This page outlines specific features and fixes that are scheduled or planned for given releases. The 6-month roadmaps that outlines focus areas of work can be viewed for

- [January to June 2021](#) (current)
- [January to December 2020](#)
- [July to December 2019](#)
- [January to June 2019](#)

- ☑ Feature already available in `typescript@next`

Future

- Investigate [nominal typing support](#)
- [Flattening declarations](#)
- Implement ES Decorator proposal
- Investigate [Ambient](#), [Deprecated](#), and [Conditional](#) decorators
- [Investigate partial type argument inference](#)
- Quick fix to [Scaffold local `@types` packages](#)
- [Investigate error messages in haiku or iambic pentameter](#)
- Decorators for function expressions/arrow functions

4.7 (May 2022)

[See the 4.7 Iteration Plan for more details.](#)

- ☑ [Control Flow and Class Initialization Checks for Computed Properties](#)
- ☑ [Instantiation Expressions](#)
- ☑ [Improved Inference Between Function-Initialized Properties and Methods](#)
- ☑ [`extends` Constraints on `infer` Type Variables](#)
- ☑ [Optional Variance Annotations](#)
- ☑ [`moduleSuffixes` Option For Resolution](#)
- ☑ [`resolution-mode` for `/// <reference types="..." />` Directives](#)
- ☑ [`resolution-mode` for `import type`](#)
- ☑ [Allow `typeof` on `#private` Fields](#)
- ☑ [Object Method Snippet Completions](#)
- ☑ [Grouping-Aware Organize Imports](#)
- ☐ [Go to Source Definition/JavaScript Implementation](#)
- ☐ [Virtual File System Support for TSServer](#)

4.6 (February 2022)

[See the 4.6 Iteration Plan for more details.](#)

- ☑ [Narrowing for Variables Destructured from Discriminated Unions](#)
- ☑ [Relaxed Checks on Code Before `super()`](#)
- ☑ [Improved Recursion Depth Checks](#)
- ☑ [Indexed Access Inference Improvements](#)

- ☑ [`--target es2022`](#)
- ☑ [Syntax and Binding Errors in JavaScript Files](#)
- ☑ [Release of `@typescript/analyze-trace`](#)

4.5 (November 2021)

[See the 4.5 Iteration Plan for more details.](#)

- ☑ [`lib` Overrides from `node_modules`](#)
- ☑ [`Awaited` and `Promise` Function Improvements](#)
- ☑ [Tail Recursive Evaluation of Conditional Types](#)
- ☑ [Template String Discriminants](#)
- ☑ [`--module es2022`](#)
- ☑ [Controls for Import Elision via `--preserveValueImports`](#)
- ☑ [`type` Modifiers on Import Names](#)
- ☑ [`in` Checks on `#private` Fields](#)
- ☑ [Import Assertions](#)
- ☑ [Speed Improvements on Windows/Mac via `realpathSync.native`](#)
- ☑ [Snippet Completions for Subclass Methods](#)
- ☑ [Snippet Completions for JSX Attributes](#)
- ☑ [Better Editor Support for Unresolved Types](#)

4.4 (August 2021)

[See the 4.4 Iteration Plan for more details.](#)

- ☑ [Control Flow Analysis of Aliased Conditions](#)
- ☑ [Generalized index signatures](#)
- ☑ [Strict optional property checks with `--strictOptionalProperties`](#)
- ☑ [Use `unknown` for `try`/`catch` variables with `--useUnknownInCatchVariables`](#)
- ☑ [Updated `--help` descriptions](#)
- ☑ [Inlay Hints](#)
- ☑ [High-Confidence Suggestions in Unchecked JavaScript](#)
- ☑ [Quick Fix to Declare Missing Properties on Objects](#)

4.3 (May 2021)

[See the 4.3 Iteration Plan for more details.](#)

- ☑ [Separate "write" types](#)
- ☑ [`--noImplicitOverride` and the `override` keyword](#)
- ☑ [Template string type inference and compatibility improvements](#)
- ☑ [Contextual Narrowing for Generics](#)
- ☑ [Infer template string types when contextually typed](#)

- ☑ ECMAScript `#private` Methods/Statics/Accessors
- ☑ `static` Index Signatures
- ☑ Editor support for `@link` tags
- Investigate auto-import improvements
  - ☑ Complete import statements through auto-imports
- Support Go-to-Definition on Relative Non-JS/TS Files

4.2 (February 2021)

See the 4.2 Iteration Plan for more details.

