In [1]:

```
from __future__ import division, print_function, absolute_import, unicode_literals
```

In [2]:

```
import numpy as np
import matplotlib.pyplot as plt
import json
```

for each model:

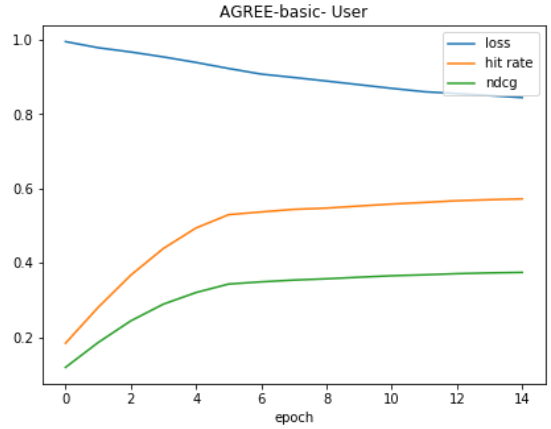
- divide into user / group
- draw loss, ndcg, hr

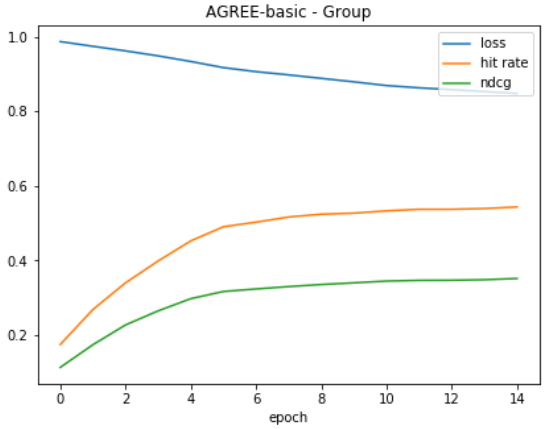
In [28]:

```
def plot_model(history_file, title):

    with open(history_file) as json_file:
        data = json.load(json_file)

        group = { 'loss': [], 'hr': [], 'ndcg': [] }
        user = { 'loss': [], 'hr': [], 'ndcg': [] }

        for history in data:
            group['loss'].append(history['loss']['group'])
            group['hr'].append(history['hr']['group'])
            group['ndcg'].append(history['ndcg']['group'])
            user['loss'].append(history['loss']['user'])
            user['hr'].append(history['hr']['user'])
            user['ndcg'].append(history['ndcg']['user'])

        epochs = [i for i in range(len(group['loss']))]

        # plotting
        fig, (user_plot, group_plot) = plt.subplots(1, 2)

        fig.set_figheight(5)
        fig.set_figwidth(15)

        user_plot.plot(epochs, user['loss'])
        user_plot.plot(epochs, user['hr'])
        user_plot.plot(epochs, user['ndcg'])

        user_plot.legend(['loss', 'hit rate', 'ndcg'], loc='upper right')
        user_plot.set_title(title + '- User')
        user_plot.set_xlabel('epoch')

        group_plot.plot(epochs, group['loss'])
        group_plot.plot(epochs, group['hr'])
        group_plot.plot(epochs, group['ndcg'])

        group_plot.legend(['loss', 'hit rate', 'ndcg'], loc='upper right')
        group_plot.set_title(title + ' - Group')
        group_plot.set_xlabel('epoch')

        plt.show()
```

In [29]:

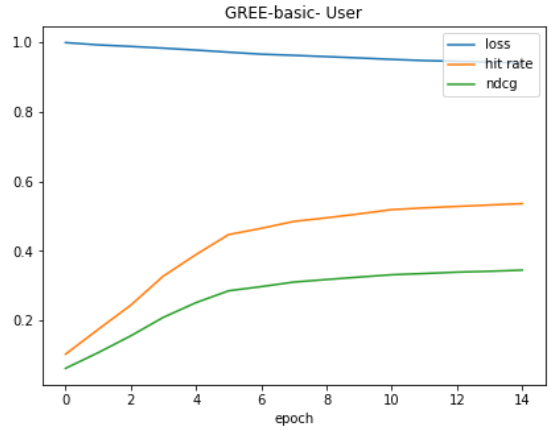
```
plot_model('./models/AGREE-basic/history.json', "AGREE-basic")
```

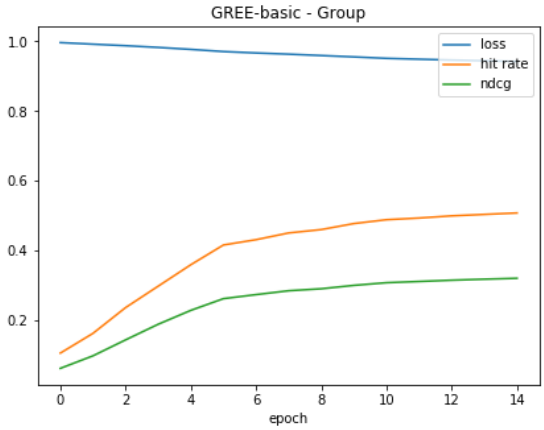




In [30]:

