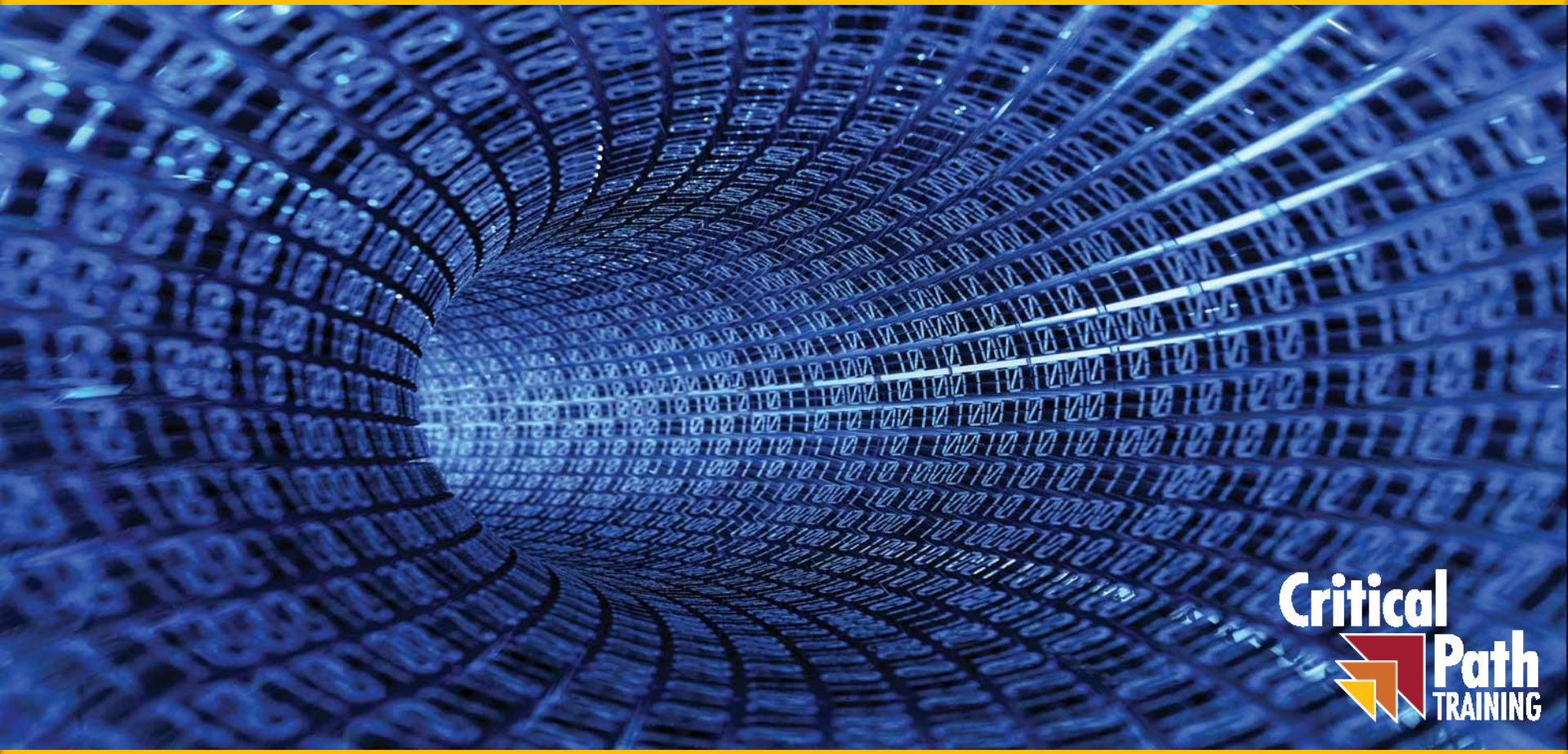
Developing for Microsoft Teams

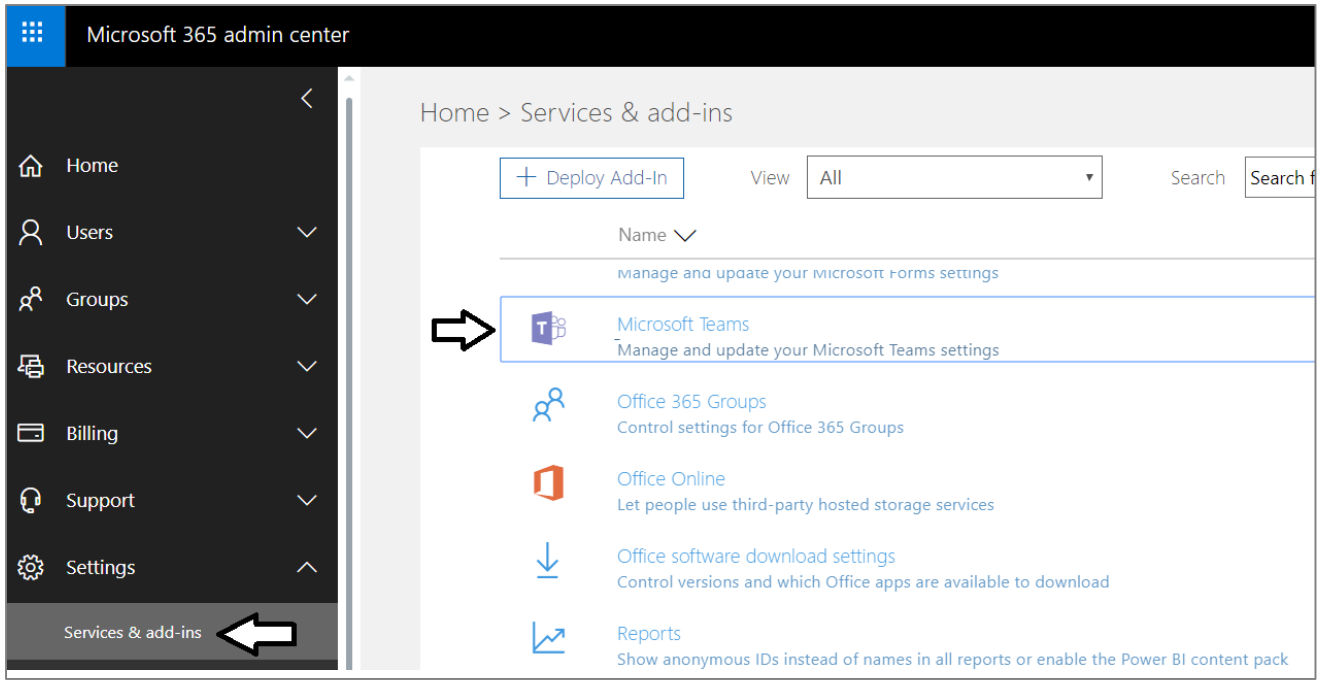


Agenda

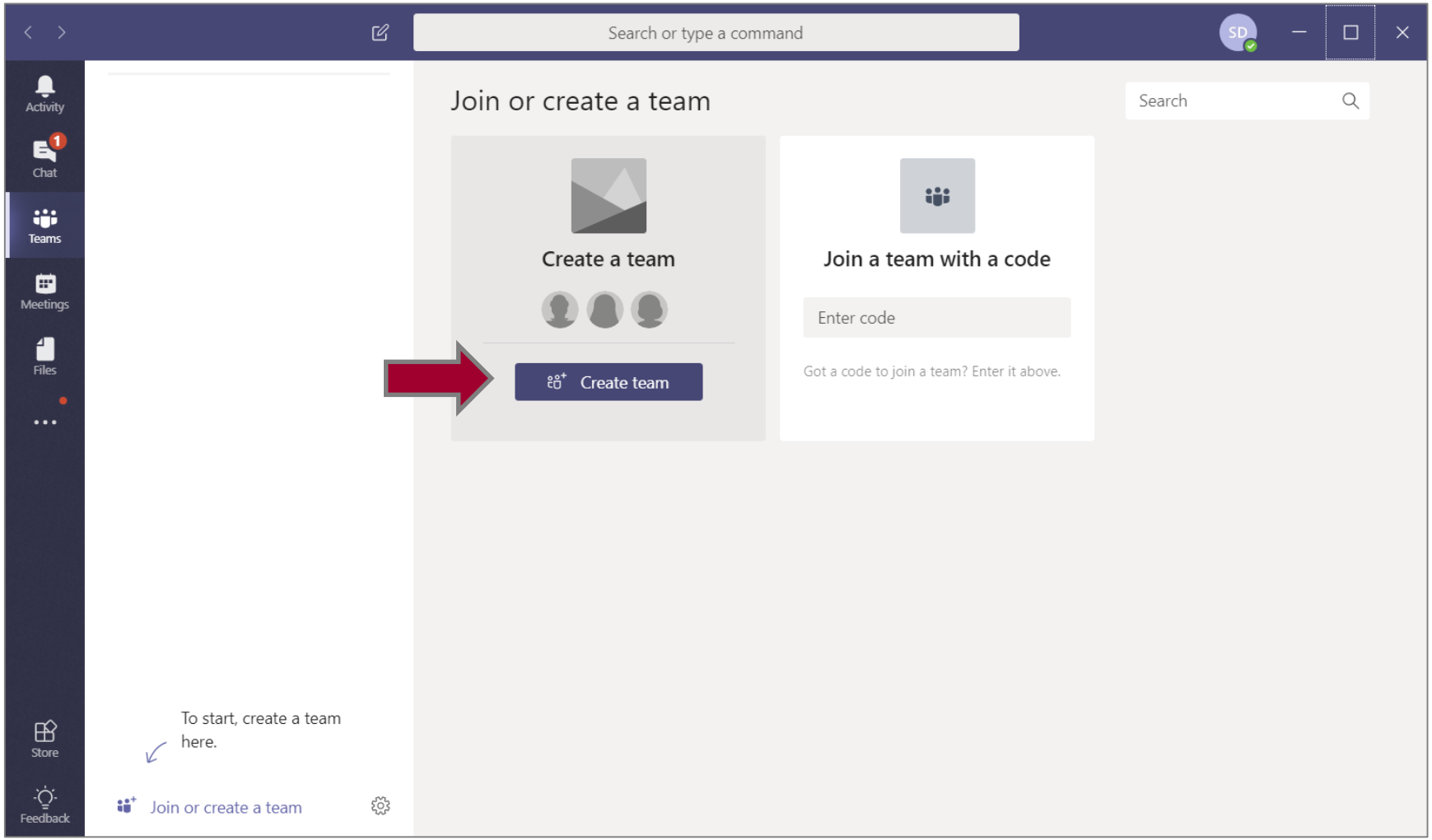
- Understanding the Teams Service, Teams and Channels
- Developing Team Apps with Tabs, Bots and Connectors
- Developing a Teams App using App Studio
- Developing a Teams App using Visual Studio and C#
- Developing a Teams App using Node.js
- Packaging and Publishing a Microsoft Teams App