- ☑ Leading/middle rest elements in tuple types
- ☑ Smarter Type Alias Printing and Emit
- ☑ ~~Template Literal Types for Template String Expressions~~
- ☑ `--noPropertyAccessFromIndexSignature`
- ☑ `abstract` constructor types
- ☑ Smarter unused local analysis in destructuring
- ☑ `--explainFiles` to understand why files have been included in a program
- ☑ Declare missing helper function

4.1. (November 2020)

See the 4.1 Iteration Plan for more details

- ☑ Template literal types and mapped type 'as' clauses
- ☑ Recursive Conditional Types
- ☑ Pedantic Index Signature Checks (`--noUncheckedIndexedAccess`)
- ☑ `export * as default`
- ☑ Aliased `this` in JavaScript functions
- ☑ Editor support for `/** @see */` tags
- ☐ Semantic Highlighting API

4.0 (August 2020)

See the 4.0 Iteration Plan for more details.

- ☑ Variadic Tuple Types
- ☑ Labeled Tuple Elements
- ☑ Class Property Inference from Constructors
- ☑ Short-Circuiting Assignment Operators
- ☑ `unknown` on `catch` Clause Bindings
- ☑ Lightweight Editor Mode
- ☑ Improved Auto-Import
- ☑ Editor support for `/** @deprecated */` tags

- ☑ [Refactoring Discoverability](#) ([ideas](#))
- ☑ Refactorings
  - ☑ [Convert to Optional Chaining and Coalescing](#)

3.9 (May 2020)

[See the 3.9 Iteration Plan for more details.](#)

- ☑ [Fix Inference in `Promise.all`](#)
- ☑ Type-Checking Speedups
  - https://github.com/microsoft/TypeScript/pull/36576
  - https://github.com/microsoft/TypeScript/pull/36590
  - https://github.com/microsoft/TypeScript/pull/36607
  - https://github.com/microsoft/TypeScript/pull/36622
  - https://github.com/microsoft/TypeScript/pull/36754
  - https://github.com/microsoft/TypeScript/pull/36696
- ☑ [`// @ts-expect-error` Comments](#)
- ☑ [Uncalled Function Checks in Conditionals](#)
- ☑ [Support for CommonJS Auto-Imports](#)
- ☑ [Preserved Newlines in Refactorings/Quick Fixes](#)
- ☑ [Editor Support for Solution-Style `tsconfig.json` Files](#)
- ☑ [Editor Support for Multi-Project Symbol Navigation](#)
- ☑ Quick Fixes to
  - ☑ [Correct Cases of Missing Return Expressions](#)
  - ☐ [Declare a `private` method](#)
  - ☑ [Declare a `private` property](#)

3.8 (February 2020)

[See the 3.8 Iteration Plan for more details.](#)

- ☑ [Type-Only Imports and Exports](#)
- ☑ [New `export * as ns` Syntax](#)
- ☑ [Top-Level Await](#)
- ☑ [Private Fields](#)
- ☑ [JSDoc `@public` / `@private` / `@protected` Modifiers](#)
- ☑ [JSDoc `@readonly` Modifier](#)
- ☑ [Improved File Watching and `watchOptions`](#)
- ☑ ["Fast and Loose" Incremental Checking](#)
- ☑ [Editor Support for Call Hierarchy View](#)

3.7 (November 2019)

[See the 3.7 Iteration Plan for more details.](#)

- ☑ [Optional Chaining](#)
- ☑ [Nullish Coalescing](#)
- ☑ [Assertions in Control Flow Analysis](#)
- ☑ [Recursive Type References](#)
- ☑ [Allow `allowJs` and `declaration` to be used together](#)
- ☑ [Uncalled Function Checks](#)
- ☑ [`--declaration` and `--isolatedModules`](#)
- ☑ [Flattened Property/Method Reporting](#)
- ☑ [`--declaration` and `--allowJs`](#)
- ☑ Editor Functionality/APIs
    - ☑ [Build-Free Editing for Project References](#)
    - ☑ [Auto-inserted `await` for completions](#)
    - ☑ [Quick fix to convert `const` to `let`](#)
    - ☑ [Semicolon Formatting Preferences](#)

