Microsoft Dynamics 365

Approaching test automation

Dynamics 365 FastTrack
Architecture Insights

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Agenda

- What, why and when

- Complementary resources

- Approaching test automation

- More about **"when"** to start

- Key takeaways

- Q&A

What, why and when

Test automation aims to produce a set of reliable and repeatable tests, that save time and manual effort

Test automation should be integrated with your project delivery approach and test strategy to ensure solution quality is validated continuously

Test automation provides a means to maximize technology investment and ensure continuous feedback about the quality and reliability of the solution

Your test automation journey should start at the beginning of the project, and be well integrated with the project delivery approach and test strategy

What

Test automation is the automated execution of tests to ensure solution quality is validated continuously.

Your test automation scope and approach should be well defined in your test strategy.

Why

Test automation provides a means to validate solution readiness and quality in a more timely and continuous way, when comparing to manual testing.

A key benefit of SaaS solutions is the ability to maximize your technology investment often to strategic and competitive advantage. Test automation supports this reality.

It aims to reduce/remove a common barrier to adopting change.

When

Test automation should ideally start early, building your test automation suite over the course of the implementation, and post go-live.

It is never too early to start your test automation journey.

An iterative and incremental approach to delivery that is well integrated with your test strategy, can help build test automation over time, as more of the solution is stabilized.

Complementary resources

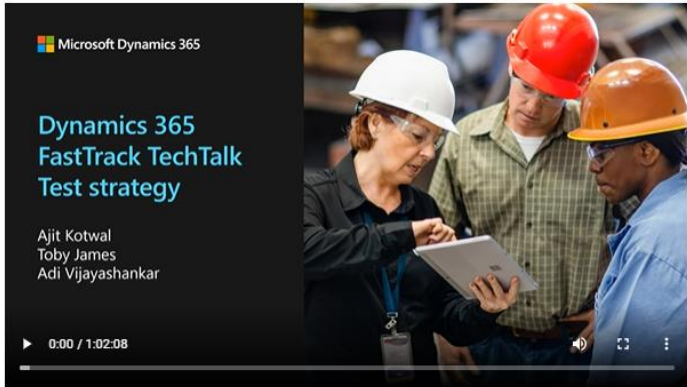# Dynamics 365 Test Strategy| Oct 21, 2020 - Microsoft Dynamics Blog

Dynamics 365 Implementation Guide

nurture leads toward a sale, and used Power BI reports to generate insights that helped them identify the best prospects and create winning proposals.

Integration with external applications brought in data from other sources to improve the company's bespoke offerings. For example, the sales teams could collate even more information about their products and send it to customers in just a few minutes—instead of spending hours manually putting together the data.

After deploying the Dynamics 365 solution, the company experienced a 70 percent increase in sales. They next brought in more departments to create a central hub for all activities, simplifying every area of their operation. For example, the sales team's process integrated everything that the accounting department needed to efficiently close a deal and reduce the possibility of human error.

The company is also using Dynamics 365 and Power BI to uncover market trends, as augmented analytics help the company learn about their customers in ways that were not possible before—and build authentic relationships that will last long after the initial sale.

14
Guide
Testing strategy

[Regression suite automation tool (RSAT)](#)

[FastTrack Architecture Insights - Testing Strategy](#)

Approaching test automation

Goals — Define and refine test automation goals

Scope — Define and refine test automation target scope, coverage and toolset

Plan — Prioritise and plan test automation scope

Build — Build and refine test automation suite aligned to and integrated with delivery

Execute — Execute tests often – frequency is aligned to scope, schedule and goals (daily, weekly, on build/deployment)