Introduction to Microsoft Teams

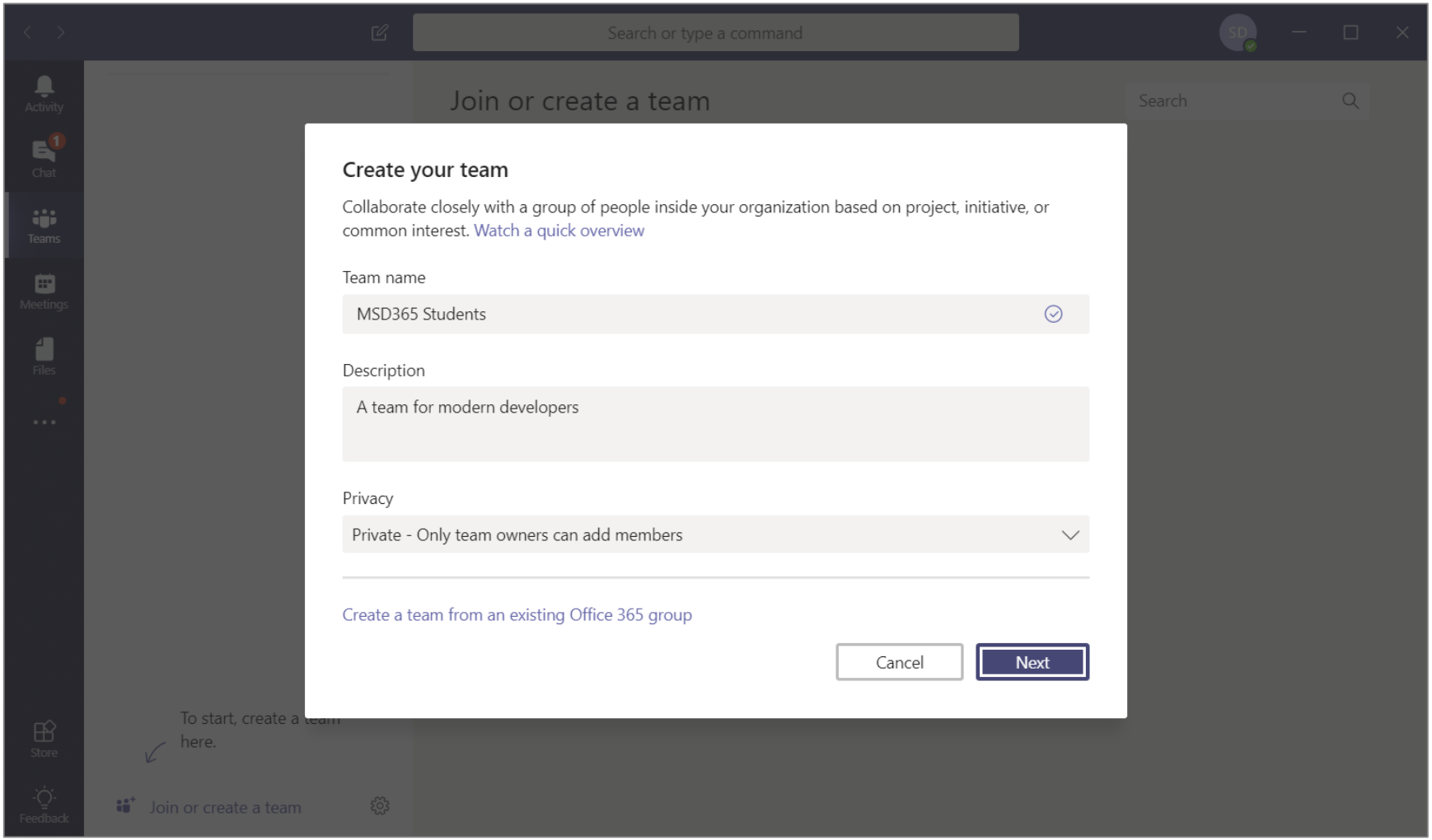
- Microsoft Teams is a Chat-based Workspace Service
  - Based on an evolved version of Skype for Business
  - Created by Microsoft to compete against Slack
  - Provides deep integration with Office 365
  - Offers native apps for Windows 10, Mac, iOS, Android and Windows Phone