3.6 (August 2019)

[See the 3.6 Iteration Plan for more details.](#)

- ☑ [Strongly typed iterators and generators](#)
- ☑ [More accurate array spreads](#)
- ☑ [Improved UX around Promises](#)
- ☑ [Semicolon-aware auto-imports](#)

3.5 (May 2019)

[See the 3.5 Iteration Plan for more details.](#)

- ☑ [Higher order inferences for constructor functions](#)
- ☑ [Easier assignment to discriminated unions](#)
- ☑ [Change default constraint for type parameters from `{}` to `unknown`](#)
- ☑ [Improved checking of indexed access types](#)
- ☑ [The `Omit` helper type](#)
- ☑ [APIs for composite projects (`--build` mode)](#)
- ☑ [`--allowUmdGlobalAccess` to use UMD globals from modules](#)
- ☑ [`--noEmitOnError` with `--isolatedModules`](#)
- ☑ Speed improvements in `--incremental` and `--build`
    - ☑ [Caching module resolution results](#)
    - ☑ [Caching results of parsing `tsconfig.json`](#)
- ☑ [Sorted/prioritized completions](#)
- ☑ [Smart Select API](#)
- ☑ [Refactoring to extract type](#)

3.4 (March 2019)

See the 3.4 Iteration Plan for more details.

- ☑ Higher order function type inference
- ☑ `--incremental` builds with `.tsbuildinfo` files
- ☑ Improved support for read-only arrays and tuples
- ☑ Const contexts for literal expressions
- ☑ `globalThis`
- ☑ Refactorings to...
  - ☑ Convert to "named" parameters

3.3 (January 2019)

- ☑ Relaxed rules on methods of union types
- ☑ File-incremental builds in `--build --watch` mode for composite projects

3.2 (November 2018)

- ☑ Strict bind, call, and apply methods on functions
- ☑ Allow non-unit types in union discriminants
- ☑ Generic spread expressions in object literals
- ☑ Generic object rest variables and parameters
- ☑ Type-checking support for `BigInt`
- ☑ Configuration inheritance through node packages
- ☑ Supporting `Object.defineProperty` property assignments in JS
- ☑ Support printing the implied configuration object to the console with `--showConfig`
- ☑ Improved formatting and indentation for lists and chained calls
- ☑ Quick fixes to...
  - ☑ Add intermediate `unknown` type assertions
  - ☑ Add missing `new` keyword
  - ☑ Infer types from usage outside of `noImplicitAny`
  - ☑ Infer JSDoc types from usage

3.1 (September 2018)

- ☑ Mapped tuple and array types
- ☑ Property assignments on function declarations
- ☑ `typesVersions` redirects
- ☑ Error UX improvements
- ☑ Refactorings to...
  - ☑ Rename files from import/export paths

- ☑ [Convert from `Promise#then` / `catch` to `async` / `await`](#)

3.0 (July 2018)

- ☑ [Support for project references/composite projects](#)
- ☑ [Tuples in rest parameters and spread expressions](#)
- ☑ [New `unknown` top type](#)
- ☑ [`/// <reference lib="..." />` reference directives](#)
- ☑ [Support for `defaultProps` and `propTypes` in React JSX elements](#)
- ☑ Error UX improvements
  - ☑ [Related error spans](#)
  - ☑ [Improved message quality and suggestions](#)
- ☑ Refactors to...
  - ☑ [Convert named imports to namespace imports and back](#)
  - ☑ [Add or remove braces from arrow function](#)
- ☑ Quick fixes to...
  - ☑ [Remove unused labels](#)
  - ☑ [Remove unreachable code](#)
- ☑ [Outlining spans for JSX expressions](#)
- ☑ [Auto-closing JSX tags](#)

2.9 (May 2018)

