



Trento checks engine under the hood

Delivering configuration checks at scale for the SAP ecosystem and the rest of the world

Who am I?



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You enter the
room...



Implementing a massive multiplayer online game

Time to cast a fireball!

- A distributed system
 - Powered by the actor model paradigm
- The players are connected to a supervised session that acts as a monitor
- Players' skill casting and movements are broadcasted messages
- The supervised session process just resolves the skills and the movements in order and applies the effects
- Profit!
 - (as in 6D6 fire damage)

From the MMORPG to the Pacemaker cluster

Because SAP isn't fun, but our job can be

- Mapping a boss fight to a checks execution
- Mapping players to agents
- Checks execution server
 - Supervised process
 - Waits for all the “players” to make their move
 - Then resolves, aka: stores and dispatches the result

Les joies du Erlang

- Wanda is built on top of Elixir and Erlang OTP
- Adopts the actor model for concurrency
- Supervised processes
- Sharp, pure, tested domain logic
- Leveraging RabbitMQ for message publishing
 - This is true for Trento Web, Wanda, and the agents

Topology

Trento Agents reporting for duty



Facts gathering

- Agents use “fact gatherers” to retrieve infos about the running system
- That knowledge is embedded in the agent
- SAP-related fact gatherers
- Non-SAP fact gatherers
- Plugin system available for additional gatherers
- Plenty of work to do to implement new gatherers

Final view

demo.trento-project.io/clusters/7965f822-0254-5858-abca-f6e8b4c27714/executions/last

Sign out

← Back to Cluster Details

Checks Results for cluster hana_cluster_1

Filter checks result...

HA Scenario	Provider
HANA scale-up	Azure

Corosync

ID	DESCRIPTION	RESULT
A1244C	Corosync <code>consensus</code> timeout is set to expected value	⚠
C620DC	Corosync <code>expected_votes</code> is set to expected value	⚠

TARGET	EXPECTATIONS
vmhdbdev01	0/1 Expectations met.
vmhdbdev02	0/1 Expectations met.

24ABCB	Corosync <code>join</code> timeout is set to expected value	⚠
845CC9	Corosync <code>max_messages</code> is set to expected value	⚠

TARGET	EXPECTATIONS
vmhdbdev01	0/1 Expectations met.
vmhdbdev02	0/1 Expectations met.

Final view

The screenshot shows the Trento web interface. The browser address bar displays the URL: `demo.trento-project.io/clusters/7965f822-0254-5858-abca-f6e8b4c27714/executions/last/C620DC/host/vmhdbdev01`. The Trento logo is in the top left, and a 'Sign out' link is in the top right. A left sidebar contains navigation items: Dashboard, Hosts, Clusters, SAP Systems, HANA Databases, Checks catalog, Settings, and About. The main content area features a green link '[← Back to Check Results](#)' and a warning message: '⚠ Corosync `expected_votes` is set to expected value'. Below this is a table with the following data:

Check ID	Host	Provider
C620DC	vmhdbdev01	Azure

Underneath the table is an 'Evaluation Results' section showing 'Failing'. Below that is a 'Gathered Facts' section with the following data:

Darth Vader	Aleen Minor
Luminara Unduli	Iridonia

At the bottom of the page, the footer contains: '© 2020-2023 SUSE LLC' on the left, 'This tool is free software released under the Apache License, Version 2.0' on the right, and the page number '10' in the bottom right corner.