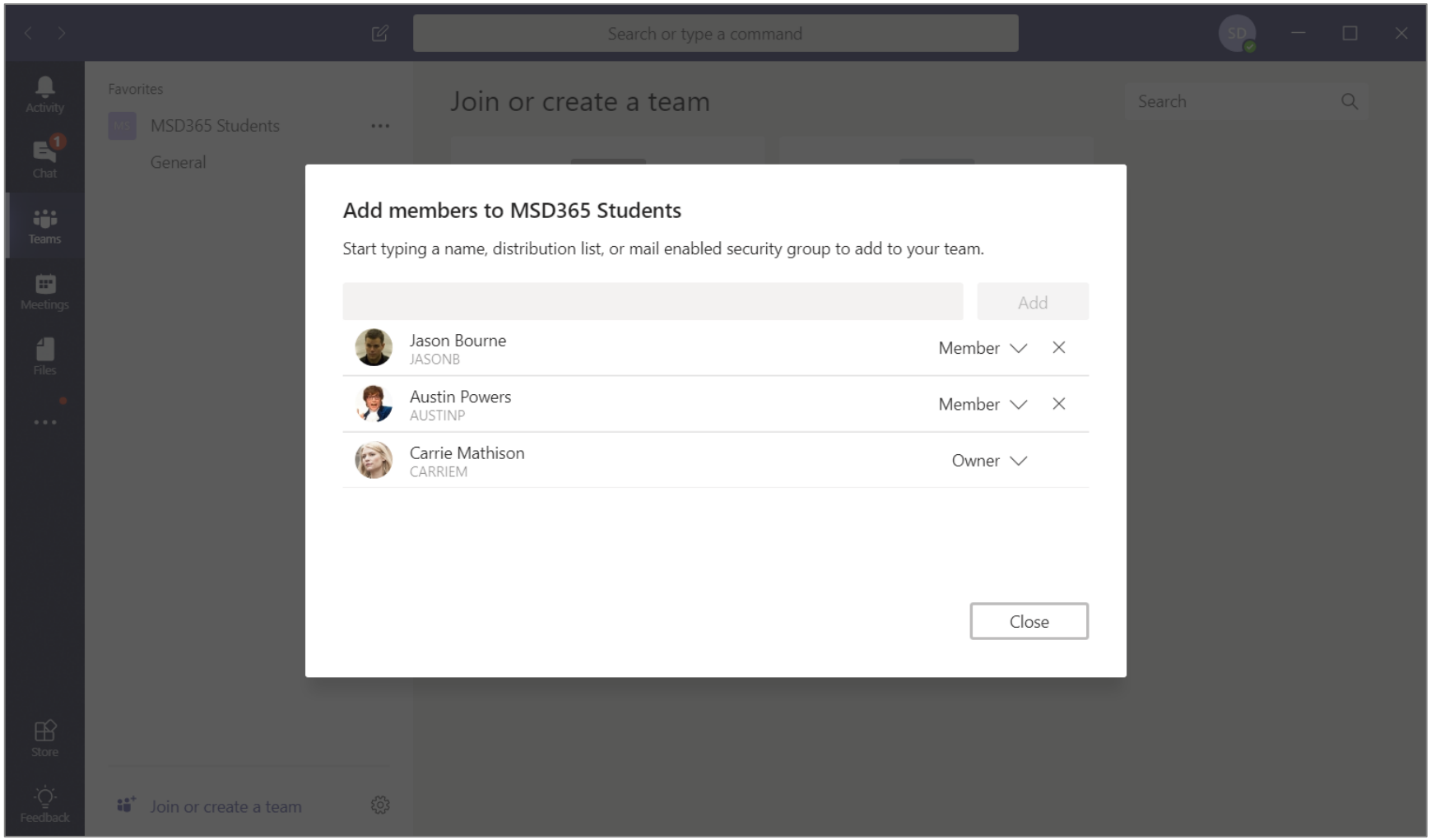
Creating a New Team



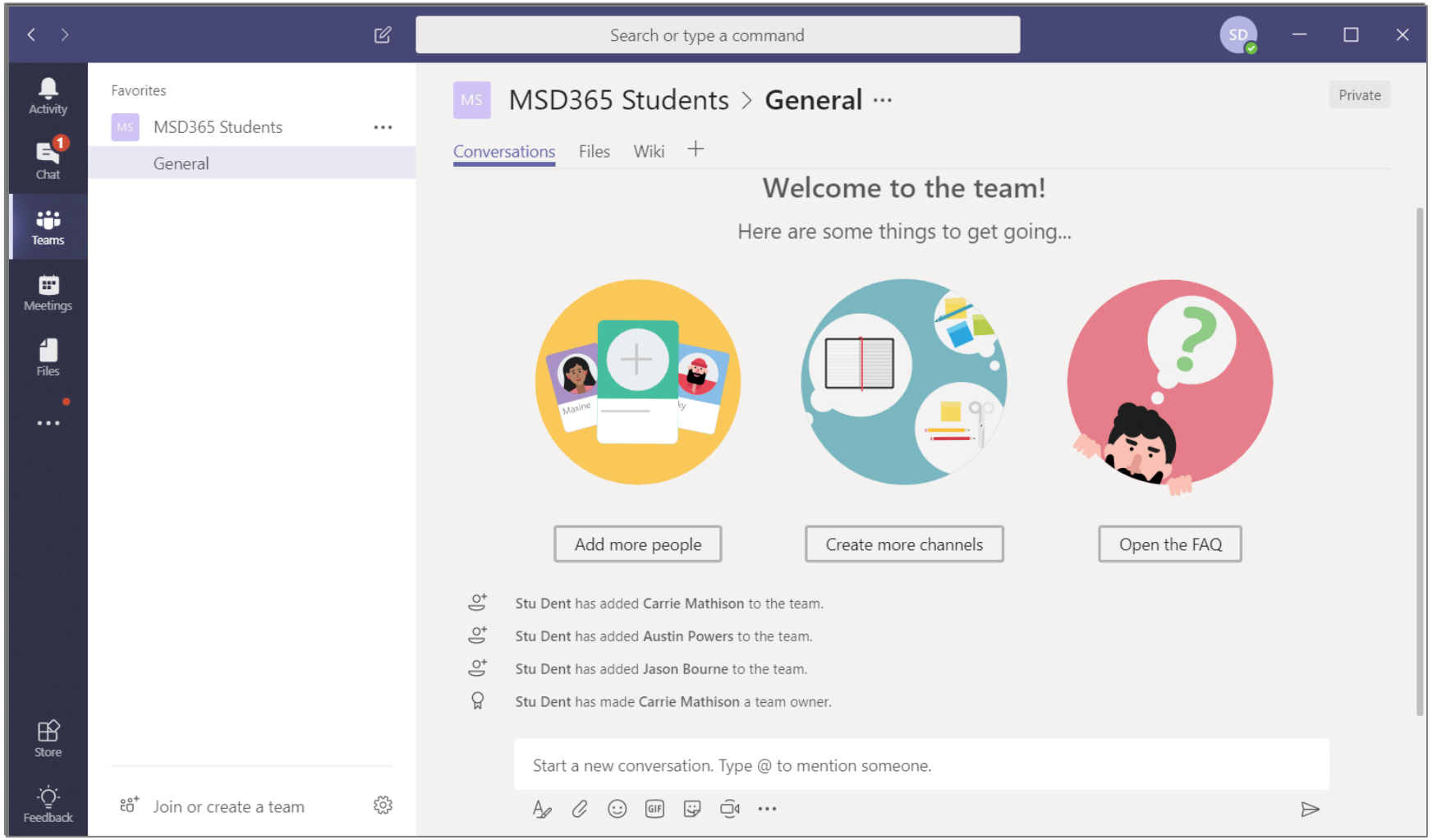
Assign Team Name and Privacy Level



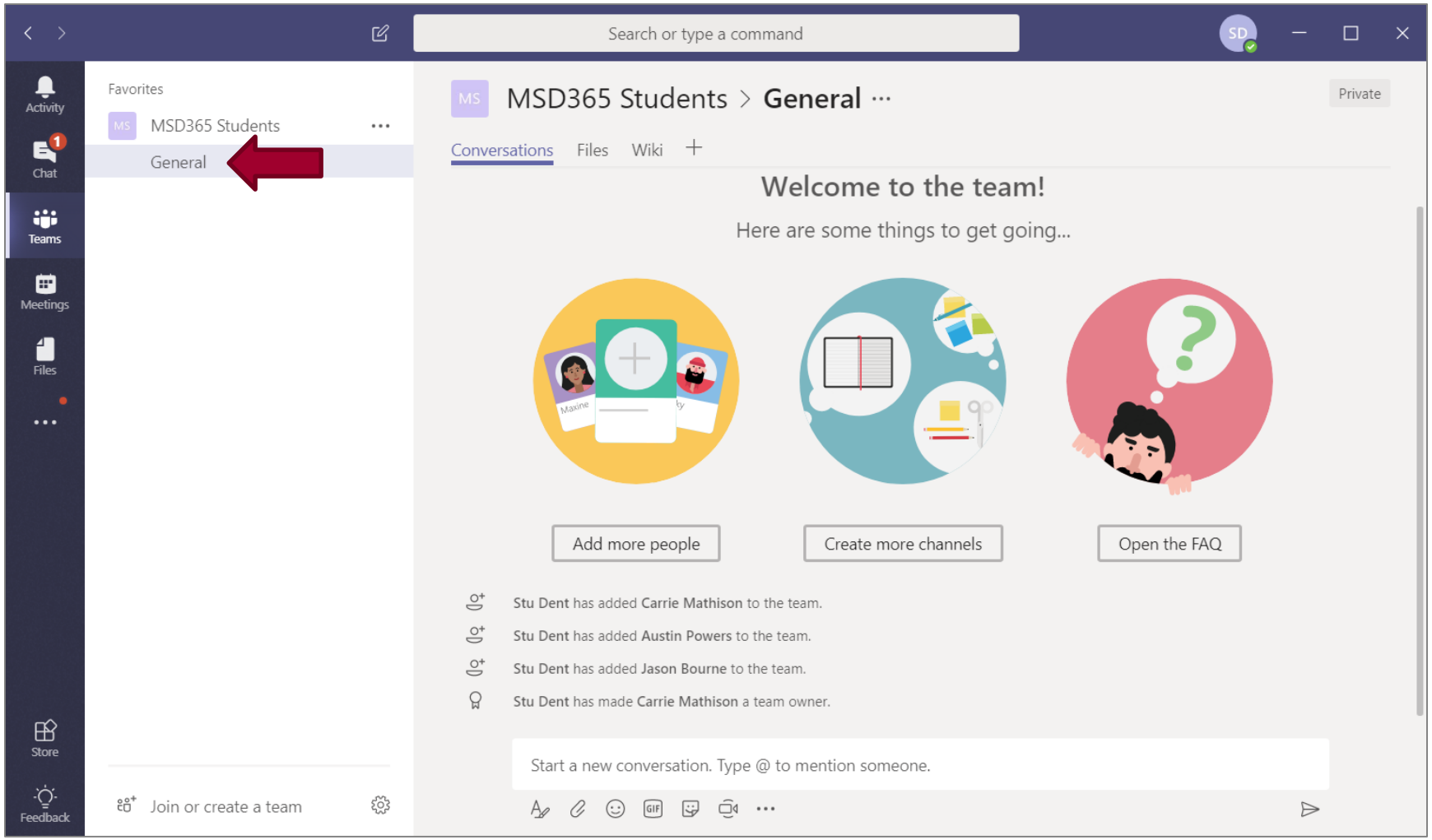
Add Team Members



A Team is Born

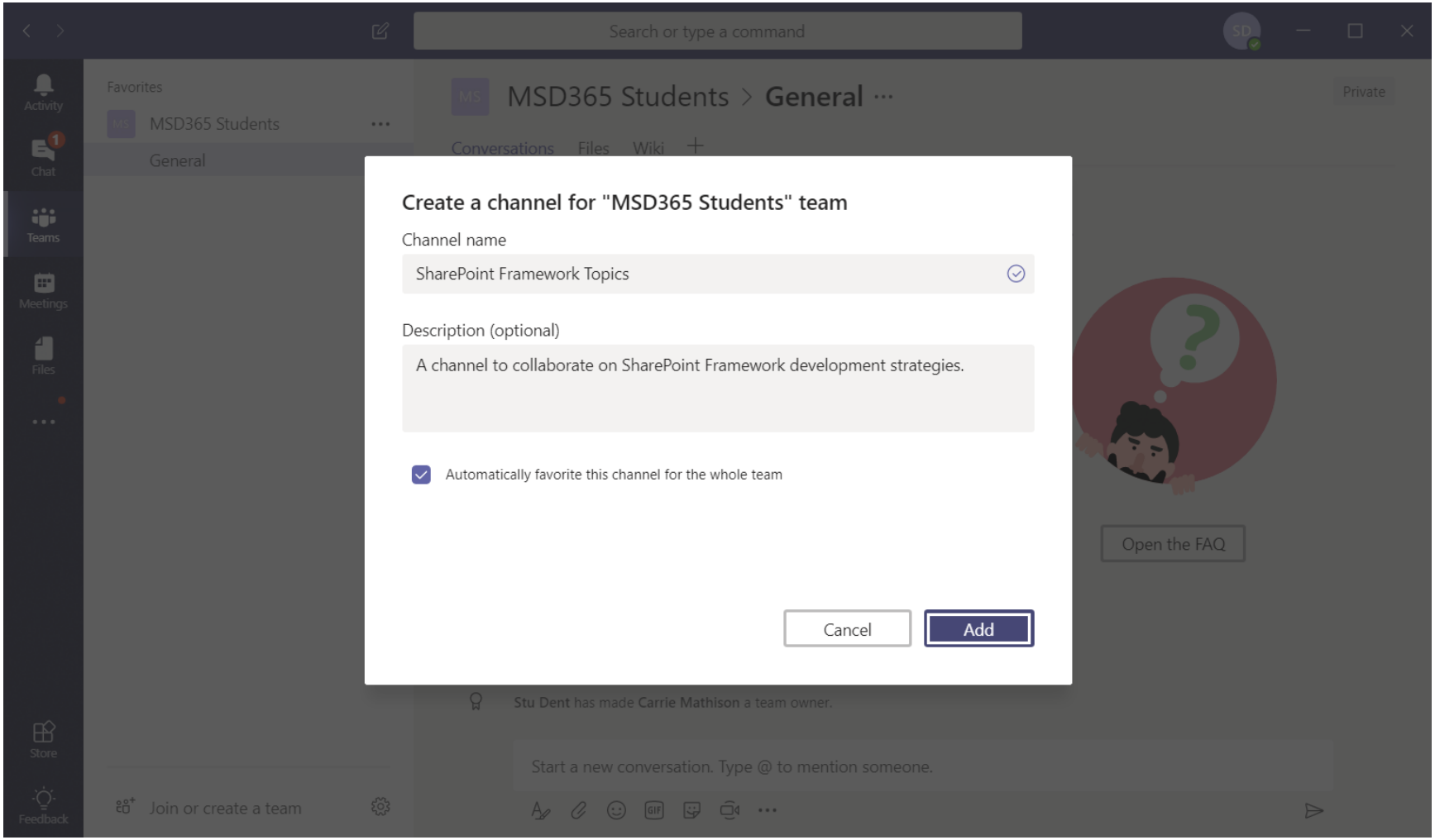


New Team has General Channel by Default



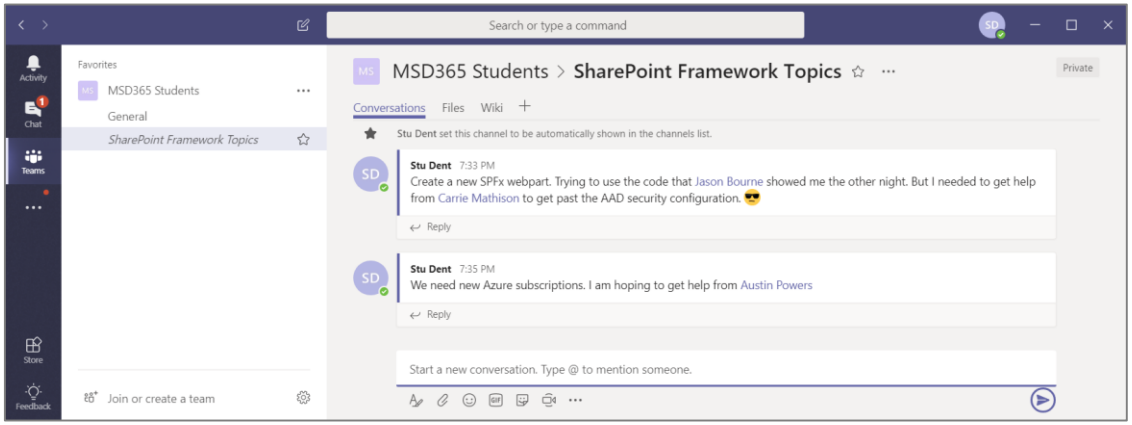
Add a New Channel

Creating a New Channel

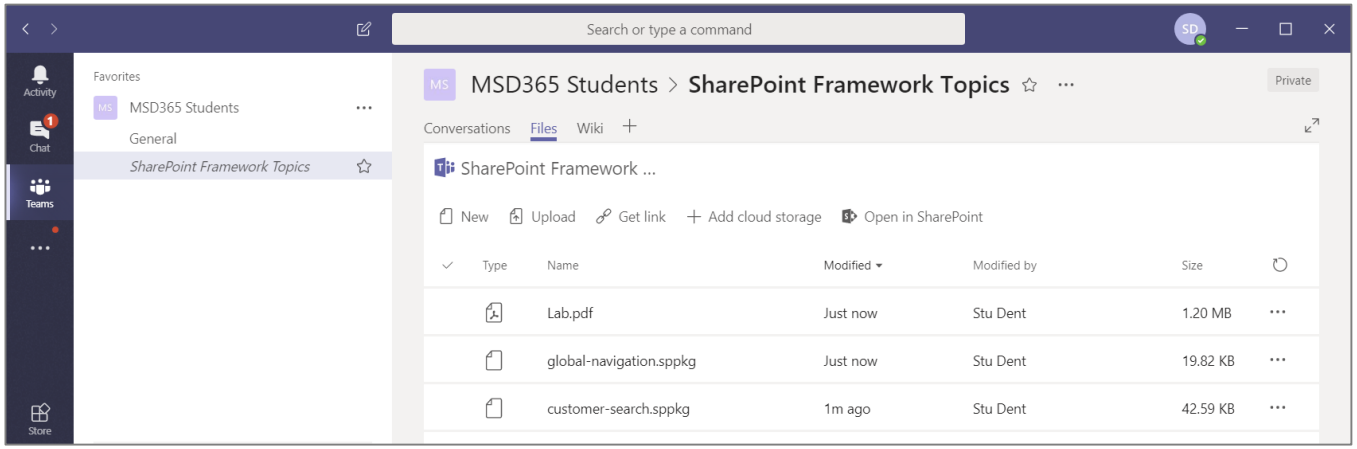


What's Inside a Channel?

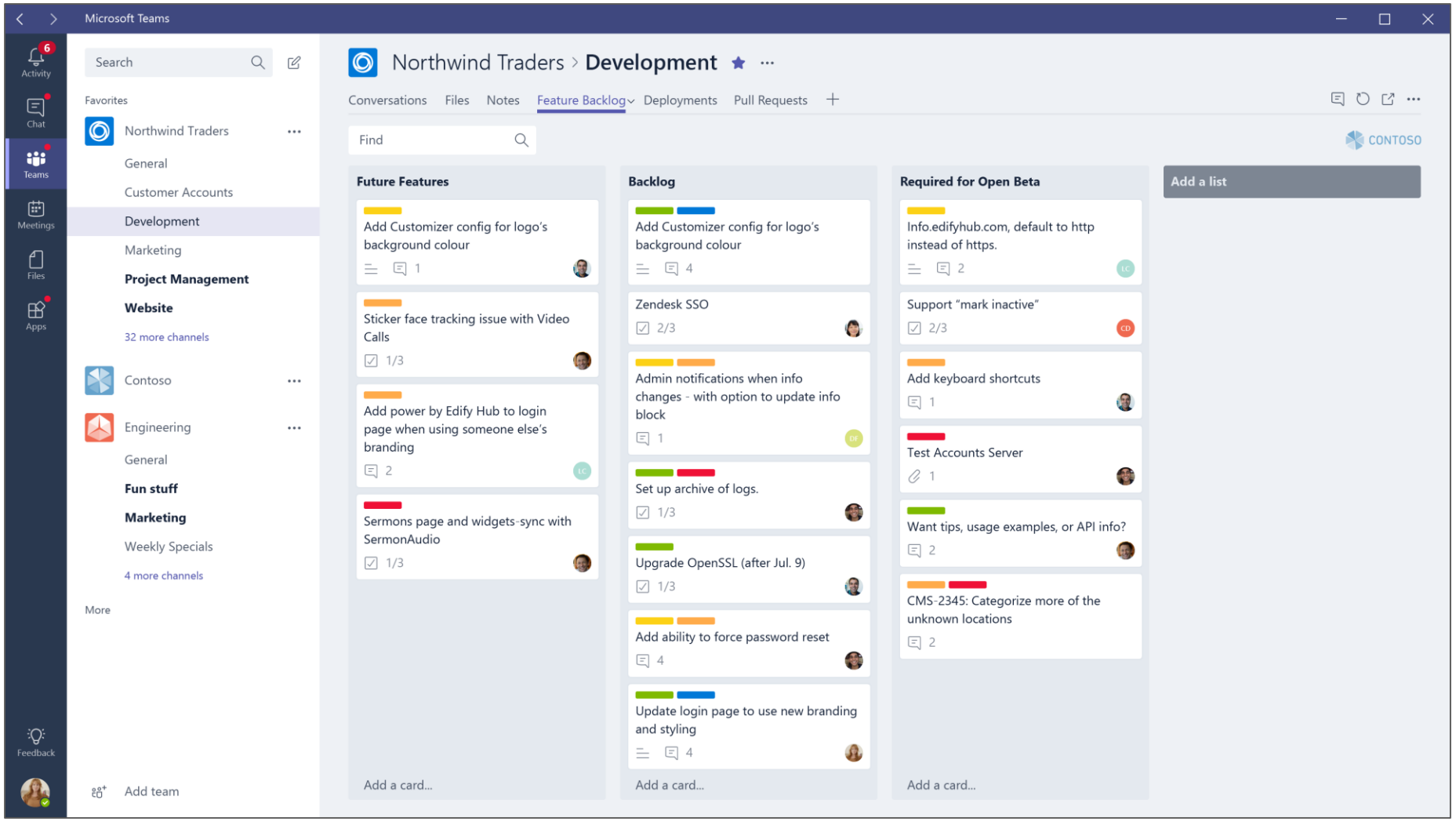
- Threaded conversations



- Files collection (i.e. document library)