- ☑ [Support number and symbol named properties with keyof and mapped types](#)
- ☑ [Support for passing generics to JSX elements](#)
- ☑ [Support for passing generics to tagged template calls](#)
- ☑ [Allow `import(...)` -ing types at any location](#)
- ☑ [`--pretty` error output by default](#)
- ☑ [Support for `import.meta`](#)
- ☑ New [`--resolveJsonModule`](#)
- ☑ [Declaration source maps and code navigation via them](#)
- ☑ [Show suggestion diagnostics for open files](#)
- ☑ [Show unused declarations as suggestions](#)
- ☑ [Support setting quote style in quick fixes and refactorings](#)
- ☑ New [Rename File](#) command
- ☑ Refactors to...
  - ☑ [Move to a new file](#)
  - ☑ [Convert property to getter/setter](#)
- ☑ Quick fix to...
  - ☑ [Convert `require` to `import` in `.ts` files](#)
  - ☑ [Install `@types/node` for built-in node modules](#)

2.8 (March 2018)

- ☑ [Conditional types](#)
- ☑ [Type inference in conditional types](#)
- ☑ [Predefined conditional types in `lib.d.ts`](#)
- ☑ [Improved control over mapped type modifiers](#)
- ☑ [Improved `keyof` with intersection types](#)
- ☑ New `--emitDeclarationOnly`
- ☑ [Better handling for namespace-patterns in .js files](#)
- ☑ [Support for per-file JSX pragmas](#)
- ☑ New [Organize imports](#) command
- ☑ [Quick fix for uninitialized class properties](#)

2.7 (January 2018)

- ☑ [Support for properties named with `const`-declared symbols](#)
- ☑ [Strict property initialization checks in classes](#)
- ☑ [Definite assignment assertions](#)
- ☑ [Improved type inference for object literals](#)
- ☑ [Improved handling of structurally identical classes](#)
- ☑ [Fixed length tuples](#)
- ☑ [Type guards inferred from `in` operator](#)
- ☑ [Numeric separators](#)
- ☑ [Support for `import d from "cjs"` form CommonJS modules with `--esModuleInterop`](#)
- ☑ [Apply all quick fixes in a file](#)
- ☑ [Refactors to convert CommonJS module to ES6 module](#)
- ☑ [Support for incremental builder compiler API](#)
- ☑ [Quick fix to add missing `async` keyword](#)
- ☑ [Completion list preselects suggested item based on context](#)
- ☑ Completion list includes `this.`, [brackets](#), and [curlies for JSX](#)

2.6 (October 2017)

- ☑ [Strict function types](#)
- ☑ [Support for JSX Fragments](#)
- ☑ [Cached tagged template objects in modules](#)
- ☑ [Include localized diagnostics in npm](#)
- ☑ [Suppress errors in .ts files using `// @ts-ignore` comments](#)
- ☑ [Speed improvements to `--watch`](#)
- ☑ [Automatic imports from completion lists](#)
- ☑ Refactors to...
  - ☑ [Extract constants/locals in refactorings](#)

- ☑ [Convert JSDoc type annotations to TypeScript](#)
- ☑ Quick fixes to...
  - ☑ [Infer from usage on `noImplicitAny` errors](#)
  - ☑ [Invoke uncalled decorators](#)
  - ☑ [Install from `@types`](#)
- ☑ [Support outlining for `// #regions`](#)

2.5 (August 2017)

- ☑ [Assertion/cast JSDoc syntax in `checkJs` mode](#)
- ☑ [Refactoring to extract functions & methods](#)
- ☑ [Optional `catch` binding](#)
- ☑ Quick fixes to...
  - ☑ [correct references to types of properties](#)
  - ☑ [correct uses of JSDoc types to TypeScript types](#)

2.4 (June 2017)

- ☑ [Infer from generic function return types](#)
- ☑ [Contextual generic function types](#)
- ☑ [Stricter generic signature checks](#)
- ☑ [Covariant checking for callback parameters](#)
- ☑ [String valued members in enums](#)
- ☑ [Weak type detection](#)
- ☑ [ES dynamic `import()` expressions](#)
- ☑ [Refactoring support in Language Service API](#)
  - [Refactor ES5 function to ES6 class in .js files](#)
- ☑ [Suggestions and quick fixes for spelling corrections in error messages](#)

