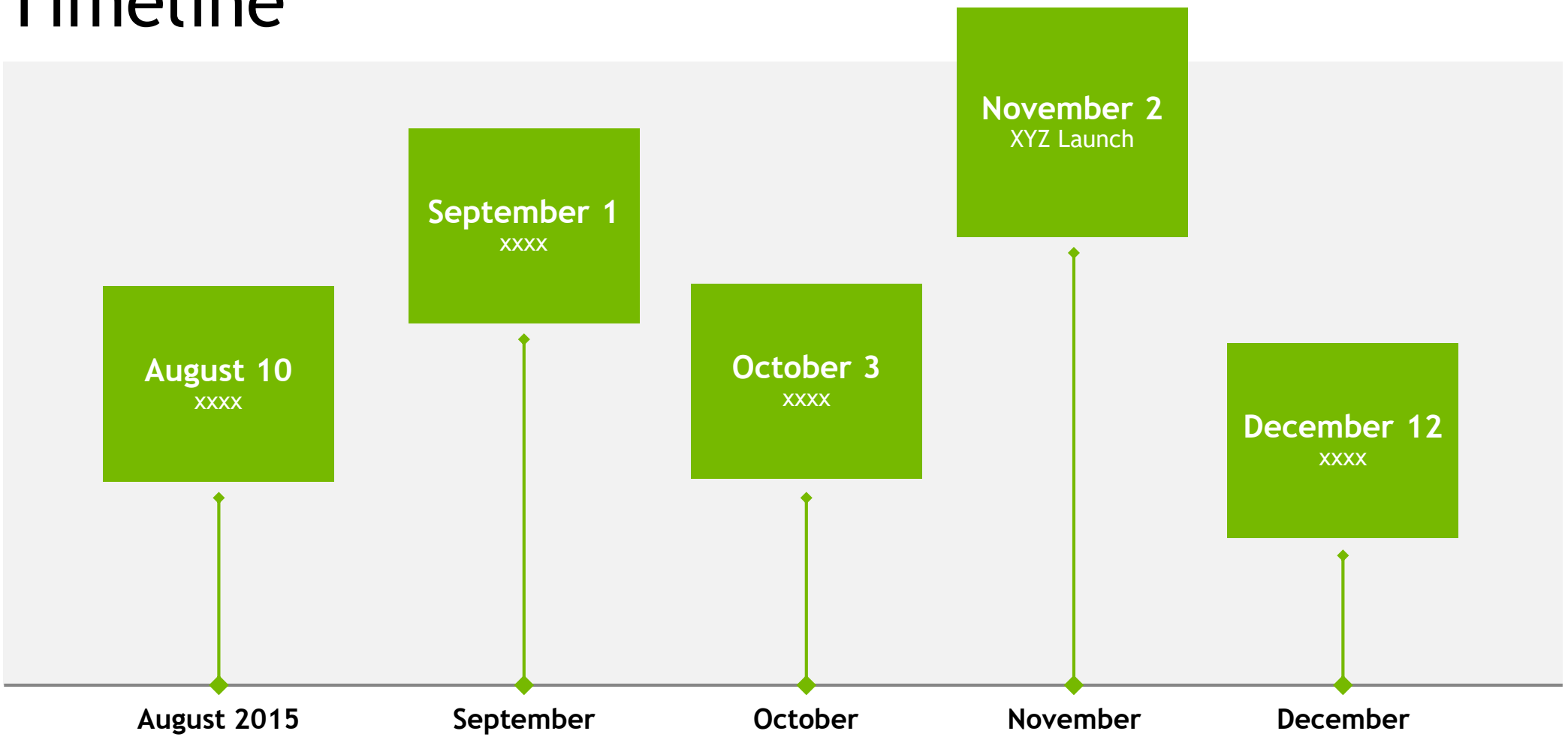
Source: Source information is 8 pt, italic

Line chart sample



Source: Source information is 8 pt, italic

Timeline



Source: Source information is 8 pt, italic

Inserting video: Insert/Video/Video from File.
Insert video by browsing your directory and selecting OK.

File type that works best in PowerPoint is: .wmv

Video file

DEMO: Placeholder *(insert picture behind gray bar)*

Compare or contrast sample

Column one

Sample text placed here

Best to keep information no more than 5 bullet points long

Should be used to distinguish buckets of information across multiple columns

Column two

Sample text placed here

Best to keep information no more than 5 bullet points long

Should be used to distinguish buckets of information across multiple columns

Column three

Sample text placed here

Best to keep information no more than 5 bullet points long

Should be used to distinguish buckets of information across multiple columns

Box diagram

Text only descriptors

Title here

Supporting text here

Title here

Supporting text here

Title here

Supporting text here

Title here

Supporting text here

Box diagram

Title with images

Title here

Title here

Title here

Title here

Product slide

Stat example

Supporting text goes here

[Use green for POSITIVE]

Text goes here

[Use red for NEGATIVE]

Text goes here

[Use gray for NUETRAL]

Photo caption

Text slide with photograph

Optional subtitle

Text goes here

Text goes here

Text slide with photographs

Multiple images

Allow a consistent “gutter” space between images

Use a gray outline (R: 90, G: 90, B: 90) at 0.5 pt

“Quoted text example goes here. Trebuchet, 42 pt. Use with shorter (headline type) quotes.”