Adding Tabs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Feedback
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Northwind Traders
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Customer Accounts
Development
Marketing
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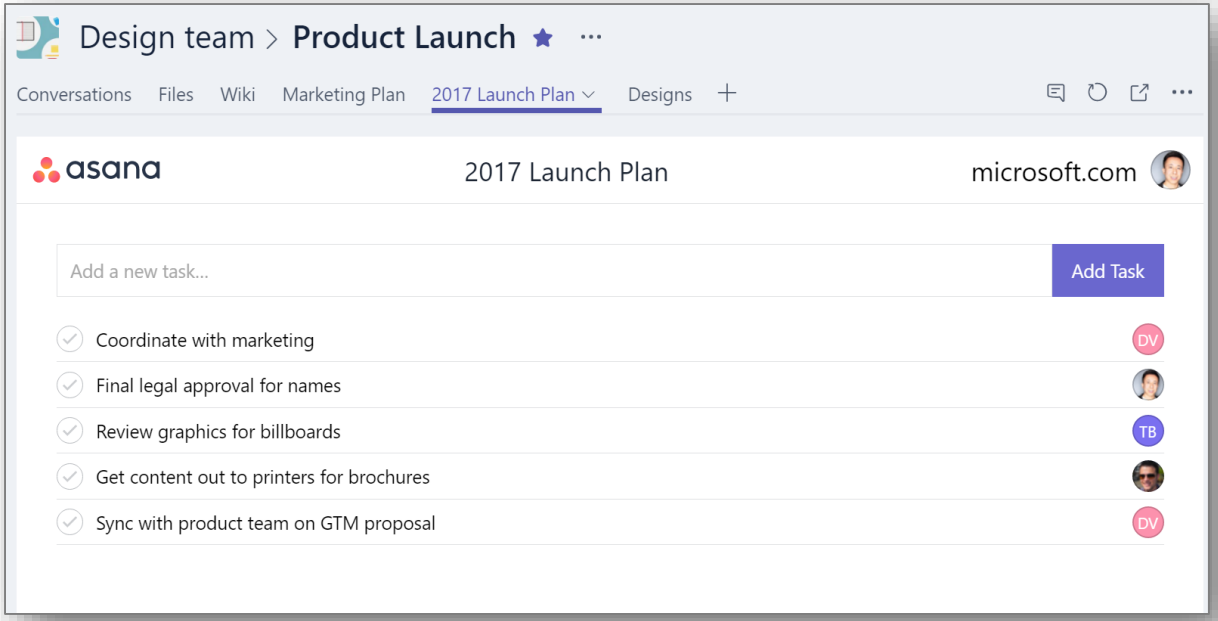
32 more channels
Contoso
Engineering
General
Fun stuff
Marketing
Weekly Specials
4 more channels
More
Add team
Northwind Traders › Development
Conversations
Files
Notes
Feature Backlog
Deployments
Pull Requests
Find
CONTOSO
Future Features
Add Customizer config for logo's background colour
Sticker face tracking issue with Video Calls
1/3
Add power by Edify Hub to login page when using someone else's branding
Sermons page and widgets-sync with SermonAudio
1/3
Add a card...
Backlog
Add Customizer config for logo's background colour
Zendesk SSO
2/3
Admin notifications when info changes - with option to update info block
Set up archive of logs.
1/3
Upgrade OpenSSL (after Jul. 9)
1/3
Add ability to force password reset
Update login page to use new branding and styling
Add a card...
Required for Open Beta
Info.edifyhub.com, default to http instead of https.
Support "mark inactive"
2/3
Add keyboard shortcuts
Test Accounts Server
Want tips, usage examples, or API info?
CMS-2345: Categorize more of the unknown locations
Add a card...
Add a list

Microsoft Teams Development Platform

- Development features available today
  - **Tabs** - surface rich content within Teams
  - **Bots** - help users get tasks done in conversations
  - **Connectors** - post rich updates to channels
- Development features in preview
  - **Actionable Messages** - add rich interaction to connector cards
  - **Activity Feed** - engage users via feed notifications
  - **Compose Extensions** - users query & share cards in conversations
  - **Office Store** - drive engagement by submitting app to Office Store

Developing Tabs

- Rich surface area for your app
- As simple as hosting your existing web app
- Team productivity: within channels
- Personal productivity: app flyout
- Your services, experience, & users

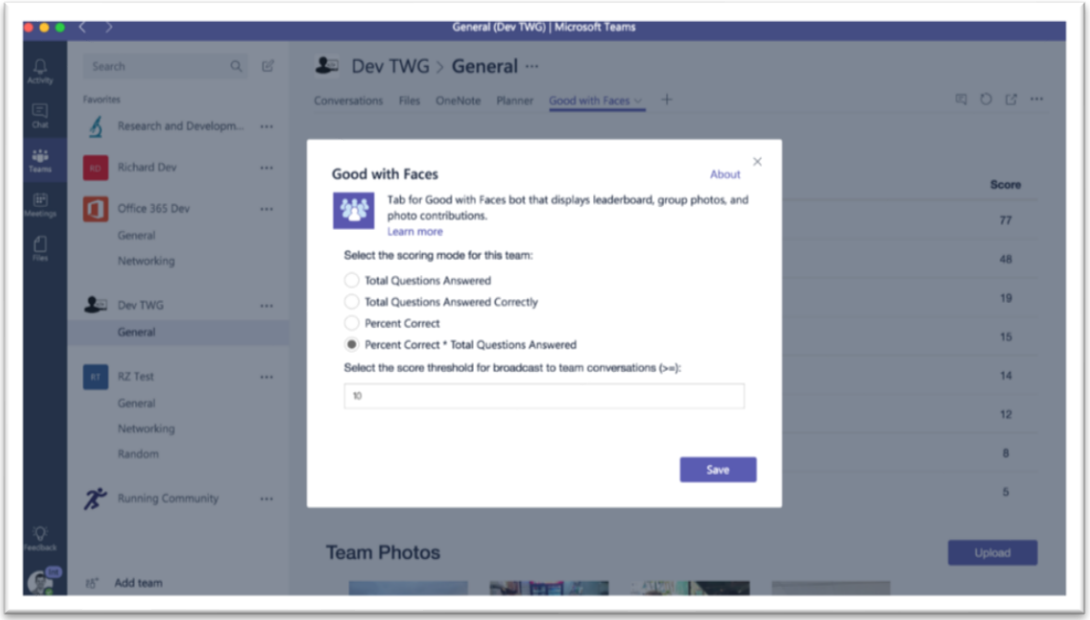


Tabs

- Embed-ready web UX on web/desktop, deep link to native apps on mobile
- Leverages Microsoft Teams Tab Library javascript for context and interactivity
- Team or Personal Scope

Tabs Pages

- Configuration Page
  - used to add/update tab and set content page
- Content Page
  - the primary page displayed in the tab
- Remove Page
  - optional page displayed when a tab is removed



Tabs - Config Page

- Used to Add or Edit a Tab
  - Must reference Microsoft Teams Tab Library
  - Sets the **contentUrl** for the tab
  - Calls **setSettings** to save tab configuration
  - Must call **setValidityState** to enable the save button
  - Call **notifySuccess** when saved

```
microsoftTeams.initialize();
microsoftTeams.settings.registerOnSaveHandler(function(saveEvent){
    microsoftTeams.settings.setSettings({
        entityId: "someid",
        contentUrl: "https://somedomain/tab.html",
        suggestedDisplayName: "Tab Title",
        websiteUrl: "https://somedomain/info.html",
        removeUrl: "https://somedomain/tabremove.html"
    });
    saveEvent.notifySuccess();
});

function onSaveClick() {
    microsoftTeams.settings.setValidityState(true);
}
```

Tabs - Context information

- getContext returns team/channel context:
  - tid – id of tenant
  - groupId – id of the O365 group
  - teamId – id of the team
  - channelId – id of the channel
  - entityId – id of the entity
  - theme – theme of the teams client
  - locale – the locale of the client
  - upn – UPN of the user

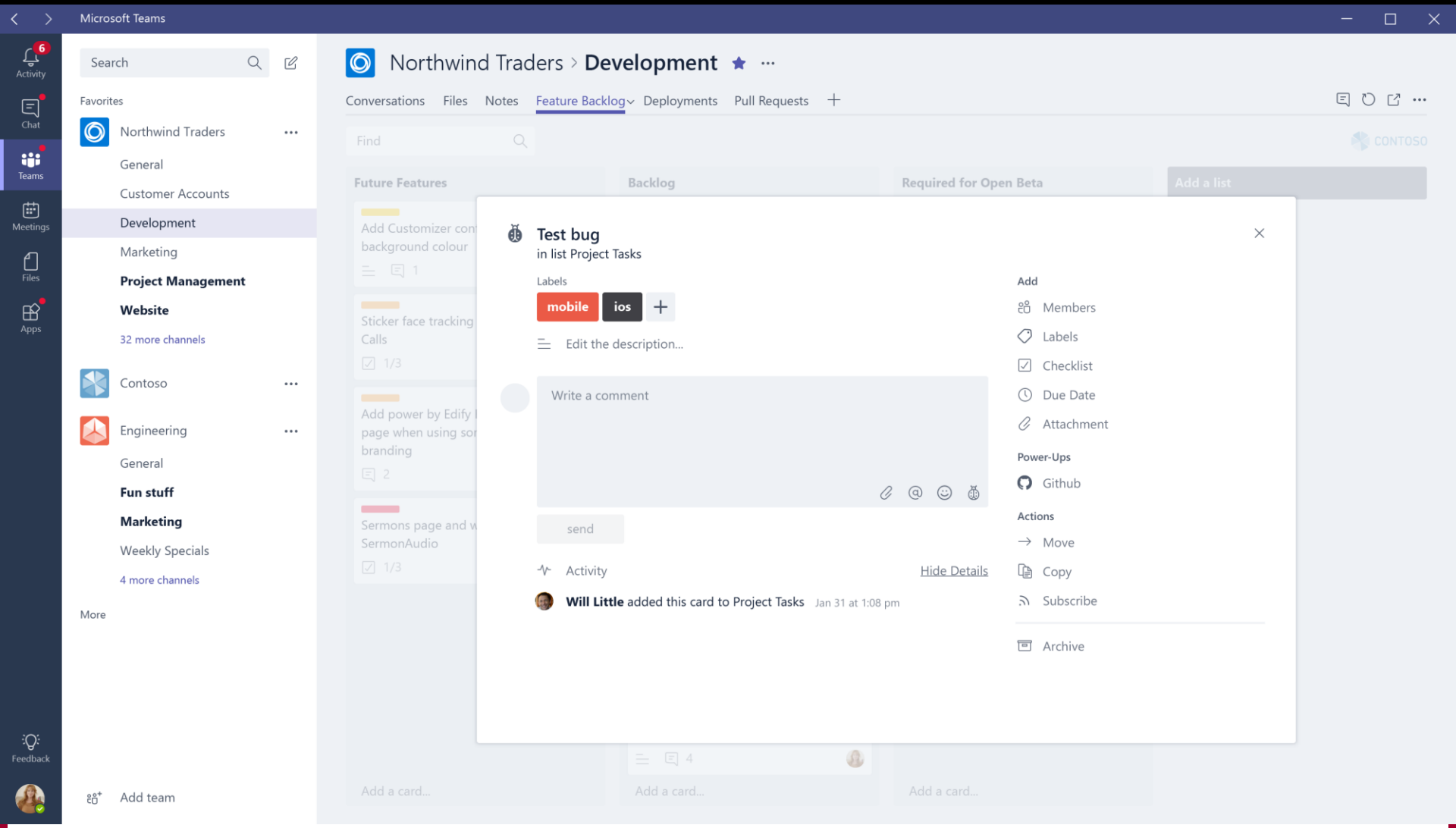
```
microsoftTeams.getContext(function (context) {
    // context contains all context info
});
```