The Trento DSL

```
zsh
blaster at gandalf in [~/Desktop/projects/wanda] on git:main x d9acee3 "Add default failure message for expect_same expectatio
ns (#243)"
16:06:48 > cat priv/catalog/FB0E0D.yaml
id: "FB0E0D"
name: Check Corosync consensus timeout during runtime
group: Corosync
description: |
  Corosync is running with consensus timeout set to the recommended value
remediation: |
  ## Abstract
  The runtime value of the Corosync `consensus` timeout is not set as recommended.

  ## Remediation
  Adjust the corosync `consensus` timeout as recommended on the best practices, and reload the corosync service.

  1. Set the correct `consensus` timeout in the `totem` section in the corosync configuration file `/etc/corosync/corosync.conf`.
  This action must be repeated in all nodes of the cluster.
  ...
  [...]
  totem {
    consensus: <timeout value>
  }
  [...]
  2. Reload the corosync configuration:
  `crm corosync reload`

## References
Azure:
- https://docs.microsoft.com/en-us/azure/virtual-machines/workloads/sap/high-availability-guide-suse-pacemaker

AWS:
- https://docs.aws.amazon.com/sap/latest/sap-hana/sap-hana-on-aws-cluster-configuration.html

GCP:
- https://documentation.suse.com/sbp/all/single-html/SLES4SAP-hana-sr-guide-PerfOpt-15/#id-example-for-etccorosynccorosync-c
onf

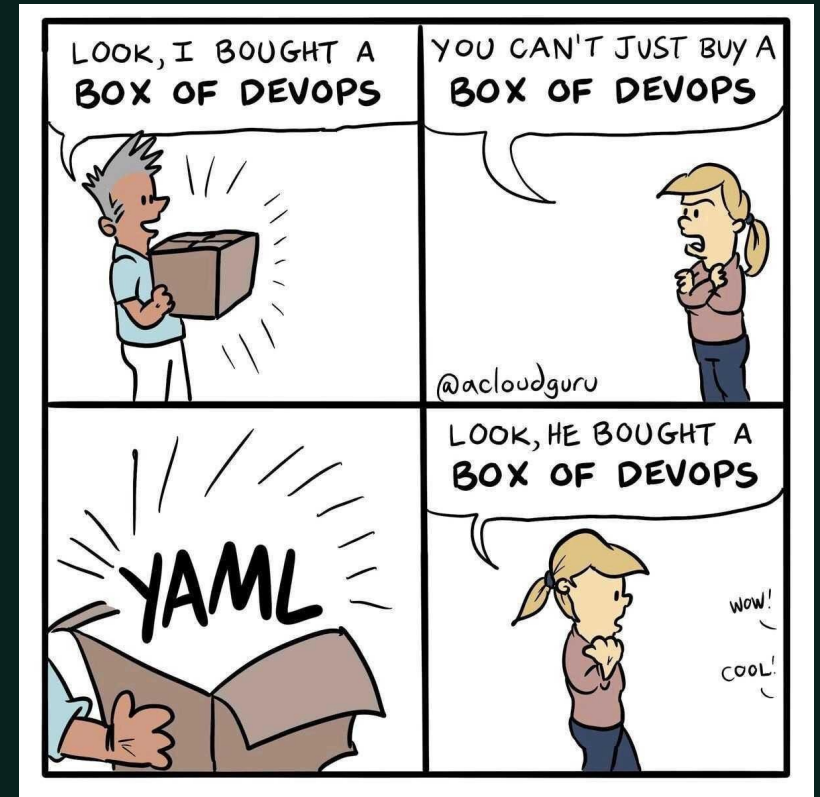
SUSE / KVM:
- https://documentation.suse.com/sbp/all/single-html/SLES4SAP-hana-sr-guide-PerfOpt-15/#id-example-for-etccorosynccorosync-c
onf

Nutanix:
- https://documentation.suse.com/sbp/all/single-html/SLES4SAP-hana-sr-guide-PerfOpt-15/#id-example-for-etccorosynccorosync-con
f

facts:
- name: consensus_timeout
gatherer: corosync-cmapctl
argument: runtime.config.totem.consensus

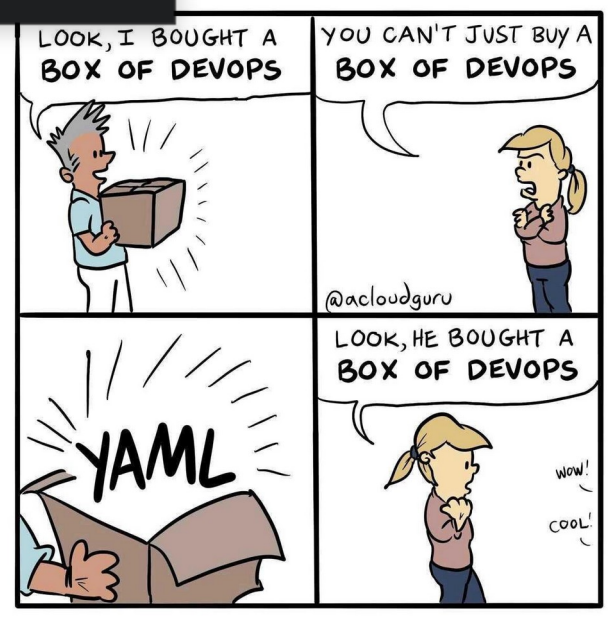
values:
- name: expected_consensus_timeout
default: 6000
conditions:
- value: 36000
  when: env.provider == "azure" || env.provider == "aws"
- value: 24000
  when: env.provider == "gcp"

expectations:
- name: expectations_consensus_timeout
expect: facts.consensus_timeout == values.expected_consensus_timeout
```