Quote Source, Trebuchet 20 pt

“Quoted text example goes here. Trebuchet, 42 pt. Use with shorter (headline type) quotes.”

— Source, Trebuchet 18 pt

“Multi-quote slide sample.”

— Source: Either a name or publication text here, OR, a company logo to the right

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“Multi-quote slide sample.”

— Source: Either a name or publication text here, OR, a company logo to the right

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“Multi-quote slide sample.”

— Source: Either a name or publication text here, OR, a company logo to the right

Customer success story

Optional subtitle

ADD CUSTOMER LOGO HERE

Challenge

Ei eos viris putant, veritus deserunt et qui.

Ea his diam labore prodesset, ei justo atomorum per.

Ei ullum utinam recteque cum. Quem tota dici

Solution

Ei eos viris putant, veritus deserunt et qui.

Ea his diam labore prodesset, ei justo atomorum per.

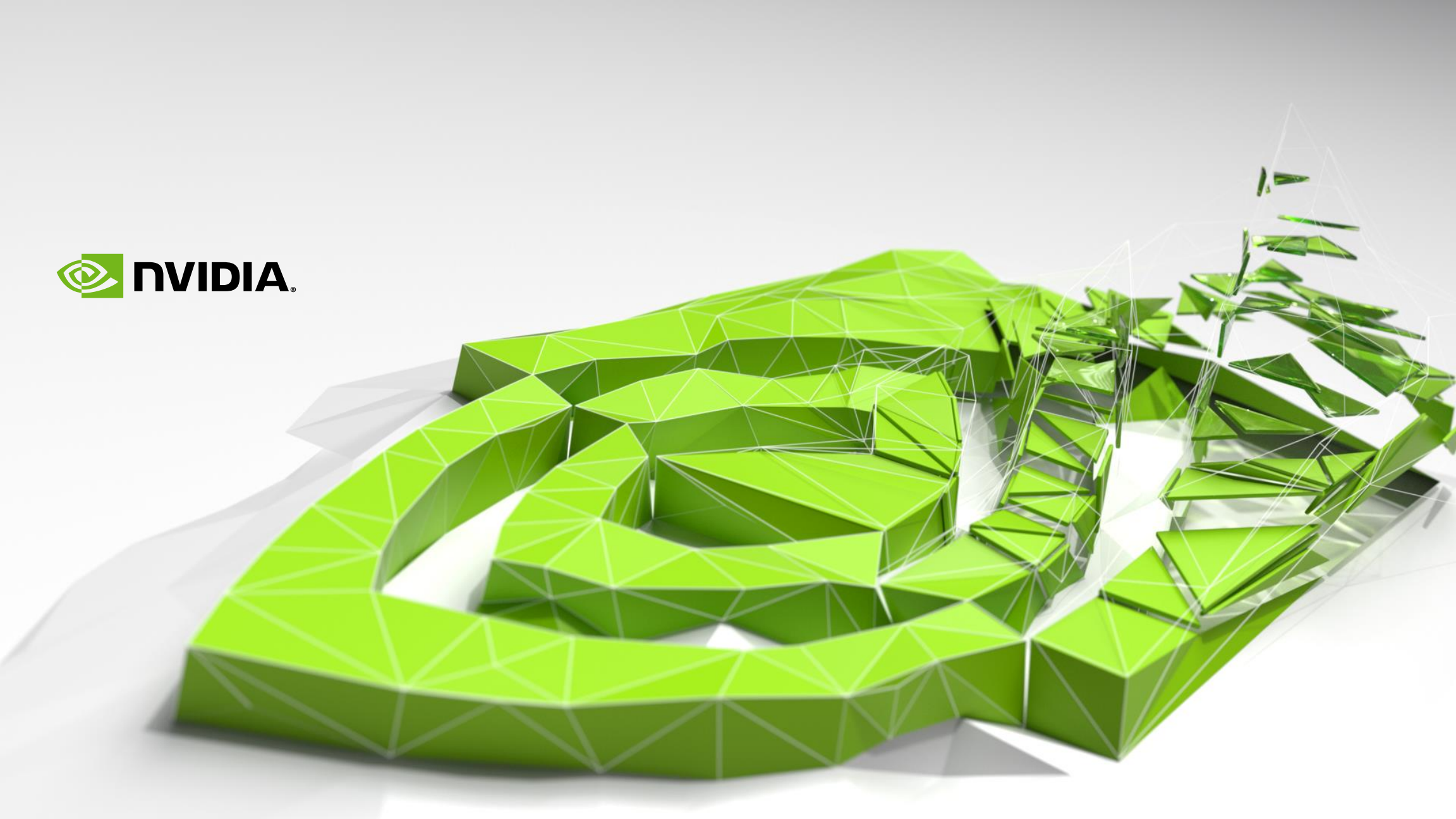
Ei ullum utinam recteque cum. Quem tota dici

Impact

Ei eos viris putant, veritus deserunt et qui.

Ea his diam labore prodesset, ei justo atomorum per.

Ei ullum utinam recteque cum. Quem tota dici


NVIDIA