2.3 (April 2017)

- ☑ [Generator support for ES3/ES5](#)
- ☑ [Asynchronous iterators](#)
- ☑ [Generic defaults](#)
- ☑ [Controlling `this` in methods of object literals through contextual type](#)
- ☑ [JSX stateless components overload resolution](#)
- ☑ [JSX `children` checking](#)
- ☑ [New `--strict` master option](#)
- ☑ [Report errors in .js files with new `--checkJs`](#)
- ☑ [Enhanced `tsc --init` output](#)
- ☑ [Language Service Extensibility](#)

2.2 (February 2017)

- ☑ [Mixin classes](#)
- ☑ [Allow deriving from object and intersection types](#)
- ☑ [Support for `new.target`](#)
- ☑ [Improved checking of nullable operands in expressions](#)
- ☑ [Update `__extends` to use `Object.setPrototypeOf`](#)
- ☑ [Allow property (dotted) access for types with string index signatures](#)
- ☑ [Support for JSX spread children](#)
- ☑ New `--jsx react-native`
- ☑ [Support for the `object` type.](#)
- ☑ More Quick Fixes!
  - [Add missing imports](#)
  - [Implement interface/abstract class members](#)
  - [Remove unused declarations](#)
  - [Add missing `this.`](#)
  - [Add missing property declaration](#)

2.1 (December 2016)

- ☑ Switch to a [transformation-based emitter](#)
- ☑ [`async` / `await` support for ES5/ES3](#)
- ☑ Support for [external helpers library](#)
- ☑ [Static types for dynamically named properties (`keyof T` and `T[K]`)](#)
- ☑ [Mapped types (e.g. `{ [P in K]: T[P] }`)](#)
- ☑ Support [ESNext object property spread and rest](#)
- ☑ [Better inference for literal types](#)
- ☑ [Use returned values from super calls as 'this'](#)
- ☑ [Control flow analysis for implicit any variables](#)
- ☑ [Control flow analysis for array construction](#)
- ☑ [Narrow string and number types in literal equality checks](#)
- ☑ [Contextual typing of partially annotated signatures](#)
- ☑ [Normalize union/intersection type combinations](#)
- ☑ New `--jsxFactory`
- ☑ New `--alwaysStrict`
- ☑ Support for `--target ES2016` , `--target ES2017` and `--target ESNext`
- ☑ [Configuration inheritance](#)
- ☑ [Go to implementation support](#)
- ☑ [Completions in imports and triple-slash reference paths](#)
- ☑ [Quick fixes support](#) in language service API
- ☑ [Untyped](#) (implicit-any) imports

2.0

- ☑ [Non-nullable types](#)
- ☑ [Control flow based type analysis](#)
- ☑ [Discriminated union types](#)
- ☑ [Improved definition file acquisition](#)
- ☑ [Specifying `this` types for functions](#)
- ☑ [Type guards on property access](#)
- ☑ [Readonly properties and index signatures](#)
- ☑ [Use path mappings in module resolution](#)
- ☑ [Shorthand ambient module declarations and wildcard matching in module names](#)
- ☑ [Implicit index signatures](#)
- ☑ Support [private and protected constructors](#)
- ☑ Support `abstract` [properties](#)
- ☑ [Optional properties in classes](#)
- ☑ [The `never` type](#)
- ☑ [`--skipLibCheck` compiler option](#)
- ☑ Support for [declaration output folder using `--declarationDir`](#)
- ☑ [Glob support in tsconfig.json](#)
- ☑ [Improve lib.d.ts modularity](#) and new `--lib` support
- ☑ Support for [UMD module definitions](#)
- ☑ [Trailing Commas in Function Param Lists](#)
- ☑ Support for [jsdoc `@typedef`](#) for JS files
- ☑ [Completion lists for string literals](#)
- ☑ [Module name in imports allow .js extension](#)
- ☑ [Support 'target:es5' with 'module:es6'](#)
- ☑ Flag unused declarations with `--noUnusedLocals` and `--noUnusedParameters`
- ☑ [Number, boolean, and Enum literal types](#)

