Consultingwerk
software architecture and development

JIRA Integration using the OpenEdge HTTP Client

Peter Judge, Consultingwerk

Peter Judge

- Senior Architect at Consultingwerk
- Writing 4GL since 1996, working on a variety of frameworks and applications. More recently have worked on a lot of integration-y stuff: Authentication Gateway, HTTP Client, Web Handlers. Dabbles in PASOE migrations.
- Active participator in Progress communities, PUGs and other events

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Consultingwerk Software Services Ltd.

- Independent IT consulting organization
- Focusing on **OpenEdge** and **related technology**
- Located in Cologne, Germany, subsidiaries in UK, USA and Romania
- Customers in Europe, North America, Australia and South Africa
- Vendor of developer tools and consulting services
- Specialized in GUI for .NET, Angular, OO, Software Architecture, Application Integration
- Experts in OpenEdge Application Modernization

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Services Portfolio, Progress Software

- OpenEdge (ABL, Developer Tools, Database, PASOE, …)
- Telerik DevCraft (.NET, Kendo UI, Angular, …), Telerik Reporting
- OpenEdge UltraControls (Infragistics .NET)
- Telerik Sitefinity CMS (incl. integration with OpenEdge applications)
- Kinvey Plattform, NativeScript
- Corticon BRMS
- Whatsup Gold infrastructure-, network- and application monitoring
- Kemp Loadmaster
- …

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Services Portfolio, related products

- Protop Database Monitoring
- Combit List & Label
- Web frameworks, e.g. Angular
- .NET
- Java
- ElasticSearch, Lucene
- Amazon AWS, Azure
- DevOps, Docker, Jenkins, ANT, Gradle, JIRA, …
- …

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What is Jira?

Jira Software is part of a family of products designed to help teams of all types manage work. Originally, Jira was designed as a bug and issue tracker. But today, Jira has evolved into a powerful work management tool for all kinds of use cases, from requirements and test case management to agile software development.

https://www.atlassian.com/software/jira/guides/use-cases/what-is-jira-used-for#jira-for-agile-teams

- For many, Jira is life.
- For some, Jira is heaven; for others, hell.

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Doesn't Jira Have It All?

- At Consultingwerk, we need to talk to Jira to
  1. Prepare release notes for a release (pull from Jira)
  2. Update tickets with change sets from Perforce (source control)

- Jira provides a RESTful API … and since we're an ABL shop, we use the ABL HTTP Client

- API is versioned, or use "latest"

```
/rest/api/2/
/rest/api/latest/
```

- Doc at https://docs.atlassian.com/software/jira/docs/api/REST/7.6.1/

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ABL HTTP Client

- Part of the OpenEdge product since 11.5
- Designed to be a REST client
- Platform independent
- Good with JSON
- Assorted "writer" classes to help with converstions to-and-from bytes

```
DEFINE VARIABLE hc   AS IHttpClient   NO-UNDO.
DEFINE VARIABLE req  AS IHttpRequest  NO-UNDO.
DEFINE VARIABLE resp AS IHttpResponse NO-UNDO.
DEFINE VARIABLE body AS JsonObject    NO-UNDO.

// reusable client
hc = ClientBuilder:Build():Client.

body = NEW JsonObject().
body:Add('conference', 'PUG UK').
body:Add('host', 'peter.judge@consultingwerk.com').

// single request to POST some JSON
req = RequestBuilder:Post("http://httpbin.org/post", body)
                    :Request.

// Run the request
resp = hc:Execute(req).

// process the response
IF TYPE-OF(resp:Entity, JsonConstruct) THEN
    CAST(resp:Entity, JsonConstruct):WriteFile("data.json").
```

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Gotchas

- Authentication is via HTTP basic authentication … but not using your account password …
  - Use an API token https://support.atlassian.com/atlassian-account/docs/manage-api-tokens-for-your-atlassian-account/#Use-an-API-token

- Assorted HTTP Client issues
  - Client redirects : `303 / See other`
  - Client redirects : different HTTPS connections
  - Always sends a `User-Agent` header

