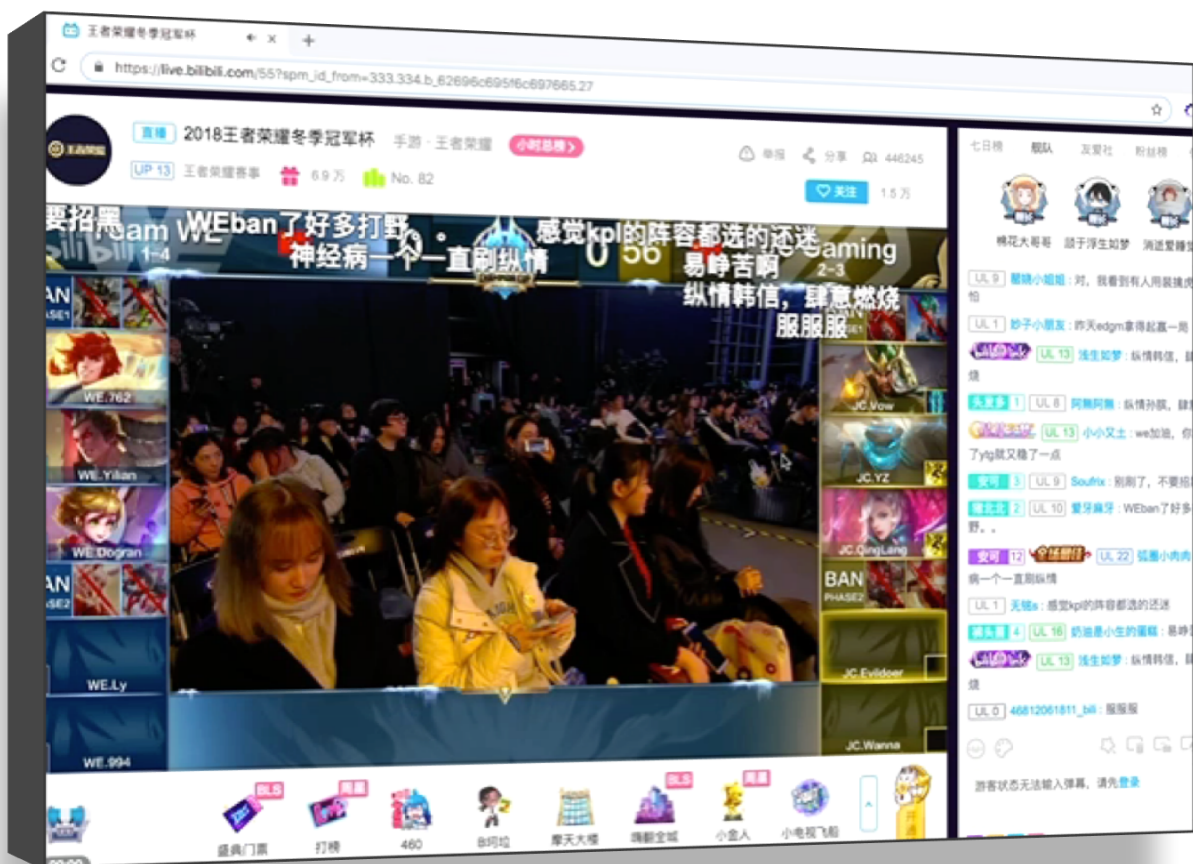# USE CASE 1: Bullet Curtain - Definition
用例1:弹幕 – 定义

Bullet subtitle/bullet screen/danmaku subtitles/barrage refers to the comment subtitles that pop up on the screen when the user watches the video on the network.

USE CASE 1: Bullet Curtain - Scenarios
用例1:弹幕 – 场景

See reviews of group users: Users can see comments from a group of users, with similar interests in a same video.

同组类型人的兴趣爱好

Real-time interaction: users can interact and comment with other users.

Engagement: Viewing the comments as part of the video viewing experience or entertainment.

深深的参与感

Generation Y: Favor multitasking - texting and watching video.

新一代年轻用户：喜欢一边看视频一边刷微信。

Social Presence: *Studies show that online-based interactions can facilitate social presence.

刷社会存在感

* Dunlap "Tweeting the Night Away: Using Twitter to Enhance Social Presence" Journal of Information Systems, 2009
* McIssac "The Relationship of Social Presence and Interaction in Online Classes" The American Journal of Distance Education, 2002

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USE CASE 1: Bullet Curtain – Situations
用例1:弹幕 – 当前方式和困难

The JSON information of the comments is grabbed from the remote server,
then drawn and overlapped on the video through DOM and Canvas.
从远程服务器抓取评论的JSON信息，然后通过DOM以及Canvas绘制并层叠在视频上。

It is necessary to calculate the position of the screen, consider the synchronization
between the screen and the video, the speed and animation of the screen,
and avoid collision of different titles of the screen. If there are characters in the video,
it is necessary to avoid collision between bullet curtain and characters.
需要计算弹幕的位置，考虑弹幕与视频的同步，弹幕的速度与动画，
以及不同字号的弹幕文字要避免碰撞。如果视频画面存在人物，需要避免弹幕和人物碰撞（AI相关）

In view of the fact that the demand for bullet curtain is more common in Asia, standardization can
unify the data structure of bullet curtain, reduce the difficulty of development, improve user experience,
and expand advanced functions in the future.

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USE CASE 1: Bullet Curtain – Suggestions
用例1:弹幕 – 建议

- Develop standard formats for bullet curtain, such as text, color, style, duration and time offset.
- Add new file formats (vdt, Video Danmaku Track). The data format of VDT can refer to the above instructions.
- Introduced through the track tag under Video, Video automatically draws the bullet curtain according to the content of vdt.

制定弹幕的标准格式，比如弹幕包含text（文本），color（颜色），style（样式），duration（显示时长）
以及timeoffset（时间偏移量，用于在指定时间显示文本）
增加新的文件格式（vdt, Video Danmaku Track），vdt的数据格式可以参考上面的说明，
通过Video下的track标签引入，Video根据vdt的内容进行自动绘制弹幕。

```
<video width="320" height="240" controls>
    <source src="forrest_gump.mp4" type="video/mp4">
    <track src="danmaku.vdt" multiple kind="subtitles">
</video>
```

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