Trento DSL: we got the cookies and the goodies

```
blaster at gandalf in [~/Desktop/projects/wanda/priv/catalog] on git:main x d9acee3 "Add default failure message for expect_sam expectations (#243)"
18:16:49 > tlint lint -f 00081D.yaml
00081D - Unknown operator: '~' (line 1, position 20)
path: /expectations/0
```





That's all Folks!

:-)

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This is a light theme cover page

Best for day-to-day presentations in brighter rooms.

This is a title slide
with an infinity
image



Getting started

Tips and tricks on how to use our latest
template and assets

A few things to keep in mind...

Alignment

Use the built-in guides to make sure content is aligned and consistent throughout.

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At the end of this presentation are example designs and diagrams. Easily copy and paste for beautiful slides.

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We have a selection of slides in Rancher by SUSE branding.

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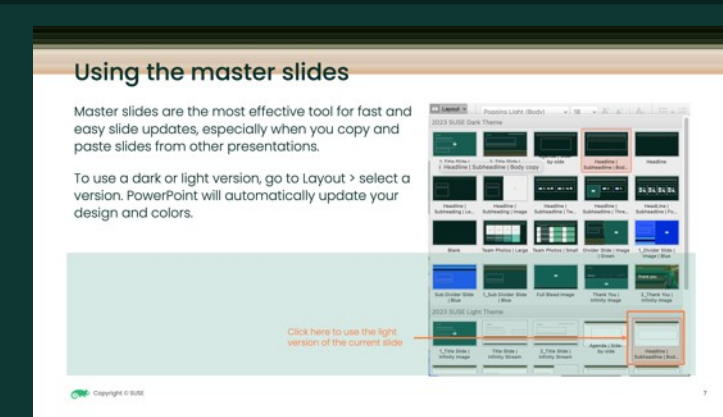
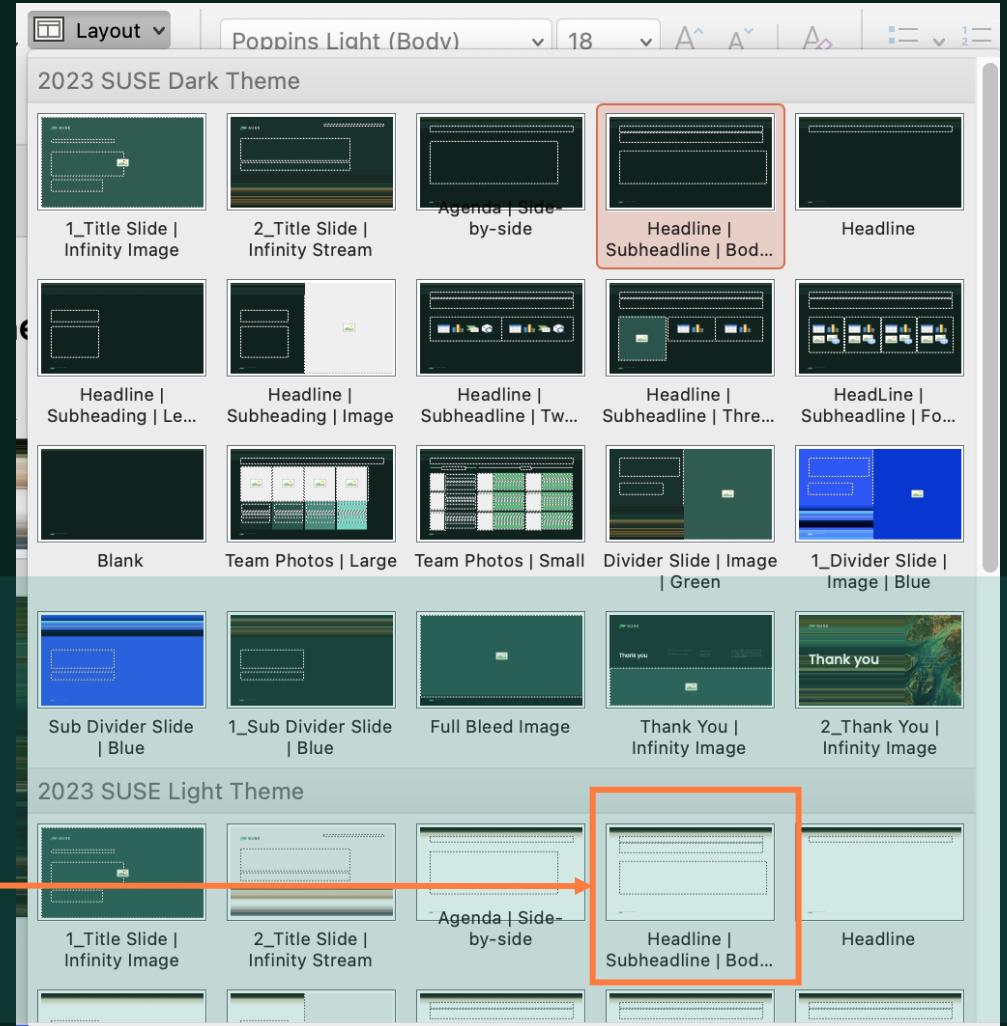
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Master slides are the most effective tool for fast and easy slide updates, especially when you copy and paste slides from other presentations.