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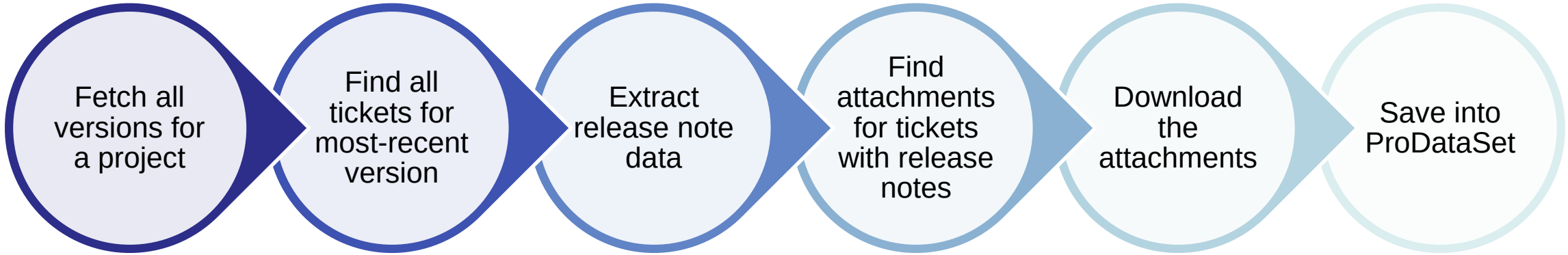
1. Prepare release notes