Tabs - Deep linking to Entities

- Share a Link from your Tab
  - Trigger creation of deep link to specific Entity for user to copy and paste into a conversation
  - Resultant link may be clicked on by any user to launch the tab and navigate directly to that Entity
  - Programmatically create your own link, for use via bot or other code flows

```
microsoftTeams.shareDeepLink({
    subEntityId: <subEntityId>,
    subEntityLabel: <subEntityLabel>,
    subEntityWebUrl: <subEntityWebUrl>
})
```

```
https://teams.microsoft.com/l/entity/<appId>/<entityId>?webUrl=<entityWebUrl>&
                                                        label=<entityLabel>&
                                                        context=<context>
```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4 more channels
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Add team
Northwind Traders › Development
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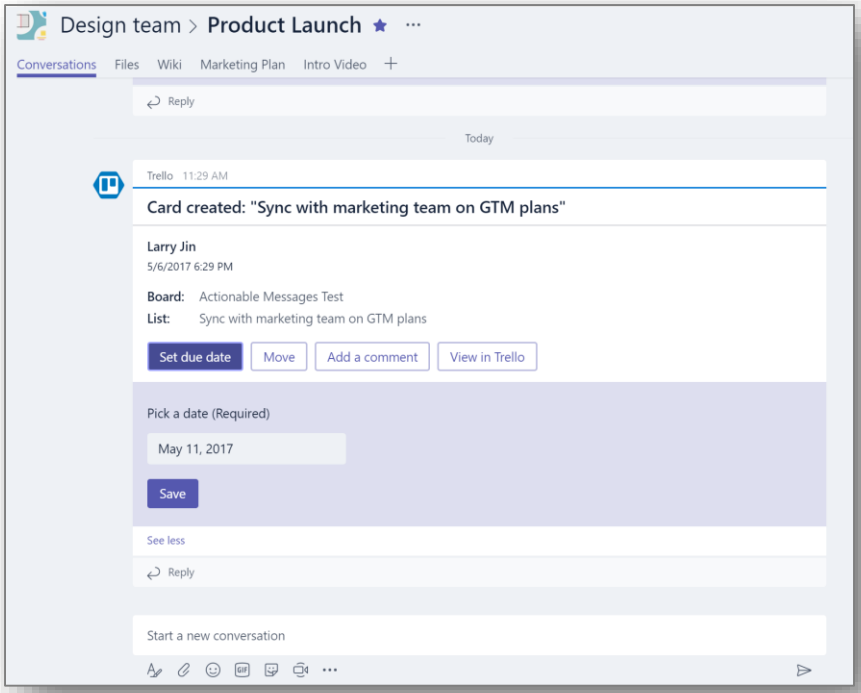
4
Add a card...
Add a card...
Add a card...
Test bug
in list Project Tasks
Labels
mobile
ios
Edit the description...
Write a comment
send
Activity
Hide Details
Will Little added this card to Project Tasks Jan 31 at 1:08 pm
Add
Members
Labels
Checklist
Due Date
Attachment
Power-Ups
Github
Actions
Move
Copy
Subscribe
Archive

Building a Great Tabs experience

- Configurable Tabs
  - In channel, tabs allow user to configure view to relevant content
  - Content should be the same for all users – leverage collaboration
  - Content should be locked – don’t allow users to browse away
- Static Tabs
  - In personal scope, this content should be the relevant for either the all-up app (e.g. Help, FAQ, forums) or for a personal view of the experience

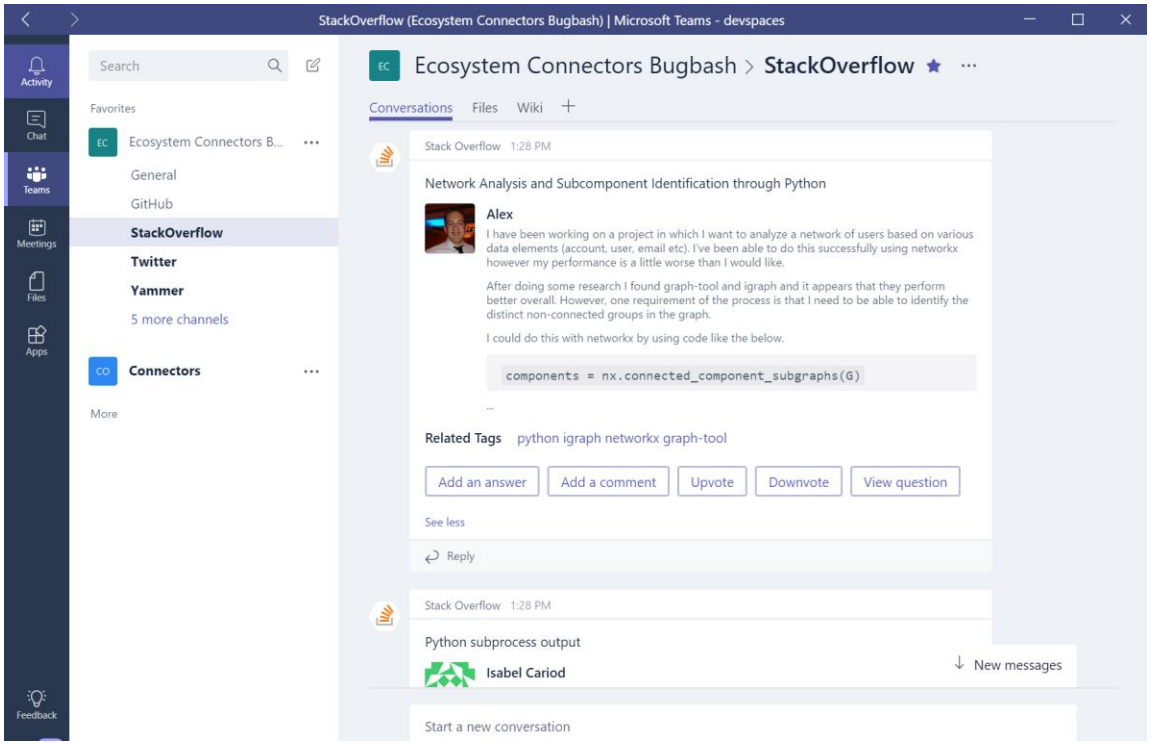
Connectors with Actionable Messages

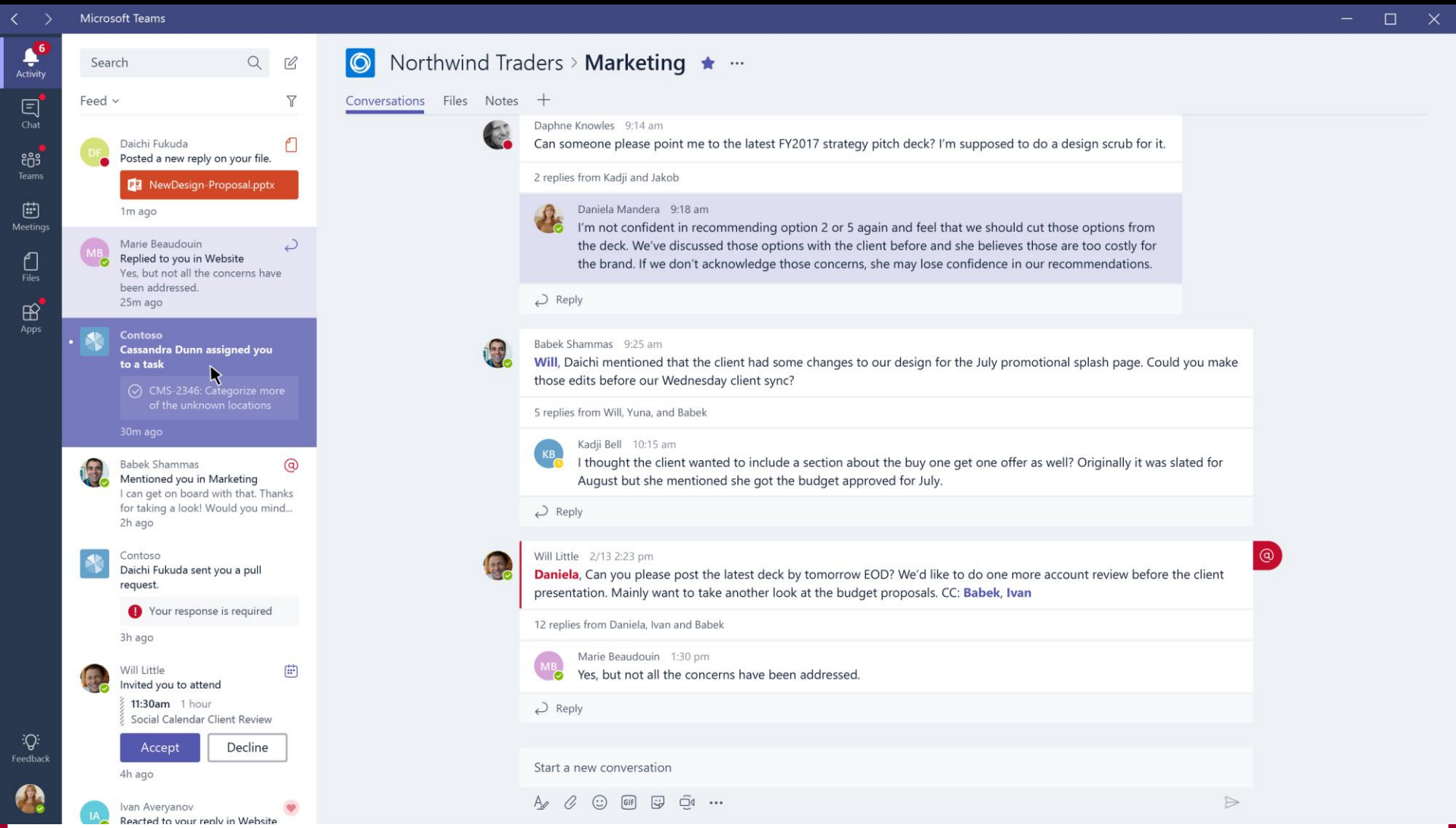
- Push rich interactive cards into channels
- Fully supported in both Teams and Outlook
- Users can take quick actions (e.g. comment or set a date)
- Uses incoming webhook API