To use a dark or light version, go to Layout > select a version. PowerPoint will automatically update your design and colors.



Click here to use the light version of the current slide

This is a sub divider slide

This is a subheading if you wish to add further detail to the slide. Ignore if you don't.

This is a one line heading

This is a subheading if you wish to add further detail to the slide. Ignore if you don't.

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- Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim.
 - Lorem ipsum dolor sit amet.

This is an agenda slide

1. Session One

Shift + Enter/Return to add details to the sessions.

2. Session Two

You can also make the session titles medium and in jungle green to stand out

3. Lunch

If you have a special session, use a secondary color to make it stand out further. Remember to change the number color in the numbering drop down.

4. Session Three

Who am I?



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dottorblaster.it (italian)

Meet the larger team

Team Leads

Staff



[Name][Family Name]

she/her/hers

Business Title

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+00 123 456 789 10



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This is a 3-column content page

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Template diagrams

Copy and paste these templates to get started on your next presentation

Content boxes

Copy and paste any of the below groups or the confidentiality tag at the top to get started.

<p>Header</p> <p>Body text goes here</p> <ul style="list-style-type: none">• Item 1• Item 2	<p>Header</p> <p>Body text goes here</p> <ul style="list-style-type: none">• Item 1• Item 2	<p>Header</p> <p>Body text goes here</p> <ul style="list-style-type: none">• Item 1• Item 2	<p>Header</p> <p>Body text goes here</p> <ul style="list-style-type: none">• Item 1• Item 2
		<p>Header</p> <p>Body text goes here</p> <ul style="list-style-type: none">• Item 1• Item 2	<p>Header</p> <p>Body text goes here</p> <ul style="list-style-type: none">• Item 1• Item 2

Comparison

Use this template for comparing different options

Better option

Body text goes here

- Item 1
- Item 2

Other option

Body text goes here

- Item 1
- Item 2

Better option

Body text goes here

- Item 1
- Item 2

Other option

Body text goes here

- Item 1
- Item 2

Process flows

These are simple flow charts in branded colors.