Business Process
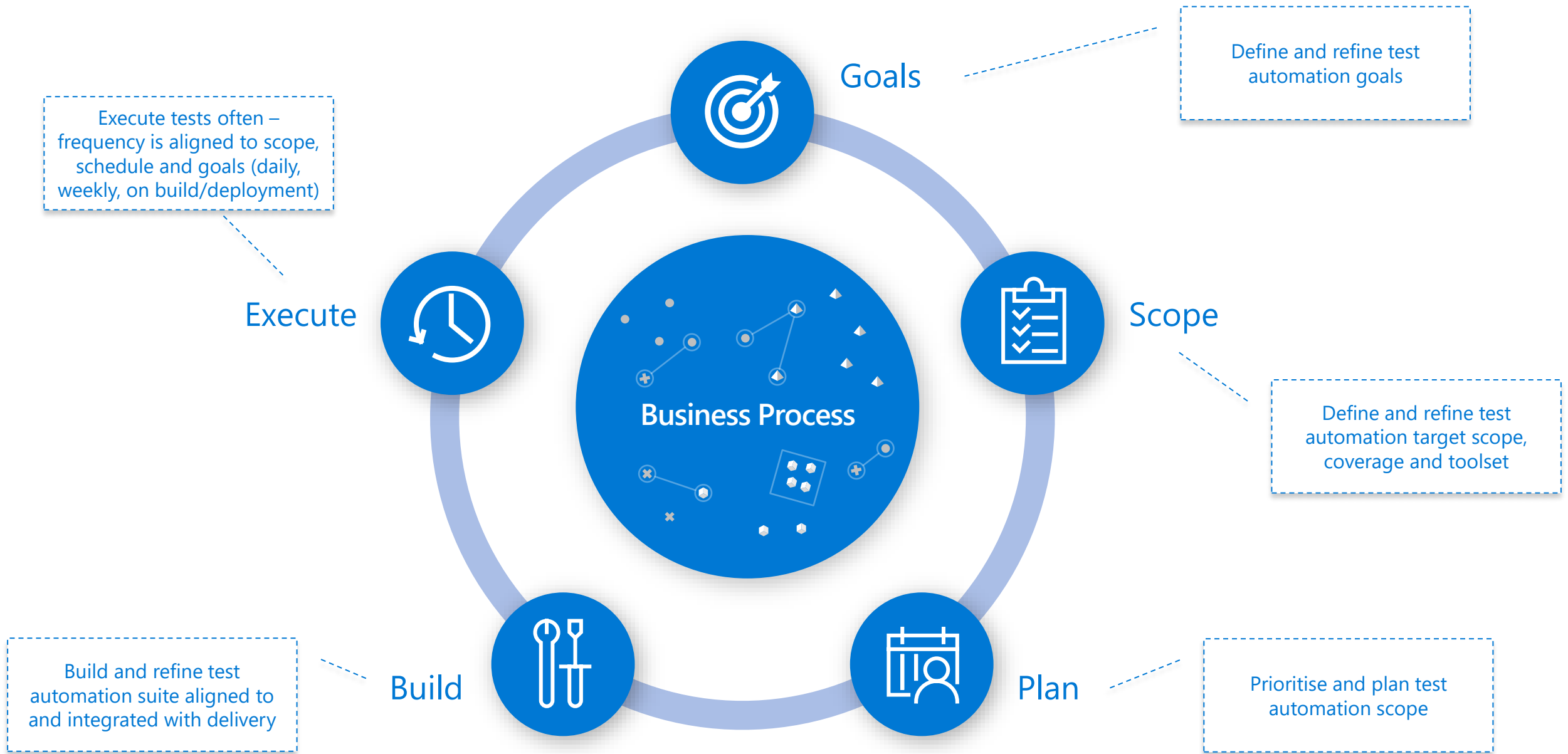
1. Define test automation goals

Purpose

Ensure automation effort is delivering required value
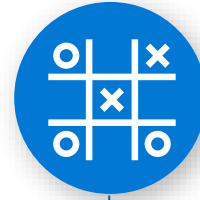
Approach

- Identify goal dimensions e.g. time, value, cost, opportunity, risk, complexity etc...
- Specific goals tend to be an extension of the aim to produce a reliable and repeatable set of tests, that save time and manual effort

Examples:

- Reduce time and manual effort to identify regressions
- Expose and manage technical debt during implementation – compliance of "definition of DONE"
- Focus on critical business processes
- Ensure a reliable and repeatable process
- Reduce dependency on specialist resources
- Reduce risk to business when adopting emergency/critical time sensitive updates
- Reduce adoption cost of continuous updates and change

2. Define test automation scope

Purpose

- Being clear with scope upfront is imperative to success with test automation
- Clear scope will ensure alignment with test automation goals, and drive planning and tool selection

Approach

- Aligned to goals and business process focused
- Mode of execution: User interaction, batch job, integration
- Non-functional considerations: Performance, infrastructure, device, security
- Set-up considerations: Environments, devices, data
- Identify test tools aligned to scope
- Test ownership