1.8

- ☑ [Allow JavaScript in TypeScript compilations with `--allowjs`](#)
- ☑ [Allow captured `let`/`const` in loops](#)
- ☑ [Flag unreachable code](#)
- ☑ [Concatenate module output with `--outFile`](#)
- ☑ [Accept comments in tsconfig.json](#)
- ☑ [Stylize error messages in terminal output with `--pretty`](#)
- ☑ [Support for `--outFile` with named pipes, sockets, and special devices](#)
- ☑ [Support computed property with literal names](#)
- ☑ [String literal types](#)
- ☑ [Stateless Functional Components in JSX](#)
- ☑ [Improved union/intersection type inference](#)

- ☑ [Support for F-Bounded Polymorphism](#)
- ☑ [Support full path for](#) `-project` / `-p` parameter
- ☑ [Extract type information from JSDoc in js files](#)
- ☑ [Support for](#) `default` import interop with SystemJS using `--allowSyntheticDefaultImports`
- ☑ [Recognize prototype assignments in JavaScript files](#)
- ☑ [Augmenting global/module scope from other modules](#)
- ☑ [Use tsconfig.json as higher priority source of configuration in Visual Studio](#)
- ☑ `this` [-based type guards](#)
- ☑ Support for [custom JSX factories using](#) `--reactNamespace`
- ☑ [Improved checking of for-in statements](#)
- ☑ [Colorization of JSX code in VS 2015](#)
- ☑ Publish official [TypeScript NuGet packages](#)

1.7

- ☑ [ES7 exponentiation operator](#)
- ☑ [Polymorphic](#) `this` type
- ☑ [Support](#) `--module` with `--target es6`
- ☑ [Support for decorators when targeting ES3](#)
- ☑ `async` / `await` [support for ES6 (Node v4)](#)
- ☑ [Improved checking of destructuring with literal initializers](#)

1.6

- ☑ [ES6 Generators](#)
- ☑ [Local types](#)
- ☑ [Generic type aliases](#)
- ☑ [Expressions in class extends clauses](#)
- ☑ [Class expressions](#)
- ☑ `exclude` [property in tsconfig.json](#)
- ☑ [User defined type guard functions](#)
- ☑ [External module resolution enhancements](#)
- ☑ [JSX support](#)
- ☑ [Intersection types](#)
- ☑ `abstract` [classes and methods](#)
- ☑ [Strict object literal assignment checking](#)
- ☑ [Declaration merging for classes and interfaces](#)
- ☑ New [--init](#)

1.5

- ☑ Support for [Destructuring](#)
- ☑ Support for [Spread Operator](#)

- ☑ Support for [ES6 Modules](#)
- ☑ Support for [for..of](#)
- ☑ Support for [ES6 Unicode specification](#)
- ☑ Support for [Symbols](#)
- ☑ Support for [Computed properties](#)
- ☑ Support for [tsconfig.json files](#)
- ☑ Support for [let and const in ES3/ES5](#)
- ☑ Support for [tagged templates in ES3/ES5](#)
- ☑ Expose a new editor interface through [TS Server](#)
- ☑ Support for [ES7 Decorators proposal](#)
- ☑ Support for [Decorator type metadata](#)
- ☑ New [--rootDir](#)
- ☑ New [ts.transpile API](#)
- ☑ Support [--module umd](#)
- ☑ Support [--module system](#)
- ☑ New [--noEmitHelpers](#)
- ☑ New [--inlineSourceMap](#)
- ☑ New [--inlineSources](#)
- ☑ New [--newLine](#)
- ☑ New [--isolatedModules](#)
- ☑ Support for new `namespace` keyword
- ☑ Support for [tsconfig.json in Visual Studio 2015](#)
- ☑ Improved [template literal highlighting in Visual Studio 2013](#)

1.4

- ☑ Support for [Union Types and Type Guards](#)
- ☑ New [--noEmitOnError](#)
- ☑ New [--target ES6](#)
- ☑ Support for [Let and Const](#)
- ☑ Support for [Template Literals](#)
- ☑ Library typings for ES6
- ☑ Support for [Const enums](#)
- ☑ Export Language Service public API

1.3

- ☑ Language service re-write to target new compiler
- ☑ Support for [protected members](#) in classes
- ☑ Support for [Tuple Types](#)