Title

Body text goes here

- Item 1
- Item 2
- Item 3

Title

Body text goes here

- Item 1
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- Item 3

Title

Body text goes here

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Body text goes here

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- Item 3

Process flow: text heavy

A simpler, process flow for text heavy slides

Title

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Title

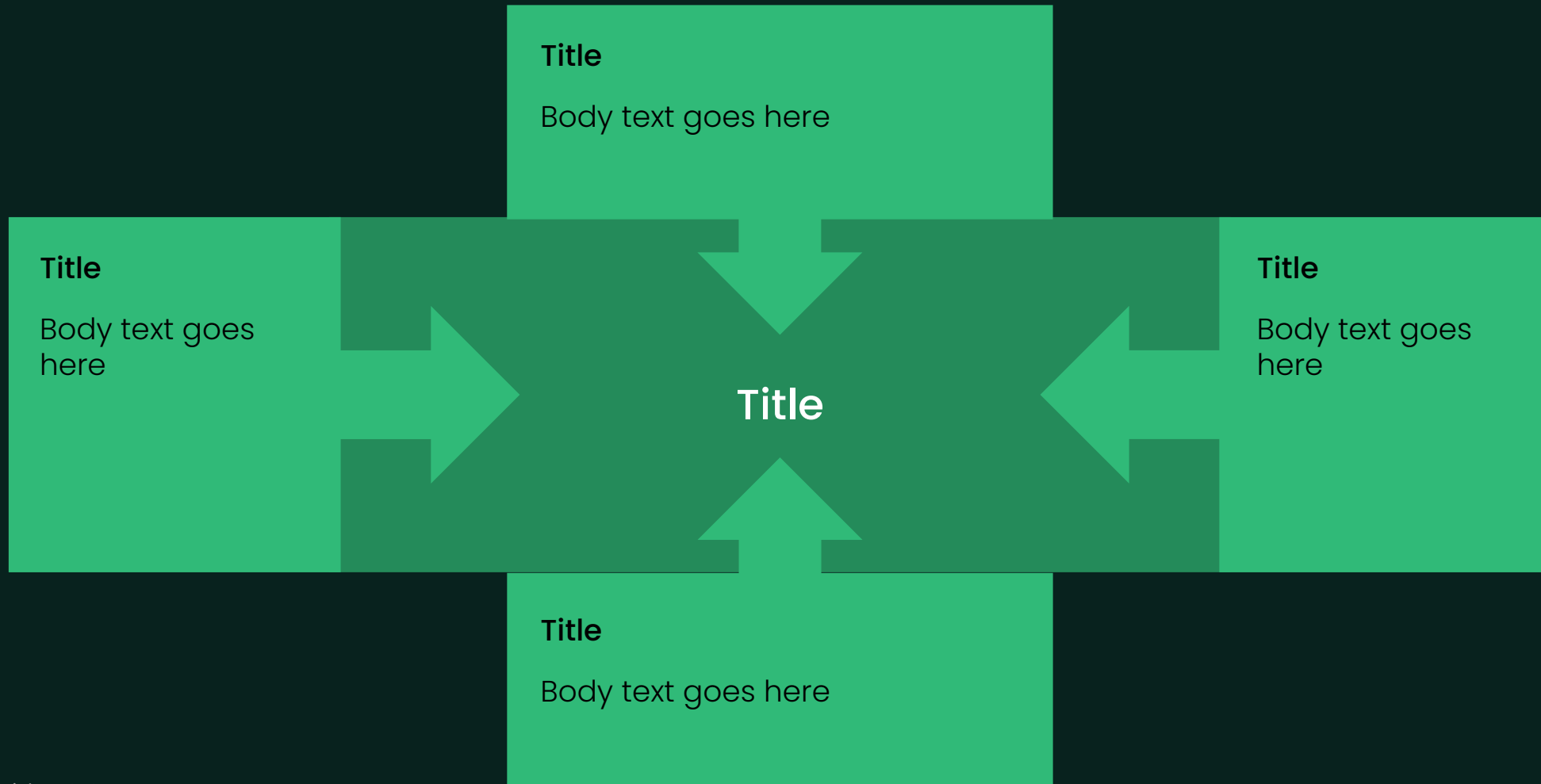
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Title