Generating release notes



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Demo: Reading release notes

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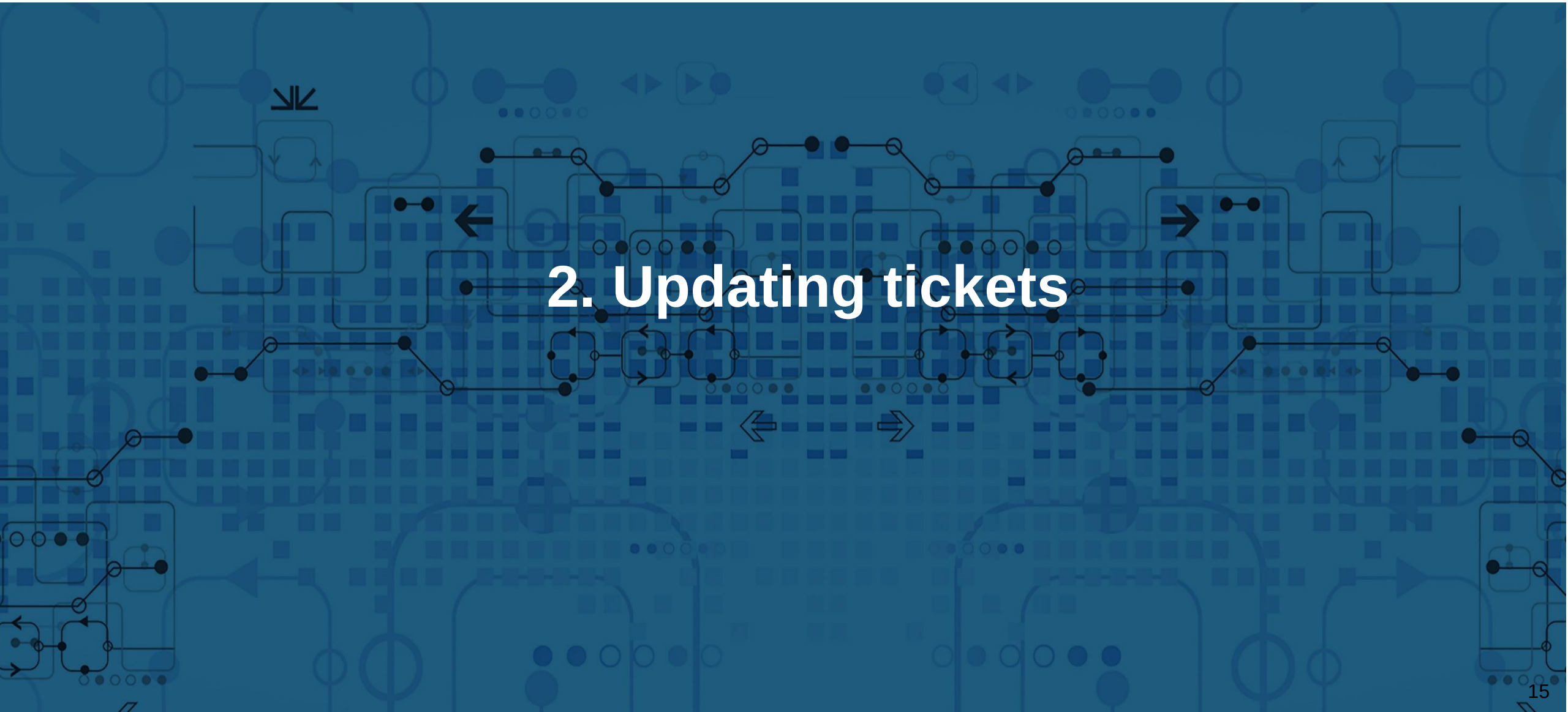
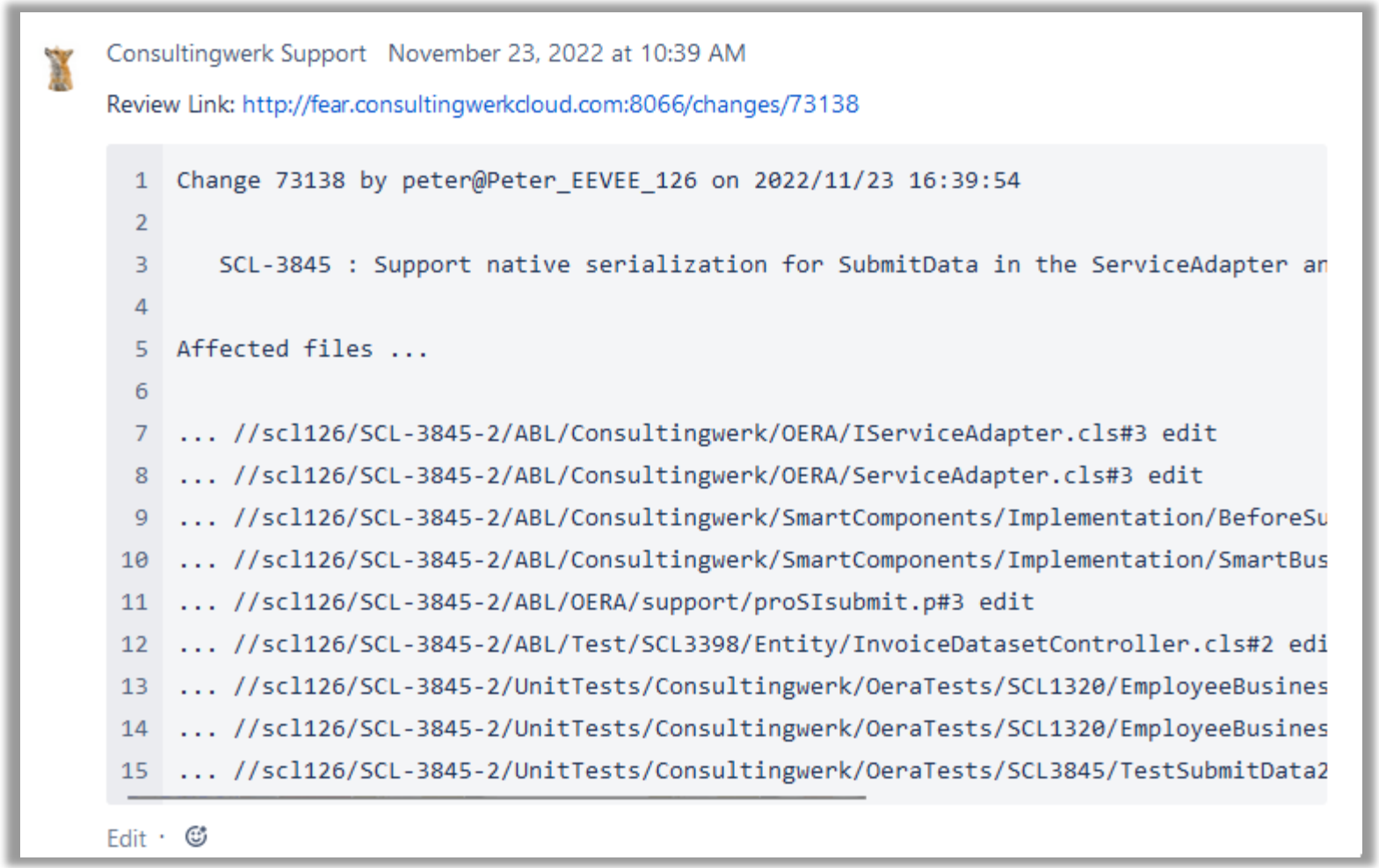