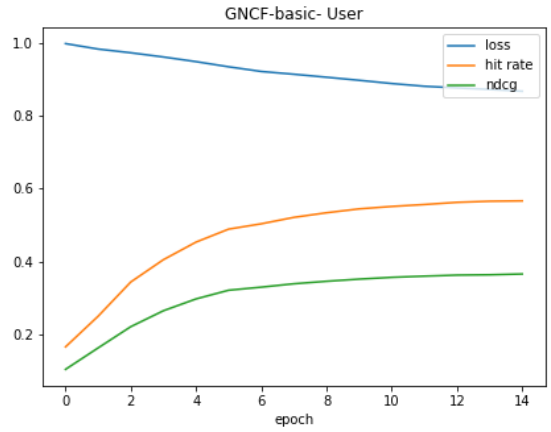
```
plot_model('./models/GREE-basic/history.json', "GREE-basic")
```

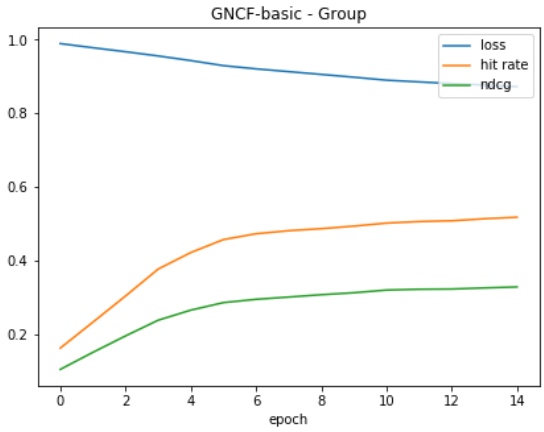




In [31]:

```
plot_model('./models/GNCF-basic/history.json', "GNCF-basic")
```



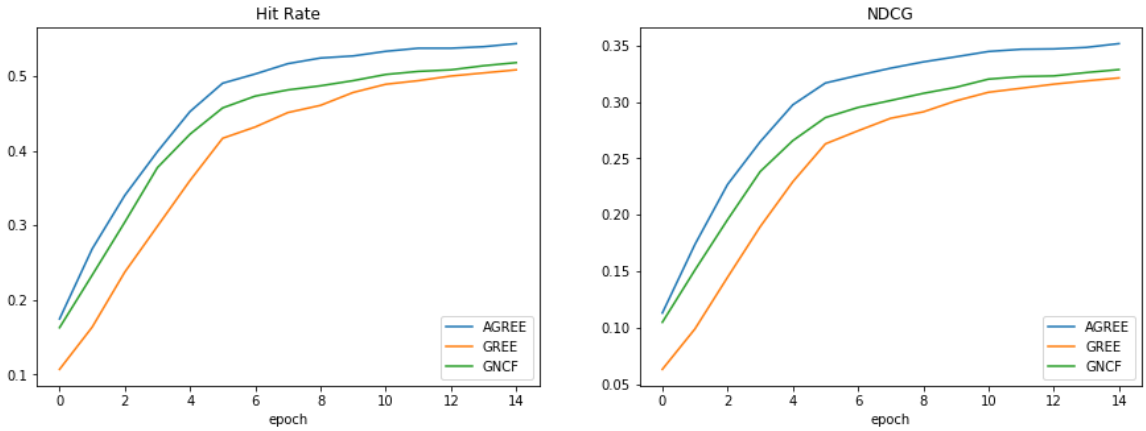


for several model: (AGREE vs GREE vs GNCF) & (AGREE n4 vs AGREE n5 vs AGREE n6)

- divide into user / group
- draw ndcg, hr

In [3]:

```
with open('./models/GNCF-basic/history.json') as json_file:

    data = json.load(json_file)

    gncf_group = {'hr': [], 'ndcg': [] }

    for history in data:
        gncf_group['hr'].append(history['hr']['group'])
        gncf_group['ndcg'].append(history['ndcg']['group'])

with open('./models/AGREE-basic/history.json') as json_file:

    data = json.load(json_file)

    agree_group = {'hr': [], 'ndcg': [] }

    for history in data:
        agree_group['hr'].append(history['hr']['group'])
        agree_group['ndcg'].append(history['ndcg']['group'])

with open('./models/GREE-basic/history.json') as json_file:

    data = json.load(json_file)

    gree_group = {'hr': [], 'ndcg': [] }

    for history in data:
        gree_group['hr'].append(history['hr']['group'])
        gree_group['ndcg'].append(history['ndcg']['group'])

epochs = [i for i in range(len(agree_group['hr']))]

# plotting
fig, (hr_plot, ndcg_plot) = plt.subplots(1, 2)

fig.set_figheight(5)
fig.set_figwidth(15)

hr_plot.plot(epochs, agree_group['hr'])
hr_plot.plot(epochs, gree_group['hr'])
hr_plot.plot(epochs, gncf_group['hr'])

hr_plot.legend(['AGREE', 'GREE', 'GNCF'], loc='lower right')
hr_plot.set_title('Hit Rate')
hr_plot.set_xlabel('epoch')

ndcg_plot.plot(epochs, agree_group['ndcg'])
ndcg_plot.plot(epochs, gree_group['ndcg'])
ndcg_plot.plot(epochs, gncf_group['ndcg'])

ndcg_plot.legend(['AGREE', 'GREE', 'GNCF'], loc='lower right')
ndcg_plot.set_title('NDCG')
ndcg_plot.set_xlabel('epoch')

plt.show()
```