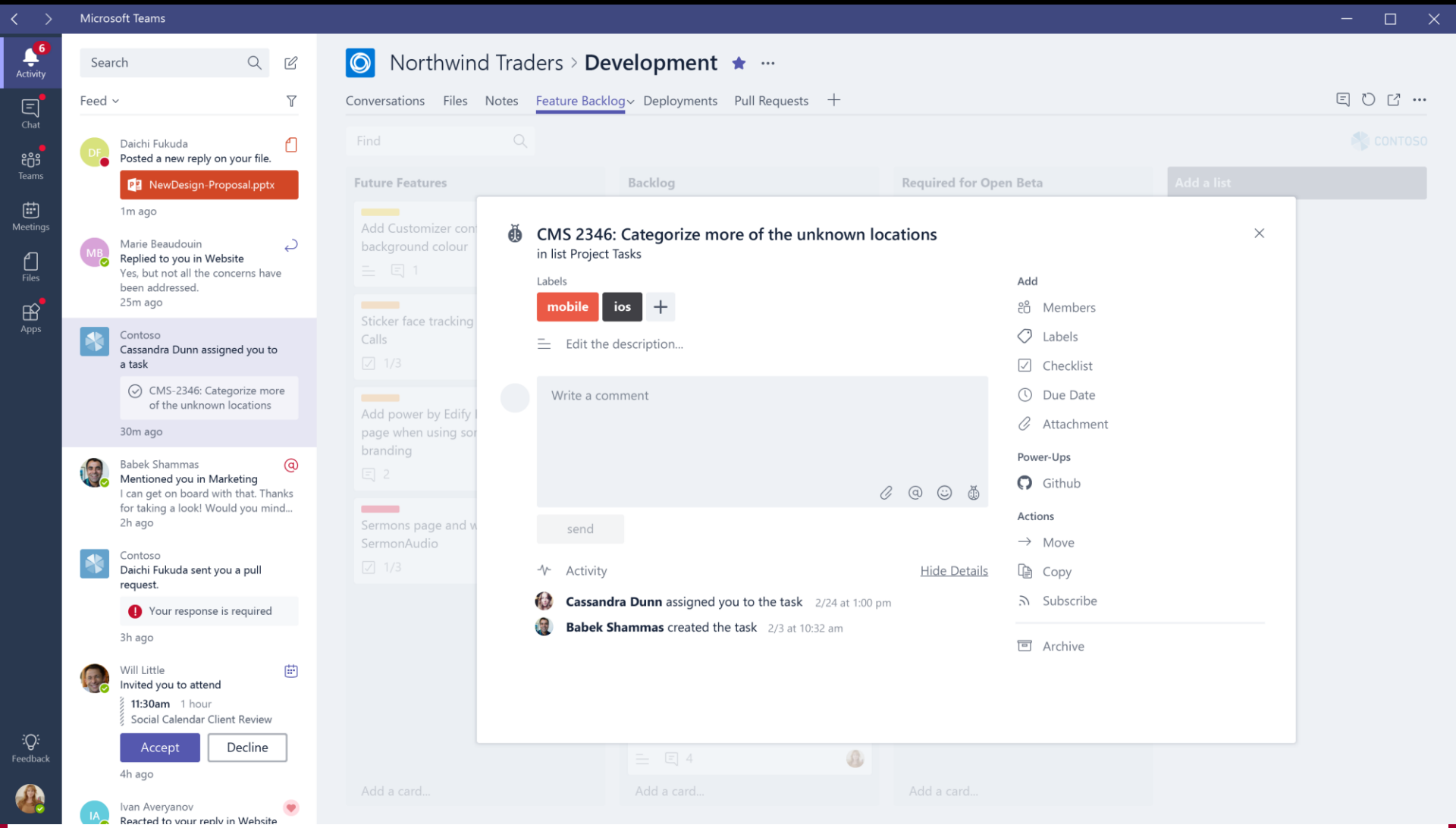


Office 365 Connectors

- Leverage webhooks to send activity into Teams
  - Build connector, registering on the Connector Developer Portal
  - Simply add Connector ID to manifest.json
  - Leverage Actionable Messages to allow inline work commands




Microsoft Teams
Activity
Chat
Teams
Meetings
Files
Apps
Feedback
Search
Feed
Daichi Fukuda
Posted a new reply on your file.
NewDesign-Proposal.pptx
1m ago
Marie Beaudouin
Replied to you in Website
Yes, but not all the concerns have been addressed.
25m ago
Contoso
Cassandra Dunn assigned you to a task
CMS-2346: Categorize more of the unknown locations
30m ago
Babek Shammas
Mentioned you in Marketing
I can get on board with that. Thanks for taking a look! Would you mind...
2h ago
Contoso
Daichi Fukuda sent you a pull request.
Your response is required
3h ago
Will Little
Invited you to attend
11:30am 1 hour
Social Calendar Client Review
Accept
Decline
4h ago
Ivan Averyanov
Reacted to your reply in Website
Northwind Traders › Marketing
Conversations
Files
Notes
Daphne Knowles 9:14 am
Can someone please point me to the latest FY2017 strategy pitch deck? I'm supposed to do a design scrub for it.
2 replies from Kadji and Jakob
Daniela Mandera 9:18 am
I'm not confident in recommending option 2 or 5 again and feel that we should cut those options from the deck. We've discussed those options with the client before and she believes those are too costly for the brand. If we don't acknowledge those concerns, she may lose confidence in our recommendations.
Reply
Babek Shammas 9:25 am
Will, Daichi mentioned that the client had some changes to our design for the July promotional splash page. Could you make those edits before our Wednesday client sync?
5 replies from Will, Yuna, and Babek
Kadji Bell 10:15 am
I thought the client wanted to include a section about the buy one get one offer as well? Originally it was slated for August but she mentioned she got the budget approved for July.
Reply
Will Little 2/13 2:23 pm
Daniela, Can you please post the latest deck by tomorrow EOD? We'd like to do one more account review before the client presentation. Mainly want to take another look at the budget proposals. CC: Babek, Ivan
12 replies from Daniela, Ivan and Babek
Marie Beaudouin 1:30 pm
Yes, but not all the concerns have been addressed.
Reply
Start a new conversation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Add a list
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Sticker face tracking Calls
1/3
Add power by Edify page when using so branding
Sermons page and w SermonAudio
1/3
4
Add a card...
Add a card...
Add a card...
CMS 2346: Categorize more of the unknown locations
in list Project Tasks
Labels
mobile
ios
Edit the description...
Write a comment
send
Activity
Hide Details
Cassandra Dunn assigned you to the task 2/24 at 1:00 pm
Babek Shammas created the task 2/3 at 10:32 am
Add
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Checklist
Due Date
Attachment
Power-Ups
Github
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Subscribe
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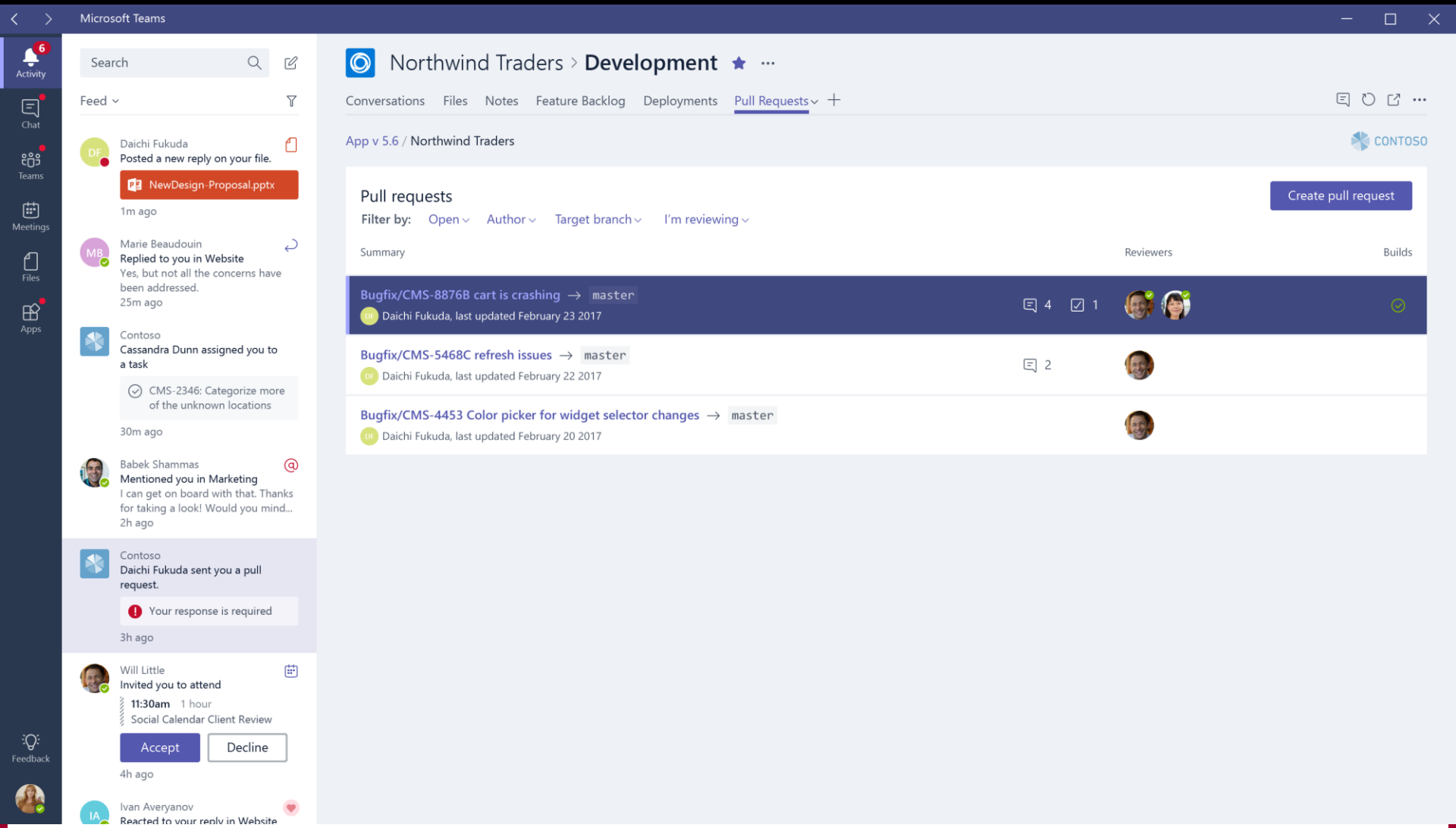
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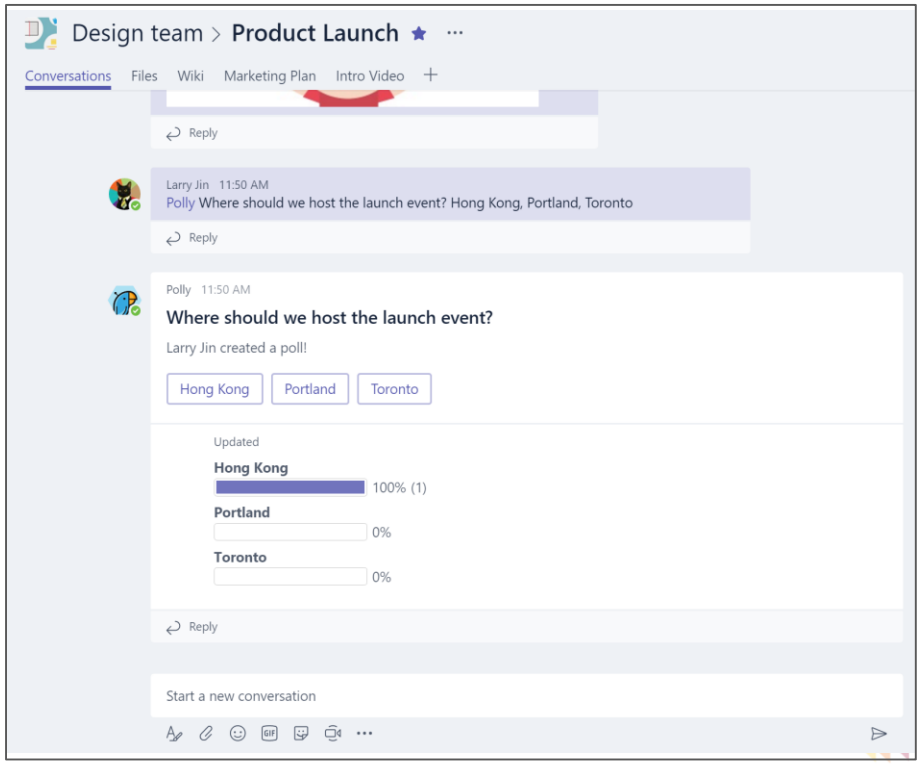
Pull requests
Create pull request
Filter by:
Open
Author
Target branch
I'm reviewing
Summary
Reviewers
Builds
Bugfix/CMS-8876B cart is crashing → master
Daichi Fukuda, last updated February 23 2017
4
1
Bugfix/CMS-5468C refresh issues → master
Daichi Fukuda, last updated February 22 2017
2
Bugfix/CMS-4453 Color picker for widget selector changes → master
Daichi Fukuda, last updated February 20 2017