2. Updating tickets

Commit data in tickets

- When a commit is made to Perforce, a comment is automatically added to a ticket



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Adding comments

- Two approaches
  1. Add comment: `POST /rest/api/2/issue/{issueIdOrKey}/comment`
  2. Update issue: `PUT /rest/api/2/issue/{issueIdOrKey}`

- 1 is tricky due to `User-Agent` issue

  403 / Forbidden

  "XSRF check failed"

  - To fix, we extend the ABL HTTP Client

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Formatted text

- (Any) Formatted text uses Atlassian Document Format
  - JSON document structure

⚠ Requires API v3 – not `/latest/` ⚠

- Formatted comments must be posted as JSON **object** – not strings or stringified JSON
- Jira provides nice "playground" tools, JSON schema and other doc

https://developer.atlassian.com/cloud/jira/platform/apis/document/structure/


```
{
    "version": 1,
    "type": "doc",
    "content": [
        {
            "type": "paragraph",
            "content": [
                {
                    "type": "text",
                    "text": "asgfa"
                }
            ]
        },
        {
            "type": "codeBlock",
            "attrs": {
                "language": "json"
            },
            "content": [
                {
                    "type": "text",
                    "text": "{\"p\": [1,4,null, \"FF\"]}\n"
                }
            ]
        },
        {
            "type": "paragraph",
            "content": [
                {
                    "type": "text",
                    "text": "this is a "
                },
                {
                    "type": "text",
                    "text": "for each ",
                    "marks": [
                        {
                            "type": "code"
                        }
                    ]
                }
            ]
        }
    ]
}
```