Create sales order

Extension (Web App – RSAT; SysTest)

Confirm sales order

Web App - RSAT

Pick sales order

Android App - RSAT

Invoice sales order

Integration - DTA
Web App - RSAT

Manual (Web App - RSAT)

EDI (Integration - DTA)

Validate sales order

Mobile (Android App – Not in scope)

Check credit limit

Web App - RSAT

Ship sales order

Android App - RSAT

Receive payment

Batch Job - RSAT
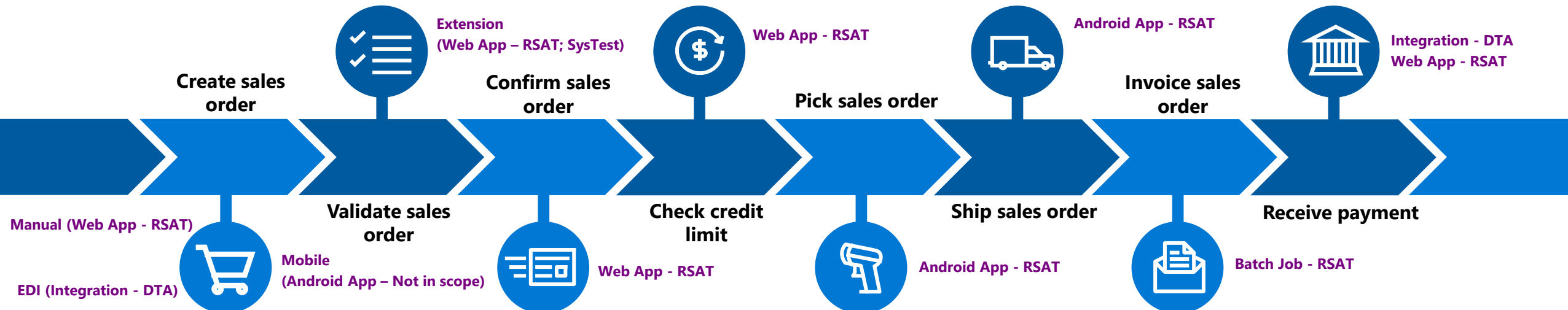
Identify the right tools for test automation

- Don't select tools before understanding at least the high-level test automation scope
- Different test tools target different types of tests and test users. For example:
  - Unit tests – target developers for testing of low-level code; usually written with code
  - Business process tests – target end users for testing business process; usually UI driven
  - Performance tests – need to simulate load and collect key metrics such as response times
- Consider all tools you'll need, not just those for test execution. For example: Tools that facilitate environment and data setup, and tools that report test failures.
- Dynamics 365 F&O Apps, RSAT provides test automation of end-to-end business processes

3. Plan and Prioritize test automation scope

Purpose

- Ensure alignment to test goals and integrated with project delivery plan
- Solution delivery approach and test automation approach influence each other
- Ensure maximum return on investment upfront
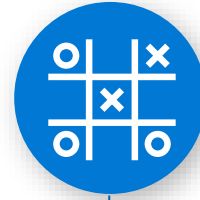
Approach

- Align to value, delivery plan and business process readiness – use Azure DevOps or similar, to prioritise and score test readiness.
- Use existing manual test suite as reference
- Identify data dependencies
- Plan for setup of test

Examples:

When planning your solution delivery, include test automation scope. If you are delivering in an agile-like/iterative way, plan to deliver complete components of the solution in a given iteration. Plan your test automation build the iteration following solution delivery (n+1), or during the same iteration where feasible.

When starting test automation post go-live, prioritise scope first on business criticality and manual test effort. The most repetitive and time-consuming manual test cases should be automated first (or eliminated if there is little value)

Example delivery plan

	Iteration 0	Iteration 1	Iteration 2	Iteration 3
Delivery scope	Base setups for Legal entity, Org. admin, AR, Sales and Marketing	Sales order validation	Sales order creation - EDI	Credit management
	Sales order creation - UI			Sales order confirmation
Test scope	Sales order creation - UI	Sales order validation	Sales order creation - EDI	Sales order confirmation with credit check - UI
		Sales order creation – UI (RSAT)	Sales order validation - UI (RSAT)	Sales order creation – EDI (Data Task Automation)
		Sales order validation – Code (SysTest & ATL)		