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Inputs and outcomes

Multiple inputs for a single outcome

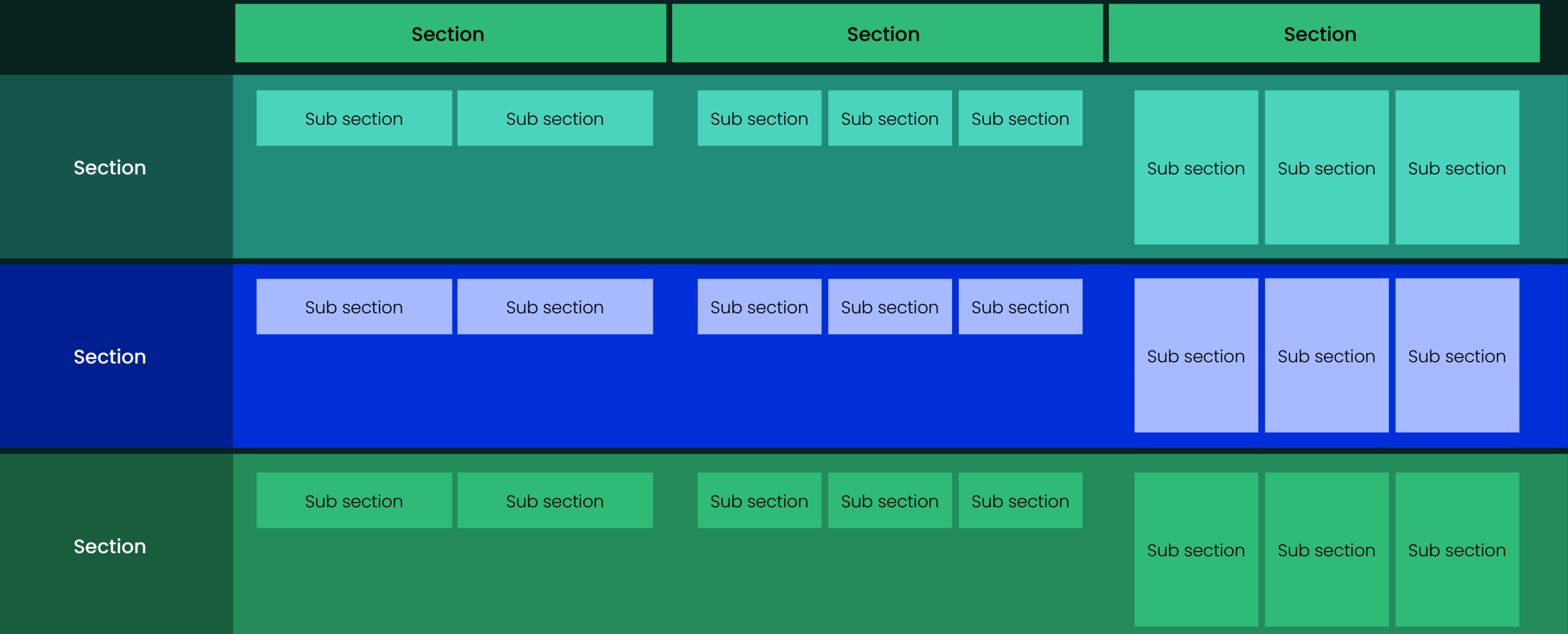


Large org chart

Team details

Team Lead, title				
SUB-TEAM	SUB-TEAM	SUB-TEAM	SUB-TEAM	SUB-TEAM
Team Member, title	Team Member, title	Team Member, title	Team Member, title	Team Member, title
Team Member, title	Team Member, title	Team Member, title	Team Member, title	Team Member, title
Team Member, title	Team Member, title	Team Member, title	Team Member, title	Team Member, title
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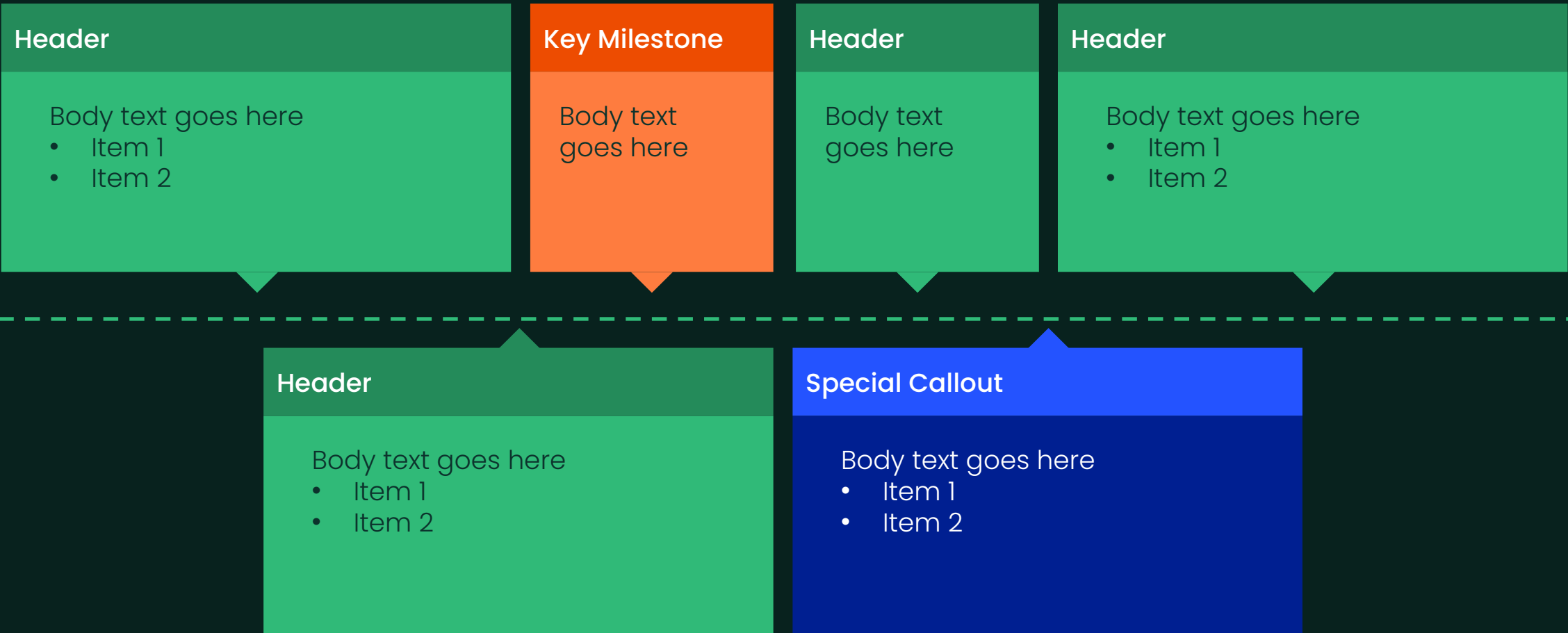
Infrastructure diagram