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Demo: Comments

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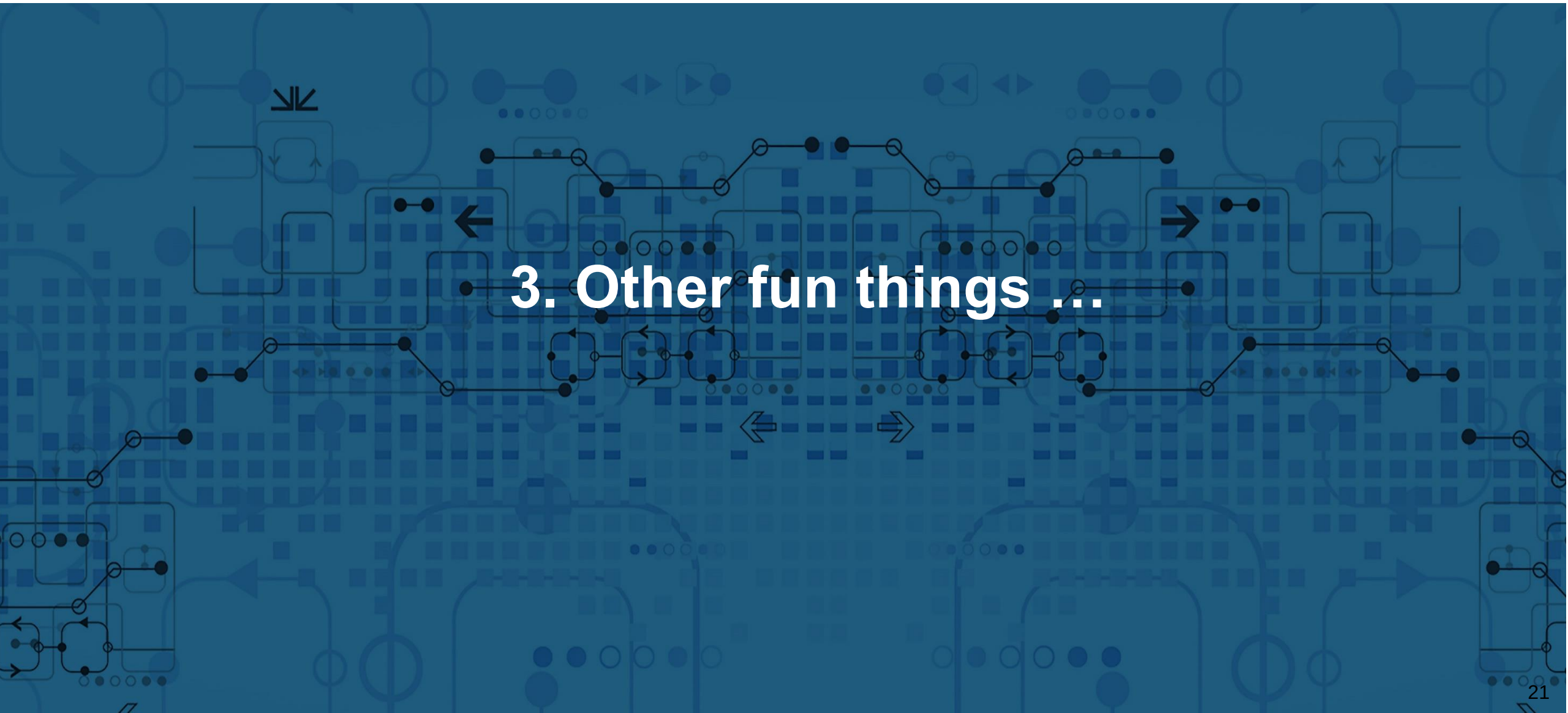

3. Other fun things ...

The API is very broad …

We can

- Create issues and sub-tasks
- Link issues together (duplicate/clones/blocks/etc)
- Update (edit) issues
- Add attachments
- Assign issues to a user
- Transition issues through states like To Do, In Progress, Done
- Add and remove watchers

… And get a bunch of metadata around these operations

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Demo: Creating & updating issues

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Adding attachments

- Request `Content-Type` is `multipart/form-data` (see RFC2046)
- HTTP Client supports
  - MultipartEntity
  - MessagePart
  - Reading / writing to them

```
POST /rest/api/3/issue/DEMO-5/attachments HTTP/1.1
X-Atlassian-Token: no-check
Host: consultingwerk.atlassian.net
Content-Type: multipart/form-data; boundary=b6dc7be0-151d-a38d-a314-e40c7486a364
Content-Length: 3162
Authorization: Basic cGV0ZXIuanVkZ2VAY29uc3VsdGluZ3dlcmsuY29tOnlnUGdCTGNVeDhtUFk4NzRiaVJsMEMzRg==
Accept: application/json

--b6dc7be0-151d-a38d-a314-e40c7486a364
Content-Type: application/octet-stream
Content-Disposition: form-data; filename="README.md"; name="file"

# Accessing JIRA via the ABL HTTP client
This repo contains the source and slides presented at the 2022 PUG Challenge in Vienna.

<< many missing bytes >>

--b6dc7be0-151d-a38d-a314-e40c7486a364--
```

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Adding links

- Link Jira issues together
- Add (remote) web links
  - Can group by user-defined "application"

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Demo: Attachments & links

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Fin

- Most of Jira's functionality is available via REST API
  - Jira REST is quite RESTful; once you have a thread, you can usually figure the path out
  - Read the docs – they are generally very good
- One “logical record” can be made up of 4+ REST calls
- Watch out for redirects & issues in the HTTP client
  - Some of which can be worked-around
- Sample code at https://github.com/4gl-fanatics/jira_http

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