In [6]:

```
arr = [1,2,3,4,5]

for i, a in zip(range(3), arr):
    print(a)
```

```
1
2
3
```

In [5]:

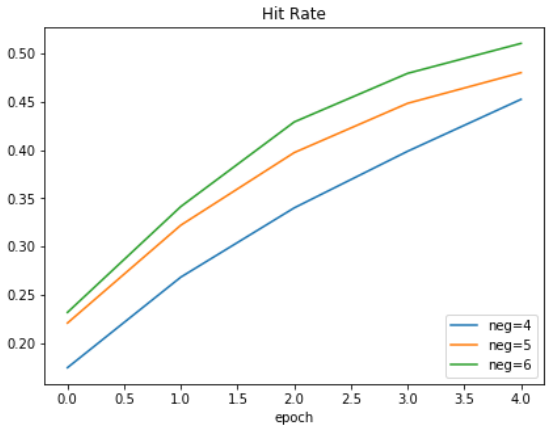
```
range(10)
```

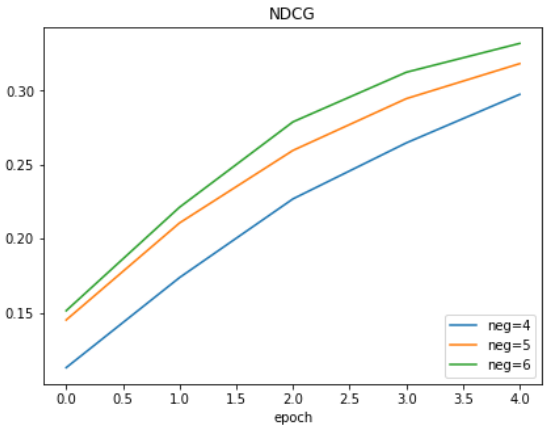
Out[5]:

```
range(0, 10)
```

In [4]:

```
with open('./models/AGREE-n5/history.json') as json_file:

    data = json.load(json_file)

    n5_group = {'hr': [], 'ndcg': [] }

    for history in data:
        n5_group['hr'].append(history['hr']['group'])
        n5_group['ndcg'].append(history['ndcg']['group'])

with open('./models/AGREE-n6/history.json') as json_file:

    data = json.load(json_file)

    n6_group = {'hr': [], 'ndcg': [] }

    for history in data:
        n6_group['hr'].append(history['hr']['group'])
        n6_group['ndcg'].append(history['ndcg']['group'])

with open('./models/AGREE-basic/history.json') as json_file:

    data = json.load(json_file)

    n4_group = {'hr': [], 'ndcg': [] }

    for idx, history in zip(range(len(n6_group['hr'])), data):
        n4_group['hr'].append(history['hr']['group'])
        n4_group['ndcg'].append(history['ndcg']['group'])

epochs = [i for i in range(len(n6_group['hr']))]

# plotting
fig, (hr_plot, ndcg_plot) = plt.subplots(1, 2)

fig.set_figheight(5)
fig.set_figwidth(15)

hr_plot.plot(epochs, n4_group['hr'])
hr_plot.plot(epochs, n5_group['hr'])
hr_plot.plot(epochs, n6_group['hr'])

hr_plot.legend(['neg=4', 'neg=5', 'neg=6'], loc='lower right')
hr_plot.set_title('Hit Rate')
hr_plot.set_xlabel('epoch')

ndcg_plot.plot(epochs, n4_group['ndcg'])
ndcg_plot.plot(epochs, n5_group['ndcg'])
ndcg_plot.plot(epochs, n6_group['ndcg'])

ndcg_plot.legend(['neg=4', 'neg=5', 'neg=6'], loc='lower right')
ndcg_plot.set_title('NDCG')
ndcg_plot.set_xlabel('epoch')

plt.show()
```


Hit Rate
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
epoch
neg=4
neg=5
neg=6


NDCG
0.30
0.25
0.20
0.15
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
epoch
neg=4
neg=5
neg=6