Simple Matrix

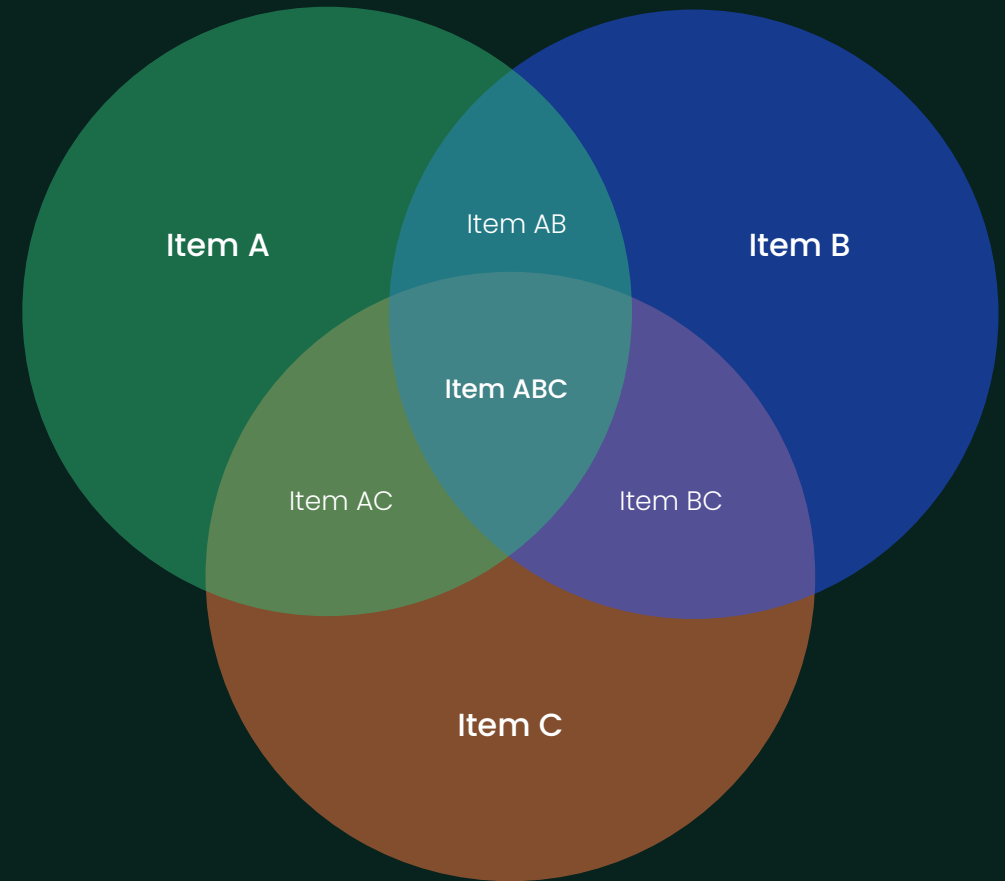
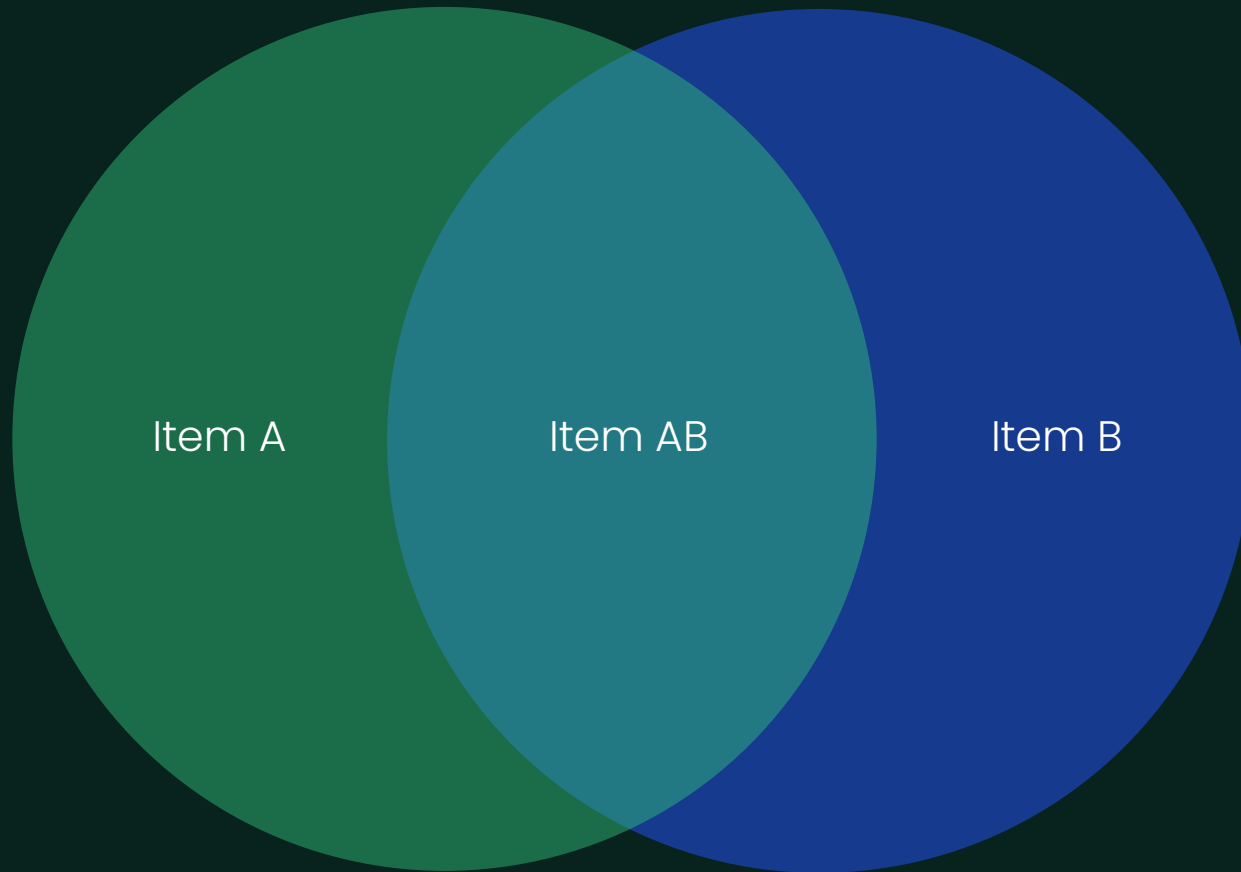
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Timeline



Venn diagrams

These diagrams are grouped for easy resizing





That's all Folks!

:-)

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Puzzle pieces

Show how things connect with a puzzle diagram



Text-heavy slide

Use this template for layouts that need more text

Title

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Tables

Four basic tables in branded colors, for both dark and light version

Column 1	Column 2	Column 3	Column 4	Column 5
Text goes here	Text goes here	Text goes here	Text goes here	Text goes here
Column 1	Column 2	Column 3	Column 4	Column 5
Text goes here	Text goes here	Text goes here	Text goes here	Text goes here
Column 1	Column 2	Column 3	Column 4	Column 5
Text goes here	Text goes here	Text goes here	Text goes here	Text goes here
Column 1	Column 2	Column 3	Column 4	Column 5
Text goes here	Text goes here	Text goes here	Text goes here	Text goes here



Thank you

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