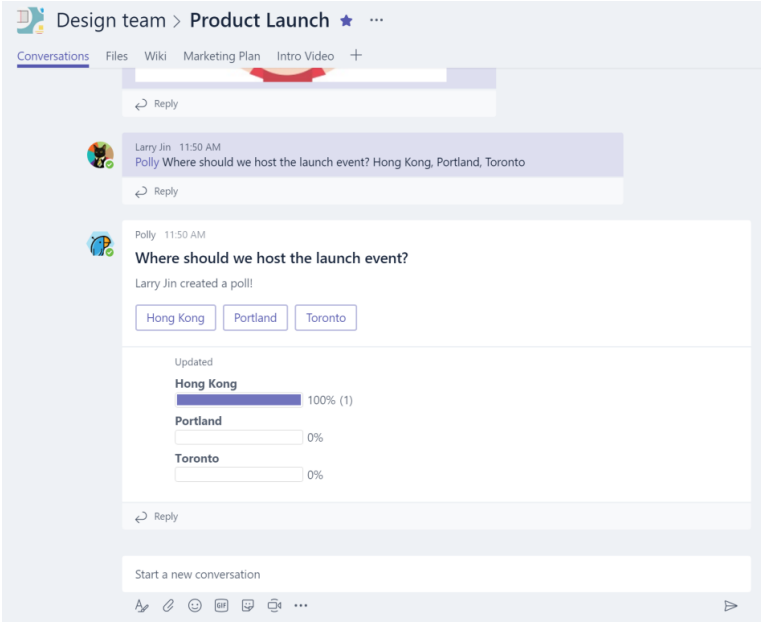
Bots

- Bot is app with automated interaction in Team with conversations or 1:1
- Built using Microsoft Bot Framework
- Complete tasks via basic commands, menu or natural language
- Rich Microsoft Teams features, e.g.
  - Input menus
  - Dynamic message updates
  - Integrate with tabs



Bots

- Based on Web Service you create and host
  - Use whatever web technology you prefer
  - Extra support for using Node.js or .NET on Azure
- Built using Microsoft Bot Framework
  - Call REST APIs directly or use libraries for Node.js and .NET
  - New Microsoft Teams Extension libraries (Node.js and .NET) provide channel-specific functionality



Bots – Getting up and running

- Set up basic development environment
  - Install Bot Builder
  - Install Microsoft Teams extension SDKs for chosen language
- Leverage existing samples
  - Bot Framework sample
  - Teams Getting Started sample
- Run locally to test in the Bot Emulator

Bots - Getting Teams-ready

- Register your bot in the Bot Framework Dev Portal
  - Set a unique bot name and handle
  - Set your bot Endpoint – your hosted domain, or your debug instance (we recommend Ngrok)
  - Create an AppID (aka BotID) and Password
  - Add Microsoft Teams as a Channel
  - Note: for 1:1 bot, you may reference your bot directly via its AppID
  - Enter your AppID and Password into your Development environment
  - Build and publish or run locally with Ngrok

Bots - Accessing in Teams

- Create a Teams App Manifest
  - Microsoft provides SimpleBot package
  - SimpleBot has manifest with sample icons
  - Add your BotID in the Bots object
  - Sideload into a Team

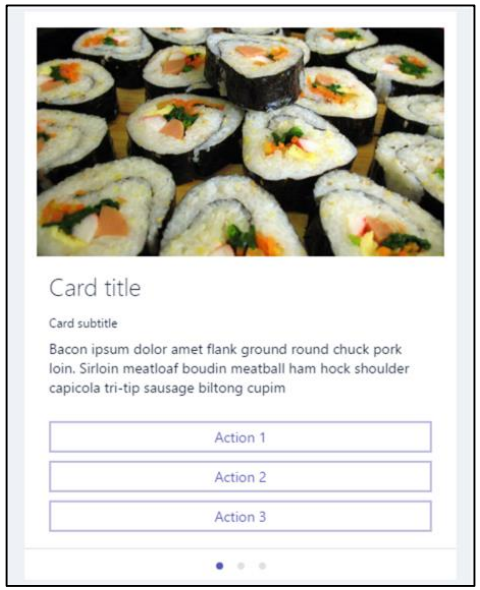
```
{
  "manifestVersion": "1.0",
  "version": "1.0.0",
  “id": "%APP_GUID%",
  "packageName": "com.samples.samplebot",
  "developer": {
    "name": "Microsoft",
    "websiteUrl": "https://www.microsoft.com",
    "privacyUrl": "https://www.microsoft.com/privacy",
    "termsOfUseUrl": "https://www.microsoft.com/termsofuse"
  },
  "name": {
    "short": "Sample Bot App"
  },
  "description": {
    "short": "This is a sample bot manifest",
    "full": "This sample bot manifest has minimum info."
  },
  "icons": {
    "outline": "contoso20x20.png",
    "color": "contoso96x96.png"
  },
  "accentColor": "#60A18E",
  "bots": [
    {
      "botId": "%BOT_FRAMEWORK_ID%",
      "scopes": [
        "team",
        "personal"
      ]
    }
  ],
  "permissions": [
    "identity",
    "messageTeamMembers"
  ]
}
```

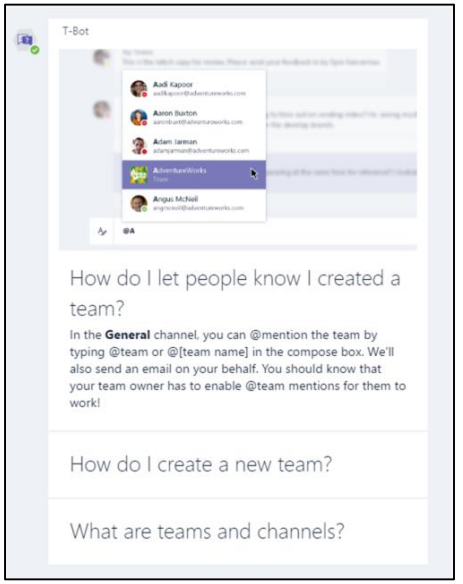
Bot - Messaging

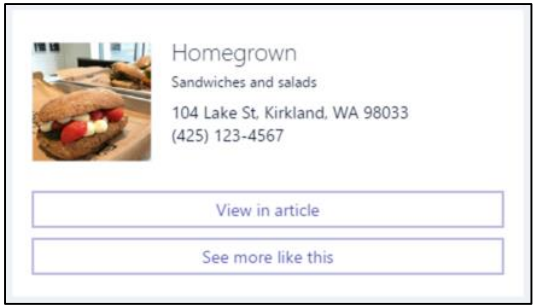
- Responsive messages (via 1:1 or @mentioning in channel)
  - Proactively create messages
  - Create direct (1:1) message – must know user ID
  - Create new channel reply – bot must be added to team and know channel information
- Update messages sent by Bot
  - One-way only – e.g. push notifications

Bot - Content

- User to bot
  - Plain or rich text
  - Inline images
  - Note: files not currently supported
- Bot to user
  - Plain text
  - Markdown or XML
  - Cards
  - Hero Cards
  - Thumbnails
  - Sign-in
  - Carousel or List layouts
  - Buttons
  - openUrl – open in browser
  - imBack – trigger chat response
  - invoke – silent JSON payload



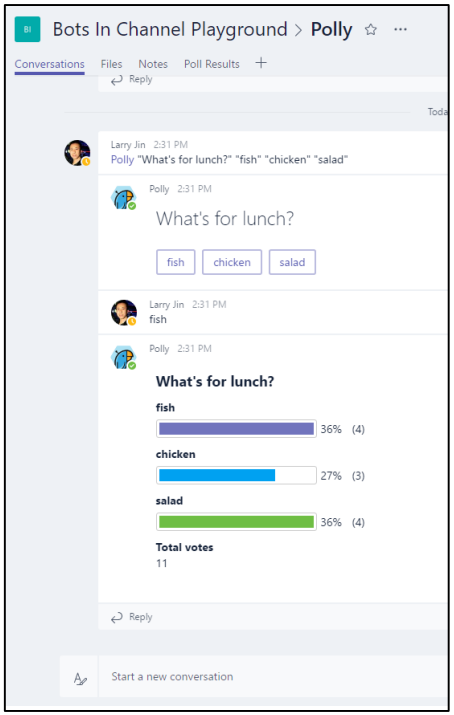




Bots in Team Channels - Basics

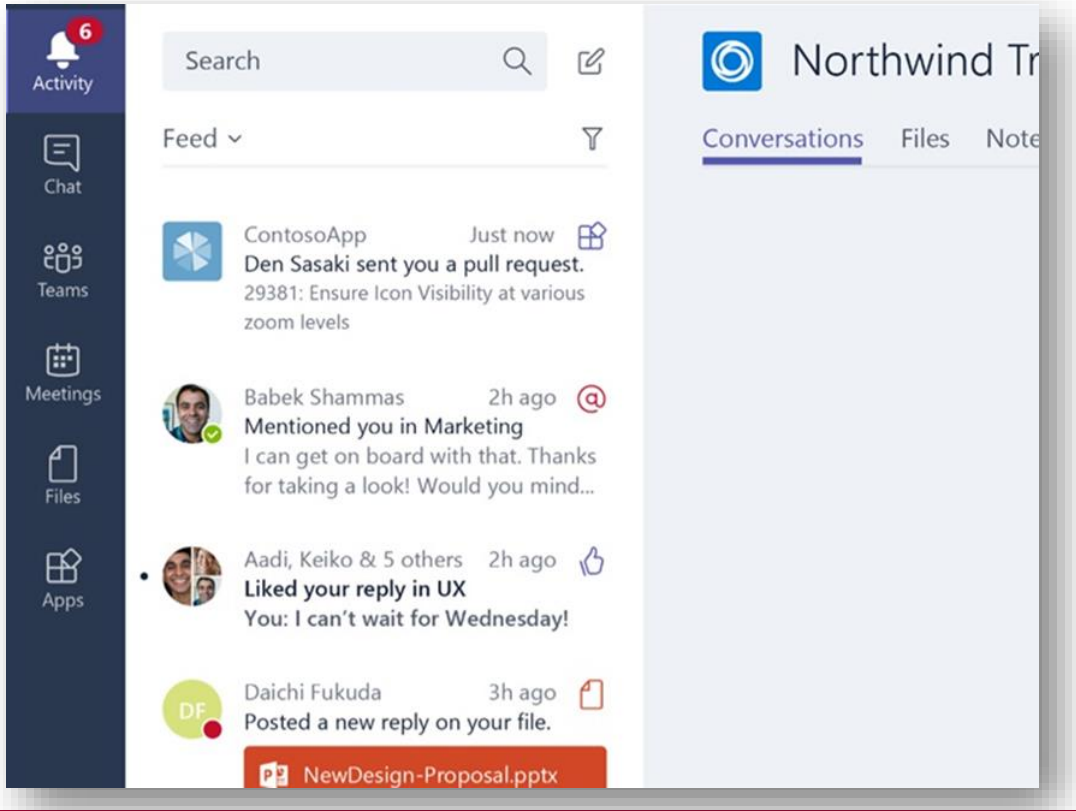
- Bot only listens to @mentions
  - Replies go to the conversation thread
  - Inbound payload in channels as flagged as isGroup and contains Teams channel data:

```
"channelData": {
    "channel": {
        "id": "19:293ecdb923ac4458a5c23661b505fc84@thread.skype",
    },
    "team": {
        "id": "19:293ecdb923ac4458a5c23661b505fc84@thread.skype"
    },
    "tenant": {
        "id": "72f988bf-86f1-41af-91ab-2d7cd011db47"
    }
}
```



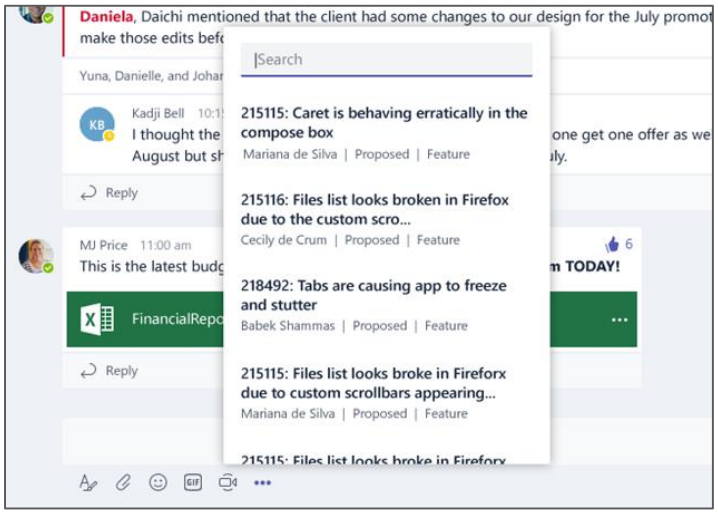
Activity Feed

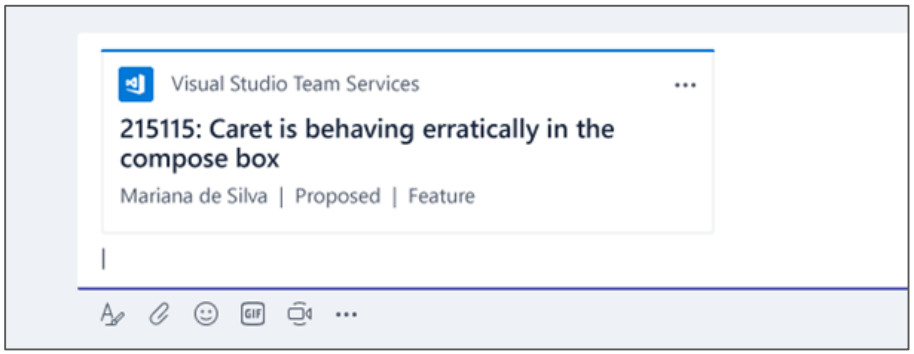
- Notify users personally via the activity feed
- Same API as sending bot messages
- Deep link straight into tabs