■ Configuration   ■ Extension development   ■ Manual testing   ■ Test automation build

Readiness heat map

1. Product Management	2. Inventory Management	3. Warehouse Management	4. Sales	5. Accounts Receivable	6. Credit and Collections
1.1 Maintain stock items	2.01 Replenish warehouse picking loc.	3.01 Maintain Sites	4.01 Create Sales Order – Manual	5.01 Maintain Customers	6.01 Maintain Credit Terms
1.2 Maintain non-stock items	2.02 Stock Transfer	3.02 Maintain Warehouses	4.02 Create Sales Order - EDI	5.02 Invoice Sales Order	...
...	2.03 Cycle Count – Inventory Journal	3.03 Maintain Locations	4.03 Create Sales Order - Mobile	5.03 Record Customer Payments	
	2.04 Block Inventory from Use	...	4.04 Validate sales order	5.04 Settle Customer Payments	
	...		4.05 Update Sales Order	...	
			4.06 Confirm Sales Order		
			4.07 Pick Sales Order		
			4.08 Ship Sales Order		
			4.09 Process Sales Order Holds		
			4.10 Sales Return Order		

Assessing test automation candidates

- Test effort
- Repetitive
- High impact
- High value
- Dependence on specialist resources
- Regression exposure – customisations
- Inter-test dependencies / business process dependencies
- Lends itself to automation

4. Build and refine the test automation suite

Purpose

- Test automation is ongoing – built and refined over time, aligned to business and solution change.

Approach

- Start early, and develop iteratively, over time
- Fix issues quickly when tests break – this might be setup data or the test itself
- Remove tests when they no longer serve a purpose, or add value
- Automate data dependencies – e.g. setups, master data etc...

Examples:

A work item is created in DevOps when at least one RSAT test fails for a given test suite, to triage failed tests.

Bugs are created for verified issues, genuine defects and broken tests, to ensure visibility and resolution.

5. Execute tests often

Purpose

- Automated tests serve as an early warning signal for solution quality
- Early detection of broken tests is key to test maintenance

Approach

- Determine frequency: daily, weekly, CI/CD pipeline, after test environment deployment
- Integrate into ALM processes, not just at major milestones
- You may have different test suites that run at different frequencies or on different environments
- Consider how test results will be reported and integrated into your defect management process

Examples:

X++ unit tests are run as part of a gated check-in process against the DEV branch. They are also run on the MAIN branch as part of the automated build.

RSAT tests are run as part of the build pipeline for the MAIN branch. Failed tests do not fail the build but are reported so a decision can be made on whether to deploy the build.

More about "when" to start

More about "when" to start

- It's never too early or too late
- It shouldn't be all or nothing – consider an approach that builds test automation over time
- Influencing factors:
  - Rate of change of solution, aka solution stability
  - Delivery approach alignment to test strategy
  - Complexity of solution
  - Prioritisation of test automation
- The easiest time to start may not be the best time to start
- Automated tests expose technical debt
- Automated tests reduce risk of unpredictable change during a project

Key takeaways

Key takeways

- Test automation is an **integral part of your test strategy**
- **Start early**, **integrate** test automation **with delivery**
- **Iterate and refine** automation suite **over time**
- **Prioritise** test automation, aligned with goals and value
- **Define** test **scope**, **before** selecting **tools**
- **Execute** tests **often** – **integrated** with **ALM** process
- It's **never too early** (or too late) **to start** test automation