Compose Extensions

- Personalize Teams Compose box with your App & Services content
- Users can query and insert your app content into conversations
- Example: Bug details from VSTS
- Example: Sales opportunities from CRM
- You can reuse services you built for Bots or Tabs





Microsoft Teams App

- Microsoft Teams Apps
  - Deliver custom solution using solution package (.zip)
  - Single App definition – manifest.json
  - Single package used for Sideloading or Office Store

Building a Great Microsoft Teams app

- Teams Scope - your experience exists in the team context
  - Team owners may add your experience to a team:
  - Bots and Compose Extensions – available on all channels
  - Teams Tabs (“Configurable”) – added and customized on a per-channel basis

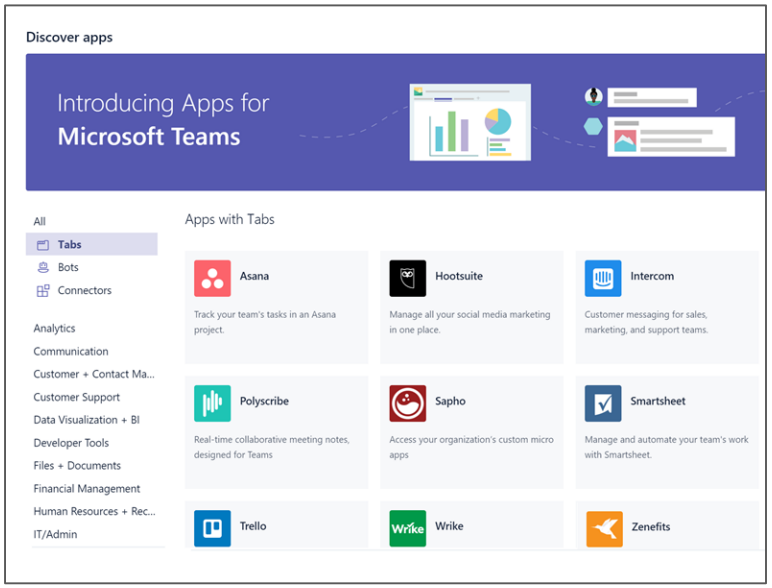
- Personal Scope – your experience exists in individual user context
  - Individuals add the experiences they want for personal use
  - Bots and Compose Extensions – available in 1:1 chat
  - Personal Tabs (“Static”) – available to end users via the App bar or alongside 1:1 bots

Getting Started

- Tabs - Bring your own Service
  - JavaScript APIs to tie your experience to Teams context
- Connectors – Leverage the Connectors Developer Portal
  - Use new Actionable Cards layouts that work in Outlook and Teams
- Bots – Build using the Bot Framework
  - Use the .NET and Node.js SDKs, or call the REST endpoints
  - Teams Extension SDKs provide Teams-specific functionality
  - Flag important messages for inclusion in Activity Feed
- Compose Extensions – Reuse your bot
  - Use the .NET and Node.js SDKs, or call the REST endpoints
  - Teams Extension SDKs provide Teams-specific functionality

Deploying

- ISVs – Distribute through the Office Store
  - Create or use your existing DevCenter/Seller Dashboard account
  - Upload your package and enter your product page metadata
  - Office Store Validation ensure compliance with Office Store Policy
  - Validated apps published to Office Store appear in Microsoft Teams Discovery view
- Line-of-Business apps – Sideload your package
  - Leverage the same testing methodology to deploy within your org



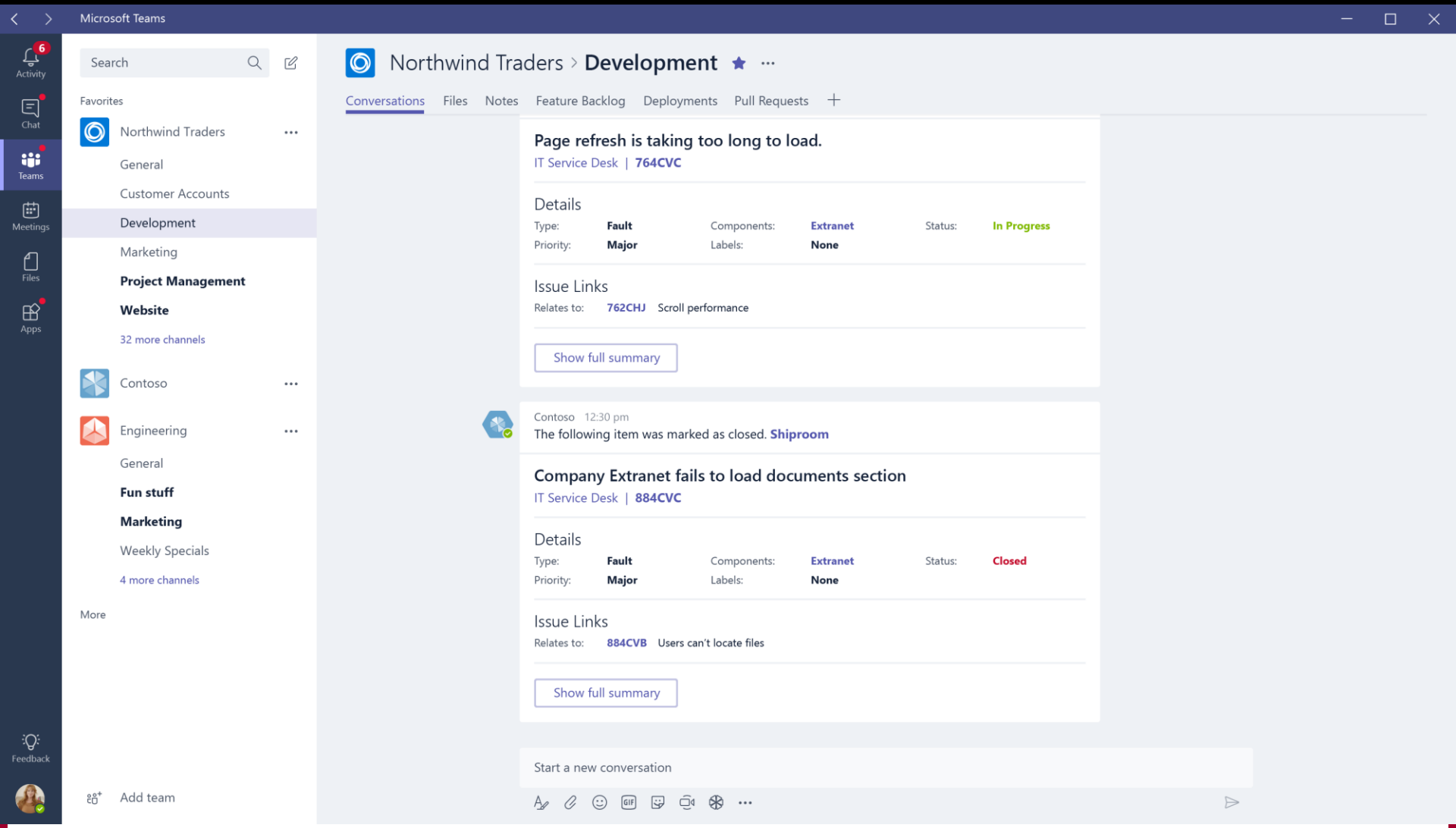
Compose Extensions

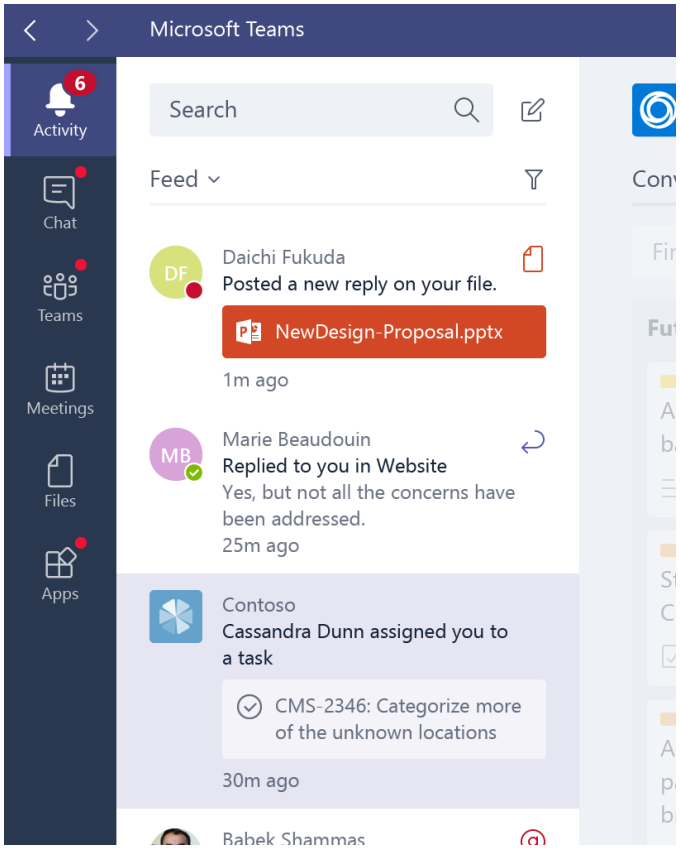
- Service that listens to user requests and returns cards or rich media
  - Leverage the Bot you've already built, or build another
  - Define commands and parameters in the manifest.json
  - Handle via Bot Framework activity, leveraging the Microsoft Bot Extension SDKs

```
"composeExtensions": [
  {
    "botId": "57a3c29f-1fc5-4d97-a142-35bb662b7b23",
    "scopes": [
      "personal"
    ],
    "commands": [{
        "id": "searchCmd",
        "description": "Search Bing for information on the web",
        "title": "Search",
        "initialRun": "true",
        "parameters": [{
          "name": "searchKeyword",
          "description": "Enter your search keywords",
          "title": "Keywords"
        }]
      }
    ]
  }
],
```

Building a Compose Extension Experience

- Compose Extensions in Microsoft Teams
  - Share content that makes sense in conversations.
  - Add on as part of core Bot offering to facilitate easier management.
  - Take advantage of the rich card types provided as part of the platform.
  - Optimize search results to keep compose extensions snappy and responsive.


Microsoft Teams
Activity
6
Chat
Teams
Meetings
Files
Apps
Feedback
Search
Favorites
Northwind Traders
General
Customer Accounts
Development
Marketing
Project Management
Website
32 more channels
Contoso
Engineering
General
Fun stuff
Marketing
Weekly Specials
4 more channels
More
Add team
Northwind Traders › Development
Conversations
Files
Notes
Feature Backlog
Deployments
Pull Requests
Page refresh is taking too long to load.
IT Service Desk | 764CVC
Details
Type: Fault
Components: Extranet
Status: In Progress
Priority: Major
Labels: None
Issue Links
Relates to: 762CHJ Scroll performance
Show full summary
Contoso 12:30 pm
The following item was marked as closed. Shiproom
Company Extranet fails to load documents section
IT Service Desk | 884CVC
Details
Type: Fault
Components: Extranet
Status: Closed
Priority: Major
Labels: None
Issue Links
Relates to: 884CVB Users can't locate files
Show full summary
Start a new conversation

Activity Feed

- Use the Activity Feed to send important information to your users
- Leverage existing Bot to tag specific messages as notification alerts
- Encode deep link to entity (tab) for one-click navigation to content