Q&A

Thank you

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Name

Company or position

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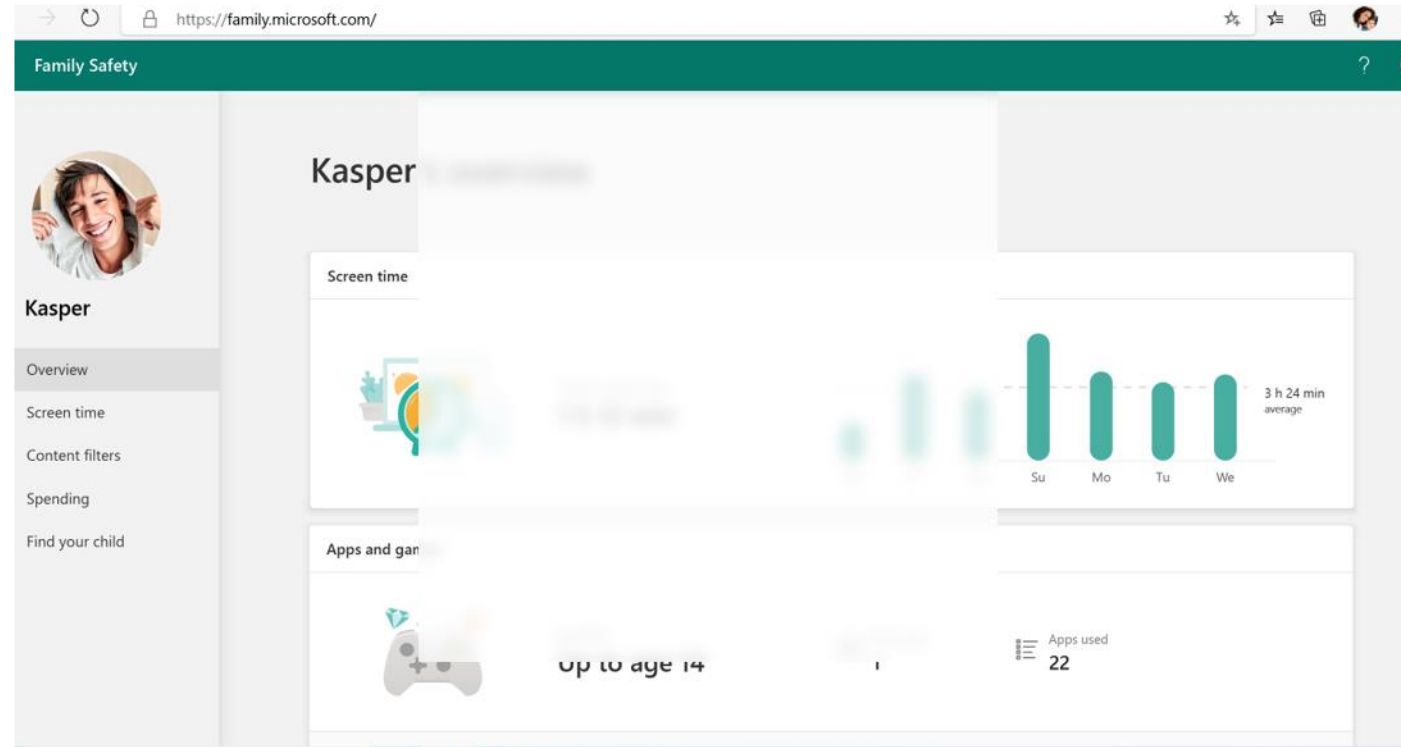
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Screenshot layout

Update this device frame placeholder to display a tablet or desktop screenshot. 16:9 UI screens work best.

You may adjust the frame's placement on the slide, and/or the slide color to another template accent.
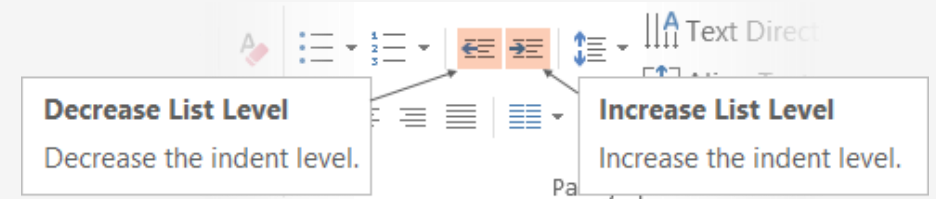
Text layout (without bullet points)

Main topic: Segoe UI, size 28pt

Segoe UI, size 20pt for second level

Segoe UI, size 16pt for third level

Text layout with bulleted text

· Learn how to adjust list levels
· Follow the steps on the right

Use the "**Decrease List Level**" and "**Increase List Level**" tools on the **Home** menu to change text levels.

Try this:

1. Place your cursor in the line of text that says "Segoe UI, size 20pt for second level"

2. Next click the Home tab, and then on the "**Decrease List level**" tool. Notice how the line moves up one level.

3. Now try placing your cursor in one of the top "Main topic..." line of text. Click the "**Increase List Level**" tool and see how the text is pushed in one level.

Use these 2 tools to adjust your text levels as you work

Demo

Speaker name

Microsoft Dynamics 365